



NOWINKA
Site 1
The cemetery from the Late Migration Period in the
northern Poland





INSTYTUT ARCHEOLOGII UNIWERSYTET WARSZAWSKI
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I. INTRODUCTION (Bartosz Kontny, Jerzy Okulicz-Kozaryn, Mirosław Pietrzak)

The cemetery in Nowinka, gm. (commune) Tolkmicko, pow. (district) Elbląg, site 1, Polish Archaeological Record (*polish* Archeologiczne Zdjęcie Polski – AZP), area 13-52, no 7¹ is located in the northern part of the Elbląg Upland, near the shore of the Vistula Lagoon (Fig. 1). It belongs to a concentration of ca twenty burial grounds which functioned at late stage of Phase E (Okulicz 1988, p. 107-108; Kowalski 2000, p. 204), which can be dated, as it is generally believed, to the final decades of the 6th century and the early 7th century. Settlement points from that period are located near the edge of the Upland, between the mouth of the Pasłęka River and the southern edge of the ‘Družno Bay’ reconstructed in the form it may have existed in the late Antiquity. This concentration was called the Elbląg group of the West Balt circle (Okulicz 1973, p. 471; 1989, p. 89-90) and the name has been generally accepted by scholars, although there are opinions that this group was subordinated to a cultural unit from the Sambian-Natangian area called by W. Nowakowski the Dollkeim-Kovrovo culture (Nowakowski 1996, p. 96-97; Bitner-Wróblewska 2001, p. 21-25, 132)² or indicating the mixed, Balt-German-Scandinavian character of the culture of that area, resulting in its lack of independent character (Bitner-Wróblewska 2008b, p. 109)³. The Elbląg group was formed several ten years after the Wielbark culture population deserted its cemeteries located on the eastern side of

the Vistula Delta. This happened, as it seems in the final stage of Phase D and the beginning of Phase E (the turn of the 5th and 6th centuries), as a result of a so-far not completely explained process of symbiosis of interregional and ‘Sambian’ elements. The Elbląg group was formed as the eastern edges of the Vistula Delta were taken over by the newly formed social group, or, as we believe, by the *Vidivarii*, known from Jordanes’ writings⁴. It also seems most probable that there was no break in the settlement in the Elbląg Upland between the early and late stage of Phase E, in contrast to K. Godłowski’s opinion (1981, p. 103, 118). The users of the cemeteries dated to the late stages of Phase E were, i.a., those buried at the necropolis in Nowinka, may be identified with the descendant social group from the social formation of the *Vidivarii*.

The earliest discoveries at the cemetery at Nowinka were made in ca 1921 at the field belonging to Peter Stobbe, but the information about it is limited to a short mentions about the discovered artefacts (spurs and bits) and horse skeletons mentioned in the report of the activities of Bruno Ehrlich, the Chairman of the Elbląg Society of Antiquities (Germ. *Elbinger Altertumsgesellschaft*). During the excavations which were conducted as a result of the discovery only a horse skeleton without grave goods and a pit with traces of burning and undecorated fragments of hand-made pottery were uncovered (Ehrlich 1922,

¹ A list of names of sites in various languages, mentioned in this paper is presented at the end (Appendix V.1).

² It should not be forgotten that it is not obvious whether the Sambian-Natangian area belonged to Dollkeim-Kovrovo culture in Phase E: at that time the majority of cemeteries were abandoned and new ones were established: they were used until the Medieval Period (cf. Nowakowski 1996, p. 96). This phenomenon is awaiting explanation, but certainly this was not a simple and widespread continuation of traditions from the Roman Period. In this paper this area is usually denoted as Sambian-Natangian area, which means also similar sites from the adjoining areas.

³ This is, however, a debatable issue and concerns mainly the terminology connected with cultural affiliations: it would be interesting to consider whether to distinguish two territorial groups within the West Balt circle: Sambian, i.e., the Dollkeim-Kovrovo culture and Elbląg group as an equivalent cultural unit or as a ‘subordinate’ to the former local cultural unit equivalent to a settlement concentration with some specific cultural features and rate of the settlement process. The suggestion to ‘deprive’ the analysed region of its cultural uniqueness due to the presence of multifarious external influences seems completely groundless: it rather stresses the cultural uniqueness of the Elbląg region or at least its incomplete identity with the Sambian-Natangian region.

⁴ Some researchers (Kunkel 1942, p. 1812-1813; Okulicz-Kozaryn 1992, p. 140) try to associate the new settlement at the Elbląg Upland with the information from the early 6th century presented by Jordanes in *Getica* V, 36: *Ad litus autem Oceani, ubi tribus faucibus fluenta Vistulae fluminis ebibuntur, Vidivarii resident ex diversis nationibus agregati..*” ; and elsewhere in *Getica* XVII, 96: *... nunc [i.e., in the early 6th century] ut fertur insulam eam [i.e., Gepedoios thus probably the Elbląg Upland?] gens Vidivarii incolit... qui Vidivarii ex diversis nationibus ac si in unum asylum colecti sunt et gentem fecisse nescuntur.* The unusual way of forming through the allochthonic process of a new tribal group, probably with the use of Aestian settlers moving from Sambian Peninsula, mixing with the migrating retinues and sailors from Bornholm and other Baltic islands is convincingly supported by the archaeological sources. For besides the early ‘almost Balt’ cemeteries from Phases E₁-E_{2a} (i.a., Młoteczno, site 3, Garbina, Podgórze, Pasym, Chojnowo) there are: one of the four largest in northern Europe concentration of finds of Byzantine solidus issued in 455-518 and the hoards of silver and gold ornaments from the second half of the 5th century and the early 6th century (Godłowski 1981, p. 104-109; Bursche 1998, p. 225; Ciołek 2001; Mączyńska 2007). Together with the cemeteries they formed contemporaneous concentrations of settlement points.

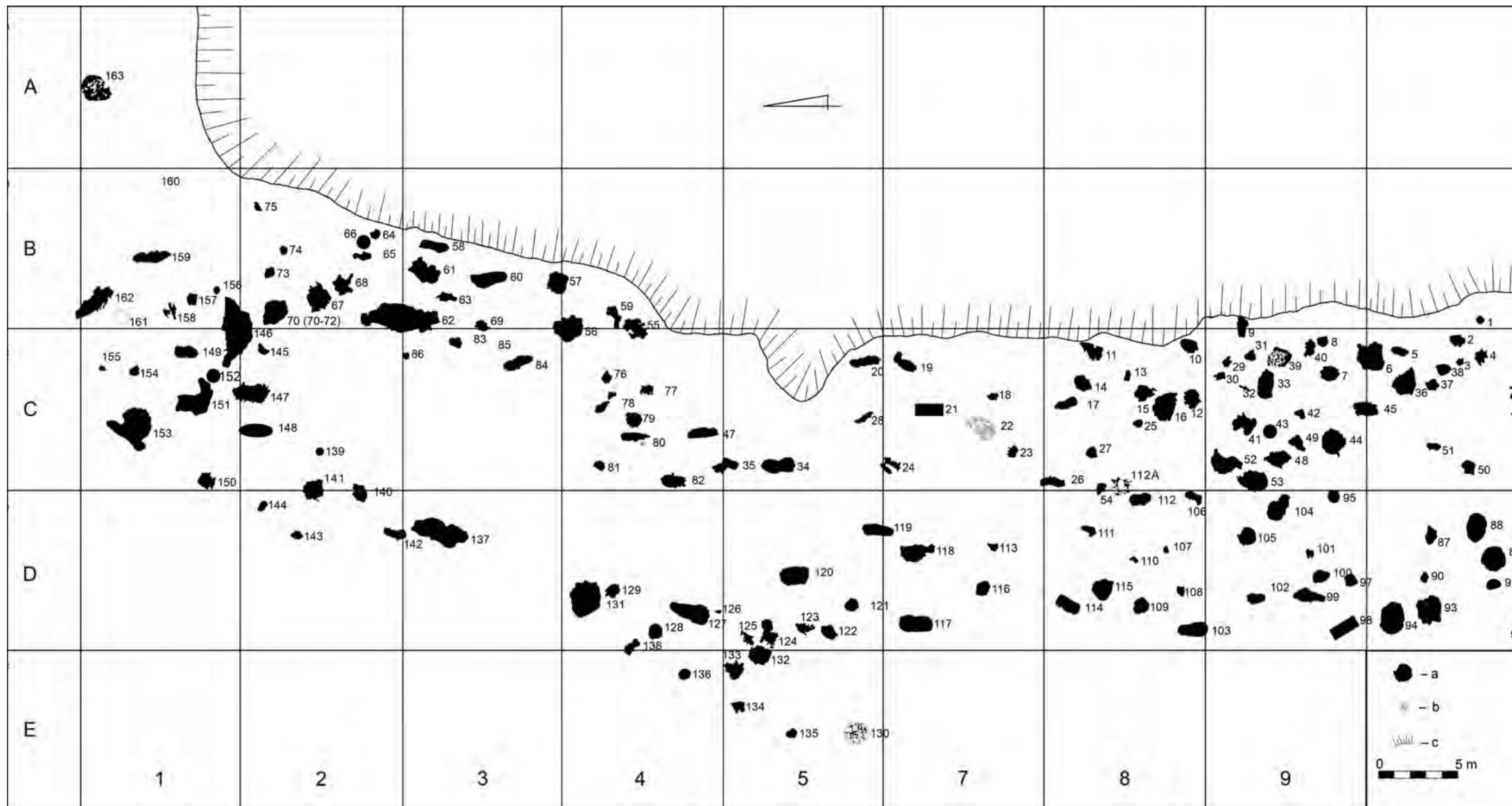


Fig. 1. Nowinka. Plan of the cemetery: a – graves and features, b – stones, c – limits of modern damage.

p. 163). Probably already at that time the destruction of the cemetery hill by excavating gravel was begun. After the 2nd World War the high-quality gravel was also mined there on a large scale, used to rebuild Elbląg after the war destruction; it is probably then that the major part of the cemetery was destroyed (Pl. CXI). Archaeologists from Gdańsk discovered the site in 1959 but they found in the slide of the gravel-pit only remains of disturbed pits containing a few sherds from the Early Iron Age. Only later on, in 1971, Janusz Podgórski and Mirosław Pietrzak from the Archaeological Museum in Gdańsk, who investigated the area after a report according to which artefacts were uncovered when mining for gravel, established that there existed a burial ground from the Late Migration Period, at that time destroyed in its larger part (Pietrzak 1977). As in 1975 the area of Elbląg was part of the Gdańsk Voivodeship, the local voivodeship conservator assigned the duty to carry out the rescue excavations to the Archaeological Museum in Gdańsk and personally to Mirosław Pietrzak. The researcher conducted the excavations for 10 seasons: from autumn 1971 till 1982 (with a one-year gap in the 1977 season, and in the 1975 season the excavations were supervised by Barbara Wiącek, from the Archaeological Museum in Gdańsk) and excavated the whole preserved S part of the cemetery with the area of ca 20 ares. During the excavations one hundred seventy one features were discovered and recorded, out of which sixteen features from the Neolithic and the Early Iron Age and remains of twelve undetermined pits should be subtracted; the remaining one hundred thirty six features are connected with the cemetery of the Elbląg group. One hundred thirty three of them were human cremation pit burials, often accompanied by skeleton horse burials (altogether fifty burials with horses were discovered). Besides, ten pavements of undetermined function, traces of pyres and hearths were found. A large part of the discovered human graves was damaged (eighty four graves, i.e. ca 64%) or disturbed (thirty nine graves, i.e., 29%), and the minority (ten graves, i.e., 7%) was undisturbed. The preserved and investigated part of the burial ground was only a fragment of a much larger necropolis: as many as several hundred burials may have been destroyed. Despite that the excavations at the cemetery have yielded a so-far unsurpassed series of artefacts of the Elbląg group. So far only single mentions of individual finds from Nowinka have been published (Pietrzak 1977; Godłowski 1981; Kulakov 1990; Jagodziński 1997; Bogucki 2006; Hillberg 2009); recently, as the work on the materials from the site progressed, the first at-

tempts at creating a synthesis of the issues connected with the necropolis were made (Kontny, Okulicz-Kozaryn, Pietrzak 2009; Kontny 2010; Okulicz-Kozaryn, Pietrzak 2009). The materials are part of the collection of the Archaeological Museum in Gdańsk under inventory no MAG N-1971:222 (grave 1-9), 1972:114 (grave 10-17), 1973:62 (grave 18-27), 1974:17 (grave 28-54), 1975:90 (grave 55-69), 1976:42 (grave 70-86), 1978:13 (grave 87-105), 1979:201 (grave 106-120), 1980:315 (grave 121-138), 1981:395 (grave 139-163).

The monograph of the Nowinka necropolis is accompanied by a number of specialist analyses, some of which are detailed and included in the text. The anthropological determinations of the cremation remains were made by Prof. Judyta Gładykowska-Rzeczycka (Centre for Anatomy and Anthropology, Śniadecki Academy of Physical Education and Sport in Gdańsk), the archaeozoological determinations of horse skeletons by Prof. Krzysztof Świeżyński and Prof. Henryk Kobryń (both Warsaw University of Life Sciences – SGGW), antlers by Prof. Alicja Lasota-Moskalewska (Institute of Archaeology, University of Warsaw), remains of fabrics were analysed by Prof. Jerzy Maik (Institute of Archaeology and Ethnology, Polish Academy of Sciences, Łódź), remains of leather and saddles by Teresa Radek Ph.D. (Department of Animal Anatomy and Histology, Wrocław University of Environmental and Life Sciences), charcoals and wood samples were determined by Zofia Tomczyńska Eng. (Department of Palaeobotany, Władysław Szafer Institute of Botany, Polish Academy of Sciences in Cracow), amber by Katarzyna Kwiatkowska M.A., (Museum of the Earth, Polish Academy of Sciences, Warsaw) and flint fragments by Michał Przeździecki M.A. (Institute of Archaeology, University of Warsaw).

It should be stressed that the cemetery at Nowinka is particularly important for the studies of the Elbląg group as none of the burial grounds excavated before the 2nd World War was fully published, except for the cemetery in Łęcze (Dorr 1898), which does not meet the modern research standards. The basic source of knowledge about the sites of the Elbląg group are publications of excavations made by German archaeologists which, unfortunately, are usually of fragmentary character. Reconstruction of the results of earlier investigations on the basis of discovered archive sources and artifacts, which yielded such promising results in the case of the other Balt areas, is so far impossible for the Elbląg group: finds and archives from the Elbląg Museum were lost during the 2nd World War and, unlike in the case of the Prussia-Museum collection, they have not

been found yet (in the MAHE⁵ there are only several dozens of artefacts usually not assigned to the assemblages or even sites). For reasons not entirely understandable the pre-war archaeologists who dealt with the Migration Period investigated the finds from the Elbląg area to a minimal degree, as a result of which their files contain no mentions on that subject (the published cemetery in Łęcze is the exception).

We would like to express our gratitude to many persons, especially Andrzej Szela M.A. (Institute of Archaeology, University of Warsaw) for his huge editorial work, Paweł Szymański Ph. D. (Institute of Archaeology, University of Warsaw) for detailed checking of the plates, Małgorzata Tuszyńska M.A. (Archaeological Museum in Gdańsk) for patience while dealing with materials from Nowinka, Maria Kasprzycka Ph.D. for permission to use and Grzegorz Stasielowicz M. A. (both Archeological-Historical Museum in Elbląg) for help in dealing with the materials from Elbląg museum collection, Anna Gręzak Ph.D. (Institute of Archaeology, University of Warsaw) for her help with adjusting the drawings of horse graves, Michał Dąbski M.A. and Miron Bogacki M.A. (both Institute of Archaeology, University of Warsaw) for taking professional photographs. We are happy to mention also Prof. Poul Otto Nielsen (National Museum in Copenhagen) as well as Prof. Finn Ole Nielsen and Maria Tuniszewska-Ringby M.A. (Bornholm Museum in Rønne) for their help during the studies concerning Scandinavian materials, Prof. Dieter Quast (Römisch-Germanische Zentralmuseum Mainz) for his kindness and help in access to probably the best Migration Period library in the Universe as well as many persons we like and feel thankful to them (i.a., Christina Reich Ph.D., Horst Wieder Ph.D. as well as Horst Junker Ph.D. from Museum für Vor- und Frühgeschichte in Berlin, Christina Rein-Seehusen M.A. from Copenhagen and many, many more). Also we are grateful to Prof. Wojciech Nowakowski, Paweł Szymański Ph.D and Mirosław Rudnicki M.A. (Institute of Archaeology,

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⁵ Abbreviations concerning names of museums, used in the monograph: BM – Bornholm Museum in Rønne (Bornholms Museum), MAG – Archaeological Museum in Gdańsk (Muzeum Archeologiczne w Gdańsku), MAHE – Museum of Elbląg (Muzeum Archeologiczno-Historyczne w Elblągu), MWMO – Museum of Warmia and Mazury in Olsztyn (Muzeum Warmii i Mazur w Olsztynie), NMK – National Museum in Copenhagen (Nationalmuseet), RGZM – Römisch-Germanische Zentralmuseum Mainz.



II. THE CATALOGUE (Bartosz Kontny, Jerzy Okulicz-Kozaryn, Mirosław Pietrzak)

II.1. Foreword

The Catalogue contains descriptions of Features no 1 to 163 discovered at the cemetery. These numbers include both graves (features containing human cremation burials, frequently additionally with skeleton horse burials) as well as remains of hearths or pyres, stone pavements and pits connected with the functioning of the necropolis, and ones coming from other periods or not containing materials allowing to date them. In the Catalogue descriptions the non-burial and not connected with the cemetery features are presented very briefly. The features and stray finds from the Neolithic and Early Iron Age periods will be presented in a separate paper. In the descriptions of the graves the depths at which the features were discovered are sometimes not mentioned: such measurements were not made consequently during the excavations as they were considered immaterial because the surface of the cemetery was strongly disturbed. Human burials and horse skeletons which accompanied them formed burial complexes deposited in shared pits were given the same numbers during excavations; this system has been retained in the Catalogue. However, in the descriptions they are treated separately as: "human burial" and "horse grave" so as to separate the assemblages from human burials from those deposited in horse graves. In some cases it was impossible definitely to assign artefacts to a horse or human burial. It is then noted in the description of the burial. Burial pits of horses were usually not spotted at the level of human grave. Therefore frequently there are lacks in documentation, namely plans of the horse graves. Also exact borders of features were not always easy to reconstruct, so sometimes they were interpreted during working with documentation. In uncertain situations doubtful limits were marked with broken line. As refers to depths at which horse's skeletons appeared they were frequently not documented, hence only rarely it was possible to correlate precisely horse's skeletons with human graves, basing namely on levels put down in documentation. Descriptions of the big pits in which horses and then human graves were placed are included in parts devoted to graves of horses.

Quite frequently interpretation of destroyed features is not sure because of bad state of preservation, although most probably they were graves; as a result their general chronology is not very sure so proposed dating is supplemented with question mark.

Some features in the Catalogue are ascribed to particular phases of necropolis' chronology, basing on the results of studies presented in Chapter III.8. Occasionally it was possible to attribute some additional features, e.g., grave 53, 69, 78 or 106, as they were furnished with elements typical of particular phases. Remaining features of the Elbląg group were described simply as Late Migration Period ones.

Generally no information concerning material of which artefacts were made is included in description of the features. It appears almost exclusively in description of features' contents with the exception of finds so similar that they had to be differentiated basing on material grounds.

In case of certain groups of artefacts not all dimensions are presented. It refers mainly to fragments of bronze or silver foil from drinking horns and headgear which were so delicate that they didn't survive. However one may say that especially fittings of drinking horns were very thin, lower than 0.05 cm. Also iron items, namely snaffle bits or buckles, frequently preserved in very bad condition so sometimes their dimensions or drawings are not exhaustive. As refers to potsherds sometimes they were too small or too badly preserved to depict details like admixture or surface treatment.

Comparing drawings of artefacts one may spot exclusively small inconsistencies, especially if we deal with small or delicate items. It results from the fact that first drawings were not precise and the state of preservation of the items not good. Supplementary drawings cannot improve original mistakes as smaller parts of objects survived up today (e.g., grave 77/20).

The descriptions of burials in this catalogue include results of experts' reports. They are included separately in the descriptions of human and horse graves. The cremation remains were anthropologically determined by Judyta Gładkowska-Rzeczycka, but due to the poor preservation of burnt bones in the majority of burials, the determinations concerning the age and gender of the deceased were possible only for a small part of the material. The archaeozoological determinations of horse skeletons were made by Krzysztof Świeżyński and Henryk Kobryń. Their report can be found in an appendix at the end of this volume (Chapter V.4), the Catalogue, however, presents the determinations of gender and age, as well as the withers height of the buried horses. Similarly, the descrip-

tions of the remains of fabrics prepared by Jerzy Maik and descriptions of the remains of leather and saddles from graves 17 and 21, studied by Teresa Radek, are published in appendices at the end and in the Catalogue they are mentioned only to present complete information about the grave goods. Determinations of charcoal from the burial pits and hearths and of wood samples from the discovered objects are presented after Zofia Tomczyńska. Information concerning amber fragments, analysed by Katarzyna Kwiatkowska, are presented only in the text (Table 1). Attributions of flint fragments included in the Catalogue were made by Michał Przeździecki.

Descriptions of the graves and artefacts are as brief as possible. However, due to the fact that the necropolis in Nowinka is the first site of this type in the Elbląg group investigated in a methodical way with full documentation and a broad questionnaire of field observations, for many features and objects the description exceeds the 'economical' standards adopted for catalogue presentations. Spatial arrangements of many features and morphological features of the finds are presented in greater detail than it is usual for cemeteries from the Late Antiquity with sets of standard forms well-known from earlier investigations.

We have considered it unnecessary to mention the cultural affiliation for each grave, since generally the necropolis belongs to the Elbląg group of the West Balt circle (Okulicz 1973; 1986; 1988). The relative datings of the respective burials are given according to the phases of the cemetery which we have established with reference to the (albeit imperfect) chronological system recently elaborated for the units of the West Balt circle (Okulicz 1988; Kowalski 1991; 2000). All burials belong to the late part of the Migration Period (Phase E). The chronology is discussed in greater detail in the analytical part of this publication.

II.2. Description of the features

Grave 1: cremation pit burial with remains of pyre, damaged (Pl. I)

At 20 cm below surface, damaged by ploughing; preserved bottom part approximately circular in outline; Dm. ca 50 cm, D. several cm. Filling: grey sand with charcoals and more than a dozen fragments of burnt human bones and a fragment of a base of a vessel. *I. Adult.*

Contents: 1. Fragment of a base of a clay vessel with carelessly polished surface, yellow-brown; admixture of coarse-grained crushed stone; B. ca 7 cm.

Chronology: Late Migration Period.

Since no syntheses of materials from the Elbląg group has been published so far and the existing publications do not match the character of the materials from the cemetery at Nowinka, typological studies are quoted relatively seldom. The following classifications, however, were used: for selected elements of the horse harness – M. Ørsnes (1993), spurs – U. Giesler (1978), Scandinavian brooches and belt fittings – M. Ørsnes (1966) supplemented by K. Høilund Nielsen (1987) and A. Nørgård Jørgensen (1999), glass beads – K. Høilund Nielsen (1987), shafted weapon's heads – V. Kazakyavichyus (1988), saxes – A. Nørgård Jørgensen (1999). Exceptionally, for some artefacts (brooches) the classical work by N. Åberg (1919) is quoted. For a pottery from the Early Iron Age classifications by Ł. Okulicz (1970) and M. Hoffmann (2000) are used.

In the descriptions of graves and artefacts the following abbreviations are used:

A. – width of a blade (of a shafted weapon's head)

B. – base diameter (of vessels)

BL. – belly diameter (of vessels)

D. – depth

Dm. – diameter

Dms. – dimensions

G. – total length of a shafted weapon's head

H. – height

L. – length (length of a blade in case of a shafted weapon's head)

Q. – section between a maximum width level and a tip of a blade (of a shafted weapon's head)

R. – rim diameter (of vessels)

T. – length of a socket (of a shafted weapon's head)

Th. – thickness

W. – width

WB. – width of a bit (a section between bridle rings)

WH. – withers height

Grave 2: cremation pit burial with remains of pyre, disturbed (Pl. I)

At 20 cm below surface; preserved bottom part of the burial pit, oval in outline, elongated along N-S, flat bottom; Dm. 100x75 cm, preserved D. 20 cm. Filling: grey-yellow sand with a layer of black soil with a large amount of charcoals at the bottom and perimeter. Burnt human bones scattered over the whole pit, with a concentration near the bottom. Concentration of finds near the N edge of the pit, at the bottom: a knife, 2 brooches, a hook ring, 3 fragments of a bar – a bracelet (?) and 6 potsherds. *I. Adult, probably a woman.*

Contents: 1-2. Two identical bronze brooches with crossbow construction, tripartite (bows form one piece with catchplates, four-coil springs with pins, wooden axles); bows slightly arched made of wire square in cross-section; solid catchplates, trapezoid in shape; pins curved; L. 3.7 cm, H. 1.3 cm, W. 1.6 cm and 1.3 cm. **3.** Hook ring of thin bronze wire circular in cross-section (wire Dm. 0.2 cm) with a hook fastening; Dm. ca 6.7 cm. **4.** 3 fragments of a bronze ring (bracelet?) of a bar with an irregular, hexagonal cross-section (diameter 0.2-0.4 cm) tapering at the ends; reconstructed Dm. of the ring ca 6.0 cm. **5.** Iron knife with partly broken off tang and traces of a wooden handle and iron fitting (protective band) and an organic (leather) sheath; strongly corroded; L. 10.8 cm, max. W. 1.3 cm. **6.** 6 small fragments of a clay vessel with an unpolished surface with small cracks; yellow-brown in colour, black inside; admixture of crushed stone; form impossible to reconstruct (not drawn).

Chronology: Phase 1.

Grave 3: cremation pit burial with remains of pyre, damaged (Pl. I)

At 20 cm below surface, damaged by ploughing or robbed; pit of irregular outline similar to a circle; Dm. 50 cm, D. up to 20 cm. Filling: dark grey soil with patches of burning, charcoals and 2 potsherds.

Contents: 1. 2 small fragments of a clay vessel; light brown in colour; admixture of coarse- and medium-grained crushed stone and sand; form impossible to reconstruct (not drawn).

Chronology: Late Migration Period.

Grave 4: cremation pit burial with remains of pyre, disturbed (Pl. I)

At 20 cm below surface, damaged by ploughing or robbed; pit with an irregular, oval outline; Dms. 75x100 cm, D. up to 20 cm. Filling: black-grey soil with patches of burning and charcoals, 2 fragments of burnt bones and 2 fragments of a clay vessel.

Contents: 1. 2 fragments of a clay vessel; surface polished and glossy; black in colour, reddish in the break; admixture of fine-grained crushed stone or sand (not drawn).

Chronology: Late Migration Period.

Grave 5: cremation pit burial with remains of pyre, disturbed (Pl. II)

At 20 cm below surface; pit with an irregular, elongated outline; Dms. 110x45 cm, D. up to 25 cm. Filling: black-grey soil with patches of burning and charcoals with 2 small fragments of burnt bones and 2 potsherds. *I. Adult.*

Contents: 1. 2 uncharacteristic pottery fragments, probably of one vessel; light brown in colour; admixture: large amount of admixture of coarse- and medium-grained crushed stone (not drawn).

Chronology: Late Migration Period.

Grave 6: cremation pit burial with remains of pyre, with two or more individuals, disturbed (Pl. III)

At 30 cm below surface; pit irregular in outline, similar to a rectangle, oriented along NNW-SSE; preserved in bottom part; Dms. 150x160 cm, D. 30 cm. Filling: yellow-grey sand with four concentrations of black soil with traces of burning and charcoals near the corners (marked as A-D). In concentrations A and B: burnt human bones and small, uncharacteristic fragments of pottery; in concentration B additionally a brooch; in concentrations C and D: charcoals.

I. Probably 2 adults of undetermined gender.

Contents: 1. Iron crossbow brooch, similar to Type Åberg 52, massive, with a low solid catchplate and rings at the ends of the axle and on the head; strongly corroded. Ten-coil spring; bow semi-circular in cross-section, band-like near the head; L. 7.0 cm, H. 2.7 cm, W. 5.3 cm (concentration B). **2.** 3 fragments of pottery, including a rim fragment of a polished vessel; brown in colour. Ornament: oblique incisions at the edge (concentration A, not drawn). **3.** 4 small fragments of pottery; light brown in colour; admixture: coarse-grained crushed stone (concentration B, not drawn).

Chronology: Late Migration Period.

Grave 7: pit burial with remains of pyre, disturbed (Pl. II)

At 25 cm below surface; burial pit approximately oval in shape, trough-shaped in cross-section; Dms. 105x95 cm; D. ca 25 cm. Filling: dark brown soil with traces of burning and charcoals; at the bottom compact layer of charcoals and burnt human bones. *I. Probably adult man.*

Contents: none.

Chronology: Late Migration Period?

Grave 8: cremation pit burial with remains of pyre, disturbed, over a skeleton horse grave (Pl. IV)

Human grave. Pit of the cremation burial irregular in shape, disturbed by ploughing, preserved in the bottom part; Dm. ca 70 cm, D. ca 15 cm. Filling: black soil with traces of burning and charcoals. In S part at the level of ca 30 cm from the surface: 2 stones (remains of pavement destroyed by ploughing?), near them, closer to the centre and deeper, a standing vessel, cracked; in N part, in compact soil with charcoals

– concentration of burnt human bones; among bones a buckle. *I. Adult man.*

Contents: **1.** Iron buckle, Type Buténas III.1a, with kidney-shaped frame and narrow, rectangular ferrule. Corroded, remains of wood preserved on the underside of ferrule; H. 2.8 cm, W. of the frame 1.8 cm, L. of the ferrule 2.0 cm. **2.** Flask-shaped clay vessel with slim neck, distinguished low rim and marked belly bend at ca 2/5 of the height; well-polished, glossy surface; dark brown in colour; admixture of medium- and fine-grained crushed stone, at the edges of the base traces of fine-grained sand; reconstructed from fragments; H. 15.8 cm, R. 5.5 cm, BL. 10.0 cm, B. 3.8 cm.

Horse grave. S part of the horse skeleton located beneath the human grave (outline of the pit of the horse grave blurred, only the sand around the horse skeleton was slightly greyish in colour); axis of the spine oriented along NNE-SSW with the head directed to S; horse strongly leaning to the left with legs tucked under, neck stretched forward and head with muzzle to the right; snaffle bit in muzzle, near the skull 3 bridle strap fittings. *I. Male, ca 8 years old, WH. 125.8 cm.*

Contents: **3.** Iron snaffle bit, Type Ørsnes 1C1, bipartite with iron rings, circular in cross-section, links of uneven lengths, rectangular in cross-section; WB. ca 9.0 cm, L. of the links 5.7 cm and 7.7 cm, Dm. of the rings 6.6 cm and 6.8 cm. **4.** 3 bronze bridle fittings: lengthwise strap fittings, 2 broken off, 1 complete; made of thin rectangular plates with pairs of rivets at the ends; Dms. 4.9x0.95 cm, Th. 0.1 cm.

Chronology: Late Migration Period.

Grave 9: cremation pit burial with remains of pyre, disturbed (Pl. II)

At 25 cm below surface, preserved in bottom part; burial pit irregular, approximately oval in shape, elongated along NE-SW, with trough-shaped profile; Dms. 135x60 cm, D. ca 20 cm. Filling: dark grey soil with patches of burning and charcoals with 3 small fragments of burnt bones and 4 small potsherds; human bones too small to make an anthropological determination.

Contents: **1.** 4 small fragments of pottery from various vessels; surfaces roughened; light brown in colour; admixture of medium- and coarse-grained crushed stone; probably earlier than the feature (not drawn).

Chronology: Late Migration Period?

Grave 10: cremation pit burial with remains of pyre, disturbed and plundered (Pl. V)

Preserved bottom part, burial pit irregularly oval in outline, elongated along NE-SW, almost

completely flat bottom; Dms. 120x80 cm, D. ca 20 cm. Filling: dark brown soil with traces of burning and charcoals mixed with light sand; in the NE part of the bottom of the pit: concentration of burnt bones, fragments of a ring and a bead. In the upper part within the outline: fragment of a bracelet. *I. Adult.*

Contents: **1.** 9 fragments of a silver ring of twisted wire, probably a bracelet or necklace; Th. 0.3-0.4 cm, Dm. impossible to determine. **2.** Fragment of a bronze bracelet or necklace, semicircular in cross-section; Dm. 0.3x0.5 cm. **3.** Biconical amber bead with a prismatic, polygonal cut; H. 1.2 cm, Dm. ca 1.0 cm.

Chronology: Late Migration Period.

Grave 11: cremation pit burial with remains of pyre, disturbed and partly destroyed (Pl. V, CIX:1, 2)

Burial pit destroyed in E part by a gravel pit; arched outline in survived part, irregular bottom; Dm. 155x90 cm, D. up to 43 cm. Filling: dark brown soil mixed with layers of burning and charcoals, secondarily mixed when the grave was plundered; in the S part brown soil; in the whole filling numerous fragments of burnt bones with concentrations near the clay vessel and drinking horn (in E part). Near the vessel, fragments of silver fittings of the drinking horn and 3 lumps of raw amber. It is possible that in the part of the grave destroyed by the gravel pit, under the human grave, there was a horse skeleton: under the cremation pit there was greyish sand – remains of the S part of the pit (?). *I. Adult.*

Contents: **1.** Fragments of a drinking horn in the form of several ten small pieces of silver foil; remains of the fitting with embossed ornament immersed in the remains of the brown matter of the horn, disturbed; the fitting probably embraced the upper part of the horn. Ornament (starting from the top): 2 horizontal rows with a railing motif and a row of rosettes below, underneath them 3 rows of railing pattern and a zone of wafer motif; Th. 0.05 cm. **2.** Biconical clay flask-shaped vessel with an elongated neck and straight rim, belly bend at 2/5 of the height; surface well-polished, glossy; brown in colour; admixture of fine-grained crushed stone. Ornament made with a stamp or wedge-shaped tool pressed at an angle: under the rim and at the belly bend doubled rows of horizontal imprints, between them 4 vertical double stamped rows, at the base on either side 3 oblique rows of stamped imprints make up motifs of triangles; H. 15.5 cm, R. 5.8-6.1 cm, BL. 12 cm. B. 5.7 cm. **3.** 3 small lumps of raw amber with traces of cutting – probably of pretreatment (not drawn).

Chronology: Phase 2.

Grave 12: cremation pit burial with remains of pyre, disturbed (Pl. II)

Outline of burial pit approximately oval, elongated at N-S, rectangular in cross-section, more steep in E part, flat bottom; Dm. 120x90 cm, preserved D. 44 cm. Filling: in the top part dark brown soil with single stones, below it compact black soil with charcoals, scattered burnt human bones, a fragment of a ring and a bead as well as 2 fragments of pottery. *I. Adult.*

Contents: **1.** Fragment of a bronze ring of filigree wire, circular in cross-section; Dm of wire 0.25 cm, reconstructed Dm. of the ring 2.4 cm. **2.** 2 small fragments of pottery with roughened surfaces; earlier than the feature, in secondary context (not drawn). **3.** Amber disc-shaped bead, asymmetrical; Dm. 2.1 cm.

Chronology: Late Migration Period.

Grave 13: cremation pit burial (?), disturbed (Pl. VI)

Outline of the burial pit oval-shaped, elongated at E-W, trough-shaped in cross-section; Dms. 65x30 cm, preserved D. 25 cm. Filling: grey-brown soil with irregular inserts of burning and charcoals with distinct concentration in W part, 2 small fragments of pottery inside. There are no burnt bones but the character of the pit and its fillings allow to classify the feature as a burial.

Contents: **1.** 2 small fragments of pottery with roughened surfaces; probably earlier than the feature, in secondary context (not drawn).

Chronology: Late Migration Period?

Grave 14: cremation pit burial, disturbed (Pl. VI)

Outline of the burial pit irregular, approximately oval-shaped, elongated at NE-SW, trough-shaped in cross-section; Dms. 115x90 cm, preserved D. 43 cm. Filling: brown soil, in the central part dark grey soil with concentrations of burning and charcoals and 1 fragment of a burnt bone and several small fragments of pottery, 3 of which are rim parts of one vessel. *I. Probably a child.*

Contents: **1.** 3 fragments of a rim of a clay vessel, Type ?; surface polished and slightly cracked; dark brown in colour; admixture of fine- and medium-grained crushed stone; R. ca 11 cm. **2.** Several uncharacteristic fragments of pottery (not drawn).

Chronology: Early Iron Age.

Grave 15: cremation pit burial with remains of pyre, damaged (Pl. VI)

Pit with an irregular, approximately circular outline, in SW part disturbed by a modern pit, flat bottom; Dm. ca 110 cm, preserved D. ca 20 cm. Filling:

in the top part dark brown soil with charcoals, below it black soil partly disturbed by a modern pit, with small burnt bones, 4 potsherds, a bead and a spindle whorl. On the surface in the mixed soil over the pit: fragment of an iron spur considered as a stray find (not drawn). *I. Adult.*

Contents: **1.** Barrel-shaped bead, Type Høilund Nielsen R3:b:a/f:I:B, made of opaque glass brown in colour; Dm. 0.10 cm, H. 0.73 cm, Dm. of the hole 0.39 cm. **2.** Clay biconical spindle whorl yellow-brown in colour with visible traces of turning; Dm. 0.28 cm, H. 2.0 cm, Dm. of the hole 0.95 cm. **3.** 4 small fragments of pottery; earlier than the feature, in secondary context (not drawn).

Chronology: Late Migration Period.

Grave 16: cremation pit burial with remains of pyre, damaged (Pl. VII)

Preserved bottom part of the burial pit with a mixed filling, outline approximately oval-shaped, elongated at NW-SE, flat bottom; Dms. 190x140 cm, preserved D. ca 25 cm. Filling: in the top part light brown soil, below it dark brown soil with concentrations of burning and charcoals, with several small fragments of burnt human bones insufficient for anthropological determination, a lump of amber and several very small potsherds.

Contents: **1.** Several very small fragments of pottery; probably earlier than the feature, in secondary context (not drawn). **2.** Crumbled lump of raw amber (not drawn).

Chronology: Late Migration Period?

Grave 17: cremation pit burial over a skeleton horse grave (Pl. VIII-XI, CVI:1, 2, CVIII:6)

Human grave. Outline of the cremation burial initially recorded only in its upper part: irregular oval elongated at NW-SE, with unclear edges; L. more than 140 cm. Filling: light grey soil with dark patches and remains of organic matter near metal objects. In the centre a circular outline, Dm. 22 cm, made by a fastened leather belt with a buckle, mounts and strap ends; inside the outline burnt human bones (without remains of the pyre) on them a brooch; near these objects preserved fragments of wool fabrics. To NW of the described burial there were, arranged alongside: an one-edged sword in a scabbard and, near the hilt, 3 shafted weapon's heads; sword with point to SSE, heads with tips to NNW; near the upper part of the sword's blade rectangular outline of decomposed organic material, ca 16x4 cm, with a yoke fitting in its upper part and scabbard suspension plate just below; near the point of the sword, at

the side: a ring over a fragment of a shaft made of hazel wood (remains of a shafted weapon). Ca 15 cm to SE of the burial: remains of a drinking horn fitted with foil ornament. *I. Adult of massive built, probably a man. II. 2 samples of wood taken from the top of the sword scabbard: oak ("Quercus sp."). III. Sample of the wood fragment from the area of the iron ring: hazel wood ("Corylus avellana"). IV. Fragments of 3 fabrics preserved near the brooch and metal parts of the belt: A – delicate fabric made of fine wool with the majority of coreless down wool, probably not dyed, thick twill, made on a warp-weighted loom; B – several fragments of thick woollen fabric with weave impossible to determine, not dyed; C – 3 fragments of string twisted from 2 yarns of plant fibre, probably flax or hemp, yellow in colour, not dyed.*

Contents: **1.** Bronze ladder brooch, Variant III, solid, with 4 rungs, upper rung trapeze-shaped, the remaining ones rectangular. Construction: pseudo-cross-bow, bronze spring of 2 sections on an iron axle, one part bent at the end rests underneath on a decorative bronze plate – an imitation of a chord, one 8-coil part of the spring is resilient (the other, 11-coil one is non-active); in the central part of the pseudo-chord on the upper side: parts of the sides serve as guides wedging the bow; solid catchplate has at the top 2 separate rungs cast from one piece of bronze together with the bow and upper rungs (separated by a waist); at the ends of the spring 2 huge bronze bosses decorated with pairs of large rings of thick, incised bronze wire. Imitation chord trapeze-shaped in cross-section with a pair of hook-like projections directed inwards; at the ends of the pseudo-chord semi-circular plates fixed on the axle of the brooch; decorated in the top part with pseudo-pearl-like punched ornament and transverse incisions. Wide bow, trapeze-shaped in cross-section with rows of points punched lengthwise. Ornament: on the 2 lower rungs horizontal engraved lines, the zones between the lines decorated with pseudo pearl-like pattern made with a texturing tool; fields between the bands of pseudo-pearl-like ornament filled with rows of stamped triangles (with convex circles in the centre) with meeting apexes, making up a zigzag pattern, the pair of upper rungs decorated similarly. On the 2 lower rungs, on the underside, engraved lines along the longer edges (probably somehow connected with the production process); L. 4.5 cm, H. 2.1 cm, W. of the spring together with the bosses 6.1 cm, W. of the rungs 3.8 cm (upper ones), 3.7 cm and 4.2 cm (lower ones). **2.** Bronze buckle, Type Butėnas III.1d, with a kidney-shaped frame, spike cross-shaped, flat, bent at the end; ferrule similar in shape to a rectangle, with projections at the place of fastening rivets

and an openwork ornament (step motif), joined to the frame by 2 bronze bands fixed to the leather belt and ferrule (preserved fragments of doubled layer of leather); on the opposite end of ferrule another pair of rivets; originally the rivets had hemispherical bronze bosses; traces of transverse polishing visible on the surface. Ornament: transverse incisions on the frame in the place where it meets the spike, decorative engraved lines along the longer edges of the plate; H. 3.8 cm, W. of the frame 2.6 cm, L. of ferrule 4.7 cm, W. of the ferrule 2.5-2.6 cm. **3.** Bronze belt mount, rectangular, on either end 3 rivets with hemispherical bosses. Ornament: an openwork pattern of perforated crosses and T-shaped motif; along the longer edges of the plate decorative engraved lines; L. 5.1 cm, W. 2.7 cm. **4.** 52 rectangular bronze belt mounts (some fragmentarily preserved) with single rivets at the ends. Polished on the outside, with pairs of incised lines along the edges; near the rivets preserved remains of leather; L. 2.2-2.4 cm, W. 0.8 cm, Th. 0.05 cm. **5.** Bronze lancet-shaped strap end with 2 rivets at the end. Ornament on the outside: incised lines near the edges and rows of stamped triangles with convex circles in the centre; in the central part transverse incised lines with an ornament of punched dots; in the ferrule part near the rivets preserved remains of leather; L. 6.8 cm, W. 1.4 cm. **6.** Bronze lancet-shaped strap end with 3 rivets at the end. Decorated similarly to the above; preserved remains of leather; L. 4.9 cm, W. 1.8 cm. **7.** Bronze lancet-shaped strap end with 2 rivets. Decorated on the top with lengthwise grooves and metope-like incisions; L. 4.6 cm, W. 0.9 cm. **8.** Bronze buckle, Type Butėnas III.1b, with a kidney-shaped frame, spike bent at the end, ferrule missing. Ornament: transverse grooves on the frame and an indentation in the place where the spike rested; H. 2.3 cm, W. 1.7 cm. **9.** Bronze U-shaped band-like plate. Decoration of grooves along the edges; L. 2.4 cm, W. 0.8 cm. **10.** Fragment of a bronze mount with 2 rivets; L. of one of them 1.6 cm. **11.** Fragments of crumbled bronze plates from belt fittings and possibly from a scabbard. Decoration of grooves along the edges; L. 4.6 cm, W. 1.0 cm. **12.** Iron one-edged sword, starkly corroded, with preserved fragments of the scabbard with suspension plate; blade and point tapering towards the massive, broad back, T-shaped in cross-section; steep junction of the blade and the tang; at the end of the tang bronze cross-shaped plate with rounded arms, end of the tang drawn through a hole in its centre and hammered down; on the corroded tang traces of a wooden hilt. Scabbard: preserved iron trough-shaped chape embracing the lower end to the height of 27 cm, rounded in the lower part;

it fixed the scabbard linings made of chips of wood covered with leather; in the bottom part of the scabbard a thin bronze plate with embossed ornament, originally inserted between the chips of wood and the trough-shaped fitting, fragmentarily preserved. Ornament on bronze foil: double convex railing pattern separated by a double pearl-like line along the axis of the blade. Construction of the upper part of the scabbard and of the suspension set difficult to reproduce (unclear arrangement of compacted and corroded organic and iron remains; 2 samples were taken): probably the scabbard had an organic grip in the upper part of the blade, fixed with a suspension plate (No 13) on the side of the back; above it a yoke-shaped fitting (No 14); the buckle found nearby (No 8) may have served to fasten this strap; L. of the sword with the remains of the scabbard 74 cm, L. of the tang 13.4 cm, W. of the blade halfway of its length 4.8 cm, W of the back 1.2 cm. **13.** Bronze openwork fitting (suspension plate) with an perforated pattern of X's joined with their tops, with 2 rivet holes in the centre of the X motif. Ornament: rows of punched triangles filled with horizontal dots; L. 6.0 cm, original W. 2.8 cm (preserved 2.4 cm). **14.** Bronze yoke fitting with oval-shaped ends and bronze nails inserted in them; preserved L. 3.3 cm, H. 1.0 cm. **15.** Iron shafted weapon's head, Type Kazakyavichyus IVA, compact and massive with a broad blade with a pronounced midrib; socket circular in cross-section; G. 27.7 cm, A. 4.6 cm, T. 8.6 cm, Q. 12.8 cm, Dm. of the socket 2.7 cm, at 1.2 cm from the mouth of the socket an iron nail Th. 0.3-0.4 cm, L. 1.15 cm. **16.** Iron shafted weapon's head, Type Kazakyavichyus V, with a slim blade and a marked out midrib and a socket circular in cross-section; G. 40.0 cm, reconstructed A. 4.6 cm, T. 10.4 cm, Q. 21.4 cm, Dm. of the socket 1.9 cm. **17.** Iron shafted weapon's head, Type Kazakyavichyus IVA, with a broad and massive blade and a distinct midrib and a socket circular in cross-section; strongly corroded; G. 29.0 cm, A. 4.4 cm, T. 9.3 cm, Q. 12.2 cm, Dm. of the socket 2.6 cm. **18.** Bronze unclosed ring fitted over a fragment of well-preserved hazel wood fragment with well-polished surface (shaft of one of the heads, probably No 16); ring circular in cross-section; Dm. 2.2 cm. **19.** Drinking horn preserved in the form of compressed organic remains in the shape of a naturally curved cattle horn; even edge; L. ca 12-13 cm, Dm. of the rim ca 5 cm. In the upper part remains of very crumbled silver foil with embossed ornament and small nails used to fasten it. Original ornament difficult to reproduce fully – in the upper part two railing rows separated by horizontal “pseudo-corded” lines, under them a band of “wafer”

motif bordered with two pearl-like lines; W. of the foil more than 4.8 cm, Th. ca 0.05 cm.

Horse grave. Ca 15-20 cm under the cremation burial and its grave goods: back part of the horse skeleton (limits of the pit of the horse grave impossible to determine in clean, light sand); reconstructed D. of the pit ca 140 cm; skeleton with the head to SE, axis of the spine parallel to the arrangement of the sword and shaft weapon's heads; pelvis and back of the horse immediately below the human grave; horse standing, all limbs bent, back arched, head lowered and slightly turned to the left (the animal was probably buried alive); snaffle bit in muzzle, on the skull remains of headgear straps with fittings and 2 small buckles. In the filling: 3 potsherds. *I. Male, ca 8 years old, WH. 128.3 cm.*

Contents: 20. Iron snaffle bit, Type Ørsnes 1C1, bipartite, symmetrical with bronze rings, on each of them 2 bronze reins' and cheekpieces' ferrules made of doubly folded band; riveted remains of leather preserved between the plates, rivet heads dome-shaped. Ornament: engraved lines along the edges of ferrules; WB. 13.5 cm, Dm. of the rings 5.3 cm and 5.4 cm, distance between the arms of the fittings 1.0-1.1 cm. **21-22.** 2 bronze buckles, close to Type Butėnas III.2a, with oval-shaped frames, flat in cross-section with ferrules with 2 rivets, spikes' ends bent onto the frames. Frames decorated with stamped triangles with convex circles in the centre; inside the ferrule fragments of leather; H. 1.8 cm, W. of the frames 1.2 cm, L. of the ferrules 2.0 cm. **23.** 21 rectangular bronze fittings of headgear straps. Embossed ornament, very poorly preserved (not drawn); Dms. impossible to reconstruct. **24.** 3 fragments of pottery; probably earlier than the feature, in secondary context (not drawn).

Chronology: Phase 3.

Grave 18: cremation pit burial with remains of pyre, disturbed, over a skeleton horse grave (Pl. XII-XIII, CVI:4)

Human grave. At 20 cm below surface, disturbed by ploughing and tree roots; outline of the burial pit irregular, elongated along N-S, bottom uneven; Dms. 85x40 cm, D. in S part ca 10 cm, in N part, ca 40 cm. Filling: dark grey soil with intensively black patches of burning and charcoals. In S part of the pit a base of a standing vessel, next to it a concentration of burnt human bones and a plate (probably fragment of a drinking horn fitting). In N part at the bottom, in a compact layer of burning, a concentration of burnt bones; among them a brooch, 2 strap ends, a ring of twisted wire, 2 fragments of band (probably a bracelet), fragment of an buckle frame and partly preserved

knife; strap ends and fragment of a band bracelet partly melted.

Contents: **1.** Bronze plate brooch, close to Type Neuwied after H. Kühn (1956), with the head similar in shape to a rectangle with rounded corners and a heart-shaped foot ended with a schematic representation of an animal head. Crossbow construction, iron axle, solid catchplate; L. 3.1 cm. W. 1.9 cm, H. 1.1 cm. **2.** Bronze lancet-shaped strap, upper part trapeze-shaped with 2 rivet holes. Ornament: sides decorated with pairs of incised lines near the edges, on the waist a transverse incised line; upper end partly melted; preserved L. 3.6 cm, W. 1.1 cm. **3.** Bronze lancet-shaped strap end. Ornament: on the waist horizontal engraved lines marking out a rectangular field with a metope motif, in the upper part partly blurred incised lines along the edges, in the lower part marked out lancet-shaped ornamental field: its borders are delimited with lines of punched imprints with a motif of a section composed of three points; inside adjacent imprints of goose feet-triangles with apexes towards the centre; item partly melted in the upper part; preserved L. 3.1 cm, W. 1.1 cm. **4.** Fragment of a frame of an iron buckle, Type Butėnas IV.2, rectangular-kidney-shaped, with an indentation in the place where the spike rested, cross-section similar to a circle; H. 2.7 cm, W. 1.9 cm. **5.** Hook ring of bronze, twisted wire with a partly preserved hook-shaped fastening; Dm. ca 5.1 cm, Dm. of the cross-section of the ring ca 0.3 cm. **6.** 2 fragments of bronze band, probably part of a bracelet. Decorated with lengthwise grooves, partly melted; W. 0.8 cm. Th. 0.15 cm. **7.** Fragment of an iron knife with remains of a wooden handle on the tang, tang distinguished from side of the wide back, tip missing; strongly corroded; preserved L. 13.4 cm, W. of the blade 1.7 cm. **8.** Fragment of silver foil, probably a fitting of a drinking horn. Decorated with embossed rosette motif. **9.** Base part of a flask-shaped clay vessel; surface well polished, glossy; brown in colour; a large amount of admixture of coarse grained crushed stone. Ornament: at the belly bend a double row of triangular punctures and similar vertical rows above; BL. 13.5 cm, B. 6.1 cm.

Horse grave. Horse's back situated approximately beneath the pit of human grave (outline of the pit recorded at the level of the skeleton), longer axis oriented along N-S. Filling: yellow sand differing only slightly from the natural sterile ground with its greyish hue; Dm. ca 210x115 cm, D. ca 150 cm. Horse skeleton poorly preserved, skeleton oriented along NNW-SSE, head stretched to S; horse lying belly down with hind-legs tucked under, fore-legs bent and splayed, muzzle slightly turned to the

left and downwards; snaffle bit in muzzle, next to it a buckle of a cheekpiece (?), on the skull headgear strap mounts and connectors in original arrangement (during exploration the arrangement was completely disturbed due to the slide of the ground which made it impossible to record it adequately). *I. Probably a male, 9-15 months old.*

Contents: **10.** Iron snaffle bit, Type Ørsnes 1C1, bipartite with one link damaged by corrosion, bronze rings with single reins' or cheekpieces' ferrules (one fragmentarily preserved) of bent bronze band joined by pairs of rivets; near the fittings preserved remains of leather. Ornament: double lines engraved along the longer sides of ferrules; L. of the preserved link of the bit 7 cm, Dm. of the rings 4.4 cm, W. of the fittings 0.8 cm. **11.** 17 rectangular bronze bridle strap fittings, including 8 completely preserved, 4 with single rivets at the ends, the other ones with 2 rivets; next to some of them remains of leather, made of the same band as the bit fittings; L. of the preserved items 5.8-6.8 cm, W. 0.8 cm, Th. 0.05 cm. **12.** 4 bronze headgear strap connectors, Type Ørsnes 9D1/9D2, partly broken off at the edges, embossed in metal sheet hemispherical bosses with four opposing projections with pairs of rivets for fastening the straps. Ornament: double line of dots punched at the edges and a row of stamped goose feet-triangles; in the centre: crossing lines of dots and adjoining them imprints of triangles-goose feet; Dms. 4.5x4.5 cm, H. 0.6 cm, Th. 0.1 cm. **13.** Bronze buckle, Type Butėnas III.1b, with a kidney-shaped frame, decorated with transverse grooves in the place where the spike rested (spike band-shaped in cross-section); preserved remains of ferrule; H. 1.6 cm, W. 2 cm.

Chronology: Phase 3.

Grave 19: cremation pit burial with remains of pyre, damaged (Pl. VII)

At 20 cm below surface, destroyed by ploughing; preserved bottom part of the burial pit irregular in outline, elongated along NE-SW; Dms. 160x70 cm, D. up to 25 cm. Filling: dark grey soil with numerous charcoals and more than a dozen fragments of burnt bones; with 3 pieces of pottery and a lump of rust. *I. Adult.*

Contents: **1.** 3 very small potsherds (not drawn). **2.** Amorphous lump of rust (not drawn).

Chronology: Late Migration Period?

Grave 20: horse skeleton burial, disturbed (Pl. XIV-XV)

At 20 cm below surface, outline clearly visible in the yellow sand in the form of a dark grey patch

elongated along N-S, in the centre of the top part darker soil with charcoals (remains of a human cremation burial destroyed by ploughing?); Dms. 195x60 cm. The uppermost parts of the horse skeleton: at the depth of ca 20 cm from the level where the outline was first noticed; skeleton oriented along N-S with head to S; horse lying belly down with stretched neck and head turned to the left, fore-legs strongly tucked under, hind-legs and pelvis unnaturally splayed; snaffle bit in muzzle, on the skull (forehead part) small fragments of iron fittings, not forming an arrangement, near the skull a buckle. Above the horse skeleton, near the spine: fragments of iron and bronze fittings in disturbed arrangement with fragments of lime wood preserved near them (probably remains of the saddle). *I. Male, 7-8 years old, WH. 127.4 cm.*

Contents: **1.** Iron snaffle bit, Type Ørsnes 1C2, tripartite with iron rings, central link short, 8-shaped, the longest of the links with ring-shaped endings at right angles, the other of longer links made from a bar bent in half, rings with gutter-shaped reins' and cheekpieces' ferrules (2 and 1); strongly corroded; WB. ca 17 cm, L. of links 9.3 cm, 5.6 cm and 7.8 cm, Dm. of the rings ca 6 cm, L. of the fittings 6.5 cm. **2.** Iron headgear strap mounts, rectangular with single rivets at the ends: 1 preserved completely, 7 fragmentarily; L. of the item completely preserved L. 6.0 cm, W. 1.5 cm. **3.** Iron buckle, Type Butėnas IV.4, with a kidney-shaped-quadrilateral frame with slightly concave sides, broader at the side where the spike rested, spike concave in central part, at the end bent over the frame, cross-section of the spike and frame approximately circular; H. 3 cm, W. 2.5 cm. **4.** 4 square iron massive plates (saddle fittings?) with holes in the centres, in one of the holes a rivet hammered down on both sides; corroded; L. of the sides 2-2.4 cm, L. of the rivet 1.0 cm. **5.** Iron plate with 2 holes, rectangular, in one of the holes a nail; corroded; L. 4.0 cm, W. 2.7 cm, L. of the rivet 1.4 cm. **6.** 4 massive iron rivets hammered down on either side on rectangular washers, one of them fragmentarily preserved, traces of wood; L. 3.6 cm, 3.3 cm, 4.4 cm, Dm. 0.4-0.6 cm, W. of the washers 1.3-1.5 cm. **7.** 3 bronze fittings with bronze nails at the ends, rectangular; 1 of the fittings fragmentarily preserved. Ornament: grooves along the longer edges; 2 of the fittings attached to fragments of an object of lime wood, the other fixed 2 adjoining fragments of wood (probably elements of a saddle); preserved L. 4.3 cm, W. 0.8 cm. L. of the nails 1.6 cm.

Chronology: Late Migration Period.

Grave 21: cremation pit burial with remains of pyre, under a stone pavement, over a skeleton horse grave (Pl. XVI-XVIII, CVIII:5)

Human grave. At the depth of ca 30 cm from the surface remains of a pavement covering the burial, disturbed by ploughing: 8 stones, the largest one, flat, in the centre, mainly under this stone slab an irregular layer of soil with darker hue with traces of burning (not drawn in details), charcoals and several fragments of burnt bones, grave goods several centimetres deeper, to S from the centre of the pavement in the light sand without a clear outline of the burial pit; distance between extreme stones 110 cm, Dms. of the largest stone ca 30 cm. Grave goods: at E side a sword, oriented along N-S, with point to S, nearby the upper part of the blade rectangular outline of decomposed organic material was spotted (Dms. 30x8 cm). Ca 35 cm to W from the sword, parallel to it: head of a shafted weapon, with tip to S; along the same line several ten cm to N a ring (probably an ornamental fitting from the shaft). Between the sword and the shaft weapon's head slightly leaning vessel; next to it from N at the level of its lower part – remains of a drinking horn with foil. Farther to N from the horn, several centimetres deeper, directly under the stone slab, an irregular in shape compact layer of organic substance permeated with oxides of non-ferrous metals and iron (probably remains of the saddle with the human remains placed over it – almost immediately below it horse spine and pelvis bones were situated) with a few and very fragmented burnt human bones, at the top a large brooch; Dms. of the layer 24x24 cm, Th. ca 2 cm. Shape of the supposed saddle impossible to reconstruct (wood and leather fragmentarily preserved); according to the analysis the organic mass consisted in its upper part of thin oak wood slats (5 samples), covered with leather fixed by rectangular mounts with rivets (9 items in N part; in S part – 6 mounts, a buckle and a strap end); near the items from N part remains of narrow straps (probably for fixing the saddle or rein fittings). In the compact mass in places permeated with copper oxides: remains of fabrics. Analyses of the 8 collected samples indicate that these were woollen fabrics of different kinds. *I. Adult. II. 5 samples of wood from the organic layer – oak wood (Quercus sp.). III. 8 samples of fabrics from the organic layer: woollen fabrics of different kinds – in the bottom part (samples II, VII, VIII) fragments of fabric of thick yarn Th. 0.05-0.1 cm, with a twill (remains of a saddle blanket?); the remaining ones – delicate fabrics of high quality yarn, with twill and plain weaves (remains of garments deposited in the grave after the cremation of the body?). IV. Small*

pieces of leather next to wood fragments (saddle lining?), undetermined.

Contents: **1.** Bronze ladder brooch, Variant II, solid, with 4 rungs, upper rung trapeze-shaped, the remaining ones rectangular. Construction: crossbow, faced bronze spring hexagonal in cross-section, composed of 2 parts 9 coils each, separated by a projection fastening the iron axle, the right side of the spring is resilient; bow and rungs made of one piece of bronze joined to the axle by means of a projection in the central part of the upper rungs. Wide bow, trapeze-shaped in cross-section; solid catchplate; at the ends of the spring 2 huge bronze bosses decorated with pairs of rings of thick, incised bronze wire. Ornament: all rungs decorated with grooves along the longer edges (in the upper rung only along the upper edge); L. 5.4 cm, H. 1.8 cm, W. of the spring with the bosses 6.6 cm, W. of upper rungs 4.1 cm, reconstructed W. of lower rungs 3.1 cm and 4.3 cm. **2.** Iron one-edged sword without a scabbard, blade of even width from the base of the tang up to mid-length, then it tapers towards the back; thick back, gently distinguished from the blade; tang distinguished from the blade on both sides; L. 58.5 cm, W. 5.5 cm, W. of the back 0.9 cm, L. of the tang 11.4 cm. **3.** Iron shafted weapon's head, Type Kazakyavichyus ID, slim, with a long socket, a short blade lenticular in cross-section and socket circular in cross-section; at the end of the socket and on the blade traces of corrosion, in socket fragment of shaft permeated with iron oxide; G. 42.7 cm, A. 4.0 cm, T. 23.2 cm, Q. 9.8 cm, Dm. of the socket 2.4 cm. **4.** Bronze ring of incised wire (probably a fragment of an ornament secondarily used to decorate the shaft); Dm. 2.1 cm. **5.** Drinking horn with broken fittings of silver foil. Embossed ornament: rosette and railing motives separated by double rows of pearl-like pattern; fragmentarily preserved; Th. 0.01 cm. **6.** Clay flask-shaped vessel with a biconical belly and high, cylindrical neck; surface with traces of smoothing; yellow-brown in colour; a large amount of admixture of fine-grained crushed stone; H. 12.1 cm, R. 6.3 cm, BL. 9.1 cm, B. 4.8 cm.

Horse grave. Located immediately under the human burial, pit with a blurred, approximately oval outline, elongated along NW-SE; Dms. 210x90 cm. Skeleton oriented along NNW-SSE with head to SSE; horse lying belly down, head turned to the left, as the ground settled the hind-legs and fore-legs became more bent and the body leaned to the right; in the muzzle snaffle bit, on the skull headgear fittings (browband, headpiece, noseband and two cheekpieces) in partly disturbed arrangement and remains of straps: 4 connectors, 36 strap mounts, 2 small buck-

les, 2 lancet-shaped strap ends and 1 with a straight end. At the side of the hind-part plates: possibly dock fittings. *I. Male, 5-6 years old, WH. 124.6 cm.*

Contents:

In a compact layer of organic substance and metal oxides (artefacts connected with the saddle and dock): **7.** Bronze buckle, Type Butėnas III.2a, with an oval frame, partly preserved spike and ferrule decorated with lengthwise lines; H. 2.0 cm, W. of the frame 1.4 cm, W. of the ferrule 1.0 cm. **8.** 15 bronze strap mounts, rectangular, some in fragments, a few of them with rectangular washers; 9 of them near the N edge of the layer, with remains of leather at the rivets and fragments of wood and woollen fabrics, 6 at the S edge, without organic remains; near the mounts fragments of leather with even edges and of the same width as the mounts. All mounts decorated with double grooves along longer edges, with single rivets at the ends, in one case also a washer with similar grooves; L. of the preserved items 5.0-5.8 cm, W. 0.9 cm, L. of the rivets 0.5-0.7 cm. **9.** Bronze strap end, quadrilateral with convex longer sides and a transverse end, with one rivet. Ornament: double grooves along the edges; L. 3.6 cm, W. 1.0 cm.

Remaining artefacts: **10.** Iron snaffle bit, Type Ørsnes 1C1(?), bipartite (?) with bronze rings; fragmentarily preserved; Dm. of the rings 5.0 cm and 5.2 cm. **11-12.** 2 bronze lancet-shaped strap ends with single rivets. Metope field halfway its length, faceted lower part; near one of the items fragment of a strap with holes for rivets of the strap mount; L. 4.4 cm, W. 0.9 cm, L. of the strap 4.6 cm. **13.** Bronze bridle strap buckle, Type Butėnas IV.4, with a profiled frame decorated with transverse grooves near the place where the spike rested; rectangular ferrule with single rivet, decorated with double incisions near the edges; preserved fragments of the strap and a fragment of wood; H. 1.9 cm, W. of the frame 1.3 cm, L. of the ferrule 2.2 cm. **14.** Bronze bridle strap buckle, Type Butėnas III.1, with an oval-shaped frame with a depression near the place where the spike rested, rectangular ferrule with single rivet, decorated with double incisions near the edges; preserved fragments of the strap; H. 1.9 cm, W. of the frame 1.1 cm, L. of the ferrule 2.2 cm. **15.** 36 bronze headgear strap mounts and their fragments, rectangular with double incisions along the longer edges, some with single, other with pairs of rivets at the ends (hemispherical rivet heads), 4 items clearly shorter; in some cases preserved fragments of the straps; L. 5.2-6.0 cm, L. of the shorter items 1.9-3.0 cm, W. of all items 0.9 cm. **16.** 4 bronze headgear strap connectors Type Ørsnes 9D1/9D3 var. b, in the centre square step pyramids. Ornament: steps decorated with a pearl-like

motif punched around them, similar pattern along the edges of the connectors, near the corners of the pyramid base – projections with pairs of rivets with hemispherical heads decorated with punched triangles and, at the ends, incisions; Dms. 4x4 cm, Dms. of the pyramid bases 1.9x1.9 cm.

Chronology: Phase 3.

Feature 22: stone pavement – a hearth? (Pl. XIX)

Immediately under the ploughed soil, pavement similar in shape to a rectangle, oriented along NE-SW, made of medium-sized stones, 2 large stones in the centre; ca 15 cm under the first level of stones, in the central part, a circular pavement; Dms. of the first level 185x110 cm, Dm. of the second level ca 80 cm. Filling: among the stones in both levels yellow-grey sand and small patches of burning and charcoals.

Contents: none.

Chronology: unknown.

Grave 23: cremation pit burial with remains of pyre, disturbed? (Pl. XIX, CVI:5, 6)

Burial pit approximately oval in shape, elongated at NW-SE, trough-shaped in profile; Dms. 75x50 cm, D. ca 20 cm. Filling: compact black soil with charcoals and very small fragments of burnt bones, in the middle of the upper part brown soil. Near the S end of the pit: in the top part – 3 beads and a brooch, near the bottom – 2 fragments of wire. *I. Child.*

Contents: 1. Bronze plate brooch, in the waist a circular boss in the shape of a step pyramid, concave on the underside, head and foot oval-shaped, at the end of the foot a spiky projection. Crossbow construction, bronze chord, iron axle fixed in the hole in the projection on the head; spring in 2 segments 3 coils each, separated by a projection for fixing the axle (only one segment of the spring is resilient); L. 6.3 cm, W. 1.9 cm. **2-3.** 2 fragments of bronze incised wire, shapelessly bent, with broken off ends; L. after straightening 6.9 cm and 7.7 cm, Th. 0.25 cm. **4-6.** 3 beads, Type Høilund Nielsen R3:b:f:I:E and R3:b:f:I:C/E of yellow opaque glass in the shape of flattened spheres, one with a greyish hue; H. 0.4-0.5 cm, Dm. 0.6-0.7 cm.

Chronology: Phase 1.

Grave 24: cremation pit burial with remains of pyre, damaged (Pl. VI)

At 15 cm below surface, destroyed by ploughing; patch irregular in shape; Dms. 120x115 cm, D. 30 cm. Filling: patch of dark soil with traces of burning and small charcoals, with a fragment of wire, in the middle of the upper part grey-yellow soil.

Contents: 1. Fragment of bronze twisted wire, curved

(part of a hook ring?); preserved L. 3.1 cm, reconstructed Dm. 4.5-5 cm, Th. 0.2 cm.

Chronology: Late Migration Period.

Grave 25: cremation pit burial with remains of pyre, disturbed (Pl. XX)

Under a layer of ploughed soil, a circular outline of the pit, trough-shaped in cross-section; Dm. ca 45 cm, D. 16 cm. Filling: charcoaly soil with numerous fragments of burnt bones and a potsherd. *I. Adult.*

Contents: 1. Uncharacteristic fragment of pottery (not drawn).

Chronology: Late Migration Period.

Grave 26: cremation pit burial with remains of pyre, disturbed, over a skeleton horse grave (Pl. XXI)

Human grave. Under a layer of ploughed soil, irregular outline of the pit, elongated along the SE-NW; Dms. ca 155x50 cm, D. up to 40 cm. Filling: black soil with charcoals and burnt bones, lighter streaks visible (traces of fresh ploughing). In the filling several large stones and 2 vessels one next to another, with rims leaning to E, probably shifted by ploughing. *I. Adult man.*

Contents: 1. Clay broad-rimmed vessel with cylindrical upper part, horizontal edge, on the outside underlined by a groove, similar groove at the belly bend; polished surface; brown-yellow in colour; admixture of medium-grained crushed stone. Ornament: 2 horizontal bands made with wedge-shaped stamps in grooves on the belly and under the rim, 5 vertical bands in the upper and central part of the vessel; H. 11.6 cm, R. 10.2 cm, BL. 10 cm, B. 6.8 cm. **2.** Clay flask-shaped vessel with a conical belly, with the belly bend at ca 1/3 of the height, with a slim neck and a straight edge; well-polished surface; black-brown in colour; admixture of medium- and fine-grained crushed stone. Ornament: 5 horizontal bands of imprints of a four-toothed comb stamp on the belly; H. 16 cm, R. 5.7 cm, BL. 11 cm, B. 5.9 cm.

Horse grave. At 50 cm below the human grave: back of a horse in elongated pit with blurred limits; D. ca 130 cm. Filling: light-grey sand. Skeleton along NNE-SSW with head to SSW; position semi-reclining, belly down, legs visibly tucked under, neck stretched forward, head turned slightly to the right; snaffle bit in muzzle, on the skull headgear fittings (reconstructed part: from the browband, between the eye sockets, to the noseband ran a wider strap with superimposed plates; narrower plates on the noseband, browband, headpiece and one of the cheekpieces); next to them fragment of a woollen fabric and a thread. *I. Male, 5-6 years old, WH. 127.4*

cm; II. Small fragment of delicate fabric, 2/2 twill of thin threads and 1 thick woollen thread.

Contents: 3. Iron snaffle bit with iron rings; very strongly corroded, fragmentarily preserved; Dm. of the ring 5.6 cm. 4. Fragments of bronze headgear fittings, thin plates, no connectors and ring fittings, crumbled (none of the plates was completely preserved); W. of wider plates 1.8 cm, W. of narrower plates 1.3 cm. Embossed ornament: wider plates with motif of overlapping angles and of squares made of pearl-like lines alternating with groups of circular bosses; narrower plates with lengthwise pearl-like lines and groups of circular bosses.

Chronology: Phase 2.

Grave 27: cremation pit burial with remains of pyre, disturbed (Pl. XX)

Outline of burial pit approximately circular, trough-shaped profile; Dm. ca 70 cm, D. 25 cm. Filling: black soil with charcoals and burnt human bones. At the bottom a slightly leaning vessel. Next to the burial pit, in black soil disturbed by ploughing: a brooch (as it was not certain whether it belonged to the discussed assemblage, it was recorded as a stray find SF/3). I. *Young individual*; II. *Charcoals: birch (Betula sp.)*.

Contents: 1. Flask-shaped biconical clay vessel with the belly bend at ca 1/3 of the height, with a slim neck and a straight edge; well-polished surface; brown in colour; admixture of medium-grained crushed stone; H. 15.8 cm, R. 5.4 cm, BL. 10.8 cm, B. 4.5 cm.

Chronology: Late Migration Period.

Grave 28: cremation pit burial with remains of pyre, damaged (Pl. XX)

At 20 cm below surface, damaged by ploughing, preserved bottom part irregular in shape; Dms. ca 125x35 cm, D. more than a dozen cm. Filling: black soil mixed with ploughed soil, with charcoals.

Contents: none.

Chronology: Late Migration Period?

Grave 29: cremation pit burial with remains of pyre, damaged (Pl. XX)

At 30 cm below surface, destroyed by ploughing, preserved bottom part of the pit, approximately circular in outline; Dm. ca 60 cm, D. up to 12 cm. Filling: black soil mixed with yellow sand, with charcoals and some small burnt human bones.

Contents: none.

Chronology: Late Migration Period?

Grave 30: cremation pit burial with remains of pyre, damaged (Pl. XX)

At 30 cm below surface, destroyed by ploughing, preserved bottom part of the oval-shaped pit, elongated at N-S; Dms. 74x50 cm, D. 8 cm. Filling: black soil mixed by ploughing, with charcoals and some small burnt human and animal (?) bones.

Contents: none.

Chronology: Late Migration Period.

Grave 31: cremation pit burial with remains of pyre, damaged (Pl. XXII)

At 30 cm below surface, destroyed by ploughing, preserved bottom part of the pit of irregular shape close to oval, Dms. 60x70 cm, D. up to 25 cm. Filling: black soil with charcoals and numerous fragments of burnt human bones and small fragments of a vessel. I. *Adult, 45-55 years old*.

Contents: 1. Small fragments of a burnt vessel with a roughened surface; brown-red in colour; admixture of crushed stone; form impossible to reconstruct (not drawn).

Chronology: Late Migration Period.

Grave 32: cremation pit burial with remains of pyre, damaged (Pl. XXII)

At 20 cm below surface, almost completely destroyed by ploughing, preserved bottom part with disturbed filling along NE-SW, at the distance of ca 70 cm. Filling: black soil with charcoals and a few burnt human bones, with 3 fragments of a bracelet and 1 small potsherd. I. *Child*.

Contents: 1. 3 fragments of a bronze band-like bracelet; reconstructed Dm. 5.5 cm, W. 0.6 cm. 2. Fragment of a clay vessel roughened on the outside and smooth on the inside; light-brown in colour; earlier than the feature, in secondary context (not drawn).

Chronology: Late Migration Period.

Grave 33: cremation pit burial with remains of pyre, damaged (Pl. XXII)

At 20 cm below surface, next to Grave 32, destroyed by ploughing, preserved bottom part of a burial pit, oval-shaped, elongated at W-E, trough-shaped in cross-section; Dms. ca 185x102 cm, D. 38 cm. Filling: brown soil with traces of burning and charcoals. In the N part of the filling disturbed by ploughing: 6 stones, next to them several fragments of burnt human bones, a buckle and several small potsherds. I. *Adult (also small fragments of animal bones, impossible to determine)*.

Contents: 1. Iron buckle, Type Butėnas III.2, with an oval-shaped frame; strongly corroded; H. 2.6 cm, W.

1.6 cm. **2.** 6 small fragments of a clay vessel; brown in colour; admixture of coarse- and fine-grained crushed stone (not drawn).

Chronology: Late Migration Period.

Grave 34: pit burial with remains of pyre, disturbed, over a skeleton horse grave (Pl. XXIII, CVI:7)

Human grave. At 30 cm below surface, the upper part disturbed by ploughing, burial pit oval-shaped, elongated along N-S, documented partly (lack of the feature's cross-section); Dms. 210x85 cm, D. 30 cm. Filling: grey-reddish sand, in the centre an elongated patch of burning with charcoals and burnt human bones (human grave proper). Part of the grave goods damaged and displaced: fragment of a blade of a shafted weapon's head, a brooch, small fragments of a vessel and 4 lumps of amber. *I. Adult man.*

Contents: **1.** Bronze disc brooch, circular with a large hemispherical boss in the centre. Construction: cross-bow, rectangular plate bent at the sides at right angles, soldered to the underside of the disc, in the holes at the sides of the plate the axle with a spring and chord, resting at the underside of the boss, solid catchplate soldered to the disc. Ornament: at the edge – concentric lines composed of triangular stamps (punches with various tips were used: with a convex circle inscribed in a triangle and a smaller triangle empty inside); Dm. 3.1 cm, Dm. of the boss 1.5 cm, H. of the boss 0.8 cm. **2.** Fragment of a blade of an iron shafted weapon's head, Type (?), flat rhomboidal in cross-section; preserved A. 3.0 cm. **3.** Small fragments of a clay flask; surface polished; brown in colour; admixture of small amount of fine-grained sand (not drawn). **4.** 4 small lumps of raw amber (not drawn).

Horse grave. Directly under the described human burial, in the same pit, poorly preserved; horse skeleton oriented along N-S with head to S, slightly turned to the left; horse lying belly down with fore-legs pulled up and hind-legs unnaturally splayed; snaffle bit in muzzle, on the skull headgear fittings, disturbed, probably incomplete. *I. Male, 5-6 years old, WH. 125 cm.*

Contents: **5.** Iron snaffle bit, Type Ørsnes 1C1, bipartite with bronze rings; strongly corroded; reconstructed WB. 14.5 cm, L. of the completely preserved link 9.3 cm, Dm. of the rings 5.4 cm. **6.** 3 Headgear strap connectors of bronze sheet, Type Ørsnes 9D1/9D2, circular in shape with 4 rectangular projections with single rivets at the ends, hemispherical boss in the centre, lightly faceted near the edges; Dms. 4.0x4.1 cm, H. of the bosses 1.0 cm, Th. 0.1 cm. **7.** Bronze lancet-shaped strap end with a broken off ferule (one rivet hole preserved). Decorated in the upper part with

double lines engraved along the edges, in the waist with transverse engraved lines and in the bottom, faceted part with 2 rows of triangles stamped parallel to the edge; preserved L. 3.8 cm. **8.** 3 bronze strap fittings from the headgear (probably strap ferrules), made of U-shaped band; in 2 of them 3 long rivets with hemispherical heads hammered down on the other side of the band, the 3rd one fragmentarily preserved. Band decorated with double pseudo-pearl-like lines along the edges; L. of the completely preserved items 5.8 cm, W. of the band 1.0 cm, L. of the rivets 1.0-1.4 cm. **9.** 3 bronze rectangular strap mounts made of a band decorated with double lines engraved along the edges, with single rivets at the ends; L. of the 2 completely preserved items 1.2 cm and 2.8 cm, L. of the rivets 0.5 cm. **10.** Fragment of a bronze plate, rectangular with broken off ends. Ornament: double grooves along the edges (probably fragment of a headgear strap mount); preserved L. 4.2 cm, W. 0.8 cm.

Chronology: Phase 3.

Grave 35: cremation pit burial with remains of pyre, disturbed, over a skeleton horse grave (Pl. XXIV)

Human grave. At 20 cm below surface, pit irregular in outline, elongated along N-S, Dms. 170x60 cm. Filling: grey-yellow sand with heterogeneous concentrations of burning and charcoals and burnt bones. In the N part of the pit a brooch and 3 belt fittings. *I. Adult; additionally small animal bones impossible to determine.*

Contents: **1.** Bronze ladder brooch, Variant II, with pair of rungs on the bow and pair on foot, the upper one trapeze-shaped, the remaining ones rectangular. Construction: pseudo-crossbow, imitation chord wound around the iron axle and bronze spring on an axle (13 coils preserved), the end of the spring extending beyond the coil, rests on the imitation chord on the inside; bow with rungs and projection for the axle made of one piece of metal (upper rung fragmentarily preserved). Bow massive, faceted, quadrilateral in cross-section, and imitation chord of bronze wire, quadrilateral in cross-section; at the ends of the axle massive bosses with superimposed pairs of rings of incised wire (one not preserved). Ornament on rungs: on the 1st a pair of lines engraved along the upper edge, on the 2nd and 4th ones horizontal grooves on the surface, the 3rd one plain; L. 4.8 cm, reconstructed W. of the spring with bosses 5.9 cm, W. of the rungs 3.1 cm (the 2nd one), 2.4 cm (the 3rd one), reconstructed W. of the 4th one 3.2 cm. **2.** Bronze belt fitting, Type Nørgård Jørgensen TR1/Høilund Nielsen C5, T-shaped, along the longer, straight edge, rectangular openwork part with 3 rivets (on the underside of

one a fragment of a bronze washer preserved). On the upper side, along longer edges, ornament of pairs of lines of stamped dots; zone between the lines filled with double rows of alternating triangles with surface textured with evenly spaced dots; L. 2.6 cm, W. 2.1 cm, Th. 0.2 cm. **3.** 2 bronze belt mounts, rectangular with 4 rivets. Ornament: pairs of incisions along longer edges; L. 2.1 cm and 1.9 cm, W. 0.9 cm.

Horse grave. Over a dozen cm below the bottom of the human grave, in the same burial pit (outline blurred); horse skeleton poorly preserved, limbs and skull survived; skeleton oriented along N-S with head to S, turned to the right; horse lying in hind-part with splayed legs, fore-part leaning to the left; snaffle bit in muzzle. *I. Individual aged 9-15 months.*

Contents: 4. Fragment of an iron snaffle bit with an iron ring, fragmentarily preserved; Dm. of the ring 5.2 cm.

Chronology: Phase 1.

Grave 36: cremation pit burial with remains of pyre, damaged (Pl. XXV)

At 35 cm below surface, disturbed by ploughing, preserved bottom part of the pit, irregular in outline (lack of information concerning the orientation of the grave); Dms. 180x120 cm, D. ca 15 cm. Filling: black and dark grey soil with charcoals, with single burnt bones, a lump of raw amber and a potsherd. *I. Woman, 20-25 years old.*

Contents: 1. Small fragment of a clay vessel with well polished, light brown surface (not drawn). **2.** Small lump of raw amber (not drawn).

Chronology: Late Migration Period.

Grave 37: cremation pit burial with remains of pyre, disturbed (Pl. XXV)

At 30 cm below surface, in upper part disturbed by ploughing, circular pit, trough-shaped profile; Dm. ca 70 cm, D. up to 25 cm. Filling: dark grey soil with numerous charcoals in upper part several stones.

Contents: none.

Chronology: Late Migration Period?

Grave 38: cremation pit burial with remains of pyre, disturbed (Pl. XXVI, CVI:8, 9)

At 30 cm below surface, pit close to circular in outline, trough-shaped profile; Dms. 85x70 cm; D. up to 25 cm. Filling: black soil with charcoals and burnt bones, in the upper part several small and medium-sized stones (probably remains of a pavement disturbed by ploughing). In the centre a brooch, a fragment of a ring, fragment of a bead and several fragments of a vessel. *I. Child.*

Contents: 1. Bronze beak brooch, Type Høilund Nielsen G1, with profiled bow. Hinge construction, bow cast together with pseudo-chord and pseudo-spring (shallow incisions imitate the spring), on imitation chord an intentionally made hole (probably to attach a chain), bronze pin attached with the wider end to an iron axle, the axle fixed on either side in socket-shaped elements of the imitation spring; solid, low catchplate. Ornament: bow decorated with pearl-like lines along the edges, in the centre a triple pearl-like line, blurred in upper part (traces of wearing); zones delimited by pearl-like lines filled with lengthwise rows of alternating stamped triangles; inside triangles texture of regularly distributed dots; on foot and imitation chord ornament of stamped circles; L. 4.6 cm, W. 2.8 cm. **2.** Fragment of a bronze ring of thin, twisted wire; reconstructed Dm. 2.5 cm, Th. 0.2 cm. **3.** Half of a flat, oval-shaped amber bead, unpolished; reconstructed Dms. 2.4x1.7 cm, Th. 0.7 cm. **4.** Several uncharacteristic fragments of a clay vessel (not drawn).

Chronology: Phase 1.

Feature 39: stone pavement (Pl. XXV)

At 30 cm below surface, oval stone pavement, elongated along N-S, composed of one compact layer of medium-sized stones; Dms. 112x104 cm. Filling: between the stones and around them grey-yellow soil with charcoals and small potsherds.

Contents: 1. Small, uncharacteristic fragments of pottery; surfaces roughened and smooth (not drawn).

Chronology: Late Migration Period?

Grave 40: cremation pit burial, damaged (Pl. XXIV)

At 20 cm below surface, preserved in bottom part, pit approximately oval in shape, elongated along W-E; Dm. ca 100x70 cm, D. 15 cm. Filling: mixed dark grey soil, with charcoals and 2 fragments of a vessel.

Contents: 1. 2 uncharacteristic fragments of a clay vessel; surface polished; brown in colour (not drawn).

Chronology: Late Migration Period.

Grave 41: cremation pit burial with remains of pyre, disturbed (Pl. XXVII, CVII:1, 2)

At 30 cm below surface, disturbed by ploughing, outline of burial pit in upper part irregular, deeper oval-shaped, elongated along N-S, trough-shaped in cross-section; Dms. 140x70-115 cm, D. 30 cm. Filling: black soil with a large amount of charcoals and numerous burnt bones. In the central part a vessel, slightly leaning, next to it 2 brooches, a knife and a bead; additionally small pieces of raw amber and several fragments of vessels. *I. Woman, 25-35 years*

old; additionally single fragments of bones of an unidentified animal.

Contents: **1.** Bronze S-shaped brooch, Type Høilund Nielsen L1a, plate in the form of a stylized snake curled into an S-shape, with head to the left. Iron fastening soldered on the underside, strongly corroded, probably of crossbow construction. Ornament: representation of the animal, the head with a pronounced mouth and eye, the body filled with a motif of 3 parallel lines of stamped alternating triangles following the twists of the body, edges of the body lined with pearl-like ornament; L. 2.7 cm, W. 2.8 cm. **2.** Bronze S-shaped brooch, Type Høilund Nielsen L1a, smaller and squatter than the previous one, with the head of different shape, turned to the right, worse state of preservation. Iron construction of the fastening missing (traces of corrosion on head and catchplate). Ornament: on the plate rows of alternating triangles, very blurred (effect of wear?); L. 1.8 cm, W. 2.4 cm. **3.** Iron knife, narrow, with a tang pronounced from one side; strongly corroded; L. 12.6 cm, W. 1.5 cm. **4.** Fragment of a glass bead, Type Høilund Nielsen R3:a:f:II: Ai:M7-8, barrel-shaped, made of untransparent, dark blue glass (in parts lighter due to superficial corrosion) with red eyes and flower pattern made of spindle-shaped “petals”; H. 1.1 cm. **5.** Clay flask-shaped vessel with belly bend below half of its height, and a slim neck with gently outcurved rim; surface well-polished, glossy; black-brown in colour; admixture of medium-grained crushed stone with diversified granulation. Ornament: double rows of small dimples, deeply impressed with a tool with a square tip, at the belly bend a horizontal row, on the neck and in the lower part of the belly – vertical rows; H. 17 cm, R. 7.1 cm, BL. 11.3 cm, B. 5.8 cm. **6.** Several small fragments of clay vessels with roughened surfaces; characteristic for the Early, in secondary context (not drawn). **7.** Several small lumps of raw amber (not drawn).

Chronology: Phase 1’.

Grave 42: cremation pit burial with remains of pyre, destroyed (Pl. XXIV)

At 35 cm below surface, destroyed by ploughing, remains of a burial, outline irregular in shape; Dms. 60x55 cm, D. 5 cm. Filling: in SW part brown soil, in remaining parts black soil with charcoals and a few fragments of burnt human bones, a lump of iron (remains of a destroyed object) and a small potsherds. *I. Adult.*

Contents: **1.** Fragment of a corroded object of U-shaped sheet of iron; preserved L. 2.9 cm (not drawn). **2.** Uncharacteristic fragment of pottery (not drawn).

Chronology: Late Migration Period?

Feature 43: modern pit (lack of detailed documentation)

Grave 44: cremation pit burial with remains of pyre, disturbed, over a skeleton horse grave (Pl. XXVIII)

Human grave. At 30 cm below surface, pit circular in outline, trough-shaped in profile; Dm. ca 160 cm, D. 30 cm. Filling: light brown soil mixed by ploughing with bands of burning and charcoals, more than a dozen fragments of burnt human bones, a buckle and over a dozen potsherds.

Contents: **1.** Bronze buckle, Type Butėnas IV.4, with a trapeze-shaped frame of unclosed wire, spike concave in central part, at the end bent over the edge of the frame; H. 1.4 cm, W. 1.6 cm. **2.** More than a dozen small fragments of pottery, mainly uncharacteristic, including 4 small fragments of a thin-walled clay vessel: polished; black-brown in colour, texture similar to that of other flask-shaped vessels (not drawn).

Horse grave. 60 cm below the human grave: poorly preserved horse skeleton (pit with blurred outline); L. ca 180 cm. Skeleton oriented along W-E with head to E; horse lying belly down with legs tucked under. *I. Individual aged 9-12 months.*

Contents: none.

Chronology: Late Migration Period.

Grave 45: cremation pit burial with remains of pyre, disturbed, over a skeleton horse grave (Pl. XXIX)

Human grave. At 30 cm below surface, pit approximately oval-shaped, elongated along N-S, uneven bottom; Dms. ca 150x90 cm, D. 50 cm. Filling: compact layer of black soil with traces of burning and charcoals and numerous fragments of burnt human bones, scattered over the whole pit; in the layer there were found a spur, 2 rings, fragment of a small ring, a bead and 2 lumps of raw amber, 2 potsherds and a point of Pomeranian flint. *I. Young woman.*

Contents: **1.** Iron rivet spur, Type Leuna Var. E, with a band-shaped bow and lengthwise band-shaped washer, bow tapers towards the arms, at ends of either arm 1 rivet joining the bow with the washer; spindle-shaped prick; strongly corroded; W. 4.4 cm, W. of the bow 1.0 cm, H. of the prick 1.1 cm. **2.** Bronze unclosed ring of wire round in cross-section, with overlapping ends (probably a finger ring); Dms. 1.9x1.6 cm, Th. of the wire 0.2 cm. **3.** Hook ring of bronze wire round in cross-section with hook fastening; Dm. 2.8 cm, Th. of the wire 0.2 cm. **4.** Fragment of a bronze ring of incised wire (probably part of an ornament or a garment decoration); reconstructed

Dm. 0.8 cm. **5.** 2 small fragments of pottery; earlier than the feature, typical of the Early Iron Age, in secondary context (not drawn). **6.** Amber bead approximately circular in shape, flat, carelessly made, with unfinished surface and traces of cutting at the sides; Dm. 1.8 cm, Th. 0.6 cm. **7.** 2 lumps of raw amber with traces of working. **8.** Fragment of a flint point, Type Nowy Młyn, with a tip formed by microburin technique in proximal part of a blade, Mesolithic form in secondary context; preserved Dms. 1.3x0.6x0.2 cm.

Horse grave. Horse skeleton over a dozen cm below the bottom of the pit of the human grave (in the pit of unclear outline); D. up to more than 100 cm. Filling: grey-yellow sand, down to D. of more than 100 cm. Skeleton oriented along N-S with head to N; horse lying on right side with legs tucked under, neck stretched upwards and head unnaturally turned to the left, above the back; snaffle bit in muzzle. *I. Individual aged 3.5-4.5 years.*

Contents: **9.** Iron snaffle bit, Type Ørsnes 1C1, bipartite with iron rings and traces of iron rein fittings; strongly damaged by corrosion; WB. ca 11 cm, L. of the links 6.8 cm and 7.0 cm, Dm. of the rings 6.8 cm and 7.0 cm.

Chronology: Late Migration Period.

Grave 46: cremation pit burial, destroyed (Pl. XXVI)

At 30 cm below surface, destroyed by ploughing, preserved in bottom part, outline of the pit irregular; Dms. 120x120 cm, D. 18 cm. Filling: brown sand with some small fragments of burnt human bones and a fragment of a vessel.

Contents: **1.** Fragment of a clay vessel, probably miniature; surface polished; dark brown in colour (not drawn).

Chronology: Late Migration Period?

Grave 47: skeleton horse grave under a destroyed cremation burial (?), disturbed (Pl. XXX)

At 30 cm below surface, disturbed by ploughing in upper part, burial pit elongated along N-S; Dms. 190x70 cm. Filling: in upper part grey-reddish soil with patches of burning, charcoals (probably from the destroyed cremation grave) and 1 uncharacteristic fragment of pottery; deeper uniformly grey-yellow soil – in it poorly preserved horse skeleton (outline of the pit equivocal). Skeleton oriented along N-S with head to S; horse lying belly down with legs tucked under, visibly leaning to the right; neck unnaturally turned to the left, head squeezed under the left foreleg; snaffle bit in muzzle, near the skull headgear strap mounts, very poorly preserved and crumbled

during excavation (mounts of the 1st variant¹ were fixed to the central strap between the browband and noseband, mounts of the 2nd variant were located on the browband). *I. Male, 1.5-3.5 years old.*

Contents: **1.** Iron snaffle bit, Type Ørsnes 1C1, bipartite with iron rings and traces of iron rein ferrules, rings of bars rectangular in cross-section; strongly corroded, one of the links crumbled; reconstructed WB. 11.0 cm, L. of links 7.0 cm and 8.0 cm, Dm. of the rings 5.4 cm. **2.** Bronze headgear strap mounts made of bands of thin metal sheet in different variants (2 distinguishable), very crumbled. Ornament: 1st variant – embossed wafer pattern at the whole surface and pearl-like lines along the edges, the mounts overlapped and were joined by means of thin wires pulled through two holes in the plates and the strap and bent on the underside with the ends towards the centre; 2nd variant – embossed wafer motif, separated by framed squares with concentric circles arranged in groups of 9, joining as above; W. of all mounts ca 2 cm (not drawn).

Chronology: Phase 2-3.

Grave 48: cremation pit burial with remains of pyre, disturbed, over a skeleton horse grave (Pl. XXXI)

Human grave. At 30 cm below surface, outline of the oval-shaped pit, elongated along N-S, trough-shaped profile; Dms. 140x90 cm, D. up to 60 cm. Filling: compact black soil with a large admixture of charcoals, with burnt human bones. In the upper part several medium-sized stones (probably remains of a pavement destroyed by ploughing). At the bottom of the pit a vessel, next to it fragment of a knife, a buckle, a strap end and a plate with a rivet. *I. Probably a woman.*

Contents: **1.** Fragment of an iron knife with a tang pronounced from one side; corroded; preserved L. 7.4 cm, W. 2.3 cm. **2.** Iron strap end, lancet-shaped (?); strongly corroded; L. 5.9 cm, W. 1.1 cm. **3.** Fragment of an iron buckle, Type (?), with an oval-shaped frame and spike bent at the end; strongly corroded; reconstructed H. 3.3 cm, reconstructed W. 2.9 cm. **4.** Fragment of an iron plate with a rivet with a round head; strongly corroded; L. of the rivet 1.0 cm, Dm. of the rivet head 1.0 cm (not drawn). **5.** Clay biconical flask-shaped vessel with a slim neck and outcurved rim, belly bend at 1/3 of the height; surface well-polished, glossy; reddish in colour, in places dark brown; admixture of medium-grained crushed stone; H. 11.5 cm, R. 5.0 cm, BL. 9.4 cm, B. 5.0 cm.

Horse grave. Immediately under the bottom of human grave (in a pit with blurred outline); skeleton

¹ See description below.

oriented along N-S with head to S; horse lying belly down with tucked under and splayed hind-legs, fore-legs extended forwards, neck stretched upwards, head muzzle down; snaffle bit in muzzle. *I. Male, 1.5-3.5 years old, WH. 144.2 cm.*

Contents: 6. Iron snaffle bit, Type Ørsnes 1C1, bipartite with iron rings and asymmetrical links; corroded; WB. ca 12 cm, L. of the links: 5.8 cm and 10.0 cm, Dm. of the rings 5.8 cm.

Chronology: Late Migration Period.

Grave 49: cremation pit burial with remains of pyre, disturbed (Pl. XXXVI)

At 30 cm below surface, pit irregular in outline, elongated along SW-NE, irregular bottom; Dms. 120x75 cm, D. 25 cm. Filling: dark brown soil with charcoals and burnt human bones.

Contents: none.

Chronology: Late Migration Period?

Grave 50: cremation pit burial with remains of pyre, destroyed (Pl. XXXII)

At 35 cm below surface, destroyed by ploughing, only shifted filling survived. Filling: brown soil with concentrations of burning and charcoals and burnt human bones and an uncharacteristic potsherd (at the plan drawn beyond the outline of the object). *I. Adult.*

Contents: 1. Uncharacteristic fragment of pottery (not drawn).

Chronology: Late Migration Period.

Grave 51: cremation pit burial with remains of pyre, destroyed (Pl. XXX)

At 40 cm below surface, destroyed by ploughing, preserved in bottom part, pit irregular in outline, elongated along N-S; Dms. 92x45 cm, D. 10 cm. Filling: brown soil with patches of burning, charcoals, burnt human bones and a potsherd.

Contents: 1. Fragment of a clay vessel with roughened surface; earlier than the feature, characteristic for the Early Iron Age, in secondary context (not drawn).

Chronology: Late Migration Period?

Grave 52: cremation pit burial with remains of pyre, disturbed, over a skeleton horse grave (Pl. XXXIII)

Human grave. At 30 cm below surface, disturbed by ploughing in upper part, oval pit elongated along SW-NE, trough-shaped profile; Dms. 100x195 cm, D. 80 cm. Filling: brown soil; near the bottom black soil, with traces of burning, charcoals and numerous burnt human and animal bones. In the upper,

disturbed part, a base part of a vessel and over a dozen fragments of iron objects including pieces of rectangular fittings with rivets. *I. Adult; additionally bones of an undetermined animal.*

Contents: 1. More than a dozen fragments of iron objects and lumps of rust, including 3 fragments of rectangular fittings with rivets at the ends, on the underside traces of wood; corroded; one fitting completely preserved, with tubular rivets at the ends; strongly corroded; W. 1.2-1.6 cm, L. of the complete fitting 4.1 cm, W. of the complete fitting 1.3 cm, L. of the complete rivet 2.5 cm. **2.** Base part of a clay vessel, probably flask-shaped, biconical in shape; surface well-polished; dark brown in colour; admixture of fine- and medium-grained crushed stone; B. 6.5 cm (not drawn).

Horse grave. At ca 70 cm below surface, immediately under a cremation human grave (outline of the pit impossible to determine); skeleton oriented along N-S with head to S; horse lying belly down, with legs tucked under, fore-part leaning to the left with head on its left side, turned to the right; snaffle bit in muzzle. *I. Individual aged 15-24 months, WH. ca 130 cm.*

Contents: 3. Iron snaffle bit, Type Ørsnes 1C1, bipartite with iron rings and asymmetrical links; WB. ca 11.5 cm, L. of the links 7.6 cm and 7.7 cm, Dm. of the rings 6.0 cm and 6.4 cm.

Chronology: Late Migration Period.

Grave 53: cremation pit burial with remains of pyre, disturbed (Pl. XXXIV)

At 30 cm below surface, disturbed by ploughing, preserved in bottom part, pit oval-shaped, elongated along N-S; Dms. 190x120 cm, D. 30 cm. Filling: dark brown soil secondarily mixed, with a large amount of charcoals and single burnt human bones; in central part patch of grey-yellow soil bones. In dark brown soil fragments of iron and bronze objects, damaged and displaced by ploughing: fragment of a ring of wire, point of a sword and 2 shafted weapon's heads, broken into pieces. *I. Man, 25-30 years old.*

Contents: 1. Bronze unclosed oval ring of incised wire (mount for a boss of a brooch?); Dms. 1.6x1.4 cm, Th. of the wire 0.2 cm. **2.** Fragment of the point of a one-edged sword, thin back; corroded; preserved L. 8.3 cm, preserved W. 3.4 cm. **3.** Iron shafted weapon's head, Type Kazakyavichyus IVA or V, blade flat rhomboidal in cross-section, gently distinguished from the socket, inside the socket remains of the shaft; strongly corroded, preserved in several fragments, tip of the blade broken off; preserved G. 28.0 cm, A. 3.2 cm, preserved T. 8.0 cm, Dm. of the socket 2.0 cm. **4.** 2 fragments of

an iron shafted weapon's head, Type Kazakyavichyus IVA or V, tip of the blade missing; preserved L. 24.3 cm, A. 3.7 cm, T. 8.3 cm, Dm. of the socket 2.3 cm.

Chronology: Phase 3.

Grave 54: cremation pit burial with remains of pyre, destroyed (Pl. XXX)

At 30 cm below surface, destroyed by ploughing, survived in bottom part, destruction layer of the bottom irregular in shape; Dms. 80x65 cm, D. 10 cm. Filling: black soil with charcoals and a fragment of a vessel.

Contents: 1. Base part of a clay vessel, probably flask-shaped, with a gentle belly bend and poorly distinguished foot; surface carelessly polished; brown in colour; admixture: a large amount of coarse- and medium-grained crushed stone; reconstructed from fragments. Ornament: on the belly two rows of impressed, oval-shaped dimples; BL. 11.0 cm, B. 8.0 cm (not drawn).

Chronology: Late Migration Period.

Grave 55: cremation pit burial with remains of pyre, disturbed, over a skeleton grave of 2 horses (Pl. XXXV-XXXVI)

Human grave. At 70 cm below surface, disturbed by ploughing, oval pit, elongated along NW-SE, trough-shaped profile, documented partly (lack of cross-section); Dms. 160x130 cm, D. 45 cm. Filling: black and brown soil with a large amount of charcoals, with layers of yellow sand. Slightly deeper, in the centre, the pit of the cremation grave proper, oval in shape, elongated at NE-SW; Dms. 90x50 cm. Filling secondarily disturbed: compact soil, with traces of burning and burnt human and animal bones with several ten fragments of pottery from 2 vessels, several fragments the Early Iron Age and modern vessels, 2 brooches, fragments of broken plates and 3 lumps of raw amber. *I. Adult (probably woman), 30-35 years old and child, 5-6 years old; additionally remains of an undetermined animal.*

Contents: 1. Bronze ladder brooch, Variant II, with 4 rungs, the topmost trapeze-shaped, the remaining ones – rectangular. Construction: pseudo-crossbow, a spring of bronze wire circular in cross-section, in two sections, 7 coils each, separated with a projection for fixing the iron axle (the right part is resilient), end of the spring damaged; imitation chord fixed on the ends of the axle, in central part of the pseudo-chord an opening on which the bottom part of the bow is resting. Bow wide, faceted, trapeze-shaped in cross-section; wide foot and an imitation chord of faceted bronze bar, trapeze-shaped in cross-section; at the ends of the axle bosses with superimposed pairs of rings of

incised wire. Ornament: grooves on rungs along the longer edges: the 1st along the upper edge, the 2nd and 4th along both edges, the 3rd along the lower edge; an opening is pseudo-chord decorated at the sides with motifs of triple engraved lines; L. 5.2 cm, W. 5.8 cm, W. of the rungs 3.8 cm (the 1st one), 3.5 cm (the 2nd one), 2.6 cm (the 3rd one), 3.2 cm (the 4th one). **2.** Bronze ladder brooch, Variant I, with 4 rungs, the topmost trapeze-shaped, the remaining ones rectangular. Construction: crossbow, spring in two parts, 7 coils each, separated by a projection for fixing the iron axle, the right part is resilient. Bow and foot trapeze-shaped in cross-section; at the ends of the axle bosses with superimposed pairs of rings of incised wire. Ornament: a groove along the upper edge of the lowest rung; L. 5.8 cm, W. 5.5 cm, H. 2.4 cm, W. of the rungs 3.3 cm (the 1st and the 2nd ones), 2.0 cm (the 3rd one), 2.4 cm (the 4th one). **3.** Over a dozen fragments of bronze belt mounts, partly melted; 2 items completely preserved: rectangular with single rivets at the ends, decorated with double grooves along longer edges; L. 2.3 cm, W. 0.8 cm. **4-5.** 2 clay flask-shaped vessels, very similar, biconical bellies with the belly bend at 1/3 of the height, slim necks with straight edges; surfaces well-polished and glossy; yellow-brown in colour; admixture of medium- and coarse-grained crushed stone; one vessel completely reconstructed, the other in its upper part; completely preserved vessel – H. 12.3 cm, R. 4.5 cm, BL. 7.8 cm, B. 3.6 cm; fragmentarily preserved vessel – R. 4.2 cm. **6.** Several fragments the Early Iron Age and modern vessels (not drawn). **7.** 3 lumps of raw amber without traces of working (not drawn).

Grave of 2 horses. Immediately under the cremation burial which reached down to the level of horse skeletons' spines (not preserved), pit close to rhomboidal in outline, elongated along N-S; Dms. 160x85 cm. Filling: light brown soil. Skeletons of 2 horses oriented along N-S with heads to S; horses arranged at the bottom of the pit, one next to another, hind-parts lying belly down with splayed and bent hind-legs; fore-part of the skeleton of horse I (individual from W side) leaning to the left, with the neck turned to the right and head muzzle upwards; fore-part of horse II (from E side) leaning to the left with legs under the neck of horse I and neck turned to the right, muzzle down; in muzzles of both individuals snaffle bits; next to the bit of horse I a rein buckle, near the skulls randomly scattered bronze headgear mounts (impossible to separate into 2 sets). *I. Horse I: male, ca 4 years old, WH. 127.2 cm. Horse II: male, ca 8 years old, WH. 125.4 cm.*

Contents: 8. Fragment of an iron snaffle bit of horse

I, Type Ørsnes 1C1, bipartite; strongly corroded, preserved one link, part of the other and a fragment of the ring; L. of the preserved link 7.4 cm, reconstructed Dm. of the ring 5.5 cm. **9.** Iron buckle, close to Type Butėnas III.2a, with a semi-circular frame and the spike bent over the frame; corroded; H. 2.3 cm. W. 1.8 cm. **10.** Fragments of an iron snaffle bit of horse II, Type Ørsnes 1C1, bipartite; strongly corroded, preserved one link, part of the other and fragments of the rings; reconstructed WB. ca 15 cm, Dm. of the rings 6.6 cm. **11.** Several ten fragments and several completely preserved bronze headgear strap mounts, made of thin metal sheet, all originally of equal width, at the ends single rivets. Decorated with double grooves along the longer edges. In 7 cases crossing bands were preserved: headgear strap connectors, Type Ørsnes 9D1, joined with one another and the straps with nails bent on the underside; L. 4-7 cm, W. 1.0 cm.

Chronology: Phase 1.

Grave (?) 56: cremation burial with remains of the pyre (?) destroyed (Pl. XXXII)

At 50 cm below surface, destroyed by ploughing, preserved in bottom part of the pit, probably of a grave, irregular in outline; Dms. 174x156 cm, D. 37 cm. Filling mixed: grey-brown soil with streaks of yellow sand, patches of burning and a few charcoals.

Contents: none.

Chronology: Late Migration Period?

Grave (?) 57: cremation burial with remains of the pyre (?) destroyed (Pl. XXXVII)

Preserved bottom part of the pit, probably of a grave, destroyed by ploughing, irregular in outline, Dms. 130x120 cm, D. 50 cm. Filling mixed: grey-brown soil with streaks of yellow sand with charcoals, a few stones, a fragment of a modern brick and 1 potsherd.

Contents: **1.** Fragment of pottery with a roughened surface. Ornament: fingernail pattern at the belly bend; earlier than the feature, typical of the Early Iron Age, in secondary context (not drawn).

Chronology: Late Migration Period?

Grave (?) 58: cremation burial with remains of the pyre (?) destroyed (Pl. XXXVII)

Preserved bottom part of the pit, probably of a grave, destroyed by ploughing, irregular in outline, elongated at NE-SW, Dms. 170x60 cm, D. 33 cm. Filling mixed: dark brown soil with layers of yellow sand and large amount of charcoals, lower brown soil.

Contents: none.

Chronology: Late Migration Period?

Grave (?) 59: cremation burial with remains of the pyre (?) destroyed (Pl. XXXII)

Preserved bottom part of the pit, probably of a grave, destroyed by ploughing, in shape close to crescent, with ends directed to NW, Dms. 150x70 cm, D. 10 cm. Filling: brown soil with distinct concentration of charcoals in black soil (remnants of the exact grave?).

Contents: none.

Chronology: Late Migration Period?

Grave 60: cremation pit burial with remains of pyre and a stone cist over a skeleton horse burial (Pl. XXXVIII-XXXIX)

Human grave: At 30 cm below the surface, streak of black soil from the top part of the burial pit, oriented along N-S; L. ca 450 cm. Outline of the burial pit recorded 20 cm below, in N part, a rectangle elongated along N-S; Dms. 240x85 cm. Filling: light brown sand with darker patches and charcoals. In N part a stone cist, irregular in form made of more than a dozen large and medium-sized stones. In its centre, in the brown-black soil with charcoals, a concentration of burnt bones, among them a brooch, a hook ring and a fragment of a knife in sheath. On W side of the feature, parallel to the longer axis of the pit: a sword with remains of the scabbard, with point to N; from E part of the feature, 2 shafted weapon's heads, alongside one another, with tips to S. In the upper, disturbed part of the filling a strap end, in other places more than a dozen fragments of pottery from the Early Iron Age and several lumps of amber with traces of working; one with a pierced hole. *I. Adult; additionally fragment of an animal's tooth.*

Contents: **1.** Bronze ladder brooch, Variant II, with 4 rungs, upper rung trapeze-shaped, the remaining ones rectangular. Construction: crossbow, faceted bronze spring, hexagonal in cross-section, composed of two parts of 8 and 9 coils, separated by a projection fastening the iron axle, the right, 9 coils side of the spring is resilient. Bow and rungs made of one piece of bronze, 3rd rung shorter than the others, fragments of both bottom rungs broken off; solid catchplate, foot faceted, trapeze-shaped in cross-section; at the ends of the axle bosses with superimposed pairs of rings of incised wire. Ornament: single groove along the lower edge of the shorter rung, the remaining ones with lengthwise grooves on the whole upper surface; L. 3.4 cm, W. 4.9 cm, H. 1.7 cm. **2.** Hook ring of bronze wire oval-shaped in cross-section with hook fastening; Dm. 6.4 cm. **3.** Bronze lancet-shaped strap end with 2 rivet holes at the partly broken off end, 1 rivet has been preserved, faceted in the lower part. Decorated with a row of triangles punched along the edges and a

transverse engraved line in the central part; L. 4.8 cm, W. 1.2 cm. **4.** Fragment of the central part of the blade of an iron knife with remains of a wooden sheath covered with bronze foil. Ornament: on the foil embossed railing pattern delimited by double pearl-like lines; preserved L. of the knife 6.6 cm, W. 1.6 cm, W. of the foil 1.9 cm. **5.** Iron one-edged sword, blade of an even width at a considerable length, near the point it tapers towards a massive, wide back, T-shaped in cross-section; tang distinguished on both sides: more on the back side, at right angles, and at the edge side at an obtuse angle, end of the tang broken off; total L. 58.8 cm, L. of the tang 5.4 cm, W. 4.5 cm, W. of the back 1.2 cm. **6.** Remains of the sword's scabbard: on the corroded blade of the sword fragments of thin chips of wood, in the point part an iron U-shaped chape with uneven arms, the longer arm on the side of the sword's back; L. of the longer arm 12.2 cm, L. of the shorter arm 7.4 cm, W. of the U-shaped part 1.0-1.2 cm. **7.** Iron shafted weapon's head, Type Kazakyavichyus V, slim, narrow blade with slightly marked out midrib at the whole length of the blade; socket circular in cross-section, narrow; G. 35.3 cm, A. 3.7 cm, T. 12.5 cm, Q. 17.6 cm, Dm. of the socket 2.1 cm. **8.** Iron shafted weapon's head, Type Kazakyavichyus V, with a slightly broader blade, flat rhomboid in cross-section; socket circular in cross-section, narrow; tip of the blade missing; preserved G. 36.6 cm, A. 4.8 cm, T. 13.5 cm, Q. 17.7 cm, Dm. of the socket 2.2 cm. **9.** More than a dozen fragments of pottery; earlier than the feature, typical of the Early Iron Age, in secondary context (not drawn). **10.** 2 lumps of amber; one with traces of pre-working and a bored hole; Dms. 2.7x2.5 cm.

Horse grave. Hind-part and back of a horse below the stone cist, (plan drawn at 110 cm below surface), deposited in the narrow, bottom part of the pit, elongated at N-S; Dms. at the skeleton level 225x70 cm. Filling: light brown soil. Skeleton preserved in minor part, oriented along N-S with head to S; horse standing, legs bent as the soil set in, neck extended upwards, head turned to the left, muzzle down; snaffle bit in muzzle, on the skull headgear fittings, partly disturbed. *I. Individual aged ca 1 year.*

Contents: **11.** Iron snaffle bit, Type Ørsnes 1C1, bipartite with iron rings; strongly corroded, rings fragmentarily preserved; WB. ca 15.5 cm, L. of the links ca 9.5 cm, Dm of the rings 5.2 cm. **12.** 17 bronze headgear strap mounts of thin sheet, rectangular with pairs of rivets with hemispherical heads at the ends. Ornament: 4 items decorated at the edges with stamped triangles, the remaining ones with double grooves along the edges. Near some of them preserved remains of

leather; L. 4.5-6.7 cm, L. of the 2 shorter items 2.0 cm and 2.7 cm, W. 0.9-1.1 cm. **13.** 2 bronze fittings of sheet, rectangular, curved, joined to rectangular washers of bronze sheet of similar dimensions with five longer rivets with hemispherical heads, between the plates remains of leather. Ornament: lines engraved along longer edges and adjoining them rows of punched triangles; L. 4.3 cm and 4.2 cm, W. 1.2 cm. **14.** 6 bronze headgear strap connectors, Type Ørsnes 9D1/9D2, with hemispherical bosses in the middle, each with four rectangular projections for rivets. Ornament: around the central bosses line of punched triangles and a line of dots, at the ends of the arms triple grooves; Dms. 4.4 cm, H. 1.0 cm, Th. 0.15 cm. **15.** 3 bronze lancet-shaped strap ends, faceted, 2 with a pair of rivets in the upper part, 1 with single rivet where a fragment of leather was preserved. Ornament: 2 with a metope field marked out in the waist, 1 decorated in the waist with a horizontal engraved line, with a single rivet in the upper part, all decorated with a double lines engraved at the edge of the upper part; L. of the items with pairs of rivets 4.9 cm, W. of them 0.9 cm, L. of the item with a single rivet 4.5 cm, W. of it 1.2 cm. **16.** Bronze buckle, Type Butėnas III.2, for fastening headgear straps, rectangular ferrule with one rivet and oval shaped frame, spike bent at the end over the frame. Ferrule decorated with double grooves along the edges; H. 2.0 cm. W. of the frame 1.3 cm, L. of the ferrule 1.6 cm. **17.** Bronze buckle, Type Butėnas IV.4, for fastening headgear straps, rectangular ferrule broken off at the end, trapeze-shaped frame, spike bent over the frame. Ferrule decorated with double grooves along the edge, frame nearby the bent end of the prick decorated with transverse grooves; H. 1.8 cm, W. of the frame 1.3 cm, L. of the ferrule ca 1.6 cm. **18.** Bronze plate (fragment of a bracelet?), lenticular; broken off at the ends. Ornament: a row of dots punched along the edge; preserved L. 5.1 cm.

Chronology: Phase 3.

Grave 61: cremation pit burial with remains of pyre, damaged, over a damaged skeleton horse grave (Pl. XL)

Human grave. At 50 cm below surface, damaged by ploughing, survived remains of the filling, irregular in shape, elongated along NE-SW; Dms. 190x130 cm, D. up. to 35 cm. Filling: in the upper part in N side black soil mixed with sand with a few charcoals, some small fragments of burnt human bones and a fragment of a vessel, in the remaining part light grey soil.

Contents: **1.** Upper part of a clay flask-shaped vessel, with the neck tapering towards the top, a straight rim

and biconical belly; surface carelessly polished; yellow-brown in colour; admixture: fine-grained crushed stone; reconstructed from fragments. Ornament: at the belly bend a row of finger-made dimples; R. 4.4 cm.

Horse grave. Horse skeleton at the depth of ca 30 cm below the destroyed pit of a cremation burial; skeleton fragmentarily preserved and partly disturbed, oriented along N-S with head to S, slightly turned to E; horse lying belly down with legs tucked under, neck extended upwards and head muzzle forward; snaffle bit in muzzle. *I. Adult, WH. 133 cm.*

Horse grave inventory: 2. Iron snaffle bit, Type Ørsnes 1C1, bipartite with small iron rings; fragmentarily preserved; reconstructed Dm. of the rings ca 3.5 cm.

Chronology: Late Migration Period.

Feature 62: modern pit (Pl. XLI)

At ca 30 cm below surface, under a layer of mixed sand, irregular outline, elongated along N-S; L. ca 480 cm. Filling: dark soil, at N and S edges patches of burning with charcoals and burnt bones, in the centre a well-visible patch of brown, mixed soil. In central part outline of modern pit located between 2 cremation burial pits, partly disturbing them, with fragments of pottery from the Early Iron Age and modern times, as well as single potsherds from the destroyed graves; central outline was called feature 62, grave at the N edge of the feature 62 A and from the S edge 62 B.

Contents: 1. Fragments of pottery characteristic of the Early Iron Age, in secondary context and from modern times (not drawn). **2.** Single small fragments of pottery from destroyed graves 62A and 62B (not drawn).

Chronology: modern times.

Grave 62A: cremation pit burial with remains of pyre, disturbed, over a skeleton grave of 2 horses (Pl. XLI-XLII)

Human grave. Pit of the cremation burial disturbed in upper part by feature 62, outline approximately circular, trough-shaped profile; Dm. ca 120 cm, D. ca 40 cm. Filling: black soil with charcoals and scattered burnt human bones. In the disturbed upper part several medium-sized stones (probably remains of destroyed stone cist or pavement). In the centre a standing vessel, next to it several fragments of fitting of a drinking horn. *I. Probably adult man; additionally small animal bones.*

Contents: 1. Single, small, embossed fragments of a fitting of a drinking horn, survived as pieces of bronze foil. Ornament: 2 larger fragments of embossed railing pattern delimited with horizontal lines. **2.** Clay flask-shaped vessel, large, with an elongated

bulging belly gently merging into a slim neck tapering to a very narrow mouth with a straight edge; surface well-polished; yellow-brown in colour; admixture: medium-grained crushed stone; H. 24 cm, R. 5.8 cm, BL. 15.3 cm, B. 7.8 cm.

Grave of 2 horses. Narrow pit of horse grave below the cremation burial, elongated along NW-SE (in the bottom part limits impossible to determine); Dms. 170x60 cm, reconstructed D. up to ca 90 cm from the surface. Filling: light-grey sand. Skeleton of horse I oriented along NW-SE with head to SE; horse standing with bent hind-legs and fore-legs stretched forward, neck and head slightly lifted and turned to the right, muzzle downwards; snaffle bit in muzzle, next to it 2 small iron buckles (probably from cheekpieces and reins) and 1 mount. Skeleton of horse II identified basing exclusively on archaeozoological analysis. *I. Horse I: male, ca 8 years old, WH. 132.6 cm. Horse II: 6 years old.*

Contents: 3. Iron snaffle bit, Type Ørsnes 1C1, bipartite with iron rings, asymmetrical; poorly preserved, one of the links crushed; reconstructed WB. ca 13 cm, L. of one of the links 8.4 cm, Dm. of the rings 4.5 cm.

4. Iron buckle, Type Buténas IV.3/4, with an approximately rectangular frame; strongly corroded; H. 2.6 cm, W. 1.9 cm. **5.** Iron buckle, Type Buténas IV.3/4, with an approximately trapeze-shaped frame; strongly corroded; H. 2.7 cm, W. 2.0 cm. **6.** Iron strap mount, rectangular, bent at the ends, joined with a smaller rectangular washer by means of 2 rivets with large heads; L. 2.4 cm, W. 1.0 cm.

Chronology: Phase 3?

Grave 62B: cremation pit burial with remains of pyre, disturbed, over a skeleton horse grave (Pl. XLI, XLIII)

Human grave. Burial pit disturbed from N by feature 62, irregular in shape (initially probably oval); Dms. 140x120 cm, preserved D. 40 cm. Filling: brown-black soil with charcoals and small burnt bones, with several potsherds (other ones, from the same vessel, were uncovered in the neighbouring pit) and fragment of a brooch. *I. Adult.*

Contents: 1. Bronze spring and pseudo-chord of a brooch, probably the ladder one of Variant III. Construction: pseudo-crossbow, bronze spring made up of 2 parts 6 coils each, separated by a projection for fixing the iron axle, on the right side of the axle hook-shaped end of the spring, resting on the imitation chord on the underside, only right side of the spring is resilient; pseudo-chord fixed on the axle by means of semi-circular plates with holes for the axle, originally adjoining with their flat parts to the underside of the rung,

in central part of the imitation chord a notch in which originally the central part of the bow rested (now broken). Imitation chord trapeze-shaped in cross-section; on the left side of the spring a decorative boss with 2 rings of incised bronze wire, on the opposite end boss without preserved rings (visible grooves for attaching them). Ornament: 3 short, transverse notches at the sides of the pseudo-chord; preserved W. 4.7 cm. **2.** Small fragments of a thin-walled clay vessel; surface well-polished and glossy; dark brown in colour; admixture: medium-grained crushed stone; form impossible to reconstruct (not drawn).

Horse grave. Very narrow pit below the cremation burial, elongated along NE-SW; Dms. 185x45 cm, D. 110 cm. Filling: light-grey sand. Skeleton partly disturbed by feature 62, oriented along NE-SW with head to SW; horse standing with fore-legs slightly bent, hind-legs squatting, neck extended forward, head muzzle down; snaffle bit in muzzle, on the skull headgear fittings (from cheekpieces and a headpiece). *I. Male, ca 6 years old.*

Contents: 3. Iron snaffle bit, Type Ørsnes 1C1, bipartite with iron rings rectangular in cross-section; WB. 13.5 cm, L. of the links 8.2 cm and 9.2 cm, Dm. of the rings 5.5 cm and 6.0 cm. **4.** 10 bronze headgear strap mounts, rectangular with a rivet with a large hemispherical head at either end (near the rivets preserved remains of leather), on the underside small washers of bronze plates. Ornament: double grooves along the sides; L. 4.0-4.4 cm, W. 1.0-1.1 cm. **5.** 3 bronze strap connectors, Type Ørsnes 9D1, in the shape of equal-armed crosses with hemispherical bosses in the centre; at the end of each arm a rivet with a hemispherical head and approximately rectangular washer on the underside; one item repaired (two additional rivets without heads near the bulge). Ornament: the boss surrounded with punched circles, along the edge double engraved lines; reconstructed Dms. 3.0 cm, 3.3 cm and 3.5 cm, Dm. of the bosses 1.0-1.1 cm.

Chronology: Phase 1.

Feature 63: modern (?) pit (Pl. XLIV)

A 50 cm below surface, irregular outline elongated at NNE-SSW; Dms. 150x60 cm., D. several cm. Filling: light brown sand.

Contents: none.

Chronology: modern times?

Grave 64: cremation pit burial with remains of pyre, disturbed (Pl. XLIV)

At 45 cm below surface, bottom part of the burial, circular in outline, trough-shaped profile; Dm. ca 65 cm, D. ca 20 cm. Filling: black soil with charcoals

and burnt bones with fragments of vessels. *I. Adult (probably a woman), 25-35 years old; additionally a few bones of an undetermined animal.*

Contents: 1. 9 fragments of clay vessels, 2 of them with brown polished surfaces – possibly from the grave; the remaining ones with roughened surfaces – addition from feature 64A (not drawn).

Chronology: Late Migration Period?

Feature 64A: pit from a settlement from the Early Iron Age (Pl. XLII)

At 45 cm below surface, next to grave 64, pit circular in outline, flat bottom; Dm. 65 cm, D. 55 cm. Filling: grey-yellow sand without traces of burning with several fragments of vessels.

Contents: 1. Several fragments of vessels; roughened surfaces, typical of the Early Iron Age (not drawn).

Chronology: Early Iron Age.

Grave 65: cremation pit burial with remains of pyre, damaged, over a skeleton horse grave (Pl. XLV)

Human grave. Pit in upper part disturbed by ploughing, exact outline of the whole burial pit was visible only in profile, in the central part of the pit approximately oval-shaped outline oriented along NE-SW, in bottom part approximately circular in shape, trough-shaped profile; L. along NE-SW axis 210 cm, Dms. of the oval outline in central part ca 100x50 cm, Dm. of the bottom part ca 40 cm, D. 35 cm. Filling: in upper part light brown soil, in central part black soil with charcoals and burnt human bones. In the centre of the bottom part standing cracked vessel, fragment of a hook ring (?) and fragment of an iron object. *I. Individual aged ca 25 years.*

Contents: 1. Fragment of a hook ring (?) of bronze twisted wire; preserved L. 2.1 cm, Th. 0.2 cm. **2.** Fragment of an iron object, probably a fastener for reins or a frame of a buckle; preserved L. 2.0 cm, W. 1.9 cm, Th. 0.4 cm. **3.** Flask-shaped clay vessel with conical belly, gentle belly bend below half of its height, elongated neck and straight rim; surface well-polished; brown in colour; admixture: fine-grained crushed stone or sand; reconstructed from fragments; H. 16.6 cm, R. 6.6 cm, BL. 11.7 cm, B. 5.0 cm.

Horse grave. Poorly preserved horse skeleton ca 30 cm below the bottom of the cremation grave (a pit with an outline impossible to determine); skeleton oriented along NE-SW with head to SW; horse lying belly down with hind- and fore-legs tucked under, neck stretched upwards and forwards, head muzzle down; snaffle bit in muzzle, inside the bit rings 2 ferrules.

Contents: 4. Iron snaffle bit, Type Ørsnes 1C1, bipartite with iron rings, on the rings bronze cheekpiece (?)

ferrules, rectangular, with 2 rivets with large, hemispherical heads; one of the links fragmentarily preserved. Ornament: double grooves at the edges of ferrules; L. of the link 8.0 cm, Dm. of the rings 5.6 cm, L. of the ferrules 3.8 cm, W. of the plates 1.1 cm. **5.** 2 iron fittings of double rectangular plates joined with 3 iron rivets with hemispherical bronze heads; between the plates remains of the leather from the strap (rein fastening?); L. 2.8 cm and 2.6 cm, W. 1.2 cm, L. of the rivets 1.5 cm.

Chronology: Phase 1.

Feature 66: modern pit (lack of detailed documentation)

Grave (?) 67: probably destroyed cremation burial with remains of the pyre overlying a pit from the Early Iron Age (Pl. XLVI)

At 40 cm below surface, upper part of the filling disturbed by ploughing, irregular in outline, at the lower level the shape of the pit circular and sack-like in profile; Dms. ca 175x155 cm, D. 105 cm. Filling: brown soil with patches of burning, charcoals and single burnt bones, at the lower level grey sand with thin dark layers with several fragments of pottery and a piece of flint (remnant of the Early Iron Age feature?), nearby in the natural sterile ground traces of 3 posts.

Contents: **1.** Several fragments of pottery from the Early Iron Age (not drawn). **2.** Uncharacteristic flint fragment (not drawn).

Chronology: Late Migration Period (?) and Early Iron Age.

Feature 68: pit, damaged (Pl. XLIV)

At 40 cm below surface, destroyed by ploughing, irregular dark patch on the sand; limits in profile unclear; Dms. of the main outline 70x55 cm. Filling: dark brown soil with patches of black soil with burning and 17 fragments of Pomeranian flint and several potsherds.

Contents: **1.** Small fragments of pottery, probably Neolithic (not drawn). **2.** Fragment of an Oldesloe point, pressure technique, in secondary context; preserved L. 2.6 cm. **3.** Bipolar and bifacial core with a retouch of one edge, pressure technique; Dms. 1.8x0.7x0.5 cm. **4.** End scraper made of small flake, splintered technique; Dms. 0.9x1.9x0.4 cm. **5.** Fragment of a core, splintered technique; Dms. 2.7x1.5x0.5 cm (not drawn). **6.** Bipolar and unifacial core, splintered technique; Dms. 2.7x1.5x0.5 cm (not drawn). **7.** Flake, splintered technique; Dms. 1.4x0.7x0.1 cm (not drawn). **8.** Medial fragment of a bladlet with traces of burning, covered by white patina, pressure technique, in secondary

context; Dms. 1.3x0.7x0.2 cm (not drawn). **9.** Distal fragment of a bladlet 'overshot piece', pressure technique, in secondary context; Dms. 1.7x0.8x0.5 cm (not drawn). **10.** Bipolar and unifacial core, splintered technique; Dms. 2.5x1.8x0.7 cm (not drawn). **11.** Bipolar and bifacial core, splintered technique; Dms. 1.6x1.6x0.7 cm. **12.** End scraper, splintered technique; Dms. 2.1x1.4x1.0 cm. **13.** Cortex flake, splintered technique; Dms. 1.7x1.1x0.3 cm (not drawn). **14.** Bipolar and bifacial core, splintered technique; Dms. 1.8x1.1x0.4 cm (not drawn). **15.** Fragment of a core, splintered technique; Dms. 1.6x1.2x0.8 cm (not drawn). **16.** Retouched flake, splintered technique; Dms. 1.8x0.7x0.5 cm (not drawn). **17.** Single platform blade core with traces of regular preparation on one side, pressure technique; Dms. 3.0x0.8x0.9 cm. **18.** Backed bladelet, pressure technique, in secondary context; Dms. 2.8x0.8x0.3 cm.

Chronology: Neolithic with a few Mesolithic forms in secondary context.

Grave 69: cremation pit burial with remains of pyre, destroyed (Pl. XLIV)

At 54 cm below surface, destroyed by ploughing, bottom part of a pit of a blurred outline; Dms. 95x70 cm, Th. a few cm. Filling: black soil with charcoals, mixed by ploughing, with a fragment of a shafted weapon's head.

Contents: **1.** Fragments of a socket of an iron shafted weapon's head, Type (?); preserved T. 5.1 cm, Dm. of the socket 1.8 cm.

Chronology: Phase 3?

Grave 70 (70-72): cremation pit burial with remains of pyre, damaged, over a skeleton horse grave (Pl. XLVII)

Human grave. At 26 cm below surface, destroyed by ploughing; in a layer of grey-black soil with 3 concentrations, initially 3 adjoining outlines of burial pits were distinguished (Nos 70, 71 and 72); as they were located over a single horse grave, ultimately they were assumed to be remains of one destroyed burial, elongated at NW-SE; Dms. 190x140 cm. Filling: grey-black soil with charcoals, with a few fragments of burnt bones and pottery. Drawing records incomplete. *1. Individual of delicate build, probably a child.*

Contents: **1.** 3 small, uncharacteristic fragments of pottery (not drawn).

Horse grave. Poorly preserved horse skeleton ca 40 cm below the destruction layer of the cremation burial, in elongated pit (outline impossible to determine); skeleton oriented along NE-SW with head to

SW; horse lying on its right side, pulled up legs, neck unnaturally bent backwards, head turned back; snaffle bit in muzzle, under the bones of the fore-legs an iron ring (probably of the bit). *I. Individual aged ca 2 years.*

Contents: 2. Iron snaffle bit, Type Ørsnes 1C2, tripartite with iron rings, asymmetrical links; WB. ca 12.0 cm, L. of the links 5.8 cm, 4.9 cm and 6.0 cm, Dm. of the rings 3.6 cm and 4.1 cm. **3.** Iron bit ring (?); Dm. 4.1 cm.

Chronology: Late Migration Period.

Feature 73: pit of undetermined function (Pl. XLIV)

At 20 cm below surface, pit irregular in shape; Dms. 60x55 cm, D. 18 cm. Filling: light grey sand with several potsherds.

Contents: 1. Several small fragments of vessels; surface carelessly polished; light brown in colour; probably contemporary to the cemetery (not drawn).

Chronology: Late Migration Period?

Feature 74: pit of undetermined function, destroyed (Pl. XLVII)

At 15 cm below surface, small depression of irregular shape; Dms. 50x45 cm, D. 15 cm. Filling: light grey sand with several small potsherds and one burnt fragment of bone (probably brought by ploughing from the neighbouring grave).

Contents: 1. Several small fragments of vessels; surface carelessly polished; probably from the Early Iron Age (not drawn).

Chronology: Early Iron Age?

Grave 75: cremation pit burial with remains of pyre, destroyed (Pl. XLVII)

At 19 cm below surface, pit oval shaped in outline, elongated along NE-SW; Dms. 70x40 cm, D. 25 cm. Filling: black soil with charcoals, mixed with sand, with several fragments of burnt bones, a piece of an antler, fragments of pottery and several small pieces of amber.

Contents: 1. Several small, uncharacteristic fragments of pottery (not drawn). **2.** Several small pieces of amber (not drawn).

Chronology: Late Migration Period.

Grave 76: cremation pit burial with remains of pyre, destroyed (Pl. XLVIII)

At 52 cm below surface, destroyed by ploughing, preserved bottom part of the burial pit with irregular outline; Dms. 80x70 cm, D. 10 cm. Filling: dark brown soil with charcoals, a few small fragments of burnt bones and 1 potsherd.

Contents: 1. 1 small, uncharacteristic fragment of pottery (not drawn).

Chronology: Late Migration Period?

Grave 77: cremation pit burial with remains of pyre, damaged, over a skeleton horse grave (Pl. XLIX)

Human grave. At 40 cm below surface, under a layer of mixed sand, survived bottom part of a burial pit, oval in outline, elongated along N-S; Dms. 90x60 cm, D. 15 cm. Filling: black soil with charcoals, with a few small fragments of crushed burnt bones. In the N part base part of a standing clay vessel. In S part an iron object (outside the pit). *I. Several burnt human and animal bones.*

Contents: 1. Iron bar doubly bent with one end sharply tapering, the other end wide (a fitting of an undetermined wooden object?); L. 4.1 cm, W. 1.7 cm. **2.** Fragment of a biconical clay vessel with a long, slim neck, upper part missing; the external surface well-polished and glossy, inside carelessly rubbed out traces of fixing clay coils; the external surface yellow-brown in colour; average amount of admixture of crushed stone of various grains; BL. 15.5 cm, B. 8.2 cm.

Horse grave. Back and hind-part of a horse immediately under the bottom of the human grave (outline of the horse grave pit blurred); skeleton oriented along N-S with head to S; horse lying belly down, forelegs strongly pulled up, hind-legs slightly bent, rump higher than head, head extended forwards; snaffle bit in muzzle. *I. Male, ca 5-5.5 years old, WH. 132.5 cm.*

Contents: 3. Iron snaffle bit, Type Ørsnes 1C1, bipartite with iron rings, links of the bit broken off at the seam; WB. 14-15 cm, Dm. of the rings 5.3 cm.

Chronology: Late Migration Period.

Grave 78: double cremation pit burial with remains of pyre, under a stone pavement, disturbed, over a skeleton horse grave (Pl. L)

Human grave. At 57 cm below surface, disturbed by ploughing, pit oval in outline, elongated along NW-SE, trough-shaped in cross-section; Dms. 100x55 cm, D. ca 25 cm. Filling: black soil with charcoals and burnt human bones. On the surface of the pit concentration of 4 stones (remains of the pavement covering the grave). From SE the pit is adjoined by another, smaller outline with a similar filling and content; D. ca 20 cm. *I. Larger pit: adult; smaller pit: child; additionally single burnt animal bones.*

Contents: none.

Horse grave. Horse skeleton well-preserved, the back of the horse buried immediately below the larger pit of the human grave, the skull below the smaller pit (outline of the burial pit blurred, in the

deeper part impossible to determine in yellow sand); skeleton oriented along NW-SE with head to SE; horse lying, rump on the right side, hind-legs one under another, turned to the left and slightly bent, fore-legs bent and located under the muzzle, head slightly turned to the right; snaffle bit in muzzle with rein and cheekpieces mounts (?), on the skull headgear strap fittings in an almost unbroken arrangement: cheekpieces, browband composed of 3 straps, noseband composed of 2 straps and middle strap running along the axis of the head between the eye-sockets from the browband to the level below the noseband, at its end a strap end. *I. Male, ca 4.5-5.5 years old, WH. 133.3 cm.*

Contents: 1. Iron snaffle bit, Type Ørsnes 1C1, bipartite with small iron rings rectangular in cross-section, on one of them 2 bronze rein and cheekpiece ferrules, on the other 1 broken off, ferrules made of rectangular plates, bent double, embracing the ring and joined to the straps with pairs of rivets. Ornament: double grooves along the edges of ferrules; WB. 13.8 cm, Dm. of the rings 4.2 cm and 4.5 cm, L. of the completely preserved ferrules 5.6 cm and 3.8 cm. **2.** 20 bronze headgear strap mounts of thin sheet, rectangular, at the ends and in central parts short rivets with small hemispherical heads (usually 3 items). Ornament: double grooves along longer edges; L. 4.0-13.8 cm, W. 1.1 cm, L. of the rivets 0.5 cm. **3.** Bronze strap end with 2 rivets, rectangular at one end, rounded at the other. Ornament: 2 embossed hemispherical bosses; L. 4.0 cm, W. 1.3 cm, Dm. of the bosses 0.3 cm. **4.** 3 bronze rivets joining crossed straps, with hemispherical heads, shaft ends hammered down or bent, in one case a small washer preserved; probably originally there were more of them; L. of the rivets 1.1-1.3 cm, Dm. of the bosses 1.5-1.7 cm, H. 0.9 cm.

Chronology: Phase 1-2.

Feature 79: topsoil depression without artefacts (Pl. XLVIII)

At 62 cm below surface, outline close to circular, unclear in profile; Dm. ca 100 cm. Filling: dark grey soil.

Contents: none.

Chronology: unknown.

Grave 80: cremation pit burial with remains of pyre, damaged, over a skeleton horse grave (Pl. XLVIII)

Human grave. Disturbed by ploughing, preserved in bottom part, oval in outline, elongated along N-S; Dms. 180x60 cm, D. 12 cm. Filling: black soil mixed with sand, with charcoals, burnt bones and a ring. *I. Individual aged ca 2 years; additionally single burnt animal bones.*

Contents: 1. Bronze ring of undecorated wire, circular in cross-section, with tapering, unconnected ends; Dm. 2.8 cm.

Horse grave. Fragmentarily preserved horse skeleton ca 15 cm below the bottom of the cremation burial pit (limits of the burial pit unrecorded, plan drawn at 78 cm below surface); skeleton oriented along N-S with head to S; horse lying belly down, probably leaning to the left side, with legs tucked under; snaffle bit in muzzle. *I. Individual aged ca 2 years.*

Contents: 2. Iron snaffle bit, Type (?), with iron rings, one of the links shorter, made of a bar bent in half; preserved fragment of 1 ring and 2 links; Dm. of the ring 4.6 cm.

Chronology: Late Migration Period.

Feature 81: cremation burial or settlement pit from the Early Iron Age (Pl. LI)

At 35 cm below surface, pit in outline close to oval, elongated along NE-SW; Dms. 75x55 cm, D. 6 cm. Filling: compact black soil with charcoals, burnt human and animal bones, burnt broken stones and several hundred potsherds.

Contents: 1. Fragment of the clay mug with a handle, Type Okulicz VIII/Hoffmann VII; secondarily burnt; W. of the handle 2.9 cm. **2.** Fragment of the clay mug with a handle, Type Okulicz VIII/Hoffmann VII; secondarily burnt; R. 9.4 cm, W. of the handle 2.1 cm. **3.** Several hundred fragments of 8-10 secondarily burnt clay vessels of the West Balt Barrow culture (not drawn).

Chronology: Early Iron Age.

Grave 82: cremation pit burial with remains of pyre, damaged, over a skeleton horse grave (Pl. LII)

Human grave. At 43 cm below surface, burial pit oval-shaped with irregular borders (due to ploughing), elongated along N-S, profile trough-shaped; Dms. 140x70 cm, D. 38 cm. Filling: compact black soil with charcoals and strongly fragmented burned human bones, in the upper part mixed with sand. In the centre of the pit a slightly leaning and cracked flask-shaped clay vessel, next to it crumbled drinking horn fittings, bent plate, hook ring and 2 iron fittings. *I. Child several years old and probably also adult (1 fragment of a massive long bone).*

Contents: 1. Bronze plate, perhaps a fragment of the fitting of the edge of a drinking horn, bent at one side; L. 3.2 cm. **2.** Hook ring of bronze, thin twisted wire with hook fastening; Dm. 4.5 cm, Th. 1.2 cm. **3.** 2 iron fittings of rectangular plates of unknown function, bent into a C-shape; L. 1.8 cm, W. 1.2 cm, W. of the plates 0.8 cm. **4.** Fragments of a silver foil fittings of a drinking horn. Embossed ornament: on better

preserved plates alternating bands with motifs of railing rows, horizontal lines and triangles and rhombuses delineated by triple lines. **5.** Upper part of a flask-shaped clay vessel, biconical belly bend, very slim neck, straight rim with the edge slanting outwards; surface well-polished, glossy; brown in colour; H. of the neck 11 cm, R. 5.8 cm, BL. 8.8 cm.

Horse grave. Horse skeleton immediately under the bottom of the cremation burial (limits of the burial pit impossible to distinguish in yellow sand, plan drawn at 176 cm below surface); skeleton oriented along N-S with head to S; horse lying belly down with hind-legs tucked under and fore-legs under the muzzle, neck extended upwards, head muzzle down; snaffle bit in muzzle, on the skull fragments of crumbled headgear strap fittings, a strap end and the strap mount. *I. Male, ca 4-5 years old, WH. 136.3 cm.*

Contents: **6.** Iron snaffle bit, Type Ørsnes 1C1, bipartite with iron rings rectangular in cross-section; corroded, preserved rings and ends of the links; Dm. of the rings 4.8 cm and 5.0 cm. **7.** Bronze strap end, lancet-shaped with a faceted tongue and transverse lines in the waist, with 1 rivet; L. 4.4 cm, W. 0.8 cm. **8.** Bronze strap mount of tapering band, on the wider side broken off, rounded at the end, with single rivet holes at either end. Ornament: lengthwise grooves; preserved L. 3.2 cm. **9.** Several ten small fragments of bronze headgear strap mounts. Embossed ornament: alternating bands with motifs of railing rows, horizontal lines and triangles and rhombuses delineated by triple lines; in some of the plates double holes with bronze wires for fastening to the strap, band-shaped in cross-section, bent inside at the end.

Chronology: Phase 3.

Grave 83: cremation pit burial with remains of pyre, over a skeleton horse grave (Pl. LIII-LV, CVII:3)

Human grave. At 11 cm below surface, a pit irregular in outline, trough-shaped profile; Dms. 75x65 cm, D. ca 30 cm. Filling: black soil. On the surface of the pit medium-sized stone with traces of polishing (remains of a pavement?); near the bottom layer with great amount of charcoals together with burnt human bones and grave goods: vessel lying on its side, next to it remains of a drinking horn with crumbled fittings of silver foil, a comb, a brooch, a buckle and 2 belt mounts; in the whole filling: several small lumps of raw amber. *I. Adult, probably a woman. II. Charcoals from the pit: spruce, birch.*

Contents: **1.** Bronze plate brooch, close to Type Wólka Prusinowska, with a convex bow; upper (head) plate oval-shaped, lower (foot) plate – heart-shaped; at the end of the foot a tongue-shaped projection. Crossbow

construction: 7-coil spring with lower chord, fixed to the axis placed on two projections at the underside of the head plate. Ornament: along the edge of the plates and in the centre of the bow, at its axis; single lines made of stamped triangles with a concentric, convex circle; L. 5.3 cm, H. 1.5 cm, W. of the upper plate 2.2 cm, W. of the lower plate 2.1 cm. **2.** Bronze buckle, close to Type Butėnas I.1, with an irregular oval frame, made of thin wire rectangular in cross-section, spike made of wire, at the end bent over the frame; H. 1.7 cm, W. 1.3 cm. **3.** 2 bronze belt fittings, rectangular with rivet holes at the ends. Ornament: double grooves along longer edges; L. 2.1 cm, W. 0.7 cm. **4.** Several ten small fragments of a drinking horn fitting made of silver foil (complete reconstruction impossible). Embossed ornament, visible on the larger fragments: bands of railing motif and double pearl-like lines separated by horizontal lines. **5.** Comb made of fallen deer antler, three-layer with decorative outer plates in the shape of low semi-circles, originally joined by 7 bronze rivets with high hemispherical heads (5 rivets preserved); fragmentarily preserved (among the fragments there were also elements of the case). Ornament: the better preserved outer plate is decorated with fourfold lines engraved along the semi-circular handle and the base of the teeth, on the preserved end a zone decorated with vertical rows of concentric circles, separated by 3 vertical lines; preserved L. 11.2 cm, H. of the plate 2.1 cm. **6.** Flask-shaped clay vessel with a biconical belly and belly bend at ca 1/3 of the height, slim neck, slightly flaring towards the rim with a straight edge; surface polished; light brown in colour; admixture: fine- and medium-grained crushed stone. Ornament in 3 zones: under the rim, at the belly bend and near the base – groups of carelessly engraved horizontal lines, in two upper bands additionally oblique punctures made with a sharp tool; H. 17.2 cm, R. 5.3 cm, BL. 11.6 cm, B. 5.7 cm. **7.** More than a dozen small lumps of raw amber (not drawn).

Horse grave. Poorly preserved horse skeleton below the bottom of the human cremation grave, back immediately under the bottom of the cremation burial; pit with a poorly visible outline, probably elongated along N-S; skeleton oriented along N-S with head to S; animal lying belly down, hind-legs tucked under, fore-part leaning to the right side, right fore-leg tucked under the trunk and left fore-leg stretched, head directed to the left; snaffle bit with bronze rings in muzzle, on the skull headgear strap fittings in an unbroken arrangement: both cheekpieces, headpiece, browband and noseband as well as the central strap running between the headpiece and noseband, below

the noseband a single lancet-shaped fitting. *I. Male, ca 5 years old, WH. 127.9 cm.*

Contents: **8.** Iron snaffle bit, Type Ørsnes 1C1, bipartite with bronze rings, hexagonal in cross-section with bronze rein and cheekpiece ferrules: 2 on 1st and 1 on 2nd, ferrules made of rectangular plates bent in half, each with 3 rivets and fragments of leather preserved between the plates; links fragmentarily preserved. Ornament: grooves or pseudo-pearl-like lines along longer edges; Dm. of the rings 5.3 cm, L. of the ferrules 5.4 cm, 5.4 cm and 5.7 cm, W. of the ferrules 1.1 cm. **9.** 24 bronze strap mounts made of rectangular plates, at the ends pairs of rivets with hemispherical heads, on 11 longer plates additionally single rivets in the centre. Ornament: double grooves along longer edges; L. 4.8-8.0 cm, W. 1.1 cm. **10.** 7 bronze headgear strap connectors, type Ørsnes 9D1/9D2, embossed in metal sheet hemispherical bosses with four opposing projections, at the ends of the projections pairs of rivets. Ornament: double row of alternating stamped triangles; Dms. 4.0-4.3x4.0-4.3 cm, H. 1.0 cm, Th. 0.15 cm. **11.** Bronze buckle, Type Butėnas III.1a, with kidney-shaped frame, quadrangular in cross-section, rectangular ferrule of a bronze plate with a pair of rivets at the end. Ornament: frame decorated with a row of stamped triangles, ferrule with grooves along the edges; in the ferrule preserved remains of leather; H. 2.8 cm, W. of the frame 1.7 cm, L. of the ferrule 2.5 cm. **12.** 2 bronze strap ends, lancet-shaped, with 2 rivets at the ferrules. Ornament: 1st with a plain faceted tongue, the 2nd with a step at the waist, decorated with transverse grooves; L. 4.2 cm and 4.4 cm, W. 1.3 cm and 1.4 cm.

Chronology: Phase 3.

Grave 84: cremation pit burial with remains of pyre, over a skeleton horse grave (Pl. LVI, LVII, CVIII:1-3)

Human grave. Pit oval in outline, elongated along NW-SE, trough-shaped profile; Dms. 200x70 cm, D. ca 40 cm. Filling heterogeneous: in the upper part in the centre light grey sand, at the perimeter black soil with traces of burning, deeper (especially near the bottom) black soil with charcoals and small burnt human bones with grave goods. In the centre of the deeper layer an iron one-edged sword with the point to SE, next to it potsherds of 2 vessels and remains of a drinking horn with a fitting. To W of the hilt a concentration of belt fittings, a buckle and a brooch, some with traces of slight melting. *I. Adult; II. Charcoals: birch (*Betula sp.*), oak (*Quercus sp.*), hazel wood (*Corylus avellana*).*

Contents: **1.** Bronze disc brooch with a central hemispherical boss, at the edge 7 smaller bosses (imitation

of a shield boss?). Construction: pseudo-crossbow, fastening fixed on a rectangular plate bent at the ends at right angles and soldered on the underside of the plate, at the ends of the plate holes for the axle, on the axle the spring and imitation chord; end of the spring supported at the back part of the disc which creates resilience (broken spring acts as in a hinge construction); remains of a catchplate soldered on the underside of the disc; Dm. 2.8 cm, Dm. of the boss 1.5 cm, H. of the boss 0.8 cm. **2.** Bronze buckle, close to Type Butėnas IV.3, frame quadrangular with rounded corners, oval in cross-section, end of the spike bent on the frame, ferrule fragmentarily preserved; H. 1.5 cm, W. of the frame 1.6 cm, W. of the ferrule 1.1 cm. **3.** 6 bronze belt mounts, rectangular, with pairs of rivets near shorter ends and openwork octagonal pattern in the centres; traces of slight melting. Ornament: double row of stamped circles and triangles along the edges; L. 4.2-4.5 cm, W. 1.6-1.7 cm, Th. 0.2 cm. **4.** 2 bronze, T-shaped belt fittings, Type Nørgård Jørgensen TR1/Høilund Nielsen C5, with rectangular perforations in the centres and single rivets at the arms' ends; traces of slight melting. Ornament: rows of stamped circles along the edges; W. 1.8 cm, W. 2.2 cm, Th. 0.2 cm. **5.** 4 bronze, tongue-shaped strap ends, Type Nørgård Jørgensen ZR1/Høilund Nielsen C6b, with 1 rivet at the ferrule, halfway along a waist; one completely preserved, others in fragments, some parts melted. Ornament: 2 rows of stamped circles and triangles along the edge of the tongue, on the plate 3 stamped dots making up a triangle, on the waist transverse grooves; L. 5.9 cm, W. 1.1 cm. **6.** Fragment of a bronze spike of a buckle Type *Schilddornschnalle*, fan-shaped base with a broken off spike and part embracing the frame. Ornament: double row of stamped circles and triangles along the edges; W. 1.4 cm. **7.** Fragment of a bronze fan-shaped plate with 2 rivet holes (1 rivet preserved), probably a terminal of buckle's ferrule. Ornament: double row of stamped circles and triangles along the edges; W. 1.5 cm, L. of the rivet 0.7 cm. **8.** Iron one-edged sword with the blade gently curved, tapering towards the straight back; massive back, T-shaped in cross-section; tang distinguished on either side, triangular in cross-section; preserved L. 67.4 cm, reconstructed L. of the tang ca 14 cm, W. of the blade 4.7 cm, W. of the back 1.7 cm. **9.** Fragments of a crushed drinking horn with a crumbled fitting of silver foil originally superimposed on the rim and end of the horn. Embossed ornament: near the rim pearl-like rows, lower down a zone marked out by a curved pearl-like band, within it a rosette motif; at the end of the horn vertical and horizontal pearl-like lines. **10.** Flask-shaped clay vessel with biconical belly and

slim neck; upper part missing, vessel cracked and deformed due to secondary burning; surface carelessly polished; light brown in colour; admixture: coarse- and medium-grained crushed stone; BL. 10.5 cm, B. 5.0 cm. **11.** Fragments of a clay vessel, probably flask-shaped; surface polished and glossy; dark brown in colour; form impossible to reconstruct (not drawn).

Horse grave. Horse skeleton immediately under the layer of burning of the cremation grave (limits of the pit unclear); skeleton oriented along NW-SE with head to SE; horse lying belly down, fore-part of the trunk visibly leaning to the right, bent legs, neck arched, head turned to the left; snaffle bit in muzzle, near the skull scattered headgear fittings. *1. Female, 1.5-2 years old.*

Contents: 12. Iron snaffle bit, Type Ørsnes 1C1, bipartite with iron rings, on each ring 1 bronze rein or cheekpieces ferrule, ferrules made of rectangular bronze plates bent in half, originally at the ends pairs of nails bent at the ends; strongly corroded. Ornament: ferrules decorated with double grooves along longer edges; Dm. of the rings 6.3 cm, W. of the ferrules 1.3 cm. **13.** 15 bronze headgear strap mounts made of rectangular plates, pairs of rivets at the ends; some plates slightly bent, near the rivets preserved fragments of leather. Ornament: double grooves along longer edges; L. 5.8-8.5 cm, W. 1.3 cm.

Chronology: Phase 3.

Grave 85: double cenotaph? (Pl. LVIII-LXI, CVI:3, CVIII:4)

At 4 cm below surface, under a layer of mixed soil, blurred outline of an oval pit, elongated along N-S, flat bottom; Dms. 125x60 cm, D. 12 cm. Filling: grey-yellow sand with darker patches near the metal grave goods, without traces of cremation. Grave goods in 2 concentrations: 1st with weapons and other indicators of male gender, the 2nd with female indicators. Bones can not have been decomposed (too many organic remains were preserved).

1st concentration: along the E edge of the pit an one-edged sword in a scabbard, oriented along N-S, with point to S; next to the upper part of the scabbard, on the side of the blade, fragment of oak wood covered with leather, with a suspension plate (with its straight edge towards the point), a bar and a buckle. Along the scabbard, at the length of 20 cm and farther down, on the drinking horn placed ca half-way the sword, to W from the blade: 30 belt fittings with preserved large fragments of narrow straps); in the same area also 2 buckles, 2 strap ends and fragments of oak wood and lime wood. Under the sword 2 shafted weapon's heads with tips to N. To S from

the drinking horn potsherds of 2 crushed vessels. Ca 20 cm to W of the sword's hilt: a brooch and a lump of amber. Along the W edge of the pit, ca 35 cm from the sword, a shafted weapon's head with the tip to S.

Contents: 1. Bronze ladder brooch, Variant I, with 4 rungs, upper rung trapeze-shaped, the remaining ones rectangular. Construction: pseudo-crossbow, spring of 2 segments 8 coils each, separated by a projection on the head of the bow, the iron axle goes through the projection, the right part of the spring is resilient: one of its ends becomes a pin, the other, goes outside – originally it rested at the underside of the imitation chord (this part has not been preserved); imitation chord of a bronze bar, trapeze-shaped in cross-section, at the ends bent on the axle, its left side is broken and repaired while modern conservation process with tin soldering. Bow and foot trapeze-shaped in cross-section; massive catchplate; at the ends of the spring 2 huge bronze bosses decorated with pairs of large rings of thick, incised bronze wire. Ornament: on the 1st rung a double line engraved along the upper edge, along lower edge a single line of punched dots, on the 2nd rung pairs of lines engraved along the longer edges, on the remaining rungs horizontal grooves on the whole surface; on bow single lines of dots punched along the edges and in the centre, near the bends; L. 6.4 cm, H. 2.7 cm, W. with the bosses 6.1 cm, W. of the rungs 3.1 cm (the 1st one), 3.5 cm (the 2nd one), 2.8 cm (the 3rd one), reconstructed W. of the 4th one 3.8 cm. **2-4.** 3 identical bronze buckles, Type Buténas IV.4, with trapezoid frames slightly concave in the place where the spike rested, ferrules of narrow bands, all broken off. Ornament: at the edges rows of stamped triangles filled with dots; H. 1.9 cm, W. of the frames 1.7 cm, W. of the ferrules 0.9 cm. **5.** Bronze strap end, lancet-shaped with faceted end and 2 rivets on the ferrule. Ornament: stamped triangles filled with dots along the edges of the ferrule; L. 6.0 cm, W. 1.0 cm. **6.** Bronze strap end, lancet-shaped with faceted end and 2 rivets on the ferrule. Ornament: imprints of goose feet-triangles with apexes outwards, along the edges of the ferrule; L. 4.6 cm, reconstructed W. 1.4 cm. **7.** 2 fragments of a bronze plate with tapering ends, curved, broken off at the end, at each of the fragments 1 rivet with hat-shaped and hemispherical heads. Ornament: row of stamped triangles filled with dots; preserved L. 4.9 cm and 2.6 cm. **8.** 17 bronze strap mounts, rectangular with single rivets at the ends, some broken to pieces, on the underside preserved fragments of leather from the straps to which fittings were attached. Ornament: row of stamped triangles filled with dots; L. 2.6-2.8 cm, W. 0.7 cm, W. of the straps ca 1 cm. **9.** Iron one-edged sword in a scabbard decorated with

embossed foil, scabbard impossible to separate without being destroyed; blade of an even width from the base to the 2/3 of its length, in the point part tapers towards the massive back, T-shaped in cross-section; tang symmetrical, distinguished from the blade on both sides, at its end bronze cross-shaped plate with rounded arms, joined by hammering down the end of the tang drawn through a hole in its centre. Scabbard with a suspension system: made of oak wood, coated with leather and strengthened with a bronze openwork suspension plate and straps with buckles, fragmentarily preserved; in the point part up to the height of 27 cm: an iron U-shaped fitting (chape), even-armed, wider from the side of the back, fixing the lime or oak wood chips (determination of the species of wood from which the scabbard was made); no traces of leather. In the bottom part, on either side of the scabbard up to the height of 14 cm, decorative bronze foils located beneath the chape; the topmost foil situated on the chape, near its end, embracing the scabbard along its whole width. Embossed ornament: in the centre of the lower foils a double pearl-like line, on the sides horizontal railing ornaments, at the top a horizontal band of 4 pearl-like lines; on the topmost foil 2 embossed bands of vertical railing ornament between double pearl-like lines. Construction of the scabbard above the chape difficult to recognise: on corroded blade and back fragments of chips and probably leather; L. of the sword in scabbard 69 cm, L. of the tang 12.7 cm, W. of the blade 4.5 cm, W. of the back 1.6 cm, W. of the decorative leaf in the upper part 2.8 cm. **10.** Bronze suspension plate of the scabbard, curved, openwork, along the edge 5 massive rivets with hemispherical heads, on the underside remains of thin bronze plate, probably of identical shape, without openwork decoration; adjoining fragments of wood and leather on the rivets. Ornament: openwork cross-shaped and T-shaped patterns; L. 10.6 cm, W. 3.2 cm, Th. 0.15 cm, Th. of the washer 0.05 cm. **11.** Iron shafted weapon's head, Type Kazakyavichyus V, blade lenticular in cross-section; socket circular in cross-section; very strongly corroded; G. 37.8 cm, A. 4.3 cm, T. 13.5 cm, Q. 18.8 cm, Dm. of the socket 1.9 cm. **12.** Iron shafted weapon's head, Type Kazakyavichyus IVB, blade lenticular in cross-section; socket circular in cross-section, socket hammered down with an overlap; very strongly corroded; G. 25.2 cm, A. 4.2 cm, T. 7.9 cm, Q. 11.5 cm, Dm. of the socket 2.2 cm. **13.** Iron shafted weapon's head, Type Kazakyavichyus V; very strongly corroded, reconstructed on the basis of a drawing made before conservation; G. ca 39 cm, A. ca 3.5 cm, T. ca 13 cm, Q. ca 20 cm. **14.** Remains of a drinking horn with

a fitting of silver foil, in 2 parts of the horn: at the end of the horn and on the rim, slightly outturned at the edge; crushed, preserved in large fragments, lower fitting preserved not so well. Embossed ornament: in upper part – 4 horizontal decorative zones separated by single rows of wedge-shaped stamps, at the top double pearl-like row, below 2 decorative zones of plaited pattern of bands filled with small pearl-like ornaments, between them a zone with s-shaped bands filled with pearl-like ornament; in lower part – 5 rows of double pearl-like ornament and curved pairs of bands with pearl-like ornament, extending from them towards the end, following the curve of the horn; L. of the horn ca 19 cm, Dm. of the opening ca 7 cm, W. of the upper fitting ca 8 cm. **15.** Flask-shaped clay vessel with biconical belly bend at ca 1/3 of the height, slim neck with a straight rim; surface polished; yellow-brown in colour; admixture: a large amount of fine-grained crushed stone; reconstructed from fragments; H. 13.2 cm, R. 5.7 cm, BL. 9.7 cm, B. 5.3 cm. **16.** Fragment of the base part of a flask-shaped clay vessel, form and texture as above; BL. 9.5 cm, B. 5.7 cm. **17.** Large lump of raw amber, approximately hexagonal, broken off on one side; Dms. 7.5x4.2x4.5 cm.

2nd concentration: in N part of the pit, ca 10 cm above the hilt of the sword, compact circular concentration of finds in a mass of rotten wood, remains of fabric and leather; Dm. 18 cm. Concentration surrounded with a leather belt with mounts, a buckle and a strap end; in the centre a bracelet or armband and a brooch, probably wrapped in a piece of cloth (remains of fabric preserved); next to them a comb in a case, a knife, rings and a bead.

Contents: **18.** Bronze ladder brooch, Variant III, massive, with 4 rungs, upper rung trapeze-shaped, the remaining ones rectangular. Construction: pseudo-crossbow, bronze spring on an iron axle, made up of 2 segments 7-coil each, separated by a projection for fixing the axle, the right part of the spring is resilient: the end of the spring rests on the underside of the decorative pseudo-chord; imitation chord attached to the axle by means of semi-circular ends of the arms; in the central part of the imitation chord, at the top: guides fixing the bow. Bow and rungs made of one piece of bronze; wide bow, trapeze-shaped in cross-section; solid catchplate; at the ends of the spring 2 huge bronze bosses decorated with pairs of large rings of thick, incised bronze wire. Ornament: imitation chord profiled with a pair of small, projections hooked inwards, on the top transverse notches at either side of the place where it joins the bow; on all rungs horizontal engraved lines, the concave zones between the grooves covered with pearl-like ornament

made with a texturing tool; L. 4.0 cm, H. 1.6 cm, W. with the bosses 5.5 cm, W. of the rungs 3.4 cm (the 1st and 2nd ones), 3.5 cm (the 3rd one), reconstructed W. of the 4th one 3.8 cm. **19.** Bronze belt buckle, Type Buténas III.1, with a kidney-shaped frame, quadrangular in cross-section; spike profiled, at the end bent over the frame, in the place where the spike rested a depression in the frame; ferrule: 2 bronze plates, rectangular, bent into half around the frame, with single rivets at the ends, joining the buckle with the preserved leather of the belt; H. 3.7 cm, W. of the frame 2.7 cm, L. of the ferrule 2.2 cm, W. of the ferrules 0.7 cm. **20.** Bronze strap end, lancet-shaped, faceted, lower part distinctly separated from the ferrule, at the end of the ferrule 2 rivets; traces of repairing at the back of the waist. Ornament: pair of grooves along the side edges of the ferrule, in the centre adjoined by a line made of stamped goose feet ornament also preserved along the edge of the tongue; L. 5.6 cm, W. 2.0 cm. **21.** 22 bronze belt mounts, rectangular with single rivets at the ends; some of them fragmentarily preserved, at some remains of leather. Ornament: pairs of grooves along the longer edges, some slightly wavy; L. 2.2-2.3 cm, W. 0.7-0.9 cm, L. of the rivets 0.6 cm. **22.** Bronze bracelet or armband of wire circular in cross-section, of uneven diameter, closer to the fastening the ring hammered down to make flat, elongated, profiled plates; at their ends the fastening: a hook and eye. Ornament: line of dots along the edge of one of the plates and adjoining it from the centre line of stamped triangles each with the 3 dots in the centre; the other plate is decorated along the edge with a stamped line of goose feet pattern; Dms. 9.3x9 cm, maximum W. of the plates 1.1 cm, Th. ca 0.3 cm. **23.** Bronze ring of spirally coiled, plain wire circular in cross-section; Dm. 2.3-2.4 cm. **24.** Bronze ring of spirally coiled, transversally incised wire circular in cross-section; Dm. 2.1 cm. **25.** Iron knife with preserved fragments of wooden handle (oak wood) and leather sheath; preserved L. 8.8 cm, L. of the blade 5.0 cm, W. 1.5 cm. **26.** Comb made of deer antler, three-layer, with a deer antler case. Comb with arched outer plates, joined with 7 bronze rivets. Case made of 2 pairs of elongated plates: the upper ones rectangular, joined by 5 bronze rivets; the lower ones arched, joined by 4 bronze rivets, at one of the ends vertical, short and narrow antler plate between the rivets and both pairs of horizontal plates, making a gap for the comb between the plates of the case. Ornament: on outer plates of the comb triple grooves along the edge, at the end vertical lines; on case plates triple grooves along the edges, near the additional plate with vertical grooves; L of the comb 10.1 cm, H. of the comb

3.7 cm, L. of the rivets 0.7-1.2 cm, L. of the case 10.4 cm, H. 3.0 cm. **27.** Amber bead, barrel-shaped, pink in colour; H. 0.8 cm, Dm. 1.0 cm.

Chronology: Phase 3.

Grave 86: cremation pit burial with remains of pyre, destroyed (Pl. LI)

At 23 cm below surface, preserved in bottom part, pit approximately circular in outline; Dm. ca 40 cm, D. ca 10 cm. Filling: black soil with charcoals and burnt human bones.

Contents: none.

Chronology: Late Migration Period.

Grave 87: cremation pit burial with remains of pyre, damaged, over a damaged skeleton horse grave (Pl. LI)

Human grave. At 30 cm below surface, preserved traces of a destroyed burial, pit approximately oval-shaped, elongated along NW-SE; Dms. 120x70 cm, D. ca 20 cm. Filling: grey-yellow sand with concentrations of burning, with charcoals and single burnt human bones.

Contents: none.

Horse grave. Poorly preserved horse skeleton several cm below the bottom of the human grave (outline of the burial pit impossible to determine); skeleton orientated along NW-SE with head to SE; horse lying belly down with hind-leg splayed and tucked under, fore-legs bent under the chest, neck strongly arched to the right and back, muzzle down (the horse was forced into the burial pit); snaffle bit in muzzle, near the skull 2 rings, in the filling 2 potsherds. *I. Individual aged ca 18 months.*

Contents: **1.** Iron snaffle bit, Type Ørsnes 1C2, tripartite with iron rings and asymmetrical links, central link shorter with looped endings; WB. ca 16 cm, L. of links 7.9 cm, 7.1 cm and 7.6 cm, Dm. of the rings 4.4 cm and 4.6 cm. **2-3.** 2 iron rings, probably of a bridle; Dm. 3.4 cm and 2.7 cm. **4.** 2 small uncharacteristic fragments of pottery (not drawn).

Chronology: Late Migration Period.

Feature 88: pit from a settlement from the Early Iron Age? (Pl. LXII)

At 40 cm below surface, pit oval, elongated along W-E; Dms. 180x120 cm, D. 25 cm. Filling: grey-yellow sand with several fragments of pottery.

Contents: **1.** Several fragments of pottery; surface roughened on the outside; light brown in colour (not drawn).

Chronology: Early Iron Age?

Grave 89: cremation pit burial with remains of pyre, disturbed, over a skeleton horse grave (Pl. LXII, LXIII)

Human grave. At 30 cm below surface, large circular pit, trough-shaped in cross-section; Dm. ca 150 cm, D. 25 cm. Filling: black soil with charcoals, some burnt human bones and 3 potsherds, in the upper part patches of yellow sand and traces of ploughing. *I. Adult and child.*

Contents: 1. 3 small, uncharacteristic fragments of pottery (not drawn).

Horse grave. Poorly preserved horse skeleton ca 20 cm below the bottom of the pit of the human grave, in pit close to oval in outline, elongated along NW-SE and shifted to E with respect to the cremation burial; Dms. 150x70 cm, D. 55 cm below the bottom of the human grave. Filling: grey-yellow sand in the lower part. Skeleton oriented along NW-SE with head to SE; horse lying belly down, hind-legs splayed and tucked under, fore-part of the trunk leaning to the left, head on the right side, unnaturally turned back, with muzzle to the left, cervical vertebrae broken out; snaffle bit in muzzle, in the area of the back saddle fittings in disturbed arrangement. *I. Individual aged 2-3 years.*

Contents: 2. Iron snaffle bit, Type Ørsnes 1C1, bipartite with iron rings; WB. ca 14 cm, L. of the links 8.6 cm, Dm. of the rings 4.9 cm and 4.8 cm. **3.** 3 double iron plates, rectangular, joined by massive rivets with wide, irregular-shaped heads, ends hammered down; between the plates remains of wood; L. 6.2 cm, 6.5 cm and 7.3 cm, W. 1.5 cm, distance between plates ca 1 cm. **4.** 3 iron rivet washers, rectangular; fragmentarily preserved; preserved Dms. 3.8x1.5 cm, 2.2x1.5 cm and 3.0x1.3 cm. **5.** 8 iron rivets with wide, irregular-shaped heads and traces of wood on shafts; L. 1.5-2 cm.

Chronology: Late Migration Period.

Grave 90: cremation pit burial, destroyed (Pl. LXII)

At 30 cm below surface, pit oval-shaped, elongated along W-E; Dms. 55x65 cm, D. ca 10 cm. Filling: grey-yellow sand with more than a dozen burnt human bones and small fragments of pottery. *I. Young individual.*

Contents: 1. Small fragments of clay vessels; typical of the Early Iron Age, in secondary context? (not drawn).

Chronology: Late Migration Period?

Grave (?) 91: traces of filling of a pit with burning, shifted by ploughing (Pl. LXII)

At 30 cm below surface, remains of a layer from a destroyed grave (?); oval-shaped, elongated along NW-SE; Dms. 90x60 cm, D. 15 cm. Filling:

black soil with charcoals, shifted by ploughing.

Contents: none.

Chronology: Late Migration Period?

Grave 92: cremation pit burial with remains of pyre, destroyed (Pl. LXII)

At 30 cm below surface, bottom part of the burial pit, destroyed by ploughing, outline irregular; Dms. 60x70 cm, D. 10 cm. Filling: black soil mixed with yellow sand with charcoals and more than a dozen small fragments of pottery.

Contents: 1. More than a dozen small fragments of pottery; surfaces polished and roughened; earlier than the feature, in secondary context? (not drawn).

Chronology: Early Iron Age?

Grave 93: cremation pit burial with remains of pyre, disturbed (Pl. LXIV)

At 30 cm below surface, pit destroyed by ploughing, close to rectangular in outline, elongated along N-S; Dms. 180x160 cm, D. 20 cm. Filling: black soil, in E part concentration of traces of burning with charcoals and burnt bones, Th. ca 25 cm, with a fragment of a spindle whorl and small fragments of vessels. *I. Burnt human and animal bones.*

Contents: 1. Fragment of a biconical clay spindle whorl with flat surfaces near the holes; surface well-polished; dark brown in colour; H. 2.6 cm, Dm. 3.2 cm. **2.** Several uncharacteristic fragments of pottery and 1 rim fragment of a thin-walled vessel; surface glossy; black in colour (not drawn).

Chronology: Late Migration Period.

Grave 94: cremation burial with remains of pyre, destroyed (Pl. LXV)

At 30 cm below surface, pit oval-shaped, elongated along W-E; Dms. 200x150 cm, D. ca 20 cm. Filling: black soil mixed with sand with charcoals, single burnt bones and 3 potsherds. *I. Burnt human and animal bones.*

Contents: 1. 3 small, uncharacteristic fragments of pottery (not drawn).

Chronology: Late Migration Period?

Grave 95: cremation pit burial with remains of pyre, destroyed (Pl. LXIV)

At 30 cm below surface, pit circular in shape; Dms. ca 80 cm, D. 27 cm. Filling: black soil with great amount of charcoals, very small burnt human bones and 1 potsherd. *I. Young individual.*

Contents: 1. 1 small, uncharacteristic fragments of pottery (not drawn).

Chronology: Late Migration Period?

Feature 96: modern pit (lack of detailed documentation)

Grave 97: cremation pit burial with remains of pyre, destroyed (Pl. LXIV)

At 30 cm below surface, pit irregular in shape; Dms. 75x80 cm, D. 15 cm. Filling: black soil mixed with sand, with very small burnt human bones and 1 potsherd.

Contents: 1. 1 uncharacteristic fragment of pottery (not drawn).

Chronology: Late Migration Period?

Grave 98: cremation pit burial with remains of pyre, over a damaged skeleton horse grave (Pl. LXV)

Human grave. Destroyed by ploughing, outline impossible to determine: on the surface an irregular darker patch of the layer. Filling: dark soil with several charcoals and burnt human bones, fragment of a horse bone and 2 potsherds. *I. Individual aged ca 35-45 years.*

Contents: 1. 2 fragments of pottery: an uncharacteristic fragment and rim fragment with a straight edge; light brown in colour; admixture of medium-grained crushed stone (not drawn).

Horse grave. Horse skeleton disturbed in upper part, under the destruction layer of the cremation burial (outline of the burial pit impossible to determine); skeleton oriented along NW-SE with head to SE; horse lying belly down with fore-legs and hind-legs tucked under, head turned to the right; snaffle bit in muzzle. *I. Male, ca 2 years old.*

Contents: 2. Iron snaffle bit, Type Ørsnes 1C2, tripartite with iron rings, central link short, 8-shaped; WB. 14.0 cm, L. of links 7.8 cm, 4.0 cm and 7.5 cm, Dm. of the rings 4.8 cm and 4.6 cm.

Chronology: Late Migration Period.

Grave 99: cremation pit burial with remains of pyre, damaged, over a skeleton horse grave (Pl. LXVI)

Human grave. At 30 cm below surface, burial pit almost completely destroyed by ploughing and the road, preserved in bottom part; Dms. 100x90 cm, D. 20 cm. Filling: black soil with charcoals, burnt bones and 2 fragments of a vessel. *I. Adult; additionally animal bones.*

Contents: 1. 2 fragments of the base of a clay vessel with marked out foot; surface carelessly polished; light brown in colour; admixture: large amount of coarse-grained crushed stone (not drawn).

Horse grave. Pit recorded at the level where cremation burial was marked out, S part destroyed by the rut of the road, pit oval-rectangular in outline,

elongated along N-S, slightly deeper in S part; Dms. 180x60 cm, D. 80 cm. Filling: grey-yellow sand. Ca 40 cm below the bottom of the pit of the human grave: horse skeleton oriented along N-S with head to S; horse lying belly down with hind-legs and fore-legs tucked under, neck stretched forwards, head slightly turned to the right; snaffle bit in muzzle, on the left side of the mandible a fastener for the reins. *I. Individual aged ca 2.5-4.5 years; additionally fragments of a limb and deciduous teeth of a much younger individual – admixture from another burial.*

Contents: 2. Iron snaffle bit, Type Ørsnes 1C2, tripartite with iron rings, links of 2 bars bent in half, carelessly hammered together, central link 8-shaped; WB. 14.5 cm, L. of the link 6.6 cm, 6.4 cm and 6.3 cm, Dm. of the rings 4.5 cm. **3.** Iron fastener for the reins, lyre-shaped with ends bent outwards, originally attached to holes in cheeks made of antler sticks (unpreserved); L. 3.7 cm, W. 2.7 cm.

Chronology: Late Migration Period.

Grave 100: cremation pit burial with remains of pyre, destroyed (Pl. LXVII)

At 30 cm below surface, preserved bottom part of a pit, approximately oval, elongated along N-S; Dms. 105x80 cm, D. 10 cm. Filling: black soil with charcoals, disturbed by ploughing, with 2 fragments of burnt human bones and 2 potsherds.

Contents: 1. 2 small, uncharacteristic fragments of pottery (not drawn).

Chronology: Late Migration Period?

Grave 101: cremation burial with remains of pyre, destroyed (Pl. LXVII)

At 30 cm below surface, irregular patch of a layer (remains of a grave completely destroyed by ploughing?); Dms. 50x55 cm, D. 14 cm. Filling: black soil with traces of burning.

Contents: none.

Chronology: Late Migration Period?

Grave 102: cremation pit burial with remains of pyre, disturbed, over a skeleton horse grave (Pl. LXVIII)

Human grave. At 30 below surface, situated in the central and N part of the pit prepared for the horse grave, in the central part disturbed by ploughing, approximately oval-shaped outline of a cremation burial pit, elongated along N-S, trough-shaped in cross-section; Dms. 110x70 cm, D. ca 20 cm. Filling: black soil mixed with sand, with charcoals, burnt human bones, fragment of an amber ornament, crumbled stone tool and 3 potsherds. *I. Adult; additionally probably also a child.*

Contents: **1.** Small fragment of an amber ornament (a large bead or whorl), biconical with traces of polishing. **2.** Fragment of a stone grinder or whetstone, burnt and crumbled; Dms. 8.9x5.4 cm. **3.** 3 small uncharacteristic fragments of a clay vessel; dark brown in colour (not drawn).

Horse grave. Pit with the outline spotted only in cross-section (limits not recorded in plan), borders reconstructed in upper parts of the walls; L. ca 200 cm, D. 75 cm. Filling: grey-yellow sand. Horse skeleton ca 30 cm below the bottom of the pit of the human grave; skeleton oriented along NW-SE with head to SE; horse lying belly down with legs tucked under, front part of the trunk leaning to the left, head with muzzle to the right; snaffle bit in muzzle. *I. Individual aged 9-22 months.*

Contents: **4.** Iron snaffle bit, Type Ørsnes 1C2, tripartite with iron rings, central link 8-shaped, outer links and rings rectangular in cross-section; WB. 13.5 cm, L. of the links 6.9 cm, 4.6 cm and 6.4 cm, Dm. of the rings 5.1 cm and 4.8 cm.

Chronology: Late Migration Period.

Grave 103: cremation pit burial with remains of pyre, disturbed, over a skeleton horse grave (Pl. LXIX)

Human grave. Disturbed by ploughing, pit of the cremation burial approximately circular, situated in N part of the pit prepared for the horse grave, trough-shaped in profile; Dm. 65 cm, D. 20 cm. Filling: intensively black soil with charcoals and burnt bones, in the upper part mixed with sand. At the bottom a standing vessel. *I. Human and animal bones.*

Contents: **1.** Flask-shaped clay vessel, biconical belly with belly bend at ca 1/3 of the height, slim neck with a straight edge; surface well-polished and glossy; dark brown in colour; admixture: fine-grained crushed stone; reconstructed from fragments. Ornament: under the rim and at the belly bend double rows of oblique, wedge-shaped dimples; H. 17 cm, R. 6.5 cm, BL. 10.8 cm, B. 6 cm.

Horse grave. Pit of the horse grave approximately oval, elongated along N-S (outline reconstructed in S part); Dms. ca 180x90 cm, D. 60 cm. Filling: grey-yellow sand. Horse skeleton ca 45 cm under the bottom of the cremation burial, along the E wall of the feature; skeleton oriented along N-S with head to S; horse lying belly down with fore-legs and hind-legs tucked under, neck stretched upwards, head slightly turned to the left; snaffle bit in muzzle.

Contents: **2.** Iron snaffle bit, Type Ørsnes 1C1, bipartite with iron rings, links and rings of bars quadrangular in cross-section; WB. ca 15.5 cm, L. of the links 9.4 cm and 8.7 cm, Dm of the rings 5.0 cm.

Chronology: Late Migration Period.

Grave 104: cremation pit burial with remains of pyre, destroyed, over a disturbed skeleton horse grave (Pl. LXX)

Human grave. At 30 cm below surface, destroyed by a modern pit and roots of a tree, preserved in bottom part, remains of a pit irregular in outline; Dms. 70x75 cm, ca D. 10 cm. Filling: mixed black soil with charcoals, burnt human bones, several potsherds and a lump of an amber. *I. Child (fragment of calvaria).*

Contents: **1.** Several small, uncharacteristic fragments of pottery (not drawn). **2.** A piece of raw amber (not drawn).

Horse grave. Burial pit invisible at the level where cremation burial was marked out, outline recorded only in cross-section (lack of the feature's plan); L. ca 150 cm, D. ca 60 cm, Filling: grey-yellow sand. Horse skeleton ca 60 cm below the level where the human grave was distinguished, disturbed by the tree roots; skeleton oriented along N-S with head to S; horse lying down with legs tucked under, head slightly turned to the left; snaffle bit in muzzle, next to it a stone.

Contents: **3.** Iron snaffle bit, Type Ørsnes 1C1, bipartite with iron rings; one of the links preserved fragmentarily; L. of the preserved link 7.3 cm, Dm. of the rings 4.0 cm.

Chronology: Late Migration Period.

Grave 105: cremation pit burial with remains of pyre, probably contained 2 burials, disturbed (Pl. LXVII, CVII:4-7)

At 30 cm below the surface, pit circular in outline, vertical walls, flat bottom, a large stone in the centre; Dm. ca 120 cm, D. ca 25 cm. Filling heterogeneous: in the S part and at the whole bottom black soil with numerous charcoals and scattered burnt bones, in the N part an insert of brown soil (resulting from the fact that filling was disturbed by ploughing?). In the black layer a sword with point to SE, near the point fragments of a U-shaped object, a buckle and belt fittings. To NW from the sword concentration of burnt bones, among them 2 brooches. Furthermore: in the mixed soil a 4-armed belt fitting and a plate. *I. In concentration N: adult, probably a woman. Bones from the other parts of the pit strongly fragmented: impossible to determine.*

Contents: **1.** Bronze brooch, pseudo-ladder, a bow cut out in bronze sheet with imitation of 4 rectangular rungs. Crossbow construction: bronze spring in 2 segments – 7-coil and 8-coil ones, made of wire with a cross-section of a flat rectangle, bronze axle with ends hooked over the end coils of the spring; a wide projection on the head bent, serving as a hook for the axle; a larger sheet projection on the foot hooked inwards,

forming a primitive catchplate; L. 4.8 cm, H. 1.9 cm, W. 3.7 cm, W. of the imitation rungs 2.9-3.0 cm, Th. of the bronze sheet 0.1 cm. **2.** Bronze brooch, pseudo-ladder, a bow cut out in bronze sheet with imitation of 4 rectangular rungs. Crossbow construction: bronze spring in 2 sections, 7-coil each, made of wire with a cross-section of a flat rectangle, bronze axle with one end hooked over the end coil of the spring; a wide projection on the head bent, serving as a hook for the axle; a larger projection of metal sheet on the foot hooked inwards, forming a primitive catchplate; L. 4.5 cm, H. 1.9 cm, W. 3.7 cm, W. of the imitation rungs 2.6-3.0 cm, Th. of the bronze sheet 0.1 cm. **3.** Bronze belt buckle, close to Type Butėnas III.1d, with an oval frame, rectangular in cross-section, spike cross-shaped, bent at the end; H. 2.3 cm, W. 1.8 cm. **4.** Fragment of a bronze belt mount, rectangular with single rivets at the ends. Ornament: double grooves along longer edges; reconstructed L. 1.5 cm, W. 0.9 cm. **5.** Bronze 4-armed belt fitting, made up of 2 plates joined with single rivets on the arms, preserved 2 of them; Dms. 1.7x1.3 cm, L. of the rivets 0.4-0.6 cm. **6.** Bronze band-shaped plate bent spirally; Dms. 1.5x1.3 cm, W. of the plate 0.6 cm. **7.** Iron one-edged sword with small traces of wood preserved on back; blade near the point tapering towards the massive back (T-shaped in cross-section); tang marked out at right angles on the side of the back and curved on the side of the edge; L. 50.0 cm, L. of the tang 8 cm, W. of the blade 4.2 cm, W. of the back 1.4 cm. **8.** Fragment of an iron object made of an U-shaped bar; Th. 0.3-0.4 cm. **9.** 2 iron shafts of unknown use; L. 2.8 cm and 2.6 cm, Th. 0.3-0.4 cm.

Chronology: Phase 3.

Grave 106: cremation pit burial with remains of pyre, disturbed (Pl. LXXI)

Pit approximately oval-shaped, elongated along NNE-SSW, uneven bottom; Dms. ca 110x60 cm, D. 20 cm. Filling: dark grey soil with charcoals and scattered burnt human bones and a brooch in the centre, 10 cm below the level of distinguishing the pit. *I. Adult, individual of delicate build: probably a woman.*

Contents: 1. Bronze disc brooch with a central hemispherical boss, at the edge 10 smaller bosses (imitation of a shield boss?). Construction: crossbow, 5-coil spring with lower chord on the axle; the axle of a wire square in cross-section, going through a hole in a rectangular plate on the underside, plate bent at right angles and riveted to the disc; the catchplate made of a rectangular plate bent at the end, riveted to the disc; Dm. 4.1 cm, Dm. of the boss 1.5 cm, H. of the boss 0.7 cm.

Chronology: Phase 3.

Grave 107: cremation pit burial with remains of pyre, destroyed (Pl. LXXI)

Pit preserved in bottom part, irregular in outline; Dms. 40x35 cm, D. up to 10 cm. Filling: mixed black soil with charcoals and several burnt human bones and a fragment of a vessel.

Contents: 1. Fragment of the base part of a clay vessel; surface carelessly polished; yellow-brown in colour; admixture: fine-grained crushed stone or sand; B. 8.7 cm.

Chronology: Late Migration Period.

Grave 108: cremation pit burial with remains of pyre, destroyed (Pl. LXXI)

At 32 cm below surface, destroyed by ploughing, preserved in bottom part, irregular in outline; Dms. 70x55 cm, D. ca 6 cm. Filling: black soil with charcoals, several fragments of burnt human bones and 1 potsherd. *I. Adult (fragments of long bones).*

Contents: 1. 1 small uncharacteristic fragment of pottery (not drawn).

Chronology: Late Migration Period?

Feature 109: settlement or burial pit, destroyed (Pl. LXXI)

At 29 cm below surface, pit destroyed by ploughing, preserved in bottom part, in outline close to circular; Dms. 100-110 cm, D. 15 cm. Filling mixed: dark soil with traces of burning, charcoals and 1 fragment of a vessel.

Contents: 1. Upper part of a large clay vessel, Type Okulicz II/Hoffmann IV, egg-shaped with incurved rim and oblique edge, on the outside underlined with an uneven groove; surface carelessly polished; yellow-brown in colour; form and texture typical of pottery from the West Balt Barrow culture; R. 22 cm, BL. ca 25 cm.

Chronology: Early Iron Age.

Grave 110: cremation pit burial with remains of pyre, disturbed (Pl. LXXII)

At 42 cm below surface, irregular in outline, funnel-shaped in cross-section, next to it 2 stones (remains of a pavement destroyed by ploughing?); Dms. 55x45 cm, D. 25 cm. Filling: black soil with charcoals, a few fragments of burnt human bones and 3 fragments of a vessel. Ca 40 cm to W: a pit, approximately circular in outline, funnel-shaped in cross-section (remains of the bottom part of the same feature?); Dm. 30 cm, D. 24 cm. Filling: black soil.

Contents: 1. 3 small fragments of a clay vessel; surface carelessly polished; dark brown in colour; admixture: a large amount of crushed stone of various grains (not drawn).

Chronology: Late Migration Period.

Grave 111: cremation pit burial with remains of pyre, destroyed (Pl. LXXII)

At 27 cm below surface, pit strongly destroyed by ploughing, preserved as remains of the filling, irregular in outline; Dms. 100x65 cm, D. 25 cm. Filling: black soil mixed with sand and charcoals, with a bead.

Contents: 1. Amber bead, disc-shaped with convex bottom and upper part, traces of turning; Dm. 2.4 cm, D. of the hole ca 0.4 cm, H. 1.3 cm.

Chronology: Late Migration Period.

Grave 112: cremation pit burial with remains of pyre, disturbed, over a skeleton horse grave (Pl. LXXIII)

Human grave. At 42 cm below surface, disturbed by ploughing, outline of the cremation burial in the centre of the pit prepared for the horse grave, in its top part; close to oval, elongated along N-S, uneven bottom; Dms. 135x60 cm, D. ca 30 cm. Filling: intensively black soil with charcoals, scattered burnt human and animal bones as well as fragments of a vessel. *I. Human and animal bones (very fragmented).*

Contents: 1. Fragment of the upper part and belly of a flask-shaped clay vessel, biconical with belly bend at 1/3 of the height, slim neck with a slightly out-turned rim; surface well-polished, glossy; dark brown in colour; admixture: a large amount of fine-grained crushed stone; R. 4.4 cm, BL. 8.8 cm.

Horse grave. Burial pit impossible to determine at the level where cremation burial was marked out and at the level of the skeleton, outline recorded only in cross-section (lack of the feature's plan), pit in upper part disturbed by ploughing, oval in outline, elongated along NNE-SSW, walls vertical in the lower part, flat bottom; Dms. 170x80 cm. Filling: near the perimeter and in S part grey-yellow sand. Horse skeleton ca 40 cm below the bottom of the pit of the human grave; skeleton oriented along NW-SE with head to SE; horse lying belly down, 'flattened' by the weight of the soil, hind-legs and fore-legs unnaturally splayed, neck extended slightly upwards, turned to the right, head muzzle down; snaffle bit in muzzle, on the left side of the skull, at the level of the eye-socket, a buckle of headgear straps (a cheekpiece or throat-lash?). Single stone in the hind-part of the skeleton, to the left of the spine. *I. Individual aged ca 8 years.*

Contents: 2. Iron snaffle bit, Type Ørsnes 1C2, tripartite with iron rings, short profiled links, central link 8-shaped, links and rings close to rectangular in cross-section; WB. 12 cm, L. of links 5.2 cm, 5.4 cm and 4.9 cm, Dm. of the rings 6.0 cm and 5.7 cm. 3. Iron buckle of headgear straps, Type Buténas III.1b, with a kidney-shaped frame and massive spike bent at the end; H. 2.2 cm, W. 1.5 cm.

Chronology: Late Migration Period.

Feature 112A: sunken stone pavement of undetermined function (Pl. LXXII)

At 42 cm below surface, ca 30 cm from the NW edge of grave 112, stone pavement composed of 3-4 layers of large and medium-sized stones, oval in outline, elongated along SW-NE, pit trough-shaped; Dms. 135x95 cm, D. 70 cm. Filling: brown-red sand.

Contents: none.

Chronology: unknown.

Grave 113: cremation pit burial with remains of pyre, destroyed (Pl. LXXIV)

Destroyed by ploughing, survived remains cremation burial's filling, irregular in shape; Dms. 65x60 cm, D. 10 cm. Filling: black soil with charcoals mixed with sand, with burnt bones and small fragments of a vessel. *I. Probably young individual.*

Contents: 1. Fragments of the base and walls of a clay vessel; surface well-polished; black-brown in colour; admixture: a large amount of medium-grained crushed stone; form impossible to reconstruct as a whole, probably flask-shaped (not drawn); B. 7.5 cm.

Chronology: Late Migration Period.

Grave 114: cremation pit burial with remains of pyre, disturbed, over a skeleton horse grave (Pl. LXXV)

Human grave. At 42 cm below surface, destroyed by ploughing, preserved in bottom part, rectangular in outline, elongated along NNE-SSW, vertical walls; Dms. 155x75 cm, D. ca 10 cm. Filling: black soil permeated with traces of burning, charcoals, several small burnt bones and a spike of a buckle.

Contents: 1. Bronze spike of a buckle (?) from flat wire with preserved hooked part, originally bent around the frame; preserved L. 2.1 cm.

Horse grave. Upper part of the horse skeleton 37 cm below the level where the human grave was distinguished, feature documented only in cross-section (lack of the plan); L. 205 cm, D. 85 cm. Filling: grey-yellow sand up to the level of horse burial mixed with black soil from the cremation burial. Skeleton oriented along N-S with head to S; horse lying with hind-legs and fore-legs tucked under, neck and head stretched forwards; snaffle bit in muzzle, at the level of left ear an iron headgear strap buckle (for cheekpiece or throat-lash?), near the head a talus bone of another animal.

Contents: 2. Iron snaffle bit, Type Ørsnes 1C1, bipartite with iron rings; WB. 14.9 cm, L. of links 9.3 cm and 8.8 cm, Dm. of the rings 5.5 cm and 4.8 cm. 3. Iron buckle, Type Buténas IV.4, with a trapeze-shaped frame, quadrangular in cross-section; W. 2.4 cm, W. 3.0 cm.

Chronology: Late Migration Period.

Grave 115: cremation pit burial with remains of pyre, destroyed (Pl. LXXIV)

At 24 cm below surface, pit destroyed by ploughing, close to circular in outline; Dm. ca 130 cm, D. 60 cm. Filling: brown soil with charcoals and a few fragments of burnt human bones, in its upper part mixed with yellow sand, in the middle of its depth filled with charcoals. *I. Adult? (fragments of long bones).*

Contents: none.

Chronology: Late Migration Period?

Grave 116: cremation pit burial with remains of pyre, destroyed (Pl. LXXIV)

At 23 cm below surface, destroyed by ploughing, preserved in bottom part, outline oval, elongated along NW-SE; Dms. 100x85 cm, D. 15 cm. Filling: dark brown soil with charcoals and a few burnt bones, in its upper part small stones. *I. Individual of delicate build, probably a child (fragments of long bones).*

Contents: none.

Chronology: Late Migration Period?

Grave 117: cremation pit burial with remains of pyre, disturbed, over a skeleton horse grave (Pl. LXXVI, CVIII:7)

Human grave. At 38 cm below surface, pit disturbed by ploughing, preserved in bottom part, pit of a cremation burial in the central part of the big rectangular outline, oval in shape, elongated along W-E; Dms. 95x70 cm. Filling: black layer with charcoals and burnt bones, burnt bones also at the NE edge (due to the grave's violation?). *I. Adult (fragments of skull and long bones); additionally several burnt animal bones. II. Charcoals: birch (*Betula sp.*), oak (*Quercus sp.*).*

Contents: none.

Horse grave. Horse skeleton over a dozen cm below the bottom of the cremation burial, in the S part of the pit, pit in outline similar to a rectangle with rounded corners, elongated along N-S, trough-shaped profile; Dms. 235x100 cm, D. 56 cm. Filling in upper part mixed by ploughing: light brown soil, black layers with charcoals in the upper part in the centre and in N part at the level of the horse skeleton. Skeleton oriented along N-S with head to S; horse forced into the pit in twisted position with croup in squatting position with legs tucked under, trunk and neck sharply turned to the left and head pressed between the fore-legs; muzzle touched left hind-leg, the occipital bone of the skull pushed into the E profile of the pit; snaffle bit in muzzle, on the skull headgear fittings (browband, cheekpieces and the central strap running from the headpiece to the noseband), crumbled, with remains of leather and fabric; at the eye level, on either

side of the skull: square plates with fragments of fabric and leather.

Contents: **1.** Iron snaffle bit, Type Ørsnes 1C1, bipartite with iron rings, rectangular in cross-section; WB. ca 14 cm, L. of the preserved link 8.7 cm, Dm. of the rings 5.4 cm. **2.** Bronze headgear strap mounts, probably rectangular. Embossed ornament: transverse rows of railing pattern; preserved in very small fragments; Dms. impossible to reconstruct (only a small fragment adjoining to one of the plates No 3 is drawn). **3.** 2 square bronze plates (blinkers?) with remains of leather and fabric. Embossed ornament: a row of impressed dots between 2 straight lines along the edges, near the corners little squares, in the central square field impressed rosettes with a central dot surrounded by a motif of small dots: on one plate 9 and on the other 12 rosettes; Dms. 4.2 cm, Th. ca 0.1 cm. *I. Fragment of fabric collected from under plate No 3: fine woollen fabric with plain weave.*

Chronology: Phase 2.

Grave 118: cremation pit burial with remains of pyre, destroyed, over a skeleton horse grave (Pl. LXXVII, LXXVIII)

Human grave. At 16 cm below surface, in the middle of the bigger pit, destroyed by ploughing, blurred and irregular in outline; L. ca 110 cm, D. 20 cm. Filling: black soil with charcoals, burnt bones and fragments of broken clay vessels. *I. Adult; additionally animal bones.*

Contents: **1.** Fragments of 2 clay vessels, probably flask-shaped, including the bases; surfaces well-polished, glossy; black-brown in colour; admixture: a large amount of fine-grained crushed stone. Ornament on a fragment of the belly: double rows of rhomboid imprints and an arrangement of horizontal lines of triangular imprints; B. 6.5 cm and 6.0 cm.

Horse grave. Horse skeleton ca 30 cm below the bottom of the cremation grave, partly preserved (bones of the limbs and skull), outline blurred and irregular, elongated along N-S; Dms. ca 230x100 cm, D. 75 cm. Filling: light brown soil. Skeleton oriented along N-S with head to S; horse lying belly down with bent hind-legs, fore-part of the trunk leaning to the right, neck and head sharply turned to the left and back; layer of burning with charcoals under the head; snaffle bit in muzzle, on the skull headgear fittings in an almost undisturbed arrangement (browband, noseband made up of two straps, right cheekpiece as well as central strap running from the headpiece to below the noseband and ending with an anchor-shaped fitting; 2 connectors at the front and on the right side of the head).

Contents: 2. Iron snaffle bit, Type Ørsnes 1C1, bipartite with iron rings; strongly corroded; reconstructed WB. ca 15 cm, Dm. of the rings 6.5 cm. **3.** 4 bronze headgear strap connectors in the form of round plates with 4 rectangular arms; at the ends of the arms 2 hemispherical bosses and 1-2 rivets with hemispherical heads, rivets link the arms with the overlapping them ends of rectangular mounts. Embossed ornament: on 3 items a central hemispherical boss surrounded by 6-7 concentric pseudo-filigree circles; on 1 item central boss surrounded by a pseudo-filigree ring, then by a ring of larger circles and then 4 rings of pseudo-filigree pattern; Dm. of the plates 3.5-3.6 cm, W. of the arms 1.3 cm. **4.** 18 bronze headgear strap mounts (right cheekpiece and central strap), rectangular with single rivets at the ends, plates overlapped in the places where they were joined by the rivets; some of mounts broken off, visible traces of numerous repairs and secondary riveting. Embossed ornament: groups of 4-8 larger, hemispherical bosses, interspersed with rows of 2-4 small bosses surrounded by a circle of embossed dots, along longer edges double pseudo-filigree lines; L. 4-10 cm, W. 1.4-1.5 cm. **5.** 3 bronze end mounts (central strap from another set?): rectangular plate with rivets at either end, small ellipsoid plate with a rivet, broken off at the end and anchor-shaped pendant with single rivets in the centre and on arms. Embossed ornament: on the rectangular plate 2 lengthwise rows of small bosses separated by pseudo-filigree lines; on the ellipsoid plate a double pseudo-filigree line along the edge; in the bottom part of the anchor-shaped pendant a wavy line of small bosses, along its edge a pseudo-filigree motif; L. of the rectangular plate 5 cm, W. of the rectangular plate 1.5 cm., W. of the pendant 6.2 cm.

Chronology: Phase 2.

Grave 119: horse skeleton burial, disturbed (Pl. LXXIX)

Pit oval in outline, elongated along N-S; documented partly (lack of cross-section and plan at the level where the skeleton was uncovered); Dms. 200x70 cm, D. 45 cm. Filling: light brown soil, in the upper part clearly disturbed by ploughing. Disturbed upper part of the horse skeleton at the level where the filling became visible; no traces of a cremation burial (probably completely destroyed by ploughing); skeleton oriented along N-S with head to S; horse lying belly down, the trunk leaning to the right, right fore-leg and hind-leg tucked under the trunk, left fore-leg and hind-leg stretched sidewise, head lying on its right side with muzzle to W; snaffle bit in muzzle, at the level of the belly a buckle probably for the girth.

Contents: 1. Iron snaffle bit, Type Ørsnes 1C2, tripartite with iron rings, on one of the rings traces of 2 cheekpiece and rein ferrules, side links quadrangular in cross-section, flat near the rings, central link 8-shaped; strongly corroded, one of the rings crushed; WB. ca 15 cm, L. of links 8.3 cm, 5.5 cm and 7.8 cm, Dm. of the rings 6.0 cm. **2.** Iron girth buckle, Type Butėnas IV.3/4, with a trapeze-shaped frame, rectangular in cross-section, massive spike bent at the end; H. 4.7 cm, W. 4.2 cm.

Chronology: Late Migration Period.

Grave 120: cremation pit burial with remains of pyre, double, disturbed, over skeleton grave of 2 horses (Pl. LXXX, LXXXI)

Human grave. Disturbed by ploughing in top part, pit oval-shaped, elongated along N-S, bottom flat and narrow; Dms. 190x115 cm, D. 40 cm, W. of the bottom ca 80 cm. Filling: black soil permeated with traces of burning and charcoals with numerous burnt human bones scattered over the whole pit, at the undisturbed level black soil in narrower outline, with light-brown sand along the edges of the pit. In top, disturbed part a buckle and a fragment of a sword. Undisturbed grave goods more than a dozen cm lower; near the E edge of the pit in its N part a sword in a scabbard pointed to S; in the centre of the grave, at the level of the point from W, 3 vessels standing one next to another; another vessel, crushed, near the sword's hilt. Between the vessels 2 buckles, a fragment of a strap end, 3 belt mounts, 2 ferrules of buckles, a brooch and 2 rings (drawing of the plan at this level is incomplete: no outline in SE part). *I. 2 Individuals: woman, 35-45 years old; adult of massive build (probably a man). II. Charcoals: birch (Betula sp.).*

Contents: 1. Bronze disc brooch of thin sheet, circular with a central hemispherical boss surrounded by 4 concentric circles of small bosses. Construction: not preserved. Dm. 3.8 cm, Dm. of the boss 1.0 cm, H. of the boss 0.3 cm. **2.** Bronze buckle, Type Butėnas III.1a, with a kidney-shaped frame, quadrangular in cross-section, spike bent at the end; H. 2.1 cm, W. 1.1 cm, L. of the spike 1.4 cm. **3.** Small bronze buckle, Type Butėnas IV.3, with a trapeze-shaped frame; H. 1.3 cm, W. 1.1 cm. **4.** Small bronze buckle, Type Butėnas IV.3, with a trapeze-shaped frame and a ferrule of a rectangular plate with 1 rivet at the end. Ornament: pairs of grooves along longer edges of the ferrule; H. 1.3 cm. W. of the frame 1.1 cm, L. of the ferrule ca 1.6 cm. **5.** 3 bronze strap mounts, made of pairs of rectangular plates fixed by single rivets with remains of leather between them; L. 1.7 cm and 2.6 cm, W. 0.8 cm. **6.** 2 bronze plates bent in half with

single rivets at the ends (ferrules of buckles) and remains of leather; L. 1.8 cm and 1.6 cm, W. 1.0 cm and 0.8 cm, **7.** Fragment of a bronze lancet-shaped strap end with a profiled end; preserved L. 2.7 cm, W. 1.0 cm. **8.** Bronze ring (a bracelet?) of uneven wire, oval-shaped in cross-section; preserved in 3 fragments, fastening missing. Ornament: traces of transverse incisions, partly blurred; Dm. ca 5.4 cm, Th. 0.2 cm. **9.** Bronze ring of incised wire, unclosed; Dm. 2.4 cm, Th. 0.3 cm. **10.** Iron one-edged sword with preserved U-shaped chape, the tips of the point and tang broken off; blade of even width with the point tapering towards the massive, broad back (T-shaped in cross-section); tang of the hilt curved on either side. Scabbard: preserved iron chape, trough-shaped in cross-section, embracing the lower end to the height of 27 cm on either side; preserved L. with the remains of the scabbard 62 cm, L. of the tang 14 cm, W. of the blade 4.6 cm, W. of the back 1.2 cm. **11.** Biconical vessel with the belly bend slightly above 1/3 of the height, slim neck, slightly outturned at the rim, edge horizontal, base slightly concave, with a marked out ring; surface well-polished, glossy; reddish in colour; admixture: a large amount of fine- and medium-grained crushed stone. Ornament: rows of oblique punctures made with a sharp tool, at the belly bend 2 horizontal rows with 2-3 vertical rows going upwards and downwards; H. 17.4 cm, R. 5.2 cm, BL. 11.5 cm, B. 5.5 cm. **12.** Biconical vessel with the belly bend slightly above 1/3 of the height, medium-slim neck with a straight rim; surface well-polished, glossy; brown in colour; admixture: a large amount of fine- and medium-grained crushed stone. Ornament: oblique triangular imprints, at the belly bend 2 rows of triangles, in the lower part of the belly 5 double vertical rows, in the upper part the motif repeated 4 times: 1 central vertical row, 2 curving at the sides; H. 14.4 cm, R. 5.8 cm, BL. 11.3 cm, B. 6.0 cm. **13.** Biconical vessel with the belly bend at 1/4 of the height, slim neck, slightly outturned at the rim, edge horizontal; surface well-polished, glossy; brown in colour; admixture: a large amount of fine- and medium-grained crushed stone. Ornament: at the belly bend and under the edge 2 horizontal rows of oblique, triangular imprints; H. 16.4 cm, R. 5.9 cm, BL. 11.3 cm, B. 6.3 cm. **14.** Small fragments of the base of a clay vessel; impossible to reconstruct (not drawn).

Grave of 2 horses. Skeletons of 2 horses under the bottom of human grave; pit irregular in shape, elongated along NW-SE (documented only at the level of skeletons); Dms. 235x115 cm. Filling at this level: uniform light brown soil. Skeletons arranged parallelly, oriented along NW-SE with head of horse I (from

W) to SE; horse I: lying belly down, with fore-legs and hind-legs tucked under, trunk leaning to the left and head turned to the right; snaffle bit in muzzle, on the skull crumbled headgear strap mounts (cheekpieces, browband, headpiece and the central strap from the headpiece to the lower part of the skull); horse II (from E): skeleton incomplete, missing head, neck vertebrae and parts of fore-legs (removed intentionally); position and orientation like in case of horse I.

Contents (horse I): 15. Iron snaffle bit, Type Ørsnes 1C2, tripartite with small iron rings, central link 8-shaped, rings quadrangular in cross-section; strongly corroded; WB. ca 15 cm, L. of links 6.0 cm, 5.1 cm and 8 cm, Dm. of the rings 4.4 cm. **16.** Fragments of bronze headgear strap mounts of thin metal foil, attached to the straps with thin wires running through 2 holes in the plates, bent on the underside; crumbled. Embossed ornament: in the centre a vertical row of railing motif, at either edge 3 rows of pseudo-filigree ornament; W. of the plates 2.1 cm.

Chronology: Phase 3.

Grave 121: cremation pit burial with remains of pyre, disturbed, over a skeleton horse grave (Pl. LXXXII)

Human grave. At 29 cm below surface, preserved in bottom part, pit in outline similar to a circle; Dm. 85 cm, D. ca 40 cm. Filling: light brown soil, with a concentration of traces of burning, charcoals and single burnt bones from *W. I. Probably a child.*

Contents: none.

Horse grave. Poorly preserved horse skeleton immediately under the bottom of cremation burial (outline of the burial pit has not been recorded); skeleton oriented along N-S with head to S; horse lying belly down with trunk slightly leaning to the left, neck and head turned to the right; snaffle bit in muzzle, on the head headgear strap fittings (cheekpieces, headpiece, browband, noseband and the central strap running from the headpiece to the level below the noseband; additionally a pair of fittings at an angle – from the noseband to the central strap, resembling a triangle with its apex up; similar fittings – in the case of the browband: apex of the triangular pattern directed downwards), partly in undisturbed arrangement; near the horse's rump: a standing vessel with crushed rim. *I. Probably female, ca 4.5-5 years old, WH. 123.6 cm.*

Contents: 1. Iron snaffle bit, Type Ørsnes 1C1, bipartite with iron rings oval in cross-section; corroded; WB. 14-15 cm, L. of links 6.3 cm and 7.0 cm, Dm. of the rings 5.0 cm. **2.** Bronze headgear strap mounts made of thin metal sheet, joined to the straps and with one another by means of band-like wires, going through pairs of holes at the ends of the plates, bent on the underside;

crumbled. Embossed ornament: in the centre a row of rosettes composed of the central boss surrounded with pseudo-pearl-like ornament, along longer edges pairs of slightly wavy grooves; L. up to 12 cm, W. 1.8 cm.

3. Base part of a flask-shaped clay vessel, gentle belly bend at ca 1/3 of the height, slim neck, broken off in the upper part; surface well-polished and glossy; dark-brown in colour; admixture: a large amount of fine- and medium-grained crushed stone. Ornament: 4 bands of 4 horizontal engraved lines distributed between the level of the base and the rim; BL. 9.0 cm, B. 5.8 cm.

Chronology: Phase 2.

Feature 122: pit of undetermined function and chronology (Pl. LXXIV)

At 18 cm below surface, shallow pit irregular in outline; Dms. 105x70 cm, D. 32 cm. Filling: grey-yellow sand.

Contents: none.

Chronology: unknown.

Grave 123: cremation pit burial with remains of pyre, destroyed (Pl. LXXXIII)

At 15 cm below surface, destroyed by ploughing, preserved in bottom part, irregular in outline; Dms. 120x65 cm, D. 20 cm. Filling: dark brown soil mixed with sand with several burnt bones, a patch of black soil with charcoals in S part.

Contents: none.

Chronology: Late Migration Period?

Grave 124: cremation pit burial with remains of pyre, destroyed (Pl. LXXXIII)

At 18 cm below surface, destroyed by ploughing, survived in bottom part; Dms. 175x120 cm, D. up to 20 cm. Filling: black soil mixed with sand; with some fragments of burnt human bones and charcoals.

Contents: none.

Chronology: Late Migration Period?

Feature 125: pit of undetermined function and chronology (Pl. LXXXIII)

At 16 cm below surface, shallow pit irregular in outline, documented partly (lack of cross-section); Dms. 110x50 cm. Filling: grey-yellow sand with small darker patches.

Contents: none.

Chronology: unknown.

Grave 126: cremation pit burial with remains of pyre, destroyed (Pl. LXXIV)

Destroyed by ploughing, preserved in bottom part, outline similar to a circle (plan not drawn, docu-

mented as a photograph); Dm. 40 cm. Filling: black soil mixed with sand, with charcoals and over a dozen fragments of burnt human bones. *I. Individual of delicate build, probably a child (fragments of long bones).*

Contents: none.

Chronology: Late Migration Period?

Grave 127: cremation pit burial with remains of pyre, disturbed, over a skeleton horse grave (Pl. LXXXIV, CIX:3)

Human grave. Within the limits of the bigger pit, near its NW edge: outline of a cremation burial, irregular, reaching down to the back of the horse buried below; Dms. 110x65 cm, D. 35 cm. Filling: black soil with charcoals, burnt human bones and lumps of amber. At the upper level 6 stones (remains of a pavement); near S edge a standing clay vessel. *I. Adult (fragments of skull and long bones).*

Contents: 1. Biconical clay vessel, belly bend at 2/3 of the height, straight rim; surface well-polished; brown in colour; admixture: a large amount of fine- and medium-grained crushed stone. Ornament: approximately triangular dimples – at the belly bend and under the rim 2 horizontal rows, between them and below the belly bend double or triple vertical rows; H. 11.8 cm, R. 8.7 cm, BL. 11.7 cm, B. 6.5 cm.

2. Several small and one large lump of amber, with traces of cutting with a knife (not drawn); Th. 1.1 cm.

Horse grave. Back and rump of the horse immediately under the bottom of cremation burial (black soil from the bottom of the cremation burial reached to the animal's ribs), pit of irregular outline, elongated along NW-SE (outline in NE part reconstructed hypothetically on the basis of the cross-section); Dm. 240x120 cm, D. 90 cm. Filling: brown soil with charcoals. Skeleton oriented along N-S with head to S; horse probably in the standing position, fore-legs and hind-legs bent (under the weight of soil used for filling the grave?), neck stretched forwards, head muzzle down; snaffle bit in muzzle, over the back of the animal a standing vessel connected with the cremation burial (described in contents of the human grave). *I. Individual aged ca 5 years, WH. 135 cm.*

Contents: 3. Iron snaffle bit, Type Ørsnes 1C1, bipartite with iron rings circular in cross-section; 1 ring fragmentarily preserved; WB. 13.7 cm, L. of the links 7.1 cm and 8.7 cm, Dm. of the rings 4.4 cm.

Chronology: Late Migration Period.

Grave 128: cremation pit burial with remains of pyre, destroyed (Pl. LXXXV)

Destroyed by ploughing, preserved remains of mixed filling of the burial pit, outline close to circular;

Dm. 90 cm, D. 10 cm. Filling: dark brown soil with charcoals and a few fragments of burnt human bones.

Contents: none.

Chronology: Late Migration Period?

Grave 129: cremation pit burial with remains of pyre, destroyed (Pl. LXXXV)

Destroyed by ploughing, preserved in bottom part, oval in outline, elongated along NW-SE (drawings of the plan and the profile incompatible); Dms. 106x72 cm, D. 35 cm. Filling: black soil with charcoals, scattered burnt human bones, small pebbles, small fragments of pottery and 1 lump of raw amber. *I. Probably an adult (fragments of long bones).*

Contents: **1.** Several fragments of pottery from at least 2 vessels; well-polished surfaces; light brown and dark brown in colour; texture typical of flask-shaped vessels (not drawn). **2.** Lump of raw amber (not drawn).

Chronology: Late Migration Period.

Feature 130: stone pavement (Pl. LXXXV)

Compact stone pavement, approximately circular in shape, made of 2 layers of medium-sized stones, stones with no traces of burning, among them 2 fragments of querns; Dm. ca 160 cm, D. 40 cm. Filling: between the stones grey-brown soil with concentrations of charcoals, many fragments of pottery and 1 fragment of a bead.

Contents: **1.** Half of a glass bead, Type Høilund Nielsen R3:b:a/f:II:I (?), barrel-shaped, made of opaque glass light red in colour; Dm. 1.1 cm, Dm. of the hole 0.4 cm, H. 0.8 cm. **2.** 39 small fragments of clay vessels including 5 rim fragments with rounded edges; surfaces roughened on the outside and smooth on the inside; brown in colour (not drawn). **3.** 13 small fragments of clay vessels; surfaces polished on the inside and outside; dark brown in colour (not drawn). **4.** 2 fragments of saddle-querns made of sandstone, elongated (not drawn).

Chronology: Early Iron Age?

Grave 131: cremation pit burial with remains of pyre, disturbed, over a skeleton grave of 2 horses (Pl. LXXXVI, LXXXVII)

Human grave. Disturbed by ploughing in upper part, pit approximately circular in outline, trough-shaped in profile; Dms. 230x200 cm, D. 70 cm, D. of the black soil 30 cm. Filling: in the centre compact black soil permeated with charcoals, over a dozen fragments of burnt human and animal bones, a spur, a buckle and a fragment of a vessel, near the edges and at the bottom slightly lighter soil; below a brown

layer with thin layers of charcoals. *I. Adult (fragments of long bones); additionally a fragment of an animal bone. II. Charcoals: birch, pine and oak; additionally a lump of charred grains (probably grits with a fragment of barley?).*

Contents: **1.** Iron buckle, Type Butėnas IV.4, with a trapeze-shaped frame, concave at the sides; corroded; H. 2.4 cm, W. 2.5 cm. **2.** Iron rivet spur, Type Leuna Var. E, from curved rectangular band, at the edges poorly preserved traces of rivets, prick short, sharp; strongly corroded; W. 5.0 cm, W. of the bow 1.4 cm. **3.** Base part of a clay vessel with a marked out foot and concave base surrounded by a ring; surface well-polished; dark brown in colour; B. 9 cm.

Grave of 2 horses. Under the bottom of cremation burial skeletons of 2 horses, poorly preserved (outline of the pit not recorded); skeletons oriented along N-S with heads to S; horse I (from E) sitting belly down with trunk leaning to the right, fore-legs and hind-legs tucked under, head stretched forward; horse II (from W) leaning to the left with legs tucked under (partly lying on horse I), head stretched forward; skulls of both animals one next to another; snaffle bits in muzzles. *I. Horse I: male, more than 5 years old. Horse II: male, less than 4.5 years old.*

Contents: **4.** Iron snaffle bit of horse I, Type Ørsnes 1C2, tripartite with iron rings, circular in cross-section with fragments of iron rein ferrules (?), central link 8-shaped; WB. ca 15 cm, L. of links 8.1 cm, 4.6 cm and 9.1 cm, Dm. of the rings 6.5 cm. **5.** Iron snaffle bit of horse II, Type Ørsnes 1C1, bipartite; strongly corroded, 1 ring and 1 link completely preserved; L. of the link 7.3 cm, Dm. of the ring 7.0 cm.

Chronology: Late Migration Period.

Feature 132: pit of undetermined function (Pl. LXXXVIII)

Pit oval in outline, elongated along N-S, funnel-shaped in profile; Dms. 135x120 cm, D. 65 cm. Filling: grey-yellow sand with inserts of burning and charcoals.

Contents: none.

Chronology: unknown.

Grave 133: cremation pit burial with remains of pyre, destroyed (Pl. LXXXVII)

Destroyed by ploughing, preserved remains of mixed filling, irregular in outline; Dms. 100-110 cm, D. 25 cm. Filling mixed: black soil with charcoals and burnt bones, small fragments of a vessel and a fragment of a bracelet (?). *I. Adult, 35-45 years old.*

Contents: **1.** Fragment of a bronze bracelet (?) made of a bar polygonal in cross-section; Dm. 6.5 cm, Th.

0.4-0.5 cm. **2.** Fragments of a clay vessel, among them a fragment of the base; surface well-polished; brown in colour; admixture: a large amount of coarse- and medium-grained crushed stone; appearance and texture like in other flask-shaped vessels; B. 5 cm (not drawn).

Chronology: Late Migration Period.

Grave 134: cremation pit burial with remains of pyre, destroyed (Pl. LXXXVIII)

Destroyed by ploughing, preserved in bottom part, pit irregular in outline; Dms. 60-65 cm, D. up to 20 cm. Filling: black soil with charcoals, a burnt bone and a fragment of a vessel. *I. Burnt animal bone (?)*.

Contents: 1. Fragment of the base part of a clay vessel; surface polished; brown in colour; admixture: a large amount of medium-grained crushed stone; appearance and texture similar to that of other flask-shaped vessels; B. 6.2 cm (not drawn).

Chronology: Late Migration Period.

Grave 135: cremation pit burial with remains of pyre, destroyed (Pl. LXXXVIII)

Destroyed by ploughing, preserved remains of mixed filling, irregular in outline; Dms. 55-65 cm, D. 15 cm. Filling: black soil with charcoals, a few fragments of burnt bones, potsherds and a lump of amber. *I. Fragments of probably human bones; additionally 1 fragment of an animal bone.*

Contents: 1. 4 fragments of a vessel; surface polished; brown in colour (not drawn). **2.** Small lump of raw amber (not drawn).

Chronology: Late Migration Period?

Grave 136: cremation pit burial with remains of pyre, destroyed (Pl. LXXXVIII)

At 40 cm below surface, destroyed by ploughing, preserved in bottom part, outline close to circular (drawings of the plan and the profile incompatible); Dm. 75 cm, D. ca 10 cm. Filling: black soil with charcoals, 1 burnt bone and a few fragments of a vessel.

Contents: 1. A few fragments of the lower part of a flask-shaped clay vessel with low belly bend. Ornament: a double line of triangles impressed at the belly bend; B. ca 6 cm.

Chronology: Late Migration Period.

Grave 137: cremation pit burial with remains of pyre, destroyed, over a disturbed skeleton horse grave (Pl. LXXXIX)

Human grave. Destroyed by ploughing, preserved in bottom part, irregular in outline, elongated along N-S, documented partly (lack of cross-section); Dms. 180x70 cm, D. several cm. Filling: layer of black

soil with charcoals and a few burnt human bones in the upper part. *I. Probably an adult (fragment of long bone).*

Contents: none.

Horse grave. Partly disturbed bones of the horse skeleton immediately under the destruction layer of cremation burial (pit without a clear outline); skeleton oriented along N-S with head to S; horse lying belly down with hind-legs tucked under, fore-part of the trunk leaning to the left, neck stretched, head turned right; snaffle bit in muzzle. *I. Individual aged ca 3.5 years.*

Contents: 1. Iron snaffle bit, Type Ørsnes 1C1, bipartite (?) with iron rings; corroded, preserved 1 ring (not drawn); Dm. of the ring 5.8 cm.

Chronology: Late Migration Period.

Grave 138: cremation pit burial with remains of pyre, destroyed (Pl. XC)

Destroyed by ploughing, preserved in bottom part, irregular in outline; Dms. 100x50 cm, D. up to 20 cm. Filling: black soil with charcoals concentrated in SE part, a few small fragments of burnt human bones and fragments of a vessel. *I. Fragments of human and possibly animal bones.*

Contents: 1. Fragments of a clay vessel with a spherical base, protruding belly and straight edge; surface polished; yellow-brown in colour; form typical of the Early Iron Age, probably in secondary context (not drawn); R. ca 11 cm.

Chronology: unknown.

Grave 139: cremation pit burial with remains of pyre, destroyed (Pl. XC)

Destroyed by ploughing, preserved in bottom part, circular in outline; Dm. ca 50 cm, D. 10 cm. Filling: black soil with charcoals, in upper part mixed with sand, with many fragments of burnt bones. *I. Male, 35-45 years old; additionally single animal bones.*

Contents: none.

Chronology: Late Migration Period?

Feature 140: settlement pit, destroyed (Pl. XC)

Destroyed by ploughing, preserved in bottom part, irregular in outline; Dms. 130x80 cm, D. 15 cm. Filling: light brown soil mixed with sand, with 9 fragments of pottery and flint fragment.

Contents: 1. 6 fragments of pottery with roughened surface and 3 polished fragments difficult to determine (not drawn). **2.** Pressure bladelet of flint with an notch formed by retouch on the ventral surface in the medial part (microburine technique); in secondary context; Dms. 2.6x2.0x1.0 cm.

Chronology: Early Iron Age.

Feature 141: pit of undetermined function, destroyed (Pl. XCI)

Destroyed by ploughing, preserved in bottom part, approximately oval in outline, elongated along N-S, trough-shaped in cross-section; Dms. 125x110 cm, D. 25 cm. Filling: grey-brown soil with black inserts of burning and a few charcoals.

Contents: none.

Chronology: unknown.

Grave 142: cremation pit burial with remains of pyre, destroyed (Pl. XC)

Destroyed by ploughing, preserved in bottom part, oval in outline, elongated along NNE-SSW; Dms. 142x65 cm, D. 23 cm. Filling: mixed black soil with burnt human and animal bones. *I. Adult (fragments of long bones); additionally burnt animal bones, probably of a horse (teeth).*

Contents: none.

Chronology: Late Migration Period?

Grave 143: cremation pit burial with remains of pyre, destroyed (Pl. XCI)

Destroyed by ploughing, preserved in bottom part, irregular in outline; Dms. 67x50 cm, D. 15 cm. Filling: black soil mixed with sand, with charcoals and burnt human bones. *I. Adult (fragments of skull and long bones).*

Contents: none.

Chronology: Late Migration Period?

Grave 144: cremation pit burial with remains of pyre, destroyed (Pl. XCI)

Destroyed by ploughing, oval in outline, elongated along NW-SE; Dms. 75x45 cm, D. 25 cm. Filling: black soil with charcoals, mixed with sand in NW part, with a few fragments of an antler and small burnt human bones. *I. Young individual.*

Contents: 1. Several fragments of burnt antler with traces of working (not drawn).

Chronology: Late Migration Period?

Grave 145: cremation pit burial with remains of pyre, destroyed (Pl. XCI)

Destroyed by ploughing, preserved in bottom part, arched in outline; Dms. 80x40 cm, D. up to 15 cm. Filling: black soil with charcoals and burnt human bones. *I. Fragments of human long bones.*

Contents: none.

Chronology: Late Migration Period?

Feature 146: remains of a pyre? (Pl. XCII)

Pit irregular in outline, elongated along W-E,

bottom irregular; L. 450 cm, W. ca 80 to 200 cm (the largest width in the middle), D. 45 cm. Filling: grey-brown soil with two black layers: large content of charcoals with single burnt human bones, separated by a layer of sand; soil at the bottom of both layers reddened from high temperatures (result of two large fires – pyres?). *I. Over a dozen remains of cremation, including, i.a., adults (fragments of long bones). II. Charcoals: birch, pine and poplar; additionally charred straw.*

Contents: none.

Chronology: Late Migration Period?

Grave 147: cremation pit burial with remains of pyre, damaged, over a skeleton horse grave (Pl. XCIII, XCIV)

Human grave. Damaged by ploughing, oval-shaped in outline, elongated along N-S, trough-shaped in cross-section; Dms. 225x110 cm, D. 80 cm. Filling: brown soil, in the top part thin layer of black soil with charcoals, single burnt human bones and scattered stones; irregular dark patches in plan; numerous charcoals down to the depth of D. ca 40 cm. *I. Adult (fragments of long bones).*

Contents: none.

Horse grave. Poorly preserved horse skeleton immediately under the destruction layer of cremation burial; skeleton oriented along N-S with head to S; horse lying belly down with hind-legs tucked under, fore-part of the trunk leaning to the left, head turned to the right; snaffle bit in muzzle, on the skull headgear strap fittings, partly in the original arrangement (of the headpiece, browband, noseband, cheekpieces and the central strap running from the headpiece to the noseband; additionally decorative rectangular plates running at an angle from the noseband to the central strap, resembling a triangle with its apex up; similar fittings in the case of browband – the arrangement oriented with the apex down). *I. Male, ca 4.5-5 years old, WH. 125.8 cm.*

Contents: 1. Fragments of an iron snaffle bit, Type (?) with iron rings, semi-circular in cross-section; strongly corroded, preserved fragment of the ring with piece of link and 1 complete ring; Dm. of the preserved ring 6.3 cm. 2. Bronze headgear strap mounts made of rectangular plates joined with one another and the straps so that they overlap, linked with flat wires, bent inwards on the underside; most of them crumbled. Embossed ornament: motif of horizontal rows of railing ornament, between triple lines of pseudo-filigree along the edges; W. 2.3 and 1.8 cm.

Chronology: Phase 2.

Grave 148: cremation pit burial with remains of pyre, disturbed, over a skeleton horse grave (Pl. XCVI, CIX:4)

Human grave. In central part of the bigger pit remains of the proper cremation burial, disturbed by ploughing, in the top part irregular, in lower parts oval-shaped, trough-shaped in cross-section; Dms. 50x35 cm, D. 20 cm. Filling: compact layer of black soil with charcoals, single stones and burnt human bones. At the bottom a standing vessel. *I. Adult (fragments of long bones).*

Contents: 1. Barrel-shaped clay vessel with low neck, straight edge with a raised band below; surface carelessly polished; brown in colour; admixture: a large amount of medium- and coarse-grained crushed stone. Ornament: 3 groups of regularly spaced 5-6 horizontal grooves near the base and at the belly, similar ornament under the rim, on either side of the raised band; raised band decorated with vertical incisions, along the whole belly vertical rows of punctures made with a tool with an oval tip; H. 13.8 cm, R. 6.7 cm, BL. 11.3 cm, B. 5.9 cm.

Horse grave. Poorly preserved horse skeleton ca 25-30 cm below the bottom of the cremation burial, pit oval in shape, elongated along N-S (there are discrepancies of limits of the feature documented in the plan and cross-section, outline of the feature in parts N and S reconstructed hypothetically); Dms. 200x80 cm, D. 85 cm. Filling: brown soil with patches of burning. Skeleton oriented along N-S with head to S; horse lying belly down, fore-part of the trunk probably leaning to the left, muzzle turned to the right; snaffle bit in muzzle. *I. Individual aged ca 2 years.*

Contents: 2. Iron snaffle bit, Type Ørsnes 1C1, bipartite with iron rings circular in cross-section; partly preserved; WB. ca 12 cm, L. of the preserved link 6.3 cm, Dm. of the preserved ring 4.3 cm.

Chronology: Late Migration Period.

Grave 149: cremation pit burial with remains of pyre, disturbed, over a skeleton horse grave (Pl. XCVII, CIX:5)

Human grave. At 53 cm below surface, disturbed by ploughing, in N part and along the longer edges of the bigger pit, in its upper part remains of the proper cremation burial, preserved as irregular patches; Dms. 75-80x30-130 cm, D. 25 cm. Filling: black soil mixed with sand, with charcoals and numerous burnt human bones, visible also in S part of the bigger pit, at the depth of several cm; Th. ca 15 cm. In the centre a vessel lying on the side. *I. Adult, probably a woman.*

Contents: 1. Clay flask-shaped vessel with a biconical belly, belly bend at 2/5 of the height, slim neck

with a straight edge, under the edge a slightly raised band; surface well-polished and glossy; brown in colour; admixture: fine- and medium-grained crushed stone. Ornament: deeply impressed triangular dimples in horizontal rows at the belly bend and under the edge, between them vertical rows, near the lowest row motif of inverted festoons; H. 15 cm, R. 6.1 cm, BL. 11 cm, B. 5.0 cm.

Horse grave. Horse skeleton under the destruction layer of the cremation burial, pit approximately oval-shaped, elongated along N-S, flat bottom; Dms. 150x80 cm, D. 55 cm. Filling: brown soil with irregular patches of black soil in the upper part. Skeleton oriented along N-S with head to S; horse lying belly down, clearly leaning to the right, right-side limbs tucked under, left-side limbs extended to the side, muzzle turned to the left; snaffle bit in muzzle, near the rump a large stone. *I. Individual aged ca 3.5 years.*

Contents: 2. Iron snaffle bit, Type Ørsnes 1C1, bipartite with iron rings quadrangular in cross-section; one of the rings preserved fragmentarily; WB. ca 13 cm, L. of the links 6.8 cm and 8.8 cm, Dm. of the rings 4.8 cm.

Chronology: Late Migration Period.

Grave 150: cremation pit burial with remains of pyre, disturbed (Pl. XCVIII)

At 65 cm below surface, disturbed by ploughing, irregular in outline, funnel-shaped in profile (there are discrepancies of limits of the feature documented in the plan and profiles); Dms. 120x100 cm, D. 40 cm. Filling: compact black soil with a large amount of charcoals, stones and burnt human bones. At the bottom a standing vessel. *I. Adult (fragments of long bones).*

Contents: 1. Biconical flask-shaped clay vessel with belly bend at 2/5 of the height, slim neck and straight rim; surface well-polished, glossy; brown in colour; admixture: a large amount of medium- and coarse-grained crushed stone. Ornament: deeply impressed triangular dimples in double horizontal rows at the belly bend and under the rim, between them vertical rows of double imprints, near the lowest horizontal row a zone of the width equal to 4 rows of imprints; H. 14.9 cm, R. 5.5 cm, BL. 10.5 cm, B. 5.4 cm.

Chronology: Late Migration Period.

Grave 151: cremation pit burial with remains of pyre, disturbed, over a skeleton horse grave (Pl. XCIV, XCV, CIX:6)

Human grave. Disturbed by ploughing, outline of 2 burial pits arranged at right angles. In N part the larger one, approximately rectangular, oriented along N-S (in S part the outline mingles with the other

burial, the stratigraphic relations between the features undetermined; the original place where the bones were deposited unidentified, the remains of cremation and pyre may have been scattered on the surface of the pit with horse burial filled up with soil); L. undetermined, W. ca 110 cm, D. 40 cm. Filling: black-brown soil with a large amount of charcoals and scattered burnt human bones. In SE part the smaller one, irregular, elongated along SWW-NEE; W. ca 80 cm, D. 35 cm. Filling: compact black soil with charcoals, a few medium-sized stones and burnt human bones. At the bottom 2 standing clay vessels. *I. Surface of the burial pit: Adult, probably a woman (numerous bones), child (single bones); smaller pit: child. II. Charcoals from the pit: pine, birch, beech.*

Contents: 1. Biconical flask-shaped clay vessel with belly bend at ca 1/3 of the height, slightly concave base, slim neck and straight edge; surface well-polished and glossy; dark brown in colour; admixture: fine- and medium-grained crushed stone. Ornament: deep, oblique oval imprints, double horizontal rows of imprints under the rim and at belly bend, between them double vertical rows with 2 more short sections near the base; H. 16.6 cm, R. 6.2 cm, BL. 11.4 cm, B. 5.7 cm. **2.** Clay vessel, biconical with upper part incurved and straight rim; surface roughly polished; brown in colour; admixture: a large amount of coarse- and medium-grained crushed stone; reconstructed from fragments; H. 11.5 cm, R. 11.2 cm, BL. 12.3 cm, B. 8.1 cm.

Horse grave. Poorly preserved horse skeleton at ca 100 cm from the surface, in the lower part of the larger pit; skeleton oriented NNW-SSE with head to SSE; horse lying belly down, fore-part of the trunk leaning to the right, hind-legs tucked under, fore-legs extended, head pressed to the right fore-leg; snaffle bit in muzzle. *I. Male, ca 7 years old (pathological changes of the backbone probably caused by an injury or improper saddling).*

Contents: 3. Iron snaffle bit, Type Ørsnes 1C2, tripartite with iron rings, long central link and shorter, 8-shaped side links, rings quadrangular in cross-section; WB. ca 12.5 cm, L. of the links 4.9 cm, 6.9 cm and 4.9 cm, Dm. of the rings 5.3 cm.

Chronology: Late Migration Period.

Feature 152: fragment of the filling of a cremation burial in secondary context

Thin layer brought by ploughing from another place, irregular in shape (not drawn, not photographed); Th. a few cm. Filling: black soil with charcoals and a few fragments of burnt human bones. *I. Child.*

Contents: none.

Chronology: Late Migration Period?

Feature 153: remains of a funeral pyre (?), disturbed (Pl. XCIX)

Disturbed by ploughing in NW part, oval, elongated along NE-SW (this is not determined at the drawing which profile was documented); Dms. 195x165 cm, D. 25 cm. Filling: black soil with a large amount of charcoals, the surrounding sand pinkish in colour in the upper part due to high temperatures (traces of burning a fire). *I. Charcoals: pine, birch, poplar.*

Contents: none.

Chronology: unknown.

Grave (?) 154: cremation pit burial (?) with remains of pyre, destroyed (Pl. XCVIII)

Destroyed by ploughing, preserved in bottom part, irregular in shape; Dms. 55x42 cm, D. 27 cm. Filling: black soil with charcoals.

Contents: none.

Chronology: Late Migration Period?

Grave 155: cremation pit burial with remains of pyre, destroyed, over a skeleton horse grave (Pl. C)

Human grave. Destroyed by ploughing, preserved in bottom part, irregular in outline; Dm. 40x30 cm, D. up to 20 cm. Filling: mixed black soil with charcoals and over a dozen fragments of burnt human bones. *I. Human and animal bones.*

Contents: none.

Horse grave. Poorly preserved horse skeleton ca 25 cm below the bottom of the cremation burial (outline of a pit impossible to determine); skeleton oriented along NW-SE with head to SE; horse lying belly down, hind-legs tucked under, fore-legs stretched forwards, head resting on the right leg, slightly turned to the right; snaffle bit in muzzle, near the back an iron buckle. *I. Male, ca 6 years old.*

Contents: 1. Iron snaffle bit, Type Ørsnes 1C2, tripartite with iron rings, central link short, 8-shaped, rings rectangular in cross-section; WB. ca 16 cm, L. of the links 8.1 cm, 4.5 cm and 8.7 cm, Dm. of the rings 5.5 cm and 5.9 cm. **2.** Iron girth buckle, Type Butėnas III.2, with a massive, oval frame, circular in cross-section; H. 7.4 cm, W. 3.7 cm.

Chronology: Late Migration Period.

Grave 156: cremation pit burial with remains of pyre, destroyed (Pl. CI)

Destroyed by ploughing, preserved in bottom part, oval in outline, elongated along N-S; Dms. 50x42 cm, D. 12 cm. Filling: black soil with charcoals mixed with sand, with a few fragments of burnt human bones. *I. Child.*

Contents: none.

Chronology: Late Migration Period?

Feature 157: settlement pit, disturbed (Pl. C)

At 35 below surface, disturbed by ploughing, preserved in bottom part, close to circular in outline; Dm. ca 70 cm, D. 20 cm. Filling: grey-yellow sand with fragments of unburnt animal bones and potsherds. **Contents:** **1.** Fragment of the rim of a clay vessel, Type Okulicz IV, slightly turned aside; surface carelessly polished; brown in colour; admixture: a medium amount of fine-grained crushed stone; R. 12 cm. **2.** Fragment of the rim of a clay vessel, Type Okulicz IV, slightly turned aside; surface polished; light brown in colour; admixture: a large amount of fine-grained crushed stone; R. 12 cm. **3.** Fragment of the base of a clay vessel with distinguished, concave bottom; surface carefully polished; brown in colour; admixture: a large amount of fine-grained crushed stone; B. 2.9 cm. **4.** Fragment of the handle of a clay vessel; surface carelessly polished; brown in colour; admixture: a small amount of fine-grained crushed stone; W. 1.4 cm. **5.** Over a dozen fragments of vessels with roughened and smooth surfaces; typical of the Early Iron Age (not drawn).

Chronology: Early Iron Age.

Grave 158: cremation pit burial with remains of pyre, destroyed (Pl. CI)

At 29 cm below surface, destroyed by ploughing, preserved in bottom part in shape of a few irregular patches, documented partly (lack of cross-section); D. 4 cm. Filling: black soil with charcoals, a few fragments of burnt human bones and a fragment of a vessel. *I. Adult.*

Contents: **1.** Fragment of the base of a flask-shaped clay vessel, biconical with low belly bend; surface well-polished, glossy; dark brown in colour; admixture: a large amount of fine- and medium-grained crushed stone. Ornament: at the preserved fragment of the belly bend a horizontal row of impressed, triangular dimples; B. 5.7 cm.

Chronology: Late Migration Period.

Feature 159: traces of a funeral pyre (?), disturbed (Pl. CII)

At 39 cm below surface, in N part disturbed by ploughing, irregular in outline, elongated along N-S; Dms. 235x75 cm, D. 18 cm. Filling: grey-reddish soil, at the perimeter thin black soil permeated with charcoals, in bottom part neighbouring with sand pinkish in colour due to high temperatures (traces of burning a fire).

Contents: none.

Chronology: unknown.

Grave 160: horse skeleton burial, disturbed (Pl. CI)

Horse skeleton immediately under the surface, disturbed by ploughing, slightly deeper fragments preserved in anatomic arrangement (pit outline undetermined, the possible cremation burial above completely destroyed by ploughing; not drawn, not photographed). Filling: grey-yellow sand. Skeleton oriented along N-S with head to S; horse lying belly down with hind-legs tucked under and fore-legs stretched forwards, head turned to the left; snaffle bit in muzzle. *I. Individual aged 3.5-4 years.*

Contents: **1.** Iron snaffle bit, Type Ørsnes 1C2, tripartite with iron rings rectangular in cross-section, on each of the rings fan-shaped iron rein and cheekpiece (?) ferrules with single rivets at the wider ends, central link longer; reconstructed WB. 18 cm, L. of links 6.5 cm, 9.0 cm and 6.7 cm, Dm. of the rings 4.5 cm and 4.9 cm.

Chronology: Late Migration Period.

Feature 161: stone pavement (Pl. CIII)

Ca 100 cm to SW from Feature 162, elongated stone, surrounded with smaller stones (with the exception of NW part), carefully arranged, documented partly (lack of cross-section); L. of the stone 100 cm. Filling: grey-yellow soil with single charcoals. Under the stone a knife and a fragment of a handle.

Contents: **1.** Iron knife with preserved fragment of a wooden handle, slightly bent; L. 11.8 cm, W. of the blade 1.9 cm, B. of the back 0.5 cm. **2.** Fragment of the iron handle (?); preserved L. 6 cm, W. 1.5 cm.

Chronology: Late Migration Period?

Feature 162: remains of a funeral pyre (?), disturbed (Pl. CII)

Disturbed by ploughing, oval in outline, elongated along NW-SE, trough-shaped in cross-section; Dms. 285x70-120 cm, D. up to 18 cm. Filling: black soil with layers of grey-yellow sand, with large amounts of charcoals, sand near the bottom of the feature pinkish due to high temperatures (traces of burning a fire). *I. Charcoals: birch, pine, poplar, beech.*

Contents: none.

Chronology: unknown.

Feature 163: stone pavement, damaged (Pl. CIII)

Partly damaged by ploughing, concentration of small and medium size stones spread not densely, close to circular in outline; Dm. ca 170 cm, D. 15 cm. Filling: brown soil with 2 potsherds between the stones.

Contents: **1.** 2 small, uncharacteristic fragments of a clay vessel; light brown in colour; admixture: coarse- and medium-grained crushed stone and sand (not

drawn). **2.** Lump of a raw amber (not drawn).

Chronology: Late Migration Period?

Stray finds (Pl. CIV, CV)

During excavation works at the site in destruction layers outside burials 16 metal finds and several ten fragments of clay vessels, part of which was classified as representing the Elbląg group, were found; the remaining ones were determined as characteristic of earlier periods of prehistory and to modern times. The list below presents descriptions of artefacts connected with the burial from the Migration Period.

1. Bronze ladder brooch, Variant I, with 4 rectangular rungs. Construction: impossible to reproduce. Bow and foot trapeze-shaped in cross-section; fragmentarily preserved and deformed (twisted in the head part, the lowest rung bent, a fragment of the spring and part of the catchplate preserved). Ornament: at the ends of the rungs holes for short rivets (5 preserved), heads unpreserved, probably originally decorative; on the 2nd rung remains of the soldering fixing the head on the right side and a circular imprint of a head around the shaft of the rivet on the left side; L. 6.5 cm, preserved W. of the 1st rung 3.0 cm, W. of the 2nd second rung 4.0 cm, preserved W. of the 3rd rung 3.6 cm, W. of the 4th rung 4.4 cm.

2. Bronze ladder brooch, Variant I, with 4 rungs, upper rung trapeze-shaped, the remaining ones rectangular. Construction: pseudo-crossbow (?) or broken and repaired crossbow construction, spring of 2 segments of 6 and 7 coils, separated by a projection on the head, fixing an iron axle, the right 6-coil side of the spring is resilient with the end resting on the underside of the pseudo-chord, pseudo-chord wound around the end of the axle on the right side; pseudo-chord of wire lens-shaped in cross-section, slightly faceted; at the ends of the spring originally 2 decorative bosses (preserved fragment of the one on the right side). Narrow bow and foot trapeze-shaped in cross-section; solid catchplate; L. 5.3 cm, preserved W. 3.3 cm, L. of the rungs 3.9 cm (the 1st one), 3.6 cm (the 2nd one), 2.8 cm (the 3rd one), 3.7 cm (the 4th one).

3. Bronze brooch, pseudo-ladder, a bow cut out in bronze sheet with imitation of 4 rectangular rungs. Construction unknown: spring, axle and pin missing; a wide projection on the head bent, serving as a hook for the axle; a projection on the foot hooked inwards, forming a primitive catchplate; fragmentarily preserved; L. 4.5 cm, W. of the imitation rungs 1.6-2.2 cm, Th. of the bronze sheet 0.1 cm (artefact discovered near grave 27).

4. Bronze disc brooch, circular with a large hemispherical boss in the centre, around the central

boss 2 concentric rows of small bosses. Construction: crossbow, rectangular plate bent in half of its length at right angles, riveted to the underside of the disc; in the perpendicular part a hole for the axle, with a spring and a chord resting on the underside of the disc, solid catchplate made of a rectangular plate bent at right angles, riveted to the disc; Dm. 3.3 cm, Dm. of the bulge 1.4 cm, H. of the bulge 0.6 cm.

5. Bronze disc brooch, circular with a large hemispherical boss in the centre, around the central boss 2 concentric rows of small bosses. Construction: crossbow, rectangular plate bent in half of its length at right angles, riveted to the underside of the disc; in the perpendicular part a hole for the axle, with a spring and a chord resting on the underside of the disc, catchplate originally solid, made of a rectangular plate bent at right angles, riveted to the disc; damaged edge of the disc and catchplate, pin missing; Dm. 3.3 cm, Dm. of the bulge 1.4 cm, H. of the bulge 0.6 cm.

6. Bronze disc brooch, Type Ørsnes I.1-2/Høilund Nielsen IIb/c; circular. Construction: crossbow, 4-coil spring of bronze wire, close to quadrangular in cross-section, on the bronze axle with ends hooked over the end coils of the spring; a catchplate and a head projection with a hole for the axle cast together with the fairly thick disc, solid catchplate; catchplate and pin damaged, chord broken. Ornament: 3 concentric, circular lines of triangular stamps, inside the smallest circle 2 crossing double lines of stamped points forming the shape of St Andrew's cross, with lines of triangular stamps adjoining to them from the outside; Dm. 4.2 cm.

7. Bronze equal-armed brooch, Type Ørsnes F2/Høilund Nielsen F1c. Construction: probably crossbow (item incompletely preserved), bronze axle, near the head remains of an iron chord, traces of corrosion on the catchplate, iron pin not preserved; massive bow, oval-shaped, concave on the underside, slightly wider at the ends. Ornament: in the central part of the bow lengthwise lines of punched dots, at the ends of the bow and on arms transverse engraved lines and rows of dots; L. 3.6 cm, preserved W. 1.4 cm.

8. Bronze lancet-shaped strap end with 3 rivets at the end arranged in a triangle, tongue faceted; end broken off; preserved L. 5.1 cm, W. 1.1 cm.

9. Bronze lancet-shaped strap end with 3 rivets at the end arranged horizontally, tongue faceted. Ornament: rows of punched double-crescent stamps along the edge, in the bottom part also along the edge of the faceting; L. 5.6 cm, W. 1.3 cm.

10. Bronze lancet-shaped strap end with 2 rivets at the end arranged horizontally, tongue faceted. Ornament: engraved lines along the upper edge of the

ferrule and horizontal grooves on the waist; L. 4.2 cm, W. 1.1 cm.

11. Bronze belt mount, rectangular with single rivet holes in corners. Ornament: openwork curved and T-shaped pattern, along the longer edges line of punched dots; L. 5.6 cm, W. 2.3 cm, Th. 0.2 cm.

12. Fragment of a bronze bracelet, quadrangular in cross-section; reconstructed Dm. 7.2 cm, Th. 0.4 cm.

13. Iron snaffle bit, Type Ørsnes 1C2, tripartite with iron rings, rectangular in cross-section, central link short, 8-shaped, side links with one end longer; reconstructed WB. 12.5 cm, L. of the links 6.6 cm, 3.8 cm and 6.9 cm, Dm. of the rings 4.7 cm and 4.9 cm.

14. Iron snaffle bit, Type Ørsnes 1C2, tripartite with iron rings, flat, rectangular in cross-section, central link short, S-shaped; preserved 1 ring; reconstructed WB. 15 cm, L. of the links 8.7 cm, 4.4 cm and 7.3 cm, Dm. of the ring 6.3 cm.

15. Iron link of a snaffle bit; L. 7.7 cm.

16. Bronze fitting of a headgear strap, rectangular with 2 rivet holes; broken at one end. Ornament: row of 7 bosses; preserved L. 4.7 cm, W. 0.8 cm.

17. Stone grinder, close to spherical with 8 surfaces; traces of abrasion on surfaces; Dm. 8.6 cm.

18. Fragment of the clay vessel, barrel-shaped with straight rim, slightly bent inwards; surface partly roughened; dark brown in colour; admixture: medium-grained crushed stone; H. 6.8 cm, R. 6.9 cm, BL. 8.3 cm, B. 6.1 cm.

19. Fragment of the base part of a clay flask-shaped vessel; surface smooth; light brown in colour; admixture: fine-grained crushed stone. Ornament: double rows of circular dimples at the belly bend and neck; BL. 10.0 cm, B. 4.0 cm.

20. Fragment of the base part of a clay flask-shaped vessel, bottom slightly concave; surface well-polished and glossy; beige in colour; admixture: fine- and medium-grained crushed stone. Ornament: double row of wedge-shaped imprints at the belly bend tool; BL. 10.3 cm, B. 6.1 cm.

21. Several ten potsherds, typical of the Elbląg group; forms impossible to reconstruct (not drawn).



III. ANALYSIS

III.1. Costume and personal ornaments (Bartosz Kontny)

III.1.1. Brooches

At the cemetery at Nowinka thirty one brooches were found, six of which were stray finds and the rest was discovered in nineteen burials. Except for the iron brooch from grave 6, all the other ones were made of bronze.

The brooch from grave 6/1⁶ represents the crossbow form with a solid catchplate and a boss on the head. It resembles the items of the Dollkeim/Kovrovo type (Bitner-Wróblewska 2001, p. 41-52) which are considered to indicate Phase D on the Balts' lands, although the finds from Gotland, Oland and Bornholm are indicators of Phase VI:2 after B. Nerman (1935) dated to the 6th century till its end (Bitner-Wróblewska 2001, p. 50-52, Pl. II). Items of Type Dollkeim/Kovrovo, however, had a different, i.e., arched, bows. Due to the angle at which its bow is bent, identical to that found in ladder brooches, the fibula from grave 6/1 should be linked with the developed or late stage of Phase E. Similar brooches have been recorded in assemblages from the Late Migration Period, e.g., from grave 'c' from the area of Kaliningrad (Kleemann 1956a, p. 72, 74, Pl. XVIII:23) or more recently at the cemetery at Mitino, grave 167, grave 206, grave 207, grave 296, grave 300, grave 319 and 381 (personal commitment: K. Skvortsov)⁷. Some of the analogical brooches had more or less reduced enlargement at the end of the foot (e.g., Mitino, grave 365 and 395), which resembles the ends of so called *Schlusskreuzfibeln*. Thus we may have to deal with forms which evolved from the *Schlusskreuzfibeln*, hence typologically later than them. Unfortunately as yet it is impossible to make any precise statements about their chronology due to the lack of numerous, well-dated assemblages.

The most numerous group of fibulas embraces ladder brooches (germ. *Sprossenfibeln*). They are represented by developed and late forms (cf. Kowalski 1991, p. 80); all of them can be determined as Group 4, Variant B after M. Rudnicki (2008, Fig. 13). Items from Nowinka may be classified into three variants: I – slim items (grave 55/2, 85/1, two stray finds SF/1-2), II – compact

items with rungs decorated with horizontally engraved lines, with a chord or pseudo-chord without projections (grave 21/1, 35/1, 55/1, 60/1), III – items with imitation crossbow construction with a decorated pseudo-chord with projections and rungs (in the case of the item from grave 17/1 also pseudo-chord) decorated with a texturing tool, i.a., with a pseudo-filigree motif (grave 17/1, 85/18; basing on the construction a fragment of a brooch of that type was also found in grave 62B/1). Due to their construction the ladder brooches from Nowinka can be divided into two basic groups: crossbow ones (grave 21/1, 55/2, 60/1) and imitation crossbow ones (grave 17/1, 35/1, 55/1, 62B/1, 85/1, 85/18, stray find SF/2). It is impossible to determine the construction of the stray find SF/1 (the elements of the constructions have not been preserved). The pseudo-crossbow construction was discussed in another place (Kontny 2010), and the detailed description of constructions of respective artefacts can be found in the Catalogue, so only its basic premises will be mentioned here: the pseudo-chord is fixed at the ends of the axle and has a decorative function only, underlined by the ornament; the resilience was obtained owing to the right side of the spring, one of its ends becomes the pin and the other rests on the pseudo-chord (the left side of the spring is non-resilient). Moreover, the pseudo-chord was attached to the bow with the use of guides in the imitation chords to which the bow was fixed (grave 17/1, 62B/1, 55/1?, 85/18). As it seems in these cases the pressure obtained by resting the hooked end of the spring on the pseudo-chord was insufficient for the latter to rest securely on the bow.

Besides the ornaments on the rungs and pseudo-chord, the ladder brooches had bosses decorated with pairs of rings of thick, incised wire, placed at the ends of the axle. The presence of bosses (or their remains) was found in all of the ladder brooches. Brooches representing Variant I did not have an ornament (stray find SF/2) or it was clearly poorer than the decoration of the other ladder brooches (grave 55/2 – one groove at the lowest rung, stray find SF/1 – grooves along the edges of the rungs and probably rivets with decorative heads at the ends of the rungs). The find from grave 85/1 is an exception here; besides grooves on the rungs it had lines made of punched dots at the bow along its axis (four lines) and along the lower edge of the topmost rung (one line). Brooches representing Variant II were decorated with horizontal grooves at the rungs and the pattern covered almost the whole surface of the 2nd

⁶ All finds from Nowinka discussed below are affixed with the grave number and the find number within the grave furnishing, e.g., grave 6/1. As refers to stray finds they are signed SF with number on the list of loose finds, e.g., SF/2. Corresponding plate numbers are added only if necessary.

⁷ In final stage of correction of this book the publication of Mitino was published (Skvortsov 2010) so it was impossible to quote it here in details.

and 4th rung and in the remaining ones it was less copious or even absent (grave 35/1). The most complex patterns were found on brooches representing Variant III. Brooch from grave 17/1 had a complex pattern of horizontal zig-zag lines: engraved, pseudo-filigree and dotted, made with a texturing tool, triangular stamp and a burin. Interestingly, the two bottom rungs had lines engraved along the longer edges on the underside, thus invisible for the lookers on (the craftsman's mistake?). On the brooch from grave 85/1 the ornament is simpler and consists of engraved and pseudo-filigree lines composed of punched dots. Also pseudo-chords were decorated in some items of Variant II and III: usually with vertical engraved lines at the sides where the bow was fixed (grave 17/1, 55/1, 62B/1, 85/18) and in grave 17/1 also dots punched along the edge of the upper part of the imitation chord.

Brooches of Variant I should be treated as typologically the earliest (cf. Rudnicki 2008, Fig. 13), yet one of them (grave 85/1) was determined as coming from the 3rd chronological phase of the burial ground at Nowinka. However, it is an unusual artefact with extremely rich decoration and imitation crossbow construction, not found in other brooches of that variant from Nowinka. Brooches of Variant II were found in all chronological phases whereas Variant III basically belongs to the latest, 3rd phase (the exception is item from grave 62B/1, hypothetically classified as this variant). It should be also noted that although imitation crossbow and crossbow brooches appeared in all the phases, sometimes even in one feature (grave 55) and very similar forms had either of the type of construction (brooch from grave 21/1 – crossbow, 35/1 – pseudo-crossbow), the crossbow construction does not appear in the latest graves from the Nowinka necropolis. This may indicate that the crossbow construction was gradually replaced by the imitation crossbow one.

Ladder brooches are the chronological determinant of the late stage of Phase E in the groups of the West Balt circle from the Late Migration Period: the final phase of the Dollkeim-Kovrovo culture (Nowakowski 1996, p. 54, Pl. 18:14, Pl. 107), in the Olsztyn group (Kowalski 2000, p. 223; Rudnicki 2008) and in the Elbląg group (Kowalski 2000, p. 220) as well as at the area of modern Lithuania (Åberg 1919, p. 139-142) with, i.a., the items from the cemeteries of Plinkaigalis and Marvelē (Bertašius 2000, p. 137, Fig. 5), Lazdininkiai, grave 73 (Bliujienė, Butkus 2002, Fig. 8) as well as Latvia and Estonia (Brather 2001, Fig. 4, p. 488-490). Outside these areas they are very rare; the exception confirming the rule is the find from grave 2 in the early Slavic burial ground at Prützke, Ldkr. Potsdam-Mittelmark (Brather 2001). The closest

analogies, however, can be found in the Elbląg and Olsztyn groups. The slimmer forms are said to have appeared in the latter from Phase E₂ and the stocky ones in Phases E_{2b}-E₃ (Rudnicki 2009, Fig. 12; cf. Kowalski 1991, p. 72; 2000, p. 223); in the Elbląg group both forms are said to have appeared in Phase E₂⁸, and the slim items are considered to be earlier (Kowalski 2000, p. 220). Analogies for Variant I items may be found at, e.g., cemeteries of the Elbląg group in Łęcze, grave 8 (Dorr 1898, p. 9, Pl. III:8), grave 19 (Dorr 1898, p. 10, Pl. II:7), grave 36 (Dorr 1898, p. 12, Pl. II:12) and Elbląg-Moniuszki St (Ehrlich 1937a, Fig. 3, lower right), Olsztyn group necropolises at Tumiany, grave 21 (Kulakov 1989, Fig. 26:2; Jakobson 2009, Pl. 7:a), Miętkie (Bitner-Wróblewska 2008a, Pl. CLVIII) and Kosewo III, grave 212 (Jakobson files) and in Sambian-Natangian areas: Pesochnoe, stray find (Jakobson files) and Zelenyy Gay, stray find (Jakobson files); for the item from grave 85/1 the closest analogy is the brooch from grave 23 in Łęcze (Dorr 1898, p. 11, Pl. III:5). For Variant II analogies can be found at burial grounds of the Elbląg group in Łęcze, grave 23 (Dorr 1898, p. 11, Pl. III:3), 32 (Dorr 1898, p. 12, Pl. III:1), 55 (Dorr 1898, p. 14, Pl. II:6), of the Olsztyn group in Kielary, grave 63 (Jakobson 2009, Pl. 156:a), Miętkie, grave 59 (Kulakov 1989, Fig. 8:4), Tumiany, grave 30a (Kulakov 1989, Fig. 27:3; Bitner-Wróblewska 2008a, Pl. III; Jakobson 2009, Pl. 14:b), 49 (Kulakov 1989, Fig. 36:1), Tylkowo (Nowakowski 1998, p. 108, Pl. I:18; Menghin *et al.* 2007, p. 370, cat. no IV.3.6) and Waplewo (Bitner-Wróblewska 2008a, Pl. XXXVII) and at the Sambian-Natangian area, e.g., Pesochnoe (Jakobson files), Kovrovo, grave 55 (Tischler, Kemke 1902, Pl. VI:4), Suvorovo, grave 465 (Heym 1938, Fig. 23; Bitner-Wróblewska 2008a, Pl. CCLV), Mitino, grave 267 (personal commitment: K. Skvortsov), and for Variant III at cemeteries of the Elbląg group in Łęcze, grave 7 (Dorr 1898, p. 9, Pl. II:4), 23 (Dorr 1898, p. 11, Pl. III:3), 30 (Dorr 1898, p. 12, Pl. II:11; cf. also Dorr 1898, Pl. II:3), 48 (Dorr 1898, p. 13, Pl. III:2), Elbląg-Żytno (Dorr 1914, Fig. 7:d-e), Elbląg-Moniuszki St (Ehrlich 1937a, Fig. 3, upper left), of the Olsztyn group in Popielno, grave 41 (Jakobson files), Kielary, grave 6 (Jakobson 2009, Pl. 110:a), grave 22 or 23 (Bezzenberger 1900, p. 173, Fig. 64; Jakobson 2009, Pl. 129:a), Tumiany, grave 30a (Jakobson 2009, Pl. 14:a), 36 (Heydeck 1895, Pl. VIII:10; Åberg 1919, Fig. 182; Kulakov 1989, Fig. 31:3; Jakobson 2009, Pl. 23:a), 80 (Kulakov 1989, Fig. 42:2; Bitner-Wróblewska 2008a, Pl. XIV; Jakobson 2009, Pl. 50:a), at the Sambian-Natangian areas

⁸ J. Kowalski established absolute limits of Phase E₂ differently for the Elbląg and Olsztyn group.

in Suvorovo, grave 338 (Bitner-Wróblewska 2008a, Pl. CCXXXIV), 372a (Heym 1938, Fig. 24; Bitner-Wróblewska 2008a, Pl. CCXXXV) and 392 (Bitner-Wróblewska 2008a, Pl. CCXXXVII), ex-Plauen, stray find (Jakobson files) and Beryozovka II, grave 29 (Jakobson files). It should be noted that in the case of finds from the Olsztyn group and the Sambian-Natangian areas the analogies are slightly more distant, especially for Variants II and III.

Brooches from grave 105 refer to the group of ladder brooches. They may be considered as imitations made with the use of primitive technology. Both brooches have crossbow construction. In one (grave 105/1) the axle was fixed on the wide, hooked projection on the head; its ends were bent on the external coils of the spring. Both the projection on the head and the catchplate were made of the same as the bow, suitably cut out piece of metal sheet. In the second brooch (105/2) the axle was hooked over the last coil of the spring only at one end; the other details of the construction are identical. The pseudo-ladder brooches are represented also by one stray find (SF/3). It was fragmentarily preserved so the details of the construction were not complete; it is possible to say that the head had an identical shape as those of the brooches from grave 105, but the catchplate was shaped from a bent piece of metal sheet cut out at the side of the foot between the rungs and not, as in the case of the other pseudo-ladder brooches, at its end. There are not known exact analogies of the described brooches, but one should recall the brooch from Łęcze, grave 41 (Dorr 1898, p. 13, 19, Pl. III:10) made with the use of equally primitive technology and also with a crossbow construction. The main difference is the lack of imitation rungs. The brooch was accompanied by, i.a., a bit with bronze ferrules and a hook ring of twisted wire (Dorr 1898, p. 13, Pl. III:1) which makes it impossible to establish a precise chronology. There are also two similar brooches from the Sambian-Natangian area uncovered in the 1990s: in ex-Wangskeim and Izhevskoe; they are said to be still more primitive: the pin was made of the same piece of bronze as the bow, there was no axle and chord (personal commitment: K. Skvortsov). None of the brooches was accompanied by artefacts allowing for precise dating. On the basis of the relative chronology of the Nowinka necropolis it may be assumed that these brooches are a later form, present in the final, 3rd phase of the cemetery.

The next group of brooches is made up of two items from grave 2/1-2. These are simple forms made of wire with a lower chord and a solid catchplate. They consist of three parts: the spring which

is extended into the pin, an axle and the bow with a catchplate. Their unique feature is the axle made of wood which is an unsophisticated solution; for that reason they are considered as 'decadent' forms (Okulicz 1988, p. 124, Fig. 9:e-f; cf. Pietrzak 1977, p. 152-153, Fig. 2:d). These brooches do not have exact analogies, yet in the Elbląg group some items of similar constructions were found: Łęcze, grave 57 (Dorr 1898, p. 14, Pl. I:32) – they differed by having a marked out place where the feet became the bow, and Elbląg-Żytno, grave 86 (Ehrlich 1920, p. 188-189, Fig. 2:a). B. Ehrlich hints as the analogy for the last mentioned artefact the items from grave 46 and 49 in Elbląg-Żytno (1920, p. 188), but these are different forms with a dissimilar, concave chord (cf. Dorr 1914, p. 10, 13, Pl. III:3-4). Simple brooches with a hinge construction, resembling modern safety pins were found in grave 4 in Chojnowo (Kowalski 1985, Pl. I:16-17; 1987, Fig. 3:1-2), the similarity in this case consists only in the simplicity of the construction as the details differ considerably. On the basis of the relative chronology of the Nowinka necropolis the brooches from grave 2 are the earliest ones at the site (Phase 1). Unfortunately this dating can not be verified by comparison of other similar finds, because they did not appear together with precise dating elements. The only exception are brooches from feature 4 in Chojnowo, dated by means of the *Schlusskreuzfibel* type brooch (Kowalski 1985, p. 228, Pl. 1:18; 1987, Fig. 3:3) to Phase E₁. On the one hand they seem to confirm the relatively early chronology of the finds from Nowinka, on the other one the evident differences in their construction do not allow to make a strong claim.

Relatively numerous are disc brooches. Majority of them were made of circular bronze plates with a hemispherical boss in the centre (except for the stray find SF/6 where the disc is flat). The brooches have crossbow constructions and springs consisting of several coils. Both the catchplate and the element stabilising the axle and spring were made of bronze plates riveted (grave 106/1, stray finds SF/4-5) or soldered (grave 34/1, 84/1) to the underside of the disc or cast together with it (stray find SF/6). The catchplates were made of vertically fixed rectangular plates doubly bent at right angles and the axles were fixed on similar plates placed horizontally and also doubly bent (grave 34/1, 84/1) or once bent (grave 106/1, stray finds SF/4-5). Only in the case of the stray find SF/6 the catchplate and the plate fastening the axle have the form of a vertical element joined with the base. The artefacts with riveted construction elements represent more primitive forms both as regards the technology of their production (joining with rivets the

ends of which are visible on the surface of the brooch) and the way in which the axle is fixed (the construction is less durable than in brooches from grave 34/1, 84/1 and the stray find SF/6). Each of the brooches is decorated; usually the area around the central boss was filled with small bosses embossed along the edge of the plate and arranged in single (grave 84/1, 106/1)⁹, double (stray finds SF/4-5) or quadruple lines (grave 120/1). The brooch from grave 34/1 is an exception. The ornament on it consists of four concentric lines made of stamped triangles made with tools with two different endings (with a convex circle inscribed in a triangle and a smaller triangle with undecorated centre). Also the stray find SF/6 is very decorative. Its surface is covered with three lines of triangular stamps arranged into a pattern of concentric circles. The centre of the smallest of them is filled with the motif of St. Andrew's cross made of a double punched line adjoined on the outside by stamped triangles. It is worth to note that two stray finds (SF/4-5) are almost identical in their ornamentation, technology of production and dimensions, which may indicate that they were made in the same workshop, or they may have come from one burial¹⁰. Disc brooches have been recorded in the Elbląg group in: Łęczce, grave 76 and the pair from grave 72 (Dorr 1898, p. 20, Fig. 5, Pl. I:30; Ehrlich 1932, p. 414, Fig. 13; Ehrlich 1931a, p. 24-26, Fig. 4)¹¹, Elbląg-Żytno (Ehrlich 1932, p. 414, Fig. 6:g, 7:b), Elbląg, Moniuszki St, feature 203 (Ehrlich 1937b, p. 274); the circular discs with a central boss from grave 228 at the same cemetery, considered by their discoverer to be decorative discs (Ehrlich 1937b, p. 276, Fig. 8; Neugebauer 1975, Pl. X:3) were probably also disc brooches. It should be mentioned here a disc brooch from unknown site, probably on the territory of the Elbląg group, stored in

MAG, inv. no 0031/02/01. Generally they had identical construction, cf. R. Dorr's remarks on the brooches from Łęczce, grave 72 and 76 (Dorr 1898, p. 20). However, they differ considerably in details: the large brooch from Łęczce and the one from MAG collection were decorated with a circular bronze plate with an embossed ornament, identical to the patterns on the headgear connectors from grave 118/3¹² in Nowinka and did not have a big, central boss; the brooch from Elbląg-Żytno was made in a similar way, whereas the brooches from grave 72 in Łęczce had a small central bulge but besides that were undecorated; the assumed brooches from feature 203 in Elbląg, Moniuszki St, also had a central bulge but surrounded with concentric engraved lines. The closest analogies to disc brooches from Nowinka may be found in the Balts' milieu: for the brooch from grave 34/1 at the Sambian-Natangian area: Beryozovka II, grave 41 and the stray find (Jakobson files; cf. Rudnicki 2006a, Fig. 3:3)¹³, and the two items from ex-Wangskeim (personal commitment: K. Skvortsov), whereas the brooches with the pattern of embossed concentric bosses in the Olsztyn group: Kielary, grave XXVIII (Jakobson 2009, Pl. 212:a) and in Sambian Peninsula: ex-Siegesdicken II, grave 15 (Jakobson files, cf. Rudnicki 2006, Fig. 3:2, 6) and in the materials from the NE edge of Polish lands culturally connected with the Sambian areas: Markajmy, grave 4¹⁴, 64 i 176 (Voigtmann files)¹⁵. Items from Nowinka are thus local products representing the production style of the Balts. The exception to

⁹ Items of this type resemble shield bosses (the small bulges seem to imitate rivets fixing the shield boss).

¹⁰ Although in Nowinka single disc brooches were found in burials, in the Elbląg group there are cases when pairs of disc brooches occurred: Łęczce, grave 72 (Dorr 1898, p. 20), Elbląg, Moniuszki St, feature 228 (Ehrlich 1937b, p. 276).

¹¹ The brooch from grave 76 is presented at Fig. 5, erroneously tagged as Fig. 6 (cf. Dorr 1898, p. 20). It is stored in the MAHE collection, inv. no 107/276 and has been erroneously ascribed to the cemetery at Elbląg-Żytno. It was not correctly identified by M. Natuniewicz, who analysed the Elbląg collection (Natuniewicz 2000, p. 124, 156, Pl. X:10). In fact it is a brooch from Łęczce, grave 76, which is indicated by its dimensions, traces of soldering the plate to the embossed pearl-like ornament and the construction detail: the hook-shaped end of the spring. Contrary to what M. Natuniewicz supposed (2000, p. 124) it seems that brooches of that kind were not decorated with applique patterns of incised wire but only with "pearl-like" embossed plates.

¹² A plate decorated with a very similar embossed pattern was found at the Natangian cemetery at Kholmogor'e (Heym 1938, Pl. 35; von zu Mühlen 1978, Pl. 22, low; Kulakov 1990, Pl. VIII:7) – V. Kulakov assumed that it was a disc brooch (1990, p. 63) – an analogous brooch is known, e.g., from the Sambian cemetery at Mitino, grave 266 (personal commitment: K. Skvortsov); at the West Lithuanian cemetery of Lazdininkiai, grave 73 such discs were used as decorative belt fittings and the embossed plate was made of silver and in its centre there was a glass insert (Bliujienė, Butkus 2002, Fig. 3:3). A very similar pattern was also found on a silver plate decorating a bronze disc brooch from the Olsztyn group cemetery at Tumiany, grave 95 (Jakobson 2009, p. 53, Pl. 59:95a). An embossed, but only slightly similar pattern was found on a disc brooch from Sambian cemetery at Vetrovo, grave 3 (Hollack 1914, p. 284, Fig. 126).

¹³ On the first-mentioned brooch the catchplate and the plate fixing the axle were probably soldered and on the second one they were riveted. Certain similarities to this group can be found in the artefact from Zdory, grave 88 (Jakobson files), but its central boss is constructed in a different way (strengthened with a spike or a rivet).

¹⁴ In its case the assemblage is similar to ones from the Elbląg group: besides the brooch it consisted of a bit and a clay flask.

¹⁵ These brooches have quadruple (Markajmy, grave 64 and 176), triple (Kielary, ex-Siegesdicken) or single (Markajmy, grave 4) lines of concentric bosses.

this rule is a stray brooch SF/6. It differs from the others by many details which are characteristic for Scandinavia: the disc is thicker, there is no central boss, the catchplate and the projection fixing the axle to the disc were cast, also the ornament is specific. What is untypical is the bronze wire used to make the fastening construction: in Scandinavia it was almost only iron wire, although there are cases when bronze was used, e.g., in Smørenge on Bornholm (unpublished, NMK inv. no C33049, MB inv. no 766x463). There are also analogies to the arrangement and kinds of stamps. The closest one is the stray find from Sorte Muld on Bornholm (unpublished, MB inv. no 1191x416Ra) where concentric circles made of dots and sections of triangular stamps were used with the motif of St. Andrew's cross in the centre, but its arms are made of single lines of dots. The arrangements of concentric circles of stamped triangles or dots, sometimes also rhombuses, are recorded in Scandinavia in greater numbers, e.g., the above mentioned brooch from Smørenge, the stray finds from Bornholm: Slamrebjerg (unpublished, BM inv. no 1508x356), Nygård – here also additionally St. Andrew's cross made of dots and stamped concentric circles in the centre and in the fields determined by the arms of the cross (unpublished, NMK inv. no C32615, BM inv. no 2159x8), Hoglebjerg (unpublished, NMK inv. no C33707, BM inv. no 1635x19), as well as Knarregård øst, grave 1 (Hedegård 1989, Fig. 1:3) and Øster Tørslev, grave 8 (Hedegård 1989, Fig. 3:2) in Jutland. It should be thus assumed that we deal with an imported brooch, Type Ørsnes I1-2/Høilund Nielsen I1b/c.

So far it was noted that the starting point for the appearance of disc brooches among the Balts were the Frankish disc brooches (Rudnicki 2006a, p. 81-83). However, it seems that this claim should be modified, acknowledging the contribution in this respect of the Scandinavian items, especially Type Ørsnes I1-2/Høilund Nielsen I1 (cf. Ørsnes 1966, p. 297-298, Fig. 129-133; Høilund Nielsen 1987, p. 77). It appeared in Phases 1A-B (530-600 A.D.) in Scandinavia (Høilund Nielsen 1987, p. 60, 62, 69). The supposition is also confirmed by the distribution of that type mainly in eastern and southern Scandinavia, including Bornholm (Ørsnes 1966, p. 297-298; Høilund Nielsen 2000, Figs. 1, 3), the similar chronology and the fact that Scandinavian influence on the Elbląg group was much stronger than Merovingian one. The find which seems to confirm this way of thinking is the brooch from grave 34/1: decorated with concentric stamps, thus in the Scandinavian style, at the same time it has the central boss typical of the Balt items (in Scandinavian brooches the centre of the disc may have been

decorated by stamped concentric circles). It is also slightly more primitive than the Scandinavian items (*vide*: the way of fixing the catchplate and the axle grip), yet far more sophisticated than the other disc brooches with central bosses. This brooch may be thus considered to be an attempt at adapting the Scandinavian fashion to local conditions (with the use of very similar stamping tools). This tendency was most probably reflected by making, on the one hand, very simple forms, embossed in thin metal sheets, and on the other one, by adding decorative, embossed plates soldered to the surface (which may be exemplified by the above-mentioned brooch from Łęczce, grave 76)¹⁶. M. Rudnicki dates the Balt disc brooches to Phase E₃ of the Olsztyn group (2006a, p. 82-83). In the relative chronology of the burial ground at Nowinka the assemblages with disc brooches belong to Phase 3, which confirms their late chronology, presumed by M. Rudnicki. It is also confirmed by the fact that disc brooches appeared in feature 203 at the Elbląg group cemetery in Elbląg, Moniuszki St together with a ladder brooch, probably Variant III (Ehrlich 1937b, p. 274)¹⁷. Also the presence of the brooch from grave 76 in an assemblage with a sword in a scabbard decorated with embossed metal sheet (Dorr 1898, p. 16; Ehrlich 1931a, p. 22-24) seems to confirm this observation: in Nowinka swords in decorative scabbards appear in Phase 3 of the necropolis. It seems that disc brooches were worn both by women (grave 106 – probably a woman) and men (grave 34 – adult man; 84 – adult, grave with weapons); grave 120 in which a disc brooch was found is a double grave of a woman and probably a man.

Another group of brooches is made up of imported items. Besides the above-presented disc brooch it comprises a beak fibula from grave 38/1. It was cast in bronze and has a hinge construction (with its pseudo-chord and pseudo-spring with incisions imitating the coils of wire), which generally fits the Scandinavian model (cf. Ørsnes 1966, p. 296), yet a comparison with the Scandinavian finds shows that brooches from the latter area have almost only crossbow constructions of iron wire in which the chord is placed between socket-shaped fastenings of the axle¹⁸. It is

¹⁶ This was probably an import from Scandinavia, which is suggested by technical details: casting of the disc together with the grip of the axle and the catchment plate as well as the considerable thickness of the disc. A decorative disc was added later on (in Scandinavia the discs are silvered as the enquiry conducted by B. Kontny in NMK and BM revealed).

¹⁷ Other reconstructed burial assemblages from the area of the Elbląg group are not sufficient to make dating more precise.

¹⁸ Result of the enquiry conducted by B. Kontny in NMK and BM.

also worth to note the presence of stamped (triangles and dots) and pseudo-pearl-like ornament on the bow and pseudo-pearl-like ornament on the pseudo-chord. Also the hole, probably used for attaching a decorative element, e.g., a chain, should be noted. Although the grave goods did not contain links (except for a fragment of a ring of twisted bronze wire), such uses of beak brooches have been confirmed for Bornholm cemeteries in Nørre Sandegård Vest, Bornholms amt, grave 54 (Jørgensen, Nørgård Jørgensen 1997, p. 41, Pl. 21:54) and perhaps also in Bækkegård, Bornholms amt, grave 14 (Jørgensen 1990, p. 119, Pl. 4:14). The brooch from Nowinka represents Variant G1¹⁹ with holes for fixing the axle in the pseudo-spring (Ørsnes 1966, p. 296, Figs. 101-103; Høilund Nielsen 1987, p. 76). Such forms are especially typical of southern Scandinavia, i.e., Jutland Peninsula, Danish Islands, Skåne and Gotland (Høilund Nielsen 2000, p. 163, Fig. 3). They were particularly frequent on Bornholm and in Skåne, e.g., in Uppåkra, Uppåkra sn. one hundred thirty two beak brooches were registered by 1998 (Hårdh 1999) and ca one hundred eighty by 2001 (Hårdh 2001, Fig. 5), and they had the closest analogies on Bornholm, cf. Sorte Muld, Bornholms amt (Hårdh 1999; cf. Lund Hansen 2009, p. 68-69). On the basis of technical details they can be classified into two groups: the western and the eastern one, including Bornholm and Skåne (Hårdh 2001; 2002, p. 47-48).

Brooches of that type are also known from other sites of the Elbląg group: recently two brooches of that type were discovered during rescue excavations in Janów Pomorski (Truso)²⁰ and two more at the cemetery in Komorowo Żuławskie (they are later and the could be determined as Type G3; personal commitment: M. Bogucki). A very late form comes from a 'Viking' assemblage from grave 41 at the cemetery Elbląg-Pole Nowomiejskie, site 37 (Neugebauer 1938, Fig. 6:f; 1975, Fig. 3; Jagodziński 1997, p. 69, Pl. XIV:9). Late forms were sporadically found also in other formally Balts' sites, although Scandinavian in character or at least with strong Scandinavian influence, cf. Grobiņa, Rudzukalni I, Liepāja distr., grave I from the mid-7th century (Nerman 1958; Bogucki 2006, p. 95, 97, Fig. 3); also their local, Balt imitations were discovered: Grobiņa, Rudzukalni, Liepāja distr., grave 3 and Priediens 2, Liepāja distr., grave 5

¹⁹ Most probably it was Variant G1c, but the ornament, on the basis of which these brooches are determined as respective variants does not have exact analogies in Scandinavia (cf. Ørsnes 1966, p. 296; Høilund Nielsen 1987, p. 76).

²⁰ One of them had almost identical decoration on the bow as the item from Nowinka; the pseudo-chord, however, has a different ornament (the remaining brooches are too poorly preserved to analyse their ornaments).

(Bogucki 2006, p. 97, Fig. 5:2-3)²¹. So far they were not found, e.g., in the Olsztyn group. Besides beak brooches are known from the Elbe region: Menzlin an der Peene, Lkr. Ostvorpommern (Mangelsdorf, Rausch 2000) – an item linked with Scandinavian influence documented for that trading settlement (Jöns 2006, p. 127, Fig. 11:3) and two items from Wulfen, Lkr. Anhalt-Bitterfeld (Schmidt 1961, p. 133, Pl. 30:k, l; 1976, Pl. 64:1.1-2; 2005, p. 410, Fig. 5:2, 4) and the ones from Altenzaun, Kläden, Sanne and Unglingen²² (Schmidt 2005, p. 410); one should add here also find from Usedom, Lkr. Ostvorpommern (Schoknecht 2008, p. 123-126). They are treated as Scandinavian imports from the 2nd half of the 6th century (Schmidt 1961, p. 133) to ca 600 A.D., which is tentatively linked with the influx of Scandinavian population to central Elbe region through Mecklenburg (Schmidt 2005, p. 414, 417).

In Scandinavia brooches of this type are found in women's graves (Jørgensen 1990, p. 30-31; Jørgensen, Nørgård Jørgensen 1997, p. 41). In the case of the item from Nowinka the sex of the dead person has not been determined so it is impossible to confirm this principle for that area.

There arises the question whether the item from Nowinka is an import or its local imitation. It is more probable that it is an imported artefact, which is suggested by the discovery of two brooches almost identical with the find from Nowinka, Type G1c, in grave 'b' from Bækkegård on Bornholm (Jørgensen 1990, p. 30, 117, Pl. 2:7-8). They have the same stamps and arrangement of the decoration as in case of the item from Nowinka (more similar than in the case of the find from Janów Pomorski mentioned above) and there are more analogies on Bornholm (Bornholms amt): stray finds from Sandegård (unpub-

²¹ Inasmuch as the brooch from Priediens may have been indeed a local imitation, due to its ornament (although similar motifs, i.e., stamped concentric arches can be also found in Scandinavia, e.g., the stray find from Møllegård on Bornholm, NMK inv. no. C31832), the item from Rudzukalni may be a Scandinavian form (the suggested differences in construction can hardly be considered as definitive, especially as they have not been explained in detail – cf. Bogucki 2006, p. 97). Theoretically, Scandinavian beak brooches may have been locally copied or even be a starting point for gradual changes in the forms of respective generations of fibulae, which is suggested by the crayfish brooches popular in Western Finland in the 7th-8th century (Purhonen 1996, p. 37-38) which formed from beak brooches. Local imitation of beak fibula is also proved for as distant region as Avar cemetery at Tác-Fövenypusztá, where in grave 6 dated to late 6th-early 7th century, a surely locally made item was found (Schilling 2009, p. 265-266, 268, Fig. 4). However, there are no premises that such a mechanism existed in the case of the Elbląg group.

²² All: Lkr. Stendal.

lished, NMK inv. no C31512, BM inv. no 1371x43), Rabekkegård (unpublished, NMK inv. no C32554, BM inv. no 1764x4), Mulebygård (unpublished, BM inv. no 2812x106)²³ and from Skåne – Önsvala, grave 2 (Hårdh 2001, p. 193, 204, Fig. 7). There is a surprising difference in the construction of the fastening: it seems that the different solution and raw material was used because the brooch was locally repaired; also the imitation of the spring in the form of notchings on the caps in which the axle was fixed was probably added by local craftsman. It could be a result of long, continuous use of the fibula, what seems to be confirmed by blurring of the ornament in the upper part of the bow (traces of wearing).

The dating of the brooch from grave 38 belongs to Phase 1 of the cemetery at Nowinka. J. Kowalski placed it in the period equivalent to Phase E_{2b} of Olsztyn group (1991, p. 77). At the area of Scandinavia such forms are considered to be characteristic for Phase VIIA after K. Høilund Nielsen and dated to 530-600 A.D. (Høilund Nielsen 2000, p. 162-163) or Phases 1A-1C distinguished for the area of Bornholm, dated to 540-ca 630 A.D. (Jørgensen, Nørgård Jørgensen 1997, p. 41, Figs. 24, 26); on Bornholm brooches Type G1 occurred only in Phases 1A-1B, i.e., in 520/30-600 A.D. (Jørgensen 1990, p. 30; Jørgensen, Nørgård Jørgensen 1997, p. 28, Figs. 18, 24, 26). Unfortunately, the closest analogies, i.e., brooches from Bækkegård and Janów Pomorski were not accompanied by any other dating elements (Jørgensen 1990, p. 117) which makes it impossible to establish any more precise chronology. The above observations suggest that the brooch came to the area occupied by the Elbląg group already in the 6th century, and taking into account the possible dating of Phase 1 of the necropolis (see Chapter III.3), in the 2nd tierce of 6th century (if it is assumed that the fastening was repaired after a long-term use of the object then perhaps the later part of the time span should be excluded). Therefore it was put in the ground probably in the later part of the 2nd third of the 6th c.

Another imported item is a stray find of an equal-armed brooch SF/7 decorated with lengthwise, parallel lines of dots on the bow and with transverse engraved and pearl-like lines on the head and foot. It may be classified as Type F1c after Høilund Nielsen (1987, p. 76) or F2 after Ørsnes (1966, p. 295). Brooches of this type have a very similar distribution as the beak fibulas, concentrating at the area of southern Scandinavia (e.g., ca one hundred twenty

such brooches were found in Uppåkra, Uppåkra sn in Skåne, cf. Hårdh 2002, p. 47) and Gotland (Høilund Nielsen 2000, Fig. 3; see Quast 2004, p. 266). They are dated to Phase 1B1, or possibly also 1A and 1B2 within the chronology elaborated for Bornholm (Jørgensen, Nørgård Jørgensen 1997, p. 28, Fig. 18) thus for the years 530-570 A.D. or possibly until 600 A.D. (Jørgensen, Nørgård Jørgensen 1997, Fig. 24, 26). Outside Scandinavia they were found in the Elbe region: Aken, Lkr. Anhalt-Bitterfeld, site 28 (Schmidt 1961, p. 131, Pl. 41:f, 1976, Pl. 61:2; 2005, p. 410, Fig. 5:1), Verchen an der Peene, Lkr. Demmin (Schoknecht 2008, p. 123-126) and in greater numbers in Sanne, Lkr. Stendal and Unglinen, Lkr. Stendal (Schmidt 2005, p. 410) where these brooches are considered as a Scandinavian element from the 2nd half of the 6th century or from ca 600 A.D. (Schmidt 1961, p. 131; 2005, p. 410). Their presence was also confirmed for the eastern Baltic Sea littoral: Staraya Ladoga, ray. Volkhov and Izborsk, ray. Pechory from the area occupied by the Long Barrows culture, similarly interpreted and dated (Quast 2004, p. 265-266, Fig. 19:1, 6, with further literature) and in SW Finland where they came as imports from the area of Sweden in the 2nd half of the 7th century but soon developed into local forms used till the late 8th century (Purhonen 1996, p. 37). Equal-armed brooch similar to the one found at Nowinka was discovered at a cemetery of the Elbląg group – Elbląg, Moniuszki St, feature 265 (Ehrlich 1937b, p. 275, Fig. 8; Petersen 1939, Fig. 183; Neugebauer 1975, Pl. X:2) but it can not be classified exactly due to imperfect drawings of the artefact and its poor state of preservation²⁴. Besides, at the cemetery Elbląg, Moniuszki St one more equal-armed brooch was found, Type F2 after Høilund Nielsen/F4 after Ørsnes (Jagodziński 1997, Pl. VII:3; MAHE inv. no 50/144)²⁵. The closest analogies to its ornament were found in Hegnæsvang on Zealand (Ørsnes 1966, Pl. 87) and on Bornholm: stray finds from Sorte Muld (unpublished, BM inv. no 1191x273Ra) and Sandegård (unpublished, NMK inv. no C32849, BM inv. no 1371x310); a similar decoration may be found at some items from Uppåkra, Uppåkra sn, in Skåne (Arrhenius 1999, Fig. 1, 8), stray find from Møllegård on Bornholm (NMK inv. no C31832) or Ekes and from an unknown settlement in Ksp. Grötlingbo, both on Gotland (Quast 2004, Fig. 19:3-4, with further literature).

²³ In the last mentioned case besides the triangular stamps, rhomboid ones were used.

²⁴ The artefact was accompanied only by a bronze hook ring (Ehrlich 1937b, p. 275), which does not provide grounds for determining the chronology more precisely.

²⁵ M. Jagodziński erroneously assigned it to the cemetery in Łęczce (1997, p. 279).

Imported s-shaped brooches from a female grave 41/1-2 have already been mentioned in literature (Godłowski 1981, Fig. 29; Kulakov 1990, Pl. VI:4). Although these brooches differ slightly in size, decoration and arrangement of the head and tail both items should be determined as Type L1 (Ørsnes 1966, p. 299-300, Fig. 164; Høilund Nielsen 1987, p. 77), Variant L1a, characterised by an s-shaped profile and representation of one head (Rundkvist 2003, p. 97-98). Brooches of Type L1 often appeared in Jutland, on Zeeland and also in Skåne and on Bornholm; such forms were also found on Gotland and Oland but only local forms L1c3-4 are known from these areas (Rundkvist 2003, p. 110-112), different from the find from Nowinka. Brooches Type L1 were often decorated in animal style Ørsnes B (Rundkvist 2003, p. 104); the brooch with better preserved ornament from Nowinka (41/1) is decorated similarly. They are considered to determine Phase VIIA after K. Høilund Nielsen, dated to ca 530-600 A.D. (Høilund Nielsen 2000, p. 162-163). According to M. Rundkvist they appeared in Scandinavia as a result of inspiration with the Alamannic brooches ca 540 A.D. and then they were replaced by new forms of Types H3 and J in the 1st tierce of 7th century (2003, p. 104-105). In Nowinka they should be attributed to the final stage of Phase 1 of the necropolis. A close analogy may be found in Asø on Zeeland (Ørsnes 1966, Pl. 164) and in Uppåkra, Uppåkra sn in Skåne (Rundkvist 2003, Fig. 1); many similar brooches were found on Bornholm (stray finds); the closest analogy to brooch from grave 41/1 was found in Møllegård (unpublished, NMK inv. no C31808, BM inv. no 1235x73), and for the brooch from grave 41/2 in Lille Myregård (unpublished, NMK inv. no C34605, BM inv. no 1233x7), Ndr. Mulebygård (unpublished, NMK inv. no C35106, BM inv. no 2112x14) and Møllegård (unpublished, BM inv. no 1235x21). It is worth to note that both these brooches had their fastenings made of iron, like in Scandinavia.

Other brooches: from grave 18/1 and 83/1 are plate brooches resembling imported items²⁶. Brooch from grave 18/1 so far has had no equivalents in the Elbląg group. A similar brooch was found on Bornholm: a stray find from Store Smørenggård (unpublished, NMK inv. no C36035, BM inv. no 1697x179); however it is fragmentarily preserved and its incomplete foot is not sufficient to establish whether it is

really an analogy or not. The item from Nowinka, due to its heart-shaped, profiled foot (in this case imitating an animal's head) and general proportions should be treated as a derivate of Type Neuwied, encountered, besides its original form found in Rhineland, in the Olsztyn group (Kühn 1956, p. 99-101, Pl. XXVII:VI.10). It differs from the Neuwied type items by the lack of decoration on the plates and the oval not rectangular shape of the head²⁷. Primitive plate brooches of this kind are believed to be products of local workshops and are far from the earlier originals (Kowalski 2000, p. 223). At the example of the finds from the Olsztyn group V. Hillberg illustrated the multi-stage process of imitation of plate brooches, which was accompanied by the simplification of the form: elimination of radiate projections on the head, more and more schematic representations of the animal's head on the foot, and finally reduction or elimination of the ornament (Hillberg 2004, p. 309-310, Fig. 14). In the case of the find from grave 18/1 in Nowinka we probably have to do with the same phenomenon. According to J. Kowalski, plate brooches which were late stylistic imitations, occurred in the Elbląg group in its late phase (Kowalski 2000, p. 220). The same refers to the Olsztyn group where they appeared in Phase E₃ (2000, p. 223). V. Hillberg in turn dates their presence on the West Balts' lands until 1st half of the 7th century when the contacts with the Merovingian circle were discontinued (2004, p. 314). On the basis of the relative chronology in Nowinka grave 18 belongs to Phase 3.

From the stylistic point of view the brooch from grave 83/1 should be interpreted in a similar way. In its general proportions it resembles the items Type Wólka Prusinowska, from which it differs in the lack of radiate projections on the head, which is a phenomenon typical of the Elbląg group (Kowalski 1991, p. 83; 2000, p. 220) and oval not triangular shape of the head. On the other hand, the proportions and an ornament of triangles along the edges suggests a close relationship of these two solutions (cf., e.g., Wólka Prusinowska, grave 27 – Åberg 1919, p. 100, Fig. 117; Tischler, Kemke 1902, Pl. VII:11-12; Okulicz 1988, p. 122, Fig. 9:c; Wólka Prusinowska, grave

²⁶ Although V. Hillberg took into account the finds from Nowinka in his study of plate brooches, he treated them marginally, not analysing their origins and analogies (2009, p. 456, Pl. 26:224-225).

²⁷ However, the analysed brooch can not be linked with a 'derivate' of the Neuwied type, recorded at the cemetery of Kovrovo; basically it can be dated to the late stage of Phase D and Phase E, as it occurred together with brooches Type Dollkeim (grave 273, 279, 291) and Type *Schlusskreuzfibel* (grave 280) – cf. Kulakov 2009, *passim*. Besides the possible chronological difference the variations of shape should be taken into account: the rectangular plate on the head and the rhomboid foot, which are characteristic of finds from Kovrovo and do not occur in the item from Nowinka.

102 – Jakobson files, Voigtmann files, Grenz files). An analogy to the find from grave 83/1 can be found at the area of the Elbląg group: Łęcze, grave 29 (Dorr 1898, p. 12, 20, Pl. I:34). A very similar item is assigned by V. Kulakov to the cemetery of Elbląg-Żytno, grave 98 (1990, p. 58-59, 92, Pl. III:14), yet this determination should be treated as a misunderstanding: in literature quoted by V. Kulakov there are no references to the discussed brooch and in the collection of MAHE there is no such artefact²⁸. It is impossible to date the brooch from grave 83/1 on the basis of the find from Łęcze (no accompanying dating elements) so a reference has to be made to the chronology of the items Type Wólka Prusinowska. They are known from the Olsztyn group and assigned to Phase E₃ (Kowalski 1991, p. 81, Fig. 2)²⁹. At the cemetery of Nowinka the assemblage with the brooch belongs to the 3rd chronological phase.

One more find should be assigned to the group of plate brooches, namely the fibula from grave 23/1. It has no adequate analogies. J. Kowalski assigned it to the late phase of the Elbląg group and moved the dating even to the 7th century (2000, p. 220). He also believed that the brooch is an imitation of Scandinavian plate brooches, one of which was found at

the Elbląg group cemetery in Elbląg, Moniuszki St. This was due to some stylistic features: circles on the bow of the brooch from grave 23/1, imitating the ornament on Scandinavian brooches (Kowalski 2000, p. 220). This does not seem to be entirely convincing: the button-on-bow brooches (germ. *Rückenknopffibel*) did not have a step ornament but a decorative rivet with a massive, hemispherical head fixed to a circular bow. It is also worth to note that the late dating adopted by J. Kowalski is not necessarily true. The item from Elbląg, Moniuszki St, feature 2 (Ehrlich 1937b, p. 274-275, Figs. 7-8; Petersen 1939, Fig. 183; Neugebauer 1975, Pl. XI, upper right) represents Type E2A2b after Høilund Nielsen (1987, p. 76) which appears on Gotland, Oland and Bornholm and is dated to the Scandinavian Phase VIIA, but also VIIB, and thus mainly to the 2nd half of the 6th and the 7th century (Høilund Nielsen 2000, p. 163, Figs. 1, 3-4)³⁰. It seems more probable to explain the motif on the brooch from grave 23/1 by the influence of the step pattern present on Scandinavian headgear fittings. It was imitated locally, which is also suggested by the discovery of headgear connectors from grave 21/16 in Nowinka. The assemblage with the brooch in Nowinka belongs to the late part of Phase 1 of the burial ground.

III.1.2. Neck rings and bracelets

III.1.2.1. Hook rings

An important group of finds consists of ring-shaped objects with hook fastenings: at one end they have an eye, and on the other one, a hook. They are usually made from plain (grave 2/3, 45/3, 60/2) or twisted (grave 18/5, 82/2) bronze wire. The hook was usually bent outwards (grave 2/3, 18/5, 45/3, 82/2) and only in one case inwards (grave 60/2). It is probably possible to assign to this group some of the fragments of bent bronze wire found in certain graves (grave 24/1, 38/2 and 65/2 – twisted wire, 120/8 – wire with traces of transverse notching) and a stray find (SF/16), and perhaps also massive silver twisted wire (grave 10/1). The function of these objects, however, is unclear: most of them were certainly bracelets as their diameters range

between 5.1-6.7 cm (grave 2/3, 18/5, 60/2, 120/8). In the case of the item from grave 82/2 it is smaller (4.5 cm) and the object is made of a wire thinner than usually. This may be explained by the fact that in that burial, i.a., remains of a child were deposited to whom the bracelet with a small diameter may have belonged. An exception is the item from grave 45/3 the diameter of which is only 2.8 cm³¹ i.e., clearly less than that of a bracelet and slightly more than of a finger ring³². It is unclear

²⁸ Personal commitment: G. Stasielowicz. The illustration in V. Kulakov's paper most probably presents the item from Łęcze, grave 29.

²⁹ These brooches very rarely occur together with good dating elements, except for grave 27 from Wólka Prusinowska where the brooch was found together with a bird brooch dated to Phase E₃ (cf. Kowalski 2000, p. 218, 223). According to A. Bitner-Wróblewska (2008b, p. 106) they should be dated to the terminal stage of the Olsztyn group, i.e., the 2nd half of the 7th and the early 8th century.

³⁰ V. Kulakov erroneously reconstructed the assemblage from that burial (1990, p. 92, Pl. II:9) including in it all the artefacts presented at the illustration from B. Ehrlich's publication (1937b, Fig. 8), contradictory to the description in the text: in fact the illustration presents items from grave 2, 228, 239 and 265 (Ehrlich 1937b, p. 274-276).

³¹ In turn the reconstructed diameter of the fragment from grave 38/2 is 2.5 cm, which makes it similar in size to finger-rings, yet as the object was made of twisted wire (which is typical of bracelets) and the reconstruction wasn't very exact, the object was placed in the discussed group of finds, with the full awareness that this is only a question of convention.

³² A ring with a hook fastening of similar dimensions was also found at an Olsztyn group cemetery at Wólka Prusinowska, grave 13 – it was determined as a temple ring – germ. *Schläfenring* (Grenz files).

if that could have been a finger ring, even worn on a thumb, because then the fastening would be unnecessary. It is, however, possible that this is another ornament of a woman's garment (the grave was of a young woman). This could have been, e.g., an ornament attached to a headband, similar to later, Early Medieval temple rings, or else an ear-ring³³. The second unusual object is the find from grave 10/1: more massive than the other ones, probably having originally a larger diameter and made of a different material (silver). It may have been also a neck ring: a similar ring with a large diameter, which may have been a neck ring, was found at the burial ground of the Elbląg group in Łęcze, grave 41 (Dorr 1898, p. 13, Pl. III:11; Jagodziński 1997, Pl. VII:2)³⁴. It is worth to note that on the bracelets constructed in the way described above decorative pendants of wire were sometimes strung, e.g., Kielary, grave 67 (Jakobson 2009, Pl. 157:67c).

Rings with hook fastenings appeared in Nowinka singly³⁵, but cases are known where they were accompanied by bracelets of other kinds (grave 2, 18, 60). These are especially typical of female (grave 2, 45) or children's burials (grave 38, 82), which is indicated by the anthropological data. However, this does not mean that they may not have occurred in men's graves; inasmuch as the item from grave 120/8 may be ascribed to a woman (a double burial of a woman and a man), grave 60/2 contained weapons – attributes of a man.

The analysed type of bracelets was considered to be produced locally (Dorr 1898, p. 22), which should not be questioned, but a note should be made of its wide popularity among the Balts³⁶. Ring shaped bracelets with hook fastenings were discovered in the

Elbląg group necropolises: Elbląg, Moniuszki St, feature 265 (Ehrlich 1937b, Fig. 8, p. 275), Chojnowo, stray find (Neugebauer 1934, p. 321, Pl. LXX:3c), Łęcze, grave 41 (Dorr 1898, p. 13, Pl. III:11) and grave 43 (Dorr 1898, p. 13, Pl. III:32)³⁷. On the basis of the published descriptions also items from Łęcze, grave 22 (Dorr 1898, p. 11), grave 51 (Dorr 1898, p. 14) and grave 57 (Dorr 1898, p. 14) should be added to this group as well as the ones from many graves in Pasłek (Ehrlich 1923, p. 199, Pl. IX:c). They are also known from the cemetery at Markajmy, which has features of the Elbląg group or ones of Sambian-Natangian area: grave 160 (made of twisted wire) and 176 (Voigtmann files). They are also frequent in the Olsztyn group (Okulicz 1988, p. 122-124; Bitner-Wróblewska 2008, *passim*). Their appearance is additionally testified for Sambian-Natangian type burial grounds, e.g., Suvorovo, grave 237 (Heym 1938, Fig. 43; Kulakov 1990, Pl. XIII:12), grave 317 (Heym 1938, Fig. 42:a; Kulakov 1990, Pl. XV:6), grave 425 (Heym 1938, Fig. 39; Kulakov 1990, Pl. XX:7), grave 451 (Heym 1938, Fig. 38; Kulakov 1990, Pl. XXI:10), Kovrovo, grave 92 (Tischler, Kemke 1902, p. 21, Pl. XV:13), grave 114 (Tischler, Kemke 1902, p. 22, Pl. XV:12), grave 116 (Tischler, Kemke 1902, p. 22, Pl. XV:11), grave 152 (Tischler, Kemke 1902, p. 23), grave 155 (Tischler, Kemke 1902, p. 24), grave 273 (Kulakov 2009, p. 21, Fig. 107:8), grave 276 (Kulakov 2009, p. 21-22, Fig. 113:5), grave 280 (Kulakov 2009, p. 22-23, Fig. 119:11), grave 284 (Kulakov 2009, p. 23, Fig. 122a:5), grave 291 – two items (Kulakov 2009, p. 24, Fig. 126:9, 16), grave 298 (Kulakov 2009, p. 29-30, Fig. 145:7), grave 319 (Kulakov 2009, p. 32, Fig. 149:3), grave 325a (Kulakov 2009, p. 37, Fig. 154a:7), ex-Warnikam, grave 1 – bracelet and a neck ring (?) of twisted wire (Tischler, Kemke 1902, p. 41-42, Pl. XV:9-10) and from the cemetery at Mitino, grave 300 – a silver neck ring of twisted wire, and grave 319 – a bracelet (personal commitment: K. Svortzov). Besides, they are known from the area of Lithuania, e.g., the bracelets from the cemetery of the West Lithuanian group at Aukštakiemiai, grave 102 (Reich 2006, Fig. 6:1-2). J. Okulicz (1988, p. 122-124) tried to make a typology of bracelets of this kind (finds from Nowinka would represent Types II and III) but due to a large accumulation of archaeological sources, this typology is no longer valid.

³³ According to V. Vaitkievičius temple rings may have appeared in the Balt milieu already in the Late Roman Period, which is supported by the find from the East Lithuanian Barrows culture cemetery in Pakalniiai, barrow 7, grave 2 (2005, p. 75-77, 80).

³⁴ Other bronze necklaces with identical fastenings as in the bracelets were found at the Elbląg group necropolis at Podgórze in grave 5 – an item considered to be a child's necklace (Peiser 1919, p. 337-338) and grave 23 – an object of twisted wire and a diameter of 11-12 cm (Peiser 1919, p. 353); it is possible that a similar necklace was found at the cemetery at Braniewo, stray find – in the publication a necklace of twisted wire from Phase E is mentioned (Peiser 1919, p. 353).

³⁵ In the Olsztyn group there is, however, one example of a pair of such objects from one assemblage: Leleszki, grave 11 (Voigtmann files).

³⁶ Due to the simplicity of form such solutions may have appeared separately in various regions, e.g., grave 17 at the Alamannic cemetery at Worms-Rosengarten, Lkr. Alzey-Worms two similar rings were found which were determined as ear-rings even though their diameters are close to the dimensions of smaller Balt bracelets (Stoll 1939, p. 18, Pl. 20:11); other analogous

Alamannic finds (e.g. Veeck 1931, p. 53-54, Pl. 36:1-3, 5-7, 9-11; Knaut 1993, p. 58-59, Fig. 26:b) as well as Frankish ones (e.g. Timpel 1999, p. 174) are interpreted similarly; larger items are determined as necklaces (e.g. Werner 1935, p. 81, Pl. 2:3).

³⁷ The items from Łęcze had a ring of twisted wire.

Items from Nowinka were found in burials ascribed to Phase 1 (grave 2, 38) and 3 (grave 18, 60, 82, 120) of the necropolis. It may be thus assumed that they are not an element suitable for making chronological distinctions, at least with respect to the time spectrum represented in Nowinka. In literature it is possible to find attempts at fitting the hook rings in narrower time spans. J. Okulicz assigned them to Phase E₃ which meant for him the 1st half of the 7th century (Okulicz 1988, p. 124), whereas J. Kowalski considered them as appearing earlier, from Phase E_{2b} on (Kowalski 2000, p. 223); W. Nowakowski treated them as a chronological determinant of Stage 6 of the Dollkeim-Kovrovo culture, which was for him contemporary to Phase E (Nowakowski 1996, Pl. 107). These claims, however, do not hold due to the large accumulation of new material. The earliest bracelets with hook fastenings are dated to Phase D: Kovrovo, grave 116³⁸, grave 152 (with a knife-dagger – germ. *Dolchmesser*), grave 155 (with a pair of brooches Type Schönwarlig/Skowarcz); the turn of Phases D/E: Kovrovo, grave 273 (i.a., a brooch Type Dollkeim/Kovrovo), grave 291 (i.a., a brooch of Dollkeim/Kovrovo type and an early equal-armed brooch); they are also known from

III.1.2.2. Other forms of bracelets

At Nowinka also fragments of more massive bracelets made from bronze bars (grave 2/4, 10/2, 133/1, SF/16) were found, it is impossible to reconstruct them. It may be only supposed that these were simple bracelets of bronze bars, sometimes faceted (maybe with slightly widened ends like in the case of the finds from Aukštakiemiai mentioned below) known from Sambian Peninsula, e.g., Kovrovo, grave 266 (Kulakov 2009, Fig. 209:4)⁴³, Mitino, grave 118 (personal commitment: K. Skvortsov) and also from the East Lithuanian Barrows culture (Iwanowska 2006, p. 59), e.g., Žvirbliai, barow 38, grave 1 (Iwanowska 2006, Pl. L:13) or the West Lithuanian group, e.g., Aukštakiemiai, grave 102 and grave 399 (Reich 2006, p. 91, Figs. 4:1, 6:7). Judging by the parallel arrangement of the preserved sides' fragments it seems less probable that we have to do with remains of a bracelet with a clearly widened end, similar to one found in Łęcze, grave 10 (Dorr 1898, p. 9, Pl. III:9). Bar bracelets similar to the find from Nowinka

³⁸ In O. Tischler's and H. Kemke's work there is a description of the brooch 'wie BA 455', which is a reference to an album of photographs of the finds from the exhibition in Berlin (Günther, Voss 1880). At Fig. 455 from that publication there is a brooch Type Dollkeim, which dates this assemblage to Phase D (cf. Bitner-Wróblewska 2001).

Phase E₁: ex-Warnikam, grave 1³⁹, grave 92 and grave 114⁴⁰ as well as grave 280, grave 319 and 325b⁴¹, Suvorovo, grave 237 (with a brooch Type *Schlusskreuzfibel*). Besides the above-mentioned finds from the Sambian-Natangian area, hook rings are known from Phase E₁ also in the Elbląg group: Podgórze, grave 5 (with a brooch Type *Schlusskreuzfibel*). In turn the find from Elbląg, Moniuszki St, feature 265, in which an equal-armed brooch was found, may be associated with the 2nd or 3rd (or, less probably also 4th) quarter of the 6th century (cf. Chapter III.1.1) and thus with the period when the Elbląg group developed; with the later phase of functioning of the Elbląg group, in turn, it is possible to link the item from Łęcze, grave 41 (it occurred together with a fibula similar to a pseudo-ladder brooch) and Nowinka, grave 18, grave 60, grave 82 and grave 120. The possibility that hook rings could appear also in a later context is indicated by the find from grave 176 in Markajmy, which was accompanied by a disc brooch. It thus seems that the analysed type of bracelets was used in the whole time span of the existence of the Elbląg group, not excluding even very early assemblages probably connected with the final stage of Phase D or the turn of Phases D/E⁴².

have a broad chronology fitting between the 6th and 10th century, although even broader time span may be acceptable (Iwanowska 2006, p. 59). It also does not seem possible to reproduce the original shape of the bracelet (?) the fragment of which was found in grave 18/6. Fragments from grave 32/1 allow to assume that the bracelet was plain and of equal width along the whole circumference. No analogies for that form are

³⁹ For the issue of dating the assemblage cf. Hillberg 2009, p. 317-330.

⁴⁰ In both assemblages, i.a., three-knob-fibulae (Tischler, Kemke 1902, Pl. VI:18, 21) typical of Phase E₁ (cf. Kowalski 1991, Fig. 2).

⁴¹ In all three cases they were accompanied by, i.a., a brooch Type *Schlusskreuzfibel*.

⁴² This is indicated by the discovery from grave 23 in Podgórze where, besides a hook ring a brooch like the one from grave 2a from the same cemetery was found: taking into account F. E. Peiser's record (1919, p. 342) it was analogous to brooches presented at Figs. 454-455 from the Berlin exhibition album (Günther, Voss 1880), i.e., representing the Schönwarlig/Skowarcz or Dollkeim/Kovrovo type, typical of the Early Migration Period.

⁴³ The assemblage is dated to Phase D. It included (Kulakov 2009, p. 50-51, Fig. 209), i.a., two spurs similar to Variant D of Type Leuna (Giesler 1978) typical of the Dollkeim-Kovrovo culture and the area of Lithuania in the Early Migration Period (Kontny, Natuniewicz 2009); this dating is confirmed by other finds: a star-footed brooch, buckle with a metope on the spike and a tongue-shaped belt-end fitting (cf. Bitner-Wróblewska 2001).

known. There are doubts, in turn, as refers to a fragment of a plate with a punched ornament from grave 60/17: it was found in a horse grave, which suggests that it may not necessarily have been a bracelet but rather a fitting from a horse harness. If that was really a bracelet it may have resembled the item from grave 85/22. It is perfectly preserved but its function is not entirely clear due to its large diameter (9x9.3 cm): it may have been a bracelet or an armlet. The artefact is made of a thin bar, hammered flat in the longer sections near the fastening. The wider parts are also profiled, i.e., broader in some sections. It seems interesting that a similar method of fastening as in the case of hook rings is used here, only the hook is placed in a hole made at the terminal. Wider parts are decorated with stamped ornament made with punches with three different patterns. So far no analogies are known for the item from grave 85/22 either in the Elbląg or Olsztyn group or at the Sambian-Natangian area. Also in the Merovingian circle bracelets or neck rings of that form do not appear. The item from Nowinka, however, has some distant analogies in Scandinavia. It does not fit in the typology defined by K. Høilund Nielsen (1987, p. 78), yet it is possible to find in it certain references to spiral bracelets type Q2⁴⁴. Some of them have very similar widened parts as the arte-

fact from grave 85/22, e.g., the bracelet from Kyndby, grave I on Zealand (Hedegård 1989, p. 200-201) and also from Nørre Sandegård Vest, grave 9 (Jørgensen, Nørgård Jørgensen 1997, p. 176-177, Pl. 6:7) and grave 54 (Jørgensen, Nørgård Jørgensen 1997, p. 186, Pl. 21:2), the last mentioned ones are also decorated in a similar style. It seems possible that we deal with a Scandinavian inspiration, which was tentatively combined with local traditions: only the terminals are flattened whereas in Scandinavia the whole ring is band-shaped; furthermore the item from Nowinka has only one coil and a fastening unknown in Scandinavia but very similar to that known from the Balt hook rings⁴⁵. This interpretation seems more probable than that we deal with a repaired Scandinavian import: there are no traces of breaking and besides in Scandinavian items band and bar were not used at the same object. Bracelets Type Q2 appeared on Bornholm in Phases 1C-2A (Jørgensen 1990, p. 39-40), thus as late as the 7th century, which does not contradict the dating of grave 85 from Nowinka to Phase 3.

Bracelets with terminals other than hook-shaped were found in female graves (grave 2), children's ones (grave 32) or burials of undetermined adults (grave 10, 133) – basing on archaeological criteria, most probably women were buried in them.

III.1.3. Finger rings

In case of some of the objects included in the category of finger rings there may be doubts as to their actual functions. This concerns especially the artefact from grave 120/9, theoretically included in the group of rings put on the shaft of shafted weapons but also plain rings of bronze wire with unclosed (grave 80/1) or overlapping (grave 45/2) ends. Their diameters slightly differ from those of finger rings, but they may have been disturbed: either the ring was stretched or squeezed. It is possible to classify more explicitly two rings from grave 85/23-24. They were made from coiled plain (grave 85/23) or transversely

incised (grave 85/24) wire circular in cross-section. The argument for considering them as finger rings is supported by the fact that they appeared in a pair and that there are analogies from other cultural zones. However, it should be noted that spiral rings were used sometimes in untypical ways, e.g., in grave 147 in Kovrovo in Sambia there was a ring which was placed on the bow of a brooch Type Schönwarling/Skowarcz and the pin of the brooch was fastened (Tischler, Kemke 1902, p. 23, Pl. V:12), furthermore in grave 355 from the Central Lithuanian group cemetery at Marvelė two rings were situated on the chord (Bertašius 2009, Pl. 8: 1). According to V. Kulakov, such ring may have been used to attach pendants or ornaments (Kulakov 1989, p. 166-167).

Spiral rings were a popular form in the Balt milieu. In the Elbląg group they were recorded at the cemetery in Chojnowo, feature 1 (Kowalski 1985, p. 228, Pl. I:10) and 4 (Kowalski 1985, p. 228). Besides for the Elbląg group there are mentions about rings but without details allowing to reproduce their form: a bronze ring was found in Chojnowo, grave 4 (Neugebauer 1934, p. 322), Łęczce, grave 10 (Dorr 1898, p. 9) and grave 18 – this one with a mention that

⁴⁴ M. Bogucki considers this item as a specific form but referring (especially with its decoration) to later, Early Medieval 'ormhuvudringar', i.e., rings ended with serpents' heads (Bogucki 2003, p. 199). It is also worth while to note the still simple profiling of the item from grave 85/22 which in later finds will be more complex.

⁴⁵ A similar fastening was used in a band bracelet from Liebenau, grave H11/A2 in Lower Saxony (Häßler 1983, p. 46, Pl. 2:4). Both the profiling and decoration of this item are, however, completely different; it also has a completely different chronology: the assemblage in which it was found is dated to the 1st half of the 6th century (Brieske 2001, p. 229).

the artefact was incised at the top and on the underside (Dorr 1898, p. 10), Podgórze, grave 37 – three rings of bronze wire, incised in one case (Peiser 1919, p. 347-348). Spiral rings appeared also in the Olsztyn group; V. Kulakov included these finds to Type 1, containing forms with from three to twelve coils notched or plain (1989, p. 166-167), e.g., Kielary, grave 3 (Jakobson 2009, Pl. 107:b), grave 6 – three items (Jakobson 2009, p. 69, Pl. 111:l), grave 34 – five items (Jakobson 2009, p. 76, Pl. 138:f), Miętkie, grave (?) – two items? (Bitner-Wróblewska 2008a, Pl. CLX), grave 559 (Kulakov 1989, p. 182, Fig. 14:3), Spychówko, grave 44 (Reich, Menghin 2008, p. 88, Fig. 8), Tumiany, grave 11 (Jakobson 2009, Pl. 3:11e), grave 15a (Jakobson 2009, Pl. 5:h), grave 20 (Kulakov 1989, p. 188, Fig. 26:1; Jakobson 2009, Pl. 7:20f), grave 80 (Kulakov 1989, p. 193, Fig. 42:2; Bitner-Wróblewska 2008a, Pl. XIV), grave 109 (Kulakov 1989, p. 196, Fig. 47:3; Bitner-Wróblewska 2008a, Pl. XX). Similar artefacts found in the Sambian-Natangian areas and in eastern Europe were classified as Type III according to another classification proposed by V. Kulakov (1990, p. 27). From Sambia one may mention, e.g., the items from Bolshoe Isakovo, grave 25 (Kulakov 2006, Fig. 5:4), Kovrovo, grave 147 (Tischler, Kemke 1902, p. 23, Pl. V:12), grave 161 (Tischler, Kemke 1902, p. 24) and stray find (Kulakov 2009, Fig. 191:17). Moreover such examples are also known from the territory of Lithuania, e.g., the items from the Lower Neman group cemetery at Greižėnai, grave VII (Bezenberger 1900, p. 141-142, Fig. 22), the Central Lithuanian group necropolis at Marvelė, grave 355 (Bertašius 2009, Pl. 8: 1) or the

discoveries from the East Lithuanian Barrows culture in Degsnė, barrow VI, grave 1 (Bliujienė 2006, Fig. 3:7-9), Diktarai, grave 26 (Bliujienė 2006, Fig. 6:6), Pakrauglė, barrow 1 (Bliujienė 2006, p. 125, Fig. 1), Taurapilis, barrow 5 (Bliujienė, Steponaitis 2009, Fig. 121, 3-4), Žvirbliai, barrow 24 (Iwanowska 2006, p. 46, Pl. XXII:3). They are also known from the territory of Latvia (Bitner-Wróblewska, Ciglis, Radiņš 2005, p. 57, 111, Pl. III:99, XV:21) and Finland (Purhonen 1996, p. 44-45). Spiral rings, although specific for the Balts' zone, can not be treated as a good determinant of chronology. Simplicity of their form was conducive to their wide chronological range. In the Elbląg group they were represented in all phases, e.g., items from Podgórze come from the Early Migration Period (they were found together with brooches of the Dollkeim/Kovrovo type), the discovery from feature 4 in Chojnowo, from Phase E₁ (found with i.a., a brooch Type *Schlusskreuzfibel*) and the artefacts from grave 85/23-24 at Nowinka from the late phase of the Elbląg group (Phase 3 of the necropolis). A still broader chronology of these finds is specific for, e.g., Finland, where they occurred in the same form from the Roman Period till the Viking times (Purhonen 1996, p. 44-45); also in the Balt areas they were found as late as the 12th-14th century (Bitner-Wróblewska, Ciglis, Radiņš 2005, p. 57, 111; Gričiuvienė, Buža 2007, p. 150, 165, Fig. 705).

Spiral rings from Nowinka were found in a 'female set' of grave 85, which is not necessarily an absolute principle: e.g., finds from Degsnė, barrow VI, grave 1 (Bliujienė 2006, Fig. 3:7-9) were found in a man's burial.

III.1.4. Beads

III.1.4.1. Glass beads

In Nowinka six glass beads or their fragments (grave 15/1, 23/4-6, 41/4, 131/1) were found. These are small barrel-shaped items (grave 15/1, 41/4, 130/1) or ones having the shape of a flattened sphere (grave 23/4-6). Usually they are made of opaque glass, frequently uniform in colour: brown (grave 15/1), yellow (grave 23/4-6) or light red (feature 130/1). Only the bead fragment from grave 41/4 was made of multi-coloured glass: dark blue with red inserts in the shape of eyes or oblique lines. As there are no analyses made for the Balt zone the beads from Nowinka have to be classified according to K. Høilund Nielsen (1987): grave 15/1 – Type R3:b:a/f:I:B, grave 23/4-6 – Type R3:b:f:I:E and R3:b:f:I:C/E, grave 41/4 – R3:a:a/f:II:AI:M7-8, feature 130/1 – R3:b:a/f:II:I⁴⁶.

⁴⁶ In the last case it is not sure whether we deal with the item from the Early Iron Age or the Migration Period, so a connection with the

Beads in Nowinka determine women's (grave 41 – a woman 25-35 years old) or children's graves (grave 23). In grave 15 only the age of the deceased (adult) was determined, but as there are no men's indicators in the grave goods, probably it was also a woman. They are found in Phase 1 (grave 23, 41) but it seems that the amount is too small to acquire any conclusive results as refers to chronology. The find from feature 130/1 may be linked with the Early Iron Age.

classification by K. Høilund Nielsen is hypothetical. Nevertheless one should remember that glass beads are spotted in the West Balt Barrow culture outside Sambian Peninsula only exclusively and generally they are blue and dark blue in colour (Okulicz 1970, p. 59-60; Hoffmann 2000, p. 155; Gładki 2003, p. 31; Jaremek 2009, p. 109), not light red like the one from Nowinka, feature 130/1. The red bead was found so far once, in the cemetery at Livny, ray. Gvardeysk (Hoffmann 1999, p. 87; 2000, p. 155).

In Elbląg group beads appear rarely among grave goods. They are seldom mentioned in literature; usually beads (often melted) of opaque glass, probably analogous to those from Nowinka are quoted: Łęcze, grave 80 – melted yellow bead and fragments of similar melted glass (Dorr 1898, p. 16). There were also items made with the use of more advanced technology. In grave 96 at the cemetery in Elbląg-Żytno beads of opaque, yellow glass with a diameter of 0.7 cm and height of 0.4 cm, decorated with crossing intertwined bronze bands were found (Ehrlich 1920, p. 194, Fig. 2:d). Before the 2nd World War the Elbląg Museum collection contained also beads from Elbląg-Żytno: stray find of a white bead with two red crossed lines, a diameter of 1.3 cm and height 1 cm and a similar, but larger bead from grave 55 (Ehrlich 1920, p. 195); the bead from Łęcze was parallel – of opaque glass with red and green wavy lines (Dorr 1898, p. 22)⁴⁷. Beads were also found at the cemetery in Podgórze, grave 2 – a blue bead (Peiser 1919, p. 336-337), grave 36 – two red-brown beads of opaque glass (Peiser 1919, p. 347), grave 37 – melted white beads with dark ornaments (Peiser 1919, p. 347-348) and the stray finds of blue beads, including cubo-octahedral ones, though probably connected with the Wielbark culture (Peiser 1919, p. 352). Moreover, a polyhedral glass bead was found in Młoteczno, grave 91 (Ziemlińska-Odojowa 1991, p. 105, Fig. 7:1, 4, 5, 7). M. Jagodziński believes that glass beads had the function of money (2009, p. 153), however, this assumption, made on the basis of later finds, do not seem appropriate with respect to the Elbląg group.

Glass beads also appear, although rarely, at the Sambian-Natangian area (Kulakov 1989, p. 167; 1990, p. 27), e.g., Mitino, stray find (personal commitment: K. Skvortsov)⁴⁸ or in Lithuania (Iwanowska 2006, p. 46). They are numerous in the Olsztyn group (Kulakov 1989, p. 167), in which items made of opaque glass similar to the ones from Nowinka, but mainly yellow can be found, e.g., Tumiany, grave 77 (Kulakov 1989, p. 193, Fig. 41:1; Bitner-Wróblewska 2008a, Pl. XIII), grave 95 (Kulakov 1989, p. 194,

Fig. 44:3; Bitner-Wróblewska 2008a, Pl. XVII), grave 103 (Kulakov 1989, p. 195, Fig. 46:1; Bitner-Wróblewska 2008a, Pl. XVIII), grave 121 (Kulakov 1989, p. 197, Fig. 50:1; Bitner-Wróblewska 2008a, Pl. XXII), Leleszki, grave 23 (Kulakov 1989, p. 185, Fig. 22:3; Bitner-Wróblewska 2008a, Pl. XLVIII), grave 39b (Kulakov 1989, p. 185, Fig. 23:3; Bitner-Wróblewska 2008a, Pl. XLIX). However, they appear mainly in necklaces, often with beads made with the use of more complex technology, imported from the Merovingian circle – especially Types 34-37 after B. Sasse and C. Theune (1996) or having arrived across the Danubian areas (cf. Voigtmann 1942, p. 12; Kulakov 1989, p. 168) or, less probably, from Scandinavia.

As it has been mentioned above, similar beads, both made of multicoloured and opaque glass were found in Scandinavia (Høilund Nielsen 1987), including also yellow, red and brown, e.g., at the cemeteries in Nørre Sandegård (Jørgensen, Nørgård Jørgensen 1997, Pl. 27-34). Simple forms of beads made of opaque glass and forms identical to those from Nowinka may be also found in large numbers in the Merovingian circle, cf. barrel-shaped forms Type 26 after B. Sasse and C. Theune (1996, p. 226); also more complicated patterns are known there, with colourful oblique lines Type 50 too (Sasse, Theune 1996, p. 227).

As the majority of finds from Nowinka were made with the use of simple technology it should be assumed that they were produced locally or in the broadly understood Balt zone. However, this issue can not be ultimately settled without making large-scale analyses of the glass composition. Besides, as such beads were found in other regions of Europe it may be presumed that they may have arrived from these areas together with beads made with the use of more complex technologies. What is debatable, however, is the area of their origin. The suggested places were the middle Danube basin or, still farther, Byzantium (Kulakov 1989, p. 168), but it could have also been the Merovingian circle, or, Scandinavia. The last mentioned direction seems to be especially confirmed by the bead from grave 41/4 which was accompanied by imported Scandinavian brooches and the bead itself has good analogies in K. Høilund Nielsen's typology. Similar conclusions may be drawn from the examples of other beads found in the Elbląg group, made with complex technologies (Elbląg-Żytno, grave 55 and stray find from Łęcze), which are reflected in the Scandinavian forms; cf. ornament No 5 after K. Høilund Nielsen (1987, Fig. 21:5). The chronology of the Scandinavian finds is very broad

⁴⁷ R. Dorr does not inform whether the bead belonged to a certain assemblage; neither is it mentioned in the list of grave assemblages and stray finds.

⁴⁸ The unique assemblage was assigned to the cemetery of Svetlogorsk, grave 86 (Voigtmann 1942, p. 10): the beads were very numerous in Svetlogorsk and they were accompanied by imports from the Merovingian circle, which allowed to make a suggestion of their Frankish or Alamannic origin (Voigtmann 1942, p. 10). In fact the finds do not come from a Sambian cemetery but from grave 5 from a Rhineland necropolis of Niederbreisig, Lkr. Neuwied the finds from which became the subject of antiquarian trade (Göldner 1985).

and ranges from the 2nd half of the 6th century: beads from Group Ra appeared on Bornholm Phases 1B-1C (2nd half of the 6th-1st half of the 7th century) and from

Group Rb in Phases 1C-2A, i.e., in the 7th and early 8th century (Høilund Nielsen 1987, p. 59-62, Fig. 18).

III.1.4.2.1. Amber beads

At the cemetery eight amber beads were found (grave 10/3, 12/3, 38/3, 45/6, 60/10, 85/27, 102/1, 111/1). Results of their specialized analysis, conducted by Katarzyna Kwiatkowska, M.Sc., are presented in Table 1. The majority of them are 2 cm in diameter or slightly bigger, disc-shaped (grave 12/3, 45/6, 111/1), biconical (grave 10/3, 102/1), oval (grave 38/3) or irregularly shaped (grave 60/10) items. Only the bead from grave 10/3 and the one from grave 85/27 are smaller. The beads were usually carelessly made, their edges and surfaces are uneven, rough and the holes are imprecisely pierced; for some of them it is impossible definitely to determine their function (grave 60/10, 102/1). Only the beads from grave 12/3, 85/27 and grave 111/1 were precisely executed (on the latter one there are even traces of turning).

Amber beads were recorded in the Elbląg group: a large amber bead was found in Chojnowo, feature 1 (Kowalski 1985, p. 228, Fig. I:11) and there was a stray find of a thick ring-shaped bead (Neugebauer 1934, p. 321, Pl. LXX:3a), an analogous form is said to have been found in Elbląg-Żytno (Neugebauer 1934, p. 324; cf. Ehrlich 1920, Fig. 2:c). Other amber beads were found in Elbląg-Żytno, grave 10 – a quadrilateral amber bead with conical piercings on either side (Dorr 1914, p. 9), grave 106 – a squat cylindrical undecorated item (Ehrlich 1920, p. 194, Fig. 2:c); a damaged, later amber bead is said to have been found at this necropolis (Dorr 1914, p. 5, Pl. I:1). There are also finds from Sierpin, grave 15 (Dorr 1898, p. 26, Pl. I:14) – a biconical squat bead with a hole rectangular in cross-section and a stray find (Dorr 1898, Pl. I:15) – cylindrical with one oblique surface, and from Łęcze, grave 46 – a trapezoid, squat item with a biconical hole (Dorr 1898, p. 13, Pl. I:13), grave 48 (Dorr 1898, p. 13, Pl. I:12) – flat, lenticular in cross-section, with a biconical hole, grave 63 – a tall biconical form (Dorr 1898, p. 15, Pl. I:11). Moreover, amber beads were discovered at the necropolis at Podgórze, grave 2 where two cylindrical amber beads were found: a large one decorated with three shallow grooves and a smaller one, squat with a groove along the edge on one side (Peiser 1919, p. 336-337), grave 5 – disc-shaped with slightly convex surfaces (Peiser 1919, p. 337-339), and finally there were stray finds (Peiser 1919, p. 352) which, however, may be theoretically linked with the Wielbark culture.

Amber beads are also known from Młoteczno, grave 20 – a large amber bead, turned, decorated with surrounding grooves (Ziemlińska-Odojowa 1991, p. 105, Fig. 4), grave 34 – fragments of two amber beads (Ziemlińska-Odojowa 1991, p. 105), grave 46 – slim biconical item (Ziemlińska-Odojowa 1991, p. 105), grave 70 – two small lenticular beads (Ziemlińska-Odojowa 1991, Fig. 2:5, 9), and another find was discovered above an assemblage (Ziemlińska-Odojowa 1991, p. 113, Fig. 2:4-12), grave 86 – a flat cylindrical bead with slightly convex surfaces (Ziemlińska-Odojowa 1991, p. 113, Fig. 10).

Roughly worked amber beads occurred in the Balt areas, including, although in small numbers, the Olsztyn group (Kulakov 1989, p. 167-168) where also more carefully worked forms are known, e.g., Miętkie, grave 410 (Kulakov 1989, p. 181, Fig. 12:4), Miętkie II (Kulakov 1989, Fig. 17:3) and also at the Sambian-Natangian areas, usually in small numbers, i.e., one to three items (Kulakov 1990, p. 27), e.g., Kovrovo, grave 284 – four items (Kulakov 2009, p. 23, Fig. 122a:6, 7, 12, 13), grave 291 – one item (Kulakov 2009, Fig. 126:2, 4-6), Mitino, grave 394 – two items (personal commitment: K. Skvortsov) and in central Lithuania (Tautavičius 1980, p. 85-86). In the remaining Balt lands they are quite rare (cf. Gričuvienė, Grižas, Buža 2005, p. 110), e.g., Žvirbliai, barrow 17, grave I (Iwanowska 2006, p. 46, Pl. XII:1, CXXXVII:1). However, they were found in Crimea, in graves from the late 6th and 7th century, believed to be Goth women's graves (Chajredinova 1999, p. 87-88, Fig. 71-74), especially the rather irregular forms. Well made amber beads were sporadically encountered in the Merovingian circle (Schnurbein 1987, p. 48, 51) where they are considered as imports from the Balt zone (Steuer 1998, p. 396; Walter, Peeck, Gillich 2008, p. 27); they were also confirmed for Scandinavia (usually one or two items) where they belong to necklaces together with glass beads (Høilund Nielsen 1987, p. 53; Jørgensen 1990, Fig. 28; Jørgensen, Nørgård Jørgensen 1997, p. 46).

At the necropolis in Nowinka amber beads were found mainly in poor, imprecisely dated burials (except for grave 38 linked with Phase 1 as well as grave 60 and 85 linked with Phase 3 of the necropolis), which can not serve as a basis for drawing conclusions about chronology. However, their

presence in the Elbląg group has been confirmed for a very broad spectrum of time: from late Phase D: Podgórze, grave 2 (brooches of the Dollkeim/Kovrovo type), in phase E₁: Podgórze, grave 5 (brooch Type *Schlusskreuzfibel*), late Phase E: Łęcze, grave 41 (late form of a ladder brooch), grave 63 (one-edged sword), and one of the beads from Elbląg-Żytno was ascribed to the ‘hillfort period’ by R. Dorr (Dorr 1914, p. 5, Pl. I:1). In such a situation it should be assumed that amber beads are not a precise dating indicator in the Elbląg group.

Neither are they an univocal identifier of

III.1.4.2.2. Raw amber fragments

Lumps of unworked amber were found in many burials (grave 11/3, 16/2, 34/3, 36/2, 41/7, 45/7, 55/6, 75/2, 83/7, 85/17, 104/2, 127/2, 129/2, 135/2). These are usually small, not numerous lumps; an exception is the large lump from grave 85/17 which was found in a rich feature (its large size may be explained by the higher social status of its owner). In single cases there are traces of incisions (grave 11/3, 127/2). The lumps can not be ascribed to one sex, although only in one case the gender of the deceased was established on the basis of bone remains (grave 83 – probably a woman); the amber fragment from grave 85 was found in a ‘male set’. Raw amber was found in burials from all chronological sections: Phase 1 – grave 55, Phase 2 – grave 11, Phase 3 – grave 34, 83, 85. The lumps seem to indicate that one of the sources of wealth of the people using the burial ground in Nowinka was probably amber gathering and trade in this raw material.

Lumps of unworked amber were often found in graves of the Elbląg group: Chojnowo, grave 15 (Neugebauer 1934, p. 322), feature 3, 6 (Kowalski 1985, p. 229) and feature 7 (Kowalski 1985, p. 228), Elbląg-Żytno, grave 66, 72 and 87 (Ehrlich 1920, p. 194), Łęcze, grave 2 (Dorr 1898, p. 9), grave

the gender as they appear in burials of: a young woman (grave 4; see ‘female set’ from grave 85), a child (grave 38) and, judging on the basis of the grave goods from grave 60 (weapons) – also of a man. Besides, amber beads are more frequent in burials of adults (grave 10, 12, 45, 60) than in children’s burials (grave 10)⁴⁹. Their presence in a warrior’s grave was confirmed also at the burial ground of the West Lithuanian group in Lazdininkiai, grave 73; the find suggests how single beads were worn: probably hanging on the neck – it was found below the deceased’s jaw (Bliujienė, Butkus 2002, p. 82, Fig. 1:10).

22 (Dorr 1898, p. 11), grave 36 (Dorr 1898, p. 12), grave 39 (Dorr 1898, p. 12), grave 40 (Dorr 1898, p. 13), grave 43 (Dorr 1898, p. 13), grave 57 (Dorr 1898, p. 14), grave 59 (Dorr 1898, p. 14), grave 66 (Dorr 1898, p. 15), grave 67 (Dorr 1898, p. 15), grave 76 (Dorr 1898, p. 16), Młoteczno, grave 35 and 45 (Ziemlińska-Odojowa 1991, p. 105). Like in Nowinka they occurred in various chronological phases. According to B. Ehrlich some of them came from the earliest period – Elbląg-Żytno, grave 87, other ones from the ‘hillfort period’ (with wheel turned pottery) – Elbląg-Żytno, grave 66 and 72 (Ehrlich 1920, p. 194). The find from Łęcze, grave 2 (accompanied by a ladder brooch) and from grave 76 (with a sword and a disc brooch) can be dated to the late period of the Elbląg group.

So far no traces of similar behaviours were found in the other parts of the West Balt circle in the Late Migration Period, except for the find from grave 106 in Tumiany where amber not being a final product but with traces of polishing was found (Jakobson 2009, p. 55, Pl. 63:106c; Bitner-Wróblewska 2008a, Pl. XIX). From the other hand this is possible that small fragments of amber didn’t draw the attention of excavators.

⁴⁹ In grave 102 remains of an adult and a child were found.

No.	Localization	Form	Description	Weight Dimension
1	Stray find	4 lumps of raw amber	1: small lump, fragile; translucent, orange-red amber 2-3: medium-sized lumps a) with preserved natural surfaces, weathered; transparent, reddish amber b) weathered piece; untransparent, translucent, yellow-orange amber 4: large lump with a crust (covered with a thick orange cortex polygonally cracked), fragile with flaking off scales; untransparent, orange-yellow amber	<1 g 2 g 6 g
2	Grave 10/3	Final product	Rhomboidal bead; untransparent, brown amber	1.2x1.0 x0.8 cm
3	Grave 11/3	3 small pieces of raw amber	Surfaces covered with untransparent decay; transparent, translucent yellow-orange and reddish amber	4 g
4	Grave 12/3	Final product	Flat disc-shaped bead, weathered surface; untransparent, almost black amber	0.8x2.1 x2.1 cm
5	Grave 16/2	Small pieces coming from one lump	Translucent, orange-red amber	< 1 g
6	Grave 34/4	Small lump	Natural cortex partly preserved; translucent, orange-red amber	< 1 g
7	Grave 34/4	Small lump	Surfaces covered with untransparent decay; transparent, reddish amber	< 1 g
8	Grave 36/2	Small lump	Natural surface partly preserved; untransparent, orange-yellow amber	1 g
9	Grave 38/3	Fragment of a bead	Surface with traces of working with a knife; untransparent, yellow-orange amber	1.6x1.8 x0.6 cm
10	Grave 41/7	Small lump	Strongly weathered; red-brown amber	< 1 g
11	Grave 45/6	Bead	Unfinished flat disc, surface with traces of working with a knife; untransparent, orange-yellow amber	0.7x1.8 x1.8 cm
13	Grave 45/7	3 pieces	Weathered surface; untransparent and transparent, orange-yellow and red amber	< 1 g
14	Grave 55/6	Several pieces of one lump (?)	Surface covered with decay; untransparent, reddish amber	5 g
15	Grave 60/10	1 piece Fragment of an ornament	Surface covered with decay; untransparent, reddish amber Weathered surface, the hole slightly drilled at the edges; mixed amber: untransparent and translucent, white-yellow and reddish	< 1 g 3.5 g
16	Grave 75/2	2 pieces	Weathered surface; untransparent, orange-yellow amber	2.5 g
17	Grave 83/7	3 small lumps	Weathered surface; dark red amber	3.5 g
18	Grave 85	Final product	Cylindrical bead; transparent, red-orange amber	0.8x1.1 x1.1 cm
19	Grave 85/17	Small pieces, possibly from one lump	Weathered surface; translucent, orange-red amber	< 1 g
20	Grave 85/17	Fragment of an unworked lump	Well-preserved; transparent, reddish amber	60.5 g

Table 1. Description of amber beads and fragments from the cemetery at Nowinka (after K. Kwiatkowska).

III.1.5. Belt elements

III.1.5.1. Buckles

In the human graves from the cemetery twenty buckles or their fragments were found. The remaining ones come from horse graves and they are discussed in the chapter concerning the horse gear. One of the most interesting finds is the large bronze item from grave 17/2 representing Type Butėnas III.1d. It is a massive buckle with a cross-shaped spike (germ. *Kreuzdornschnalle*)⁵⁰ and a kidney-shaped frame with a decorative, openwork ferrule (on the patterns on the ferrule cf. Chapter III.1.5.2). The plate functioning as a ferrule is fixed in an untypical way: it is connected to the frame by two bent bands of bronze sheet, fixed with a pair of rivets with large decorative heads. They are fitted in projections on the shorter side of the plate. To keep the distance between the edges of the plates, which allows the frame to move, a double layer of leather was inserted (remains of leather were preserved in that place). It is possible that these are traces of repair of the ferrule. This may be also suggested by the openwork decoration at the opposite edge, which breaks the symmetry of the pattern. The idea that belt fittings were modified is supported also by the fact that the second ferrule has a different openwork pattern. On the other hand, in the Olsztyn group other instances of using such a way of fastening are known: Tumiany, grave 80 (Bitner-Wróblewska 2008a, Pl. XIV; Heydeck 1895, p. 56; Jakobson 2009, Pl. 50:b), Kosewo, grave 392 (Jakobson files) where the ferrule is not changed. Besides, at the Elbląg group cemetery at Łęcze, grave 28, a buckle with an openwork ferrule was found the end of which was hammered and split into two band-like grips in which the frame of the buckle was fixed. Their ends are joined to the ferrule with rivets placed in holes in openwork ornament (Dorr 1898, Pl. II:1; MAHE inv. no. 15/31). The remaining ferrules in belt buckles of that type were fixed in the traditional way⁵¹. The territorially closest analogy is the item from Elbląg-Żytno (Ehrlich 1932, Fig. 9:b). Also in the Olsztyn group numerous such artefacts were found, e.g., Kielary, grave 6 and grave 34 (Voigtmann files), Leleszki (Kulakov 1989, Fig. 24:7; Bitner-Wróblewska 2008a, Pl. LI), Tumiany, grave 96 (Bitner-Wróblewska 2008a, Pl. XVII; Jakobson 2009,

Pl. 60:b), grave 147 (Heydeck 1895, p. 65, Pl. IV:3; Bitner-Wróblewska 2008a, Pl. XXV; Jakobson 2009, Pl. 77:b) and grave 149 (Bitner-Wróblewska 2008a, Pl. XXVI; Jakobson 2009, Pl. 79:b). They are also confirmed for the Sambian-Natangian areas, e.g., ex-Koddien (Ehrlich 1932, p. 415) and in the West Lithuanian group, e.g., Vilkyčiai (Voigtmann files)⁵². Buckles of the *Kreuzdornschnalle* type are dated to Phase E₂ in the Olsztyn group (Kowalski 1991, Fig. 2; 2000, p. 222-223) and the Elbląg group (Kowalski 2000, p. 220). In Nowinka, grave 17 in which the analysed buckle was uncovered, was included in Phase 3.

A buckle of the *Kreuzdornschnalle* type (version similar to Type Butėnas III.1d) was also found in grave 105/3. It is smaller, has no ferrule, its frame is close to a trapeze in shape and slightly concave in the place where the spike rested. Buckles of similar shape are known in the Elbląg and Olsztyn groups and the closest known analogy is the item from a horse grave 13 in Łęcze (Dorr 1898, p. 10, Pl. III:13). In the light of analyses made so far the chronology of buckles of this type does not differ from that established for other items with cross-shaped spike. In Nowinka the assemblage in which the discussed buckle was found is one of the latest at the site.

Another large buckle was the bronze item Type Butėnas III.1 from grave 85/19. Its frame is close to kidney-shaped and has a notch in the place where the spike rested. It does not have a ferrule and was joined to the belt by means of a pair of bent rectangular bands with rivets at the ends (a similar method was used in the buckle from grave 17/2), which seems to confirm its local origin. Chronology of the majority of Balt buckles from the analysed period, especially of the simpler forms has not been established in detail; i.a., the analysis of cemeteries in Tumiany and Kielary has not brought any definitive results (Bitner-Wróblewska 2007a, p. 78-79). It thus can only be said that oval and kidney-shaped buckles are known in the Elbląg and Olsztyn groups, in Lithuania and at the Sambian-Natangian area (eg., Suvorovo, grave 63, 64, 121, 386 – cf. Heym 1938, Pl. 6:54-56, 59-60, 63; 22:221, 225; 29:214, 217; 30:221, 225; 33:243). They generally occur in Phases E₂-E₃ in Olsztyn group (cf. Kowalski 2000, p. 222-223), and their chronology for the Elbląg group is probably similar. The item from grave 85/19 represents Phase 3 of the Nowinka necropolis.

⁵⁰ The term used after N. Åberg (1919, p. 106-108).

⁵¹ Such constructions are common in the Merovingian circle, which is well illustrated by the example of the cemetery at Peigen, Lkr. Dingolfing-Landau (cf. von Freeden, Lehmann 2005, Fig. 35:15, 36:8, 42:7, 89:3, 94:5, 170:4).

⁵² Cf. Åberg 1919, p. 107-108; Reich 2009, p. 39, 43, Fig. 9-10.

In grave 84/6 a fragment of a spike from a shield-on-tongue buckle (germ. *Schilddornschnalle*)⁵³ was found. From the area of the Elbląg group other item of that type is known: the silver-gilt item from Elbląg, Moniuszki St, feature 239 (Ehrlich 1937b, p. 275, Fig. 8; Neugebauer 1975, Pl. X:6)⁵⁴. It represents the form with elongated, trapeze-shaped or triangular ferrule⁵⁵. It seems probable that the buckle from Nowinka had a similar form. These forms were dated to the 2nd half of the 6th (Godłowski 1981, p. 114) or even to the 7th century and treated as an indicator of the final phase of the Elbląg group (Kowalski 2000, p. 220). They are well documented for the Olsztyn group (mainly the items with oval-shaped ferrule) and their presence is confirmed also for the Sambian-Natangian area (cf. Åberg 1919, p. 111-114). J. Kowalski treats them as indicators of Phase E₂ in Olsztyn group (1991, Fig. 2) which to a certain extent contradicts the later dating of such forms for the Elbląg group he suggested. *Schilddornschnalle* were also found in Scandinavia where they are determined as Types A2-3 after M. Ørsnes (1966, p. 288-289, Figs. 3, 10, 14, 17, 19) or A1a-c after K. Hoiland Nielsen (1987, p. 75). In A. Nørgård Jørgensen's classification they are assigned to Type GU2 – with an elongated ferrule or GU3 – with an oval ferrule (Nørgård Jørgensen 1999, p. 114, Fig. 101:2-3). They were found on Bornholm, Gotland and in Norway, in the last-mentioned place only forms Type GU3 (Nørgård Jørgensen 1999, p. 114-116). The finds from Scandinavia are considered to be indicators of Nordic Phase I and II (520/30-560/70 A.D. and 560/70-610/20 A.D.) and the Norwegian items and forms with elongated ferrule are clearly later (Nørgård Jørgensen 1999, Figs. 107, 110, 116). They are the most numerous in the Merovingian circle. According to U. Koch such buckles appeared in men's burials from Phase 3 (565-590/600 A.D.), but mainly in Phase 4 (590-620/30 A.D.) and the latest items even in Phase 5, i.e., 620-650/60 A.D.

⁵³ The term used after N. Åberg (1919, p. 109).

⁵⁴ In this group of artefacts a buckle from Żuławka Sztumska was mentioned (Godłowski 1981, p. 114, Fig. 31; Jagodziński 1997, Pl. III:6; Bogucki 2006, p. 101, Fig. 10). Inaccurate drawing included in the above mentioned papers could have maintained this idea. Actually the item preserved in collection of MAG, inv. no 1986:59, and thus it has to be underlined that it unequivocally comes from Elbląg, Moniuszki St, feature 239.

⁵⁵ This group may be also extended by a ferrule of a buckle, probably Type *Schilddornschnalle* from Komorowo Żuławskie (personal commitment: M. Bogucki) and a fragment of a ferrule probably of a buckle of analogous type from the MAHE collection, inv. no. 254/700 from an undetermined site at the area of Elbląg.

(Koch 1977, Fig. 8:B). According to other interpretations they belong to Phase 5 (565-580/90 A.D.) in the Rhineland: items with elongated ferrule (Müsse-meier, Nieveler, Plum, Pöppelmann 2003, Fig. 7) and to Phase MA3 (560/70-600/10 A.D.) in France: mainly items with an oval ferrule (Legoux, Périn, Vallet 2006, p. 62). Items from Thuringia were included in Group IIIb (560-600 A.D) and IV (600-ca 700 A.D.) after B. Schmidt (1961, p. 140, Fig. 5:A, Pl. 45:s, cf. Fig. 1). Finds of slim buckles of that type from Lombards' cemeteries in Italy were included by V. Bierbrauer (2008, Fig. 18) to Phase 1 (572-590 A.D.). Merovingian and north European items are indicators of men's burials. It seems that finds from the Elbląg group, including Nowinka, should be associated with the Scandinavian items Type GU2 or Merovingian ones (namely from Phase 4 after U. Koch). This is confirmed also by the fact that the spike from Nowinka was found together with possible fragment of ferrule's terminal of the shield-on-tongue buckle (grave 84/7, cf. Chapter III.1.5.2.) typical of artefacts with slim ferrules. Grave 84 from Nowinka is dated to Phase 3 of the necropolis.

Additionally four iron medium-sized buckles (ca 3 cm long) with kidney-shaped frame Type Buténas III.1a (grave 8/1), oval frame Type Buténas III.2 (grave 33/1), rectangular-kidney-shaped frame Type Buténas IV.2 (grave 18/4) or trapeze-shaped frame Type Buténas IV.4 (grave 131/1) may be mentioned.

At the cemetery in Nowinka small bronze buckles with frames 1-2 cm long are far more numerous. In this group there are items with kidney-shaped frames Type Buténas III.1b (grave 17/8, 120/2), trapeze-kidney-shaped frames Type Buténas IV.4 (grave 85/2-4), trapeze-oval-shaped frames (grave 120/3-4), trapeze-shaped frame Type Buténas IV.4 (grave 44/1), similar to a square frame Type Buténas IV.3 (grave 84/2), oval-shaped frame Type Buténas III.2a (grave 21/7), or irregular-oval-shaped frame Type Buténas I.1 (grave 83/2) and additionally a spike of a buckle from grave 114/1. Some of them had ferrules (grave 21/7, 85/2-4, 120/4). Most of them are fragile and simple, except for items from grave 85/2-4 which also have stamped decorations on the ferrules. Some of these buckles were elements of the belts used for fixing a sword's scabbard or drinking horn (grave 85/2-4).

Simple bronze and iron buckles were also found at other burial grounds of the Elbląg group, e.g., Elbląg, Moniuszki St (Ehrlich 1937b, p. 275). As the analogies one may mention small oval forms, e.g., Chojnowo, feature 1 (Kowalski 1985, Pl. I:2, 4-6), feature 2 (Kowalski 1985, Pl. II:32), feature 14 (Kowalski

1985, Pl. II:3), Elbląg-Żytno (Ehrlich 1932, Fig. 9:d), Młoteczno, feature 68 (Ziemlińska-Odojowa 1991, p. 113, Fig. 9:6), feature 70 (Ziemlińska-Odojowa 1991, Fig. 2:6); kidney-shaped ones, e.g., Chojnowo, feature 1 (Kowalski 1985, Pl. I:3), Młoteczno, feature? (Ziemlińska-Odojowa 1991, Fig. 5) or trapeze-kidney-shaped items, e.g., Elbląg-Żytno (Ehrlich 1932, Fig. 9:f-g), Łęcze, grave 38 (Dorr 1898, p. 12, Pl. III:26). They were also encountered at the necropolises of the Olsztyn group: small, kidney-shaped, e.g., Leleszki, grave 44 (Bitner-Wróblewska 2008a, Pl. L), Tumiany, grave 26 (Heydeck 1895, p. 46, Pl. V:9; Kulakov 1989, Fig. 26:6; Jakobson 2009, Pl. 9:f), grave 28 (Heydeck 1895, p. 46; Jakobson 2009, Pl. 11:c), grave 47 (Heydeck 1895, p. 51; Jakobson 2009, Pl. 30:b), grave 88 (Kulakov 1989, Fig. 43:3; Jakobson 2009, Pl. 55:a), grave 141 (Heydeck 1895, p. 64; Kulakov 1989, Fig. 51:1; Jakobson 2009, Pl. 73:c), grave 148 (Heydeck 1895, p. 65; Jakobson 2009, Pl. 78:c), grave 150 (Heydeck 1895, p. 66; Jakobson 2009, Pl. 80:d), grave 153 (Kulakov 1989, Fig. 51:6; Jakobson 2009, Pl. 81:a); small, oval-shaped, e.g., Tumiany, grave 49 (Kulakov 1989, Fig. 36:1; Bitner-Wróblewska 2008a, Pl. X; Jakobson 2009, Pl. 49:d), grave 79 (Kulakov 1989, Fig. 42:1; Bitner-Wróblewska 2008a, Pl. XIV; Jakobson 2009, Pl. 49:c), graves? (Bitner-Wróblewska 2008a, Pl. XXIX); small, trapeze-kidney-shaped, e.g., Miętkie (Bitner-Wróblewska 2008a, Pl. CLVII), Miętkie, grave 37 (Kulakov 1989, Fig. 2), grave 51 (Kulakov 1989, Fig. 8:2), Miętkie II, grave 99 (Kulakov 1989, Fig. 16:5), grave 90? (Kulakov 1989, Fig. 19:2), Tumiany, grave 78 (Kulakov 1989, Fig. 41:2; Bitner-Wróblewska 2008a, Pl. XIII; Jakobson 2009, Pl. 48:e), grave 85 (Kulakov 1989, Fig. 42:3; Bitner-Wróblewska 2008a, Pl. XV; Jakobson 2009, Pl. 53:b); trapeze-shaped, e.g., Miętkie (Bitner-Wróblewska 2008a, Pl. CLVII), Leleszki, grave 12 (Bitner-Wróblewska 2008a, Pl. XLVI), Tumiany, grave 85 (Kulakov 1989, Fig. 42:3; Jakobson 2009, Pl. 53:c), grave 95 (Kulakov 1989, Fig. 44:3; Jakobson 2009, Pl. 59:c), Waplewo, grave 22 (Bitner-

Wróblewska 2008a, Pl. XXXVIII); rectangular-oval-shaped, e.g., Miętkie, grave 51 (Kulakov 1989, Fig. 8:2). Small buckles were also recorded at the Sambian-Natangian areas, i.a., oval forms, e.g., Suworovo, grave 116 (Heym 1938, Fig. 54), grave 131 (Heym 1938, Fig. 214, 217), grave 286a (Heym 1938, Fig. 235); trapeze-kidney-shaped, e.g., Kholmogor'e (Heym 1938, Pl. 35) or kidney-shaped, e.g., Suworovo, grave 63 (Heym 1938, Fig. 221); all these types were also discovered at the cemetery of Mitino, e.g., kidney-shaped-oval in grave 119, grave 305 and grave 342 as well as oval-shaped in grave 119 and grave 319 (personal commitment: K. Skvortsov). They are also known from the territory of Lithuania (Butėnas 1999, p. 54-55). Among the items mentioned above buckles with more massive frame, similar to the ones from grave 85/2-4 in Nowinka, are exceptional, e.g., Miętkie II, grave 90?

The chronology of small and medium-sized buckles is even less precise than that of large ones. Similar buckles may be found in the contexts from the early phase of the Elbląg group, e.g., Młoteczno, feature 70 (together with a *Schlusskreuzfibel*, cf. Ziemlińska-Odojowa 1991, Fig. 2:4-12). Only for the trapeze-kidney-shaped items it is possible to establish that they occurred in graves from Phase 3 of the cemetery (grave 85 and grave 60 – where the buckle belonged to a horse grave). It is also worth to consider the function of small buckles: certainly not all of them were used to fasten the belt, if only because of their low durability, besides they occurred in larger sets: three items in grave 85 ('male set') and three items in grave 120. In grave 85 their location in the burial pit suggests that one buckle was used to fasten the strap of the sword's scabbard and two others were attached to the belt whereas in grave 120 the buckles were in the same context as the belt fittings. They may have been used to attach some elements to the belt. Sometimes they are interpreted as buckles used to fasten the spurs (Heydeck 1895, p. 66), which, however, is not confirmed by the materials from Nowinka.

III.1.5.2. Belt fittings

At the cemetery also openwork rectangular bronze plates were discovered, which served as belt mounts (grave 17/3, stray find SF/11). They were fixed with rivets placed in the corners (stray find, SF/11) or in threes near the shorter edges (grave 17/4). They had openwork decoration which was a mixture of T-shaped and curved (stray find SF/11)⁵⁶ or cross-

shaped motifs (grave 17/3). A very similar to the latter one pattern was found at the suspension plate of the scabbard from grave 85/10. Another openwork motif was found on the bronze plate from grave 17/2 which served as a ferrule: on the sides of T- and cross-shaped motifs a step motif was added. Analogies for this kind of belt ornaments with T-shaped motifs can be found at burial grounds of the Elbląg group: Elbląg-Żytno (Ehrlich 1932, p. 415; Fig. 6:l) and Łęcze, grave 28. In the last-mentioned burial ground a set of nine mounts with

⁵⁶ The object was additionally ornamented with lines of dots punched near the edges.

T-shaped, curved and cross-shaped motifs and lines engraved along the edges was found; part of them is represented by smaller, square items with rivets inserted in the holes of the openwork decoration (Dorr 1898, p. 12, 21, Pl. II:1). An openwork mount was also found in grave 13 in Łęczce, yet there it was probably part of horse furniture (Dorr 1898, p. 10, 22, Pl. III:23). In the Elbląg group also less carefully made patterns of openwork squares were found: Elbląg-Żytno (Ehrlich 1932, Fig. 9:e), Łęczce, grave 13 (Dorr 1898, p. 22, Pl. III:22-23) as well as rectangles: Elbląg-Żytno, grave 99 (Ehrlich 1920, p. 193, Fig. 2:e). Similar decorations can be found in the Olsztyn group. These are curved patterns: Kielary, stray find (Jakobson 2009, Pl. 191:24), Spychówko, grave 1 (Åberg 1919, Fig. 168; Nowakowski 2007a, p. 117, Fig. 7:c), Tumiany, grave 36 (Heydeck 1895, p. 48, Pl. VIII:13), grave 48 (Bitner-Wróblewska 2008a, Pl. IX; Jakobson 2009, Pl. 31:e), grave 80 (Kulakov 1989, Fig. 42:2; Bitner-Wróblewska 2008a, Pl. XIV; Jakobson 2009, Pl. 50:d). Still numerous are cross- or T-shaped patterns: Kielary, grave 5, grave 6, grave 22, grave 37, grave 62, grave 73, grave 85, grave 90 (Voigtmann files; Jakobson 2009, Pl. 109:f, 110:h, 128:d, 140:f, 155:f, 160.73:c, 170:d, 174:e), stray find (Jakobson 2009, Pl. 191:25), Leleszki, grave 25 (Kulakov 1989, Fig. 23:1; Bitner-Wróblewska 2008a, Pl. XLVIII), Miętkie II, grave 32 (Kulakov 1989, Fig. 15:3), Tumiany, grave 48 (Bitner-Wróblewska 2008a, Pl. IX; Jakobson 2009, Pl. 31:g), grave 79 (Kulakov 1989, Fig. 42:1; Bitner-Wróblewska 2008a, Pl. XIV; Jakobson 2009, Pl. 49:e), grave 80 (Heydeck 1895, p. 56, Pl. IV:3; Kulakov 1989, Fig. 42:2; Bitner-Wróblewska 2008a, Pl. XIV; Jakobson 2009, Pl. 50:e), grave 84 (Kulakov 1989, Fig. 41:3; Jakobson 2009, Pl. 52:d), grave 96 (Heydeck 1895, p. 58, Pl. IV:3; Kulakov 1989, Fig. 45:1; Bitner-Wróblewska 2008a, Pl. XVII; Jakobson 2009, Pl. 60:d), grave 108a (Heydeck 1895, p. 60, Pl. VI:2; Kulakov 1989, Fig. 46:2; Bitner-Wróblewska 2008a, Pl. XIX; Jakobson 2009, Pl. 64:b-c), grave 115 (Heydeck 1895, p. 61; Kulakov 1989, Fig. 48:5; Bitner-Wróblewska 2008a, Pl. XXI; Jakobson 2009, Pl. 66:b, f, g), grave 121 (Heydeck 1895, p. 62; Kulakov 1989, Fig. 50:1; Bitner-Wróblewska 2008a, Pl. XXII; Jakobson 2009, Pl. 70:c), grave 147 (Heydeck 1895, p. 65, Pl. IV:3; Bitner-Wróblewska 2008a, Pl. XXV; Jakobson 2009, Pl. 77:b, d, e)⁵⁷, grave 149 (Heydeck 1895, p. 65; Bitner-Wróblewska 2008a, Pl. XXVI; Jakobson 2009, Pl. 79:d), Waplewo, stray find (Jakobson files). There are also known cross- and T-shaped patterns of the step variant: Tumiany, grave

87 (Heydeck 1895, p. 57, Pl. VIII:11; Kulakov 1989, Fig. 43:2; Bitner-Wróblewska 2008a, Pl. XV; Jakobson 2009, Pl. 54:d-f), and with patterns of letters T, L and S – Kosewo, grave 394 (Jakobson files). Openwork mounts with T- or cross-shaped patterns were recorded also in other regions of the West Balt circle: in the Sambian-Natangian area, e.g., Suvorovo, grave 392 (Kulakov 1990, Pl. XIX:7; Bitner-Wróblewska 2008a, Pl. CCXXXVIII) and in the West Lithuanian group, e.g., Lazdininkiai, grave 73 (Bliujienė, Butkus 2002, Fig. 4:4; Beganskaitė, Satkūnaitė 2002, Fig. 10:b)⁵⁷ and Vilkyčiai (Åberg 1919, p. 114; Voigtmann files); lately next item from Katyčiai (Lower Neman group) and one from unknown site, probably in Western Lithuania were published (Banytė-Rowell 2009, p. 228-231, Fig. 1:2-3). They are also known in the northern Baltic Sea littoral, on Bornholm, in Sweden and Finland (Ørsnes 1966, p. 291), e.g., the mount similar to a rectangle from Bornholm cemetery at Bækkegård, Bornholms amt, grave 'e' (Ørsnes 1966, Fig. 23; Jørgensen 1990, p. 134, Pl. 24:10) or Swedish mounts from Valsgårde, Gamla Uppsala sn, grave 8, where they were used as mounts of horse furniture No II (Arwidsson 1954, p. 73, Fig. 50), Vendel, Vendels sn, grave XIV (Stolpe, Arne 1927, Pl. XLIII:10, XLIV:20) and Birka, Adelsö sn (Stolpe, Hallström 1913, Pl. VI, VIII) as well as stray finds from Gotland (Nerman 1969, Figs. 330, 333; 1975, p. 21-22, 155). Also items with openwork decoration of the step variant are known from the area of Sweden, e.g., Vendel, Vendels sn, grave XII (Stolpe, Arne 1927, Pl. XLIII:10), including Gotland, e.g., Bjärs, Roma sn, and the vicinity of Roma, Roma sn (Åberg 1919, Fig. 168; Nerman 1969, Fig. 332; 1975, p. 22, 155, Table 1-2; Nørgård Jørgensen 1997, p. 262, Pl. 105:15). A. Nørgård Jørgensen classified the items with the step motif as a local, Gotlandic variant RR1b (1997, p. 112). However, they are usually determined as Type Ørsnes C3/Høilund Nielsen C1c (Høilund Nielsen 1987, p. 76). Fittings of that type are very rare outside the Balt area⁵⁹ and their occurrence in Scandinavia is explained by the influences com-

⁵⁷ In V. Kulakov's work named erroneously as grave 150 (1989, Fig. 53:2, cf. p. 199).

⁵⁸ Also here the plate had a less carefully made pattern of openwork squares (Bliujienė, Butkus 2002, Fig. 4:3; Beganskaitė, Satkūnaitė 2002, Fig. 10:b).

⁵⁹ Openwork belt fittings were found also at the Merovingian and Anglo Saxon areas in the late 6th and 1st half of the 7th century (Hillberg 2009, p. 267-269, footnote 946, 947), i.e., in a similar time spectrum as in Scandinavia. A similar plate, however, with L-shaped motifs was found in central Germany. It was part of a decorative disc brooch from Deersheim, Lkr. Halberstadt, grave 14 (Schmidt 1976, p. 19-20, Pl. 6:3) and the cross- and T-shaped patterns decorated belt fittings from grave 25 in Mainz-Finthen, Stadt Mainz (Hillberg 2009, Fig. 7.39:4) or at the Alamannic cemetery of Waiblingen, Lkr. Rems-Mur Kreis in Württemberg (Veeck 1931, Pl. 63:4).

ing from the area of the former Ostpreussen (Ørnsnes 1966, p. 291; cf. Åberg 1919, p. 115). According to J. Kowalski the chronology of mounts from the Olsztyn group should be limited to Phase E₂ (1991, Fig. 2; 2000, p. 222). He also dates to Phase E₂ the items from the Elbląg group (2000, p. 220). At the cemetery of Nowinka objects with openwork decoration (belt fittings and a suspension plate of the scabbard) can be assigned to Phase 3. The items from Sweden may be linked with the Early Vendel Period (Phase Vet 1 after J. Ljungkvist, i.e., 560/70-620/30 A.D., cf. Ljungkvist 2008, Table 1:a) and the ones from Gotland were connected by A. Nørgård Jørgensen with Nordic Phase I in the chronology of graves with weapons which she placed between 520/30 A.D. and 560/70 A.D. (1997, p. 112, 141) whereas B. Nerman assigned them to Phase VII:1 (Nerman 1969) dated from the 2nd half of the 6th century (cf. Bitner-Wróblewska 2001, Pl. I-II).

In grave 105/5 a four-armed belt fitting made up of two bronze plates with rivets in the corners was found. The only known Balt analogies are ones from the cemeteries of the Olsztyn group in Kielary, grave XXVIII (Jakobson 2009, p. 97, Pl. 212:c), grave 51 (Voightmann files; Jakobson 2009, p. 79, Pl. 150:f) and Tumiany, grave 52 – here the fitting was made of silver (Jakobson 2009, p. 46, Pl. 36:e; Catalogue of the *Prussia Museum*, Book 01, Chart 021 – personal commitment: K. Skvortsov); an object like that may have also been found in grave (?) in Miętkie excavated in 1903 (Nowakowski 1998, p. 120, Pl. 21:404)⁶⁰. Fitting from grave 51 in Kielary was found together with, i.a., a buckle with a cross-shaped spike, a cross-bow brooch with trapeze-shaped head and foot, lancet-shaped strap ends and band-shaped riveted spurs, which allows to date the assemblage to Phase E_{2(a)} (cf. Kowalski 2000, p. 222-223). The item from grave XXVIII was found together with, i.a., a disc brooch (Jakobson 2009, Pl. 212:a), which puts the assemblage in Phase E₃ (Rudnicki 2006a). In grave 52 from Tumiany, i.a., a semi-circular openwork ferrule of a buckle was found (Jakobson 2009, Pl. 36:b) typical of Phase E₂ (Kowalski 1991, Fig. 2) and in grave 57, i.a., a *Kreuzdornschnalle* and a brooch Group II after M. Rudnicki (2008, Fig. 13) dated to Phase E_{2a} (Rudnicki 2008, Fig. 12). The item from Nowinka is synchronical with the later finds from the Olsztyn group as it was found in an assemblage dated to Phase 3 of the necropolis. Similar fittings were recorded in the Merovingian circle, yet they were larger and were used as headgear strap connectors in Merovingian areas, e.g.,

Staffelberg bei Staffelstein, Lkr. Lichtenfels (Koch 1967, p. 73, Pl. 41:14), Frankfurt-Heddernheim, Lkr. Frankfurt, stray find (Koch 1967, p. 73; Oexle 1992, p. 220, Pl. 148:321.1). In the Early Medieval Period such connectors were recorded also in Balt areas, e.g., Klintsovka-Irzekapinis, grave 91 (Kulakov 1990, Pl. LXX:1). The appearance of four-armed belt fittings in the Balt milieu should be probably explained by the Merovingian influences, which concerned mainly the belt fittings⁶¹.

In grave 35/2 and 84/4 T-shaped belt fittings were uncovered. They have rectangular openings near the longer, straight edges. It is worth to note that the stamped ornament on the fitting from grave 35/2 is analogous to the pattern on the imported brooch from grave 38/1. A different pattern of lines punched along the edges covered a pair of fittings from grave 84/4: it is very similar to the motif on imported tongue-shaped strap ends (84/5), belt mounts (84/3) and the shield at the tongue of the buckle (84/6) from the same grave. This may indicate that T-shaped fittings from Nowinka were imports. T-shaped fittings are quite numerous in the Olsztyn group (however, usually without openwork pattern) where they are dated to Phase E_{2b} (Kowalski 1991, Fig. 2; cf. Kowalski 2000, p. 215-216) and occasionally at the Sambian-Natangian area, e.g., Schosseynoe, stray find (silver-gilded item – an import; personal commitment: K. Skvortsov). From the Elbląg group so far only one find was known: Jelonki, stray find (Rudnicki, Trzeciński 1994, p. 151, Pl. III:2). However, they were found on a much larger area, especially in the Merovingian circle (see Åberg 1919, p. 114, Fig. 154-166), e.g., at the Alamannic cemeteries in Hailfingen, Stadt Rotenburg am Neckar, grave 286 (Stoll 1939, p. 58, Pl. 24:1c-d; Koch 1968, Pl. 29:3), Marktoberdorf, Lkr. Ostallgäu, grave 34 – four items (Christlein 1966, p. 114-115, Fig. 15, Pl. 10:5-8) and Schretzheim, Stadt Dillingen a.d. Donau, grave 463 (Koch 1977, p. 100-101, Pl. 120:13-14), in the Frankish necropolises Krefeld-Gellep, Stadt Gellep, grave 2638 – three items (Pirling 1979a, p. 133; 1979b, p. 54, Pl. 54:6) and Kleinlangheim, Lkr. Kitzingen, grave 19 (Pescheck 1996, p. 217; Pl. 3:14), grave 37 – two items (Pescheck 1996, p. 220-221, Pl. 8:9-10), grave 113 (Pescheck 1996, p. 234-235, Pl. 26:17), grave 115 (Pescheck 1996, p. 235, Pl. 27:13), grave 192 – two items (Pescheck 1996, p. 247-248, Pl. 45:6-7), grave 195 (Pescheck 1996, p. 248, Pl. 46:4), grave 293 – four

⁶⁰ Dating and determination of the find from Miętkie are highly dubious; besides it is larger than the items from Nowinka.

⁶¹ It should be also noted that sometimes openwork pattern in decorative belt mounts give them the shape similar to four-armed fittings, e.g., Tumiany, grave 36 (Jakobson 2009, Pl. 23:g).

items (Pescheck 1996, p. 266, Pl. 71:4, 7-9, 94:4-7), grave 295 (Pescheck 1996, p. 267, Pl. 73:2, 96:14), Westheim, Lkr. Weißenburg-Gunzenhausen, grave 134 (Reiß 1994, p. 322-323, Pl. 64:5), grave 152 – two items (Reiß 1994, p. 333-335, Pl. 71:17-18), grave 170 (Reiß 1994, p. 352-354, Pl. 86:3), grave from Wölfersheim, Lkr. Wetteraukreis – two items (Behrens 1937, p. 272, Fig. 6:12-13), Andernach-Kirchberg, Lkr. Mayen-Koblenz, stray finds (Vogel 2006, p. 164, Pl. 28:4-5, 9, 12-18), grave 11a – four specimens (Vogel 2006, p. 146, Pl. 4:10-13), grave 7 – two specimens (Vogel 2006, p. 145, Pl. 2:13-14) and grave 10 (Vogel 2006, p. 146, Pl. 4:3-4), Weingarten, Lkr. Ravensburg, grave 12 – two items (Roth, Theune 1995, p. 18, Pl. 6:8) and grave 335 – two items (Roth, Theune 1995, p. 99-100, Pl. 126:d-e)⁶², Eichstetten, Lkr. Breisgau-Hochschwarzwald, grave 201 (Sasse 2001, p. 211, Pl. 86:A5-6) and grave 272 (Sasse 2001, p. 230-231; Pl. 116:9), Peigen, Lkr. Dingolfing-Landau, grave 36 – five items (von Freeden, Lehmann 2005, p. 68-69, Fig. 36:12), grave 42 – four items (von Freeden, Lehmann 2005, p. 75-77, Fig. 42:11), grave 170 – four items (von Freeden, Lehmann 2005, p. 147, Fig. 170:7), grave 189 – three items (von Freeden, Lehmann 2005, p. 153-154, Fig. 189:11-13), at the cemetery Beckum I, Lkr. Warendorf, grave 43 (Capelle 1979, p. 23, Pl. 17:43.i), Junkersdorf, Stadt Köln, grave 80 (La Baume 1967, p. 162, Pl. 6:80.2), Pleidelsheim, Lkr. Ludwigsburg (Koch 2001, p. 285-287), Kelheim-Gmünd, Lkr. Kelheim, grave 53 (Koch 1960, Pl. 29:3), Göggingen, Lkr. Augsburg, grave 57 – two items (Stein 1961, p. 81, 102, Fig. 2:1)⁶³, two items from an unknown site from the RGZM collection (Behrens 1947, Fig. 104), four items from Basel-Aeschenvorstadt, Kt. Basel-Stadt, grave 334 (Giesler 1998, Fig. 225)⁶⁴, Liebenau, Lkr. Nienburg a.d. Weser, grave G12/B5 (Häßler 1983, p. 82, Pl. 37:1, 87:5), grave H11/B1 (Häßler 1983, p. 52, Pl. 6:1:d-e, 81:7), grave K12/B1 (Häßler 1985, p. 107, Pl. 48:4-5). The finds from Liebenau, Lkr. Nienburg a.d. Weser in Lower Saxony, grave H11/B1 are dated to the late 6th century (Häßler 1997, p. 289) or ca 600 A.D., within Phase 5 of the cemetery (Brieske 2005, p. 115). In the Merovingian circle T-shaped belt fittings may occur together with ones decorated with motifs of animal

⁶² More similar in shape to a triangle than to letter T.

⁶³ The items from Göggingen, Lkr. Augsburg clearly differ from the other ones in their complex shapes and decoration; they are also later – dated to the 1st tierce of the 7th century (Stein 1961, p. 81). Also the find from grave 7 from the Alamannic cemetery at Fridingen, Lkr. Tuttlingen differs in shape from the other ones. It has less convex sides and profiled end of the lower part (von Schnurbein 1987, p. 113, Pl. 2:13).

⁶⁴ Items with straight sides and profiled ends.

heads; they are known from the last tierce of the 6th century especially from the east Frankish and Alamannic areas but also from Lower Saxony (Brieske 2001, p. 200-203, Fig. 83; Böhme 2005, p. 87). They were also found in less ornamental sets of fittings, yet they are considered to have a decorative function (Brieske 2001, p. 209). They are indicators of men's burials from Phase 4 (590-620/30 A.D.) after U. Koch (1977, Fig. 8:B). Most of the Merovingian finds had openwork decorations along the longer part⁶⁵, like in the case of the items from Nowinka although there were also openwork decorations in the narrow part (Koch 1977, p. 124) and also ones without openwork decoration at all (Andernach-Kirchberg, Lkr. Mayen-Koblenz, stray find; Kelheim-Gmünd, Lkr. Kelheim, grave 53; Kleinlangheim, Lkr. Kitzingen, grave 37; Peigen, Lkr. Dingolfing-Landau, grave 170 and one item from grave 189). They make up a group of diverse forms: besides items similar to the finds from Nowinka there are also fittings with typical proportions but with lower parts ended with a circular plate with a rivet (Andernach-Kirchberg, Lkr. Mayen-Koblenz, grave 7 and 10; Kleinlangheim, Lkr. Kitzingen, grave 115, single item from grave 293, grave 295; Liebenau, Lkr. Nienburg a.d. Weser, grave K12/B1; Peigen, Lkr. Dingolfing-Landau, grave 36). This variant may have been also used for attaching the scabbard, which is suggested by the find from a Frankish cemetery in Neuß where two such fittings adjoined the edge of the scabbard of a sax (Stoll 1940, Pl. 34:2). Taking into account the location of the fittings in grave 84 in the case of Nowinka such a function of T-shaped fittings should be excluded. In the Merovingian circle there are also much more compact fittings (Andernach-Kirchberg, Lkr. Mayen-Koblenz, stray find; Eichstetten, Lkr. Breisgau-Hochschwarzwald, grave 272; Kleinlangheim, Lkr. Kitzingen, grave 293; Westheim, Lkr. Weißenburg-Gunzenhausen, grave 134). There are also items with clearly elongated central arm ended with a semi-circular or circular plate with a rivet (Andernach-Kirchberg, Lkr. Mayen-Koblenz, grave 11a and stray finds; Eichstetten, Lkr. Breisgau-Hochschwarzwald, grave 201; Kleinlangheim, Lkr. Kitzingen, grave 192; Marktoberdorf, Lkr. Ostallgäu, grave 34; Peigen, Lkr. Dingolfing-Landau, grave 189; Weingarten, Lkr. Ravensburg, grave 12; Westheim, Lkr. Weißenburg-Gunzenhausen, grave 152 and grave 170; Wölfersheim, Lkr. Wetteraukreis – one item). Their location in the burials sometimes

⁶⁵ Basing on the reconstruction of the arrangement of the fittings on the belt (Pescheck 1996, p. 49, Fig. 19) it seems that the openings may have been used to fasten the straps from which various objects were suspended.

suggests that they were used for fastening belt pouches in men's graves, e.g., Marktoberdorf, Lkr. Ostallgäu, grave 34 (cf. Christlein 1966, Fig. 15). The last mentioned form is basically a little later within Phase 4 (Koch 1977, Fig. 8:B).

Relatively numerous (over a dozen items) T-shaped fittings were found in Scandinavia where they are determined as Type Nørgård Jørgensen TR1 (1999, p. 114)/Ørsnes C10 (1966, p. 292, Fig. 27)/Høilund Nielsen C5 (1987, p. 76). Some were found on Bornholm, more in Gotland, in Sweden and, exceptionally also in Norway (Ørsnes 1966, p. 292; Nørgård Jørgensen 1999, p. 114). They are considered to be attributes of men's belts; on Bornholm they are determined as Phase II, i.e., 560/70-610/20 A.D. and in Gotland as Phases I-II, i.e., 520/30-610/20 A.D. (Nørgård Jørgensen 1999, Figs. 107, 110, 116). They comprise compact (cf. grave 35/2) and slim (cf. grave 84/4) items but so far no chronological differences between them have been found. The closest, although not identical, analogy as regards proportion and decoration of the item from grave 35/2 is the fitting from Stora Ihre, Hellvi sn on Gotland (Nerman 1969, Fig. 368; Nørgård Jørgensen 1997, p. 262, Pl. 107:6) and as regards the shape, also Merovingian fittings. A. Nørgård Jørgensen dates the assemblage from Stora Ihre to Nordic Phase I, i.e., 520/30-560/70 A.D. (1999, p. 262, cf. p. 141). This is in agreement with the early dating of grave 35 (Phase 1) in the chronology of the Nowinka necropolis. In the case of finds from grave 84/4 the closest known analogy are four items from grave 42 from Peigen, Lkr. Dingolfing-Landau (the only difference is that other stamps were used) and the items from Beckum I, Lkr. Warendorf, grave 43 and Kleinlangheim, Lkr. Kitzingen and Wölfersheim, Lkr. Wetteraukreis (they differ from the item from Nowinka by their slightly larger dimensions and more elaborate decoration). The next analogy (as regards decoration, but not the proportions) may be the item from Krefeld-Gellep, Stadt Gellep, grave 2638. The fittings from grave 84/4 are dated to Phase 3 of the Nowinka necropolis. It should be noted that the majority of west European and the larger part of Scandinavian finds was silver gilded, which makes them different from the finds from Nowinka. At the present stage of research it is impossible to decide whether they were imports or imitations inspired by the Scandinavian and Merovingian influences. The second interpretation is supported by the fact that similar fittings were found in the Olsztyn group, yet they were most probably a local product, which is indicated by the important difference with respect to their originals (lack of openings). However, the cooccurrence of fittings from grave 84/4 with other

ones having Merovingian analogies (cf. below) indicates that we have to do with a Merovingian import. What is more, this direction is confirmed by the fitting from Jelonki, stray find, which had a long projection; forms of this kind do not have any analogies in Scandinavia or in the Olsztyn group, but they are typical of the Merovingian circle. The fitting from grave 35/2 has, in turn, close analogies in Scandinavia, thus in this case import (at least the import of the idea) from the north should be rather taken into consideration.

In grave 84 more belt fittings were found. These are six bronze rectangular mounts with an elongated opening along the longer axis and rivets in the corners (grave 84/3). The stamped ornament along the edges is very similar to the patterns found at strap ends, a fragment of the spike of the buckle and at the T-shaped fittings from that grave which suggests that it was a set of fittings from one belt. So far no analogies for these mounts were found either in the Balt milieu or in Scandinavia. However, similar items may be occasionally found in the Merovingian circle where they are interpreted as sets of belt fittings. As an example one may quote two items from grave 61 in Linz-Zizlau, Bez. Linz-Land. (Ladenbauer-Orel 1960, p. 39, Pl. 4:61.2)⁶⁶, finds from grave 362 (Roth, Theune 1995, p. 106, Pl. 132:A2) and 487 from Weingarten, Lkr. Ravensburg – two items (Roth, Theune 1995, p. 142-143, Pl. 176:c-d), grave 54 and 286 from the Alamannic cemetery in Hailfingen, Stadt Rottenburg am Neckar (Stoll 1939, p. 47, 58, Pl. 25:39-40; Menghin 1983, Fig. 18). The last mentioned have been determined as Group D of graves with two-edged swords, dated to 580-620 A.D. (Menghin 1983, p. 59-60, Fig. 25), a similarly dated item comes from grave 25 in Mainz-Finthen, Stadt Mainz (Hillberg 2009, Fig. 7.39:4, footnote 946), from the Frankish burial in Wölfersheim, Lkr. Wetteraukreis (Behrens 1937, p. 272, Fig. 6:16) and from the Alamannic cemetery of Oberböbingen, Lkr. Gmünd (Veeck 1931, Pl. M:4). The last mentioned one occurred in a set with a square belt mount decorated in the niello technique – so it was probably a washer⁶⁷. A very similar find to the one from Oberböbingen was discovered at the Frankish cemetery of Krefeld-Gellep, Stadt Gellep, grave 2616 (Pirling 1979a, p. 132; 1979b, p. 49, Pl. 49:3), especially with respect to the compact proportions. Another analogy is the fitting from grave 23 in Dingden-Lankern, Lkr. Borken which had a simpler rectangular opening; on the basis of the coins found in

⁶⁶ One with a cross-shaped opening.

⁶⁷ A similar interpretation (as 'Gegenbeschlag') was assigned to the find from grave 54 in Hailfingen, Stadt Rottenburg am Neckar (Stoll 1939, p. 47).

the burial it is dated to the 7th century (Werner 1935, p. 100, Pl. 28:B.3).

It is not utterly clear what was the purpose of a fan-shaped bronze plate from grave 84/7, which may have been a belt mount. One should underline that the style of its decoration matches the other belt fittings from that burial. The exact analogy is not easy to find due to the bad state of preservation. From one hand it is possible that the item is a fragment of an 8-shaped loop (germ. *Schlaufe*) known from the Olsztyn group, e.g., Leleszki (Bitner-Wróblewska 2008a, Pl. LVII), Tumiany, grave 121 (Jakobson 2009, Pl. 70:k), grave 141 (Heydeck 1895, Pl. V:10; Kulakov 1989, Fig. 51:1; Bitner-Wróblewska 2008a, Pl. XXIV; Jakobson 2009, Pl. 73:m), grave 148 (Kulakov 1989, Fig. 53:1; Bitner-Wróblewska 2008a, Pl. XXVI; Jakobson 2009, Pl. 78:h); such forms occur with, i.a., T-shaped belt fittings, buckles Type *Kreuzdornschnalle* and Type *Schilddornschnalle*, and crossbow brooches decorated with rings of notched wire which allows to place them in Phase E₂; R. Banytè-Rowell placed them in the whole Late Migration Period (2009, p. 233). From the other hand much more probable is that we deal with the terminal of the belt buckle's ferrule or the end of the ornamental mount shaped identically as the buckle's ferrule, situated at the opposite end of the belt (cf., e.g., Pescheck 1996, Fig. 13). Its shape, decoration, rivet sticking in it and its size very close to the shield on tongue make this idea most probable. Such endings are typical of shield-on-tongue buckles with elongated ferrules, popular in the Merovingian circle in Phase 4 after U. Koch, i.e., 590-620/30 A.D (1977, Fig. 8:B). In Nowinka it appeared in grave dated to Phase 3 of the cemetery.

In some graves also simpler belt mounts were found, often in larger numbers: grave 17/4 – fifty two items, grave 85/8 – seventeen items, grave 85/21 – twenty two items. The most frequent forms are rectangular, fixed at the ends with single rivets (except for some items from grave 17/4 with pairs of rivets), decorated with grooves along the longer edges (grave 17/4, 35/3, 83/3, 85/21, 105/4)⁶⁸. Only on the belt from the 'male set' of the assemblage from grave 85/8 additionally there were stamped triangles along the edges. The lengths of the mounts vary between 1.5 cm and 2.8 cm, their proportions also differ even in the case of fittings from one belt (cf. grave 17/4, 85/21). No connection between the gender of the deceased and the forms of the mounts have been observed.

Moreover, some very similar fittings were not used as transverse belt fittings: the mount from grave 17/10 had a rivet much longer than the thickness of the belt. It should be noted that in the Olsztyn group there were cases of using identically decorated rectangular plates as pendants – elements of a necklace, e.g., Tumiany, grave 114 (Kulakov 1989, Fig. 48:4; Bitner-Wróblewska 2008a, Pl. XXI; Jakobson 2009, Pl. 65.114:a) or Wólka Prusinowska (Voigtmann files) although surely this is not the case of the find from grave 17/10.

Analogous belt mounts were also found in grave 28 at the cemetery of Łęcze (Dorr 1898, p. 12, 21, Pl. II:1b-c). Items decorated with grooves near the edges may be also found in the Olsztyn group, e.g., Kielary, grave 4 (Jakobson 2009, Pl. 108:d), grave 5 (Jakobson 2009, Pl. 109:i-k; Voigtmann files), grave 6 (Jakobson 2009, Pl. 111:k), grave 15 (Jakobson 2009, Pl. 121:c), grave 30 (Jakobson 2009, Pl. 135.30:f), grave 47 (Jakobson 2009, Pl. 149:b), grave 51 (Jakobson 2009, Pl. 150:g-h), grave 57 (Voigtmann files), grave 62 (Jakobson 2009, Pl. 155:g), grave 74 (Jakobson 2009, Pl. 161:d), grave 78 (Jakobson 2009, Pl. 164:h), grave 88 (Jakobson 2009, Pl. 173.88:d), grave XXVIII (Jakobson 2009, Pl. 212:d) and stray finds (Jakobson 2009, Pl. 191:26, 28), Leleszki (Bitner-Wróblewska 2008a, Pl. LVIII; Voigtmann files), Miętkie, grave 37 (Kulakov 1989, p. 180, Fig. 7:2; Bitner-Wróblewska 2008a, Pl. CLVII), grave 51 (Kulakov 1989, p. 180, Fig. 8:2), Miętkie II, grave 32 (Kulakov 1989, p. 182, Fig. 15:3), Tumiany, grave 38 (Heydeck 1895, Pl. IX:5-6; Kulakov 1989, p. 190, Fig. 33; Jakobson 2009, Pl. 24:h), grave 51 (Kulakov 1989, p. 191, Fig. 37:1; Jakobson 2009, Pl. 35:g.1), grave 57 (Kulakov 1989, p. 191, Fig. 39:2; Jakobson 2009, Pl. 40:e), grave 77 (Kulakov 1989, p. 193, Fig. 41:1; Jakobson 2009, Pl. 47:f), grave 79 (Kulakov 1989, p. 193, Fig. 42:1; Jakobson 2009, Pl. 49:g), grave 80 (Kulakov 1989, p. 193, Fig. 42:2; Jakobson 2009, Pl. 50:f), grave 83 (Jakobson 2009, Pl. 52.83:b), grave 88 (Jakobson 2009, Pl. 55.88:d), grave 89 (Heydeck 1895, p. 57, Pl. VIII:17; Jakobson 2009, Pl. 55.89:b⁶⁹, grave 95 (Bitner-Wróblewska 2008a, Pl. XVI), grave 96 (Kulakov 1989, p. 195, Fig. 45:1; Bitner-Wróblewska 2008a, Pl. XVII; Jakobson 2009, Pl. 60.96:e), grave 102 (Kulakov 1989, p. 195, Fig. 45:3), grave 108a (Kulakov 1989, p. 195, Fig. 46:2; Bitner-Wróblewska 2008a, Pl. XIX; Jakobson 2009, Pl. 64.108a:f-i), grave 115 (Kulakov 1989, p. 196, Fig. 48:5; Bitner-Wróblewska 2008a, Pl. XXI), grave

⁶⁸ Similarly made but larger objects were used as headgear fittings.

⁶⁹ V. Kulakov erroneously named the assemblage as grave 82 (Kulakov 1989, Fig. 39:5).

121 (Kulakov 1989, Fig. 50:1; Bitner-Wróblewska 2008, Pl. XXII; Jakobson 2009, Pl. 70.121:f), grave 126 (Bitner-Wróblewska 2008a, Pl. XXII)⁷⁰, grave 141 (Heydeck 1895, p. 64, Pl. V:2; Kulakov 1989, p. 198, Fig. 51:1; Bitner-Wróblewska 2008a, Pl. XXIV; Jakobson 2009, Pl. 73:h), grave 147 (Heydeck 1895, Pl. IV; Kulakov 1989, p. 198, Fig. 52; Bitner-Wróblewska 2008a, Pl. XXV; Jakobson 2009, Pl. 77:d)⁷¹. They were also found at the Sambian-Natangian areas, e.g., in: Kholmogor'e, grave 'b' (Kulakov 1990, Pl. VIII:7), Suvorovo, grave 392 (Kulakov 1990, Pl. XIX:7; Bitner-Wróblewska 2008a, Pl. CCXXXVIII), grave 444 (Kulakov 1990, Pl. XXI:5), grave 472 (Kulakov 1990, Pl. XXII:10). As it seems they have little dating value as they appeared in a wide time spectrum. Similar strap

III.1.5.3. Strap ends

The most popular belt end fittings in Nowinka are the lancet-shaped items. They were found in human graves where they functioned as belt-end fittings but also in horse burials where they served as headgear strap fittings (the latter ones are discussed in Chapter III.3.2.4.). They were usually fixed with a pair of rivets (grave 17/5, 17/7, 18/2, 60/3, 85/5-6, 85/20, stray find SF/10), and seldom, with three rivets (grave 17/6, stray find SF/8, 9). There are items of various proportions: slim (grave 17/7), compact (grave 17/6, 85/20) and all kinds of intermediate forms. In contrast to the lancet-shaped headgear strap fittings the majority of belt fittings was decorated⁷² (except for the fitting from grave 120/7): the ornament of stamped triangles covered the ferrule (85/5-6), tongue (grave 18/3) or both parts (grave 17/5-6, 60/3, 85/20, stray find SF/9 – in this case a crescent-shaped punch was used). The edges of the ferrules were decorated with grooves (grave 17/7, 18/2, stray find SF/10). Some items have a well marked out metope between the tongue and ferrule (grave 17/7, 18/3) or a zone composed of horizontal grooves (stray find SF/9-10) sometimes decorated with pearl-like ornament (grave 17/5-6). In other cases the zone between the tongue and ferrule is not very distinct (grave 18/2, 60/3, 85/5, 120/7, stray find Pl. SF/9-10) or stepwise (grave 85/6, 85/20). The larger and compact items are more decorative. All lancet-shaped fittings are faceted. The above-presented diversification is not reflected in relative chronology: all assemblages with lancet-shaped fittings, both from human and horse graves,

mounts, but decorated with grooves along all edges, were found on Gotland. They are too long (4.3-12.3 cm) to be transverse belt mounts. They were determined as Type RR3 after A. Nørgård Jørgensen (1999, p. 12), yet they are later than the Balt items, for they occurred in Nordic Phases IV-VI, i.e., ca 680-830/40 A.D. (Nørgård Jørgensen 1999, p. 130). The items from Nowinka were recorded for Phases 1 and 3 so there are no grounds to make their chronology more precise.

The fitting from grave 120/5, made from a rectangular bronze plate, bent in half, with a rivet at the end, should be also mentioned. The preserved fragments of leather indicate that it was attached to a strap, yet its actual function is unclear. Similarly unclear is the function of the fittings from grave 17/11.

belonged to Phase 3 of the necropolis. Lancet-shaped fittings frequently appeared in the West Balt circle. They occur in the Elbląg group where they are dated to Phase E₂ (Kowalski 2000, p. 220): Elbląg-Żytno (Ehrlich 1932, Fig. 6:n-o; 8), Łęczce, grave 19a, grave 19b, grave 27, grave 28, grave 30, grave 43 (Dorr 1898, p. 21-22, Pl. II:1, III:28, 30, 31, 33, 36), but they are also common in the Olsztyn group (Åberg 1919, p. 98-99), especially in Phase E₂, but it is possible to extend their dating to Phase E₃ (Kowalski 1991, Fig. 2). They were also recorded in the Sambian-Natangian area, e.g., in Suvorovo, grave 392 (Heym 1938, Fig. 46, 247-248; Bitner-Wróblewska 2008a, Pl. CCXXXVII), Mitino, grave 209 and grave 309 (personal commitment: K. Skvortsov) and in Lithuania, e.g., Lazdininkiai, grave 73 (Bliujienė, Butkus 2002, p. 90, Fig. 3:7, 4:2, 6), Vilkyčiai (Åberg 1919, p. 98). With respect to their origin the possible connection with the fittings from the area of Bayern (Åberg 1919, p. 98, Fig. 134) was mentioned but it is much more probable that they evolved from the tongue-shaped strap ends of the Samland type, characteristic for Phases 2-3 after A. Bitner-Wróblewska identified with Phase D (Bitner-Wróblewska 2001, p. 111-113, 120, Pl. LIX). Items of that type were also found at the cemeteries of the Elbląg group: Elbląg-Żytno, grave 10 – the horse I (Dorr 1914, p. 9, Pl. II:5), Łęczce, grave 22 (Dorr 1898, Pl. III:29). In grave 10 from Elbląg-Żytno also a lancet-shaped with a slightly rounded tip was found whereas the item from grave 22 in Łęczce was accompanied by a simple brooch prob-

⁷⁰ V. Kulakov erroneously named the assemblage as grave 108d (Kulakov 1989, Fig. 45:8).

⁷¹ There are also the longer items with an unclear function, e.g., Kielary, grave 5, grave 10, grave 57 and grave 61 (Voigtmann files), Tumiany, grave 51 (Heydeck 1895, p. 52, Pl. V:17).

⁷² For that reason two of the stray finds (stray finds SF/9, 10) were considered as parts of the belt and one (stray find SF/8) as part of horse trappings. It should be, however, stressed that this is a hypothetical solution.

ably of early dating (Dorr 1898, p. 11, Pl. I:32)⁷³. This seem to suggest that such forms lasted till Phase E and that lancet-shaped strap ends had appeared firstly slightly earlier than previously proposed. However, this does not concern the cemetery at Nowinka where all the precisely dated artefacts come from graves ascribed to Phase 3 of the cemetery.

Among the belt-end fittings there are also imported items (four items from grave 84/5). These are tongue-shaped strap ends Type Nørgård Jørgensen ZR1 (1999, p. 113)/Ørsnes C12 (1966, p. 292, Fig. 32-36)/Høilund Nielsen C6b (1987, p. 76). Such fittings were found mainly on Gotland and Bornholm, sometimes there were several (up to four) items in one grave (Nørgård Jørgensen 1999, p. 113). They are also known from Norway, Sweden and Estonia⁷⁴. They occurred rarely in Brandenburg (Stößen, Lkr. Burgenlandkreis, grave 61 – Schmidt 1961, Pl. 86:A; 1970, p. 32, Pl. 24:2.a) or Thuringia (Alach, Stadt Erfurt, grave 1/81 – Timpel 1999, p. 176)⁷⁵, and quite frequently in western Germany and Holland (Alamannia, Austrasia and Lower Saxony), e.g., Altenerding, Lkr. Erding, grave 467 (Sage 1984, p. 134-135, Pl. 63:22) and grave 610 (Sage 1984, p. 170-171, Pl. 80:7), Altlußheim, Lkr. Rhein-Neckar Kreis, grave 22 (Oexle 1992, Pl. 2:7, 4), Dörverden, Lkr. Verden, stray find (Genrich 1963, p. 37, Pl. 7:4), Gammertingen, Lkr. Sigmaringen, grave from 15.12.1902 (Rieth 1937, p. 45, Fig. 4:12), Liebenau, Lkr. Nienburg a.d. Weser, grave E17/B3 (Brieske 2001, p. 210, Fig. 89:1), grave K14/A1 (Häßler 1985, p. 119, Pl. 63:3), Pfullingen, Lkr. Reutlingen, two stray finds (Quast 2006, p. 288, Pl. 81:277, 279), Regensburg, Lkr. Regensburg, horse grave from 1977 (Oexle 1992, Pl. 103:222, 10, 11), Schretzheim, Lkr. Dillingen, grave 540 (Koch 1977, p. 115-116, Pl. 142:28-29), two items from unknown site in the RGZM collection (Fiedler 1962, p. 37, Pl. 60:7-8), Stuttgart-Zazenhausen, Stadt Stuttgart, stray find (Veck 1931, p. 241; Koch 1977, p. 81), Maastricht, Limburg prov. and Groß-Rohrheim, Lkr. Bergstraße (Koch 1977, p. 81), Peigen, Lkr. Dingolfing-Landau, grave 42 – two items (von Freedden, Lehmann 2005, p. 75-77, Fig. 42:12-13), Undenheim, Lkr. Mainz-Bingen, grave 7 (Schnellenkamp 1935, p. 86, Fig. 15:2), Weingarten, Lkr. Ravensburg, grave 335 (Roth, Theune 1995, p. 99-100, Pl. 126:k), Beckum I, Lkr. Warendorf, grave 17 (Capelle 1979, p. 15, Pl. 8:17.i;

Oexle 1992, Pl. 155:341, 8-9), Beckum II, Lkr. Warendorf, grave 110 (Oexle 1992, Pl. 166:370, 6-9, 20, 21), Bremen, Lkr. Bremen, grave 14 (Oexle 1992, Pl. 179:381, 6, 7), grave 21 (Oexle 1992, Pl. 182:382, 4, 5)⁷⁶. The last-mentioned finds are explained by the Scandinavian influences in the northern part of the Merovingian circle (Høilund Nielsen 2003, p. 214-216) yet as the finds of such fittings were quite numerous in the Merovingian circle this does not have to be true; besides the Scandinavian influence also parallels with southern Germany are taken into account (Falk 1980, p. 35, footnote 124; Brieske 2001, p. 210). Interestingly, unlike in Scandinavia the Merovingian strap fittings often occurred together with elements of headgear, which suggests that they were also used as elements of horse furniture (e.g., Gammertingen, Regensburg, Beckum I, Beckum II)⁷⁶. The single finds from France or Italy differ considerably from their possible north-European prototypes (Ørsnes 1966, p. 292). However, some of the Frankish finds have features which make them similar to the fittings from Nowinka: like them they have a waist between the tongue and ferrule, sometimes with transverse notches (Baudot 1860, Pl. XVIII:7; Boulanger 1909, Pl. XXXIII:2; Vallet 1996, p. 688, Fig. 560:3, 561:6-7); similarly waisted strap ends dated to the 1st half of the 6th century (Brieske 2005, p. 109-110) are also known from Lower Saxony: Liebenau, Lkr. Nienburg a.d. Weser, grave E17/B3 and grave K14/A1 (Brieske 2001, p. 210, Fig. 89). The fittings from Nowinka do not seem to be a local imitation because other features such as proportions or the ornament have exact analogies in Scandinavia, e.g., Stora Ihre, Hellvi sn on Gotland (Nerman 1969, Pl. 24:258, 259; 1975, p. 11, 94) or Kobbeå, Bornholms amt, grave 1 (Nørgård Jørgensen

⁷³ Similar 'transitory' forms occurred also in the Olsztyn group, e.g., Waplewo, grave 2 (Jakobson files).

⁷⁴ It is worth to note that tongue-shaped strap ends Type ZR1 are internally diversified (cf. Nerman 1969, Pl. 22-24). The items from Nowinka differ from the other ones by their marked waist with transverse grooves between the ferrule and the tongue.

⁷⁵ The find is connected with the Frankish presence in Thuringia.

⁷⁶ At the Frankish areas they were exceptionally rare, e.g., Brechen-Niederbrechen, Lkr. Limburg-Weilburg, grave 3/1950 – two items (Schoppa 1952, Pl. 3:2), grave from Wölfersheim, Lkr. Wetteraukreis (Behrens 1937, p. 272, Fig. 6:11) or Krefeld-Gellep, Stadt Gelep, grave 454 – the last-mentioned one was considered to be an import from Scandinavia (Pirling 1966a, p. 205-206, Fig. 24:5; 1966b, p. 59, Pl. 36:454.12).

⁷⁷ In Scandinavia such cases are very rare, e.g., Nørre Sandegård Vest, grave 1, Bornholms amt (Jørgensen, Nørgård Jørgensen 1997, p. 175, Pl. 4:1), Kobbeå, Bornholms amt, grave 1 (Nørgård Jørgensen 1992, Fig. 11) or much later, dated to ca. 675 A.D. (Arwidsson 1977, p. 131) the finds from Valsgårde, Gamla Uppsala sn, grave 7, where highly decorative tongue-shaped strap ends with motifs of human heads served as end fittings of the central strap of the horse headgear (Arwidsson 1977, Pl. 21:43, 22:45, 46, 57, 75). At the Alamannic areas, in turn, slightly later and less profiled tongue-shaped fittings (with very slightly concave sides) were found in women's burials as garter and shoe strap ends, e.g., Truchtelfingen, Lkr. Zollernalbkreis, grave 27 (Menghin 2007, p. 442-443).

1992, Fig. 11:6, 7) as well as in the the Merovingian circle – the ones mentioned above. However, it is difficult to decide definitively whether they were Merovingian or Scandinavian imports. The Scandinavian finds are considered to denote Phases II-III in Norway and Bornholm and Phases I-II on Gotland (Nørgård Jørgensen 1999, Fig. 107, 110, 116) whereas the discoveries from the Merovingian areas are dated to the 6th century (Falk 1980, p. 35-36). Such forms are also recorded, but sporadically, in the Olsztyn group – two items from grave 10 in Waplewo (Åberg 1919, p. 99, Fig. 135; Voigtmann files; Jakobson files), perhaps also the fragmentarily preserved item from Kosewo II, grave 219 (Jakobson files); they are more frequent in the Elbląg group. From its area, besides the items from Nowinka, one can mention also the stray find from Chojnowo (Neugebauer 1934, Pl. LXX:3e; 1975, Pl. XI, upper left) and a silver-gilt item from grave 239 from the cemetery Elbląg, Moniuszki St (Ehrlich 1937b, p. 275, Fig. 8; Neugebauer 1975, Pl. X:5). The former has a slightly different shape than the classical tongue-shaped strap ends⁷⁸. The latter is fragmentarily preserved; it was accompanied by a pair of shafted weapon heads and a silver-gilt buckle Type *Schilddornschnalle*, which suggests that the assemblage belonged to the late phase of the Elbląg group. This is in accordance with the dating of the fittings from Nowinka, which were similarly accompanied by

a fragment of a buckle of that type: the assemblage is dated to the 3rd chronological phase of the cemetery. The dating of the item from Waplewo is not different: the crossbow brooch with a trapeze-shaped plate on the head and a buckle of the *Kreuzdornschnalle* type which accompany it are dated to Phase E₂ in the Olsztyn group (the supposed item from Kosewo was not accompanied by precise dating elements).

It is impossible to find close analogies to the bronze fitting from grave 21/9. It is similar in shape to a rectangle with concave longer sides, along which pairs of grooves were made. Similar, but elongated, trapeze-shaped fittings were found at the Balt cemetery at Kholmogor'e, grave 'b' (Heym 1938, Fig. 255; von zu Mühlen 1978, Pl. 22, bottom; Kulakov 1990, p. 63, Pl. VIII:7) yet they occurred in a theoretically later chronological context, together with the early forms of stirrups, but also with a disc similar to the find from Łęcze (cf. footnote 150)⁷⁹. The Lithuanian find from Taurapolis, barrow 5 is, in turn, earlier: elongated fittings with a ferrule in its wider part and minimally concave longer edges were found there in an assemblage dated to the turn of Phases D/E. They were used as fittings of the straps fixing the spurs (Bliujienė, Steponaitis 2009, Fig. 6, 10:3-4). It is possible that in both cases we have to do with local derivatives referring to the tongue-shaped fittings. The find from Nowinka should be associated with Phase 3 of the necropolis.

III.2. Weaponry (Bartosz Kontny)

III.2.1. Swords

At the cemetery in Nowinka seven one-edged swords (saxes) and a fragment of one more sword (grave 53/2)⁸⁰ were found. On the basis of their dimensions and proportions⁸¹ they may be divided into

two groups (cf. Table 2): slim, longer ones (grave 17/12, 84/8, 85/9) and compact, shorter ones (grave 21/2, 105/7, 120/10). The sword from grave 60/5 was halfway between the two groups. Almost all swords had a clearly thicker back as a result of which their blades were T-shaped in cross-section (except for the item from grave 21/2). Such a solution required considerable technological skills and was a local feature unknown, e.g., in Scandinavia (Nørgård Jørgensen 1999, p. 53, 57). Its aim was to strengthen the blade and make it heavier, which increased the power of the

⁷⁸ However, it has analogies in Scandinavia, e.g., on Bornholm: Østerlars, grave 1 (unpublished, BM inv. no. 1409x108) and Vasegård, stray find (unpublished, NMK inv. no. C35092, BM inv. no. 2147x37).

⁷⁹ Due to the lack of agreement about the date when the stirrups first appeared in the Balt milieu and doubts as to the coherence of assemblages from earlier excavations (cf. Kleemann 1956b; von zu Mühlen 1975, p. 47; Žak, Maćkowiak-Kotkowska 1988, footnote 561; Świętosławski 1990, p. 32-33) it is impossible to exclude the quoted analogies. What is more, the recent studies (Nowakowski 2008) confirm O. Kleemann's conclusion (1956b) that the earliest stirrups appeared in the Balt milieu in the horizon of the late ladder brooches and thus at the time when the Nowinka necropolis was functioning. W. Nowakowski dated them to the final stage of the Migration Period, i.e. ca 650-700 A.D. (2008, p. 199), which, however, seems to be a not entirely justified attempt at reconciling the so far considered as discrepant datings of ladder brooches and stirrups.

⁸⁰ The swords from Nowinka were tentatively analysed by R. Mroczek (1997) to whom we would like to thank for permission to use his thesis. As the knowledge on the subject has increased considerably it was necessary to make a new analysis of the saxes from Nowinka.

⁸¹ Following H. Westphal's suggestion (1997, p. 408-409) a coefficient calculated as a quotient of the length and width of the sword (l/w) was used. Additionally, due to the untypical width of the backs a coefficient calculated as a quotient of the width and thickness of the back (w/b) was introduced.

cuts (cf. Kontny 1998). The point reaching ca 1/3 of the length of the blade visibly tapered towards the back. The tangs were marked out on either side, visibly and usually at right angles on the side of the back and more gently on the side of the blade. Very poor state of preservation of the iron made metallographical analyses impossible so it is impossible to determine whether the blade was made with the use of complex technologies or the back was simply hammered down. The swords found in decorative scabbards (grave 17/12, 85/9) had cross-shaped bronze plates with rounded arms on the tangs of the hilts. They were attached by hammering down the ends of the tang inserted in the central hole. One of such plates (grave 17/12) is decorated in the style found also at suspension plate of the scabbard from that assemblage (grave 17/13). The plates strengthened the fastening of the unpreserved organic hilt⁸², which allows to state that the hilts were not longer than the tangs (probably also in the case of the remaining swords). Thus in longer swords the hilt was

about 13 cm long. Taking into consideration observations made during excavations (namely shape of darker patches neighbouring the hilt – remains of organic handle) it may be supposed that the width of the hilt was approximately as wide as the plates fastening it, i.e., 3.6x2.8 cm, and certainly was not smaller than them. Thus the hand holding the sword was poorly protected. As there are no general publications on the topic of the saxes from the Elbląg group, it is impossible to make their precise classification. Although A. Nørgård Jørgensen determined them as Type SAX2 – grave 60/5, grave 105/7 (1999, p. 53) and SAX3 – grave 17/12, grave 21/2, grave 84/8, grave 85/9, grave 120/10 (1999, p. 57), yet due to large discrepancies, also chronological, it is hard to consider this issue as settled. Also the criteria of classification, adopted for west European saxes (Westphal 2002, p. 205-206, 288-293) are not suitable in this case. Finally, the monograph on the Balt weapons (Kazakevičius 1988, p. 99-109) does not suggest any classification of one-edged swords.

	Dimensions: (cm) length x width x thickness of a back	l/w	w/b
Grave 17	71.4x4.7x1.4	15.19	3.36
Grave 21	58.5x5.5x0.9	10.36	6.11
Grave 60	~60x4.5x1.2	13.33	3.75
Grave 84	~67x4.7x1.7	14.25	2.76
Grave 85	69x4.5x1.6	15.33	2.81
Grave 105	~50x4.2x1.4	11.90	3.00
Grave 120	63.9x4.6x1.2	13.89	3.83

Table 2. Dimensions and proportions of swords from the cemetery at Nowinka.

One-edged swords were also found at other cemeteries of the Elbląg group: they were recorded in Pasłek in grave 26 and outside the burials, together with a shafted weapon's head (Ehrlich 1923, p. 199). Seven complete items and numerous fragments were found in Elbląg-Żytno (Ehrlich 1920, p. 181; 1931a, p. 19-25, Fig. 2; 1932, p. 404, Fig. 2, 5:i) including grave 105 (Ehrlich 1920, p. 187, 193) and four items

were found in Łęczce, including grave 63 and 76 and two stray finds (Dorr 1898, p. 23-24, Pl. I:16, 20-22; Ehrlich 1931a, p. 22, 25); a fragment of a sax was also discovered in Komorowo Żuławskie (Bogucki 2009, p. 32-33). The publications usually do not present the descriptions of these weapons, occasionally some details can be noted⁸³. On their basis it is possible to classify the sword from grave 105 in Elbląg-Żytno to the group of smaller ones (Ehrlich 1920, p. 193) as well as another (?) find from Elbląg-Żytno (Ehrlich 1932, Fig. 5:i) and the item found outside

⁸² R. Dorr says that the iron tang of one of the swords accidentally discovered in Elbląg-Żytno in 1907 was covered with wood and in upper part fixed by a fitting of sheet of iron band decorated with incised bronze wire (Dorr 1914, p. 2). Remains of wooden handle platings were preserved also on the sword from grave 63 in Łęczce (Dorr 1898, p. 23; the collection of the MAHE).

⁸³ For one of the items from Elbląg-Żytno the thickness of the back was given: 1.8 cm (Ehrlich 1931a, p. 19), which suggests that thickened backs occurred not only at the cemetery at Nowinka but seem to have been typical of the whole Elbląg group.

graves in Łęczce (Dorr 1898, p. 24, Pl. I:20) whereas three swords in decorative scabbards from Elbląg-Żytno as the larger ones (Ehrlich 1931a, p. 19-21) and also swords in decorated scabbards from Łęczce, grave 63 (Dorr 1898, Pl. I:16; Ehrlich 1931a, p. 22) and probably also from grave 76 – preserved fragmentarily (Dorr 1898, Pl. I:21)⁸⁴. The accidental find from Łęczce (Dorr 1898, p. 24, Pl. I:22) is an intermediate form. The above observations confirm that in the Elbląg group decorated scabbards were used for longer swords; the same is the case at the cemetery at Nowinka.

In the Balt milieu saxes are also found at the area of Sambia, Natangia, Nadrovia and the Neman River drainage basin (Ehrlich 1931a, p. 34). These are the long artefacts from Suvorovo, grave 335 and 392 (Heym 1938, p. 63, Pl. 9:95, 34:245; Kulakov 1990, p. 69, Pl. XV:10, XIX:7)⁸⁵. They differed slightly from the finds from Nowinka: they were slimmer, the point was slightly outcurved towards the back; they also had a thicker back but not to that extent as the saxes from the Elbląg group (0.5-1.0 cm), finally had shallow fullers near the back (Heym 1938, p. 63). This group comprises also an one-edged sword from ex-Sorthenen (Ehrlich 1932, p. 412; Knorr 1938, p. 522; MWMO collection, cat. no 646) and a sword in a scabbard decorated with gold foil from grave 1 in Vetrovo; according to the author of the publication it is analogous to the sword from Łęczce, grave 63 (Hollack 1914, p. 283; cf. *Prussia Archiv* PM-A 282/1, 275); two similar but shorter one-edged swords were also found in grave 3 (Hollack 1914, p. 284, Fig. 127). Another analogy to sword from grave 63 in Łęczce was said to be the sax in a scabbard decorated with silver embossed sheet decorated in animal Style I from grave 1 in ex-Warnikam (Tischler, Kemke 1902, p. 42). A sax in a scabbard decorated with gold embossed sheet was found in ex-Tengen, grave 9 (Berendt 1873, Pl. I:9, II:4). The other one-edged swords were recorded in grave 28 in ex-Tengen (Klebs 1877, p. 53, Pl. 1:5) and in ex-Eisliethen (Gaerte 1929, Fig. 242:g). Besides similar swords are mentioned in archival sources (usually without and specific data) concerning the drainage basin of the lower Neman River, e.g., Rzhevskoye, grave 39 (Ehrlich 1932, p. 409), grave 96 (Engel 1932, Fig. 86, right), and excavations from 1939: in grave 15 (PM-A 1472/1, 128), grave 59

(PM-A 1472/1, 112), grave 420 (PM-A 1472/1, 212), grave 448 (PM-A 1472/1, 228), grave 457 (PM-A 1472/1, 229), grave 476 (PM-A 1472/1, 221), grave 481 (PM-A 1472/1, 234), grave 484 (PM-A 1472/1, 236) – cf. F. Jaensch's report in the *Prussia Archiv*; they are also said to have been found in Vėžaičiai, grave 667 (Gaerte 1929, Fig. 242:f; Olsén 1945, p. 64, Fig. 299) and Barvai, grave 34 (Hollack 1914, p. 284; Knorr 1938, Fig. 42; Olsén 1945, p. 64, Fig. 298; Kazakyavichyus 1981, p. 95). Lithuanian one-edged swords were analysed by V. Kazakyavichyus (1981; 1988, p. 93-94, 99-109), yet he did not study the chronological and typological differences. The swords were very numerous, and were said to have appeared from the 6th (or even 5th) till the early 11th century (Kazakyavichyus 1988, p. 101-104). They concentrated at the area of West Lithuanian group but they were also found at the area of the Lower Neman group, Central Lithuanian group and Samogitian Flat Cemeteries group (Kazakyavichyus 1988, Map XVI). In Samogitia and Semigallia they are not numerous; at these areas wide swords close to falchions became popular (Kazakyavichyus 1988, p. 106).

Saxes were found also in western Europe and Scandinavia. The origins of the development of saxes are believed to be connected with the Huns who used long knives in the 5th century (Nørgård Jørgensen 1999, p. 44; Quast 1999). It is believed that the direct predecessors of saxes were the long knives known both in Scandinavia and in western Europe from the late 5th century. They gave rise to short saxes, which in fact were large knives accompanying double-edged swords⁸⁶. These in turn yielded forms included in type SAX1 after A. Nørgård Jørgensen, i.e., narrow swords up to 52 cm long, which happened before 575 A.D. In the early 7th century the paths of development of one-edged weapons in Scandinavia and the Merovingian world diverged: in western Europe wide saxes with a long, sometimes double handed hilt appeared and in the Nordic zone forms SAX2, similar to SAX1 but clearly longer and wider, reaching up to 69 cm in length appeared (Nørgård Jørgensen 1999, p. 44-45, 50-53, 147). Type SAX3, however, to which A. Nørgård Jørgensen determined some of the items from Nowinka, embraced forms with broad blades and up to 81 cm long, analogous to west European langsaxes. It appeared in western Europe after

⁸⁴ The differences in sizes of the swords from Łęczce were indicated by R. Dorr (1898, p. 24).

⁸⁵ One-edged swords were also said to have been found in grave 435a and 466 but in these cases the details of description are missing or there are unclarities as to the grave numbers (Heym 1938, p. 19).

⁸⁶ Quite long but very narrow saxes, reaching 60-70 cm in length, are known also from Gepidic cemeteries in Tisa basin, starting from the 2nd tierce of 6th century although they were not very frequent there (Boná, Nagy 2002, p. 112).

the mid-7th century and before 680 A.D. (cf. Westphal 2002, p. 213, Table 2.3a⁸⁷, whereas its copies were first made in Scandinavia in the late 7th century. (Nørgård Jørgensen 1999, p. 46, 53-57, Fig. 110). The copies, however, were not made with the use of the Damascene technology known in western Europe. The Scandinavian forms were made in a simpler way. Also other technologically advanced solutions such as T-shaped cross sections of the blades, recorded in the Elbląg group, were adopted in Scandinavia later on, in the Middle Ages (Nørgård Jørgensen 1999, p. 46). Due to the technological and chronological differences it seems that determining some of the swords as type SAX3 is a misunderstanding.

Saxes from Nowinka were found only in burials dated to the Phase 3 of the necropolis, thus there are no grounds to assume that the differences in the lengths of the swords were connected with their different chronology⁸⁸. The late dating is confirmed also by the discoveries from Łęczce: in grave 63 the sword was accompanied by, i.a., a buckle with a kidney-shaped frame, spurs and a lancet-shaped strap end (Dorr 1898, p. 15) and the sax from grave 76 by, i.a., a disc brooch (Dorr 1898, p. 16, Fig. 6)⁸⁹. The finds from the neighbouring areas also belong to this chronological horizon: in grave 392 from Suvorovo, i.a., a late ladder brooch, an openwork belt mount and a tongue-shaped strap end were found (Kulakov 1990, Pl. XIX:7) and in grave 3 from Vetrovo, a disc brooch (Hollack 1914, p. 284, Fig. 126); in grave 59 and 457 from Rzhnevskoye, ladder brooches (*Prussia Archiv* PM-A 1472/1, 112, 229). However, also earlier finds are known: with a brooch Type *Schlußkreuzfibel* considered to be an indicator of Phase E₁ (Kowalski 2000, p. 219): ex-Warnikam, grave 1 (Tischler, Kemke 1902, p. 41, Pl. XIII:2)⁹⁰ and Rzhnevskoye,

grave 484 (*Prussia Archiv* PM-A 1472/1, 236). This is where we get to the question what the origin of this kind of swords was. It seems that adopting the west and north European scheme of variation of the forms of the saxes does not entirely explain the problem and does not fit exactly the reality of the Balt milieu. In this case we have at our disposal the forerunner of the one-edged weapons, which were most probably daggers-knives (germ. *Dolchmessern*): a characteristic form of a knife with a long and very narrow point and several grooves spaced out on the blade along the back or slightly obliquely with respect to it. The possibility that one-edged swords developed from knives of the *Dolchmesser* type was suggested by V. Kazakyavichyus, who stressed that in ca the mid-1st millennium they began to lose the features of knives and gain morphological elements typical of the swords: greater length and width, thickened back, wider point (1981, p. 45, 57-58; 1988, p. 99-100). V. Šimėnas, in turn, indicated that the reason for appearing daggers-knives was the migration of human groups from the middle Danube in the 5th-6th century (1996, p. 71), which seems unjustified due to the fact that in the Danube area no similar weapons were found. Moreover, in his publications he did not clearly distinguish daggers-knives from one-edged swords, which resulted in such misunderstandings as treating the items from Elbląg-Żytno and Łęczce as daggers-knives (Šimėnas 1992, p. 98; Šimėnas 1996, p. 65-66). The interpretation put forward by V. Kazakyavichyus is much more probable. Besides the examples of long daggers-knives (1988, p. 100) which he mentions, it is possible to quote items which have to be considered as swords due to their considerable length (from ca 50 cm) and certain archaic features, such as the presence of the fullers – Dobroe-Gora Velikanov, grave N-1 (Kulakov, in print, p. 8, Fig. 22), Kalniškiai, Pakalniškiai and Vidgiriai (Šimėnas 2006, Fig. 30, 54:1, 2), Povarovka, site 2, grave 92 (*Prussia Archiv* PM-A 1730/2, 120), Rzhnevskoye, grave 457 (*Prussia Archiv* PM-A 1472/1, 229), Suvorovo (Heym 1938, p. 63), ex-Tengen, grave 1 (Klebs 1877, Pl. 1:5). In the last mentioned one, the find from Povarovka, and possibly also one from grave 9 from ex-Tengen (Berendt 1873, Pl. I:9a) the blade is T-shaped in cross-section, which was characteristic for many daggers-knives. Thus the most probable hypothesis is that saxes developed locally from daggers-knives⁹¹, which most probably happened in the Early Migration Period, for it is in Phase D that *Dolchmessern* were used (Nowakowski 1996, p. 58) including the sword from grave 28 in ex-Tengen (Nowakowski

⁸⁷ This is stated that the first saxes longer than 50 cm appeared generally in the west of Europe as late as before the mid-7th century (Westphal 2002, p. 217), although there are rare earlier finds from central Europe, e.g., Blučina, okr. Brno-venkov but also western Europe, e.g., Pouan, dép. Aube (Menghin 1983, p. 180-184, with further literature), both attributed to to chronological Group A after W. Menghin, i.e., 450-480 A.D. (Menghin 1983, p. 58-59, 173).

⁸⁸ Fragment of the sword from grave 53 was found together with a ring of incised wire – probably a decoration of a ladder brooch Variant II or III, which also suggests the late dating within the cemetery.

⁸⁹ J. Kowalski stated that the swords belong to the latest stage of the necropolis at Łęczce (2000, p. 220).

⁹⁰ It should be noted that J. Kowalski earlier dated that assemblage to Phase E_{2a} (1991, p. 76). After a detailed analysis and reconstruction of the burial assemblage V. Hillberg dated grave 1 from ex-Warnikam to the late 5th or early 6th century (2009, p. 317-330).

⁹¹ Of a similar opinion was also B. Ehrlich (1931a, p. 34-35).

1996, Pl. VIII:b, XVI:d) and Povarovka⁹². This was in accordance with the cross-European trend of lengthening the weapons, but evidently happened earlier than in Scandinavia or western Europe. The area where daggers-knives and later on one-edged swords appeared

basically comprises the zone along the SE coast of the Baltic Sea. This is probably from there and not only from the eastern part of the Merovingian circle that the tendencies for lengthening the one-edged weapons came to Scandinavia.

III.2.2. Scabbards

Elements of scabbards were preserved only in four graves. The arrangements of preserved fittings indicates that the swords were in scabbards. The fittings include U-shaped iron chapes and embossed bronze sheets placed between the chips and the chape. There were also bronze elements used for fastening the scabbard. In some cases organic elements of the scabbards were preserved: remains of wooden chips on the blades (grave 17/12, 60/6, 85/9) or back (grave 105/7). What is important in grave 105/7 no metal fittings of the scabbard were found, which supports the claim that some scabbards were made of wood and did not have any additional fittings. In graves 21 and 84 no traces of wooden chips were found which suggests that the swords were deposited without scabbards or that their organic elements became completely decomposed (the second possibility is supported by the fact that in grave 21 an organic outline of a construction used to suspend the sword found in the forte part was recorded). In grave 17/12 also the leather covering the wooden scabbard was found and in grave 85 the leather with remains of oak wood was discovered in the area of the forte, which may be linked to the construction used for suspending the scabbard. In the point part of the sword from grave 85/9 the scabbard was made of oak or lime wood chips. The state of preservation of the organic parts does not allow to determine whether the wooden parts of the scabbards were decorated⁹³.

Iron chapes (grave 17/12, 60/6, 85/9, 120/10) had the form of U-shaped, one-piece fittings embracing ca 2/5 of the length of the blade. Their arms were originally of equal length (it is different in the case of the item from grave 60/6 but there the chape is incomplete and it is difficult to determine whether is much longer on either of the sides). Two of the scabbards

were additionally decorated with bronze sheets with embossed ornaments (grave 17/12, 85/9) placed in the lower parts of the scabbards. It should be noted that decorated scabbards co-occurred only with long slim swords. In the scabbard from grave 17/12 a thin bronze plate (fragmentarily preserved) was placed in its lower part, originally pushed between the chips and the U-shaped chape; similar was the case in grave 85/9 where metal sheets were preserved on either side. Another decorative metal leaf occurred additionally in the scabbard from grave 85/9: it was superimposed on the U-shaped fitting near its upper end; it embraces the scabbard along its whole width and its ends slightly overlap. In both scabbards a combination of embossed double railing pattern and double pearl-like lines in horizontal and vertical arrangements were used. Such motifs were also used on sheets decorating the sheath of a knife (grave 60/4) and headgear fittings (grave 82/9, 117/2, 120/16, 147/2) and a drinking horn (grave 17/19, 21/5, 83/4; the railing ornament occurred on the fittings of drinking horns also in combination with other motifs – grave 11/1, 62A/1, 82/4).

The construction of the part of the scabbard above the chape and of the way of suspending it are difficult to reconstruct; some possibilities are given only by the analysis of the context of the finds from grave 17 and grave 85, and to some extent also grave 21. In the case of the scabbard from grave 17, in the forte part a rectangular organic outline was noticed. It had the dimensions of ca 16x4.5 cm and adjoined the back with its longer side. At its top there was a yoke fitting (grave 17/14) and below an openwork X-shaped fitting (grave 17/13) – both placed along the longer axis of the organic outline. Most probably the scabbard had in this part an organic clasp (made of leather or leather and wood), fixed with an X-shaped fitting on the underside and a yoke fitting on the overside: both fittings were probably joined with the same pair of rivets: the distances between the preserved rivets and holes are identical. Very close to the fittings there were remains of a belt, most probably serving to fasten the scabbard, together with its fittings. The buckle (grave 17/8) found nearby may have been used to fasten the strap on which the scabbard was suspended. In grave 85 in turn the construction for suspending the

⁹² It was accompanied by, i.a., a buckle with an oval-shaped thickened frame and a crossbow brooch with a solid catchplate.

⁹³ This can not be excluded as the instances of placing decorative motifs on organic parts of the scabbards are known in the Baltic zone from the Migration Period: in its earlier part (Phase D), e.g., bog deposits of Nydam Id and IV (Jørgensen, Petersen 2003, Figs. 25, 36; Petersen 2003, Fig. 1-2) and the later one, e.g. Nørre Sandegård Vest, Bornholms amt, grave 62 (Jørgensen, Nørgård Jørgensen 1997, Fig. 57).

scabbard was made from oak wood coated with leather (which suggests that a similar material was used in grave 17) and bound from the side of the blade with an arched bronze plate with openwork ornament (grave 85/10) with remains of leather adjoining it; the fastenings consisted of straps combined with buckles (grave 85/2-4). As the construction was very fragmentarily preserved, it is impossible to reconstruct its details but it is possible to assume that two of the buckles belonged to the belt from which the scabbard was suspended and the third may have been part of the strap to which the drinking horn was fixed. This is confirmed by the fact that identical buckles were elements of a belt used for suspending the scabbard of the sax (probably a double belt – hence two buckles) in Lazdininkiai, grave 73 (Bliujienė, Butkus 2002, Fig. 3), which is suggested by the arrangement of fittings in the inhumation grave from Lazdininkiai. In the vicinity of the forte of the sword from grave 21/2, however, a rectangular organic outline was recorded. It had the dimensions 30x8 cm and no additional fittings. This suggests that there was a scabbard with a wider part, probably used for fastening it.

In the Elbląg group metal elements of scabbards quite frequently co-occurred with the swords: especially the U-shaped chapes (Ehrlich 1932, p. 411)⁹⁴. They were found in Elbląg-Żytno (Ehrlich 1931a, p. 19-25; 1932, Fig. 5:i) and Łęcze, grave 63 and grave 76 (Dorr 1898, p. 23, Pl. I:16). The best preserved sword from Elbląg-Żytno (so-called sword I) was in a scabbard with a U-shaped chape with one arm longer (on the side of the back – 26 cm) and one shorter (18 cm). Additionally the chape was supposedly fixed also with a decorative rivet placed 13 cm from the point in the back part (Ehrlich 1931a, p. 19, Fig. 2). The chape from grave 63 in Łęcze was similar in length to the items from Nowinka (in grave 76 numerous fragments of U-shaped fittings were preserved, but the chape was not reconstructed)⁹⁵. Chapes decorated with embossed bronze metal sheets were recorded in Łęcze, grave 63 (Dorr 1898, p. 23) and grave 76 (Dorr 1898, p. 23, Fig. 6). The last-mentioned one was decorated with a pattern of embossed concentric circles and a damier pattern of rhombuses separated by lines of dots. Decorative metal sheets were made also of more precious metals. Silver sheets

were placed on either sides of the scabbards found in Elbląg-Żytno (Ehrlich 1931a, p. 19-20, Fig. 2; 1932, p. 404, Figs. 2, 4): in case of sword I they were decorated with the railing ornament, concentric circles, embossed lines and lines of horizontal and oblique dots (Ehrlich 1932, p. 19-20, Fig. 2), the scabbard of sword II was decorated with railing motif and straight lines, of sword III – with embossed concentric circles surrounded by rings of dots, and of sword IV – a pattern of concentric circles placed between borders of double lines of dots (Ehrlich 1931a, p. 21-22). In contrast to finds from Nowinka, in Elbląg-Żytno the metal sheets covered the whole lengths of the scabbards. It was also noticed that the end parts of the metal sheets overlapped (Knorr 1938, p. 521-522, Fig. 37); this solution was probably also used in decorative scabbards from Nowinka, which is suggested also by the way in which the topmost sheets in sword from grave 85/9 were fixed. The decorative motifs observed on scabbards from Nowinka have analogies in decorations of other objects from the Balt milieu, including the Olsztyn group, at the Sambian-Natangian area and in the drainage basin of the lower Neman (Ehrlich 1931a, p. 25-34, 39-42). There are no similarities to the decorations on scabbards of the saxes from Scandinavia and the Merovingian circle (cf. Olsén 1945, Figs. 125-169; Nørgård Jørgensen 1999, Figs. 19, 25, 34)⁹⁶.

Both saxes and scabbards with U-shaped chape, including ones decorated with embossed metal sheets, occurred at Balt areas, especially in Sambia, Natangia and in the drainage basin of the lower Neman River. One of them is the find from ex-Sorthenen, grave 15. During the excavations of 1931, together with a flask-shaped vessel a sword in a scabbard was discovered, decorated with an embossed pattern of zig-zags and concentric circles interspersed with lines of dots (Ehrlich 1932, p. 412). According to H. A. Knorr (1938, p. 522) two swords with fittings were discovered (from C. Engel's excavations). The swords preserved in MWMO collection, cat. no 646, unfortunately in very poor state. It may be said that these saxes belong to the group of longer swords and that the embossed sheets probably covered the whole blades; like in the case of sword I from Elbląg-Żytno, they were made of overlapping sheets, in the lower part held in place by an iron chape. They were decorated with vertical and

⁹⁴ They are also known from Scandinavia and the Merovingian circle, yet the items from these areas clearly differ from the Balt artefacts in the use of a fitting placed along the whole length of the scabbard (cf. Olsén 1945, Figs. 125-169; Nørgård Jørgensen 1999, Figs. 19, 25, 34).

⁹⁵ At present the finds of Łęcze are much worse preserved and the remains of the U-shaped chape are preserved only on the point part (collection of MAHE).

⁹⁶ The ornaments found on the scabbards from the Elbląg group were tackled by P. Urbańczyk. He came to the conclusion that whereas the construction of the scabbard was derived from the Germanic, west European environment, the decorations found at the scabbards were drawn from the nomadic (basically Avarian) milieu from the Carpathian Basin, which was to be proved by the lack of local prototypes (1978, p. 113-128).

horizontal plain and dotted lines, plain oblique lines and a motif of concentric circles ringed with pearl-like ornament (like in sword II from Elbląg-Żyto). Due to their poor state of preservation it is difficult to say which raw material was used to make the metal sheets. In turn in grave 1 from Vetrovo a sword in a scabbard decorated with gold sheet was found; according to the author of the publication it is analogous to the sword from Łęcze, grave 63 (Hollack 1914, p. 283; cf. *Prussia Archiv* PM-A 282/1, 275). A scabbard decorated with embossed gold sheet was found also in ex-Tengen grave 9 (Berendt 1873, Pl. I:9, II:4). Another decorated scabbard was found with the sax from grave 1 in ex-Warnikam: it was decorated with embossed silver sheet with ornaments in animal Style I (Tischler, Kemke 1902, p. 42) after B. Salin (1935). Bronze sheet was said to have been found in grave 484 from Rzhenskoye, most probably covering only a small part of the scabbard (*Prussia Archiv* PM-A 1472/1, 236). There are also simple scabbards with U-shaped chapes similar in length to the items from Nowinka, e.g., from ex-Eisliethen (Gaerte 1929, Fig. 242:g). Due to the earlier dating of the assemblages from ex-Warnikam and Rzhenskoye (discussed above) than the scabbards from the Elbląg group it seems evident that they appeared as a secondary phenomenon in the Elbląg Upland⁹⁷.

⁹⁷ Here the debatable but still accepted (Nowakowski 2008, p. 185) conception put forward by P. Urbańczyk (cf. footnote 96) should be discussed. As the chronological issues were treated too freely and the finds accompanying the scabbards were considered as only auxiliary in determining the chronology (Urbańczyk 1978, p. 109) P. Urbańczyk's dating of the scabbards to the 2nd half of the 7th century (Urbańczyk 1978, p. 127-128) should be considered as not proved and (in the light of the remarks made above) as regards the adoption of decorative motifs on scabbards from the Sambian-Natangian area – as erroneous. The arguments put forward by P. Urbańczyk contain also mistakes such as treating gold sheets from Hunnic *Totenopfer* in Pécs-Üszögpuszta, kom. Baranya as fittings of the whole length of the scabbard, which was meant to prove that such constructions were drawn from the nomadic circles (Urbańczyk 1978, p. 118). In fact these are fittings of a symbolic reflex bow (László 1951, p. 96-97). This does not mean that the possibilities of certain, probably strongly modified nomadic inspirations in the decorative style should be completely rejected, but as the earliest scabbards decorated with embossed ornaments appeared in Sambia already in Phase E₁ the Avarian influence (the Avars settled in the Carpathian Basin as late as 567 A.D.) has to be excluded. It should not be also forgotten that in the late part of Phase D the Germans adopted many features of the nomadic culture, also as regards the weapons (cf. Bitner-Wróblewska, Kontny 2006, p. 112, 117), thus some motifs made in nomadic style may have reached the Balt areas via the Germans. The local character of the decorations of the Balt scabbards is also supported by P. Olsén, who accepted the similarities in constructions of the scabbards to those used in the Merovingian circle (1945, p. 68).

The finds from the Elbląg group also confirm that scabbards were made of wood and leather, which was noticed by R. Dorr in the materials from Łęcze (1898, p. 23); wooden parts of a scabbard were preserved in Elbląg-Żyto on sword I (Knorr 1938, p. 521), sword II and sword III (Ehrlich 1931a, p. 21). Other elements discovered at the cemetery in Nowinka which have analogies in the Elbląg group are parts of the suspension system for the scabbards. In Elbląg-Żyto a decorative fitting made of an openwork silver plate was found; it strongly resembled the bronze suspension plate from grave 17/13 in Nowinka but it had longer terminals bent inwards, owing to which it has the shape of a triple rhombus. The ornament is also similar. It consists of a double row of stamped triangles filled with a motif of dots (Ehrlich 1931a, p. 24-25, Fig. 6; 1932, Fig. 3; Jagodziński 1997, Pl. XI:5). Although there are small differences in length (Elbląg-Żyto: 8.2 cm, Nowinka: 6 cm), shape and the way of fixing (Elbląg-Żyto: eight rivets, Nowinka: two rivets) undoubtedly the two items were used for the same purpose. As the item from Elbląg-Żyto is a stray find, B. Ehrlich could not identify its function (1931a, p. 35) but in the light of the discoveries from Nowinka it is obvious that they were used to suspend the scabbard (use of different raw material can be easily explained by the fact that decorative metal sheets from Elbląg-Żyto were also made of silver and not from bronze, like in Nowinka). Also the yoke fitting from Nowinka (grave 17/14) has an analogy at the cemetery in Elbląg-Żyto. Exactly such an item is represented in B. Ehrlich's publication (1932, Fig. 9:k) among artefacts determined as strap fittings and buckles, but it may be also interpreted, on the basis of the find from Nowinka, as an element of sword suspension system⁹⁸. It should be noted that yoke fitting from grave 17/14 has some functional analogies in the Merovingian circle: a similar bronze artefact was found in grave XVI at a Thuringian cemetery at Obermöllern, Lkr. Burgenlandkreis where it was riveted to a wooden projection placed in the upper back part of a scabbard of a knife/short sax (Holter 1925, p. 94, Fig. 53, Pl. VIII:16, XVI; Olsén 1945, p. 64, Figs. 45, 289; Schmidt 1976, p. 105)⁹⁹. This place was probably

⁹⁸ B. Ehrlich states that at Suvorovo, grave 385, together with a sax an openwork scabbard fitting was discovered, decorated with T-shaped patterns (Ehrlich 1932, p. 412). This information suggests that we have to do with a similar plate as in grave 85/10 but there are no other data to confirm this statement: the sword is not mentioned by H. Heym (1938), V. Kulakov (1990) or A. Bitner-Wróblewska (2008).

⁹⁹ A pair of similar yoke fittings was recorded also at the cemetery of Duisburg-Walsum, Lkr. Duisburg Stadt, grave 32, and similar forms were sometimes classified as P-shaped metal extensions of Avaric scabbards, e.g., Kishegyes, kom. Bács-Bodrog, (Olsén 1945, p. 64, Fig. 40).

strengthened on the underside with an X-shaped suspension plate (grave 17/13) attached to it, like in the case of the openwork plate from grave 85/10.

The organic outline from grave 21 resembles the solution from the cemetery at Oberflacht, Lkr. Tuttlingen in Württemberg where a sheath of a knife with a similar organic wider part but additionally strengthened with borders made of metal sheet (Veeck 1931, Pl. O:3; Olsén 1945, Fig. 290) was found. Closer analogies of this construction are known in the Olsztyn group (Olsén 1945, p. 65, 68), e.g., Tumiany, grave 38 (Heydeck 1895, Pl. IX:1; Jakobson 2009, Pl. 24:m).

The analogies for the suggested suspension system of sax scabbards from Nowinka can be seen in finds from other parts of Europe. In the Late Migration Period the places at which the scabbards were fastened were usually at their sides, especially in the case of knives and saxes. This way of fastening can be observed in the Balt (including the Olsztyn group), Finnish, Scandinavian, and Slavic areas as well as in the Merovingian circle (cf. Ehrlich 1920; Knorr 1938; Urbańczyk 1978; Olsén 1945; Böhner 1958, p. 140, 144, Fig. 7) and also among the Avars, where, however, the projections are of a different shape (P-shaped)¹⁰⁰. On the basis of these analogies and some observations made for the materials from the Elbląg group it is worth while to try to establish the number of points at which sax scabbards from that group were fastened. It has already been stressed that a two-point system of fastening is suggested by a space free of decorative metal sheets located between the chape and metal sheets attached higher up on the scabbard of the sword from Elbląg-Żytno. According to B. Ehrlich (1931a, p. 20) this is where an iron band with a ring to which the strap for fastening the scabbard was placed; the second strap was to be close to the hilt, above the upper metal sheets (but the traces of fastening were not found). As the researcher from Elbing believed – these bands may look similar to the one from the sax scabbard from Vėžaičiai, grave 667 (Gaerte 1929, p. 301, Fig. 242:f; Ehrlich 1931a,

Fig. 19) where a two-point system of suspending the scabbard was used. The idea that in the Elbląg group the two-point system of fastening scabbards was used is supported by P. Urbańczyk (1978, p. 118), who linked it not with local traditions but with German influences from the Rhineland, expressed in the construction of weapons (1978, p. 122). In the light of the considerations from Chapter III.2.1. suggesting the early dating of Balt saxes, the last mentioned hypothesis should not be treated as valid any longer. Also the hypothesis of two-point fastening of scabbards need not necessarily be supported. Although it is assumed that this system was used for double-edged *spathae* (cf. Menghin 1983, Figs. 62, 65, 84, 90) and saxes (Stoll 1940), yet for the latter ones also cases of using two systems at one cemetery are known, e.g., at Nørre Sandegård Vest, Bornholms amt: grave 36 – one-point system, grave 24 and grave 31 – two-point system (Jørgensen, Nørgård Jørgensen 1997). Usage of both systems is also suggested by the iconographic representations: one-point system is shown at the representations of warriors-werewolves with saxes in scabbards preserved on the scabbard of a sword of the *spatha* type from an Alamannic grave in Gutenstein, Lkr. Sigmaringen or on a plate from Toslunda, Torslunda sn on Oland, and the two-point system – at the representation on the Frankish stele from Niederdollendorf, Lkr. Rhein-Sieg-Kreis (cf. Olsén 1945, Figs. 257-259)¹⁰¹. This state of affairs is also supported by the above-mentioned Balt discoveries: swords from Vėžaičiai, grave 667 and Lazdininkiai, grave 73, were fastened in two points but the find from Barvai, grave 34, only in one (the bow-shaped fastening in the upper part of the scabbard; it is treated as a nomadic influence, cf. Knorr 1938, Fig. 42; Olsén 1945, p. 64)¹⁰². In such a situation it can not be excluded that both systems were represented also at the cemetery in Nowinka. Whereas in grave 85, due to the presence of buckles, it is possible to consider a two-point fastening, in grave 17 and grave 21 it is not so certain and fastening only in the upper part is also possible.

¹⁰⁰ E.g., graves from Bócsa, kom. Bács-Kiskun (cf. Garam 1993, Pl. 12:2), Kecel, kom. Bács-Kiskun (Garam 1993, Pl. 45:3), Kunágota, kom. Békés (Garam 1993, Pl. 58:4), Kunmadaras, kom. Jász-Nagykun-Szolnok (Garam 1993, Pl. 66:9), Ozora-Tótipusztá, kom. Tolna (Garam 1993, Pl. 76:8), Zsámbok, kom. Pest (Garam 1993, Pl. 103:9).

¹⁰¹ Noticing this contradiction, P. Olsén came to the conclusion that the iconographic representations did not reflect the reality but had a purely ornamental function (1945, p. 63-64), which seems to be an evasion of the issue.

¹⁰² He considers (1945, p. 64) as an analogy also one of the finds from Rzhevskoye and Łęczce, grave 60. In the latter case it was the only find in the feature which had no connections with weapons (Dorr 1898, p. 14, Pl. III:12) and its military designation seems to be dubious.

III.2.3. Heads of shafted weapons

At the cemetery in Nowinka eleven iron heads of shafted weapons (grave 17/15-17, 21/3, 53/3-4, 60/7-8, 85/11-13) were found as well as fragments of two more (grave 34/2 – a fragment of the blade, grave 69/1 – a fragment of the socket). They were found in assemblages with swords (grave 17, 21, 53, 60, 85)¹⁰³.

The majority of shafted weapon heads are slim, ca 40 cm long. The items from grave 17/15, grave 53/3-4 and grave 85/11 are exceptions: their lengths range from 20 to 30 cm, they are also more compact. The blades are rhomboid or lens shaped in cross-section; only the heads from grave 17/15-17 have marked out midribs. The sockets are narrow and shafts were pressed in them without the use of rivets, nails, etc. Another head which has a specific form is the one from grave 21/3, with a very long socket. The weapons are in a very poor state of preservation: in many cases only the analysis of old drawings was possible for the artefacts are almost completely disintegrated (especially grave 53/3-4 and 85/13). So far there are no typology worked out for the heads of shafted weapons from the Elbląg group¹⁰⁴. However, it is possible to use the classification elaborated by V. Kazakyavichyus (1988)¹⁰⁵. According to it, Type ID is represented by the head from grave 21/3, Type IVA by heads from grave 17/15 and grave 17/17, Type IVB by head from grave 85/12, and Type V by heads from grave 17/16, grave 60/7-8, grave 85/11 and grave 85/13. Heads from grave 53/3-4 are so poorly preserved that it may be only assumed that they represent Type IVA or V. The fragmentarily preserved heads (grave 34/2 and 69/1) can not be classified. Shafted weapons were found also at other sites of the Elbląg group: in Łęcze two items near grave 63

(Dorr 1898, p. 23-24, Pl. I:17)¹⁰⁶ and two near grave 4 (Dorr 1898, p. 9, 24), in Elbląg-Żytno fifteen heads were found and fragments of many other ones (Ehrlich 1920, p. 181; 1931a, p. 18; 1932, p. 404)¹⁰⁷, and three items in Chojnowo (Neugebauer 1934, p. 323, Pl. LXX:4c-e)¹⁰⁸ and probably fragments of other ones in feature 1 (Kowalski 1985, p. 228)¹⁰⁹. Another head was uncovered in a feature (?) accidentally discovered in Młoteczno (Ziemlińska-Odojowa 1991, p. 105, footnote 8, Fig. 5)¹¹⁰. There are mentions of heads made in connection with feature 239 from Elbląg, Moniuszki St (Ehrlich 1937b, Fig. 8), Podgórze, grave 2¹¹¹ (Peiser 1919, p. 336), grave 5¹¹² (Peiser 1919, p. 338) and a stray find (Peiser 1919, p. 351), Pasłek, grave 26 and a concentration of finds in an area between graves (Ehrlich 1923, p. 199)¹¹³, as well as Komorowo Żuławskie (Bogucki 2009, p. 32-33). Heads of shafted weapons of types found in Nowinka are frequent in Lithuania and neighbouring Balt areas, including, which has been indicated by B. Ehrlich (1920, p. 34-35), the Sambian-Natangian areas and the drainage basin of the lower Neman River. V. Kazakyavichyus (1988, p. 22-52), however, provides very broad chronological range for them, which makes it impossible to date the finds from Nowinka more precisely basing on types of shafted weapons. Interestingly, the finds from Nowinka belong to Phase 3 of the cemetery (except for grave 53 and 69, the assemblages of grave goods of which are too small to establish precise chronology). Also the context of the find from feature 239 in Elbląg, Moniuszki St indicates that heads occurred in

¹⁰³ Grave 34 and grave 69 were destroyed so there are no grounds to decide whether there were swords in them or not.

¹⁰⁴ Heads of shafted weapons from Nowinka do not have analogies in the Merovingian circle or in Scandinavia. It should be noted that in some cases it is possible to talk about a tendency for shaping shafted weapon heads embracing also other regions of Europe: head Type ID from grave 21/3 resembles in its proportions the Alamannic finds Type 6 after F. Garscha (1970, Pl. D:6) or Frankish finds Type A5 after K. Böhner (1958, Pl. 28:9), whereas heads Type V from grave 60/7-8 some Gepidic forms, e.g., Kisköre-Pap tanya, kom. Heves, grave 44 (cf. Bóna, Nagy 2002, Pl. 86:4). This should, however, be considered as a result of general European trends rather than of direct borrowings.

¹⁰⁵ The classifications of Scandinavian and west European shafted weapon heads (Nørgård Jørgensen 1999, p. 88-100) completely do not fit the heads from Nowinka.

¹⁰⁶ One of them (Dorr 1898, Pl. I:17) may be determined as a specific variant of Type IB. The MAHE holds all the heads from Łęcze (inv. no 18/37, 8/19, 18/36, 18/38). The first one is the head Type IB Variant, published by R. Dorr, the other ones represent respectively types: V, IA/IVA and IVB/V.

¹⁰⁷ On the basis of the published photograph it is possible to determine them as Type IB Variant (Ehrlich 1932, Fig. 5:c), Type II (Ehrlich 1932, Fig. 5:d), a form similar to Type IVA (Ehrlich 1932, Fig. 5:e) and Type V (Ehrlich 1932, Fig. 5:f-g); the last mentioned of the published items (Ehrlich 1932, Fig. 5:h) is impossible to determine.

¹⁰⁸ Due to the poor state of preservation and the bad quality of the published photograph they can not be given a final typological affiliation. Most probably they represent Type IVA or B.

¹⁰⁹ Only fragments of the sockets were preserved.

¹¹⁰ Type IG.

¹¹¹ The description suggests that it is Type II.

¹¹² The description suggests that this was an arrowhead with a socket and blade.

¹¹³ In the publication there is a mention that the blade of the head had the shape of a leaf of a reed (*schilfblattförmigen Blatt*) and had a midrib.

the late chronological context: together with shield-on-tongue buckle and tongue-shaped strap end (Ehrlich 1937b, p. 275, Fig. 8). On the other hand, some early artefacts were found in Podgórze. On the basis of descriptions made by F. E. Peiser, who referred to analogous forms published by O. Tischler and H. Kemke (1902), in grave 2 the head was found together with a cross-

III.2.4. Shaft rings

In two graves rings placed on shafts were found (grave 17/18, 21/4). These are unclosed rings of plain (grave 17/18) or incised (grave 21/4) bronze wire with a diameter of 2.1-2.2 cm. Their function is proved by the context: at the moment of its discovery the ring from grave 17/18 was placed on a fragment of hazel wood (*Corylus avellana*) – remains of a shaft, and the item from grave 21/4 was lying several ten cm from the head, on its axis and the wood fragment adjoined it. It is also possible that the ring of incised wire from grave 120/9 had a similar function. Although in that grave no shafted weapon heads were discovered, yet the feature was disturbed in the part where the

III.2.5. Spurs

At the cemetery in Nowinka two iron spurs were found (grave 45/1, 131/2)¹¹⁴. Both of them represent the riveted forms. They were made of curved, flat, rectangular band; at the ends of arms there are single iron rivets and in the centre an iron prick. In item from grave 45/1 the bottom iron plate (a washer) was preserved which was originally placed inside the shoe and attached with rivets to the rest of the spur. The spurs are small (5 and 4.4 cm long, respectively). Although some categories of Balt spurs from the Late Migration Period have already been studied (Rudnicki 2006b), the spurs of this kind have not been analysed¹¹⁵; they can only be related to variant E (West Balt) of spurs Type Leuna (Giesler 1978, p. 13-14, 52-54); some of the items included in this variant did not have a hook at the base of the prick, in which they resemble the finds from Nowinka. Analogous forms were recorded at the necropolis of the Elbląg group in Łęczce, grave 50 – one spur (Dorr 1898, p. 13, 22, Pl. III:34), grave 38 – one spur (Dorr 1898, p. 12, Pl.

bow brooch with a massive catchplate or a fibula Type *Schlusskreuzfibel*, and in grave 5 – a *Schlusskreuzfibel*; this situates these assemblages in the early stage of Phase E. In the light of the above it seems probable that in the whole Elbląg group the shafted weapons, unlike the saxes, occurred in the early and late phase, although further research is necessary to confirm this claim.

weapons (sword) were placed, so it may have originally contained shafted weapons.

No similar ornaments are known from other cemeteries of the Elbląg group and the remaining Balt areas. Similar rings fastened close to the head were said to occur only in inhumation graves of Curonia, sometimes together with amber beads or lumps of raw amber (Tautavičius 1996, p. 86). The custom of decorating shafts with metal elements was also proved for the Migrations Period: e.g., in Valsgårde, Gamla Uppsala sn, grave 7 these were openwork semi-sockets of bronze sheet fixed with small nails in the upper part of the shaft (Arwidsson 1977, p. 52, Pl. 18:67, 95-97).

III:25); basing on the description (Dorr 1898, p. 22) also the pair of spurs from grave 19 looked similarly (Dorr 1898, p. 10), as well as the fragment from grave 52 (Dorr 1898, p. 14), fragments of spurs from grave 62 (Dorr 1898, p. 14), the spur from grave 63 (Dorr 1898, p. 15), fragment of 1 spur from grave 69 (Dorr 1898, p. 15)¹¹⁶. They also appeared at Sambian cemeteries, e.g., Mitino, grave 226 (personal commitment: K. Skvortsov) or Izhevskoe II, grave 6/38 (Klemann 1956b, p. 115-116, Pl. XXXII:6/38f)¹¹⁷; their presence was confirmed also for the area of the East Lithuanian Barrows culture, unknown site (Giesler 1978, p. 54, Pl. 5:124); a similar spur, although with a fragmentarily preserved third hook was found as a stray find in Bratei in Transylvania (Giesler 1978, p. 52, Pl. 5:117)¹¹⁸. Spurs of this kind, however, are

¹¹⁴ The supposed fragment of the third spur from above grave 15 was too poorly preserved to be analysed.

¹¹⁵ M. Jahn included them in the Prussian group of plate spurs (1921, p. 107), yet his study is no longer valid due to the huge increase of the archaeological material. It is difficult to accept the claims of E. Roman (1998) who determined spurs of this kind as X-shaped spurs (*Knebelsporen*), here: Group IV (Roman 1998, p. 170-171) which is an obvious misunderstanding.

¹¹⁶ R. Dorr indicated that the spurs from Łęczce were made of iron, only the bow or washer could have been made of bronze (1898, p. 22).

¹¹⁷ W. Nowakowski, after an analysis of the preserved archive sources, included this spur in grave 3/38 (2008, p. 207).

¹¹⁸ One can also mention a similar spur from the settlement of Shankiv Yar (Boremel), ray. Mlyniv and the stray find from the cemetery at Velikaya Boogayovka, ray. Vasilkov (Mago-medov, Levada 1996, p. 314, 319, Fig. 8:9-10). Although they were found at the sites of the Chernyakhov culture, yet they were found without any dating context; they may have been one of the products of evolution of rivet spurs.

most popular in the Olsztyn group. Finds of similar dimensions, proportions and construction were found, e.g., in Bogaczewo-Kula (Voigtmann files), Dłużec, grave 541 (Voigtmann files), Kielary, grave 6 (Hollack 1900, p. 169; Jakobson 2009, Pl. 109:o; Voigtmann files), grave 27 (Hollack 1900, p. 174; Jakobson 2009, Pl. 133:f; Voigtmann files), grave 33 (Hollack 1900, p. 175; Jakobson 2009, Pl. 137:e; Voigtmann files), grave 51 (Hollack 1900, p. 178; Jakobson 2009, Pl. 150:i; Voigtmann files), Leleszki, grave 14 (Kulakov 1989, p. 184, Fig. 21:1), grave 44 (Kulakov 1989, p. 185, Fig. 23:4; Bitner-Wróblewska 2008a, Pl. XLIX; Jakobson files), stray find (Bitner-Wróblewska 2008a, Pl. LVIII), Spsychówko, grave 167 and grave 172 (Jakobson files), Stare Kiejkuty, grave 208 (Jakobson files; Voigtmann files), Tumiany (Heydeck 1895, Pl. IX:19) in grave 11 (Heydeck 1895, p. 44, Pl. IX:19; Kulakov 1989, p. 187; Jakobson 2009, Pl. 3:f), grave 32 (Kulakov 1989, p. 189, Fig. 30; Jakobson 2009, Pl. 19:q), grave 51 (Heydeck 1895, Pl. V:15; Kulakov 1989, p. 191, Fig. 37:1; Jakobson 2009, Pl. 35:n), grave 141 (Kulakov 1989, p. 198, Fig. 51:1; Jakobson 2009, Pl. 73:n), grave 198 (Kulakov 1989, p. 200, Fig. 56:1; Bitner-Wróblewska 2008a, Pl. XXXI), Tylkowo, stray find (Jakobson files), Waplewo (Voigtmann files; Bitner-Wróblewska 2008a, Pl. XXXVII), Wyszembork, site IVa, stray find (Szymański 2005, p. 71-72, Pl. XIII:3). In the Olsztyn group the discussed spurs occurred singly or in pairs (three items only in grave 6 from Kielary); usually their bows were made of bronze and pricks of iron (only in Dłużec, grave 541 and Kielary, grave 27 they were made entirely of iron)¹¹⁹.

Items from Nowinka were found in graves contextually linked with horse burials, which supports the claim that these were graves of riders. This was not always the case in the Elbląg group: graves with spurs were associated with burials of riders and horses (Łęcze, grób 19 and 38) but also with burials of only humans (Łęcze, grave 50, 52, 62, 63, 69).

Some spurs from the Elbląg group were accompanied by buckles which are considered to be elements of a strap for fastening the spur or shoes, e.g., Łęcze (Dorr 1898, p. 22); finds of small buckles with narrow ferrules (cf. Heydeck 1895, Pl. III:13-14) from graves with spurs in Olsztyn group (Jahn 1921, p. 38) are interpreted similarly. This does not concern the finds from Nowinka, where no similar buckles were found in analogous contexts.

The chronology of spurs of this kind has not been elaborated yet. Although U. Gielser claimed that they occurred between ca 500 A.D. and the 2nd half of the 6th century (1978, p. 23), yet this does not seem valid as the number of finds has considerably increased since that time. W. Nowakowski, in turn, assumes that their presence in the West Balt circle should be connected with the Late Migration Period (2008, p. 195). Assemblages with spurs from Nowinka can not be dated precisely as they do not contain good dating elements. It is, however, possible to establish their chronology by analysing assemblages from other sites: in grave 62 from Łęcze the spurs of the discussed type co-occurred with a 'crossbow brooch' (Dorr 1898, p. 14) and in grave 63, an one-edged sword and a buckle with a kidney-shaped frame (Dorr 1898, p. 15) and in grave 69, a buckle with a frame close to kidney-shaped (Dorr 1989, p. 15). This suggests that analogous spurs are characteristic for the developed phase of the Elbląg group. Similar conclusions may be drawn from the analysis of the finds from the Olsztyn group. The spur from grave 14 in Leleszki co-occurred with a plate brooch with a rectangular head (Kulakov 1989, p. 184, Fig. 21:1) which according to V. Hillberg should be described as a derivative form of Type Mülhofen (2004, p. 314), dated to the late stage of Phase E; nevertheless M. Rudnicki sees rather similarities to plate brooches Type Andernach-Nordendorf, although treating them as local forms and dating them to Phase E₂, i.e., 2nd half of the 6th century (2010, p. 425-426, Fig. 5). A spur from grave 44 at the same site appeared with a slim ladder brooch, disc brooch and a buckle Type *Kreuzdornschnalle* (Jakobson files), one from grave 208 in Kiejkuty with a buckle with a kidney-shaped frame (Jakobson files), from grave 172 in Spsychówko with a brooch Type *Schlusskreuzfibel* with a bar at the end of the foot decorated with horizontal grooves (Jakobson files), from grave 51 in Tumiany with a buckle Type *Kreuzdornschnalle* and a crossbow brooch decorated with rings of incised wire (Heydeck 1895, Pl. V:16; Kulakov 1989, p. 191, Fig. 37:1), from grave 141 at the same site with an analogous brooch and a T-shaped belt mount, from grave 31 with a brooch with a trapeze-shaped head and pseudo-crossbow, i.e., late construction (Kulakov 1989, p. 189, Fig. 30), finally in grave 541 from Dłużec there were a *Schlusskreuzfibel* (stylistically late form decorated with horizontal grooves in the wider part) and a *Kreuzdornschnalle* (Voigtmann files). Basing on the above it seems possible to assume that these spurs generally occurred during the whole Phase E₂, although it can not be excluded that they first appeared slightly earlier (cf.

¹¹⁹ Such spurs do not have any analogies in Scandinavia or the Merovingian circle (see Rettner 1997).

Kowalski 2000, p. 219-224). These assumptions are not contradicted by the find from the Sambian cemetery at Izhevskoe II, grave 6/38 where together with

the spur a compact ladder brooch with a pseudo-crossbow construction was found (Kleemann 1956b, Pl. XXXII:6/38b)¹²⁰.

III.3. Horse furniture (Bartosz Kontny, Jerzy Okulicz-Kozaryn, Mirosław Pietrzak)

III.3.1. Bridles

The grave goods in horse burials consisted mainly of bridles. They are represented exclusively by snaffle bits, sticking in muzzles (grave 8/3, 17/20, 18/10, 20/1, 21/10, 26/3, 34/5, 35/4, 45/9, 47/1, 48/6, 52/3, 55/7 and 9, 60/11, 61/2, 62A/3, 62B/3, 65/4, 70/2-3, 77/3, 78/1, 80/2, 82/6, 83/8, 84/12, 87/1-3, 89/2, 98/2, 99/2, 102/4, 103/2, 104/3, 112/2, 114/2, 117/1, 118/2, 119/1, 120/15, 121/1, 127/3, 131/4-5, 137/1, 147/1, 148/2, 149/2, 151/3, 155/1, 160/1). Additionally there are three loose finds (SF/13-15). Only three horse skeletons were not accompanied by bridles. In grave 44 this can be explained by the fact that the buried individual was too young (9-12 months) to be broken. On the other hand, grave 60 contained a young (about 1 year old) individual with a bridle in its muzzle. Lack of a bridle in the case of one of the horses buried in double grave 120 is connected with the fact that the individual was deprived of its head. In turn grave 142, in which no bridle was found, was disturbed and that is how its lack can be explained; moreover its exceptional character is underlined by a fact that cremated bones of a horse (?) were found there.

Great part of the bridles consisted of bipartite bits which were symmetrical (grave 17/20, 45/9, 52/3, 60/11, 89/2) but also slightly (grave 47/1, 103/2, 114/2 and 121/1) or clearly asymmetrical (grave 8/3, 48/6, 62B/3, 127/3, 149/2)¹²¹. Such forms represent Type 1C1 according to M. Ørsnes (1993)¹²¹. Equally significant part of bridles create tripartite forms (grave 20/1, 70/2, 80/2?, 98/2, 102/4, 112/2, 119/1, 120/15, 131/4-5, 155/3, 160/1, SF/13-14) representing Type 1C2 according to M. Ørsnes (1993). Some of the central links were 8-shaped (grave 20/1, 98/2, 120/15), others were S-shaped with unfinished ends (grave 131/4, 155/1) or had the form of a rod with ends in the shape of little hooks (grave 70/2, 80/2?, 102/4, 112/2, 160/1). The majority of central links

were clearly shorter than the remaining ones and certainly functioned as baubles – elements used as a piece for a tongue to ‘play’ with, in aim to accept the bridle easily; touching the central link with the tongue makes the bit not getting too deep into the mouth (also at present some horses with a tendency to reject a bridle, do need such utensils)¹²³. Some of central links were, however, of similar and even greater length than the remaining ones (graves 80/2?, 119/1, 160/1). In such cases we have probably to do with bits adapted to calm horses, for the addition of a third, long link made the pressure of the bit on gums lesser than in bipartite bits. Both types of bits have been recorded for the Elbląg group: tripartite items with the short central link were discovered in Elbląg-Żytno (Ehrlich 1932, Fig. 5:b) and in grave 21 in Łęcze (Dorr 1898, p. 11, Pl. I:23) whereas bipartite items were confirmed by the finds from Elbląg, Moniuszki St (Ehrlich 1937b, Fig. 2), Elbląg-Żytno (Ehrlich 1932, Fig. 5:a) and Łęcze (the artefact the copy of which survived in the collection of the RGZM, no 20044¹²⁴ and the item from grave 15 – Dorr 1898, Pl. I:25). The situation at the necropolis of the Olsztyn group at Tumiany is slightly different. On this necropolis fourteen of seventeen horse graves (for twenty two from twenty six complete horse skeletons) contained pieces of equipment: mainly bridles, but

¹²⁰ Yet, if as W. Nowakowski has assumed, the spur was in fact part of grave 3/38, then due to the presence of the imported Merovingian bronze vessel the item should be dated to the 2nd half of the 7th century (Nowakowski 2008, p. 195).

¹²¹ They should be determined as Type 1, Subtype 2 according to V. Kulakov (1990, p. 35).

¹²² It should be noted that M.Ørsnes’ classification is schematic; the author did not distinguish the cases where links of various lengths were found (1993, p. 190).

¹²³ This kind of form with short, S-shaped link can be determined as Type 2 according to V. Kulakov (1990, p. 36). They are found in Balt areas, e.g., at a Semigalian cemetery at Šukioniai, grave 69 (Griciuvienė, Grižas, Buža 2005, p. 129, Fig. 670), in the East Lithuanian Barrows culture, e.g., Žvirbliai, tumulus 55, grave 1 (Iwanowska 2006, p. 117, Pl. XCIX:1), in the Lower Neman group, e.g., Rzhenskoye, grave 8, grave 65, grave 69, grave 75 (Jankuhn files), the West Lithuanian group, e.g., Lazdininkiai, grave 73 (Bliujienė, Butkus 2002, p. 85, Fig. 2:6), Central Lithuanian group, e.g. Marvelė (Bertašius 2009, *passim*) or in the Sambian-Natangian area, e.g., ex-Warnikam (La Baume 1944, Fig. 4), Izhevskoe, grave 11 (Kleemann 1956b, p. 115, Pl. XXXII:11), Mitino, grave 99, grave 101, grave 106, grave 112, grave 161, grave 197 (personal commitment: K. Skvortsov). They are known even further to the east, i.e., from the area of the Long Barrows culture (Kazanski 2007, p. 245-246) and to the north (Scandinavia) in the Vendel Period and – on Gotland – also from the Viking Age (Sundkvist 2001, p. 239); starting from the Merovingian Period they appeared also in Finland (Purhonen 1996, p. 60, Pl. 22).

¹²⁴ Personal commitment: M. Jagodziński Ph.D. (MAHE), whom we would like to thank for this information.

also fragments and decorations of headgear (Baranowski 1996, p. 72-73). However, the tripartite bits (eight items) are more numerous here than the bipartite ones (seven items), as compared to the proportion of 14:14 at the burial ground in Nowinka but the difference is minimal. Actual dissimilarity lies in the fact that snaffle bits with cheeks were quite frequent in Tumiany (five cases), and they are proved also for other necropolises of the Olsztyn group and for the Sambian-Natangian area ones as well (see La Baume 1944, p. 14). Meanwhile in the Elbląg group they are almost unknown¹²⁵. The next difference between the two necropolises is the fact that the richest, decorative headgear fittings appeared in Tumiany, except for grave XVII, with tripartite bits (Baranowski 1996, p. 73) whereas in Nowinka the situation is opposite: in burials with rich headgear fittings a tripartite bit was found only in grave 120; bipartite items were recorded in all the remaining cases. On the basis of the scant available material it is hard to decide if the above mentioned differences have a cultural character or they only are a result of different preferences of local communities. It is only possible to state the almost complete absence of snaffle bits with cheeks in the Elbląg group.

In the analysis of the bits attention was paid to their span: it was attempted to measure so-called interdental space, i.e., the maximum length of the part of the bit which was in the animal's mouth. It was possible in thirty six cases. The average value was 13.3 cm, and the results were comprised between 9 and 18 cm. A very small span (9 cm) was found in grave 8 where an 8 year-old, rather short (125.8 cm at the withers) horse was buried. This does not mean however that there is a directly proportional relation between the horse size and the span of the bit, for one of the largest span (17 cm) was recorded in the grave of a rather short horse (grave 20 – the horse of the age of 7-8 years, withers height: 127.4 cm). Probably we have to do with individual features of the horse skull structure and making simple comparisons with the horse size is not justified. Besides, no correlations were observed between the bit sizes and heights or ages of the horses. One can notice however, that the largest spans appeared in tripartite bits (grave 20/1 – 17 cm, 87/1 and 155/1 – 16 cm, 160/1 – 18 cm), and only exceptionally in bipartite

ones (grave 60/11 and 103/2 – both about 15.5 cm), which can be easily explained by practical reasons: tripartite bits generally were never set straight and the reconstruction of the real interdental space should decrease its length. Also the horses' individual features of character should be taken into account: their skittishness, sensitiveness of the jaw, etc.

Bridle rings from Nowinka varied in their diameters (average 5.2 cm, calculated on the basis of ninety five measurements). It is worth to note the large items (grave 8/3 – 6.6 cm and 6.8 cm, grave 45/9 – 6.8 cm and 7.0 cm, grave 52/3 – 7.6 cm and 7.7 cm, grave 55/9 – both 6.6 cm, grave 131/4-5 – twice 6.5 cm and 7.0 cm), which can be determined as Type 2B according to M. Ørsnes (1993, p. 190)¹²⁶; the remaining items are smaller and do not go beyond the dimensions of Type 2C¹²⁷. The rings of larger sizes generally accompanied bipartite bits (grave 45/9, 52/3, 55/7 and 9, 84/12, 118/2, 131/5) and only exceptionally tripartite ones (grave 131/4)¹²⁸. No relation between the diameter of rings and age of the horses or their withers height has been observed.

The decided majority are iron bridle rings, however, also bronze ones were found (grave 17/20, 18/10, 21/10, 34/5, 77/3, 83/8). Bronze bridle rings have been also found at another necropolises of the Elbląg group, in Elbląg-Żytno, grave 8, grave 10, grave 13 and grave 41 (Dorr 1914, p. 7-8, Pl. I: 3-5; Ehrlich 1920, p. 182; Ehrlich 1932, p. 404)¹²⁹, in Elbląg, Moniuszki St (collection of MAHE, inv. no ME 112/303-310; 246:683), Pasłek (Ehrlich 1923, p. 199) and Komorowo Żuławskie (Bogucki 2009, p. 33). In Nowinka they had average sizes (diameters from 4.4 cm to 5.6 cm) and they were found only with bipartite bits¹³⁰. More often than in the case of iron

¹²⁵ The only example (except the plausible find of the bridle with cheeks made of organic material from grave 99 in Nowinka) of a bit with cheeks comes from Elbląg, Moniuszki St (Ehrlich 1941, p. 96, Fig. 32:4; Neugebauer 1975, Pl. XI). It should be attributed to Type 5C3 according to M. Ørsnes (1993) and it has an analogy, e.g., in the find from Tumiany (La Baume 1944, Figs. 16, 19; Baranowski 1996, Fig. 5).

¹²⁶ They are not, however, as large as some of items from the cemetery at Tumiany where rings of diameters up to 9-11 cm were discovered (Baranowski 1996, p. 73).

¹²⁷ As the studies on bits from the Merovingian Period indicate, the diameters of rings could have a chronological importance. The sizes recorded for Nowinka, however, do not allow to draw unambiguous conclusions in this matter (see Oexle 1992, Fig. 3).

¹²⁸ A similar regularity can be found in Tumiany, cf. grave IX and grave XIV (Baranowski 1996).

¹²⁹ Bronze bridle rings with bronze strap fittings are also known from the other units of the West Balt circle, e.g., Sambian find from Izhevskoe, grave 10 (Kleemann 1956b, p. 114, Pl. XXXI:10.b) or Olsztyn group discoveries from grave 228 in Tumiany (Voigtman files, Prussia Museum inv. no VII.461.13005) and from „horse grave 1”, in which, i.a., a considerable part of headgear fittings of Tumiany type was preserved (Voigtman files, Prussia Museum inv. no VII.304.11948a).

¹³⁰ The same refers to the cemetery at Pasłek, where bronze rings appeared and only bipartite snaffle bits were found (Ehrlich 1923, p. 199).

items they appeared together with ornamental bronze headgear fittings (grave 17, 18, 21, 34, 65, 83), which indicates that the material probably determined the status of the horse owner¹³¹.

Rings of some bits had bronze (graves 17/20, 18/10, 65/4, 78/1, 83/8, 84/12) or iron (graves 20/1, 45/9, 47/1, 119/1, 131/4, 160/1) ferrules, serving to fix reins or straps of the headgear – first of all cheekpieces. This solution is frequently found in the Elbląg group, cf.: Łęcze, grave 13 (Dorr 1898, p. 10, Pl. I:27), grave 21 (Dorr 1898, p. 11, Pl. I:23), grave 41 (Dorr 1898, p. 13, Pl. I:26), Elbląg-Żytno, grave 10, grave 13, grave 41 (Dorr 1914, Pl. I:3-4) and grave 107 (Ehrlich 1920, p. 193), Elbląg, Moniuszki St (collection of MAHE inv. no ME 112/303-308, 310; 246:683). At the burial ground in Chojnowo, on the other hand, the presence of greenish tarnish on one of the iron bits was found (Neugebauer 1934, p. 322), which suggests that originally there was a bronze ferrule in that place. Bronze items from Nowinka had the same form: they were made of long rectangular plates, bent at half length around the ring of the bit. The arms of the ferrules were originally joined together and with the strap by means of two or three rivets (depending on the length). Along the longer edges an ornament in the form of two engraved lines was placed¹³². Such fittings were used both to fix the rein straps and headgear (cheekpieces) as they appear singly – and then their function may be only a subject of conjecture (graves 18/10, 65/4, 84/12), or in pairs – in such cases they were used to strengthen both straps (graves 17/20, 78/1, 83/8). Most probably also fittings from grave 34/8 served as strap fasteners. They were made similarly of bent, rectangular, elongated sheets of bronze ornamented with lines parallel to longer edges. The main difference lies in big (roughly 1 cm) distance between two parts, fastened with rivets. Moreover items were found not directly on bridle rings. From the other side in the Elbląg group we know fittings with similar distance between both parts, used surely as bridle ferrules as they are still located on bronze rings: Elbląg-Żytno (MAHE, inv. no ME 387). Much less can be said about the iron specimens, due to the fact that they were strongly damaged by corrosion.

Only in the case of bit rings from grave 20/1, a pair and a single ferrules of U-shaped iron plate was recorded, whereas in grave 160/1 pairs of fittings attached to rings were made of fan-shaped iron plates with single rivets at their broader ends designed to join the strap¹³³.

So far there are no grounds to attribute bipartite and tripartite snaffle bits from Nowinka to particular chronological stages. Bipartite ones are proved for Phase 1 (grave 62B/3), Phase 2 (grave 121/1) and Phase 3 (grave 17/20, 60/11) whereas tripartite for Phase 3 (grave 120/15). The number of items ascribed to certain phases is not big enough to state any regularities. Nevertheless it seems that bipartite and tripartite bridle bits were used parallelly for the long period, e.g., in horse graves from the East Lithuanian Barrows culture both bipartite and tripartite bits were common, not showing any significant variability in time. Tripartite items have been recorded for the time from the 2nd half of the 5th century but they gained the largest popularity in the 10th-14th century (Iwanowska 2006, p. 68). Also in Finland no chronological differences referring to bipartite and tripartite bits were spotted (Purhonen 1996, p. 60). However this is possible to attribute bridle rings of bronze to Phase 3 (grave 17/20, 18/10, 21/10, 34/5, 83/8).

The rare find from grave 99/3 was also connected with bridle. This lyre-shaped object of iron wire was found on the left side of a horse's mandible. An almost identical object was uncovered in exactly the same relation to the horse in barrow 1 at the burial ground of the Sudovian culture in Korkliny, site I. It was interpreted as a link between the reins and the bridle (Jaskanis 1968b, p. 304, Pl. I:2), which, however, seems hardly probable due to its insufficient toughness. It seems most probable that we have to do with a fastener for the reins attached to holes in cheeks made of organic sticks¹³⁴. They co-occurred with bridles with terminals in form of rings of small diameters in which sticks were put; additionally the hooks fixed cheeks in rings of low diameters. Such sticks may not have been preserved till today; they may have been made from materials which are more easily decom-

¹³¹ To a certain extent, for there are known bits completely made of iron, which are accompanied by decorative bronze fittings of the headstalls (grave 8, 26, 47, 55, 60, 62B, 78, 82, 84, 117, 118, 120, 121, 147). Additionally, an opposite case is known: in grave 77 a snaffle bit with bronze rings without headgear ornaments was found.

¹³² There are also more solid bronze fittings proved for the Elbląg group but they seem to be extremely rare: Elbląg, Moniuszki St (Ehrlich 1941, p. 96, Fig. 32:4; Neugebauer 1975, Pl. XI; MAHE inv. no 73:180); possibly they are elements of snaffle bits with metal cheeks.

¹³³ Similar form is known from the item attributed to Łęcze (collection of MAHE, inv. no ME 243/676). Nevertheless these forms are so simple that they rather should not be treated as a cultural factor: similar forms were found, e.g., in Merovingian cemeteries, e.g., Neresheim, Lkr. Ostalbkreis, grave 44 (Knaut 1993, p. 259, Pl. 7:10), Beckum I, stray find (Capelle 1979, p. 39, Pl. 40:T5).

¹³⁴ Such function is also possible in case of find from grave 65/3. Although it was found in human part of the grave we cannot exclude its connection with the horse's one as they were considerably disturbed. The second possibility is that we deal with a fragment of a buckle.

posed, e.g., antler or wood. They appeared in bridles of Avar type, which are considered to be the product of nomadic influences; it is believed that starting from the 2nd half of the 6th century they reached to the Balt areas (Nowakowski 2000, p. 18; 2007b, p. 182), although also a view has been reasonably expressed that their chronology is broader and embraces the period from the turn of Phases D/E till Phase E₂ (Piwowarska, forthcoming). From the other side use of antler sticks, although differing in details, is proved also for Early Medieval Period¹³⁵ in Lithuania, see: Central Lithuanian group cemetery at Marvelė, horse grave 33 (Bertašius 2009, Pl. 30:1), grave 43 (Bertašius 2009, Pl. 160:43), grave 46 (Bertašius 2009, Pl. 35:1), grave 57 (Bertašius 2009, Pl. 146:1), grave 82 (Bertašius 2009, Pl. 164:82), grave 84 (Bertašius 2009, Pl. 167:4). Solutions similar to Sudovian finds are known from,

i.a., a cemetery in Suvorovo, grave 115, grave 172, and grave 183 (La Baume 1944, Fig. 27; Kulakov 1990, Pl. XII:11; Bitner-Wróblewska 2008, Pl. CCXXVII) and also from the Sudovian culture cemetery at Przebród, barrow I (Nowakowski 2000, Fig. 5:a; 2007b, Fig. 10) and the Olsztyn group necropolises at Tumiany, horse grave II (Baranowski 1996, p. 84-85, Fig. 6), Kielary (Jakobson 2009, Pl. 218:s) as well as Wyszembork, site II, feature 23. The identity of the finds from Polish lands with this form is supported by the fact that the item from Korkliny was accompanied by a bridle with rings of small diameter (3.4 cm); also the find from Nowinka has rings of internal diameter of 4.5 cm, which is much less than the average for the other bridles from that necropolis (although they differ in details as the rings are not the part of the rod as, e.g., in case of the item from Korkliny).

III.3.2. Headgear

III.3.2.1. Strap mounts

The most spectacular category of the equipment of horse graves are the fittings decorating headgear straps. They were found in many graves (graves 8/4, 17/23, 18/11, 21/15, 26/4, 34/9-10, 47/2, 55/10, 60/12-13, 62A/6, 62B/4, 65/5, 78/2, 82/8-9, 83/9, 84/13, 117/2, 118/4, 120/16, 121/2, 147/2), however, only in some of them they were numerous enough and their arrangement was similar enough to the original ones to make their reliable reconstruction. Headgear mounts were made of thin or very thin bronze plates¹³⁶ which crumbled easily, which was noted already in the pre-war period (cf. Ehrlich 1920, p. 191-192). No silver fittings were found at Nowinka, similar to the ones recorded for the necropolis at Chojnowo (Kowalski 1987, p. 281, 284)¹³⁷ or the more so, fittings made of gold, which appeared, next to silver and bronze ones, at the burial ground in Elbląg, Moniuszki St (Ehrlich 1941, p. 96). The most common form were rectangular strap mounts decorated with lines engraved along the edges, fixed with the use

of pairs of rivets placed on shorter sides¹³⁸. In some graves they were quite numerous (over twenty items). They appeared comparatively often at different necropolises of the Elbląg group, where beside forms decorated with grooves also items with one, two or three lines made of stamped points were found, e.g., in Łęczce, grave 20 and grave 25 (Dorr 1898, p. 22, Pl. III:19, 24), Elbląg-Żytno, grave 10, grave 105 and grave 107 (Ehrlich 1920, p. 191-192, Fig. 2:f-h), Chojnowo – pre-war investigations (Neugebauer 1934, p. 321, Pl. LXX:4) as well as feature 1 and feature 14 (Kowalski 1987, p. 281, 284). They were also popular in the Olsztyn group, e.g., Tumiany, grave V, horse 9 or grave XVII, horse 30 (Baranowski 1996, Figs. 5, 17:n, 50, 52:b) as well as Sambian-Natangian area, e.g., Soldatovo, grave 20 (Bujack 1891, p. 15, Pl. III).

In grave 60, instead of elongated rectangular fittings with grooves there were found also four shorter plates with grooves and stamped triangles situated along longer edges (grave 60/12); additionally there were documented two almost identical finds but slightly bent and added with lower plates riveted to them (grave 60/13). In the Olsztyn group objects very similar to the latter form are considered as spurs (e.g. Kulakov 1989, p. 165-166), but this is definitely not the case of finds from Nowinka. Objects from Nowinka served as headgear mounts what is proved by

¹³⁵ According to M. Bertašius (2009, p. 18) – first stage of the Marvelė cemetery, to which specified graves are attributed, was dated to late 8th-early 9th century A.D.

¹³⁶ The only exception is an iron fitting from grave 62A/6, consisting of two rectangular plates: a larger one, about 2.4 cm long, bent at the end, and a smaller one joined to it by a pair of rivets. Their exact function is difficult to establish, although due to their location close to the animal's muzzle one may conjecture that the fitting strengthened the place where the straps crossed.

¹³⁷ They were also found at the burial ground in Tumiany (Baranowski 1996, p. 77).

¹³⁸ Only the find from grave 82/8 was more trapezoid than rectangular.

the context. Moreover, middle rivet was too small to be used as a prick. They are dated to the 3rd phase of the cemetery.

Some of rectangular fittings were decorated with impressed patterns. Particular motifs differ. Fittings from grave 26/4 survived partly and we may only say that there were impressed pearl-like lines and groups of bosses in shape of angle and square motifs used here. As refers to plates from grave 47/2 there were two kinds of fittings proved: first with waffer motif together with pearl-like ornament along the edges and the second with waffer pattern and small squares enclosed by small circles. The ones from grave 82/9 were ornamented with the pattern of embossed geometric and railing motives. In grave 118/4 stamped ornament composed from four larger groups of hemispherical bosses was used; the spaces between them were filled with rows of three or four smaller bosses surrounded by pearl-like motif and

bordered with double lines of pseudo-filigree; single rivets were placed at the ends. In case of items from grave 120/16 and 147/2 another decorative motif was documented: in the centre there was a vertical line of embossed railing motif and on either side three rows of pseudo-filigree made with the same technique. The fittings from grave 121/2 were decorated in the centre with a line of embossed rosettes consisting of a central boss surrounded by a pearl-like motif, along the longer edges there were standard double engraved lines. Some of impressed fittings were joined with flat wires bent inwards (grave 47/2, 82/9, 120/16, 121/2, 147/2) while the others with rivets (grave 26/4, 118/4). Chronology of impressed fittings cannot be stated precisely: they appeared in graves dated to 2nd (grave 118/4, 147/2) and 3rd (grave 82/9, 120/16) phase of the cemetery. It is in agreement with the dating of the impressed motifs found on sword scabbards and drinking horns.

III.3.2.2. Connectors

Bronze strap connectors of various forms were less numerous than strap fittings: usually a few of them were found in one grave. Examples of the most popular type had circular bosses in their central parts. In case of finds from grave 83/10 decorative arrangements consisting of concentric lines of embossed points were made¹³⁹. An almost identical arrangement of headgear fittings together with connectors was found in grave XVII, horse 30 in Tumiany (Baranowski 1996, p. 77, Figs. 4, 50). Connectors of this type were also found in other graves at the necropolis in Nowinka (grave 18/12, 34/6, 60/14). Items from grave 34/6 were not decorated whereas the ornament on the connector from grave 18/12 differed in details from the one presented above. Some of them were made of thin sheet of metal like objects from Nowinka, grave 18/12 and grave 34/6 whereas others, like ones from grave 60/14 or 83/10 were solid. They were found in different numbers in particular graves: three (grave 34/6), four (grave 18/12), six (grave 60/14) and seven specimens (grave 83/10). They appeared exclusively in graves ascribed to 3rd phase of the Nowinka cemetery and it doesn't contradict datings acquired for parallels from Merovingian area, put down further. Connectors of the discussed kind were found at necropolises of the Elbląg group in Elbląg-Żyto, grave 10 (Dorr 1914, p. 8, Pl. II:1-3)¹⁴⁰, grave 105 and grave 107 (Ehrlich 1920,

p. 192)¹⁴¹ and during later investigations (Ehrlich 1932, Fig. 10)¹⁴², in Elbląg, Moniuszki St (Ehrlich 1937a, Fig. 2) among the others in grave 2 (Ehrlich 1937b, p. 274)¹⁴³, and in Komorowo Żuławskie (Bogucki 2009, p. 33)¹⁴⁴. They were numerous also at other Balt burial grounds: in Olsztyn group¹⁴⁵ or in Sambian Peninsula, e.g., in ex-Koddien (Ehrlich 1920, p. 192), Soldatovo, grave 11 (Bujack 1891, p. 15, Pl. III)¹⁴⁶. Similar forms were sporadically discovered in the Merovingian circle where, however, they were more ornamental, cf. items made of gilded bronze from Wörrstadt-Rommersheim (Eichloch), Lkr. Alzey-Worms, grave 54 (Werner 1935, p. 95, Pl. 22:28-29; Oexle 1992, Pl. 136:294.2-3)¹⁴⁷ and Beckum II, Lkr. Warendorf, grave 110 (Oexle

¹⁴¹ With the ornamental motif in the form of an engraved zigzag line with a central boss embossed from the inside.

¹⁴² Both the items with the embossed bulge and the flat ones, originally with riveted boss.

¹⁴³ Iron connector of that type with additional, ornamental bosses is still in MAHE, inv. no 254/703, but its attribution is not very precise, although it is known that it originates from Elbląg (Natuniewicz 2000, p. 138, 159, Pl. XXXVIII:5).

¹⁴⁴ Here items made of very thin sheet were found.

¹⁴⁵ Unfortunately so far there are no grounds to establish their chronology precisely (see Baranowski 1996, p. 81-83).

¹⁴⁶ Item with a very small boss.

¹⁴⁷ Curiously enough, in this case the ornament of stamped triangles and pseudo-pearl-like pattern, which is typical of items from the Elbląg and Olsztyn groups, was used. From the other side the design of the connectors was different from Nowinka finds: their bosses were separate elements actually serving as heads of huge rivets fastened to the bases of connectors. Basing on numismatic data as well as analogies in form and ornaments this feature is linked with Group D after W. Menghin (1983, p. 40-43), i.e., 580-620 A.D. (Menghin 1983, Fig. 25).

¹³⁹ Such forms have no direct equivalents in M. Ørnes's classification (1993), representing a form between Types 9D1 and 9D2.

¹⁴⁰ In this case the ornament around the central boss (riveted to the connector and not embossed) consisted of zigzag engraved lines.

1992, Pl. 166:370.2; 167:370.3)¹⁴⁸. One may mention also the very ornamental, solid item from Døvregård, Bornholms amt, stray find (BM, inv. no 34404). Nevertheless connectors of that type are typical of Balt area. They could be connected in a way with circular objects Type Ørsnes 9D2, appearing namely in Scandinavia and Merovingian circle (Ørsnes 1993, p. 239-240) but surely it is of local origin.

Somewhat different, simpler cross-shaped connectors of Type 9D1 according to M. Ørsnes (1993) with single rivets at the ends of the arms and a small central boss in the place where the arms meet (without a circular central part) were found in grave 62B/5 in Nowinka. Similar solutions were discovered at the burial ground of the Elbląg group in Łęcze, where four such fittings were uncovered in grave 25 (Dorr 1898, p. 11, 22, Pl. III:17). They are also known from the Olsztyn group, e.g., Tumiany, grave XV, horse 27 and XVI, horse 28 (Baranowski 1996, p. 113, 116, Figs. 40:c, 44:d-h) and Sambian Peninsula, e.g., Izhevskoe II, grave 8 (Kleemann 1956b, p. 114, Pl. XXXI:8e-f; Nowakowski 2008, Fig. 4:7). Two cross-shaped connectors were found also in Elbląg-Żytno (MAHE, inv. no 176/460-461); they were more solid than finds from Nowinka and additionally they were deprived of bosses that had been originally fastened in the centre (the same refers to finds from Tumiany). In Nowinka they come from grave attributed to Phase 1 of the cemetery but it cannot be treated as a definite statement concerning chronology of a type, e.g., in Izhevskoe they were found together with stirrups what suggests also their late appearance. Connectors of the same Type 9D1 but different in details from the specimens from Nowinka are confirmed in Scandinavia and Merovingian circle but they are characterized by a wide chronology (Ørsnes 1993, p. 238-239, Fig. 53).

The discovery from grave 21/16 is particularly worth mentioning. Four cross-shaped connectors with pairs of rivets at the ends of the arms and with a step pyramid (with three steps) in the centre were found there. They should be considered as a transitional form 9D1/9D3 variant b according to M. Ørsnes (1993). A similar style of decoration was found on a brooch from grave 23/1. The closest, although not complete, analogy for this solution can be found in grave 228 from Tumiany, where a pair of connectors was found differing from the items from Nowinka by the presence of different texture at the upper surface of the pyramid (Nowakowski 1998, p. 196, Fig. 1:B; Voigtmann files, Prussia Museum, inv. no. VII 461.13005)

and the size of the pyramid, extending to the arms of the connector (in case of the find from Nowinka the whole pyramid is on a plate). Further analogies for such solutions can be found in Scandinavia among forms Type RV1a according to A. Nørgård Jørgensen (1999, p. 112), cf.: Kobbeå, Bornholms amt, grave 1 (Nørgård Jørgensen 1992, Figs. 11:2-3; 37; see Ørsnes 1966, Fig. 26) and Glasergård, Bornholms amt, grave 2 (Jørgensen 1990, p. 138, Pl. 31:2-3; see Ørsnes 1966, Fig. 25) on Bornholm and Torgård, Klæbu komm. in Norway (Nørgård Jørgensen 1992, Fig. 29:7-8; 1999, p. 234, Pl. 56:7-8) or Valsgårde, Gamla Uppsala sn, grave 7 in Sweden (Arwidsson 1954, Pl. 22:43, 73). Connectors in the form of a pyramid are also known from the Merovingian circle, e.g., Alamannic cemetery in Betzingen, Stadt Reutlingen, grave from 1909 (Oexle 1992, Pl. 3:16.2; Quast 2006, p. 193, Pl. 5:5-6), Beckum I, Lkr. Warendorf, grave 73 (Capelle 1979, p. 35, Pl. 33:73.e; Oexle 1992, Pl. 158:348.2-3) and grave 76 (Capelle 1979, p. 36, Pl. 35:76.d; Oexle 1992, Pl. 160:349.2-3)¹⁴⁹, Köln-Müngersdorf, Stadt Köln, grave 80 (Fremersdorf 1955, p. XII, Pl. 12:80.6-7, 100:B.4-5), Xanten, Lkr. Wesel, grave 27 (Oexle 1992, Pl. 196:430.2); cf. also items more decorative and sometimes differing in details: Neuwied-Engers, Lkr. Neuwied (Oexle 1992, Pl. 123:269.1-2), Klepsau, Lkr. Hohenlohe, grave 6 (Oexle 1992, Pl. 39:84.2-3), Beckum I, Lkr. Warendorf, grave 17 (Capelle 1979, Pl. 8:17.c; Oexle 1993, Pl. 154:341.2-3), Regensburg, Lkr. Regensburg (Oexle 1992, Pl. 102:222.2-3), Bremen, Lkr. Bremen, grave 12 (Oexle 1992, Pl. 176:379.2-3) and grave 14 (decorated: Oexle 1993, Pl. 178:381.2, 179:381.3), Gammertingen, Lkr. Sigmaringen (Rieth 1937, Fig. 4:7) as well as Junkersdorf, Stadt Köln, grave 411 (Oexle 1992, Pl. 183:393.1); one may enumerate here also find from grave 7 at Hodmèzövasarhely-Kishomok, kom. Csongrád in Hungary (Menghin 1983, Fig. 17; Boná, Nagy 2002, Fig. 55:7, Pl. 9:26). These are not, however, ideal parallels: the motif of a pyramid on the finds from Scandinavia and Merovingian circle decorates a square plate which makes up the main part of the connector (small projections with rivets are placed in the corners of the plate) and not only the central part of the cross-shaped fitting. Also their function is not entirely identical with that of the Scandinavian finds: in Kobbeå only two pyramid-shaped fittings were found and they functioned as connectors of the browband and cheekpiece (Nørgård Jørgensen 1992, Fig. 28); pairs of them appeared also in the Merovingian circle (cf. Capelle

¹⁴⁸ Very decorative items, with cross-shaped mounts made of a metal band.

¹⁴⁹ Gilded ones.

1979, Fig. 11), while in the assemblage from Nowinka four items were discovered, thus also other pairs of straps must have been connected (curiously enough in the case of the find from Tumiany also a pair of connectors was found). Thus we have to do with a local imitation of a decorative motif and not of the whole product. Such interpretation is supported by another find from the area of the Elbląg group – a stray find of a headgear connector from Jelonki: the step pattern was used as a decoration of a connector typical of the Tumiany type (Nowakowski 1998, p. 196, Fig. 1:a), i.e., characteristic of Balt milieu. Western and northern analogies are dated quite widely, i.e., for the whole Migration Period until the end of Merovingian Period (Ørsnes 1993, p. 240, Fig. 53). The item from Nowinka is dated to the 3rd phase of the necropolis.

Unusual connectors come from grave 118/3 (four items). They have the shape of circular discs on which the ornament was pressed, the same on three of them, of a central boss and seven concentric circles of pseudo-filigree; on the fourth one the above composition was enriched with a ring-shaped pearl-like pattern around the central boss. At the ends of the arms pairs of hemispherical bosses and single rivet holes were added. The preserved rivets join the fittings with the overlapping ends of rectangular mounts of headgear straps¹⁵⁰. If this is compared to M. Ørsnes' typological suggestions, they represent a mixed form 9D1/9D2. Comparable solution is known from the Elbląg group: it is the stray find from Elbląg-Żytno (Ehrlich 1932, Fig. 10; MAHE, inv. no 176/459) in shape of a circular plate with projecting arms, one of which was very

III.3.2.3. Buckles

In some cases small buckles, probably – basing on their location – serving to tighten headgear or rein straps were found (grave 17/21-22 and grave 55/8: close to Type Butėnas III.2a; grave 18/13: Type Butėnas III.1d; grave 20/3: Type Butėnas IV.4; grave 21/13-14: Type Butėnas III.1 and IV.4; grave 60/16-17: Type Butėnas III.2 and IV.4; grave 62A/4-5: Type Butėnas IV.3/4; grave 83/11: Type Butėnas III.1a; grave 112/3: Type Butėnas III.1b; grave 114/3: Type Butėnas IV.4). Some of them were made of iron (grave 62A/4-5, 112/3, 114/3) whereas the others of bronze. The location of buckles from grave 112/3 and grave

114/3 at the back of the skull, on the left, suggests that they served to fasten the cheekpiece or throat-lash (in both graves no decorative headgear fittings were found) whereas thanks to a very well preserved arrangement of the headgear fittings from grave 83 it was possible to state that the buckle (83/11) was used to fasten the throat-lash. Similar buckles appeared in horse graves of the Elbląg group: kidney-shaped ones, e.g., Chojnowo, feature 14 (Kowalski 1985, Pl. II:1-2), Łęcze, grave 25 (Dorr 1898, p. 11, Pl. III:14) and oval one in Elbląg, Moniuszki St (Ehrlich 1937a, Fig. 2).

Nevertheless it was made of bronze plate more solid than ones from Nowinka. Moreover it was originally fitted with an ornamental plate with a big boss (see Ehrlich 1932, Fig. 10) that didn't survive – only a hole is visible in the middle of circular plate. In Nowinka it was found in grave from the 2nd phase of a cemetery but it is possible that they were used also slightly later: later chronology is approved by analogically ornamented finds quoted above, i.e., disc brooches.

In grave 55/10, in turn, in the place where the straps crossed, rectangular plates of equal lengths, overlapping so that they made up a pattern of an equal-armed cross, were found (formally they should be determined as Type Ørsnes 9D1). At the place where they crossed they were joined by a rivet and similar rivets were fixed at the ends of the arms of the connectors. The cross-shaped connectors of this type were also found at the burial ground in Łęcze, grave 25 (Dorr 1898, p. 11, Pl. III:15) and Elbląg-Żytno (Ehrlich 1932, Fig. 10). Similar form but cut out from a single piece is known from the Sambian cemetery at Mitino, grave 344 (personal commitment: K. Skvortsov).

Quite numerous are elongated rectangular fittings arranged at acute angles, serving partly as connectors. One should mention here the sets from grave 78/2 (ones ornamented with grooves), grave 121/2 and grave 147/2 (both with impressed pattern). So far we do not know any exact analogies for them. Two of above features are connected with Phase 2 on the cemetery but it is impossible to draw any definite conclusions as refers to dating on these grounds.

¹⁵⁰ The motif of this kind was found in the Elbląg group: a very similar fitting was discovered in Elbląg-Żytno (Ehrlich 1932, Fig. 10, top left). An almost identical decoration as on the central piece of the connectors from grave 118/4 in Nowinka was found on the disc fibula from Łęcze, grave 76 (Dorr 1898, p. 20, Fig. 6) and on the one from unknown site, in collection of MAG, inv. no 0031/02/01. Also the decorative belt mounts from grave 73

in Lazdininkiai in Lithuania, dated to the first half of the 7th century, have a very similar form (Bliujienė, Butkus 2002, p. 98-99, Fig. 3:3). Circular plate (a disc fibula?) ornamented in that way comes from Natangian necropolis at Kholmogor'e (Heym 1938, Pl. 35; von zu Mühlen 1978, Pl. 22; Kulakov 1990, p. 63, Pl. VIII:7) and quite close motif was found on the brooch from Sambian cemetery at Mitino, grave 266 (personal commitment: K. Skvortsov).

III.3.2.4. Strap ends

Some of lancet-shaped strap ends were surely related to a headgear (grave 21/11-12, 34/7, 60/15, 82/7, 83/12). They were almost identical as the ones from sets of belt fittings. The main difference lies in the fact that their adornment was very limited: strap ends from grave 21/11-12 and two finds from grave 60/15 possess grooves along edges of the upper part and metope in the middle, the item from grave 34/7 has the ornament of stamped triangles on the tongue and horizontal grooves in the middle, one find from grave 60/15 is characterized by grooves along the edges of the upper part and in the middle, item from grave 82/7 has only horizontal grooves in the middle similarly to one item from grave 83/12. The second strap end from the latter wasn't ornamented at all¹⁵¹. All of them have faceted tongues, some of them also upper parts (grave 34/7, 83/12 – one item). The strap ends were fastened with the use of single rivets (grave 21/11-12, 34/7, 60/15 – one item, 82/7) or double ones (grave 60/15 – two items, 83/12). They appeared in graves in different numbers: one (grave 34/5, 82/7), two (grave 21/11-12, 83/12) or three (grave 60/15) items; at least in case of grave 34 the set was incomplete. Their exact function can be reconstructed only occasionally as their original position most frequently was disturbed. In case of grave 83/12 it served as a throat-lash ending. We may imagine also different purpose: in grave XVII (horse 30) from Olsztyn group cemetery at Tumiany it decorated central strap, behind the headpiece (Baranowski 1996, p. 77, Figs. 4, 50). Lancet-shaped strap ends from horse graves are proved also for other Elbląg group cemeteries: Łęcze, grave 25 (Dorr 1898, Pl. III:16), Elbląg-Żytno (Ehrlich 1937a, Fig. 2), including grave 10 (Dorr 1914, p. 9, Pl. II:4) – here with a wide tongue-shaped strap end (Dorr 1914, Pl. II:5). As refers to the chronology it is the same as lancet-shaped belt-end fittings, i.e., Phases

III.3.2.5. Blinkers

Completely unique find comes from grave 117/3. There were square bronze plates with the sides of 4.2 cm found there. They were richly decorated with embossed motifs: at the edge a row of pearl-like ornament was placed between two straight lines, in the corners, little squares, and in the inside impressed rosettes with central points surrounded by pearl-like ornament (nine on one plate and twelve on the oth-

E₂₋₃. In Nowinka all of them come from graves ascribed to Phase 3.

In grave 21/9 another bronze strap end was found. It is almost rectangular in shape, with concave longer edges; grooves are situated along the sides. It has not close analogies: similar but definitely more elongated, trapezoid items come from Balt cemetery at Kholmogor'e, grave 'b' (Heym 1938, Fig. 255; von zu Mühlen 1978, Pl. 22; Kulakov 1990, p. 63, Pl. VIII:7), however they appeared in theoretically later context (with early stirrups but also a disc ornament, parallel to the find from Łęcze, grave 76 (Dorr 1898, p. 20, Fig. 5, Pl. I:30)¹⁵². From the other side similar fittings from Taurapilis, barrow 5, widened in upper part and with delicately concave sides were found in feature dated to the turn of Phases D/E; here they served as mountings of strap used for fastening spurs (Bliujienė, Steponaitis 2009, Figs. 6, 10:3-4). This is possible that we deal with local derivatives close to tongue-shaped strap ends. The find from Nowinka is dated to the 3rd phase of the necropolis.

Unique strap end was found in grave 118/5. It was made of an anchor-shaped plate with impressed dot and pearl-like ornament, with additional rivet at the end. It served as the lower end of the central strap. It has no analogies and in Nowinka it is connected with 2nd phase of the cemetery. The same was the function of strap end from grave 78/3. Made of bronze it had almost rectangular shape but one of the shorter ends was convex; additionally it was adorned with two bosses impressed from the inner side. Maybe also a stray find SF/16, ornamented in the similar way should be linked with analogical headgear. Find from grave 78/3 cannot be dated precisely; only if we compared it with chronology of other graves with headgear fittings arranged at acute angles we would link it with Nowinka Phase 1 or 2.

er). Some fragments of leather and fabric adhered to them. Due to their location it is supposed that they functioned as decorative blinkers. The silver head fittings from Elbląg, Moniuszki St, unfortunately known only from a photograph of the horse burial, which does not allow to make a reliable comparison,

¹⁵¹ Hypothetically one may add to the group of horse harness strap ends also the stray find SF/8 as it was not ornamented.

¹⁵² There are controversies as refers to the dating of stirrups' appearance in Balt milieu. They result from doubts concerning compactness of the earliest stirrup graves furnishings which were not adequately documented (cf. Kleemann 1956b; von zu Mühlen 1975, p. 47; Žak, Mačkowiak-Kotkowska 1988,

may have had a similar function (Ehrlich 1937b, Fig. 10). It may be also possible that the presence of blinkers suggests that harness animals were deposited in the burials. This may be confirmed by the asymmetry of many bits, which would be practical if they were used for two harnessed horses. It should be reminded

III.3.2.6. Other fittings

Some fittings are more problematic as refers to their function. One should mention here the find from grave 62A/6. It is rectangular iron plate with a washer (both linked with two rivets). Unfortunately it has no analogies so far. Nevertheless it was found near bri-

III.3.3. Saddles

In some graves it may be assumed that the horse was buried together with the saddle made of organic materials. Although such materials can not survive till modern times, certain premises seem to confirm such a presumption. In grave 20/4-7 iron and bronze fittings located over the animal's backbone were found, probably strengthening certain parts of the saddle. What is more, fragments of wood were found in this place, some of them sticking to the iron (grave 20/6) and bronze (grave 20/7) fittings (in the last case lime wood fragments were traced). So far they find so exact parallels (see Ørsnes 1993, p. 271-275). The presence of organic materials on the animals' backs was recorded also in graves 17 and 21. According to the analysis conducted by T. Radek in grave 17 these were fragments of moss and, in grave 21, tissues of wicker or bast making up a kind of plait. The analysis of the samples also showed the presence of remnants of tanned leather and of horse, cattle, and sheep fur, which T. Radek interpreted as remains of horse fur and remains of pieces of leather harness tanned together with hair (cattle hides and hair) as well as remains of fabrics (sheep hair). The saddle was made of oak wood planks (*Quercus sp.*) covered with hide. Also in grave 21/8 at the side of the animal's hind-part bronze plates ornamented with

that in Nowinka, i.a., pairs of horses were found in burials. The predominant number of single burials and the unique character of the discovery from grave 117/3 seem, however, to contradict this. It seems that if we really have to do with a burial of a harness horse, then it is a rather isolated case.

It probably served as a connection of the strap, strengthening of it or rein fastening. The same problem refers to two iron finds from grave 65/5 situated analogically. Grave 62A cannot be dated precisely but grave 65 comes from 1st phase of necropolis.

grooves along the edges were found (fifteen items): maybe fittings of the dock (?). Iron fittings in the form of plates connected by massive rivets spaced out by ca 1 cm (fragments of wood were preserved between the plates) arranged in a way impossible to interpret, nails, and rectangular washers, were found near the back of the horse buried in grave 89/3-5.

In graves 119/2 and 155/2, large iron buckles, probably used to fasten the girth (and thus to secure the saddle, held in place by the girth), were found near the animal's abdomen. First of them should be attributed to Type Butėnas IV.3/4 and the second to Type Butėnas III.2. Similar buckles (in form, dimensions, and the location in the grave) were found at sites from the West Balt circle: in Olsztyn group necropolis at Tumiany, grave X, horse 20; grave XIII, horse 23; grave XV, horse 27 (cf. Baranowski 1996, p. 77, Figs. 30:c, 35:a, 40:d), in Sambian-Natangian area at Kholmogor'e (Heym 1938, Pl. 35) and Suvorovo, grave 345 (Heym 1938, Pl. 36:259), in culturally linked cemetery at Sątoczno, grave 3 (Lasota-Moskalewska, Perlikowska-Puszkarska 1994, p. 193, Fig. 2) and also in the Sudovian culture at Szwajcaria, barrow 25 (Jaskanis 1966, Fig. 4-5) and Korkliny, barrow 2 (Jaskanis 1966, p. 40, Fig. 6; Krysiak, Serwatka 1970, p. 219). They should be interpreted in an analogous way.

The data presented above do not, of course, allow to say anything about how the presumed saddles may have been constructed. The only relation to any of the various features of burial rites or grave goods, which it was possible to observe, is that in graves with alleged saddles bits had large spans (grave 20 – 17 cm, grave 89 – 14 cm, grave 119 – 15 cm, grave 155 – 16 cm). It is hard, however, to establish if this has any connection with using saddles. Also grounds for making any conclusions concerning chronology of saddles are too weak.

footnote 561; Świątosławski 1990, p. 32-33). Nevertheless the latest paper concerning the problem (Nowakowski 2008) confirms the conclusion by O. Kleemann (1956b), who stated that the earliest stirrups emerged in the Balt milieu in chronological horizon of late ladder brooches, i.e., synchronically with a period of the Nowinka cemetery's existence. W. Nowakowski tried to specify their chronology to the end of the Migration Period what he meant 650-700 A.D. (2008, p. 199) but such late chronology does not have to be adequate (it seems to be prolonged excessively just to fit datings of late ladder broches and early stirrups).

III.3.4. Arrangements of headgear

In a few cases it is possible to reconstruct the arrangements of headgear, basing on the fittings' localization in a grave (Pl. CXIV). The model known from the cemetery of the Olsztyn group and hence called the Tumiany type (La Baume 1944, p. 13-14)¹⁵³ is represented by a set of fittings from grave 83 in Nowinka (Pl. CXIV:2). Rectangular plates (grave 83/9) covered in that case the cheekpieces, headpiece, browband, noseband (in the exposed part, i.e., in the front part of the head) and the central strap, running along the axis of the horse's head extending from the headpiece to the noseband or even beyond it and ending with a lancet-shaped fitting (grave 83/12). Also part of the throat-lash was fitted and the strap coming through the buckle was ended with a lancet-shaped fitting (grave 83/12). In the places where the straps crossed, connectors in the form of circular plates with four arms each ending with four rivets designed to fix the straps were used (grave 83/7). In the grave there were seven such connectors, which provides a certain point of reference owing to the very well preserved arrangement of the headgear fittings. An almost identical arrangement of headgear fittings was found in grave XVII, horse 30 in Tumiany (Baranowski 1996, p. 77, Figs. 4, 50). The only difference consists in the use of one of the lancet-shaped fittings to decorate part of the central strap, behind the headpiece found in Tumiany, while in Nowinka it was used as an end of the throat-lash.

One may say that in grave 118 metal mounts (grave 118/4) decorated the browband, noseband (in this case composed of a pair of parallel straps), the central strap (from the headband to below the noseband) and the right cheekpiece (the arrangement was almost intact)¹⁵⁴. The lower end of the central strap was made of an anchor-shaped plate with a rivet at the end (grave 118/5). Four connectors (grave 118/3) with pressed ornament were also used (Pl. CXIV:3).

The set of fittings from grave 120 also deserves attention (grave 120/16). On the skull of horse I mounts from the cheekpieces, the central strap (from the headpiece to the lower part of the skull), browband and headpiece were found.

In grave 21, on a partly disturbed horse skull other thirty six bronze mounts of standard type (grave 21/15) with double grooves along longer edges and one or two rivets at the ends were found. They decorated the browband, headpiece, noseband and the two cheekpieces; also two small buckles (grave 21/13-14), two lancet-shaped strap ends (grave 21/1-12) and some remains of the straps were discovered.

Unfortunately, in grave 55, it is impossible reliably to reconstruct the headgear: the two sets of fittings (double burial) were scattered and mixed up. It is, however, worth to notice the presence of connectors consisting of two plates: a longer one and a shorter one fixed to it with a rivet placed at the end, and arranged at an angle of about 45° (grave 55/10). This is an example of a solution serving both to decorate and strengthen the branching out straps. In the case of the discussed grave, typical fittings of thin plate, decorated with lines engraved along the longer edges were used.

Fittings arranged at acute angles are more numerous at the analysed necropolis. One should mention here the sets from grave 78 and 121. In grave 78 an almost intact arrangement of cheekpieces, browband, noseband and central strap (from the browband to the place below the noseband) mounts was found (Pl. CXIV:1). Moreover, another specific feature of horse harness from Nowinka is manifested here, i.e., multiplied straps of the headgear (grave 78/2): in this case the browband consisted of three parallel straps covered with plates, whereas the noseband, of two similarly decorated straps, the lower of which was connected to the central strap at the angle of about 45°. The lower end of the central strap had the form of a mount similar in shape to a rectangle but rounded at the end and with two decorative bosses: they were attached to the strap with the use of two rivets (grave 78/3). In grave 121, where fittings were partly preserved in their original arrangement (Pl. CXIV:4), however, it was found that some plates made up triangular patterns (grave 121/2). A reproduction of the former was obtained thanks to the mounts going from the noseband on either side at an angle to the central strap (motif of a triangle with the apex pointing upwards). The second triangle was slightly higher and had its apex pointing downwards. It was made of plates going from the headband at an angle towards the central strap. Also the headpiece, browband, cheekpieces, noseband, and the central strap were mounted (from the headpiece to the level below the noseband). The way of fixing the fittings is also very interesting: they were attached by means of pieces of flat wire running through holes in the metal plates and bent on the inside. An almost identical decorative arrangement (only the fittings

¹⁵³ It is worth noting that this type was not defined precisely by W. La Baume, and the examples used to illustrate it differ considerably (cf. Baranowski 1996, p. 76). The common features, however, were supposed to be cross-shaped strap connectors, elongated, rectangular mounts, belt buckles and tongue-shaped strap ends (the bits may have been ended with rings or metal rods).

¹⁵⁴ Lack of the fittings of the left cheekpiece may be explained by the fact that the thin plate was destroyed.

of the central strap did not reach below the noseband) and the way of fixing them was found for the headgear fittings from grave 147/2.

In grave 117 on the horse's skull layed fittings (grave 117/2) of the browband, cheekpieces and the central strap (probably extending from the headpiece to the noseband). Unfortunately, they were preserved in small pieces and it was impossible to reproduce how they looked like: most probably they were rectangular plates decorated with stamped transverse railing ornament, similarly as in grave 120. The most spectacular finds were two bronze ornamental plates, described above, serving probably as blinkers (grave 117/3).

Summing up it is worth to note that the sets of headgear fittings from Nowinka, besides the solutions known in the Balt world (similar to the Tumiany type) have their specific features. These embrace the use of many straps with mounts¹⁵⁵ (grave 78, 118), including

III.4. Tools and toilet accessories (Bartosz Kontny)

III.4.1 Knives

At the cemetery in Nowinka seven knives were found (grave 2/5, 18/7, 41/3, 48/1, 60/4, 85/25, feature 161/1). All of them are small in size, ca 10-15 cm in length. They have short tangs and clearly longer blades ca 1.5 cm wide, distinguished on the side of the blade and sometimes also on the side of the back (grave 18/7). They are poorly preserved; due to corrosion only fragments remained: only items from grave 2/5, grave 18/7, grave 48/1 and feature 161/1 were preserved in large part. In some cases fragments of wooden handles were preserved (grave 2/5, 18/7, feature 161/1); for knife from grave 85/25 it was possible to establish the kind of wood from which the handle was made (oak). In one case the wooden part was reinforced at the base of the tang with an iron band (grave 2/5). In two cases (grave 2/5, 85/25) remains of leather were preserved on the blades, which indicates that this material was used to make the sheaths. One of the knives (grave 60/4) was placed in a wooden sheath girded with bronze foil with embossed ornament (railing ornament bordered with double pearl-like lines).

In Nowinka knives were found much more frequently in women's burials marked by anthropological and archaeological indices (grave 2, 41, 48) and the archaeological context (grave 85 – a 'female set'). Only

the plates oriented towards one another at acute angles (grave 55, 121, 147), the method of joining decorative elements with flat wire (grave 47, 82, 120, 121, 147), characteristic patterns embossed on fittings and their specific forms, even if inspired by external influences (cf. connectors from grave 21/16) bearing traces of local production, or the use of unique for the area ends of the central strap (graves 78 and 118). All that indicates that headgear ornaments were results of local production open to external influences.

Deducing from the chronology of Nowinka finds one may assume that arrangements of headgear fittings at acute angles were characteristic for Phase 1 (grave 55) and Phase 2 of the cemetery (grave 121, 147) and joining straps with a wire appeared in Phase 2 (grave 121, 147) and 3 (grave 82, 120). Multiplied straps were proved for Phase 2 (grave 118) but there are no grounds to establish their chronology firmly.

grave 60 can be described as a man's burial (weapons) and the gender of the deceased buried in grave 18 is not evident (the presence of a bracelet seems to indicate a woman and of a drinking horn, a man). The former, however, is not typical: it has a decorative sheath. Similar conclusions may be drawn also basing on the analysis of the cemetery in Łęcze where the numerous knives only twice, in grave 63 and grave 76, were registered in graves with weapons (Dorr 1898, p. 15).

The small diversification of the forms of knives from Nowinka was determined by their function; they do not have any chronological value and can be assigned both to Phase 1 (grave 2 and 41) and Phase 3 (grave 18, 60 and 85) of the necropolis.

Small knives were also found at other necropolises of the Elbląg group: in Chojnowo, stray find (Neugebauer 1934, p. 321, Pl. LXX:4.a), grave 18 (Neugebauer 1934, p. 322, Pl. LXX:4.b)¹⁵⁶, feature 5, feature 11 and feature 12 (Kowalski 1985, p. 229), Elbląg-Żytno: one in the vicinity of grave 3 and two stray finds (Dorr 1914, p. 13, Pl. III:8), grave 68 (slightly wider, found near the back of the horse and considered to be the proof that the animal was killed in the burial pit¹⁵⁷), grave 71, grave 89, grave

¹⁵⁵ Although a double browband is known from Tumiany (La Baume 1944, Fig. 19), such a solution was exceptional in the Olsztyn group. It is worth to note that standard cross-shaped connectors with a small boss in the centre and less typical T-shaped connectors cut from sheet metal were used here.

¹⁵⁶ A bent knife was found there, which is a unique situation for the Elbląg group (Neugebauer 1934, p. 324).

¹⁵⁷ Due to the lack of detailed information concerning the context of the discovery, this claim does not seem fully justified; to kill a horse a precise hit had to be made, besides, it is not known how high the knife was, which certainly was important for the situation in which it was used.

91, grave 92, grave 96 and grave 97¹⁵⁸ (Ehrlich 1920, p. 185, 193, 194), Łęcze, grave 1 – two items (Dorr 1898, p. 9), grave 9 (Dorr 1898, p. 9, Pl. I:18), grave 17 (Dorr 1898, p. 10), grave 19 (Dorr 1898, p. 10), grave 20 (Dorr 1898, p. 10), grave 23 (Dorr 1898, p. 11), grave 27 – two items (Dorr 1898, p. 11, Pl. I:19), grave 28 (Dorr 1898, p. 12), grave 30 (Dorr 1898, p. 12), grave 36 (Dorr 1898, p. 12), grave 46 (Dorr 1898, p. 13), grave 49 (Dorr 189, p. 13), grave 52 (Dorr 1898, p. 14), grave 53 (Dorr 1898, p. 14), grave 55 (Dorr 1898, p. 14), grave 63 – two items (Dorr 1898, p. 15), grave 75 (Dorr 1898, p. 16), grave 76 – two items (Dorr 1898, p. 16)¹⁵⁹ and Podgórze, grave 4 (Peiser 1919, p. 337), grave 5 (Peiser 1919, p. 337-338), grave 40a (Peiser 1919, p. 348-349).

Larger knives occurred in the Elbląg group sporadically: in Podgórze, grave 2 (Peiser 1919, p. 336-337) and grave 5 (Peiser 1919, p. 337-338) and in Młoteczno, accidentally discovered assemblage? (Ziemlińska-Odojowa 1991, footnote 8, Fig. 5). The above-mentioned finds are, however, clearly earlier than the ones from Nowinka: in grave 2 from Podgórze there were crossbow brooches with solid catchplates, in grave 5 – the brooch Type *Schlusskreuzfibel*¹⁶⁰, also the knife from Młoteczno may be in theory linked to the earliest stage of the Elbląg group although it is not certain if this assemblage is coherent.

Small knives, slightly differing in proportions and the shape of the tangs and blades may be found at the Sambian-Natangian area, e.g., in Suvorovo, grave 9 (Heym 1939, Fig. 86; Kulakov 1990, Pl. IX:4), grave 171 (Heym 1938, Fig. 81; Kulakov 1990, Pl. XI:15), grave 246 (Heym 1938, Fig. 88), grave 287 (Heym 1938, Fig. 83; Kulakov 1990, Pl. XVI:4), grave 343 (Heym 1938, Fig. 87), grave 364 (Heym 1938, Fig. 82; Kulakov 1990, Pl. XVIII:6) or the numerous finds from Mitino (personal commitment: K. Skvortsov). They were also very popular at the necropolises of the Olsztyn group, e.g., Tumiany, grave 2 (Jakobson 2009, Pl. 1:2.d), grave 8 (Jakobson 2009, Pl. 2:8.d), grave 13

(Jakobson 2009, Pl. 3:13.d), grave 30a (Jakobson 2009, Pl. 15:p), grave 32 (Jakobson 2009, Pl. 19:1), grave 33 (Jakobson 2009, Pl. 20:c), grave 41 (Jakobson 2009, Pl. 27:m), grave 29 (Jakobson 2009, Pl. 29:g), grave 47 (Jakobson 2009, Pl. 30:f), grave 57 (Jakobson 2009, Pl. 40:h, i), grave 71 (Jakobson 2009, Pl. 44:71.h), grave 73 (Jakobson 2009, Pl. 45:73.d), grave 75 (Jakobson 2009, Pl. 46:i), grave 77 (Jakobson 2009, Pl. 47:o), grave 88 (Jakobson 2009, Pl. 55:88.g), grave 95 (Jakobson 2009, Pl. 59:95.m), grave 96 (Jakobson 2009, Pl. 60:96.g), grave 97 (Jakobson 2009, Pl. 59:97.c), grave 100 (Jakobson 2009, Pl. 61:100.b), grave 107 (Jakobson 2009, Pl. 64:107.b), grave 108c (Jakobson 2009, Pl. 64:108.c-b), grave 112 (Jakobson 2009, Pl. 65:112.b), grave 113 (Jakobson 2009, Pl. 65:113.c), grave 118 (Jakobson 2009, Pl. 68:118.b), grave 119 (Jakobson 2009, Pl. 69:119.a), grave 127 (Jakobson 2009, Pl. 71:127.a), grave 135 (Jakobson 2009, Pl. 72:135.b), grave 141 (Jakobson 2009, Pl. 73:o), grave 142 (Jakobson 2009, Pl. 74:k), grave 143 (Jakobson 2009, Pl. 75:143.c), grave 146 (Jakobson 2009, Pl. 75:146.a), grave 150 (Jakobson 2009, Pl. 80:g), grave 151 (Jakobson 2009, Pl. 81:151.b), Kielary, grave 9 (Jakobson 2009, Pl. 116:9.p), grave 33 (Jakobson 2009, Pl. 137:f), grave 46 (Jakobson 2009, Pl. 147:p), grave 49 (Jakobson 2009, Pl. 145:49), grave 52 (Jakobson 2009, Pl. 151:52.b), grave 58 (Jakobson 2009, Pl. 152:58.a), grave 73 (Jakobson 2009, Pl. 160:73.f), grave 90 (Jakobson 2009, Pl. 174:k).

In the West Balt circle there are also analogies for the sheath of the knife from grave 60/4 decorated with the railing and pearl-like motifs. In the Olsztyn group analogously decorated sheath fittings were discovered in Tumiany, stray find (Ehrlich 1931a, Fig. 10; Jakobson 2009, p. 65, Pl. 100:139, 219:f) and Kielary, grave 6 (Ehrlich 1931a, Fig. 7; Jakobson 2009, p. 69, Pl. 111:o, 219:d). The difference consist in the material from which the sheaths were made (silver plate in Tumiany and Kielary) and dimensions of the knives (clearly larger knives in the Olsztyn group).

III.4.2. Spindle whorls

At the cemetery two biconical clay spindle whorls were discovered (grave 15/2, 93/1). They were carefully made: one bears traces of turning, the other has carefully polished surface. The fragment

¹⁵⁸ For knives from grave 68 and grave 97 also remains of wooden handles were preserved.

¹⁵⁹ For knives from grave 28, grave 52, grave 62 and grave 76 remains of wooden handles were preserved, and for knife from grave 36 – of a wooden sheath.

¹⁶⁰ Here so-called dagger-knife (*Dolchmesser*) was found.

of amber from grave 102/1, which may have served as a whorl, is described in the part devoted to amber products. They probably come from women's burials but in neither case it was possible to determine the gender of the deceased on the basis of bone remains. This claim is also confirmed by the fact that none of the whorls from the Elbląg group was found together with evident indicators of the male gender.

So far whorls were found at the following cemeteries of the Elbląg group: Chojnowo, feature 4 (Kowalski 1985, p. 228, Fig. I:19), Elbląg-Żytno

(Dorr 1914, p. 5), Łęcze, grave 42 (Dorr 1898, p. 13), grave 43 (Dorr 1898, p. 13), grave 45 (Dorr 1898, p. 13, Pl. I:10) and grave 55 (Dorr 1898, p. 14) as well as Podgórze, grave 37 (Peiser 1919, p. 347-348). These are biconical items often with a clearly marked bend (Dorr 1898, p. 23; Kowalski 1985, Fig. I:19), usually undecorated (except for the find from Łęcze, grave 45). It is said in literature that some whorls were made of amber, e.g., Łęcze, stray find (Dorr 1898, p. 23; cf. Kulakov 1990, p. 34), yet it is possible that these were in fact large amber beads. It is possible that some whorls were made of stone – the item from Elbląg-Żytno was made of clay or stone (Dorr 1914, p. 5).

Biconical clay whorls are also known from Sambian-Natangian areas: Type 2 after V. Kulakov (1990, p. 34), e.g., from Mitino, grave 67, grave 156, grave 207, grave 349, grave 364 (personal commitment: K. Skvortsov), and Olsztyn group, e.g., from

III.4.3. Combs

At the cemetery two combs made of deer antlers (grave 83/5, grave 85/26) were found. Both were long (10-11 cm) and narrow, three-layer, with decorative outer plates in the shape of low arch, fixed to the toothed plates by means of seven bronze rivets with high hemispherical heads. Together with the comb from grave 85/26 the case was also well-preserved whereas in grave 83 only small fragments could be found among the pieces of antlers. The case was made up of two pairs of elongated plates: rectangular at the top and arched at the bottom, joined; at one end additional short antler plate was preserved between the rivets, which ensured that there was a space between the layers. Outer plates of the combs and the case were decorated with combinations of engraved lines and rows of concentric circles.

So far no combs in burials of the Elbląg group were found, which should be, however, put down to the unsatisfactory state of research. The only mention is the information about fragments of a comb found in a feature (?) accidentally discovered in Młoteczno (Ziemlińska-Odojowa 1991, p. 105, footnote 8, Fig. 5)¹⁶¹. At the Balt areas, especially in Lithuania, they are rare and often represent forms different from the ones found in Nowinka (cf. Tautavičius 1996, p. 275-277; Gričuvienė, Buža 2007, p. 220). However, similar combs are known from the Olsztyn group, e.g., Kielary, grave 91 (Hollack 1900, p. 184, Fig. 73; Ja-

Kielary, grave 68 (Hollack 1900, p. 180; Jakobson 2009, p. 82, Pl. 159:68.b, 217:N'), Miętkie II, grave 32 (Kulakov 1989, p. 182, Fig. 15:3), grave 66 (Kulakov 1989, p. 182, Fig. 19:1), Leleszki, grave 22 (Kulakov 1989, p. 185, Fig. 22:2; Bitner-Wróblewska 2008, Pl. XLVII), Tumiany, grave 74 (Kulakov 1989, p. 192, Fig. 40:2; Jakobson 2009, p. 49, Pl. 45:74.e), grave 198b (Kulakov 1989, p. 200, Fig. 57:7; Bitner-Wróblewska 2008, Pl. XXXI).

As the graves with spindle whorls from Nowinka had poor grave goods, their chronological analysis is impossible. On the basis of other discoveries from the Elbląg group it is possible that they occurred in a wide temporal spectrum: in the initial (Podgórze, grave 37 – i.a., with a brooch Type Dollkeim/Kovrovo), early (Chojnowo, feature 4 – with a brooch Type *Schlusskreuzfibel*), and late chronological phase of the Elbląg group (Łęcze, grave 55 – with a pair of compact ladder brooches).

kobson 2009, Pl. 175:91.a, 220:k), Leleszki, grave 14 (Kulakov 1989, Fig. 21:1), Miętkie II, grave 32 (Kulakov 1989, Fig. 15:3), Tumiany, grave 47 (Bitner-Wróblewska 2008a, Pl. IX; Jakobson 2009, Pl. 30:47.e, 220:i), grave 49 (Jakobson 2009, Pl. 33:49.o), grave 227 and grave 228 (Voigtmann files), Waplewo, grave 10 (Voigtmann files), Piecki, grave (Rudnicki 2004, p. 266, Pl. I:8), Wyszembork, site IVa, grave 197 and grave 293 (Szymański 2005, p. 63, Pl. XV:1-2)¹⁶². In the Balt milieu they are recorded also at the Sambian-Natangian areas, e.g., Suvorovo, grave 26 (Heydeck 1938, Fig. 50; Kulakov 1990, p. 64). Very similar constructions are also known from Thuringian areas (Schmidt 1961, p. 141-144), e.g., Bilzingsleben, Lkr. Sömmerda, grave 30 (Schmidt 1976, Pl. 30:2.n), Obermöllern, Lkr. Burgenlandkreis, grave 15 (Schmidt 1976, Pl. 88:d) and grave 26 (Schmidt 1976, Pl. 92:2.d), Beuditz, Lkr. Weißenfels, grave 1 (Schmidt 1976, Pl. 110:1.b), as well as the Gepidic cemeteries in the basin of the Tisa River, e.g., Hódmezővásárhely-Kishomok, kom. Csongrád grave 73 (Boná, Nagy 2002, Pl. 19:73.1) or Szolnok-Szanda, kom. Jász-Nagykun-Szolnok, grave 68 (Boná, Nagy 2002, Pl. 37:68.1, 98:5). Combs were also

¹⁶¹ The grave was said to contain the body of a *maturus* man but the circumstances of the discovery suggest that its coherence is quite doubtful.

¹⁶² In the Olsztyn group also slim combs, which were part of the horse grave goods, are quite well documented: Tumiany, grave III, grave V, grave VII, grave VIII, grave IX, yet these are different forms with archaic features consisting in more or less pronounced bell-shaped handle end (Baranowski 1996, Figs. 9:g, 22:f, 24:c, 28:g), whereas the item from grave V is completely different: it is exceptionally long (more than 20 cm) and has a straight handle (Baranowski 1996, Fig. 14:j).

recorded at the Frankish areas (Aufleger 1996, p. 642) and in Scandinavia (Callmer 1995), especially on Gotland (Nerman 1969, Pl. 37-40)¹⁶³ where their state of preservation is enhanced by the favourable climate¹⁶⁴. Similar forms, but with a triangular handle, were also recorded in Moravia and Bohemia where they are considered to be Slavic, e.g., Kozly, okr. Mělník, waste pit (Curta 2008, Fig. 10), Svěpravice, okr. Pelhřimov, Praha-Horní Počernice, okr. Praha-město, semi-dugout from 1981 (Curta 2008, Fig. 11), Roztoky, okr. Praha-západ, feature 911 (Curta 2008, Fig. 12). It may be thus assumed that this is an interregional form, occurring during the Migration Period, which developed from earlier forms dated to the Late Roman Period and the Early Migration Period, with a bell-shaped or triangular handle (cf. Schmidt 1961, p. 141, 144). The finds from Nowinka were most probably local products, judging from the West Balt traditions of antler working. More precise dating is not possible, the finds from the Olsztyn group, however, should not be connected with its early phase (cf. Rudnicki 2004, p. 268, 270), Scandinavian combs occurred starting with Nordic Phase I for a very long time (cf. Nørgård Jørgensen 1999, cat. no 226, 239, 260-261, 318, 333, 338) and the Gepidic finds are earlier than the occupation of the Tisa areas by the Avars in 567 A.D., whereas the Slavic finds occurred in assemblages imprecisely dated with the Prague Style pottery decorated and undecorated, at the turn of the 6th and 7th century (Curta 2008, p. 673). B. Schmidt's observation that slimmer items with poorly marked out handle may have appeared in the late 5th century and forms decorated with grooves along the edges in the early 6th century may serve as a certain kind of indication; B. Schmidt noticed also on the basis of finds from Central Germany that in the

early 7th century the plates from which the platings of the combs were made became semi-circular in cross-section instead of the rectangular one (1961, p. 144). As this feature occurs in finds from Nowinka, it may indicate a late chronology, reaching the early 7th century. This agrees with the fact that both assemblages with combs belong to Phase 3 of the Nowinka necropolis.

It is worth to stress the fact that combs from Nowinka were found in cases. According to the current state of knowledge it may be assumed that cases appeared in the Early Migration Period (Phase D₃) together with combs with bell-shaped handles, see bog site Nydam IV (Jørgensen, Petersen 2003, p. 283, Fig. 37). In the Late Migration Period they were much more frequent; they are known from the Olsztyn group, e.g., Tumiany, horse graves VII-IX (Baranowski 1996, Figs. 22:f, 24:c, 28:g), from Gotland (Nerman 1969, Pl. 40: 420) or central Germany, e.g., Obermöllern, Lkr. Burgenlandkreis, grave 15 (Schmidt 1976, Pl. 88:d).

There remains the question whether combs were determiners of gender. For the finds from the Gepidic lands studies were duly conducted, which indicated that the combs appeared both in men's and women's graves, and slightly rarer also in children's burials; found next to the skull they were used to fix the hair (Boná, Nagy 2002, p. 95-99). Similar conclusions were drawn from the analysis of finds from the Frankish areas where they were found in graves of both genders (Aufleger 1996, p. 642). It seems that it should be the same in the Elbląg group. Unfortunately, the finds from Nowinka are not numerous enough to settle this issue. It may be only said that comb from grave 85 occurred in a 'female set' and in grave 83 an adult was buried, probably a woman.

III.5. Vessels (Bartosz Kontny, Jerzy Okulicz-Kozaryn, Mirosław Pietrzak)

III.5.1. Drinking horns (Bartosz Kontny, Jerzy Okulicz-Kozaryn, Mirosław Pietrzak)

In nine graves (grave 11/1, 17/19, 18/8, 21/5, 62A/1, 82/1 and 82/4, 83/4, 84/9, 85/14) fragmented pieces of thin silver foil from plating of drinking horns were found (only in grave 62A/1 and grave 82/1 it was probably bronze leaf). The form of the drinking horn is difficult to reconstruct because the leaf was strongly fragmented and fragile. Basing on the few better preserved parts and imprints of embossed

plates in the soil a tentative reconstruction was made (grave 82/4a, 84/9a, 85/14a). The horns had naturally curved shape; they were probably made from cattle horns. For the best preserved one from grave 85/14 the original length of the horn was ca 19 cm and the diameter of the opening ca 7 cm. It was possible to establish approximate dimensions for the find from grave 17/19: the length was ca 12-13 cm and the diameter at the rim ca 4.5-5 cm¹⁶⁵. The silver leaf covered top and bottom parts of the horns, probably fixed with little nails (grave 17/19) or hooked over the rim

¹⁶³ Also with cases (cf. Nerman 1969, Pl. 40:420).

¹⁶⁴ The lack of finds of combs in the other parts of Scandinavia is explained by the unfavourable climatic conditions, e.g., on Bornholm they are manifested by the presence of very small rivets in the grave assemblages (Jørgensen, Nørgård Jørgensen 1997, p. 54-55).

¹⁶⁵ The horn, mentioned also below, from grave 1 in ex-Warnikam (Hillberg 2009, p. 315) had a similar diameter (5.7 cm).

(grave 85/14): in grave 85/14 it was a horizontal band ca 8 cm wide and in grave 17/19 more than 4.8 cm; similar solution was probably applied in grave 82/4 whereas the fitting from grave 84/9 tapered on one side towards the rim. In all three reconstructed horns also the bottom parts were covered with metal: the fittings had the shape of narrow bands with parallel edges and a curved band going towards the tip of the horn. All the leaves were embossed, but only in some cases it was possible to reproduce the major part of the decoration. In grave 11/1 there were used: a motif of two horizontal rows of the railing motif, under them a row or rosettes, then three railing rows and below them a band with a wafer motif. In horn from grave 17/19 in the upper part there were two rows of railing ornament separated by horizontal 'pseudo-corded' lines, below them a band with a wafer motif bordered with two pearl-like lines. In grave 18/8 there was a rosette motif, in grave 21/5 a rosette motif and railing ornament separated by double pearl-like lines, in grave 62A/1 a motif of a railing row bordered with horizontal lines, in grave 82/4, alternating rows of railing ornament, horizontal lines and triangles and rhombuses of triple lines. In grave 83/4 survived impressed bands of railing ornament and double pearl-like lines separated with horizontal lines. In grave 84/9 one may notice – in the rim part – pearl-like lines, below them a zone delimited by a curved band of pearl-like ornament and in it a motif of rosettes; at the end of the horn vertical and horizontal pearl-like lines. Finally in grave 85/14 four horizontal decorative zones separated by single rows of wedge-shaped stamps were arranged, at the top double pearl-like row, below two decorative zones of plaited pattern of bands filled with small pearl-like ornaments, between a zone with s-shaped bands filled with pearl-like ornament; the fitting at the end of the horn had five rows of double pearl-like lines and pairs of curved bands of pearl-like ornament.

Drinking horns so far have been almost completely unknown at the area of the Elbląg group. Only in Chojnowo, feature 14, it was possible to identify fittings of a drinking horn made of silver foil with embossed railing motif (Kowalski 1985, p. 229, Pl. II:28)¹⁶⁶. It is also probable that a fragment of a tubular, as it seems originally circular in shape bronze fitting with rivets from Łęczce, grave 25, considered to be a part of horse furniture (Dorr 1898, p. 11, Pl. III:18)

¹⁶⁶ MAHE collection. The tubular fitting considered by J. Kowalski as an element of a drinking horn (1985, p. 229, Pl. II:27) was impossible to find so its function could not have been verified. There is one thing which inspires doubt: the fitting is rather straight so it could not have been used to strengthen the rim of the horn.

was in fact a fitting of the rim of a drinking horn. It may be only guessed that drinking horns occurred at necropolises but were not noticed during excavations, probably due to very poor state of preservation of the metal foils. It is also possible that the discovered fragments of fittings of drinking horns were classified as decorations of headgear or scabbards which, as the find from Nowinka indicate, had similar embossed ornaments. One can also mention here the plates from Elbląg-Żytno, stray finds from 1928: these were five fragments of silver sheet of various sizes with a scale motif (Ehrlich 1920, p. 26, Fig. 9; 1932, Fig. 4) considered as possible fittings of a quiver (Ehrlich 1920, p. 26); the author of the publication excluded the possibility that these were fittings of a scabbard as they were convex and originally covered a rounded surface (Ehrlich 1920, p. 26). As there is no information about the use of bow and arrows by the Elbląg group population this interpretation may be rejected in favour of the more probable one that these were fittings of a drinking horn. Undetermined silver plates with embossed ornament were found also at the Sambian-Natangian area, e.g., in grave 1 from ex-Warnikam silver leaves were found, probably of a drinking horn, with embossed railing, rosette and pseudo-pearl-like ornaments, thus motifs analogous to those discovered at Nowinka (Tischler, Kemke 1902, p. 42, Pl. XIII:4; cf. Hillberg 2009, p. 316-317). Since, as it has been already mentioned, they are earlier than the finds from Nowinka it seems probable that the presence of fitted drinking horns in the Elbląg group is a result of the influences coming from north-east. Drinking horns were used as grave goods also at the area of Lithuania (as well as Latvia, see Bebre 1996), especially in the coastal area (Griciuvienė, Grižas, Buža 2005, p. 112)¹⁶⁷, e.g., Lazdininkiai, grave 73 (Bliujienė, Butkus 2002, p. 82, Fig. 1:1), however, they represent completely different forms (cf. Simniškytė 1998, p. 196-207, Figs. 16, 24, 38; Kazakievičius 1993, p. 125-136): in contrast to Lithuanian horns the finds from Nowinka lack fittings of the rims and terminals or chains to suspend the horn from the belt. It has to be admitted, however, that similar decorative motifs were used, e.g., embossed rosettes on the fittings of horns from Jaunsaules Siliņi and Aizkraukles Lejasbitēni in Latvia (Bebre 1996, p. 46; Simniškytė 1998, Fig. 24) or grave 226 from Jauneikiai in Semigallia (Griciuvienė, Grižas, Buža 2005, p. 112, Fig. 567); at the area of Lithuania the railing motifs were also popular (Bogucki 2000, p. 28, Table 1).

¹⁶⁷ Such distribution of horns is typical of the 7th-8th century, earlier on the distribution was more regular (Simniškytė 1998, Fig. 54-55).

Particularly interesting is the motif from the horn found in grave 85/14. It represents the animal Style II after B. Salin (1935), Variant B after M. Ørsnes (1966). Such motifs, although typical of Scandinavia and the Merovingian circle (excluding the centre of the Franks' state, cf. Høilund Nielsen 1998, p. 11, Figs. 6-9), have been also recorded in the Balt context: at the belt fittings from Lazdininkiai, grave 73 (Bliujienė, Butkus 2002, p. 88, Figs. 3:5, 4:5) or belt fittings from grave 55 in Tumiany (Heydeck 1895, Pl. VIII:2, 4; Kulakov 1989, p. 191, Fig. 40:1; Jakobson 2009, Pl. 39:d, h). As it does not differ in the technology of production from the fittings of other horns from the cemetery it should be assumed that it is a local product. With respect to western and southern Europe it was assumed that Style II became widespread after the arrival of the Lombards to Italy, i.e., after 568 A.D.; the debate on the subject is in progress (a real turning point was brought about by the discovery of the grave of Arnegundis in Saint-Denis dated to 565-570 A.D. where shoe fittings decorated in that style were found), but it is generally assumed that it could not have existed earlier than ca 575 A.D. (Roth 1998, p. 356-359; Birkmann 1995, p. 61-63). In Scandinavia, in turn, Style II, Variant B, functioned from Phase 1B2 on Bornholm, i.e., ca 570-600 A.D. (Jørgensen, Nørgård Jørgensen 1997, p. 24, 28) and, in terms of M. Ørsnes' system (1966), only in Phase 1, i.e., from ca 575 A.D. till the mid-7th century (Birkmann 1995, p. 64-65)¹⁶⁸. The late dating of the horn from grave 85/14 is indicated by the place the assemblage occupies in the relative chronology of the ne-

ropolis in Nowinka: it comes from Phase 3 of the cemetery, which concerns almost all the other assemblages with horns (the exceptions are: grave 62A, not included in seriation and grave 11, which belongs to the final stage of Phase 2). Thus the horn from grave 62A/1 has a similar dating.

It is not entirely clear whether the horns were indicators of gender. Although they were found in assemblages with weapons (grave 17, 21, 84, 85) and the graves were determined as male ones also on the basis of anthropological analyses (grave 17, 62A), in some cases there are no data to determine the gender (grave 11, 18, 82) and in one case the anthropological analysis determined the grave as a female one (grave 83). However, it should be generally assumed that drinking horns were rather elements typical of assemblages from male burials. Similar conclusions were drawn on the basis of finds from the area of Lithuania (Griciuvienė, Grižas, Buža 2005, p. 112) or Latvia although exceptions to the rule are known (Bebre 1996, p. 43-44).

In seven cases horns were lying near flasks, in human graves accompanied by horse burials and only in two cases in graves without a horse. Drinking horns, all ornamented, occurred five times with undecorated flasks and twice with decorated flasks (grave 18, 120). Co-occurrence of flasks and drinking horns is not accidental, especially as it happens almost exclusively in burials with rich grave goods deposited over horses wearing decorative bridles: flasks and horns may have been sets for ceremonial drinking and making ritual offerings.

III.5.2. Pottery (Jerzy Okulicz-Kozaryn, Mirosław Pietrzak)

The pottery typical of the sepulchral purposes from the Migration Period in the West Balt circle are small, slim vessels with tall, narrow necks and rounded bellies, called flask-shaped vessels or flasks. Besides the Elbląg Upland, the areas where they were found include Sambia, lower basin of the Pregolya River and the Prussian Lowland (Tischler, Kemke 1902, Pl. XXIX, XXX; Nowakowski 1996, p. 61). At the cemetery in Nowinka a series of forty three ceramic vessels of that type or their fragments were found. These are forms of small capacity used for storing liquids and drinking. It is particularly important that Nowinka is the first place where they were recorded with the complete grave furnishing contexts. Earlier on only

a series of several graves with flasks from the Elbląg group cemetery at Łęcze was published with the main artefacts from the assemblages (Dorr 1898), but publications of flasks with the finds which co-occurred with them in well-dated assemblages are very few. Reports from major pre-war excavations at a number of sites of the Elbląg group indicate that such vessels occurred at these necropolises in large numbers: Elbląg-Pole Nowomiejskie, Elbląg-Żytno and Elbląg, Moniuszki St (Dorr 1914, p. 15-17; Ehrlich 1922; 1937b, p. 271-274) and at many Sambian-Natangian sites and those from the Pregola River drainage basin (e.g., Dorr 1914, p. 17-19; Gaerte 1929, Figs. 26:a, 205:d-f; Heym 1938; Kleemann 1956b, Pl. XXXI; Kulakov 1990, p. 34-35, Fig. 19, Pl. IX-XII; Nowakowski 1996, p. 61; Kowalski 2000, p. 225). Several ten flasks from various cemeteries have been saved from war destruction (especially from the Sambian areas from the MWMO collection) but usually they

¹⁶⁸ Although K. Høilund Nielsen accepted the possibility that Style II may have appeared in Scandinavia even before the mid-6th century (1998, p. 10), yet she based this opinion on earlier claims made by A. Nørgård Jørgensen (1992).

are not accompanied by descriptions of burials or of the dating artefacts which accompanied them.

Flasks from Nowinka make up a very uniform group of vessels of one type with strikingly similar morphological features, technology and style of decoration. The belly bends are low, at ca 0.25-0.3 of the height or lower. They are usually gently biconical (grave 8/2, 11/2, 21/6, 26/2, 41/5, 48/5, 55/4, 83/6, 84/10, 85/15, 103/1, 120/11-13, 149/1, 150/1, 151/1, stray find SF/20) or, more rarely, rounded (grave 18/9, 27/1, 62A/2, 65/3, 77/2, 85/16, 121/3, stray find SF/19) but these differences are very slight and can not be used as a basis for classification into variants or sub-forms. Also the slight differences in the forms of necks: almost cylindrical or slightly concave and of rims: with slightly out-turned edges or without them, are not sufficient for making typological distinctions. The perceptible similarities between some of the flasks in their profiles are useful for identifying respective potters' workshops.

A comparison of sizes of twenty completely reconstructed flasks and of their volumes allowed to divide them into three groups according to the size and proportions (Table 3). Group I comprised exceptionally small items, 10-14 cm high and with capacities of ca 208-320 cm³, Group II, the majority of other flasks, ca 15-17 cm high and with capacities of ca 360-710 cm³, and Group III consists of only one very large, characteristic flask with a gentle profile found in grave 62A/2. It is 23 cm high and has a capacity of 2486 cm³; the flask from grave 77/2, of which only the bottom part was preserved, probably had a similar volume. The third group thus differs the most from the rest.

As regards their technological features the flasks from Nowinka are a homogenous group of products, which may suggest that the potter's clay was produced according to one recipe, using similar technology of hand-making vessels and of finishing their surface as well as firing them in a similar kiln. These observations are introductory, so far not supported by specialist analyses.

Grave no	Maximum height (cm)	Rim diameter (cm)	Belly diameter (cm)	Base diameter (cm)	Capacity (cm ³)
Group I					
48/5	11.5	5.0	9.4	5.0	260
21/6	12.1	6.3	9.1	4.8	328
55/4	12.3	4.5	7.8	3.6	209
85/15	13.2	5.7	9.7	5.3	305
120/12	14.4	5.8	11.3	6.0	321
Group II					
82/5	14.8 (reconstructed)	5.8	8.8	?	358
11/2	15.5	6.1	12.0	5.7	539
149/1	15.0	6.1	11.0	5.0	524
150/1	14.9	5.5	10.5	5.4	497
41/5	17.0	7.1	11.3	5.8	573
26/2	16.0	5.7	11.0	5.9	588
27/1	15.8	5.4	10.8	4.5	598
8/2	15.8	5.5	10.0	3.8	572
65/3	16.6	6.6	11.7	5.0	766
120/13	16.4	5.9	11.3	6.3	514
83/6	17.2	5.3	11.6	5.7	707
151/1	16.6	6.2	11.4	6.0	627
103/1	17.0	6.5	10.8	6.0	475
120/11	17.4	5.2	11.5	5.5	714
Group III					
62A/2	24.0	5.8	15.3	7.8	2486

Table 3. Dimensions of the flasks from the cemetery at Nowinka.

Taking into account forms and working the surfaces of the vessels, two types may be distinguished. The first type is composed of eleven undecorated vessels, less carefully modelled than the other ones, usually asymmetrical and with thicker walls, polished but not glossy, with visible on the surface large and medium grains of crushed stone (grave 21/6, 27/1, 48/5, 55/4-5, 77/2, 82/5, 84/10, 85/15-16, 112/1, and probably also fragments from grave 1/1). The second type consists of twenty six flasks more carefully shaped, usually decorated, including thirteen complete ones (grave 8/2 – undecorated, 11/2, 26/2, 41/5, 62A/2 – undecorated, 65/3 – undecorated, 83/6, 120/11-13, 149/2, 150/1, 151/1) and four partly reconstructed (grave 54/1, 61/1, 112/1 – undecorated, 121/3) as well as nine cases of fragments included in this group due to the kind of surface or ornament (grave 18/9, 107/1, 118/1, 131/3¹⁶⁹, 134/1, 136/1, 158/1, stray find SF/19-20). All the vessels of the second type have carefully polished and glossy surface, reddish or brown (of various hues – from dark brown to yellowish). On their surfaces fine grains of crushed stone whitish or pink in colour are visible as well as fine sand. The firing is so strong that the sherds do not crumble or flake.

The supposed ritual function of the flasks (see Chapter III.7) must have required specific ornaments. Not all flasks found at Nowinka were decorated: thirteen of them had plain walls. The relative chronology, however, does not allow to state whether the presence of the ornament had a dating value¹⁷⁰: the decorated flasks were found in graves from the Phase 2 (grave 11, 26) and Phase 3 (grave 83, 120) of the necropolis whereas the undecorated ones, in graves from Phase 3 (grave 21, 82, 85). Interestingly, the flasks from the cemetery at Nowinka have a late chronology. The flasks were mostly decorated in a specific, quite uniform style, which differs them from decorated flasks known from earlier burials of the West Balt circle from Phases D₂, E₁ and E_{2a} (Okulicz-Kozaryn, Pietrzak 2009, Pl. XIII-XIV), but have many analogies from horizons E_{2b}-E₃. This style was confirmed for cemeteries from the Elbląg group (Dorr 1898, Pl. I:1-10) and for the Dollkeim-Kovrovo culture (Nowakowski 1996, Pl. 18, 107). Decorated flasks occurred exceptionally in the Olsztyn group: Kielary, grave 44 (Voigtmann files) and grave 74 (Jakobson 2009, Pl. 161:f)¹⁷¹. Similar flasks were found even in Gotland

(Nerman 1969, Pl. 88:756, 150:1290-1291) and different flasks but of similar capacity, on Bornholm (Vedel 1872, Pl. 6:12; 1897, Figs. 48, 86). No such vessels were found in grave assemblages from the Prudziszki Phase (i.e., the Migration Period) of the Sudovian culture in Suwałki region or in any cultural groups from the area of Lithuania.

Only few flasks were decorated in a different way than the above-described ones. The flasks from earlier phases: E₁-E_{2a}, from Sambian cemeteries (Tischler, Kemke 1902; Nowakowski 1996, p. 20, Pl. 17, 18:1) were mainly decorated with various raised bands, bosses and small handles, pierced and complete, together with horizontally engraved lines or bands of angular patterns typical of the Dollkeim-Kovrovo pottery already in the Roman Period. Similar types of decoration are found at the few known flasks from the early phase of the Elbląg group, e.g., from Pasłek (Ehrlich 1923, p. 196-200). In later phases, both in Sambia and in the Elbląg group, such motifs and their composition do not occur; the same is true of the vessels from Nowinka, except for sporadically used horizontally engraved or impressed lines, which, however, form different arrangements. The most frequent are rows of punctures made with a tool with a rectangular tip which, impressed at an angle, yielded an attractive pattern of wedges or triangles resembling cross-stitch embroidery (grave 11/2, 61/1, 103/1, 120/12-13, 136/1, 149/1, 150/1, 151/1, 158/1 and stray find SF/20). A variant of this motif are rows of small oval-shaped dimples (grave 18/9, 41/5, stray find SF/19) and another one – rows of short oblique incisions on flask from grave 120/11. All the described patterns appear usually in double rows – horizontal at belly bends and under the rim and vertical in the bottom and top part of the vessel. In four cases (grave 61/1, 103/1, 120/13, stray find SF/20) there are only horizontal rows and in three (grave 18/9, 41/5, 120/11), horizontal combined with vertical rows. The most eye-catching are compositions made of rectangular (grave 150/1, 151/1), triangular (grave 11/2, 149/1) and trident-shaped (grave 120/12) zones linked with horizontal and vertical rows. Most of the flasks decorated with 'stitch' motifs are similar both as regards the way of making and composition of ornaments as well as in the texture of the surface and details of the shape of the walls; all of them were probably made in the same workshop. This may also concern some of the undecorated flasks (grave 27/1, 48/5, 55/4-5, 62A/2, 65/3).

Other unique motifs and compositions of the ornament were found at the other flasks, which also differed from the described 'workshop group' in details of the shape of their walls. On flask from grave

¹⁶⁹ In this case the vessel may be also classified as a bowl.

¹⁷⁰ Different conclusions were drawn from a so far introductory chronological analysis of the assemblages with flasks (Okulicz-Kozaryn, Pietrzak 2009).

¹⁷¹ Despite the similarity of the vessels from grave 44 and 74 from Kielary it is not the same item (the vessel from grave 74 is more compact).

83/6 at the belly bend and under the rim there were carelessly drawn horizontal lines separated by rows of small punctures made with a sharp tool sometimes held vertically towards the walls but in other rows obliquely downwards which yielded rows of round dimples and elongated 'commas'. On the preserved bottom part of the flask from grave 54/1 at the belly bend there were two horizontal rows of relatively large dimples impressed with a tool with a rounded end. Flask from grave 26/2 was decorated in the central part of the belly with five rows of imprints of a five-tooth comb. On the preserved part of the flask from grave 121/3 there are evenly spaced from the bottom to the base of the neck four horizontal bands composed of four or five lines each; the lines were impressed with a tool with a rounded tip; a fragment of a similar band is visible also in the partly preserved rim part.

Of the forty one flasks discovered in thirty two graves (two flasks are stray finds) in twenty five cases there were single flasks, in six graves – two flasks, and in one case there were four flasks. Out of these, in twenty six human graves accompanied by horse burials twenty nine flasks were recorded whereas in six human graves without horses – seven flasks (as compared to twenty human burials without flasks but with horses), which does not allow to find any regularity in this respect.

It is, however, interesting to note that together with flasks there sometimes appeared drinking horns. Drinking horns occurred in nine graves and out of these only once without a flask (grave 17); the preserved fragments of horns were lying near flasks in the human graves with horses and only in two cases without a horse. Co-occurrence of flasks and drinking horns is certainly not accidental, especially as it happens almost exclusively in burials with rich grave goods deposited over horses wearing decorative headgear. Flasks and drinking horns may have been sets used for ceremonial drinking and making ritual offerings. According to anthropological determinations, not entirely certain (cremation remains were very poorly preserved), in seven cases horses and flasks accompanied women's burials, including one case when also a drinking horn was discovered (grave 83).

Besides flasks also some vessels of other forms were found: bowls (grave 26/1, 127/1, 151/2, stray find SF/18) and a barrel-shaped vessel (grave 148/1). Undecorated bowls were dark brown in colour, not completely polished surfaces and curved profiles with slightly incurved edges (grave 151/2, stray find SF/18). Bowl from grave 26/1 had a different shape: its upper part was cylindrical. The vessel was carefully made: the edge is horizontal, on the outside

marked out by a groove; a similar groove is on the belly bend; the surface is polished. On the belly there is an ornament of impressed wedge-shaped tool: two horizontal bands in grooves on the belly and under the edge and five vertical bands in the upper and central part of the vessel. Also the bowl from grave 127/1 was carefully polished on the surface and the 'stitch' pattern was used: approximately triangular dimples impressed at the belly bend and under the edge to create two horizontal rows, between them and below the belly bend double or triple vertical rows making up rectangular zones. Thus these vessels are similarly diverse in quality and execution style as the flasks.

The group of carefully made vessels should also comprise the barrel-shaped vessel (grave 148/1). It is particularly well executed, has thinner walls, better polished light brown surface and, as the only one in Nowinka, a relief decoration. Under the edge there is a relatively low, horizontal raised band with oblique incisions and the whole belly from the bottom to the border is decorated with evenly spaced four horizontal bands each composed of five engraved lines; a similar band is also above the border, on the low cylindrical neck. Additionally on the belly there are eight evenly spaced vertical rows of imprints made with a tool with an oval-shaped tip. The shape of the vessel and the ornament were probably meant to imitate a barrel with marked out edges of the staves and hoops of bands of phloem. These motifs resemble very much the decoration of flask from grave 121/3.

It should be also mentioned that these vessels represent similar sizes as flasks from Group I and II: the bowls (grave 26/1, 127/1, 151/2) were ca 11.5 cm high and had capacities of 550-640 cm³ while the barrel-shaped vessel (grave 148/1) was 13.8 cm high and had the capacity of 639 cm³. Taking into account their capacity they could have had the same function during funeral rites as the flasks and sometimes (grave 26) made together with flasks sets for ceremonial drinking of sacred drinks.

Moreover, at the cemetery several hundred fragments of vessels were found, mainly in secondary context, both in features and in the destruction layer as well as in the fillings of burial pits. This pottery came from various periods of the site: the Neolithic (feature 68/1), modern times (in a modern feature – feature 62/1 or in secondary context – grave 55/6) and also small undetermined fragments. The most numerous fragments came from the Early Iron Age. They were found in a secondary contexts – in features from Migration Period (grave 41/6, 45/5, 51/1?, 55/6, 57/1, 60/9, 67/1, 138/1) or later (feature 62/1) but also in the features from the Early Iron Age (feature 14/1, 64A/1, 74/1, 81/1-3, 88/1, 90/1,

109/1, 157/1-5), connected with the West Balt Barrow culture. On the contrary, the fragments from Migration Period were not numerous among the stray finds, but

III.6. Others (Bartosz Kontny)

In grave 102/2 a fragment of a stone grinder or whetstone, burnt and crumbled, was found. It was accompanied by a fragment of an amber ornament with traces of polishing, which may suggest that the stone object was used for working the amber. It has basically no analogies in the materials from the Elbląg group or from the West Balt circle. A spherical stone without other grave goods was found only in Łęcze, grave 6 (Dorr

judging from the texture, admixture and colour of the surfaces of the sherds it is possible to say that these were fragments of flasks (stray find SF/21).

III.7. Burial rite (Bartosz Kontny, Jerzy Okulicz-Kozaryn, Mirosław Pietrzak)

The human graves were located at relatively small depths, their outlines were often visible already at the depth of more than a dozen centimetres from the surface, which was probably due to the fact that the field had been cultivated for a long time (and the stones were cleared off the surface) and that the upper layer of the topsoil was removed by a bulldozer, as it is usually done before the exploitation of a gravel-pit. For that reason most of the fillings of burial pits were disturbed in their upper parts or completely destroyed and deprived of finds; as a result their original outlines can not be reproduced, although it should be noted that some burial pits were oval-shaped, rounded, similar to rectangles or irregular (only in the case of well-preserved burials one may notice surely that the outlines were irregular – grave 17, 21, rectangular – grave 60 and oval-shaped – grave 84). Also some of the horse burials, deposited under human graves, were destroyed. The pavements over the graves were thus removed. Above the graves only single stones were found, probably remains of destroyed stone pavements (grave 26, 33, 37, 38, 48, 57?, 62A, 78, 83, 88, 105?, 110, 127, 147, 148, 149?, 150 and 151). Also the stone cist around grave 60 can be treated as a remainder of a pavement. Only the pavement from grave 21 was better preserved. However in the majority of the features no remains of pavement were found. In turn, some features had the pavement, but it was not connected with graves (feature 22, 39, 112B and 161). Their function is difficult to determine; only in the case of feature 22 it is possible to suppose that it was a hearth.

Similar graves with pavements are quite typical of the Elbląg group where often, although not always, they appeared together with horse burials. Pavements sometimes consisted of several layers. They were circular, elliptic or irregular in shape (cf.,

1898, p. 9). A possible analogy may be represented by the finds from grave 106 in Olsztyn group cemetery at Tumiany, where pebbles and amber polished on one side were discovered (Jakobson 2009, p. 55, Pl. 63:106c-d; Bitner-Wróblewska 2008a, Pl. XIX). It is also possible that these were objects of earlier origin, from the Early Iron Age which were deposited in graves from the Migration Period in a secondary context.

e.g., Dorr 1898, p. 6-7, Fig. 3; Ziemińska-Odojowa 1991, p. 109). The lack of pavements was explained by their destruction by ploughing (Dorr 1898, p. 7; 1914, p. 3), which seems justified, but most probably not all burials were covered with pavements (they were not found at all in, e.g., Chojnowo, cf. Neugebauer 1934, p. 323, although some of the stones recorded during the post-war excavations may have been related to graves, cf. Kowalski 1985, p. 226, Fig. IV; 1987, p. 281, 284). Unfortunately, so far there are no grounds to determine for certain whether the use of pavement has any chronological value.

One of the local phenomena are the so-called horse graves (the animals were probably a special element of grave goods from human burials): there were fifty of them, including four double ones (altogether fifty four horses)¹⁷². This makes up a significant assemblage, so far the largest at the area of the Elbląg group¹⁷³ and one of the largest in the Migration Period

¹⁷² Grave no. 8, 17, 18, 20, 21, 26, 34, 35, 44, 45, 47, 48, 52, 55, 60, 61, 62A, 62B, 65, 70 (70-72), 77, 78, 80, 82, 83, 84, 87, 89, 98, 99, 102, 103, 104, 112, 114, 117, 118, 119, 120, 121, 127, 131, 137, 142, 147, 148, 149, 151, 155 and 160. Comparing to the published data (Kontny, Okulicz-Kozaryn, Pietrzak 2009) a few refinements and corrections has been made.

¹⁷³ At the burial ground in Łęcze thirteen horse graves were discovered (Dorr 1898), in Chojnowo four horse burials were found during pre-war excavations (Neugebauer 1934, p. 321-322) and three more after the war (Kowalski 1985, p. 227-228; 1987, p. 281, 284). From Elbląg-Żytno excavated by R. Dorr in 1907-1912 six graves are known (Dorr 1914, p. 6-7, 10-15), and five more from investigations conducted by various researchers in 1916-18 (Ehrlich 1920, p. 184). It is known, however, that the excavations were continued there from 1928 (Ehrlich 1932, p. 404), so the final number was probably larger. The burial ground Elbląg, Moniuszki St yielded ten horse burials (Ehrlich 1937a, p. 80-84; 1937b, p. 268), but also there more horse burials were recorded during the excavations conducted in the eve of the 2nd World War (Ehrlich 1941, p. 96, Fig. 32:3-4). One should also mention grave 21,

Europe¹⁷⁴. Horses were inhumated in elongated pits, usually only slightly larger than the animals (in grave 62A, 62B and 87 the pits were so narrow that horses could barely fit in)¹⁷⁵. In the same pit, between several and several ten centimeters above the horse's back, human cremation pit burials were located, similarly to what was found for the same period at the Sambian-Natangian area (e.g. Nowakowski 2008, p. 199). The outlines of horse graves were usually hardly visible, as pits were filled with clear sand. After covering the pit with a horse grave, a smaller circular or elongated pit was dug in its centre with its bottom reaching a horse's back or hindquarters. In particular cases one may assume that cremation was finished before burying the horse and the remains of the funeral pyre were placed close to the burial pit. This is suggested by the presence of burnt soil with charcoals at the level of the skeleton (grave 117) or underneath the horse's skull (grave 118). Over the horse's back the remains of cremation and grave goods were placed. It seems possible that also clothes were located there as remains of fabric were found in a few cases (grave 17, 21, 26, 85). Women were given personal ornaments and men weapons (saxes and heads of shafted weapons) as well as flasks or drinking horns. Such grave goods, excluding clay flasks which may be treated as substitutes

of glass beakers, together with ornamental helmets and shields, are also typical of richly equipped graves from Bornholm, Gotland, central Sweden and Norway as well as the Merovingian area. The horizon of such opulent graves from the late 6th century and the early 7th century could be a proof of existence of warrior elites in unstable times of constant wars (see Oexle 1992; Høilund Nielsen 2003; Nørgård Jørgensen 1999). It seems that such elites, honoured in the burial rite, existed also in the Elbląg group and at the Sambian-Natangian area, naturally having their own, local traits.

Although human corpses were burnt, the grave goods generally were not burnt: traces of high temperature are visible only sporadically on grave goods (grave 18/2-3, 18/6; 55/3; 84/3-5), besides remains of pyre are generally traced in the filling (except for graves 46 and 90). This was probably the rule in the Elbląg group as traces of melting were not found on bronze items from the other cemeteries, either¹⁷⁶.

It was noted that one-edged swords were usually arranged along the N-S axis, sometimes slightly deviating from it, with the point towards S (grave 17, 21, 84, 85, 105, 120) – thus they had the same orientation as the horse skeleton and the burial pit; only in grave 60 the sword was directed with foible to N. The heads of shafted weapons, however, were directed with their tips to S (grave 21, 60, 85) and to N (grave 17, 85). The flasks, usually standing, and the drinking horns lying next to them, decorated with silver leaf, were found in men's graves with weapons often near the sword and heads of shafted weapons (grave 17, 21, 84, 85), outside of the remains of cremation; more rarely in richly equipped women's graves (grave 83). In graves without horse burials and weapons, the flasks were placed in the centre of cremation remains; in such burials a drinking horn was found next to the flasks only once (grave 11). Flasks and drinking horns were probably sets with which the deceased should make ceremonial offerings to the gods and heroic ancestors during his journey to the land of the dead.

There are several mentions in the written sources of the specific features of the rites of *Aestii*. The earliest one comes from Wulfstan's account from the late 9th century about the same area and community which had been represented by the Elbląg group several generations after the moment when the necropolis at Nowinka was abandoned. The Anglo-Saxon translation of Orosius' *Historia adversum paganos* made by Alfred the Great, in its smaller part called *Chorography*, contains an account of a traveller and sailor

discovered at the burial ground in Elbląg-Pole Nowomiejskie (Neugebauer 1937, p. 55, Fig. 10:3), probably connected with the Elbląg group. The burial ground at Podgórze yielded four horse graves (Peiser 1919, p. 339, 342, 350), whereas Pasłek yielded three (Ehrlich 1923, p. 199). A relatively small number of horse burials at the above mentioned burial grounds may be explained only to a certain extent by the improper research methods, i.e., by the use by the German researchers of probes made of steel rods, which were pushed into the ground to locate a stone pavement and the area was explored only if it was spotted (Dorr 1914, p. 2). This method was abandoned by B. Ehrlich when it turned out that not all graves were covered with pavements. As a result, from 1912 whole areas under investigation were excavated (Dorr 1914, p. 4; Ehrlich 1920, p. 179). Doubts as to the actual number of graves can be expressed in that way only in the case of investigations at the burial ground in Łęcze and the first excavation seasons in Elbląg-Żytno. The excavations at Młoteczno yielded five horse graves (Ziemlińska-Odojowa 1991, p. 105).

¹⁷⁴ The custom of burying the dead with a horse spread more widely in these times in Balt milieu, namely in Sambian Peninsula (Kulakov 1990, p. 20; Skvortsov 2009), cemeteries from the north-east borders of contemporary Poland, connected with the Sambian-Natangian area like Równina Dolna or Sątoczno (Lasota-Moskalewska, Perlikowska-Puszkarska 1994), in the Sudovian culture (Jaskanis 1966; 1968a), in the Olsztyn group (Baranowski 1996) and also in Lithuania but to a lesser extent (Bliujienė, Butkus 2009; Bliujienė, Steponaitis 2009).

¹⁷⁵ Only in grave 142 there were found cremated bones of an animal (horse?) but the character and dating of the feature is not sure.

¹⁷⁶ The only exception known to us is the fibula from a cemetery in Elbląg, Moniuszki St (collection of MAHE, inv. no ME 35/66).

Wulfstan from his journey to Truso (Labuda 1961; see also Bately 2007, p. 48-50). According to information given there in Chapters 20-21, Wulfstan reached Witland, a land located to the east of the mouth of the Vistula River, inhabited by the *Aestii*; clearly the area of the Elbląg Upland is meant. Wulfstan met the local people and described their customs noticing that the land of the *Aestii* is very large with many towns¹⁷⁷, and in each town there is a king¹⁷⁸; he mentioned that there is a lot of honey and gull there and that the king and the rich drink mare's milk while the poor and the slaves drink mead. Moreover the *Aestii* do not brew any beer, but there is a lot of honey. Most important here is their custom: when a man dies he lies unburnt in his home visited by his family and friend for a month or even two; during all that time when the deceased is at home they drink and play until the day in which they will burn him¹⁷⁹. Besides this account, other chroniclers, surprised by the Old Prussians' customs and their favourite drink of mare's milk, give similar information: Adam of Bremen in *Gesta Hammaburgensis Ecclesiae Pontificum* IV, 18 and IV, schol. 134 (129)¹⁸⁰ mentions Goths¹⁸¹ and Sambians drinking mare's milk; also in a late, i.e., a 14th century, text, Peter of Duisburg in *Chronicon terrae Prussiae* III, 5 contains the information that the Old Prussians drink ordinary water and a drink made of honey, that is, mead, and mare's milk. What seems to be very important, according to his description, they don't drink the milk until it is consecrated and when they received visitors they did not believe they were hospitable enough unless the guests have been drunk silly¹⁸².

All the above-mentioned chroniclers' accounts about the feasting customs and drinks in daily life and rites of the *Aestii*-Old Prussians indicate that the strangers considered them as utterly exotic. There is a lot of other information about drinks made of fermented honey but 'mare's milk' was not known anywhere else in that part of Europe. The assumption that as a result of some contacts with the steppe peoples the locals learnt about and adopted kumys is probable but difficult to prove. It is, however, doubtless that the *Aestii* had a developed system of beliefs connected with the cult of the horse, which is discussed in the

later part of this chapter. As the horse as a cult animal for the Old Prussians, also the drink of mare's milk, probably cleverly fermented and hence not without alcohol, may have been considered as sacred. The clay flasks discovered in Nowinka and similar vessels from other cemeteries of the Elbląg group and Sambian area were most probably used to store and drink the revered and sacred in the Old Prussians' customs drink from the mare's milk – hence the vessels were carefully made and decorated. Probably the drinking horns, which usually appeared together with the flasks, had a similar purpose.

One of the features of the burial rites from Nowinka is the presence of lumps of unworked amber placed in the layer of burning (see Chapter III.1.4.2.2). This phenomenon is known also from other Elbląg group necropolises (Dorr 1898, p. 24). It can not be excluded that some (although, bearing in mind the scope of the phenomenon, not all) of the lumps were found in a secondary context and got into the ground in the Early Iron Age. It is also possible that amber was used as incense during the burial rites; use of amber as incense is suggested by the Ancient sources with respect to the Germans¹⁸³ or ancient India¹⁸⁴ (cf. Kolendo 1998, p. 145, 152, 154).

One of the richest and simultaneously most peculiar features is grave 85. Its outline was not clear as there were no traces of burning or burnt bones. Dark, organic patches appeared only in the vicinity of the grave goods. The grave goods formed two concentrations: in E part with male (i.a., weapons) and in N part with female (i.a., personal ornaments) archaeological determinants of sex. A lot of organics survived so lack of bones cannot be accounted for by bad state of preservation. Most probably this was a double cenotaph. The female artefacts consisted of a circular bulk of rotten wood, remnants of textiles and leather; they were surrounded by a leather belt with bronze fittings: rectangular plates, a buckle and a belt-end fitting. Inside it a bronze bracelet and a brooch were found, originally probably placed in a textile bundle; the remaining objects (a comb, a knife, rings and a glass bead) were found nearby. Among materials from the Elbląg group a belt rolled in a similar way was proved for grave 17 at the Nowinka cemetery but it was found also in grave 28 at Łęcze, which is suggested by the arrangement of belt fittings (Dorr 1898, p. 21, Pl. II:1); similarly arranged belt fittings and a ladder brooch were also discovered in grave

¹⁷⁷ The term *byrig* rather concerning hillforts.

¹⁷⁸ The term *cyninge* rather means a leader or a chieftain.

¹⁷⁹ After G. Labuda (1961, p. 85-86); Latin text after Ch. Hartknoch (1679, p. 80).

¹⁸⁰ After B. Schmeidler 1917, p. 253.

¹⁸¹ Probably Old Prussians living on the lower Vistula River were meant here.

¹⁸² After S. Wyszomirski (2005, p. 46).

¹⁸³ The record of Pytheas of Massilia quoted by Pliny the Elder, *Naturalis Historia* XXXVII, 35.

¹⁸⁴ Pliny the Elder, *Naturalis Historia* XXXVII, 36.

15 from the Olsztyn group cemetery at Kielary (La Baume 1939, p. 285; Pl. 76:2).

Also graves 78, 120 and 151 contained double burials. Interestingly, they were found together with horse skeletons: single (grave 78 and 151) or double (grave 120). Separate parts of pits were dedicated to particular burials in grave 78 (an adult in the bigger pit and a child in the smaller one) and grave 151 (two pits arranged at right angles: in the bigger one, the bones of an adult – probably of a woman together with a child, and in the smaller one – bones of a child). Grave 120 was disturbed in its upper part so the possible outline could not be recorded (bones of a woman and probably of a man were found there).

One should also mention grave 6, probably with two (according to anthropological analysis) or even more (taking into account four concentrations of burnt soil in the corners of the pit) buried people. The burial contained only human bones.

At the cemetery in Nowinka, besides the predominating graves with single horses, also burial pits with pairs of horses (graves 55, 62A, 120 and 131) were found. Double horse burials were found in the Elbląg group only in rare cases. Besides the graves from Nowinka one can mention only grave 15 from Chojnowo (Neugebauer 1934, p. 322, 324) and lately also grave 3 from Komorowo Żuławskie (Bogucki 2009, p. 31). The anthropological analyses of human bones from graves below which horses were deposited indicate that pairs of horses accompanied pairs of humans (grave 55 – woman and child, grave 120 – woman and man) or single people (grave 62A and grave 131 – in both cases one adult?). Although one can attribute the last-mentioned result to imprecise determination based on burnt bones (cf. Godłowski 1974), the assemblage is too small to state if in the burial rites there existed a relationship: a pair of people – a pair of horses deposited in the grave.

Horse graves were placed under cremation burials of warriors, i.e., graves with weapons (grave 21 and 60), but also under ones anthropologically determined as female graves (grave 45, 18?, 48?, 63? and 149?), graves of a woman and a child (grave 55 and 151?), of an adult and a child (grave 78, 82, 89 and 102), or even of only one child (grave 70, 80, 104 and 121). The appearance of horse graves in combination with graves of people of different age and gender were noticed by R. Dorr, who made inferences on the basis of the excavations at the burial ground in Łęczę (Dorr 1898, p. 7-8)¹⁸⁵. Interestingly, burials of

women with horses seemed to be very rare in the Migration Period: it is said that only men accompanied horses (Alseikaitė-Gimbutienė 1946, p. 137; Jaskanis 1966, p. 30-31; Bertašius 2002; Witte 2006, p. 130; Bliujienė, Butkus 2009, p. 157-158), although in the Frankish area burials of women accompanied by horses occurred sporadically (Schubert 1999, p. 167).

In Nowinka horse graves not connected with human burials appeared only exceptionally (grave 47, 119 and 160). In these cases one may conjecture that the human graves were destroyed by ploughing, which is indicated by the traces of burning in the upper parts of the investigated features. Only in the case of grave 20 it is possible that the horse alone was deposited in the pit. Such cases were not, in the principle, found in the Elbląg group: the only known example comes from grave 15 in Łęczę where a horse burial under a pavement without traces of a human cremation burial was found. Less evident is the discovery of two horses with no connection to human burials found in Elbląg-Żytno (Dorr 1914, p. 6), due to the possibility that the human graves may have been destroyed by ploughing. At the burial ground in Nowinka complete skeletons were found¹⁸⁶ and the presence of incomplete skeletons can be reliably explained by the worse preservation of the bones. Grave 120 in which a pair of horses was buried is an exception. In case of one of them the head, cervical vertebrae, and some of fore-leg bones were missing. It is certainly impossible to explain that by the state of preservation of the feature as the skeleton was located next to the edge of the burial pit: evidently the horse was deposited in the burial after decapitation. Depositing parts of the skeleton was confirmed in the Elbląg group by the discovery from grave 106 in Elbląg-Żytno (Ehrlich 1920, p. 187). The closest analogy from the Balt area for the discovery from Nowinka is in this case grave XV from Tumiany (Olsztyn group) where both buried horses were deprived of heads (Baranowski 1996, p. 70, Fig. 39).

Horse graves from Nowinka were N-S orientated (with the head directed towards S), with small variations: NNW-SSE (grave 151) with the head towards SSE, NW-SE with the head towards SE (grave 22A, 78, 84, 87, 89, 98, 102, 112, 120 and 150) or NE-SW with the head towards SW (grave 62B). Two features: grave 45, oriented on the N-S axis, but with the head directed towards N and grave 44, oriented on the W-E axis, with the head towards E, are exceptions to this rule. The unique graves did not differ from the other ones in the arrangement of horses' bodies,

¹⁸⁵ A general remark to this effect was made in reference to the Balt areas by J. Jaskanis (1966, p. 55-65).

¹⁸⁶ Partial burials were found at other Balt areas: in the Sudovian culture, in Sambian Peninsula and Lithuania (Bitner-Wróblewska 2007, p. 106 with further literature).

their sizes, or equipment. The only departure from the rule there was the fact that the horse from grave 44 did not have the bit, which was the standard element of the horse equipment. It was a young individual, aged nine-twelve months, yet in the case of another young individual, about one year old, from grave 60, the bit was in the muzzle. The orientation of horse graves from Nowinka follows the customs of the Balt peoples. Horse skeletons in the Elbląg group were arranged on the N-S axis with the heads towards S, with small deviations from this axis. This was confirmed by the investigations conducted at the cemetery in Elbląg-Żyto (Ehrlich 1920, p. 181, 184-186), Elbląg, Moniuszki St (Ehrlich 1937b, p. 274), Podgórze (Peiser 1919, p. 342) or Chojnowo (Kowalski 1987, p. 281, 284). The only exception is the necropolis at Młoteczno where in three cases horse heads were directed towards N, and only in one, towards S (Ziemlińska-Odojowa 1991, p. 109)¹⁸⁷. Horse burials in the Olsztyn group as well as in the Bogaczewo and Sudovian cultures or in Sambian-Natangian area were also orientated along the N-S axis, sometimes slightly deviating towards E or W, often with the head oriented towards S¹⁸⁸ (cf. Jaskanis 1966, p. 53; 1968a, p. 96-97; Baranowski 1996, p. 70-71; Kulakov 1990, p. 22; Lasota-Moskalewska, Perlikowska-Puszkarska 1994, p. 195; Piątkowska-Małecka 2000, p. 188; Gręzak 2007, p. 362), although in eastern areas (Lithuania) departures from this rule were observed (Jaskanis 1966, p. 53). In such a situation the atypically oriented graves 44 and 45 from Nowinka seem more interesting.

At Nowinka horses' bodies were deposited in so-called ventro-dorsal position, natural for a lying horse, sometimes slightly on the side. The limbs were almost always bent and the fore-legs were stretched forward, similarly as at other burial grounds of the Elbląg group (Neugebauer 1934, p. 324; Kowalski 1985, p. 227; 1987, p. 281, 284; Ziemlińska-Odojowa 1991, p. 109) or generally Balt cemeteries, particularly the ones from Sambian Peninsula and neighbouring areas (Jaskanis 1966, p. 47; 1968a, p. 89; Baranowski 1996, p. 70-71)¹⁸⁹. At the cemetery in Nowinka some departures from this rule were also recorded: in grave

70 the horse was deposited with its neck strongly bent backwards, in grave 87 the head was turned towards the back, to the right¹⁹⁰ and downwards, whereas the horse from grave 127 was arranged in a standing position only with slightly bent legs; also horses from grave 17, 60 and 62A were put in a standing position. The position of the horse from grave 117 is also unique. The animal was pushed into the pit in a twisted position with bent hind-legs, trunk and neck strongly turned leftwards, and the head between the fore-legs with the muzzle touching the left hind-leg. In several graves (grave 20, 34, 48, 55 – both skeletons, grave 112) the horses had fore- and hind-legs strongly extended to the sides¹⁹¹. The last mentioned cases can be explained by sagging of the horses' bodies under the weight of the soil. In the other, less typical, cases the position of the horses seems to indicate that the horses were put in the pits alive and that they were trying to get out of the grave. The animals may have been ridden into the ground so that it was easy to push them into the pit¹⁹² but it is also possible that they were stunned, poisoned or intoxicated. J. Jaskanis also suggested starving the animal put in the pit (1966, p. 47), which seems hardly probable judging from the arrangement of the skeletons from Nowinka. No unambiguous cases of tying limbs¹⁹³, like those recorded for horses from the cemetery at Sątoczno (Lasota-Moskalewska, Perlikowska-Puszkarska 1994, p. 197) and the necropolises of the Sudovian culture in Korkliny (Krysiak, Serwatka 1970, p. 219)¹⁹⁴, were found either. It is worth to note that the pits into which animals were pushed were very narrow (namely grave 62A, 62B and 78)¹⁹⁵. Generally it should be assumed that horses were deposited in pits before they reached rigor mortis, which is suggested by their natural positions. In some cases burying alive seems the most

¹⁸⁷ In this case, however, one should remember about the very poor preservation of horse skeletons, as a result of which the orientation of burials was reproduced only on the basis of the location of teeth in the pit (Ziemlińska-Odojowa 1991, p. 109). This could have resulted in certain inaccuracies in the reconstruction.

¹⁸⁸ In the case of inhumation graves, the horse skeletons were oriented in the same way as the human remains, i.e., with the head to N (Jaskanis 1966, p. 53).

¹⁸⁹ It should be, however, noted that in the Balt milieu horses were also buried at their sides, which concerns especially graves from the Roman Period (cf. Jaskanis 1966, p. 46-47).

¹⁹⁰ A similar position, although not so strongly twisted, was found for one of the horses from the cemetery in Elbląg, Moniuszki St (Ehrlich 1937b, Fig. 5).

¹⁹¹ A similar arrangement was found at the cemetery in Elbląg, Moniuszki St (Ehrlich 1937b, Fig. 6).

¹⁹² Such practices among Medieval Prussians are mentioned, i.a., by Peter of Duisburg, *Chronicon terrae Prussiae III*, 5 (cf. Jaskanis 1966, p. 46-47; Gręzak 2007, p. 361).

¹⁹³ No cases of crossing fore-limbs or placing the limbs very close, or under the belly, which could have been interpreted as prove of tying the limbs (cf. Piątkowska-Małecka 2000, p. 190-191), were found.

¹⁹⁴ Some researchers believe that tying the legs was a general custom, and tied animals were lowered to the burial pits on ropes (Krysiak, Serwatka 1970, p. 219; Piątkowska-Małecka 2000, p. 191).

¹⁹⁵ Also B. Ehrlich noted the fact that at the necropolis in Elbląg, Moniuszki St, pits were small, exactly fitting the dimensions of the horses (1937b, p. 274).

accurate interpretation. The suspicions that living animals were put in the pits and deprived of life as offerings in the graves were expressed already in the pre-war period, on the basis of the observation from the necropolises of the Elbląg group (Ehrlich 1937a, p. 82; 1937b, p. 274). In grave 66 from Elbląg, Moniuszki St, a knife, which may have been used to kill the animal, was found in the central part of the horse's back; moreover positions of many skeletons were said to suggest that the horses fought for their lives (Ehrlich 1937b, p. 274). Undoubtedly horses played significant role during burials and their peculiar treatment was an important element of funeral rites, although we cannot reconstruct it even in general¹⁹⁶.

In horse graves there were spotted bridles, elements of headgear (bronze fittings of straps) and probably sometimes also saddles. Generally, besides the ones listed above, other grave goods were not found in Nowinka. Although near the head of the

horse from grave 114 a talus bone of another animal was found and in grave 121 a clay flask, whereas in grave 149 a large stone was discovered near the horse's rump, all the above cases concern disturbed graves. For that reason both the bone and the flask should be connected with the assemblages from the disturbed human graves¹⁹⁷ and the stone with the disturbed pavement covering the horse and human grave. At the other cemeteries of the Elbląg group no other categories of goods were found in horse graves. At the necropolises of the Elbląg group no horse caring items such as combs and scissors, or knives and tweezers, known from the Olsztyn group (Baranowski 1996, p. 78-79) have been found. It should be, however, reminded that at the burial ground in Młoteczno, tools were discovered in horse graves: in grave 68 under the horse's belly an iron sickle was found whereas in grave 86 an iron plane was found near the animal bones (Ziemlińska-Odojowa 1991, p. 113).

III.8. Chronology (Bartosz Kontny, Jerzy Okulicz-Kozaryn)¹⁹⁸

The relative chronology was elaborated with the use of a cluster analysis method popular in archaeology – the Czekanowski Diagram (Czekanowski 1913). To carry it out the MaCzek program version 3.3.44 created by Piotr Jaskulski (Sołtysiak 1997; Sołtysiak, Jaskulski 1999)¹⁹⁹ was used. To measure the distance between features the Jaccard coefficient was used as it is the most appropriate for the analysed set of all the distance measures included in the programme. The comparison of the features was conducted with the use of traits from relatively narrow time spans and occurring from as large a number of

graves as possible. Unfortunately, it was not always possible: due to the lack of detailed analyses of finds from the investigated period and thus of data on their changeability in time, and on the other hand, due to the presence of important for chronology but rare artefacts, some compromises had to be made in this respect. Ultimately, the following traits were taken into account: 1 – ladder brooch, Variant I; 2 – ladder brooch, Variant II; 3 – ladder brooch, Variant III; 4 – pseudo-ladder brooch; 5 – simple brooch made of wire; 6 – disc fibula; 7 – S-shaped brooch; 8 – beak fibula; 9 – brooch similar to Type Wólka Prusinowska; 10 – brooch similar to Type Neuwied; 11 – buckle Type *Kreuzdornschnalle*; 12 – large buckle with a kidney-shaped frame; 13 – small buckle; 14 – buckle Type *Schilddornschnalle*; 15 – lancet-shaped strap end; 16 – tongue-shaped strap end; 17 – T-shaped belt fitting; 18 – belt mounts of the Merovingian type²⁰⁰; 19 – openwork belt mounts; 20 – 'angled' arrangements of headgear strap fittings; 21 – headgear Type Tumiany; 22 – step ornament; 23 – pearl/pearl-like ornament; 24 – railing ornament; 25 – wafer ornament; 26 – rosette ornament; 27 – undecorated sword/scabbard; 28 – decorated sword/scabbard; 29 – head of a shafted weapon; 30 – undecorated flask; 31 – decorated flask; 32 – hook ring; 33 – antler comb; 34 – drinking horn; 35 – glass bead; 36 – amber; 37 – 'wolf fang' ornament. Some of the traits turned out to be less important for establishing the chronology

¹⁹⁶ In Orosius' *Chorography*, 22 translated by Alfred the Great we find the information about horse races connected with burial ceremony aimed to win the valuables formerly possessed by the deceased. The precious items had been divided and hidden in a known place. Then horse riders were to hurry and get the prize (cf. Labuda 1961, p. 70, 86). The significance of the horse in the burial rite is also underlined in a mention from the Treaty of Christburg, 13: a peace treaty signed in 1249 between the pagan Prussian clans, represented by a papal legate, and the Teutonic Knights. Pagan priests called *Tulissones* or *Ligaschones* are described here during burial ceremonies; they were reporting their visions of the mounted armed dead person, riding the sky together with his retinue and a falcon (text after Hartknoch 1679).

¹⁹⁷ The presence of a fragment of a window urn near horse 8 in grave V at Tumiany was interpreted in a similar way (Baranowski 1996, p. 80).

¹⁹⁸ Preliminary version of the chronology (Okulicz-Kozaryn, Pietrzak 2009, p. 123-131), proposed a few years ago, during conference in 2005, demanded further investigations. Herein we present the results of these studies.

¹⁹⁹ Cf. Jaskulski 2009.

²⁰⁰ This term was used to denote rectangular fittings with an elongated opening from grave 84/3.

of the necropolis (e.g., amber, hook rings) than other ones (e.g., swords, combs, drinking horns). As the majority of the features was damaged and as a result the grave assemblages were poorly preserved, only twenty five features were finally taken into account in the chronological diagram (Table 4), from which some are quite poor but they were taken into consideration to observe chronological position of particular traits in the chronological system. On its basis it was possible to distinguish three chronological phases. The first one comprised grave 38, 35, 62B, 55, 65 as well as grave 2, 23 and 41, where the three last mentioned ones were not directly linked with the remaining ones²⁰¹. They may be considered as an element separating the 1st phase from the 2nd one, yet ascribed to Phase 1 (Subphase 1'). Phase 2 comprised grave 117, 121, 118, 26, 147 and 11. Phase 3, comprising the greatest number of graves, is represented by grave 120, 21, 60, 82, 17, 83, 18, 85, 84, 34 and 105. A comparison of respective phases with the relative chronology of the Elbląg group elaborated by J. Kowalski (2000) is problematic due to a certain arbitrariness of the latter's claims. Lack of a detailed and apt chronological analysis of respective necropolises of the Elbląg and Olsztyn groups creates great difficulties in comparing the chronological systems of even the closely related Elbląg and Olsztyn groups. It should be only noted that all the three phases distinguished at the necropolis in Nowinka belong to the 2nd horizon of the Elbląg group dated by J. Kowalski to the 2nd half of the 6th and the early 7th century defined as Phase E₂ (Kowalski 2000, p. 220). However, some doubts are inspired by J. Kowalski's view that two settlement horizons should be identified with Phases E₁ and E₂ as the beginnings of the settlement in the Elbląg group are marked by artefacts evidently connected with the developed part of Phase D (e.g., star-footed brooches, brooches Type Schönwarlig/Skowarcz or Dollkeim/Kovrovo as well as Type Niemberg), which J. Kowalski has noted (2000, p. 219). Thus the 1st horizon should be extended at least to the final stage of Phase D. In turn, limiting the time span of the 2nd horizon of the Elbląg group to Phase E₂ is contradicted by the presence of indices of Phase E₃ from the Olsztyn group (e.g., disc brooches, see Rudnicki 2006a). Also striking are the so-far unconfirmed in recently investigated archaeological material observations made by the pre-war researchers, who perceived continuity

²⁰¹ One should notice that in cases of graves with small number of traits (e.g., grave 2, 23, 38) their position in the diagram is not utterly sure (they are situated between concentrations or in the ending parts of diagram because of lack of coincidences with other objects).

of use of 'Old Prussian' cemeteries until the Early Medieval Period. This was to be manifested by the presence of the 'hillfort period' pottery and, which is more debatable, selected metal artefacts or stone constructions at the necropolis in Elbląg-Żytno (Dorr 1914, p. 6, 12-14; Ehrlich 1920, p. 200-203). At present it is thus possible to move the duration of the 2nd horizon of the Elbląg group at least to the early Phase E₃²⁰¹. As there are no complete publications of sites from the Elbląg group, in order to establish the relative chronology for the whole group new excavations should be made at its area and systems of periodisation for the Sambian area (the existing suggestions are not convincing) and the Olsztyn group (attempts are being made at present) should be created and then detailed comparative studies should be conducted. This exceeds the scope of this monograph but it is clear that the chronology established for the cemetery at Nowinka will be very useful for such studies.

To establish the absolute chronology of the respective phases it is necessary to use the dating of the imports found in the assemblages from Nowinka. It should not, however, be forgotten that some forms of artefacts may have reached the area of the Elbląg group later on and they may have been used for a longer time in the Balt milieu.

For Phase 1 the dates are provided by the beak brooch Type G1 after Høilund Nielsen from grave 38. According to the chronological systems elaborated for Bornholm, it denotes Phase VIIA equivalent to 530-600 A.D. (Høilund Nielsen 2000, p. 162-163) or Phases 1A-1B, i.e., 520/30-600 A.D. (Jørgensen 1990, p. 30; Jørgensen, Nørgård Jørgensen 1997, p. 41, Figs. 24, 26). This is, however, a very broad chronological spectrum. It should not be also overlooked that the beak brooch from Nowinka had a new, local fastening mechanism which probably replaced the original one damaged after long use. Long use is proved also by traces of wearing in the upper part of the item. Thus the artefact may have reached Nowinka later on and it may be necessary to shift at least the beginning of Phase 1 to the later part of the 2nd tierce of the 6th century. In turn, the T-shaped belt fitting Type Nørgård Jørgensen TR1/Ørsnes C10/Høilund Nielsen C5 from grave 35 has analogies in Scandinavia; such forms are dated to Phase II on Bornholm, i.e., 560/70-610/20 A.D. and to Phases I-II on Gotland, i.e., 520/30-610/20 A.D. (Nørgård Jørgensen 1999, Fig. 107, 110, 116). Generally this matches the chronology of grave 38. It is possible that the earlier part of that period should be

²⁰² There is a general need to redefine the meaning of Phases E₁, E₂ and E₃.

taken into consideration, which is suggested by a close analogy: a fitting from Stora Ihre, Hellvi sn on Gotland from the Nordic Phase I, i.e., 520/30-560/70 A.D. (Nørgård Jørgensen 1999, p. 262, cf. p. 141).

For the late stage of Phase 1 at the Nowinka necropolis (Subphase 1') there is only one good dating element: S-shaped brooches Type L1a from grave 41. The item with a better preserved ornament (grave 41/1) was decorated in Style B (a variant of the animal Style II) according to M. Ørsnes (1966, p. 285), which is a frequent feature of brooches of that type (Rundkvist 2003, p. 104). Brooches Type L1a are also treated as indicators of Phase VIIA (Høilund Nielsen 2000, p. 162-163), and they are presumed to have appeared in Scandinavia as a result of inspiration by the Alamannic S-shaped brooches in ca 540 A.D. to be replaced by new forms Type H3 and J in the 1st tierce of the 7th century (Rundkvist 2003, p. 104-105). In the analysed case the presence of decoration in Style II is very important. It should not be forgotten that that style appeared not earlier than ca 575 A.D. (Roth 1998, p. 356-359; Birkmann 1995, p. 61-63) and in Scandinavia Variant B was used on Bornholm from Phase 1B2, i.e., ca 570-600 A.D. (Jørgensen, Nørgård Jørgensen 1997, p. 24, 28) and according to M. Ørsnes (1966) only in Phase 1, i.e., from ca 575 till the mid-7th century (Birkmann 1995, p. 64-65). Thus Subphase 1' may be tentatively put in the last third of the 6th century. On the basis of the above it is possible to claim that, if the proposed chronological succession of Phase 1 and Subphase 1' is true, Phase 1 embraces the times before the decline of brooches Type G1, i.e., probably the 2nd tierce of the 6th century.

For Phase 2 there are no adequate dating elements and its time span must be determined by the limits of Subphase 1' and Phase 3.

For Phase 3 a good starting point is grave 85 which contained a drinking horn with a fitting decorated in animal Style II. In contrast to the brooches from grave 41 in this case we most probably don't have to do with the earliest phase of the popularity of this style. This is suggested by the fact that it was accompanied by a bracelet similar to Type Q2. Such ornaments were used on Bornholm in Phases 1C-2A (Jørgensen 1990, p. 39-40) and thus during the whole 7th century. The latest date for grave 85 is the time when Style II gradually lost its popularity, i.e., the mid-7th century.

Equally important for establishing the limits of Phase 3 is grave 84. The buckle Type *Schilddornschnalle* found in it is considered as an identifier of Nordic Phase I and II (520/30-560/70 and 560/70-610/20 A.D.) and the Norwegian items and forms

with elongated ferrules (and probably this is the case of item from grave 84) are clearly later (Nørgård Jørgensen 1999, Fig. 107, 110, 116). Analyses concerning the Merovingian circle place buckles of these type in the late 6th and early 7th century: according to U. Koch – Phase 4 (590-620/30 A.D.); the latest items from Phase 5 (620-650/60 A.D.) could be excluded (Koch 1977, Fig. 8:B); items with elongated ferrules are said to be typical for Phase 5 (565-580/90 A.D.) according to U. Müssemeier, E. Nieveler, R. Plum and H. Pöppelmann (2003, Fig. 7); in France they are said to have occurred in Phase MA3 (560/70-600/10 A.D.) – mainly items with oval-shaped ferrules (Legoux, Périn, Vallet 2006, p. 62). Fortunately, in Nowinka besides a spike of the buckle also the terminal of the ferrule was found, which makes it possible to date the item more precisely and to exclude it representing the earliest items (Phase 3 after U. Koch) with oval ferrule and the latest ones (Phase 5 after U. Koch), frequently decorated with the use of the silver wire inlaid. In the same grave T-shaped belt fittings were found which are very similar to Merovingian finds; in the Merovingian circle they determined men's burials from Phase 4 (590-620/30 A.D.) according to U. Koch (1977, Fig. 8:B). Next chronologically important items from grave 84 are tongue-shaped fittings Type Nørgård Jørgensen ZR1/Ørsnes C12/Høilund Nielsen C6b. Similar Scandinavian finds are treated as indicators of Phases II-III in Norway (560/70-ca 680 A.D.) and on Bornholm and Phases I-II (520/30-610/20 A.D.) on Gotland (Nørgård Jørgensen 1999, Fig. 107, 110, 116) and analogous discoveries from the Merovingian areas are dated to the 6th century (Falk 1980, p. 35-36). The last-mentioned dating can be hardly considered as definitive: the issue has not been analysed in detail for the Merovingian circle. The finds of belt mounts of the Merovingian type, in turn, also present in grave 84 have not been analysed at all as regards their chronology. On the basis of the few finds it may be assumed that they were used at ca the turn of the 6th and 7th century and in the early 7th century (they appeared in assemblages included in Group D of graves with double-edged swords dated to 580-620 A.D., see Menghin 1983, p. 59-60, Fig. 25; they were also found in graves dated with coins to the 7th century, see Werner 1935, p. 100, Pl. 28:B.3). To sum up: grave 84 should thus be dated to ca the turn of the 6th and 7th century or – more probably – in the early 7th century and grave 85 in the early 7th century. The limits of Phase 3 may be established analogously to the dating of grave 84. Phase 2 should thus be placed at ca the turn of the 6th and 7th century on the basis of the analysis concerning Subphase 1' and

Phase 3. It should be remarked here that the cemetery did not function for a long time and probably did not exceed 100 years. Of course, these findings are made less certain by the fact that minor part of the necropolis was preserved. Besides, it can not be excluded that some of the important dating elements, the time span of which was established on the basis of analogies (especially Scandinavian) may have been used for a longer time and be placed in the ground later than in their native lands.

The above chronological boundaries are, of course, not determined with absolute precision for they are based on dating of single finds with well-established absolute chronology. Thus the possibility that the cemetery was used for a longer time can not be completely excluded, but at the moment there are no grounds to believe so. The time span delimited above comprises also stray finds of imported brooches:

a disc brooch Type Ørsnes I1-2/Høilund Nielsen I1b/c, typical of Phases 1A-B, i.e., 530-600 A.D. on Bornholm (Høilund Nielsen 1987, p. 60, 62, 69) and an equal-armed one Type Høilund Nielsen F1c/Ørsnes F2, dated to Phase 1B1 or possibly also to 1A and 1B2 (Jørgensen, Nørgård Jørgensen 1997, p. 28, Fig. 18), and thus to 530-570 A.D., or possibly until 600 A.D.

Some forms of the finds are clearly connected with the phases distinguished above. The most evident relations are for Phase 3: weapons (swords, scabbards, heads of shafted weapons), drinking horns, combs as well as lancet-shaped strap ends, buckles Type *Kreuzdornschnalle* and disc and ladder brooches Variant III, and, with respect to decorations: openwork bronze plates (belt mounts, elements of scabbards). The remaining types of artefacts have broader datings or are too few to be reliably linked with a certain phase.

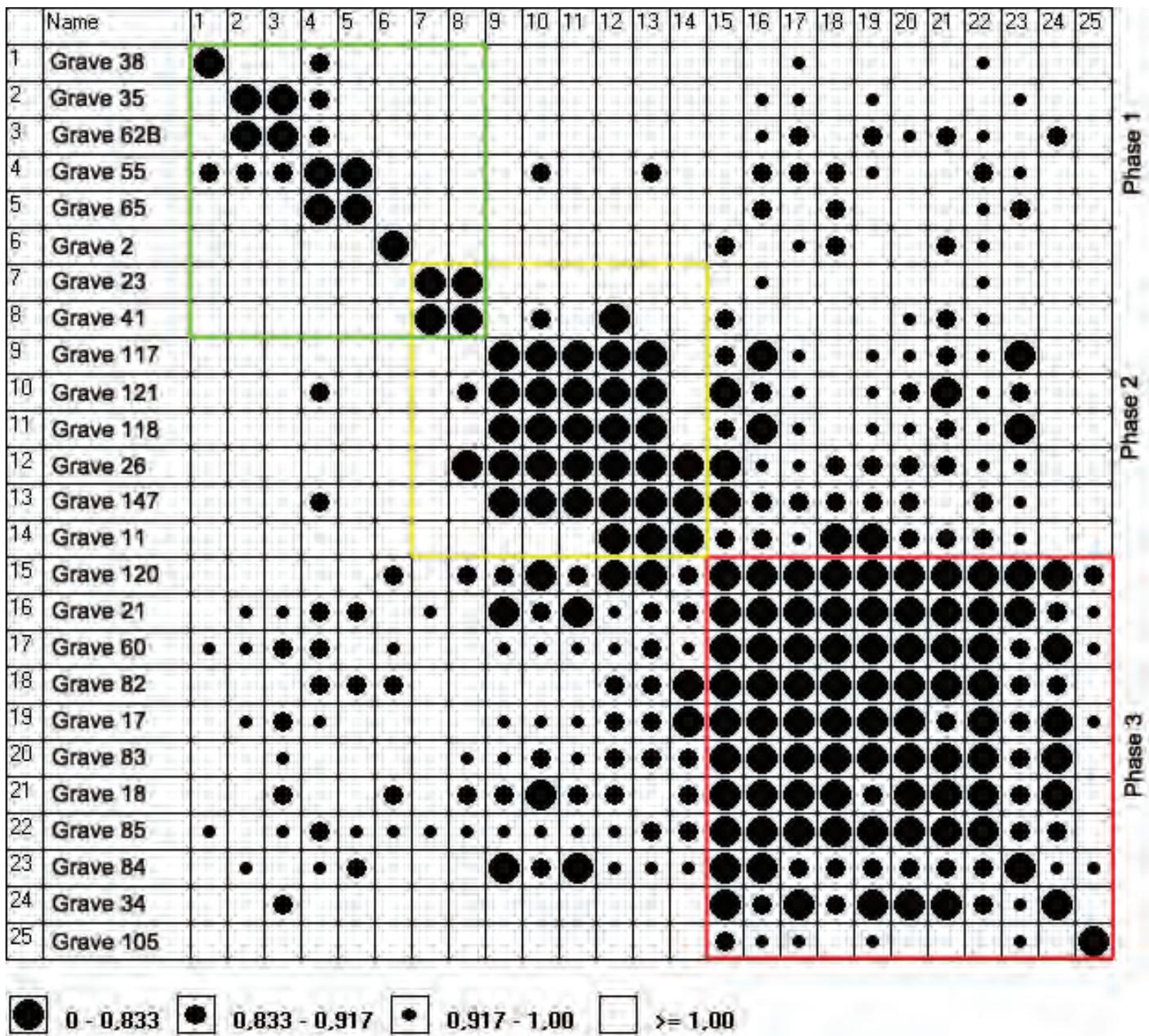


Table 4. Diagram showing chronological grouping of chosen graves from the cemetery at Nowinka.

The analysis of horizontal stratigraphy (Pl. CX) does not allow to state in which direction the cemetery developed as too many burials were dated imprecisely and can not be taken into account. It seems, however, that the earliest burials (Phase 1) were located in the E, S and NE part of what was preserved from the necropolis and some of the later features in the SE part. It is in the central part of the site, where burials from Phase

2 were generally located (except for grave 147 which was dug in the N part of the necropolis). Burials from Phase 3 are again concentrated in the NE and E parts as well as in the centre. The above, however, are only general observations, and more detailed conclusions will perhaps be drawn in the future after significant progress in the studies on the chronology of the Elbląg group.



IV. CONCLUSIONS (Bartosz Kontny, Jerzy Okulicz-Kozaryn)

The analysis of the burial ground at Nowinka indicates that it was used in the times from the 2nd third of the 6th century (perhaps its later part, i.a., ca the mid-6th century) till the early 7th century. This is not a very long period but it is also possible that the destroyed part of the cemetery included burials from other chronological periods. The cemetery at Nowinka was probably used by a human group living in the vicinity. It seems the most probable that these people inhabited the hillfort at Tolkmicko (Ebert 1927, p. 109-117; Ehrlich 1931b, p. 55-59; Dmochowski 1963, p. 271-286); the middle phase of it, as it is presumed, embraced the period between the 6th and 9th century (cf. Jagodziński 1997, p. 34-35) and thus at least partially the same time as the necropolis at Nowinka.

The fortified settlement of Tolkmicko had an important strategic position: it allowed to control the transport at the adjoining waters of the Vistula Lagoon, much larger than today (Kasprzycka 1999). Thus it was the control of trade and perhaps also participation in it that produced the wealth of the local community. The importance of trade is testified by the imports. The same was the case of the community inhabiting the area of Tolkmicko and Nowinka: at the cemetery at Nowinka, besides very numerous finds suggesting the affiliation to the West Balt circle (especially its Sambian-Natangian areas) there appeared relatively frequent imported artefacts, especially from Scandinavia (beak brooch from grave 38/1, pair of S-shaped brooches from grave 41/1-2, stray finds of an equal-armed and a disc brooch SF/6-7, a belt fitting from grave 35/2) as well as Merovingian ones (especially the belt with a set of Merovingian fittings from grave 84/3-7). It is not surprising that the majority of Scandinavian imports has close analogies on Bornholm – an island which in many periods served as an intermediary in transferring Scandinavian influences to the southern littoral of the Baltic Sea and vice versa. It is unclear how the Merovingian imports reached Nowinka: one possibility is that they came through Scandinavia, and the other one, the Olsztyn group, where the traces of Merovingian influences are quite numerous. Unfortunately, at present it is impossible to give a clear answer to that question. Besides imports, certain ideas reached Nowinka, characteristic for the contemporary tribal elites both in the Balt milieu and in Scandinavia. They were manifested in, e.g., depositing in burials decorated drinking horns usually made in the local style but sometimes imitating Scandinavian decorations (grave 85/14). Partial adaptation

of Scandinavian solutions may be also exemplified by headgear connectors with the step motif from grave 21/16.

An important testimony of cultural contacts is the use by the local bronzesmiths stamps with tips identical as in the Merovingian circle or Scandinavia. It is striking that triangular imprints with inscribed single circles which appeared on Scandinavian or Merovingian products were recorded in Nowinka on objects of local provenience (ladder brooch from grave 17/1, disc brooch from grave 34/1, plate brooch from grave 83/1, two lancet-shaped strap ends from grave 17/5-6). A similar observation can be made about the stamps in the shape of triangles with inscribed rows of horizontal dots: their presence was confirmed at the Nowinka necropolis both on local products (suspension plate of a scabbard from grave 17/13) and imported ones (T-shaped belt fitting from grave 35/2, beak brooch from grave 38/1). One may also mention here the bracelet with decoration inspired by Scandinavian ornaments from grave 85/22 which had triangular sections of stamps with three inscribed dots. It also had stamps in the shape of triangles-goose feet, found also on local lancet-shaped fittings from grave 18/3 and grave 85/20 and on the headgear strap connector from grave 18/12²⁰³. This suggests that at least some of the aspects of Scandinavian ‘know-how’ were adopted. It should be also noted that the above-described stamps became popular also in the Olsztyn group and at the area of Lithuania, which was noted already by N. Åberg (1919, p. 48-49, Fig. 44:21-24). Similar phenomenon may be observed also for the Gepidic finds from Tisa River basin, e.g., disc brooch with triangular stamps with dots inside from Keszthely-Fenekpuszta, kom. Zala, grave 1980/2 (Bóna, Nagy 2002, Fig. 57:4) which is explained by contacts with Frankish, Alamannic or north European goldsmiths (Bóna, Nagy 2002, p. 118).

Although Scandinavian contacts are of greater importance one cannot neglect proves of links with Merovingian milieu. It could result from subordination of areas of Jutes, Saxons and Thuringians to Frankish state in 2nd half of the 6th century so they were included in Merovingian cultural zone. It shortened the distance between Franks and Balts. Therefore postulated interest of Frankish merchants in trade with eastern regions could account for intensifying Frankish influences on the Olsztyn group, pos-

²⁰³ On similar stamped ornaments (i.a., ‘goose feet’ and triangles with three inscribed dots) on ladder brooches from the cemetery at Łęczce, see: Dorr 1898, p. 18, Fig. 4:b-c.

sibly with Thuringians as mediators (Kowalski 2000, p. 234). It seems that contacts with the Elbląg group had similar character.

The importance of trade in the local economy provides a convincing explanation why there were so many military elements at the necropolis in Nowinka. The control of trade had to be based on military power, e.g., on a retinue ensuring security of trade and profiting from it. This suggestion seems to be confirmed by the location of similarly equipped graves of warriors (with visible Scandinavian influences) in the Baltic Sea littoral, more to the east, e.g., in Lazdininkiai or in the Sambian-Natangian area. It should be stressed that weapons (especially the saxes) appeared at the cemetery at Nowinka as late as in its 3rd phase, thus much later than at the Sambian-Natangian areas or in the Lower Neman group (cf. the swords from the cemeteries at ex-Warnikam and Rzhhevskoye discussed above). This seems to suggest that at the Elbląg Upland the saxes were a secondary phenomenon, perhaps the result of the suggested by researchers second wave of migrants from the north-east (Kowalski 2000, p. 229-230) who exerted an even stronger influence on the local population (the *Vidivarii*?). The existing numerous cultural features derived from the Sambian-Natangian areas (horse burials, artefacts' forms), new ones were thus added, accompanied by relatively strong Scandinavian references and weaker Merovingian ones.

Possibly it was due to military and trade reasons that the horse played such an important role in the Elbląg group, also manifested in the burial rite. It should not be forgotten, however, that horses accompanied not only burials of warriors but often also of women, so there is no direct relationship.

Therefore, the question arises whether the wealth of the local population was only due to the control of trade. It seems that the answer to this question is provided by the analysis of the assemblages from burials: they often contain fragments of raw amber or not very carefully worked products from that material. As the quality of local amber products is low it seems possible that the population dealt with the exchange of raw amber: the raw material imported from the Baltic Sea littoral reached, i.a., the Merovingian circle (Steuer 1998, p. 396; Walter, Peeck, Gillich 2008, p. 27) or Scandinavia (Høilund Nielsen 1987, p. 53) where only regular forms are known, probably made by west-European craftsmen (cf. Žak 1962, p. 185-186). In turn the finds from the Pontic area (burials of Goth women from Crimea from the late 6th and 7th century) contained especially beads irregular in shape, much more similar to the finds from No-

winka (see: Chajredinova 1999, p. 87-88, Fig. 71-74). Handing over of Baltic amber to Theodoric the Great, the ruler of the Ostrogothic state in Italy is confirmed by Cassiodorus (Cassiodorus, *Variae* V, 2). As J. Kolendo stressed, the letter written by Cassiodorus on behalf of Theodoric the Great, thanking for the gift of amber brought by the envoy of the *Aestii* was in fact a model not an actual letter, which the Barbarians would probably not have been able to understand. This does not mean that the visit of the *Aestii* envoy did not take place; it is rather quite possible that the *Aestii* came to Italy in order to trade (Kolendo 2009, p. 37-38). Although the *Aestii* lived to the east of the Elbląg Upland but numerous cultural similarities allow to believe that the area of the Elbląg group was also involved in their trade relations. Thus if the supposed mission of the *Aestii* really happened and was successful, resulting in establishing trade relations between the southern Baltic Sea littoral with southern or south-eastern Europe, it is possible to assume one more, southern direction from which cultural influences reached the area occupied by the Elbląg group. However, the archaeological material does not contain direct evidence of that.

Another raw material, mentioned in the studies of the topic, could have been salt. This seems to be supported by the toponyms: Lake Družno (Druso) in the vicinity of Elbląg and the trading settlement and port of Truso are names related to salt, e.g., Lithuanian *Drusk* means 'salt' (Labuda 1960, p. 22, 24, 36). As there were shortages of salt in Scandinavia (it was obtained only in Denmark and not from salterns but from sea water or possibly sea plants) it was necessary to import it. A very good source of salt was probably the neighbourhood of Elbląg inhabited by the Balt people (Žak 1962, p. 194-195). It is difficult to settle whether salt was imported from that area at the time when the necropolis at Nowinka was in use, yet the presence of Scandinavian imports seems to be a strong argument in favour of this idea. It is hardly probable that the object of exchange were the brooches, as A. Žak believed (1962, p. 258).

Taking into account trading contacts, one should remember the analysis of textile remains from Nowinka which supports the claim that Balt textile production from the Late Migration Period was at a very high level. Unfortunately so far there are not premises good enough to know whether Balt tribes traded textiles or not.

It should be noted that the site at Nowinka, despite the fact that many unique finds were discovered there, was most probably used by the population poorer than the groups using the cemeteries at Elbląg-Żytno

(where silver foils decorating scabbards and a silver suspension plate for a scabbard were found, whereas at Nowinka they were made of bronze) as well as in Chojnowo and Elbląg, Moniuszki St (silver fittings of horse trappings; their equivalents from Nowinka were again made of bronze). It is difficult to settle whether this was due to the differences in the wealth or dependency to the said 'Old Prussian kings' who used scabbards decorated with silver (cf. Ehrlich 1931a, p. 19).

One should underline that the peak of wealth of the population using the necropolis at Nowinka was reached in the 3rd phase of development of the burial ground; during it the graves were the richest, containing weapons (saxes), drinking horns as well as imports and their imitations (including objects with stamped decorations typical of Scandinavia and the Merovingian circle). Moreover, the materials from Nowinka are not sufficient to work out chronological links with the nearby trade emporium in Janów Pomorski (former Truso from Wulfstan's description). According to the current state of research the earliest finds from the settlement in Truso are dated to the late 7th and early 8th century (Jagodziński 2009, p. 153-154). This does not mean that at that time there was a developed trade and harbour settlement: the finds dated to that period are isolated and have broad datings, sometimes reaching the late 8th century (cf. Jagodziński 2009, Fig. 18). The bottom limit of the cemetery seems to be more interesting; it belongs to the 2nd third of the 6th century and thus may fill, at least partially, the chronological gap noticeable between the two chronological horizons existing in the Elbląg group (cf. Kowalski 2000, p. 220, 229-230).

However, the necropolis basically belongs to the second settlement horizon of the Elbląg group.

In our view, the publication of the materials from the cemetery at Nowinka is a starting point opening research perspectives and forming a reference point for further investigation on the chronology, cultural features, external influences and variability of the Elbląg group. The questions which this monograph could not answer are connected with the disappearance of the Elbląg group and its transformation into the culture of Medieval Prussian tribes. Besides, the unclear issue of the settlement hiatus between the two horizons of the Elbląg group should be, in the light of the excavations at Nowinka, reinterpreted after a detailed study of the problem. The answer to these questions can be given only on the basis of new excavations and also publications of materials collected from the nearby areas, dated to the Late Migration Period (especially the cemeteries at Młoteczno and Równina Dolna). The previous experiences indicate that the analysis of the archive sources will probably not bring any breakthrough in this respect: in the files of the pre-war archaeologists finds from the area of Elbląg were disregarded (except for the references to the published cemetery at Łęcze) and the archives of the Elbląg museum were destroyed during the 2nd World War. The interpretation of relations with the other groups from the West Balt circle, especially the Sambian-Natangian areas is one more issue to settle. However, in order to do that, besides an analysis of the Elbląg group, a synthesis of knowledge about the culture of the Sambian-Natangian areas in the Late Migration Period should be also made.



V. APPENDICES

V.1. Bartosz Kontny, Mirosław Pietrzak, List of sites from former Ostpreussen, Memelgebiet and modern Poland, Lithuania, Latvia and Kaliningrad Oblast of Russia, mentioned in the text

Elbląg group

Braniewo, gm. Braniewo – Braunsberg, Kr. Braunsberg
Chojnowo, gm. Tolkmicko – Conradswalde, Kr. Elbing
Elbląg-Żytno, gm. Elbląg – Benkenstein-Freiwalde, Kr. Elbing
Elbląg, Moniuszki St, gm. Elbląg – Elbing-Scharnhorststrasse, Kr. Elbing
Elbląg-Pole Nowomiejskie, gm. Elbląg – Elbing-Neustädterfeld, Kr. Elbląg
Janów Pomorski, gm. Elbląg
Jelonki, gm. Rychliki
Komorowo Żuławskie, gm. Elbląg
Łęcze, gm. Tolkmicko – Lentzen (Silberberg bei Lentzen), Kr. Elbing
Nowinka, gm. Tolkmicko – Neuendorf-Kämmereidorf, Kr. Elbing
Pasłek, gm. Pasłek – Preussisch Holland, Kr. Preussisch Holland
Podgórze, gm. Braniewo – Huntenberg, Kr. Braunsberg
Sierpin, gm. Elbląg – Serpin, Kr. Elbing
Tolkmicko, gm. Tolkmicko – Tolkemit, Kr. Elbing

Lithuanian and Latvian area cultural units

Aizkraukles Lejasbitēni, r. Aizkraukle (the Latgallian area)
Aukštakiemiai, r. Klaipėda – Oberhof, Kr. Memel (the West Lithuanian group)
Barvai, r. Šilutė – Barwen, Kr. Heydekrug (the Lower Neman group)
Degsnė (Labotiškės), r. Molėtai (the East Lithuanian Barrows culture)
Diktarai, r. Utena (the East Lithuanian Barrows culture)
Greižėnai, r. Tauragė – Greyszönen, Kr. Tilsit (the Lower Neman group)
Jauneikiai, r. Joniškis (the Semigallian area)
Jaunsaules Siliņi, raj. Bauska (the Semigallian area)
Kalniškiai, r. Plungė (the Samogitian Flat Cemeteries group)
Katyčiai (Koadjuthen), r. Šilutė – (Lower Neman group)
Lazdininkiai (Kalnalaukis), r. Kretinga (the West Lithuanian group)
Marvelė, Kaunas city (the Central Lithuanian group)
Pakalniškiai, r. Šakiai – Pakalniszki, pow. Poniewież (the Lower Neman group)
Pakrauglė, r. Vilnius (the East Lithuanian Barrows

culture)

Rzhevskoye, ray. Slavsk – Linkuhnen, Kr. Tilsit (the Lower Neman group)
Šukioniai, r. Pakruojis (the Semigallian area)
Taurapolis, r. Utena (the East Lithuanian Barrows culture)
Vilkyčiai, r. Klaipėda – Wilkieten, Kr. Memel (the West Lithuanian group)
Vėžaičiai (Verdainė), r. Šilutė – Weszeiten, Kr. Heydekrug (the Lower Neman group)
Vidgiriai, r. Šilutė (the Lower Neman group)
Žvirbliai, Vilnius city – Żwirble, pow. Wilno (the East Lithuanian Barrows culture)

Olsztyn group

Kielary (the locality not existing nowadays), gm. Stawiguda – Kellaren, Kr. Allenstein
Kosewo, gm. Mrągowo – Alt Kossewen, Kr. Sensburg
Leleszki, gm. Pasym – Leleshken, Kr. Ortelsburg
Miętkie, gm. Dźwierzuty – Mingfen, Kr. Ortelsburg
Popielno, gm. Ruciane-Nida – Popielnen, Kr. Sensburg
Spychówko, gm. Świętajno – Klein Puppen, Kr. Ortelsburg
Stare Kiejkuty, gm. Szczytno – Alt-Keykuth, Kr. Ortelsburg
Tumiany, gm. Barczewo – Daumen, Kr. Allenstein
Tylkowo, gm. Pasym – Scheufelsdorf, Kr. Ortelsburg
Waplewo, gm. Jedwabno – Waplitz, Kr. Ortelsburg
Wyszembork, gm. Mrągowo, site II
Zdory, gm. Pisz – Sdorren, Kr. Johannisburg

Sambian-Natangian area and similar sites from other areas

Beryozovka, ray. Bagratyonovsk – Nauniemen, Kr. Pr. Eylau
Bolshoe Isakovo, ray. Guryevsk – Lauth, Kr. Königsberg
ex-Eisliethen, Kr. Fischhausen – the locality not existing nowadays, in ray. Zelenogradsk
ex-Grebieten, Kr. Fischhausen – the locality not existing nowadays, in ray. Zelenogradsk
Dobroe-Gora Velikanov, ray. Zelenogradsk – Rantau-Hünenberg, Kr. Fischhausen
Klintsovka-Irzekapinis, ray. Zelenogradsk
Izhevskoe, ray. Guryevsk – Widitten, Kr. Fischhausen
Kholmogor'e, ray. Pravdinsk – Kipitten, Kr. Pr. Friedland
Kovrovo, ray. Guryevsk – Dollkeim, Kr. Fischhausen

Markajmy, gm. Lidzbark Warmiński – Markeim, Kr. Heilsberg
 Mitino, ray. Kaliningrad – Stantau, Kr. Königsberg
 Pesochnoe, ray. Pravdinsk – Detlevsruh, Kr. Bartenstein
 ex-Plauen, Kr. Wehlau – the locality not existing nowadays, in ray. Gvardeysk
 ex-Warnikam, Kr. Heiligenbeil – the locality not existing nowadays, in ray. Bagratyonovsk
 Povarovka, ray. Zelenogradsk – Kirpehnen, Kr. Fischhausen
 Równina Dolna, gm. Korsze
 ex-Siegesdicken, Kr. Fischhausen – the locality not existing nowadays, in ray. Zelenogradsk
 Sątoczno, gm. Korsze
 Schosseynoye, ray. Guryevsk – Warten, Kr. Königsberg
 Soldatovo, ray. Gvardeysk – Friedrichsthal, Kr. Wehlau

Suvorovo, ray. Gvardeysk – Zohpen, Kr. Wehlau
 Svetlogorsk, ray. Zelenogradsk – Cobjeiten, Kr. Fischhausen
 ex-Tengen, Kr. Heiligenbeil – the locality not existing nowadays, in ray. Guryevsk
 Vetrovo, ray. Zelenogradsk – Ekritten, Kr. Fischhausen
 ex-Wangskeim, Kr. Heiligenbeil – the locality not existing nowadays, in ray. Bagratyonovsk
 Zelenyy Gay, ray. Zelenogradsk – Gross Drebnau, Kr. Fischhausen

Sudovian culture

Korkliny, gm. Suwałki
 Przebród, gm. Suwałki
 Szwajcaria, gm. Suwałki
 Żywa Woda, gm. Jeleniewo

V.2. Jerzy Maik, Fabrics from the cemetery at Nowinka

The fabrics from the cemetery at Nowinka come from four graves of riders. The remains of fabrics were usually found near horse skeletons, next to fragments of metal objects the oxides of which preserved the tissues from which the fabrics were made. All of them are very poorly preserved: while saturation with metal oxides preserved the fabrics, it also resulted in their mineralization as a result of which threads break and disintegrate. This made it difficult to determine some parameters of the fabrics, especially of the raw materials. The fabrics were found in the following graves: 17, 21, 26 and 117.

The Catalogue²⁰⁴

Grave 17: remains of two woollen fabrics and one flax cord were preserved above a horse skeleton.

Fabric 17/I

Inv. no.: 1972:17/1a, 2a, 3a.

Description: small fragments of soft woollen fabric; dark brown in colour; very poor state of preservation, the yarns break; Dms. ca 4x2 cm.

Fabric type: 7.

Weave: 2/2 twill.

Th. of warp: 16 yarns per 1 cm.

Th. of weft: 14 yarns per 1 cm.

Twist of the yarn: ZZ.

Th. of yarn in the warp: 0.2-0.3 mm, average 0.24 mm.

Th. of yarn in the weft: 0.2-4 mm, average 0.28 mm.

Raw material of warp: wool.

Th. of fibres in the warp: 12-81 µm, average 26.2 µm.

Unevenness: 55.27%.

Proportion of core fibres: none.

Raw material of weft: wool.

Th. of fibres in the weft: 12-69 µm, average 26.5 µm.

Unevenness: 32.07%.

Proportion of core fibres: none.

Remarks: none.

Fabric 17/II

Inv. no.: 1972:17/1b, 2b, 3b.

Description: small fragments of thick woollen fabric; black in colour; very poorly preserved, the fabric almost completely destroyed; Dms. ca 2x1 cm.

Fabric type: ?

Weave: ?

Th. of warp: ?

Th. of weft: ?

Twist of the yarn: ZZ.

Th. of yarn in the warp: ca 0.6-0.8 mm.

Th. of yarn in the weft: ca 1.2-1.3 mm.

Raw material of warp: wool.

Th. of fibres in the warp: 12-63 µm, average 25.5 µm.

Unevenness: 39.84%.

Proportion of core fibres: none.

Raw material of weft: wool.

Th. of fibres in the weft: 15-51 µm, average 24.3 µm.

Unevenness: 32.61%.

²⁰⁴ Abbreviations as in Chapter II.1. The typology of fibres developed for products from the Roman Period and the Middle Ages was used (Maik 1988, p. 29), with subsequent modifications (Maik 1997, p. 14). As refers to twist: Z – twist to the right, S – twist to the left, ZZ means that the warp and weft are twisted to the right, ZS – the warp twisted to the right and the weft to the left, etc. (Fig. 1).

Proportion of core fibres: none.
Remarks: none.

Cord 17/III

Inv. no.: 1972:17/4b.

Description: a small fragment of a thin, evenly twisted cord; pale yellow in colour; twist of the cord: S of two yarns with a Z twist (S/2Z); L. of the cord: ca 1 cm, Th. ca 1 mm.

Twist of the yarn: Z.

Th. of yarn: ca 0.7-0.8 mm.

Raw material: flax.

Remarks: none.

Grave 21: remains of eight woollen fabrics were found near the saddle.

Fabric 21/I

Inv. no.: 1973:21/1b, 3a, 4b, 5, 6a, 12b.

Description: numerous fragments of fine woollen fabric; brown in colour; very poor state of preservation, the yarns break; Dms. ca 6x5 cm.

Fabric type: 7.

Weave: diagonal 2/2.

Th. of warp: 17-24 yarns per 1 cm.

Th. of weft: 14-20 yarns per 1 cm.

Twist of the yarn: ZZ.

Th. of yarn in the warp: 0.1-0.3 mm, average 0.21 mm.

Th. of yarn in the weft: 0.1-0.4 mm, average 0.26 mm.

Raw material of warp: wool.

Th. of fibres in the warp: 15-69 µm, average 34.0 µm.

Unevenness: 36.97%.

Proportion of core fibres: none.

Raw material of weft: wool.

Th. of fibres in the weft: 15-77 µm, average 32.9 µm.

Unevenness: 41.28%.

Proportion of core fibres: none.

Remarks: Th. of yarns in some fragments of the fabric calculated per 0.5 cm.

Fabric 21/II

Inv. no.: 1973:21/1a, 2a, 3b, 4a, 6b, 7c, 14.

Description: numerous small fragments of thick woollen fabric; dark brown in colour; in some fragments the weave very poorly visible or not visible; very poor state of preservation, fabric preserved in small fragments, often these are separate yarns; Dms. ca 8x5 cm.

Fabric type: 7.

Weave: 2/2 twill.

Th. of warp: 9 yarns per 1 cm.

Th. of weft: 7 yarns per 1 cm.

Twist of the yarn: ZZ.

Th. of yarn in the warp: 0.4-0.7 mm, average 0.54 mm.

Th. of yarn in the weft: 0.7-1.3 mm, average 1.03 mm.

Raw material of warp: wool.

Th. of fibres in the warp: 15-60 µm, average 32.3 µm.

Unevenness: 35.3%.

Proportion of core fibres: none.

Raw material of weft: wool.

Th. of fibres in the weft: 15-45 µm, average 25.5 µm.

Unevenness: 27.79%.

Proportion of core fibres: none.

Remarks: none.

Fabric 21/III

Inv. no.: 1973:21/2b, 7b, 8b.

Description: small narrow fragments of very fine woollen fabric; light brown in colour; fabric with grooves probably imprinted on some hard object; very poor state of preservation, the yarns break; Dms. ca 7x3 cm.

Fabric type: 2.

Weave: plain 1/1.

Th. of warp: ca 18-20 yarns per 1 cm.

Th. of weft: ca 18-20 yarns per 1 cm.

Twist of the yarn: ZS.

Th. of yarn in the warp: 0.1-0.3 mm, average 0.19 mm.

Th. of yarn in the weft: 0.2-0.3 mm, average 0.22 mm.

Raw material of warp: wool.

Th. of fibres in the warp: 18-75 µm, average 33.4 µm.

Unevenness: 32.91%.

Proportion of core fibres: none.

Raw material of weft: wool.

Th. of fibres in the weft: 18-63 µm, average 34.2 µm.

Unevenness: 28.28%.

Proportion of core fibres: none.

Remarks: none.

Fabric 21/IV

Inv. no.: 1973:21/7a.

Description: small fragments of very fine fabric; light brown in colour; very poor state of preservation, the yarns break; Dms. ca 2x1.5 cm.

Fabric type: 7.

Weave: 2/2 twill.

Th. of warp: 29-30 yarns per 1 cm.

Th. of weft: 20-22 yarns per 1 cm.

Twist of the yarn: ZZ.

Th. of yarn in the warp: 0.1-0.2 mm, average 0.15 mm.

Th. of yarn in the weft: 0.1-0.2 mm, average 0.18 mm.

Raw material of warp: wool.

Th. of fibres in the warp: 12-48 µm, average 23.3 µm.

Unevenness: 36.81%.

Proportion of core fibres: none.

Raw material of weft: wool.

Th. of fibres in the weft: 15-42 µm, average 22.6 µm.

Unevenness: 33.06%.

Proportion of core fibres: none.

Remarks: none.

Fabric 21/V

Inv. no.: 1973:21/8a.

Description: small fragments of very fine fabric, fused into three layers; brown in colour; very poorly preserved, the fabric disintegrates; Dms. ca 3.5x3 cm.

Fabric type: 7.

Weave: 2/2 twill.

Th. of warp: 7 yarns per 1 cm.

Th. of weft: 6 yarns per 1 cm.

Twist of the yarn: ZZ.

Th. of yarn in the warp: 0.3-0.6 mm, average 0.42 mm.

Th. of yarn in the weft: 0.6-0.9 mm, average 0.42 mm.

Raw material of warp: wool.

Th. of fibres in the warp: 15-45 µm, average 24.4 µm.

Unevenness: 31.65%.

Proportion of core fibres: none.

Raw material of weft: wool.

Th. of fibres in the weft: 15-42 µm, average 24.8 µm.

Unevenness: 34.39%.

Proportion of core fibres: none.

Remarks: none.

Fabric 21/VI

Inv. no.: 1973:21/8c, 11, 12a.

Description: small fragments of very fine fabric; brown in colour; very good state of preservation, one of the fragments mineralized with copper oxides; Dms. ca 4x1.5 cm.

Fabric type: 9.

Weave: 2/2 broken twill.

Th. of warp: 18 yarns per 1 cm.

Th. of weft: 14 yarns per 1 cm.

Twist of the yarn: ZZ.

Th. of yarn in the warp: 0.2-0.4 mm, average 0.31 mm.

Th. of yarn in the weft: 0.2-0.5 mm, average 0.38 mm.

Raw material of warp: wool.

Th. of fibres in the warp: 18-60 µm, average 29.4 µm.

Unevenness: 27.64%.

Proportion of core fibres: none.

Raw material of weft: wool.

Th. of fibres in the weft: 15-48 µm, average 29.2 µm.

Unevenness: 27.73%.

Proportion of core fibres: none.

Remarks: the weave reversed every 14 yarns of the warp.

Fabric 21/VII

Inv. no.: 1973:21/9, 10, 12c.

Description: small fragments of medium-thick fabric; dark brown in colour; very poorly preserved, two fragments fused, two other ones damaged, only

single yarns remained; Dms. ca 3x3 cm.

Fabric type: 7.

Weave: 2/2 twill.

Th. of warp: 5 yarns per 1 cm.

Th. of weft: 4 yarns per 1 cm.

Twist of the yarn: ZZ.

Th. of yarn in the warp: 0.6-1.0 mm, average 0.76 mm.

Th. of yarn in the weft: 0.8-1.3 mm, average 1.01 mm.

Raw material of warp: wool.

Th. of fibres in the warp: 15-57 µm, average 298 µm.

Unevenness: 28.42%.

Proportion of core fibres: none.

Raw material of weft: wool.

Th. of fibres in the weft: 15-48 µm, average 25.5 µm.

Unevenness: 29.41%.

Proportion of core fibres: none.

Remarks: none.

Fabric 21/VIII

Inv. no.: 1973:21/13.

Description: small fragments of quite thick fabric; dark brown in colour; poorly preserved, the fabric disintegrates; Dms. ca 2.5x2 cm.

Fabric type: 7.

Weave: 2/2 twill.

Th. of warp: 9 yarns per 1 cm.

Th. of weft: 7 yarns per 1 cm.

Twist of the yarn: ZZ.

Th. of yarn in the warp: 0.4-0.7 mm, average 0.51 mm.

Th. of yarn in the weft: 0.5-0.9 mm, average 0.67 mm.

Raw material of warp: wool.

Th. of fibres in the warp: 12-54 µm, average 22.9 µm.

Unevenness: 37.43%.

Proportion of core fibres: none.

Raw material of weft: wool.

Th. of fibres in the weft: 15-45 µm, average 23.8 µm.

Unevenness: 27.34%.

Proportion of core fibres: none.

Remarks: none.

Grave 26: one fragment of woollen fabric and one fragment of woollen yarn were found in undetermined places.

Fabric 26/I

Inv. no.: 1973:26/1.

Description: small, irregular fragments of fine fabric; light brown in colour; very poorly preserved, the fabric almost completely destroyed; Dms. ca 2x1 cm.

Fabric type: 7.

Weave: 2/2 twill.

Th. of warp: 13 yarns per 1 cm.

Th. of weft: 10 yarns per 1 cm.

Twist of the yarn: ZZ.

Th. of yarn in the warp: 0.1-0.3 mm, average 0.20 mm.
 Th. of yarn in the weft: 0.2-0.3 mm, average 0.24 mm.
 Raw material of warp: wool.
 Th. of fibres in the warp: 15-63 μm , average 27.7 μm .
 Unevenness: 31.76%.
 Proportion of core fibres: none.
 Raw material of weft: wool.
 Th. of fibres in the weft: 15-72 μm , average 29.6 μm .
 Unevenness: 43.58%.
 Proportion of core fibres: none.
 Remarks: Th. of the weft and warp calculated per 0.5 cm.

Yarn 26/II

Inv. no.: 1973:26/2.
 Description: fragment of a thick yarn; brown-black in colour; well preserved; L. ca 2.5 cm.
 Twist of the yarn: Z.
 Th. of yarn: 1.2-1.4 mm, average 1.26 mm.
 Raw material: wool.
 Th. of fibres: 15-51 μm , average 29.0 μm .
 Unevenness: 29.25%.
 Proportion of core fibres: none.
 Remarks: none.

Grave 117: on the horse skull near a small bronze plaque there were fragments of one woollen fabric.

Fabric 117/I

Inv. no.: 1973:117/1, 2, 4.
 Description: fragments of fine woollen fabric; very poorly preserved, the yarns are stiff and break; Dms. ca 5x3 cm.
 Fabric type: 1.
 Weave: plain 1/1.
 Th. of warp: 22-28 yarns per 1 cm.
 Th. of weft: 13-16 yarns per 1 cm.
 Twist of the yarn: ZZ.
 Th. of yarn in the warp: 0.1-0.3 mm, average 0.18 mm.
 Th. of yarn in the weft: 0.2-0.4 mm, average 0.25 mm.
 Raw material of warp: wool.
 Th. of fibres in the warp: 12-45 μm , average 30.8 μm .
 Unevenness: 25.59%.
 Proportion of core fibres: none.
 Raw material of weft: wool.
 Th. of fibres in the weft: 15-51 μm , average 30.9 μm .
 Unevenness: 20.99%.
 Proportion of core fibres: none.
 Remarks: none.

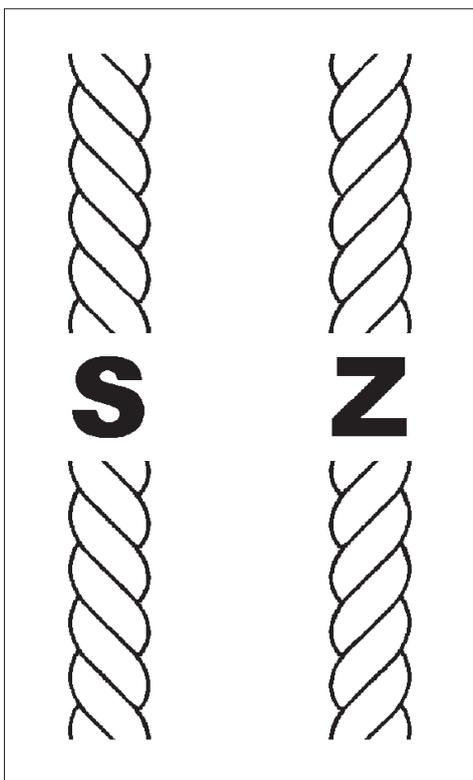


Fig. 1. Yarn twist: left (S) and right (Z) (drawn by E. Wtorkiewicz-Marosik).

Conclusions

Out of twelve woollen fabrics found in the graves, one represents Type 1, one – Type 2, eight – Type 7, one – Type 9, and the type of one fabric was not determined.

Type 1 is represented by not felted fabrics with a plain weave (Fig. 2a) made from yarn with the same twist in weft and warp (ZZ or SS). In Nowinka one fabric of this type was found (grave 117). It is a very delicate fabric made from yarn with twist ZZ. The density of yarn in its warp is 22-28 per 1 cm and of the weft, 13-16 per 1 cm. The yarns of the warp are 0.18 mm thick on the average, and of the weft, 0.25 mm.

Type 2 is represented by not felted fabrics with a plain weave made of yarn with twist ZS or SZ. One fabric of Type 2 was found at Nowinka (grave 21). Its yarns have ZS twist. The fabric has deep grooves, which seem to be secondarily imprinted by a hard object adjoining it in the grave. The poor state of preservation and the fact that the yarns break at every touch made it impossible to determine what made the grooves. The fabric is delicate and the density of its warp and weft is 18-20 yarns per 1 cm. The yarns of

the warp are 0.19 mm thick on the average, and of the weft, 0.22 mm.

Fabrics of Type 7 are not felted and have 2/2 twill (Fig. 2b). The yarn has twist ZZ or SS. In the fabrics from Nowinka it is always twist ZZ. Fabrics of Type 7 were found in grave 17 (one item), 21 (six items), 26 (one item). Some of these fabrics are thick (four items) with 5 to 10 yarns in the warp and 4 to 7 yarns in the weft per 1 cm, medium-thick (two items), with 13 to 16 yarns in the warp and 9 to 14 yarns in the weft per 12 cm and very fine (two items) with 22 to 30 yarns in the warp and 16 to 17 yarns in the weft per 1 cm. The above differences in thickness suggest that the fabrics had different uses: the thicker ones were probably used for making outer garments, the finer ones, for the undergarments. The thicknesses of the yarns used in respective fabrics match the thicknesses of the fabrics: in the thickest fabrics the warp yarns have average thickness from 0.5 to 1.0 mm, in the finest ones, in the warp yarns of average thickness from 0.1 to 0.2 mm were used and in the weft, from 0.2 to 0.3 mm.

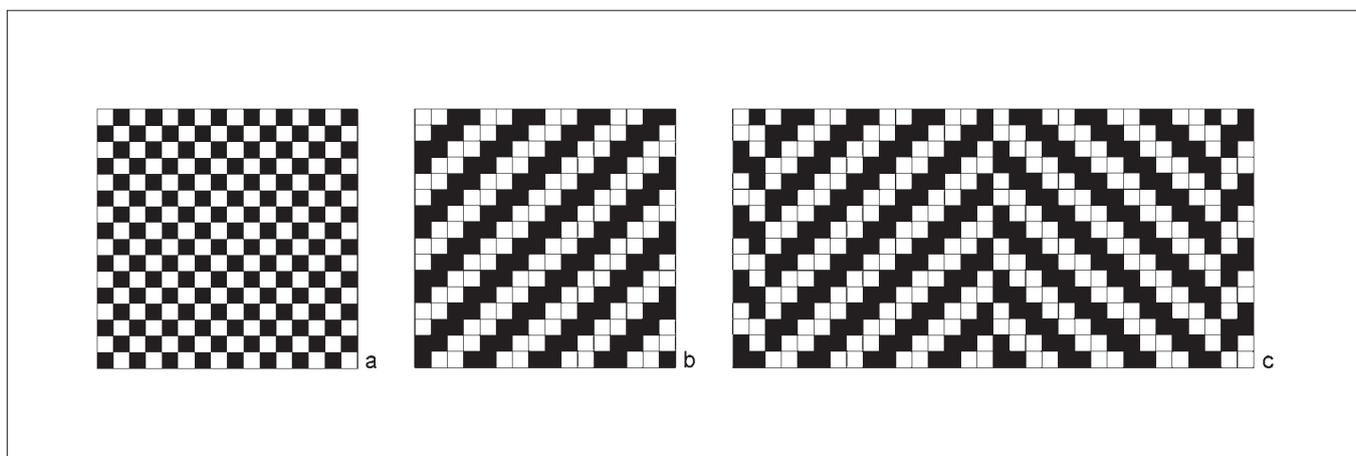


Fig. 2. Schemes of weaves in fabrics from Nowinka: plain weave 1/1, b. twill weave 2/2, c. herringbone weave 2/2 (drawn by E. Wtorkiewicz-Marosik).

Type 9 is represented by non felted fabrics with 2/2 broken twill (Fig. 2c) made of yarn with ZZ or SS twist. The only fabric of that type from Nowinka has the ZZ twist. This is quite a fine product with the thickness of the warp of 18 yarns per 1 cm and weft of 14 yarns per 1 cm. The yarn of the warp has an average thickness of 0.31 mm and of the weft, 0.38 mm.

It was impossible to determine the type of very strongly damaged fabric from grave 17. It was made of yarn with ZZ twist, the thickness of the warp was ca 0.6-0.8 mm and of the weft, 1.2-1.3 mm.

In grave 26 a fragment of woollen yarn with twist Z was found. Its length is ca 2.5 cm and average thickness 1.26 mm. No characteristic deflections

suggesting that it comes from a destroyed fabric were found on it, it rather seems that it may have been used, e.g., to sew two fabrics together.

In grave 17 a small fragment of a ca 1 cm long and 1 mm thick flax cord²⁰⁵ was preserved. It is twisted into S from two yarns with a Z twist (S/2Z). The thickness of individual yarns is ca 0.7-0.8 mm. Although flax was found in the one piece of string it may be, however, assumed that at the cemetery there were more products made of flax, yet they were completely

²⁰⁵ The analysis of the raw materials was made by Henryk Wrzosek, M. Eng., from the Department of Physics of Fibres and Textile Metrology Technical University of Łódź, to whom I would like to express my gratitude for his help.

destroyed as textile raw materials of plant origin do not preserve in the soil as well as wool.

Analyses of the wool from the fabrics from the cemetery at Nowinka consisted in measuring the thickness of the yarns separately for the warp and weft, calculating the average thickness of the fibres (in micrometers: $1\ \mu\text{m} = 0.001\ \text{mm}$) and their unevenness, i.e., the average deviation from the average thickness (in %). Moreover, observations were made whether the samples contain core fibres and what, if any, is their proportion. It was established that the yarns in the wool used in the warps of the fabrics from Nowinka have average thickness of $24\text{--}30\ \mu\text{m}$ and it is thicker only in the warps of three fabrics ($32\text{--}34\ \mu\text{m}$). The unevenness of thickness of fibres in this wool ranges between 27 and 55%. In none of the samples core fibres were found. Similar wool was used in the wefts, with average thickness of fibres amounting to $23\text{--}30\ \mu\text{m}$. Thicker fibres ($32\text{--}34\ \mu\text{m}$) were found only in two wefts. The unevenness of the fibres was also similar: 27–43%. Also in the wefts no core fibres were found. The above indicates that the described wool was of good quality. Its parameters match the parameters

typical of the wool of local woolly sheep Type *woolly Soay* (Fig. 3) and hairy sheep Type *hairy Soay* (Fig. 4), found in fabrics from the Wielbark culture (Maik 1988, p. 104–110; 2001, p. 313–317). Similar or even better in quality was the wool from the Sudovian culture cemetery at Żywa Woda (Maik 1977, p. 143). Also the wool from the fabrics from Prussian cemetery at Równina Dolna, from the turn of the 13th and 14th centuries, does not show much difference in quality than the wool from Nowinka (Nahlik 1958, p. 172–174). By contrast, wool with thicker fibres with a diameter of more than $30\ \mu\text{m}$ (Fig. 5) corresponds rather to the Early Medieval wool fabrics, such as that from Wolin, originating from primitive breeds, e.g., Wrzosówka or Mazurian sheep (Nahlik 1959, p. 258–261; Maik 1990, p. 156–159). It thus seems that the analyses of wool from Nowinka may suggest deterioration of the quality of wool, and so also of sheep breeding at the Baltic areas, in comparison to the Roman Period. A similar process has been also observed in other areas of central and northern Europe (Maik 1988, 102–115; von Stokar 1938, p. 1947–1948, Fig. 63; Bender Jørgensen 1986, *passim*; 1992, *passim*).

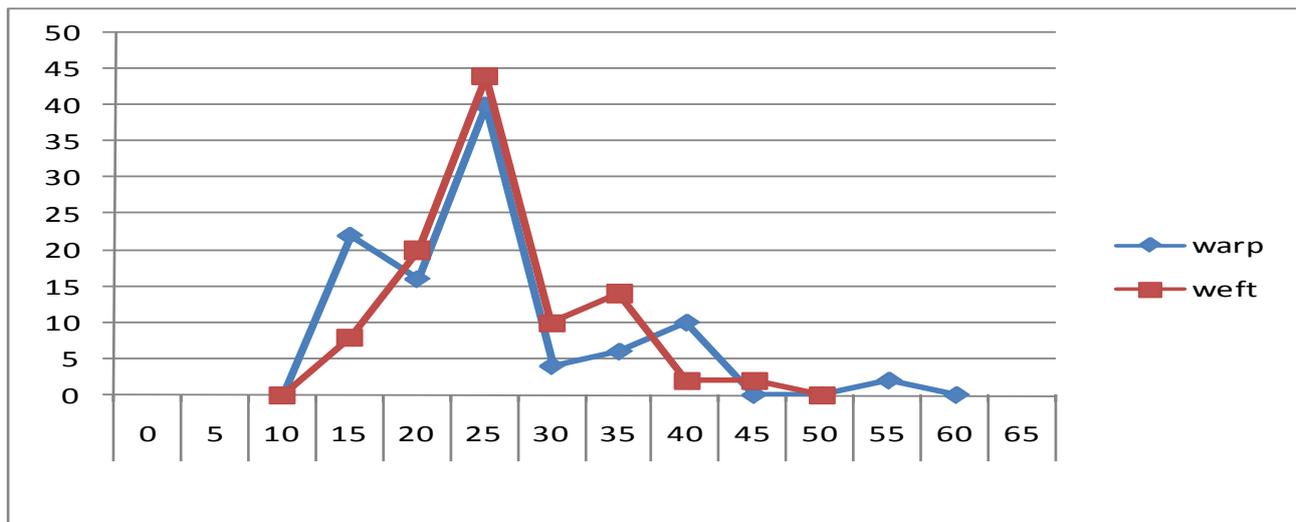


Fig. 3. Thickness of woolly wool Type woolly Soay.

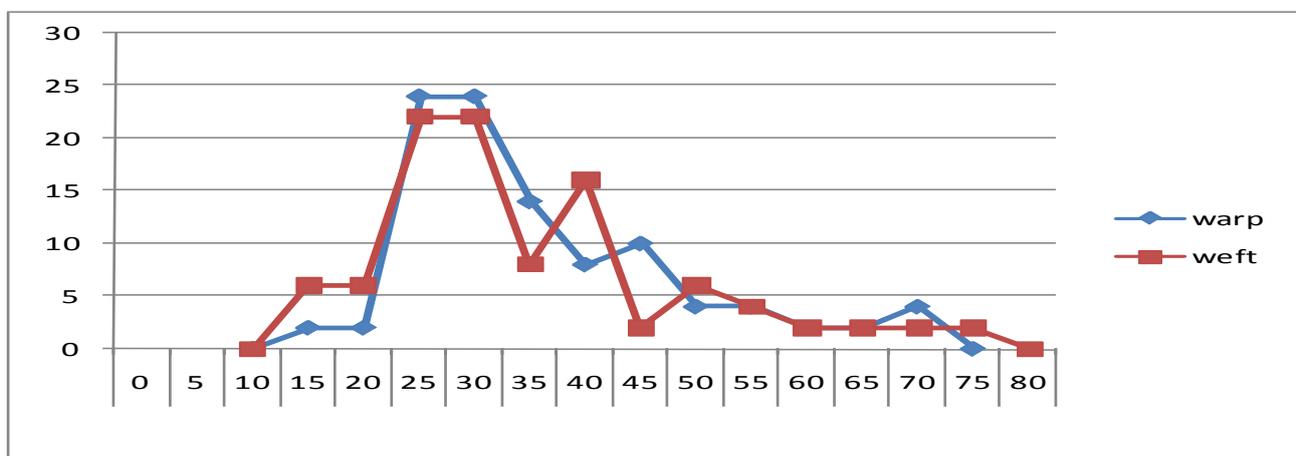


Fig. 4. Thickness of woolly wool Type hairy Soay.

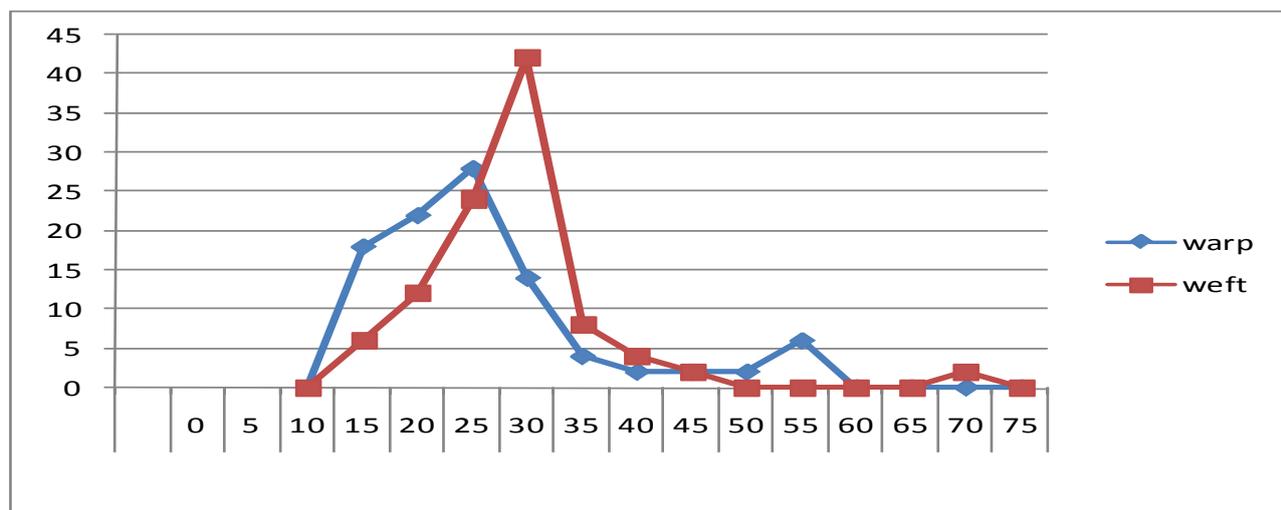


Fig. 5. Thickness of wool of primitive sheep (*Wrzosówka* or *Mazurian*).

Of the twelve fabrics as many as eight belong to Type 7. This means that the fabrics with the diagonal weave 2/2 constitute the majority, i.e., over 77%. Although the total number of fabrics from Nowinka is not large enough for the whole set to have any statistical value, I believe that it is worth noticing. Furthermore, two fabrics have plain weave (one belongs to Type 1, and the other, to Type 2), and one has 2/2 broken twill (Type 9). The weave of one fabric is not determined. These proportions of using various weaves in woollen fabrics are characteristic of textile production of the Wielbark culture, and also of the earliest Medieval textile production from Pomerania (Maik 1988, p. 126-129). 2/2 twill is also typical of the Balt textile production from the Roman Period and the Middle Ages (Maik 1977, p. 137-139, 143; Nahlik 1958, p. 177-178; Pečeliūnaitė-Bazienė 2004, p. 66-77).

The yarn of almost all of the fabrics (except for one) has ZZ twist, i.e., it is twisted to the right both in the warp and weft. Such way of selecting the yarn in the fabrics with diagonal weave produces a smooth fabric; it does not accentuate its texture (slanting rows) and in fabric Type 9: reversed rows. It seems that this may be due to the lack of knowledge of how to use a spindle with a whorl to produce the yarn twisted to the left (S). Already the authors of “Włókiennictwo gdańskie X-XIII w.” pointed out that also modern spinsters were not able to produce yarn twisted in this way (Kamińska, Nahlik 1958, p. 182-183). However, this skill, known in the Roman Period, did not completely disappear, as evidenced by the presence of fabric Type 2 (plain weave, twist of the thread ZS) in the collection of fabrics from Nowinka. It should be noted that even in the Early Middle Ages the yarn with twist S was far less common than that with twist Z (Niesiołowska-Wędzka 1965, p. 323-324; Nahlik 1959, p. 267-268, Maik 1990,

p. 162-163). Also in the collection of fabrics from the cemetery at Równina Dolna, dating to the turn of the 13th and 14th century, fabrics with twist ZZ are clearly predominant (Nahlik 1958, p. 176-177).

Furthermore, the majority of the described fabrics are amazingly fine (Fig. 6). The density of the warp of more than fifteen threads per 1 cm and of the weft of more than twelve threads per 1 cm, which was found in as many as six of them, means that they are products of very high quality; according to the classification worked out by J. Kamińska and A. Nahlik they represent Class I and II (Kamińska, Nahlik 1958, p. 80). Yarn in these fabrics is very thin, it is often less than 0.3 mm thick and, taking into account their quality, resembles rather the products from the Roman Period than those from the Middle Ages (Maik 1988, p. 116-159; Nahlik 1958, p. 176-179).

In the fabrics from Nowinka the edges were not preserved, so they do not have any features which would conclusively confirm what kind of loom (vertical or horizontal) was used to make them. Despite that, I believe that they were woven on a vertical loom, probably a weight loom. The loom of that kind was in general use in central and northern Europe until at least the 11th century and thus it must have been the main tool used by the Balt weavers in the 7th century.

Summing up one may say that the fabrics found at the cemetery in Nowinka are not very numerous and they are very poorly preserved. However, their analysis has shown that we are dealing with very interesting textile products. The way they were made, the use of 2/2 twill and 2/2 broken twill, as well as the high quality of the fabrics made with very fine yarn, support the claim that Balt textile production from the Late Migration Period was at a very high level. Although it seems true that the spinners had lost the ability to make yarns with S twist, they were able to make exceptionally thin threads. From these threads the weavers made products

of excellent quality, especially in the 2/2 twill, but also in the herringbone weave. All this makes the textiles

from Nowinka an interesting contribution to the knowledge of the history of the Baltic textile production.

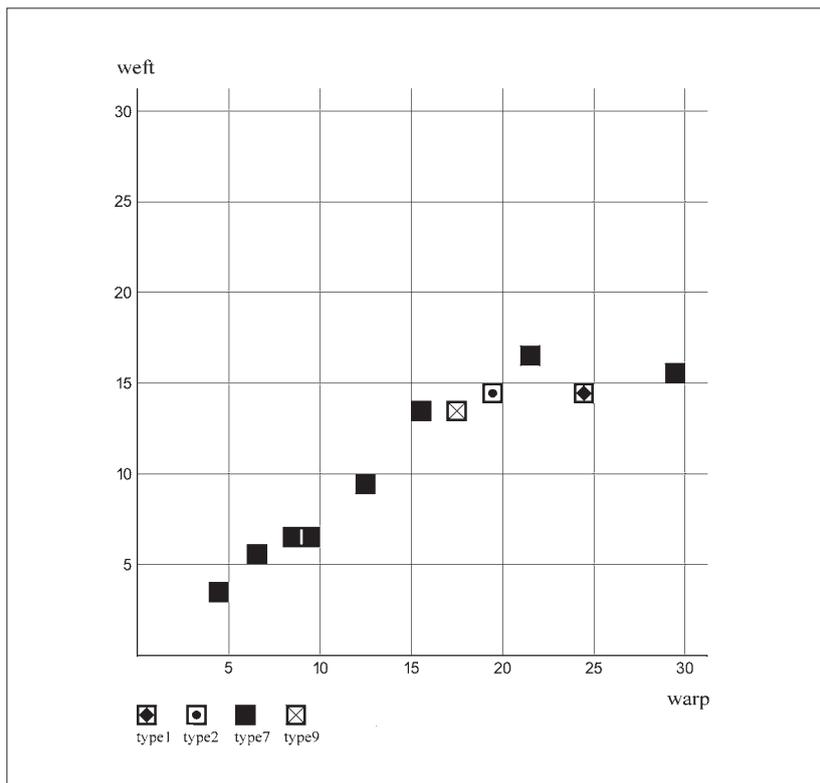


Fig. 6. Densities of the fabrics from Nowinka (drawn by E. Wtorkiewicz-Marosik).

V.3. Teresa Radek, Remains of tanned leather and hair from a cremation burial ground at Nowinka

The degree of preservation of leather found in archaeological layers (also ones with similar datings) may be very different. Within one layer and even one site, specific physical and chemical conditions as well as of other factors, including the methods of tanning used in the past, allow to protect the remains from the degrading influence of time and the environment.

Leather fragments from other sites, having less favourable environment or preserved with the use of more primitive methods of tanning, decompose to a much greater extent. According to my experience gathered from the analyses of remains of leather from the Early Medieval cemeteries (Sowinki, gm. Mosina, the 10/11th-11th century and Czekanów, gm. Jabłonna Lacka, the mid-11th-13th century) as well as of the amulet from the Lusatian culture burial in Truskolasy, gm. Wręczyca

Wielka²⁰⁶ the environment conditions at sites of that type seem to be unfavourable for preserving leather artefacts. The final effect of the analyses of leather fragments (having as a rule very small dimensions) discovered in burials was usually: either confirmation of the presence of a leather artefact without determining the origin of the leather or discovery of a trace of its presence in the form of a single plexus of collagen fibres in the mass of the macerated tissue (casing of the amulet from the grave in Truskolasy – analysis with the use of scanning microscope, magnification 1000x). Sporadically the preserved taxonomic features of leather remains found in burials were sufficient for making tentative determinations of the species of the animal from which the leather came. This was possible during the analysis of the leather artefacts from the cemetery at Nowinka.

Material and methods

The material from Nowinka comes from grave 17 and 21. It consists of three samples of fragmented remains and of material found only in grave 21, namely, two samples of tanned leather (sixteen fragments) and one sample of hair.

I determined the species of the animals from which the leather came using a stereoscope microscope

²⁰⁶ Results of the analysis are stored in the archives of the Centre of Electron Microscopy of the Wrocław University of Environmental and Life Sciences.

with a camera, taking into account three taxonomic features of leather: the distribution of the hair follicles on the grain of the leather, pattern on the grain surface, and the structure of the flesh layer fibres (Persz 1992, p. 61; Radek 1980, p. 63).

The species affiliation of hair was determined with the use of Dziurdzik's (1973, p. 73-77) and Day's (1966, p. 201-205) methods and of the histological atlases (Bacha, Wood 1990, p. 82-88; Kuryszko, Zarzycki 1995, p. 282). The medulla of the hair was analysed with the use of the optical microscope after cleaning the remains in water and 70% alcohol or in 4% solution of potassium hydroxide and cleared

the cuticle of the hair in methyl benzoate or glycerol. The cuticular scale pattern of the hair was determined on the basis of hair imprints wet mounted on gelatin-coated slides. 1 μm thin sections of hair embedded in Epon were made with a Zeiss ultramicrotome²⁰⁷ in the Centre of Electron Microscopy of the Wrocław University of Environmental and Life Sciences.

The analysis of broken up material, which consisted in separating non-organic remains from the organic ones and classifying the organic remains into groups of similar origin, was made with the use of a stereoscope microscope with a magnification of 25-50.

Results and discussion

The analysed organic material comprised remains of both plant and animal origin. The former consisted of fragments of wood, ligneous plant roots (grave 17, 21) and moss remains (grave 17). Particularly interesting are the strands of wicker or bast fibres found in grave 21 (Fig. 1), whose unnatural (at right angles) arrangement seems to be the result of an

intentional human action.

The organic remains of animal origin comprise: twenty two fragments of leather (seventeen from grave 21 and five from grave 17), hair, remains of woollen fabrics (fabric), small pieces of bones and compact lumps of macerated tissue (most probably of cutis) containing numerous remains mainly of hair.

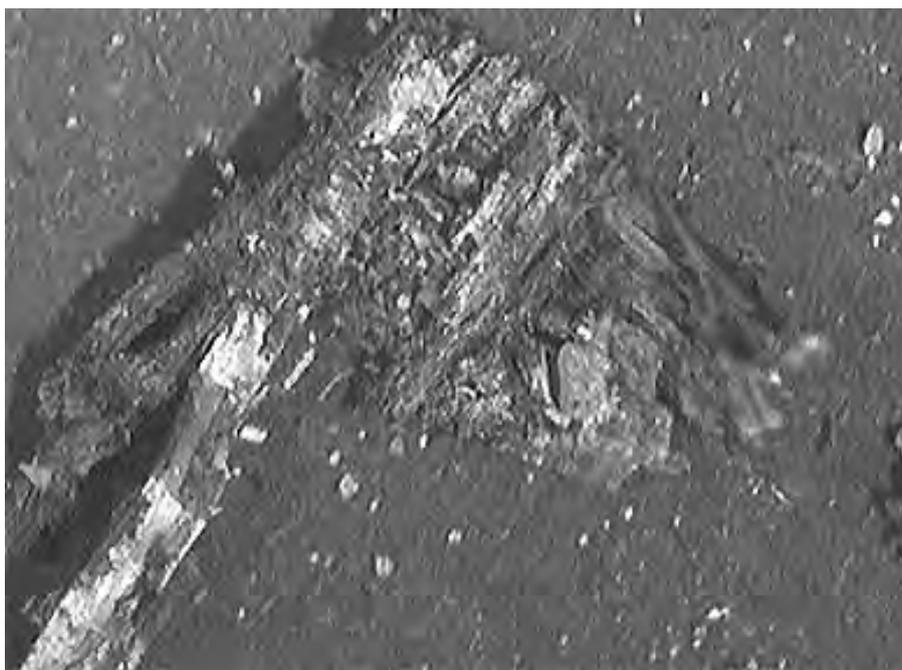


Fig. 1. 'Plaiting' from grave 21.

²⁰⁷ Method and execution by Piotr Kuroпка, Ph.D., Centre for Anatomy and Histology at the Wrocław University of Environmental and Life Sciences.

Tanned leather

Sixteen of the samples of leather artefacts from grave 21 have the form of short and narrow bands. Fourteen of them are considered to be fragments of reins, a narrow belt, or straps for fixing the saddle (Fig. 2). Originally they were joined with thin

wooden slats by means of bronze mounts with rivets. The remaining two fragments of leather, similarly attached to metal plates, were discovered near the skull of the buried horse, among the preserved remains of the bridle.

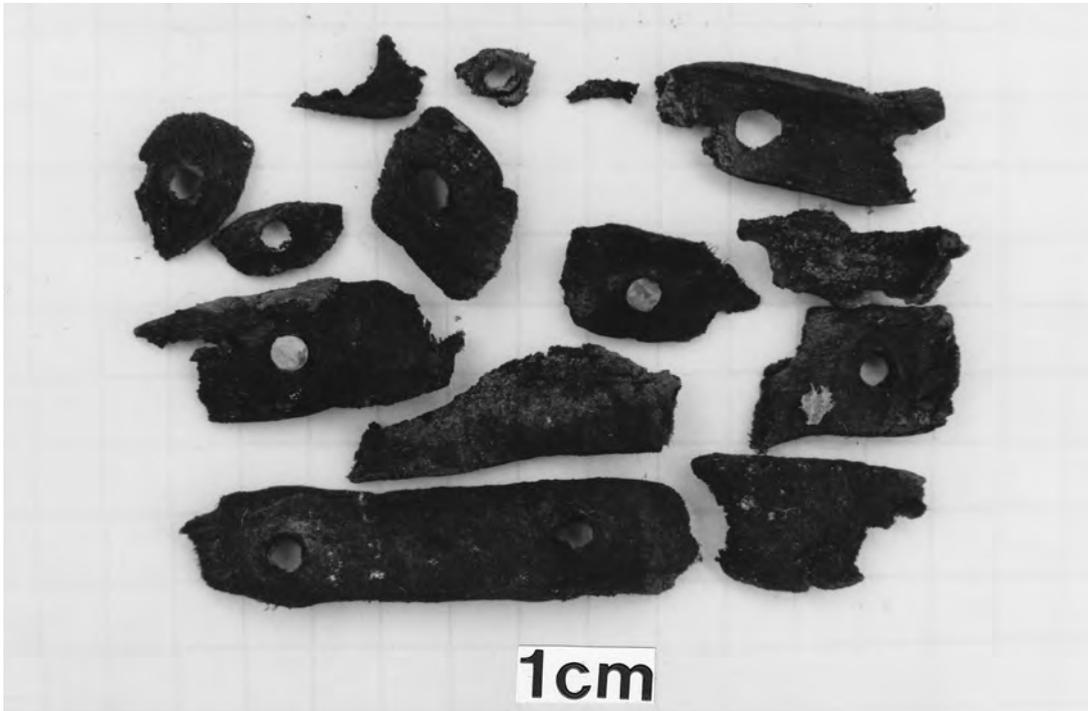


Fig. 2. Leather fragments of horse trappings (?) from grave 21.

The material used to make the analysed leather parts of the trappings was hide, tanned with hair, probably of cattle. Such selection of the material

should be considered as the best possible (Rerutkiewicz, Tobiszewski 1956, p. 105-106).

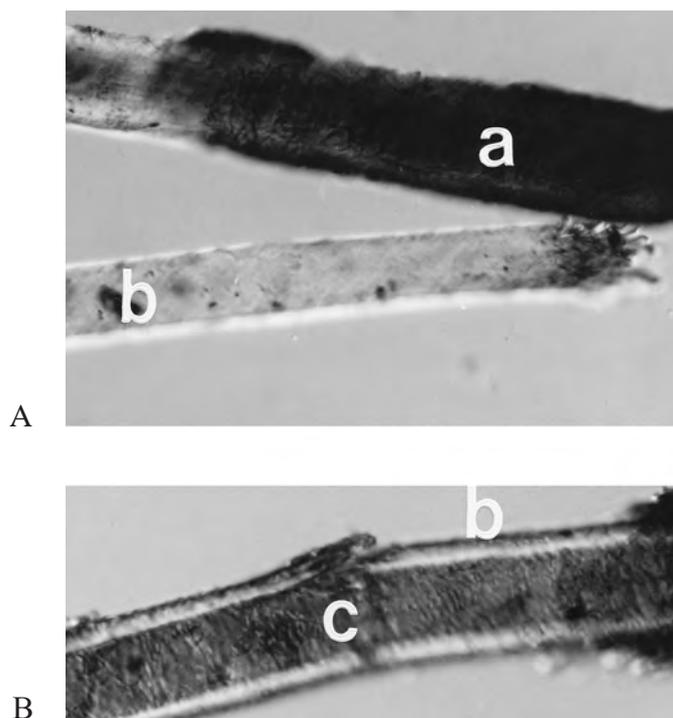


Fig. 3. Hair collected from the surfaces of leather fragments of horse trappings: A – magnification 100x, a – hair follicle, b – hair shaft, B – magnification 120x, c – nonlattice (reticular) hair core.

Pieces of hair remaining in their follicles (Fig. 3A, B) were found on the grain of all the investigated fragments (Fig. 4). This fact may be the result of intentional activities during tanning or due to a lack

of skill in weakening of hair during the preliminary treatment of the hide. The tentative assessment of the material of leather artefacts in the above context is, however, risky as the analysed material was scant.

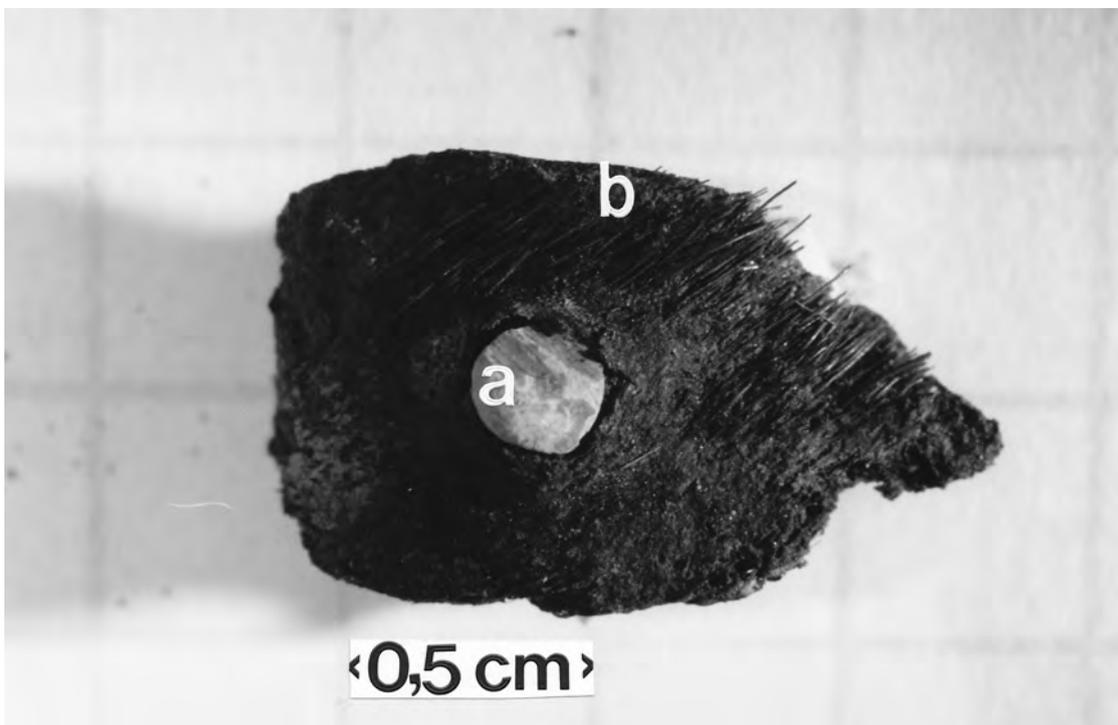


Fig. 4. Fragment of tanned leather from grave 21: a – metal rivet, b – hair.

As the taxonomic features of the leather were blurred, they were insufficient for species determination. The artefacts were very dry, stiff, with compact flesh side fibres and smoothed grain. Their surfaces did not have the grain pattern, characteristic for respective animal species (Persz 1992, p. 61; Radek 1980, p. 85, Table 1-4). The arguments supporting the claim

that the leather was made of cattle hides are based on the analysis of the grain of the three better preserved fragments: the shape and way in which the openings of the hair follicles are distributed (Fig. 5A, B), the arrangement of the flesh layer fibres in the form of the lens-shaped bundles visible in the cross-sections of the pieces of leather, and the structure of the hair.

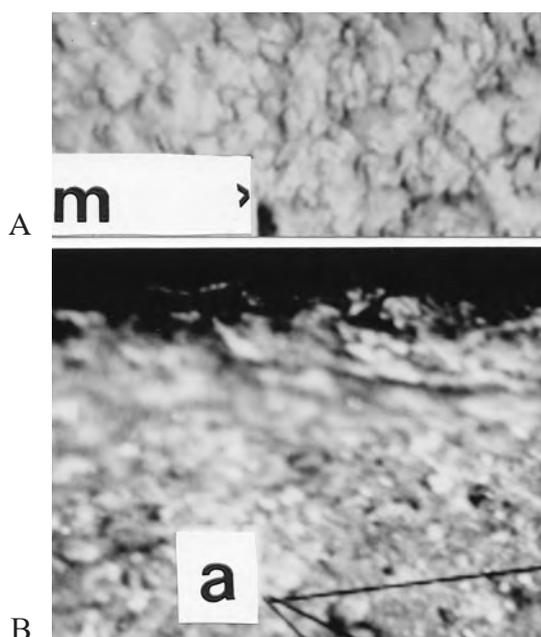


Fig. 5. Leather grain: A – of the artefact, B – modern cattle leather, a – openings of the hair follicles.

The hair samples collected from the leather have the nonlattice, fragmentary medulla (Fig. 3B) and mosaic cuticular scale pattern. The detailed analysis of the above features of the histological structure of the hair narrows down the number of animals from which they may have come from to three species: the cattle, horse, and goat (Dziurdzik 1973, p. 89). At the same time the taxonomical features of the grain and flesh side of the preserved leather artefacts, clearly different from those of tanned horse and goat leather, justify the above-presented determination of the analysed samples. In the sample of the remains collected from grave 21, at the area where there may have been the saddle, I found one

Hair

Among the organic material hair is the main element. Besides the sample of hair found in grave 21, discovered near the head of the buried horse and the above-described cattle hairs fixed on the surface of the leather artefacts, numerous hair remains were found in the lumps of macerated tissue from grave 17 and 21. They are also components of the remains of woollen fabrics found in both graves. All kinds of hairs were subject to taxonomical analysis, yet only part of them had the desired results. This especially concerns the sample from grave 21. This part of the material comprises two types of remains. One of them are guard hairs, mainly light brown, almost yellow in colour with single dark brown, almost black hair. The remain-

2x3 mm fragment of tanned leather with hair, yet this artefact, due to its small dimensions, can not be taken into account in the taxonomical analysis of tanned leather. Also the remains of a leather product (products) found in the sample from grave 17 can be also considered as such material. Five fragments of leather found among remains of other origin are remains of the surface of the leather product (products, saddle) which were originally placed under metal rivets. It seems highly probable that the above-mentioned remains of a leather product were preserved in the material from grave 17 owing to the tanning (preserving) property of the metal compounds (Lasek 1954, p. 90, 98).

ing ones are very delicate, glossy bands of guard hair cuticle split along their longer axis. Although only few undamaged guard hairs were preserved, and among them, only the top parts of their shafts, it was possible to determine that their cuticle had the mosaic scale pattern (Fig. 6). It was much more difficult to determine the types of their medulla, which decomposes depending on the structure of the hair (Kuryszko, Zarzycki 1995, p. 281) or loses its species character (Dziurdzik 1973, p. 75) in the top parts of the shaft. The nonlattice (reticular) arrangement of the cells was visible in the longest investigated remains of the dark hair. The other ones, where the core should have been visible, are remains of the mane (in horses this hair does not

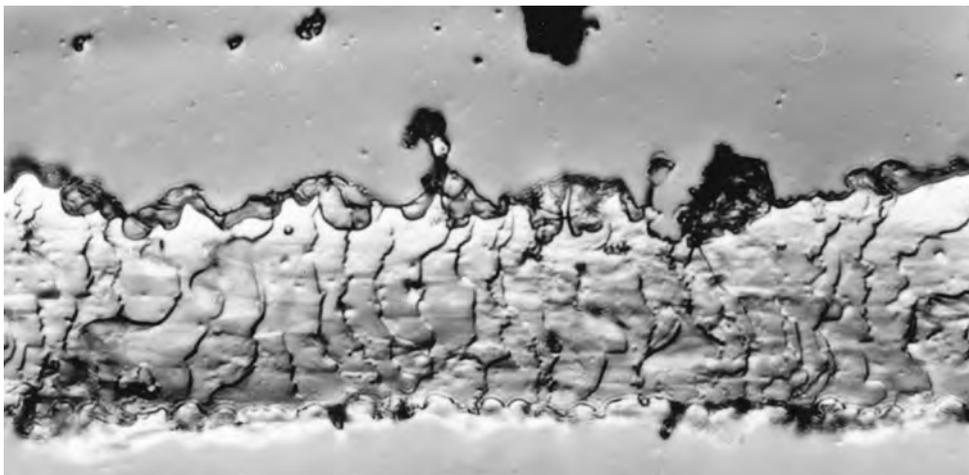


Fig. 6. Relief of the horsehair cuticle from grave 21 (magnification 520x).

have medulla) or were deprived of the discussed layer by the bugs from the *Lathrididae*²⁰⁸ family feeding on the remains (on the surface of the analysed hair there were numerous holes in the cuticle; the insects may have also contributed to the fragmentation of hair into

the above-mentioned longitudinal bands). The above-mentioned morphological features of hair are typical of the horse, hence the assumption that the remains of fur discovered in grave 21 belonged to the buried animal. The oval shape of the cross-sections of the hair (Fig. 7) may suggest that part of them came from the investigated remains (only the lighter hair?) of the mane.

²⁰⁸ Determined by Marek Wanad, Ph. D., from the Zoological Institute at Wrocław University.



Fig. 7. Cross-sections of horse hair from grave 21 (magnification 260x).

The attempts at identifying the hair collected from the lumps of macerated tissues did not yield the expected results. I did not determine the types of the cuticle scales. The procedures used to clean the hair resulted in splitting of the remains along their longer axes. The analyses of the deeper layers revealed the presence of hair with nonlattice (reticular) type of medulla (Fig. 8) and medullaless hair.

Hair with medulla represents the type of hair described above – cattle and horse hair. On the surface of some medullaless hair, pigment was visible in the form of short lines arranged along the longer axis of the hair. This arrangement of pigment, considered as typical of human hair (Dziurdzik 1973, p. 77), was observed also in hair from the thick fabric (?) remains (Fig. 9).

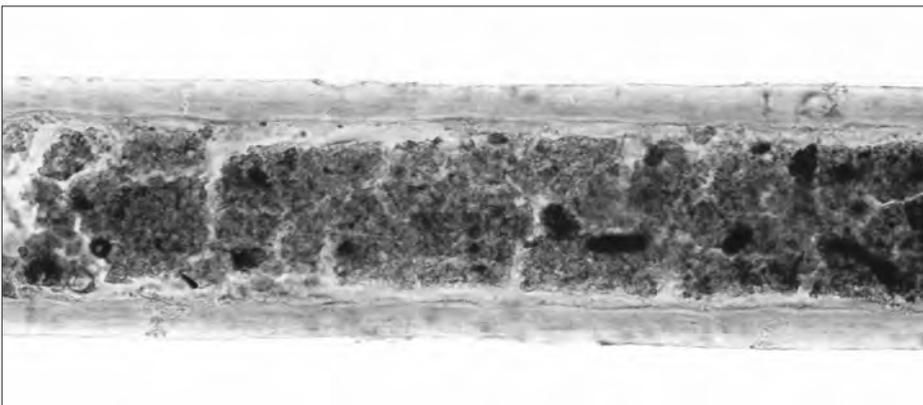


Fig. 8. Nonlattice (reticular) type of hair core from grave 21 (magnification 200x).



Fig. 9. Hair from the fabric (?), grave 17. Streaks of the pigment arranged along the longer axis of the hair (magnification 780x).

Conclusions

The analysed samples of the material from the cemetery at Nowinka are a set of small fragments of various origins. Plant remains, which comprised fragments of wood, moss, roots and animal remains – tanned leather, hair, woollen fabrics, small bone fragments, were found in the material either separately or as *sui generis* two or more layered complexes. The repeated arrangement of layers in these features suggests that at least some of them reflect the original topographical arrangements from the burials.

The analysed remains were preserved in two cremation burials in which the human remains were deposited following similar rituals. As a result the material from the two burials is very similar. The differences concern the presence of moss fragments (grave 17), wicker or bast fibres making up a kind of a 'plaiting' (grave 21) and also of remains of tanned leather for which the influence of the environment (time?) was more favourable for grave 21 than grave 17.

The remains of tanned leather uncovered in the

two graves, especially the fragments from grave 21, are much better preserved than similar material from other sites. It seems highly probable that their good state is the result of the direct contact of the leather with metal compounds (especially the rivets fixed in the leather) which, as it is well known, have tanning properties (Lasek 1954, p. 90, 98). Basing on the shape and arrangement of the openings of hair follicles in some artefacts, the shape of bunches of the flesh layer fibres in the cross-sections and the morphological features of the hair preserved on the surfaces of the artefacts it is possible to determine the analysed fragments as cattle hides tanned with hair.

The analysed hair samples can be classified as remains of fur of the buried horses, the cattle hair as the remains of decomposed parts of horse trappings (?) and the sheep hair as coming from the remains of fabrics. The considerable similarity of morphological features of horse and cattle hair makes it impossible to separate the hair of these two species (Dziurdzik 1973, p. 89) among the fragmented remains.

V.4. Henryk Kobryń, Krzysztof Świeżyński, Archaeozoological description of horses from the cemetery at Nowinka

Introduction

The aim of the investigation was to carry out anatomical analyses and prepare osteometric documentation of horse remains from the excavations at Nowinka. The other aim of the analysis was to determine the structure of this group of animals according

to their sex and age, to determine their withers height, and to determine their morphological types, compared to other listed archaeological sites of a similar nature and dating and compared to the population inhabiting the Polish lands at the same time.

Material

The research embraced the animal remains (bones and teeth) collected at the cemetery in Nowinka. They came from forty graves: 8, 17, 18, 20, 21, 26, 34, 35, 44, 45, 47, 48, 52, 55, 60, 61, 62A, 70 (70-72), 77, 78, 80, 82, 83, 84, 87, 89, 98, 99, 102, 112, 121, 127, 131, 137, 147, 148, 149, 151, 155, 160²⁰⁹.

The state of preservation of the remains as compared to materials from other sites should be considered as bad. As always when dealing with bone remains from archaeological excavations their state is affected by, besides the duration of their deposition, the conditions in which they were deposited. In

Nowinka these conditions must have been very unfavourable. Another factor which could have caused such a high fragmentation of the remains was the age of the animals from which the bones came. As it is known, the bones of young individuals decompose more quickly due to the presence of epiphyseal plates. Cartilage tissue is more susceptible than bone tissue to destructive influence of different factors, and so is the structure of deciduous teeth in comparison to permanent teeth. In the investigated material there were many individuals whose process of growth was unfinished.

²⁰⁹ The material from the rest of the horse graves was preserved too poorly to carry out analyses.

Methods

The species and anatomical affiliation of the horse remains were identified on the basis of morphological features.

The sex of the horses was established on the basis of the presence or absence of canine teeth (or their fragments). This criterion is not entirely reliable as these teeth, which are characteristic of males, may also (although rarely, but such cases are known) occur in females. In these few cases they are very poorly developed. Lack of clear gender differences in the bone structure and size of the horse skeletons (except for the pelvic bones) forced us to use the above criterion. In fact, out of necessity, this practice is commonly used in the analyses of excavated horse remains (Kobryń 1984).

The age of the horses buried in Nowinka was determined primarily on the basis of dentition, taking into account the time of growing and wearing deciduous teeth, of replacing deciduous teeth by permanent teeth and the degree of wear of the latter (Lutnicki 1972). As the standards presented in W. Lutnicki's publication (1972) were developed for the modern breeds of horses, which differ slightly in the time at which they reach adulthood, we treated the horses from Nowinka as a primitive breed, late in reaching adulthood. When the epiphyseal plates were preserved the age of the individuals was determined according to J. Kolda's criteria (1936).

Bones and teeth which were preserved well enough were measured using standard methods (von den Driesch 1976). The measurements of teeth and bones are presented in Tables 1-19.

Basing on the dimensions of the completely preserved long bones the probable heights at the with-

ers were calculated. To this end, the classical method introduced by L. Kiesewalter (1888) was used, its subsequent criticisms (Driesch, Boessneck 1974) being taken into account. In the few cases where it was impossible to measure the length of the side of the bone, the withers height was determined by V.O. Vitt's method (1952). Following this method the table proposed by its author was used and interpolations were made, which allow to establish the given individual's withers height. The values of withers height determined with the use of the two methods, do not differ significantly and are comparable (Kobryń 1984). In the few cases when we had dimensions of several long bones of one animal, the withers height (regardless of the method of its determination), was established as the arithmetic mean calculated from these dimensions.

In order to assign horses to appropriate size groups on the basis of withers height we used classification according to quartile values developed by H. Kobryń (1984).

Basing on descriptive morphological features and (where it was possible) the dimensions of homonymous bones, the number of individuals buried in one grave was determined. Anatomical distribution of all the identified material from a given grave allowed to establish whether a complete animal (or animals) was buried or it was a partial burial where only certain parts of the skeleton and the corresponding body parts were deposited.

The results on the morphological analysis of the horses from the cemetery at Nowinka were compared with the data from the literature.

Results

Grave 8

It contained fragments of a skeleton and teeth of a horse. One hundred sixty of them were sufficiently well preserved to identify their anatomy and species. They come from both the axial skeleton and extremities of the horse. Among the large number of remains unidentified due to their fragmentation, there may have been skull fragments and missing fragments of the right scapula, pelvic, the left metacarpal bone, carpus and phalanges.

The preserved elements of head bones included:

- a relatively large fragment the right maxilla with cheek teeth,
- a fragment of the left half of the skull with the maxilla and cheek teeth, thoracic-lower fragment of the orbital ring with the adjoining fragment of the zygomatic arch,

- several ten fragments of upper and lower incisors,
- two fragments of upper permanent canine teeth,
- two fragments of the left squama temporalis, with the mandibular fossa and two condylar processes,
- ten skull cap fragments and two fragments of the petrous parts of the left and right temporal bone,
- five fragments of the rami of the right mandible with the condyloid process,
- a very damaged fragment of the body of the right mandible with cheek teeth and a fragment of lower right canine tooth,
- fourteen fragments of the left mandible with the condyloid process and a complete of cheek teeth.

Bone fragments near the right and left zygomatic arch and the lateral surfaces of both pieces of

the petrous parts of the temporal bones are markedly green in colour, which may indicate that objects made of copper alloy were deposited near them.

The identified remains of the spine included fragments of all the sections of this part of the skeleton. The most numerous were the fragments of cervical and thoracic vertebrae. Among the fragments of lumbar vertebrae there were two unfused epiphyseal plates. One of them is the caudal-end plate of the last lumbar vertebra. In the sacrum the base is well preserved. The caudal section was represented by two fragments from the same vertebra. Rib fragments were represented by eight left and right parts.

The identified bones of the extremities or their fragments represent almost every section. In the left anterior limb only the wrist, metacarpals, and proximal and distal sections of the phalanges were not found, and in the right one – of the shoulder, wrist bones and the distal section of the phalanges. In the left posterior limb the second and fourth tarsal bone and the whole finger were missing, and in the right posterior limb the talus and the second and fourth tarsal bone were not found.

The anatomical analysis of the remains from this grave shows that one complete individual was buried in it. The fragments of canine teeth indicate that it was a male. The appearance of the biting surface of the incisors, which could be reconstructed from numerous fragments, suggests that the animal was ca 8 years old. This may be confirmed by the fact that the epiphyseal plates in the lumbar vertebrae were not fused, if we assume that the buried horse represented a primitive breed corresponding to late maturing ones.

It was possible to make measurements of many better preserved fragments. The withers height of this horse was 125.8 cm.

Grave 17

The grave contained fragments of horse skeleton and teeth. The state of preservation of one hundred sixty two remains allowed to identify their anatomical affiliation. Arranging the remains in a logical order suggested that a complete animal was buried. Missing autopodium parts in the left anterior and posterior limbs were probably among the very numerous remains, which could not have been identified due to their poor state of preservation. This assumption may be confirmed by the small fragments of metapodia and phalanges which were found among the unidentified fragments.

The material from this grave made it possible to reconstruct almost the whole dentition, except for the lower incisors on the left side of the dental arch.

The preserved permanent canine teeth (one from the upper and two from the lower arch) indicate that the horse was a male. The state of the preserved incisors and blunted lower canine teeth indicate that the horse was approximately 8 years old. The teeth and bones which were better preserved were measured. The withers height of this horse was 128.3 cm.

Grave 18

In this grave the remains were very poorly preserved. In the majority of bone finds the compact bone was almost completely destroyed to such an extent that their remaining part was held together by grass roots.

The characteristic morphological features of these bones were blurred and because of that only fifty six fragments were identified. They come from the head, the cervical part of the spine and a few from each extremity. The anatomical composition of the remains allows to assume that also in this grave a complete horse was buried. It seems hardly probable that it would contain only the head, neck and four limbs (without phalanges).

The identified remains included also fragments of unerupted permanent teeth and deciduous teeth. Three relatively well preserved deciduous canine teeth may suggest that also in this grave a male was buried. In the right anterior limb the radius bone with both epiphyseal plates was preserved. The teeth and the presence of these plates suggest that the animal was young (between 9 and 15 months). Besides the environment conditions in which the remains were deposited the animal's young age clearly had a bad influence on the state of preservation of the find.

Grave 20

The shape of articular surfaces and the size of the remains of the horse buried in that grave indicate that they are parts of one individual. The identified bones or their fragments represent all parts of the skeleton and almost all teeth. It is thus beyond doubt that a complete animal was buried.

Among the remains of the head a large fragment of the skull with the body of the left maxilla, its palatal process and the horizontal plate of the left palatal bone, are particularly interesting. The damaged external wall of the body of the maxilla reveals a small maxillary sinus and long roots of all fully grown cheek teeth of the upper dental arch, which indicates that the animal was more than 4.5 years old. The biting surfaces of all the preserved incisors in the upper dental arch have clear, deep infundibula: this means that the horse was not more than 8 years old. Also the bodies of both mandibles with all cheek teeth, inci-

tor parts and undamaged mandibular symphysis were preserved. The lower canine tooth and incisors I2 and I3 were found in their tooth sockets. On the biting surface of incisor I3 there is a well visible infundibulum. All the above findings concerning the teeth suggest that a 7-8 year-old male was buried in that grave. It is worth to note the form of the above-described fragment of the mandible with teeth. The interdental space is unusually narrow and asymmetrical. The body of the left mandible has a damaged lamina lateralis and exposed tooth sockets (it looks as if it was smashed from the side). As the mandibular symphysis was undamaged it is impossible for the injury to have happened when the horse was placed in the grave. The deformed biting surfaces of the cheek teeth of the right upper and lower dental arch indicate that the mandible was asymmetrical, as a result of which in its lifetime the animal had a malocclusion. The withers height of this horse was 127.4 cm.

Grave 21

This grave contained animal remains such as bones and teeth. One hundred twenty one of them were sufficiently well preserved to determine their anatomy and species. These were remains of one horse which was complete when deposited in the grave, which is indicated by the morphological features. According to the principle earlier adopted when discussing the content of the burials we have considered single missing bones as too fragmented to make any statements about them, as a result of which they were included in unidentified fragments. The missing bones were single vertebrae, some basipodial sections of the limbs and the phalanges.

The bones of the head included a relatively large fragment of the facial part with the oral part of the hard palate and tooth socket processes of both maxillae. The tooth sockets of the left maxilla had all the cheek teeth and of the right, P3, P4, M1 and M2. There was also the cervical part of the occipital bone, which was difficult to match with the neighbouring fragment of the skull, but which allowed to make several measurements. There were numerous teeth found separately including the missing cheek teeth on the right side and the incisors as well as two canine teeth from the lower dental arch, which suggests that the discussed skeleton was of a male horse.

The appearance of the incisors (all of them were permanent teeth and had adequately developed infundibula) suggests that the animal was 5-6 years old.

The withers height, determined on the basis of the radius, was 124.6 cm.

Grave 26

One hundred seventy five remains from that grave allowed to determine their anatomy and species. They belonged to one horse which, according to the anatomical distribution, was buried whole. The few missing bones, visible at the graphical reconstruction of the skeleton, were single carpal bones, tarsal bones, and phalanges.

Many fragments of the skull bones were related to the neighbouring ones, which made it possible to make observations about their forms. Hence a large fragment of the roof of the nasal cavity with the upper parts of the plates of the external maxillae with the nasal bones was preserved. They revealed a visibly concave profile of the skull similar to those of the Tarpan horse and of modern breeds of Arabian horses. On the basis of several complete teeth and numerous fragments it was possible to say that none of them was missing. The state of the dentition suggests that the buried horse was a 5-6 year-old male.

Relatively numerous (for the discussed site) dimensions of long bones allowed to determine the withers height. It was 127.4 cm.

Grave 34

The animal remains from this burial, basing on their anatomical distribution suggests that they belonged to a single horse. The bone fragments suitable for anatomical classification were less numerous than in the burials described above (seventy items) and included all the upper incisors, two canine teeth (upper and lower), many fragments of the skull (including the mandibular symphysis with all teeth), cervical and thoracic vertebrae, ribs and both anterior limbs. The right posterior limb is represented by a few fragments of the pelvic bone, the transitory part and the autopodium (without the phalanges). The left posterior limb is represented by the elements of the pelvic bone, a fragment of an epiphyseal plate, the transitory fragment and the tarsal bones and fragments of the metatarsus. The anatomical distribution of the identified bones and the description of the burial made by the person who explored it allow to say that a complete individual was buried.

The presence of the canine teeth indicates that it was a male and the appearance of the well preserved incisors allows to establish its age as 5-6 years. This age is also indicated by the epiphyseal plates of the thoracic vertebrae. The withers height of this individual, determined on the basis of the length of the largest radius, is 125 cm.

Grave 35

Remains found in this grave were very poorly preserved due to the young age of the buried animal

(together with the destructive influence of the environment in which the bones were deposited). It was possible to identify sixty two remains.

The skull bones and teeth were very fragmented. Of the skull bones a large fragment of the right maxilla with cheek teeth was preserved. The premolar deciduous teeth were considerably worn and the permanent ones were well developed. The first molar was fully grown but its biting surface did not reach the level of occlusion. The fragments of the cervical vertebrae included numerous separate epiphyseal plates. The axial skeleton was also represented by a few rib fragments.

All limb bones were found. The long bones had separate epiphyseal plates, both proximal and distal, which means that the plates were not ossified. The epiphyseal plate was also present in the first phalanx of the right anterior limb, which becomes ossified at the age of 15 months. On the basis of the teeth and preserved epiphyseal plates the age of the horse from this grave may be tentatively determined at 9-15 months.

It was impossible to determine the sex of the buried horse. The state of preservation of the bones was too poor to make measurements, which, however, would be immaterial for the morphological description due to the young age of the individual.

Grave 44

In this grave the remains were very poorly preserved. It was possible to make anatomical identification of only fourty of them. The numerous teeth fragments allowed to reconstruct the incomplete dentition. There were no incisors and canine teeth, which made it impossible to establish the sex of the buried horse. The first molars were not fully grown, which suggests that the horse was buried at the age of between 9 months to 1 year.

According to the anatomical distribution of the remains there were several fragments from the majority of the main parts of the body, which may suggest that a complete horse was buried. In the case of grave 44 it is not feasible to assume that the missing bones could have been among the unidentified remains as the number of the letter bones was very small. If we assumed that it was a partial burial then the grave would contain the head with the neck and parts of the limbs from the glenohumeral and hip joints to the carpal and tarsal bones. However, such cut of the carcass is highly improbable due to the anatomical reasons.

Grave 45

Remains found in this grave are still worse preserved than in the burial described above. Only sixty one pieces were identified.

The remains of the head consisted mainly of the teeth. They belonged to one individual, and the cheek teeth, the complete set of which was determined on the left side, had a considerable malocclusion. Their cheek edges in the upper arch and lingual edges in the lower arch were very sharp. On the right side an opposite state was recorded. This must have made chewing very difficult. The third upper molar on the left had no traces of use on the biting surface. Neither did it bear any traces of disease. The malocclusion may thus have been caused by the fact that this tooth began to grow later on or by a malformation of the body of the left mandible. As there are not recognisable elements of the mandible it is impossible to determine the cause of such occlusion.

Due to considerable fragmentation of the incisors it was not possible to complete the whole dentition and assess the degree to which it was worn. The I3 incisors, which were better preserved, did not have traces of wear, which, together with the presence of all the molars, suggests that the horse was ca 3.5-4.5 years old.

The remains of the post-cranial skeleton comprised very poorly preserved fragments of the vertebrae (the thoracic and lumbar ones) and a few limb bones. The lack of traces of ribs and shoulder and pelvic parts may be explained by the fact that, like other flat bones, they were destroyed. As no measurements could have been taken it was impossible to make any claims about the withers height of the horse, which was buried complete.

Grave 47

Also in that grave the remains were very poorly preserved. Despite that, sixty pieces were anatomically identified. Unfortunately, they did not include larger fragments or complete long bones (except for the right metatarsus) which would have allowed to make more measurements.

Among the cranial bones there was a large fragment of the skull cap with orbital parts of the nasal bones. The concave profile was more pronounced than in the horse from grave 26. Also two fragments of the body and the tooth socket process of the left maxilla were preserved. In one of them the third molar which was in the growth stage was fixed. The second fragment was the external wall with a piece of the left nasal bones, the left incisive bone, the premolars and the deciduous left upper canine tooth.

The fragments of the long bones came both from the anterior and posterior limbs, which, together with the bones of the skull and spine, indicates that a complete horse was buried. Fragments of the base and transitory parts show the presence of proximal

and distal epiphyseal plates, as well as the teeth development suggests that the horse was young. The appearance of the teeth (unerupted M3, deciduous I3) and the preservation of the epiphyseal plates suggest that the horse was 1.5-3.5 years old. The presence of a canine tooth indicates that it was a male. The state of preservation of the long bones does not allow to determine the withers height.

Grave 48

The species and anatomical identification of the remains found in that burial was possible for the best preserved one hundred seventy one bone fragments and teeth.

The skeleton of the head was represented by numerous fragments of the skull cap, a fragment of the right maxilla with adjoining fragments of the palatine bone and cheek teeth of the upper dental arch fixed in the tooth sockets (the last premolar was about to be replaced, P2 and P3 were permanent teeth). There were also sixteen fragments of the bodies of the mandibles with cheek teeth fixed in them. The last molars found in them were at the stage of advanced growth and the remaining ones had reached the level of occlusion. The first and second incisors of the lower arch were permanent and the third incisors were erupting. Similarly, the upper right incisors and the upper right canine tooth were permanent, almost fully grown. From the spine fragments the cervical (including the atlas), thoracic and lumbar vertebrae were identified.

The limb bones were considerably fragmented, due to the young age of the horse, and hence, the presence of the epiphyseal plates. Bones representing all sections of each limb were found, but the fragments of the anterior limbs were more numerous.

On the basis of the above information it may be assumed that the remains from that grave belonged to one individual buried complete. The appearance of the teeth and the presence of the epiphyseal plates indicate that the animal was 1.5-3.5 years old, hence it was still growing. The fragments of canine teeth indicate that it was a male. Its withers height at the moment of burial, calculated on the basis of the dimensions of the metacarpal bone III, was 144.2 cm²¹⁰.

Grave 52

The grave contained strongly fragmented material. The species and anatomical identification was possible for eighty four fragments.

²¹⁰ In some cases (graves 48, 52 and 121) withers high of morphologically immature horses was determined on the base of the length of metapodial bones. Although the development of the individuals was still in progress, the value should be

From the axial skeleton numerous fragments of the facial and cranial bones, cervical and thoracic vertebrae and very numerous rib fragments were identified. The facial bones were related to complete and crumbled deciduous teeth (worn premolars) and permanent teeth (fully grown upper and lower M1 and M2).

The skeleton was represented mostly both by fragments of the anterior and of the posterior limbs. The right radius bone had the proximal epiphyseal plate. No other limb bone was preserved well enough to find out whether it had epiphyseal plates or not.

The anatomical distribution of the identified remains suggests that one horse was buried complete in the discussed grave. The state of development of the teeth and the presence of the epiphyseal plate suggest that the individual was 15-24 months old. However, it is not possible to determine its sex. It was a young horse, still growing. The withers height of that young individual, determined on the basis of the dimensions of the metacarpal bone III was 130.0 cm. This value should be treated tentatively.

Grave 55

One hundred thirty five remains from that grave were identified. The anatomical analysis revealed that they belonged to two horses, marked as horse I and horse II.

The seventy six fragments identified as remains of horse I indicated that it was a relatively young individual. A fragment of the left maxilla had cheek teeth: the premolars were fully grown whereas the molars did not reach half of the depth of the tooth sockets. A canine tooth socket with a broken deciduous canine tooth was also preserved. The state of preservation of incisor fragments did not allow to find out how worn they were. The canine tooth socket indicated that it was a male. On the basis of the dentition features its age may be determined as ca 4 years. It was possible to make several measurements of the almost completely preserved skull cap.

The few fragments of vertebrae came from the cervical and thoracic part of the spine and the rib fragments came from both sides of the body. Fragments of broken limb bones belonged mainly to the thoracic limbs. Thus the buried animal was complete.

treated as their hypothetical height at the time of morphological maturity. The estimates were based on indices referring to adults horses, whose limb bone proportions are slightly different from juvenile ones. In the cases mentioned by the authors the process of development of metapodial bones used to calculate the withers height was already finished whereas other long bones might not have reached the final length.

On the basis of the measurements of the left radius bone and metacarpal bones III of the same side the withers height was determined. Its average value was 127.2 cm.

Horse 2 from the discussed grave was represented by a large fragment of the facial bones with maxillar bones of both sides and cheek teeth of the upper dental arch. The incisive bones belonging to that fragment had all incisors with poorly preserved biting surfaces and visible infundibula. There were also blunt upper canine teeth, so it was a male. Mandibular symphysis with incisors was also preserved. One can see at them worn infundibula of incisors I1 and I2 and still present, but gradually becoming worn, infundibula of incisors I3. A large fragment of the body of the left mandible had all cheek teeth in the teeth sockets. They were fully grown except for M3, which did not reach the edge of the tooth socket. There was also a canine tooth, which confirmed the sex determined above. Taking into account the fact that horses from Nowinka were primitive and thus late maturing animals, the age of the discussed individual, buried complete, was determined at ca 8 years.

Quite numerous fragments of the spine, from the cervical and thoracic part were preserved, as well as less numerous ones from the lumbar part and ribs.

The autopodium parts were the least numerous among limb bones and most of the phalanges were missing (exception: Ph1 of the right anterior limb and Ph2 of the right posterior limb). Unfortunately, the limb bones were considerably fragmented. The length of only the left radius bone and left metacarpal bones III could have been measured (imprecise). The withers height calculated on their basis was 125.4 cm.

Grave 60

The material from that burial was very fragmented. This concerned both bones and teeth and because of that the number of identified remains was quite large and amounted to seventy nine. For most of the bones a large surface, and in some cases, the whole surface, was deprived of the compact bone. The spongy bone, loose and brittle, retained the outlines of bones only thanks to careful conservation.

Among the very numerous fragments of the skull several larger fragments were unexpectedly well preserved. One of them was the skull cap with both temporal fossae and frontal bones. The second one was the cervix part of the occipital bone, green in colour, with a well-visible occipitoparietal suture and preserved occipital condyles and condylar processes. Fragments of the right and left maxillae and bodies of the mandible from the same sides were the remains of

the facial part of the skull. Besides the very numerous loose fragments of teeth, there were unerupted M2 and M3 in the teeth sockets, whereas M1 had a biting surface. The deciduous premolars were in the teeth sockets but they were being pushed out by respective permanent teeth. Taking into account the state of the teeth and the presence of the occipitoparietal suture we determined the age of this horse at 1 year. The young age, together with the influence of the environment, was the reason why the find was so poorly preserved. There were no grounds to determine the gender.

Several identified fragments of cervical and thoracic vertebrae were what were left of the spine. Fragments of limb bones represented both the anterior and posterior limbs from both sides. There were no fragments of scapulae, pelvic bones and the majority of the phalanges. The above remarks, the large number of unidentified fragments and traces of basically all parts of the skeleton suggest that also this horse was buried complete.

Grave 61

The material from this burial was very scant; it was possible to identify only nineteen fragments. These were small fragments of the skull, teeth, a cervical vertebra and two thoracic vertebrae. Of the limbs a fragment of the scapula, the right radius bone and the left humerus were identified. The anatomical analysis of all the identified remains of the horse allowed to say that without any doubt the grave contained the head, neck, part of the trunk and elements of both anterior limbs. The above information and the distribution of the discovered elements in the burial pit indicate that the horse was buried complete. The withers height of this horse was 133 cm.

Grave 62A

This grave contained one hundred eighty four identifiable fragments. All of the pieces belonged to a horse. The anatomical distribution indicated that these were two individuals. One of them was certainly, and the other one quite probably, buried complete.

Horse I. The identified remains of its skeleton (one hundred twenty three items) included large skull fragments such as the left maxilla with an adjoining fragment of the nasal bone and frontal bones, the damaged right maxilla with all cheek teeth, the upper incisors (not all of them), the lower incisors and three canine teeth with slightly worn edges. The infundibula on the lower incisors were worn, except for incisors I3, on which the traces of the infundibula were still visible.

The preserved remains of the spine included fragments of cervical and thoracic vertebrae and

adjoining numerous fragments of right and left ribs.

All limb sections were represented. The bones were damaged during transportation: the humerus, forearm bones and the tibia, were reconstructed and then it was possible to take their measurements.

The almost complete dentition allowed to establish the age of the horse at 8 years and the canine teeth indicated that it was a male. The average withers height of the individual buried complete was 132.6 cm.

Horse II. The remains of this horse were far less numerous. The majority of the sixty one identified items came from the head. They included a large fragment of the left maxilla with a set of cheek teeth, a damaged right maxilla with the first and second molar, a set of incisors with worn infundibula, incisors I1 of the mandible, four fully grown canine teeth with sharp edges, and numerous (small) fragments.

The postcranial skeleton was represented by the remains of cervical vertebrae, including the atlas and axis, numerous fragments of thoracic vertebrae and ribs. There were also a few fragments of limb bones but no autopodium parts.

The horse was a male, ca 6 years old, hence an adult individual, so it was difficult to establish why so few of its bones were well-preserved. The presence of the head bones, some parts of the spine and fragments of all the limbs suggests that the horse was buried complete. Unfortunately none of the long bones was sufficiently well preserved to take measurements.

Grave 70 (70-72)

The material from this grave was scant and poorly preserved. The seventy four fragments which were identified included skull fragments, deciduous and permanent teeth and also fragments of thoracic vertebrae, ribs and few small fragments of limb bones. Two disintegrating fragments of the right maxilla had deciduous premolar teeth (the third and fourth) fixed in tooth sockets and half grown first molars. The fragment of the mandible had a deciduous fourth premolar and first molar fixed in the tooth sockets. Several loose deciduous and permanent teeth were highly fragmented, which made it impossible to examine them successfully. The small fragments of skull bones included petrous parts of the temporal bones from both sides.

Of the elements of the right anterior limb it was possible to determine only two fragments of the scapula and of the left one, the proximal base of the humerus, which indicated the presence of an epiphyseal plate. The pelvic bones were represented by two acetabulums, fragments of the proximal bases of both femora, fragments of the tibiae and the left metatarsus.

All the remains belonged to one horse, ca 2 years old, buried complete. The investigated material did not allow to determine the animal's sex and withers height.

Grave 77

The remains from that grave were more numerous than in the one described above. It was possible to identify one hundred forty seven items. They represented all parts of the body but in different numbers.

Due to the high fragility of the skull and the presence of numerous teeth, the majority of the fragments were skull bones. Almost all the teeth were preserved except for the incisors from the right mandible. Incisors I3 in the upper arch were as high as all the other incisors and the canine teeth were fully grown. The numerous fragments of skull, impossible to label in greater detail, included both petrous parts of the temporal bones.

The spine was represented by a fragment of the axis and pieces of all thoracic vertebrae. Numerous fragments of left and right ribs indicated that other elements of the chest were also present.

The very fragmented limb bones included all limbs but their state of preservation made it impossible to measure their length. Only the tibia, the shaft of which was obliquely broken, could be put together and it was possible to take several measurements. The dimensions of the bone made after reconstruction and the withers height calculated on its basis are only a tentative values.

The teeth indicated that the buried horse was a male ca 5-5.5 years old. Its withers height was 132.5 cm.

Grave 78

In comparison with the other skeletons, the remains from this burial were quite well preserved. Species and anatomical analysis was possible for two hundreds forty seven fragments. All of them were remains of a horse. The fragments classified as teeth or their parts allowed to complete the whole dentition. There were only permanent teeth, the incisors I3 were not fully grown and the canine teeth were fully grown, which indicates that the animal was a 4.5-5.5-year-old male.

Vertebrae representing all the sections of the spine were identified. The very numerous fragments of the lumbar vertebrae, sacrum and the ribs were particularly interesting.

All limb sections were represented. Unfortunately, some of them, such as: the left humerus, the left radius, the left femur and tibia, were secondarily

broken. The damage made reconstruction and measurements impossible (except for the humerus). The average withers height of that individual, determined on the basis of the dimensions of several bones was 133.3 cm.

The aggregation of anatomical elements indicated that all parts of the skeleton, probably of one individual, were represented. However, there was a curious disproportion of dimensions of the two taluses (left and right), the scope of which may suggest that one of these bones belonged to another individual.

Grave 80

The grave contained a small number of very fragmented bones and teeth. Only fifty fragments were identified. The labelled fragments comprised teeth and small pieces of both anterior limbs and only the third tarsal bone from the right posterior limb.

The thirty eight teeth or their fragments included not fully grown molars as well as fragments of worn deciduous premolars and of permanent teeth. The latter ones did not reach the level of occlusion. The dentition suggested that the horse was ca 2 years old.

In the axial skeleton none of the vertebrae was preserved well enough to be identified; neither were any of the ribs. The respective parts of the limbs were represented by single or few fragments. The scapulae, carpal bones and distal phalanges were not found.

The missing fragments of the skeleton may be among the unidentified pieces. It may be thus assumed that the horse was buried complete. This claim is supported by the presence of one bone from the posterior limb. The analysed material did not provide grounds for determining the sex of the individual or its withers height.

Grave 82

The burial contained a lot of material. The state of the one hundred eighty one pieces allowed to say that they belonged to one horse. The bones were fragile, brittle, with cracked outlines. As a result of that many elements of the skeleton were secondarily broken. The skull was badly damaged; very few fragments were preserved. They included part of the skull cap with the occipitoparietal suture, disintegrating both halves of the facial bones with remains of the maxillae (it was possible to place the upper cheek teeth in their sockets: these were fully grown permanent teeth), complete and broken permanent incisors which could be arranged according to whether they belonged to the upper or lower dental arch. Upper and lower incisors I3 were not fully grown. The teeth comprised four deciduous canine teeth. Large frag-

ments of the left and right mandible with cheek teeth of the lower arch were also identified. They matched the upper cheek teeth.

Taking into account the state of the dentition and the presence of the canine teeth it may be said that the buried horse was a 4-5-year-old male.

The spine fragments comprised pieces of cervical, thoracic, and lumbar vertebrae. In the thoracic vertebrae traces of epiphyseal plates were found. Besides the other elements of the skeleton, the numerous rib fragments proved that the horse was buried complete.

The average withers height of that individual, determined on the basis of the dimensions of the bones was 136.3 cm.

Grave 83

Remains from that grave were very poorly preserved. Ninety one remains were identified. The teeth were generally well preserved in contrast to the bones where only metatarsus III was in good condition.

In the skull it was possible to distinguish fragments of the right and left mandible with fully grown cheek teeth, two parts of the temporal bone and the right cornu of the hyoid bone.

The loose teeth, damaged to a greater or lesser degree, represented the whole upper and lower arch except for the right cheek teeth which were most probably among unidentifiable fragments. There were also three permanent, fully grown canine teeth (two from the upper arch and one from the lower arch). The better preserved friction surfaces of incisors had infundibula which were the most worn in the incisors I1 of the lower arch. The state of the teeth suggested that the buried horse was a ca 5-year-old male.

The few fragments of vertebra represented all the sections of the spine except for the tail. However, there were no rib fragments, which seems to be unusual in the analysed material (a similar situation was recorded only in grave 60, grave 61 and 80).

Very damaged fragments of limb bones represented the majority of their segments. Only the tarsal bones and phalanges, except for the proximal phalanx of the anterior limb, were missing. The anatomical composition of the bone fragments and teeth indicated that the horse was buried complete. The withers height of this horse was 127.9 cm.

Grave 84

Bones in that grave were quite well preserved even though they belonged to a young individual. It was thus possible to identify as many as one hundred ninety five pieces.

The skull bones were highly fragmented. Two

petrous parts of the temporal bones, two cornua of the hyoid bone and two bodies of the mandible, right and left, with cheek teeth were labelled. The cheek teeth included deciduous premolars, the first molar, grown, and the second one, small, reaching the edge of the tooth socket (in life it probably had not erupted yet). The state of the incisor fragments (all deciduous) did not allow to determine how worn they were. The lack of canine tooth sockets and the state of the teeth indicate that the buried animal was probably a 1.5-2 year-old female.

The spine and the chest were represented by fragments of the cervical, thoracic and lumbar vertebrae and very numerous parts of ribs.

All sections of limb bones were represented by complete bones or their fragments. Several long bones (humeri, femora) had both epiphyseal plates or the distal epiphyseal plate (radius). This indicated that the horse was still growing and the state of preservation of the epiphyseal plates determined its age at 15-18 months. This confirmed the age determined on the basis of the dentition. The anatomical distribution of the investigated remains indicated that the horse was buried complete.

As the horse was not fully grown its withers height was not determined.

Grave 87

The eighty identified remains from that burial, poorly preserved, also belonged to a young horse. Most of them were skull bones, especially teeth fragments. They were classified as deciduous teeth, upper and lower premolars and first and second molars, upper left, and one lower right. As the length indicated, the first molars were fully grown and the second ones were very low with 'unused' biting surfaces. The state of the dentition indicated that the individual was 1.5 years old. The analysed material did not comprise any canine teeth, which made it impossible to determine the sex of the animal. Besides the numerous fragments of unidentifiable flat bones of the skull there were also damaged petrous parts of both temporal bones.

The fragments of three cervical and eight thoracic vertebrae and two parts of ribs (right and left) were the remains of the spine and chest.

The parts of the right and left anterior limb were very fragmented, and the right middle tarsal bone was the only trace of the posterior limb. The arrangement of the preserved elements of the skeleton in the burial pit and its dimensions indicated that the horse was buried complete. It should also be stressed that among the anterior limb bones, on the humerus and radius bones there were epiphyseal plates. This sug-

gests that the horse was older than 18 months, which was confirmed by so-called teeth age. The young age and the fact that the animal was still growing made it pointless to calculate the withers height.

Grave 89

The remains from this grave were of a young horse, which affected their state of preservation. Despite that, it was possible to identify as many as one hundred seven pieces. Besides the influence of the environment in which the bones were deposited, another negative factor was the presence of the epiphyseal plates. They were found on either side of the femora and tibiae and on the left humerus.

Among the skull bones two separate fragments of the left and right maxilla with teeth in the sockets are worthy of attention. The teeth were deciduous strongly worn premolars and permanent first and second molars. The socket of the third molars were closed which means that the tooth did not begin to erupt. Four fragments of the bodies of the left and right mandible with cheek teeth of the lower arch were also identified. The appearance of these teeth was similar to that of the teeth from the upper arch. The incisors were so fragmented that they could not be examined in detail; it could be only said that they included both deciduous and permanent teeth. Besides the numerous skull fragments which could not be classified more exactly there were two petrous parts of the temporal bone.

Identified fragments of the vertebrae belonged to the thoracic and tail part of the spine and the few rib fragments were both from the left and right side. The limb bones represented all the sections except for the middle and distal phalanges.

The above description allows to say that the horse buried in the grave was an individual of undeterminable gender, 2-3 years old and still growing. On the basis of the anatomical distribution of the remains it can be said that a complete animal was deposited in the burial.

Grave 98

This grave contained a small number of very poorly preserved remains. They belonged to a young horse and only seventy four fragments were identified.

Among the skull bones bodies of the two maxillae with fully grown deciduous premolars, first molars and small unerupted second molars were recorded. There were also several fragments of the right and left mandibles with cheek teeth on either side, the development of which was equivalent to the stages

described for the upper dental arch. The incisor fragments comprised deciduous and permanent teeth. Also two right canine teeth (upper and lower) were found as well as a strongly damaged petrous part of the right temporal bone.

A fragment of the atlas and several fragments of thoracic vertebrae were the only recorded parts of the spine. There were no remains of ribs.

The limb bones were highly fragmented. The recognisable fragments came from all the limbs but not from all the sections. There were no scapulae and pelvic bones or the middle and distal phalanges.

On the basis of the above description it may be concluded that the horse, a ca 2-year-old male, was buried complete.

Grave 99

Material from this burial was scant. Seventy two pieces, mostly teeth, were identified. From them sets of upper and lower cheek teeth from both sides were selected. All of them were permanent and their biting surfaces showed traces of wearing. Among the incisor fragments (deciduous and permanent) it was possible to examine more precisely three permanent third incisors (one upper and two lower ones), the length of which indicated that they were erupting. Small fragments of skull bones were represented by the petrous part of the left temporal bone and numerous fragments of bodies and rami of the mandibles. There were no grounds to determine the sex of the animal and the dentition indicated that its age was 2.5-4.5 years.

The examined material did not contain elements of the spine preserved well enough to be determined.

The only identified limb fragments came from the left anterior limb. They represented the majority of its sections (except for the scapula and carpus). The fragments of this bone included the radius bone and metacarpal bone III with traces of epiphyseal plates, which indicated that the horse was ca 15 months old. It is possible that bone remains belonged to two individuals.

Grave 102

The contents of the grave were badly damaged. Many bones seemed to have been cut with a sharp tool. This must have been done when the bones were tough because when they were analysed they disintegrated at a slight touch. The anatomical analysis allowed to identify one hundred fifty pieces which belonged to a horse.

The head was mainly represented by the teeth. Among broken incisors there were both deciduous and

permanent teeth and among the upper cheek teeth, short (not fully grown) molars – the second and third ones on both sides. The upper and lower deciduous premolars were considerably worn. The latter ones, on the right side, were in a fragment of the body of the mandible with the first molar. The skull fragments (unidentified for the most part) included the petrous part of the right temporal bone.

Damaged cervical vertebrae with fragments of the atlas and axis, thoracic vertebrae and two caudal vertebrae indicated that there was a spine. The missing vertebrae may be among the unidentified fragments. The bodies of the cervical and thoracic vertebrae bore traces of epiphyseal plates.

Recorded fragments of limb bones represented almost all sections. They included all phalanges. Some long bones had epiphyseal plates (the right humerus, both radii, the right femur).

Thus it was a young horse of undetermined sex; the teeth indicated that its age was more than 9 but less than 22 months; it was buried complete. The bones were too damaged and the individual was still growing hence no measurements of the bones were taken.

Grave 112

The material from this burial was very scant and damaged. The thirty seven identified pieces included the petrous part of the temporal bone, which indicated the presence of the head in the grave. The other fragments were from the postcranial skeleton, both axial and limb bones. The bones from the anterior limb were the most numerous; from the right posterior limb only two fragments of phalanges were found.

Interestingly, no teeth were found, which are usually the best preserved elements of the skull (together with the petrous part of the temporal bone). The facial part of the head may have been cut off but there is no proof for that.

The presence of the epiphyseal plates in thoracic vertebrae indicated that the buried horse was ca 8 years old. The description made by the explorer indicated that the horse was buried complete and the majority of the bones were badly damaged.

Grave 121

The grave contained numerous remains of a young horse which was still growing. One hundred twenty one fragments of bones and teeth were identified.

Of the larger parts of the skull a fragment of the skull cap with the frontal, parietal, and occipital bone were recorded. The appearance of the permanent cheek teeth fixed in the left mandible and right maxilla suggested that the animal was 4.5-5 years old.

The cervical and thoracic vertebrae had well visible epiphyseal plates and together with the damaged sacrum they indicated that the grave contained a complete axial skeleton. This was confirmed by the numerous fragments of ribs from both sides.

All limb sections were represented. Distal epiphyseal plates were noted on the femori and proximal and distal ones, on the tibiae, which, according to the criteria adopted for this analysis, suggested that the animal was 2-3.5 years old. Numerous fragments indicated that in the grave there were all proximal phalanges and central sections of anterior and posterior limbs. The lack of canine teeth and of a canine tooth socket in the fragment of the left mandible excluded the possibility that the individual was male.

The completely preserved right metatarsus III allowed to determine the withers height at 123.6 cm.

The analysis of animal age suggested the possibility of double burial but the anatomical distribution of the identified remains and the drawings of the burial indicated that in the discussed grave one horse was buried complete.

Grave 127

The material from this burial was very rich; it was possible to identify two hundred fifty three pieces. They included more or less fragmented bones and also well preserved skeleton fragments and very numerous complete or fragmented teeth.

The skull was represented by numerous, very small fragments. There was also a fragment of the right mandible with permanent incisors and the left lower canine tooth. Furthermore, numerous fragments of the right mandible with deciduous cheek teeth (P2, P3, P4) and the right incisive bone with a set of permanent teeth with clearly visible infundibula were recorded. In this case discrepancy was observed between the end of erupting of incisors, which in modern horses appear at the age of 4-5 years, and the eruption of the permanent cheek teeth, which begins at the age of 2.5 years, and the presence of the deciduous premolars, which function till the age of 2.5-3.5. This disproportion seems significant and can not be explained by individual development.

Rib and vertebra fragments from all sections of the spine were identified.

The limb remains came from all sections. These were well preserved homonymous bones of the right and left limbs (radii, metacarpal III bones, femori, tarsal bones) which belonged to one individual, ca 5 years old, buried complete. The average withers height of that individual, determined on the basis of several bones was 135 cm.

Grave 131

The remains from this grave were quite numerous. The results of the anatomical analysis suggest that one hundred thirty seven identified pieces belonged to two different individuals. This is proved by two damaged left mandibles with cheek teeth belonging to two horses of different ages. In one there were fully grown premolars and all molars in the teeth sockets. In the other one the premolars were similar to the previous one but the last molar was very poorly developed, so this mandible belonged to a younger individual. Furthermore, the number of the cheek teeth, both those in the sockets and the loose ones, suggested that the discussed remains belonged to at least two male individuals, as it was proved by the number and appearance of the canine teeth.

The dentition indicated that one of the horses was slightly more than 5 years old and the other, less than 4.5.

Unfortunately, the identified fragments of the postcranial skeleton did not include homonymous bones and no measurements could have been taken to confirm the claim that they belonged to at least two animals buried complete. It may only be said that they represented all parts of the skeleton.

Grave 137

The remains from this burial were not numerous and were strongly fragmented. Only eighty three fragments were identified. The skeleton of the head was represented by nine fragments of the mandibles and two petrous parts of the temporal bones as well as teeth and their fragments. The incisors of the lower arch were permanent except for two third incisors which were worn deciduous teeth. The cheek teeth from that arch were also permanent, including the third molar, which was not fully grown.

Very numerous and small fragments of vertebrae (mainly thoracic ones) with visibly lowered heads and bottoms indicated the presence of epiphyseal plates.

Fragments of three limbs (the left anterior one and both posterior limbs) had no autopodium sections and only the right anterior limb was represented by a fragment of the metacarpal bone III and a proximal phalanx. The other bones from these sections may be among the unidentified elements. The horse was probably buried complete, but this cannot be stated with full certainty.

The state of dentition and the presence of epiphyseal plates in the right humerus and both femori suggest that it was a young horse, ca 3.5 years old.

Grave 147

Although the bones were considerably damaged, sixty eight pieces were identified. The skull was represented by a large fragment of the skull cap consisting of the frontal and temporal bone and the squama occipitalis with the condylar process. Of the facial bones, a fragment of the right maxilla with fully grown second and third molar was recorded. There was also a large fragment of the right mandible with a permanent fully grown canine tooth and a set of permanent fully grown cheek teeth. This dentition indicated that the horse was a 4.5-5-year-old male.

Numerous fragments of vertebrae, mostly the thoracic ones, were all that was left from the spine. As the remains of the posterior limb included, i.e., the pelvic bone, it may be assumed that there was also the sacrum. Three fragments of left and right ribs were also found.

The limb bones were highly fragmented. Among the identified fragments the most numerous were the remains of posterior limbs. The anterior limbs were represented by several fragments of the scapula and humerus. The completely preserved left metatarsus III provided the only possibility of assessing the withers height, which was 125.8 cm.

The anatomical composition of the remains indicates that the horse was buried complete.

Grave 148

The material from this burial was very scant and damaged and consisted of bone fragments and teeth. It was possible to identify only fifty seven fragments. Of the thirty eight pieces from the head the majority were teeth and their fragments. The preserved four deciduous incisors were so damaged that no other information could be derived from them and the fragments of the cheek teeth comprised both deciduous and permanent ones.

There were a few large pieces of skull bones, i.e., a fragment of the frontal bone with the orbital lamina and the body of right maxilla. The bones were separated at the sutures, which indicated that the animal was young. The dentition and the state of the sutures suggested that the horse was ca 2 years old. The material did not allow to determine the sex of the animal.

Among the identified remains there were no traces of the postcranial part of the axial skeleton (spine and ribs). However, all the extremities were represented (although their remains were not numerous). The presence of both epiphyseal plates in the radius confirmed the above suggestion concerning the age of the animal. Although not all parts of the skeleton were represented it should be assumed that the horse was

buried complete, according to the description of the burial made by the explorer.

Grave 149

In this burial it was possible to identify seventy three pieces with a considerable degree of precision.

The loose lower cheek teeth include deciduous premolars which had the form of very small, flat 'caps' fixed on quite well grown permanent teeth. The first and second molar had reached the level of occlusion and the third one, judging from its length, was already erupted but did not reach that level. All the identified upper and lower incisors were permanent teeth with visible infundibula. The dentition allowed to state that the discussed horse was ca 3.5 years old. The sex could not be determined.

Like in some other burials described above, also in this one there were no traces of spine and chest bones among the identified pieces.

The identified remains of anterior limb were the two humeri (the right one had a trace of the distal epiphyseal plate) and the forearm bones. The scapulae and autopodium sections were missing. The posterior limbs were better preserved, comprising fragments of pelvic bones, femora, tibiae, fibulae and also single basipodium and metapodium bones. There were no traces of phalanges. The investigated material did not allow to determine whether the burial was complete or partial. The description of the grave made by the explorer suggested that a complete animal was buried.

Grave 151

The grave contained remains of a horse and sixty eight pieces were identified. These were fragments of bones and teeth as well as complete teeth. The last mentioned ones were fixed in the sockets of the right mandible and were preserved together with a large part of its body. All the above-mentioned teeth reached the level of occlusion and were permanent. Among the eight permanent incisors, the lower I1 and I2 had worn infundibula. The third incisors from that dental arch had clearly visible infundibula. The dentition suggests that the horse was ca 7 years old. This is also confirmed by fragments of five fully grown (with no epiphyseal plates) thoracic vertebrae. These vertebrae had visible productive changes in the form of sharp outgrowths. Similar changes were found on the ends of four ribs fragments out of the identified nine. Typically, such changes are contemporarily caused by injuries or long-lasting pressure of an ill-fitting saddle or saddle packs, especially in horses in poor physical condition.

Although the identified bone fragments from this burial did not contain complete or broken vertebrae

from other sections of the spine than the thoracic one, we believe that it may also have been an effect of post-deposition factors and a complete animal was buried.

The presence of a permanent canine tooth with worn edges, besides proving that the animal was male, also supported the suggestion concerning the age of the horse.

As no long bones were preserved it was impossible to make any statements about the withers height.

Grave 155

The remains from this burial were highly fragmented even though they belonged to an adult horse. Out of them ninety three fragments were identified; besides the teeth they were small pieces of bones from various parts of the skeleton.

The almost complete dentition consisted of loose finds, except for the cheek teeth fixed in the sockets in the fragments of the left mandible and the right maxilla. It comprised permanent, fully grown teeth. The incisors had (when it was possible to determine that) visible infundibula, except for the incisors I1 and I2 of the lower arch. Such appearance of dentition and state of its wear indicated that the horse was ca 6 years old and the presence of the canine teeth suggested that it was a male.

Among the small fragments of the skull only two damaged petrous parts of the temporal bones could have been identified. They indirectly confirmed that the complete skull was deposited in the grave.

Very numerous fragments of the thoracic vertebrae bore traces of epiphyseal plates, suggesting that the horse was not more than 8-9 years old. The presence of the sacrum and caudal vertebrae allowed to assume that the spine was complete. The complete lack of traces of cervical vertebrae and strong fragmentation of the skull bones may indicate that the place where the head and neck were deposited had particu-

larly favourable conditions for decomposition. The complete lack of other elements of the chest and of the scapulae may have been caused by similar factors.

The anatomical distribution of the remains of the extremities indicated that the grave contained all their sections except for the acropodium (phalanges). Unfortunately, none of the long bones was sufficiently well preserved to take the measurements. All the above indicates that a complete horse was buried in the discussed grave.

Grave 160

The material from this grave was scant. It was possible to identify fifty two pieces. These were teeth, bones and their fragments.

Fragments of the head comprised mainly teeth partly fixed in the sockets of two fragments of the right and left mandible. In the right fragment there were fully grown first and second molars; the third one was approximately half-way grown. Its length suggests that the molar had not erupted. In the left mandible permanent premolars were preserved. Unfortunately, no incisors or canine teeth were found, which made it impossible to determine the age and sex of the horse.

Other preserved parts of the axial skeleton were the thoracic vertebrae, considerably fragmented, with clearly visible epiphyseal plates and only one rib fragment.

The identified fragments of the extremities came from both anterior limbs and from the right posterior limb and there were no fragments of the shoulder and pelvic parts (both scapulae and the pelvic bone). There were no bones, which could make measurements possible.

On the basis of the scant and fragmented material it was only possible to say that the remains belonged to one horse, 3.5-4 years old, buried complete.

Discussion

The analysed material came from forty horse burials and concerned remains of 43-47 individuals. The majority of them were deposited in single graves and only a few in double burials²¹¹.

The results of anatomical analyses, in many cases supported by detailed archaeological descriptions of the burials, indicated that in Nowinka the majority of burials contained complete animals. Only in two cases it was possible to assume that the basic

burial was complemented with single horse bones. In grave 78 the addition of that type may be represented by the talus not matching the buried horse in size and in grave 127 a fragment of the mandible which did not match the age of the other elements of the skeleton.

It was possible to determine unquestionably the sex of twenty six horses. The majority were males (twenty four individuals). The remains of two individuals did not have any remains of the canine teeth

²¹¹ The archaeological documentation made during excavation process indicates that two complete individuals were buried

only in graves 55, 62A, 120 and 131 while the authors of the archaeological analysis allowed for a possibility of double

nor the sockets (grave 84 and 121). Thus these were females. The predominance or even exclusiveness of male individuals among horse remains from animal graves was observed and discussed by authors of all comparable sites. It should be also added that in Nowinka out of the twenty six horses whose sex could not be unquestionably determined fifteen were young individuals, up to 3.5 years old. In modern times the males often do not have deciduous canine teeth and the permanent ones grow at the age of 4-5 years (some specialists believe this is due to domestication). If the situation in the past was similar and two horses identified by us as females were males, then we would be ready to agree that the sex played an important part in selecting the animals for burials.

It was possible to determine more or less precisely the age of about forty individuals. The age of horses discovered at the cemetery in Nowinka ranged from 9 months to 8-9 years. The division of the horses from that site according to the age into very young, young-maturing and adult individuals is as follows: there were twelve or thirteen very young horses (aged 9 to 24 months), twelve or thirteen young horses (2-5 years old) and fifteen adult horses (5 to 9 years old). There were no old animals. The lack of animals from this group should be considered as one of the main differences between this site and the other ones. Horses older than 10 years were found in Osowa (Krysiak 1958), Korkliny (Krysiak, Serwatka 1970), Sątoczno (Lasota-Moskalewska, Perlikowska-Puszkarska 1994) and in Tumiany (Kobryń, Serwatka, Świeżyński 1999). There were no horses of that age in Netta, yet at that site the age of only one horse was determined so it should not be taken into account (Serwatka 1970). Generally it may be said that the horses buried in Nowinka were rather younger than at the compared sites.

The withers height, determined for seventeen horses, was between ca 124 and ca 144 cm (Table 20). The span between the extreme values is large (ca 20 cm), which suggests diversity in the sizes of the horses. The buried horses represent generally three classes of horses according to the classification proposed by Kobryń (1984): short, medium-sized-short and medi-

um-sized-tall; the most numerous are short and medium-sized-short horses and the class of the medium-sized-tall is represented by only one individual (Table 21). There were no tall animals. Similar diversity and scope of heights (from 124 to 144 cm) was observed among adult horses buried at the cemetery in Tumiany (Kobryń, Serwatka, Świeżyński 1999). The observed diversity was most probably caused by sexual dimorphism and the tallest individuals may have been castrated. It is also possible that the tallest horses (144 cm) came from another area; this should be investigated on the basis of more comprehensive material.

Anomalies in the skeletons of the horses from Nowinka found in the investigated material concerned the dentition.

The horse from grave 20 had a considerable malformation of the body of the left mandible which resulted in malocclusion of the biting surfaces of the upper and lower dental arch. This resulted in their uneven wearing and unnatural sharpening of the left lip and cheek edges (upper arch) and left lingual edge (lower arch).

Similar changes, this time concerning only the cheek teeth, were found in the horse from grave 45. The belated growth of the third left upper molar may have caused this anomaly.

The described developmental anomalies in the dentition are called malocclusion. This anomaly is often observed also in modern horses. The sharp edges of the teeth break the mucous membrane in the mouth, cause pain and make it difficult to chew food; as a result this may cause disorders in the functioning of the other sections of the gastrointestinal tract. Even if this does not result in the death of the animal, it leads to its emaciation and considerable decrease of its physical fitness and usefulness.

In case of the horse from grave 151 there were productive changes in thoracic vertebrae and the fragments of the ribs. They had the form of sharp outgrowths which must also have resulted in a decreased fitness.

Numerous pathological changes have been described for all compared sites. Malocclusion was found in the horses from Tumiany (Świeżyński 1972; Kobryń, Serwatka, Świeżyński 1999) and from Sątoczno (Lasota-Moskalewska, Perlikowska-Puszkarska 1994). Productive changes in the spine were observed at the sites of Korkliny (Krysiak, Serwatka 1970), Sątoczno (Lasota-Moskalewska, Perlikowska-Puszkarska 1994) and of Tumiany (Świeżyński 1972; Kobryń, Serwatka, Świeżyński 1999).

Although the materials from Nowinka did not contain examples of a common affliction, described in materials with horse burials, it may have been also

burials also in graves 99 and 121. Their claim is based on the discrepancy of age estimation, based on the dentition and the skeleton (grave 99) or based on different types of teeth (grave 121). The placement of the skeleton in anatomical order suggests single burials. It is possible that a single bone or tooth (alternatively a few remains) was placed in grave additionally. It is also likely that age estimation was imprecise due to a bad state of preservation or potential differences in the pace of bone and teeth development between the horses of the discussed period in relation to the models based on the modern animals (editors remarks).

present at that site. The affliction concerns the small tarsal bones and causes their disfigurements and adhesion (syndactyly). The high degree of fragmentation of the material, frequently referred to above, made it impossible to find whether this affliction was present or not.

Grave no	Side	P2		P3		P4		M1		M2		M3	
		a	b	a	b	a	b	a	b	a	b	a	b
8	D	34	23	27	25	26	26	25	26	25	25	23	22
17	D	31	24	29	27	29	28	24	25	24	25	27	23
20	D	37	24	30	30	29	28	25	29	26	29	24	24
21	S	36	23	28	265	25	25	23	22	25	24	25	22
26	S	34	22	25	24	29	25	24	24	26	25	26	22
34	S	-	-	31	26	29	29	26	25	24	24	24	20
48	D	-	-	-	-	-	-	28	24	28	23	-	-
55/1	D	36	23	25	26	27	24	27	24	27	24	-	-
55/2	D	34	24	26	24	27	26	23	23	23	23	25	22
62A/1	D	35	24	25	24	25	24	24	23	26	25	25	22
62A/2	D	34	23	24	25	27	26	26	26	25	24	27	23
77	S	32	23	27	25	28	26	25	26	25	24	25	22
78	D	37	25	31	26	29	28	25	27	25	26	25	23
82	S	34	23	26	29	27	25	25	25	23	22	24	22
83	S	33	23	26	25	26	27	23	26	23	24	25	23
121	S	36	23	28	24	27	24	28	25	30	24	25	21
147	D	35	23	29	24	30	24	27	25	25	23	24	19
149	S	35	22	26	21	28	25	29	25	29	25	28	24
151	S	36	24	27	26	29	25	24	24	29	24	-	-
155	D	33	25	28	26	24	23	25	25	24	23	23	19

Table 1. Dimensions of upper cheek teeth (mm). Symbols: P – premolar, M – molar, D – right side, S – left side, a – length, b – breadth.

Grave no	Side	P2		P3		P4		M1		M2		M3	
		a	b	a	b	a	b	a	b	a	b	a	B
8	S	31	15	26	17	27	19	26	17	24	17	29	14
	D	32	17	27	18	27	17	24	17	24	14	30	12
17	D	32	15	26	17	24	18	24	15	24	16	32	13
20	S	33	26	28	17	27	19	28	15	24	16	31	14
21	S	31	14	28	17	25	14	26	15	26	14	29	13
26	D	32	14	27	18	27	18	25	12	25	14	30	14
55.2	D	29	15	24	18	23	16	27	17	24	15	27	13
62A.1	S	30	15	26	19	26	17	25	18	25	16	29	14
62A.2	D	32	18	27	18	26	17	25	16	26	16	31	14
77	S	29	14	24	16	24	17	22	16	24	15	27	13
78	D	34	17	30	18	29	18	29	18	28	16	30	14
82	S	29	14	24	14	23	15	24	14	24	14	25	10
83	S	29	12	25	15	25	17	24	15	24	16	29	14
121	D	32	13	27	16	29	14	28	15	26	15	30	12
131	S	31	15	28	16	26	15	26	16	27	14	21	11
147	D	30	15	29	16	25	13	25	15	25	13	22	12
149	S	32	14	29	14	28	13	31	17	30	17	30	15
155	S	30	15	29	12	27	15	26	15	26	14	27	11

Table 2. Dimensions of lower cheek teeth (mm). Symbols: the same as in Table 1.

Measurement	Grave no			
	21	34	47	55.1
Length of the frontal bone in the sagittal plane (Br-N)	-	-	41	-
Greatest length of the nasal (N-Rh)	-	-	-	199
Length of the hard palate	128	-	-	-
Greatest breadth of the occipital condyles (C-C)	21	-	-	-
Greatest breadth at the basis of the paraoccipital processes	99	-	-	-
Greatest breadth of the foramen magnum	36	-	-	-
Breadth of the palate at P3	63	-	-	-
Height of the squamous part of the occipital bone	52	53	-	-
Height of the foramen magnum	32	-	-	-

Table 3. Dimensions of skull fragments (mm).

Measurement	Grave no					
	8	17	20	26	62A.1	82
Greatest length of the glenoid process – GL	-	-	-	-	80	-
Length of the glenoid cavity	-	-	42	47	49	45
Breadth of the glenoid cavity	-	42	-	39	39	38

Table 4. Dimensions of scapula (mm).

Measurement	Grave no											
	8	17	20	21	26D	26S	55.1	62A.1	77	78	82	127
GL	251	279	245	-	261	262	-	260	-	-	259	321
GL1	-	-	-	-	-	-	-	-	-	-	-	311
GLC	-	-	234	241	241	243	-	245	-	-	238	313
Bp	75	77	-	-	-	-	-	77	-	-	-	74
SD	35	37	-	34	-	32	29	32	32	28	31	34
Bd	66	66	-	-	68	71	62	69	-	70	75	69
BT	-	-	-	-	-	64	-	63	64	-	-	-

Table 5. Dimensions of humerus (mm). Symbols: D – right side, S – left side, GL – greatest length, GL1 – greatest length of the lateral part, GLC – greatest length from caput, Bp – breadth of the proximal end, SD – smallest breadth of diaphysis, Bd – breadth of the distal end, BT – breadth of the trochles.

Measurement	Grave no												
	8	17	20	21	26D	26S	34	55.1	55.2	61	62A.1	78	127
GL	293	316	-	304	307	306	299	297	290	301	306	303	322
L1	290	291	-	287	292	291	-	-	-	-	298	291	312
PL	-	310	-	-	295	-	-	295	284	-	-	292	-
Bp	-	68	-	-	72	72	-	-	-	74	73	70	75
SD	-	38	-	38	35	-	-	-	-	33	-	35	35
Bd	-	58	-	-	64	65	-	-	-	-	64	64	70
Bfp	-	62	57	-	-	-	-	-	-	-	63	-	69

Table 6. Dimensions of radius (mm). Symbols: D – right side, S – left side, GL – greatest length, L1 – length of the lateral part, PL – physiological length, Bp – breadth of the proximal end, SD – smallest breadth of diaphysis, Bd – breadth of the distal end, Bfp – breadth of the facies articularis proximalis.

Measurement	Grave no		
	26	62A.1	78
Length of the olecranon – LO	69	73	74

Table 7. Dimensions of ulna (mm).

Grave no	Measurement				
	GL	L1	Bp	SD	Db
17	201	-	-	-	-
20D	195	-	-	-	-
20S	195	-	34	-	-
26D	207	-	43	-	-
26S	207	-	-	-	-
34	204	-	-	-	-
48D	225	-	-	-	-
48S	225	-	-	-	-
55.1	196	-	-	-	-
55.2D	193	-	-	-	-
55.2S	194	-	-	-	-
62A.1	211	-	44	29	40
82	216	-	48	29	45
121	238	232	38	-	40
127D	211	207	47	30	46
127S	210	207	46	31	46

Table 8. Dimensions of metacarpal bone III (mm). Symbols: D – right side, S – left side, GL – greatest length, L1 – length of the lateral part, Bp – breadth of the proximal end, SD – smallest breadth of diaphysis, Db – breadth of the distal end.

Measurement	Grave no								
	17	20	26	34	62A	82	127D	127S	131
GL	69	69	81	69	77	78	77	78	74
Bp	32	42	44	41	44	48	51	51	46
SD	24	29	-	-	31	30	33	33	29
Bd	-	36	-	-	40	43	-	44	41
Dp	-	32	-	26	32	32	33	34	31

Table 9. Dimensions of the proximal phalanx of the anterior limb (mm). Symbols: D – right side, S – left side, GL – greatest length, Bp – breadth of the proximal end, SD – smallest breadth of diaphysis, Bd – breadth of the distal end, Dp – depth of the proximal end.

Measurement	Grave no				
	62A.1	78	127D	127S	131
Greatest length – GL	42	41	42	41	37
Breadth of the proximal end – Bp	44	44	48	49	44
Smallest breadth of diaphysis – SD	40	40	42	43	41
Breadth of the distal end – Bd	42	42	-	46	42
Depth of the proximal end – Dp	26	28	29	30	26

Table 10. Dimensions of the middle phalanx of the anterior limb (mm). Symbols: D – right side, S – left side.

Measurement	Grave no		
	20	127D	127S
Length of the acetabulum on the rim – LAR	51	65	64
Inner length of the foramen obturatum – LFo	-	-	156
Length of the symphysis – LS	-	58	58
Smallest breadth of the shaft of ilium – SB	-	-	35
Smallest height of the shaft of ilium – SH	-	-	24

Table 11. Dimensions of pelvic bone (mm). Symbols: D – right side, S – left side

Measurement	Grave no		
	62A.1	127D	127S
Greatest length – GL	-	373	373
Greatest length from caput – GLC	312	338	338
Breadth of the proximal end – Bp	-	102	104
Smallest breadth of diaphysis – SD	-	36	34
Breadth of the distal end – Bd	-	82	85

Table 12. Dimensions of femur (mm). Symbols: D – right side, S – left side.

Measurement	Grave no
	78
Greatest length – GL	49
Greatest breadth – GB	50

Table 13. Dimensions of patella (mm).

Measurement	Grave no											
	17	20	21	26	62A.1	62A.2	77	78	121	127D	127S	147
GL	325	295	312	315	304	310	310	311	-	343	341	305
Ll	302	275	-	-	-	-	-	291	-	312	315	279
PL	300	-	-	294	-	294	294	82	-	-	-	-
Bp	-	-	-	-	-	-	-	82	77	86	89	75
SD	-	-	-	-	-	-	-	34	-	-	37	34
Bd	-	-	-	64	-	-	-	62	52	66	66	-

Table 14. Dimensions of tibia (mm). Symbols: D – right side, S – left side, GL – greatest length, Ll – length of the lateral part, PL – physiological length, Bp – breadth of the proximal end, SD – smallest breadth of diaphysis, Bd – breadth of the distal end.

Measurement	Grave no							
	17	20	26	55.1	55.2	78.1	78.2	127
GL	48	52	52	52	55	55	69	58
GH	50	54	54	47	57	52	67	52

Table 15. Dimensions of talus (mm). Symbols: GL – greatest length, GH – greatest height.

Measurement	Grave no	
	78	127
Greatest length – GL	95	101
Greatest breadth – GB	-	50
Breadth of the talar shelf	41	-
Breadth of the calcaneal process	28	-

Table 16. Dimensions of calcaneous bone (mm).

Measurement	Grave no						
	26	78	82	83	127D	127S	247
GL	244	249	262	255	-	242	240
LI	-	241	252	251	-	236	-
Bp	-	46	49	47	46	40	-
SD	29	27	27	29	30	25	-
Bd	40	42	45	45	-	-	-

Table 17. Dimensions of metatarsus III (mm). Symbols: the same as in Table 14.

Measurement	Grave no						
	20	26	55.1	55.2	78	127	147
GL	75	75	73	71	77	67	70
Bp	41	45	-	47	51	38	-
SD	-	31	26	30	31	27	27
Bd	-	30	36	40	40	36	37
Dp	30	31	-	32	35	28	-

Table 18. Dimensions of the proximal phalanx of the posterior limb (mm). Symbols: the same as in Table 9.

Measurement	Grave no	
	82	127
Greatest length – GL	40	43
Breadth of the proximal end – Bp	47	47
Smallest breadth of diaphysis – SD	42	40
Breadth of the distal end – Bd	45	38
Depth of the proximal end – Dp	28	29

Table 19. Dimensions of the middle phalanx of the posterior limb (mm).

Class of horse	Number
Short	11
Medium-sized-short	5
Medium-sized-tall	1
Tall	-

Table 20. Division of the horses from Nowinka into classes according to the withers height.

Class of horse	Nowinka		Poland
	Number	Percentage	Percentage
Short	11	64.7	61.6
Medium-sized-short	5	29.4	19.2
Medium-sized-tall	1	5.9	15.4
Tall	-	-	3.8

Tabela 21. Division of the horses from Nowinka and the whole Poland population (Kobryń 1984) into classes according to the withers height.



VI. REFERENCES

Archival sources

Catalogue of the *Prussia Museum*

In collection of *Istoriko-Khudozhestvennyy Muzey* in Kaliningrad, after Bitner-Wróblewska 2008a and scans of preserved books (acquired due to kindness of K. Skvortsov).

Grenz files

Files of Rudolf Grenz housed in *Archäologisches Landesmuseum Schloß Gottorf* in Schleswig.

Jakobson files

Files of Feliks Jakobson collected in *Latvijas Nacionālais vēstures muzejs* in Riga; see Jakobson 2009.

Prussia Archiv

Archive of Prussia-Museum stored in *Museum für Vor- und Frühgeschichte* in Berlin.

Voigtmann files

Files of Kurt Voigtmann housed in *Museum für Vor- und Frühgeschichte* in Berlin.

References

Alseikaitė-Gimbutienė, M.

1946 *Die Bestattung in Litauen in der vorgeschichtlichen Zeit*, Tübingen.

Arrhenius, B.

1999 *De likarmade spännena från Vendeltid funna på Uppåkrabopplatsen*, [in:] B. Hårdh (ed.), *Fynden i centrum. Keramik, glas och metall från Uppåkra*, Uppåkrastudier 2, Lund, 135-143.

Arwidsson, G.

1954 *Die Gräberfunde von Valsgarde II. Valsgarde 8*, Acta Musei antiquitatum septentrionalium Regiæ Universitatis Upsaliensis IV, Uppsala.

1977 *Die Gräberfunde von Valsgarde III. Valsgarde 7*, Acta Musei antiquitatum septentrionalium Regiæ Universitatis Upsaliensis V, Uppsala.

Aufleger, M.

1996 *Beinarbeiten und Beinverarbeitung*, [in:] A. Wiczorek, P. Perin, K. von Welck, W. Menghin (eds.), *Die Franken. Wegbereiter Europas vor 1500 Jahren: König Chlodwig und seine Erben*, Mainz, 640-649.

Bacha, W. J. Jr., Wood, L. M.

1990 *Color atlas of veterinary histology*, Philadelphia-London.

Banytė-Rowell, R.

2009 *Buckle and mountings from Western Lithuania. Some remarks about a few loose finds of Migration Period*, [in:] A. Bitner-Wróblewska, G. Iwanowska (eds.), *Baltowie i ich sąsiedzi. Mariian Kaczyński in memoriam*, Warszawa, 227-237.

Baranowski, T.

1996 *Pochówki koni z Tumian, w woj. olsztyńskim*, „Archeologia Polski” XLI/1-2, 65-130.

Bately, J.

2007 *Text and translation: the three parts of the known world and the geography of Europe north of the Danube according to Orosius' Historiae and its Old English version*, [in:] J. Bately, A. Englert (eds.), *Othere's Voyages. A late 9th-century account of voyages along the coasts of Norway and Denmark and its cultural context*, Maritime Culture of the North 1, Roskilde, 40-50.

Baudot, H.

1860 *Mémoire sur les sépultures des barbares de l'époque mérovingienne, découvertes en Bourgogne, et particulièrement à Charnay*, Dijon-Paris.

Bebre, V.

1996 *Ornamentēto dzeramo ragu atradumi Latvijā 8.-12. gs.*, „Arheoloģija un Etnogrāfija” XVIII, 43-48.

Beganskaitė, R., Satkūnaitė, S.

2002 *VII a. pirmosios pusės kario kapo įkapių iš Lazdininkų (Kalnalaukio) kapinyno korskervavimas*, „Archeologia Lituana” 3, 100-103.

Behrens, G.

1937 *Fränkische Gräber des 7. Jahrhunderts aus Hessen*, „Germania“ 21, 267-272.

1947 *Merowingerzeit. Original-Altertümer des Zentralmuseums in Mainz*, Katalog des Römisch-Germanische Zentralmuseum 13, Mainz.

Bender Jørgensen, L.

1986 *Forhistoriske textiler i Skandinavien (Prehistoric Scandinavian Textiles)*, Nordiske Fortidsminder B 9, København.

1992 *North European Textiles until AD 1000*, Aarhus.

Berendt, G.

1873 *Zwei Gräberfelder in Natangen*, „Schriften der königlichen Physikalisch-Ökonomischen Gesellschaft zu Königsberg“ XIV, 81-101.

Bertašius, M.

2002 *Vidurio Lietuva VIII-XII amžiais*, Kaunas.

2009 *Marvelė. Ein Bestattungsort mit Mittellitauischer Pferdegräber. Marvelės žirgų kapinynas II*, Kaunas.

Bezenberger, A.

1900 *Gräberfeld bei Greyszönen, Kr. Tilsit*, „Sitzungsberichte der Altertumsgesellschaft Prussia“ 21, 135-152.

Bierbrauer, V.

2008 *Die Langobarden in Italien aus archäologischer Sicht*, [in:] M. Hegewisch (ed.), *Die Langobarden. Das Ende der Völkerwanderung*, Bonn, 109-151.

Birkmann, T.

1995 *Von Ågedal bis Malt: die skandinavischen Runeninschriften vom Ende des 5. bis Ende des 9. Jahrhunderts*, Reallexikon der germanischen Altertumskunde: Ergänzungsband 12, Berlin-New York.

Bitner-Wróblewska, A.

2001 *From Samland to Rogaland. East-West connections in the Baltic basin during the Early Migration Period*, Warszawa.

2007a *Problem genezy grupy olsztyńskiej w świetle periodyzacji cmentarzysk w Tumianach i Kielarach*, „Acta Universitatis Lodzianae – Folia Archaeologica” 25, 69-92.

2007b *Netta. A Balt Cemetery in Northeastern Poland*, Monumenta Archaeologica Barbarica XII, Warszawa.

2008a (ed.) *Archeologiczne księgi inwentarzowe dawnego Prussia-Museum*, Aestiorum Hereditas I, Olsztyn.

2008b *Observers or participants? The Balts during turbulent epoch*, [in:] B. Niezabitowska-Wiśniewska, M. Juściński, P. Łuczkiwicz, S. Sadowski (eds.), *The turbulent epoch – new materials from the Late Roman Period and the Migration Period I*, Lublin, 97-112.

Bitner-Wróblewska, A., Ciglis, J., Radiņš, A.

2005 *Latvijas arheoloģiskās senlietas polijas krātuvēs/Zabytki lotewskie w zbiorach polskich*, Rīga.

Bitner-Wróblewska, A., Kontny, B.

2006 *Controversy about three-leaf arrowheads from Lithuania*, „Archeologia Lituana” 7, 104-122.

Bliujienė, A.

2000 *Lokalių europos puošybos stilių įtaka i tūkstantmečio vidurio baltų genčių ornamentikai*, [in:] V. Kazakevičius, A. Grininkas, M. Mychelbertas, V. Urbanavičius (eds.), *Iš Baltų Kultūros Istorijos. Skiriama Adolfo Tautavičiaus 75-mečiui*, Vilnius, 99-111.

2006 *Watershed between Eastern and Western Lithuania during the Early and Late Migration Period*, „Archeologia Lituana” 7, 123-143.

Bliujienė, A., Butkus, D.

2002 *VII a. pirmosios pusės karys iš Lazdininkų (Kalnalaukio)*, „Archeologia Lituana” 3, 81-99.

2009 *Burials with horses and equestrian equipment in the Lithuanian and Latvian littorals and hinterlands (from the fifth to the eight centuries)*, „Archaeologia Baltica” 10, 149-163.

Bliujienė, A., Steponaitis, V.

2009 *Wealthy horsemen in the remote and tenebrous forests of East Lithuania during the Migration Period*, „Archaeologia Baltica” 10, 185-205.

Boessneck, J., von den Driesch, A.

1974 *Kritische Anmerkungen zur Widerristhöhenberechnung aus Längenmasen vor- und frühgeschichtlicher Tierknochen*, „Säugetierkundliche Mitteilungen“ 22, 325-348.

Bogucki, M.

2000 *Symbolika ornamentów z litewskich okuć rogów do picia z okresu wędrówek ludów*, „Światowit” N.S. II (XLIII)/B, 26-34.

2003 *Wczesnośredniowieczny skarb ozdób srebrnych z miejscowości Brodzikowo, powiat Mrągowo*, [in:] W. Wróblewski (ed.), *Studia Galindzkie I*, Warszawa, 181-244.

2006 *Grobiņa – a Sign of an Early Future Port of Trade in the Balt Lands*, [in:] M. Bertašius (ed.), *Transformatio mundi. The Transition from the Late Migration Period to the Early Viking Age in the East Baltic*, Kaunas, 93-106.

2009 *Konno w zaświaty*, „Archeologia Żywa” 3 (43), 2009, 30-33.

Böhme, H. W.

2005 *Merowingisches in Liebenau*, [in:] H.-J. Häbler (ed.), *Neue Forschungsergebnisse zur nordwesteuropäischen Frühgeschichte unter besonderer Berücksichtigung der altsächsischen Kultur im heutigen Niedersachsen*, Studien zur Sachsenforschung 15, Oldenburg, 83-95.

Böhner, K.

1958 *Die fränkischen Altertümer des Trierer Landes*,

Germanische Denkmäler der Völkerwanderungszeit Serie B: Die fränkischen Altertümer des Rheinlandes 1, Berlin.

Bóna, I.

1991 *Das Hunnen-Reich*, Stuttgart.

Bóna, I., Nagy, M.

2002 *Gepidische Gräberfelder am Theissgebiet I*, Monumenta Germanorum Archaeologica Hungariae 1: Monumenta Gepidica, Budapest.

Boulanger, M. C.

1909 *La cimetièrre franco-mèrovingien et carolingien de Marchélepot (Somme). Étude sur l'origine de l'art barbare*, Paris.

Brieske, V.

2001 *Schmuck und Trachtbestandteile des Gräberfeldes von Liebenau, Kreis Nienburg/Weser 2*, Studien zur Sachsenforschung 5/6, Oldenburg.

2005 *Zur Chronologie des Gräberfeldes von Liebenau, Kr. Nienburg (Weser)*, [in:] H.-J. Häßler (ed.), *Neue Forschungsergebnisse zur nordwesteuropäischen Frühgeschichte unter besonderer Berücksichtigung der altsächsischen Kultur im heutigen Niedersachsen*, Studien zur Sachsenforschung 15, Oldenburg, 97-118.

Bujack, G.

1891 *Friedrichsthal, Kreis Wehlau, auf einer alten Bauerngehöftstelle welche Powaitnick hieß*, „Sitzungsberichte der Altertumsgesellschaft Prussia“ 16 (1890), 14-17.

Bursche, A.

1998 *Złote medaliony rzymskie w Barbaricum. Symbolika prestiżu i władzypoleczeństw barbarzyńskich u schyłku starożytności*, Światowit Supplement Series A: Antiquity II, Warszawa.

Butėnas, E.

1999 *Sagtys iš rytų lietuvos pilkapių (tipai, paskirtis)*, „Lietuvos archeologija“ 18, 37-56.

Callmer, J.

1995 *Hantverksproduktion, samhällsförändringar och bebyggelse. Iakttagelser från östra Sydskandinavien ca 600-1100 e. Kr.*, Produksjon og samfunn Varia 30, Oslo.

Capelle, T.

1979 *Das Gräberfeld Beckum I*, Veröffentlichungen der Altertumskommission im Provinzialinstitut für Westfälische Landes- und Volksforschung Landschaftsverband Westfalen-Lippe VII, Münster Westfalen.

Chajredinova, E.

1999 *Die Tracht der Krimgoten im 6. und 7. Jahrhundert*, [in:] T. Werner (ed.), *Unbekannte Krim. Archäologische Schätze aus drei Jahrtausenden*, Heidelberg, 84-93.

Christlein, R.

1966 *Das alamannische Reihengräberfeld von Markt- oberdorf im Allgäu*, Materialhefte zur Bayerischen Vorgeschichte 21, Kallmünz/Opf.

Ciolek, R.

2001 *Katalog znalezisk monet rzymskich na Pomorzcu, Światowit Supplement Series A: Antiquity VI*, Warszawa.

Curta, F.

2008 *Utváreni Slovanů (se zvláštním zřetelem k Čechám a Moravě)*, „Archeologické rozhledy“ LX, 643-694.

Czekanowski, J.

1913 *Zarys metod statystycznych w zastosowaniach do antropologii*, Prace Towarzystwa Naukowego Warszawskiego 5, Warszawa.

Day, M. G.

1966 *Identification of hair and feather remains in the gut and faeces of stoats and weasels*, „Zoological Journal“ 148, 201-217.

Dmochowski, A. I.

1963 *Wyniki prac wykopaliskowych na grodzisku w Tolkmicku (pow. elbląski) w roku 1959*, „Rocznik Elbląski“ 2, 271-286.

Dorr, R.

1898 *Die Gräberfelder Silberberge bei Lenzen und bei Serpin, Kreis Elbing aus dem V.-VII. Jahrhundert nach Christi Geburt*, Elbing.

1914 *Das vorgeschichtliche Gräberfeld von Benkenstein-Freiwalde, Kr. Elbing (700-1150 n. Chr.)*, „Mitteilungen des Copernicus-Vereins für Wissenschaft und Kunst zu Thorn“ 22/1, 2-26.

von den Driesch, A.

1976 *A guide to the measurement of animal bones from archaeological sites*, „Peabody Museum Bulletin“ 1, 1-137.

Dziurdzik, B.

1973 *Klucz do oznaczania włosów ssaków Polski*, „Acta Zoologica Cracoviensia“ 18/4, 73-92.

Ebert, M.

1927 *Castrum Weklitze, Tolkemita, Truso*, „Elbinger Jahrbuch“ 5/6, 109-117.

Ehrlich, B.

1920 *Bericht über die Tätigkeit der Elbinger Altertumsgesellschaft in der Vereinsjahre 1915/16 bis 1917/18*, „Elbinger Jahrbuch“ 1 (1919/20), 151-214.

1922 *Bericht über die Tätigkeit der Elbinger Altertumsgesellschaft in den Vereinsjahre 1919/20 und 1920/21*, „Elbinger Jahrbuch“ 2 (1921/22), 159-166.

1923 *Das Gräberfeld bei Pr. Holland*, „Elbinger Jahrbuch“ 3, 196-200.

- 1931a** *Schwerter mit silberbeschlagenen Scheiden von Benkenstein, Kr. Elbing, und einige west- und ostpreußische Vergleichsstücke*, „Prussia“ 29, 16-46.
- 1931b** *Tolkemita, die erste nachweislich germanische Burg Ostpreussens*, „Mannus“ 8, Ergänzungsband.
- 1932** *Elbing, Benkenstein und Meislatein. Ein neuer Beitrag zur Trusoforschung*, „Mannus“ 24, 399-420.
- 1937a** *Truso. Eine preussisch-wikingische Siedlung bei Elbing*, „Germanen-Erbe“ 2, 1937, 80-84.
- 1937b** *Germanen und Altpreussen auf dem Boden Elbings. Die Scharnhorststrasse als vorgeschichtliches Siedlungsgebiet*, „Germanen-Erbe“ 2, 1937, 268-277.
- 1941** *Die Ausgrabungen des Städtischen Museums Elbing von 1936 bis 1939*, „Nachrichtenblatt für deutsche Vorzeit“ 17/3-4, 94-98.
- Engel, C.**
- 1932** *Das vierstöckige Gräberfeld von Linkuhnen*, „Fornvätten“ 24, 168-177.
- Falk, A.**
- 1980** *Riemen- und Gürtelteile und ihre Funktionen nach Befunden des Gräberfeldes von Liebenau, Kr. Nienburg, und gleichzeitigen Gräberfunden*, [in:] H.-J. Häbler (ed.), *Studien zur Sachsenforschung* 2, Hildesheim, 15-52.
- Fiedler, R.**
- 1962** *Katalog Kirchheim unter Teck. Die vor- und frühgeschichtlichen Funde im Heimatmuseum*, Veröffentlichungen des Staatlichen Amtes für Denkmalpflege Stuttgart Reihe A: Vor- und Frühgeschichte 7, Stuttgart.
- von Freeden, U., Lehmann, D.**
- 2005** *Das frühmittelalterliche Gräberfeld von Peigen, Gem. Pilsting, Ldkr. Dingolfing-Landau*, Schriftenreihe des Niederbayerischen Archäologiemuseums Landau 2, Landau a. d. Isar.
- Fremersdorf, F.**
- 1955** *Das fränkische Reihengräberfeld Köln-Müngersdorf*, Germanische Denkmäler der Völkerwanderungszeit VI, Berlin.
- Gaerte, W.**
- 1929** *Urgeschichte Ostpreussens*, Königsberg i Pr.
- Garam, É.**
- 1993** *Katalog der awarenzeitlichen Goldgegenstände und der Fundstücke aus den Fürstengräbern im Ungarischen Nationalmuseum*, Catalogi Musei Nationalis Hungarici. Seria Archaeologica I, Budapest.
- Garscha, F.**
- 1970** *Die Alamannen in Südbaden. Katalog der Grabfunde*, Germanische Denkmäler der Völkerwanderungszeit Serie A XI, Berlin.
- Genrich, A.**
- 1963** *Der gemischtbelegte Friedhof von Dörverden, Krei Verden/Aller*, Materialhefte zur Ur- und Frühgeschichte Niedersachsens 1, Hildesheim.
- Giesler, U.**
- 1978** *Jünger-kaiserzeitliche Nietknopfsporen mit Dreipunkthalterung vom Typ Leuna*, „Saalburg Jahrbuch“ 35, 5-56.
- 1998** *Völker am Hochrhein. Das Basler Land im frühen Mittelalter*, [in:] K. Fuchs (ed.), *Die Alamannen*, Stuttgart, 3rd ed., 209-218.
- Gładki, M.**
- 2003** *Osada i miejsce kultu ludności kultury kurhanów zachodniobałtyjskich na stanowisku II w Wyszemborku, pow. Mrągowo, w świetle badań wykopaliskowych przeprowadzonych w latach 1995-1997*, [in:] W. Wróblewski (ed.), *Studia Galindzkie I*, Warszawa, 13-62.
- Godlowski, K.**
- 1974** *Konfrontacja i ocena wartości archeologicznych wyznaczników płci w odniesieniu do grobów ciałopalnych z okresu późnolateńskiego i rzymskiego*, [in:] *Metody, wyniki i konsekwencje badań kości z grobów ciałopalnych*, Uniwersytet im. Adama Mickiewicza w Poznaniu, Wydział Biologii i Nauk o Ziemi Seria Antropologia 2, Poznań, 63-70.
- 1981** *Okres wędrówek ludów na Pomorzu*, „Pomorania Antiqua” X, 65-129.
- Göldner, H.**
- 1985** *Ein Bügelpaar vom Typ Andernach-Kärlich aus dem ehemaligen Ostpreussen?*, „Archäologisches Korrespondenzblatt” 15, 245-247.
- Gręzak, A.**
- 2006** *Grobby koni na cmentarzyskach kultury bogaczewskiej*, [in:] A. Bitner-Wróblewska (ed.), *Kultura bogaczewska w 20 lat później*, Warszawa, 353-367.
- Griciuvienė, E., Buža, Z.**
- 2007** *Selonian Finds*, [in:] N. Deveikienė (ed.), *The Selonians*, Vilnius-Riga, 111-258.
- Griciuvienė, E., Grižas, G., Buža, Z.**
- 2005** *Semigallians, V-XIII cent.*, [in:] L. U. Urbaitė, (ed.), *The Semigallians*, Vilnius-Riga, 23-152.
- Günther, C., Voss, A.**
- 1880** *Photographisches Album der Ausstellung Praehistorischer und Anthropologischer Funde Deutschlands in Aufnahmen nach den Originalen*, Berlin.
- Hartknoch, Ch.**
- 1679** *Privilegia quaedam prussica notis et animadversionibus necessariis illustrata opera et studio Christophori Hartknoch*, Francofurti et Lipsiae.

Häßler, H.-J.

1983 *Das sächsische Gräberfeld bei Liebenau, Kreis Nienburg (Weser) 2*, Studien zur Sachsenforschung 5/1, Hildesheim.

1985 *Das sächsische Gräberfeld bei Liebenau, Kreis Nienburg (Weser) 3*, Studien zur Sachsenforschung 5/2, Hildesheim.

1997 *Zwei merowingerzeitliche Körpergräber vom Fuß des Burgberges in Gehrden, Ldkr. Hannover, Niedersachsen*, [in:] H.-J. Häßler (ed.), Studien zur Sachsenforschung 10, 275-292.

Hedegård, K. R.

1989 *En tidlig yngre germanertids kvindergrav fra Knarregård*, [in:] L. Jørgensen (ed.), *Simblegård-Trelleborg. Danske gravfund fra førromersk jernalder til vikingetid*, Arkæologiske Skrifter 3, København, 188-207.

Heydeck, J.

1895 *Das Gräberfeld von Daumen und ein Rückblick auf den Anfang einer deutsch-nationalen Kunst*, „Prussia“ 19 (1893/95), 41-80.

Heym, H.

1938 *Das Gräberfeld Zohpen. Ein Beitrag zur Volks- und Kulturgeschichte des nördlichen ostpreußischen Binnenlandes von 400 n. Ztrw. bis zur Ordenszeit*, manuscript of a doctoral dissertation, in library of the Archaeological Museum in Poznań.

Hillberg, V.

2004 *Die westbaltischen Stämme und der überregionale Kulturaustausch in der Ostseeregion zur Merowingenzzeit*, „Bodendenkmalpflege in Mecklenburg“ 203/51, 295-319.

2009 *Masurische Bügelfibeln. Studien zu den Fernbeziehungen der völkerwanderungszeitlichen Brandgräberfelder von Daumen und Kellaren*, Daumen und Kellaren – Tumiany i Kielary 2, Schriften des Archäologischen Landesmuseums 9, Numünster.

Hoffmann, M.

1999 *Źródła do kultury i osadnictwa południowo-wschodniej strefy nadbałtyckiej w I tysiącleciu p.n.e.*, Olsztyn.

2000 *Kultura i osadnictwo południowo-wschodniej strefy nadbałtyckiej w I tysiącleciu p.n.e.*, Olsztyn.

Hollack, E.

1900 *Das Gräberfeld bei Kellaren im Kreise Allenstein*, „Prussia“ 21 (1896-1900), 160-195.

1914 *Ein neues Gräberfeld bei Ekritten, Kr. Fischhausen*, „Sitzungsberichte der Altertumsgesellschaft Prussia“ 23/I, 280-286.

Holter, F.

1925 *Das Gräberfeld bei Obermöllern aus der Zeit des alten Thüringen*, „Jahresschrift für Vorgeschichte der Sächsisch-Thüringischen Länder“ XII, 1, 1-114.

Hårdh, B.

1999 *Näbbfibulan – ett vendeltida vardagsspänne*, [in:] B. Hårdh (ed.), *Fynden i centrum. Keramik, glas och metall från Uppåkra*, Uppåkrastudier 2, Lund, 145-162.

2001 *Produktion och spridning. Näbbfibulor i Skåne*, [in:] B. Hårdh (ed.), *Uppåkra. Centrum och sammanhang*, Uppåkrastudier 3, Lund, 187-204.

2002 *Uppåkra in the Migration and Merovingian Periods*, [in:] B. Hårdh, L. Larsson (eds.), *Central Places in the Migration and Merovingian Periods*, Uppåkrastudier 6, Lund, 41-54.

Høilund Nielsen, K.

1987 *Zur Chronologie der jüngeren germanischen Eisenzeit auf Bornholm. Untersuchungen zu Schmuckgarnituren*, „Acta Archaeologica. København“ 57, 1986, 47-86.

1998 *Animal Style – a Symbol of Might and Myth. Salin's Style II in a European Context*, „Acta Archaeologica“ 69, 1-52.

2000 *The Political Geography of Sixth- and Seventh-Century Southern and Eastern Scandinavia on the Basis of Material Culture*, „Archaeologia Baltica“ 4, 161-172.

2003 *Saxon art between interpretation and imitation: the influence of Roman, Scandinavian, Frankish, and Christian art on the material culture of the continental Saxons AD 400-1000*, [in:] D. H. Green, F. Sigmund (eds.), *The Continental Saxons from the Migration Period to the Tenth Century: an Ethnographic Perspective*, San Marino 2003, 193-233.

Iwanowska, G.

2006 *Cmentarzysko kurhanowe w Żwirblach pod Wilnem. Wprowadzenie w problematykę*. Katalog, Warszawa.

Jagodziński, M. F.

1997 *Archeologiczne ślady osadnictwa między Wisłą a Pasłęką we wczesnym średniowieczu – katalog stanowisk*, Adalbertus 3, Warszawa.

2009 *Zagadnienie obecności Skandynawów w rejonie ujścia Wisły we wczesnym średniowieczu*, [in:] G. Białyński (ed.), *Pruthenia IV*, Olsztyn, 117-192.

Jahn, M.

1921 *Der Reitersporn seine Entstehung und früheste Entwicklung*, Mannus-Bibliothek 21, Leipzig.

Jakobson, F.

2009 *Die Brandgräberfelder von Daumen und Kellaren im Kreise Allenstein, Ostpr.*, Daumen und Kellaren – Tumiany i Kielary 1, Schriften des Archäologischen Landesmuseums 9, Neumünster.

Jaremek, A.

2009 *The new sources to studies over late phases of West Balt Barrow culture according to selected objects from settlement I in Jezioro, Ryn district*, [in:] B. Kontny, A. Szela, J. Kleemann (eds.), *Barbaricum* 8, Warszawa, 107-114.

Jaskanis, J.

1966 *Human burials with horses in Prussia and Sudovia in the first millenium of our era*, „Acta Baltico-Slavica” 4, 29-65.

1968a *Pochówki z końmi na cmentarzyskach protojańskich z okresu rzymskiego i wędrówek ludów*, „Rocznik Białostocki” VIII (1967), 77-109.

1968b *Materiały z cmentarzyska kurhanowego na stanowisku I w Korklinach, powiat Suwałki*, „Rocznik Białostocki”, VIII (1967), 299-336.

Jaskulski, P.

2009 *Instrukcja użytkownika programu MaCzek v. 3.0*, http://eskimo73.republika.pl/download/manual_30_pl.pdf, retrieved on 10.11.2009.

Jöns, H.

2006 *Slawisch-skandinavische Kontakte an der südwestlichen Ostseeküste im Lichte neuer Forschungen*, [in:] M. Bertašius (ed.), *Transformatio mundi. The Transition from the Late Migration Period to the Early Viking Age in the East Baltic*, Kaunas, 117-131.

Jørgensen, E., Petersen, P. V.

2003 *Nydam Bog – new finds and observations*, [in:] L. Jørgensen, B. Storgaard, L. Gebauer Thomsen (eds.), *The Spoils of Victory. The North in the Shadow of the Roman Empire*, København, 258-285.

Jørgensen, L.

1990 *Bækkegård and Glasergård. Two cemeteries from the Late Iron Age on Bornholm*, *Arkæologiske Studier* VIII, København.

Jørgensen, L., Nørgård Jørgensen, A.

1997 *Nørre Sandegård Vest. A Cemetery from the 6th-8th Centuries on Bornholm*, *Nordiske Fortidsminder* B/14, København.

Kamińska, J., Nahlik, A.

1958 *Włókiennictwo gdańskie X-XIII w.*, Łódź.

Kasprzycka, M.

1999 *Tło paleogeograficzne osadnictwa Żuław Elbląskich w pierwszym tysiącleciu naszej ery*, *Adalbertus* 5, Warszawa 1999.

Kazakyavichyus (Kazakievičius), V.

1981 *Vienašmenių kalavijų atsiradimas ir raida Lietuvoje*, „Lietuvos Archeologija” 2, 43-58.

1988 *Oruzhiye baltskikh plemen II-VIII vekov na territorii Litvy*, Vilnius.

1993 *Plinkaigalio kapinynas*, „Lietuvos Archeologija” 10.

Kazanski, M.

2007 *The Armament, Horsemen's Accoutrements, and Riding Gear of Long Barrow Culture (Fifth to Seventh Centuries)*, „Archaeologia Baltica” 8, 238-253.

Kiesewalter, L.

1888 *Skelettmessungen an Pferden als Beitrag zur theoretischen Grundlage der Beurteilungslehre des Pferdes*, Dissertation, Leipzig.

Klebs, R.

1877 *Bericht über die neuen Ausgrabungen in Tengen bei Brandenburg (Natangen) ausgeführt im Sommer 1875*, „Schriften der königlichen Physikalisch-Ökonomischen Gesellschaft zu Königsberg“ XIX, 51-62.

Kleemann, O.

1956a *Völkerwanderungszeitliche Funde aus dem südlichen Ostpreussen*, [in:] O. Kleemann (ed.), *Documenta Archaeologica Wolfgang La Baume Dedicata*, Bonn, 70-78.

1956b *Sämländische Funde und die Frage der ältesten Steigbügel in Europa*, [in:] O. Kleemann (ed.), *Documenta Archaeologica Wolfgang La Baume Dedicata*, Bonn, 109-122.

Knaut, M.

1993 *Die alamannischen Gräberfelder von Neresheim und Kössingen, Ostalbkreis*, *Forschungen und Berichte zur Vor- und Frühgeschichte in Baden-Württemberg* 48, Stuttgart.

Knorr, H. A.

1938 *Die slawischen Messerscheidenbeschläge*, „Mannus“ 30/4, 479-545.

Kobryń, H.

1984 *Zmiany niektórych cech morfologicznych konia w świetle badań kosztnych materiałów wykopaliskowych z obszaru Polski*, Warszawa.

Kobryń, H., Serwatka, S., Świeżyński, K.

1999 *Konie z cmentarzyska w Tumianach (woj. warmińsko-mazurskie) w świetle badań archeologicznych, unpublished analysis*, Library of Warsaw University of Life Sciences – SGGW, Warsaw.

Koch, R.

1967 *Bodenfunde der Völkerwanderungszeit aus dem Main-Tauber-Gebiet*, *Germanische Denkmäler der Völkerwanderungszeit Serie A VIII*, Berlin.

Koch, U.

1968 *Die Grabfunde der Merowingerzeit aus dem Donautal um Regensburg*, *Germanische Denkmäler der Völkerwanderungszeit Serie A X*, Berlin.

1977 *Das Reihengräberfeld von Schretzheim*, *Germanische Denkmäler der Völkerwanderungszeit Serie A XIII*, Berlin.

- 2001** *Das alamannisch-fränkische Gräberfeld bei Pleidelsheim*, Stuttgart.
- Kolda, J.**
- 1936** *Srovnavaci anatomie zvirat domacich se zretelem k anatomii cloveka*, Brno.
- Kolendo, J.**
- 1998** *Miejsca występowania bursztynu według Pliniusza Starszego*, [in:] A. Bursche, R. Chowaniec, W. Nowakowski (eds.), J. Kolendo, *Świat antyczny i barbarzyńcy. Teksty, zabytki, refleksja nad przeszłością*, Instytut Archeologii Uniwersytetu Warszawskiego – Seria Podręczników 1, Warszawa, 141-165.
- 2009** *Ziemie u południowo-wschodnich wybrzeży Bałtyku w źródłach antycznych*, [in:] G. Białuński (ed.), *Pruthenia IV*, Olsztyn, 11-41.
- Kontny, B.**
- 1998** *Próba odtworzenia technik walki mieczem w młodszym okresie przedrzymskim. Wpływ formy broni na jej zastosowanie*, „Światowit” 41/B, 388-406.
- 2010** *Odwrotna strona medalu czyli w kwestii konstrukcji zapinek szczeblowych słów kilka*, [in:] A. Urbaniak, R. Prochowicz, J. Schuster, M. Levada (eds.), *Terra Barbarica*, Monumenta Archaeologica Barbarica Series Gemina II, Łódź-Warszawa, 321-331.
- Kontny, B., Natuniewicz-Sekuła, M.**
- 2009** *A spur from Myślęcín (?) as an odd piece in a puzzle*, [in:] B. Kontny, A. Szela, J. Kleemann (eds.), *Barbaricum 8*, Warszawa, 153-160.
- Kontny, B., Okulicz-Kozaryn, J., Pietrzak, M.**
- 2009** *Horse graves in the Elbląg Group. The case of and cemetery at Nowinka, Tolkmicko com.*, „Archaeologia Baltica” 10, 164-184.
- Kowalski, J.**
- 1985** *Archeologiczne badania cmentarzyska w Chojnowie gmina Tolkmicko*, „Rocznik Elbląski” X, 227-229.
- 1987** *Badania cmentarzyska w Chojnowie, woj. elbląskie*, [in:] A. Pawłowski (ed.), *Badania archeologiczne w woj. elbląskim w latach 1980-83*, Malbork, 279-286.
- 1991** *Z badań nad chronologią okresu wędrówek ludów na ziemiach zachodniobałtyjskich (faza E)*, [in:] H. Judzińska (ed.), *Archeologia Bałtyjska*, Olsztyn, 67-85.
- 2000** *Chronologia grupy elbląskiej i olsztyńskiej kręgu zachodniobałtyjskiego (V-VII w.). Zarys problematyki*, [in:] P. Szymański, A. Żórawska (eds.), *Barbaricum 6*, Warszawa, 203-266.
- Krysiak, K.**
- 1958** *Szczątki zwierzęce z okresu rzymskiego z kurhanów Suwalszczyzny wydobyte w 1956 r.*, „Wiadomości Archeologiczne” 25/1-2, 140-144.
- Krysiak, K., Serwatka, S.**
- 1970** *Grobby koni w jaćwieskich kurhanach z Korklin na Suwalszczyźnie*, „Rocznik Białostocki” IX, 211-228.
- Kühn, H.**
- 1956** *Das Problem der masurgermanischen Fibeln in Ostpreussen*, [in:] O. Kleemann (ed.), *Documenta Archaeologica Wolfgang La Baume Dedicata*, Bonn, 79-108.
- Kulakov, V. I.**
- 1989** *Mogil'niki zapadnoy chasti Mazurskogo Poozyor'ya konca V-nachala VIII vv. (po materialach raskopok 1878-1938 gg.)*, [in:] J. Okulicz (ed.), *Barbaricum 1*, Warszawa, 148-275.
- 1990** *Drevnosti Prussov VI-XIII vv.*, Archeologia SSSR. Svod Archeologicheskikh Istochnikov C1-9, Moskva.
- 2006** „Varvarskiye” *podrazhaniya provincialno-rimskim fibulam s „knopkami” v Baltii na fazach C1-D1*, „Archaeologia Lituana” 7, 66-79.
- 2009** *Dollkeim-Kovrovo, Kaliningrad Region, Russia. Research on the cemetery conducted in 1879 and 1992-2002*, BAR International Series 1950, Oxford.
- in print *Hünenberg – “Gora Velikanov”. Mogil'nik 3-6. vv. na severe Sambii*, [in:] P. Szymański (ed.), *Barbaricum 9*, Warszawa.
- Kunkel, O.**
- 1942** *Ostsee, Forschungabriss und Schriftennachweis zur Urgeschichte der Ostseeländer*, [in:] G. Wissova, W. Kroll, K. Mittelhaus (eds.), *Paulys Real-Enzyklopädie der classischen Altertumswissenschaft XVIII/2*, Stuttgart, 1690-1854.
- Kuryszko, J., Zarzycki, J.**
- 1995** *Anatomia mikroskopowa zwierząt i człowieka*, Warszawa-Wrocław.
- La Baume, P.**
- 1967** *Das fränkische Gräberfeld von Junkersdorf bei Köln*, Germanische Denkmäler der Völkerwanderungszeit Serie B: Die fränkische Altertümer des Rheinlandes 5, Berlin.
- La Baume, W.**
- 1939** *Vorgeschichtliche Forschung und Denkmalpflege in Ostpreußen, 1938*, „Nachrichtenblatt für Deutsche Vorzeit” 15/11-12, 281-286.
- 1944** *Altpreussisches Zaumzeug*, „Alt-Preussen” 9/1-2, 2-19.
- Labuda, G.**
- 1960** *Źródła, sagi i legendy do najdawniejszych dziejów Polski*, Warszawa.

- 1961 (ed.) *Źródła skandynawskie i anglosaskie do dziejów Słowiańszczyzny*, Warszawa.
- Ladenbauer-Orel, H.**
1960 *Linz-Zizlau. Das baierische Gräberfeld an der Traunmündung*, Wien-München.
- Lasek, W.**
1954 *Materialoznawstwo skórzane*, Warszawa.
- Lasota-Moskalewska, A., Perlikowska-Puszkarska, U.**
1994 *Pochówki koni na cmentarzysku z okresu wędrówek ludów w Sątocznie, gm. Korsze, woj. olsztyńskie*, [in:] J. Okulicz-Kozaryn, W. Nowakowski (eds.), *Barbaricum* 3, Warszawa, 193-205.
- László, G.**
1951 *The significance of the Hun Golden Bow*, „Acta Archaeologica Academiae Scientiarum Hungaricae” 1, 91-106.
- Legoux, R., Périn, P., Vallet, F.**
2003 *Chronologie normalisée du mobilier funéraire mérovingien entre Manche et Lorraine*, Bulletin de liaison de l'Association Française d'Archéologie Mérovingienne hors série, Condé-sur-Noireau.
- Ljungkvist, J.**
2008 *Valsgårde – Development and change of a burial ground over 1300 years*, [in:] S. Norr (ed.), *Valsgårde studies: the Place and its People, Past and Present*, Uppsala, 13-55.
- Lund Hansen, U.**
2009 *Fibulae and Pins*, [in:] Ch. Adamsen, U. Lund Hansen, F. O. Nielsen, M. Watt (eds.), *Sorte Muld. Wealth, Power and Religion at an Iron Age Central Settlement on Bornholm*, Rønne, 63-69.
- Lutnicki, W.**
1971 *Uzębienie zwierząt domowych*, Warszawa-Kraków.
- Magomedov, B. V., Levada, M. E.**
1996 *Oruzhiye tschernyakhovskoy kultury*, „Materiały po Arkheologii, Istorii i Etnografii Tavrii” V, 304-323.
- Maik, J.**
1977 *Tkaniny z okresu rzymskiego z terenu Polski*, „Pomorania Antiqua” 7, 77-145.
1988 *Wyroby włókiennicze na Pomorzu z okresu rzymskiego i ze średniowiecza*, Wrocław-Warszawa-Kraków-Gdańsk-Łódź.
1990 *Wczesnośredniowieczne wyroby włókiennicze w Wolinie*, „Materiały Zachodniopomorskie” 32 (1986), 155-180.
1997 *Sukiennictwo elbląskie w średniowieczu*, Łódź.
2001 *Wetna tkanin wykopaliskowych jako źródło do badań ras owiec*, „Kwartalnik Historii Kultury Materialnej” XLIX/4, 311-326.
- Mangelsdorf, G., Rausch, K.**
2000 *Eine vendelzeitliche Schnabelfibel des. 6./7. Jahrhunderts aus Menzlin, Ldkr. Ostvorpommern*, „Jahrbuch Bodendenkmalpflege in Mecklenburg-Vorpommern” 48, 269-277.
- Mączyńska, M.**
2007 *Zmierzch kultury wielbarskiej – czego nie wiemy?*, [in:] M. Fudziński, H. Paner (eds.), *Nowe materiały i interpretacje. Stan dyskusji na temat kultury wielbarskiej*, Gdańsk, 365-401.
- Menghin, W.**
1983 *Das Schwert im Frühen Mittelalter. Chronologisch-typologische Untersuchungen zu Langschwertern aus germanischen Gräbern des 5. bis 7. Jahrhunderts n. Chr.*, Stuttgart.
2007 (ed.) *The Merovingian Period – Europe without Borders. Archaeology and history of the 5th to 8th centuries*, Berlin.
- Mroczek, R.**
1997 *Miecze jednosieczne typu „saks” z cmentarzyska z VI-VII w. w Nowince w województwie elbląskim. Studium porównawcze*, manuscript of the M.A. thesis in library of the Institute of Archaeology, University of Warsaw, Warszawa.
- von zu Mühlen, B.**
1975 *Die Kultur der Wikinger in Ostpreußen*, Bonner Hefte zur Vorgeschichte 9, Bonn.
- Müssemeier, U., Nieveler, E., Plum, R., Pöppelmann, H.**
2003 *Chronologie der Grabfunde vom linken Niederrhein bis zur nördlichen Eifel*, Materialien zur Bodendenkmalpflege im Rheinland 15, Köln.
- Nahlik, A.**
1958 *Tkaniny z XIII-XIV-wiecznego cmentarzyska w miejscowości Równina Dolna, pow. Kętrzyn*, „Rocznik Olsztyński” I, 171-191.
1959 *Tkaniny wykopaliskowe z wczesnośredniowiecznego Wolina*, „Materiały Zachodnio-Pomorskie”, 5, 257-276.
- Natuniewicz, M.**
2000 *„Nowe” znaleziska ze starych wykopalisk. Ocalale materiały archeologiczne z okresu wpływów rzymskich z okolic Elbląga*, [in:] J. Kolendo, W. Nowakowski (eds.), *Antiquitates Prussiae. Studia z archeologii dawnych ziem pruskich*, Warszawa, 105-206.
- Neugebauer, W.**
1934 *Das altpreussische Gräberfeld von Conradswalde Kr. Elbing*, „Altschlesien” 5, 321-325.
1937 *Ein wikingisches Gräberfeld in Elbing, Reg.-Bez. Westpreussen*, „Nachrichtenblatt für deutsche Vorzeit” 13/3, 54-58.

- 1938** *Das wikingische Gräberfeld in Elbing, „Alt-Preußen“* 3/1, 2-6.
- 1975** *Von Truso nach Elbing. Leitlinien der Frühgeschichte des Elbinger Raumes, „Elbinger Hefte“* 34, 9-49.
- Nerman, B.**
- 1935** *Die Völkerwanderungszeit Gotlands*, Stockholm.
- 1958** *Grobin – Seeburg. Ausgrabungen und Funde*, Stockholm.
- 1969** *Die Vendelzeit Gotlands*, Stockholm.
- 1975** *Die Vendelzeit Gotlands. Text*, Stockholm.
- Niesiolowska-Wędzka, A.**
- 1965** *Wyniki badań nad tkaninami z najstarszych warstw grodu w Santoku, „Archeologia Polski”* 10/1, 318-337.
- Nowakowski, W.**
- 1996** *Das Samland in der römischen Kaiserzeit und seine Verbindungen mit dem römischen Reich und der barbarischen Welt*, Marburg-Warszawa.
- 1998** *Die Funde der römischen Kaiserzeit und der Völkerwanderungszeit aus Masuren*, Museum für Vor- und Frühgeschichte Bestandkataloge 6, Berlin.
- 2000** *Die Balten zwischen Weichsel und Memel zwischen 400 und 800 n.Chr. Ein Entwurf der Forschungsproblematik, „Archaeologia Baltica“* 4, 9-25.
- 2007a** *Cmentarzyska mazursko-germańskie z późnego okresu wędrówek ludów – grupa olsztyńska w koncepcji Carla Engla, „Acta Universitatis Lodzianensis – Folia Archaeologica”* 25, 93-127.
- 2007b** *East Prussia as a bridge between Eastern and Western Europe: finds of the 5th to 8th centuries*, [in:] Menghin 2007, 145-155.
- 2008** *Die frühesten Steigbügel aus Preußen. Funde vom Gräberfeld Widitten II in Samland*, [in:] B. Niezabitowska-Wisniewska, M. Juściński, P. Łuczkiwicz, S. Sadowski (eds.), *The turbulent epoch – new materials from the Late Roman Period and the Migration Period II*, Lublin, 189-211.
- Nørgård Jørgensen, A.**
- 1992** *Weapon sets in Gotlandic grave finds from 530-900 A.D. A chronological analysis*, [in:] L. Jørgensen (ed.), *Chronological studies of Anglo-Saxon England, Lombard Italy and Vendel Period Sweden*, Arkæologiske Skrifter 5, København, 5-34.
- 1999** *Waffen und Gräber. Typologische und chronologische Studien zu skandinavischen Waffen- gräbern 520/30 bis 900 n. Chr.*, Nordiske Fortidsminder B/17, København.
- Oexle, J.**
- 1992** *Studien zu merowingerzeitlichem Pferdegeschirr am Beispiel der Trensen*, Germanische Denkmäler der Völkerwanderungszeit XVI, Mainz am Rhein.
- Okulicz, J. (Okulicz-Kozaryn, J.)**
- 1973** *Pradzieje ziem pruskich od późnego paleolitu do VII w. n.e.*, Wrocław-Warszawa.
- 1988** *Problem ceramiki typu praskiego w grupie olsztyńskiej kultury zachodniobałtyjskiej (VI-VII w. n.e.)*, „Pomorania Antiqua” XIII, 103-133.
- 1989** *Próba identyfikacji archeologicznej ludów bałtyjskich w połowie pierwszego tysiąclecia n.e.*, [in:] J. Okulicz (ed.), *Barbaricum 1*, Warszawa, 64-100.
- 1992** *Centrum kulturowe z pierwszych wieków naszej ery u ujścia Wisły*, [in:] J. Okulicz-Kozaryn, W. Nowakowski (eds.), *Barbaricum 2*, Warszawa, 137-155.
- Okulicz-Kozaryn, J., Pietrzak, M.**
- 2009** *Flasze gliniane z wyposażenia grobów z późnej fazy okresu wędrówek ludów na cmentarzysku w Nowince, w powiecie elbląskim*, [in:] M. Karczewska, M. Karczewski (eds.), *Ceramika bałtyjska. Tradycje i wpływy. Materiały z konferencji, Białystok 21-23 września 2005 roku*, Białystok, 115-153.
- Okulicz, Ł.**
- 1970** *Kultura kurhanów zachodniobałtyjskich we wczesnej epoce żelaza*, Wrocław-Warszawa-Kraków.
- Olsén, P.**
- 1945** *Die Saxe von Valsgårde I*, Uppsala.
- Pečeliūnaitė-Bazienė, E.**
- 2004** *2/2 sustiprinto rouželinio pynimo audiniai I-XII a. Lietuvos pajūrio laidojimo paminkluose*, „Archaeologia Lituana” 5, 66-77.
- Peiser, F. E.**
- 1919** *Gräberfeld bei Huntenberg*, „Sitzungsberichte der Altertumsgesellschaft Prussia“ 23/2 (1914), 335-356.
- Persz, T.**
- 1992** *Materiałoznawstwo dla techników przemysłu skórzanego*, Warszawa.
- Pescheck, Ch.**
- 1996** *Das fränkische Reihengräberfeld von Kleinslangheim, Lkr. Kitzingen/Nordbayern*, Germanische Denkmäler der Völkerwanderungszeit Serie A XVII, Mainz am Rhein.
- Petersen, E.**
- 1939** *Der ostelbische Raum als germanisches Kraftfeld im Lichte der Bodenfunde des 6.-8. Jahrhunderts*, Leipzig.

Petersen, P. V.

2003 *Warrior art, religion and symbolism*, [in:] L. Jørgensen, B. Storgaard, L. Gebauer Thomsen (eds.), *The Spoils of Victory. The North in the Shadow of the Roman Empire*, København, 286-294.

Piátkowska-Malecka, J.

2000 *Pochówki końskie na obszarze Polski północno-wschodniej w I tysiącleciu n.e.*, „Światowit N.S.” II(XLIII)/B, 186-201.

Pietrzak, M.

1977 *Cmentarzysko pruskie z V-VII w. n.e. w Nowince, woj. Elbląg*, „Sprawozdania Archeologiczne” 29, 151-158.

Pirling, R.

1966a *Das römisch-fränkische Gräberfeld von Krefeld-Gellep 1: Text*, Germanische Denkmäler der Völkerwanderungszeit Serie B: Die fränkischen Altertümer des Rheinlandes 2, Berlin.

1966b *Das römisch-fränkische Gräberfeld von Krefeld-Gellep 2: Katalog und Tafeln*, Germanische Denkmäler der Völkerwanderungszeit Serie B: Die fränkischen Altertümer des Rheinlandes 2, Berlin.

1979b *Das römisch-fränkische Gräberfeld von Krefeld-Gellep 1964-65 2: Katalog und Tafeln*, Germanische Denkmäler der Völkerwanderungszeit Serie B: Die fränkischen Altertümer des Rheinlandes 10, Berlin.

1979b *Das römisch-fränkische Gräberfeld von Krefeld-Gellep 1964-65 1: Text*, Germanische Denkmäler der Völkerwanderungszeit Serie B: Die fränkischen Altertümer des Rheinlandes 10, Berlin.

Piwowska, A.**forthcoming**

Bałtyjskie wędzidla z rogowymi pobocznicami z okresu wędrówek ludów. Na marginesie znaleziska z Przebrodu, pow. suwalski, [in:] *Studia Archaeologica Sudauica et Pollexiana I*, Suwałki.

Purhonen, P. (ed.)

1996 *Vainionmäki – a Merovingian Period Cemetery in Laitila*, Finland, Helsinki.

Quast, D.

1999 *Auf der Suche nach fremden Männern – Die Herleitung schmalen Langsaxe vor dem Hintergrund der alamannisch-donauländischen Kontakte der zweiten Hälfte des 5. Jahrhunderts*, [in:] T. Fischer, G. Precht, J. Tejral (eds.), *Germanen beiderseits des spätantiken Limes*, Brno, 115–128.

2004 *Ein skandinavisches Spathascheidenmundblech*

der Völkerwanderungszeit aus Pikkjärve (Pölvamaa, Estland), „Jahrbuch der Römisch-Germanischen Zentralmuseums Mainz“ 51, 243-279.

2006 *Die frühalamannische und merowingerzeitliche Besiedlung im Umland des Runden Berges bei Urach*, Forschungen und Berichte zur Vor- und Frühgeschichte in Baden-Württemberg 84, Stuttgart.

Radek, T.

1980 *Morphological investigations on the species belonging of excavatory animal skins on the basis of samples coming from Nakto on Noteć*, „Zoologica Poloniae” 28/1, 57-85.

Reich, Ch.

2006 *Das Gräberfeld von Oberhof – Kulturelle Beziehungen und Kontakte*, „Archaeologia Lituana“ 7, 85-97.

2009 *Archaeological finds from the area of present day Lithuania in the Prussia collection at the Museum für Vor- und Frühgeschichte, Berlin*, „Archaeologia Lituana” 10, 36-49.

Reich, Ch., Menghin, W.

2008 *Die Prussia-Sammlung im Museum für Vor- und Frühgeschichte, Berlin*, [in:] A. Bitner-Wróblewska 2008a (ed.), 68-97.

Reiß, R.

1994 *Der merowingerzeitliche Reihengräberfriedhof von Westheim (Kreis Weißenburg-Gunzenhausen)*, Wissenschaftliche Beibände zum Anzeiger des Germanischen Nationalmuseums 10, Nürnberg.

Reutkiewicz, J., Tobiszewski, A.

1956 *Rymarstwo*, Warszawa.

Rettner, A.

1997 *Sporen der Älteren Merowingerzeit*, „Germania“ 75/1, 133-157.

Rieth, A.

1937 *Das alamannische Fürstengrab von Gammertingen*, „Germanen-Erbe“ 1937, 39-48.

Roman, E.

1998 *Ostrogi krzesłowate z terenu ziem polskich*, [in:] J. Ilkjær, A. Kokowski (eds.), *20 lat archeologii w Masłomęczu I: Weterani*, Lublin, 165-188.

Roth, H.

1998 *Kunst*, [in:] H. Beck, H. Steuer, D. Timpe (eds.), *Reallexikon der Germanischen Altertumskunde XI*, Berlin-New York, 356-368.

Roth, H., Theune, C.

1995 *Das frühmittelalterliche Gräberfeld bei Weingarten (Kr. Ravensburg). I. Katalog der Grabinventare*, Forschungen und Berichte zur Vor- und Frühgeschichte in Baden-Württemberg 44/1, Stuttgart.

Rudnicki, M.

2004 *Grób grupy olsztyńskiej z miejscowości Piecki, woj. warmińsko-mazurskie*, [in:] A. Juga-Szymańska, W. Nowakowski, P. Szymański (eds.), *Barbaricum* 7, Warszawa, 265-273.

2006a *Eine Scheibenfibel mit Mittelbuckel aus dem masurischen Gräberfeld Leleszki and das Problem der späteren Stufe der Olsztyn-Gruppe*, „*Archaeologia Litwana*“ 7, 80-84.

2006b *Ostrogi z haczykowatymi zaczepami odgiętymi na zewnątrz z obszaru grupy olsztyńskiej w świetle źródeł archiwalnych. Próba nowego spojrzenia*, [in:] W. Nowakowski, A. Szela (eds.), *Pogranicze trzech światów. Kontakty kultur przeworskiej, wielbarskiej i bogaczewskiej w świetle materiałów z badań i poszukiwań archeologicznych*, Światowit Supplement Series P: Prehistory and Middle Ages XIV, Warszawa, 349-362.

2008 *Bemerkungen zur Entwicklung von Armbrustspesenfibeln aus dem Territorium der Olsztyn-Gruppe. Erste Feststellungen*, [in:] B. Niezabitowska-Wiśniewska, M. Juściński, P. Łuczkiwicz, S. Sadowski (eds.), *The turbulent epoch – new materials from the Late Roman Period and the Migration Period II*, Lublin, 291-302.

2009 *Uwagi na temat niektórych form zawieszek z terenu grupy olsztyńskiej*, [in:] A. Bitner-Wróblewska, G. Iwanowska (eds.), *Bałtowie i ich sąsiedzi. Marian Kaczyński in memoriam*, Warszawa, 421-436.

Rudnicki, M., Trzeciński, M.

1994 *Wyniki badań powierzchniowych z zastosowaniem wykrywaczy metali. Nowa metoda w polskiej archeologii*, [in:] J. Okulicz-Kozaryn, W. Nowakowski (eds.), *Barbaricum* 3, Warszawa, 149-162.

Rundkvist, M.

2003 *Snake brooches of south Scandinavia Ørsnes types L1, L2, J, and H3*, [in:] B. Hårdh (ed.), *Fler fynd i centrum. Materialstudier i och kring Uppåkra*, Uppåkrastudier 9. Lund, 97-121.

Sage, W.

1984 *Das Reihengräberfeld von Altenerding in Oberbayern*, Germanische Denkmäler der Völkerwanderungszeit Serie A XIV, Berlin.

Salin, B.

1935 *Die altgermanische Thierornamentik*, Stockholm.

Sasse, B.

2001 *Ein frühmittelalterliches Reihengräberfeld bei Eichstetten am Kaiserstuhl*, Forschungen und Berichte zur Vor- und Frühgeschichte in Baden-Württemberg 75, Stuttgart.

Sasse, B., Theune, C.

1996 *Perlen als Leittypen der Merowingerzeit*, „*Germania*“ 74/1, 187-231.

Schilling, L.

2009 *An Avar-Period Germanic Brooch from Tácsfövenypuszta*, [in:] D. Quast (ed.), *Foreigners in Early Medieval Europe: Thirteen International Studies on Early Medieval Mobility*, Mainz, 261-271.

Schmeidler, B. (ed.)

1917 *Adam von Bremen, Hamburgische Kirchengeschichte*, Hannover und Leipzig, 2nd ed.

Schmidt, B.

1961 *Die späte Völkerwanderungszeit in Mitteldeutschland mit einem anthropologischen Beitrag*, Veröffentlichungen des Landesmuseums für Vorgeschichte in Halle 18, Halle (Saale).

1976 *Die späte Völkerwanderungszeit in Mitteldeutschland. Katalog (Nord- und Ostteil)*, Veröffentlichungen des Landesmuseums für Vorgeschichte in Halle 29, Berlin.

2005 *Sächsische, angelsächsische und skandinavische Einflüsse in Mitteldeutschland während des 6. und 7. Jahrhunderts*, [in:] H.-J. Häbler (ed.), *Neue Forschungsergebnisse zur nordwesteuropäischen Frühgeschichte unter besonderer Berücksichtigung der altsächsischen Kultur im heutigen Niedersachsen*, Studien zur Sachsenforschung 15, Oldenburg, 403-419.

Schnellenkamp, Dr.

1935 *Jahresbericht des Altertums-Museums der Stadt Mainz für die Zeit vom 1. April 1934 bis 31. März 1935*, „*Mainzer Zeitschrift*“ XXX, 80-90.

Schnurbein von, A.

1987 *Der alamannische Friedhof bei Fridlingen an der Donau*, Forschungen und Berichte zur Vor- und Frühgeschichte in Baden-Württemberg 21, Stuttgart.

Schoknecht, U.

2008 *Vendelzeitliche Funde aus Mecklenburg-Vorpommern*, [in:] F. Biermann, U. Müller, T. Terberger (eds.), „*Die Dinge beobachten ...*“. *Archäologische und historische Forschungen zur frühen Geschichte Mittel- und Nordeuropas. Festschrift für Günter Mangelsdorf zum 60. Geburtstag*, Archäologie und Geschichte im Ostseeraum 2, Rahden/Westf., 123-130.

Schoppa, H.

1952 *Spätfränkische Gräber im Limburger Becken*, „*Nassauische Heimatblätter*“ 42/1, 16-43.

Schubert, A. H.

1999 *Zur Frage sächsischer Elemente im Gräberfeld Lünen-Wethmar*, [in:] U. v. Freeden, U. Koch,

- A. Wiczorek (eds.), *Völker an Nord- und Ostsee und die Franken, Akten des 48. Sachsensymposiums in Mannheim vom 7. bis 11 September 1997*, Bonn, Kolloquien zur Vor- und Frühgeschichte 3/Mannheimer Geschichtsblätter N. F. 2, Bonn, 153-165.
- Serwatka, S.**
1970 *Szczątki końskie z cmentarzyska okresu rzymskiego i wędrówek ludów w Netcie, pow. Augustowski*, „Rocznik Białostocki” 9, 229-236.
- Šimėnas, V. (Shimenas, V.)**
1992 *Boevye nozhi-kinzhaly v baltiyskom areale v V-VI vv.*, [in:] *Archeologiya i istoriya Pskova i Pskovskoy zemli. Materialy simpoziuma*, Pskov, 96-102.
1996 *Smailieji kovos peiliai-durklai baltų kraštuose I m. e. tūkstantmečio viduryje*, [in:] A. Astrauskas, M. Bertasius (eds.), *Vidurio Lietuvos archeologija. Etnokultūriniai ryšiai*, 27-71.
2006 *Etnokultūriniai procesai. Vakarų Lietuvoje pirmojo mūsų eros tūkstantmečio viduryje*, Vilnius.
- Simniškītė, A.**
1998 *Geriamieji ragai Lietuvoje*, „Lietuvos Archeologija“ 15, 185-245.
- Skvortsov, K.**
2009 *Burials of riders and horses dated to the Roman Iron Age and Great Migration Period in Aleika-3 (former Jaugehnen) cemetery in the Sambian Peninsula*, „Archaeologia Baltica” 10, 130-148.
2010 *Mogil'nik Mitino V-XIV vv. (Kaliningradskaya oblast') po rezul'tatam issledovaniy 2008 g.*, Moskva.
- Soltysiak, A.**
1997 *MaCzek 1.00. Język programowania diagramu Czekanowskiego*, „Biuletyn Antropologiczny” 1, 11-20.
- Soltysiak, A., Jaskulski, P.**
1999 *Czekanowski's Diagram. A Method of Multidimensional Clustering*, [in:] J. A. Barceló, I. Briz, A. Vila (eds.), *New Techniques for Old Times. CAA 98. Computer Applications and Quantitative Methods in Archaeology. Proceedings of the 26th Conference, Barcelona, March 1998*, BAR International Series 757, Oxford, 175-184.
- Stein, F.**
1961 *Das alamannische Gräberfeld von Göggingen, Ldkr. Augsburg*, „Bayerische Vorgechichtsblätter“ 26, 75-107.
- Steuer, H.**
1998 *Tausch, Raub und Geschenk*, [in:] K. Fuchs (ed.), *Die Alamannen*, Stuttgart, 3rd ed., 389-402.
- von Stokar, W.**
1938 *Spinnen und Weben bei den Germanen*, Manus-Bücherei 59, Leipzig.
- Stoll, H.**
1939 *Die Alamannengräber von Hailfingen in Württemberg*, Germanische Denkmäler der Völkerwanderungszeit IV, Berlin.
- 1940** *Zur Tragweise des fränkischen Saxen*, „Bonner Jahrbücher“ 145, 153-154.
- Stolpe, H., Arne, T. J.**
1927 *La nécropole de Vendel*, Stockholm.
- Stolpe, H., Hallström, G.**
1913 *Birka I*, Stockholm.
- Sundkvist, A.**
2001 *Hästarnas land. Aristokratisk hästhållning och ridkonst i Svealands yngre järnålder*, Occasional Papers in Archaeology 28, Uppsala.
- Szymański, P.**
2005 *Mikroregion osadniczy z okresu wpływów rzymskich w rejonie jeziora Salet na Pojezierzu Mazurskim*, Światowit Supplement Series P: Prehistory and Middle Ages X, Warszawa.
- Świeżyński, K.**
1972 *Wstępne wyniki badań nad szczątkami z grobów koni odkrytych na terenie Tumian, w pow. olsztyńskim*, „Komunikaty Mazursko-Warmińskie” 1 (115), 229-236.
- Świętosławski, W.**
1990 *Strzemiona średniowieczne z ziem Polski*, Łódź.
- Tautavičius, A.**
1980 *Baltskiye plemena na territorii Litvy v I tysyacheletii n. e.*, Riga.
1996 *Vidurinis geležies amžius Lietuvoje (V-IX a.)*, Vilnius.
- Tischler, O., Kemke, H.**
1902 *Ostpreussische Altertümer aus der Zeit der grossen Gräberfelder nach Christi Geburt*, Königsberg i. Pr.
- Urbańczyk, P.**
1978 *Geneza wczesnośredniowiecznych metalowych pochew broni białej ze stanowisk kultury pruskiej*, „Przegląd Archeologiczny” 26, 107-145.
- Vaitkevičius V.**
2005 *Interpreting the East Lithuanian Barrow Culture*, [in:] V. Lang (ed.), *Culture and Material Culture*, Interarcheologia 1, Tartu-Riga-Vilnius, 71-86.
- Vallet, F.**
1996 *Weibliche Mode im Westteil des merowingischen Königreiches*, [in:] *Die Franken. Wegbereiter Europas vor 1500 Jahren: König Chlodwig und seine Erben*, Mainz, 684-690.

Vedel, E.

1872 *Den Ældre Jernalders Begravelser paa Bornholm*, Kjøbenhavn.

1897 *Efterskrift til Bornholms oldidsmindering oldsager*, Kjøbenhavn.

Veeck, W.

1931 *Die Alamannen in Württemberg*, Germanische Denkmäler der Völkerwanderungszeit I, Berlin und Leipzig.

Vitt, V. O.

1952 *Loschadi pazyrykskich kurganov*, „Sovetskaya Archeologiya” 16, 136-205.

Vogel, A.

2006 *Die merowingischen Funde aus Andernach (Kr. Mayen-Koblenz)*, Universität Forschungen zur prähistorischen Archäologie, Bonn.

Voigtmann, K.

1942 *Ein fränkisch-alamannischer Grabschmuck im Samland (Cobjeiten, gr. 86)*, „Alt-Preußen“ 7/1, 7-13.

Timpel, W.

1999 *Franken. Neue Herren in Thüringen*, [in:] S. Dušek (ed.), *Ur- und Frühgeschichte Thüringens*, Stuttgart, 167-179.

Walter, S., Peek, Ch., Gillich, A.

2008 *Kleidung im Frühen Mittelalter. Am liebsten schön bunt*, *Porträt Archäologie* 3, Esslingen.

Werner, J.

1935 *Münzdatierte austrasische Grabfunde*, Germanische Denkmäler der Völkerwanderungszeit III, Berlin und Leipzig.

Westphal, H.

1997 *Untersuchungen an Langsaxen aus niederländischen Sammlungen*, „Berichten van de Rijksdienst voor het Oudheidkundig Bodemonderzoek“ 42, 1996-97, 407-423.

2002 *Franken oder Sachsen? Untersuchungen an frühmittelalterlichen Waffen*, *Studien zur Sachsenforschung* 14, Oldenburg.

Witte, H.

2006 *Pferde- und Reitergräber im mittleren und unteren Wesergebiet sowie Hinweise auf Pferdekulte während der Zeit zwischen 400 und 800 n. Chr.*, [in:] Manfred Rech (ed.), *Pferdeopfer – Reiterkrieger, Fahren und Reiten durch die Jahrtausende*, *Bremer Archäologische Blätter* 4, Bremen, 130-144.

Wyszomirski, P. (transl.).

2005 *Piotr z Dusburga, Kronika ziemi pruskiej*, Toruń.

Ziemlińska-Odojowa, W.

1991 *Wstępne wyniki badań na wielokulturowym stanowisku w Młotecznie (gmina Braniewo)*, [in:] H. Judzińska (ed.), *Archeologia Bałtyjska*, Olsztyn, 100-119.

Żak, A.

1962 *Studia nad kontaktami handlowymi społeczeństw zachodniosłowiańskich ze skandynawskimi od VI do VIII w.n.e.*, Wrocław-Warszawa-Kraków.

Åberg, N.

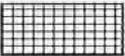
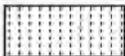
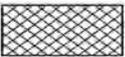
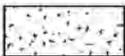
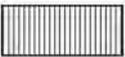
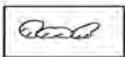
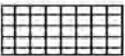
1919 *Ostpreussen in der Völkerwanderungszeit*, Uppsala-Leipzig.

Ørsnes, M.

1966 *Form og stil i sydsandinaviens yngre germaniske jernalder*, København.



VII. PLATES

	black		grey-yellow
	black-grey		grey-reddish
	dark brown		sand
	humus, ploughing soil		stones
	brown-black		burnt bones
	brown		charcoals
	light brown		roots
	light grey, grey		outline undetermined precisely
	grey-brown		modern damage
	brown-red		horse bone

0 — 50 cm
grave scale

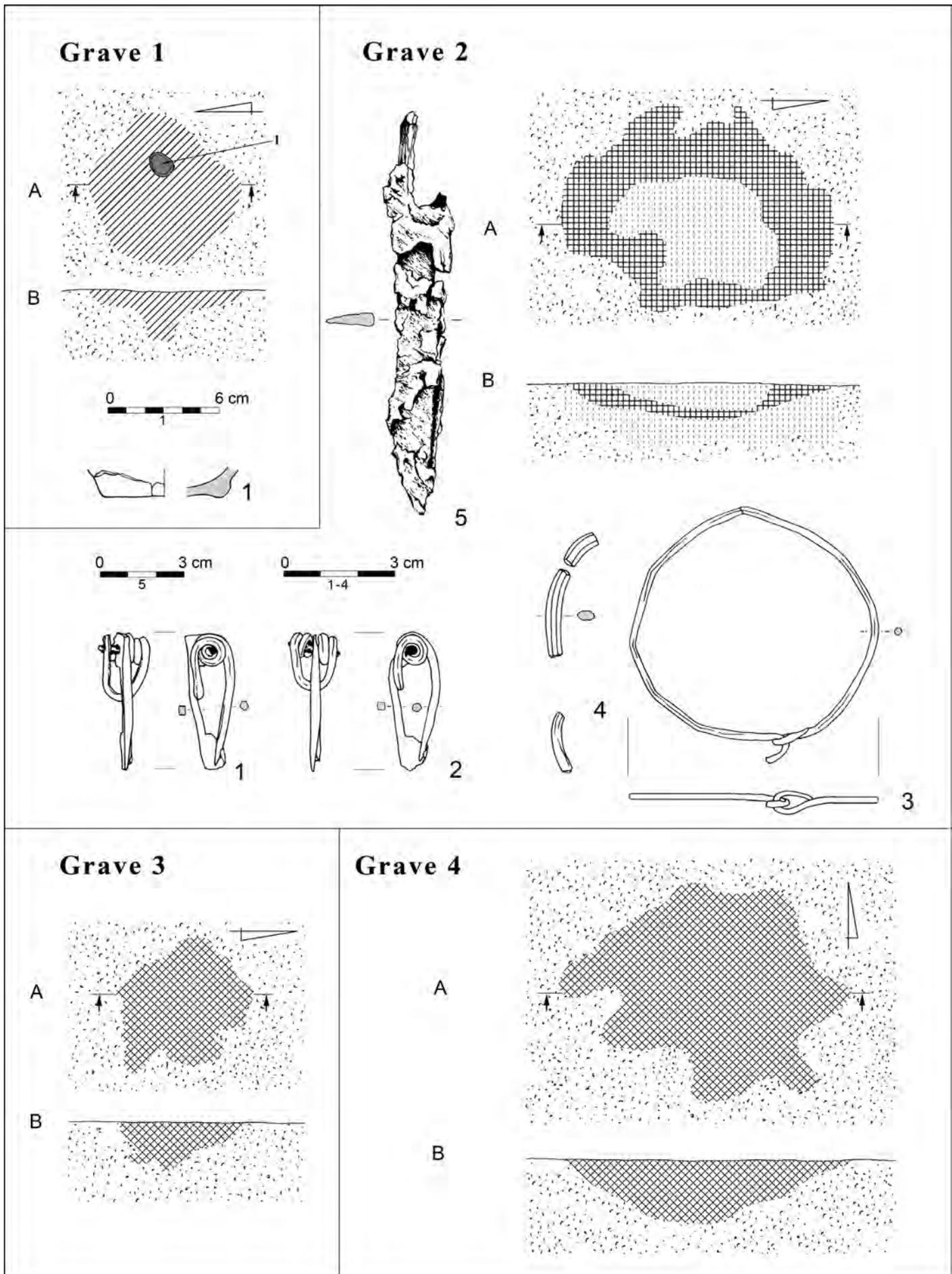


Plate I. Grave 1: A – plan, B – profile; 1 – clay. Grave 2: A – plan, B – profile; 1, 2 – bronze and wood, 3, 4 – bronze, 5 – iron, wood and leather. Grave 3: A – plan, B – profile. Grave 4: A – plan, B – profile.

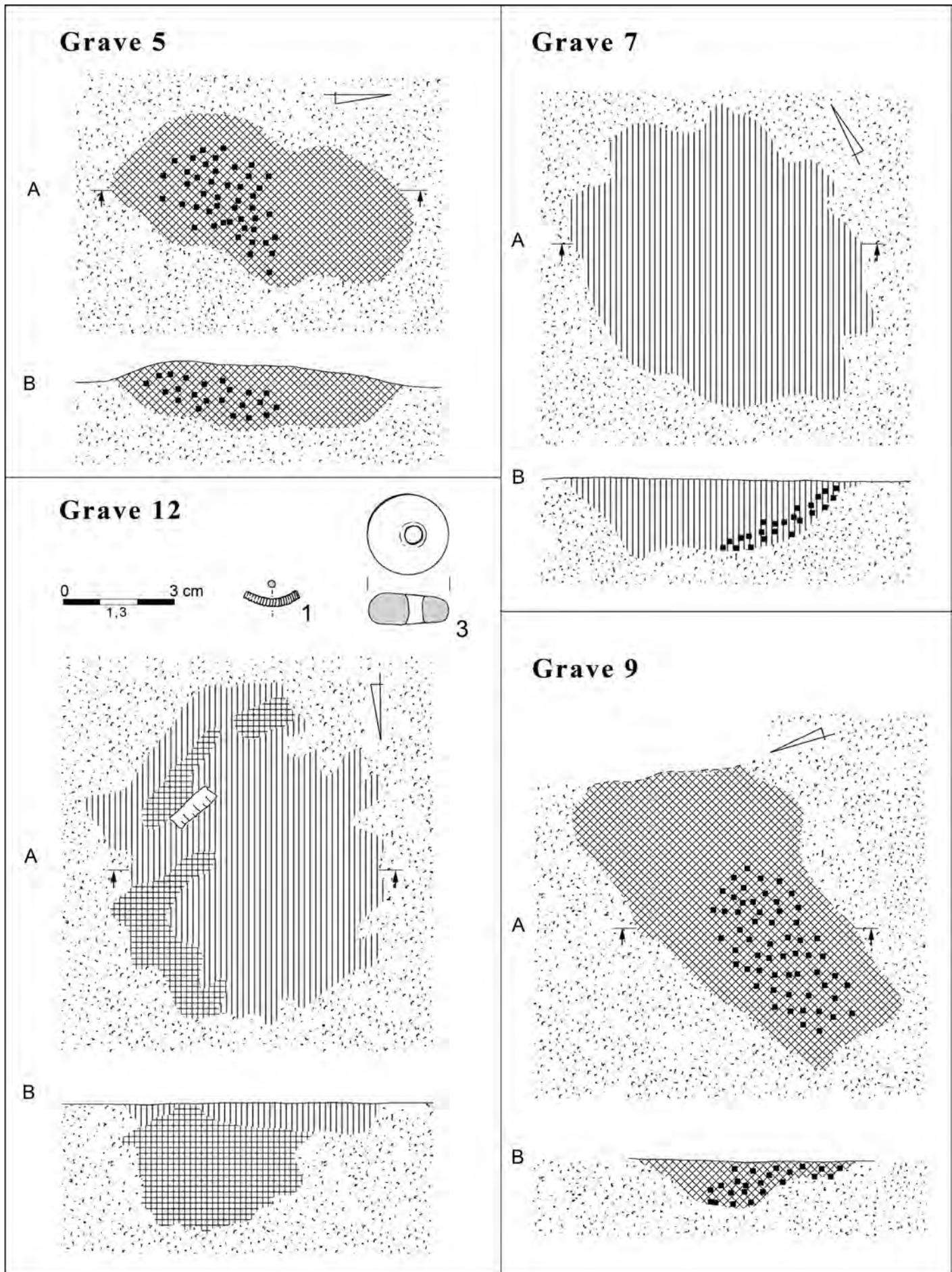


Plate II. Grave 5: A – plan, B – profile. Grave 7: A – plan, B – profile. Grave 9: A – plan, B – profile. Grave 12: A – plan, B – profile; 1 – bronze, 3 – amber.

Grave 6

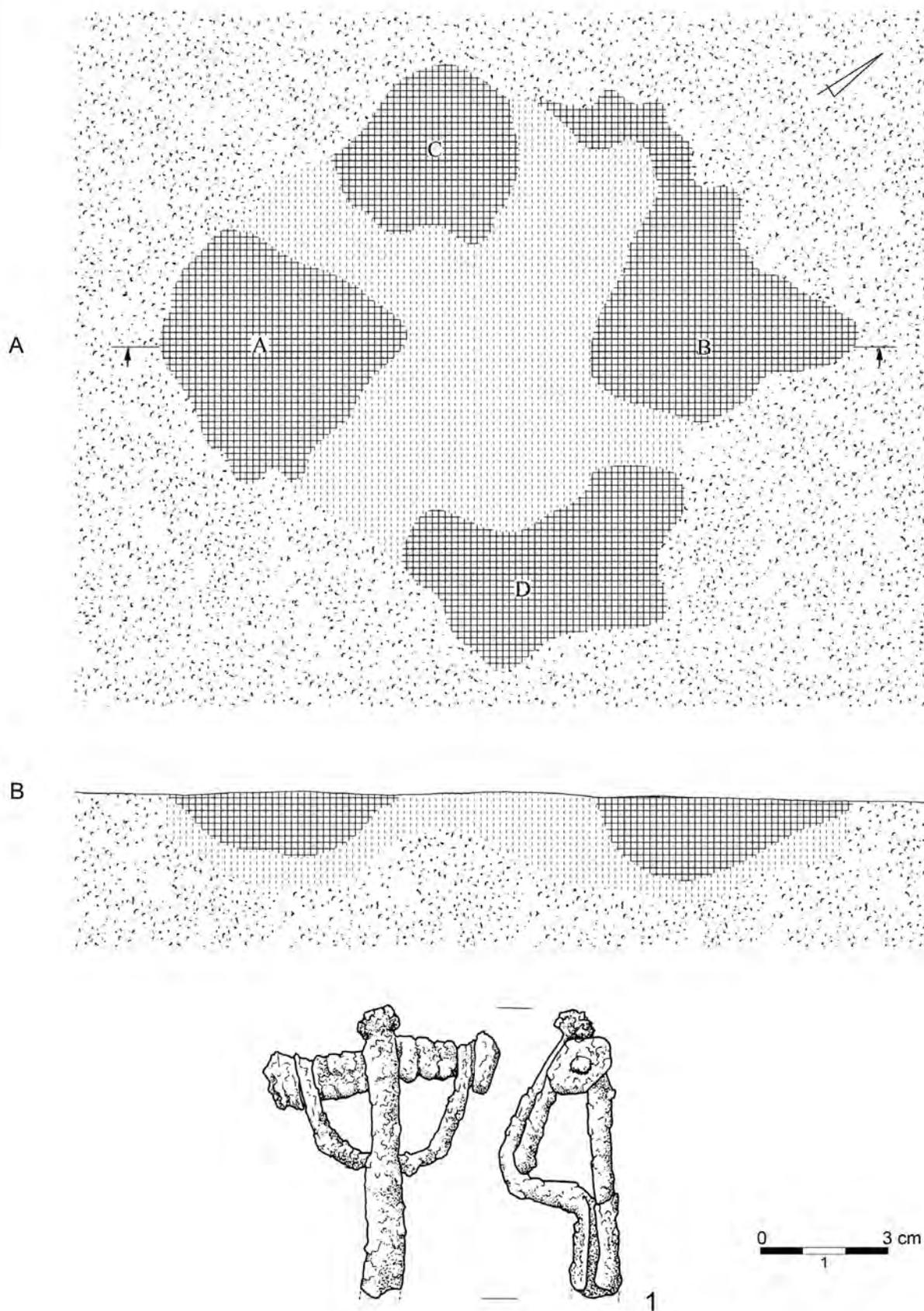


Plate III. Grave 6: A – plan, B – profile; 1 – iron.

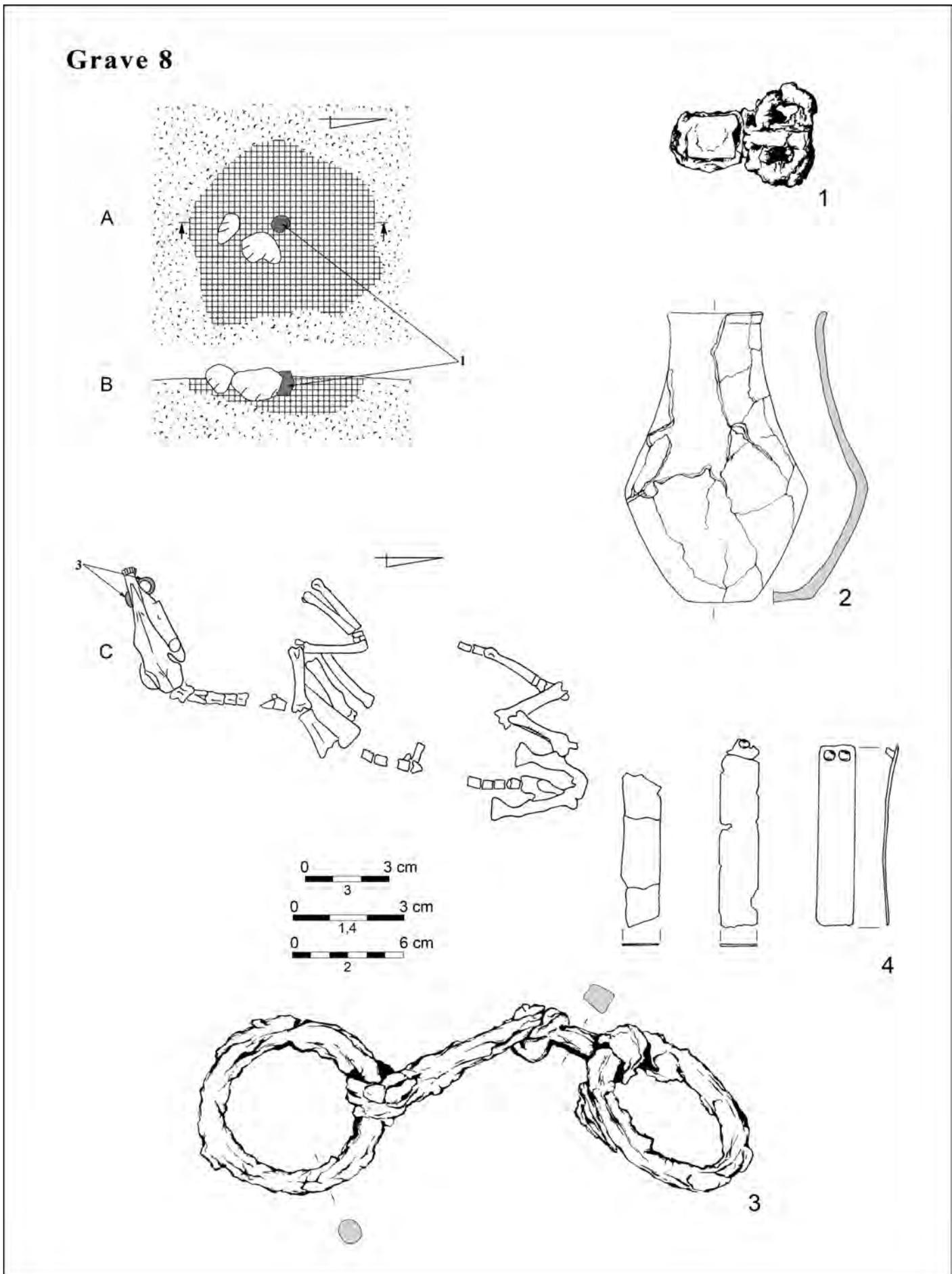
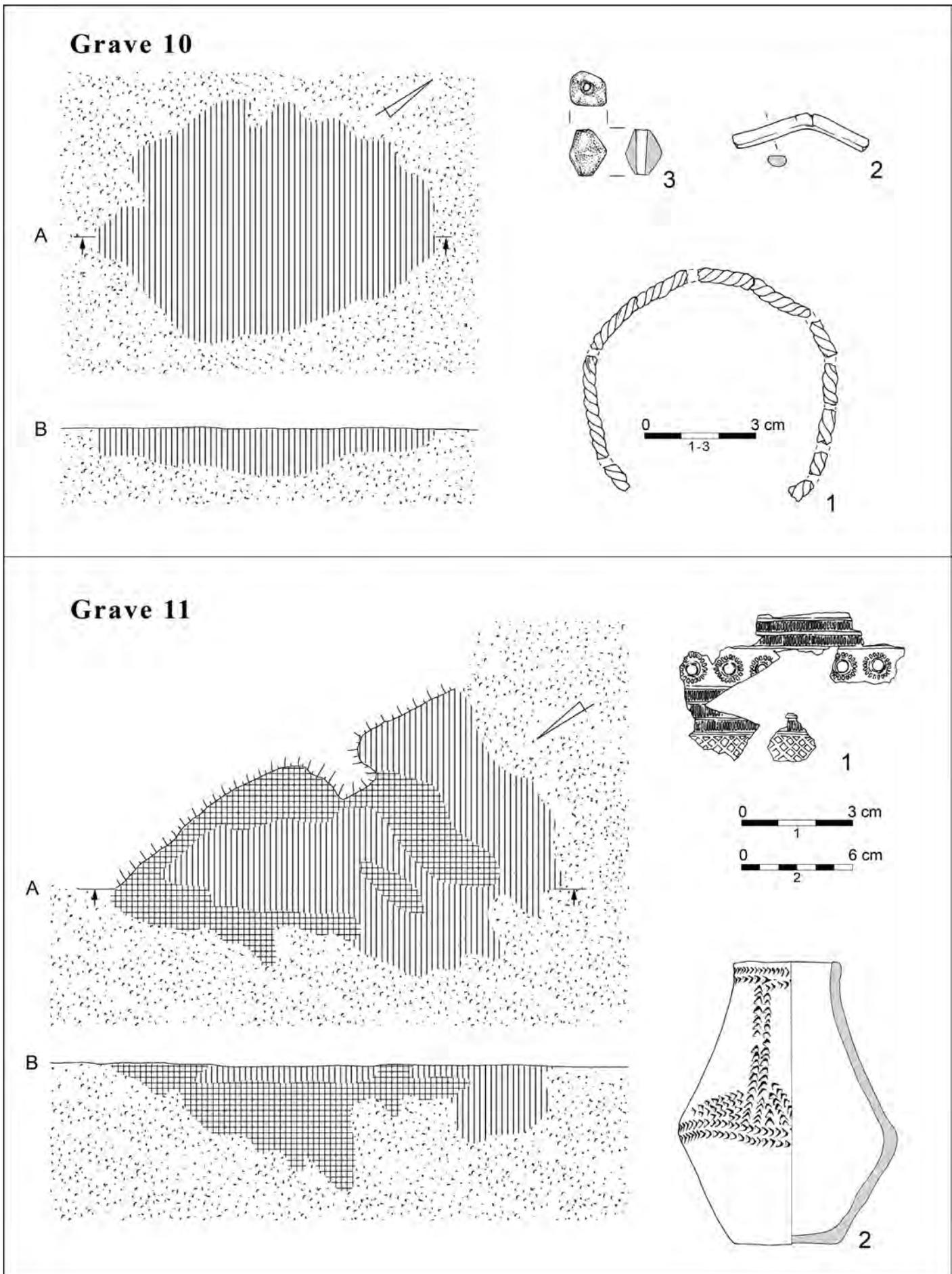


Plate IV. Grave 8: A – plan, B – profile, C – situation of the horse skeleton in plan; 1, 3 – iron, 2 – clay, 4 – bronze.



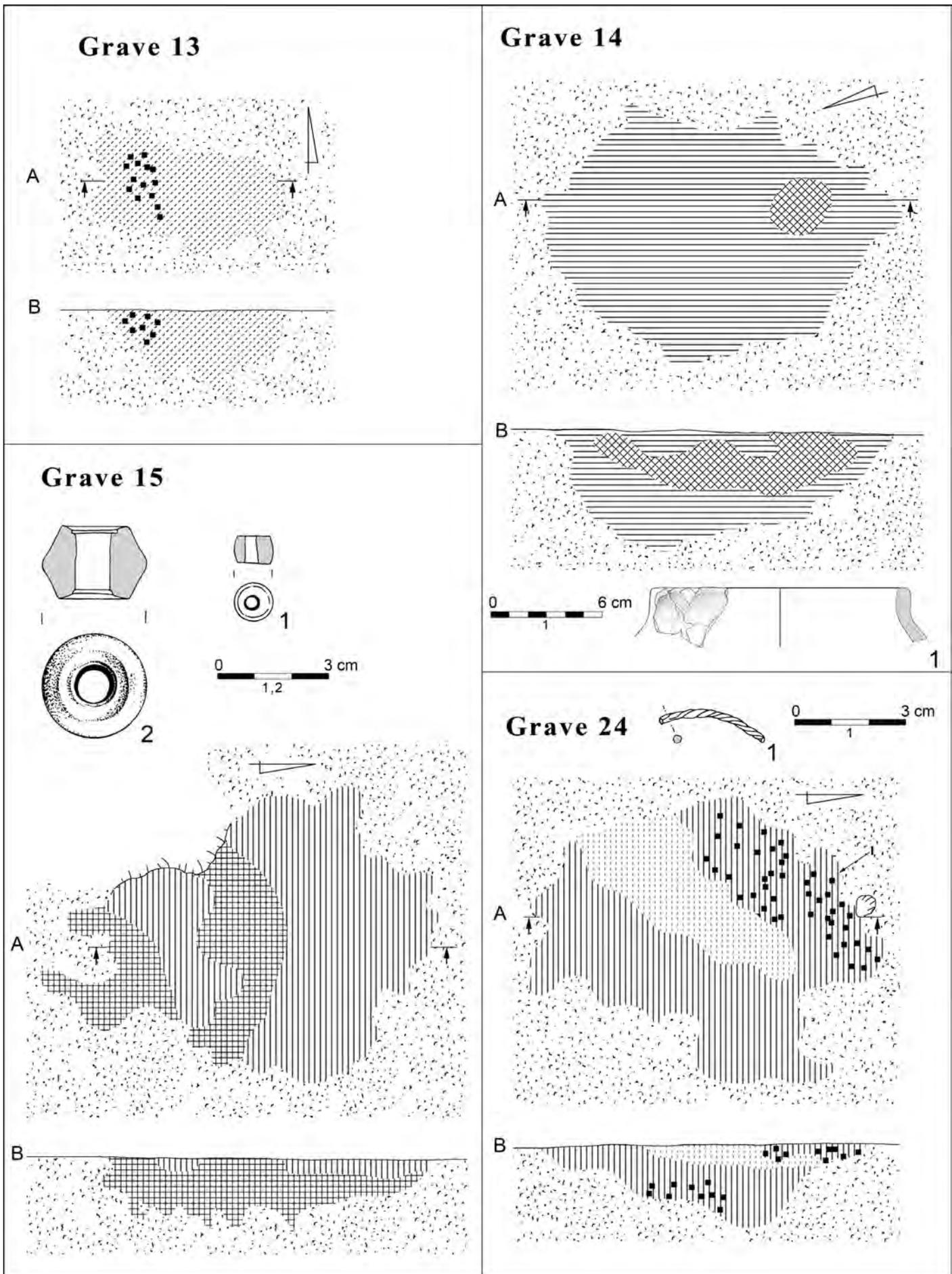
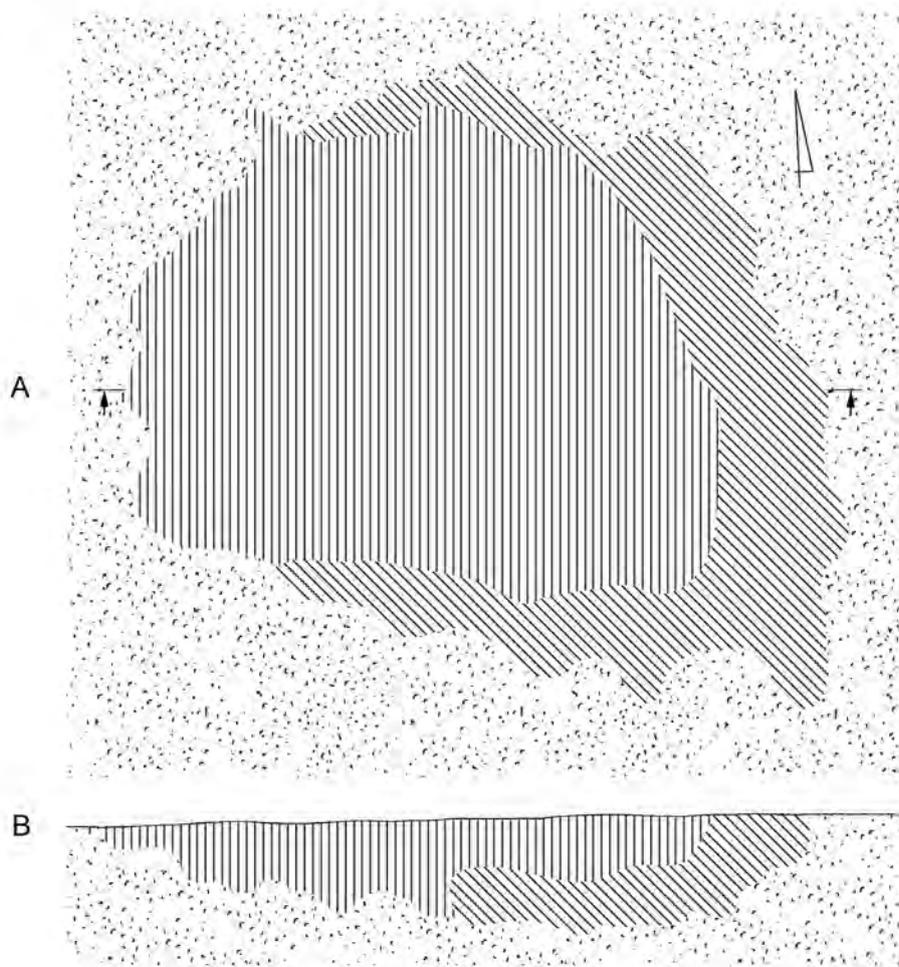


Plate VI. Grave 13: A – plan, B – profile. Grave 14: A – plan, B – profile; 1 – clay. Grave 15: A – plan, B – profile; 1 – glass, 2 – clay. Grave 24: A – plan, B – profile; 1 – bronze.

Grave 16



Grave 19

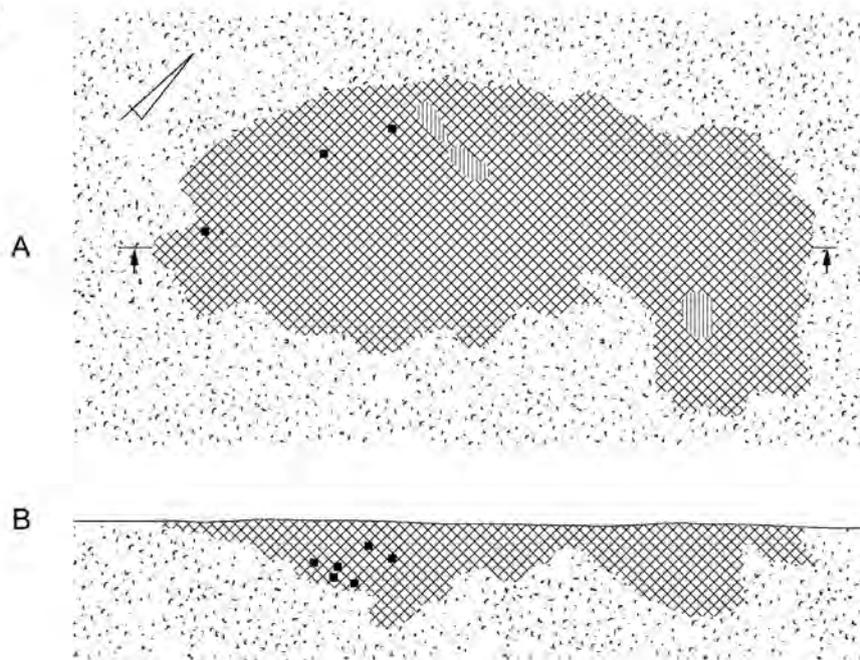
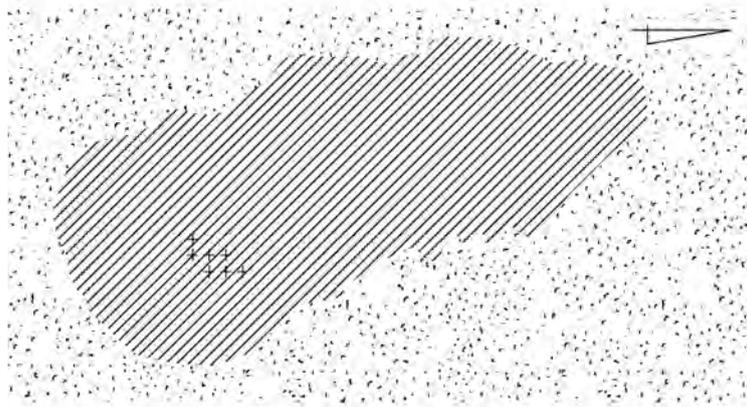


Plate VII. Grave 16: A – plan, B – profile. Grave 19: A – plan, B – profile.

Grave 17

A



B

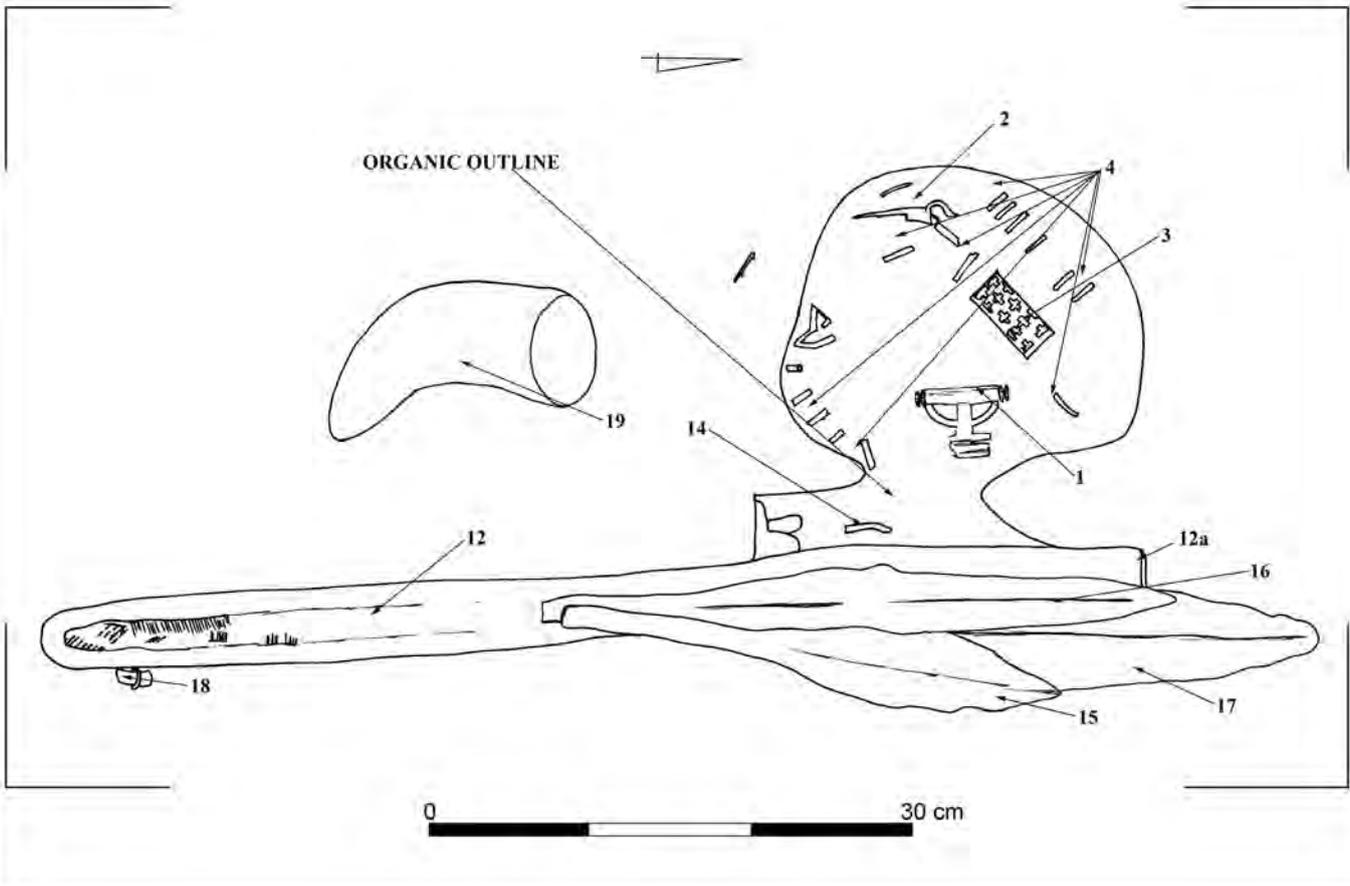
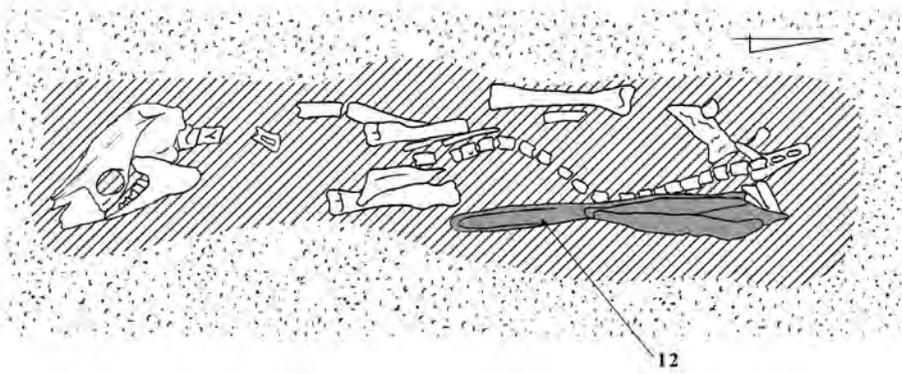


Plate VIII. Grave 17: A – plan, B – plan at the level of the horse skeleton, C – situation of the artifacts.

Grave 17

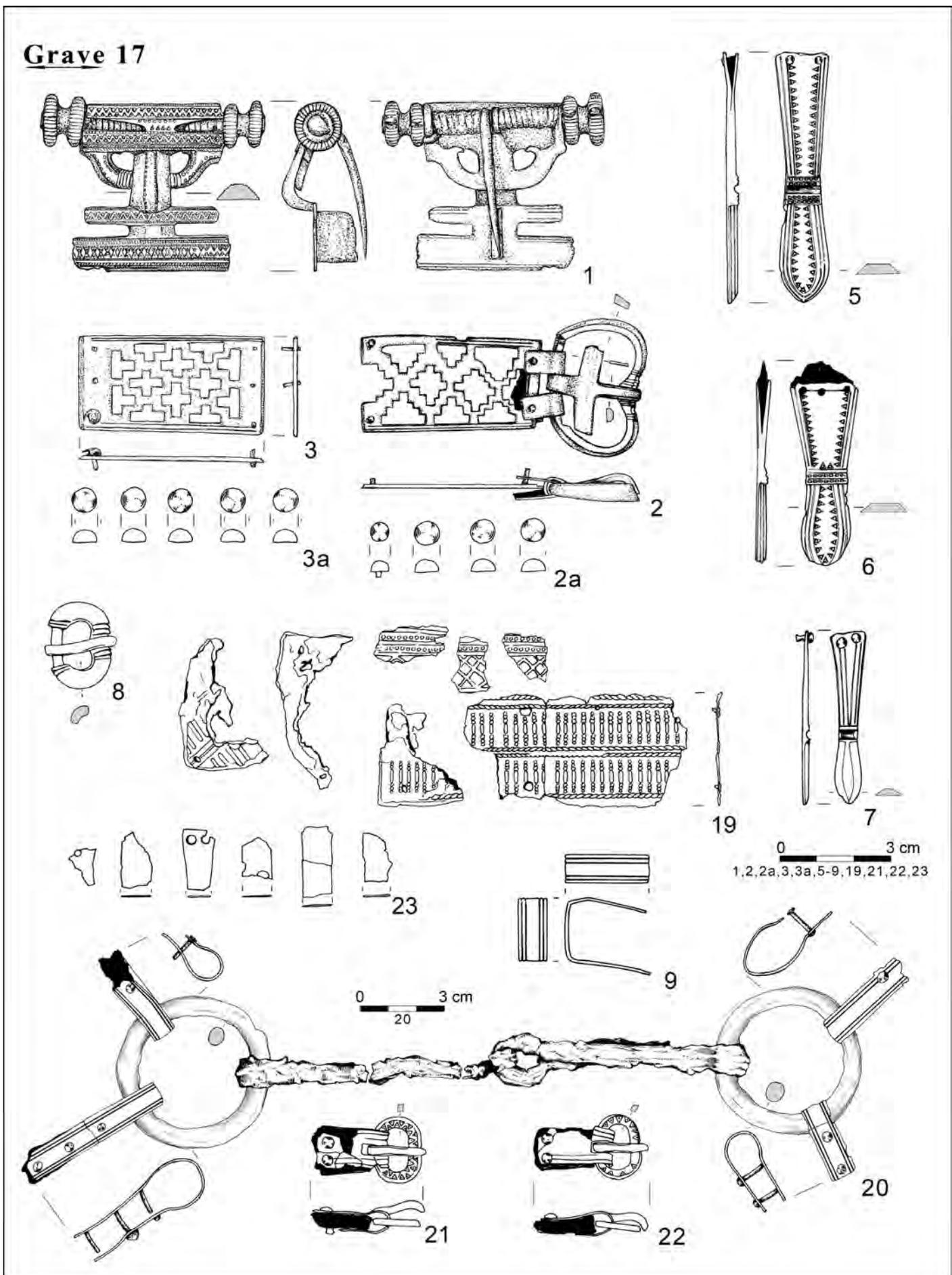


Plate IX. Grave 17: 1 – bronze and iron, 2a, 3, 3a, 7-9, 23 – bronze, 2, 5, 6, 21, 22 – bronze and leather, 19 – silver, 20 – iron and bronze.

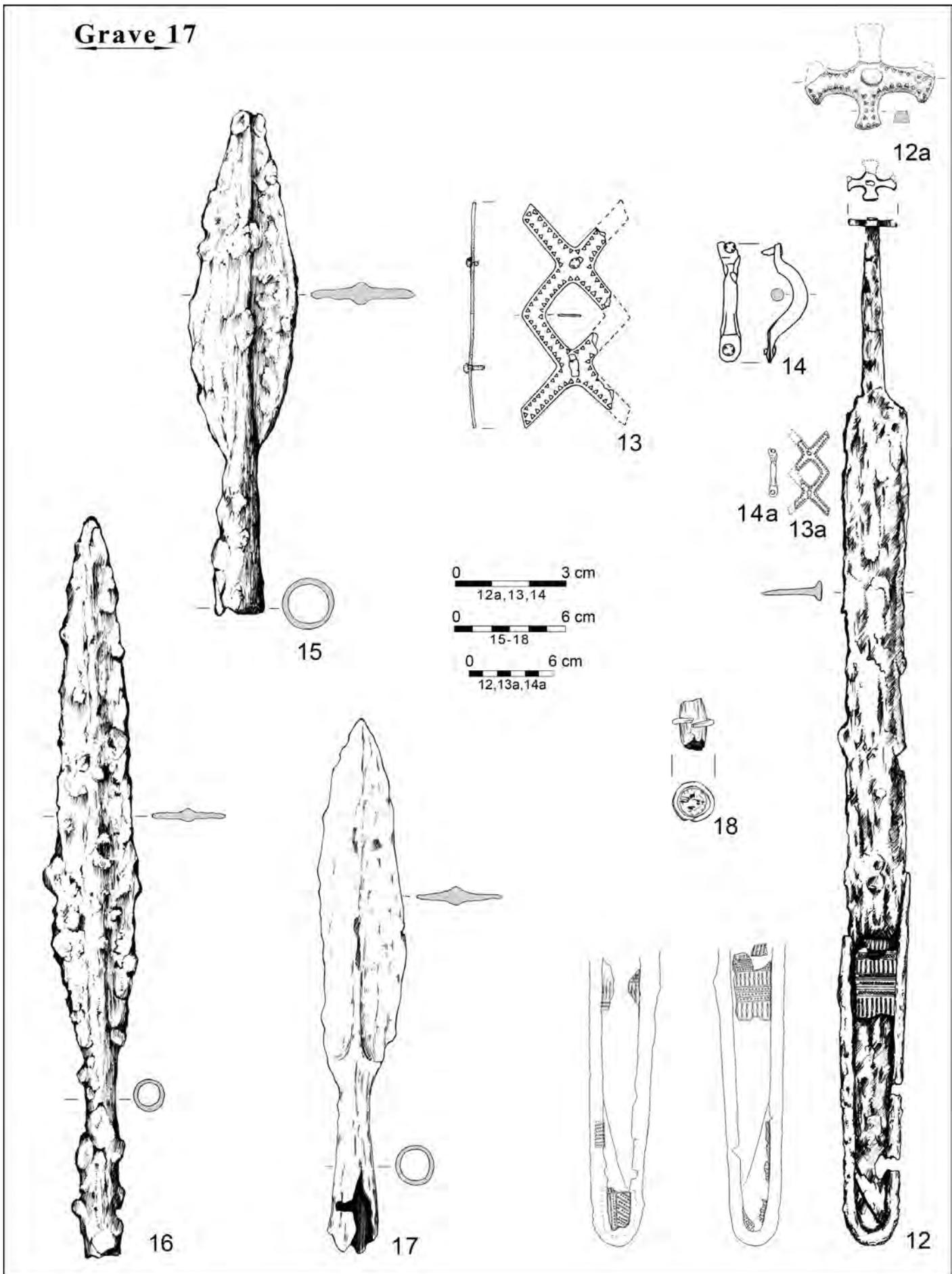


Plate X. Grave 17: 12 – iron and bronze, 15-17 – iron, 12a, 13, 13a, 14, 14a – bronze, 18 – wood and bronze.

Grave 17

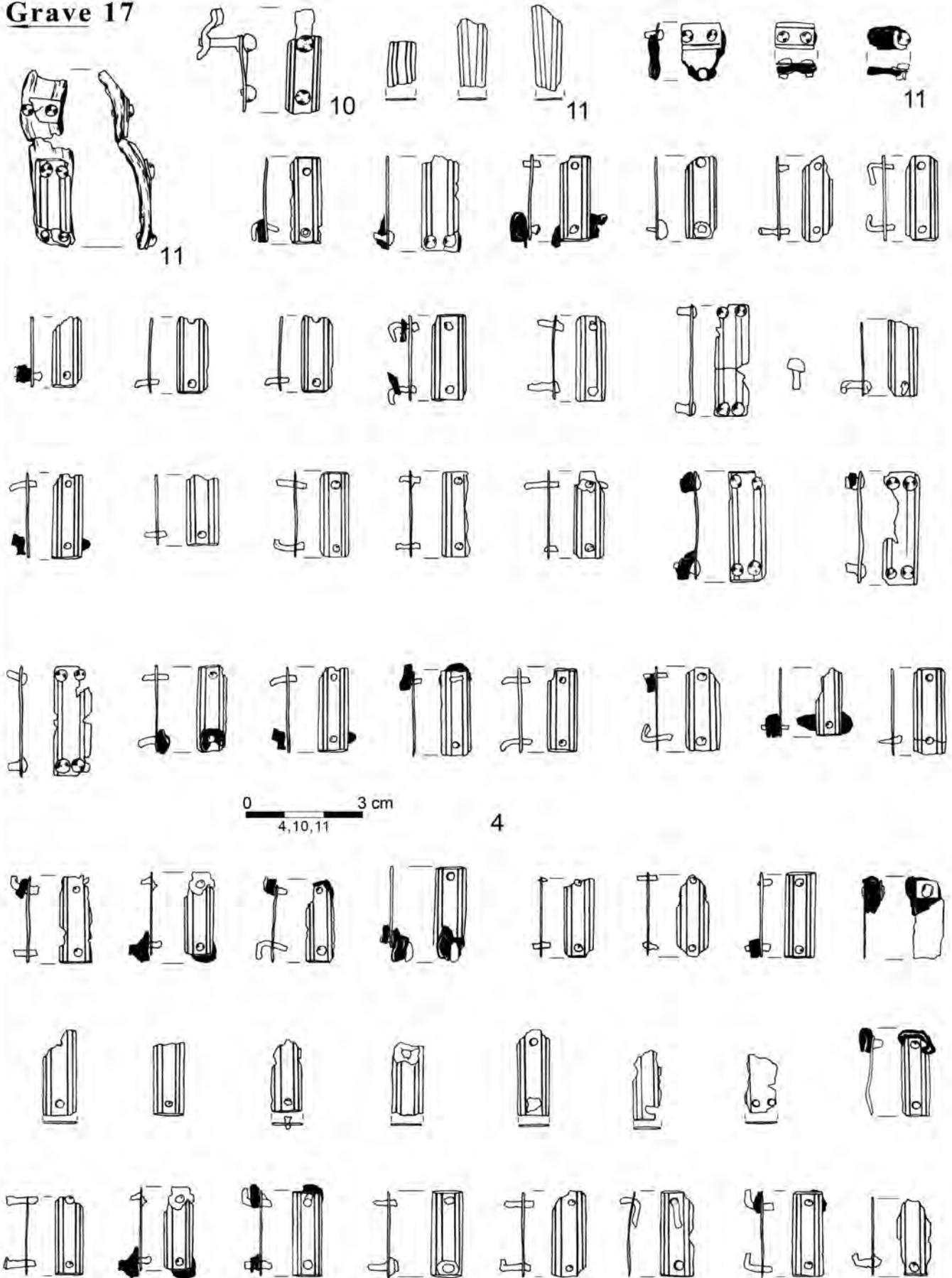


Plate XI. Grave 17: 4, 11 – bronze and leather, 10 – bronze.

Grave 18

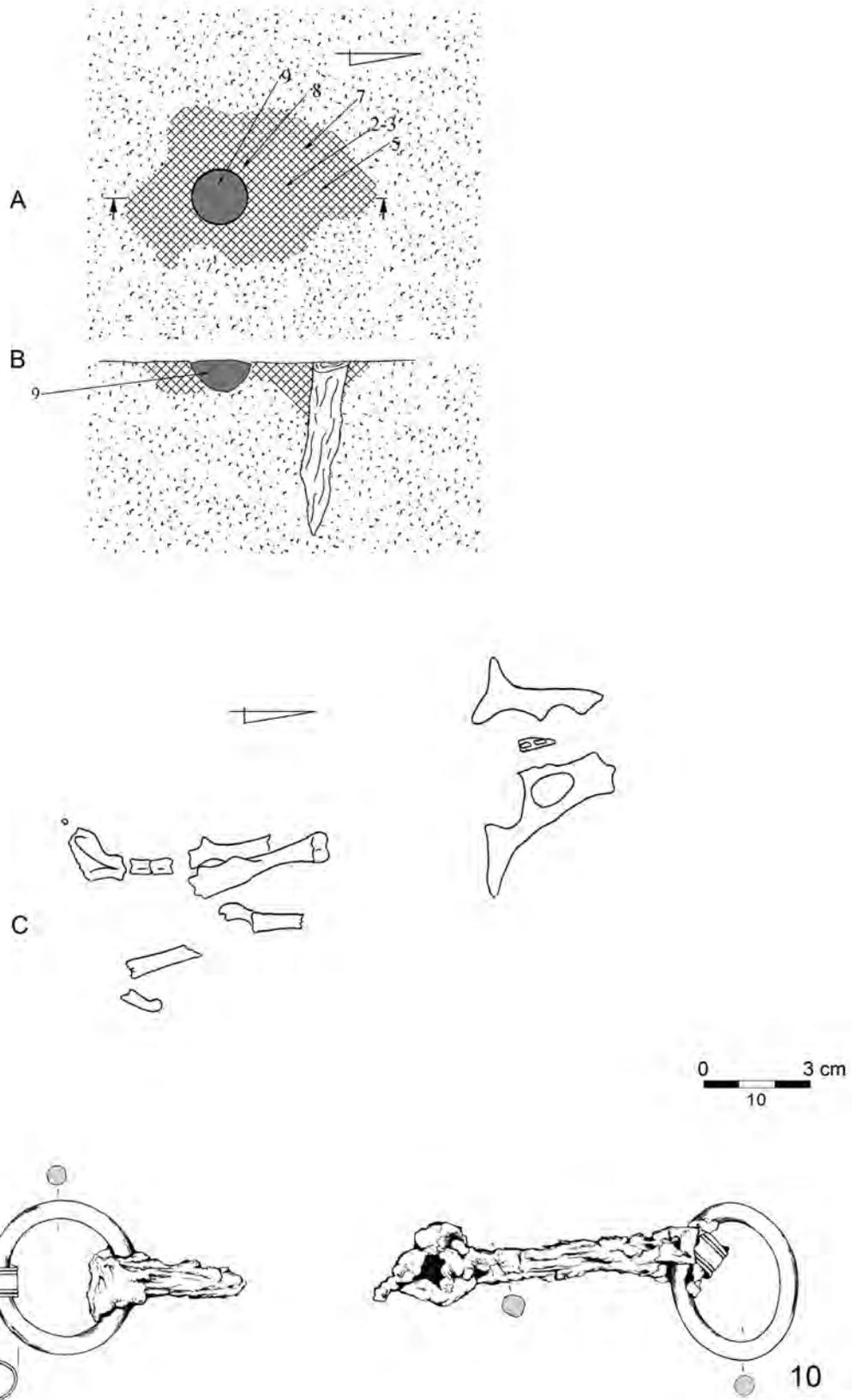


Plate XII. Grave 18: A – plan, B – profile, C – situation of the horse skeleton in plan; 10 – iron and bronze.

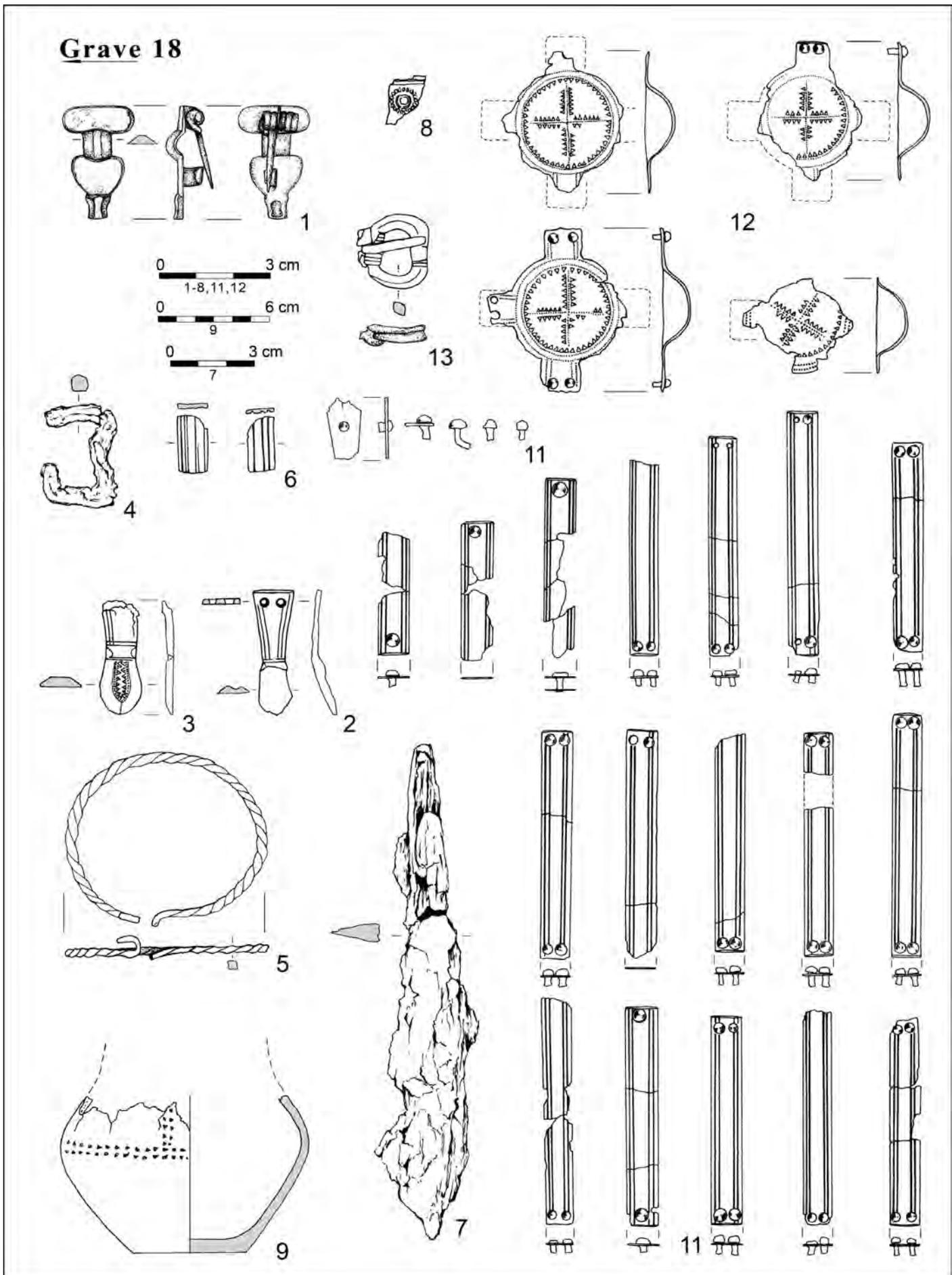


Plate XIII. Grave 18: 1-3, 5, 6, 11-13 – bronze, 4 – iron, 7 – iron and wood, 8 – silver, 9 – clay.

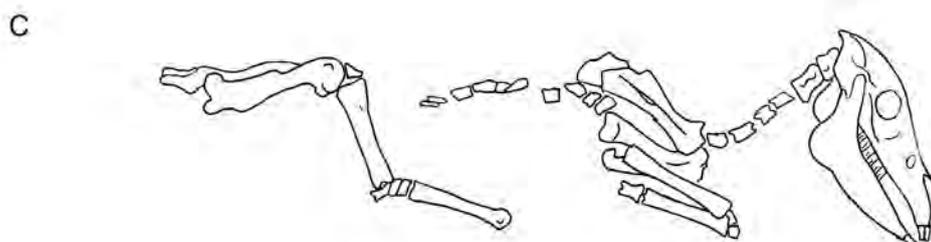
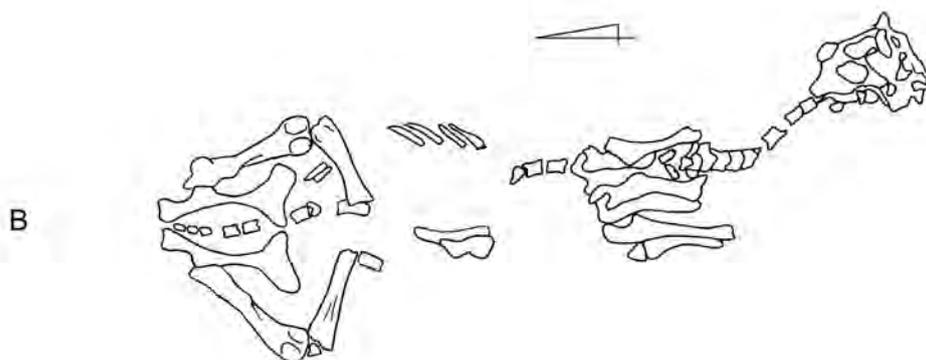
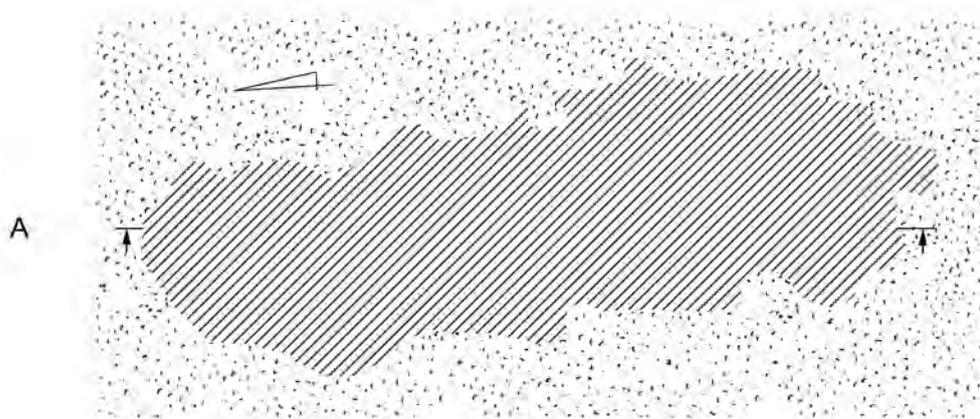
Grave 20

Plate XIV. Grave 20: A – plan, B – situation of the horse skeleton in plan, C – situation of the horse skeleton in profile.

Grave 20

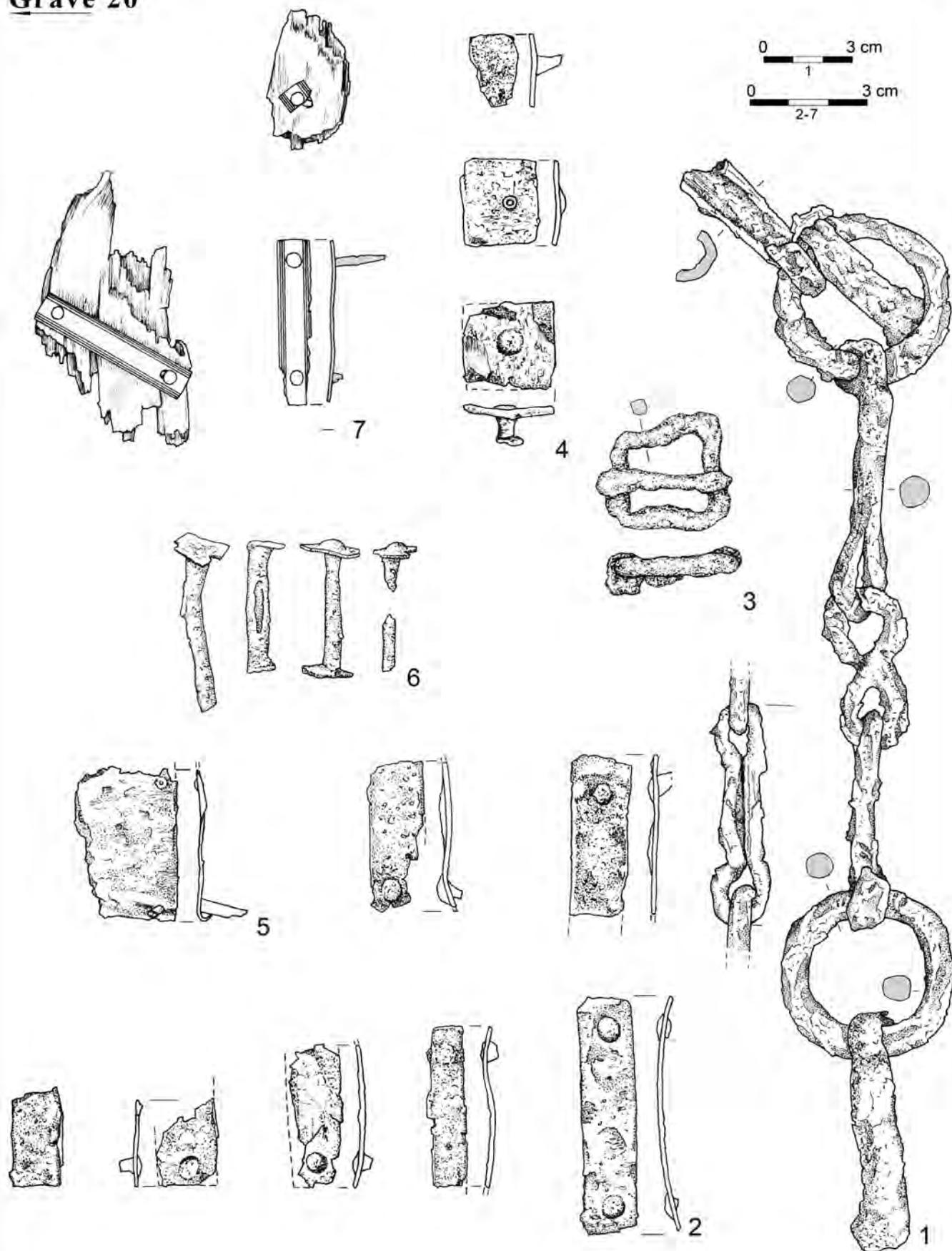


Plate XV. Grave 20: 1-6 – iron, 7 – wood and bronze.

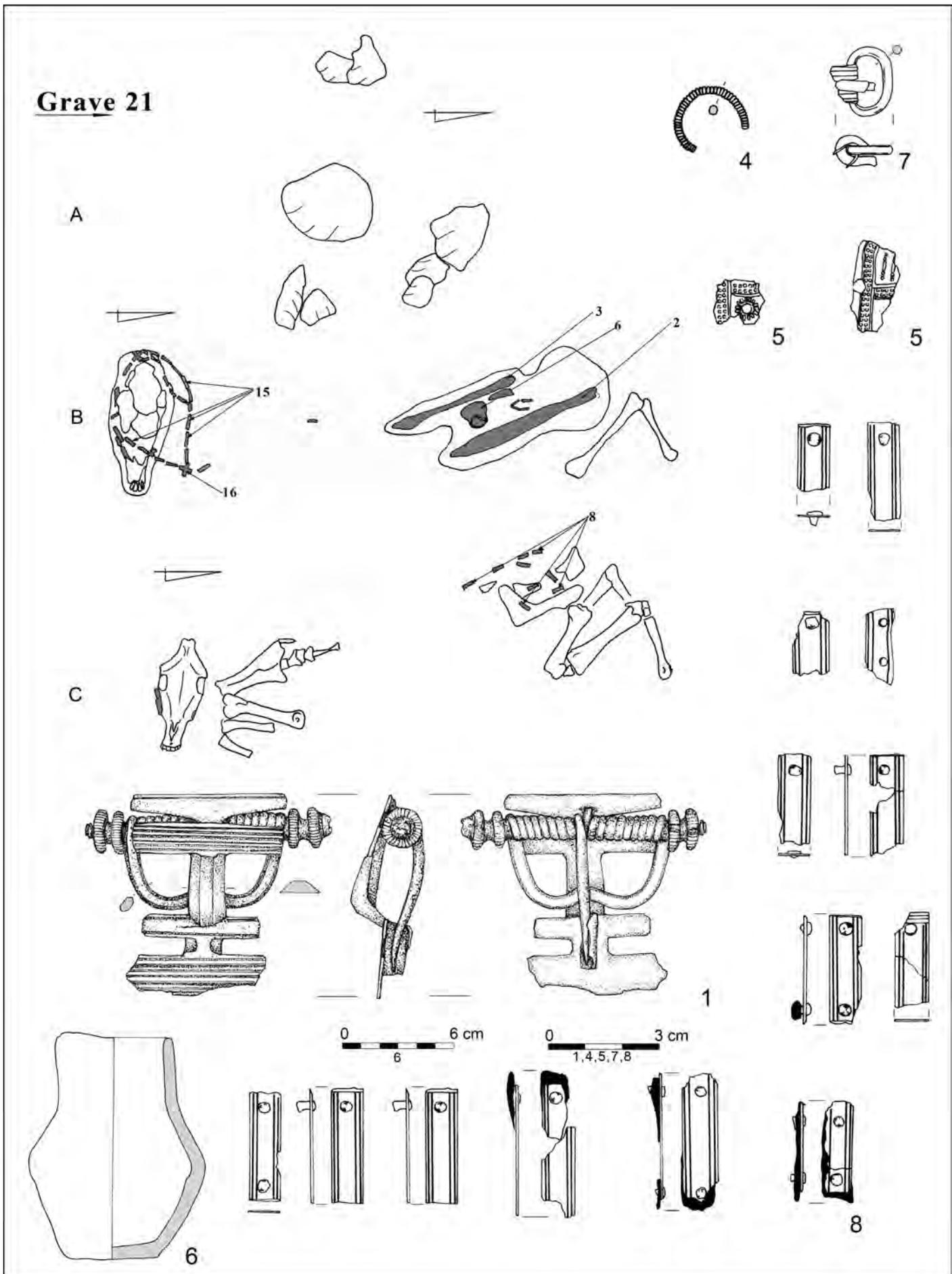


Plate XVI. Grave 21: A – situation of stones, B – situation of the horse skeleton in plan at the upper level, C – situation of the horse skeleton in plan at the lower level; 1 – bronze and iron, 4, 7 – bronze, 5 – silver, 6 – clay, 8 – bronze and leather.

Grave 21

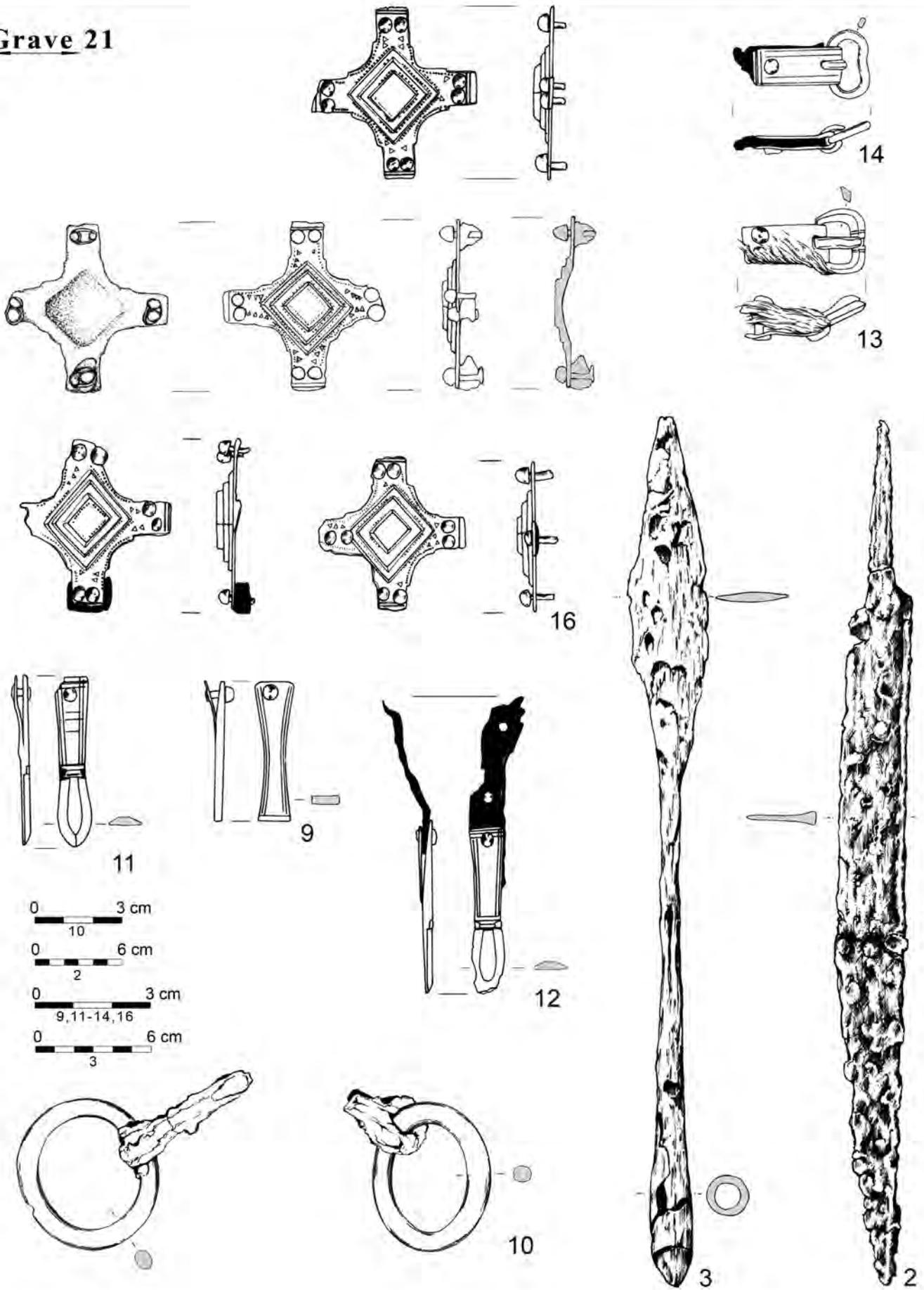


Plate XVII. Grave 21: 2, 3 – iron, 9, 11 – bronze, 10 – iron and bronze, 12, 14, 16 – bronze and leather, 13 – bronze, leather and wood.

Grave 21

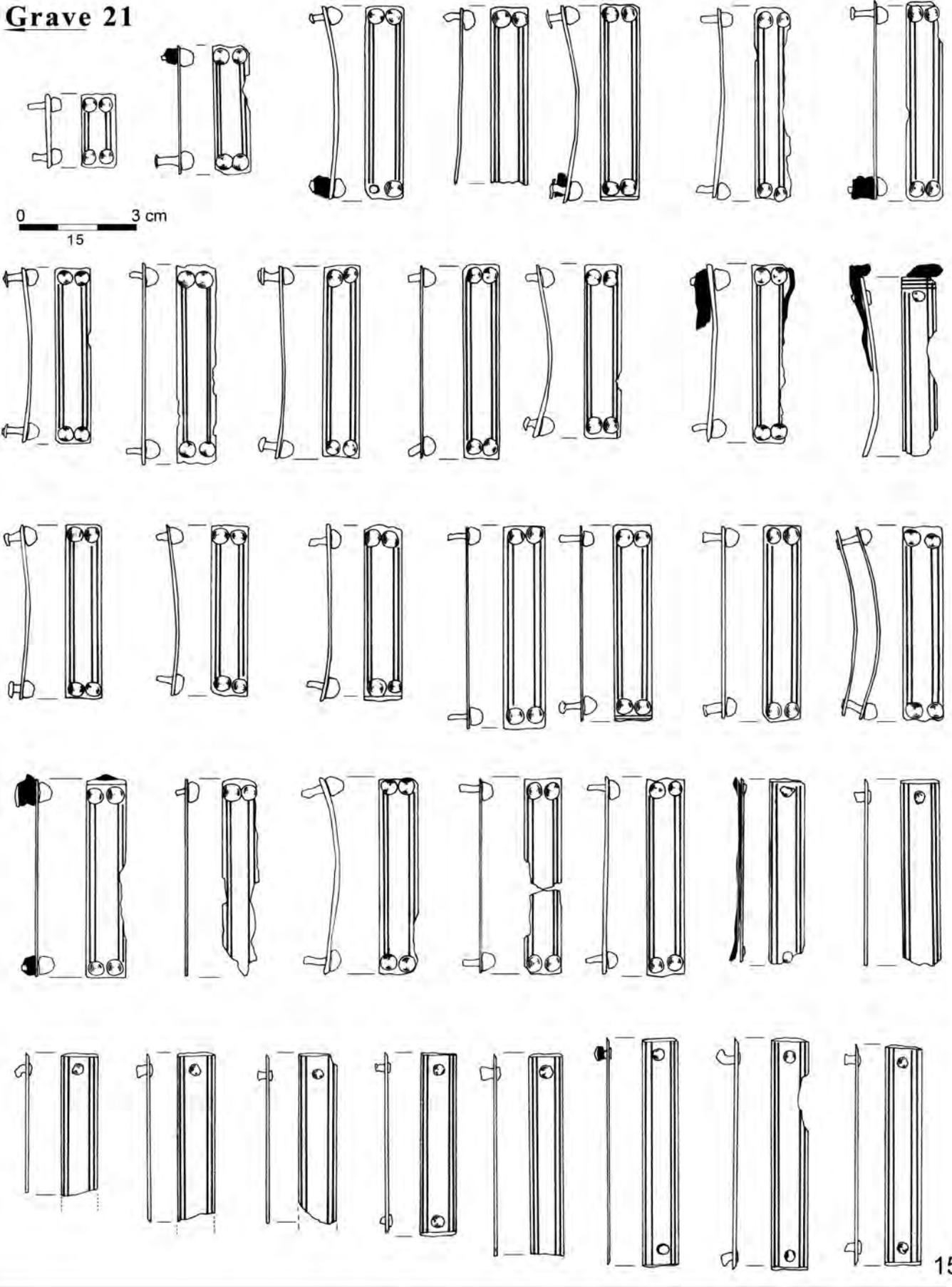


Plate XVIII. Grave 21: 15 – bronze and leather.

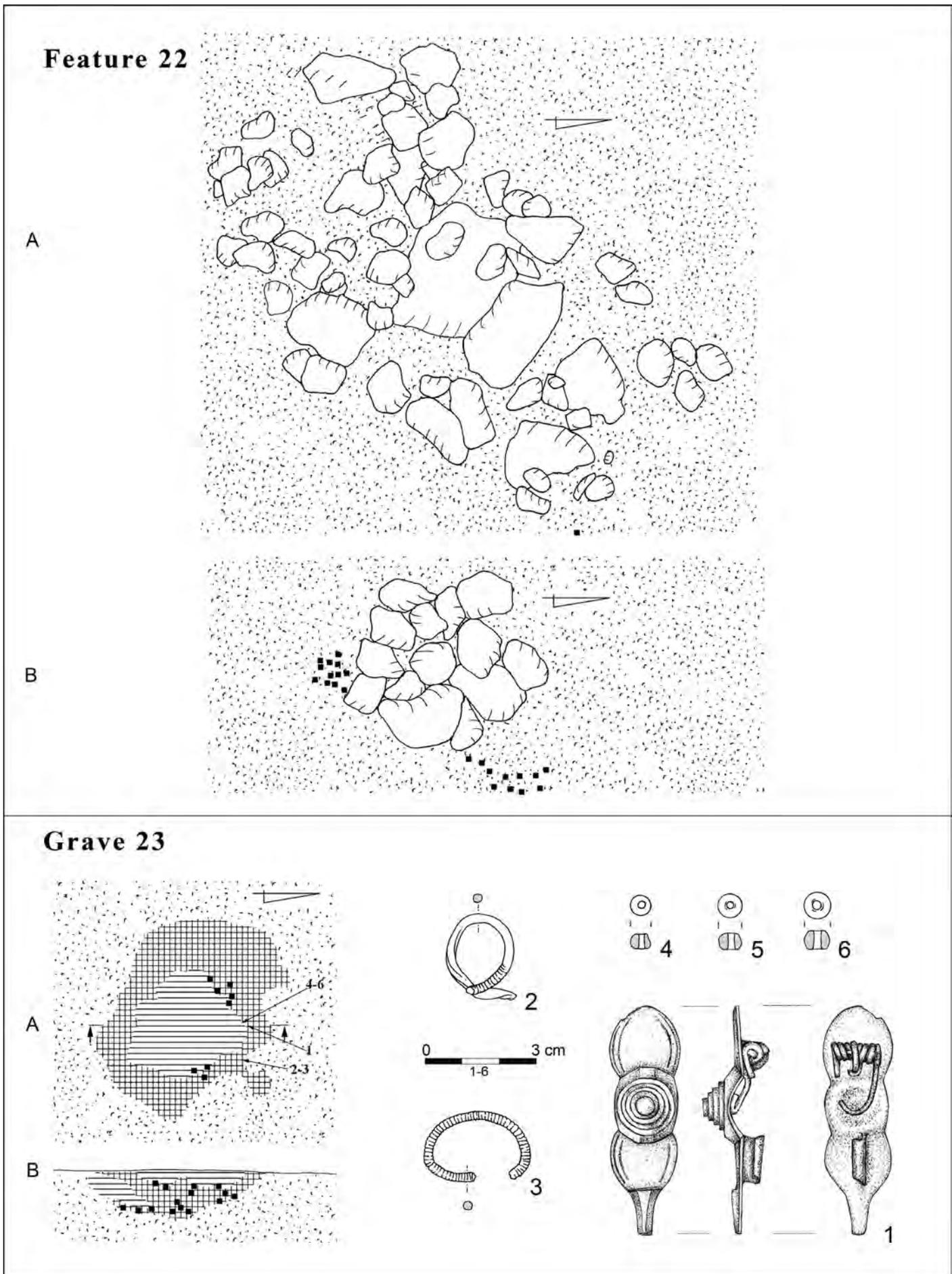


Plate XIX. Feature 22: A – plan at the upper level, B – plan at the lower level. Grave 23: A – plan, B – profile; 1-3 – bronze, 4-6 – glass.

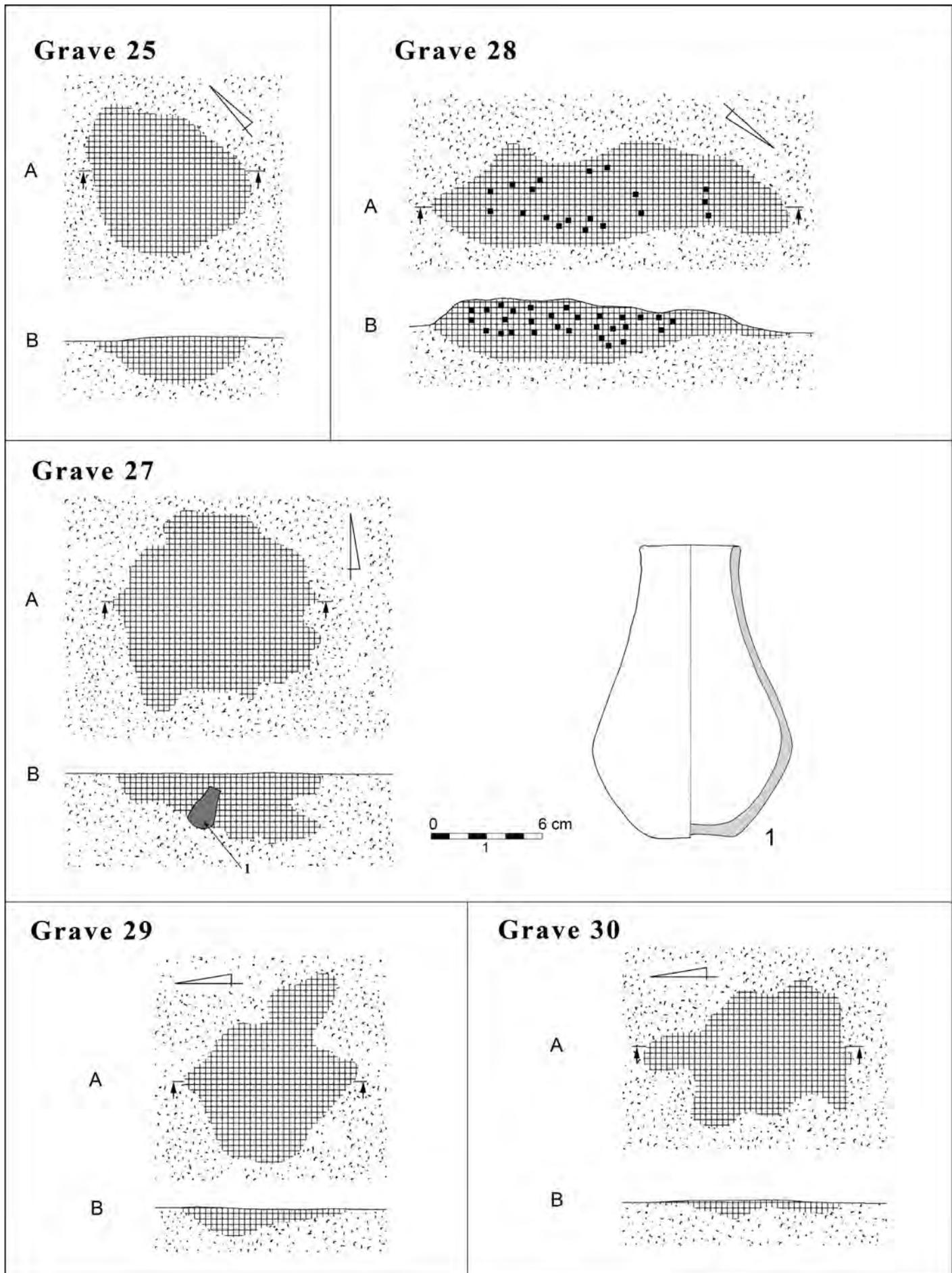


Plate XX. Grave 25: A – plan, B – profile. Grave 27: A – plan, B – profile; 1 – clay. Grave 28: A – plan, B – profile.
Grave 29: A – plan, B – profile. Grave 30: A – plan, B – profile.

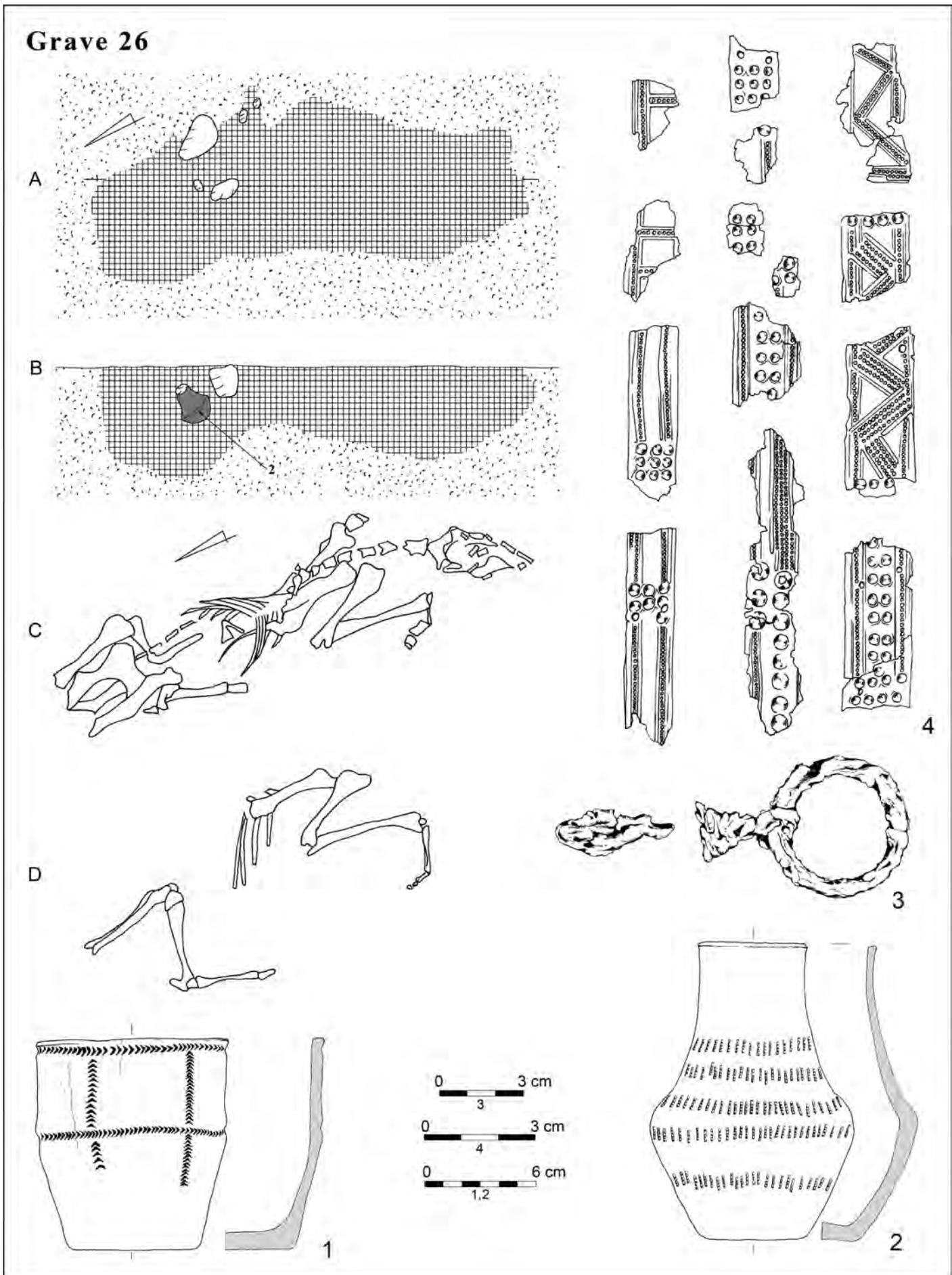
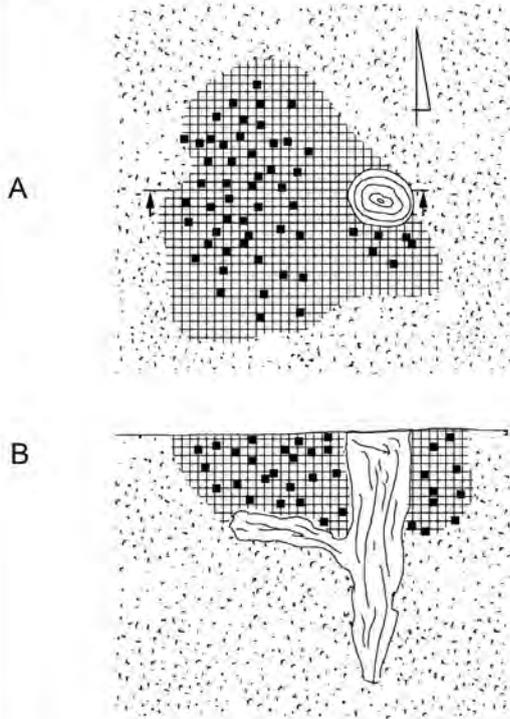
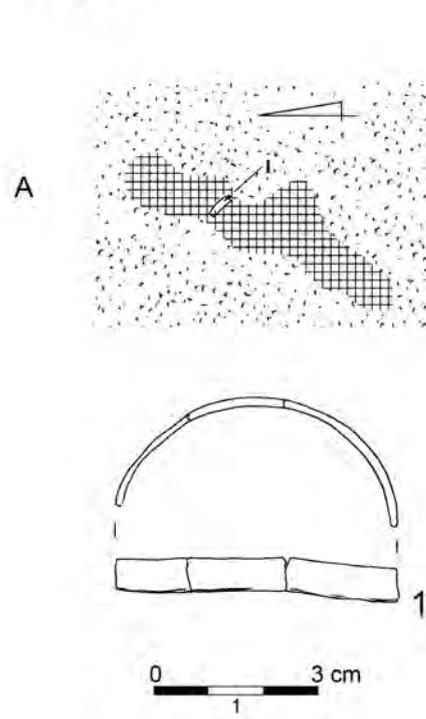


Plate XXI. Grave 26: A – plan, B – profile, C – situation of the horse skeleton in plan, D – situation of the horse skeleton in profile; 1, 2 – clay, 3 – iron, 4 – bronze.

Grave 31



Grave 32



Grave 33

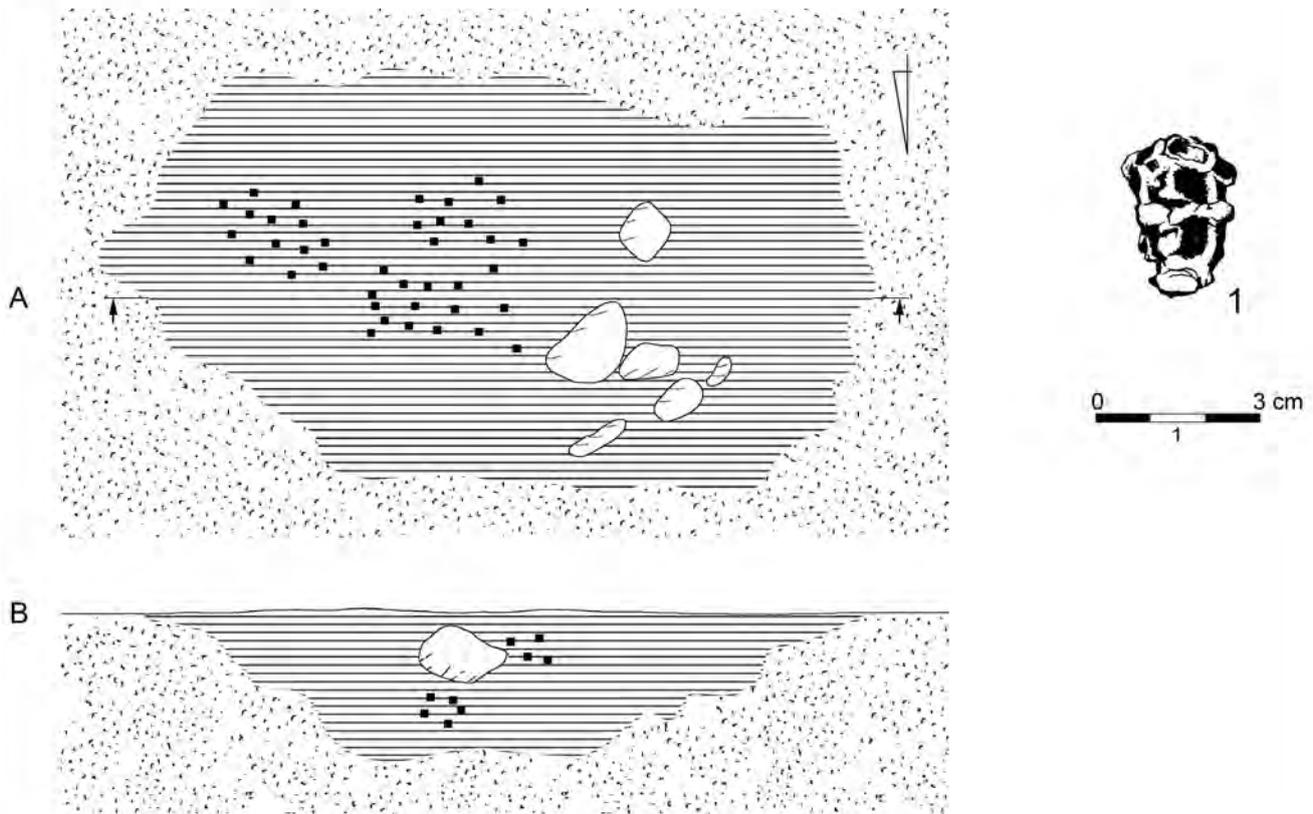


Plate XXII. Grave 31: A – plan, B – profile. Grave 32: A – plan; 1 – bronze. Grave 33: A – plan, B – profile; 1 – iron.

Grave 34

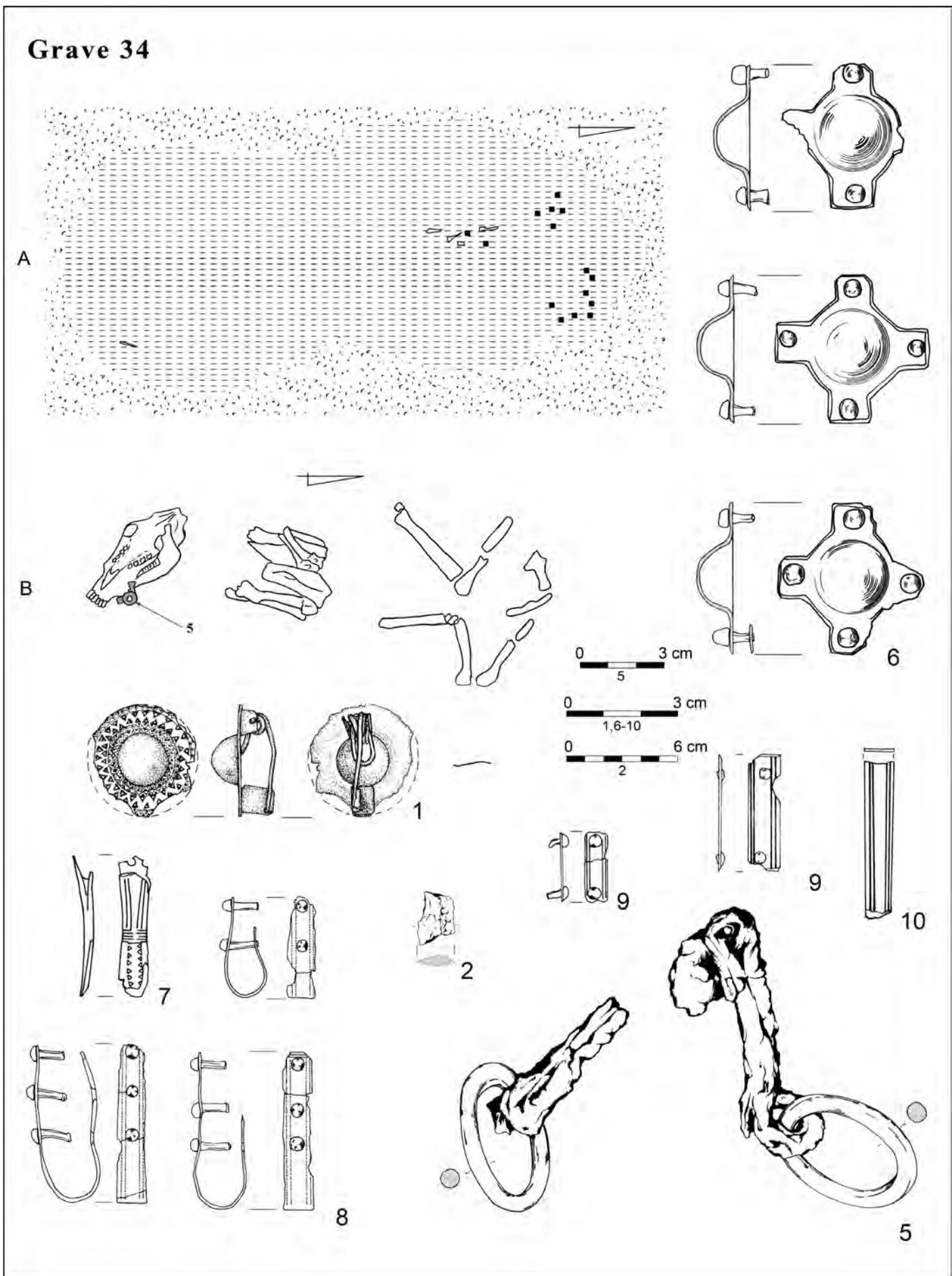


Plate XXIII. Grave 34: A – plan, B – situation of the horse skeleton in plan; 1, 6-10 – bronze, 2 – iron, 5 – iron and bronze.

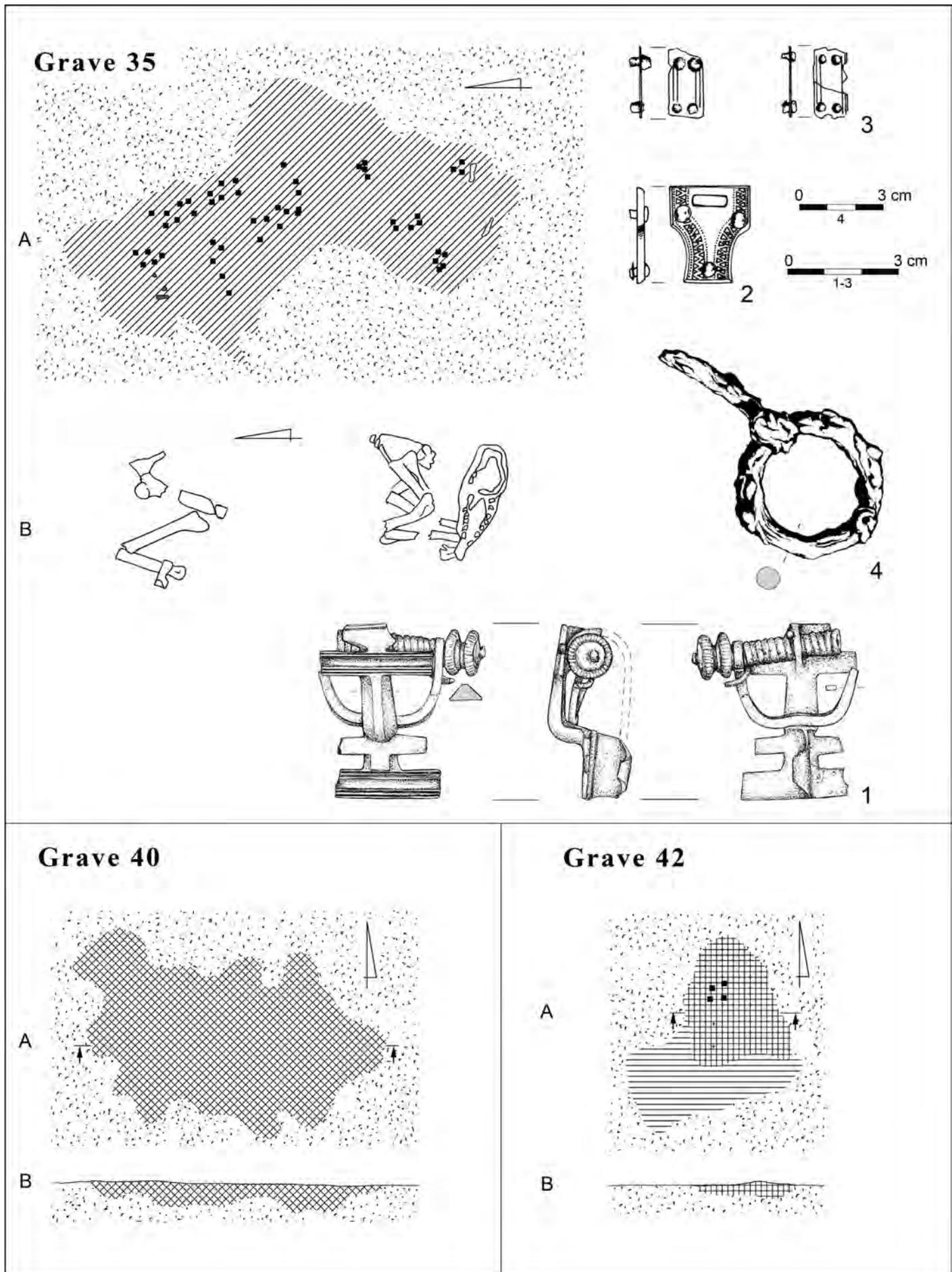


Plate XXIV. Grave 35: A – plan, B – situation of the horse skeleton in plan; 1 – bronze and iron, 2, 3 – bronze, 4 – iron.
Grave 40: A – plan, B – profile. Grave 42: A – plan, B – profile.

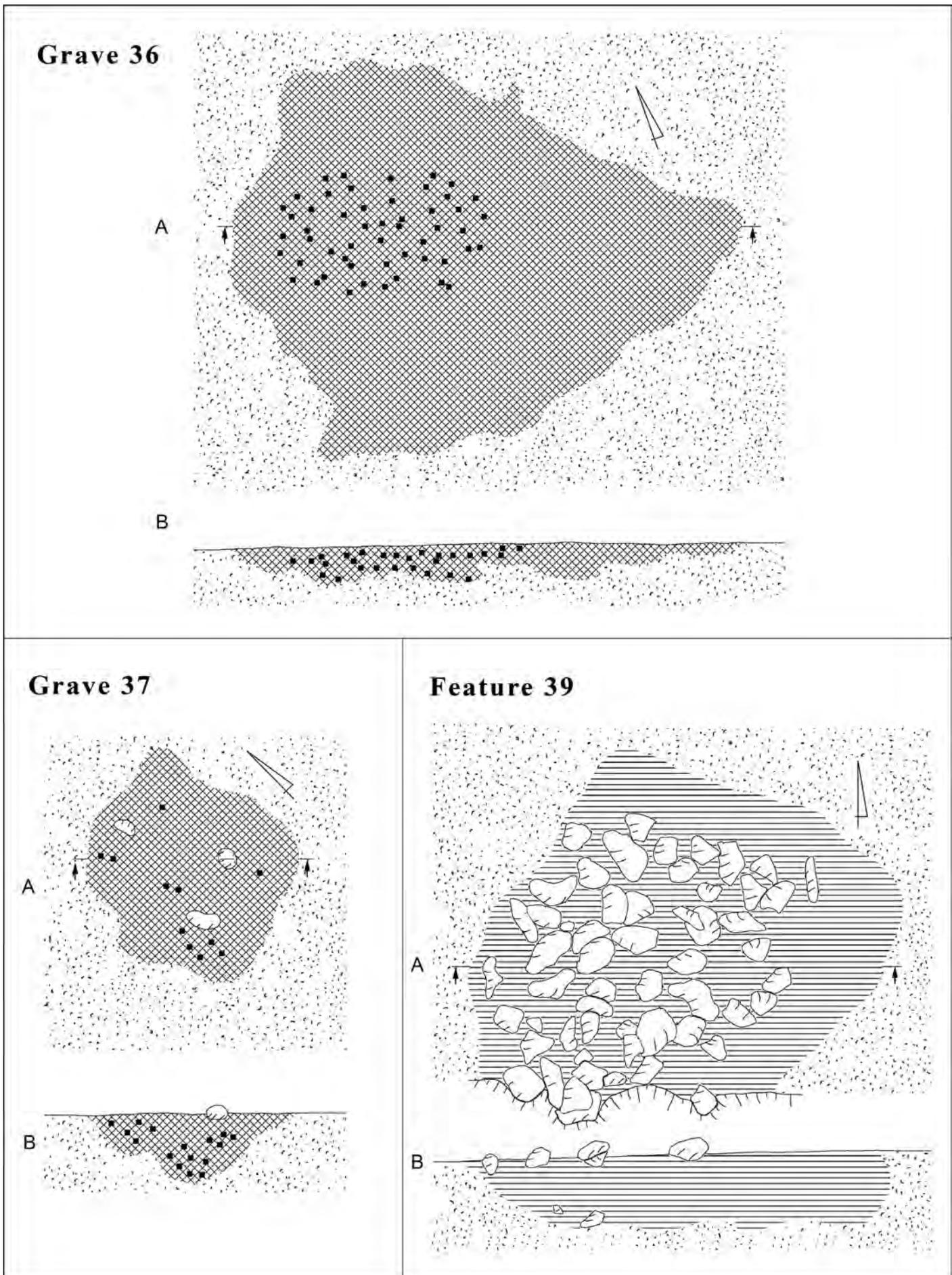
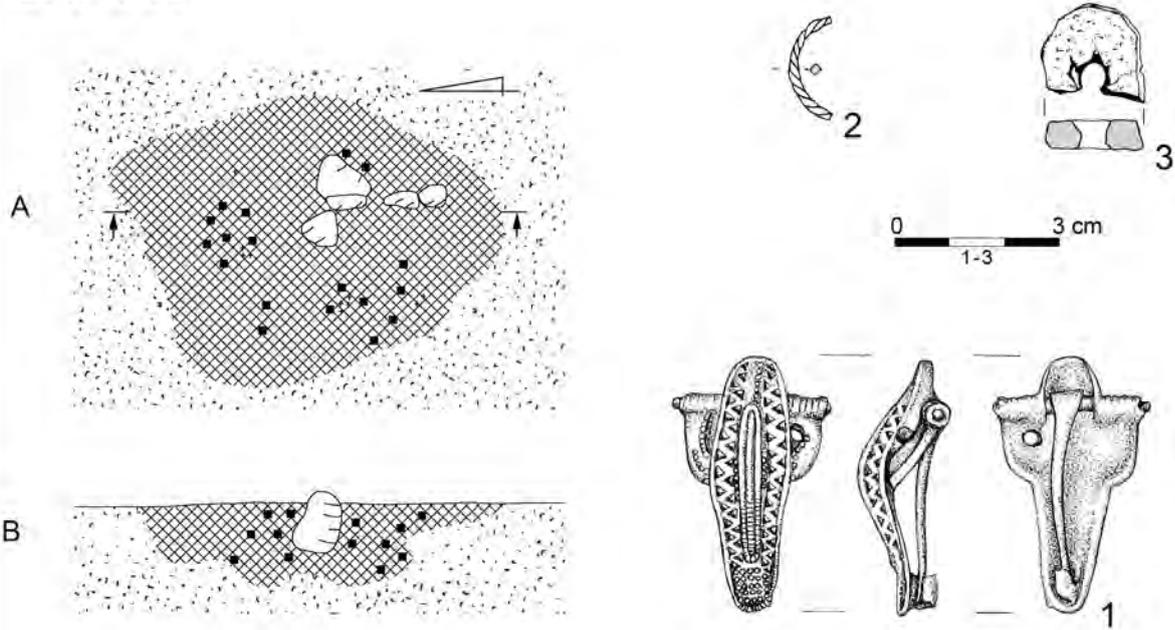
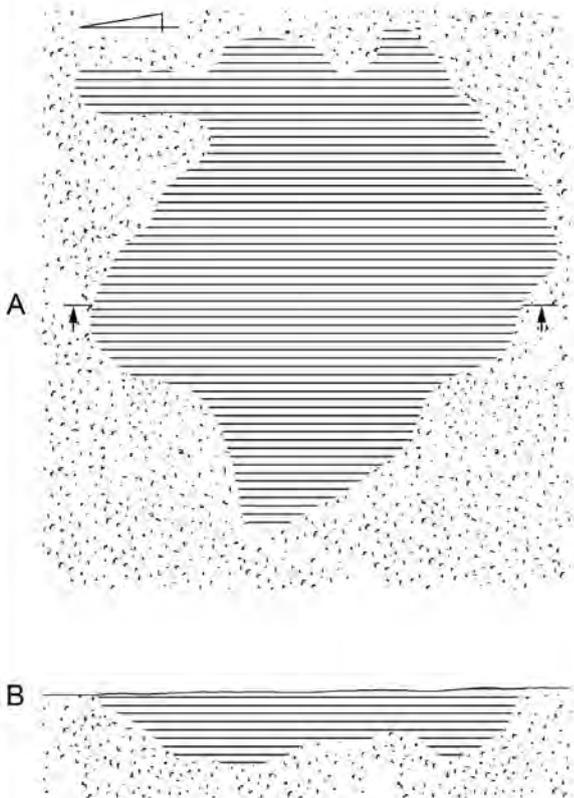


Plate XXV. Grave 36: A – plan, B – profile. Grave 37: A – plan, B – profile. Feature 39: A – plan, B – profile.

Grave 38



Grave 46



Grave 49

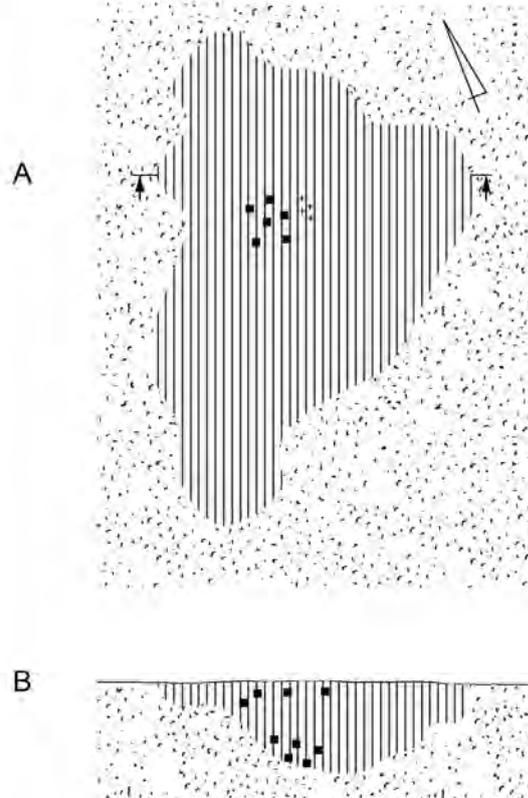


Plate XXVI. Grave 38: A – plan, B – profile; 1, 2 – bronze, 3 – amber. Grave 46: A – plan, B – profile. Grave 49: A – plan, B – profile.

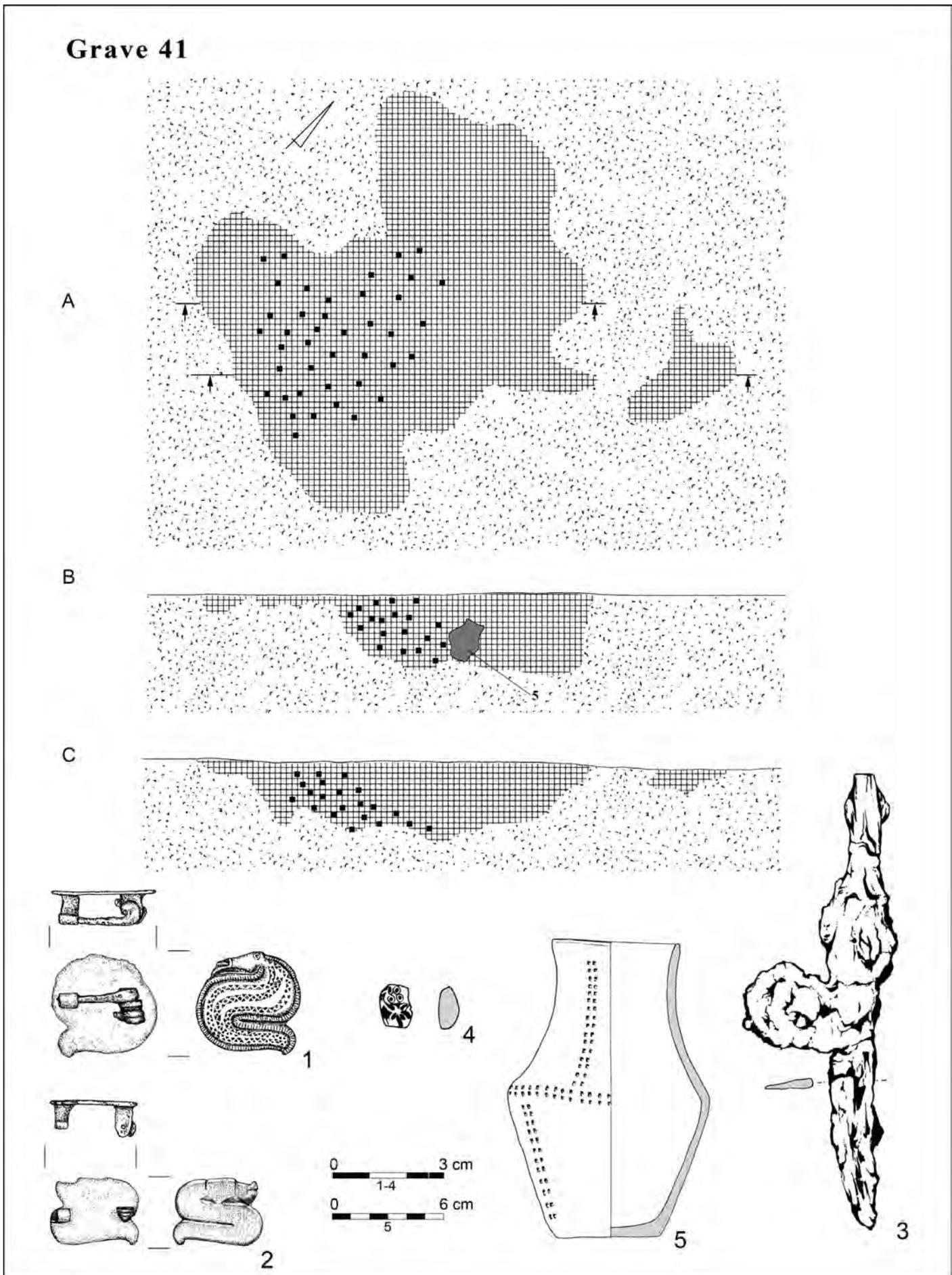


Plate XXVII. Grave 41: A – plan, B – profile in the part further to the north-west, C – profile in the part further to the south-east; 1, 2 – bronze and iron, 3 – iron, 4 – glass, 5 – clay.

Grave 44

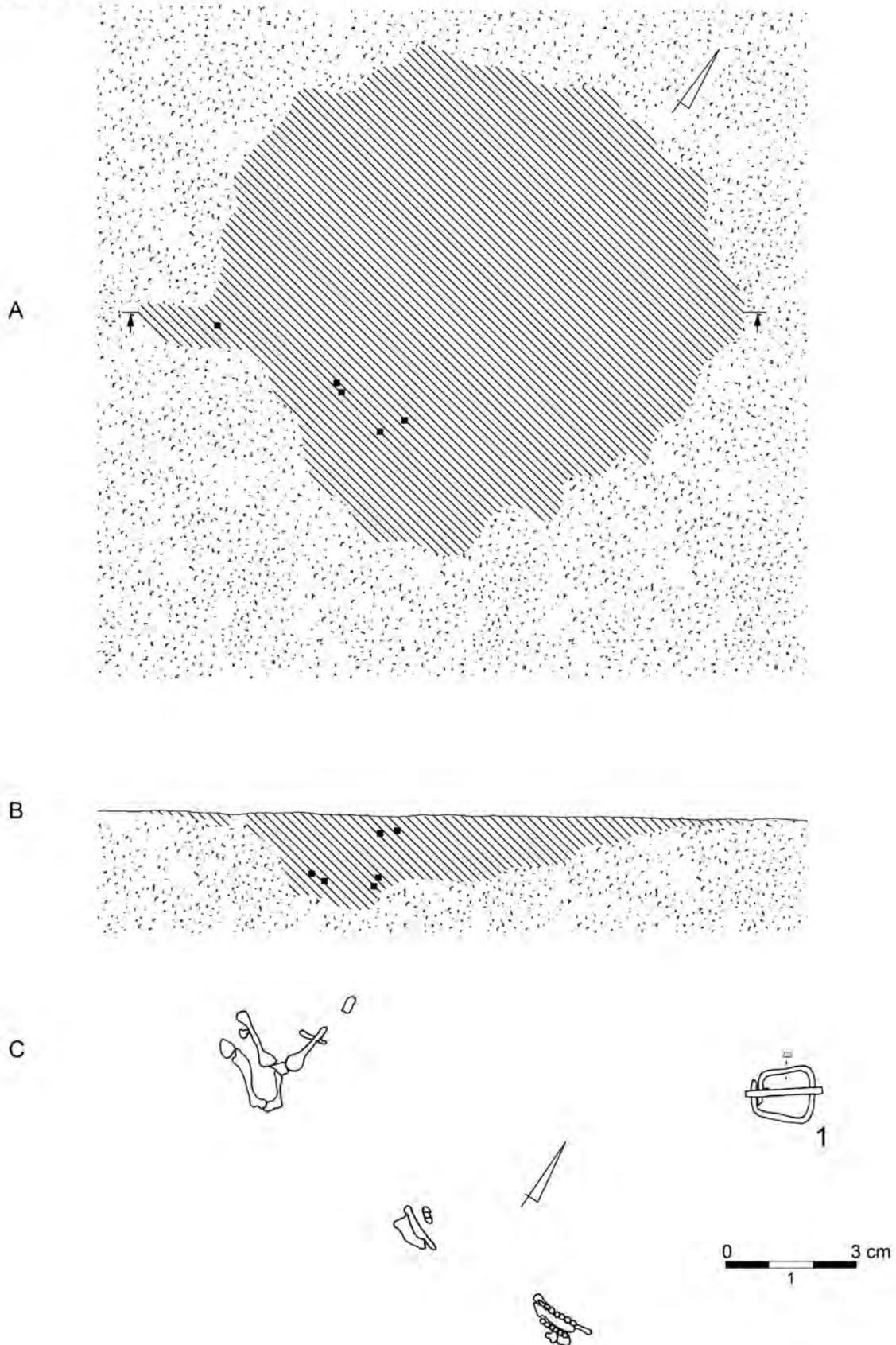


Plate XXVIII. Grave 44: A – plan, B – profile, C – situation of the horse skeleton in plan; 1 – bronze.

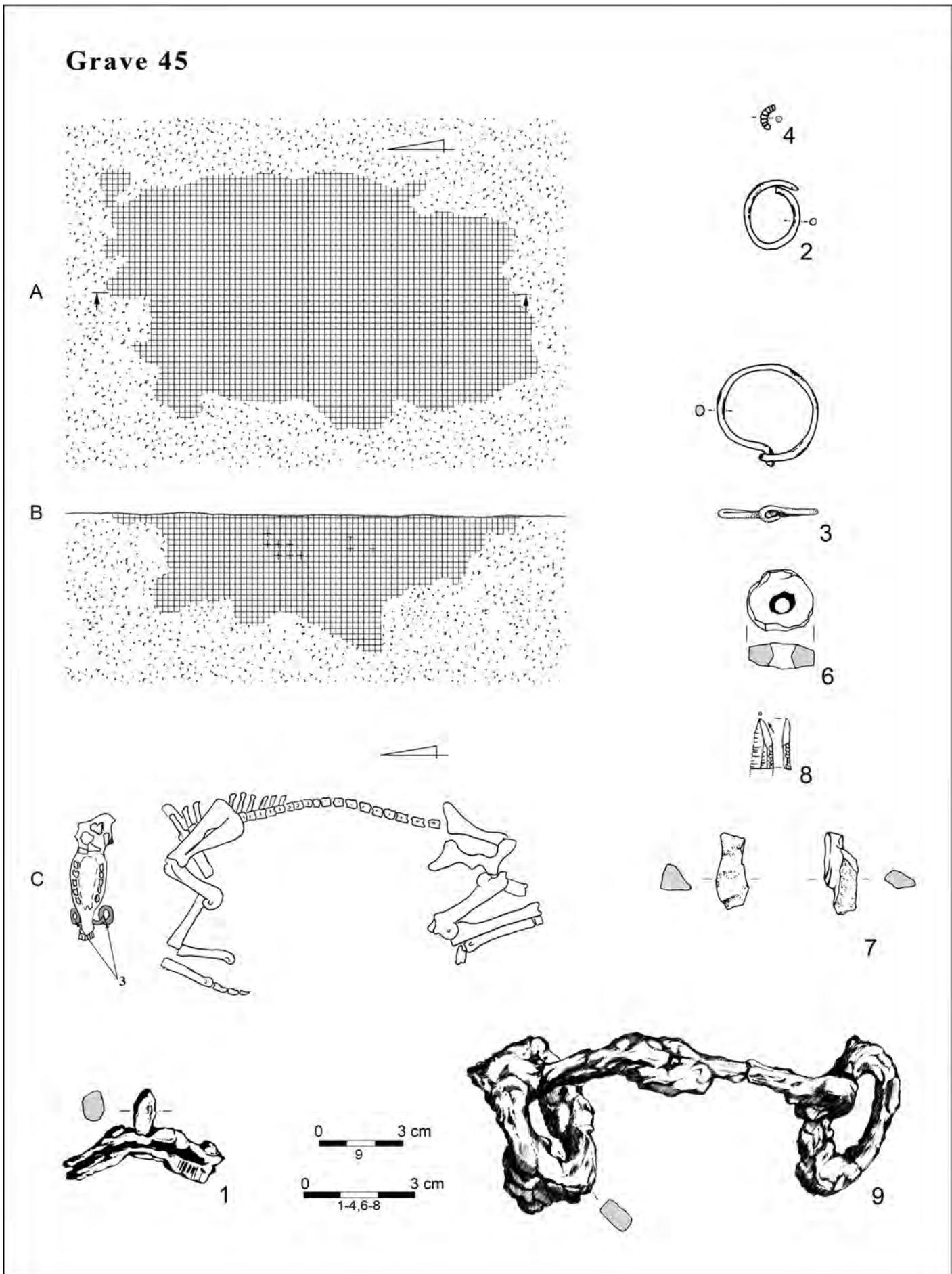


Plate XXIX. Grave 45: A – plan, B – profile, C – situation of the horse skeleton in plan; 1, 9 – iron, 2-4 – bronze, 6, 7 – amber, 8 – flint.

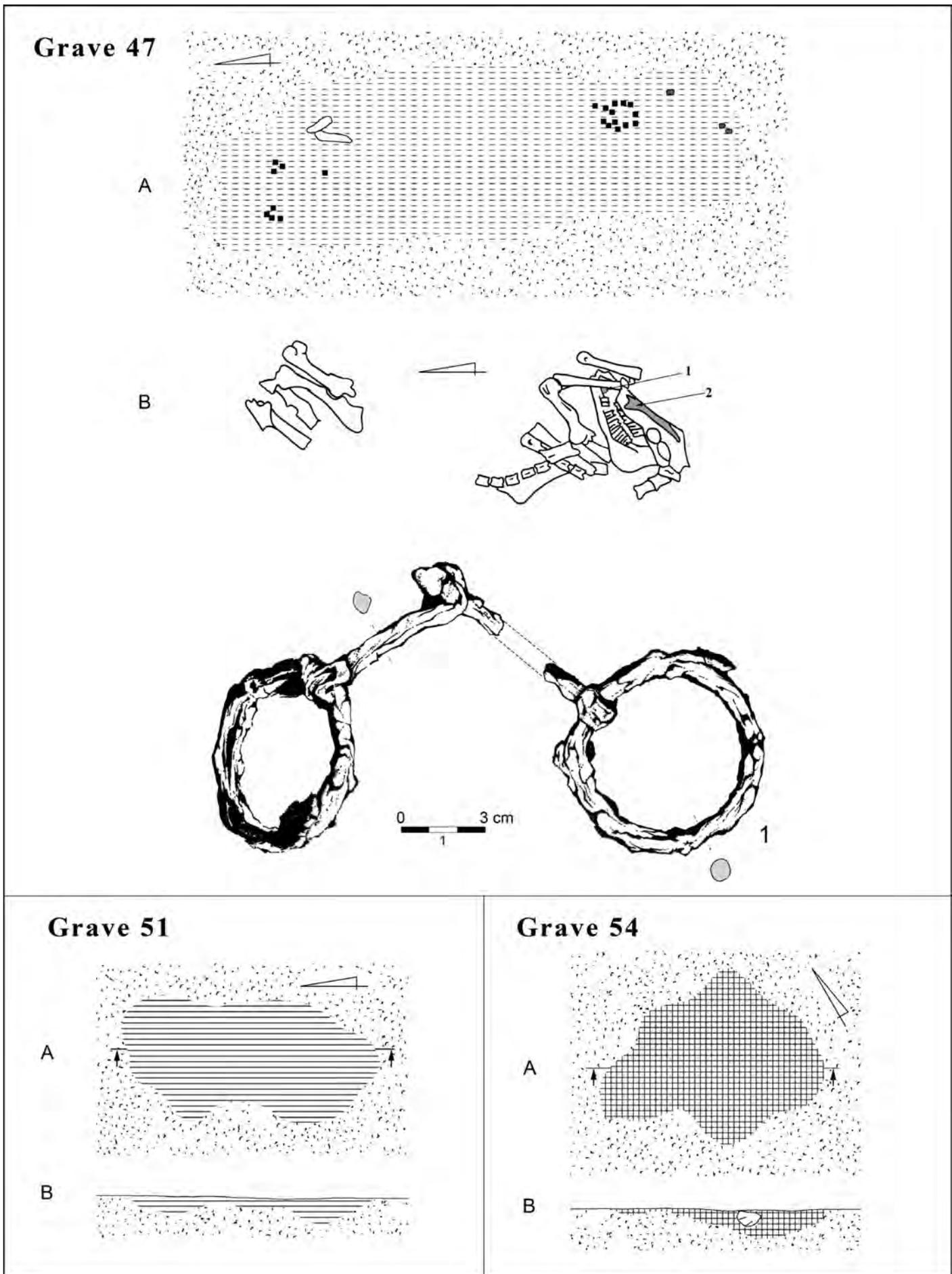


Plate XXX. Grave 47: A – plan, B – situation of the horse skeleton in plan, 1 – iron. Grave 51: A – plan, B – profile. Grave 54: A – plan, B – profile.

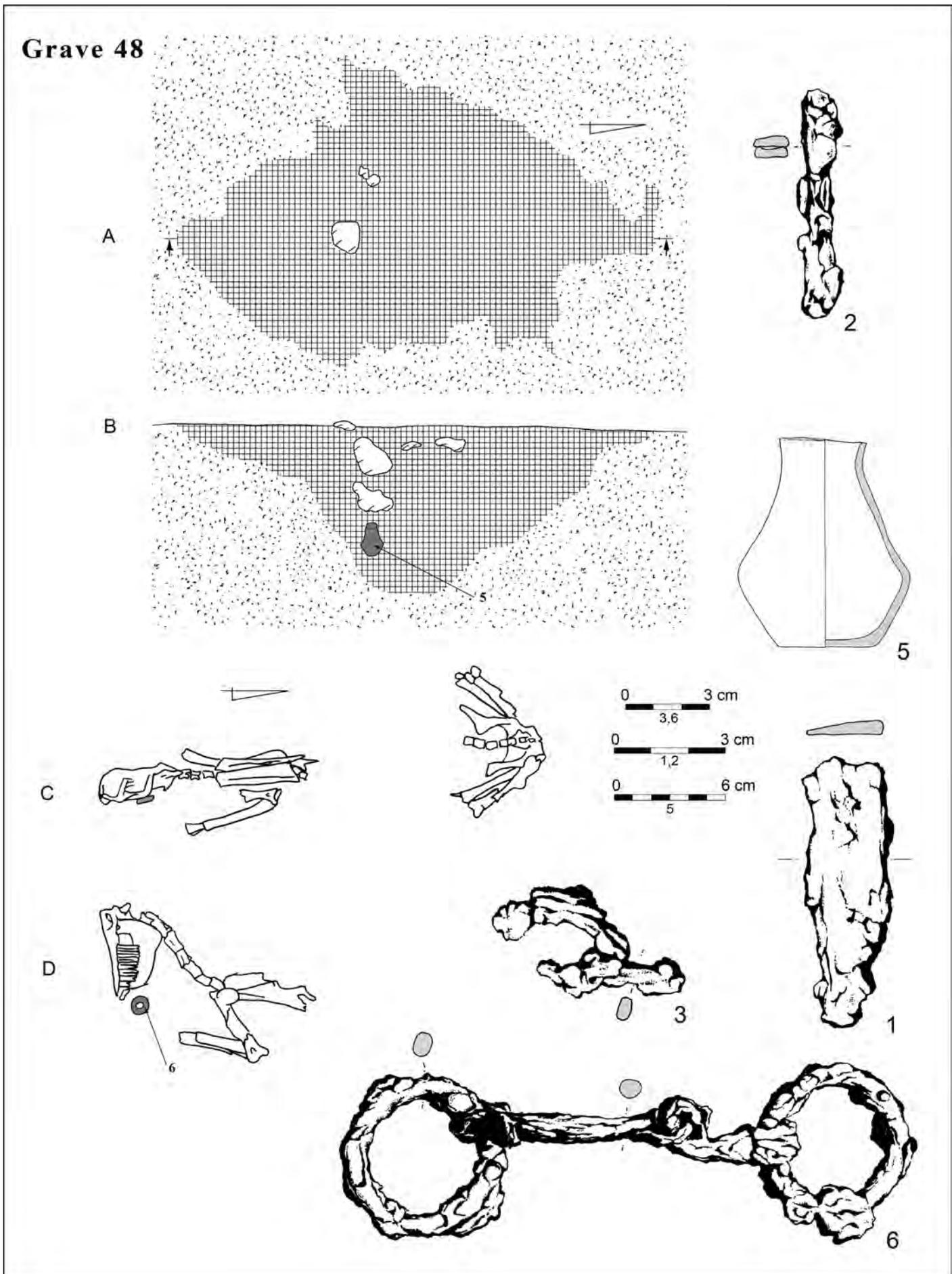


Plate XXXI. Grave 48: A – plan, B – profile, C – situation of the horse skeleton in plan, D – situation of the horse skeleton in profile; 1-3, 6 – iron, 5 – clay.

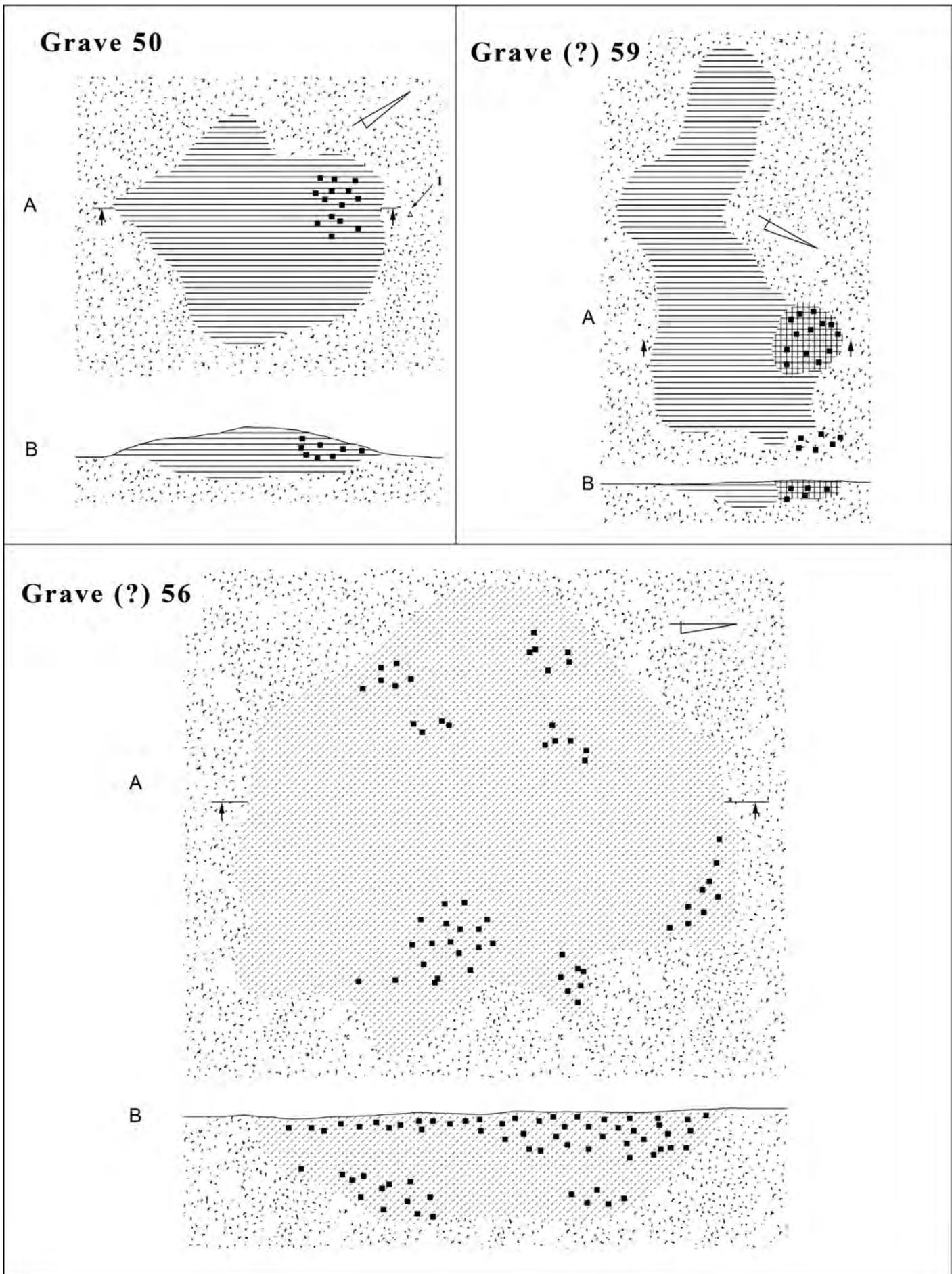


Plate XXXII. Grave 50: A – plan, B – profile. Grave (?) 56: A – plan, B – profile. Grave (?) 59: A – plan, B – profile.

Grave 52

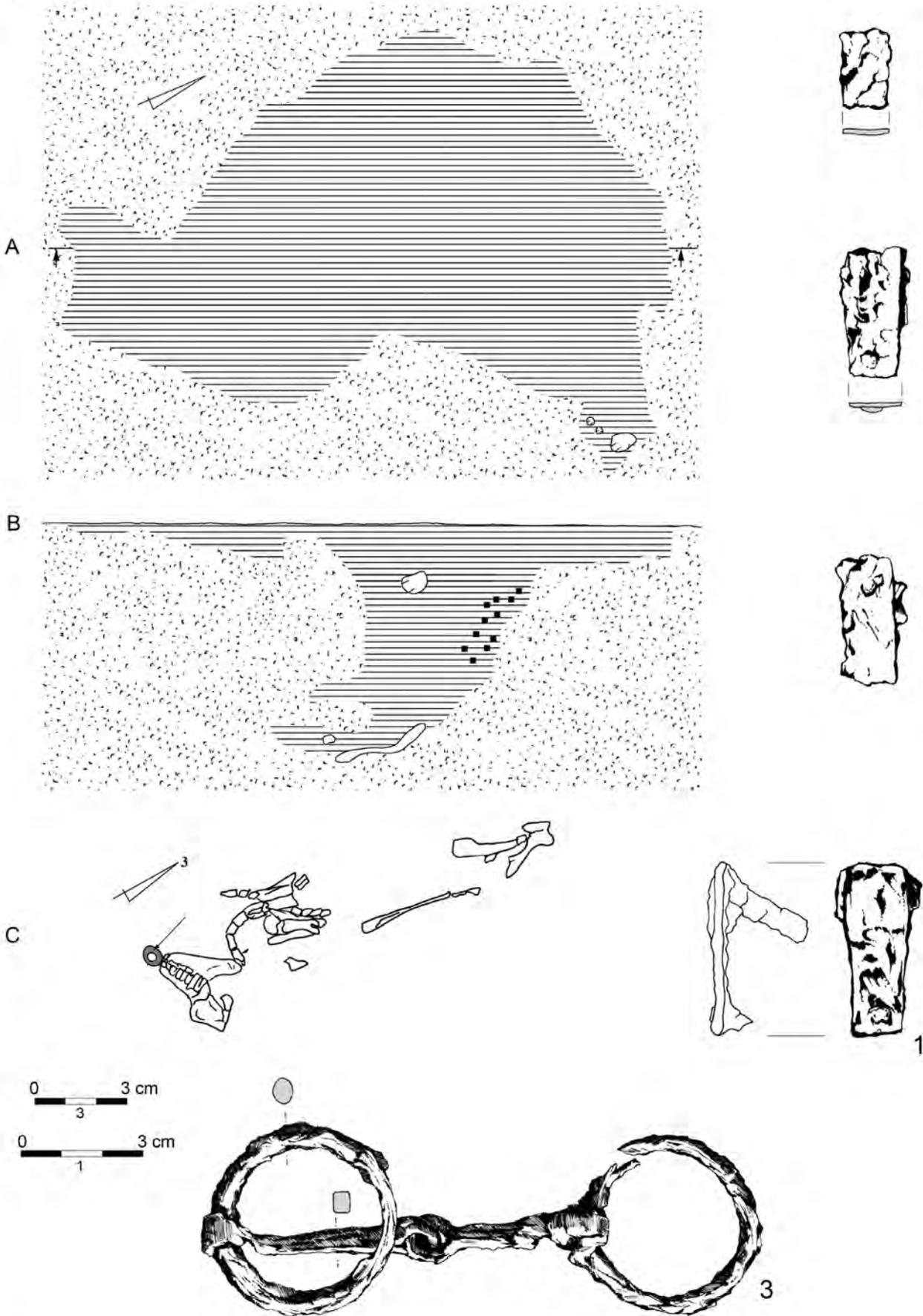


Plate XXXIII. Grave 52: A – plan, B – profile; 1 – iron and wood, 3 – iron.

Grave 53

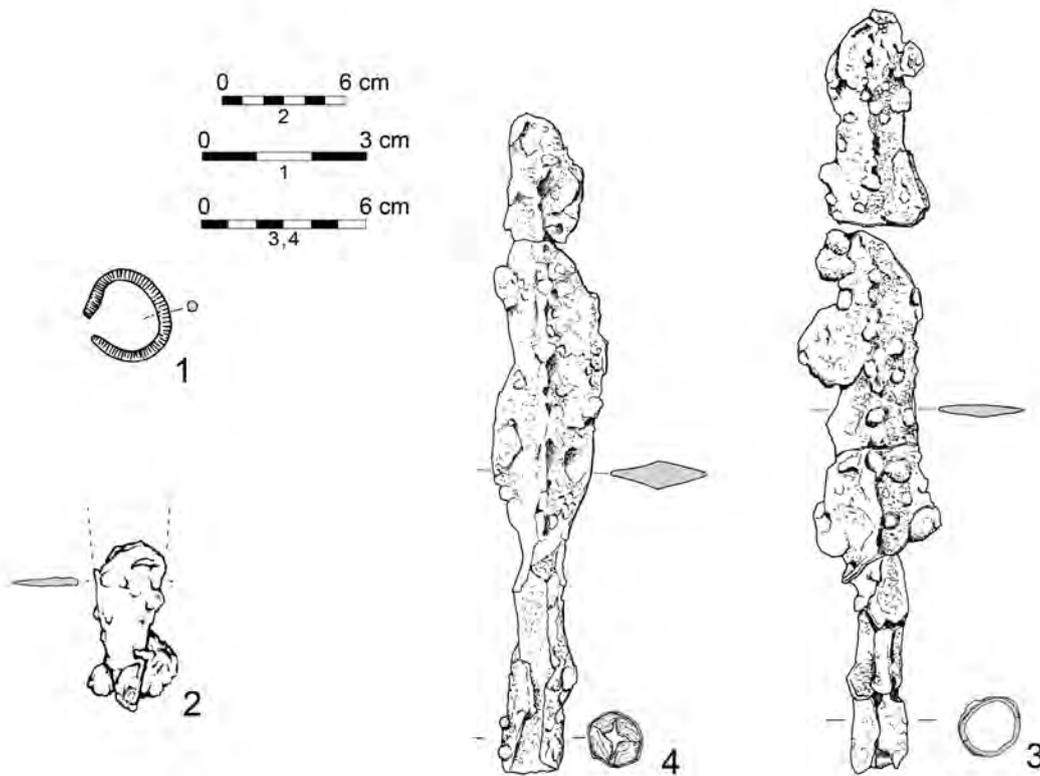
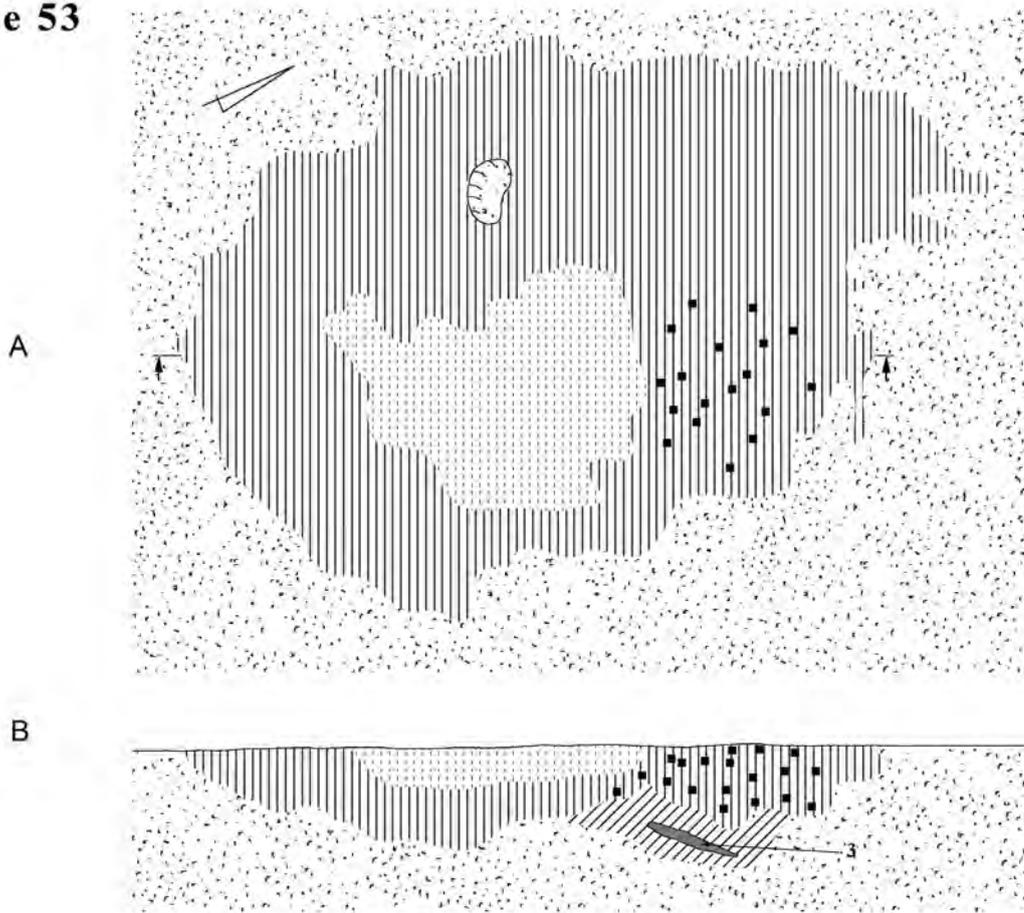


Plate XXXIV. Grave 53: A – plan, B – profile; 1 – bronze, 2-4 – iron.

Grave 55

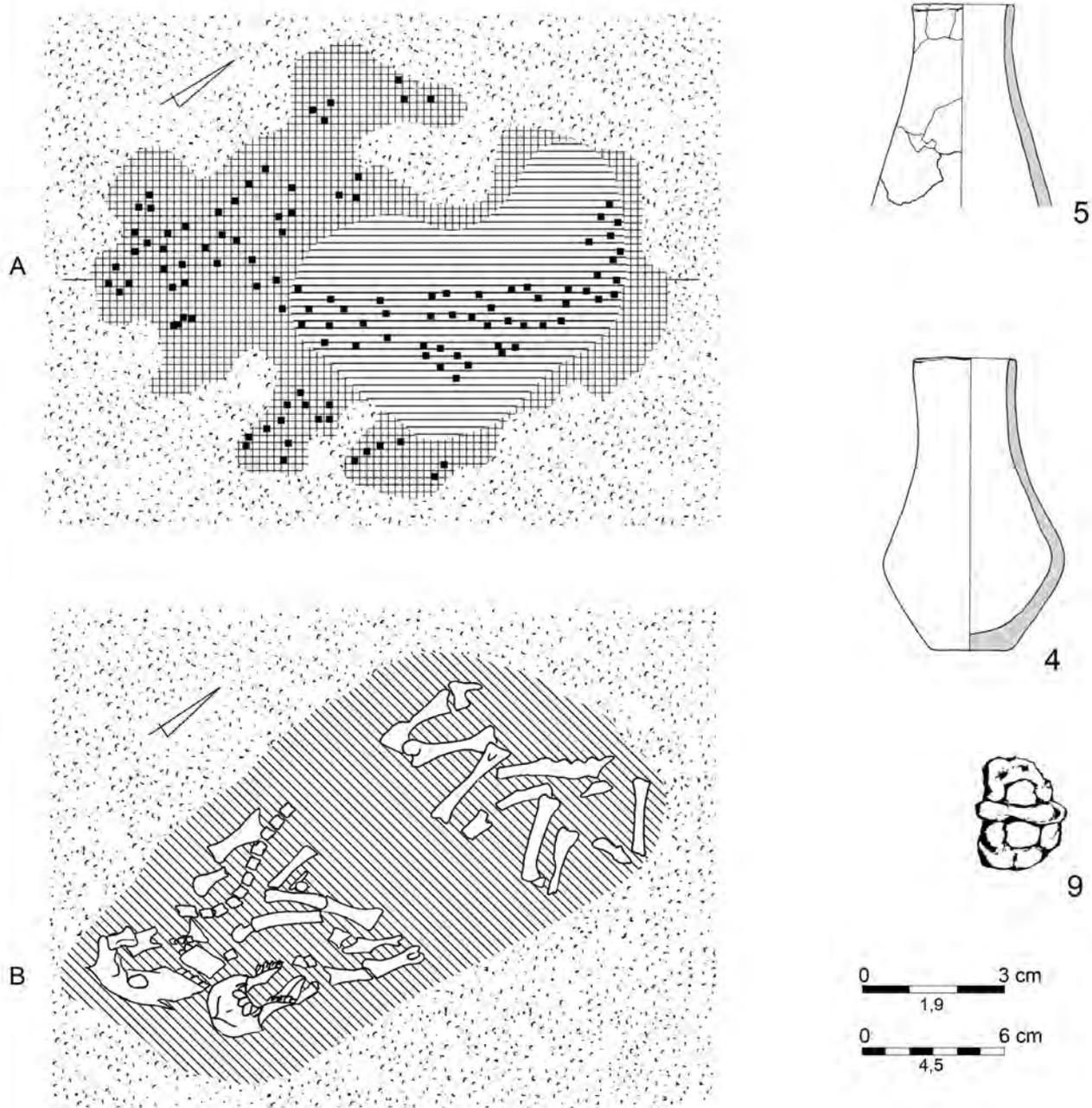
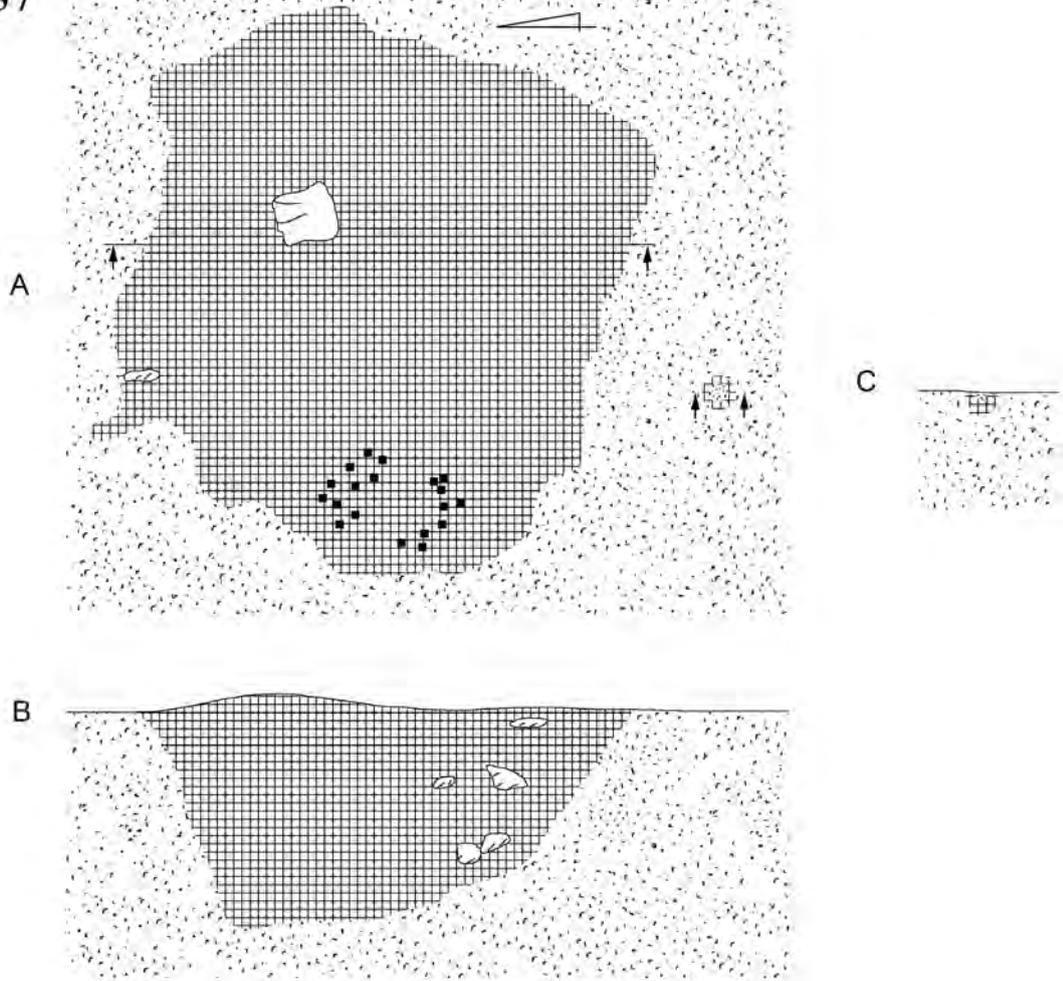


Plate XXXV. Grave 55: A – plan, B – plan at the level of the horse skeletons; 1 – bronze and iron, 4, 5 – clay, 9 – iron.

Grave (?) 57



Grave (?) 58

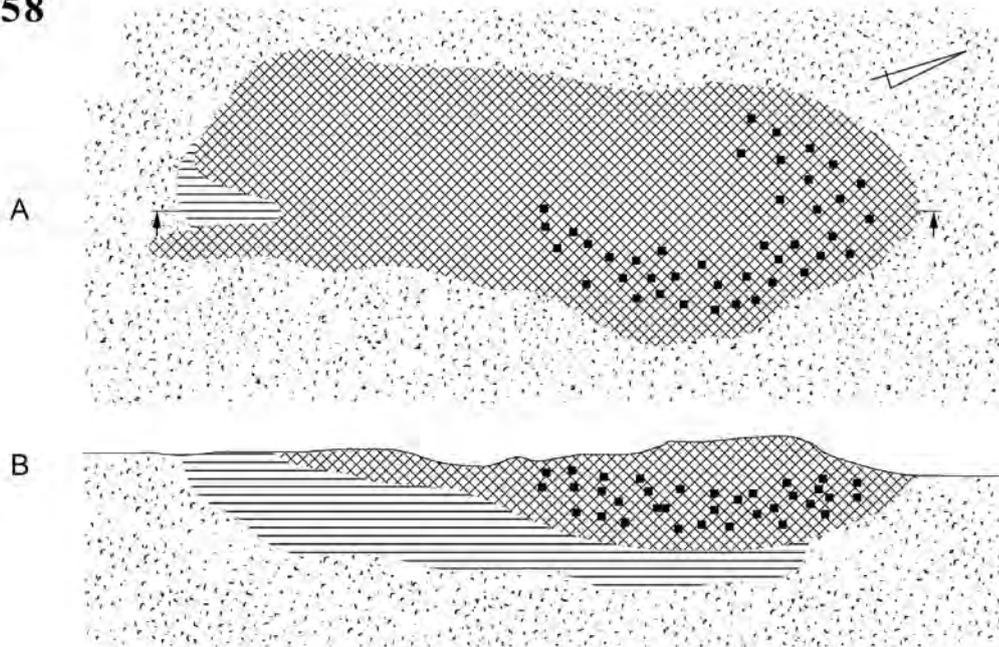


Plate XXXVII. Grave (?) 57: A – plan, B – profile, C – profile of the small soil darkening to the S of the grave.
Grave (?) 58: A – plan, B – profile.

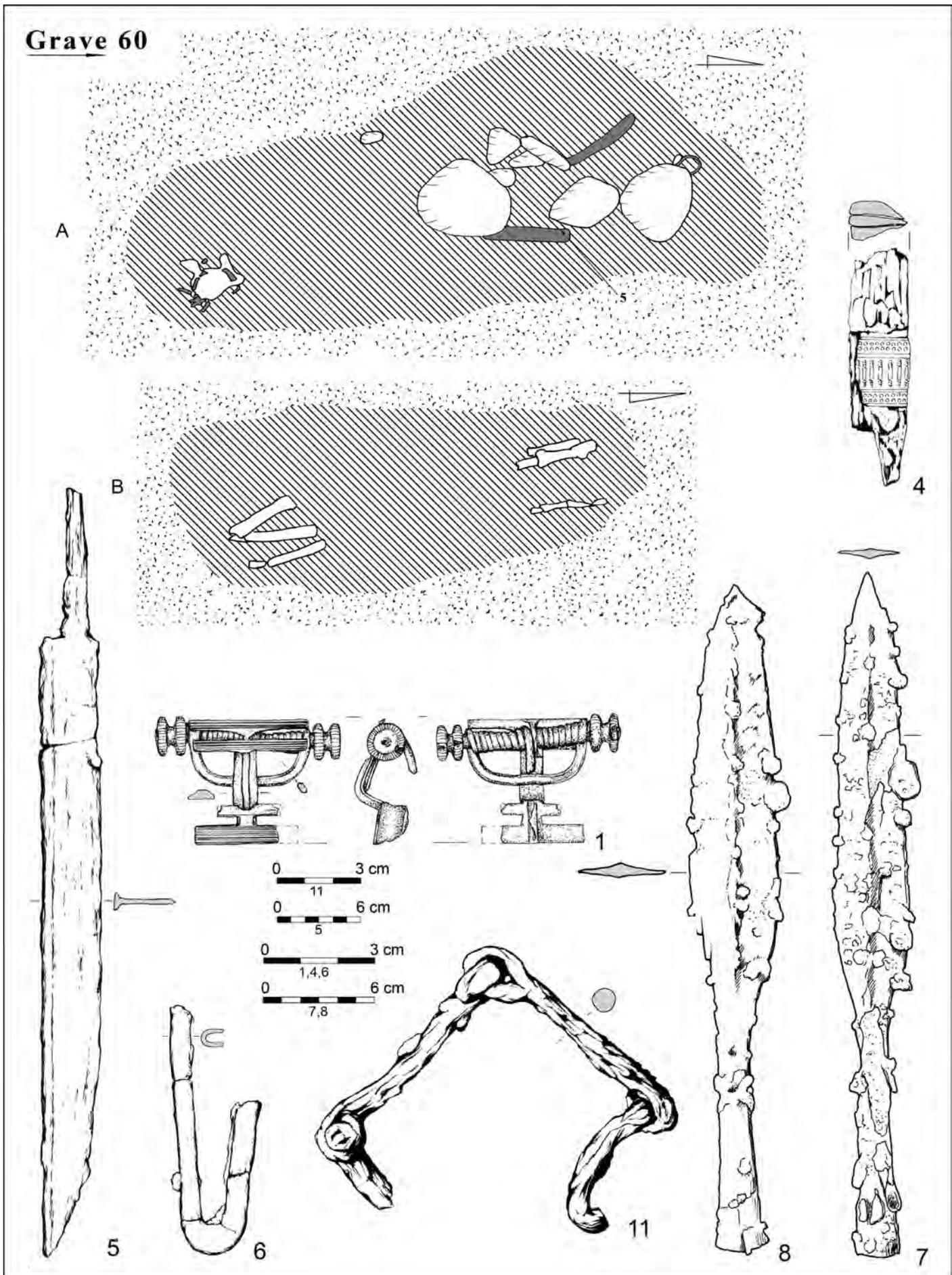


Plate XXXVIII. Grave 60: A – plan, B – plan at the level of the horse skeleton; 1 – bronze and iron, 4 – iron, bronze and wood, 5-8, 11 – iron.

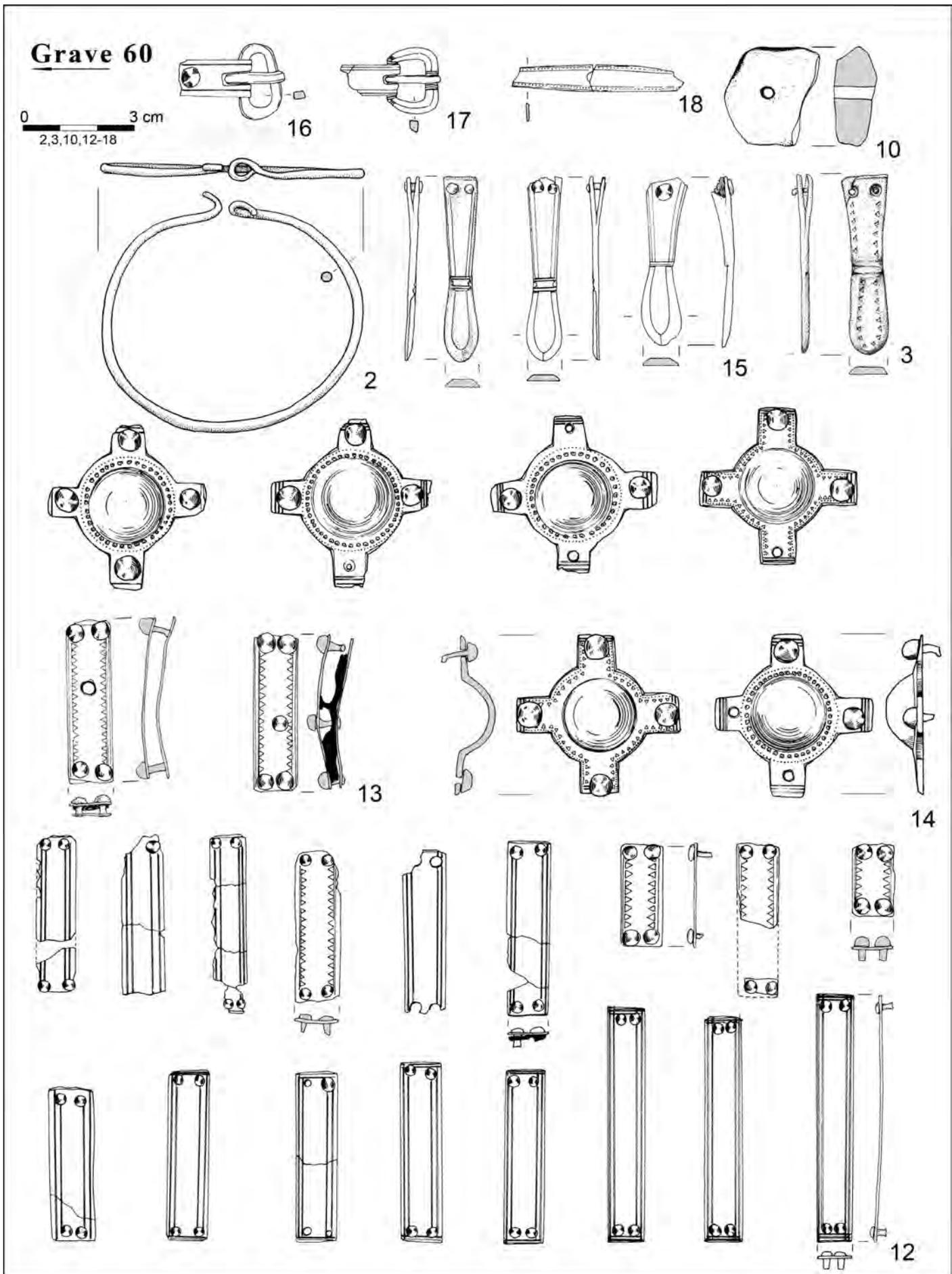


Plate XXXIX. Grave 60: 2, 3, 14, 16-18 – bronze, 10 – amber, 12, 13, 15 – bronze and leather.

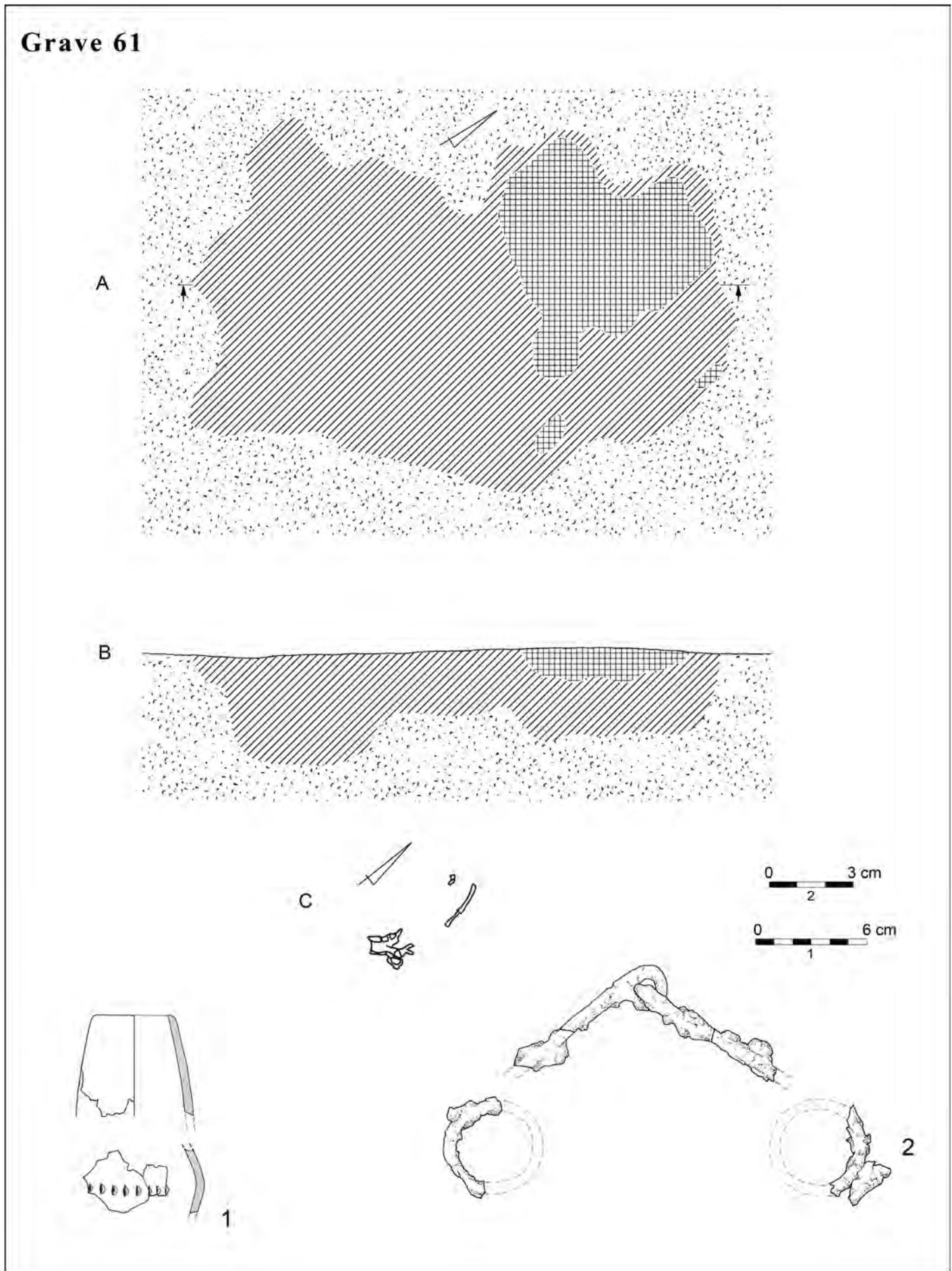


Plate XL. Grave 61: A – plan, B – profile, C – situation of the horse skeleton in plan; 1 – clay, 2 – iron.

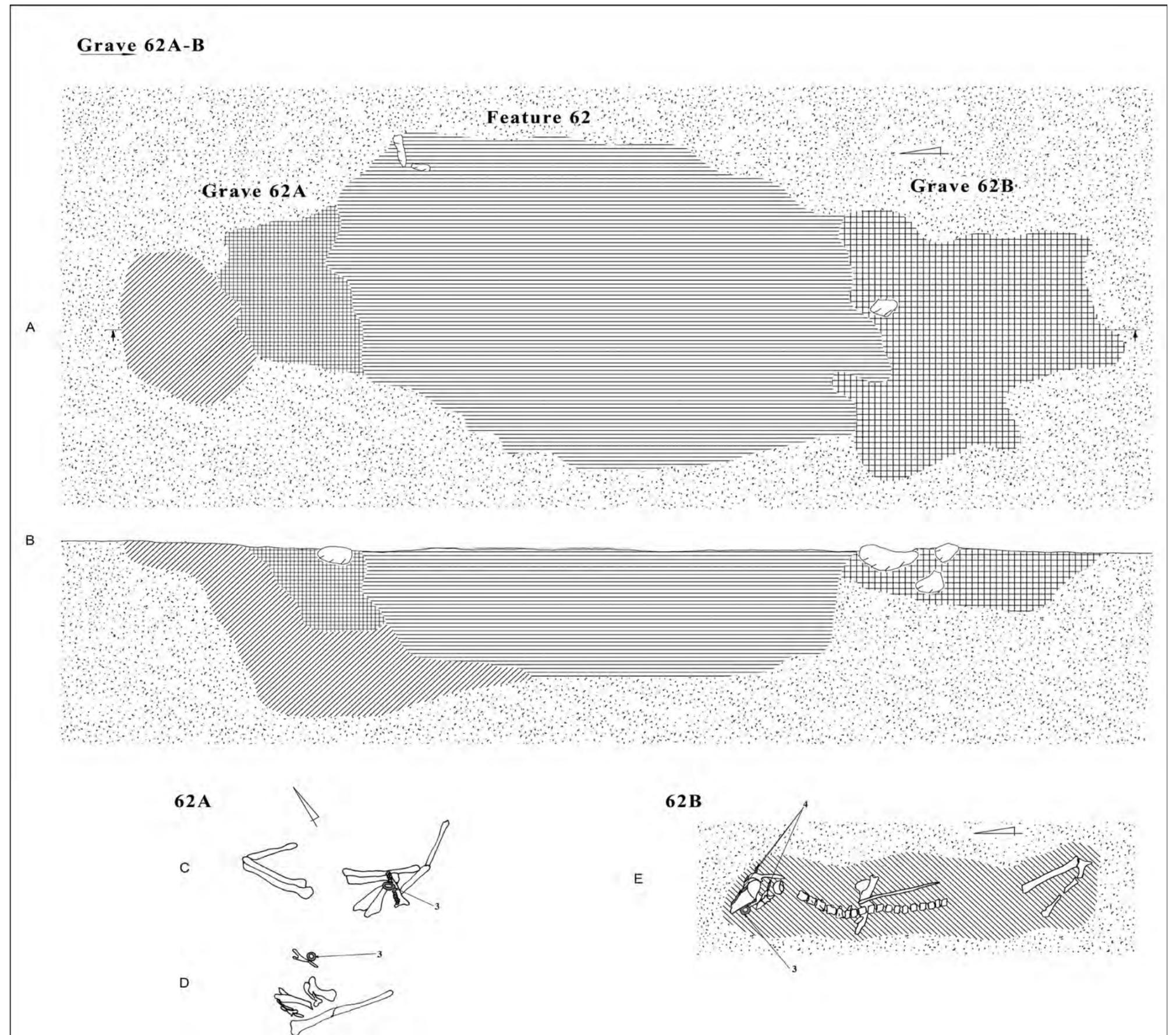


Plate XLI. Feature 62, grave 62A and grave 62B: A – plan, B – profile. Grave 62A: C – situation of the horse skeleton in plan, D – situation of the horse skeleton in profile. Grave 62B: E – plan at the level of the horse skeleton.

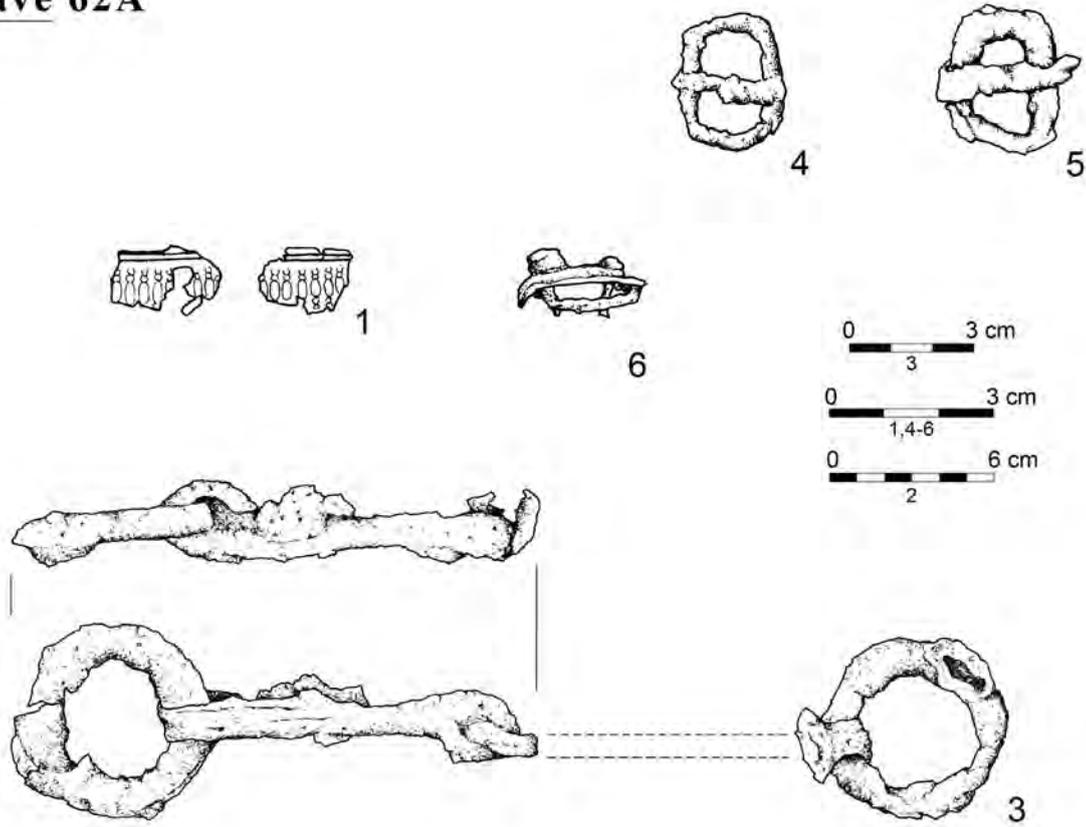
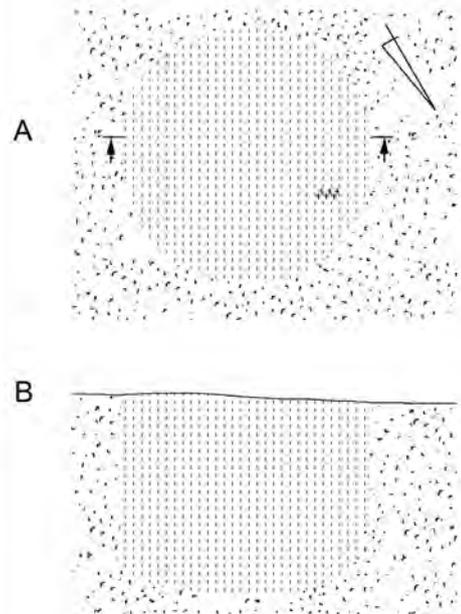
Grave 62A**Feature 64A**

Plate XLII. Grave 62A: 1 – bronze, 2 – clay, 3-6 – iron. Feature 64A: A – plan, B – profile.

Grave 62B

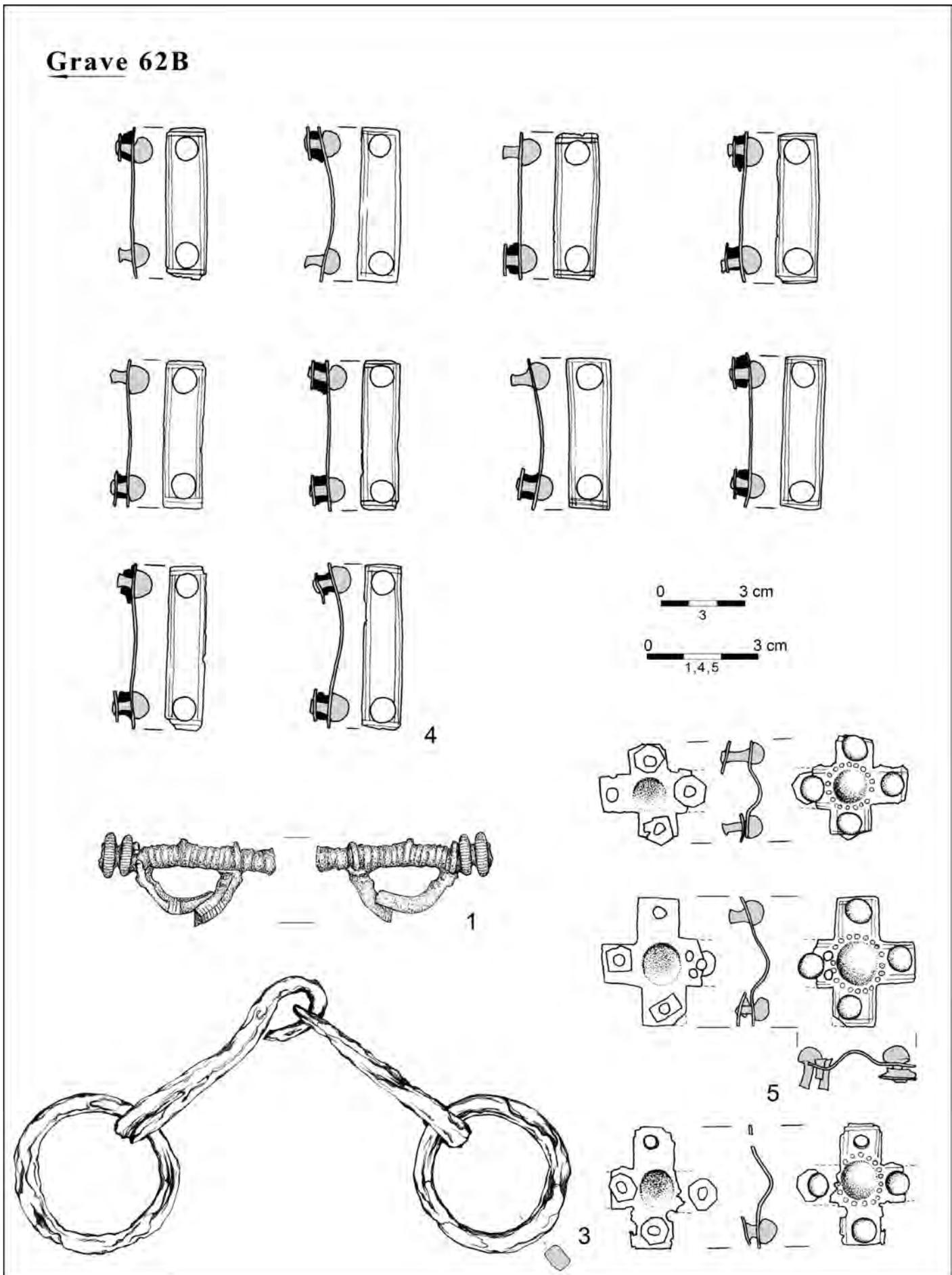


Plate XLIII. Grave 62B: 1 – bronze and iron, 3 – iron, 4 – bronze and leather, 5 – bronze.

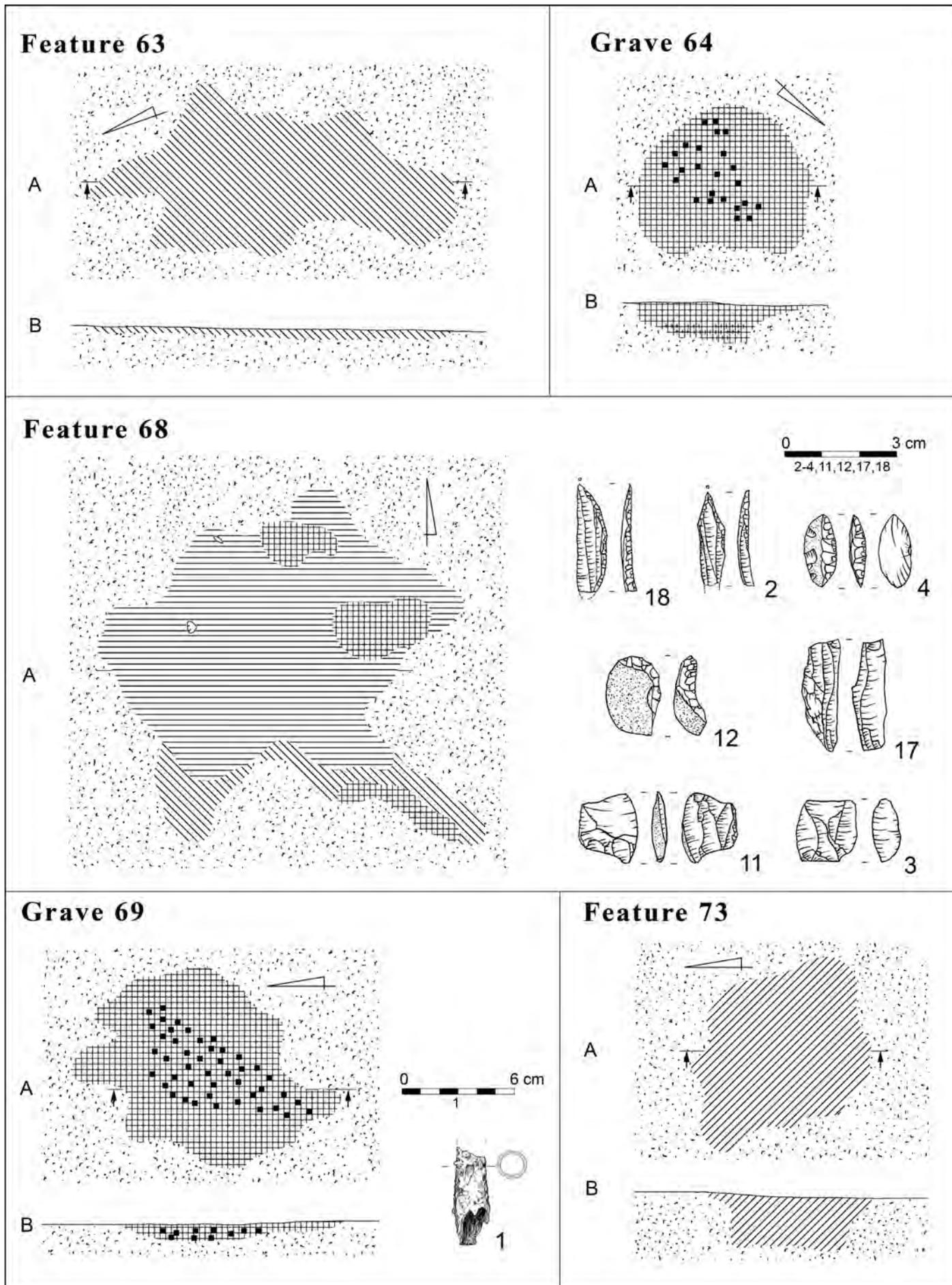


Plate XLIV. Feature 63: A – plan, B – profile. Grave 64: A – plan, B – profile. Feature 68: A – plan, B – profile; 2-4, 11, 12, 17, 18 – flint. Grave 69: A – plan, B – profile; 1 – iron. Feature 73: A – plan, B – profile.

Grave 65

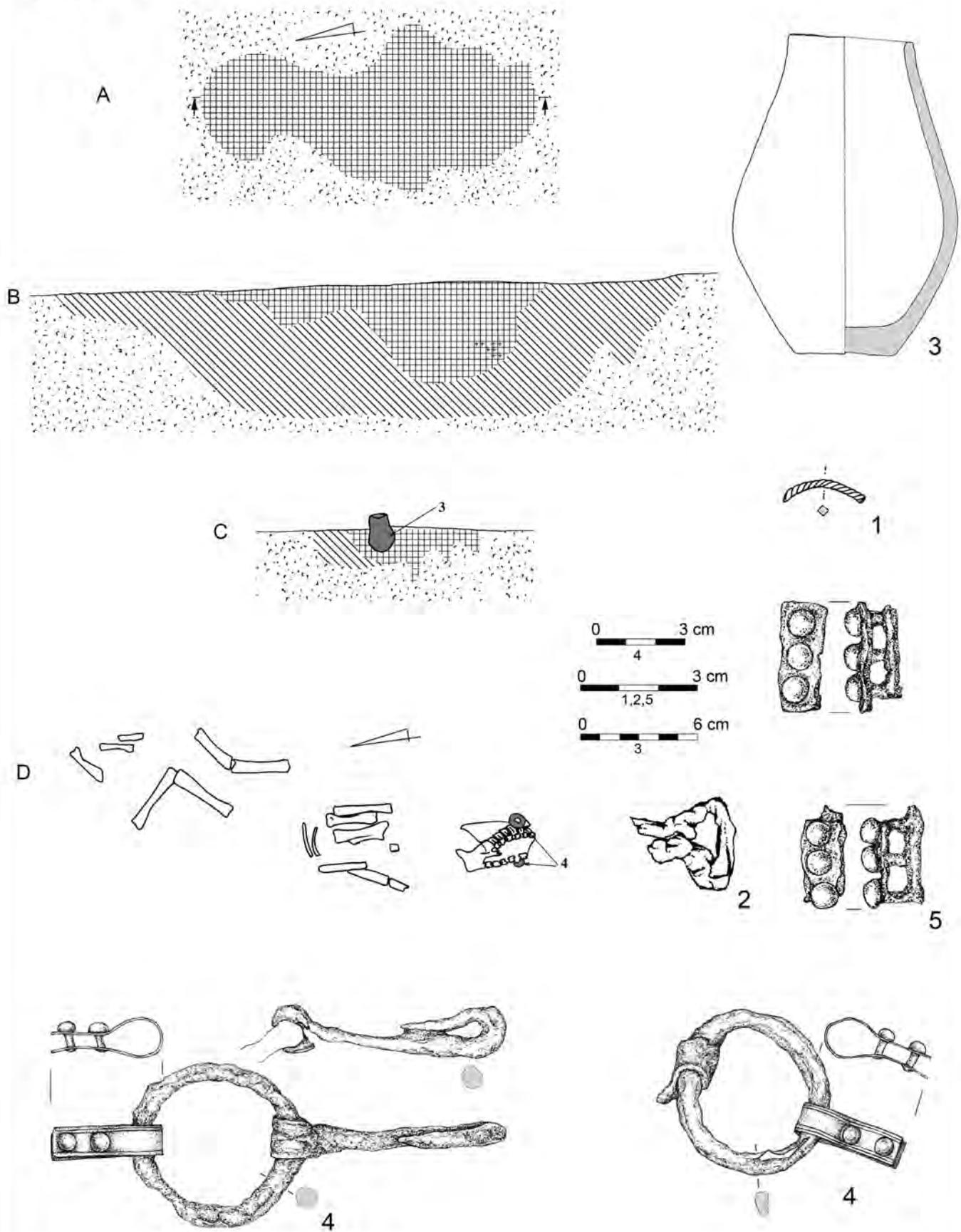


Plate XLV. Grave 65: A – plan, B – profile, C – profile at the level of the vessel (precise location unknown); 1 – bronze, 2, 5 – iron, 3 – clay, 4 – iron and bronze.

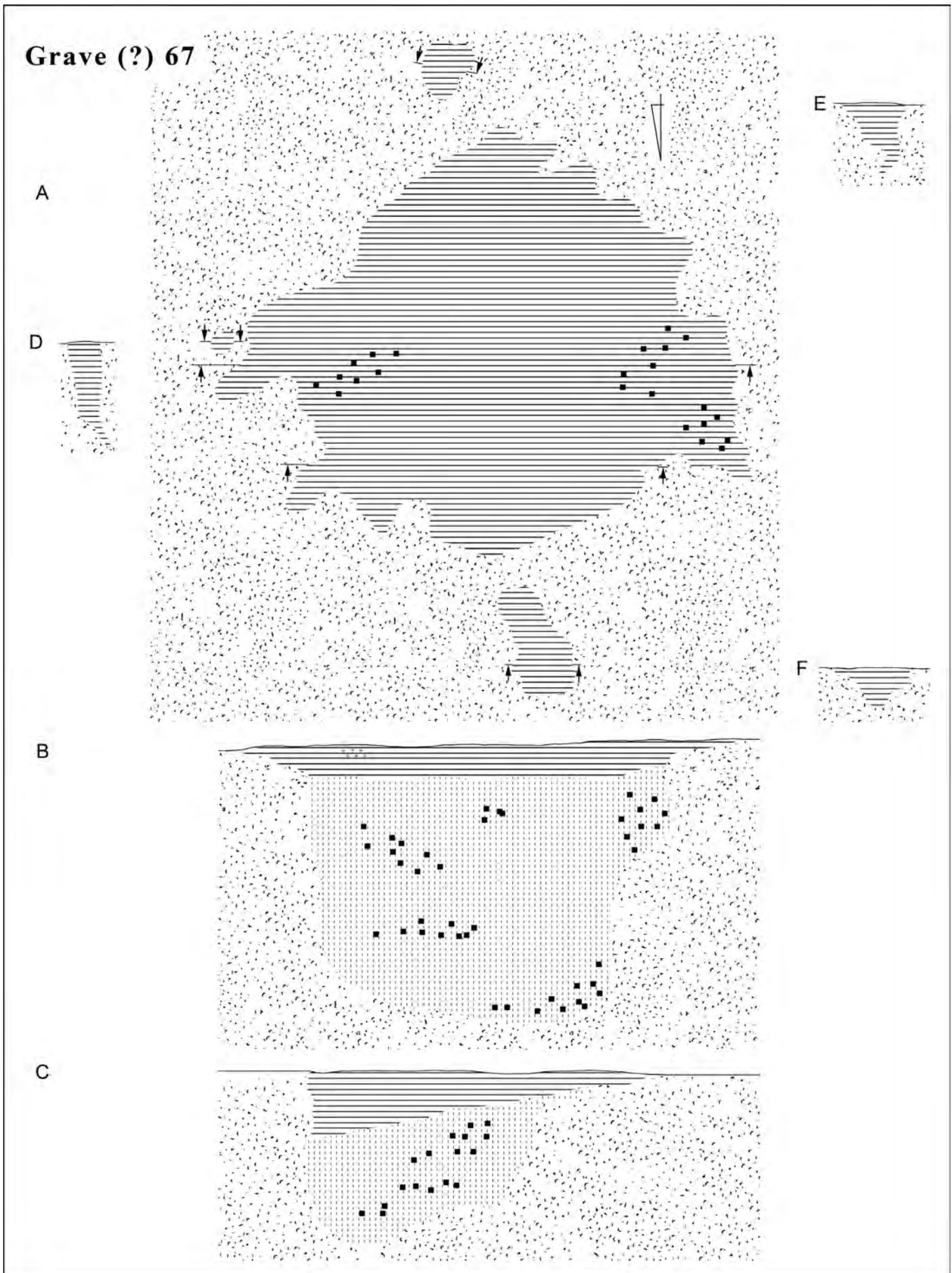


Plate XLVI. Grave (?) 67: A – plan, B – profile in the part further to the south, C – profile in the part further to the north, D – profile of the soil darkening to the east of the grave, E – profile of the soil darkening to the south of the grave, F – profile of the soil darkening to the north of the grave.

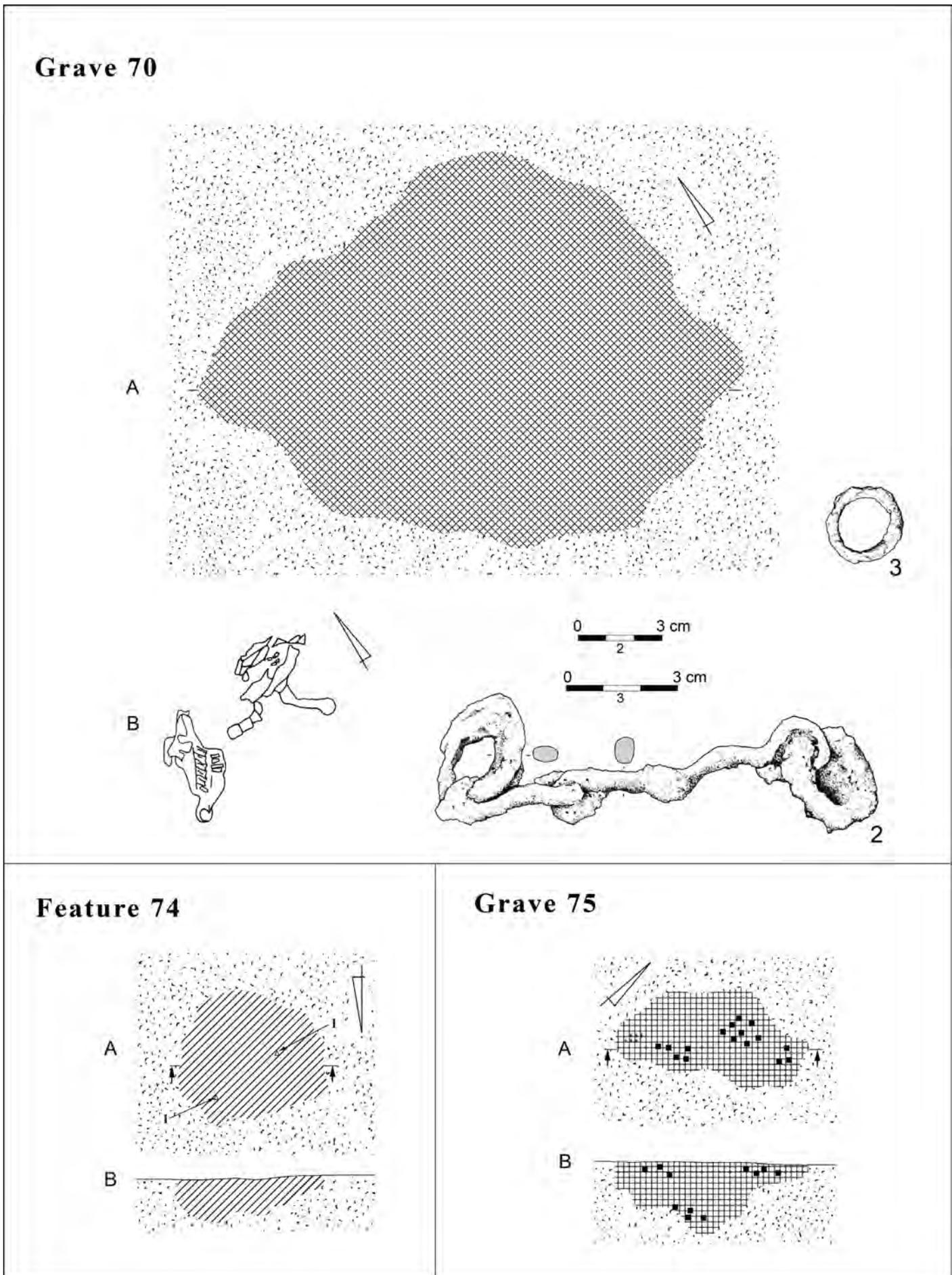


Plate XLVII. Grave 70: A – plan, B – situation of the horse skeleton in plan; 2, 3 – iron. Feature 74: A – plan, B – profile. Grave 75: A – plan, B – profile.

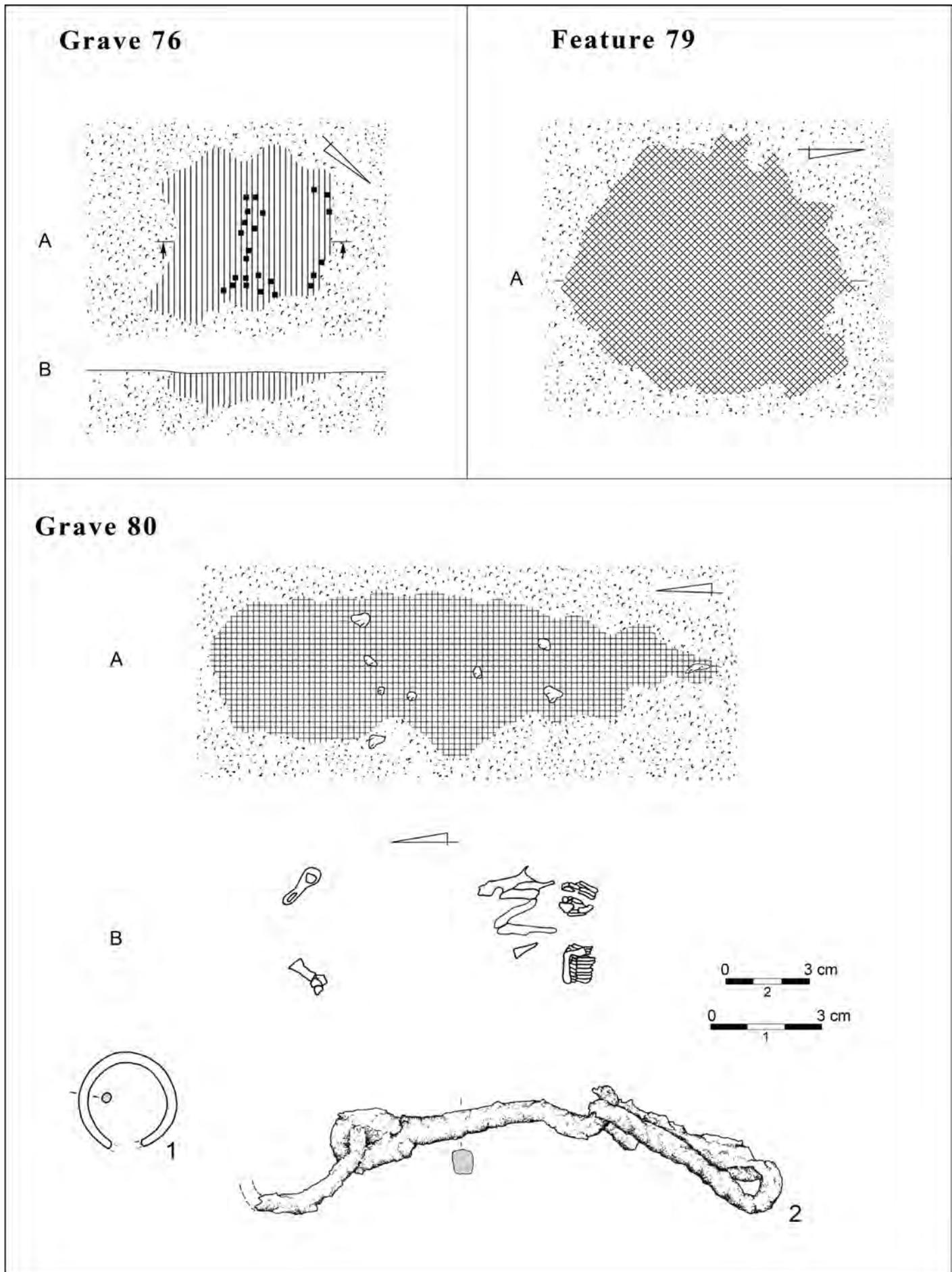


Plate XLVIII. Grave 76: A – plan, B – profile. Feature 79: A – plan. Grave 80: A – plan, B – situation of the horse skeleton in plan; 1 – bronze, 2 – iron.

Grave 77

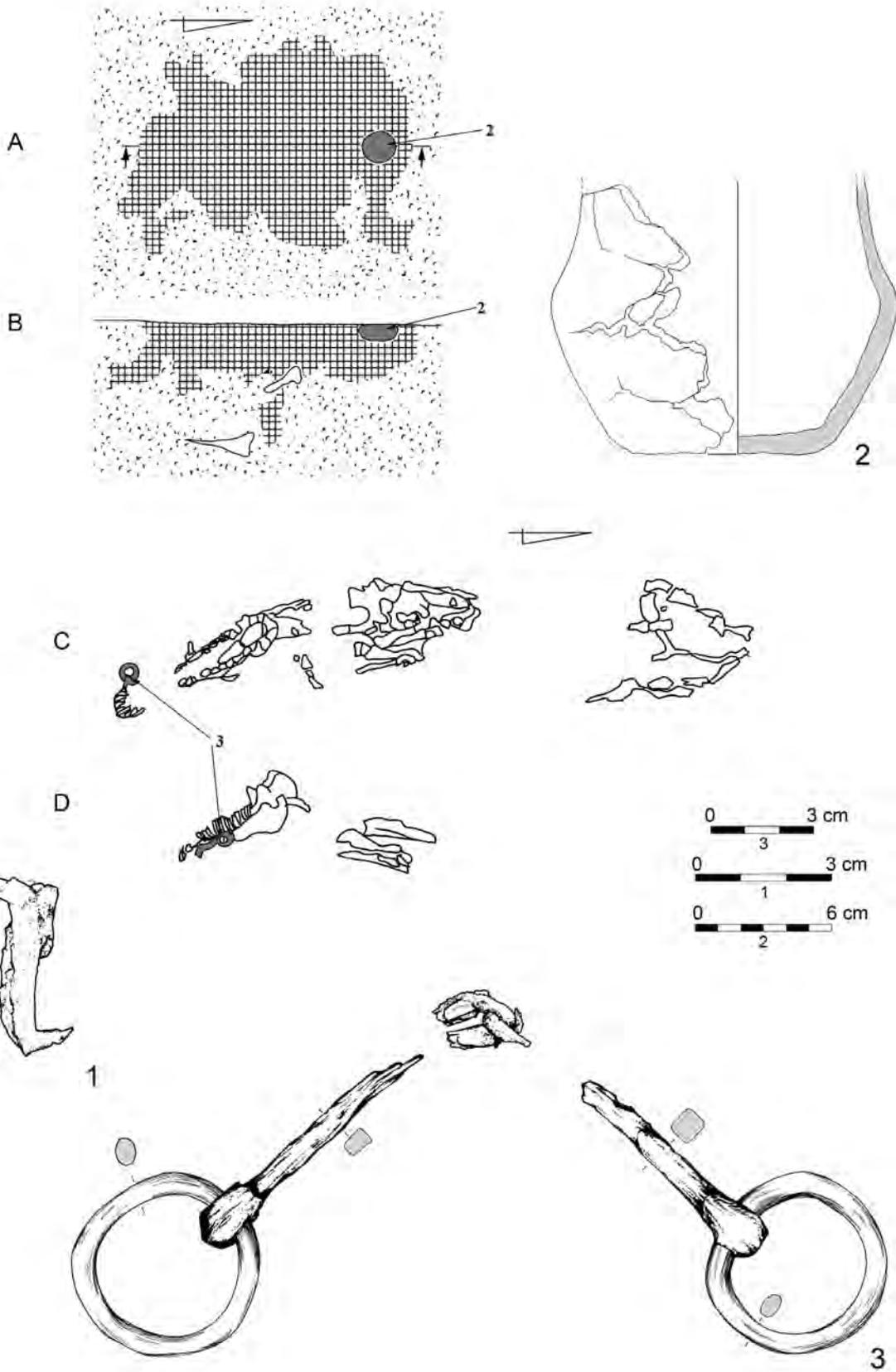


Plate XLIX. Grave 77: A – plan, B – profile, C – situation of the horse skeleton in plan, D – situation of the horse skeleton in profile; 1, 3 – iron, 2 – clay.

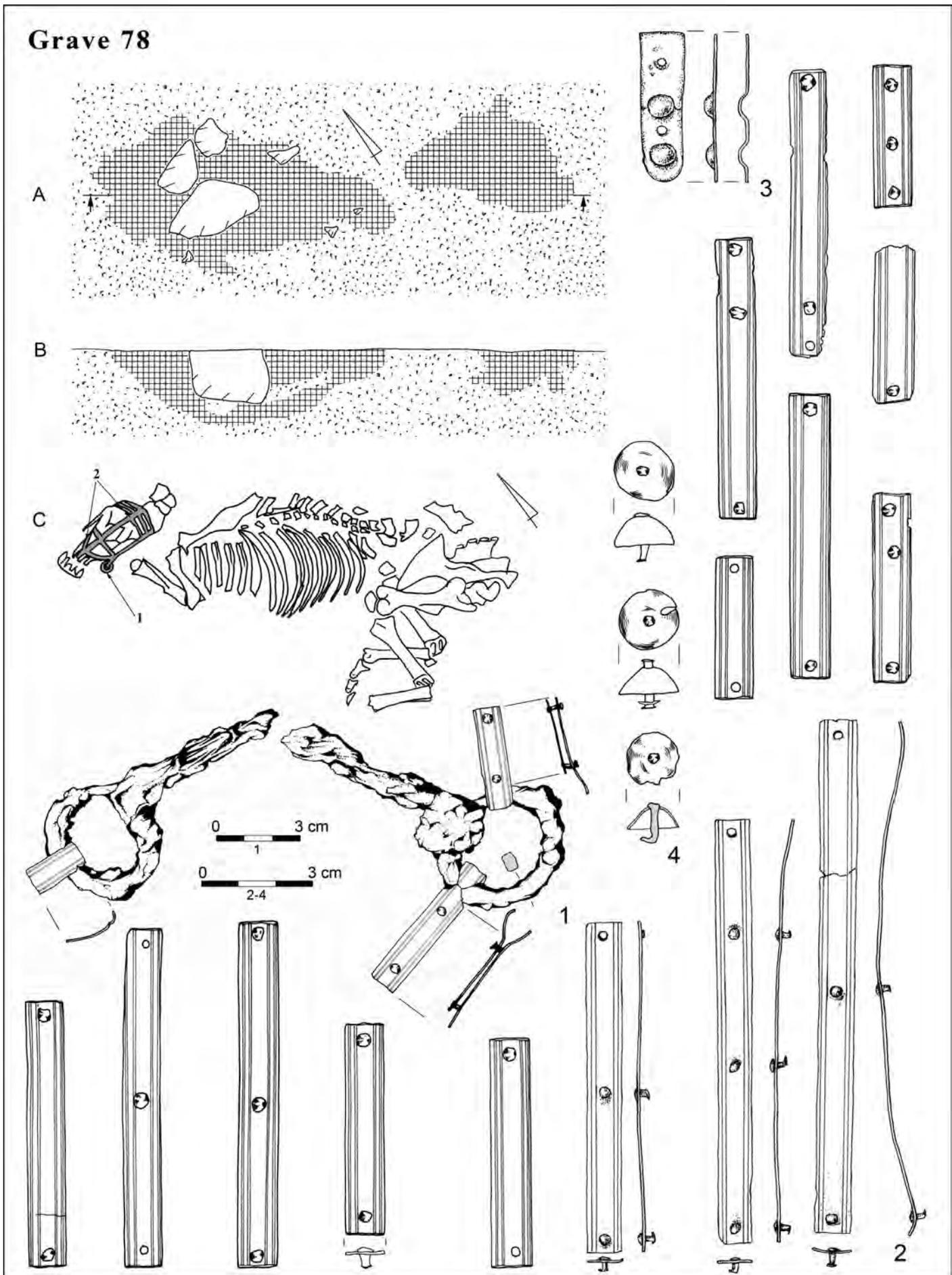


Plate L. Grave 78: A – plan, B – profile, C – situation of the horse skeleton in plan; 1 – iron and bronze, 2-4 – bronze.

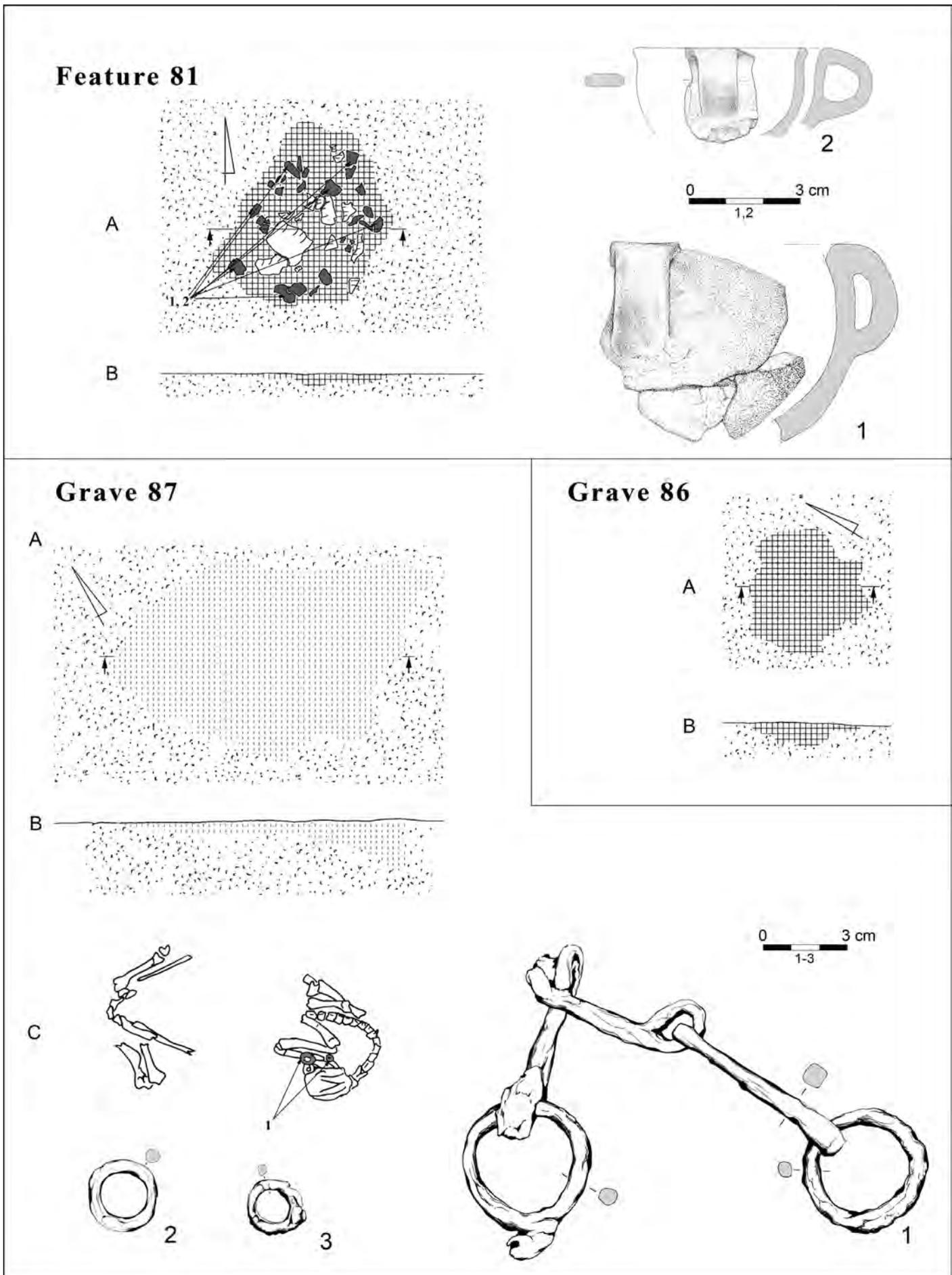


Plate LI. Feature 81: A – plan, B – profile; 1, 2 – clay. Grave 86: A – plan, B – profile. Grave 87: A – plan, B – profile, C – situation of the horse skeleton in plan; 1-3 – iron.

Grave 82

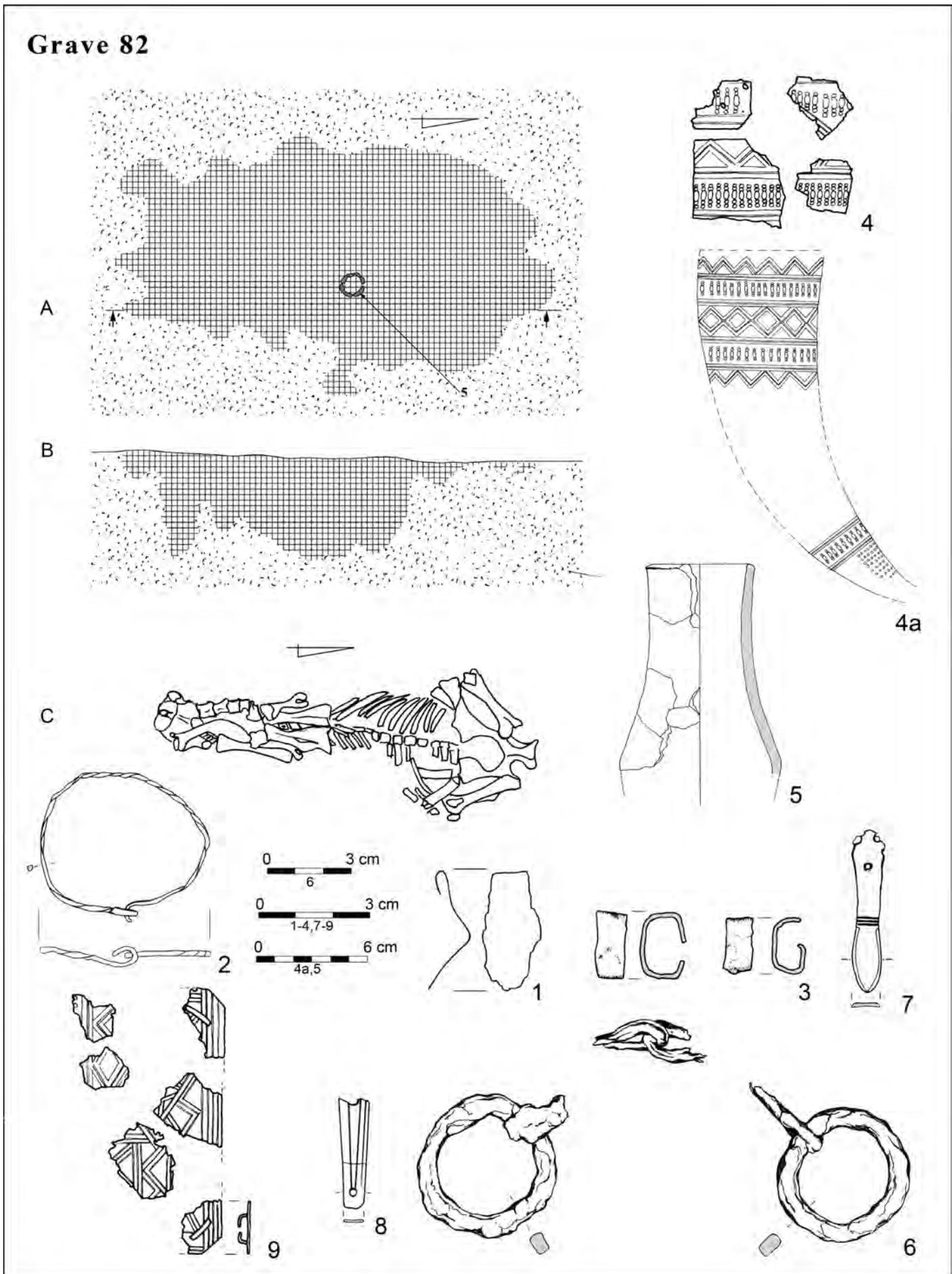


Plate LII. Grave 82: A – plan, B – profile, C – situation of the horse skeleton in plan; 1, 2, 7-9 – bronze, 3, 6 – iron, 4 – silver, 5 – clay.

Grave 83

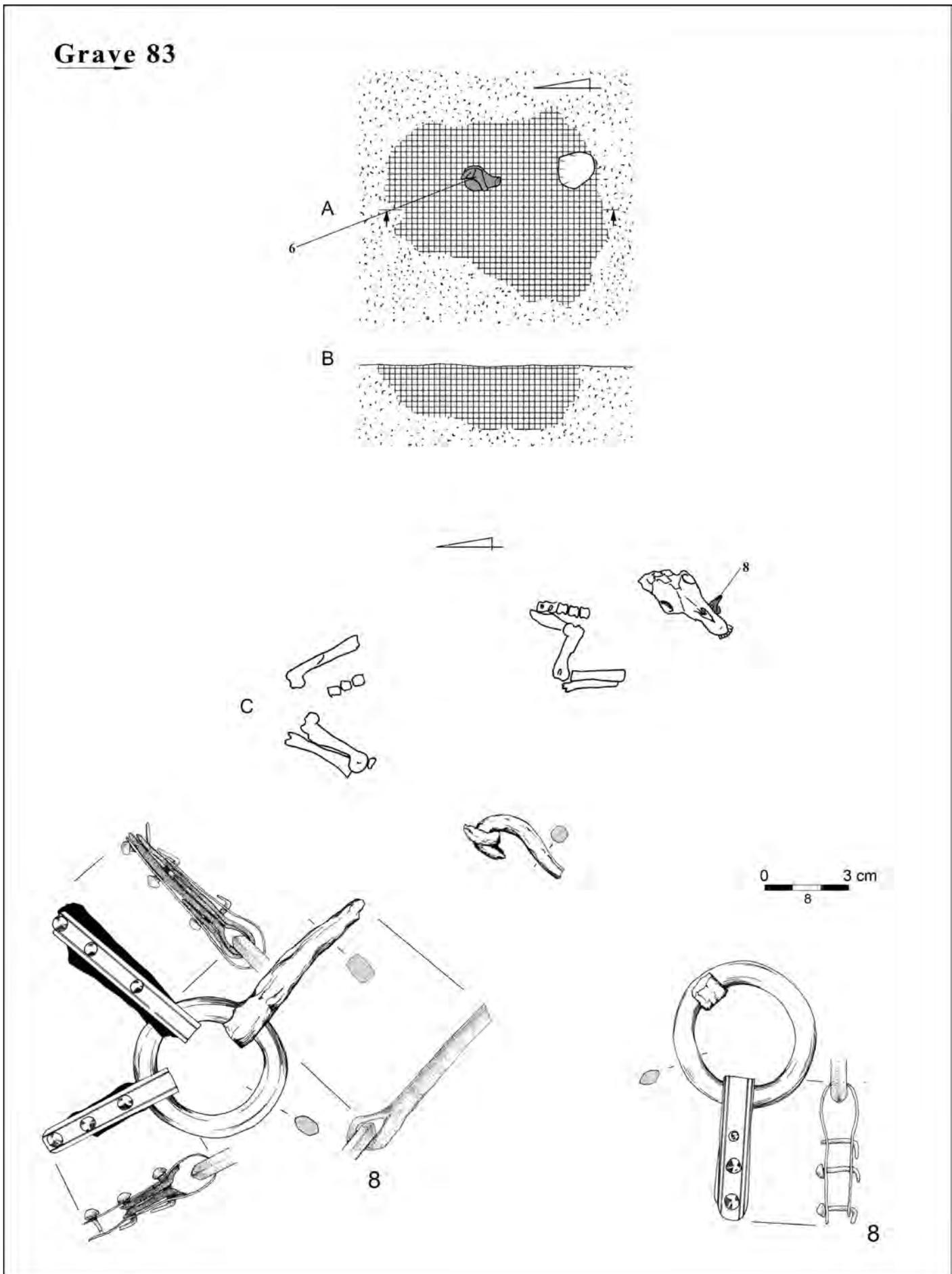
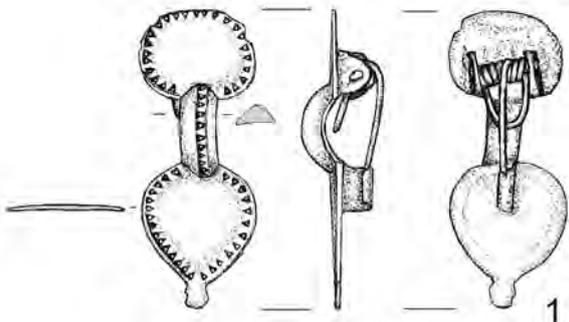


Plate LIII. Grave 83: A – plan, B – profile, C – situation of the horse skeleton in plan; 8 iron and bronze.

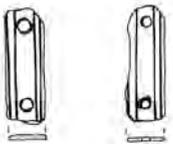
Grave 83



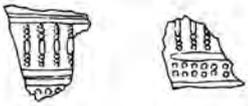
1



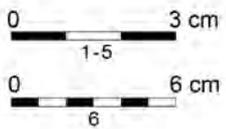
2



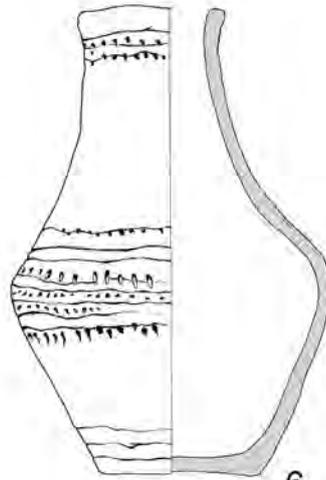
3



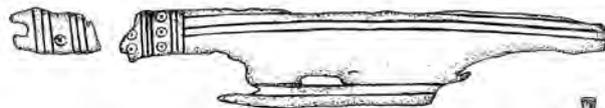
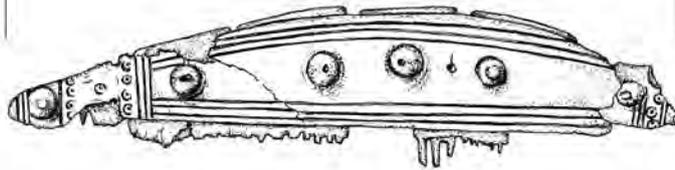
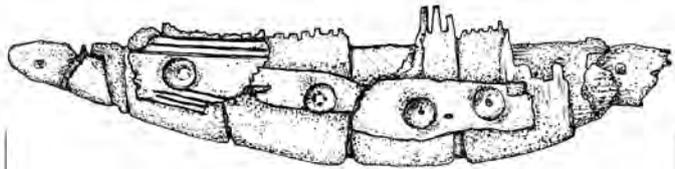
4



6



6



5

Plate LIV. Grave 83: 1-3 – bronze, 4 – silver, 5 – antler and bronze, 6 – clay.

Grave 83

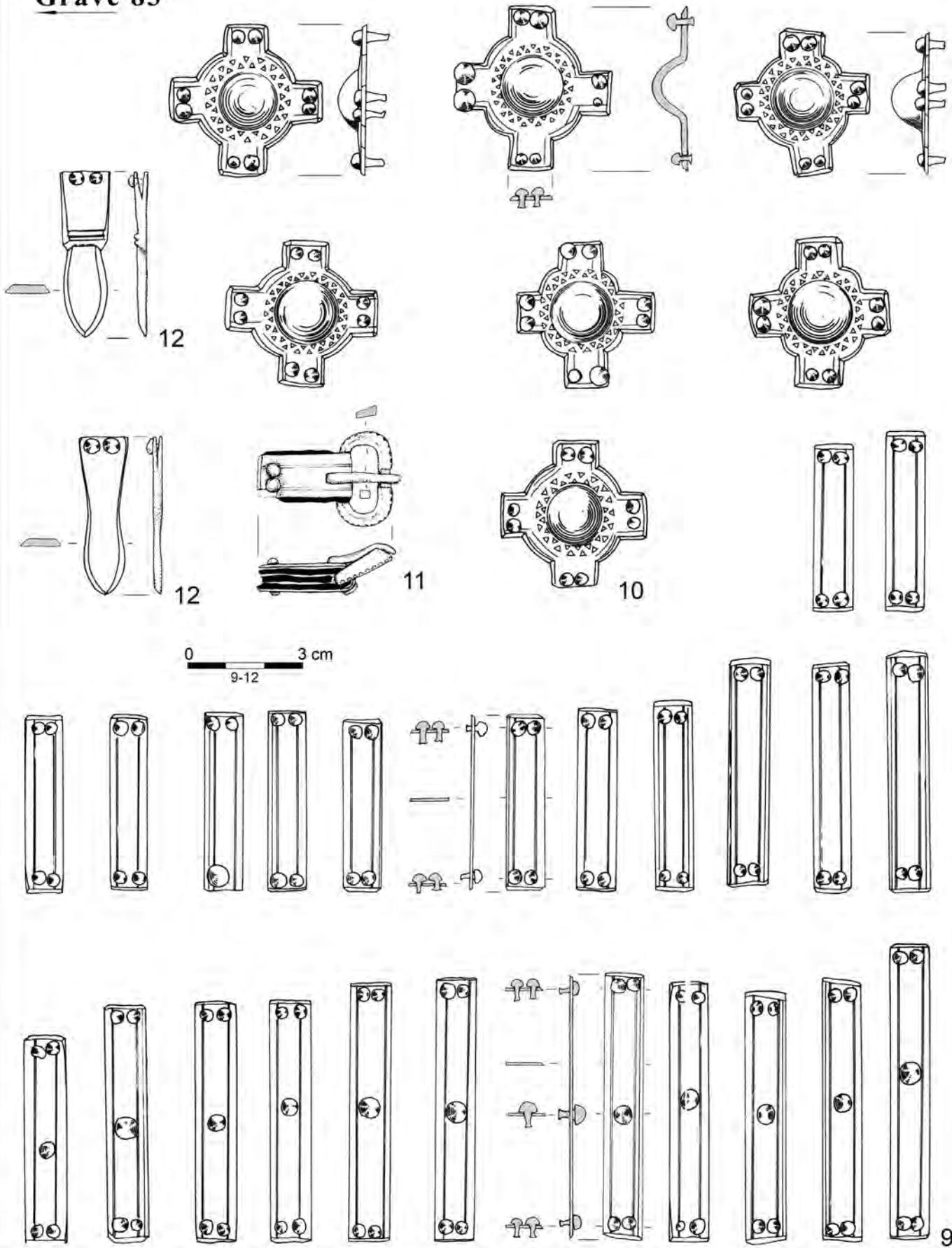


Plate LV. Grave 83: 9, 10, 12 – bronze, 11 – bronze and leather.

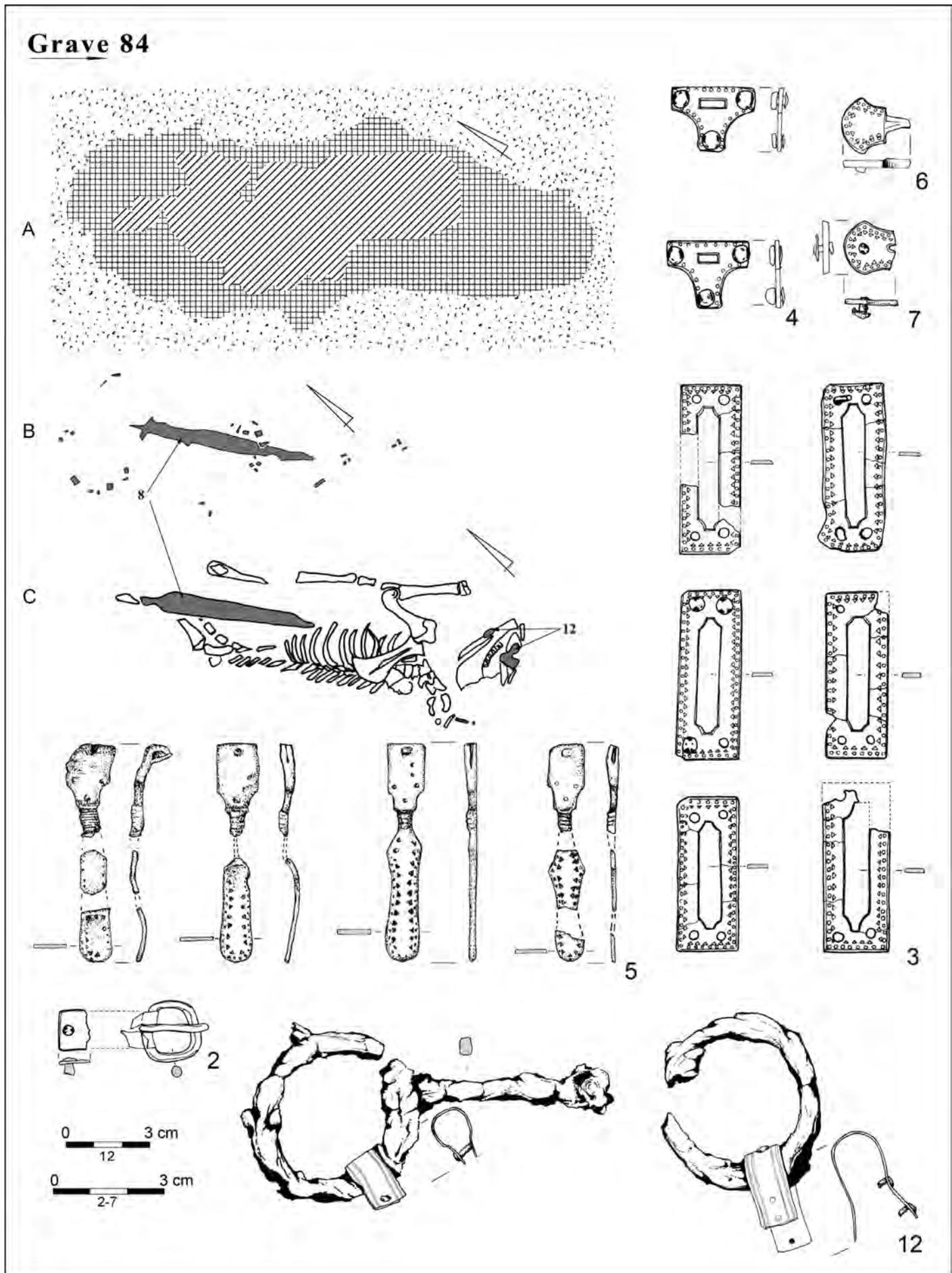


Plate LVI. Grave 84: A – plan, B – situation of the artifacts, C – situation of the artifacts and the horse skeleton in plan; 2-7 – bronze, 12 – iron and bronze.

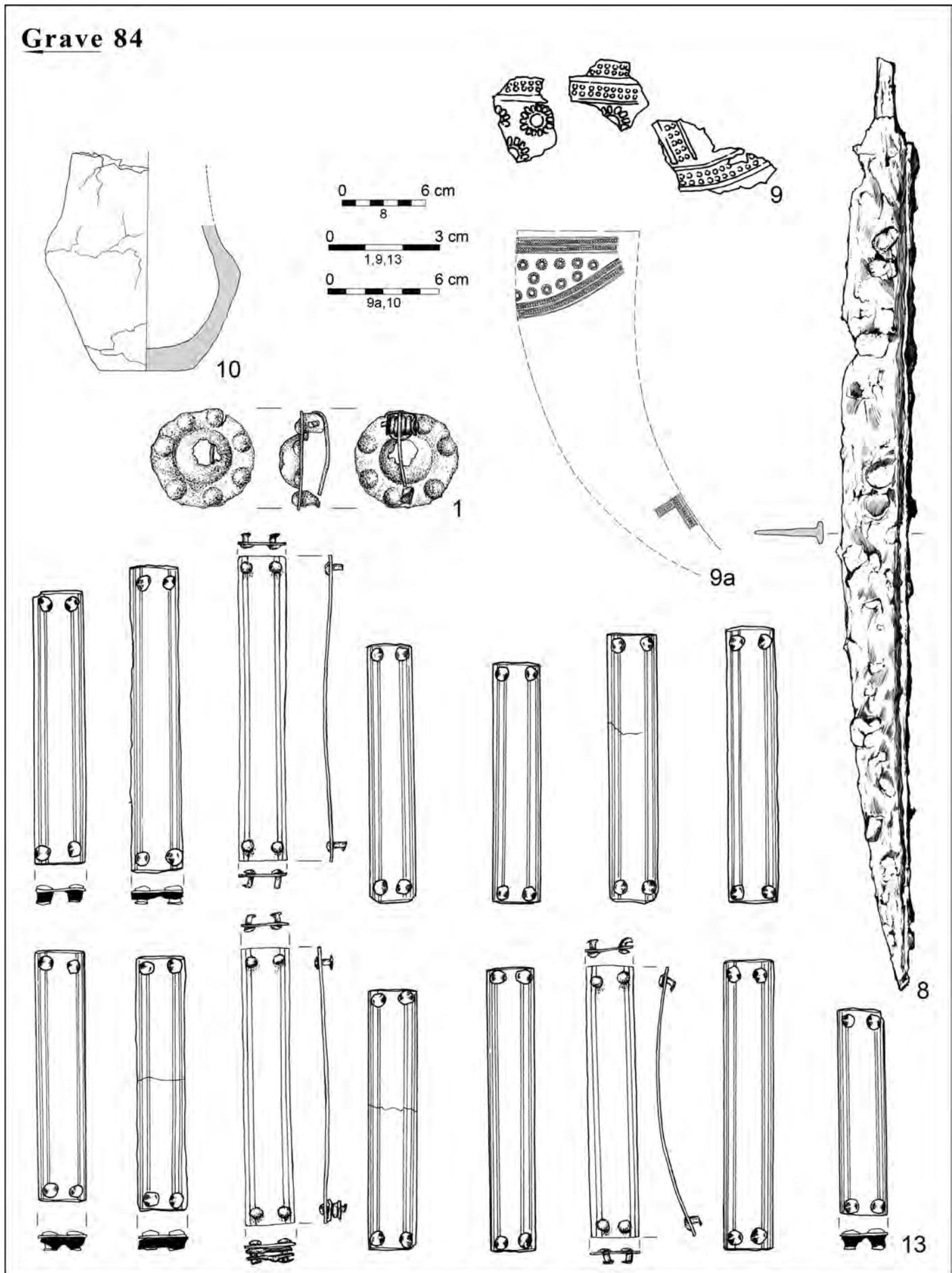


Plate LVII. Grave 84: 1 – bronze, 8 – iron, 9, 9a – silver, 10 – clay, 13 – bronze and leather.

Grave 85

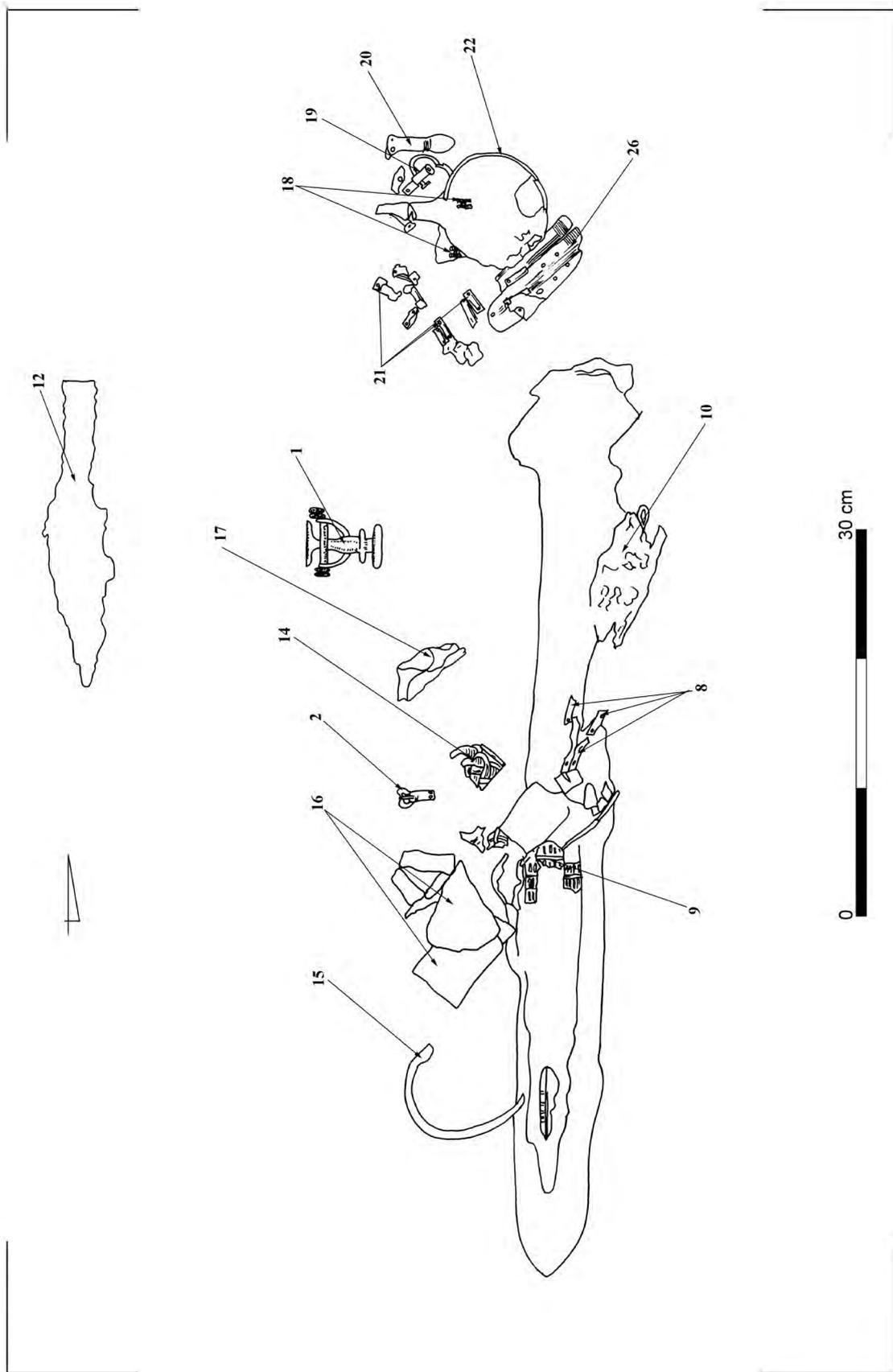


Plate LVIII. Grave 85: situation of the artifacts.

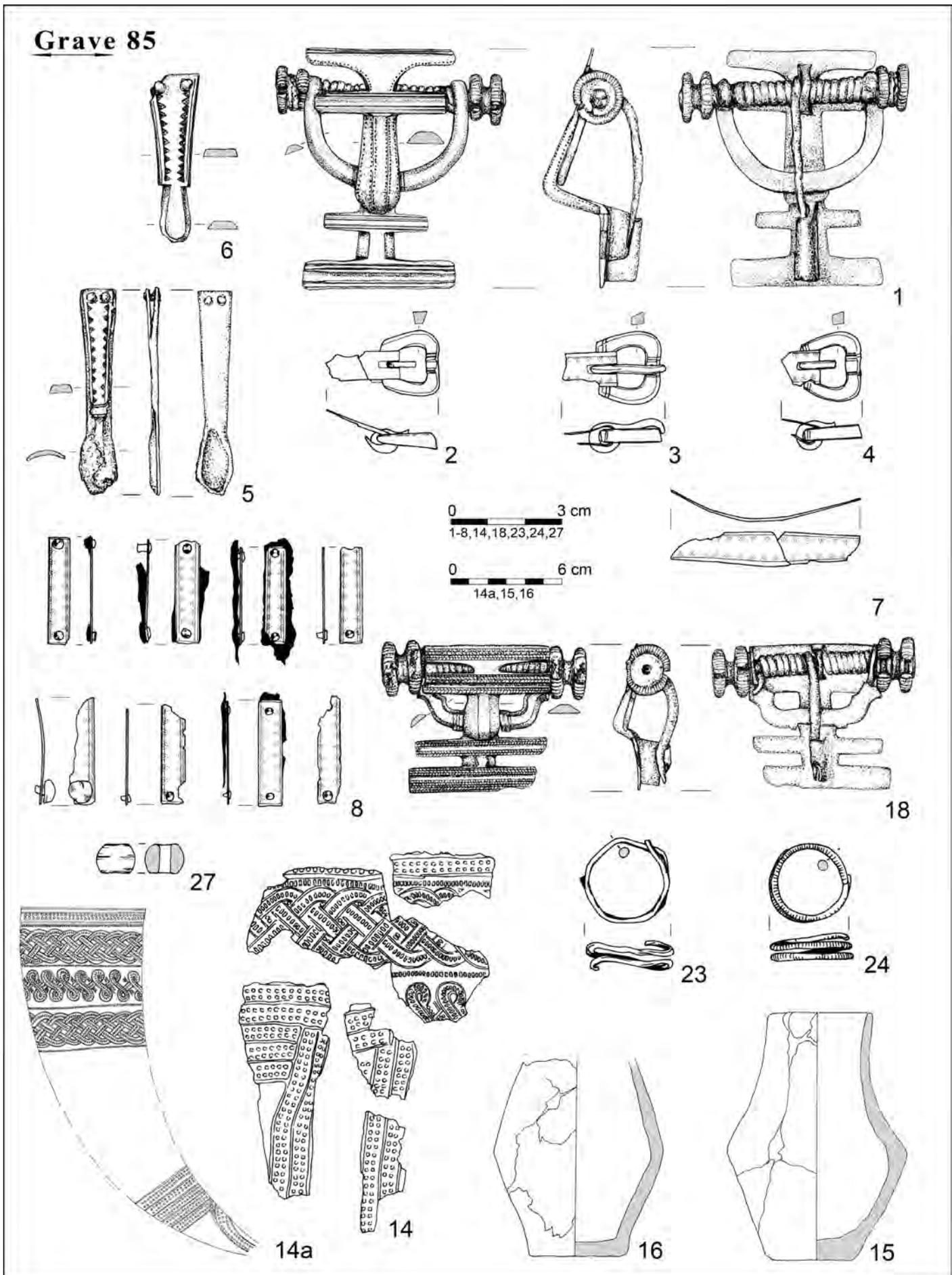


Plate LIX. Grave 85: 1, 18 – bronze and iron, 2-7, 23, 24 – bronze, 8 – bronze and leather, 14, 14a – silver, 15, 16 – clay, 27 – amber.

Grave 85

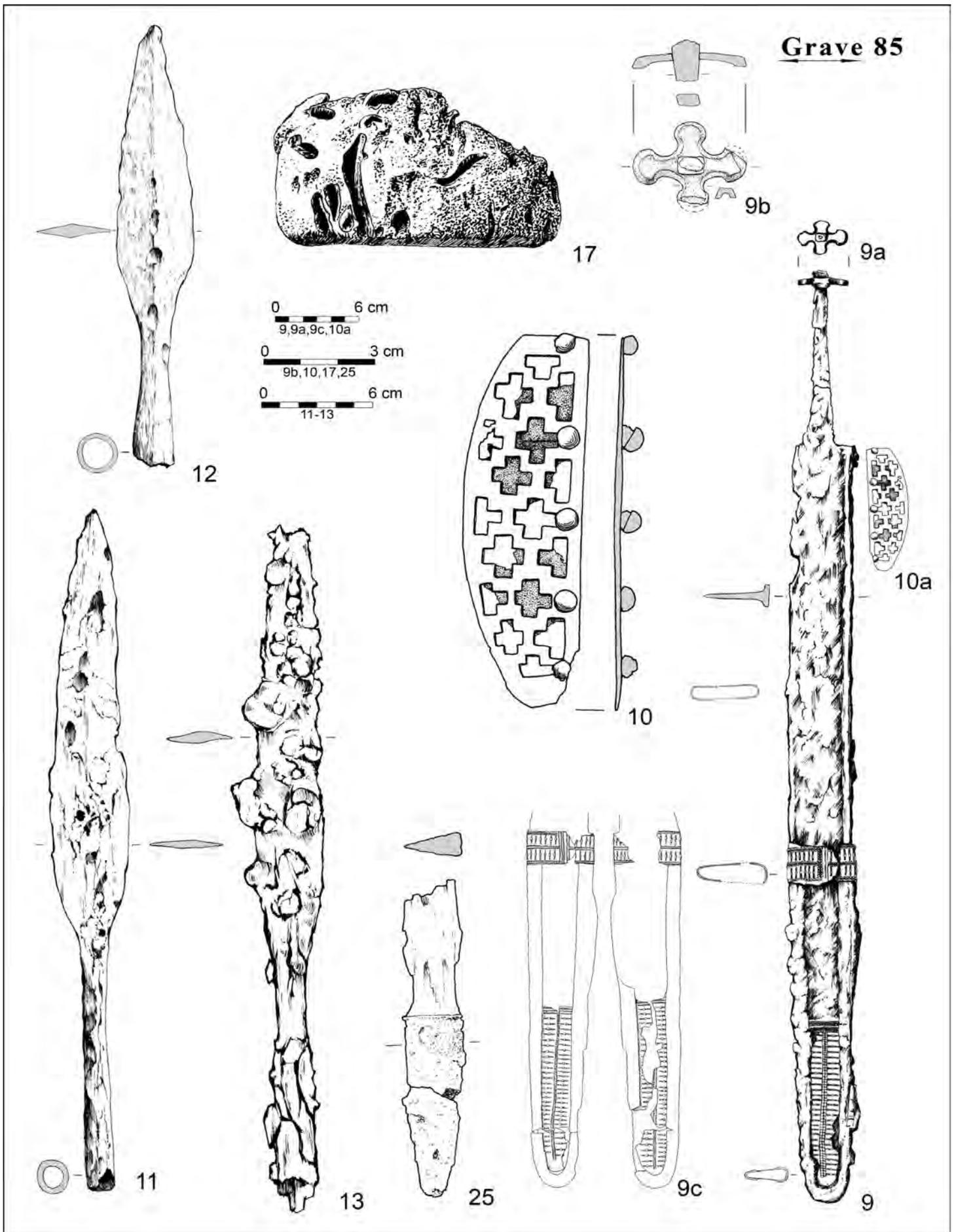
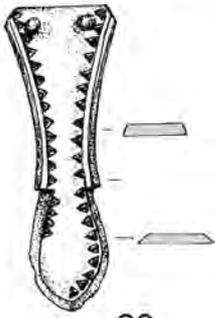
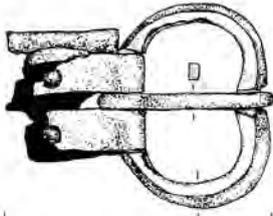


Plate LX. Grave 85: 9, 9a, 9b, 9c – iron and bronze, 10, 10a – bronze, 11-13 – iron, 17 – amber, 25 – iron, wood and leather.

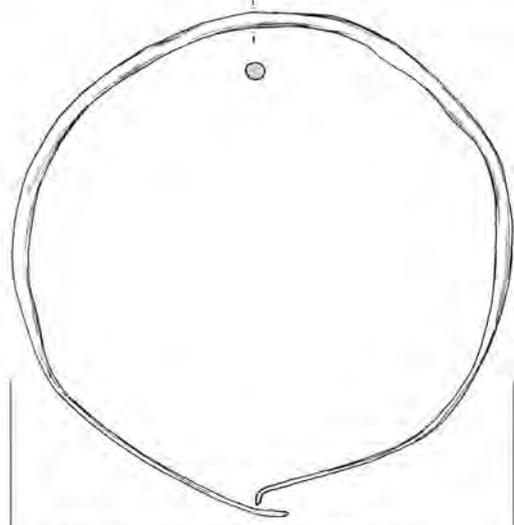
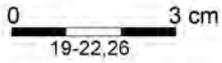
Grave 85



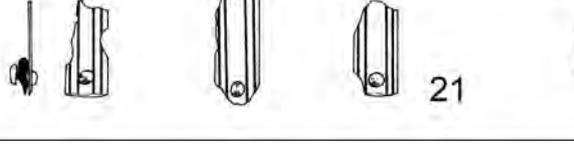
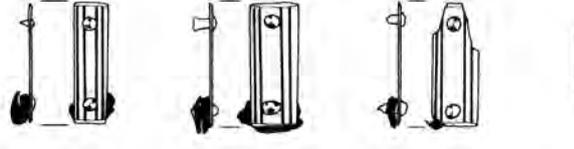
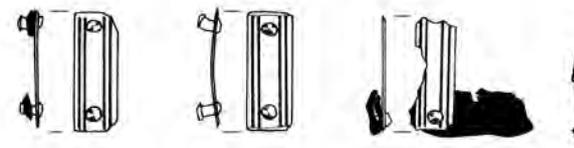
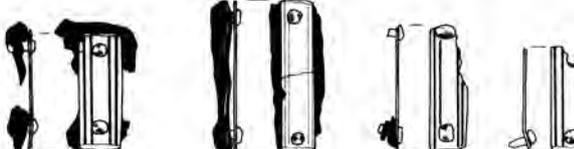
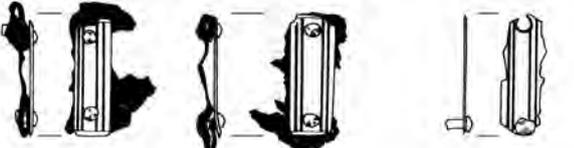
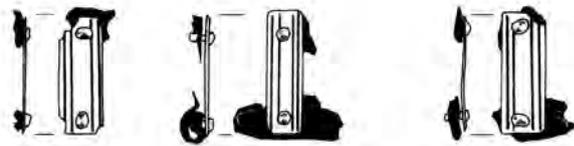
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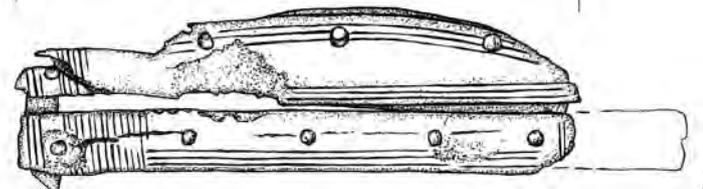
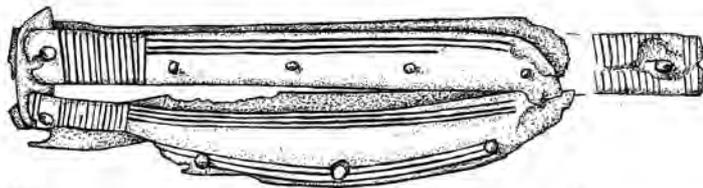
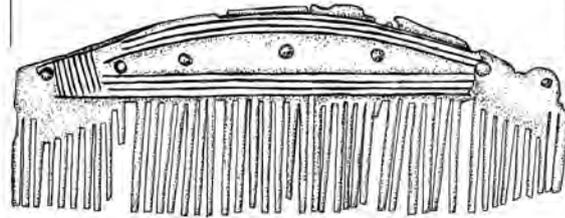
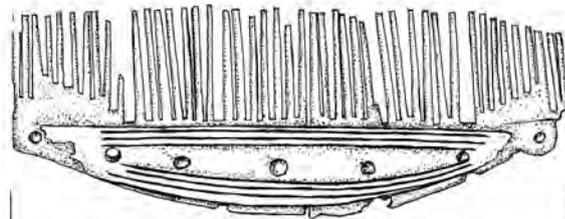
19



22



21



26

Plate LXI. Grave 85: 19, 21 – bronze and leather, 20, 22 – bronze, 26 – antler and bronze.

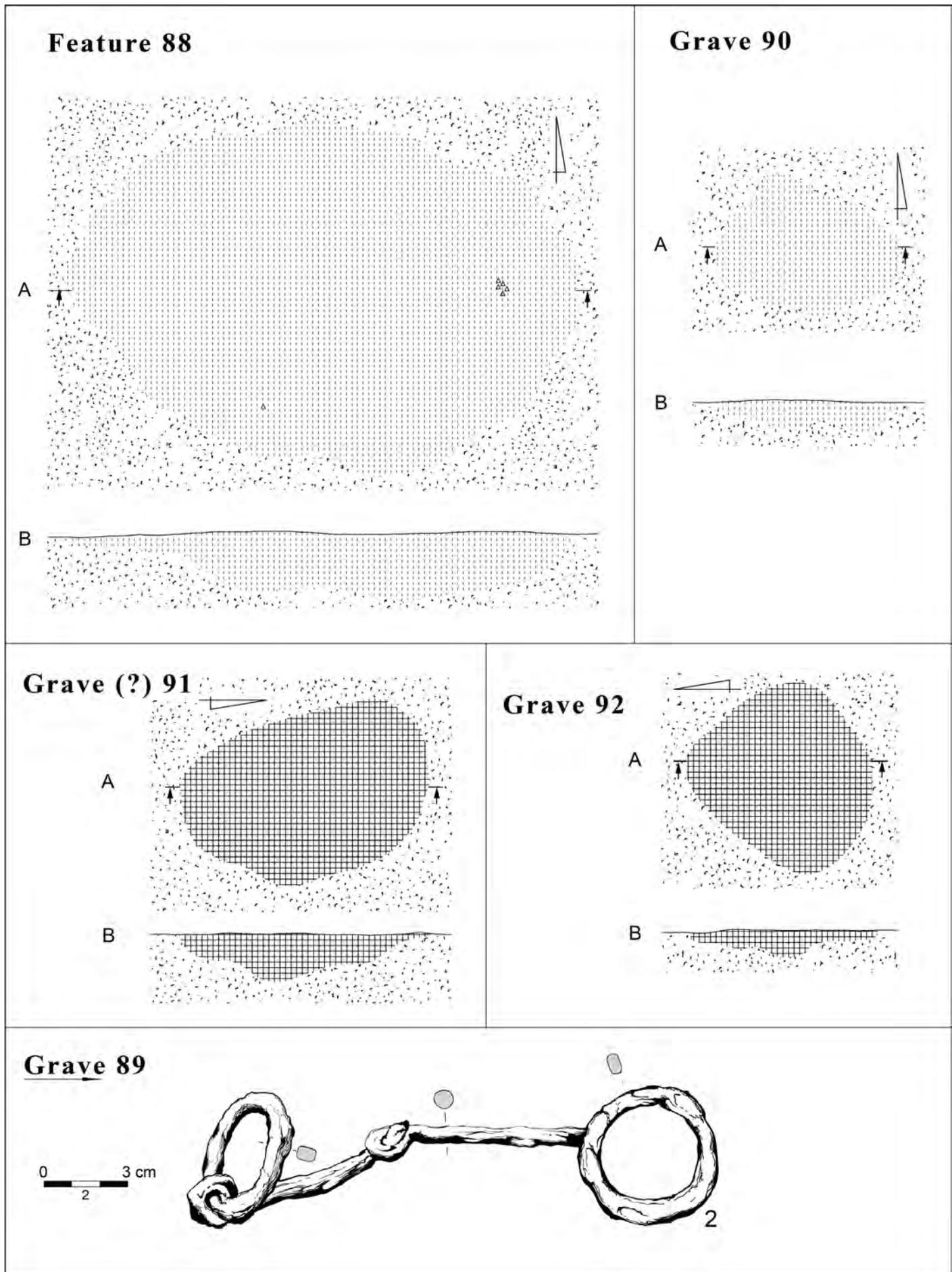


Plate LXII. Feature 88: A – plan, B – profile. Grave 89: 2 – iron. Grave 90: A – plan, B – profile. Grave (?) 91: A – plan, B – profile. Grave 92: A – plan, B – profile.

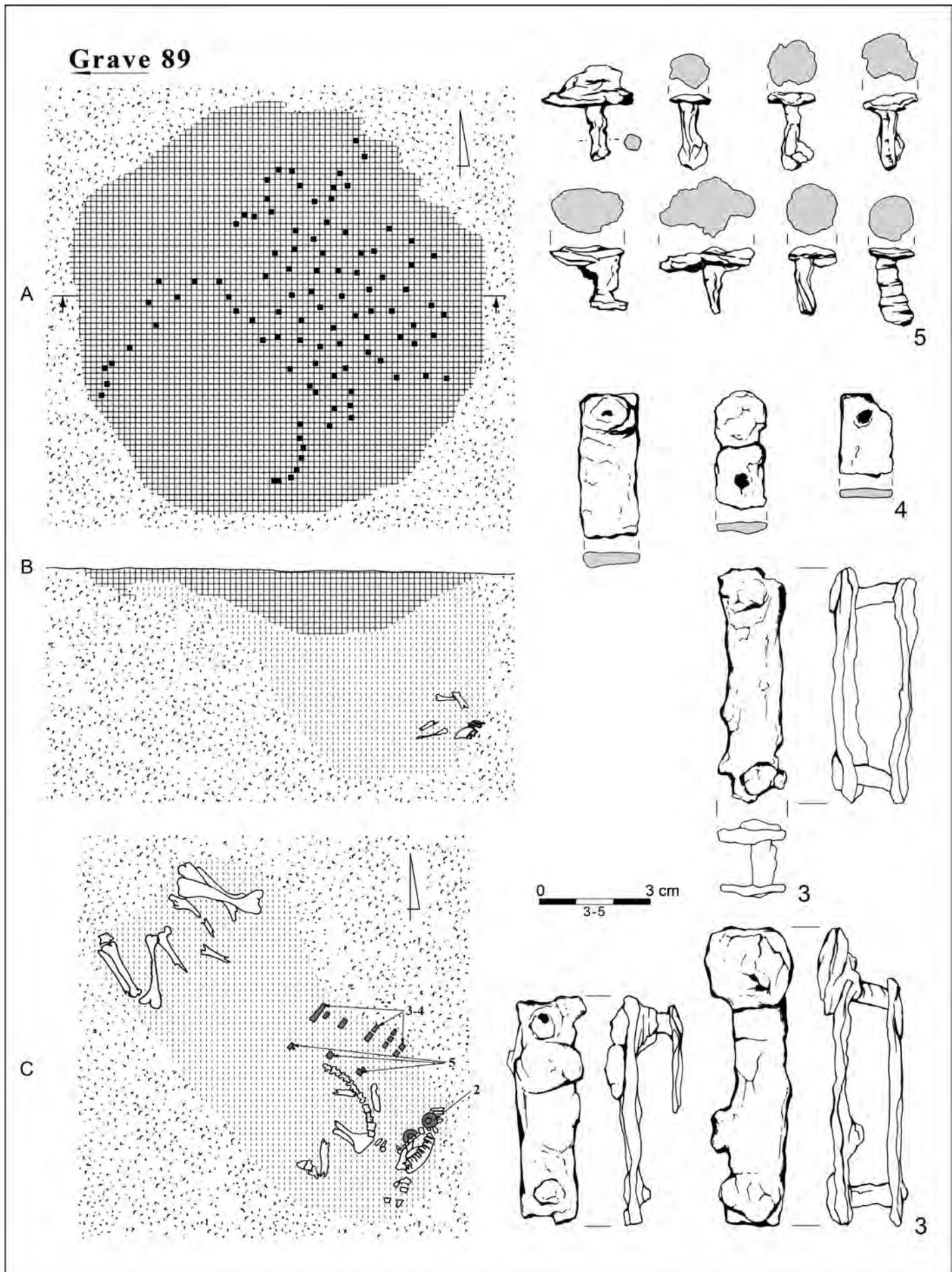
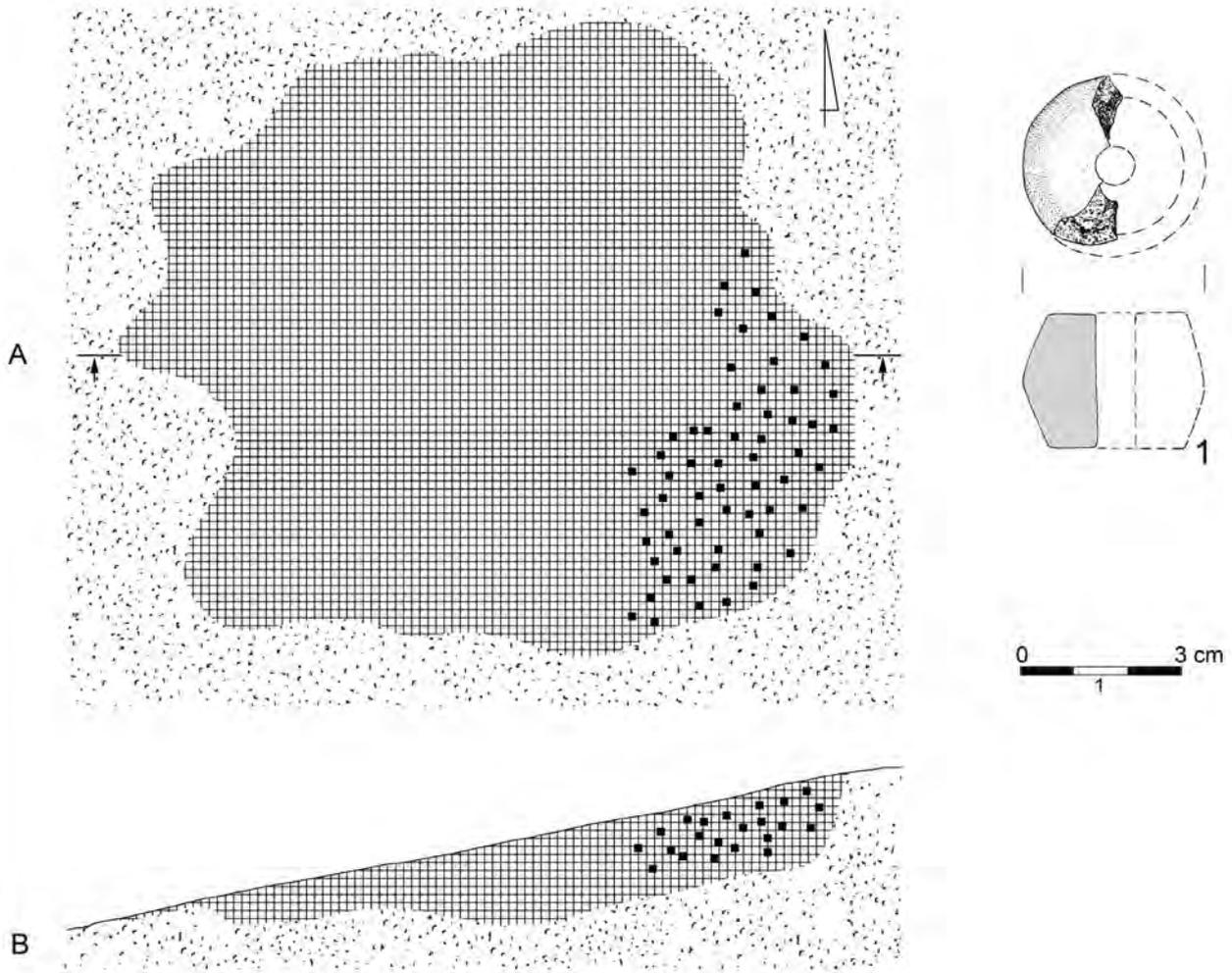
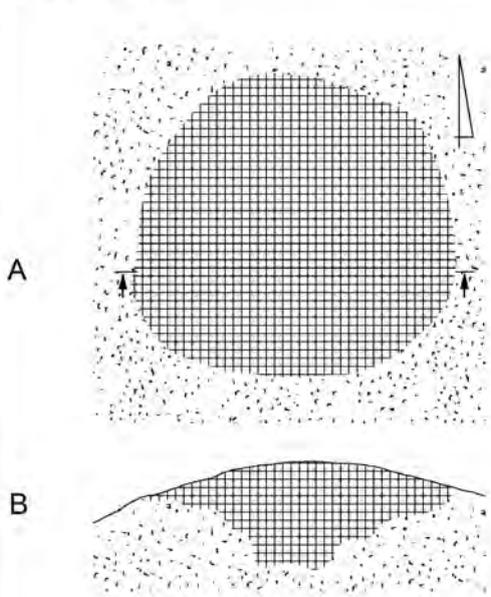


Plate LXIII. Grave 89: A – plan, B – profile, C – plan at the level of the horse skeleton; 2-4 – iron.

Grave 93



Grave 95



Grave 97

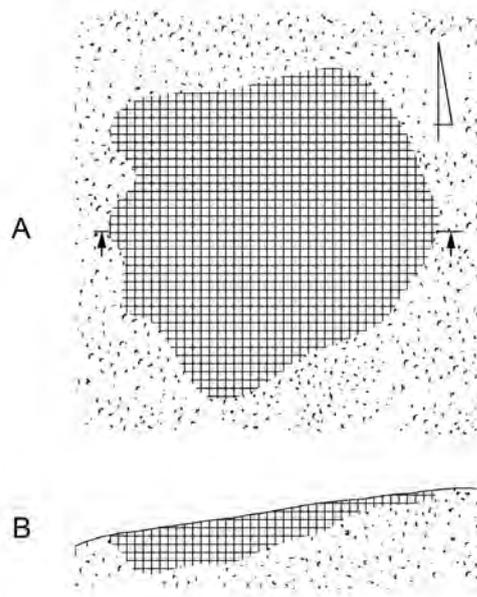
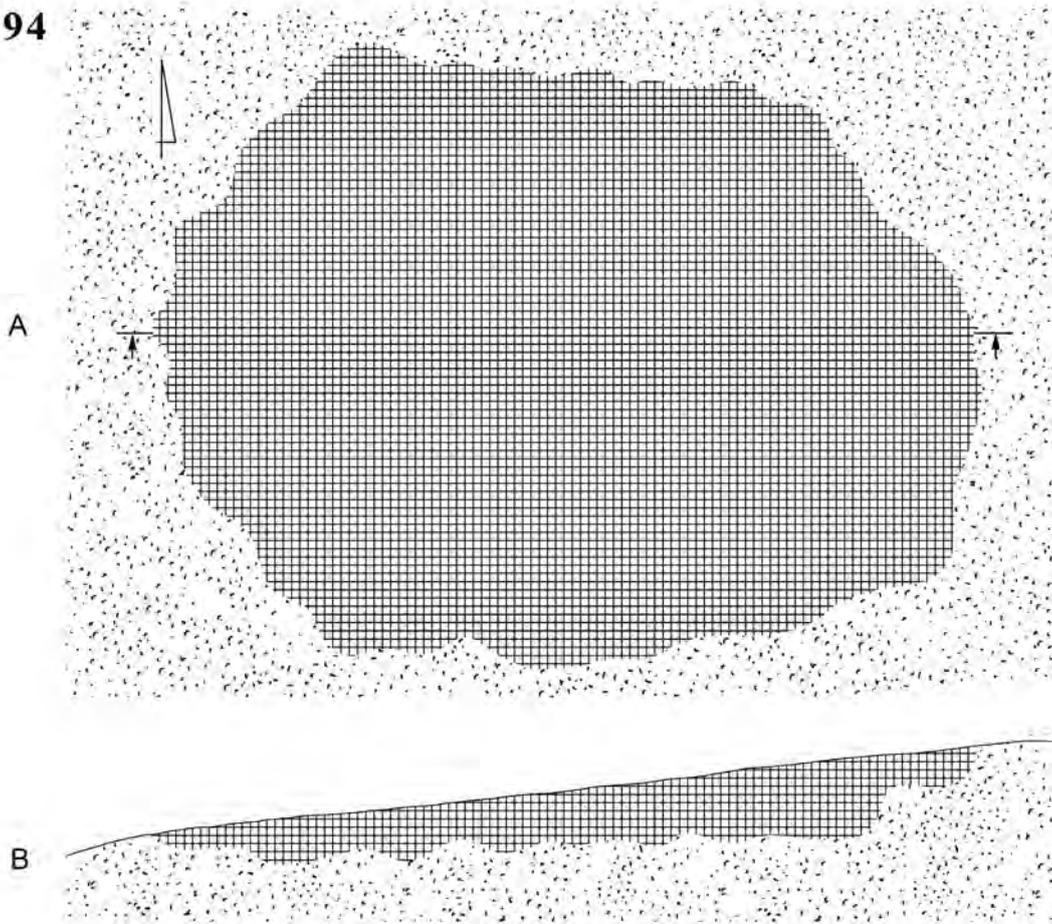


Plate LXIV. Grave 93: A – plan, B – profile, 1 – clay. Grave 95: A – plan, B – profile. Grave 97: A – plan, B – profile.

Grave 94



Grave 98

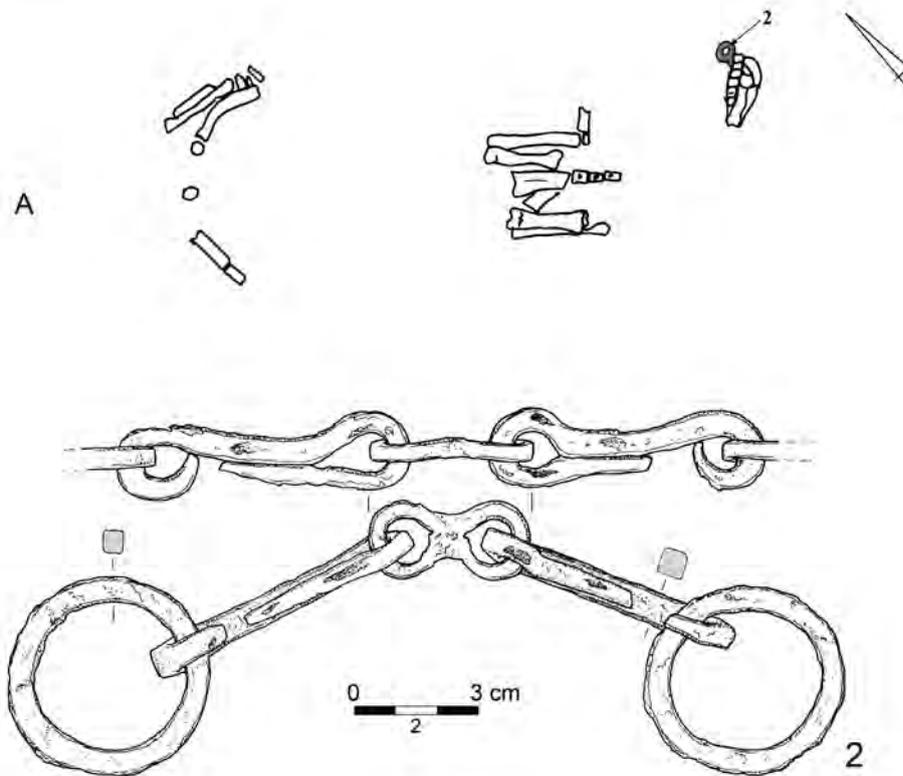


Plate LXV. Grave 94: A – plan, B – profile. Grave 98: A – situation of the horse skeleton in plan; 2 – iron.

Grave 99

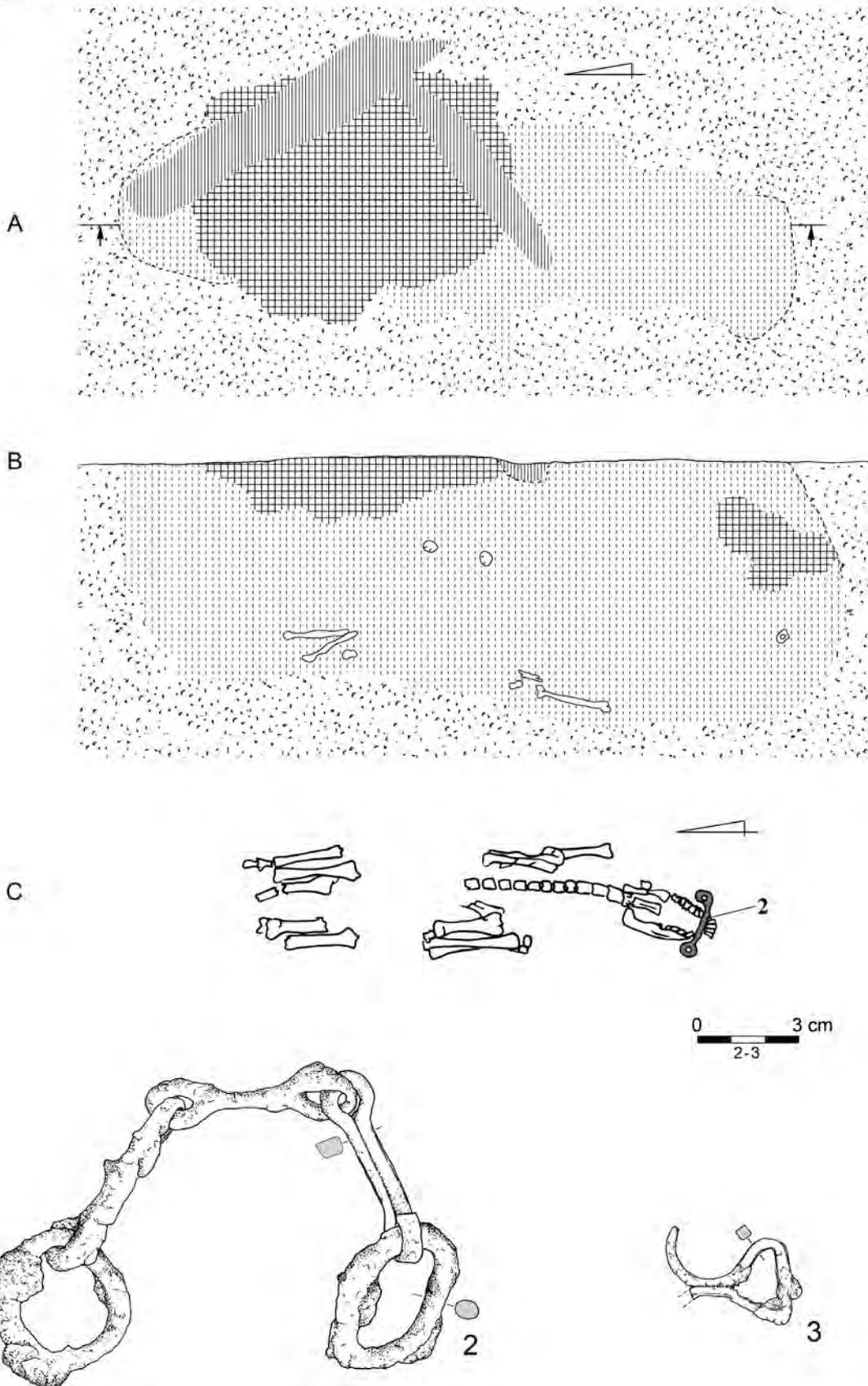
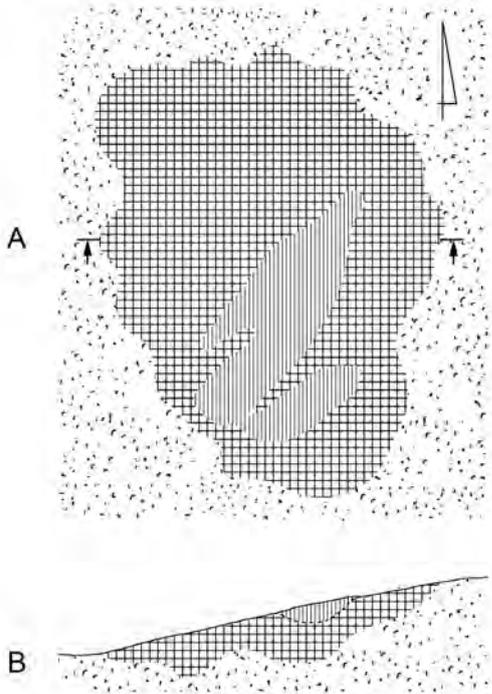
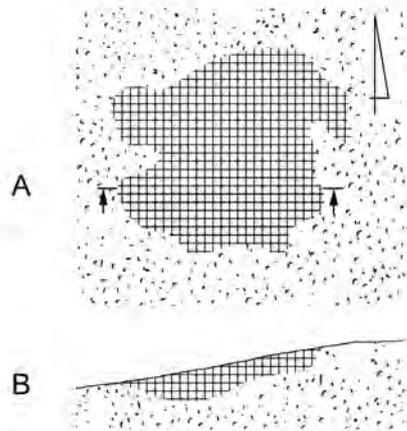


Plate LXVI. Grave 99: A – plan, B – profile, C – situation of the horse skeleton in plan; 2, 3 – iron.

Grave 100



Grave 101



Grave 105

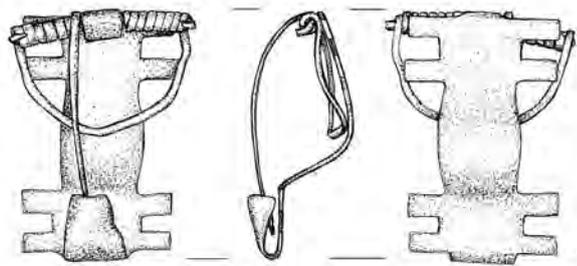
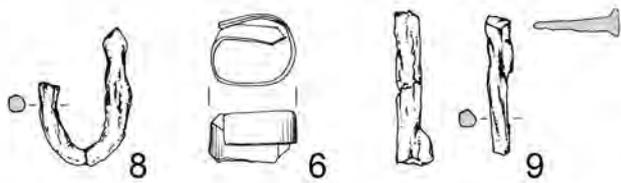
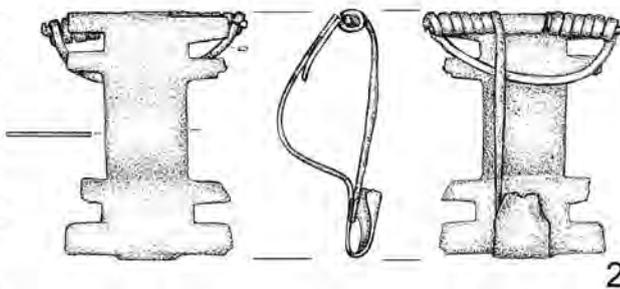
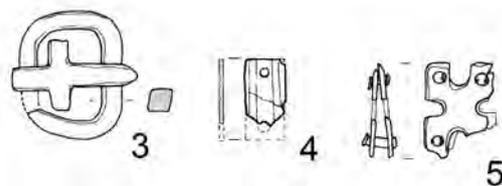
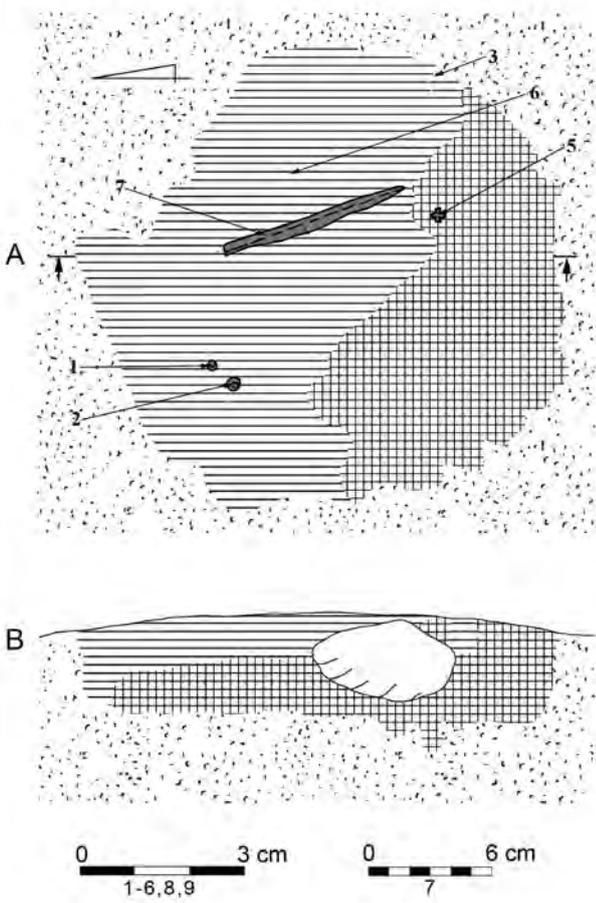


Plate LXVII. Grave 100: A – plan, B – profile. Grave 101: A – plan, B – profile. Grave 105: A – plan, B – profile; 1-6 – bronze, 7-9 – iron.

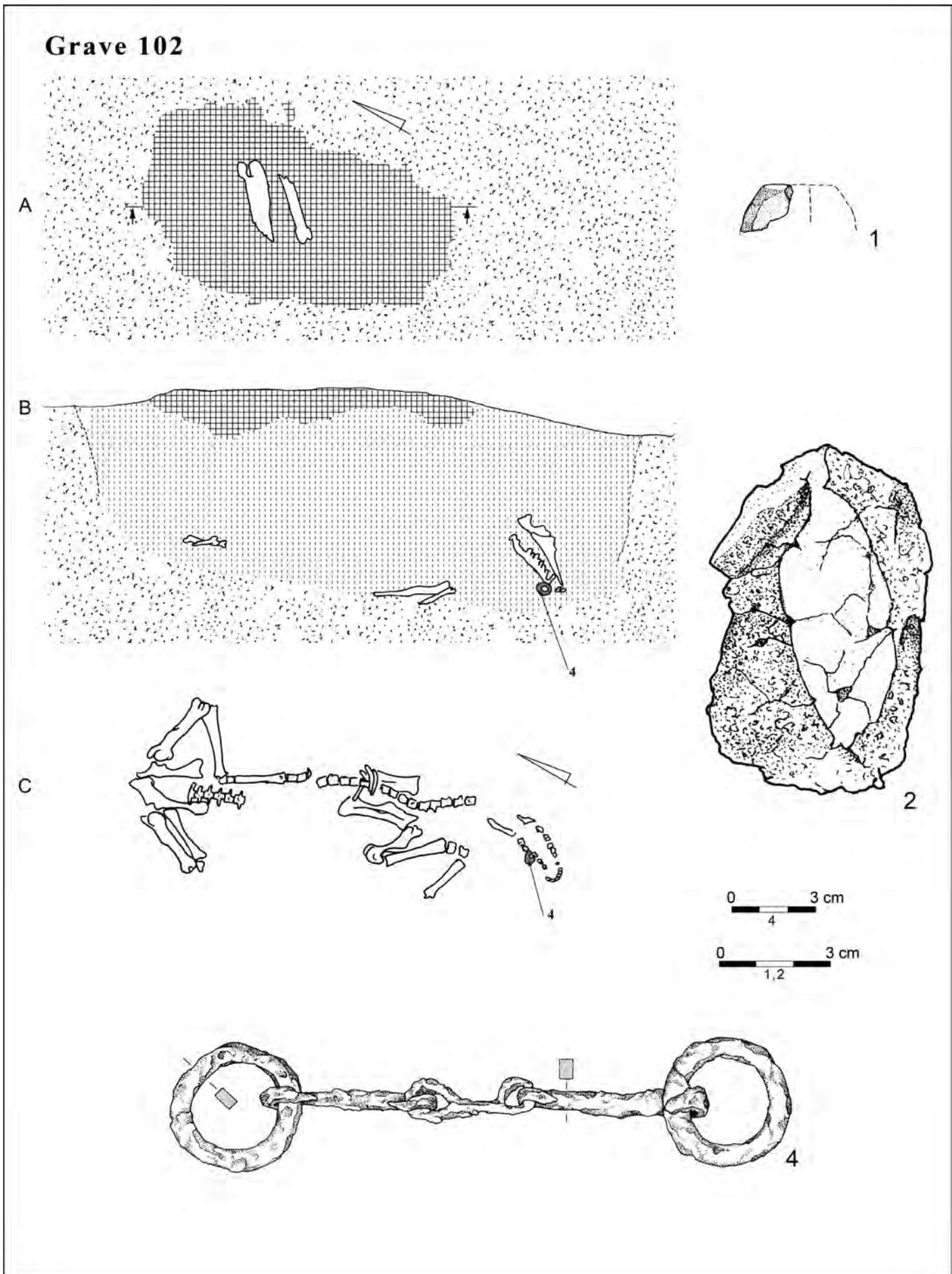


Plate LXVIII. Grave 102: A – plan, B – profile, C – situation of the horse skeleton in plan; 1 – amber, 2 – stone, 3 – iron.

Grave 103

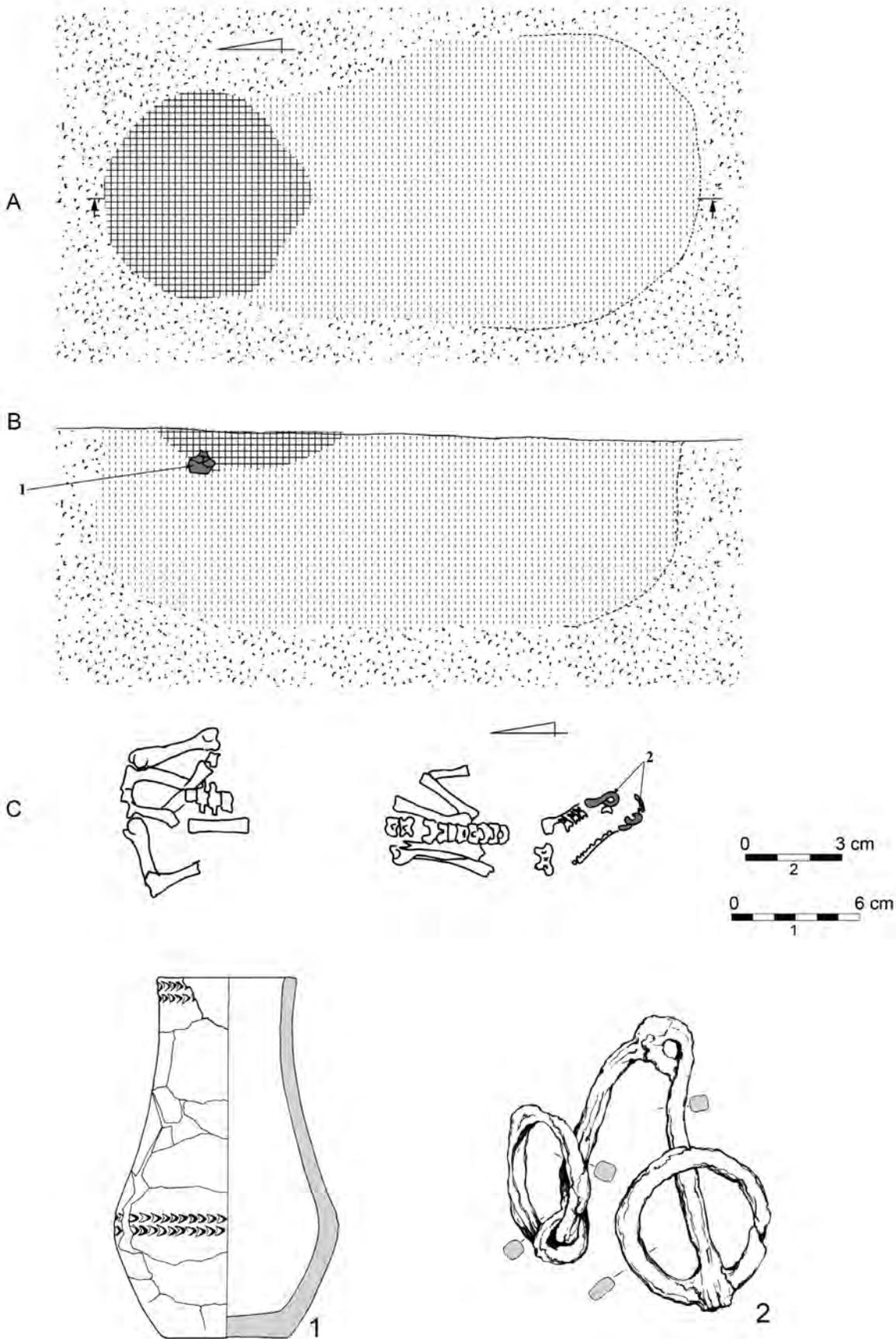


Plate LXIX. Grave 103: A – plan, B – profile, C – situation of the horse skeleton in plan; 1 – clay, 2 – iron.

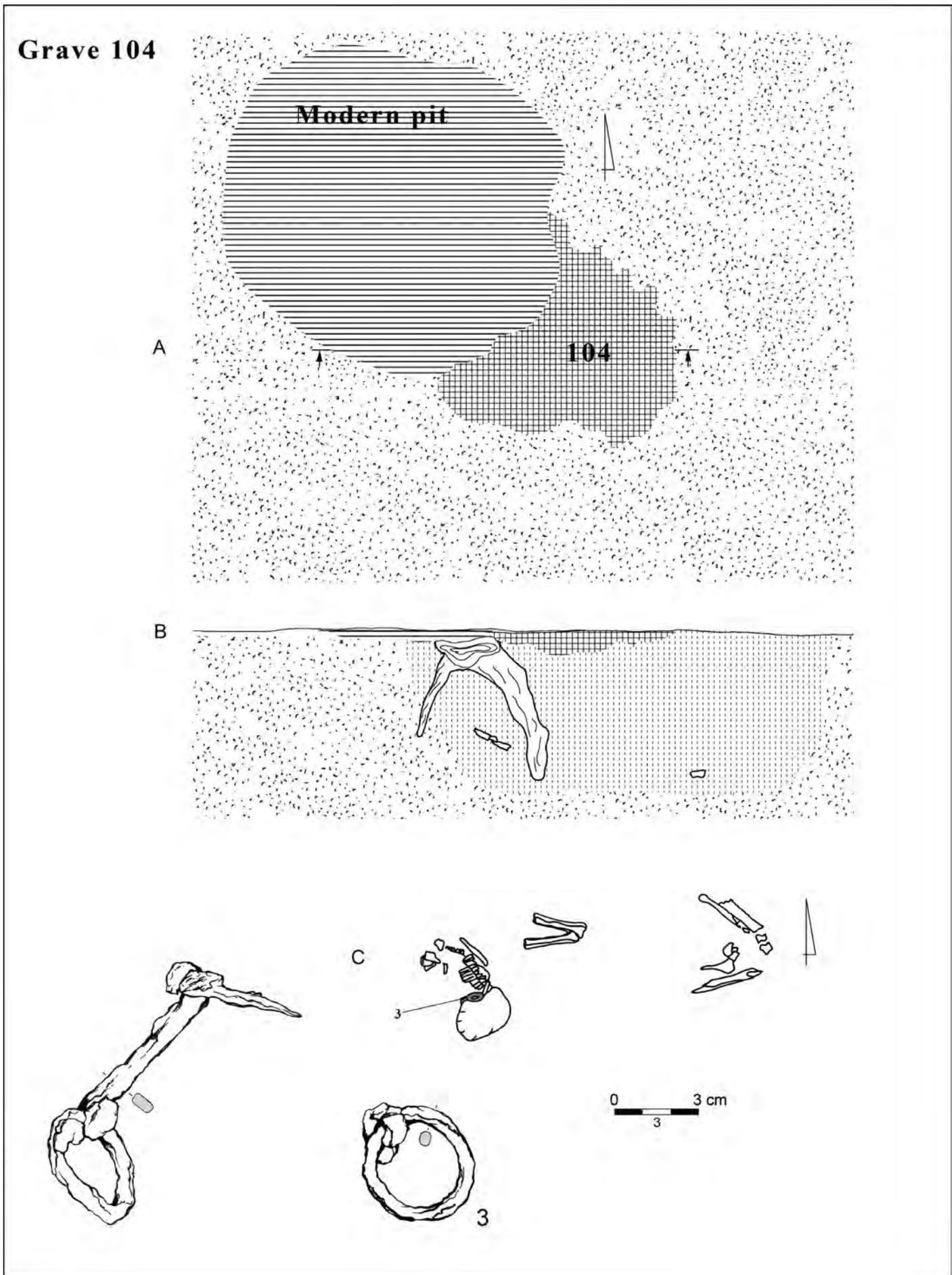


Plate LXX. Grave 104: A – plan, B – profile, C – situation of the horse skeleton in plan; 3 – iron.

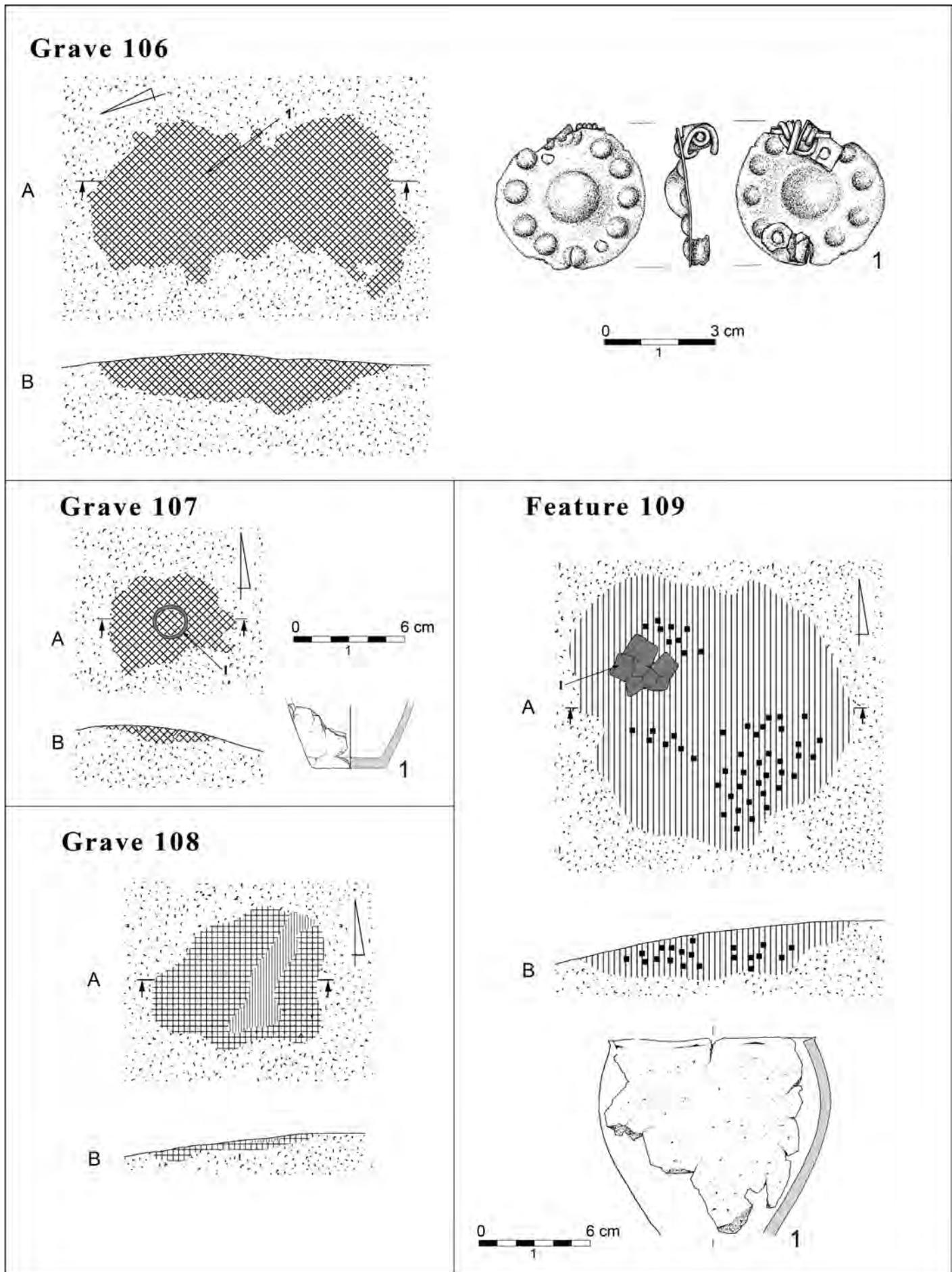


Plate LXXI. Grave 106: A – plan, B – profile; 1 – bronze. Grave 107: A – plan, B – profile; 1 – clay. Grave 108: A – plan, B – profile. Feature 109: A – plan, B – profile; 1 – clay.

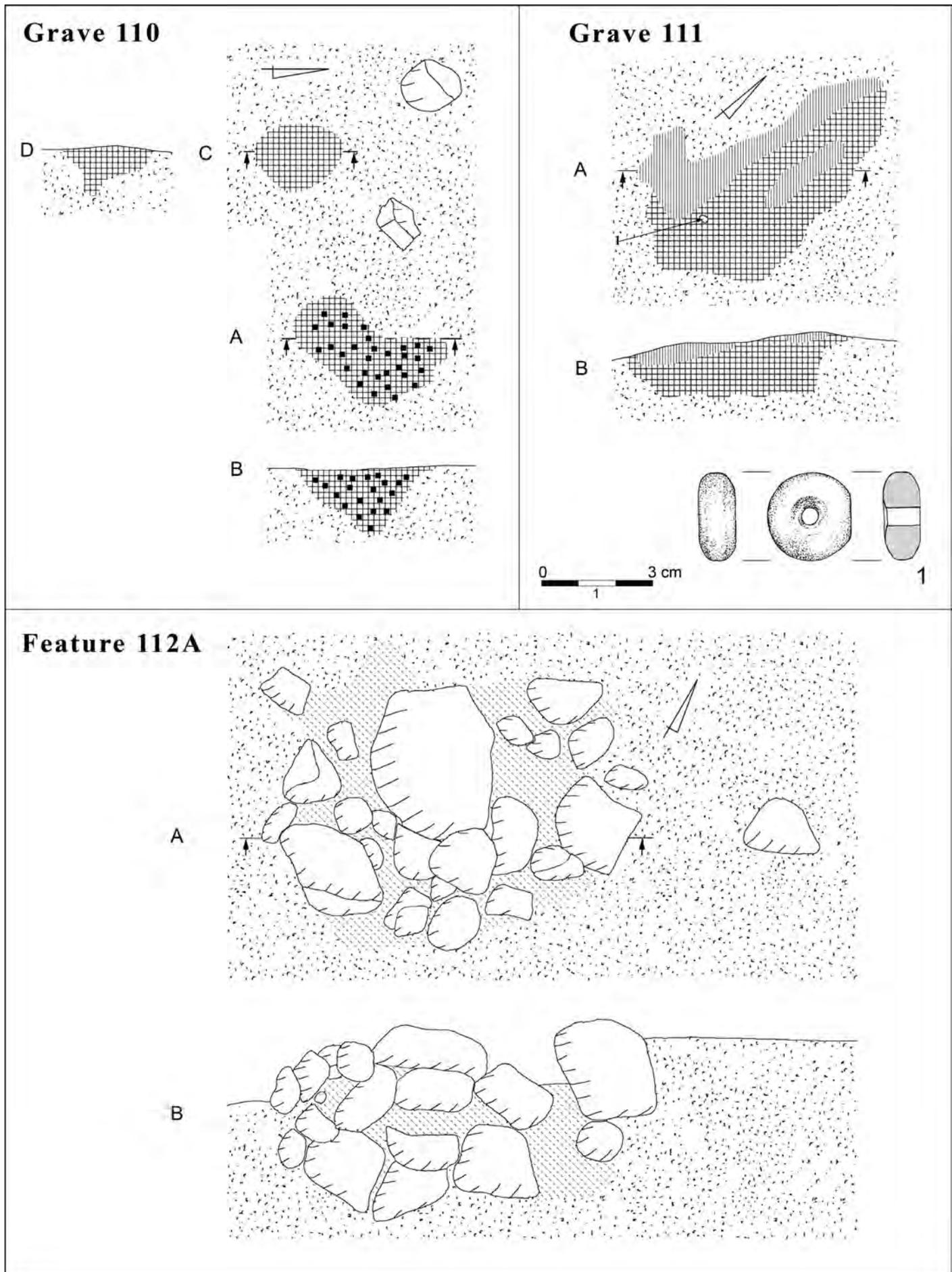


Plate LXXII. Grave 110: A – plan, B – profile. Grave 111: A – plan, B – profile; 1 – amber. Feature 112A: A – plan, B – profile, C – profile of the darkening to the west.

Grave 112

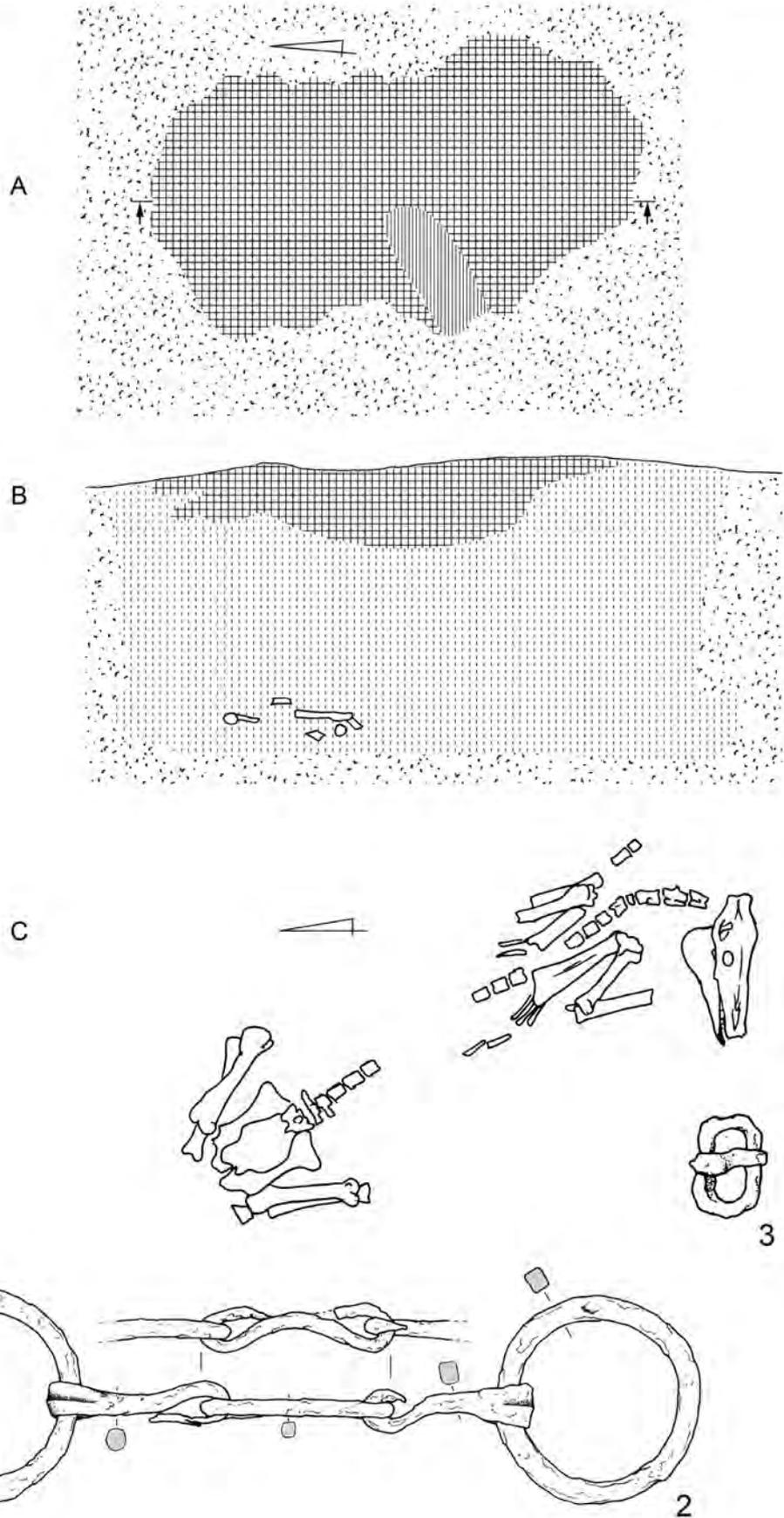


Plate LXXIII. Grave 112: A – plan, B – profile, C – situation of the horse skeleton in plan; 1 – clay, 2, 3 – iron.

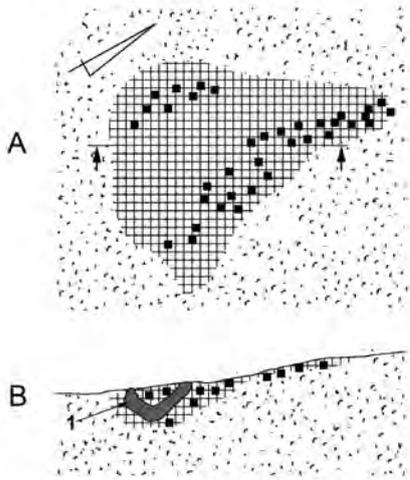
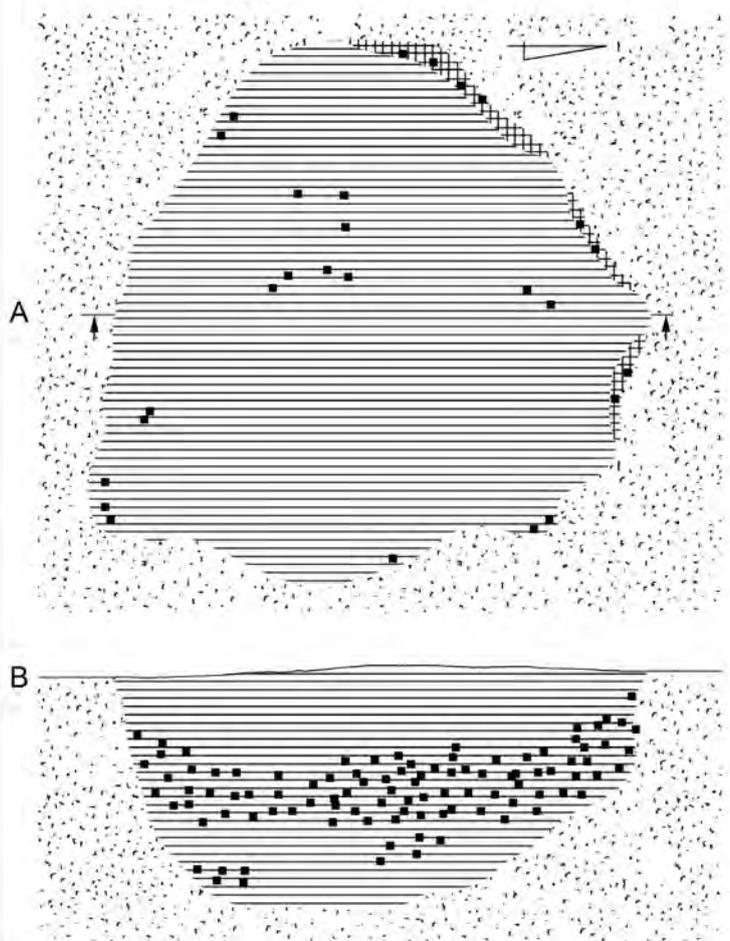
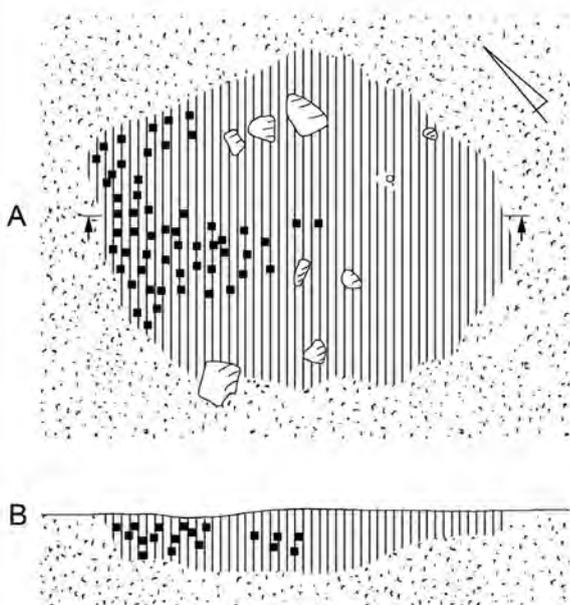
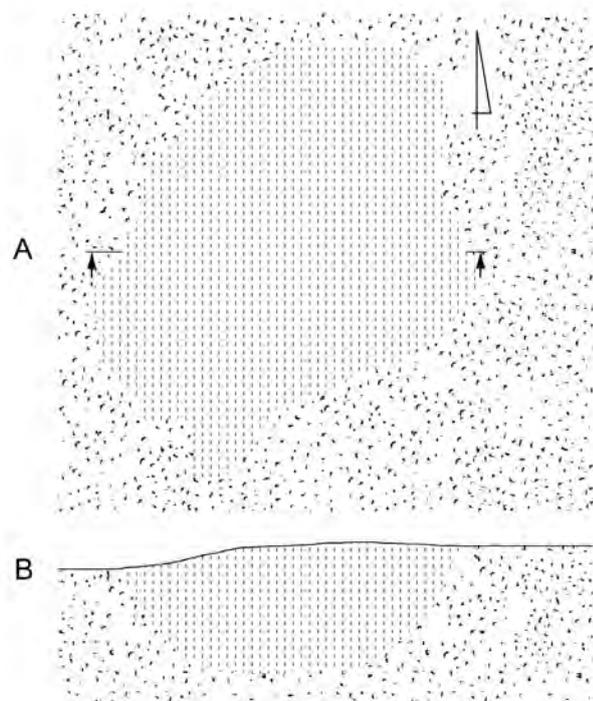
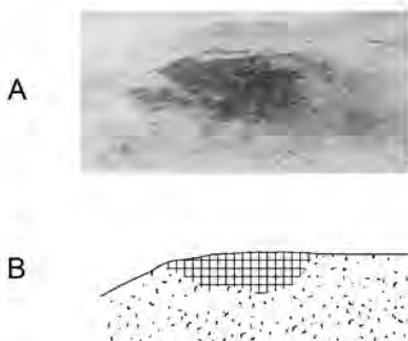
Grave 113**Grave 115****Grave 116****Feature 122****Grave 126**

Plate LXXIV. Grave 113: A – plan, B – profile. Grave 115: A – plan, B – profile. Grave 116: A – plan, B – profile.
Feature 122: A – plan, B – profile. Grave 126: A – plan, B – profile.

Grave 114

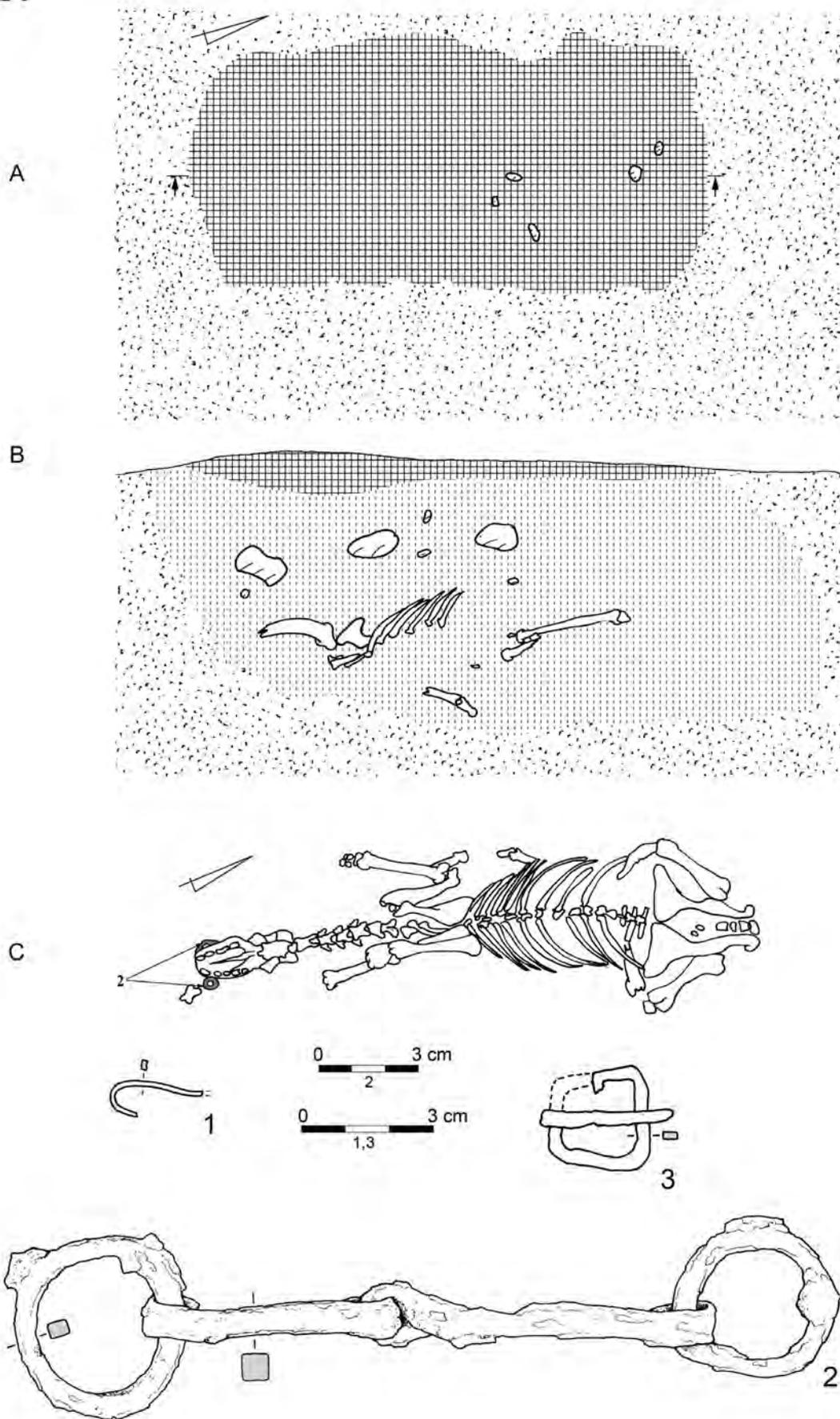


Plate LXXV. Grave 114: A – plan, B – profile, C – situation of the horse skeleton in plan; 1 – bronze, 2, 3 – iron.

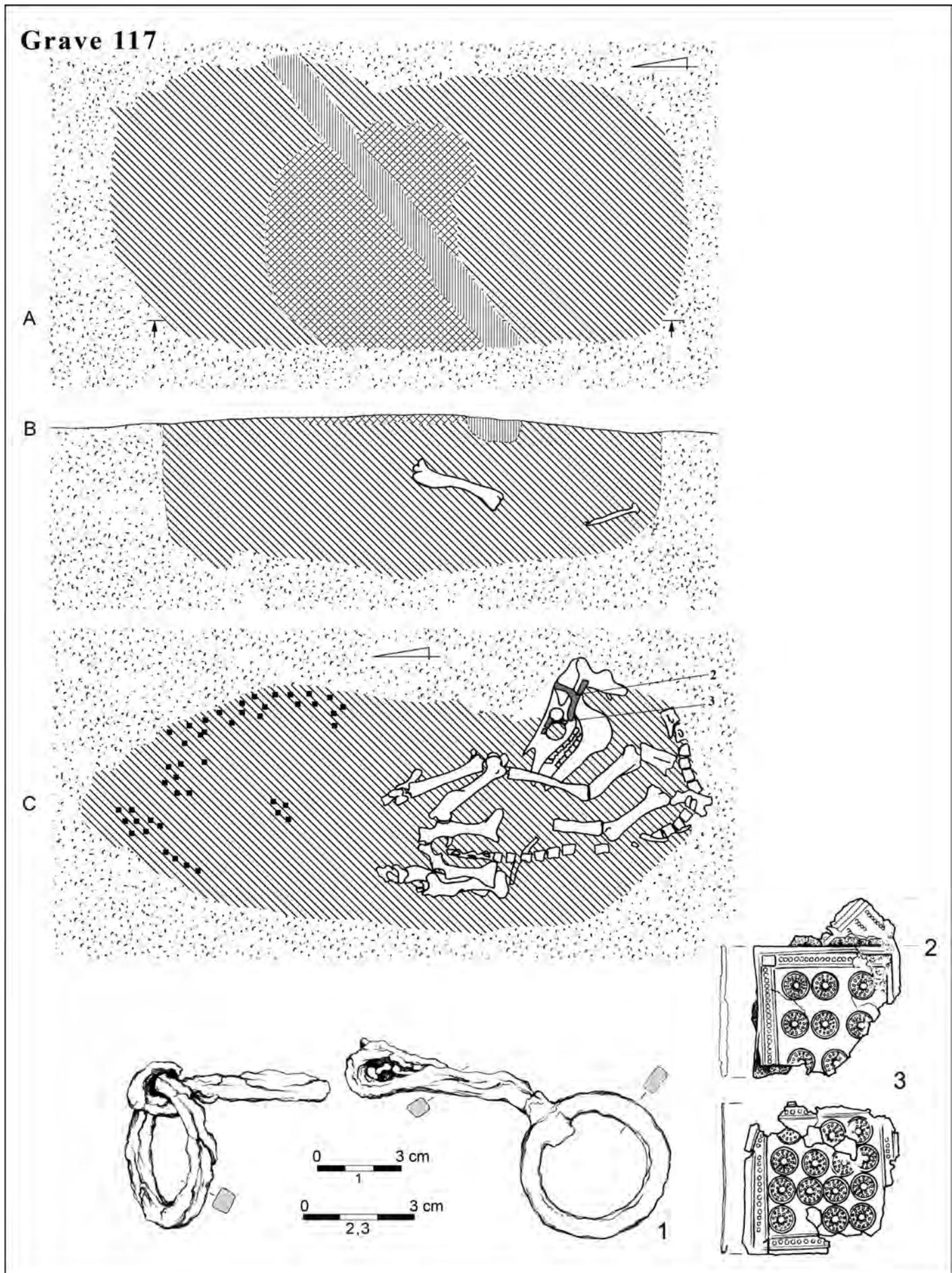


Plate LXXVI. Grave 117: A – plan, B – profile, C – plan at the level of the horse skeleton; 1 – iron, 2, 3 – bronze.

Grave 118

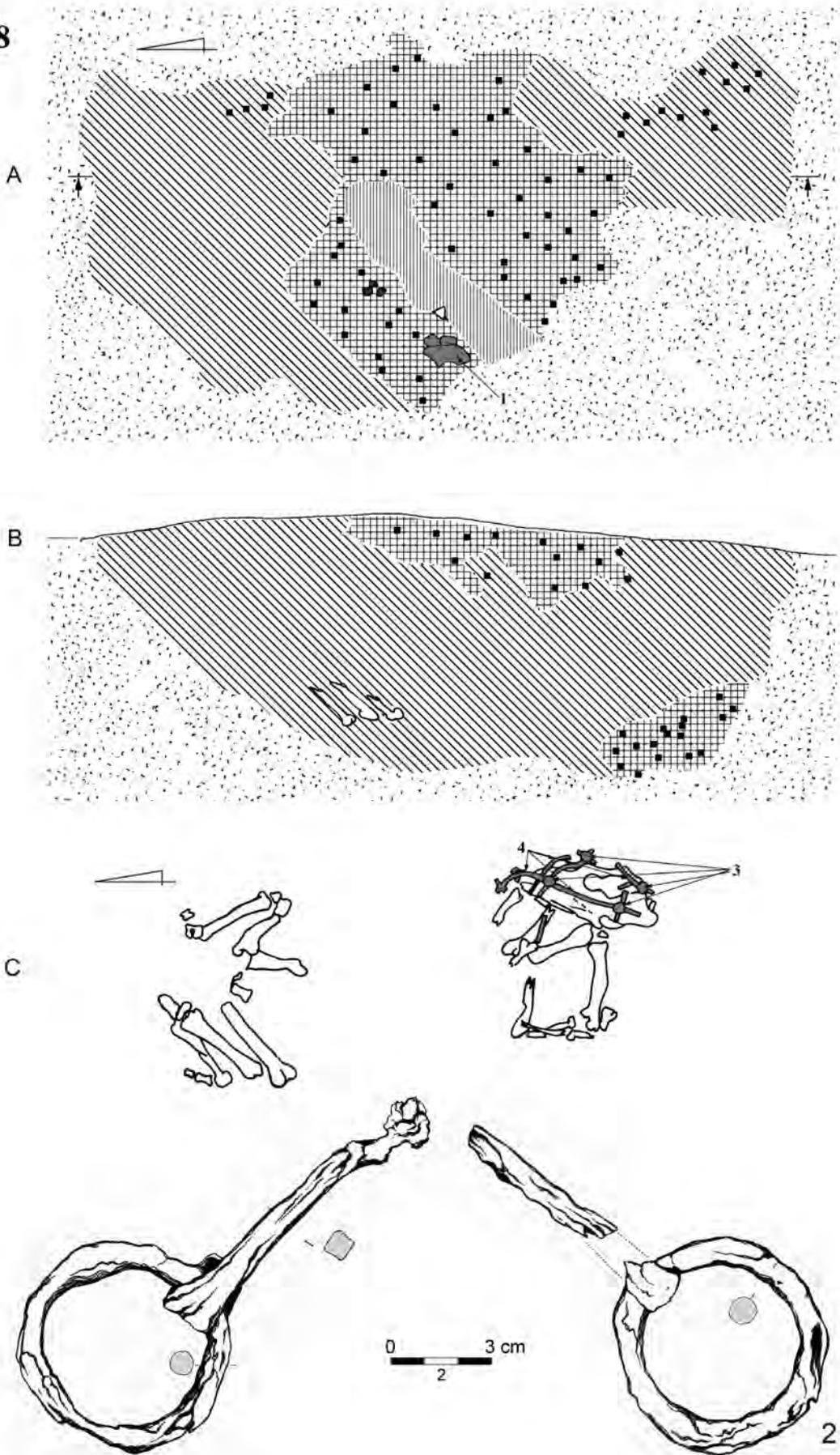


Plate LXXVII. Grave 118: A – plan, B – profile, C – situation of the horse skeleton in plan; 2 – iron.

Grave 118

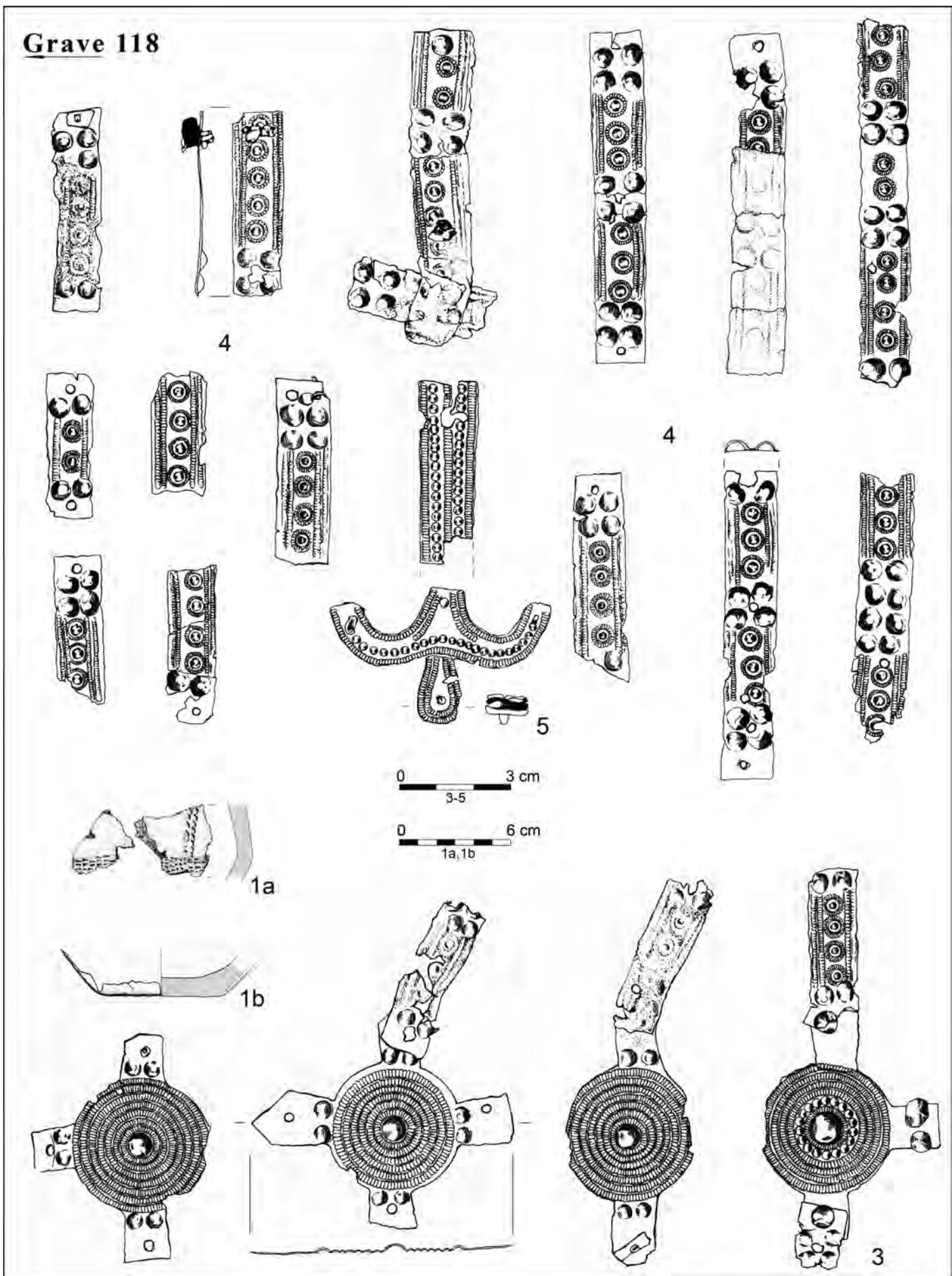


Plate LXXVIII. Grave 118: 1a, 1b – clay, 3-5 – bronze.

Grave 119

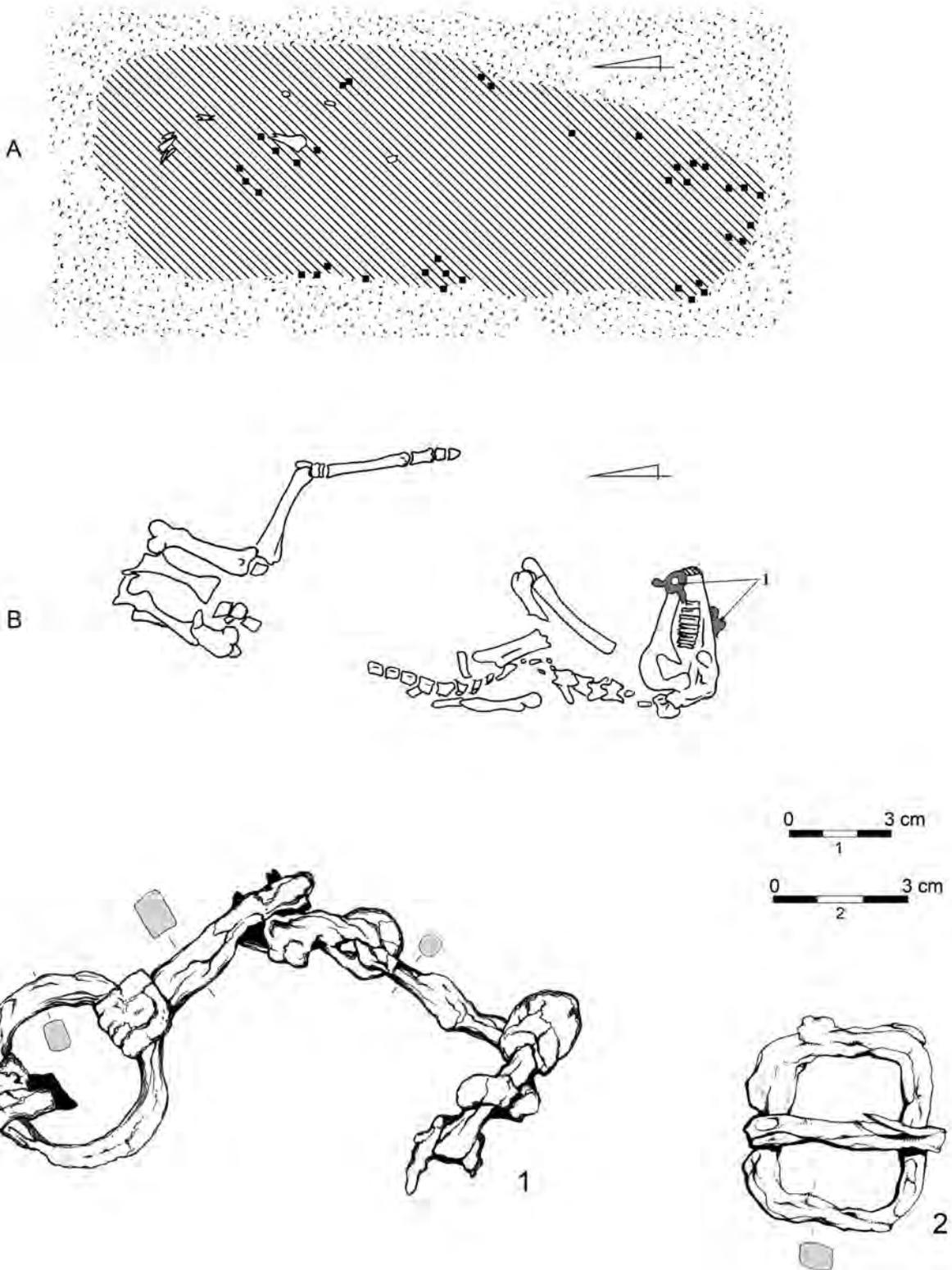


Plate LXXIX. Grave 119: A – plan, B – situation of the horse skeleton in plan; 1, 2 – iron.

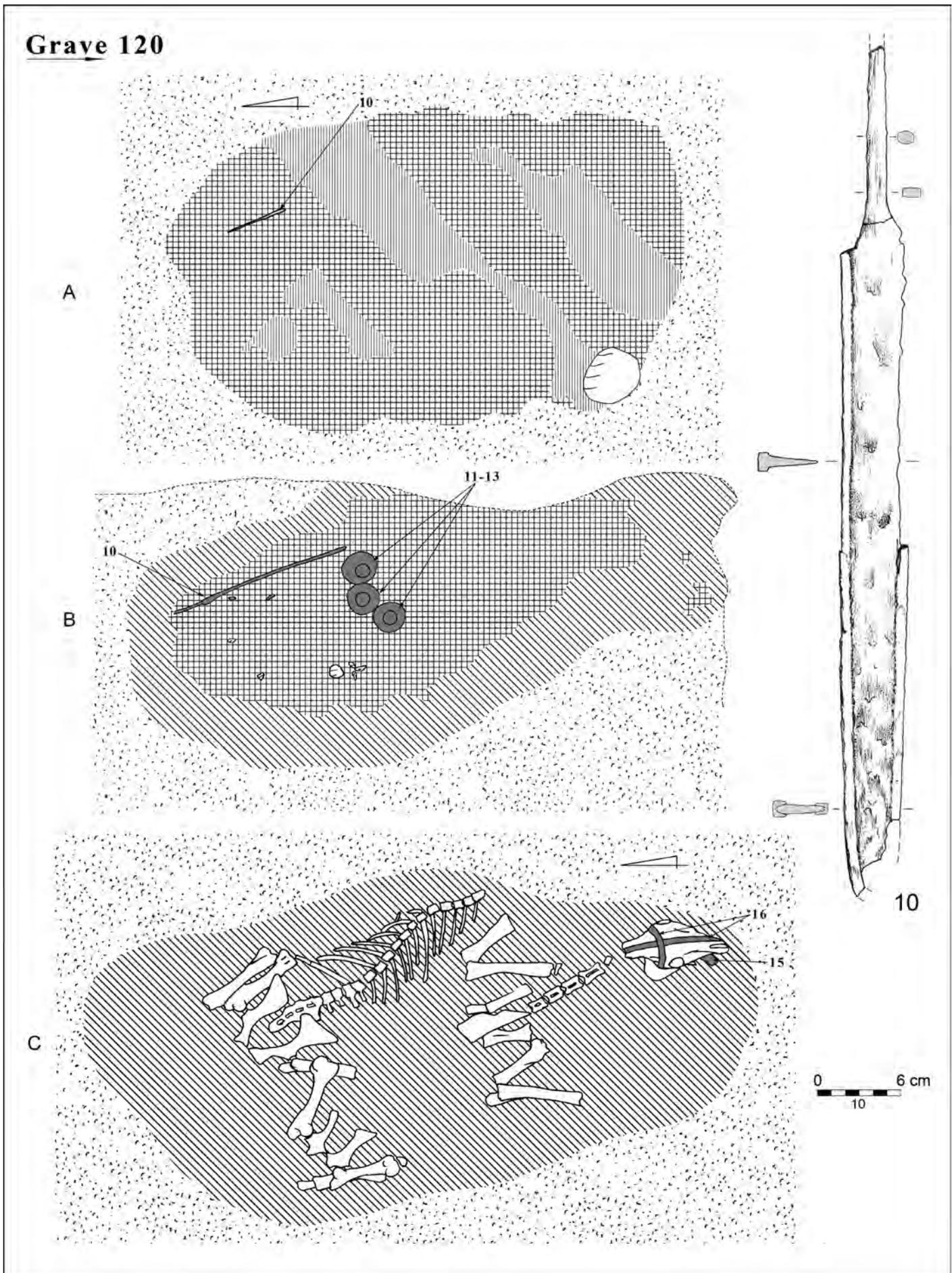


Plate LXXX. Grave 120: A – plan at the upper level, B – plan at the middle level, C – plan at the level of the horse skeletons; 10 – iron.

Grave 120

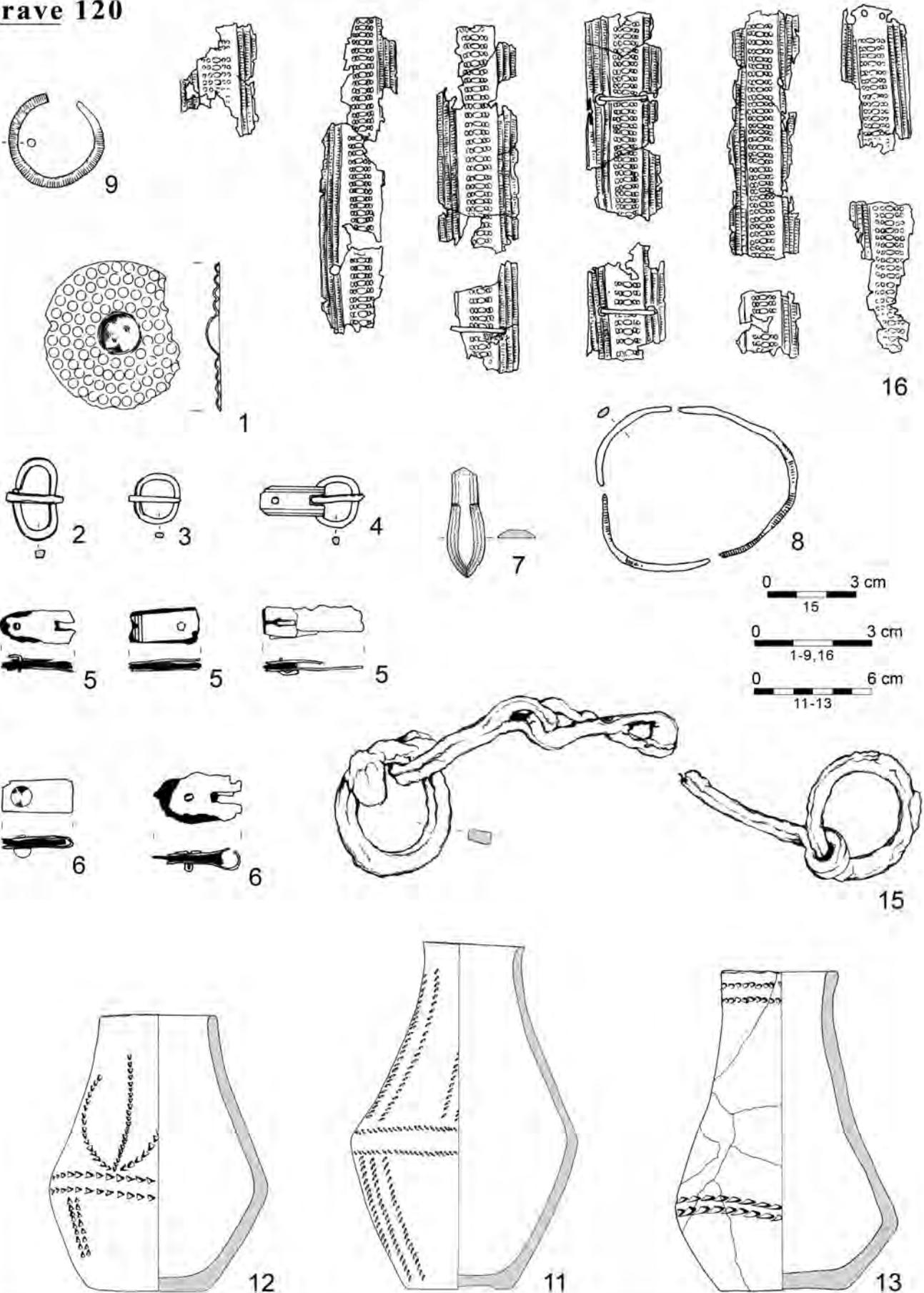


Plate LXXXI. Grave 120: 1-4, 7-9, 16 – bronze, 5, 6 – bronze and leather, 11-13 – clay, 15 – iron.

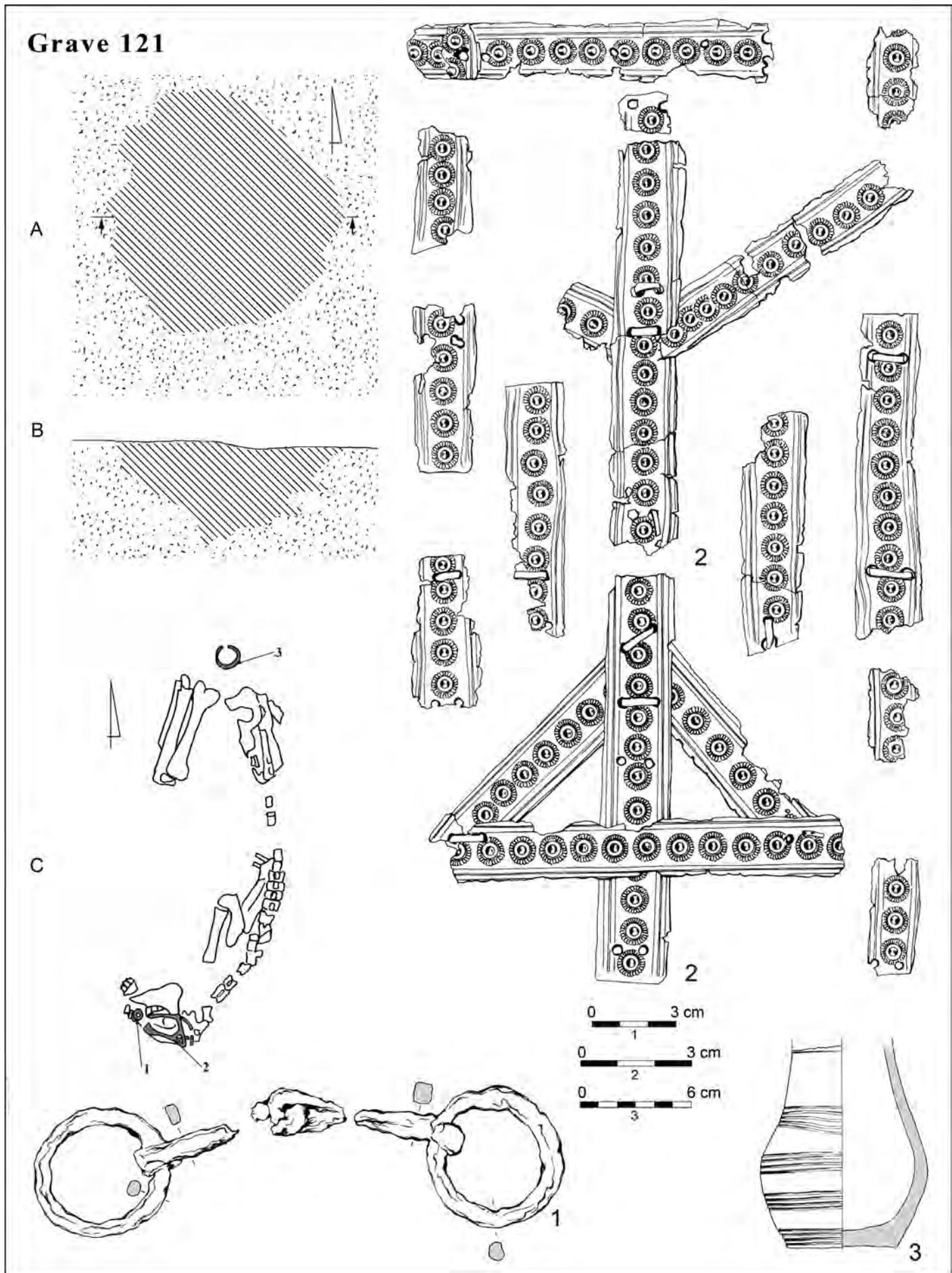
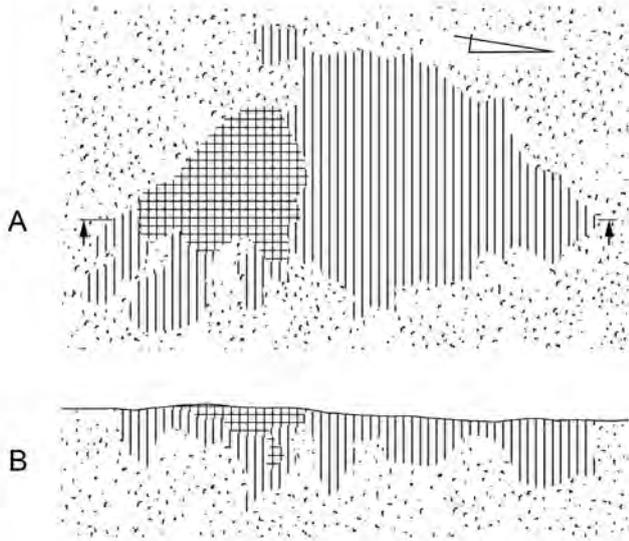
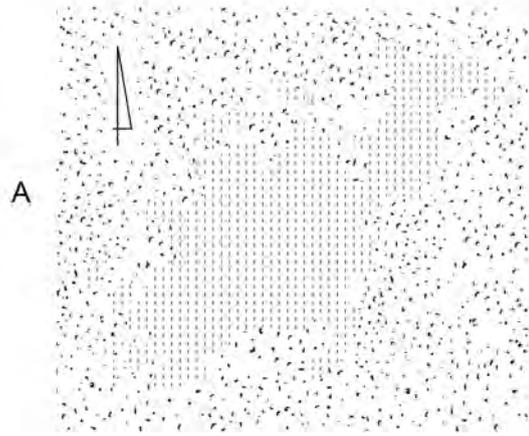


Plate LXXXII. Grave 121: A – plan, B – profile, C – situation of the horse skeleton in plan; 1 – iron, 2 – bronze, 3 – clay.

Grave 123



Feature 125



Grave 124

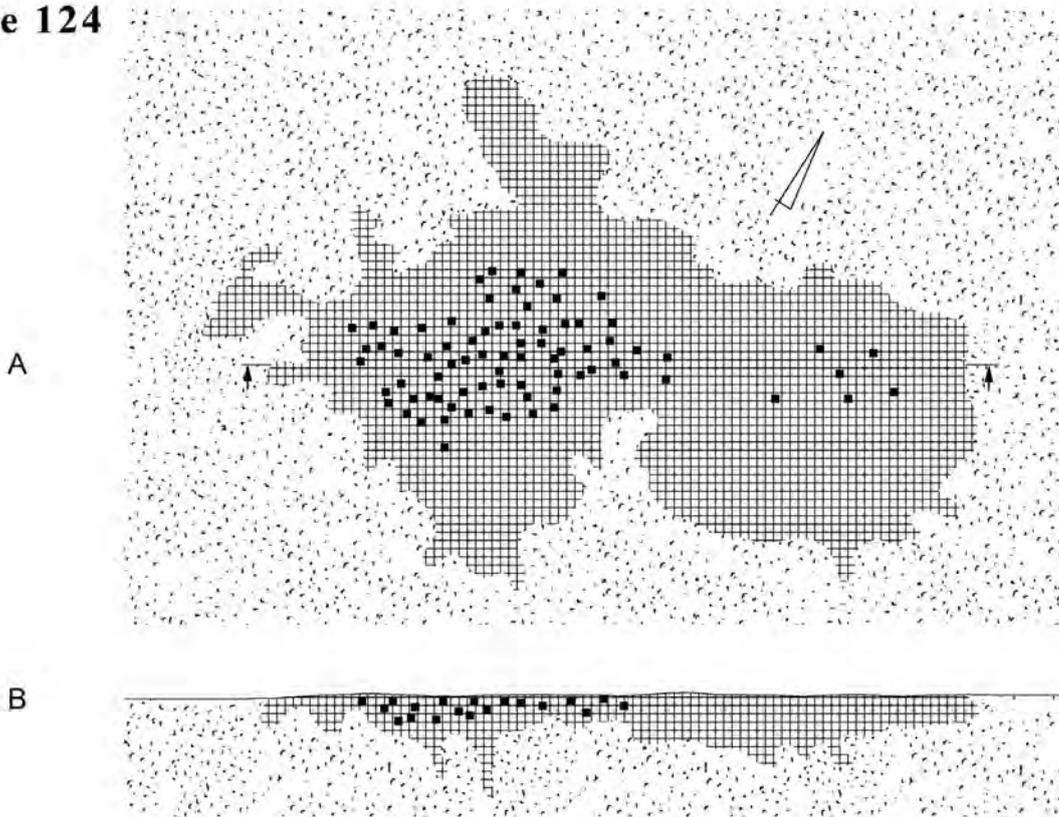


Plate LXXXIII. Grave 123: A – plan, B – profile. Grave 124: A – plan, B – profile. Feature 125: A – plan.

Grave 127

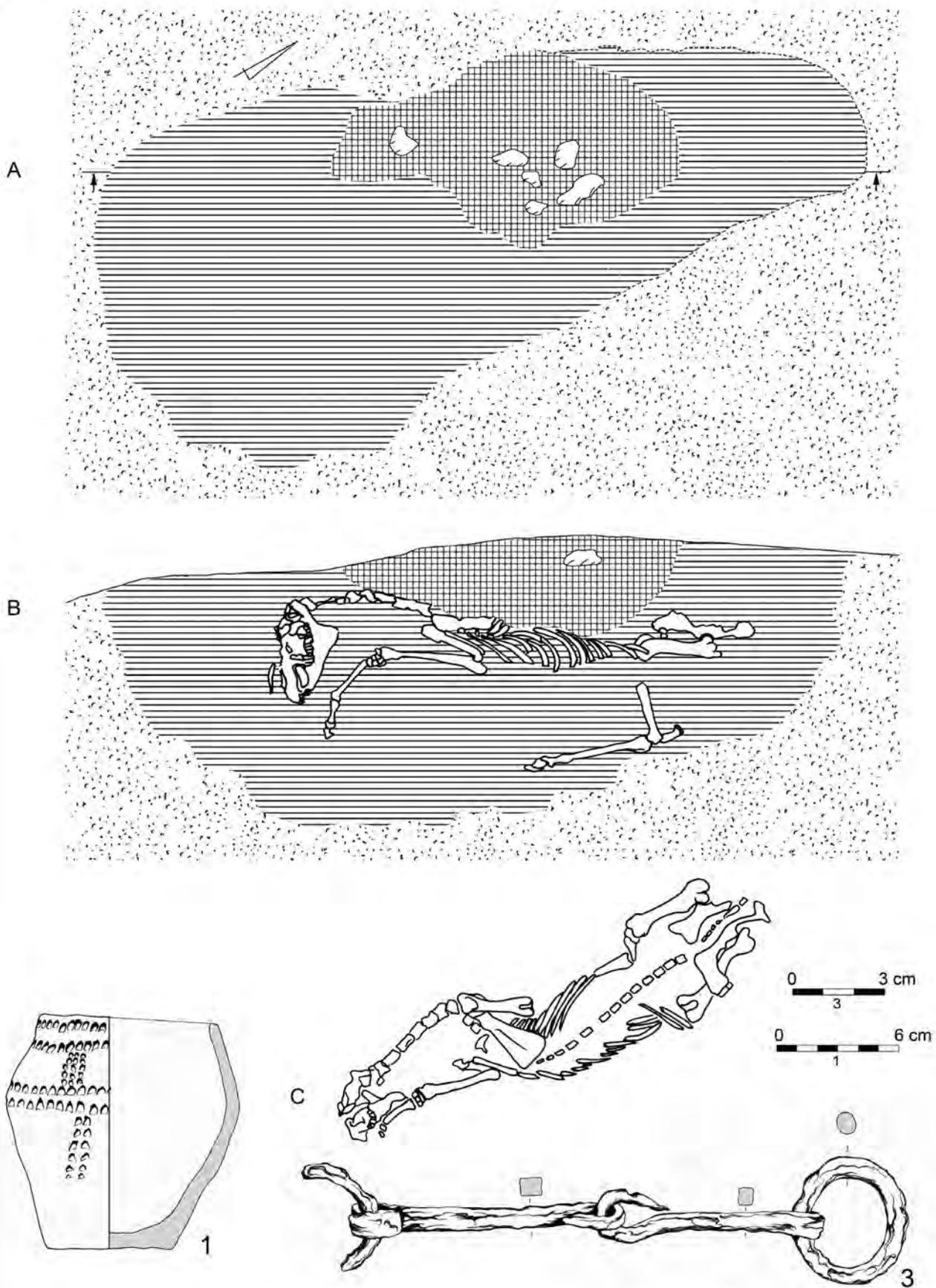
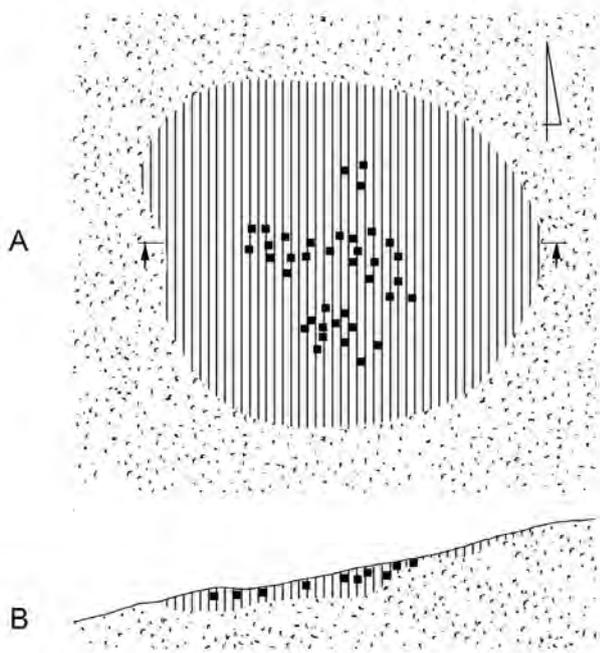
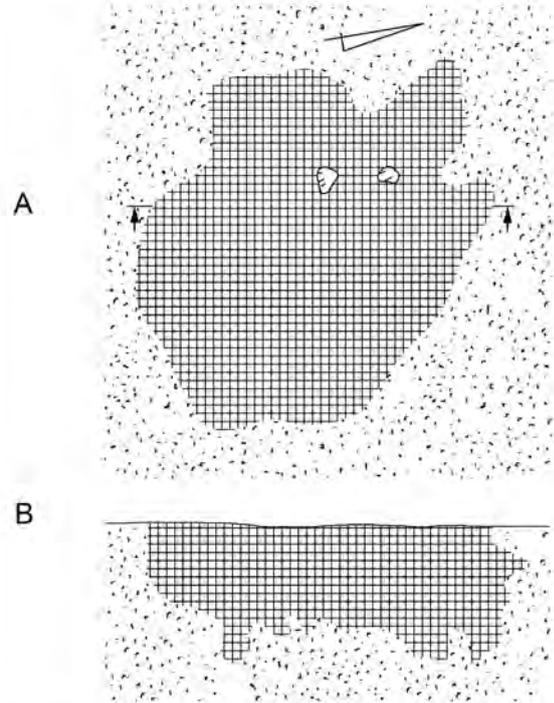


Plate LXXXIV. Grave 127: A – plan, B – profile, C – situation of the horse skeleton in plan; 1 – clay, 3 – iron.

Grave 128



Grave 129



Feature 130

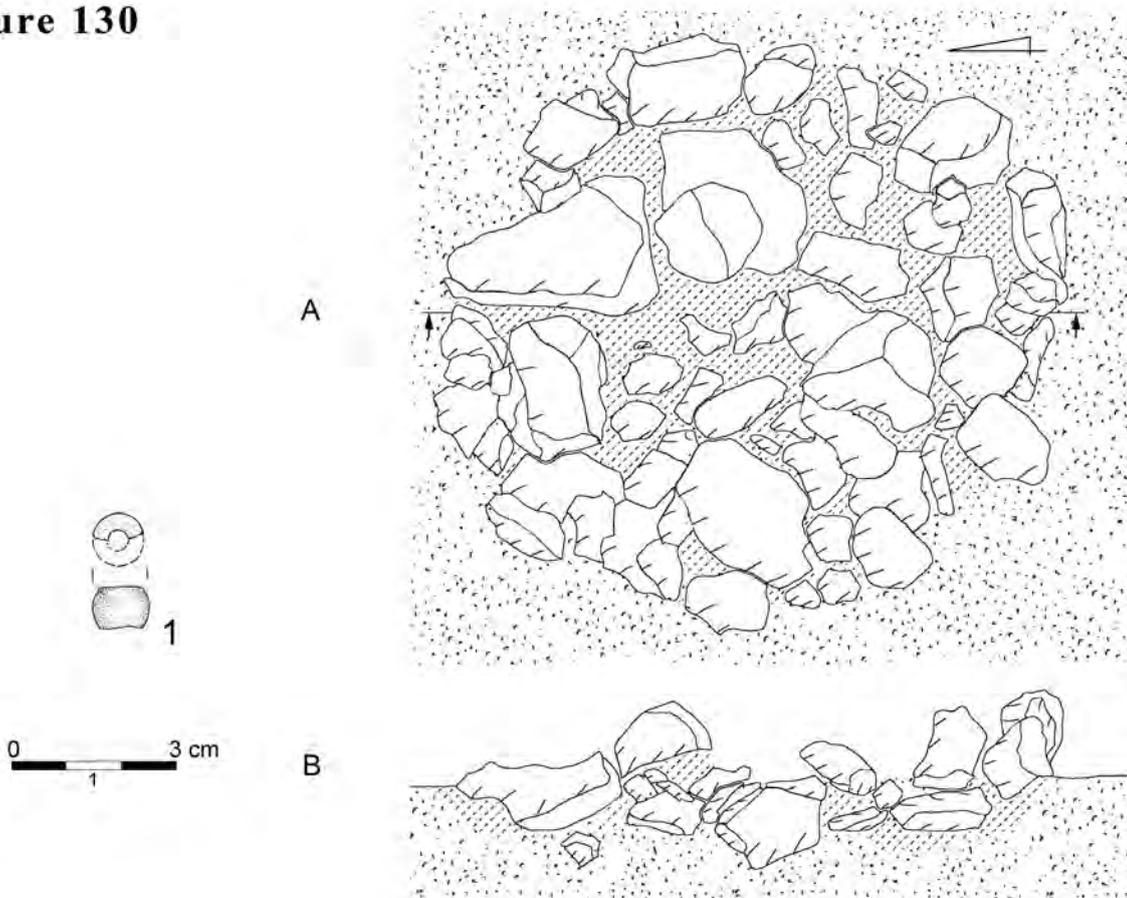


Plate LXXXV. Grave 128: A – plan, B – profile. Grave 129: A – plan, B – profile. Feature 130: A – plan, B – profile; 1 – glass.

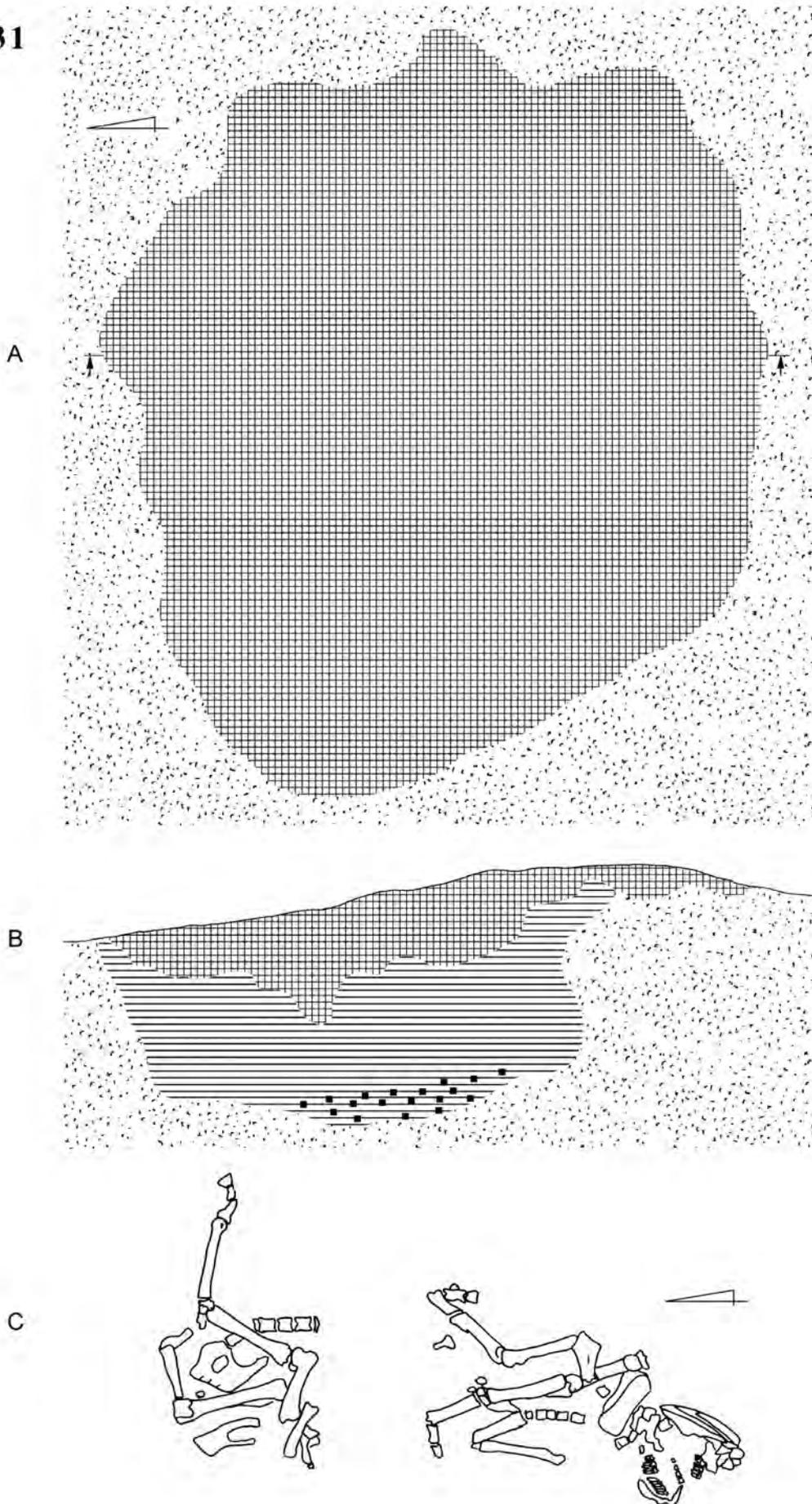
Grave 131

Plate LXXXVI. Grave 131: A – plan, B – profile, C – situation of the horse skeleton in plan.

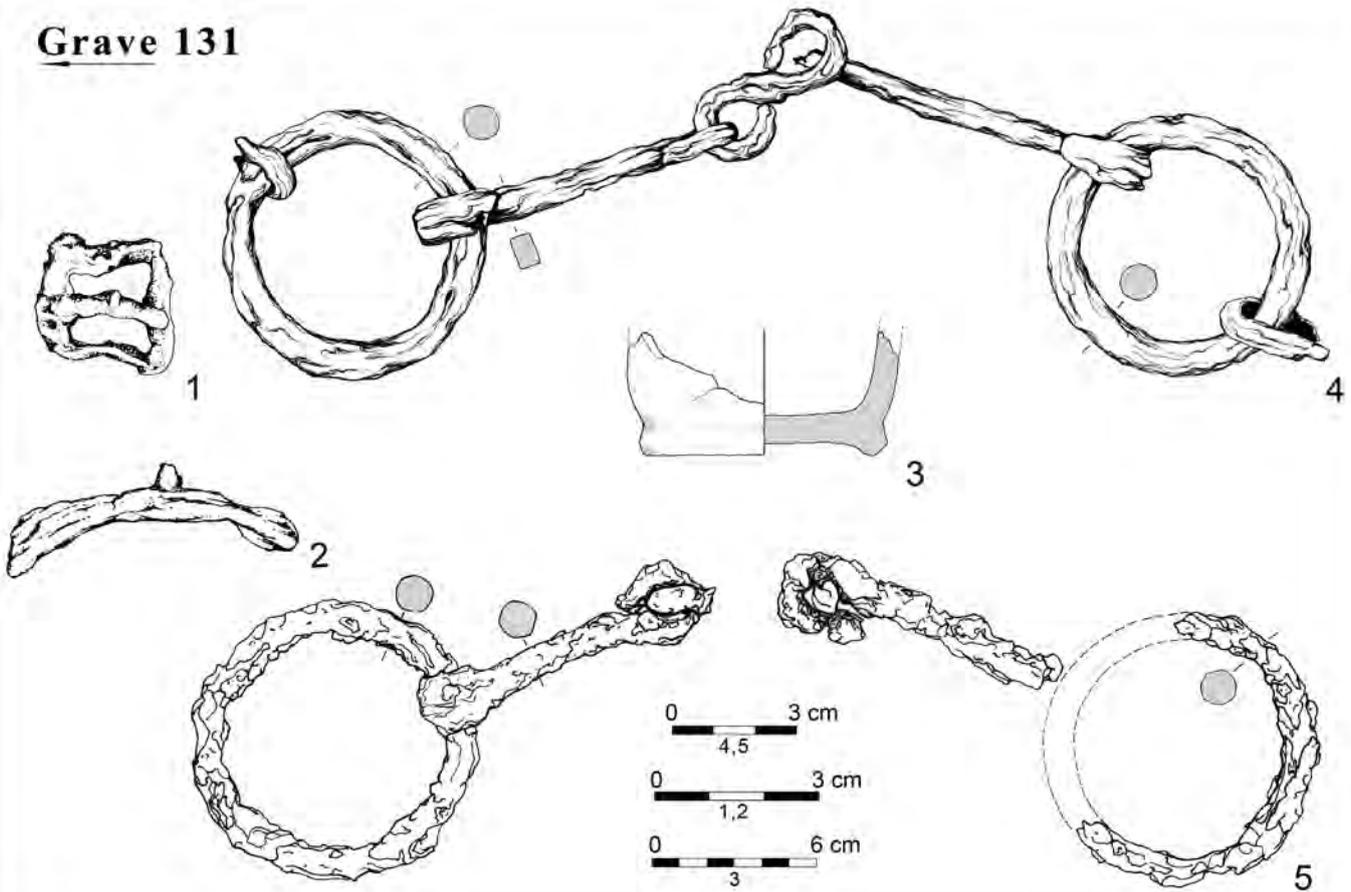
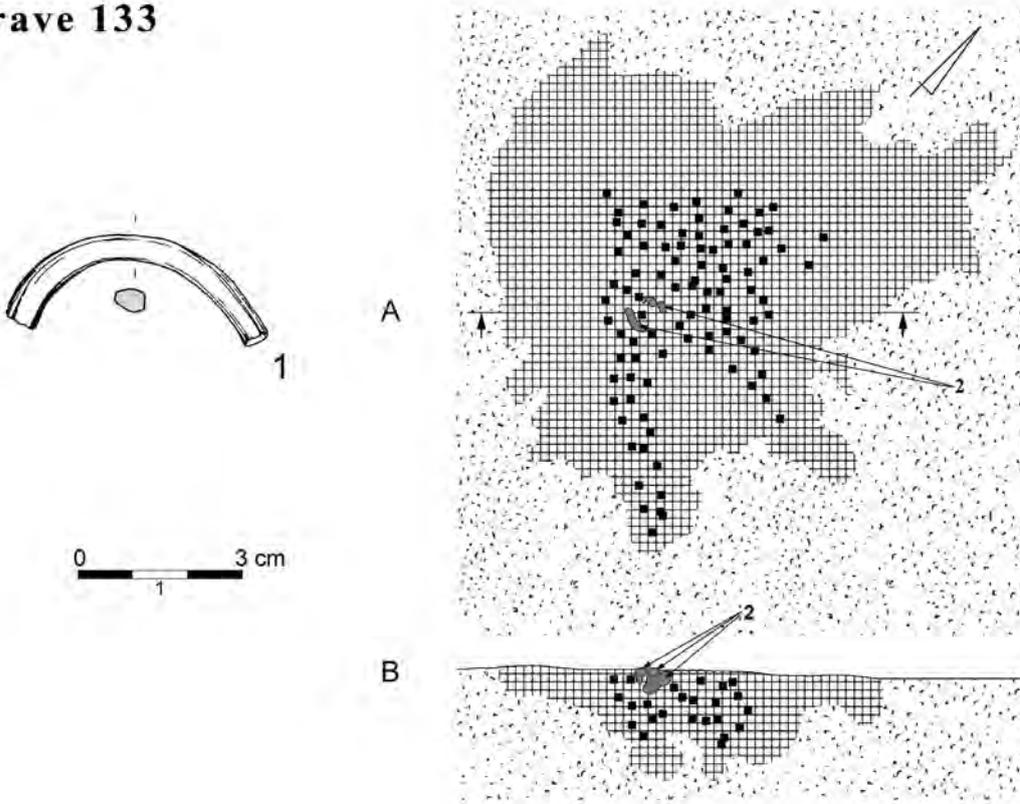
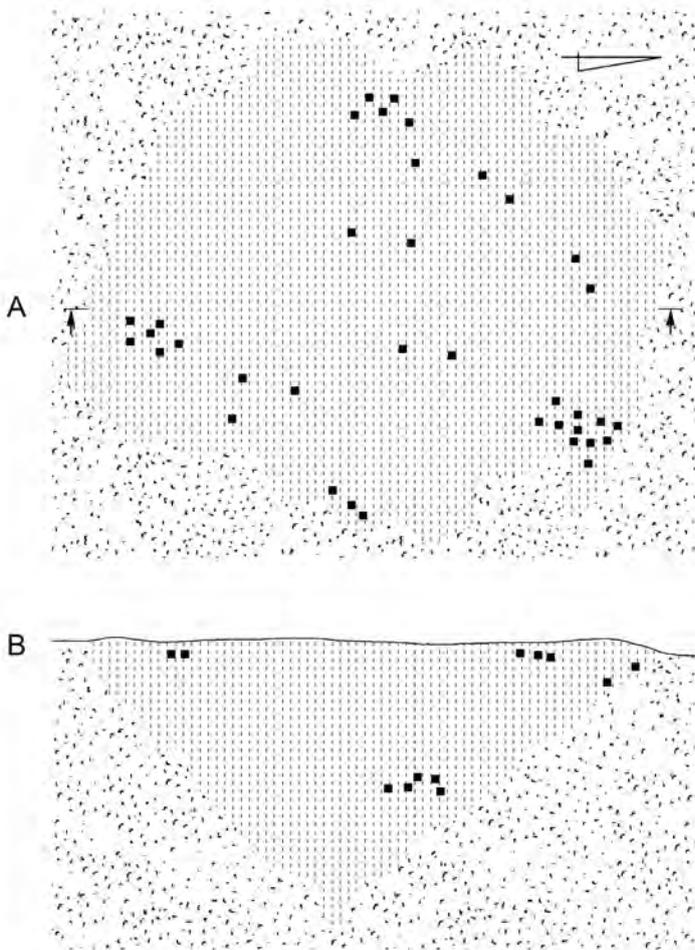
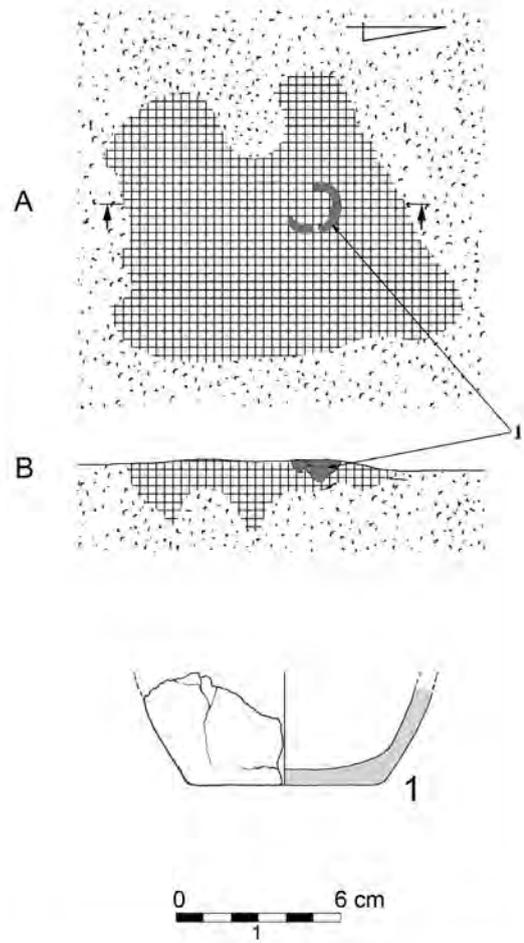
Grave 131**Grave 133**

Plate LXXXVII. Grave 131: 1, 2, 4, 5 – iron, 3 – clay. Grave 133: A – plan, B – profile; 1 – bronze.

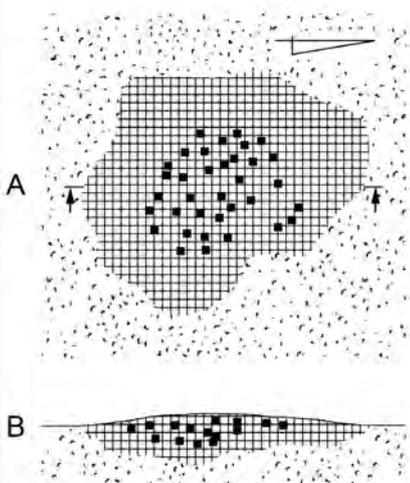
Feature 132



Grave 134



Grave 135



Grave 136

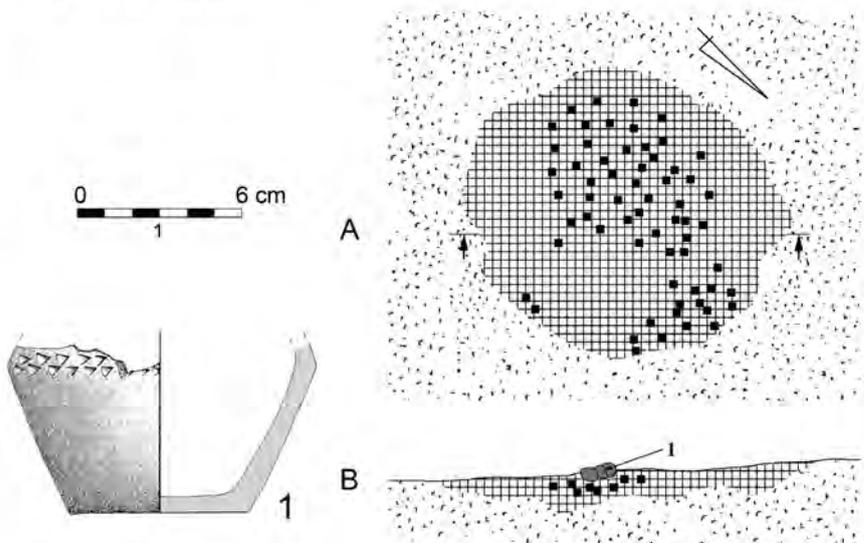


Plate LXXXVIII. Feature 132: A – plan, B – profile. Grave 134: A – plan, B – profile; 1 – clay. Grave 135: A – plan, B – profile. Grave 136: A – plan, B – profile; 1 – clay.

Grave 137

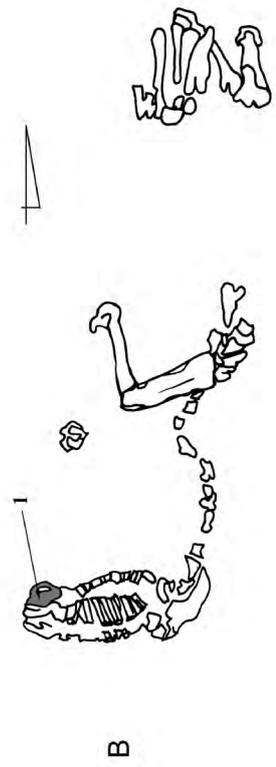
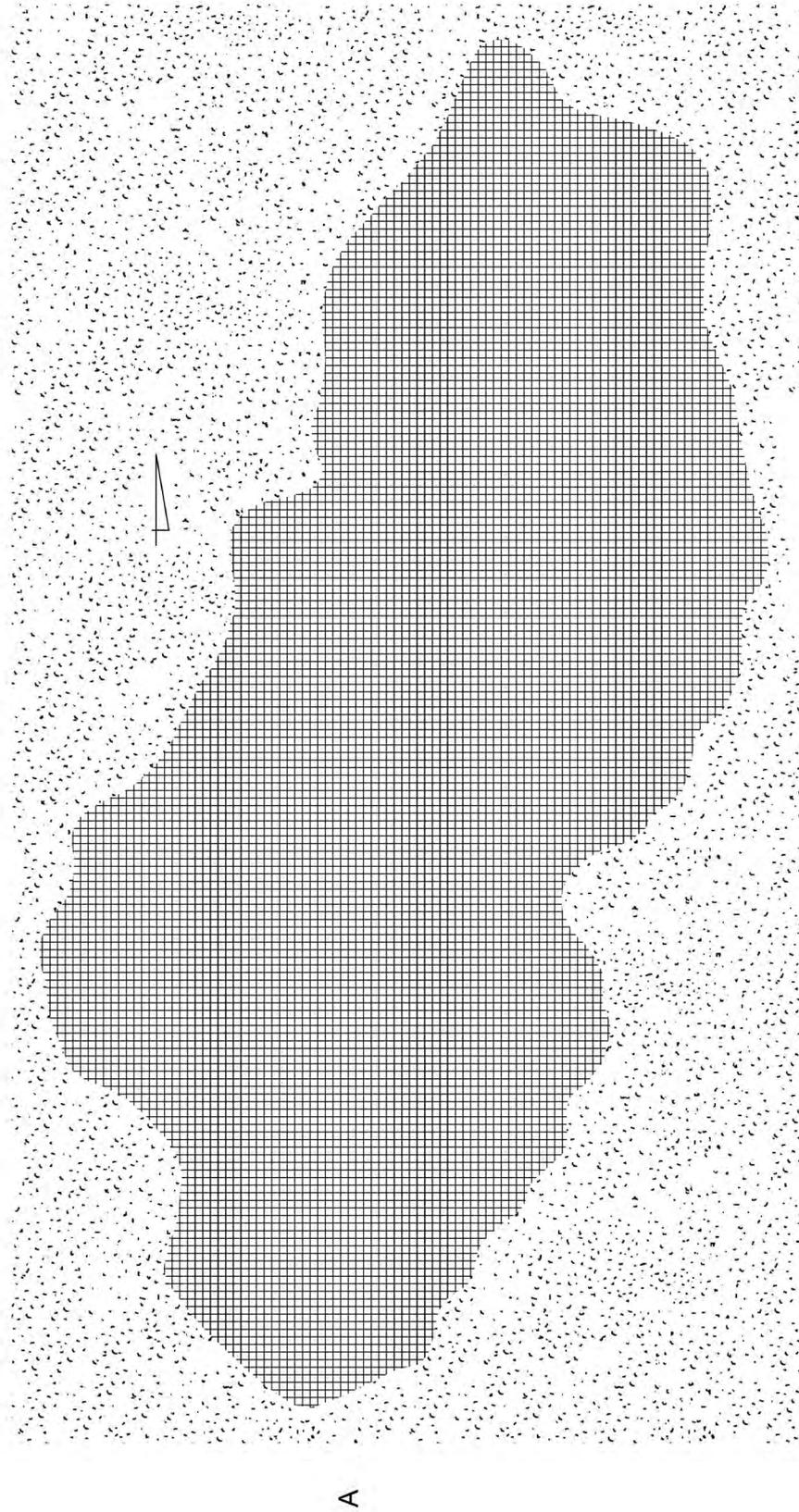
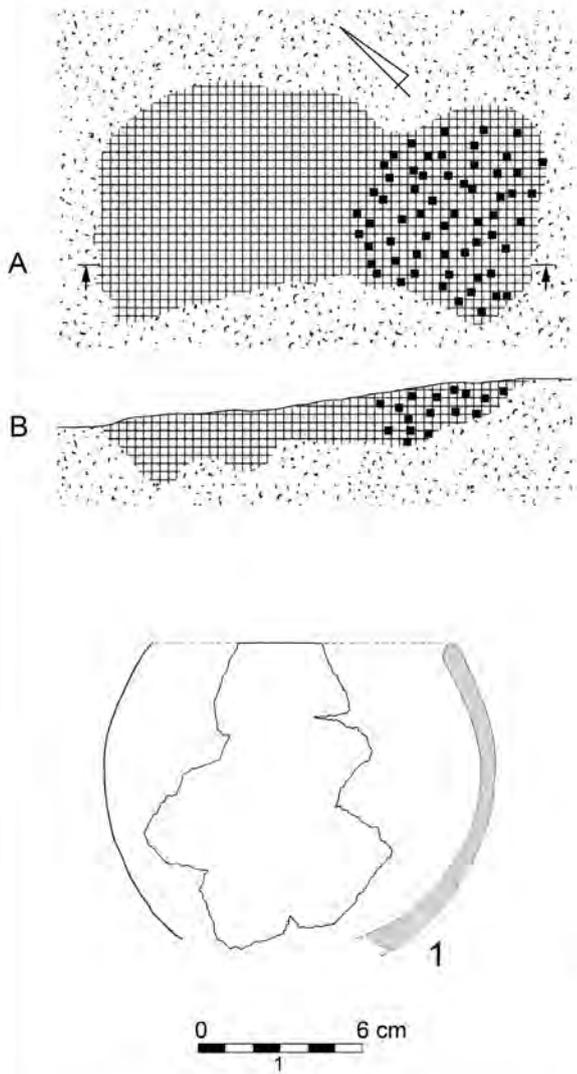
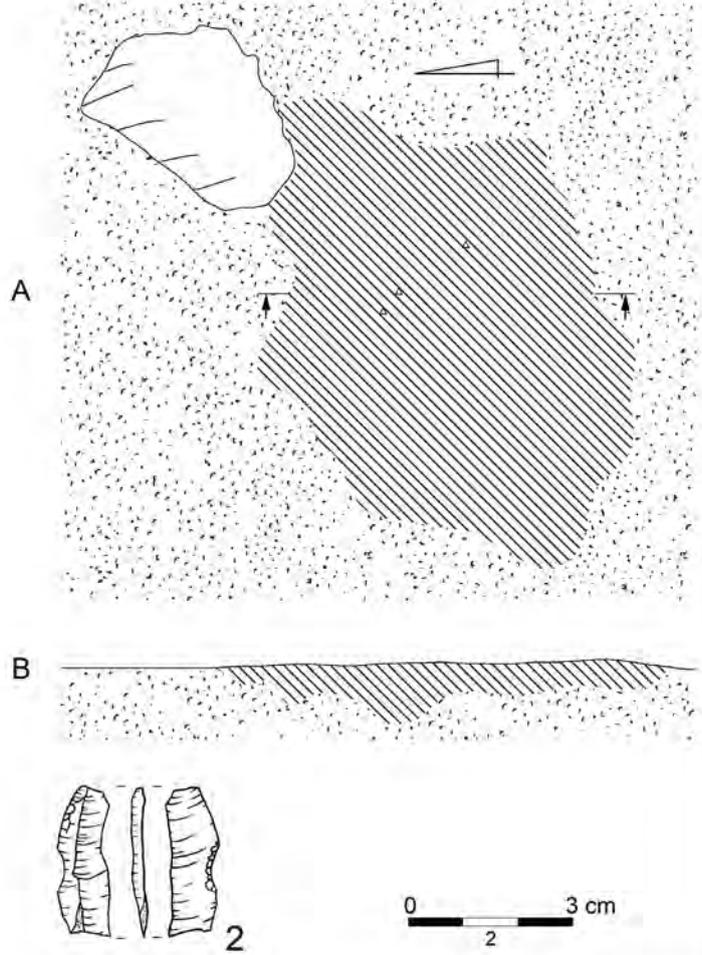


Plate LXXXIX. Grave 137: A – plan, B – situation of the horse skeleton in plan.

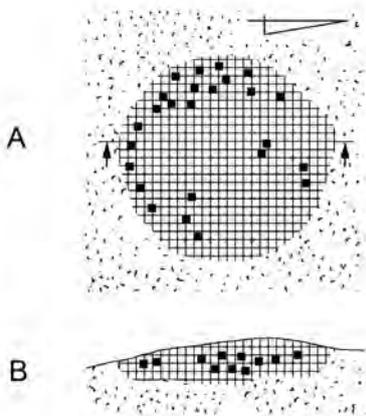
Grave 138



Feature 140



Grave 139



Grave 142

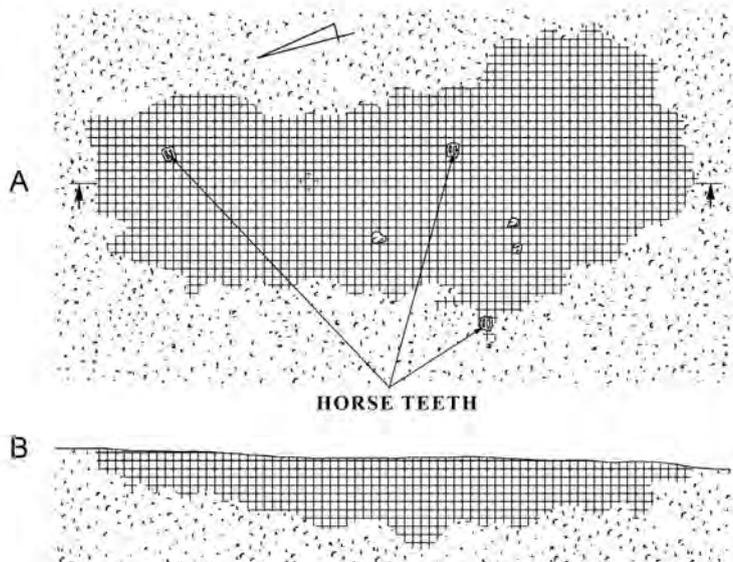


Plate XC. Grave 138: A – plan, B – profile; 1 – clay. Grave 139: A – plan, B – profile. Feature 140: A – plan, B – profile; 2 – flint. Grave 142: A – plan, B – profile.

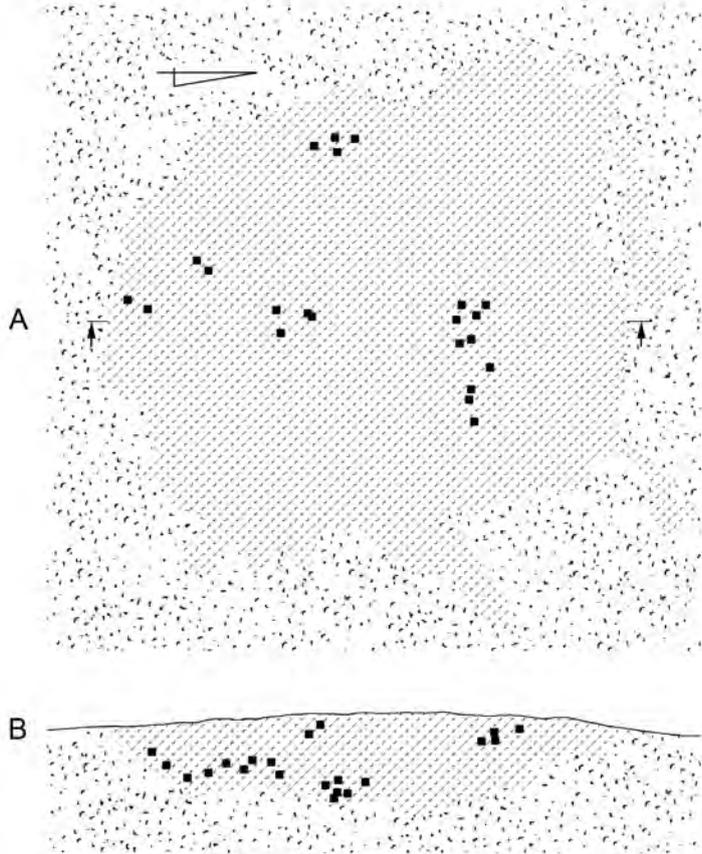
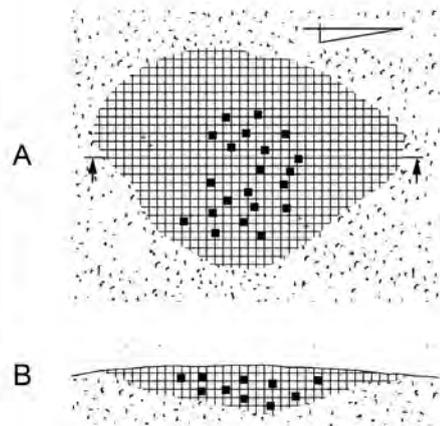
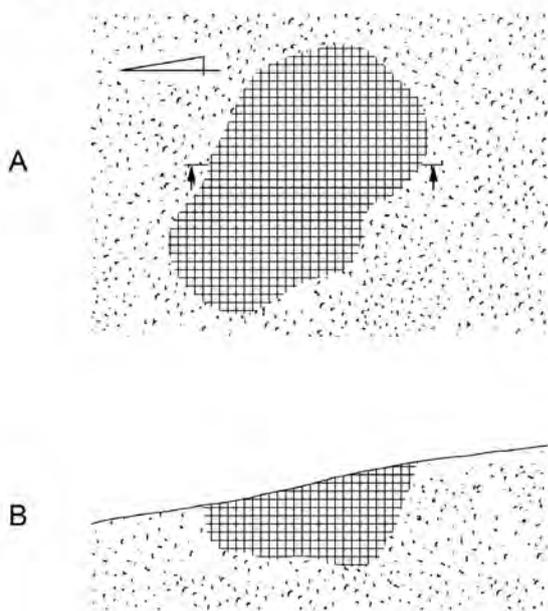
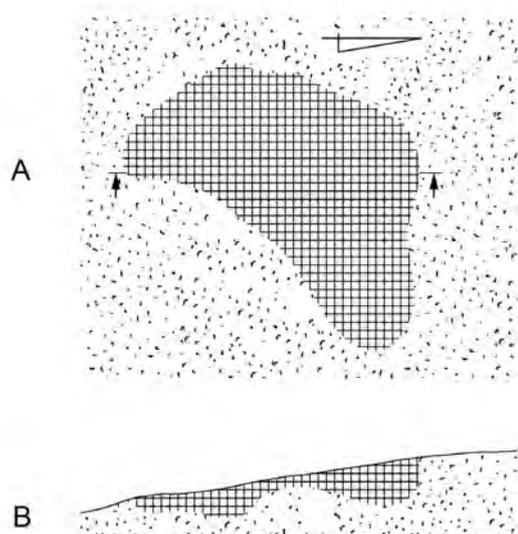
Feature 141**Grave 143****Grave 144****Grave 145**

Plate XCI. Feature 141: A – plan, B – profile. Grave 143: A – plan, B – profile. Grave 144: A – plan, B – profile. Grave 145: A – plan, B – profile.

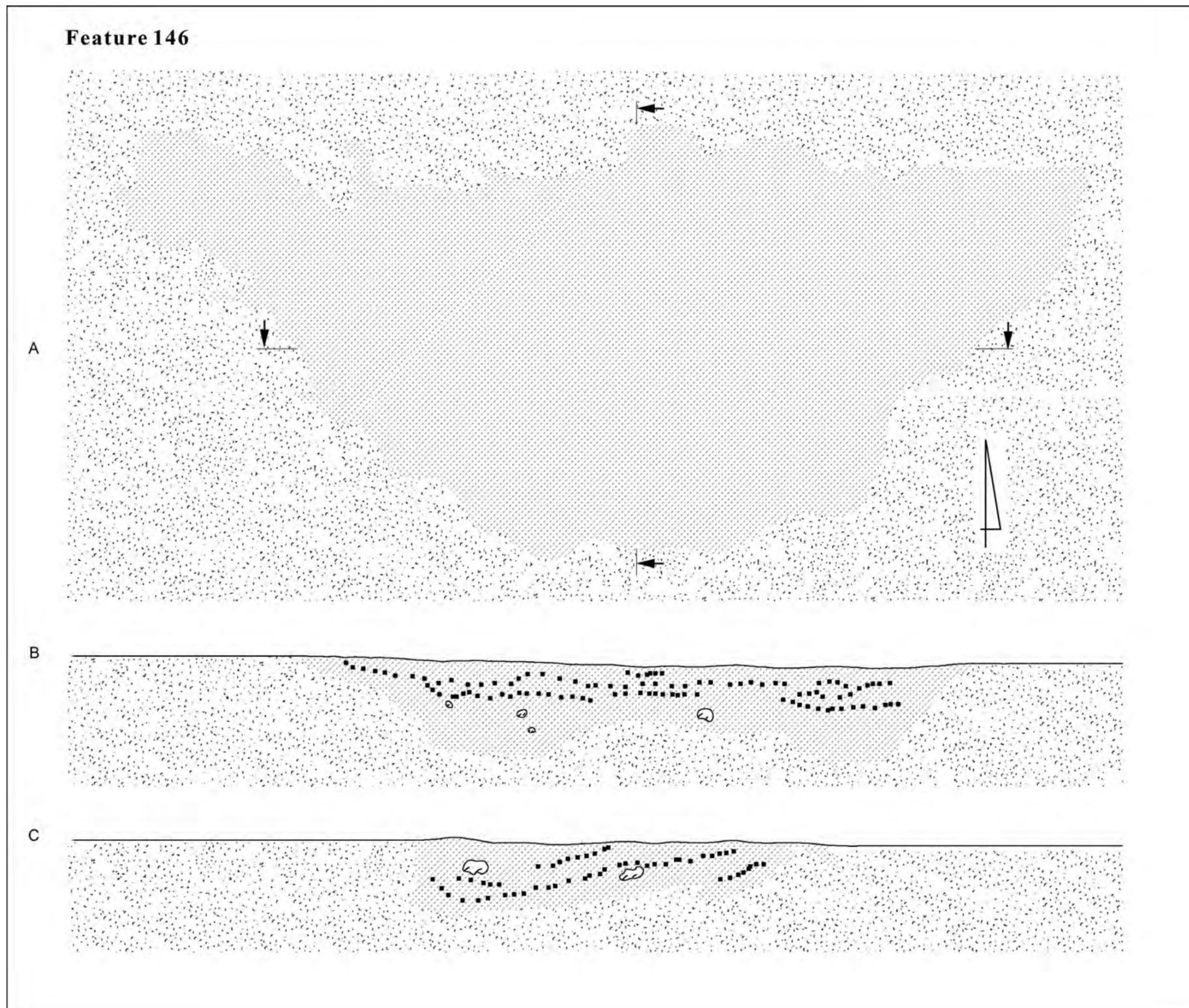


Plate XCII. Feature 146: A – plan, B – west-east profile, C – south-north profile.

Grave 147

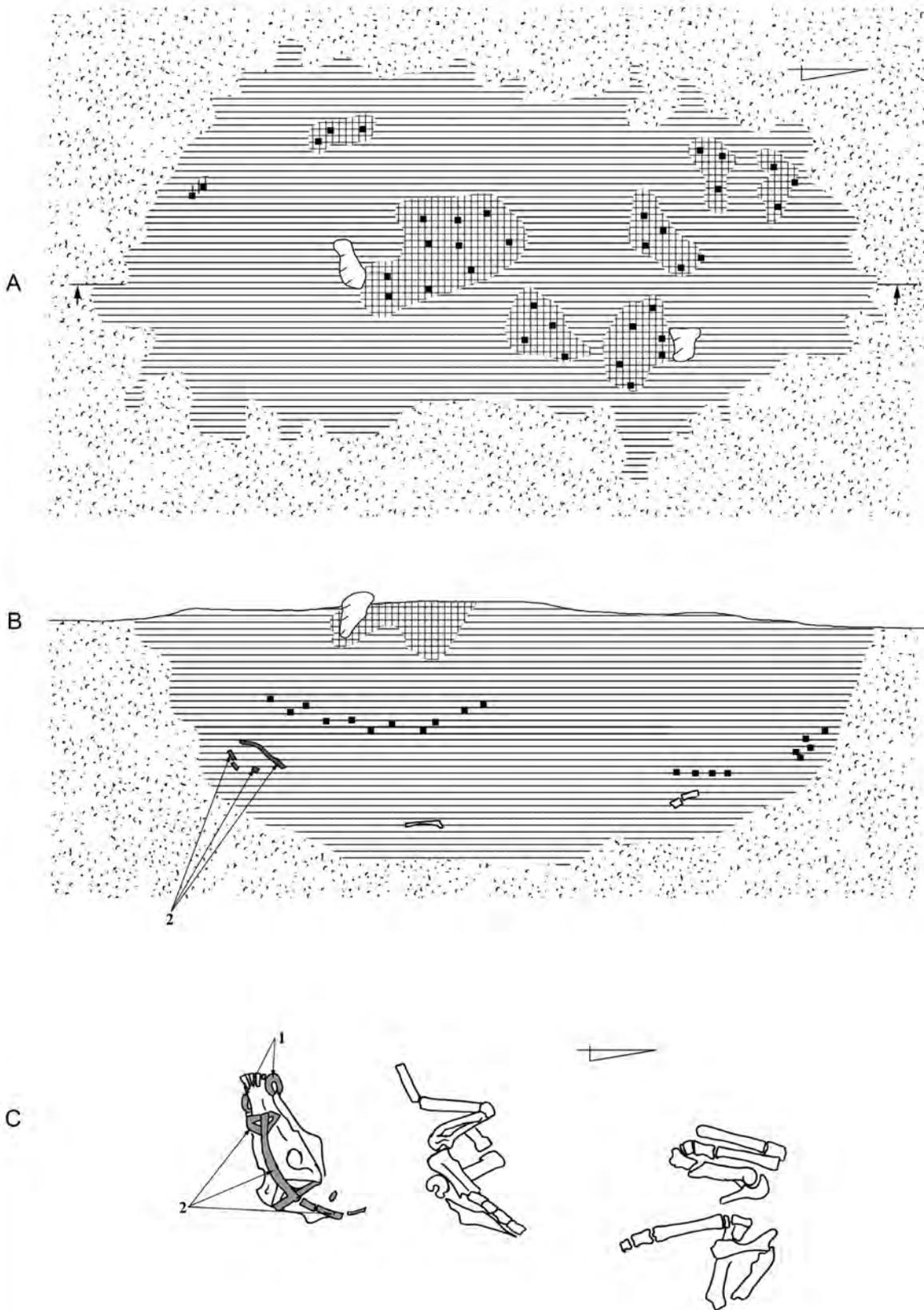


Plate XCIII. Grave 147: A – plan, B – profile, C – situation of the horse skeleton in plan.

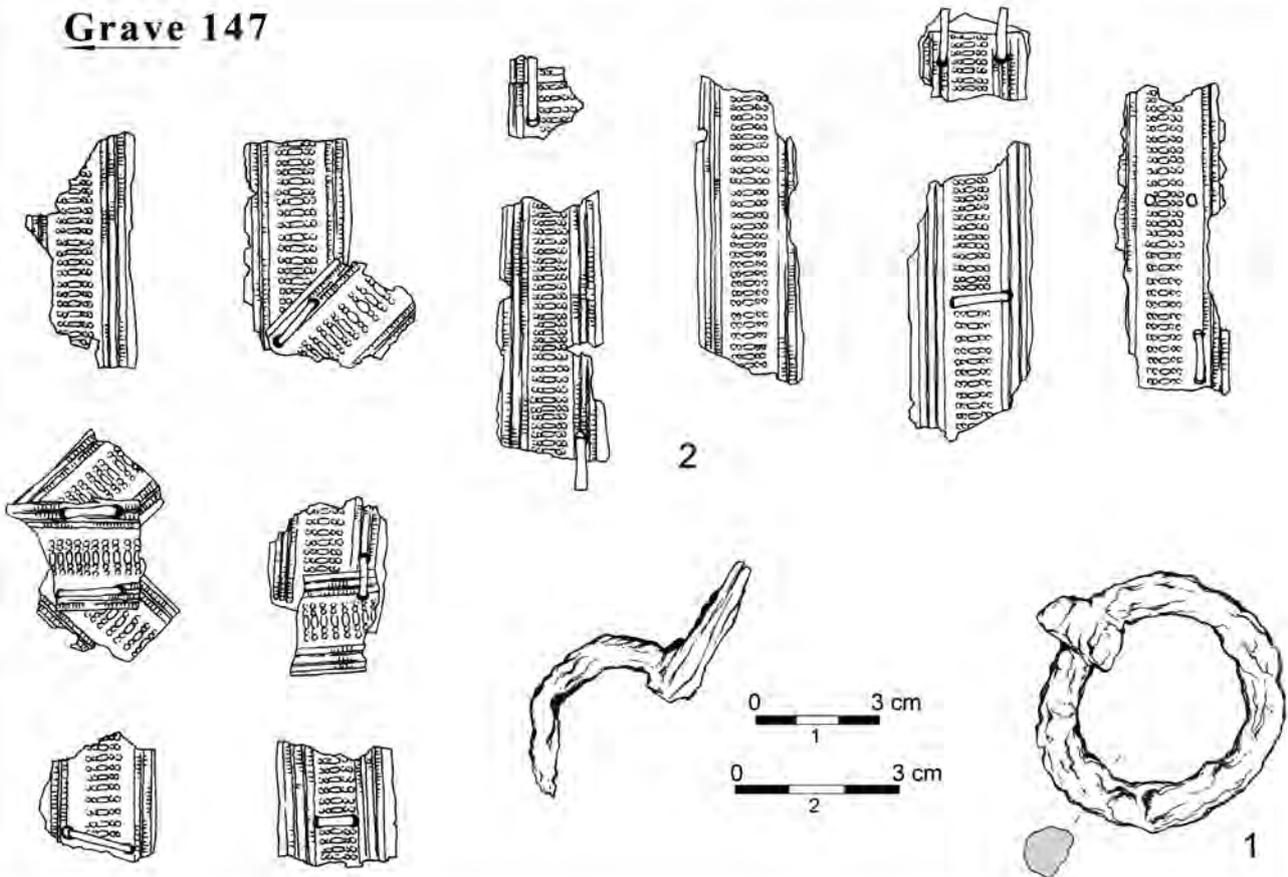
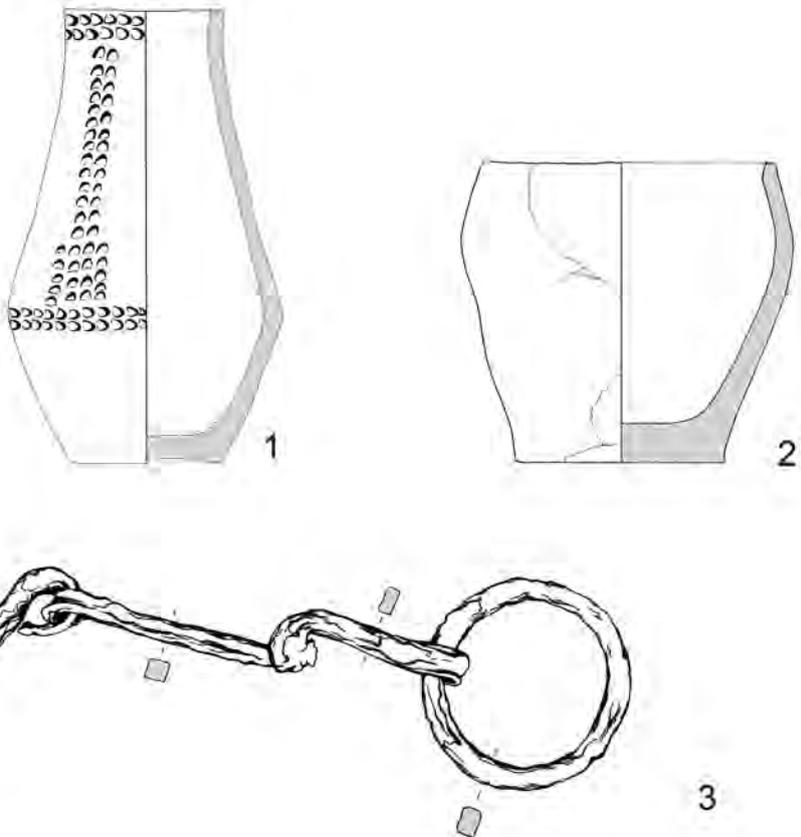
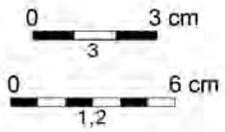
Grave 147**Grave 151**

Plate XCIV. Grave 147: 1 – iron, 2 – bronze. Grave 151: 1, 2 – clay, 3 – iron.

Grave 151

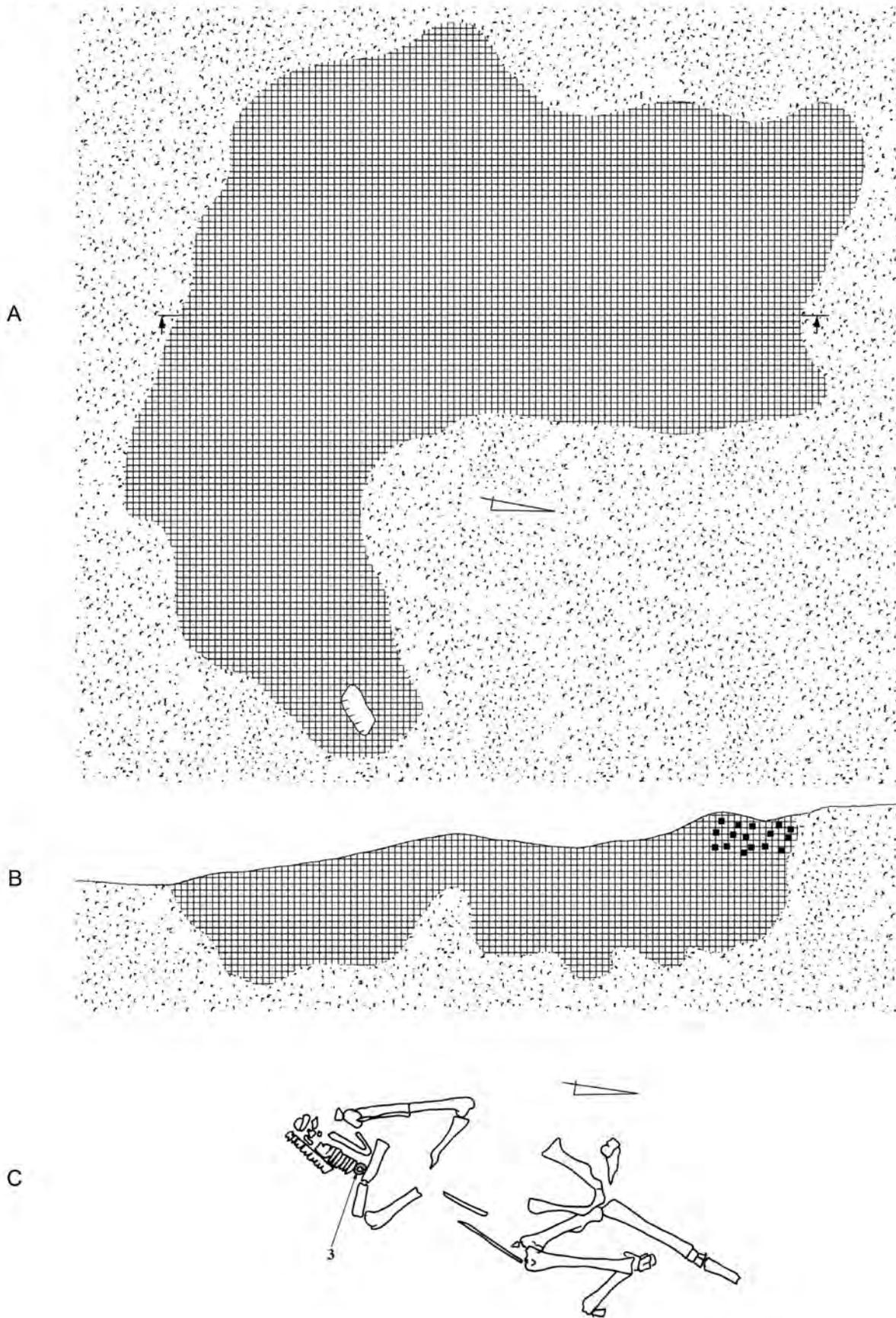


Plate XCV. Grave 151: A – plan, B – profile, C – situation of the horse skeleton in plan.

Grave 148

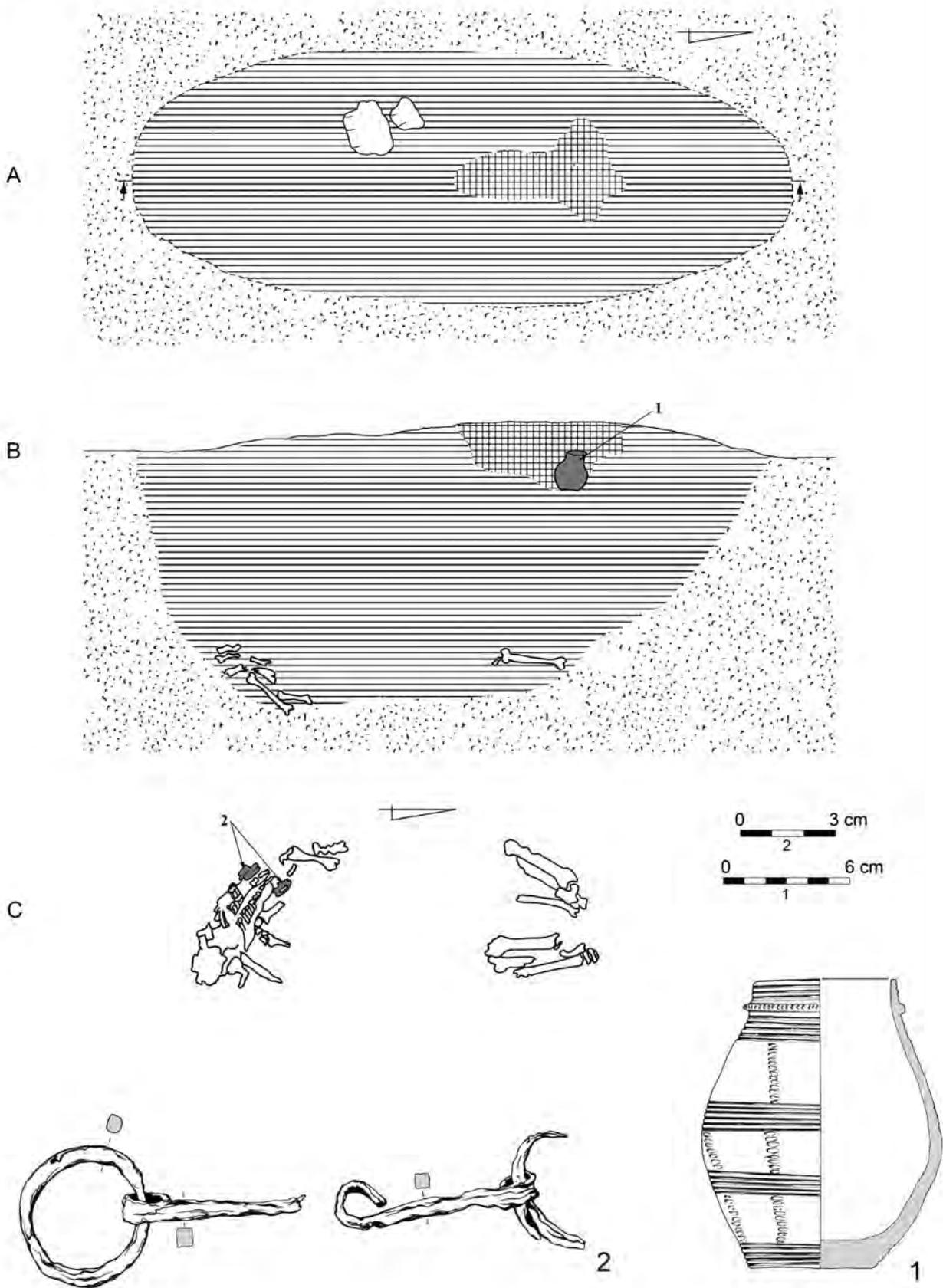


Plate XCVI. Grave 148: A – plan, B – profile, C – situation of the horse skeleton in plan; 1 – clay, 2 – iron.

Grave 149

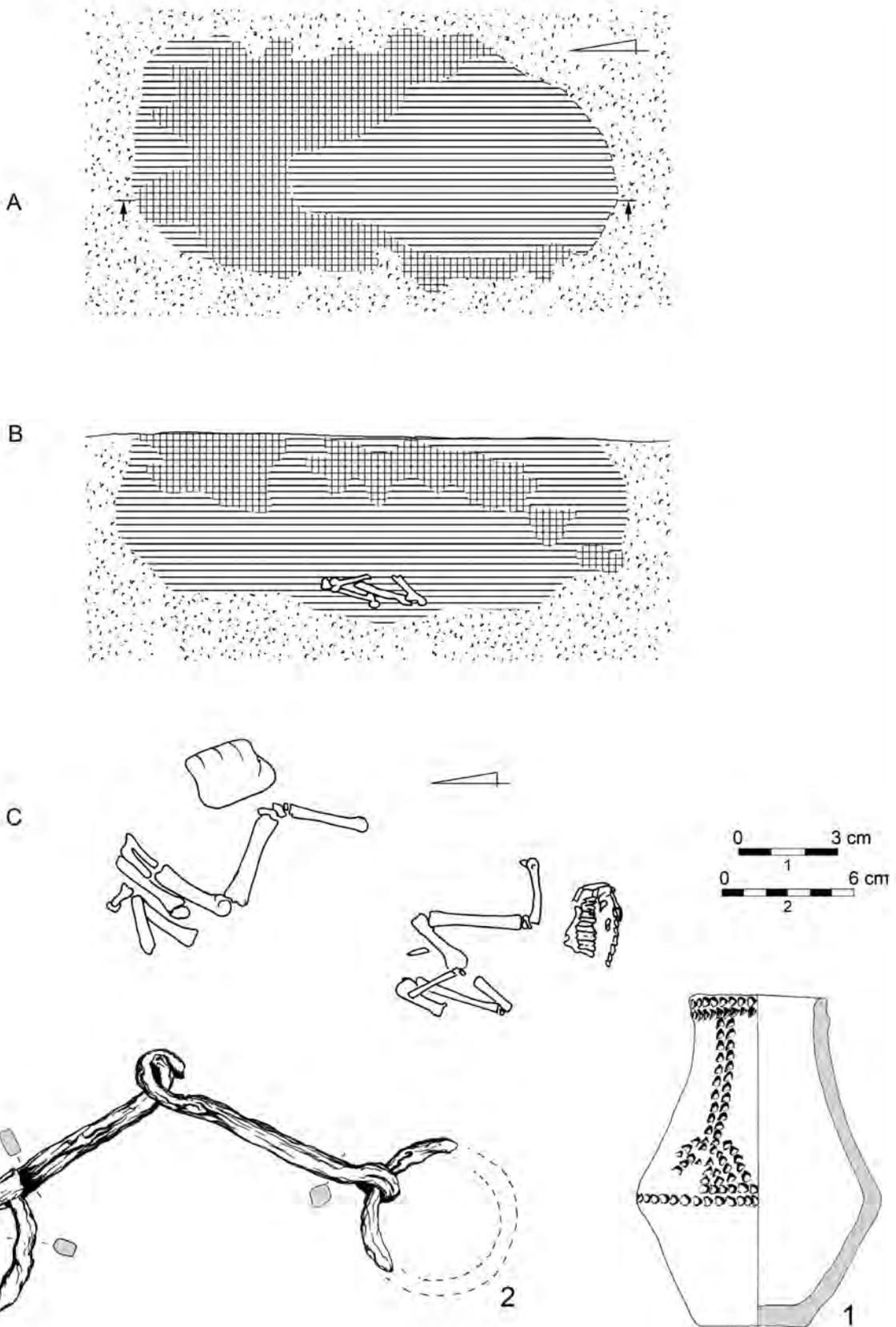
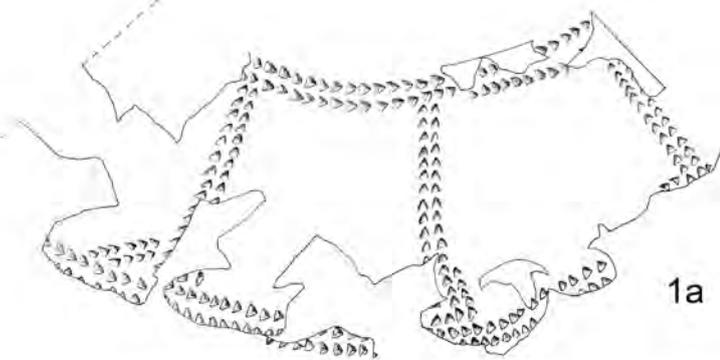
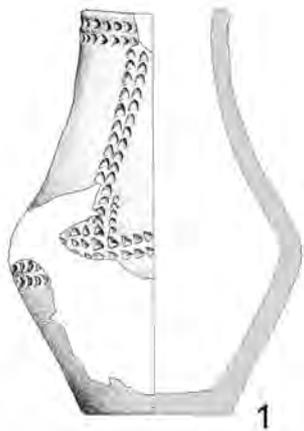
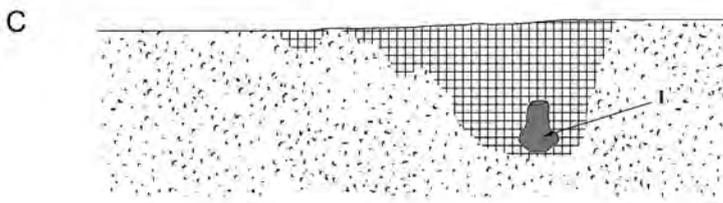
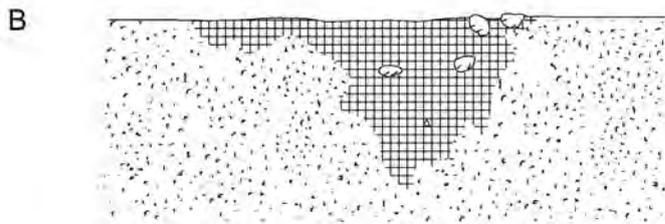
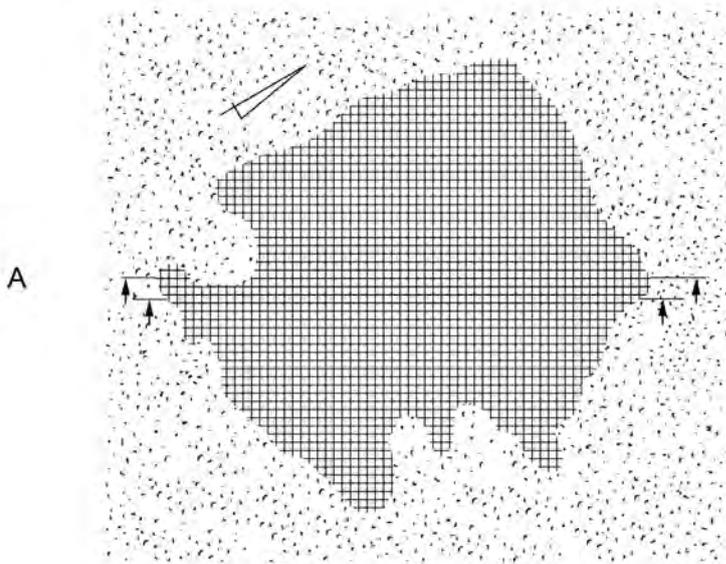


Plate XCVII. Grave 149: A – plan, B – profile, C – situation of the horse skeleton in plan; 1 – clay, 2 – iron.

Grave 150



Grave (?) 154

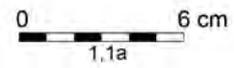
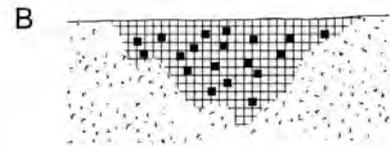
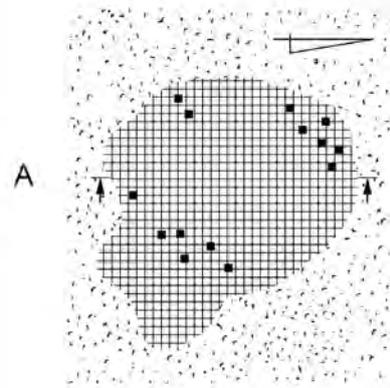


Plate XCVIII. Grave 150: A – plan, B – profile, C – profile with the vessel; 1, 1a – clay. Grave (?) 154: A – plan, B – profile.

Feature 153

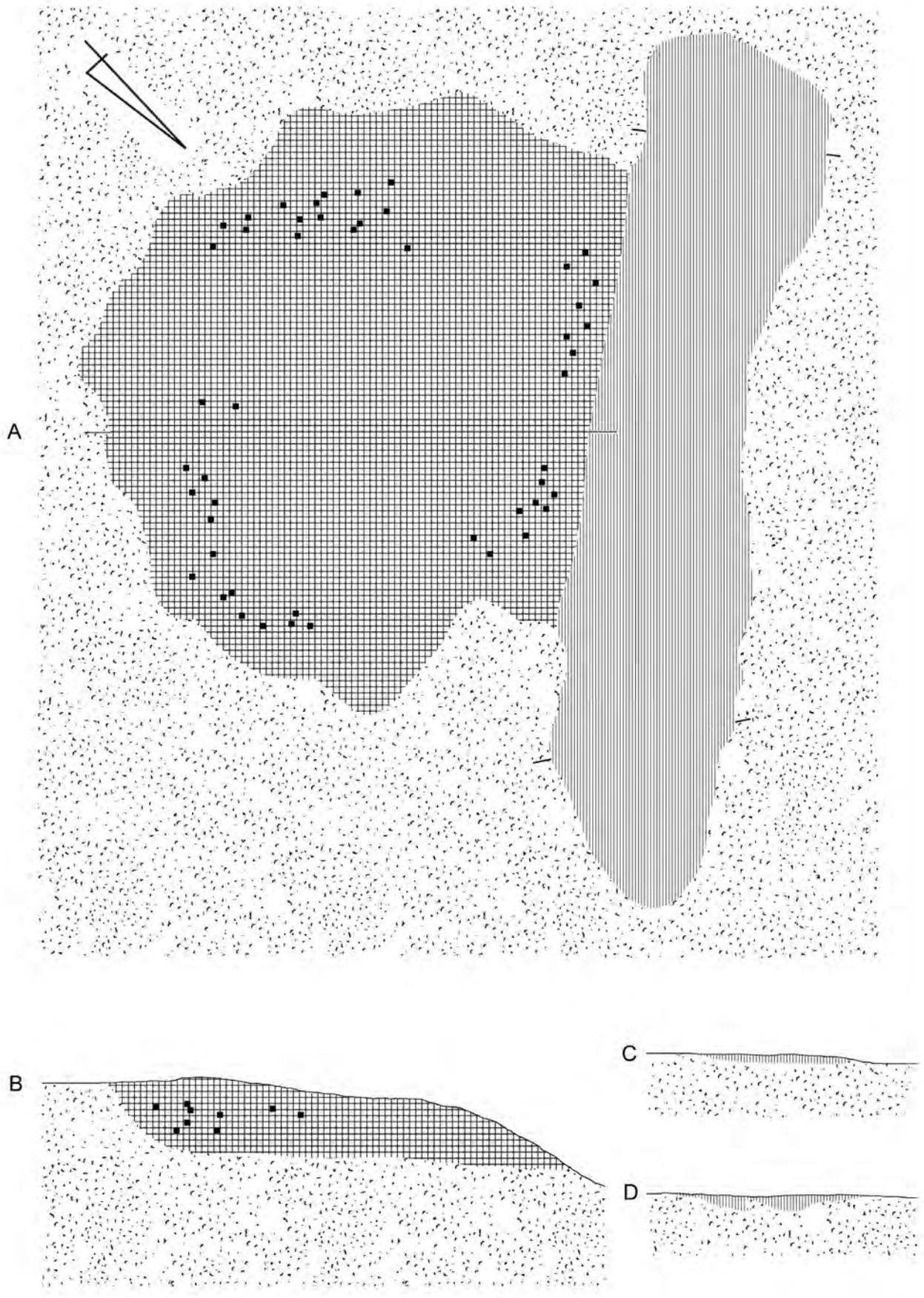


Plate XCIX. Feature 153: A – plan, B-D – profiles.

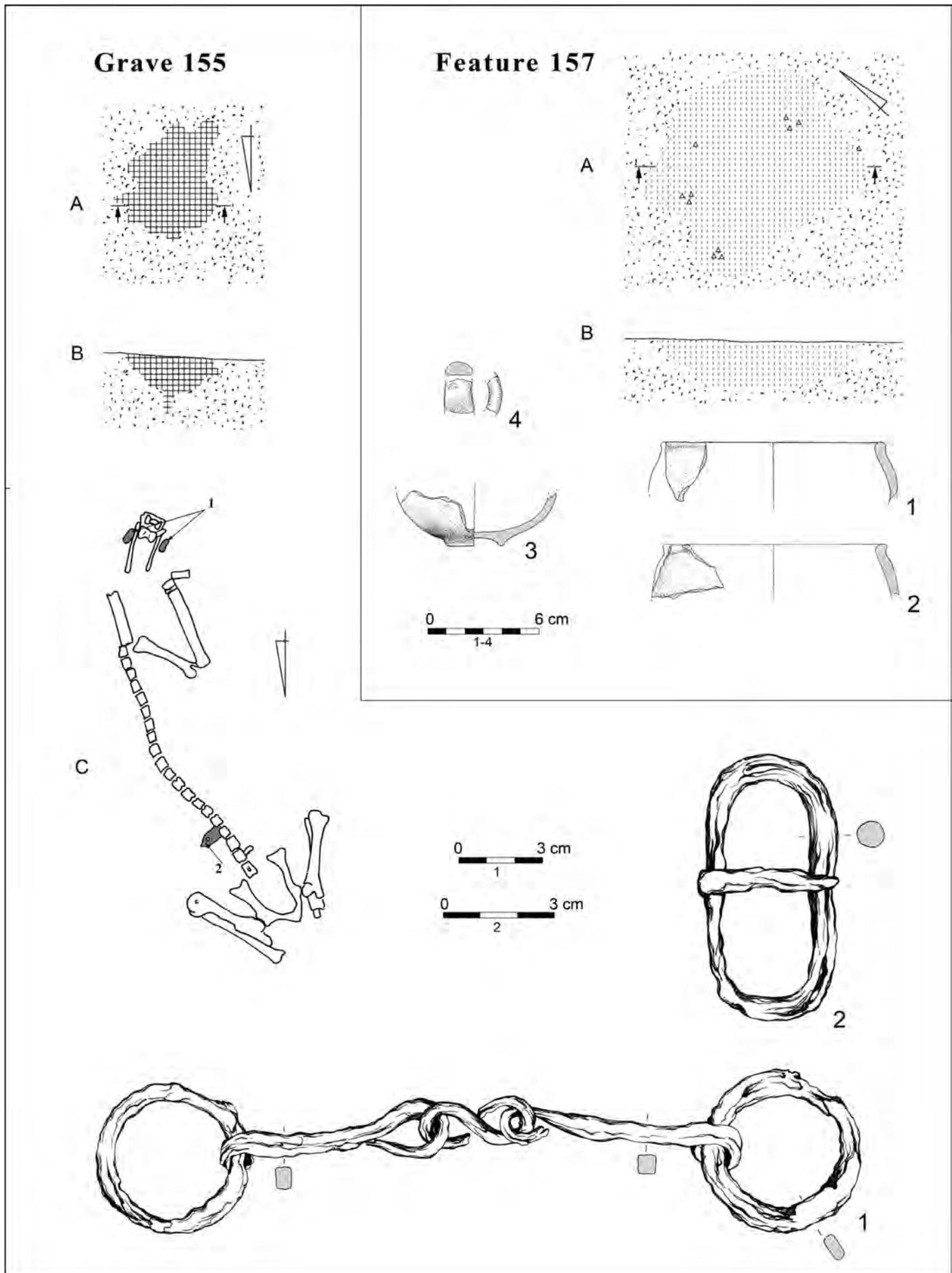
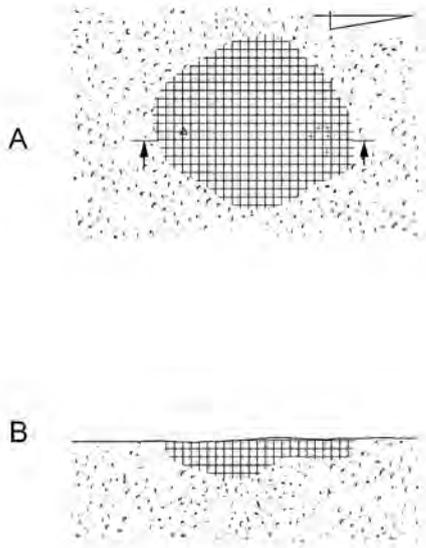
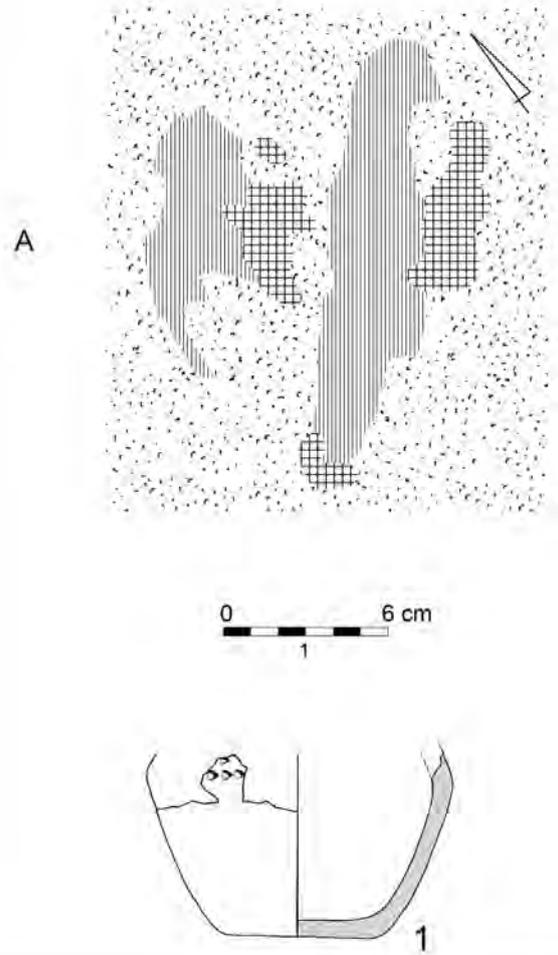


Plate C. Grave 155: A – plan, B – profile, C – situation of the horse skeleton in plan; 1,2 – iron. Feature 157: A – plan, B – profile; 1-4 – clay.

Grave 156



Grave 158



Grave 160

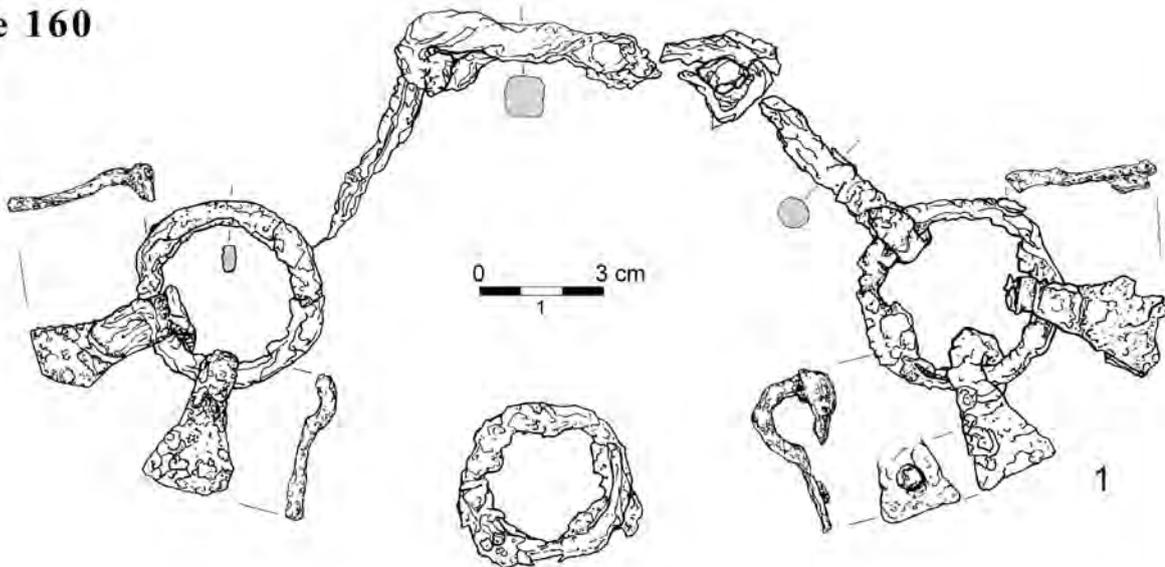


Plate CI. Grave 156: A – plan, B – profile. Grave 158: A – plan; 1 – clay. Grave 160: 1 – iron.

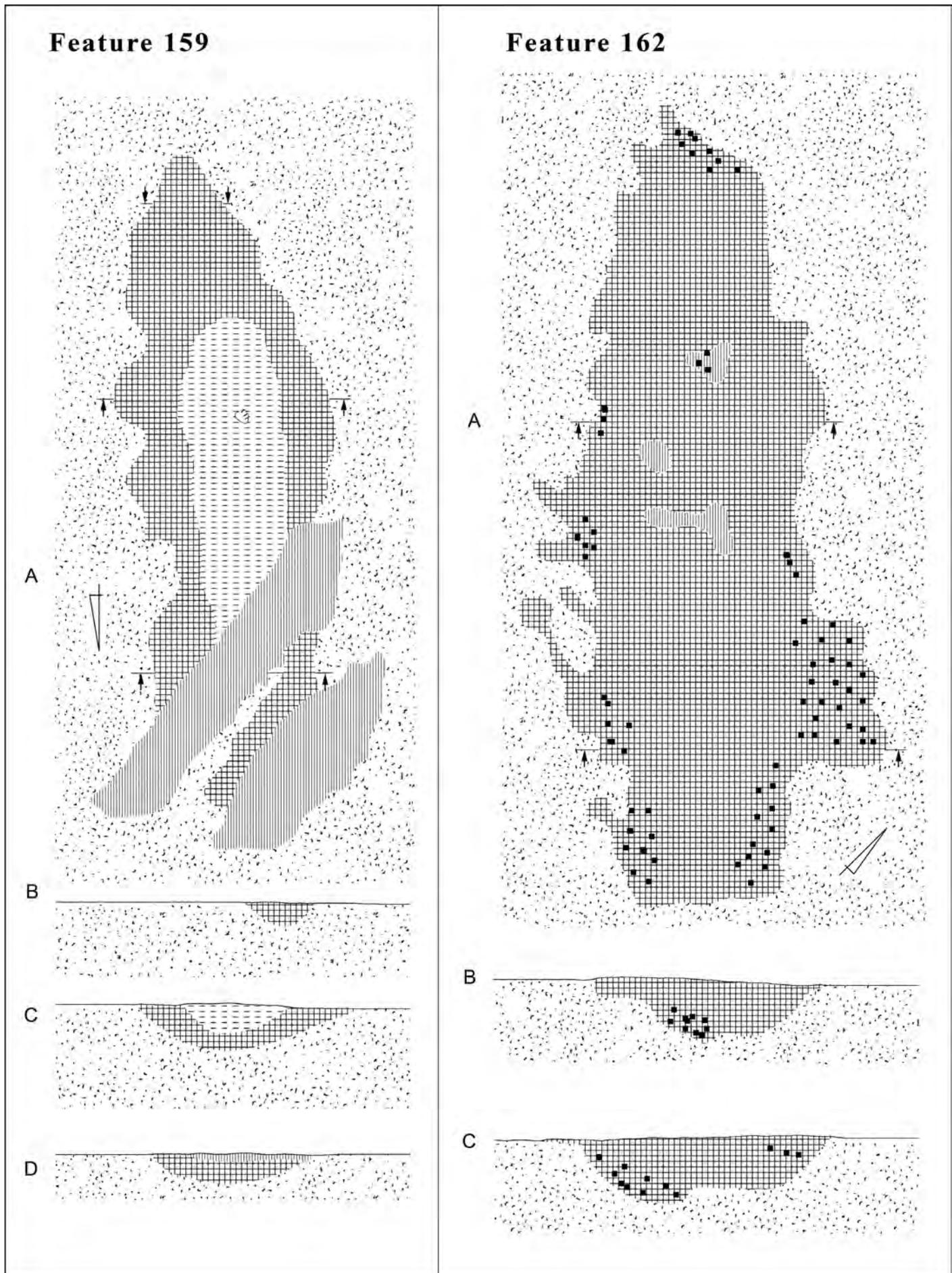
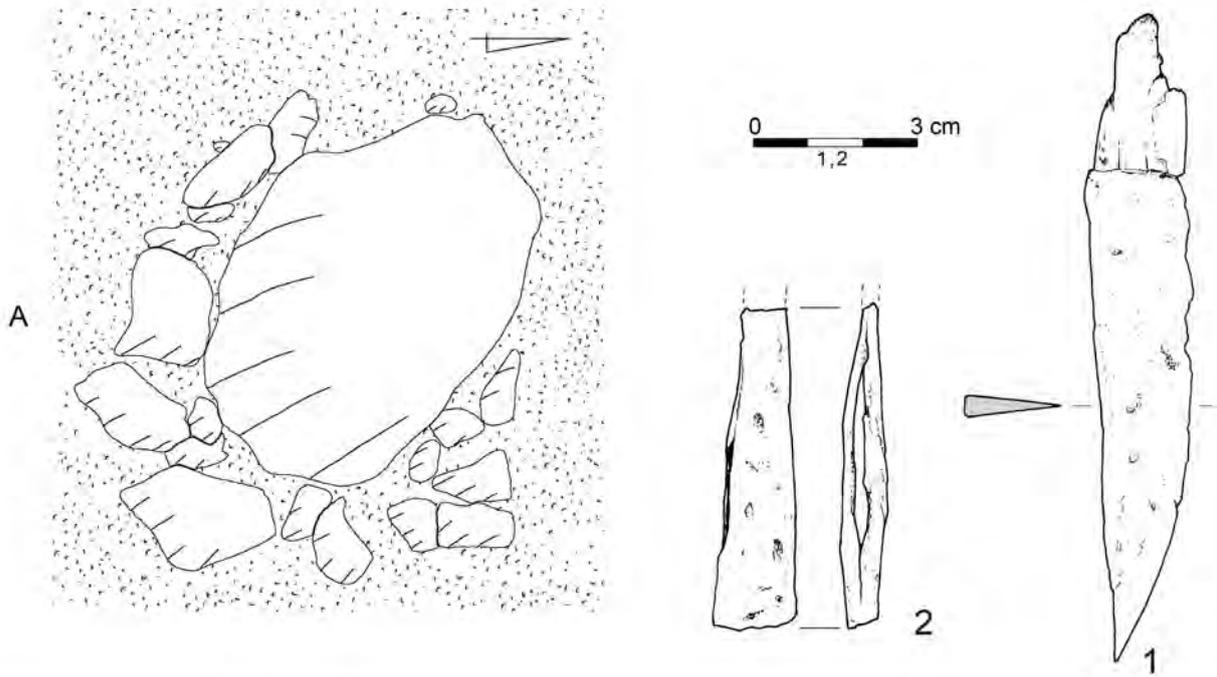


Plate CII. Feature 159: A – plan, B – profile in the southern part, C – profile in the middle part, D – profile in the northern part.
 Feature 162: A – plan, B – profile in the north-western part, C – profile in the south-eastern part.

Feature 161



Feature 163



Plate CIII. Feature 161: A – plan; 1, 2 – iron. Feature 163: A – plan, B – profile.

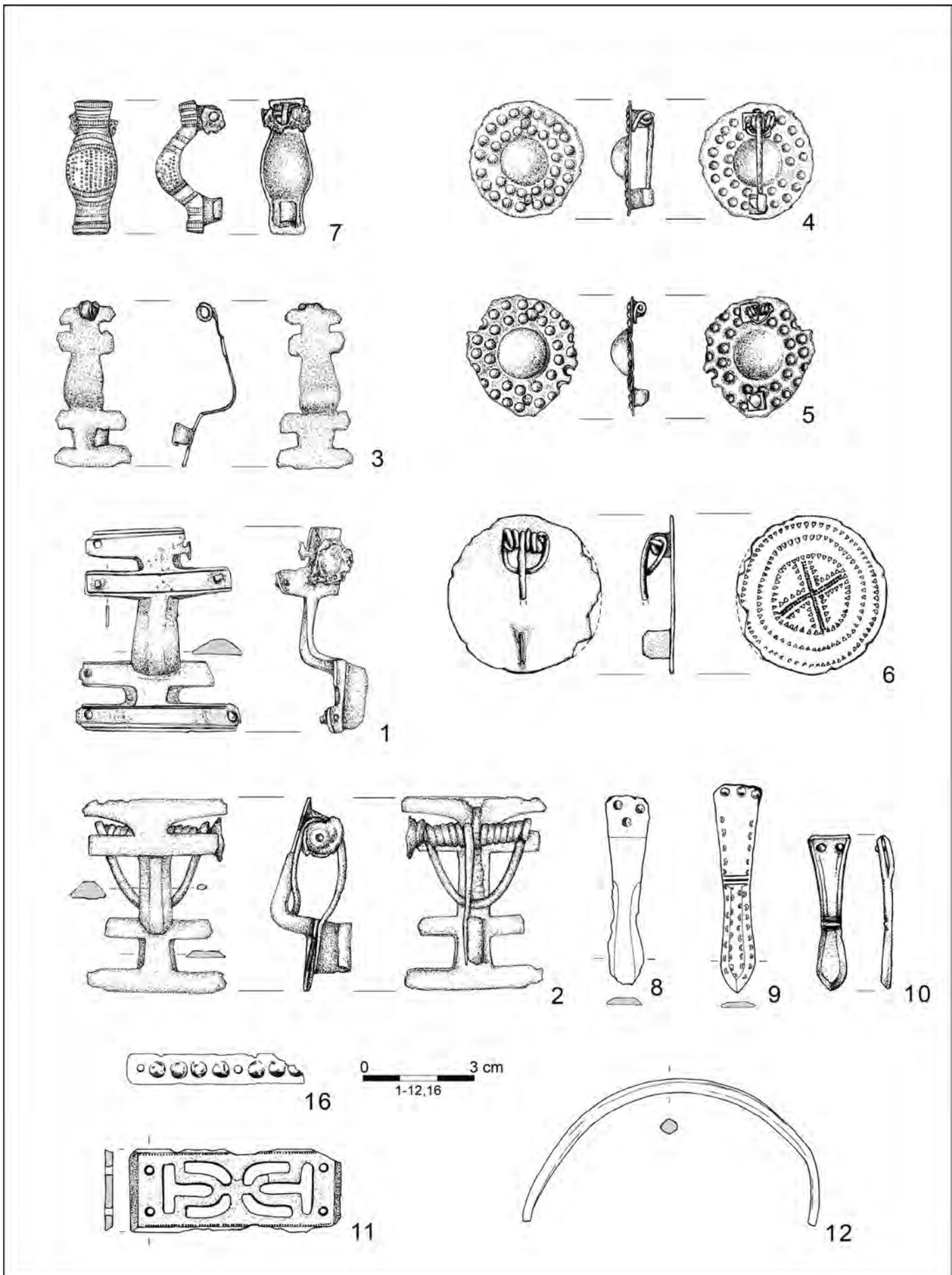


Plate CIV. Stray finds: 1, 3-6, 8-12, 16 – bronze, 2, 7 – bronze and iron.

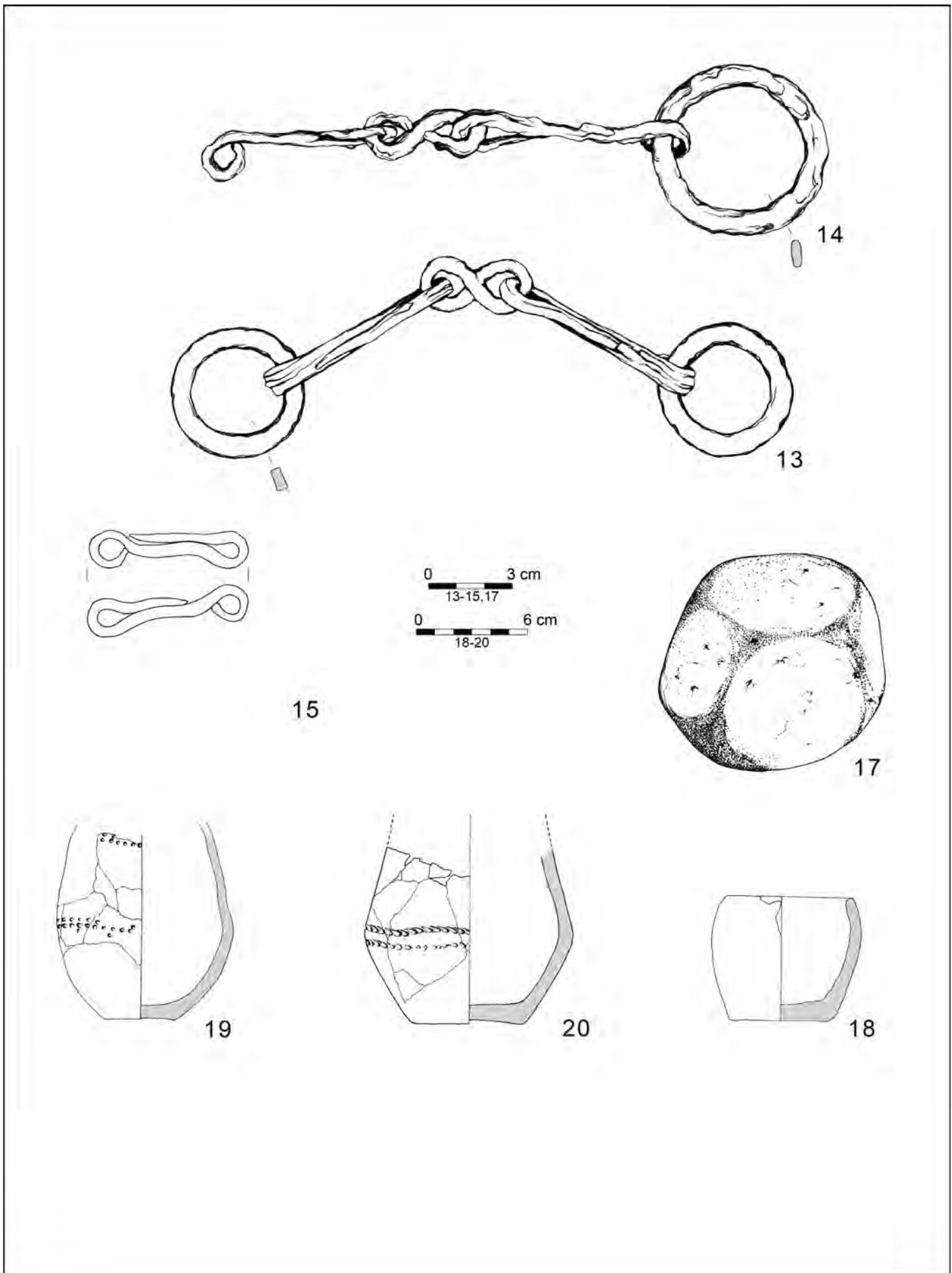


Plate CV. Stray finds: 13-15 – iron, 17 – stone, 18-20 – clay.



Plate CVI. Grave finds: 1, 2 – 17/1, 3 – 85/18, 4 – 18/1, 5, 6 – 23/1, 7 – 34/1, 8, 9 – 38/1.



Plate CVII. Grave finds: 1 – 41/1, 2 – 41/2, 3 – 83/1, 4, 5 – 105/1; 6, 7 – 105/2.



Plate CVIII. Grave finds: 1 – 84/4, 2 – 84/3, 3 – 84/5, 4 – 85/9, 5 – 21/16, 6 – 17/13, 7 – 117/3.



Plate CIX. Grave finds: 1, 2 – 11/2, 3 – 127/1, 4 – 148/1, 5 – 149/2, 6 – 151/1.

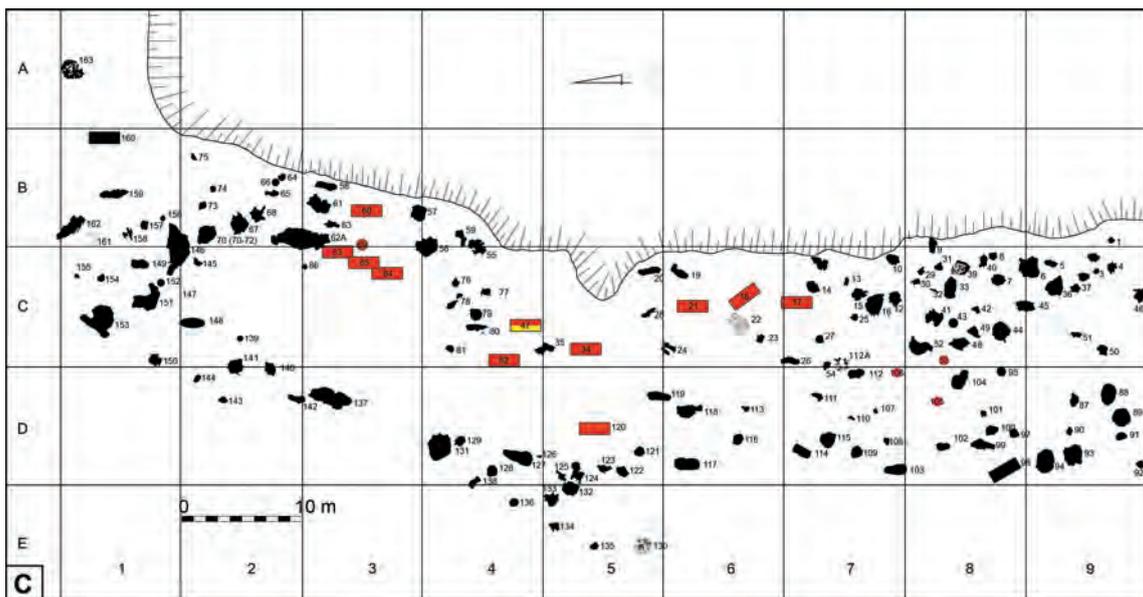
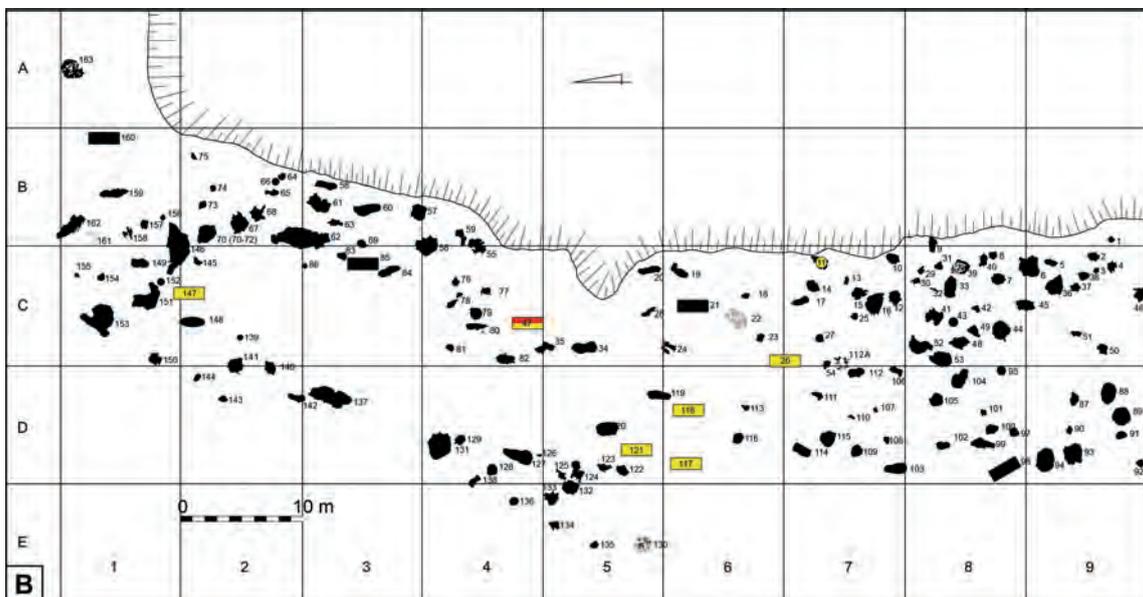
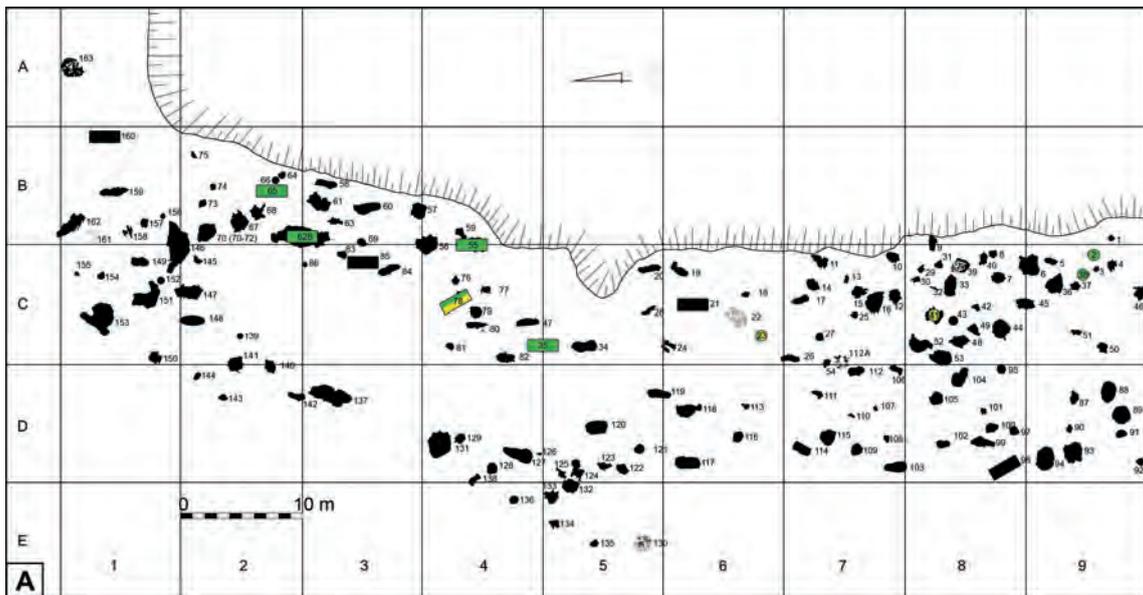


Plate CX. Distribution of graves from respective phases: A – Phase 1 (graves marked in green), B – Phase 2 (graves marked in yellow), C – Phase 3 (graves marked in red).



1



2



3

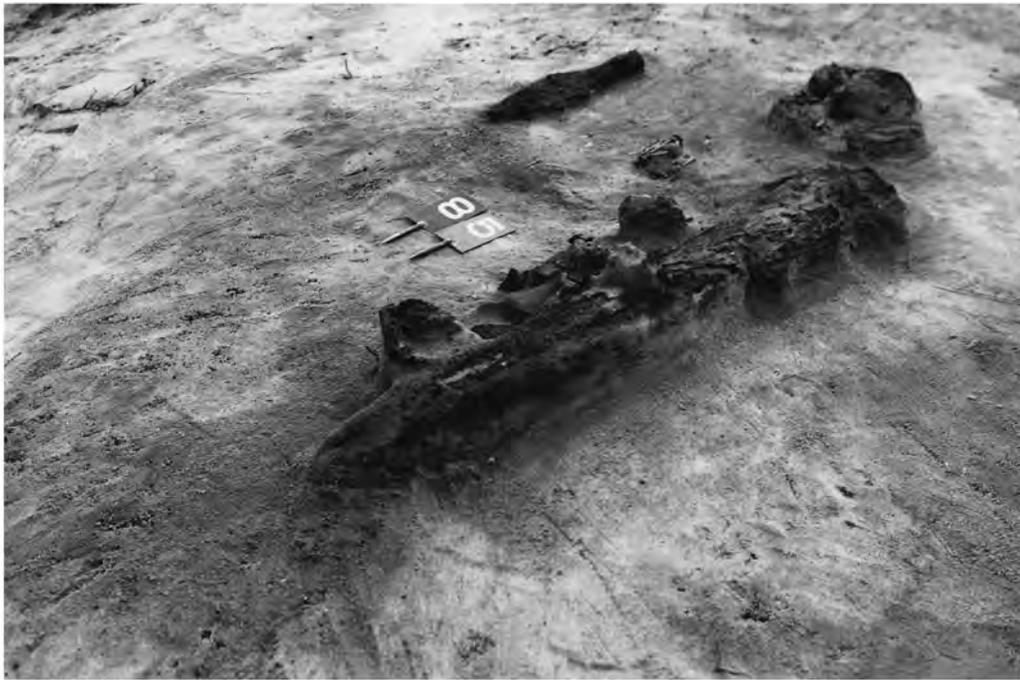
Plate CXI. Nowinka. Views of the site before the excavations.



1



2



3

Plate CXII. Nowinka: 1 – grave 17, 2 – grave 120, 3 – grave 85.



1



2



3

Plate CXIII. Nowinka: 1 – grave 120, 2 – grave 82, 3 – grave 114.

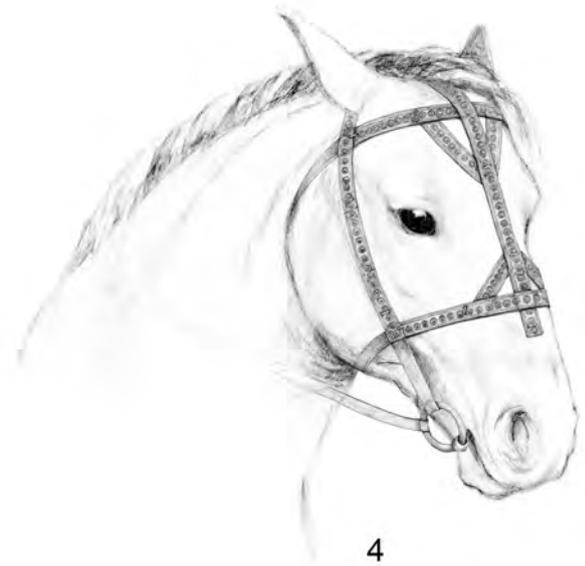


Plate CXIV. Reconstruction of horse harnesses from Nowinka: 1 – grave 78, 2 – grave 83, 3 – grave 118, 4 – grave 121.

