

**THE FOUNDATIONS OF RADIOCARBON
CHRONOLOGY OF CULTURES BETWEEN
THE VISTULA AND DNEIPER:
4000-1000 BC**

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Editor's Foreword

This volume of the *Baltic-Pontic Studies* is a record of investigations carried out under the research project begun earlier in vol. 7 ("The Foundations of radio-carbon chronology of cultures between the Vistula and Dnieper: 3150-1850 BC", Poznań 1999). Here, the approach is broader in terms of chronology and culture. Our purpose has been to fill taxonomic gaps hitherto present in the discussion (supplementing the dating of cultures, groups or phases) or reanalyze the grounds for findings considered particularly controversial. In the latter case, a very enlightening debate was provoked by the comparative chronology of the Yamnaya and Catacomb cultures presented by A.N. Nikolova. We hope that a large series of ^{14}C dates and a revision of the foundations of "archaeological knowledge" (stratigraphy, typochronology and groups of co-occurrence of traits), brought together in the paper by D.Y. Telegin, S.Z. Pustovalov, N. Kovalyukh, lay the ground for a stabilization of views on this important dividing line in the chronology of the Bronze Age in the Pontic zone.

A vast majority of the new ^{14}C dates have been obtained under an international research project financed by the Polish Committee for Scientific Research.

Editorial comment

1. All dates in the B-PS are calibrated [BC; see: Radiocarbon vol.28, 1986, and the next volumes]. Deviations from this rule will be point out in notes [bc].
2. The names of the archaeological cultures and sites are standarized to the English literature on the subject (e.g. M. Gimbutas, J. P. Mallory). In the case of a new term, the author's original name has been retained.
3. The spelling of names of localities having the rank of administrative centres follows official, state, English language cartographic publications (e.g. *Ukraine, scale 1 : 2 000 000*, Kiev: Mapa LTD, edition of 1996; *Rèspublika BELARUS', REVIEW-TOPOGRAPHIC MAP*, scale 1:1 000 000, Minsk: BYELORUSSIAN CARTOGRAPHIC AN GEODETIC ENTERPISE, edition 1993).

Katarzyna Ślusarska-Michalik

RADIOCARBON CHRONOLOGY OF THE “HORDEEVKA TYPE”

The discovery of a tumulus cemetery near Hordeevka (Gordievka), in the Trostyanets District, the Vinnytsia Region (Fig.1), is a turning point in the process of analysing the pace of cultural changes on the borderland of the steppe and the forest-steppe of the northern Pontic area in the late Bronze Age. Although this



Fig. 1. Hordeevka, Trostyanets District, Vinnytsia Region. Location of the site

site has already been extensively described in the relevant literature, its ^{14}C datings available at present are still rare. Hence, specifying the culture and time in which it functioned arouses controversies.

Basically, there are two approaches concerning the Hordeevka cemetery itself and the related terminology. In the first one, it is treated as an isolated phenomenon that occurred within local or immigration cultural groups (cf. chapter I). In the other approach, L.I. Krushelnitska referred to this site as to a taxonomic unit, introducing the term **“Hordeevka type”** to denote a “late Bronze Age Middle Dniester culture”. According to L.I. Krushelnitska, this culture differed from the Bilozerka or Bilogrudovka cultures [Krushelnitska 1998:196]. In line with this approach, V.I. Klochko [2001:157] pointed to the emergence of a new culture, manifested by the Hordeevka cemetery.

In this article the author aims at establishing the chronology of the Hordeevka site on the strength of the radiocarbon datings and, indirectly, attempts at determining the place of the **“Hordeevka type”** in the cultural setting of the right-bank Ukraine.

I. HOW HAS THE “HORDEEVKA TYPE” BEEN REPRESENTED CULTURALLY AND GENETICALLY TO DATE?

The cemetery is situated on a flat high ground, covering an area of approximately 3 square km (2.0 by 1.5 km), between two right tributaries of the Southern Bug River — the Bityug and Trostyanchyk rivers. This area features 45 low, roughly round mounds. In 40 of them there were burials. Most probably, the tumuli appeared in a larger number, however, some of them had been completely destroyed by ploughing [Berezanskaya, Lobay 1994:148]. The site in question was discovered in 1986 in the course of land improvement works and its excavation proceeded until 1989. In the first season the investigation was directed by B.T. Lobay of the Regional Museum in Vinnytsia. However, owing to the unique nature of the discovered finds, the direction in the subsequent three seasons was taken over by S.S. Berezanskaya who was assisted by the team composed of: V.I. Klochko, B.T. Lobay, Y.S. Machostych and O. Vangorodskaya.

Since 1994 when the research began, the basic problem to solve has been to determine the chronology of the cemetery and the culture it belonged to, as well as the role and nature of the central-European influences. The authors of the initially determined taxonomy maintain that the Hordeevka cemetery reflects a considerable influence of the central-European tumulus cultures, resulting from eastward migration from the west [Berezanskaya, Lobay 1994:152]. Supposedly, this was the

burial place of the elite representatives of a single wide territorial unit. This hypothesis can be further supported by the lack of any neighbouring and coexisting settlement. Featuring hardly any weapons but containing instead rich sets of ornaments, the site was believed by some to be a female necropolis [Berezanskaya, Lobay 1994:153] of an easternmost group, so far unknown, of the tumulus groups. Such assumption was supposedly based on the finds of tulip-shaped jars, vases and cups, bronze bracers and spiral-plate rings, as well as single-edged knives. The question of chronology was settled by making a comparative analysis of the Hordeevka metals and central-European materials. Consequently, the cemetery was dated between the 14th and the early 10th century BC, BC-HaA2 according to Reinecke [Berezanskaya, Lobay 1994:153]. Due to differences found in the analysed material (mainly in pottery), the authors of the study suggested distinguishing two phases of the use of this necropolis: phase 1 — connected with the Komarov and Trzcinec cultures and phase 2 — connected with the Bilozerka, Vysotsko and Bilogrudovka cultures, as well as the Tarnobrzeg group of the Lusatian culture [Berezanskaya, Lobay 1994:153].

The opinion on the connection of the Hordeevka cemetery with the tumulus circles was further popularised in S.S. Berezanskaya and V.I. Klochko's monograph of the site [1998]. The authors extended the previous division by another two phases, following the comparison of metals (mainly knives), pottery and harnesses with materials from the Carpathian and east Mediterranean areas. This chronology, according to the authors, was supported by five non-calibrated ¹⁴C datings (cf. chapter II). Phase I was dated at 1500-1300 BC (BB-BD), phase II — 1300-1200 BC (BD-HaA1), phase III — 1200-1100 BC (HaA2) and phase IV — 1100-1000 BC (HaA-B) [Berezanskaya, Klochko 1998:19-20].

In contrast to the above considerations, L.I. Krushelnitska challenged the thesis that the discussed cemetery belonged to the “tumulus” groups. She argued that there were no grounds to establish the formal identity of the vessel forms found in Hordeevka with those in the Tumulus/pre-Lusatian assemblages. L.I. Krushelnitska pointed out that similar pottery traditions were widely cultivated by groups inhabiting south-western Ukraine. She criticised the assumption — made after analysing only some of the metal objects, including tanged arrowheads, spiral temple circlets [of the Bilozerka type] — that the assemblage was of an allochthonous origin and claimed that these artifacts appeared in the right-bank Ukraine already in the “Late Sabatinovka” level. L.I. Krushelnitska observed that the Hordeevka metal objects are most analogous to artifacts found in assemblages of the Vysotsko culture, however, in her opinion, the analogies resulted from reciprocal contacts. What is more, she maintained that the state of culture in Hordeevka makes one believe that in the “Middle Dniester” area (i.e. area between the Middle Dniester and Southern Bug rivers) there appeared syncretic groups that could have contributed to the formation of the Chornoles culture in this area. L.I. Krushelnitska claimed that the

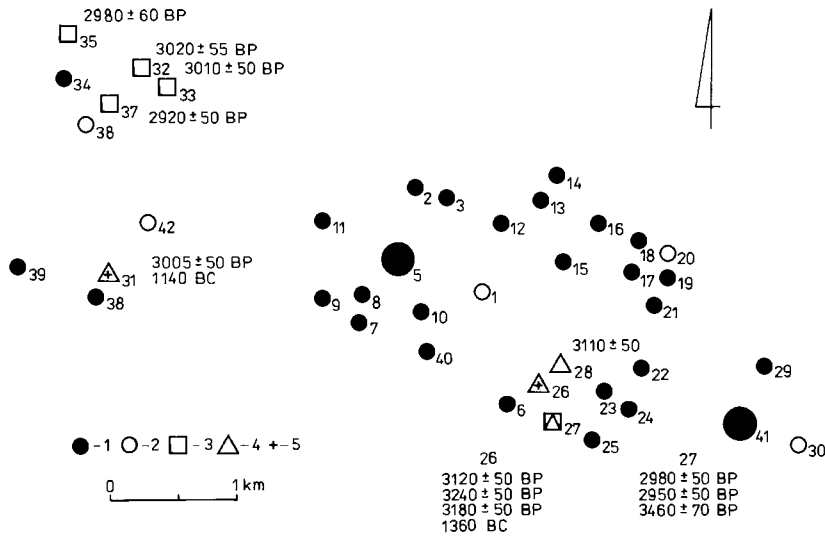


Fig. 2. Hordeevka, Trostyanets District, Vinnytsia Region. Layout of the location of the barrows. Key: 1 – conventionally dated barrows, 2 – natural mound, 3 – first stage of radiocarbon dating, 4 – second stage of radiocarbon dating, 5 – supercalibration

cemetery's magnitude, abundance of its inventory, the complexity and uniformity of rituals, but most of all the long time of functioning induce one to treat it as a centre of rituals and ceremonies. In her work she agreed with the dates proposed by S.S. Berezanskaya and B.I. Lobay [Krushelnitska 1998:193-197].

The view that the cemetery is autochthonous, as a result of merging forest-steppe [the Bilogrudovka and Chornoles cultures] and steppe [the Balty group of the Bilozerka culture] patterns in the late the Bronze Age and in the early Iron Age, is also advanced in the present author's studies to date. A detailed analysis of the grave goods and characteristics of burial rituals, as well as calibrated ^{14}C datings served as a basis for establishing a new chronology of the assemblage. Accordingly, the Hordeevka cemetery was dated between 1400 and 1000 BC [Ślusarska 2003].

II. DESCRIPTION OF SOURCE ASSEMBLAGES FOR WHICH RADIOCARBON DATES WERE OBTAINED

The construction of the absolute chronology of the Hordeevka cemetery on the basis of radiocarbon dating is marked by two stages of research. The first one, connected with the monograph of the site, contains dates of five tumuli (cf. Fig. 2).

The second one started with dates obtained for four tumuli. The studies constituted a part of a research project concerning relative chronology of the area between the Vistula and Dnieper rivers. The project was conducted by the Institute of Prehistory at Adam Mickiewicz University, Poznań, with the co-operation of the Institute of Archaeology of the Ukraine Academy of Science and the State Scientific Centre of Environmental Radiogeochemistry in Kiev.

II.1. HORDEEVKA IN LIGHT OF THE RADIOCARBON DATINGS MADE SO FAR

The cemetery's monograph contained ^{14}C dates from five tumuli: 27, 32/2, 33, 35, 37. The Authors' thesis was that the dates referred both to the earliest (27) and to the latest phase of the cemetery (cf. Table 1). These dates, assumed conventionally, without calibration, corroborated the chronological brackets of the cemetery established on the basis of typology [Berezanskaya, Kločko 1998]. Likewise, the radiocarbon dates and conventional dates "complement" the typo-chronology in later literature [cf. Berezanskaya 1998:325-341; Kločko 1998:343-351].

Table 1

Hordeevka, Trostyanets District, Vinnytsia Region. The basic radiocarbon chronology of the cemetery by Berezanskaya and Kločko [1998]

Lab. No.	Grave No.	Material	Date BP	Conv. bc	Date BC [Calpal 2001]
Ki-5080	27	bone	3460±70	1510±70	1780±90
Ki-5079	32/2	bone	3020±55	1070±70	1260±90
Ki-5083	33	bone	3010±50	1060±50	1250±90
Ki-5081	35	bone	2980±60	1030±60	1200±100
Ki-5082	37	bone	2920±50	970±50	1120±90

With the adoption of conventional dates it was no longer necessary to criticise the single dating of tumulus 27 which in its calibrated version shifted the dates for this assemblage to the period between 1878 and 1682 BC. Otherwise, a possible solution of this situation would be to consider this dating as false and date the early level of the cemetery relying on typo-chronology [Ślusarska 2003:71-72].

II.2. CHARACTERISTICS OF NEWLY DATED ASSEMBLAGES

Dates were determined for four grave assemblages, i.e. tumuli: 26, 27, 28 and 31. Their description provides only typochronologically relevant characteristics, namely the rituals and grave goods.

Tumulus 26 (Fig. 3). The grave pit was roughly square, 3.6 by 3.3 metres, and it was covered with timber. About 20-40 cm away from its walls there were boards forming a cist of a kind. Inside this cist there were 4 postholes probably supporting a canopy-shaped construction. The covering boards bore traces of fire, which induces one to assume that above the grave there was a ritual hearth. The skeleton was relocated; only teeth and humeri were left *in situ*. Other grave goods were discovered in the debris which was filling the shaft made by thieves. The inventory included: two gold and two silver pendants, a bronze knife with a solid handle, 10 amber beads and 2 resin discs. They were all found in the place where originally lay the corpse's head. However, fragments of a vessel and of a bronze pin were placed in the material filling the posthole in the SW part of the grave. The ^{14}C dates are as follows: 3180 ± 50 (Ki-9252), 3240 ± 50 (Ki-9253), 3120 ± 50 (Ki-9254). One of the construction elements was supercalibrated. Consequently, it was possible to determine the date of cutting down the tree at 1360 BC.

Tumulus 27 (Fig. 4). The grave was surrounded by a patch of pale yellow clay thrown out of the excavation. Four metres S from the grave pit there were traces of a hearth. The grave pit was rectangular, measured 3.8 by 2.8 metres, and was covered with a wooden roof. The grave walls were grooved lengthways to fit in wooden boards. At the bottom of the grave pit there were 4 postholes. The grave's N part was destroyed by thieves digging into the grave. The skeleton had only the long bones left *in situ*. It was a flexed burial, with the head directed NE and hands put in front of the face. Below the skeleton there was an organic bed. Presumably, the inventory was originally placed near the corpse's head in the upper part of the body only to be relocated later. The grave goods featured: about 100 amber beads, a handleless, S-shaped cup, a bronze awl, fragments of two bronze ring-headed pins, one bronze needle, 3 ring-like gold pendants, a helix made of a strip (5 turns) and another one of gold wire (3 turns). The ^{14}C dates are as follows: 2980 ± 50 (Ki-9255), 2950 ± 50 (Ki-9256).

Tumulus 28 (Fig. 5). The rectangular grave pit (dimensions 3.4 by 2.8 metres) was covered with a board ceiling and shifted NE. On the bottom there were 4 postholes, i.e. the remnants of a structure supporting the roofing or a wooden platform. The skeleton was relocated; some of the bones were found in the debris filling the thief-made shaft which had destroyed the northern part of the grave. The skeleton probably lay on a reed bed (?), 1.5 by 1.8 meters in size, while the remaining part of the grave contained small slats. Both the bones and the covering wood bore

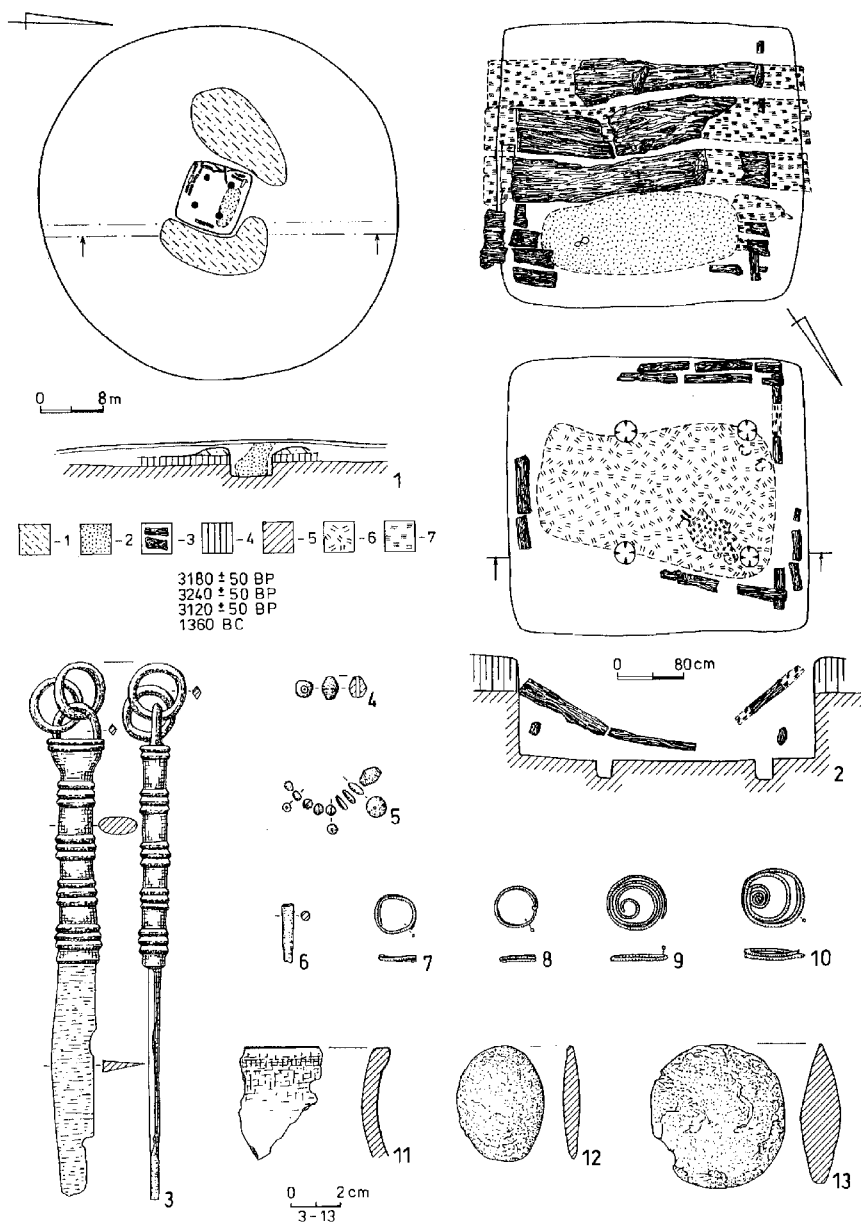


Fig. 3. Hordeevka, Trostyanets District, Vinnytsia Region. Barrow 26. 1 – plan and section of barrow, 2 – plan and section of grave, 3 – bronze knife, 4-5 – amber beads, 6 – fragment of bronze needle, 7-8 – golden rings, 9-10 – silver pendants, 11 – fragment of pottery, 12-13 – resin. Key: 1 – discharge, 2 – plunder diggings, 3 – wood, 4 – chernozem, 5 – rock-bed, 6 – remains of organic underlay, 7 – wood remains

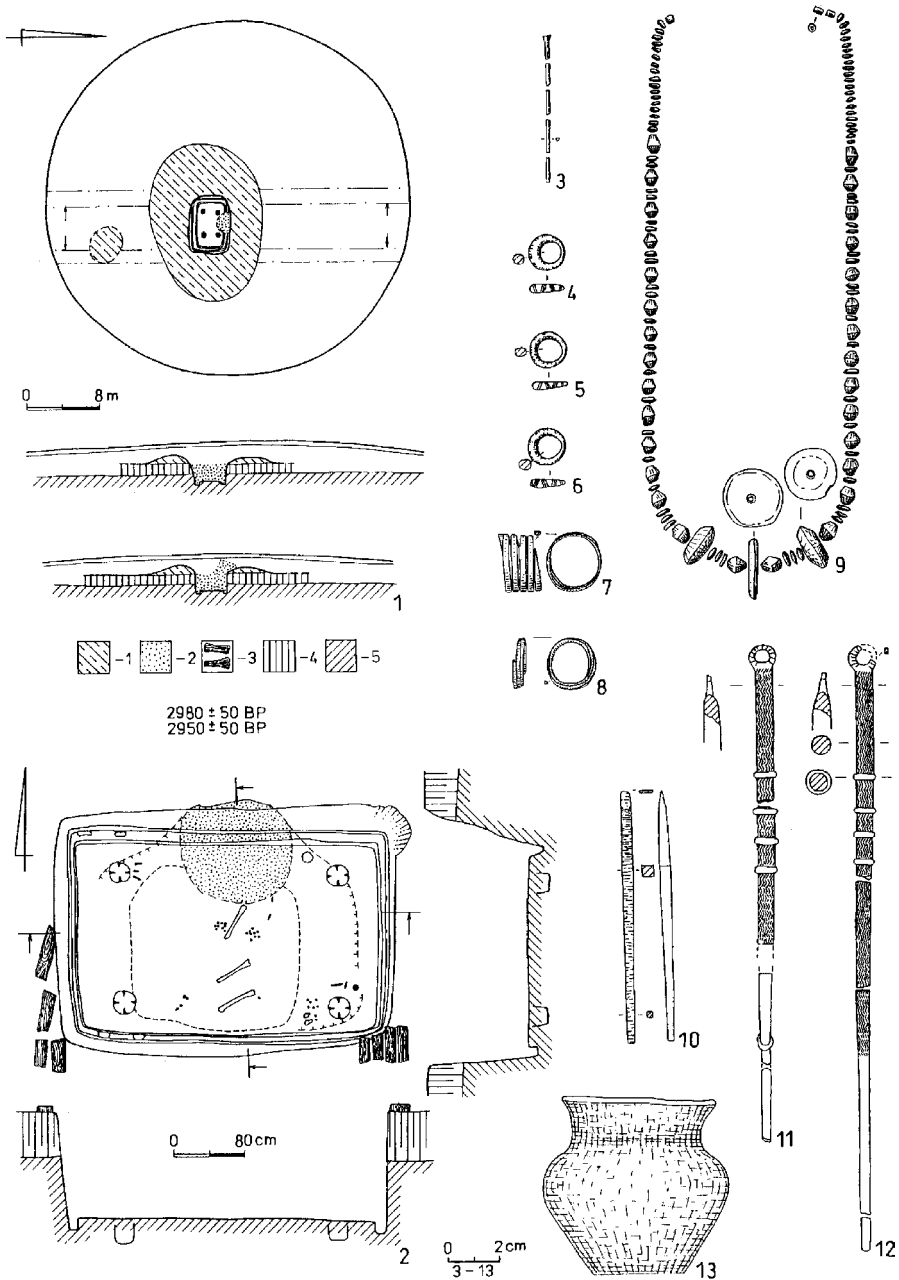


Fig. 4. Hordeevka, Trostyanets District, Vinnytsia Region. Barrow 27. 1 – plan and section of barrow, 2 – plan and section of grave, 3 – bronze needle, 4-8 – golden rings, 9 – amber beads, 10 – bronze awl, 11-12 – bronze pins, 13 – pottery. Key: 1 – discharge, 2 – plunder diggings, 3 – wood, 4 – chernozem, 5 – rock-bed

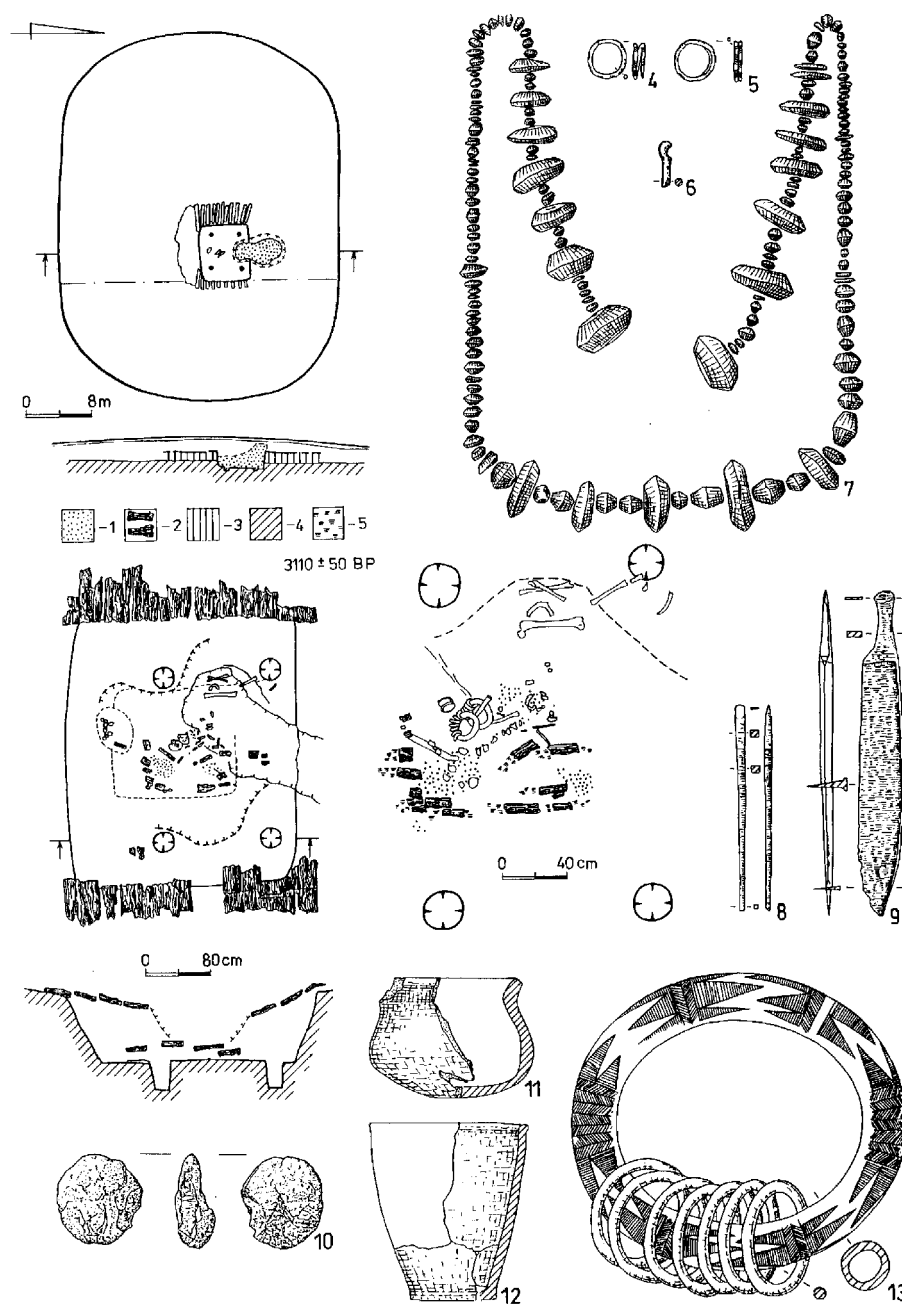


Fig. 5. Hordeevka, Trostyanets District, Vinnytsia Region. Barrow 28. 1 - plan and section of barrow, 2-3 - plan and section of grave, 4-5 - golden rings, 6 - fragment of bronze needle, 7 - amber beads, 8 - bronze awl, 9 - bronze knife, 10 - resin, 11-12 - pottery, 13 - bronze bracelet (?). Key: 1 - plunder diggings, 2 - wood, 3 - chernozem, 4 - rock-bed, 5 - remains of organic underlay

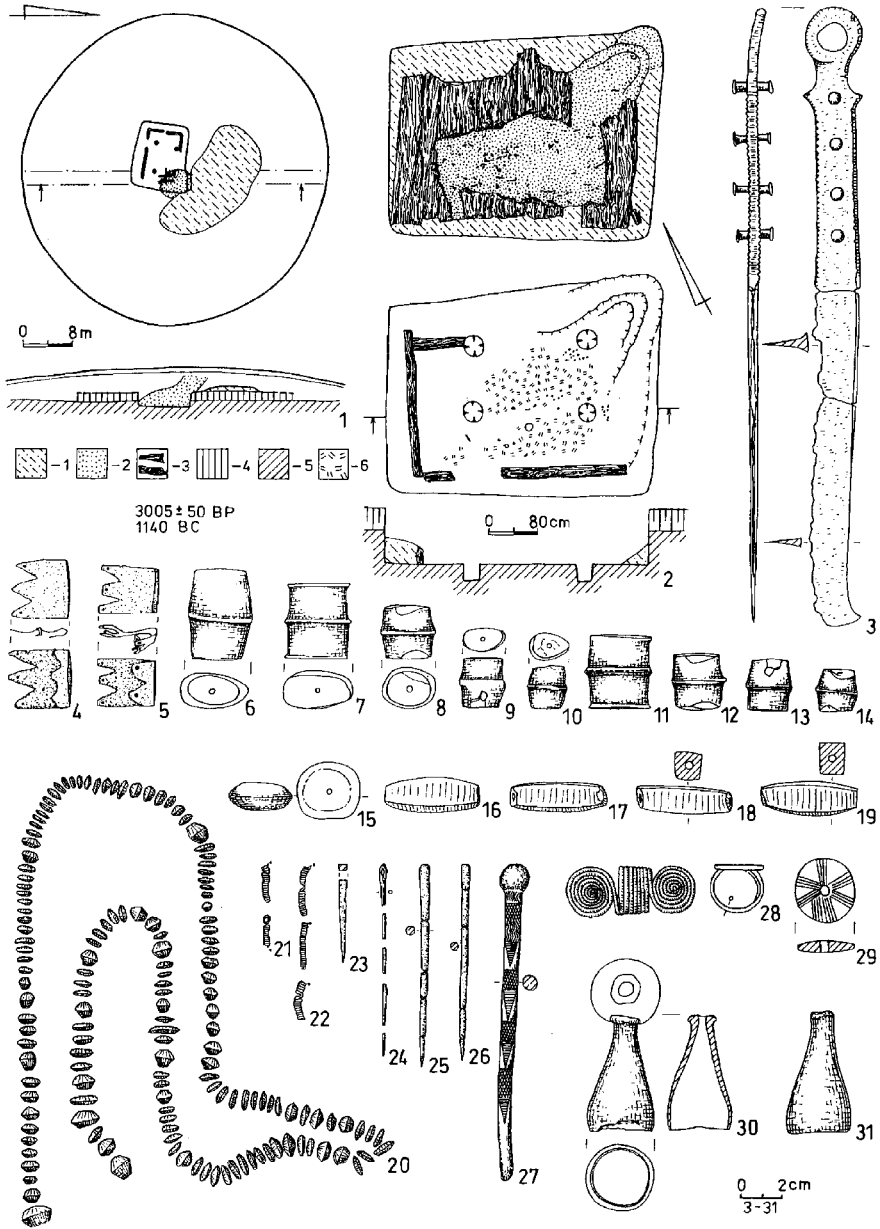


Fig. 6. Hordeevka, Trostyanets District, Vinnytsia Region. Barrow 31. 1 - plan and section of barrow, 2 - plan and section of grave, 3 - bronze knife, 4-20 - amber beads, 21-22 - golden scrolls, 23 - bronze awl, 24 - bronze needle, 25-26 - bone needles, 27 - bronze pin, 28 - golden ring, 29 - amber pendant, 30-31 - bronze bell-shaped pendants. Key: 1 - discharge, 2 - plunder diggings, 3 - wood, 4 - chernozem, 5 - rock-bed, 6 - remains of organic underlay

traces of fire that might have been lit above the grave. Relying on the grave goods that were left intact, it may be assumed that in this flexed burial the corpse was laid on its right side with the head directed northwards. The hands, holding two bracelet-flappers, were raised and placed near the face. In the SE corner of the grave there were: a small vase, a bronze awl, as well as a fragment of a bulbous vessel and a knife. The latter two artifacts were found near the skeleton's legs. The other inventory consisted of about 100 bronze beads, a fragment of a pin with a globular head, 2 helixes of gold wire (1.5 turns) and a resin disc. The ^{14}C date is as follows: 3110 ± 50 (Ki-9257).

Tumulus 31 (Fig. 6). The rectangular grave pit (dimensions 4.0 by 3.5 metres) was situated in the centre of the mound. Alongside the northern side of the pit, there was a layer of soil thrown out during the digging. The grave had a roof made of logs, which in the SE part bore traces of burning (probably remnants of a ritual hearth). Inside the grave pit, a "cist" made of wooden boards was found with four postholes within its perimeter. The northern part of the grave was destroyed by thieves who had dug a shaft, pulled out the corpse and scattered around the inventory: about 160 amber beads, 5 small gold wire helixes, 2 gold ferrules of a wooden vessel, a bronze knife, a fragment of an awl, a bronze disc-shaped pendant, one bronze and two bone needles, a bronze globular-headed pin, 2 bell-shaped pendants. The ^{14}C date is as follows: 3005 ± 5 (Ki-9258). One of the structural elements was supercalibrated. Consequently, it was possible to determine the date of cutting down the tree at 1140 BC. The new dates are listed in table 2.

Table 2

Hordeevka, Trostyanets District, Vinnytsia Region. The radiocarbon dates obtained in the second phase of research into the cemetery's absolute chronology

Lab. No.	Grave No.	Material	Date BP	Date BC [Calpal 2001]
Ki-9252 [k. 26]	26	wood	3180 ± 50	1450 ± 50
Ki-9253 [k. 26]	26	wood	3240 ± 50	1520 ± 70
Ki-9254 [k. 26]	26	wood	3120 ± 50	1380 ± 60
supercalibration	26	wood		1360
Ki-9255 [k. 27]	27	wood	2980 ± 50	1210 ± 90
Ki-9256 [k. 27]	27	wood	2950 ± 50	1160 ± 90
Ki-9257 [k. 28]	28	wood	3110 ± 50	1370 ± 60
Ki-9258 [k. 31]	31	wood	3005 ± 50	1240 ± 90
supercalibration	31	wood		1140

III. THE TYPOCHRONOLOGY VERSUS THE RADIOCARBON CHRONOLOGY OF THE "HORDEEVKA TYPE"

III.1. TYPOCHRONOLOGY OF THE CHARACTERISTICS OF BURIAL RITUALS

This article describes only two most meaningful typochronological features: (a) structures within the grave pit and (b) traces of ritual behaviour.

a. In the Hordeevka cemetery one can distinguish two kinds of grave structures. In the first one, there were boards lining the grave pit walls covered by roofing made of logs split in halves. The simplest wooden grave structures, consisting only of pit coverings made of boards or logs split in halves appeared in the Pontic area as of the early Bronze Age. Although the custom of lining the grave pit walls with boards was recorded as early as in the burials of the Mnogovalikovoy Pottery culture, it became most widespread in the Bilozerka culture. In the graves of the latter taxon, the boards were placed along the walls both vertically and horizontally [Otroschenko 1986:130]. It seems that the rectangular grave pits found in the Hordeevka cemetery roughly correspond to type 3, according to Vanchugov [1990:50].

In the other kind of wooden grave structures discovered in Hordeevka, there were cists or coffins with a log structure. Their analogous forms were found in the graves of the Chornoles culture (e.g. Gulay-Gorod, tumulus 52), including the Zhabotin phase (Nosachevo, Ryzhanovka) and both phases of the Cimmerian horizon. The above observations incline one to assume that the chronology of the graves containing cist-coffin structures, i.e. tumuli 26, 31, 32/2, 33, 34, 35 and 37 is relatively late. In line with this view, the authors of the monograph suggest that the structures be recognised as a local characteristic of the right-bank foreststeppe, typical of the Pre-Scythian period [Berezanskaya, Kločko 1998:7].

What is interesting about the interior design of the Hordeevka graves is the existence of postholes. The tumuli of the Bilozerka culture featured several postholes, the number ranging from two to over a dozen. However, in most cases there were four postholes. They are thought to be remnants of light roofing structures, yet there are reasons to believe that some postholes were not parts of any structure. The debris filling postholes in tumulus 4/2 of Glinnoe and 31/1 of Kochkovatoo contained fragments of vessels and bull bones. Likewise, in Hordeevka, a posthole in tumulus 34 contained a snaffle bit [Berezanskaya, Kločko 1998:table 64].

b. In the mound of tumulus 27, at the grave pit's southern border, there was a hearth. In tumulus 28 both the skeleton and the structure boards bore traces of charring. Furthermore, in the southern part of tumulus 31 traces of fire were also detectable, while around the grave in tumulus 5, there was a ring (diameter 21 by 18 metres; 5.0-6.0 metres wide; 1.5 metres thick) of burnt clay with a layer of ash and

charcoal. Consequently, it may be assumed that fire played a vital role in the burial ceremonies. The custom of fire-kindling over graves, evidenced by the traces of ash and burnt clay in grave pit ceilings, also appeared in the burial ceremonies of the Bilozerka culture [Vanchugov 1990:51].

III.2. TYPOCHRONOLOGY OF GRAVE GOODS

The analysis of grave goods includes only the artifacts which are vital for typochronology: (a) elements of harness, (b) single-edged knives, (c) bronze ornaments, (d) amber beads, and (e) pottery forms.

a. Elements of harness were found in the graves of horizon II. Stirrup-type snaffle bits prevailed in the Chernogorovka phase on the Pontic steppes. Usually, such snaffle bits occurred together with bronze cheekpieces [Chochorowski 1994:48]. Surprisingly, one assemblage featured a bronze snaffle bit and a three-aperture cheekpiece, probably made from a wild boar tusk, with round apertures in the same plane. It is believed that this type is connected with steppe influences. According to Foltiny, its date falls on the 9th century BC [Foltiny 1967:30]. However, the above description concerns only the central-European materials. As concerns the steppe and forest-steppe of south-eastern Europe, the cheekpieces under consideration constitute prototypes of the Cimmerian cheekpieces of the Chernogorovka type. They first appeared in the late Bronze Age cultures of Ukraine, mainly in the Bilogrudovka, Bilozerka, Chornoles cultures, and continued occurring until late Chernogorovka phase. The closest analogous artifact to the find from tumulus 34 is the cheekpiece discovered in Sacharna (the Rezin region) [Terenzhkin 1976:Fig. 62, 15]. However, the fact that one assemblage contained both a bone cheekpiece and the discussed bronze snaffle bit does not necessarily reflect the manner in which bits made of the composite materials were used. As O. Terenzhkin (followed by J. Chochorowski) noticed, bronze snaffle bits were fit with bronze cheekpieces, while bone cheekpieces appeared together with flexible (leather-strapped) snaffle bits [Terenzhkin 1976:150]. The above considerations refer to grave deposits, therefore, in line with Chochorowski's observation, it may be assumed that the appearance of particular goods in graves was determined by symbolic rituals. If so, it is uncertain whether the fact that a only a snaffle bit or only cheekpieces were found in a grave reflects the manner of using a particular type of bit [Chochorowski 1994:42]. Still, when both artifacts appear in one assemblage there are grounds to consider its chronology. The bone cheekpieces with apertures in the same plane were recorded as early as the Bilozerka and Bilogrudovka cultures and they continued occurring until the Chernogorovka phase, i.e. from about the 10th till about the 9th/8th century

BC. Similarly, the stirrup-type snaffle bits appeared mainly in the Chernogorovka phase, i.e. from about the 10th to the first half of the 8th century and slightly into the 8th and 7th centuries BC. If this snaffle bit were to be considered as one of the oldest, according to the monograph authors, it cannot be dated earlier than at HaA2/HB.

The monograph describes an artifact from tumulus 37 as a snaffle bit. Its analogous forms were found in grave 5 of the Vaszar cemetery (western Hungary) that belonged to the younger phase of the Urnfield culture circles (HaB) [Berezanskaya, Kločko 1998:10]. Nevertheless, the discussed object, which is made of iron, is connected with “Thraco-Cimmerian” art [Stegmann-Rajtár 1992:83]. The present author believes that the artifact from tumulus 37 may be associated with the group of Smerekivka-type catches-connectors, even though it bears no stylistic traits that would suggest its connection with the Cimmerian horizon. Other pendants, similar but with different ends (either crescent-shaped or trapezoid-shaped on the outer rings), are known from the late Bronze Age assemblages of Transylvania and were dated at HaB [Chochorowski 1994:83]. The iron artifact found in Vaszar seems to play the same role. In accordance with J. Chochorowski’s observations, it may be assumed that early Hallstatt artifacts served as prototypes that were later adapted and transformed in the Cimmerian traditions [Chochorowski 1994:85].

b. Artifacts analogous to single-edged bronze knives included in the Carpathian group can be found in the central-European cultures of the BD/HaA1 period [Berezanskaya, Kločko 1998:8; Ślusarska 2003]. L.I. Krushelnitska noticed that analogous types of knives occurred at the sites of the Vysotsko? culture (Zalozhtsy, Lisivtsy, Shumlyany) [Krushelnitska 1998:Fig. 111].

c. At the Hordeevka site there appeared two types of bell-shaped pendants. Tumulus 31 featured solid items found near the chest and the shoulders of the corpses. Artifacts of this kind, dated at HaA1, were relatively common in the burials of the Bilozerka culture and the Carpathian Basin cultures.

d. In terms of typo-chronology, the beads of the Tiryns and Allimuere types seem to be important. As a matter of fact, only those artifacts can be dated precisely: the 11th-9th century BC [LHIIC and the Submycenaean period]. In Italy, the beads are found in the Proto-Villanovan contexts, while in Bosnia they are encountered in assemblages dated at HaA-B [Harding, Hughes-Brock 1974:155]. The fact that beads of these kinds occurred in Hordeevka means that there were ties between the Southern Bug and eastern Mediterranean areas. Besides, such an assumption leads to the possibility of dating the assemblages in which the beads were found, i.e. the late phase of the site’s functioning, which corresponds to HaA-B.

e. In establishing the chronology of pottery assemblages, it is necessary to consider two graves containing scoops with loop-like handles. Scoops became widespread in the cultures of the transition period between the Bronze and the Iron ages, *inter alia* in the Bilogrudovka cultures, in which the scoops were the second, as

to the frequency of occurrence, group of table pottery, as well as in the Bilozerka culture. Various forms of scoops were also popular in the east-Balkan cultures of the Late Bronze Age [i.a. the Babadag culture] and Early Iron Age culture groups of the Dniester area: Chişinau-Corlăteni, Saharna-Solonceny or Neporotiv. One of the scoops found in Hordeevka has a disc-like bead at the top of a handle. This trait was very common in the Thracian Hallstatt groups on the Dniester: Chişinau-Corlăteni and Neporotiv.

To conclude, it may be said that typological analysis of the whole funerary rite, including grave goods, leads to distinguishing, within the cemetery, two groups of graves that may be associated with different stages of its evolution.

The first group of graves is characterised by grave pits without any wooden structures, covered only by a ceiling, alternatively with boards lining the walls. Inside, there were remnants of postholes. The grave inventory usually consisted of: 1-3 vessels from groups I, II, V, VIB2 and VII (i.e. vases, handleless cups, stem vessels, poorly profiled tulip-shaped pots and bulbous vessels), single-edged knives of the Carpathian and Mediterranean groups, a number of ornaments (bracelets, pins, pendants, elements of necklaces), including amber beads. These graves often contained also bronze awls and needles appearing together with single-edged knives. The following tumuli belong to this group: 2-22, 24-28, 30, 39 and 40. In many aspects, group I is analogous to the early assemblages of the Bilozerka and Bilogrudovka cultures, as well as to the Carpathian cultures of the BD/HaA1-HaA2 level.

The other group of graves incorporates tumuli with large grave pits (about 3.0 by 3.20 metres) fitted with complex wooden structures, i.e. cist-coffins. Occasionally, postholes were also recorded. The grave goods consisted mainly of 1-3 vessels from groups I, II, III, IV and VIB1 (i.e. vases, handleless cups, bowls, scoops and tulip-shaped pots), few ornaments (usually limited to small pendants made of gold wire, gold, glass and amber beads, including beads of the Tiryns and Alimuere types), iron artifacts (double-edged and bimetallic single-edged knives, an awl), bell-shaped pendants and elements of a horse harness. The following tumuli belong to this group: 5, 23, 31-38. Apart from the traits of the cultures mentioned above, in this group there were also characteristics of the earlier phase of the Cimmerian horizon, the Chornoles culture, as well as the Carpathian-Danube elements associated with the early groups of Thracian Hallstatt (HaA2-HaB).

The assemblages have some traits that are correlated with phase II of the Babadag culture evolution. Consequently, the present author suggests establishing for them a relatively late chronology, comparable with the late Bilozerka and Bilogrudovka cultures and the early Chornoles culture groups in the forest-steppe. On the basis of typonchronology, the dates of the cemetery should be narrowed down to the BD/HaA1-HaB period (Table 3).

Comparison of periodisation of the cemetery in the context of the Central-European periodisation of the Late Bronze and the Early Iron ages

Hordeevka, according to the present author	Hordeevka, according to V.I. Klochko [1998]	Central Europe
phase I	phases I and II	BD/HaA1-HaA2
phase II	phases III and IV	HaA2-HaB

III.3. THE “HORDEEVKA TYPE” IN LIGHT OF THE LATEST ¹⁴C DATES

The series of seven new ¹⁴C datings obtained from wooden elements of grave structures makes it possible to present a more accurate radiocarbon chronology of Hordeevka (cf. Table 2). Above all, it was possible to determine the time brackets for the initial group of burials and verify the contention about the sequence of the distinguished groups. Next, samples from tumulus 27 were taken and analysed again, which helped to verify its very early dates obtained before. The new dates range between 1250-1120 BC. The dates of the other two tumuli from group I (26 and 28) correspond to the period of 1420-1310 BC. Such time brackets for tumulus 26 are supported by the date obtained as a result of supercalibration, i.e. 1360 BC [Ślusarska 2002:184-185].

Considering typochronology and the radiocarbon dates, the first group of burials can be dated at the period between 1500/1400 and 1200 BC. The dates of the second group of burials, set in accordance with the previous datings at

1200—1000 BC, were supported by the results of supercalibration of tumulus 31 (cf. Table 3).

CONCLUSIONS

The above findings can be concluded as follows:

1. According to two series of ¹⁴C datings (cf. chapter II), the chronology of the Hordeevka cemetery should be established at the period between 1500/1400 and 1000 BC. Such chronological brackets do not contradict the typochronological findings.
2. The cemetery functioned approximately at the same time as the development of the Bilozerka culture and the early Chernogorovka phase of the Cimmerian

horizon in the steppe, as well as the Bilogrudovka and Chornoles cultures in the forest-steppe.

3. The joint appearance of steppe traditions (burial structures) and forest-steppe traditions (pottery), which is transparent at the Hordeevka site, seems to justify the hypothesis that in the area of the right-bank middle Southern Bug River there existed a new culture system, apart from the already known Balty group of the Bilozerka culture and the Bilogrudovka culture. However, the relationship of “**the Hordeevka type**” to the groups mentioned above or its supposed contribution to forming new cultural qualities [cf. Krushelnitska 1998:193-197; Klochko 2001:256-257, 276-279] require further study, including exploration of the settlement sites in the area between the middle Southern Bug and Dniester rivers.

Translated by Piotr T. Żebrowski

ABBREVIATIONS

AAC	– Acta Archaeologica Carpathica, Kraków
Annales UMCS	– Annales Universitatis Mariae Skłodowska-Curie, Lublin
AP	– Archeologia Polski, Warszawa
APŚ	– Archeologia Polski Środkowoschodniej, Lublin
BerRGK	– Bericht der Römisch-Germanischen Kommission, Mainz
BPS	– Baltic-Pontic Studies, Poznań
BSA	– Annales of the British School of Archaeology at Athens
JIES	– The Journal of the Indo-European Studies, Washington D.C.
KSIA	– Kratkiye soobshcheniya Instituta Archeologii, Moskva
MANH	– Materiały Archeologiczne Nowej Huty, Kraków
NA IA NAN	– Nauchnyy Arkhiv Instituta Arkheologii Natsionalnoy Akademii Nauk Ukrainy, Kiev
PA	– Przegląd Archeologiczny, Wrocław
PBF	– Prähistorische Bronzefunde, München
PZP	– Prahistoria ziem polskich, Wrocław-Warszawa-Kraków-Gdańsk
RA	– Rossiyskaya Arkheologiya, Moskwa
SA	– Sovetskaya Arkheologiya, Moskwa
SIA	– Slovenska Archeologia, Bratislava
SPA	– Sprawozdania Archeologiczne, Kraków
WA	– Wiadomości Archeologiczne, Warszawa

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