

**THE FOUNDATIONS OF RADIOCARBON
CHRONOLOGY OF CULTURES BETWEEN
THE VISTULA AND DNIEPER:
3150-1850 BC**

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Editor's Foreword

This volume of the *Baltic Pontic Studies* focuses on the results of the research carried out so far into the absolute (radiocarbon) chronology of the area lying between the Vistula and Dnieper or the bio-cultural borderland between the West and East of Europe. Absolute chronology is treated here both as a research goal and fundamental premise in the broader studies of the chronometric and development synchronization of "borderland" cultural systems. In a series of articles devoted to individual taxa a considerable number of new ^{14}C dates have been compared. The dates concern source materials that have been chosen from the point of view of their representativeness and chronometric value ("short-lived" materials were preferred to minimize a potential error). The vast majority of analyses were purposefully made in the same ^{14}C laboratory of the *State Scientific Center of Environmental Radiogeochemistry of Ukrainian Academy of Sciences* in Kiev taking advantage of funds generously provided by the *Polish Committee for Scientific Research*.

The volume devoted to the "dark" section of the "borderland" history (3150-1850 BC) is the first but not the last publication on the broader issues mentioned above that we intend to present in the near future.

Editorial comment

1. All dates in the B-PS are calibrated [see: Radiocarbon vol.28, 1986, and the next volumes]. Deviations from this rule will be point out in notes.
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).

Jan Machnik

**RADIOCARBON CHRONOLOGY OF THE CORDED
WARE CULTURE ON GRZĘDA SOKALSKA.
A MIDDLE DNEIPER TRAITS PERSPECTIVE**

1. INTRODUCTION

Discovered in the early 1970's, the barrows in the southern part of Grzęda Sokalska [Gurba, Wojtanowicz 1974] waited until the late 1980's to be systematically excavated. With the barrows being heavily damaged, the excavations were clearly of a rescue type [Bagińska 1988; Koman, Machnik 1993]. The barrows, numbering a few dozen and occurring in small groups, most often in pairs 200-300 m apart, stretch E-W for about 15 km along the crests of loess hillocks forming (Fig. 1, 2) the divide between the Huczwa and Rzeczyca Rivers (left tributaries of the Bug). The surviving height of the barrows is generally from 0.5 to 2.0 m (in forest) with the diameter oscillating between 10 and 30 m. Next to them, there are single large barrows in this area (which must be younger than the Neolithic) a few meters high and up to 50 m in diameter at the base [Koman, Machnik 1993:41,42; Fig. 1]. So far, twenty-four barrows, in various stages of destruction, have been excavated. In most cases their mounds have barely been preserved. Almost all of them turned out to be *kurgans* of the Corded Ware culture (CWC) from different phases of its existence [Bagińska 1998; Koman 1998]. Some of these *kurgans* included more than one human burial with most of the burials being placed off the *kurgan* center or frequently even at the edge of its mound. They were skeleton inhumations in grave pits, sometimes of a niche type. In some better preserved *kurgans*, a symbolic groove (in two cases a double one), dug into the undisturbed soil, was found underneath their mounds. The groove encircled one of the burials, usually the central one. In a clear majority of graves, both centrally located and placed off center, there were

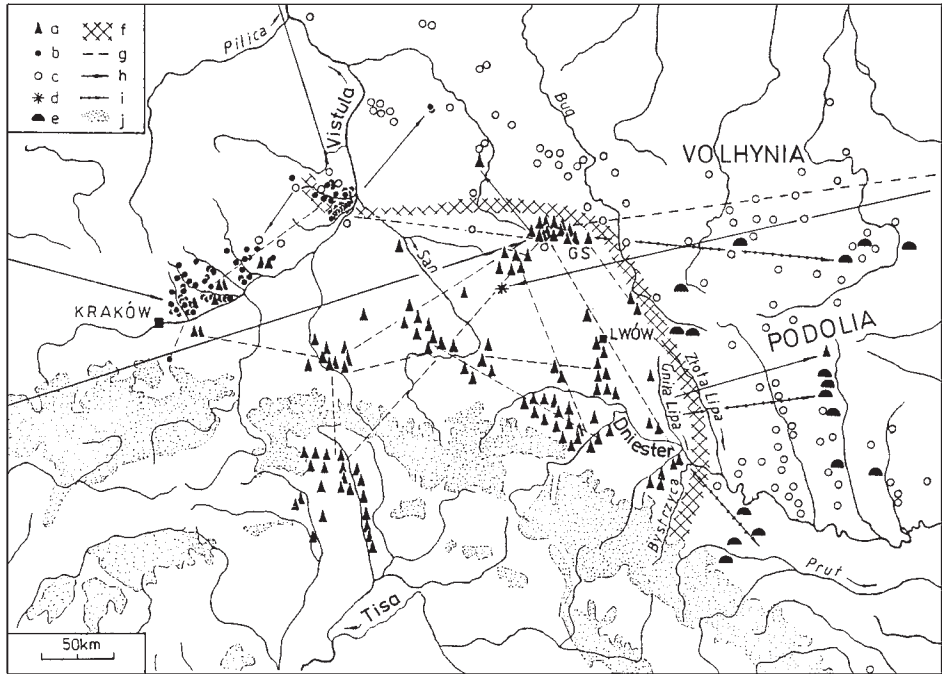


Fig. 1. A general map of single Corded Ware culture graves and their clusters in the interfluvial area of the Upper Vistula, Upper Bug and Dniester Rivers: a - clusters and single CWC *kurgans*, b - clusters and single flat graves of the Kraków-Sandomierz group of the CWC, c - clusters and single GAC graves, d - site of a presumed MDC grave assemblage (Młodów-Zakęcie), e - *kurgans* with CWC traits from the late 3rd millennium BC, f - zone separating compact ranges of the CWC and GAC, g - directions of movement of cultural traits (movement of shepherds) within the CWC area between the Upper Vistula, Upper Bug and Dniester, h - directions of far-reaching intrusions into the CWC area between the Upper Vistula, Upper Bug and Dniester, i - directions of the spreading of *kurgans* with CWC traits in the late 3rd millennium BC, j - main range of the Carpathians and Sudetes, over 500 m above the sea level. Letters GS stand for Grzędą Sokalską.

found numerous grave-goods, including complete vessels. This made it possible to thoroughly analyze, both typologically and stylistically, the cultural content of the *kurgans*. As a result we have obtained evidence of a great diversity of artifact forms as well as of pottery ornament patterns. The patterns have far-reaching analogies not only within the CWC but also to the Middle Dnieper culture (MDC). This, as well as certain stratigraphic observations and ^{14}C dates are a proof of considerable chronological differentiation between individual *kurgans* (even neighboring ones) as well as between graves located within them or nearby.

The CWC *kurgans* on Grzędą Sokalską mark the northern frontier of the compact range of the south-eastern branch of the culture covering the area located on



Fig. 2. Kurgans and traces of Neolithic settlements Funnel Beaker culture in the southern part of Grzęda Sokalska (Podkarpatie Prov.): 1 - Corded Ware culture *kurgans*, 2 - large *kurgans* of unknown chronology, 3 - traces of Neolithic settlements. The map gives numbers of sites discussed in the text with their affiliation to a given locality shown with a line.

the right bank of the Upper Vistula in the west and the Gniła Lipa and Bystrzyca Sołotwińska Rivers in the east (see map). The area also includes certain foothill regions of the Carpathians with the Ondawa and Laborec Highlands in the drainage of the Upper Tisa. To the north and east of the area (Fig. 1), there stretches a zone of the compact range of the Globular Amphora Culture (GAC), for a long time contemporaneous with the branch of the CWC of interest to us here which occupied the area between the Upper Vistula, Upper Bug and Dniester [Kadrow, Szmyt 1993].

The fact that it has been possible in the last decade to excavate such a large number of CWC *kurgans* on Grzęda Sokalska, a considerable number of which have been assigned absolute dates, allows us to investigate this culture better and to study the behavior of its founders in greater detail also in the context of the spatially distant MDC. This is possible because among the excavated CWC graves on Grzęda Sokalska there are some which contained pottery with traits more or less typical of the latter (i.e. MDC). The MDC is also counted among the wide spectrum of cultures with corded wares [Buchwaldek 1986a:11, Fig. 1].

2. GRAVE ASSEMBLAGES FROM GRZEŻA SOKALSKA WITH MIDDLE DNEIPER LINKS

Out of about thirty discovered CWC human burials in the area under discussion, six contained pottery (at least one vessel) with clear Middle Dnieper links. In addition, two other graves contained mortar-like beakers that might be a distant echo of influences coming from that direction. Among the former, two burials clearly stand out with vessels that have very close counterparts, both in respect of form and ornament, in MDC pottery. These are graves nos. 2 and 3 discovered during the excavation of a *kurgan* on site no. 3 at Hubinek in 1997 [Koman 1998]. Both graves (Fig. 3:A, B), dug into the undisturbed soil, were located at the original edge of the mound of the *kurgan* (Fig. 3:A1). In grave no. 1, located underneath the mound (however, not exactly in the center of the *kurgan*), there was a record number of seven vessels, considering what is typical of the CWC. All the vessels were typical only of the said culture (Fig. 3C), specifically of its late phase with one vessel (Fig. 3:C6) displaying clear resemblance to GAC amphorae¹.

Interesting Middle Dnieper traits are particularly clearly visible in one of the two beakers found in grave no. 2 mentioned before (Fig. 3:B1). The walls of the beaker are slightly curved inwards while the bottom section is rounded and has a regularly circular concavity in the bottom. The upper section of the vessel is decorated with three horizontal bands of incised herringbones with the middle band being considerably wider than the other two. The shape of the beaker bears clear resemblance to vessels of the same type (being a certain variety of “hourglass” beakers) in the MDC, for instance to a specimen from grave no. 3 in *kurgan* no. 1 in Khodosovichi and even more specifically to a specimen from grave no. 12 in Strelica on the Upper Dnieper [Artemenko 1967:17, Fig. 4:2, 3]. A less typical of this culture, although appearing in its assemblages, e.g. in Belynets on the Desna [Artemenko 1987:168, Fig. 12:27], is the other specimen from the grave under discussion, i.e. a beaker of a sinusoid profile with a strongly protruding belly whose greatest protrusion is in the lower section of the vessel (Fig. 3:B2). It differs from MDC beakers of this type by the presence of a marked, slightly concave bottom, however small, whereas in its Middle Dnieper counterparts the bottom is not usually marked, being rounded or even convex [Artemenko 1967:87, Fig. 49:6].

The other artifacts from grave no. 2 in Hubinek, i.e. a tetrahedral flint celt, heart-shaped arrowhead, retouched chip, broken flake and a bone punch (Fig. 3:B3-7), occurring in the whole circle of corded ware cultures do not indicate clearly any

¹ In addition, within this *kurgan* (Fig. 3A1), two other features (nos. 5 and 7) were discovered. These are settlement features containing potsherds of painted ceramics of the Volhynia-Lublin culture and the Funnel Beaker culture. In feature no. 7 an unpublished vessel fragment was found (probably of an amphora) decorated in a way characteristic of an older CWC phase. On the edge of the original *kurgan* mound two other graves had been placed (nos. 4 and 6) most probably belonging to the Mierzanowice culture of the Early Bronze Age [Koman 1998:67].

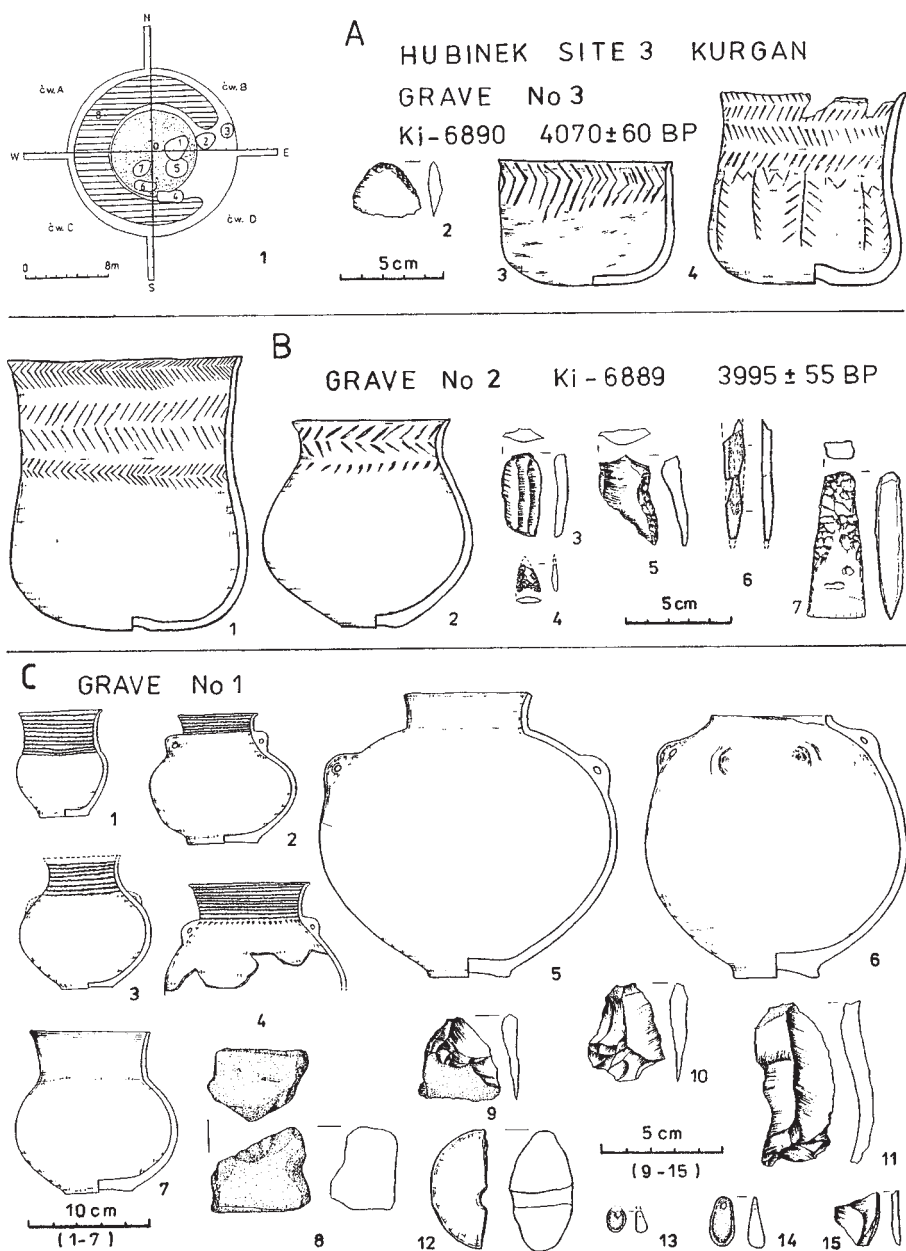


Fig. 3. Hubinek, Podkarpacie Prov., site 3 (A,B,C - *Kurgans*), *kurgan* A, grave no. 3: 1 - *kurgan* outline, 2 - flint, 3, 4 - pottery; *kurgan* B, grave no. 2: 1, 2 - pottery, 3-5, 7 - flint, 6 - bone; *kurgan* C, grave no. 1: 1-7 - pottery, 8 - stone, 9-11, 15 - flint, 12 - clay, 13, 14 - bone. Foll. Koman [1998].

taxonomic unit of the circle. The same can be said about the characteristics of the burial rite observed in the grave (the deceased is placed on his right side in a flexed position, along the SW-NE axis, with the head pointing SW and grave goods placed at his legs and hips) which are common to at least a few units of the said circle, two of them being the CWC between the Upper Vistula, Upper Bug and Dniester [Machnik 1998] and a significant portion of the MDC [Artemenko 1967:82].

In child grave no. 3 at site 3 in Hubinek, both vessels found there (Fig. 3A3, 4) bear a striking resemblance to forms of this type in the MDC. The first of the two is a small beaker (Fig. 3A4) similar to the specimen from grave no. 2 on the same site (Fig. 3B1), but differing from the latter in the fact that the inward indentation of its walls is moved up, which brings it closer to MDC beakers from Syabrovichi and Khodosovichi [Artemenko 1987:167, 168, Fig. 12:32; 13:27] or even to a squattier variety from Jackowica (currently Dolinka) near Vinnitsa [Bydłowski 1905: Tab. II, 2]. Additionally, it is decorated with a combination of patterns frequent in the MDC, namely a horizontal incised herringbone in the upper section of the vessel and a vertical one in its lower section separated by a dotted zigzag. Thus, the patterns cover almost the whole surface of the vessel, as is the case in the majority of beakers of the culture in question. The other vessel from the said grave is a beaker (Fig. 3:A3) with almost straight walls that slightly bend in under the rim. The walls smoothly change into the bottom which is flat only in the middle. The beaker is decorated at the top with a horizontal pattern of a large casual herringbone and an incomplete row of slanting incisions (Tab. Fig. 3:A3). This form type has not found yet any accurate counterparts in CWC assemblages; it refers partially to some specimens of the Kawsko type (a small group of finds from the Upper Dniester) which are believed by some authors to be a manifestation of eastern influences, i.e. of the Yamnaya (Pit Grave) culture (YC) or the MDC [Berniaković 1959; Sveshnikov 1974:33]. From the latter ones, however, our specimen differs in both the shape of the bottom and in the ornament. Kawsko-type beakers (Fig. 8:25, 26), most probably dating from the Early Bronze Age [Machnik 1979], have rounded bottoms and are decorated with horizontal impressions of a thick cord at the top. A closer similarity to our specimen is shown in this respect by certain MDC vessels of this type. What is meant here is, e.g. a beaker from Stretovka with a flattened bottom and a slight narrowing of walls decorated at the top with a horizontal pattern of an incised herringbone [Artemenko 1967:28, Fig. 16:2]. A pattern of a large, casually incised herringbone covering only the upper portion of the vessel, analogous to the specimen from Hubinek, is encountered on a small MDC mug/cup with bulging walls from *kurgan* no. 5 in Ryżanówka². The third artifact from the grave, i.e. the retouched flake of Volhynia cretaceous flint (Fig. 3:A2) has no diagnostic traits. To a certain extent the same can be said about the arrangement of the skeleton of a four-year-old child in grave no. 3 (on its side,

² The vessel, which has not been published yet, is in the collection of the Archaeological Museum in Kraków.

along the E-W axis, with the head pointing E, flexed, with hands bent in elbows and pointing to the face). The arrangement occurs both in the CWC, specifically in the drainage of the Upper Dniester [Sulimirski 1968: Plan 35], and in the MDC [Artemenko 1967:86].

In the neighborhood of the *kurgan* on site 3 in Hubinek, during the excavation of which two graves numbered 2 and 3 were discovered, another *kurgan* was found known as site 4 [Bagińska 1998:70 et al.]. Under the *kurgan*'s mound, traces of a circular groove were found and, to all appearances, a shaft of a niche grave dug in it. Within the space encircled by the groove no grave has been found³. However, on the edge of a claypit, from which soil was taken to make the *kurgan*'s mound, a FBC settlement pit was discovered (Fig. 4:A1). The niche grave might have been dug in the loess undisturbed soil from the shaft cutting into the edge of an already existing *kurgan* mound⁴. Approximately in the middle of the ample chamber of the niche grave (Fig. 4:A2), a man's skeleton lying along the SE-NW axis on its right side with its legs strongly flexed and the head pointing NW was found. In addition, at the southern wall of the chamber, bones of another individual forming a heap without any anatomical order were discovered. Below the legs of the first skeleton and at the same time close to the other one, at the south-eastern wall of the chamber, two large amphorae lay. Two beakers (displaying Middle Dnieper traits as we shall see) were located somewhat further away, behind the back of the first skeleton, on the level of its legs (Fig. 4:A2, 6, 7). Also behind the skeleton's back a stone axe (Fig. 4:A2, 3), two stone celts (Fig. 4:A2, 9, 11) and a sidescraper of Volhynia cretaceous flint (Fig. 4:A2, 4) were found. Another sidescraper of the same material (Fig. 4:A2, 5) lay below the legs, in the proximity of the two amphorae. Next to the toes of the first individual, a small bone chisel was found (Fig. 4:A2, 12). At the east wall, a chip of sandstone and a fragment of pearloyster shell (*Margaritifera margaritifera* ?) were discovered [Bagińska 1998:69].

Taking into consideration considerable scattering of relatively quite numerous artifacts within the grave chamber, it seems that some of them might have belonged to an older human burial. The bones of the older burial might have been moved to the SE wall when a new body was interred. Consequently, the artifacts may not make up a temporally homogeneous assemblage belonging to one individual. We are not able, however, to determine which of the artifacts are older and which are younger. On the other hand, a stone axe (Fig. 4:A3) refers back to older boat axes of the CWC, while a lenticular flint celt (Fig. 4:A8) may be an indicator of a very late horizon of that culture, but also, as we shall see, of the MDC. Tetrahedral stone axes (Fig. 4:A9, 11), which are very rare in the interfluvial area of the Upper Vistula, Upper Bug and Dniester, again would rather refer to the earlier forms of

³ Already before the excavations, the *kurgan* had its mound completely leveled off by ploughing and showed damages caused by fox burrows [Bagińska 1998:69]. Consequently, the central grave may have been completely damaged.

⁴ This is possible under the assumption that the symbolic groove marks the original diameter of the *kurgan*.

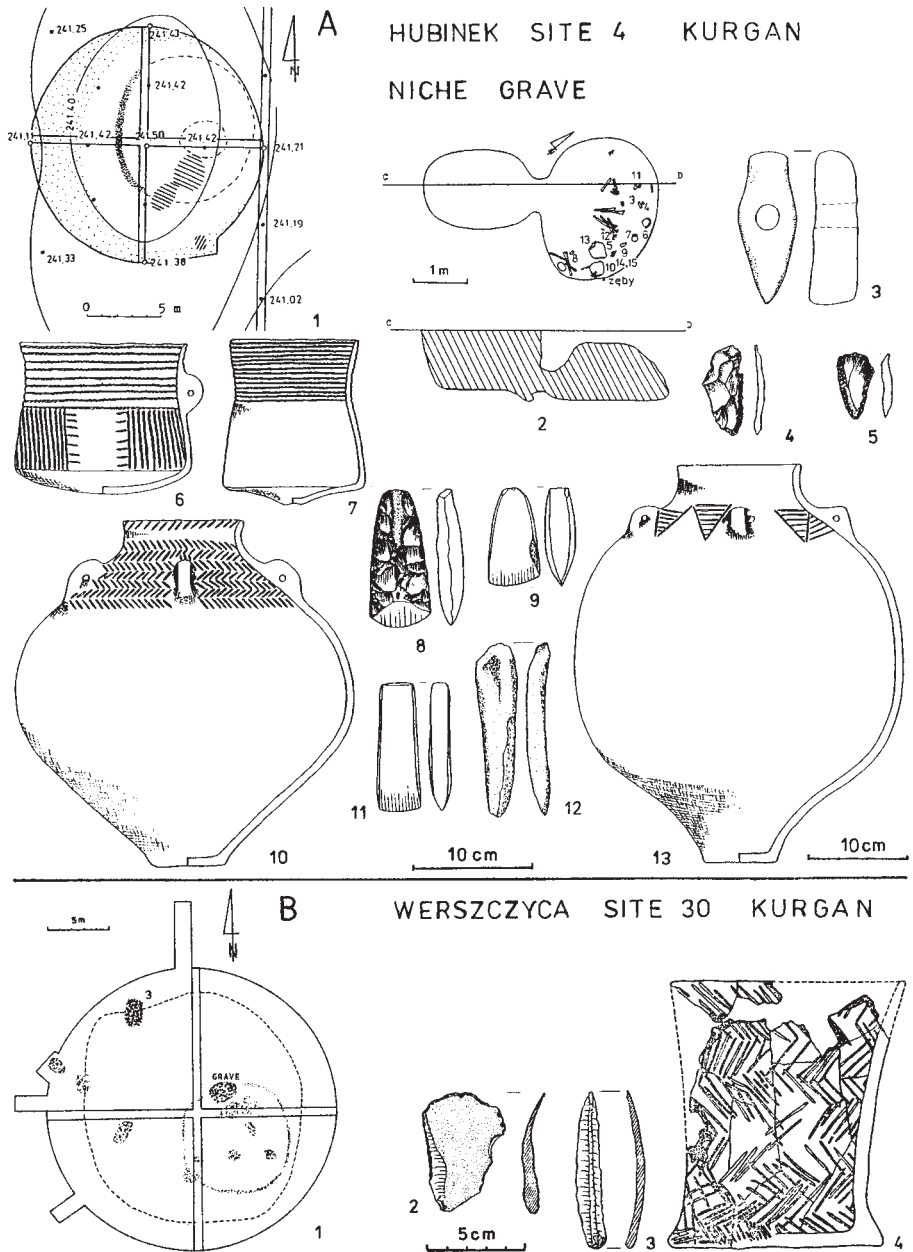


Fig. 4. Hubinek, Podkarpacie Prov., site 4, *kurgan* (A): 1 - *kurgan* outline, 2 - horizontal projection and-cross section of the niche grave, (Arabic numerals on the horizontal projection refer to numbers of artifacts in the figure.) 3, 9, 11 - stone, 4, 5, 8 - flint, 6, 7, 10, 13 - pottery, 12 - bone. Foll. Bagińska 1998. Werszczyca, Lublin Prov., site 30, *kurgan* (B), grave: 1 - *kurgan* outline, 2, 3 - flint, 4 - pottery. Foll. Bagińska [1990].

the said cultures. Other flint artifacts and the bone chisel do not have any diagnostic traits in the chronological sense.

As far as the pottery is concerned, the two vessels located behind the feet of the first skeleton (i.e. the one preserved in the anatomical order), next to the eastern wall of the chamber, are beakers (Fig. 4:A6, 7) having a typical form of classic “hourglass” beakers of the MDC. Several varieties of these beakers are known in the said culture [Artemenko 1964:56, Fig. 18:1; 1967:36, 53, 75, 80, Fig. 25:12; 39:1-4; 44:1, 3, 5, 7-9; 45:2-5, 6; Machnik, Pilch 1997:154, Fig. 8:6-10, 13, 15, 16, 18, 20, 28, 30], of which the most frequent is a squatty, “wasp-waisted” beaker, i.e. strongly narrowed approximately in the middle of its height or slightly higher [Artemenko 1967:36, Fig. 25:12]. Its walls are almost straight or slightly convex in the lower half while the bottom part is wide and bow-like shaped, the diameter of which equals the diameter of the rim and the vessel height frequently exceeds both these values. Sometimes, the bottom is barely marked by a small and regular dent. Beakers of this variety are usually decorated all over its surface, sometimes even including the bottom [Artemenko 1967:96, Fig. 62:9], with the upper part of a vessel being covered with horizontal patterns while the lower one being predominantly covered with horizontal ones, frequently metopically arranged [Artemenko 1967:80, Fig. 45:2, 5]. Curiously enough, one of the small beakers from the niche grave in Hubinek (Fig. 4:A6) almost fully fits the description of the main variety of “hourglass” beakers of the MDC given above. It differs from the latter in that it has a handle and that its ornament, specifically in the upper part of the vessel, is rather simple and made only with a cord while in a clear majority of its counterparts the ornament is made by incision and scratching using rather more complicated patterns [Artemenko 1967:53, Fig. 39:4]. The beaker also lacks a sharp transition between the upper and the lower part, which is clearly marked in a majority of MDC beakers of the variety in question. The transition is quite visible, however, in another, slenderer beaker (Fig. 4:A7) corresponding to a slightly different variety of “hourglass” beakers, i.e. with slightly convex walls in the lower part of a vessel, represented in one of the *kurgans* of the culture under discussion located near Khodosovichi [Artemenko 1964:56, Fig. 16]. On our specimen, a simple ornament of horizontal cord impressions covers only the upper part of the vessel, which is very rare in its Middle Dnieper counterparts.

The two large amphorae (Fig. 4:A10, 13) lying in the SE part of the chamber of the niche grave in Hubinek, close to the heap of human bones found at one of the chamber walls, are not typical of the MDC. However, the ornament covering the upper part of one of them (Fig. 4:A10) and consisting of dense, horizontally incised herringbones is frequently encountered on different types of beakers in grave assemblages of this culture. Due to its shape, the amphora must be subsumed under type IIb (according to J. Machnik’s classification) known, apart from Grzęda Sokalska, from different regions of the CWC, in particular from Małopolska loess

area [Machnik 1966]. The other amphora (Fig. 4:A13), being a variety of the same type, is related to some specimens from Germany [Bagińska 1988:75,76].

The majority of other artifacts found in the grave have no distinctive character since they are encountered both in the CWC and MDC. The stone celts, represented in the grave under discussion by two different types (Fig. 4:A9, 11), while being extremely rare in the interfluvial area of the Upper Vistula, Upper Bug and Dniester and only sporadically found in the grave assemblages from the areas on the Middle and Upper Dnieper [Artemenko 1967:50] are a common component of CWC grave-goods in the Alps-Sudeten Zone [Buchvaldek 1986a].

It is worth mentioning in this context that one of the two amphorae (Fig. 4:A13) from the niche grave on site 4 in Hubinek has certain analogies in Central Germany. Whereas MDC graves were very frequently furnished with river mollusk shells, such shells have not been found so far in CWC graves between the Upper Vistula and Dniester [Artemenko 1967:81]. One such shell piece was found in the discussed grave.

For the purpose of analyzing cultural traits, the arrangement of the body in the niche grave is of little importance. The form of niche grave itself, however, has not been registered so far in the MDC, whereas in the CWC it occurs not only in the Kraków-Sandomierz group, of which it is quite typical, [Machnik 1966, Włodarczak 1998], but also in some CWC *kurgans* on Małopolska loess highlands, e.g. in Pałecznicza near Proszowice [Liguzińska-Kruk 1975] and ever more often on Grzęda Sokalska⁵.

Summing up the discussion of the niche grave in the *kurgan* on site 4 in Hubinek, the following can be said. Most probably, we deal here with two human burials that took place some time apart. The skeleton, possibly of a man, preserved in an anatomical order and lying in the middle of the grave chamber, would belong to an individual placed second in the grave after moving aside the bones remaining of a human body that was placed there earlier and for which, in this case, the grave chamber had been dug. It seems less probable that the last mentioned body was placed in the grave in the state it was found at the same time as the interment of the other body (arranged in the position consistent with the prevailing rite) after it had been exhumed from another place [Bagińska 1998:75]. In any case, taking into account the fact that remains of two individuals were found in the grave, it is quite possible that some grave-goods belonged to one of them while the remaining ones to the other. A dividing criterion could be the location of individual objects either closer to the anatomically arranged skeleton or to the heap of bones at the SE wall of the niche. From this point of view both beakers displaying Middle Dnieper traits (Fig. 4:A6, 7), the stone axe and two stone celts would belong to the former while the two amphorae and the flint celt to the latter. Adopting, however, the

⁵ In the 1998 excavation season, two other niche graves, placed on the edge of a CWC *kurgan*, were discovered on Grzęda Sokalska. Personal communication from Wiesław Koman M.A. for which I am very grateful.

order of interment of the two individuals suggested above as being more probable, both amphorae would have to be taken to be older than the beakers, which is not impossible from the typological and chronological points of view, as is taking all the four vessels to be contemporaneous.

In another earth mound on Grzęda Sokalska located approx. 4 km to the W of the *kurgans* discussed above (Fig. 2), namely in *kurgan* no. 2 on site 2 in the locality named Łubcze, a grave was discovered [Koman 1990] in which two of the three vessels found there display Middle Dnieper traits. The grave, designated as no. 2, was dug into one (inner) of two symbolic grooves encircling the central pit (Fig. 5:A1) located underneath the mound of a heavily ploughed-over *kurgan*. On the bottom of this grave, a skeleton of an adult individual placed on its right side along the E-W axis was found, with its head pointing W and slightly flexed legs, with the left hand bent in the elbow and placed on the chest while the right one was raised in the direction of the face [Koman, Machnik 1993:44, Fig. 3A]. At the skeleton's feet, three vessels were placed (Fig. 5:A4-6) including the two beakers mentioned above (Fig. 5:A4, 5). Behind the deceased's back, at his knees, a plano-convex celt of Volhynia cretaceous flint (Fig. 5:A2) was located while at the pelvis a bone chisel (Fig. 5:A3) was discovered. The first of the mentioned beakers (Fig. 5:A4) could be a variety of slender specimens of MDC "hourglass" beakers, e.g. from the already cited graves of this culture in Strelitsa [Artemenko 1967:95, Fig. 61:3], if it were not for its pointed bottom part ending in a marked, very small and flat bottom. This shape of bottom parts is, however, characteristic of other, more pot-like vessels in the MDC [Artemenko 1967:66, 126, Fig. 62:5; 76:14], which in their case may be taken to be a result of an impact of the Yamnaya culture⁶. A typical trait of the MDC is the zone arrangement of ornament on the beaker in question (Fig. 5:A4) stressed by incised lines separating the patterns of horizontal incised herringbones and closed at the bottom with a band consisting of a double zigzag being, as it were, a simplified version of the pattern of the scalled interlaced triangles. The other beaker from the discussed grave (Fig. 5:A5), of which only the lower half has survived, is clearly a variety of squattier, MDC "hourglass" beakers; it is also zone-decorated but in this case with impressions of a thin cord making rather wide horizontal bands (Fig. 5:A5). This type of decoration while being rather rare in the MDC [Artemenko 1967:75, Fig. 44:2] is typical of the proto-Mierzanowice culture [Kadrow, Machnik 1997]. The large amphora accompanying the beakers (Fig. 5:A6) represents a type that is

⁶ However, one must remember that beakers similar to the discussed specimen from Łubcze, however having a slightly wider bottom and a less bulging lower part, but decorated in a very similar way (patterns of incised, horizontal herringbones separated by horizontal bands of grooves), are also known from Jutland [Siemen 1991:92, Fig. 1B11]. These similarities, exhibited also by other beaker forms, not to mention type A amphorae [Machnik, Pilch 1997: 164], existing between the south Scandinavian and south Baltic zones, on one part, and the drainage of the Middle and Upper Dnieper, on the other part, must be related to the fact that it was from the first area and across the Lowlands that the oldest CWC traits spread (together with population migrations) towards the Dnieper giving rise to the MDC or even the Fatyanovo culture bordering on the MDC in the NE. To this possibility attention was also drawn by Prof. Aleksander Koško at the annual seminar in Igołomia in February of 1999.

quite common on Małopolska loess soils [Włodarczak 1998:43, Fig. 1] and in the CWC, in particular in its earlier chronological phases. The plano-convex celt of an irregularly lenticular cross-section (Fig. 5:A2) belongs to the type known from both CWC *kurgans* (mostly from older ones) and MDC grave assemblages. It does occur in the latter culture, though only in some of its chronological phases [Artemenko 1967:43, Fig. 29:4]. Accompanying the vessels in the discussed grave, the bone chisel (Fig. 5:A3) is an artifact of an intercultural character. As far as the form of the grave is concerned, i.e. the position of the deceased and the arrangement of grave-goods, although the burial does not differ from some graves in CWC *kurgans*, especially older ones, it has many traits in common with MDC graves. In the latter culture we know of graves with a similar arrangement of hands to that in Łubcze and with vessels placed at the deceased's feet while the remaining grave-goods (frequently including axes) are deposited behind the skeleton's back [Artemenko 1967:81, 83].

The stratigraphic situation in *kurgan* no. 2 on site 2 in Łubcze (Fig. 5:A1) seems to indicate that grave no. 2 could have been dug into the edge of already existing *kurgan* raised over centrally located grave no. 1 encircled by at least one internal groove marking the original base of this rather small barrow. As far as the other groove is concerned, one may not totally reject the presumption [Koman 1999:13, 14] that it was made after grave no. 2 had been excavated, hence before the possible enlargement of the whole *kurgan*, i.e. of its mound. In any case, the central grave had to be placed in the *kurgan* earlier than grave no. 2. The central grave contained remains of a heavily damaged skeleton ? oriented along the E-W axis, similarly as it seems to grave no. 2, and was equipped with three vessels (Fig. 5:B1-3), displaying traits of a rather early CWC phase, and a tetrahedral flint celt (Fig. 5:B4). It is worth mentioning already here (it shall be discussed later) that the stratigraphic relations of both graves discussed above fully agree with absolute dates obtained for them. Grave no. 2 with vessels displaying traits related to MDC pottery is, in the light of these dates, younger than the central grave by at least half a century (Table 1).

About 4 km to the W of the discussed *kurgan* in Łubcze (Fig. 2), in a heavily damaged barrow (no. 2) on site 22 (Fig. 5:C) in Nedeżów, two human burials, located in the center of the barrow, one over the other, were found [Bagińska 1996]. In the lower grave, oriented E-W, there were found, apart from the remains of a skeleton of a young individual placed, as it seems, on its side in the flexed position [Bagińska 1996:63], only a flat celt with a rectangular cross-section (Fig. 5:D2) made of Volhynia chalk flint and a retouched flake of the same material (Fig. 5:D1). The upper grave contained remains of a skeleton, most likely of an adult man, placed on his right side in the flexed position with the head pointing W and the face turned S [Bagińska 1996:59]. At the eastern wall of the rectangular grave chamber, a large amphora was found (Fig. 5:C3) while near the SW corner a flint celt was unearthed (Fig. 5:C9). Slightly further away from it, already close to the

Table 1

Specification of radiocarbon dates obtained for grave assemblages from the *kurgans* on Grzęda Sokalska containing MDC traits or for features (also mainly graves ones) stratigraphically related to these assemblages.

No.	Site	Lab. No	BP	BC (Calib 3.0.3)
1	Hubinek, site 3, grave 2	Ki-6889	3995±55	1σ 2581-2455 1.0
2	Hubinek, site 3, grave 3	Ki-6890	4070±60	1σ 2855-2820 .16 2662-2635 .12 2627-2550 .43 2549-2491 .29
3	Łubcze, site 2, kurgan 2, grave 2	Ki-6298	4160±50	1σ 2872-2852 .12 2824-2800 .13 2777-2713 .37 2708-2657 .28 2641-2623 .10
4	Łubcze, site 2, kurgan 2, grave 1	Ki-6297	4210±60	1σ 2888-2858 .19 2816-2693 .78 2677-2668 .04
5	Nedeżów, site 22, kurgan 2, grave 1	Ki-6894	4020±55	1σ 2588-2463 1.0
6	Nedeżów, site 22, kurgan 2, grave 2	Ki-6895	3940±50	1σ 2487-2392 .70 2386-2338 .30
7	Łubcze, site 37, grave 3	Ki-6300	4050±55	1σ 2837-2828 .04 2618-2472 .96
8	Łubcze, site 37, grave 1	Ki-6299	3920±45	1σ 2464-2392 .62 2387-2337 .38
9	Wereszczyca, site 1, kurgan 1, grave 2	Ki-6301	4305±45	1σ 3016-2995 .15 2926-2879 .85
10	Wereszczyca, site 30, feature 3	Ki-6891	4125±50	1σ 2863-2810 .30 2746-2725 .11 2698-2589 .59

N wall of the grave, a small beaker was discovered while the remaining objects, i.e. another celt (Fig. 5:C5), a retouched flake tool and other flint goods (Fig. 5:C5-8, 10, 11), were found in the NE corner [Bagińska 1996:61]. Whereas one of the two vessels found in the grave, namely the amphora, shows certain analogies to the amphorae of the late (III) phase of the CWC in Bohemia [Buchvaldek, Koutecký 1970:110, Fig. 49:1; Tab. II), in the other one a clear impact of the MDC can be detected. What is primarily meant here is not the form itself of this flower-pot-like beaker, although a certain analogy to it is supplied by a specimen with two symmetrical handles from Grechaniki on the Middle Dnieper [Artemenko 1967:75,

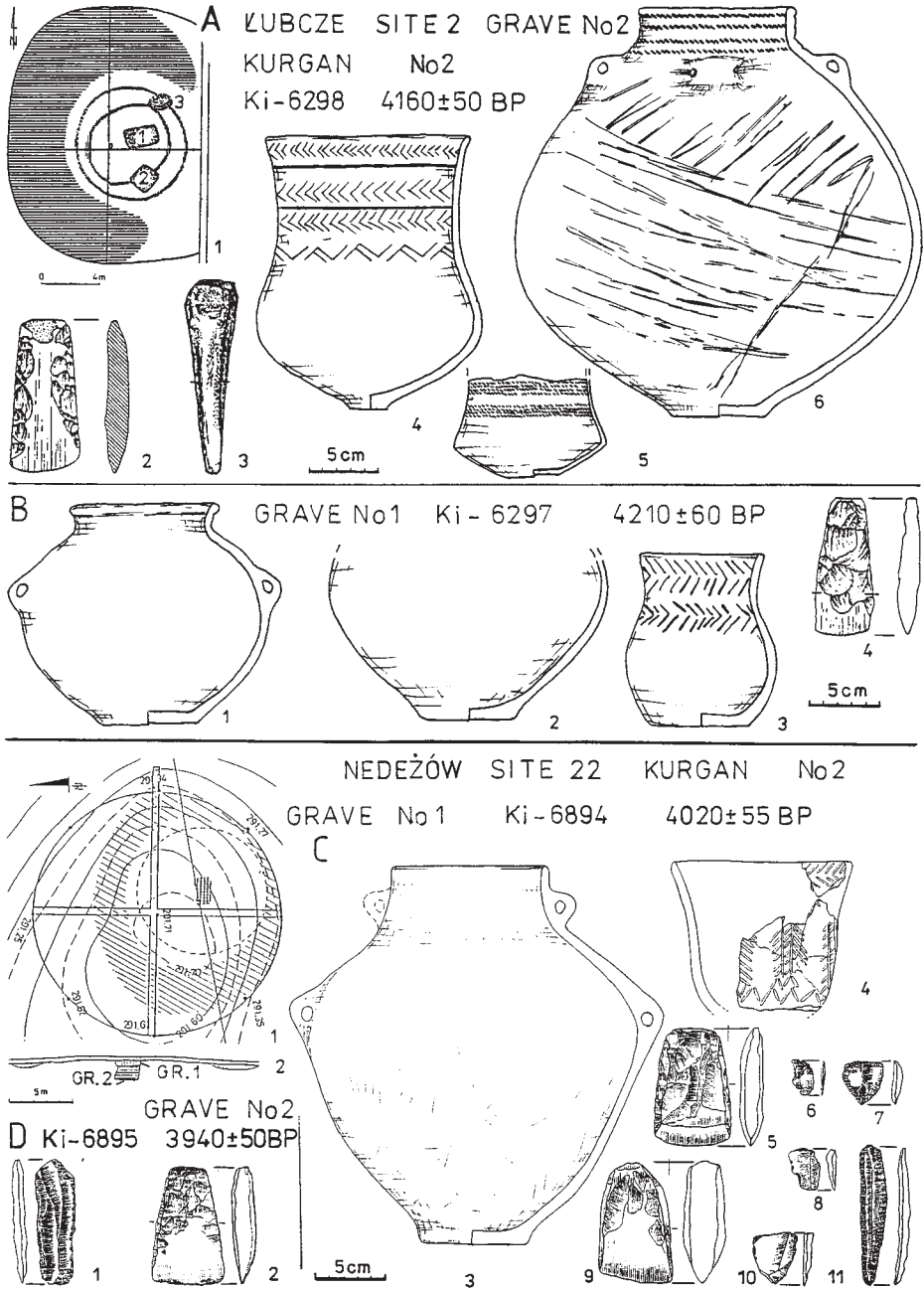


Fig. 5. Żubcze, Lublin Prov., site 2, *kurgan* no. 2 (A, B - graves): A - grave no. 2: 1 - *kurgan* outline, 2 - flint, 3 - bone, 4-6 - pottery; B - grave no. 1: 1-3 pottery, 4 - flint. Foll. Koman, Machnik [1993]. - Nedeżów, Lublin Prov., site 22, *kurgan* 2 (C, D - graves): C - grave no. 1: 1 - *kurgan* outline, 2 - *kurgan* cross-section, 3, 4 - pottery, 5-11 - flint; D - grave no. 2: 1, 2 - flint. Foll. Bagińska [1996].

Fig. 44:2], but rather an ornament typical of this culture covering the whole surface of the vessel and consisting of horizontal herringbone patterns (on the top part of the vessel) as well as vertical ones and a zigzag closing it from below (Fig. 5:C4). Of particular importance is the pattern of a double, vertical herringbone which is one of the decorative traits of MDC beakers. However, on the last mentioned vessels it usually occurs in a more developed form incorporating vertical lines in the middle [Artemenko 1967:27, 96, Fig. 14:3; 62:9]. The flint artifacts from the discussed grave are of more inter-cultural character. The same can be said of the form of the grave itself, its orientation and the arrangement of the skeleton [Bagińska 1996:61, Fig. 3].

The modest grave-goods found in the lower grave (no. 2) consisting of a tetrahedral flint celt (Fig. 5:D2) and a flint tool (Fig. 5:D1) of the same Volhynia raw-material do not have any distinctive traits and may come from, despite the fact of their earlier placement in the *kurgan* than the upper grave no. 1, the same chronological phase of the CWC. This may be confirmed, as we shall see below, by the absolute dating of both burials.

Only a distant analogy, from the typological point of view, to the “hourglass” MDC beakers may be mortarpot-like specimens from graves discovered in another two *kurgans* on Grzęda Sokalska, i.e. on sites 1 and 30 in Werszyczca [Bagińska 1990; 1997]. The *kurgans* were located in the space between the barrow in Nedeżów and the already discussed *kurgans* from Łubcze (Fig. 2). The small beaker from the first of these sites (Fig. 6:A4), almost completely covered with a compact pattern of horizontal incised herringbones, was found in grave no. 1 oriented E-W and encircled by a symbolic groove [Bagińska 1997:50 ff.]. In the eastern part of this grave poorly preserved leg bones were found while the grave-goods (including the beaker) were located in its western and central parts [Bagińska 1997:50]. Besides the beaker, the grave-goods comprised a small undecorated amphora of the “older type” (Fig. 6:A5), a stone axe (Fig. 6:A2) of type VI (according to J. Machnik’s classification) and a broken flake of Volhynia chalk flint (Fig. 6:A3). Three other graves were discovered in this barrow, of which one, i.e. grave no. 2, was placed under the mound, close to the center of its apex that was preserved until the beginning of excavations (Fig. 6:A1). The grave, oriented also along the E-W axis, was, in the opinion of the discoverer of this *kurgan*, dug into the groove encircling grave no. 1 [Bagińska 1997:50]. The grave-goods of the deceased, of whom only few bones have survived, comprised a small slender beaker (Fig. 6:B1) finding an analogy to its ornament form in some specimens from Germany [Bagińska 1997:51], a large amphora with two handles (Fig. 6:B2) of the type of the so-called Central European horizon [Machnik 1979:342 ff.] and a boat axe (Fig. 6:B3) reminiscent of specimens subsumed by K. Struve [1955] under type A. A crucial issue (to which we shall return) is the very early dating of the other grave which supposedly is stratigraphically younger than grave no. 1 with the mortar-like beaker [Bagińska 1997:50]. The remaining two features, designated by the discoverer of the *kurgan*

in question as graves no. 3 and 4 [Bagińska 1997:50], due to their modest artifact inventory (Fig. 6:C, D) cannot contribute much to this discussion. The first of them (grave no. 3), located on the southern edge of the *kurgan* mound, contained fine remains of two human skeletons, as it seems, a bone pendant (Fig. 6:C1) and a ring made of round-section wire (Bagińska 1997:50). The other one, grave no. 4, is a small oval feature dug into the groove encircling grave no. 1. Inside, three human vertebrae and a tetrahedral celt made of Volhynia cretaceous flint (Fig. 6:D1) were found. The celt was discovered lying partially in the contents (?) of the groove.

On the other site in Werszczyca (site 30), in a *kurgan* seriously disturbed by many dug-ins, including modern ones, and with almost completely flattened mound (Fig. 4:B1), a symbolic groove was detected that must have once encircled a totally damaged central burial [Bagińska 1990:20 ff.]. Into the groove, a grave was dug in, oriented along the ENE-WSW axis, containing poorly preserved bones of a human skeleton. Inside, besides two flint artifacts (Fig. 4:B2, 3), a flower-pot-like beaker was found (Fig. 4:B4). The beaker has a strongly widened bottom part and is completely covered - from the lip rim to the bottom edge - with incised lines making chaotic patterns of large horizontal herringbones (Fig. 4:B4). They resemble somewhat the ornament on the already cited MDC beaker from *kurgan* no. 55 in Jachowica [Bydłowski 1905, Tab. II 2].

Among different features discovered within the archaeological excavation encompassing the discussed *kurgan* and its immediate surroundings, a trapezoidal pit, later designated as no. 3, was exposed. It was located outside the original range of the mound (Fig. 4:B1) and contained a large pile of animal bones, mostly cattle's [Bagińska 1990:23]. The feature was dated using the radiocarbon method, which shall be discussed below. However, there are no data to determine its relation, including temporal one, to the above discussed grave and groove. It could have preceded the raising of the barrow over the presumed (not surviving) central grave, surrounded by the groove or it could have been contemporaneous to or younger than the grave.

Finally, to complete the review of the assemblages containing MDC traits on Grzęda Sokalska one must mention grave no. 3 in the *kurgan* on site 37 in Łubcze (Fig. 2). The grave, ¹⁴C dated, must have been placed on the edge of the barrow (Fig. 7:A1) and contained bones of two or three individuals forming a pile 90 cm in diameter. Among them there were items that must have been grave-goods (Fig. 7:C1-5), namely: a beaker (Fig. 7:C5), flint implement (Fig. 7:C1), copper ring made of flattened wire with overlapping ends (Fig. 7:C2) and two bone pendants (Fig. 7:C3, 4) [Bagińska 1997:45]. The beaker has a slightly marked protrusion (relief strip) and is decorated with dense, horizontal and incised herringbones on its upper part (Fig. 7:C5). What strikes the viewer is the disproportionately small bottom of this artifact, which may be, together with the whole form and ornament, a certain analogy to some MDC vessels [Berezańska 1971:168, Fig. 12:24, 27].

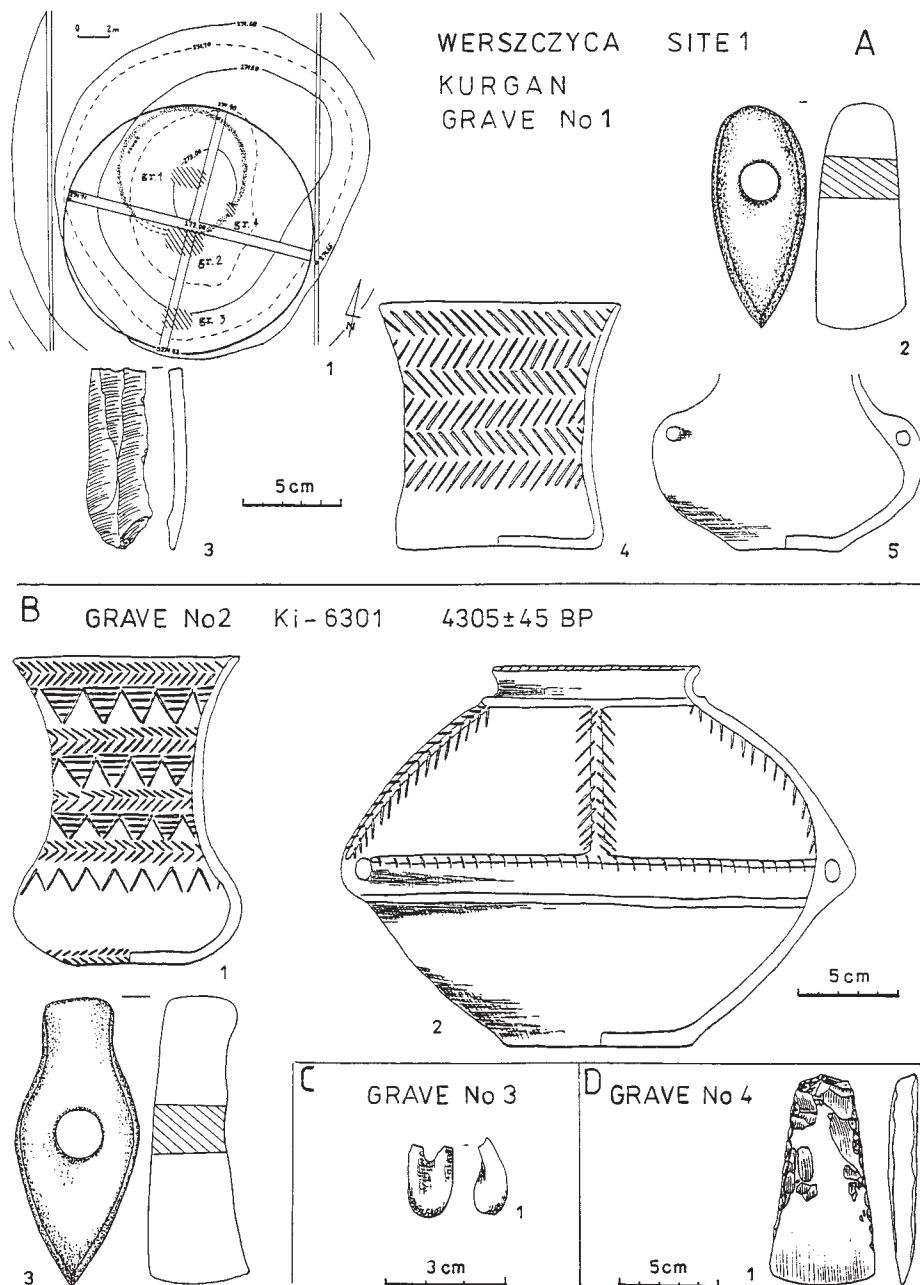


Fig. 6. Werszczyca, Lublin Prov., site 1, *kurgan* (A, B, C, D, - graves): A - grave no. 1: 1 - *kurgan* outline, 2 - stone, 3 - flint, 4-5 - pottery; B - grave no. 2: 1, 2 - pottery, 3 - stone; C - grave no. 3: 1 - bone; D - grave no. 4: 1 - flint. Foll. Bagińska [1997].

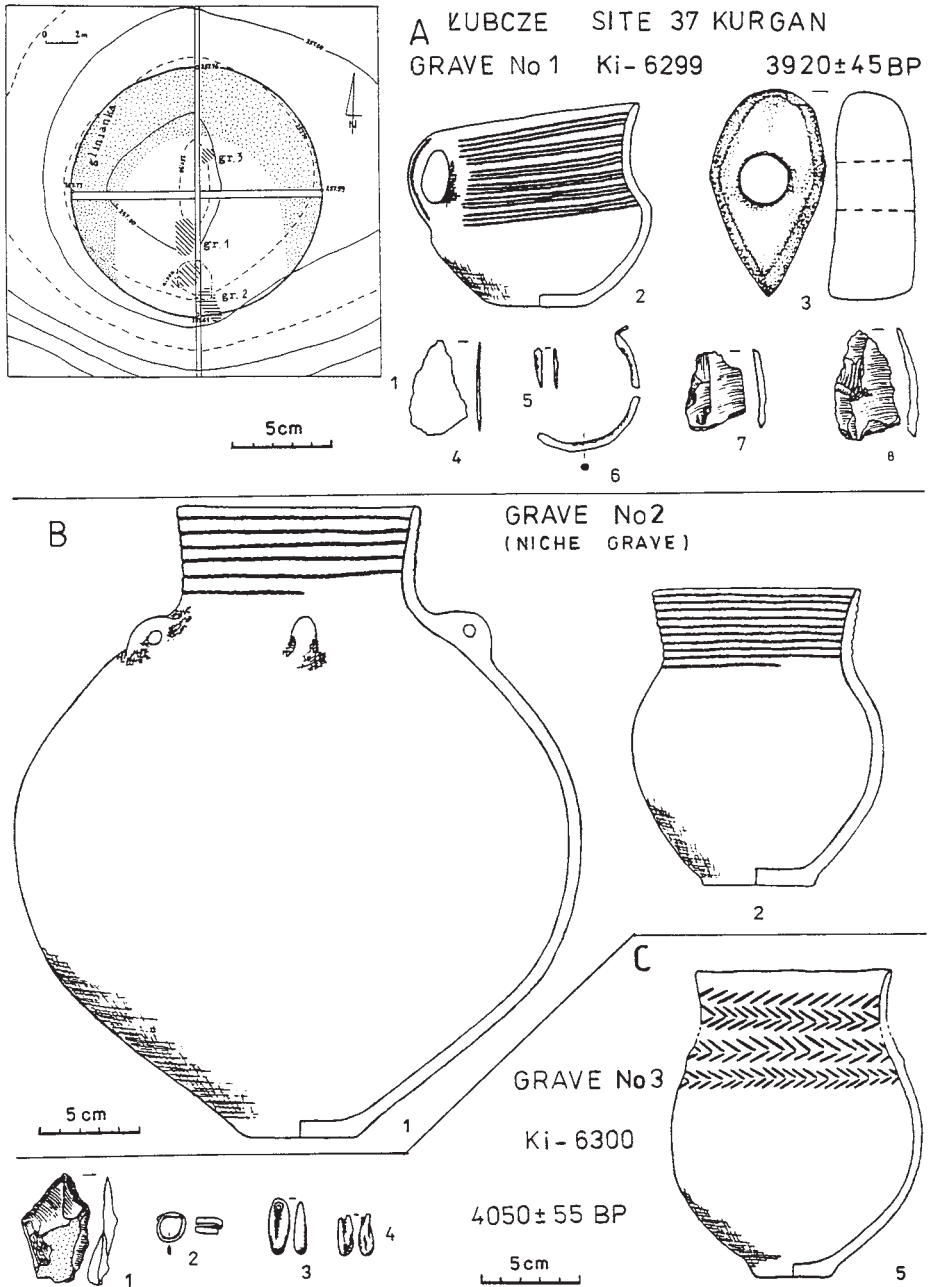


Fig. 7. Żubcze, Lublin Prov., site 37, *kurgan* (A, B, C, - graves): A - grave no. 1: 1 - *kurgan* outline, 2 - pottery, 3 - stone, 4-6 - copper, 7, 8 - flint; B - grave no. 2: 1, 2 - pottery; C - grave no. 3: 1 - flint, 2 - copper, 3, 4 - bone, 5 - pottery. Foll. Bagińska [1997].

In this context, of certain importance may be the copper ring of hammered-out wire found in the discussed grave. Ornaments in the form of simple rings are known from some, mostly younger, CWC graves [Kempisty 1978:73, Fig. 88; 1982:68], but are made of wire of round cross-section and only their ends are flattened. In the MDC, however, ornaments are often encountered, as for instance in Strelitsa or in a locality called Proletariat, that are made of completely beaten-out wire [Artemenko 1967:37, 38, Fig. 26:1; 27:1].

In the discussed *kurgan*, the mound of which has been completely flattened, no central grave has been found. None of the two remaining human burials can be taken to be one. The most centrally located grave no. 1 (Fig. 7:A1), dated by the radiocarbon method, belongs to the proto-Mierzanowice culture while the other (Fig. 7:A2-8), located clearly off-center, was a niche grave containing two vessels (Fig. 7:B1, 2) and dating, as it seems, to a rather late CWC phase.

3. CATEGORIES OF GRAVE ASSEMBLAGES DISPLAYING A MIDDLE DNEIPER CULTURE TRAITS ON GRZĘDA SOKALSKA

From the above review of the grave assemblages on Grzęda Sokalska, which to a lesser or greater degree display Middle Dnieper traits, we can see that the assemblages can be divided into three categories. The first category comprises two assemblages from graves no. 2 and 3 in the *kurgan* on site 3 in Hubinek (Fig. 3:A, B). In this category all vessels do not differ radically, either in form or ornament, from MDC pottery. The second category is made up of three burials, i.e. grave no. 2 in *kurgan* no. 2 on site 2 in Łubcze (Fig. 5:A), grave no. 1 in *kurgan* no. 2 on site 22 in Nedeżów and the grave on site 4 in Hubinek (Fig. 4:A), in which beakers of definite Middle Dnieper traits occur together with vessels typical of the CWC. Finally, the third category includes also three assemblages, i.e. grave no. 1 in the *kurgan* on site 1 in Werszczyca, the grave on site 30 in the same locality (Fig. 4:B) and grave no. 3 in the *kurgan* on site 37 in Łubcze (Fig. 7:C) in which the mortar-like beakers (Fig. 4:B4; 6:A4) and the sinusoid-profile beaker (Fig. 7:C5) were found. The last category only vaguely reminds us of the MDC pottery.

It has been found that in the case of the first two categories, the graves from which the assemblages come cannot have been central graves or, in any case, the oldest in a given *kurgan*. At times, as in the case of graves no. 2 and 3 on site 3 in Hubinek, they were actually placed on its border (Fig. 3:A1). The same certainly applies to another two assemblages, i.e. grave no. 3 in the *kurgan* on site 37 in Łubcze (Fig. 7:A1) and the grave in the *kurgan* on site 30 in Werszczyca (Fig. 4:B1) included in the third category. An exception would be the assemblage from grave

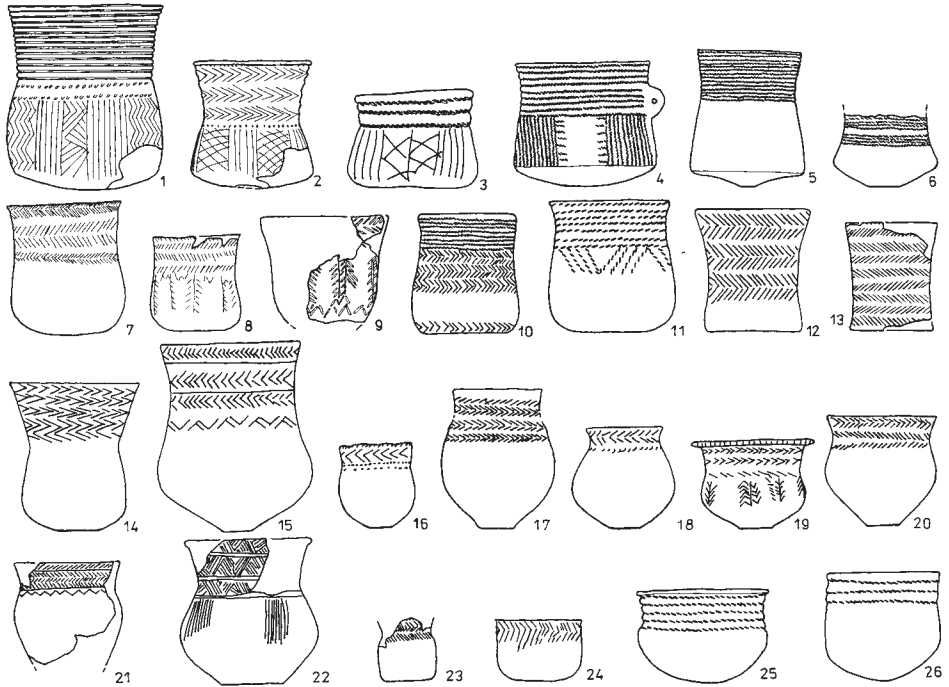


Fig. 8. Typology of vessel forms exhibiting Middle Dnieper culture traits to a various degree from the interfluvial area of the Upper Vistula, Upper Bug and Dniester: 1-3 - Młodów-Zakęcie near Lubaczów, 4-5 - Hubinek, site 4 (Grzęda Sokalska), 6, 15 - Łubcze, site 2 (Grzęda Sokalska), 7, 8, 18, 24 - Hubinek, site 3 (Grzęda Sokalska), 9 - Nedeżów, site 22 (Grzęda Sokalska), 10 - Łukawica near Narol, 11 - Side near Sambor, 12 - Werszczyca, site 1 (Grzęda Sokalska), 13 - Wola Węgierska near Przemyśl, 14 - Krylos near Halich, 16 - Kołokolin near Rohatyn, 17 - Łubcze, site 37 (Grzęda Sokalska), 19, 20 - Komarow near Halich, 21, 23 - Koniusza near Kraków, 22 - Kobiela near Opatowiec, 25, 26 - Kawsko near Drohobich.

no. 1 in the *kurgan* on site 1 in Werszczyca if it was accepted following I. Bagińska [1997] that the surrounding groove did actually mark the original base of the whole *kurgan*, which raises certain justified doubts as we shall see below.

From the typological point of view, vessels having clear CWC traits and co-occurring with those displaying MDC analogies in assemblages included in the second category represent rather the younger phases of the former culture. There is no contradiction between categorizing them in this way and other accompanying artifact categories. This remark can be cautiously applied also to the assemblages of the third category⁷.

⁷ Caution of this remark is absolutely justified in the case of grave no. 1 on site 1 in Werszczyca because the amphora accompanying the beaker (Fig. 6:A5) represents a type believed to be quite early in the CWC [Machnik 1966:12, Tab. XXIV 4a].

4. GRAVE ASSEMBLAGES CONTAINING MIDDLE DBIEPER CULTURE TRAITS ON GRZĘDA SOKALSKA IN THE LIGHT OF ^{14}C DATES

In the ^{14}C Laboratory of the National Academy of Science of Ukraine in Kiev, absolute dates for thirteen features, including twelve human burials from the excavated *kurgans* on Grzęda Sokalska, have been obtained from bones by the ^{14}C method. In this series, eleven dates coincide with expectations, in one case (grave no. 2 in *kurgan* no. 1 on site 1 in Werszczyca) a slightly older date than expected has been obtained, whereas in another case (grave no. 2 of the late Mierzanowice Culture (MC) on site 25 in Nedeżów [Bagińska 1992] a date considerably departing from the recorded chronology of that culture has been procured [Kadrow, Machnik 1997]⁸. Out of eight grave assemblages showing Middle Dnieper traits, five have been assigned absolute dates, including both placed by us in the first category, two out of the three belonging to the second category and one of the three included in the third category. This is already a sufficient number making it possible to determine the approximate time of depositing these assemblages on Grzęda Sokalska and, consequently, to define their place in the general CWC chronology in the area between the Upper Vistula, Upper Bug and Dniester Rivers.

Already at the first glance one can see (Fig. 9-18) that there are no major time differences between individual assemblages with Middle Dnieper traits belonging to all three categories. Both assemblages of the first category (Fig. 3:A, B) can be safely dated to the period between 2600-2500 BC with one of them, i.e. grave no. 3 on site 3 in Hubinek (Fig. 3:A), probably having been deposited closer to the lower (older) limit of the time interval or even slightly preceding it. Another perfect fit into this interval is scored by one of the two assemblages, i.e. grave no. 1 in *kurgan* no. 2 on site 22 in Nedeżów (Fig. 5:C) assigned by us to the second category as well as the only dated assemblage of the third category, i.e. grave no. 3 on site 37 in Łubcze (Fig. 7:C). Hence, we already have four assemblages of different category originating roughly from the same time horizon. Any chronological differences between them could not have been longer than a few dozen years or even less. Only one assemblage of the second category, i.e. grave no. 2 in *kurgan* no. 2 on site 2 in Łubcze (Fig. 5:A), has been assigned a BP date older by ca 100 years than the above-mentioned assemblages. Taking into consideration, however, the character of the bar graph (produced by the OxCal program) offering a wide legitimate choice of the moment of the origins of this deposit, it is absolutely acceptable that they took place in ca 2650 BC (Fig. 13). This date would be close to the lower limit of the chronological interval adopted for other assemblages exhibiting Middle Dnieper traits and already dated by the radiocarbon method. A certain corroboration of the date is offered

⁸ The date, Ki-6302 4270±60 BP, in no way corresponds to the dating by the radiocarbon method of the whole MC, not to mention its classic and late phases.

by the presence in this assemblage of a small beaker decorated with horizontal bands of multiple impressions of a thin cord (Fig. 5:A5) in a manner typical of the proto-MC [Kadrow, Machnik 1997:18].

The absence of an absolute date for the “third” assemblage, i.e. the niche grave in the *kurgan* on site 4 in Hubinek (Fig. 4:A) classified under the second category, makes it difficult to determine its chronology. Nevertheless, relying on the amphora found in it and similar in shape (Tab. 4:A13) to that from the above-named grave in Łubcze (Fig. 5:A6), taking also into account its ornament finding certain analogies in younger CWC graves in Germany, it can be accepted that this “assemblage” is roughly contemporaneous with the latter one⁹.

In a similar situation as the niche grave in the *kurgan* on site 4 in Hubinek, one may find two assemblages of the third category, i.e. the grave on site 30 in Werszczyca (Fig. 4:B) and grave no. 2 on site 1 (Fig. 6:A) in the same locality, that do not have absolute dates. The mortarpot-like beakers found in both graves are believed, as it has already been mentioned, to be vessels typical of rather younger CWC phases. This is confirmed by a recently obtained date from 3920 ± 80 BP to ? for a grave located underneath a *kurgan* in Wola Węgierska on the Dynów Upland from which comes a mortarpot-like beaker of the same type as the discussed specimens from Grzęda Sokalska [Machnik, Sosnowska 1998:11, Fig. 11a]. Therefore, the interpretation of the stratigraphic arrangement in the *kurgan* on site 1 in Werszczyca (Fig. 6:A1) seems to be unreliable. Under this interpretation, grave no. 1 containing the same beaker would have to be older than grave no. 2, dated to 4305 ± 45 BP, dug into the groove encircling the first grave. At least this is what follows from a drawing published by J. Bagińska [1997:47, Fig. 2B]. Considering the fact that the date of grave no. 2 is among the oldest in the CWC in Europe, we would have to accept in such a case that grave no. 1 with a mortarpot-like beaker is even older, which is untenable vis-à-vis our current knowledge of this culture. Thus, we deal here either with an error in the dating of grave no. 2 or with a wrong interpretation of the sequence of placing these two burials in the *kurgan*. If we accepted a different sequence, namely that the symbolic groove circumscribing grave no. 1 was dug later than grave no. 2 - such cases are frequent in the MDC [Artemenko 1967:81] or even in the CWC [Machnik 1966:343] - then the ¹⁴C date obtained for the latter could at least approximately reflect its actual chronology. In this case, however, one would need to prove that it is the groove that was dug into the contents of grave no. 2 and not vice versa as the investigator of the *kurgan* believes. In this situation, to attempt to determine the time of depositing both assemblages of the third category with mortarpot-like beakers one would rather need to take into account the current knowledge on the chronology of this vessel form within the CWC supported by the latest absolute dating from Wola Węgierska. The dating seems to indicate to a still

⁹ If it was also accepted that both beakers with Middle Dnieper traits (Fig. 4:A6, 7) found in the grave were part of grave-goods buried together with the deceased after moving aside the bones of a person placed in the niche earlier, to whom both amphorae belonged, it would *ipso facto* mean that the beakers were younger than the amphorae.

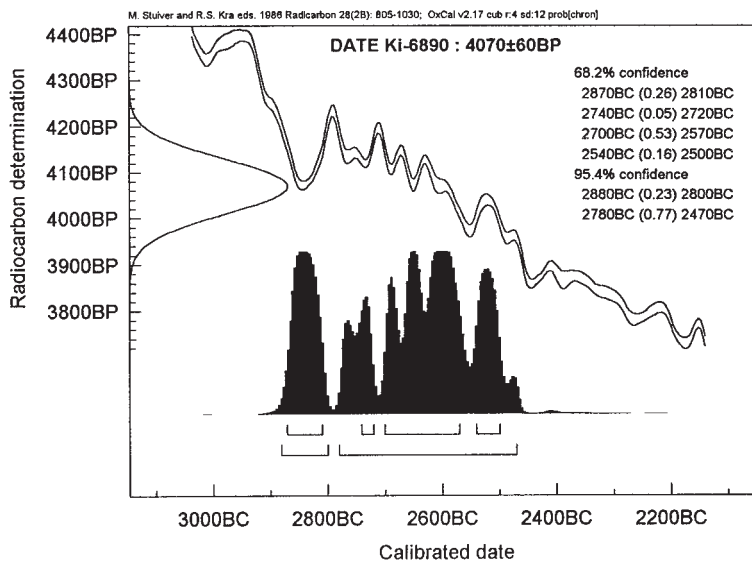


Fig. 9. Hubinek, Podkarpace Prov., site 3, *kurgan*, grave no. 3, bar graph of calibrated radiocarbon dates (foll. OxCal).

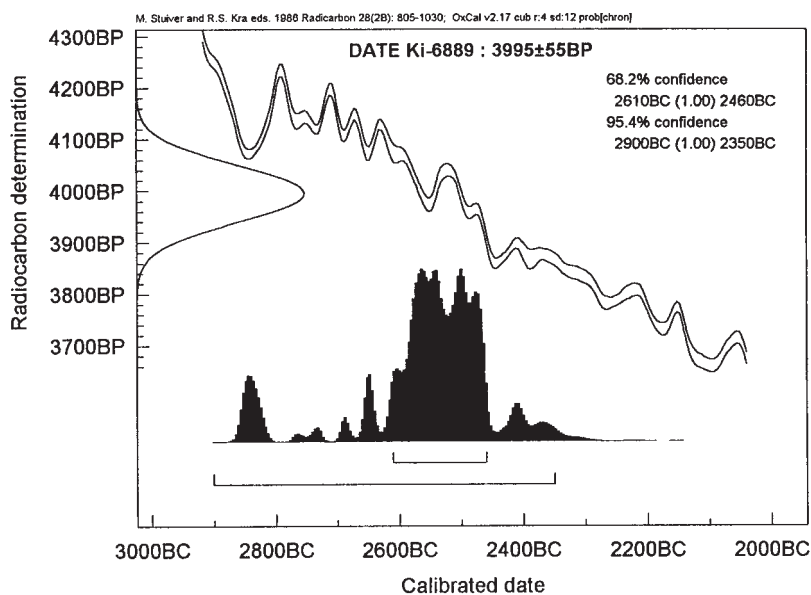


Fig. 10. Hubinek, Podkarpace Prov., site 3, *kurgan*, grave no. 2, bar graph of calibrated radiocarbon dates (foll. OxCal).

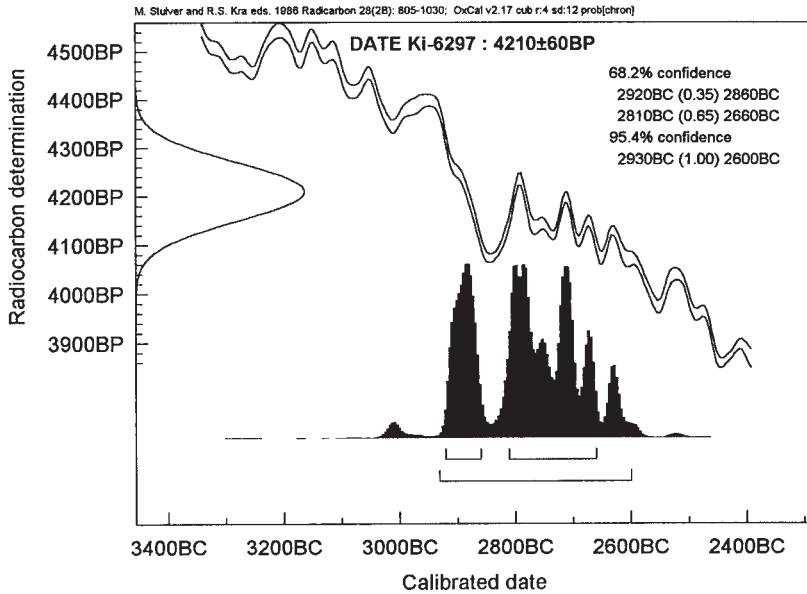


Fig. 11. Łubcze, Lublin Prov., site 2, *kurgan* no. 1, grave no. 1, bar graph of calibrated radiocarbon dates (foll. OxCal).

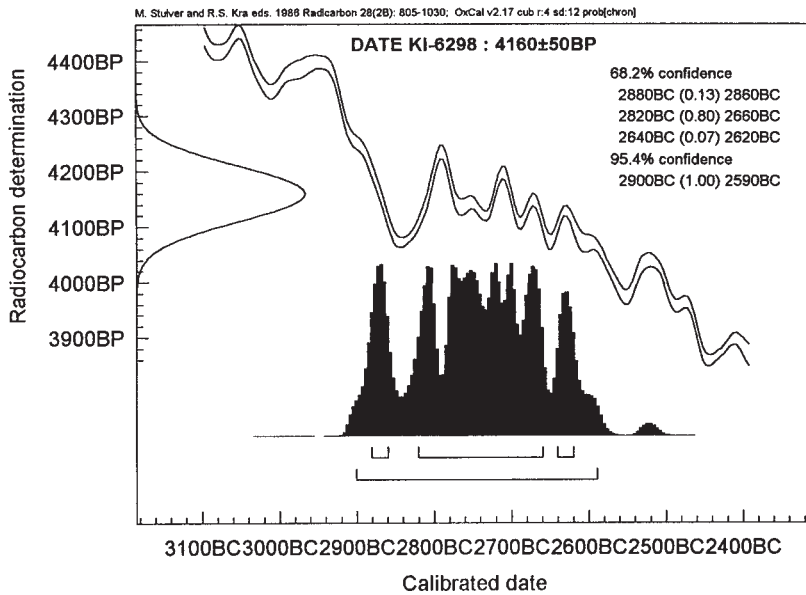


Fig. 12. Łubcze, Lublin Prov., site 2, *kurgan* no. 2, grave no. 2, bar graph of calibrated radiocarbon dates (foll. OxCal).

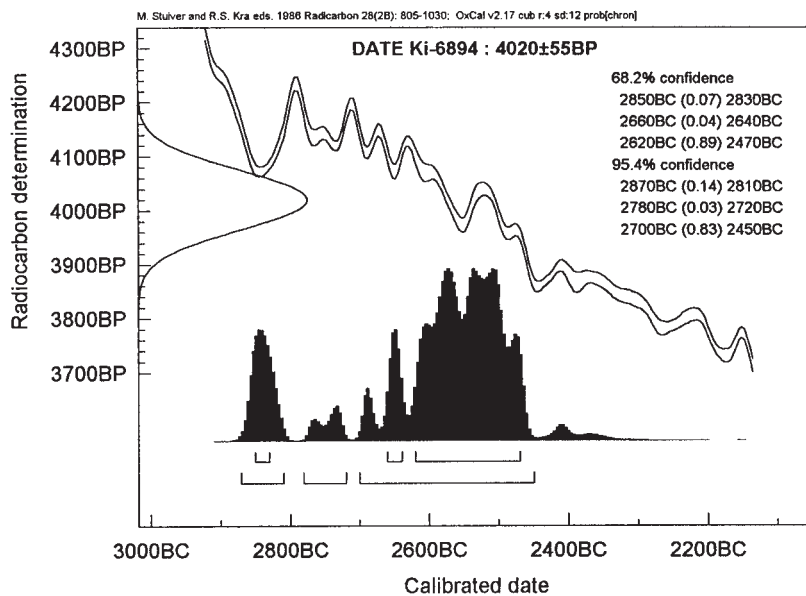


Fig. 13. Nedeżów, Lublin Prov., site 22, *kurgan* no. 2, grave no. 1, bar graph of calibrated radiocarbon dates (foll. OxCal).

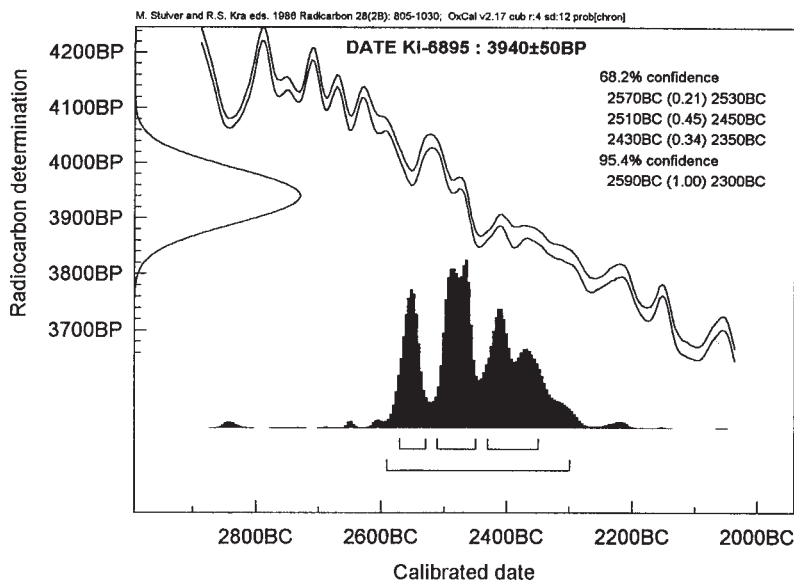


Fig. 14. Nedeżów, Lublin Prov., site 22, *kurgan* no. 2, grave no. 2, bar graph of calibrated radiocarbon dates (foll. OxCal).

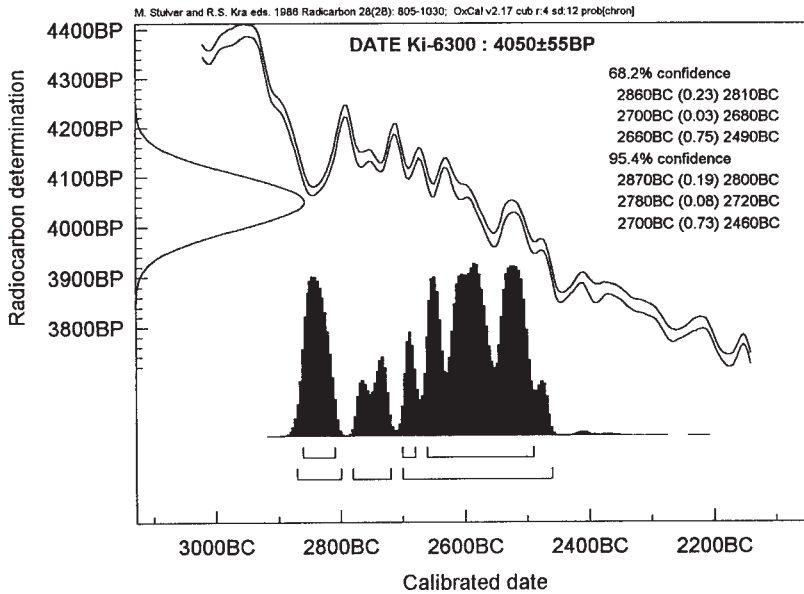


Fig. 15. Łubcze, Lublin Prov., site 37, *kurgan*, niche grave no. 3, bar graph of calibrated radiocarbon dates (foll. OxCal).

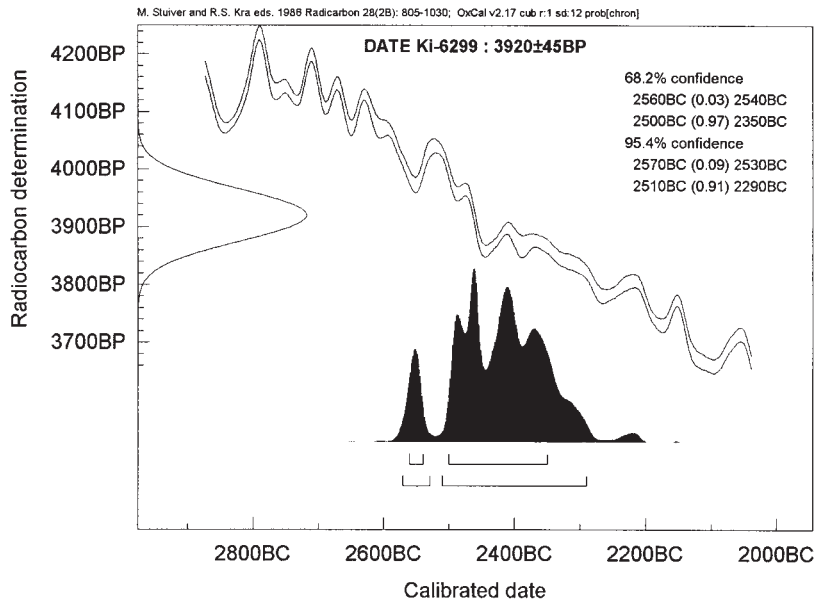


Fig. 16. Łubcze, Lublin Prov., site 37, *kurgan*, grave no. 1, bar graph of calibrated radiocarbon dates (foll. OxCal).

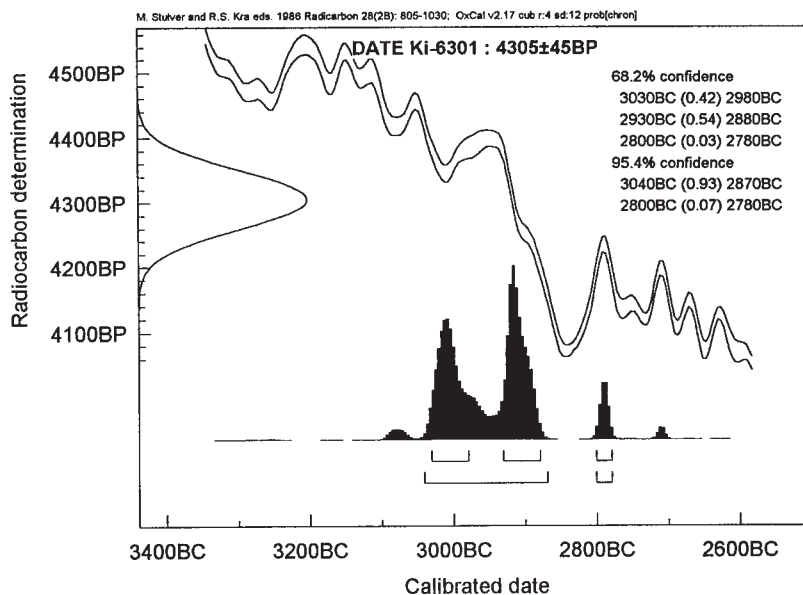


Fig. 17. Werszcyca, Lublin Prov., site 1, *kurgan* no. 1, grave no. 2, bar graph of calibrated radiocarbon dates (foll. OxCal).

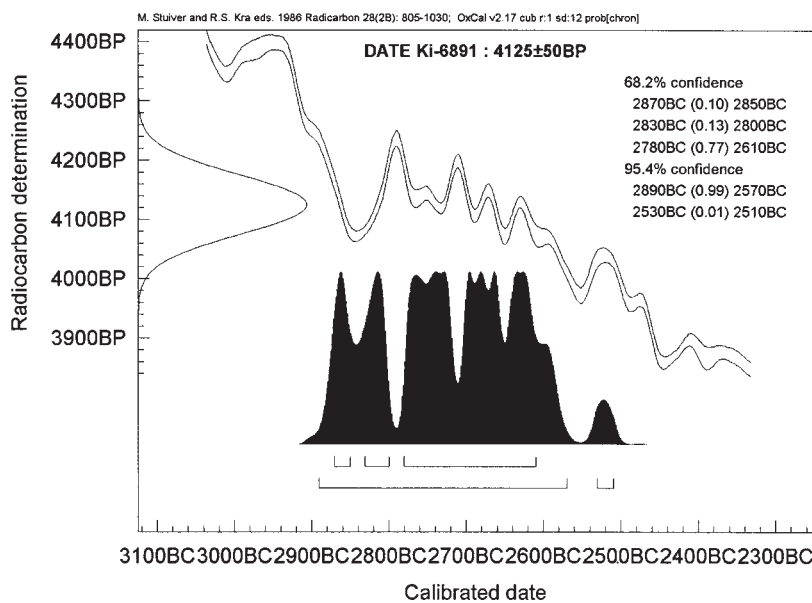


Fig. 18. Werszcyca, Lublin Prov., site 30, *kurgan*, pit no. 3, bar graph of calibrated radiocarbon dates (foll. OxCal).

later period (ca 2400 BC) from the upper limit of the time interval (2600-2500 BC) set by the ¹⁴C dates obtained for the assemblages with Middle Dnieper traits on Grzęda Sokalska.¹⁰

A general conclusion that comes to mind after making the above analytical review of dates referring to pertinent grave assemblages and after analyzing their stratigraphic positions in the excavated *kurgans* is that the Middle Dnieper traits contained in them should be synchronized with the relatively late period of the CWC development extending not earlier than the very decline of the first half of the 3rd millennium BC in the area between the Upper Vistula, Upper Bug and Dniester Rivers. Consequently, it would be the period of a fully developed Kraków-Sandomierz group of the CWC on the loess soils of the Małopolska Uplands [Włodarczak 1998:38, Fig. 3] and most probably it would coincide with phase IIIa or even the beginning of phase IIIb of that culture in Moravia [Šebela 1991].

5. OTHER ASSEMBLAGES IN THE AREA BETWEEN THE UPPER VISTULA, UPPER BUG AND DNIESTER RIVERS CONTAINING MIDDLE DNEIPEP TRAITS

The graves on Grzęda Sokalska are not the only ones containing Middle Dnieper traits in the vast interfluvial area. Quite recently, an assemblage of artifacts, most likely grave ones, has been discovered in Młodów-Zakęcie near Lubaczów [Machnik, Pilch 1997] which includes three classic MDC hourglass beakers [Machnik, Pilch 1997:148, Phot. 1] displaying technological characteristics typical of the pottery of that very culture. The vessels and accompanying objects, i.e. a large stone boat-shape axe, a flint celt with an irregular lenticular cross-section, heart-shaped bow arrowheads and other artifacts made of the same raw-material leave no doubt that the assemblage was deposited by MDC people far away from their home territory (Fig. 1). A detailed stylistic analysis of the vessels, especially of the large beaker [Machnik, Pilch 1997:146, Fig. 2], seems rather to indicate to a possibility of relating this deposit to a quite early period of CWC existence in this area [Machnik, Pilch 1997:156-159]. Thus, it would come earlier, or even much earlier, than the Middle Dnieper assemblages on Grzęda Sokalska, including those assigned by us to the first and second categories. Besides, it shows “purer” MDC traits (with respect to form, ornamentation and technology) than the latter, not to mention the vessels from the assemblages of the third category. It is so far the only assemblage of its kind in the area in question, beyond the compact range of the MDC. In the

¹⁰ Also a late ¹⁴C date, namely 1850±100 bc (later than the grave in *kurgan* 1 in Wola Węgierska), was assigned to grave K in Łukawica near Narol in Roztocze [Machnik 1966] containing a “flower-pot” beaker of certain MDC reminiscences [Machnik, Ścibior 1991:54, Fig. 6:3a]. The accuracy of this date, however, should be treated with caution because it was obtained very early in Berlin without appropriate documentation.

area, however, several grave assemblages, including pottery exhibiting to a variable degree Middle Dnieper traits, are known. They have been inventoried and briefly characterized while working on the already mentioned deposit in Młodów-Zakęcie [Machnik, Pilch 1997:159-164]. We can see among them specimens that are very similar in shape and ornament to respective MDC forms as well as vessels (flower-pot beakers) which are only reminiscent of the MDC impact in the western direction (Fig. 8). Among the former ones the most important are: an “hourglass” beaker from a grave placed secondarily in a *kurgan* in Kryłos near Halich [Sulimirski 1968:135, 136, Fig. 11:15; Sveshnikov 1974:44, Fig. 9:21], two wide-orifice beakers from *kurgans* in nearby Komarov [Sveshnikov 1974:44, Fig. 9:1, 5; Machnik, Pilch 1997:160, Fig. 9: 4, 5], a small beaker from a side grave in *kurgan* II in Kołokolin near Rohatyn [Sulimirski 1968:141, Plate 7:7; Machnik, Pilch 1997:160, Fig. 9:24], two beakers from feature no. 11 (possibly a grave) in Koniusza near Kraków [Tunia 1979:70, Fig. 18a, b] and a beaker from a grave in Kobiela near Opatowiec [Ścibior 1990:143, Fig. 1a]. Together with the last mentioned item, a boat-shape axe of an older type was found [Ścibior 1990:144, Fig. 2a], which may indicate a quite early origin of that burial. Vessels with hardly legible Middle Dnieper traits include, as we already know, “flower-pot” beakers narrowed at the top and having wide bottoms preserved intact in *kurgan* K in Łukawica near Narol, in graves (flat?) in Nowosiółki near Przemyśl and Side near Sambor [Machnik, Pilch 1997:160, Fig. 9:6, 10, 15]. Out of these artifacts, only the beaker from Łukawica is ornamented in a manner similar to the patterns prevailing in the MDC [Machnik 1966: Tab. XXIV 2a].

As of today we do not have any certain premises for accurate dating of the majority of the listed finds exhibiting Middle Dnieper traits and originating in places other than Grzęda Sokalska in the interfluvial area under discussion. All we can say is that, save the deposit from Młodów, the degree of their similarity to the Middle Dnieper pottery is comparable to that which we observed in the assemblages - especially of the second and third categories - on Grzęda Sokalska. What is more, some of these finds (Kryłos and possibly Koniusza, too) were, as was the case on Grzęda Sokalska, placed within CWC *kurgans* that had been raised earlier or in their immediate vicinity. Hence, it may be accepted that also a majority of these finds fit into the chronological limits set on the basis of ^{14}C dates referring to the assemblages displaying Middle Dnieper traits on Grzęda Sokalska. Consequently, this would mean 2600- 2500 BC.¹¹ However, this would not apply to a classically Middle-Dnieper assemblage from Młodów (Fig. 8:1-3) which must be older from the lower limit of that time interval. It may also be older, but with much lower certainty, than the above-mentioned finds from Kobiela and Koniusza.

¹¹ Except for “flower-pot” beakers which in most cases seem to come from (as it is suggested by the ^{14}C dates relating to the barrow in Wola Węgierska and the grave in Łukawica) a still later period.

As we have seen the grave assemblage from Młodów is undoubtedly an incidental occurrence in the interfluvial area. Therefore, it must be considered a result of a single intrusion into the area controlled by CWC societies (Fig. 1). Its incidental character follows from the existence of a wide zone separating the territories of the compact range of the CWC and MDC (on their south flank) and occupied by a GAC people [Sveshnikov 1983]. It must have been a significant barrier preventing any direct contact across the upland zone of the interfluvial area of the Middle Dnieper and the Upper Dniester Rivers between the first two cultures, after all so genetically close to one another.¹² The significance of the barrier must have declined together with the weakening of the GAC settlement, its disintegration and complete disappearance from the areas lying to the east of Gniła Lipa (western part of Podolia). Judging by a long series of dates obtained for the GAC in Volhynia and Podolia [Kadrow, Szmyt 1996b; Szmyt 1998], its lifetime was drawing to an end beginning with the middle of the 3rd millennium BC. Thus, we have here a striking coincidence between the ¹⁴C dates concerning the discussed assemblages exhibiting Middle Dnieper traits on Grzęda Sokalska and a majority of such assemblages from the late period of the GAC in Volhynia and Podolia [Szmyt 1998:228, 229].

It follows that a clear intensification of MDC influences, most probably due to the influx of groups of people not only to Grzęda Sokalska but to the whole interfluvial area, took place during a crisis and disappearance of the GAC, which until then blocked any such migrations in the areas lying to the east of Gniła Lipa [Machnik 1979b:57]. Now, these areas became fully accessible to people of the late or even decline CWC from the interfluvial area of the Upper Vistula, Upper Bug and Dniester Rivers (Fig. 1). Earlier such expansion was hardly possible, except for incidental intrusions, e.g. a *kurgan* in Lisieńczyce on the Upper Zbrucz, or completely impossible due to the presence of the GAC. The expansion is evidenced by *kurgans* and other graves showing decline traits of the CWC, e.g. in Kaczanówka and Nowosiółki in Podolia [Bedłowski 1930] and Siwki in Volhynia [Sulimirski 1968:164], coming from the times when in the western part of the interfluvial area, primarily on the loess soils of the Małopolska Uplands, the culture underwent a transformation resulting in a rapid spread (also in the eastern direction) of early MC traits [Kadrow, Machnik 1997:30, Fig. 7].

Translated by Piotr T. Żebrowski

¹² A lot seems to indicate that these ties existed for a long time, especially between the south Baltic zone and the drainage of the Upper Dnieper [Machnik, Pilch 1997. See also footnote 6].

ABBREVIATIONS

AO	– Arkheologicheskiye otkrytya, Moskva.
AJA	– American Journal of Archaeology, New York.
BPS	– Baltic-Pontic Studies, Poznań.
EA	– Eurasia Antiqua, Berlin.
FPP	– Folia Praehistorica Posnaniensia, Poznań.
KSIA	– Kratkiye soobshcheniya Instituta Arkheologii, Moskva.
KSIA AN USSR	– Kratkiye soobshcheniya Instituta Arkheologii AN USSR, Kiev.
KSIIIMK	– Kratkiye soobshcheniya Instituta Istorii Materialnoy kultury, Moskva.
KSOGAM	– Kratkie Soobshcheniya Odesskogo Gosudarstvennogo Arkheologicheskogo Muzeya, Odessa.
MIA	– Materialy i issledovaniya po arkheologii, Moskva.
NA IA NANU	– Naukovy Arkhiv Instituta Arkheologii Nacionalnoi Akademii Nauk Ukrainu, Kiev.
SA	– Sovetskaya Arkheologia, Moskva.
SpA	– Sprawozdania Archeologiczne, Kraków.
ZFA	– Zeitschrift für Archäologie, Berlin.

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