

**BETWEEN WEST AND EAST
PEOPLE OF THE GLOBULAR
AMPHORA CULTURE IN EASTERN
EUROPE: 2950-2350 BC**

Marzena Szmyt

BALTIC-PONTIC STUDIES

V O L U M E 8 • 2010

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Second Edition

ADAM MICKIEWICZ UNIVERSITY
INSTITUTE OF EASTERN STUDIES
INSTITUTE OF PREHISTORY
Poznań 2010
ISBN 83-86094-07-9 (print:1999)
ISBN 978-83-86094-15-8 (CD-ROM)
ISSN 1231-0344

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Translated by John Comber
and Piotr T. Żebrowski

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Cover Design: Eugeniusz Skorwider

Linguistic consultation: John Comber

Prepared in Poland

Computer typeset by PSO Sp. z o.o. w Poznaniu

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Editor's Foreword

The societies of the Globular Amphora culture (GAC) in eastern Europe have already been discussed in one of the previous volumes of the *Baltic-Pontic Studies* (4). The papers included in it presented new Globular Amphora culture assemblages and new information categories (in particular, new radiocarbon dates). This volume gives a full description of source material foundations relating to the presence of GAC populations in eastern Europe, from the Baltic coast in the north to the Black Sea in the south and the Dnieper-Dvina line in the east. The sources were subjected to extensive analytical procedures whose ultimate result is a new presentation of the temporal and spatial parameters of the development of GAC population settlement in eastern Europe. Of special interest is a detailed description of the cultural environments in which the settlement appeared as well the cultural processes in which GAC societies took part. Consequently, this book touches upon a number of controversial issues in the prehistory of the borderland between western and eastern Europe. We intend to continue this line of investigations in one of the next volumes focusing especially on the questions of social transformations characteristic of the 3rd millennium BC in the area of interest to us that need to be dealt anew.

INTRODUCTION

1. SUBJECT, AIM AND SCOPE OF THIS WORK

The name 'Globular Amphora culture' (GAC), which features in the title of this volume — one of the more humorous definitions, it must be said, in archaeological taxonomy — is of a nineteenth-century pedigree, similarly, moreover, to many other names given to archaeological cultures. It was used for the first time by the German researcher A. Götze [1900] in relation to grave assemblages in which the dominant type of vessel was the specific (key) form of two or four-handled vessel, with a globular belly. After many years of research, this term lost its original, narrow sphere of reference and became a purely conventional name, also applied to assemblages devoid of that key vessel type. The name is presently used to designate a set of traits from the field of material and symbolical culture, among which the following should be mentioned: forms, ornamentation and technology of ceramics, macrolithic flint products (axes and chisels), amber artifacts, cist graves, ritual features with animal burials etc. The majority of these traits can also be found in other taxonomical units; together, however, they compose a unique structure, which should be described as typical ('classical') for the GAC. More recent studies portray the dynamics of the formation of this structure, abandoning a static description and emphasising the chronological and spatial (regional) diversity of the traits which compose it and their relations [e.g. Szmyt 1996a; Müller 1997], with the result that the notion of archaeological culture in the case of the GAC approaches that of a polithetic category [Clarke 1968:248-249].

Sources of the GAC have been identified across a wide area of Central and Eastern Europe, from the Elbe basin in the west to the Dnieper in the east, and from the Baltic coast in the north to the Vltava basin, the Upper Vistula and Upper Dniester, Seret and Prut, and the Black Sea Coast in the south. Three territorial GAC groups are distinguished in this area (Fig. 1): western, central (or Polish) and eastern [Wiślański 1966:86-91; 1970:183-221; Sveshnikov 1983:Fig. 1]. The first of these covers territories in the basin of the Oder, Elbe and Vltava; the central group is concentrated in the basin of the Vistula, Warta, Noteć and Bug; and the eastern group is located in Eastern Europe, from the south-eastern Baltic coast to

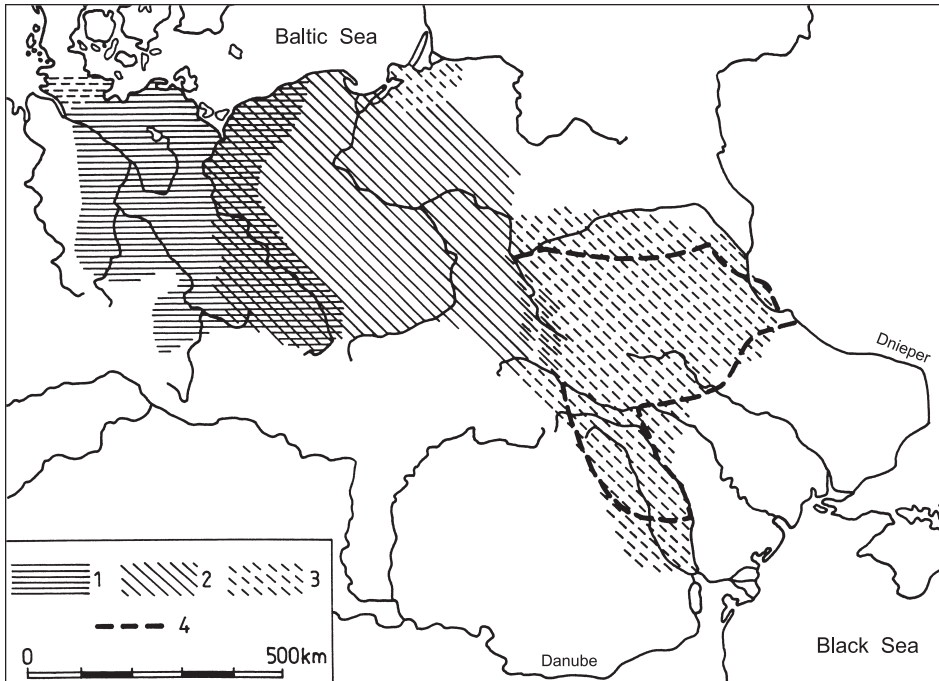


Fig 1. Distribution of the Globular Amphora culture.

Key: 1 - the western group, 2 - the central (Polish) group, 3 - the eastern group as defined by I.K. Sveshnikov, 4 - borders of the eastern group proposed herein.

Source: Sveshnikov 1983, with modifications of the author.

the basin of the Seret and Prut and the area between the Bug, Neman and Dnieper¹.

The aim of this work is the analysis and interpretation of GAC sources from the territory of Eastern Europe. Due to the present state of reference sources, I will focus on selected aspects of this question, namely on providing some form of spatial, temporal and cultural order to the information, drawing particular attention to the location of GAC complexes within the cultural environment of Eastern Europe. Thus, this volume does not represent a monograph of a given taxonomical unit, but rather creates a base for socio-cultural and economic interpretations, which will be the subject of a further study of a wider scope, utilising similarly-ordered sources from all three territorial groups of the GAC. In accordance with the accepted formula, I have also excluded anthropological questions, which, in any case, require a fresh specialised analysis. The spatial scope of this study covers the western part of Eastern Europe², generally situated between the line of the Bug and Neman in

¹It is against this spatial formula of the eastern group that I argue below.

²The categories of physiographic divisions according to Kondracki 1997, with modification.

the west and the Dnieper in the east. Within this territory, three principle ecological zones are distinguished: Forest (within which further distinction is made of the south-eastern Baltic coast), Forest-Steppe and Steppe [Ievlev 1991]. The treatment of these zones as distinct ecocultural units has been justified by numerous archaeological and historical studies. Against this context, it should be emphasised that traces of the GAC have been observed in all of the above-mentioned zones (Figs. 2-3). From a chronological perspective, they are placed in the III mill. BC, more precisely: in the first three-quarters of this millennium, which determines the temporal scope of this work.

2. HISTORY OF RESEARCH

Traces of the presence of the GAC on the area of interest to us here have been documented in a scientific manner since the 19-th century, and their precise cultural identification was established at the beginning of the 20-th century [Kossinna 1910]. The first outline of the south-eastern (more precisely Podolian) GAC concentration (defined at the time as the 'Megalithic Grave culture'), added to a work of a wider scope, appeared in 1921 [Kozłowski 1921:39; cf. reiteration in Kozłowski 1924]. Several years later was published a monograph of the GAC ('Megalithic culture') of the eastern part of Volhynia [Levitskiy 1929]. In subsequent years, information concerning further discoveries appeared [e.g. Levitskiy 1930]. The issue of the south-eastern branch of the GAC also appeared in wider synthesising formulations [e.g. Antoniewicz 1938; Kozłowski 1939; Kostrzewski 1948; Bryusov 1952; Gimbutas 1956; Sulimirski 1959] and on the margins of studies of other cultures [e.g. Äyräpää 1933; Passek 1949]. However, it was only with the monographic publication of I.K. Sveshnikov [Sveshnikov 1957] that some order was introduced into the state of source material. Despite its misleading title, this study, together with the later works of A. Häusler [1966] and T. Wiślański [1966:83-90], finally put an end to the tradition of the dual-naming of the materials in question: 'Globular Amphora culture' and 'Megalithic culture' (the latter had been used to emphasise the distinct origins of Volhynia-Podolia finds). At the same time, traces were found of GAC settlement in the eastern Carpathian Foothills, in the basin of the Middle Seret (the Moldavian Uplands) [Mătașă 1959; Dinu 1960a; Spinei, Nistor 1968].

The following years saw the publication of source-descriptive studies presenting new source assemblages [e.g. Maleyev 1971, 1986; Berezanska, Pyasetskiy 1979; Cucos 1985]. Further works of I.K. Sveshnikov [1971, 1974, 1983] specified —

in accordance with the standards then applied — the following questions: range, spatial diversity and the chronology of Volhynia-Podolia materials of the GAC. A different perspective was presented by T. Sulimirski [1968], who is also author of the most expansive synthesised depiction of the questions of the development and intercultural contacts of the eastern GAC group [Sulimirski 1970:162-170]. The most recent monographic publications [e.g. Chernysh 1982; Sveshnikov 1985a, 1990] essentially reiterate previous theses of I.K. Sveshnikov. Over the last decade or so, a series of publications have appeared which consider several aspects of the development of the south-eastern branch of the GAC [Koško 1990, 1991b], some also covering its border area with the Polish group [Kokowski, Ścibior 1990; Ścibior, Kokowski, Koman 1991].

In terms of direct connections with examinations into the GAC in Volhynia, Podolia and the Moldavian Uplands, the issue remains of the relations of the GAC with other cultural groups, particularly the Tripolye culture and Steppe cultures. The former was addressed by writers such as T. Sulimirski [1970], V.I. Zbenovich [1974] and T.G. Movsha [1985b], establishing, above all, mutual references of space and chronology between the GAC and the Tripolye culture, as well as formulating certain socio-cultural conclusions. The recognition of the participation of GAC elements in the development of Steppe cultures is more debatable. The most radical version of this hypothesis was put forward by N. Nikolayeva and V. Safronov [1974]. The positions represented in relation to this issue by authors such as those mentioned above were subject to criticism [Maleyev 1980; Sveshnikov 1983:20; Markovin 1990; Haüsler 1994:195; Munchayev 1994:163], despite the fact that the catalogue of traits with genetic links to the GAC, which were noted in the context of Steppe groups, underwent a systematic expansion [e.g. Yarovoy 1979; Subbotin 1988]. An entirely different view was put forward by M. Gimbutas [e.g. 1997a; 1997b], according to which the origins of the GAC were linked to the influences of Steppe groups ('Kurgan culture').

A different picture emerges in relation to the northern (i.e. situated in the south-eastern zone of the Baltic coast) and central (i.e. in the Forest zone, presently in the border area between Belarus and Russia) parts of Eastern Europe. In the first case, information contained in early publications has only in recent years been expanded [cf. Rimantiene, Česnys 1990; Rimantiene 1992a, 1996a, 1996b]. Also recently presented have been new GAC sources from the Forest zone of Eastern Europe [Charniauskis 1987; Schmidt 1992] and new hypotheses relating to the participation of the GAC in the transformations of local cultural groups [e.g. Miklayev 1992].

Finally, work has also been undertaken recently into a new formulation of the chronology and periodisation of the GAC in Eastern Europe [Kadrow, Szmyt 1996; Szmyt 1998], of which the present volume is a continuation.

3. REFERENCE SOURCES

The sources used in the present work can be divided into two groups: so-called 'pure' material directly (albeit sometimes hypothetically) linked to the GAC; and other artifacts, some of whose traits refer to a broader concept of GAC tradition.

The series of sources linked directly to the GAC is provided by material from 389 archaeological sites (Table 1). They include grave remains (35%), settlements, camps and workshops (25%) and so-called 'settlement traces' (40%). GAC graves were identified on the basis of their grave-goods (the presence of ceramics or other GAC artifacts) and/or their construction (particularly so-called 'cist' graves). The criterion for the classification of settlements is the presence of some kind of evidence of a lasting settlement development of a given location (buried or half-buried features — most frequently pits, less often the remains of dwelling constructions), which was usually accompanied by a significant quantity of artifacts (ceramics, flint and stone products, bones, etc.) Also included here were a small group of points of a specific character, linked to the production of flint artifacts (workshops). The category of settlement points is used to cover those sites in which GAC ceramics have been recorded (usually up to about 20 fragments), and sometimes also other artifacts of this culture. A number of these points probably represent the remains of temporarily inhabited sites (camps), although some may be relics of destroyed graves. The group of so-called 'settlement traces' is at once both quantitatively the most important and, at the same time, the least informative. These are locations in which macrolithic flint tools (axes and chisels) have been found without any definite context ('loose') — most frequently, moreover, in an accidental way. At this point, it is essential to remark that individually-discovered flint axes and chisels, characterised by a strictly-defined form and type of surface-finish (cf. Ch. 1.2.2), can only hypothetically be linked to the GAC. As in the case of other areas settled by the GAC population, a significant proportion of such finds probably originate from destroyed graves [cf. justification in Szmyt 1996a:49]. It is not possible to give a more detailed picture of this situation in relation to particular cases, hence the inclusion of the category of sources in question among that of settlement traces.

The question of sources which can be linked to a broader understanding of GAC tradition on the territory under consideration is a matter to be treated separately. Generally speaking, these are individual elements, whose original source was the GAC. This most often covers such elements as the burial rite, ornamentation, or vessel forms, as well as flint axes. These are discovered in a variety of cultural contexts, and constitute a basis for consideration of the question of intercultural links of the GAC population.

Table 1.

Globular Amphora culture sites in Eastern Europe

Identification	Graves	Other ritual features	Settlements	Workshops	Settlement points	Settlement traces	Total
GAC	82	3	8		89		182
GAC ?	52			2		153	207
Total	134	3	8	2	89	153	389

4. STATE OF REFERENCE SOURCES

A separate comment is required concerning the state of the sources which were at my disposal. Their flaw is in a triple over-representation of (a) old collections (from the 19-th and first half of the 20th century) in relation to the results of more recent exploratory groundwork, (b) incidental finds in relation to material from archaeological excavations and (c) sepulchral sources in proportion to settlement sources.

a. Sources originating from older studies (up to the 1950s) represent 50% of the whole pool. The majority of these are only to be found in literature, such as the valuable collections from the examinations carried out by I. Levitskiy, of which only a small number of specimens of vessels and other artifacts have been preserved in museum collections to the present day. Pictorial documentation published in earlier studies often falls short of present-day standards, particularly in the case of drawings of artifacts and plans. Furthermore, a large number of features possess no documentation whatsoever. There are also cases of studies of a doubtful tenability, in which the plans presented, being most probably compilations of different finds, fail to elucidate the sense of their representation in such a form [e.g. Gamchenko 1930]. The situation with regard to more recent discoveries is not always more beneficial, since a number of these were not published in full, whilst other materials were not made available for individual examination. Others simply disappeared. This all resulted in significant analytical limitations, the consequences of which can be observed in particular chapters.

b. A large number of finds were incidental, particularly with regard to macrolithic flint implements (axes and chisels), and graves. In the case of the former, this results on the one hand in rich museum collections, and on the other in fragmented (or entirely absent) information concerning the location of individual finds. As regards graves, in the vast majority of cases we have at our disposal only some laconic mentions of their discovery (especially for ‘cist’ graves), against a lack of information concerning the grave-goods which they contained, the elements of which regularly fail to reach the hands of archaeologists (falling victim to destruction or break-up).

c. The over-proportionate incidence of grave sources in relation to settlement sources is considerable (134 to 99), and concerns particularly those assemblages which could be useful in terms of chronological analysis, i.e. of a sufficiently large number. Consequently, the periodisation and chronology of the GAC which is presented below was formulated on the basis of grave assemblages and does not necessarily reflect the diversity of settlement sources (cf. more extensive observations in Ch. I.).

The combined effect of the above-mentioned circumstances is that the state of sources drawn upon can only be assessed as disappointing. This carries over into a far-reaching limitation of research possibilities affecting every aspect under consideration in the present volume.

5. ARRANGEMENT OF THE WORK AND FORMAL CONSIDERATIONS

The book consists of five chapters, of which the first two are devoted to detailed macro-spatial and chronological-periodisational analyses of GAC sources, the next two permit the positioning of GAC communities in relation to their Eastern European neighbours, whilst the final chapter contains a processual depiction of the fragment of prehistory discussed in this volume, with particular focus on the role of the GAC population in the cultural transformations of Eastern Europe. The text is complemented by two annexes, the first of which (annexe I) is an abridged (tabulated) catalogue of sources. Annexe II provides a list of the radiocarbon datings referred to in this work.

All of the dates included in the text are calendar dates (with the abbreviation BC), calculated on the basis of the most recent calibrational curve on which the computer program of B. Weninger and O. Joris [1998] is founded. I have generally employed their versions from period 1 sigma (e.g. probability 68%); all departures from this rule have been clearly indicated. In each case, the catalogue number of the laboratory is also given, in order to facilitate the location of the corresponding reference in annexe II. Any transferral of general caesurae into calendar years (e.g. indicating the period of duration of a particular cultural unit) is accompanied in brackets by a reference to the original version, taken from a specific study and marked by the abbreviation bc (= uncalibrated years) or BP.

Included in this book are two groups of illustrations: figures and plates. The first group are principally of an analytical nature, whilst the plates present all available 'pure' GAC materials — assemblages of graves and from settlement pits, and also finds from surface excavations and so-called 'loose' finds. References to plates

are included in the catalogue of sources (annexe I). It should be mentioned that a personal examination of the sources to which I had access revealed numerous errors in earlier published documentation, especially of ceramics. Consequently, the plates include a large number of new illustrations, although the break-up of museum collections did not allow this to be carried out in full. Also included is the full range of available plans of excavated features (mainly graves) — the limited number of which reflects the state of research material which was outlined above.

To conclude, I would like to add a few remarks related to the transliteration adopted of place names and proper nouns from the Belarussian, Russian and Ukrainian. For place names, the guiding principle for transliterations were the official ('national') versions, e.g. Rivne and not Rovno or Równe. However, in the case of names which already possess an established English language version, it is precisely these that have been employed, e.g. Dnieper rather than Dnipro, or Kiev and not Kyiv.

ACKNOWLEDGEMENTS

The sources used in this volume were gathered from museum searches in Belarus, Lithuania, Poland and Ukraine, as well as from a survey of literature published in Belarus, Lithuania, Moldova, Russia, Rumania and Ukraine, access to which was sometimes difficult to obtain. I also had access to the private archives of Dr. Mykola Kryvaltsevich, Dr. Yuriy Maleyev, Late Dr. Olena Lagodovska and Late Prof. Igor K. Sveshnikov. All the searches were possible thanks to financial support in the form of a grant awarded by the State Committee for Scientific Research (grant 1 H01G 01810) and additional funds assigned by Prof. Aleksander Koško (grant 1 H01G 05912) and Prof. Grzegorz Kotlarski (within the framework of research conducted by the Institute of Eastern Studies of the Adam Mickiewicz University, Poznań). To both of them I am extremely grateful. However, my research would not have been possible without the disinterested help of many people, particularly the directors and employees of the museums in Dubno, Grodno, Kiev, Lvov, Minsk, Mlyniv, Rivne, Ternopil, Vilnius, Zalishchiki and Zhitomir. My wholehearted thanks go to Dr. Lubov Klochko, Dr. Viktor Klochko, Dr. Mykola Kryvaltsevich, Dr. Yuriy Maleyev, Dr. Yuriy Rassamakin, Dr. Svyatoslav Shelomentsev-Terskiy and Dr. Mihailo Videiko for their support during my work. Special thanks to Prof. Sophia Berezanska, Prof. Mikhail Charniauski and Prof. Rimute Rimantiene for the possibility to examine unpublished materials and to Prof. Johannes Müller for his kind permission to use his forthcoming publications. I am grateful to the translators, in

particular to Mr. Piotr T. Żebrowski for his inquisitiveness while translating. All figures have been drawn by Mrs. Jolenta Kędelska, whom I would like to thank here, too. My purposes would not have come true if it had not been for the assistance provided by Dr. Iwona Hildebrandt-Radke and Dr. Andrzej Prinke. Last but not least I am grateful to my husband, Janusz Czebreszuk. But for his generous help, the writing of this book, in a difficult period of our life would not have been possible.

I. SPACE. SETTLEMENT OF THE GLOBULAR AMPHORA CULTURE ON THE TERRITORY OF EASTERN EUROPE

This chapter will focus on the characteristics of the range of complexes of GAC traits (i.e. 'pure' structures) on the territory of Eastern Europe. The analysis is prefaced by a typology of complexes and an evaluation of their empirical significance in terms of the assessments undertaken.

I.1. CLASSIFICATION OF SOURCES

The sources examined to date can be divided into five groups, according to the form of settlement in which they were found.

I. Graves with definite links to the GAC (sepulchral features, for which we are in possession of almost complete knowledge of the grave-goods placed within them, particularly the ceramics)

A. With a stone structure

A.1. — do. in the form of a cist

A.1.1. — do. with a passage

A.1.2. — do. with no passage

A.1.1.-1.2., 1 — do. constructed from slabs

A.1.1.-1.2., 2 — do. constructed from blocks

A.1.1.-1.2., 3 — do. constructed from blocks and rubble

A.1.1.-1.2., 4 — do. constructed from rubble

A.2. do. of a less formal arrangement than A.1.

A.3. do. in the form of a 'paved' area (of rubble or slabs)

A.4. do. with single stones arranged in the filling

A.5. do. in the form of two upright slabs

A.1.-5., 1.-4. a — rectangular-shaped

A.1.-5., 1.-4. b — trapezoid-shaped

A.1.-5., 1.-4. c — oval-shaped

B. With no stone structure

A. — B. α — inhumation in an anatomical arrangement

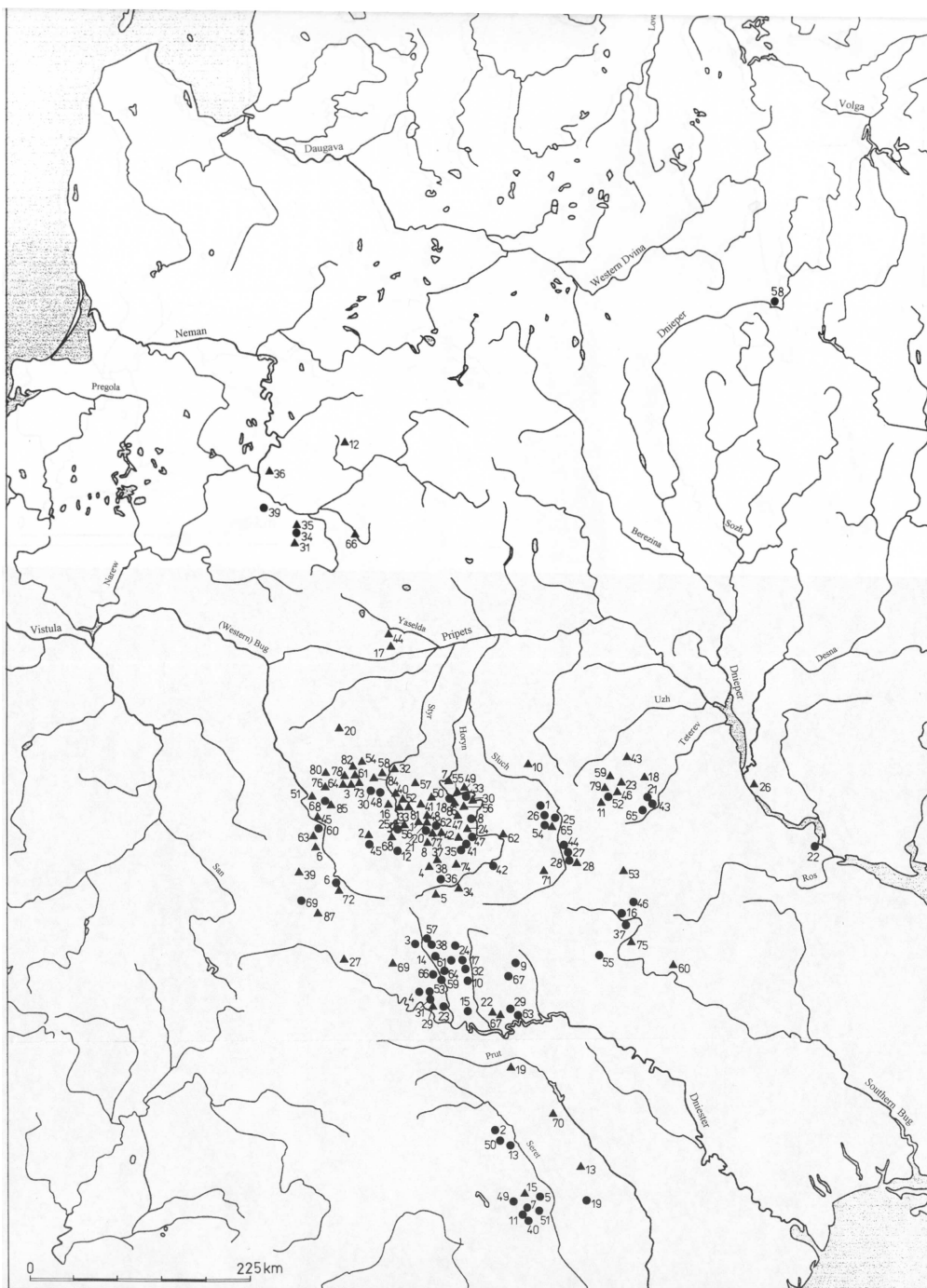


Fig 2. Distribution of sites of the Globular Amphora culture (class I; see catalogue 1A and 1C).
 Key: black circles - graves (see catalogue 1A); black triangles - settlements, workshops, camps and unidentified sites (see catalogue 1C).

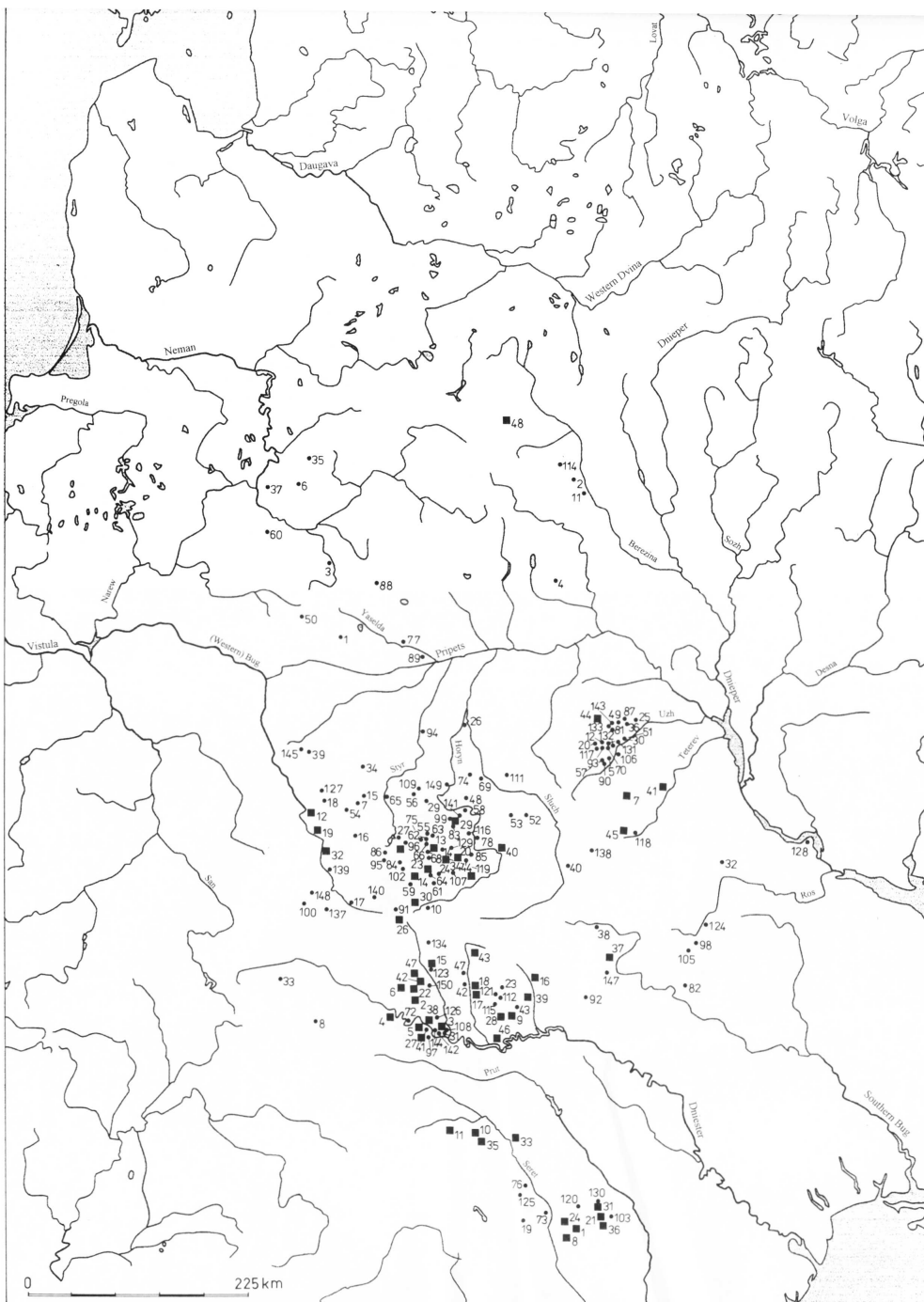


Fig 3. Distribution of sites hypothetically linked to the Globular Amphora culture (class II; see catalogue 1B and 1D).

Key: black squares - graves (see catalogue 1B); black dots - incidental ('loose') finds of axes and chisels (catalogue 1D).

A. — B. β — inhumation in a mixed arrangement (part — anatomical, part — unanatomical)

A. — B. δ — cremation

II. Graves hypothetically linked to the GAC (sepulchral features for which information concerning grave-goods, in particular ceramics, is incomplete); these are treated here as grave assemblages of uncertain GAC links.

(typology as for I.)

III. Other GAC ritual features

A. With so-called ‘animal burials’

A.1. — do. in the form of whole animal bodies (so-called ‘whole burials’)

A.2. — do. in the form of parts of animal bodies (so-called ‘part burials’)

A.1. — 2., a — cattle

A.1. — 2., b — a pig

A.1. — 2., c — a sheep/goat

A.1. — 2., d — a horse

A.1. — 2., e — other

IV. Other GAC settlement points

A. Settlement

A.1. With at least one dwelling feature

A.2. Only with at least one buried feature of an household function (pit)

B. Workshops

B.1. With traces of specialised production from flint materials

C. Settlement point of an undetermined character

V. Traces of a settlement hypothetically linked to the GAC — incidental (‘loose’) finds of flint axes and chisels.

The groups of assemblages presented above can be divided into two classes, according to their ‘informativeness’, i.e. their empirical significance. In the first class, I would include those assemblages which unambiguously belong to the GAC. The chief criterion for classification in this group is the presence of ceramics produced in accordance with GAC standards (see below), or of other grave-goods for which analogies can only be found in this culture (e.g. open-work bone clasps or T-shaped plates). All other traits (such as the form of the grave or the presence of other relics) are considered as secondary criteria. This class covers assemblages of groups I, III and IV.

In the second class, according to empirical significance, I include assemblages hypothetically linked to the GAC, where the context of the find was unclear, i.e. those belonging to groups II and V. A part of the latter (i.e. the ‘loose’ finds of macrolithic flint implements) may be related to syncretic structures, yet the incomplete nature of the information available means that the safer option is for them to remain in the group of hypothetically ‘amphora’ sources.

I.2. CHARACTERISTICS OF COMPLEXES OF GLOBULAR AMPHORA CULTURE TRAITS

In the profile of complexes of GAC traits presented below, the focus is on the description of their peculiarities. Full information concerning all the sources can be found in the catalogue (annexe I; see Plates 1-69).

I.2.1. COMPLEXES OF CLASS I

The majority of assemblages included in this class contained GAC ceramics, with only a few cases where classification was made on the basis of the presence of other characteristic (and unique) GAC artifacts. Consequently, in profiling the sources under consideration, the initial focus will be on ceramics (A), and then on the remaining individual groups of assemblages (B — graves, C — other ritual features, D — settlements, E — workshops, F — settlement points of an undetermined character).

A. CERAMICS

The selective nature of the sources available and the break-up of many collections makes it difficult to venture here a complete and systematic profile of the ceramic production of the eastern GAC, analogous, for example, to that proposed previously in relation to certain regions of the central group [Szmyt 1996a]. At the same time, the range of evaluations formulated in earlier literature of this field [e.g. Sveshnikov 1983] demands discussion and verification. Hence the restriction here to a number of aspects of the production in question, concerning particular issues in the areas of (a) technology, (b) macro-morphology and (c) ceramic ornamentation. The overriding aim of the considerations undertaken here is to define the range of ceramics peculiar to the eastern GAC and their distinctness with relation to those of other groups of this culture.

a. As regards technological issues, the only question which can be addressed is that of the type of admixture added to the clay as a leaning temper. The greatest attention has been devoted to this matter by I.K. Sveshnikov [1983] who, in his description of ceramics from particular GAC sites, noted the use of a variety of admixtures. He claimed that GAC vessels were produced from clay containing sand, chamotte, quartz, plant admixtures, and charred flint and shell. These last two, especially, represented an important reference for the analysis of links between the GAC and other cultural units, particularly the Tripolye culture and cultures of the Prick-Comb circle [Ścibior 1986:360]. Similar admixtures were also described by

S. Shelomentsev-Terskiy [1996], M. Peleshchyshyn [1998], O. Pozikhovskiy [1998] and others.

The examination of a range of collections of eastern GAC material, carried out by myself in 1994-1998, permits the verification of the observations presented above. First of all, on the basis of macroscopic scrutiny, it should be stated that the principal admixture — as in the remaining GAC groups [e.g. Szmyt 1996a; Ścibior, Ścibior 1990:Table 2; Ścibior, Kokowski, Koman 1991] — is of a coarsely ground (and, less frequently, medium-ground) stone. This is often accompanied by fine and medium-grained sand and, occasionally, chamotte. A sand admixture is also sometimes found separately. In a number of cases (Glibochok, Kutyanika, Peresopnitsa), admixtures of coarse and medium-ground limestone or shell have been identified, although this identification is not definite and demands microscopic analysis. I also verified one of the assemblages where an admixture of charred flint had been identified (Slobidka Koshylivetska), but no such admixture was to be found. I would caution that the inaccessibility of a part of the material means that the observations presented above can only represent an introduction to a more comprehensive analytical procedure, including microscopic analysis.

The results of this examination can be related to the descriptive schema of the technology of GAC ceramics from Kujawy (i.e. a part of the central group) [Szmyt 1991, 1996a]. A part of the units identified there — groups, sub-groups and their component elements — fully correspond to the ceramics of the eastern GAC. This applies to mixtures defined as II, IIIA, IIIB1 and IV. Units I, IIIB2 and IIIC, meanwhile, do not seem to have been used in eastern GAC ceramic production, just as a part of the mixtures identified among eastern material are not found within the Kujawy schema. This latter, therefore, needs to be reconstructed, although it should be noted that, at present, this can only be effected conditionally, in the hope of verification on the basis of a broader pool of sources.

The reconstructed schema contains 12 units of varying levels — technological groups (tg), technological sub-groups (tsg) and elements of technological groups (egt) — an abridged profile of which is presented below.

— tg I — based predominantly on an admixture of fine-grained sand, accompanied by smaller quantities of coarse-ground stone.

— tg II — based on a small quantity of medium and fine-grained sand and stone.

— tsg IIIA — based on a large or medium quantity of coarse-ground stone.

— etg IIIB1 — based on a large or medium quantity of coarse-ground stone, with the addition of fine or medium-grained sand.

— etg IIIB2 — based on a large or medium quantity of coarse-ground stone, with the addition of fine or medium-grained sand and a plant admixture.

— tsg IIIC — based on a large or medium quantity of coarse-ground stone, with the addition of fine or medium-grained sand and coarse-ground chamotte.

— tg IV — based on a large quantity of medium and fine-ground stone, with the addition of fine or medium-grained sand.

— tsg VA — based on a large or medium quantity of medium or fine-grained sand.

— tsg VB — based on a large or medium quantity of medium or fine-grained sand, with the addition of chamotte.

— tsg VIA — based on a medium quantity of coarse or medium-ground limestone/shell.

— tsg VIB — based on a medium quantity of coarse or medium-ground limestone/shell, with the addition of medium or fine-grained sand.

— tsg VIC — based on a medium quantity of coarse or medium-ground limestone/shell, with the addition of medium or fine-grained sand and a plant admixture.

The table 2 shows the appearance or absence of individual technological mixtures in eastern GAC assemblages and, by way of comparison, in material from Kujawy. An attempted reconstruction of the dynamics of the changes in ceramic technology is presented in Ch. II.

b. The set of macro-morphological forms is laid out in Fig. 4. The systemisation draws on the schema proposed by the author in her work on the GAC in Kujawy [Szmyt 1996a:28-32].

c. The ceramic ornamentation most clearly illustrates the specificity of eastern European GAC material. A complete set of ornamentative patterns is provided in Fig. 5.

‘Typical’ of the ceramic ornamentation of the GAC in Volhynia are the frequently applied stamp ornamentations (vertical bars, and horizontal, occasionally vertical zigzags made with a regular rectangular stamp), impressions in the form of a small ring (so-called ‘bird feathers’), two-strand cord impressions, and the so-called ‘herring-bone’ pattern and festoons (both made using a variety of techniques, including the use of cord). All of the above patterns are widespread throughout the central group, as well as in its nearest sub-group — (eastern) Lublin [Wiślański 1966:89].

In Podolia, the most commonly applied motifs were a variety of arrangements constructed from small arcs (including so-called ‘fish-scale’ patterns), slanting grids (also used as a filling for triangles) and lines formed from X’s. These patterns are alien to the tradition of the central group, although relatively close (at times identical) to the ornamentation of the western GAC group. Stamp and cord ornamentation, meanwhile, was less frequently used in Podolian assemblages.

The Volhynia and Podolia concentrations were not divided by a clear boundary. There are sites in Volhynia in which typically Podolian patterns have been recorded (e.g. Kikova 1, Korshiv, Ostrog, Peresopnitsa, Suyemtsy II — Plates 14, 15, 29, 30, 39, 58, 59), as well as Podolian sites with Volhynian ornamentation (e.g. Bavoriv-Zastave, Doveg, Glibochok, Gorodnitsa, Yagolnitsa — Plates 2, 6, 8, 9, 47). Links

Table 2.

Examples of technological recipes identification within Globular Amphora culture ceramics assemblages

Technological recipe (tg, tsg or etg)	Volhynian sub-group	Podolian sub-group	Other east-european assemblages	Kujawy *
I				Krusza Zamkowa 3/65, Tuczo 1
II		Chornokintsy, Slobidka Koshylivetska (Kolokolin / I)		Krusza Zamkowa 3/295, Opoki 7/II, Polanowice 3/40
IIIA	Ivanye, Peresopnitsa, Skolobiv, Suyemtsy II, Tovpyzhyn, Ulvivok (Kozlin, Kolokolin I, Mezhireche, Zozov)	Chornokintsy, Kotsiubintsy, Slobidka Koshylivetska, Vorvulintsy (Dolgoye Pole)	(Krasnaselski 5)	Dęby 29/32, Kołuda Wielka 13/3, Jaszczółtowo 10
IIIB1	Kikova I, Kolosivka, Ozdiv, Peresopnitsa, Skolobiv, Suyemtsy I, Suyemtsy II, Tovpyzhyn (Kozlin, Remel, Volitsa 2, Volitsa)	Kotsiubintsy, Slobidka Koshylivetska, Uvisla (Samchyntsy)	Krasnaselski 1/1 (Dymitrovka)	Tarkowo 49, Marcinkowo 1, Przybranowo 10
IIIB2				Tarkowo 49, Przybranowo 10
IIIC				Tarkowo 24, Przybranowo 10, Stara Wieś 9
IV	Aneta, Gorodok, Peresopnitsa, Suyemtsy I, Suyemtsy II	Koshylivtsy		Tarkowo 50, Smarglin 51, Dęby 29/5, Stara Wieś 9
VA	Kikova I, Kikova II, Suyemtsy II, Kolosivka (Volitsa)	Kotsiubintsy		
VB	(Kiev-Nikolskaya Slobidka)	Khartonivtsy 1 (Kolokolin / V)		
VIA	Kutyanka, Peresopnitsa			
VIB	Kutyanka, Peresopnitsa	Glibochok		
VIC		Glibochok		

Notes: * foll. Szmyt 1996a; in brackets - IV group assemblages, without brackets - I and III group assemblages

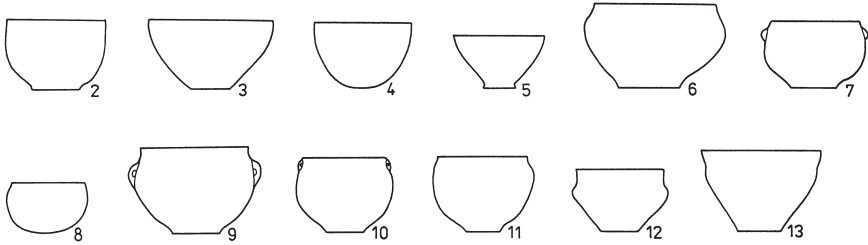
between Volhynian and Podolian assemblages are also evident in the ornamentation of vessels from the Moldavian Uplands, where patterns characteristic of Volhynia appear side by side with the predominant Podolian patterns (e.g. cord festoons from Dolcheștii Mari and Piatra Neamț — Plates 4, 5, 32). Thanks to this, the entire area from the Pripets to the lower reaches of the Seret and Prut displays distinct similarities.

A different situation is presented to the north of the Pripets, especially on the Middle Neman and Upper Dnieper. Assemblages in both of these regions are known for the dominant role of the simplest ornamentive patterns (particularly stamp ornamentation), and a significant incidence of unornamented vessels. The incidental presence in one of the Middle Neman assemblages (Krasnaselski

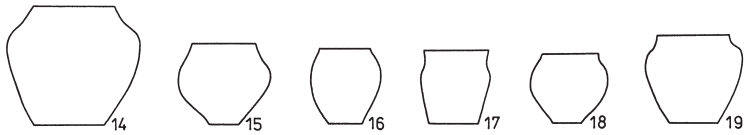
I



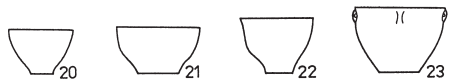
II



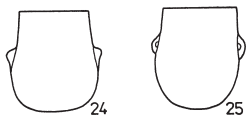
III



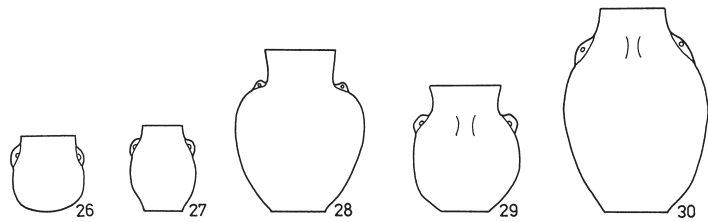
IV



VA

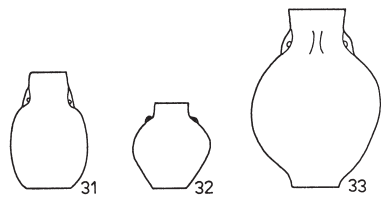


VBI

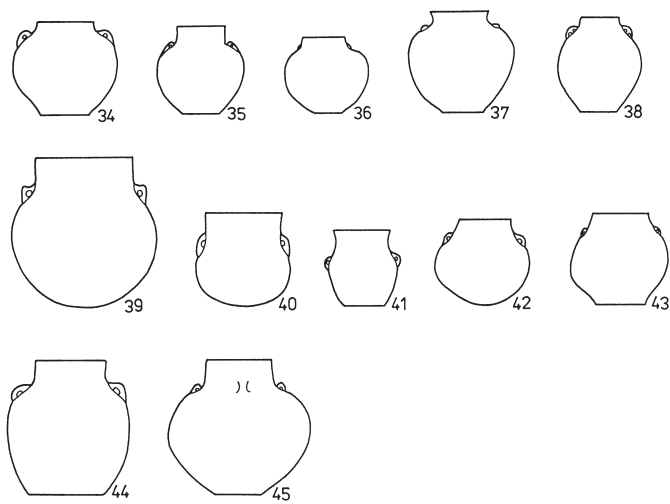


F i g 4. Table of vessel forms.

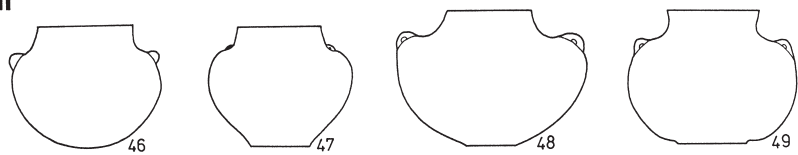
VBI



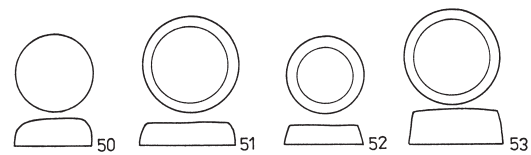
VBII



















































































VBIII



IX



							
Z 01	Z 021	Z 022	Z 031	Z 032	Z 033	Z 034	Z 035
							
Z 041	Z 042	Z 051	Z 052	Z 053	Z 061	Z 062	Z 063
							
Z 064	Z 065	Z 066	Z 071	Z 081	Z 082	Z 091	Z 092
							
Z 095	Z 101	Z 111	Z 121	Z 122	Z 131	Z 141	Z 151
							
Z 152	Z 161	Z 162	Z 163	Z 164	Z 171	Z 172	Z 173
							
Z 174	Z 175	Z 176	Z 181	Z 182	Z 183	Z 184	Z 187
							
Z 188	Z 189	Z 190	Z 191	Z 192	Z 193	Z 194	Z 201
				notch			hole
Z 211	Z 212	Z 213	Z 214	Z 221	Z 231	Z 232	Z 241
							
Z 251	Z 252	Z 253	Z 261	Z 262	Z 271	Z 272	Z 273
							
Z 274	Z 275	Z 276	Z 281	Z 282	Z 283	Z 284	Z 285
							
Z 286	Z 301						

F i g 5. Table of types of vessel ornamentation.
Note: Code of ornamentations used in statistical analyses.

I/grave 1 — Plate 21:C1) of the rare ornamentation of corded wave impressions points to a western orientation of contacts — with the central GAC group and its nearest sub-group, geographically-speaking, to this assemblage — the Mazovia-Podlasia group [Wiślański 1966:88; Kempisty 1971; see also Nortmann 1985:Fig. 16]. Meanwhile, the only assemblage on the Upper Dnieper of an extremely simplified ornamentive structure (Turinshchina — Plate 42, 43) might testify to genetic links with communities from either the Middle Neman or Volhynia (see Ch. II.1.).

B. GRAVES (GROUP I)

The abridged typology of sepulchral features presented above (Ch. I.1.) is based on the fundamental, and taxonomically crucial contrasts between grave forms:

- (a) graves with stone structures/graves with no stone structures
- (b) skeletal ritual (inhumation)/ body-burning ritual (cremation).

In addition to the traits listed in the suggested typology, attention should be drawn to further elements characteristic of GAC sepulchral features, namely (c) the number of bodies lain in the grave, (d) indications of the single or multiple use of the grave, (e) the orientation of the grave chamber, (f) the presence/absence of ochre or another colouring substance in the grave and (g) the presence of animal remains.

a. Graves with stone structures constitute a clear majority of GAC features on the territory under consideration, similarly to the situation in other GAC groups. The most typical grave form here is the cist form (A.1.). This is sometimes found with an additional element in the form of a 'passage' (A.1.1). To date, such forms have only been found on the territory of Volhynia (e.g. Kolodiezchno II and Skolobiv — Plates 19, 33). Significantly more frequent is a cist grave with no additional entrance constructions (A.1.2). There is a noticeable variety among A.1.2 type graves in terms of the building materials used: in Podolia and in the Moldavian Uplands, these are stone slabs, whilst in Volhynia, in addition to slabs, stone blocks were used. The gaps between slabs or blocks are sometimes filled with rubble (e.g. Ivanye — Plate 11). Rubble was also used to support the slabs from the outside — a feature more common in Podolia (e.g. Khartonivtsy I and II, Uvisla — Plates 12, 13, 45) than in Volhynia (e.g. Tovpyzhyn — Plate 40). The addition of further slabs to support the grave walls from the outside is unique to Podolia (e.g. Dovge, Gorbasiv, Khartonivtsy I and II — Plates 6, 10, 12, 13). The cist is rectangular or trapezoid, less frequently oval (only in Volhynia). In Podolia, the burial chamber also generally possesses a stone bottom and cover(s), whilst these elements are absent from a significant part of burial features in Volhynia. Quite often, one of the walls (the entrance wall) is higher than the others (e.g. Aneta, Ivanye, Kolodiezchno II and Skolobiv in Volhynia, and Dovge in Podolia; see Plates 1, 6, 11, 19, 33).

The standard dimensions of the features in question on the territory of Volhynia vary from 0.7 x 1.5 m (Vysokoye) to 1.28 x 2.26 m (Kolodiezchno II) and 0.95 x 3.0 m (Ostrog-Karpaty), although the most common width of the chamber is approx. 1 m and length — over 2 m. Podolian graves, meanwhile, measure between 0.7 x 1.3 m (Bavoriv-Zastave 1) to 1.7 x 2.2 m (Zavadyntsy) and 1.0 x 2.5 m (Glibochok), with the most common width being 1 m, and length — 1.5-2 m.

Significantly rarer are grave forms constructed with a less rigid stone arrangement (A.2), with a paved area of stone slabs, on which the body was lain (A.3 — Dolcheştii Mari/ grave 3), with a filling of single stones (A.4 — Turinshchina/ graves I and II, Krasnaselski 1/ grave 2; Plates 21, 42, 43) and from two upright slabs (A.5 — Kolosivka), although the last of these could be the effect of the destruction of a cist grave.

Only a few graves are known which contain no stone elements whatsoever. These were discovered in Volhynia (Gorodok, Korshiv 12, Ozdiv — Plate 29), in the Moldavian Uplands (Dolcheştii Mari/ grave 4) and in the Forest zone (Turinshchina/ grave III — Plate 41).

Thus, a rectangular or trapezoid form of cist grave, constructed from evenly-hewn slabs (types A.1.1, 1 and A.1.2, 1) should be considered as specific to the GAC on the territory of Podolia and the Moldavian Uplands, and to a lesser degree in Volhynia. Such graves, particularly those possessing floor and covering slabs, have only a small number of analogies in other GAC groups [in the central group, for example, Ossolin, Szeromin, Kucice Nowe — Nosek 1967; Sahryń site 1 — Ścibior, Kokowski, Koman 1991:91-97; Łopiennik Dolny Kolonia site 1 — Gołub 1996b; in the western group — in Mittelelbe-Saale Gebiet, see Beier 1988:Abb. 4]. Graves in the form of an oval cist constructed from blocks (types A.1.1, 2c and A.1.2, 2c — Aneta, Skolobiv; Plates 1, 33), on the other hand, are limited in range to Volhynia. Volhynia cist graves with a 'passage' (A.1.1.) are also distinct from 'passage' graves known from the western and central groups [Góra 1972].

b. The clearly predominant burial rite was inhumation, as in the remaining GAC groups. The body was most often lain in an anatomical arrangement, which distinguishes the eastern GAC grave from sepulchral features of the central group, where an unanatomical arrangement is relatively common [Nosek 1967:27; Szmyt 1996a]. The burial rite of the eastern GAC is characterised by a lack of clear guiding principles in relation to the laying of the body in any particular manner: various positions can be found, with the dominant posture being the 'foetal' type-flexed, on the left or right side (e.g. Aneta, Basarabi, Bavoriv-Zastave I, Dolcheştii Mari/ grave 4, Khartonivtsy I), less frequently on the back (e.g. Uvisla, Dolcheştii Mari/ grave 2). Some arrangements have also been interpreted as being the effect of placing the body in a sitting position (e.g. Dovge, Khartonivtsy II, Ostrog-Karpaty, Suyemtsy II). In addition, a number of bodies were lain flat on their backs (e.g.

Dolcheștii Mari/ graves 1 and 4, Gorodok, Khartoniivtsy II, Piatra Neamț). The small number of cases where the sex of the body could be determined makes it difficult to differentiate between burial rites with regard to this consideration.

There is a widespread conviction among authors writing on this subject that traces of the cremation of bodies is relatively common on the territory of Volhynia [Sveshnikov 1983:13]. However, such observations concerning features which could confidently be attributed to the GAC, are exclusively based on old examinations of I. Levitskiy [1929]. More recent, and actually relatively numerous finds of GAC graves in Volhynia have failed to provide any convincing information in this respect. By contrast, traces of cremation have been found on the Middle Neman (Krasnaselski 1/grave 2) [Charniauski 1996:89]. In such circumstances, doubts as to the reliability of the observations of I. Levitskiy would be justifiable, yet the scrupulous nature of his archaeological and anthropological examinations tends to remove such doubts.

Ultimately, after the elimination of features whose cultural provenance is uncertain, only four graves provide evidence of the use of cremation among communities of the eastern GAC: Kikova I, Skolobiv, Vysokoye and Krasnaselski 1/grave 2. In the Kikova I grave, excavated by I. Levitskiy, an 'urnless' burial rite was documented: the remains of the cremation were contained in a layer of ash covering the floor of the burial chamber [Levitskiy 1929]. In two further cases (Skolobiv and Vysokoye), the cremated human remains were apparently to be found in vessels fulfilling the function of an urn [Levitskiy 1929]. Since these remains — as, indeed, the majority of material from the excavations of I. Levitskiy — have been dispersed, it is impossible to verify their evaluations. Charred human bones were found in the feature 2 in Krasnaselski 1 [Charniauski 1996:89]. The advanced degradation of this feature, however, reduces its value for analysis.

At this point, it should be noted that signs of the use of cremation are known from a variety of zones within the GAC oecumene, albeit in a modest quantity: in the central group (e.g. the 'urnless' cremation in Krusza Zamkowa 13) [Koško 1989:36], as in the western group (e.g. both 'urnless' and 'urn' ceremonies, such as those in Stemmern and Ködderitsch/ grave 2) [Müller 1976; Beier 1988:61]. Attention should also be brought to the relatively common use of fire in the GAC burial ritual in various zones of the oecumene of this culture, including the burning of fires within the burial chamber, above the chamber and also in its immediate vicinity [e.g. Uzarowiczowa 1965; Nosek 1967:269]. Relevant examples are also known, for example, on the territory of Podolia: namely, traces of a fire and of the burning of bones discovered in the interior of the burial chamber in Dovge [Sveshnikov 1983:40]. In extreme cases, this could lead to flames destroying the entire contents of the grave, the effect of which could be comparable to that observed in Kikova or Krasnaselski [Ścibior 1986:352].

c. The graves contained the remains of single bodies or also of several individuals

(up to 10 in Volhynia and 6-7 in Podolia and the Moldavian Uplands). Approximately 30% of Volhynian and Podolian graves contained one single burial, whilst this proportion rises to almost 60% in the Moldavian Uplands. In terms of the quantity of finds, the second most common category was burials of 2-3 individuals — recorded in 40% of graves in Podolia and 45% in Volhynia, although only 16% in the Moldavian Uplands. Graves with more individuals buried constituted almost 30% of features in Podolia, over 20% in Volhynia, and 25% in the Moldavian Uplands. Against this, one should note that burials of 1-3 bodies have been documented both in features with stone structures (type A; mainly in cist graves — type A.1.), as well as in graves with no stone structures (type B). Burials of a greater number of bodies, however, have been discovered in cist graves only (A.1).

d. Cases are known which point to the possibility of the multiple use of cist graves, with the aim of placing in them subsequent bodies. For instance, in Suyemtsy II the remains of five individuals were found. The arrangement of the bodies was complicated: two adult males were placed in a sitting position by the SW wall, two adult females were laid in a foetal position one on top of the other, in the centre of the chamber, and by the upper of these two were found the remains of a child [Levitskiy 1929:196-199; Sveshnikov 1983:31]. The remains of five individuals were also found in Vorvulintsy. The skeletons, placed in a foetal position, lay on top of one another. On the outside of the chamber, by the northern wall of the cist, a sixth body was found [Gereta, Kharitonov 1970; Sveshnikov 1983:46; Maleyev 1996:61]. Similarly, in Velikaya Slobidka the remains of two individuals lay within the chamber, and on the outside, by one of the southern walls, a third skeleton was found [Gerinovich 1926]. The remains of five bodies were discovered in Khartoniivtsy II [Sveshnikov 1983:48-50]. The arrangement of the bones in the grave (Plate 13) indicates the multiple laying of the dead in the grave: the remains of an adult male (individual no. 5) partially covered a skeleton probably belonging to an adult female (individual no. 4) which, in turn, partly covered the bones of individual no. 1 (a woman aged 30-50). Also in the grave were found the remains of an adult female (individual no. 2) and a child of up to 1 year old (individual no. 3). One should mention that in the region under consideration there is a lack of such suggestive confirmation of multiple grave use as that obtained for the feature from Nakonowo in Kujawy. ¹⁴C datings were carried out for each of the seven bodies buried in this grave, which confirmed the temporal differentiation between the burials³.

Several examples exist which point to the order of the placing of the bodies in the grave being far from accidental; governed, in fact, by strict symbolic rules. The best known of these is the feature at Kolodiezchno II (also cited as being from Wojciechówka; Plate 19) [Levitskiy 1930], where nine bodies were placed in the

³Material in the course of preparation by Paweł Sobczyk MA. and the author.

main chamber in a 'heraldic' formation (in the centre, a male aged 45-50, at his sides two women aged 45-50 and 40-50, each with two children — aged 1-2 years, 7-9, 1 and 3-4, whilst at the feet of the man lay two young individuals — a female of 16-18 years and a male aged 14-16), with another male, aged about 30, in the antechamber. In Khartonivtsy I (Plate 12), the bodies of a man and a woman were arranged on the basis of 'antithesis': in opposite corners of the grave, in a foetal position on their left side, with the legs pointed to one another; the grave also contained the skeleton of a child. The 'heraldic' principle of arrangement is familiar, for example, from the central group (e.g. the two-chamber grave at Czulczyce Kolonia site 6, in the Province of Lublin, where in one chamber two men were placed back to back in a foetal position, and in the second chamber two women lay face to face, also in a foetal position)⁴. However, the Kolodiezchno feature in particular is characterised by the originality of the arrangement of the bodies, for which there are no closer analogies either in the GAC environment or within other, earlier groups.

e. A significant distinction is clear in the orientation of the burial chambers between features from Volhynia and from Podolia. In the former, the chambers were most often oriented latitudinally: W-E or E-W, although other forms of orientation were also used (NE-SW, NW-SE, S-N). In Podolia, meanwhile, NW-SE and N-S orientations predominated, with less frequent occurrence of NE-SW, E-W and SE-NW orientations.

f. Seven cases have so far been recorded of the use of a colouring substance in the sepulchral ritual: ochre, and white and yellow clay. Six of these cases have been documented in Volhynia and one in Podolia. Only in Kolodiezchno and Ostrog-Karpaty were the bodies dusted with ochre. The remaining features displayed insignificant quantities of this dye: in Kikova I, traces of ochre were found on the ground and on the vessels; in Suyemtsy II, ochre was sprinkled around the body; and in Skolobiv, small lumps of ochre were found near the urn. White clay was sprinkled on the remains of a woman in a grave in Aneta, and the same clay was found in Kikova I. Yellow clay was applied only in a grave in Zavadyntsy in Podolia, where rolls of this substance were placed on the male corpse. An analogous role may also have been played in certain cases by charcoal [Levitskiy 1929:201].

g. Animal remains were discovered in all of the more thoroughly examined graves, particularly those of type A.1 (Table 3). They were most commonly bones of domestic animals, mainly pigs, less frequently cattle and sheep or goats. Wild boar bones were also quite often used (tusks, used for pendants). The proportion of animal remains in human graves differs from those of bone remains from ritual features with animal burials (see point C below), as well as from the proportion of bones in the only settlement feature examined by an archaeozoologist (Peresopnitsa; see point D below). However, in terms of the frequency of the appearance of pig

⁴Personal communication of Andrzej Bronicki MA., for which I am extremely grateful.

remains it is convergent with the situation observed, for example, in Kujawy [Szmyt 1996a:Table 28]. This would seem to be a case of a 'general cultural' rule.

C. OTHER RITUAL FEATURES (GROUP III)

In contrast to other parts of the GAC oecumene, on the territory of eastern Europe ritual features other than graves have been discovered only extremely rarely. In principle, three such examples are known, each of which has its own distinct character. They were recorded in (a) Krasnaselski 1, (b) Tovstolug-Zastinka and (c) Dolcheştii Mari. The small number of these features seems to be due to several factors, most important of which are the predominance of incidental discoveries and the spatial restrictions to archaeological interventions (e.g. excavations limited to the interior of a grave, without the extension of the dig to the surrounding area).

a. In the cemetery situated in the flint outcrops region, in the area of the locality of Krasnaselski, next to the destroyed graves was discovered a ritual feature with animal burials [known as grave 3: Charniauski 1996:89-91]. In a rectangular pit, 4.0 x 1.9 — 2.0 m in size, sunk 0.4 m deep and oriented along the W-E axis (Plate 22), the remains of 13 animals were found [Shcheglova, Cherniavskiy 1976]. The majority of the bones belonged to cattle (9 individuals, including 2 young — up to 11 years old), with other being from a pig (a very young individual), sheep or goats (2 young individuals), as well as the bones of a horse (a relatively large individual). Among the cattle were found 3 bulls, and a total of 7 animals were apparently placed whole in the grave. Three of these filled the western section of the pit, and their skulls were pointing to the west. The remains of two further individuals were placed in the eastern section, head to the east, and two more were found in the centre of the feature, with their heads lying at the southern pit wall. Among the bones of one of these two were sticking two double-edged bone blades. The burials of the remaining animals were part-burials. Besides the animal burials, four vessels and a lump of amber were also found in this feature, which belongs to category III.A.3. It is worth emphasising that, in terms of the quantity of animals it contains and the arrangement thereof, this feature is unique among the entire GAC.

Another of the features discovered in Krasnaselski 1 is of an uncertain character, namely the so-called grave 1 [Charniauski 1996:87-89]. In a severely-damaged pit (Plate 21) were recorded vessel fragments, small stones and the disintegrated bones of cattle (belonging to two individuals) and pigs. This could be an example of a ritual feature with animal burials (type III.A ?), or else of a badly damaged human grave. This question is impossible to resolve, due to the incomplete nature of available information.

b. In the locality of Tovstolug-Zastinka, on the right bank of the Gnizna River, 3 m from a GAC cist grave (type A12, 1a), were discovered the burial of two pigs (type III.A?b), covered by several slabs of sandstone [Gereta 1970:23; Sveshnikov 1983:39], with no grave-goods in the pit. Nothing is known concerning the form

of burial (whole? part?). Links to the GAC should be considered as hypothetical, based on analogies from other areas of the oecumene of this culture where, in the vicinity of graves, examples have been recorded of ritual features with the burial of cattle or other animal (e.g. a dog: Serebryszcze, site 23 — central group) [Gołub 1994].

c. In the cemetery in Dolcheștii Mari, next to graves with human burials (Plate 4), was also discovered a 'grave 5' [Dinu 1960a:105; 1960b:216], in the form of a ritual feature with a animal cattle burial (type III.A.1.a). On the floor of the pit was placed a whole animal (bull), with a richly ornamented amphora at its head. In this case, numerous analogies are known from other territories settled by the GAC population (e.g. Zdrojówka — central group) [Wiślański 1966:155-156].

As can be seen from the above survey, all of the ritual features with animal burials described were situated in GAC cemeteries, near to human graves. There is, however, a lack of analogous features located within GAC settlements, which, in turn, is common in the central group [e.g. Szmyt 1996a]. Nevertheless, it is difficult to draw any broader conclusions from the above observations due to the very poor state of knowledge concerning this latter settlement form on the territory of interest to us here (see below).

D. SETTLEMENTS (GROUP IV.A)

On the territory under consideration, to date only a very small number (eight, to be precise) of settlements of the GAC population have been identified, all of which are located in Volhynia. However, these sites were only partially excavated, hence the extremely limited extent of our knowledge.

Thus far, the site at Mezhireche [Sveshnikov 1983:23-25] has been included in category IV.A.1, i.e. a settlement with at least one dwelling feature identified. However, the material published from this site does not justify the linking of the half-buried dwelling features with the GAC, but rather with the population of the Lublin-Volhynia culture [Sveshnikov 1983:Table I]. Moreover, the majority of GAC ceramics presented by I.K. Sveshnikov come from the so-called 'cultural layer' [Sveshnikov 1983:Table II, 9-10], with only a small amount found in buried features (certain are the materials from pit 4; see Plate 54:1-6) [Sveshnikov 1983:Table 1, 11]. In addition, the character of flint artifacts is entirely distinct from that of the GAC [Sveshnikov 1983:Table II, 1-6, 8, 11, 12]. All of these observations point to a more logical interpretation of the remaining GAC settlements in Mezhireche being their classification as the form IV.A.2 (i.e. a settlement with at least one buried feature of a household function).

All the remaining sites can also be included in this same category — IV.A.2. Five of these revealed one pit (Dvorishche, Ivanye, Khichiv, Ozliyeve, Peresopnitsa, Volitsa; Plate 58) [Sveshnikov 1983:22; Serdyukova 1996:137; Shelomentsev-Terskiy 1996; Misiats 1997 and pers. communication from B. Pryshchepa], with

Table 3.

Animal bone remains from Globular Amphora culture features [coll. Shcheglova, Cherniavskiy 1976, Sveshnikov 1983, Shelomentsev-Terskiy 1996]

Site	Number of individuals								
	Cattle	Pig	Sheep/ goat	Horse	Boar	Roe deer	Beaver	Weasel (?)	Fish
Graves									
Aneta		+							
Glibochok		frs. of 2 ind.							
Khartonivtsy II					1 (tusk)*				
Kolodiezno		frs. of 2 ind. (jaw + teeth)			+ (6 tusks)*				
Krasnaselski / I	frs. of 2 ind.	frs. of 1 ind. frs. of 1 ind.							
Kutyanka		1 (jaw)							
Loshniv		1 (jaw)							
Mali Yodkavichi		+			+ (2 tusks)*				
Ostrog		+ (? , jaw)							
Suyemtsy I		frs. of 2 ind. (limbs bones)							
Suyemtsy II***		+ (bones of 2 ind. +?)							
Tovpyzhyn		1 (jaw)							
Turinshchina gr. II		+							
Turinshchina gr. III		+							
Ulvivok		+ (jaw + tusk)							
Yagolnitsa					+ (tusks)*				
Ritual features									
Dolheştii Mari / V	1								
Krasnaselski I/ 3	9	+	frs. of 2 ind.	frs. of 1 ind.					
Tovstolug-Zastinka		2							
Settlement pits									
Peresopnitsa			frs. of 2 ind. (mature)		frs. of 1 ind. (young)	frs. of 1 ind. (young)	frs. of 1 ind.	frs. of 1 ind.	fr. of 1 ind.**

Notes: * - ? (or pig); ** - Cyprinidae?; *** - 1 tooth of bear as ornaments; frs. = fragments; ind. = individual.

2-4 pits only in Gorbuliv [Serdyukova 1996:137-140]. All of the pits were of considerable dimensions (length from 1.0 m in Khichiv to approx. 2.0 m in Ozliyev, depth from 0.4 m in Dvorishche to 2.5 m in Ozliyev). At least two pits were of a four-sided section, with a smooth floor (Dvorishche, Peresopnitsa). Those for which we possess more detailed information contained charcoal, ash, and pisé in the filling (Dvorishche, Peresopnitsa).

In addition to GAC ceramics (Plates 50, 54, 56, 58, 59), these features revealed artifacts made from flint (Dvorishche, Gorbuliv 4, Ozliyev, Peresopnitsa) and bone (Peresopnitsa), as well as stone implements (Mezhireche). A particularly rich content characterised the feature in Peresopnitsa, where animal remains were also found (bones of sheep, goats, wild boar or deer and fur-bearing animals) — beaver and probably weasel — as well as fish (Table 3). The animal bones from

the pits at Mezhireche and Ozliyeu mentioned in literature [Sveshnikov 1983:22 and 25] have not been subjected to archaeozoological analysis. It is worth adding that in Mezhireche, pit 4, were also recorded human bones [Sveshnikov 1983:25].

E. WORKSHOPS (GROUP IV.B)

In professional literature, links to the activity of the GAC population are claimed for two workshops specialising in the production of flint artifacts (type IV.B.1): Rudnya-Shlakhova and Melen (Plate 55:1-2) [Berezanska, Pyasetskiy 1979:79]. Both are situated on the banks of the River Irsha in Volhynia (Zhitomir region). According to S.S. Berezanska and V. Pyasetskiy, in these workshops a grey flint, with lighter patches and bands was used, probably brought from the valley of the River Uzh, i.e. from a region approx. 20 km from the workshops. Macrolithic tools — axes and chisels — were produced in both workshops, with flakes also being produced in Rudnya-Shlakhova. In the opinion of the above-mentioned authors, the most persuasive argument in support of the existence of links between both workshops and the GAC is the fact that the population of this culture was the only user of this particular variety of flint, and the fact that axes and chisels produced from it are to be found in GAC graves [Berezanska, Pyasetskiy 1979:79].

F. SETTLEMENT POINTS OF AN UNDETERMINED CHARACTER (GROUP IV.C)

Included in this category are 89 sites in which GAC ceramics appear (Plates 49, 51, 52, 53, 55, 56, 57), sometimes together with other relics of this culture, as well as sites listed in the catalogues of artifacts from various regions of Ukraine, where there is frequently a lack of more precise information concerning material put forward to justify the classification of a particular settlement form as, for example, 'a GAC settlement' (nevertheless, the dimensions of a given site are often provided, evaluated on the basis of a surface projection of sources). The most commonly recorded relics are several vessel fragments, sometimes accompanied by flint artifacts (axes and chisels or fragments of the same).

Numbered among complexes included in the second class according to their empirical significance are group II features, i.e. graves for which only incomplete information is available regarding the grave-goods (particularly vessels), and group V, i.e. traces of a settlement isolated due to incidental finds of flint axes and chisels.

A. GRAVES (GROUP II)

Classified in this category are primarily graves with stone constructions: principally, moreover, those features for which additional information is available (concerning flint axes/chisels found there or also generally-described vessels — e.g. ‘globular’). The information comes from a survey of published material and from archives. Since I have attempted to eliminate doubtful features, i.e. those which could belong to other cultural units (e.g. the early Mierzanowice culture in Podolia, the Strzyżów culture or the Biały Potok group of the Komarów culture etc.), some of the graves isolated by I.K. Sveshnikov [1983] are absent from my list.

Practically all of the features included in this group belong to type A.1. — graves with a stone structure in the form of a cist. In grave I in Tokarevka, an ‘entrance’ (passage?) was apparently found which was not examined [Sveshnikov 1983:54]; this would therefore represent type A.1.2. The Kugaivtsy grave, meanwhile, was a pit surrounded by stones and covered with a stone slab (type A.2) [Vinokur et al. 1984:95]. In most cases, we possess information that these graves contained human skeletons. Only in graves in Vyshevichi and Zbranki were vessels ‘with ashes’ and flint axes apparently discovered [Sveshnikov 1983:34-35]. Finally, two graves in Tokarevka were discovered in a kurgan [Sveshnikov 1983:54], which would represent a significant ‘event’ in the region in question.

B. SETTLEMENT TRACES (GROUP V)

In this group, I included incidental (‘loose’) finds of flint axes and chisels with the following traits: trapezoid (‘wedge’) or rectangular horizontal projection, four-sided in cross-section (fourwalled), with traces of grinding or smoothing (also occasionally burnishing) on the surfaces of the top and sides, and sometimes also the butt.

Chisels are distinguished on the basis of the relation of length to maximum width, which should be greater than 4:1 [Balcer 1975:114]. Since artifacts of this type are extremely rare in other cultural units on the territory of eastern Europe, they have been dealt with separately: examples of semifinished products and incomplete forms have also been added to this set.

A comparison of the selection criteria outlined above with the same kind of macrolithic tools recorded in indisputable contexts (i.e. from GAC graves) reveals the relatively frequent appearance in GAC features of tools of analogous morphometrical traits, though, for example, only partially ground or with no traces of

grinding. However, it should be emphasised that although similar forms are also found in other cultural units (e.g. the Funnel Beaker culture or the Tripolye culture), specimens with traces of grinding on the top and side surfaces are unique to GAC production [e.g. Konopla 1982:22]. These observations have also been applied to macrolithic tools made from so-called banded flint on the territory of Poland by the Funnel Beaker culture and GAC populations. GAC craftsmen were the only ones to apply a more precise finish to the side surfaces, which were left rough on axes used by the Funnel Beaker culture population [Borkowski, Migal 1996:164]. The divergence from the above criterion in the case of chisels results from the fact that these were not typical of any of the cultures originating from eastern Europe, and are also extremely rare on Funnel Beaker culture sites in Volhynia [see Konopla 1982:22-23].

The observations presented above justify the restriction of the collection examined to tools of the morphometrical-technological profile specified (Plates 60-69). The set obtained under such criteria will certainly not cover all the potentially GAC artifacts; it will, however, include specimens which can be relatively safely attributed to this culture. Accordingly, this collection can confidently be regarded as under-valued — presenting, as it does, probably the smallest number of tools used by the GAC population found in an unclear context. It could therefore represent a basis for more far-reaching conclusions concerning the spread of GAC settlement (see below).

Raw material specifications are only available for a part of the implements under consideration. In this matter, I relied on source papers [e.g. Berezanska, Pyasetskiy 1979], the evaluation of V. Konopla⁵ and my own definitions. The majority of specimens were made from western Volhynian and Podolian flint, which are often difficult to tell apart [Konopla 1998a:153], as well as from raw materials available both in the Middle Dniester region [Konopla 1998a:146-148], and locally, e.g. in the Uzh River valley in the region of Zhitomir [Berezanska, Pyasetskiy 1979:79]. In a number of cases⁶, banded flint was distinguished — mined on the northern edge of the Holy Cross Mountains [for more on this subject see Borkowski 1995], and so ‘imported’ from the Vistula basin.

Unfortunately, there are no details concerning the flint materials used to make the axes and chisels discovered in the Forest zone, particularly in features from the banks of the Neman (Mali Yodkavichi) and Upper Dnieper (Turinshchina), as well as a part of the findings from the Moldavian Uplands.

⁵Thanks once again here to Dr. Vitaliy Konopla for his help.

⁶Assessment of Dr. Vitaliy Konopla: e.g. Penyaki (Pl. 65:10). Other cases: Buderazh (Pl. 61:2), Korytnitsa (coll. of Historical Museum in Kiev).

I.3. RANGE OF COMPLEXES OF GLOBULAR AMPHORA CULTURE TRAITS

The range of particular groups of complexes have been presented in the form of maps. In the discussion below of the results of cartographic analyses, I have maintained an order connected with the gradation of the empirical significance of complexes of GAC traits.

A. Complexes of class I (Fig. 2)

Graves which can confidently be linked to the GAC population (group I) appear across a wide area, reaching from the centre of the Forest zone (the Upper Dnieper basin) to the southern limits of the Forest-Steppe zone at the level of the Middle Seret and Upper Birlad rivers in the Moldavian Uplands. Information currently available indicates the extreme northern limits of their range in the Upper Dnieper basin at the level of the present-day Smolensk, where the assemblage of features at Turinshchina is located. However, this is one single site, at a considerable distance (over 500 km) from the nearest concentration of GAC graves in the region of the Middle Neman and the basin of the Teterev River. The southern boundary reaches down to the basin of the Middle Dniester and the Middle Seret and Upper Birlad in the Moldavian Uplands. The eastern boundary is marked by the line of the Dnieper, on which the above-mentioned Turinshchina is situated (Upper Dnieper) and the site at Kanev (Middle Dnieper, to the south of the present-day Kiev). To the east, the range of the features in question reaches the basin of the Upper Bug and the Middle Neman.

Within this area are significant concentrations of GAC cemeteries. Among the densest of these are the following:

- in Volhynia — in the area between the middle reaches of the Styr and the Horyn rivers (the region of Lutsk-Rivne-Izyaslavl), on the banks of the Sluch River and on the Teterev,
- in Podolia — from the basin of the Upper Seret to the Smotrych and in the northern part of the Middle Dniester (the region of Tlumach-Buchach-Zalishchiki),
- in the Moldavian Uplands — in the western part of the Middle Seret basin.

In the remaining areas, the features under consideration are more dispersed. An important fact is that the northern limit of the extent of I.A.1. type (cist) graves falls in the region between the Upper Bug and the Middle Dnieper (more precisely, through the middle section of the basin of the rivers Turiya, Styr, Horyn, Sluch and Teterev). To the north of this boundary, only other types of grave have been excavated (I.A.4 and I.B — Krasnaselski 1, Mali Yodkavichi, Turinshchina).

Ritual sites with animal burials (group III) have been recorded only on three sites, located in the Middle Neman basin (Krasnaselski 1), in Podolia (Tovstolug-Ozstinka) and in the Moldavian Uplands (Dolcheştii Mari).

Settlements (group IV.A) and workshops (group IV.B) have so far been noted only in Volhynia, both in its western part — in the basins on the Ikva (Ivanye, Ozliyev and Volitsa), Styr (Mezhireche) and Stubla (Peresopnitsa) rivers — and in the east — in the basin of the River Irsha (Dvorishche, Gorboliv 4, Khichiv 1, Mielen and Rudnya-Shlakhova).

Settlement points, i.e. sites with GAC ceramics, but with no buried features (group IV.C) have been recorded in both the Forest and Forest-Steppe zones. Current knowledge places the northern-most extent of the scattered occurrence of these points in the basin of the Middle Neman and the northern tributaries of the Pripets (the Yaselda and Pina rivers). Their most southerly appearance is along a line from the Prut estuary to the Danube, via the Middle Southern Bug (Samchyntsy, Vinnitsa). In the east, one site (Kiev-Nikolskaya Slobodka III) is situated to the east of the Dnieper (on the level of the present-day Kiev). A small number of points have been documented in the area between the Prut and Seret and on the banks of the Middle Dniester. A clear majority of IV.C sites, however, are to be found on the territory of Volhynia, with the main concentrations in the area between the Western Bug and the Horyn (western Volhynia), and in the basin of the Irsha (eastern Volhynia).

B. Complexes of class II (Fig. 3)

Graves hypothetically linked to the GAC (group II) are located between a line along the rivers Hayna — Uzh — middle Teterev to the north and north-east, the basin of the Ushytza and Studenitsa rivers to the east, the area between the Middle Prut and the Seret to the south and the Strypa and Upper Bug to the west. Here, one can distinguish between larger concentrations of such features on the level of tributaries of the Middle Dniester (from the Strypa to the Smotrych) and lesser concentrations in the area between the Prut and the Seret and between the Middle Horyn and the Upper Bug. These forms are therefore dispersed in a similar way to graves included in class I (group I).

Sparse finds of flint axes and chisels (group V) have been recorded in an area bound to the north-east by a line along the Middle Neman — Middle Berezina — right bank of the Middle Dnieper, and to the south-east from the Middle Dnieper basin through the Middle Southern Bug *via* the area between the Middle Prut and the Seret. The south-western limit of group V finds reaches to the basin of the Middle and — in some cases — Upper Dniester, and further to the Upper Bug. Distinct concentrations of finds are evident, of which the largest is to be found on the territory bound by the Ikva — Stubla — Horyn — Viliya rivers (the region of Rivne — Dubno — Ostrog — Kremenets). Further concentrations are situated

in the Uzh River basin (the region of Owruch — Korosten) and on the Middle Dniester (the Horodenka — Zalizchiki region). In addition, of particular note are exceptional collections of the sources in question in the surrounding areas of a number of localities in Volhynia (Bovsunny — 7 examples, Listvin — 24 examples, Mirogoshcha — 9 examples, and Rivne — 7 examples) and Podolia (Syrvatyntsy — 14 examples).

C. Conclusion

In recapitulating the results of the analysis concerning the extent of complexes of GAC traits, I would now like to turn attention to two aspects of spatial relations: (a) between individual groups of sources and (b) with reference to flint deposits.

a. Generally speaking, the spatial dispersion of individual groups of GAC assemblages of both class I and II is convergent. The broad extent of relics of GAC population settlement is from the basin of the Middle Neman, the Hayna River and the Upper Dnieper to the north; in the east, generally to the line of the Dnieper, with only the site at the level of Kiev (Kiev-Nikolskaya Slobodka III) further east; and to the west through the basin of the Bug, where it joins the central group. Most complicated is the line of the southern boundary, running from the Middle Dnieper through the basin of the Middle Southern Bug to the Middle Dniester and Upper Bug, with an extreme southerly branch in the area between the Seret and the Prut.

Within the area defined above, concentrations of GAC sites are evident, the largest of which are situated in the western part of Volhynia (between the Upper Bug and the Horyn), in Podolia between the Strypa and the Smotrych and in the area between the Middle Seret and the Prut (more precisely, in the western reaches of the latter).

Equally important is the absence of GAC sources in certain parts of the area defined above and its immediate vicinity. I refer here to the Pripets basin to the east of the confluence with the Yaselda, the area between the Prut and the Dniester, the region to the north of the Middle Neman — Upper Dnieper, and to the south of the line between the Middle Southern Bug and the Middle Dnieper (below the confluence with the Ros River). This situation may have its roots in the state of excavations, or in the functioning of actual barriers to the expansion of GAC population settlement. Bearing in mind the absence on this territory of even incidental finds, I would tend to favour the second of these hypotheses. This problem will be referred to again in Ch. IV. of this volume.

b. At the present time, any evaluation of the spatial relations of GAC sites with flint deposits found on the above-mentioned territory can only be possible based on general observations (Fig. 6). More complete analyses will be made possible with the formulation of detailed maps showing reasonably precisely the extent of

flint-bearing areas in the western limits of eastern Europe. The cartographic representations hitherto available are of a general nature and differ from one another in many aspects [see, for example, Gurina 1976:Fig. 47; Berezanskaya 1994:Fig. 1; Petrougne 1995:Fig. 1], despite the existence of a range of detailed studies [e.g. Bibikov 1966; Sveshnikov 1969; Gurina 1976; Charniauski, Kudrashou, Lipnitskaya 1996]. Unfortunately, the most recent, and extremely valuable article of V. Konopla [1998a], devoted to the characteristics of flint from the territory of western Ukraine and the location of its deposits, does not contain any maps. Thus, the outline presented below of the issue in question draws on a map which constitutes a summary of the knowledge hitherto expounded, taken mainly from studies referred to above [see also Zakościelna 1996].

A comparison between this map and the spread of GAC sites reveals that the settlement of this culture displays clear connections with several flint-bearing areas (Fig. 6), namely with deposits of the following varieties: (ba) western Volhynian and Podolian, (bb) from the banks of the Dniester, (bc) eastern Volhynian — from the banks of the River Uzh and (bd) from the banks of the River Ros (Fig. 6).

ba. The largest concentration of GAC settlement relics lies between the rivers Styr and Horyn, i.e. on the territory where rich deposits can be found of the highest quality flint in eastern Europe — Turonian flint, classified as Volhynian or western Volhynian [Konopla 1998a:149-152; see also Balcer 1983:47-48]. Nodules of this flint are most often 5-30 cm in size (occasionally even up to 100 cm) and are covered by a very fine, white crust. The flint is usually black or dark grey (less frequently light grey) in colour; the nodule is characterised by a very high transparency, and sometimes by a dappled effect or the presence of light and dark bands. On the basis of analyses of its mineral content, V. Konopla [1998a:149-152] distinguishes 8 sub-types of this material. One of these (sub-type VIII) forms extensive flint-bearing fields (even over an area of more than 10 hectares) on the River Ikva in the vicinity of Dubno [V. Konopla 1998a:152; see also Cynkałowski 1961:3-4].

Clear similarities to western Volhynian flint are to be found in that of Podolia, also connected to the Turonian formation [V. Konopla 1998a:152-155]. Nodules of this material are on average 20-25 cm in size. Among the four regional sub-types of this flint distinguished by V. Konopla, the most of interest here are sub-types II (Gologory-Kremenets) and III (western Podolian, from the region of Buchach-Monastyr). GAC settlement is also extremely intensive in the area of these two sub-types.

Artifacts (mainly axes and chisels) made from Turonian flint are commonly found in GAC inventories in Volhynia and Podolia, and are also recorded within the boundaries of the central group [e.g. Budziszewski 1990; Ścibior, Kokowski, Koman 1991; Ścibior, Koman 1996].

bb. Three varieties of flint are found on the Middle Dniester: upper Albian, lower

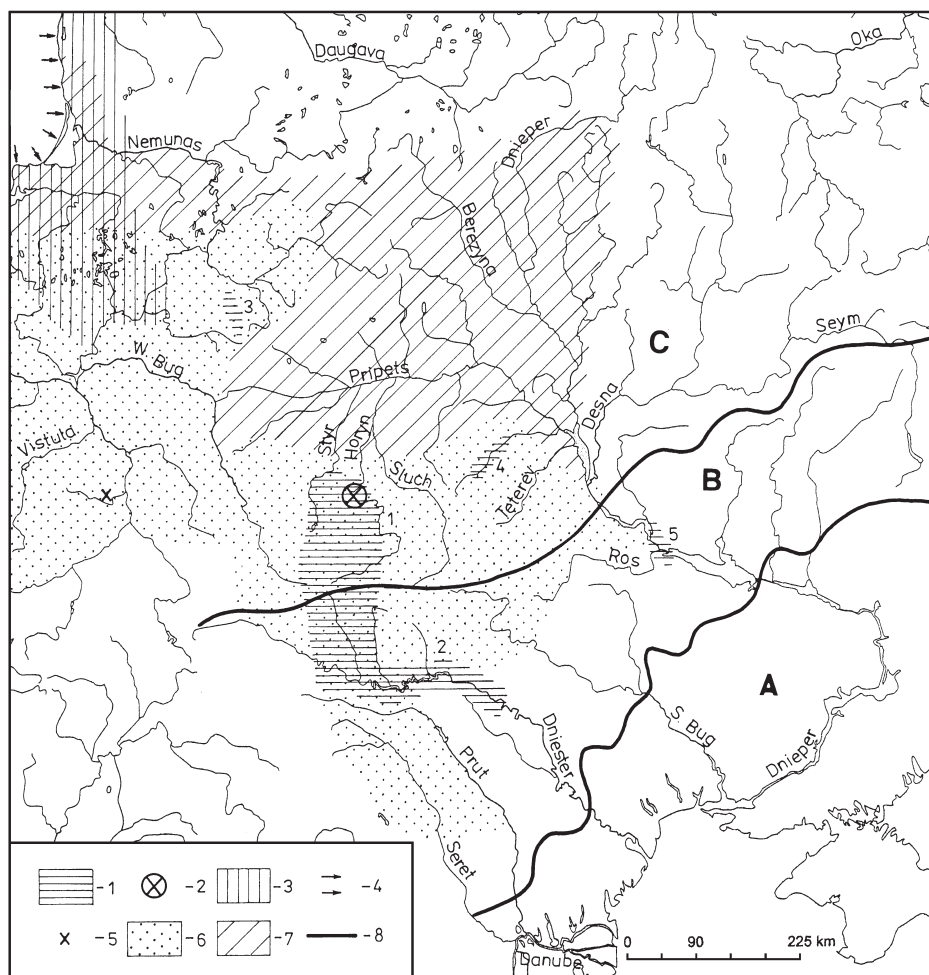


Fig 6. Areas settled or penetrated by communities of the Globular Amphora culture in Eastern Europe in a context of deposits of selected raw materials.

Key: 1 - deposits of flint raw material (1 - Volhynia and Podolia flints, 2 - Dniester flints, 3 - Ros River flints (middle Neman area), 4 - Uzh River flints, 5 - Middle Dnieper flints - Kanev type); 2 - deposit of Horyn River basalts; 3 - shallow deposits of Baltic amber; 4 - locations of the depositing of amber by sea water; 5 - flint mine in Krzemionki (deposit of so-called banded flint); 6 - areas settled by Globular Amphora culture populations; 7 - areas penetrated by Globular Amphora culture populations; 8 - borders of ecological zones (A - steppe, B - forest-steppe, C - forest; cf. Ievlev 1991).

Sources: Berezanskaya 1994, Mazurowski 1983, Petrougne 1995, Prinke 1983.

Cenomanian and upper Cenomanian [Konopla 1998a:142-148]. The outcrops of the first of these are located on the Dniester between its Zhvanchyk and Smotrych tributaries (on the border between the districts of Chernivtsy and Khmelnytskyi). The colour of this flint ranges from grey to black, sometimes mottled. Deposits of the lower Cenomanian variety, two types of which have been distinguished [Konopla 1998a:145-146], appear on the Dniester, roughly between the confluence with the Seret, through the Brinnik and Naslacha rivers, as far as the Prut basin. This flint is of a variety of colours — from milkywhite, through grey, to black. Upper Cenomanian flint, also sub-divided into two types [Konopla 1998a:146-147], is located on the stretch between the Studenitsa and tributaries of the Reut. The first of these types is predominantly black in colour, less frequently light or dark grey, and the second — from black, through various shades of grey, to white.

Among macrolithic flint tools of the GAC in Volhynia and Podolia, a certain number of artifacts made from Dniester flint have been identified, although their type has not been defined⁷.

bc. A grey flint, with lighter patches and streaks, characterises the flint deposits discovered in the Uzh River valley. According to S.S. Berezanska and V.K. Pyasetskiy, this flint was used almost exclusively by the GAC population, especially in the production of axes and chisels. It has been noted among material from settlements and settlement points, as well as from flint workshops outside of settlement boundaries, situated on the Irsha River [Berezanska, Pyasetski 1979].

bd. On the banks of the River Ros, a tributary of the Neman, are located deposits of a flint dark-grey in colour, with a bluish tint, occurring in layers of chalk [Charniauski, Kudrashou, Lipnitskaya 1996:15]. The nodules are covered by a light-blue/grey-coloured crust. Their average dimensions are 20-30 cm.

On the central stretch of the Ros lies the Krasnaselski-Karpautsy complex of flint mines [Szmit 1926; Gurina 1976; Charniauski 1995; Charniauski, Kudrashou, Lipnitskaya 1996]. In the western section of the flint-bearing area, immediately upon the western limit of the chalk 'lens' (lens no. 2 — Plate 21), was situated the GAC cemetery in Krasnaselski 1, already mentioned in this volume, dating from approx. 2830-2450 BC (Gd-9249). Also recorded in the area of the mine is at least one GAC settlement point (Krasnaselski 5) [Charniauski, Kudrashou, Lipnitskaya 1996:56-61]. The chronology suggested for this cemetery is close to one of the dates published by N.N. Gurina [1976:127] for the Krasnaselski mine: 3010-2890 BC (GIN-148; dated charcoals). All of these indications allow us to infer that the start of flint mining on the Ros is linked to the GAC population [Charniauski 1995:269; Charniauski, Kudrashou, Lipnitskaya 1996:85-86].

⁷Evaluations of Dr. Vitaliy Konopla.

I.4. SPATIAL DISTINCTION BETWEEN COMPLEXES OF GLOBULAR AMPHORA CULTURE TRAITS. THE EASTERN GROUP AND ITS INDICATORS

The survey of information thus far presented leads one to conclude that the origins of the GAC on the territory of Eastern Europe were of more than one source (Fig. 7). There is evidence of a clear distinction between sources from the southern (the Forest-Steppe zone and its borderlands with the Forest zone) and central (within the Forest zone) areas of the territory under examination, and its boundary falls along a line cutting at right angles across the central reaches of the southern tributaries of the Pripets (from the Turiya River to the Uzh). In terms of present-day administrative designations, this would be the line Kovel-Ovruch-Kiev.

To the north of this boundary, only one larger settlement concentration has been recorded — in the region of the Middle Neman. On the basis of ceramic traits (Ch. I.2.), one can surmise that this complex had a direct link with the central group — more precisely, with the Mazovia-Podlasie subgroup — and was isolated from the main concentrations located to the south of the Pripets.

I propose that the name 'eastern GAC group' be kept for these main concentrations situated on the territory of Volhynia, Podolia and the Moldavian Uplands. The area occupied by this group was located to the south of the border outlined above. Its eastern boundary was generally marked by the line of the Dnieper; the western limit by the Bug basin. The southern borderline ran from the Middle Dnieper, through the Middle Southern Bug, to the Middle Dniester and Upper Bug, with an extreme southerly branch in the area between the Seret and the Prut. The trait structures of the three abovementioned settlement concentrations located in this area diverge to such an extent that three separate sub-groups of the eastern GAC can be distinguished: Volhynian, Podolian and Moldavian (or better — Seret).

In discussing the identifiers of individual cultural structures, the determinants of the eastern group will be dealt with first, followed by those of its three sub-groups.

In comparison with the remaining GAC groups, the diagnostic traits of the eastern GAC can be clearly seen in ceramic production, bone-shaping and sepulchral ritual. With regard to ceramics, the most important features are the new types of vessel forms and ornamentive work combining stamp and cord ornamentation and 'herring-bone' patterns (i.e. traits extremely common in the central group) with ornamentations made using an arc-shaped form (especially 'fish-scale' patterns) and slanting grids (including triangles filled with such grids). Particular attention is due to the frequent incrustation of ornamentive forms using a white paste filling. Unique to the population of the eastern group are the so-called 'open-work clasps', made

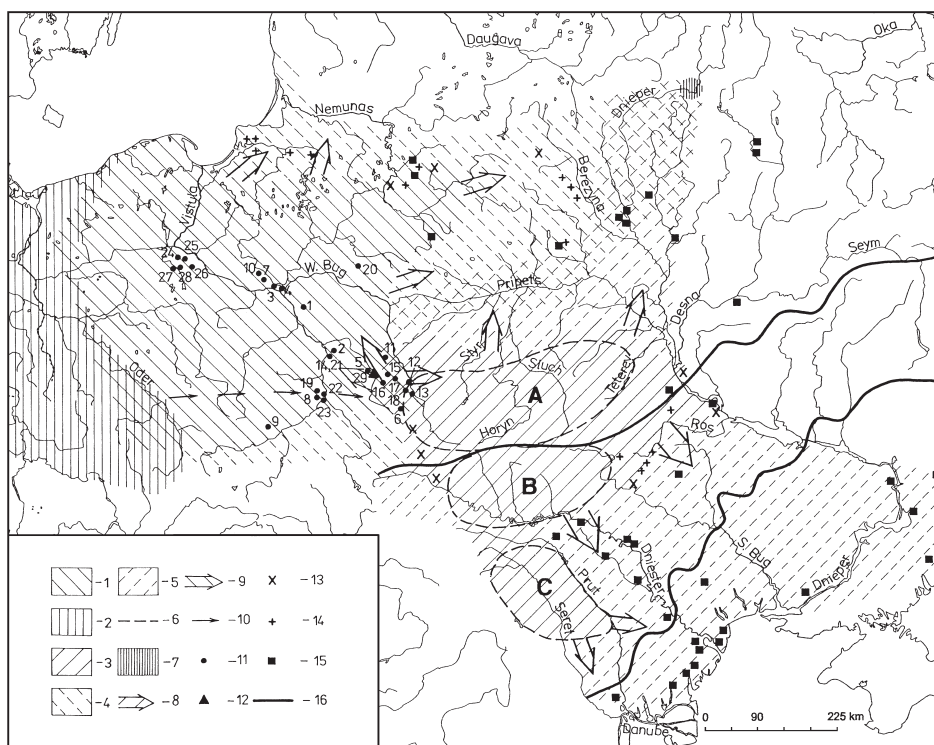


Fig 7. The eastern group in relation to the remaining groups of the Globular Amphora culture.

Key: 1 - the central group; 2 - the western group; 3 - the eastern group; 4 - zone of influence of the central group; 5 - zone of influence of the eastern group; 6 - range of subgroups within the eastern group (A - Volhynian subgroup, B - Podolian subgroup, C - Moldavian-Seret subgroup); 7 - settlement enclave on Upper Dnieper; 8 - directions of influence of the eastern group; 9 - directions of influence of the central group; 10 - direction of hypothetical migration from the territory of the western group; 11 - sites with 'eastern' traits in the central group; 12 - extreme site of the central group with 'western' traits (Krasnystaw); 13 - extreme sites of the eastern group; 14 - extreme sites with incidental finds of flint axes and chisels; 15 - syncretic sites with GAC traits; 16 - borders of ecological zones.

from bone. Finally, rectangular or trapezoid cist graves constructed from evenly-hewn slabs, and frequently possessing a floor slab and cover, should be considered as specific to this group.

The Volhynia sub-group possesses a whole range of identifying traits. Generally speaking, ceramics from the territory of Volhynia are the most varied, both in terms of the range of vessel forms and the ornamentation and technology applied. Stamp and cord ornamentations predominate, with a less frequent incidence of 'fish-scale' type patterns and filled-in triangles. 'Herring-bone' patterns and festoons are common. Also specific to Volhynia is the variety in terms of sepulchral rituals.

Rectangular and trapezoid, as well as oval cist graves can be found here. Furthermore, 'passage' graves are unique to this region. The building materials used were blocks and stone slabs, although graves with no stone structures have also been recorded. Inhumations have been noted next to cremations. Finally, Volhynia is also the only region where ochre was used in the funeral rite.

The above indicated departures from typical rituals are most conspicuous in eastern Volhynia (Sluch and Teterev basins). These differences lay behind T. Wiślański's proposal to distinguish two subgroups: western and eastern Volhynian [Wiślański 1966:89]. The differences in the funerary sphere are not equally well visible in other categories of sources, hence, it seems more reasonable to keep one Volhynian subgroup distinguishing, however, two varieties within it: a western and an eastern one.

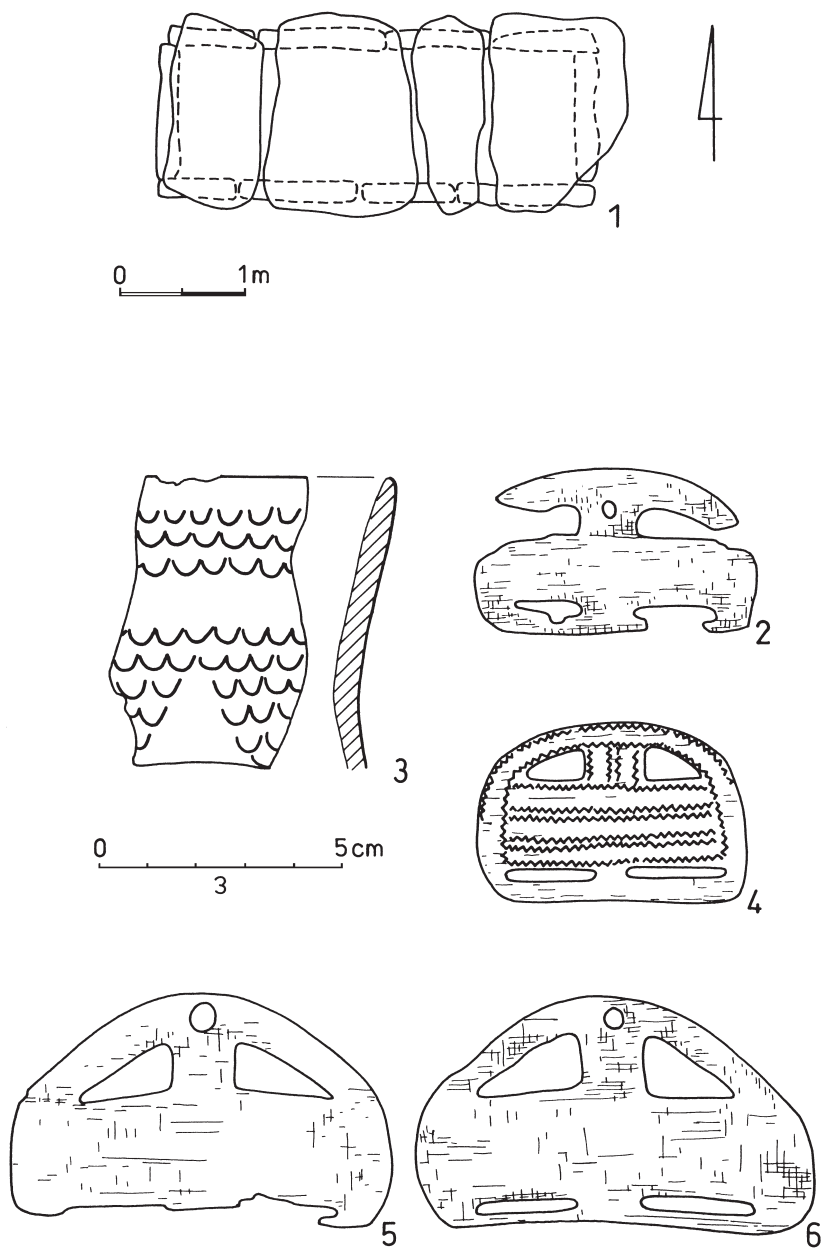
In contrast to the Volhynia sub-group, the situation in Podolia seems more uniform. In terms of ceramic ornamentation, the principle patterns are those made using an arc-shaped form (the 'fish-scale' motif is particularly common), as well as those in slanting grids, including triangles filled in with slanting grids or rows of X's. The grave form used is one of a rectangular or trapezoid cist constructed from regular stone slabs. The burial ritual used was exclusively skeletal inhumation.

The Seret Moldavian sub-group — the third of those identified — combines both Volhynian and Podolian traits. This is particularly evident in the ceramic ornamentation, where patterns constructed from arc impressions appear as well as cord ornamentations (horizontal lines and festoons). The sepulchral ritual, meanwhile, is close to that used in Podolia, although other burial forms have occasionally been noted (e.g. on a stone slab or in a 'stone-free' pit).

As has already been mentioned, the origins of GAC settlement on the Upper Dnieper can be linked either to the eastern group (specifically, the Volhynia sub-group), or to the concentration of Middle Neman settlement.

I.5. SPATIAL RELATIONS OF THE EASTERN AND CENTRALGLOBULAR AMPHORA CULTURE GROUPS

Due to genetic links, and to the significant degree of similarity in various cultural spheres, which is the corollary of these links, it is not easy to determine the border between the central and eastern GAC groups. In general terms, it runs through the Bug basin. However, as I.K. Sveshnikov [1983:10] has already pointed out, a transitional zone can be distinguished there, in which traits of both groups can be found. The western borderland of this region can be determined by graves



F i g 8. Selected traits associated with the eastern group of the Globular Amphora culture, identified within the confines of the central group.

Key: 1- Kucice Nowe; 2, 4-6 - Kosewo; 3 - Zañcin (2,4-6 - bone, 3 - fragment of vessel).

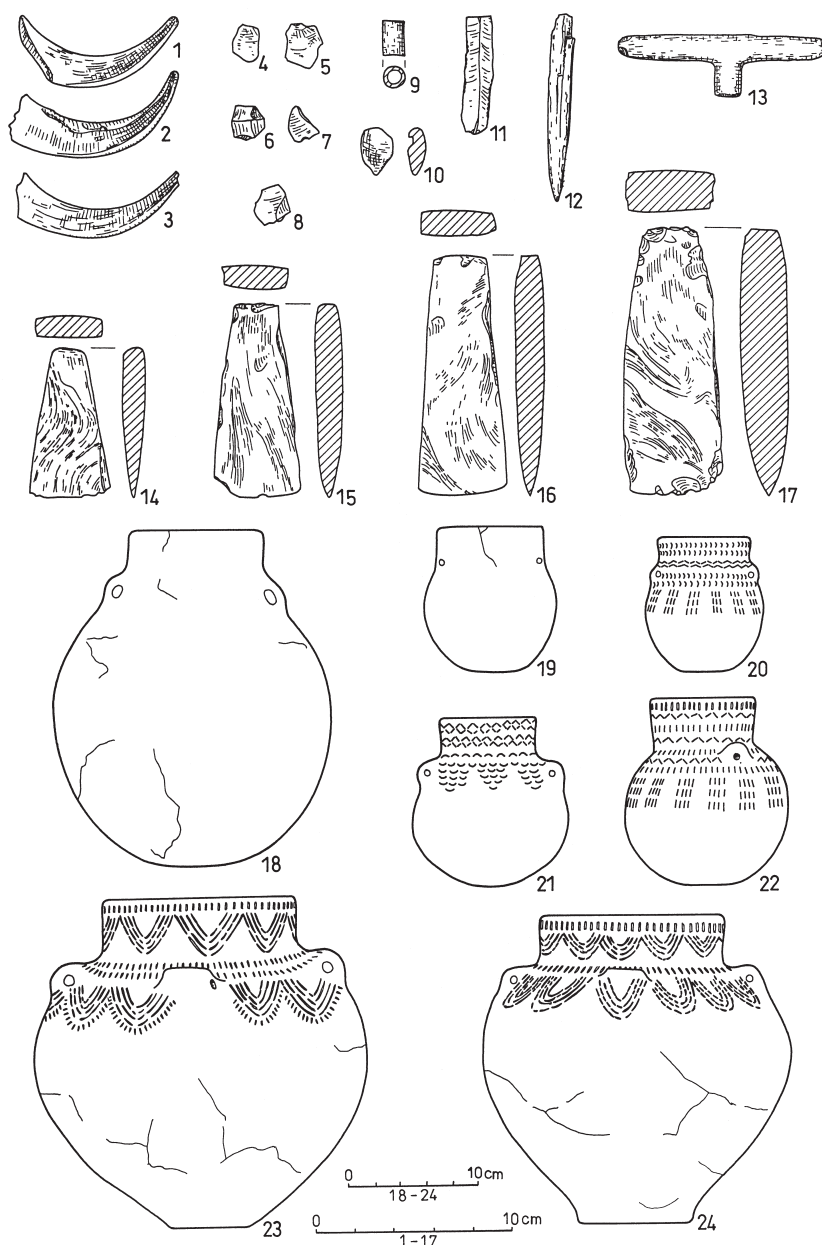
Sources: Antoniewicz 1938, Nosek 1967 and collection of the Regional Museum in Grodno.

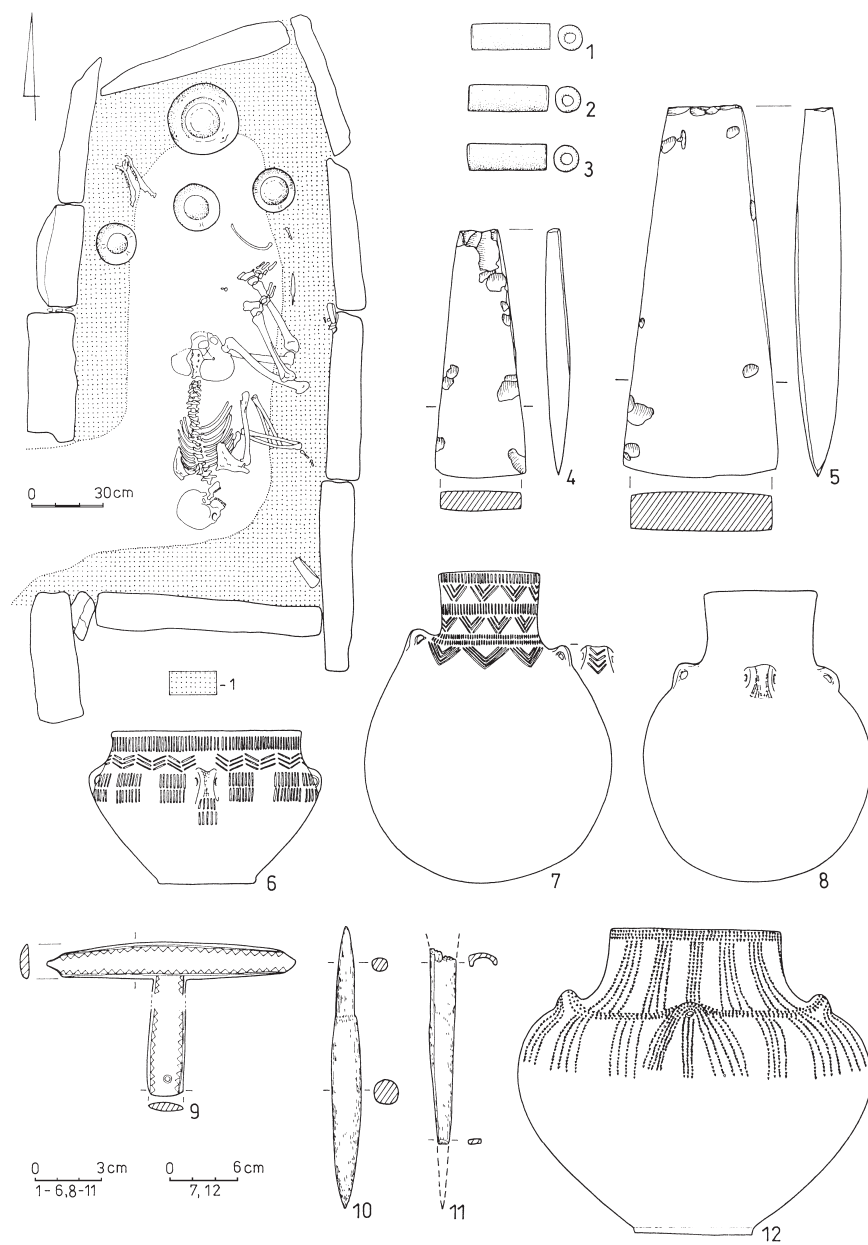


Fig 9. Assemblage of the central group of the Globular Amphora culture with 'eastern' traits: Klementowice B, grave I.

Key: a - bones; b - stones; c - flint axes; d - vessels; I - wild boar's jaw. 1-3,12-13 - bone; 4-8,10-11,14-17 - flint; 9 - amber; 18-24 - pottery.

Source: Nosek 1964.





F i g 10. Assemblage of the central group of the Globular Amphora culture with 'eastern' traits: Sahryń 1.
Key: 1 - trench made to position the slabs forming the side walls. 1-3 - amber; 4-5 - flint; 6-8,12 - pottery;
9-11 - bone.

Source: Kokowski, Ścibior 1990.

constructed from stone slabs (analogous to I.A.1.1,1 and I.A.1.2,1 types), recorded in Sahryń, site 1, in Lublin province [Ścibior, Kokowski, Koman 1991:91-97] and in Łopiennik Dolny Kolonia, site 1, in Lublin province [Gołub 1996b; see earlier Nosek 1967:211-213], whereas its eastern range is, at present, impossible to determine.

However, traits which certainly or hypothetically derive from the eastern GAC are more widely spread on the territory of the central group. Here, there were found (a) elements of vessel ornamentation, (b) bone clasps, (c) stone slab graves and (d) Volhynia flint artifacts. The provenance of the following should also be taken into consideration: (e) specific type of pottery, namely lids, (f) Volhynia basalts as well as (g) dyes applied to pottery.

a. Ceramics with a 'fish scale' ornamentation, which is typical of the eastern group (more precisely of its Podolian subgroup), were found on two sites: Zanęcin, in Mazovia province (Fig. 8:3) [museum collections in Grodno; M. Kryvaltsevich archive; see also Kempisty 1971:16] and Klementowice site B, grave I (Fig. 9:21), in Lublin province, [Nosek 1967:Fig. 157, 23]. The partially preserved vessel from Rosiejów, Świętokrzyskie (Holy Cross) province, was also possibly decorated in a similar way [Nosek 1967:Fig. 110, 2].

b. The so-called 'bone clasps' were found in a grave in Kosewo (Fig. 8:2, 4-6) and probably Nowy Dwór Mazowiecki, Mazovia province [Kozłowski 1921:58; Antoniewicz 1938:350-354].

c. In addition to the above-mentioned objects from Łopiennik Dolny Kolonia, site 1, and Sahryń, site 1 (Fig. 10), which are clearly linked to A.1.1,1 and A.1.2,1 type graves, other examples are also known from the territory of the central group, although these are only partially documented (coming from old examinations or incidental finds): Kucice Nowe, Mazovia province (Fig. 8:1) [Nosek 1967:149-150]; Ossolin, Świętokrzyskie province [Nosek 1967:193-195]; Rosiejów, Świętokrzyskie province [Nosek 1967:165-166]; and Szeromin, Mazovia province [Nosek 1967:157-158].

d. Products made from the so-called eastern Volhynia cretaceous flint (mainly axes, but also other artifacts) have been found in graves and other ritual objects of the central group, principally between the Vistula and Bug rivers, e.g. Czulczyce Kolonia, site 6, Lublin province [Bronicki 1998], Husynne Kolonia, site 6, Lublin province [Ścibior, Kokowski, Koman 1991:91], Kułakowice, Lublin province [Gurba, Kutylowski 1969], Las Stocki, site 7, Lublin province [Zakościelna 1989:52], Serebryszcze, site 23, Lublin province [Gołub 1994], Stadarnia, Lublin province [Skibiński 1958], Stefankowice Kolonia, site 33, Lublin province [Ścibior, Kokowski, Koman 1991:84-88] and Świerszczów, site 27, Lublin province [Ścibior, Kokowski, Koman 1991:80-84; Ścibior, Koman 1996]. They have also been identified in materials from the GAC settlement in Kosowice, site III, Świętokrzyskie province [Budziszewski 1990:213-215 and Table 7] and on the loess Małopolska

Uplands [Ścibior, Kokowski, Koman 1991:102]⁸. One cannot omit the possibility that some of the specimens mentioned may have been produced from a local (in the area of Chełm) variety of western Volhynian flint — the so-called Rejowiec type [Ścibior 1986:361-362; Ścibior, Kokowski, Koman 1991:102]. However, even when accepting such a possibility, emphasis should be placed on the undoubted arrival of the flint originating from Volhynia (possibly Volhynia-Podolia) in the central group region (particularly in its eastern Lublin and — to a lesser extent — Nałęczów sub-groups).

e. Lids (Fig. 4:IX), relatively common in the Podolia sub-group, have also been found in several assemblages of the central group: Brańsk-chojewo, Warmia-Mazuria province [Antoniewicz 1938:355-366]; Las Stocki, site C, grave II, Lublin province, [Nosek 1967:Fig. 161, 2]; and Sandomierz, site 78, grave X, Świętokrzyskie province, [Ścibior, Ścibior 1990:Fig. 28b and 29b — from the layer]. They were also found in assemblages of the so-called Złota culture [Krzak 1976:114-117]. Although the origins of this form are not clear, they can be hypothetically linked to the transformation of the Tripolye culture patterns (see Ch. IV.1.4.).

f. On two GAC sites in Kujawy (Goszczewo, site 13 and Przybranowo, site 10, both in Kujawy-Pomerania province), semi-finished axes made of basalt originating from Volhynia, more precisely from the Horyn basin, were found [Chachlikowski 1991:165].

g. Also in Kujawy, organic and mineral dyes applied to vessels made by the GAC population have been found (see Ch. IV.1.4.). This technique is clearly eastern in origin — ‘Tripolye’ to be precise — and it seems logical to assume that it was transmitted through the intermediary of communities of the eastern GAC group, although no direct evidence in support of this hypothesis has yet been put forward.

To recapitulate, the distribution of traits which are certainly derived from the eastern group (points “a”-“d”) covers primarily (Fig. 7) the eastern part of the Vistula basin as far as northern Mazovia, and some parts of the western Vistula basin (the Sandomierz Uplands). Taking into consideration elements of a controversial provenance (points “e”-“g”), one can add to this area both Kujawy and Podlasie.

By way of conclusion to this section of our considerations, it is worth taking up the question of the links between the eastern and western groups — clearly visible in ceramic ornamentation (see Ch. II.3.3.). Due to the spatial separation of these two units, the population of the central group must have been in some way instrumental in the establishment of contacts between their populations [see Szmyt 1996a:229-238]. One example of this could be provided by a grave assemblage from Krasnystaw, site 8, Lublin province, which contained a clay drum, i.e. a form of a clearly ‘western’ origin [Gołub 1996a]. However, the key areas were

⁸I excluded here are the controversial (of uncertain homogeneity) finds of Volhynian flint artifacts from GAC settlements in Kujawy [see Olszewski 1990:191-192].

the Sandomierz Uplands, where patterns from both the eastern (see points “c” and “d” above) and western (e.g. Chwałki, Działawice, Mierzanowice, site 1, all in Świętokrzyskie province) [Nosek 1967:Fig. 114, 4, 6; 117:4, 7; 128:1; 136] groups penetrated, and the Nałęczów Plateau, where traits of an ‘eastern’ provenance have been documented (see points “a” and “d” above). This does not preclude the possibility of minor migrational movements from the west to the east, the route of which is presently impossible to reconstruct (from Silesia through the Małopolska Uplands?) [Wiślański 1970:221]. It is worth mentioning here that in the same area, traces of long-distance migrations involving small groups of people were observed also in Corded Ware culture [Machnik 1998:23].

II. TIME. CHRONOLOGY OF SETTLEMENT OF GLOBULAR AMPHORA CULTURE POPULATIONS IN EASTERN EUROPE

The chronology of the GAC in Eastern Europe may be established using procedures aimed at determining relative and absolute time. For the purpose of establishing a relative chronology, I have used material sources (they have been subjected to seriation and a classical comparative analysis), on which conventional periodisation has been based. Whereas an absolute chronology has been determined relying on a series of radiocarbon dates.

II.1. RELATIVE CHRONOLOGY

A point of departure for the discussion of chronology is a classification of material sources associated with the GAC in Eastern Europe. However, analytical possibilities are strongly limited due to the nature of the source base. The limitations are chiefly related to the over-representation of single or sepulchral finds and the scarcity of settlements and camping grounds. Consequently, the only real possibility is to rely on sepulchral sources, specifically on pottery from grave assemblages. This gives rise to a different situation than in the case of GAC agglomerations in Kujawy [Szmyt 1996a:8] and between the Middle Elbe and Saale rivers [Müller 1997], which are best explored now. The exploration of the GAC in Kujawy was based on settlement assemblages, while in the latter case independent sequences of changes were built relying on settlement and grave assemblages. Lacking an alternative, one has to be aware of possible distortions. Their potential sources primarily include: (a) the manner in which sepulchral sources come into being, (b) unknown but possible difference in the rhythm of changes between settlement and grave sources, (c) non-homogeneity of some sepulchral sources and (d) incompleteness of the information held.

a. Sepulchral sources are a result of a conscious and positive choice. They lack so characteristic an element of settlement features as randomness. We know nothing of the selection criteria of objects used in burial rituals or about the circumstances the criteria depended on (e.g. variety following from the social status of the deceased, his or her sex, age, cause of death, etc.) [cf. Müller 1996:217].

- b.** In the western and central GAC groups, differences have been observed concerning the chronology of certain ornamentation types of pottery found in grave and settlement assemblages [Müller 1996; Szmyt 1996a]. Actually, this is a phenomenon of greater import. For instance, there are reasons to believe that certain artifacts placed in graves were aged, i.e. the same patterns were repeated over long periods in the case of ritual practices, while they were already obsolete in “everyday” life. Examples of this may be found in various Late Neolithic groups in central Europe, besides the GAC [Szmyt 2000], for instance in the Corded Ware culture [Czebreszuk 1996]. Under certain circumstances, objects placed in graves (especially pottery) may represent thus long-lived structures.
- c.** A significant number of graves explored in Volhynia and Podolia are megalithic features in the form of stone cists containing remains of several persons. Only in a few cases, we have data suggesting that all the bodies found in a grave were placed in it at the same time. The homogeneity of other features is purely conventional. In no case do we have any confirmation (nor a negation!) of it in the form of a series of ^{14}C dates for all individuals buried in a grave. While a number of observations, both from other regions of GAC settlement and concerning other cultures, point to a possibility that megalithic structures of various forms may have been used for a long time [e.g. Saville, Gowlett, Hedges 1987; Mizoguchi 1993; Szmyt 2000].
- d.** Finally, one cannot ignore a factor related to the contemporary reality, namely the incompleteness of information in the case of a large number of grave features. Another reason is a destruction of some sources or records (detailed plans or descriptions), in particular those referring to older investigations.

II.1.1. SERIATION OF POTTERY FROM GRAVE ASSEMBLAGES

The above comments are meant to bring to mind the difficulties encountered when attempting to analyse chronologically GAC sepulchral sources in the studied area. At present, however, it is only this category of sources that provides the possibility of making the analysis. While accepting the foregoing, I adopt here a few simplifying assumptions:

- (1) I have selected sources from today’s Volhynia and Podolia eliminating single features found in the central part of the Forest zone.
- (2) In order to make a studied series numerous enough I have selected materials for analysis from the majority of graves about which I have complete or almost complete information (this assumption caused the elimination of a series of features from the Moldavian Uplands, which had been published only in fragments).

(3) I have assumed that these sources, which have been called assemblages, are relatively homogenous. In the light of the comments made earlier in section II.1.1.d, this is, however, an oversimplification of a complex situation. It makes any achieved results preliminary and liable to falsification in the future.

(4) The foundation of the analysis shall be pottery as the type of sources that is the most common in graves. Hence, observation will concentrate on the variation of pottery traits.

(5) Among pottery traits, the easiest to identify (even in the case of archival sources) is ornamentation. At the same time, it supplies enough information. Thus, pottery ornamentation is the basis of the analysis.

Selected ornamentation assemblages were described by recording all the types of ornamentation found in them in a database (Fig. 5). To arrange the assemblages, a series of statistical procedures included in the WINBASP package was used: correspondence analysis, seriation and grouping by the closest neighbour method (dendrogram). I relied on the experience gathered during the study of GAC sources from central Germany (area between the Middle Elbe and Saale rivers – *Mittelelbe-Saale Gebiet*) presented in the works of J. Müller [1996; 1997; 2000]. It has to be noted that the requirements of the correspondence analysis are the most restrictive, due to which a considerable number of assemblages were excluded from it. The procedures of seriation and grouping by the closest neighbour are “more lenient”, consequently, it was possible to include in them those assemblages that had been excluded from the correspondence analysis. The differences between the methods in terms of their capability called for their ordering with respect to their relative importance. I take the results of correspondence analysis to be the most important (“reference”), while the results of seriation and grouping are considered auxiliary.

Studies included three series of assemblages (a) general, (b) from Volhynia, (c) from Podolia. To meet the requirements of the procedures used, the analysis encompassed only such types of ornament that occurred at least in two assemblages and only such assemblages in which at least two types of ornament were recorded. Additionally, those types of ornament which occurred in most assemblages, as impressed bars (Z01) and impressed zigzags (Z031 and Z033), were eliminated to “clear” the picture.

a. First, the general series, including all the assemblages from Volhynia and Podolia, was analysed.

SERIATION (Fig. 11). Seriation results show a clear trend of variation in space. The studied artifacts can be divided into three groups: (1) includes mostly assemblages from Volhynia, (3) those from Podolia, while the composition of group (2) is mixed (intermediate group).

CORRESPONDENCE ANALYSIS (Fig. 12). The series falls into five groups. Three of them (I, II, III,) include chiefly assemblages from Volhynia, while the

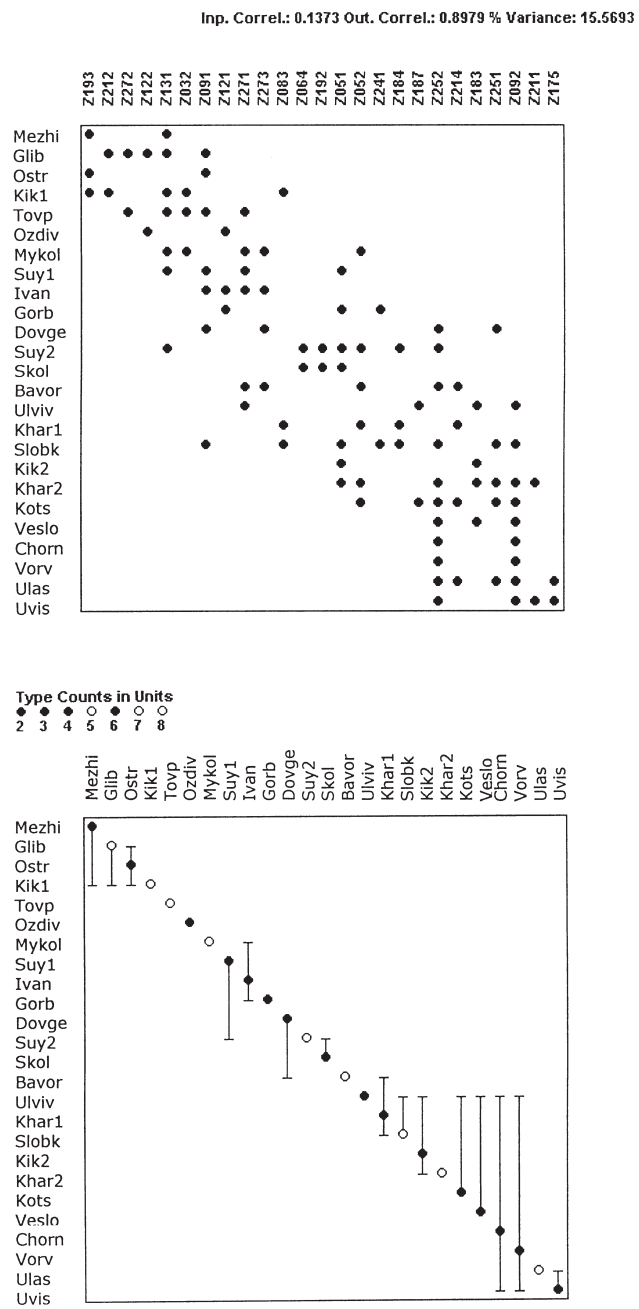


Fig 11. Seriation of Globular Amphora culture assemblages from Volhynia and Podolia.

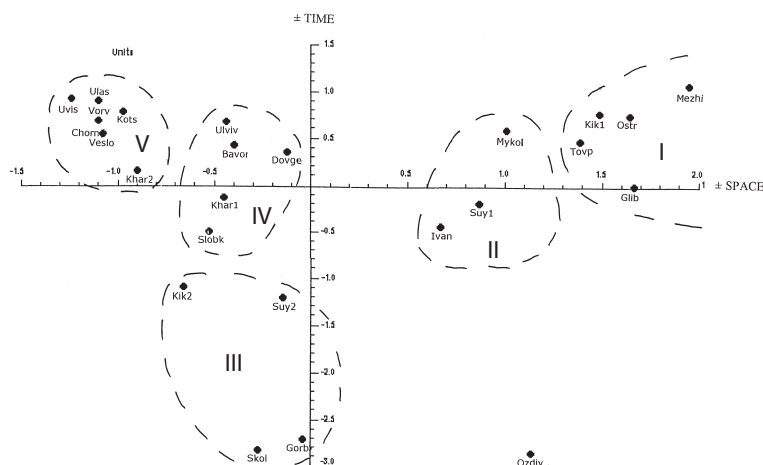


Fig 12. Results of the analysis of the correspondence of Globular Amphora culture assemblages from Volhynia and Podolia.

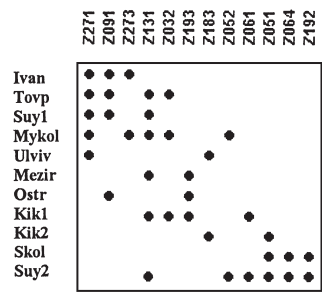
remaining two (IV and V) those from Podolia. In the whole system, the analysis of two components shows that component 1 (X axis) refers to geographical space: to the left of it mainly Podolia assemblages (exception: Ulvivok), while in the centre and to the right Volhynia assemblages are located (exception: Glibochok and Gorbasiiv). Component 2 may be related to time: Volhynia assemblages found above the X axis are generally older than assemblages placed below the axis. This rule does not hold, however, for assemblages from Podolia. Together with the seriation results, the correspondence analysis shows that the examined series is not homogenous and that the observed variety of assemblages is due to spatial and temporal differences. Thus, it is justified to have the general series broken up into two smaller series comprising separately assemblages from Volhynia and Podolia. However, both series are less numerous, which may have an impact on the credibility of results.

b. Volhynia assemblages

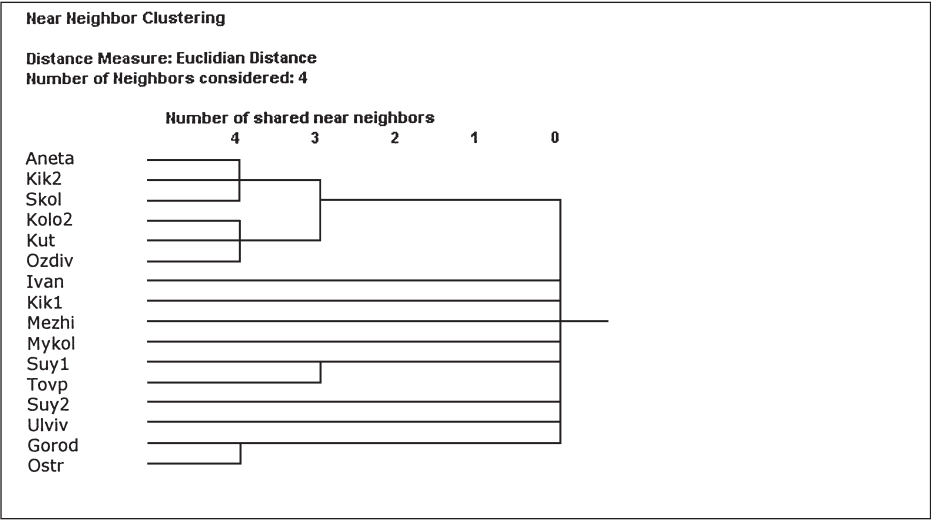
SERIATION (Fig. 13A). A trend of changes is marked. The extremes of the system are formed by the following groups of assemblages: Ivanye + Tovpyzhyn + Suyemtsy I + Mykolaiv and Kikova 2 + Skolobiv + Suyemtsy II. The remaining artifacts make up an intermediary group.

CORRESPONDENCE ANALYSIS (Fig. 14). The results of the analysis justify

A



B



F i g 13. Results of the analyses of Globular Amphora culture assemblages from Volhynia: A - seriation, B - dendrogram.

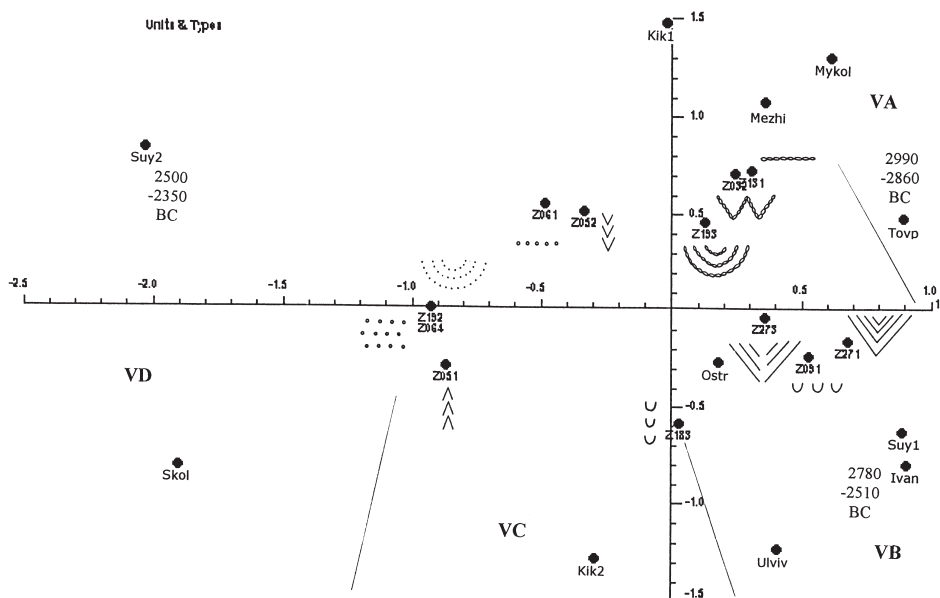


Fig 14. Results of the analysis of the correspondence of Globular Amphora culture assemblages from Volhynia.

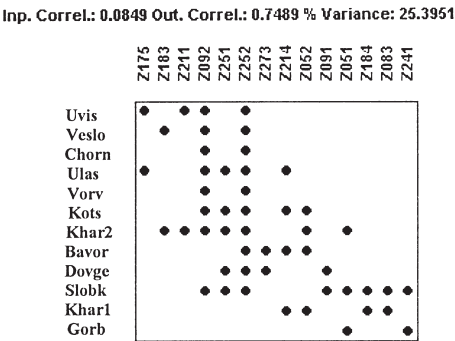
the division of the series into four groups of assemblages identified by the following symbols: VA (= Volhynian A group: Tovpyzhyn + Mykolaiv), VB (Ivanye + Suyemtsy I + Ulvivok + Mezirichi + Ostrog + Kikova 1), VC (Kikova 2), VD (Skolobiv + Suyemtsy II). As evidenced by the seriation results, the captured variation is in principle continuous. Group VA is characterised chiefly by “herringbone” ornaments and impressions of a two-strand cord. In group VB, festoons (including cord ones) are added. Groups VC and VD are characterised by simplified ornamentation due to a lack of complex elements. Actually, both groups are very close to one another. After superimposing the available ^{14}C dates on the presented graph, the distinguished groups can be plausibly treated as a reflection of the temporal differentiation of the assemblages.

GROUPING BY THE CLOSEST NEIGHBOUR METHOD (Fig. 13B). The last of the used procedures makes use also of those assemblages and ornaments that have been eliminated earlier due to their low incidence. Generally speaking, the series may be described as quite diversified and incongruous. What is important, however, is marked affinity of most of the assemblages not included in the correspondence analysis (Aneta, Kolodiezchno 2, Kutyanka, Ozdiv) with groups VC and VD.

c. Podolia assemblages

SERIATION (Fig. 15A). The trend of changes is set by two opposite groups of as-

A



B

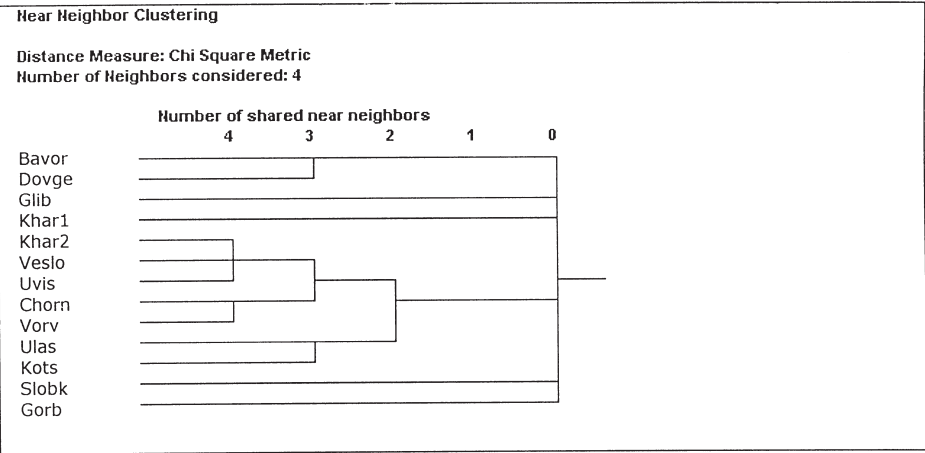
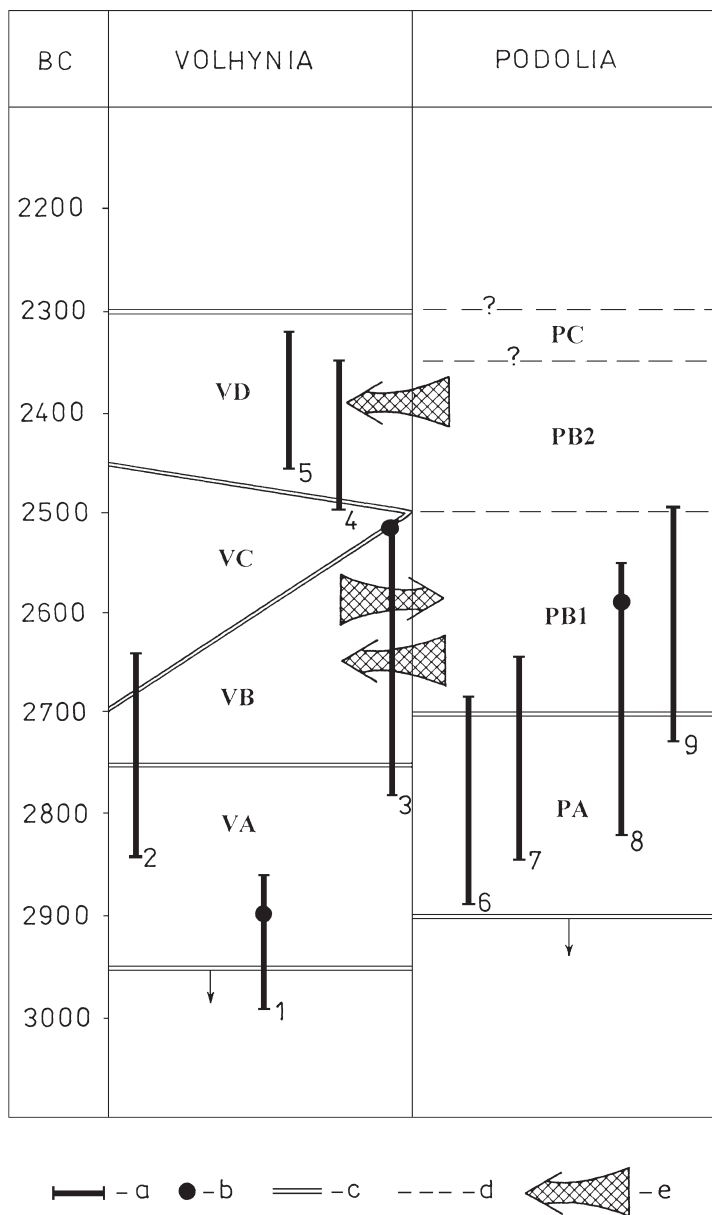


Fig 15. Results of the analyses of Globular Amphora culture assemblages from Podolia: A - seriation, B - dendrogram.



F i g 17. Chronology and periodisation of the eastern group of the Globular Amphora culture (Volhynia and Podolia subgroups). 1 - range of 14C datings on the level of 1 sigma; b - 'point' obtained as a result of joint calibration of two datings for the same feature; c - time limit determined through the use of 14C datings; d - uncertain time limit (without 14C datings); e - evidence of contacts.

Summing up, I adopt, as a basis for organising the assemblages from Volhynia and Podolia, the results of correspondence analysis and groups/phases thereby distinguished, namely VA-VB-VC-VD and PA-PB-PC. Whereas the classification of assemblages including a smaller number of ornament types may be done using the closest neighbour method. The final results are shown in Fig. 17.

In conclusion, it should be stressed that the evolution of Volhynia ornamentation began with assemblages with stamped and “herringbone” patterns (group/phase VA) and continued through the most diversified ornamentation comprising different versions of the “herringbone” (including one lined with dents or little arches), festoons and more sophisticated stamped patterns (with multiple rows of zigzags, for instance) and rich corded ornaments (phase VB) to finish with assemblage of ever simpler ornamentation limited to the simplest stamped patterns and horizontal rows of cord impressions (phase VC). Only very rarely were the last mentioned patterns enriched by incidental ornaments (phase VD).

The changes of ornamentation in Podolia must have evolved along the same lines as in Volhynia. In phase PA, ornamentation was limited to various arrangements of small arches that built “scale-like” patterns; in phase PB a diversity of patterns came to the fore (next to arches and “scalelike” patterns, oblique, checked triangles, single and multiple stamped patterns, etc., appeared), while in phase PC ornamentation was radically simplified to include only stamped patterns and simple arrangements of small arches.

II.1.2. CHRONOLOGICAL CHANGE OF OTHER SELECTED CULTURAL TRAITS

I shall attempt now to relate the above periodisation proposal to other GAC traits, namely (a) pottery technology and (b) funeral ritual.

a. An attempt to reconstruct the changes in pottery-making encounters considerable difficulties due to the randomness of observations. For future research it may be important to realise that the oldest available assemblages (Tovpyzhyn — group/phase VA; Uvisla and Chornokintsy — group/phase PA) observe technological rules known from the central group (technological units II, IIIA, IIIB1). These classical recipes are found in assemblages representing all later phases, as well. Tempers “untypical” for this group appear at a later stage; they were identified in assemblages of groups VB (Kikova 1 — tsg VA), VC (Kikova 2 — tsg VA, Kutyanka — tsg VIA and VIB), VD (Peresopnitsa — tsg VIA and VIB, Suyemtsy II — tsg VA), PB1 (Glibochok — tsg VIB and VIC, Kotsiubintsy — tsg VA) and

PB2 (Khartonivtsy 1 — tsg VB). Thus, a hypothesis may be formulated about an increasing technological diversification of GAC pottery.

b. The most characteristic of the eastern GAC, rectangular and trapezoidal cist graves have a long chronology as they occur in all the phases (VA-VD and PA-PC). Whereas graves in the form of an oval cist built of stone blocks are recorded in phases VC and VD. Volhynia cist graves having a “passage” are to be distinguished from passage graves known from the western and central groups [Góra 1972]. The former are linked to phases VB and VC. Stoneless features may be associated with phases VB and VC. Finally, cremation traces may be dated to phases VB and VD, while the use of ochre — to phases VB, VC and VD.

II.2. ABSOLUTE CHRONOLOGY

For the purpose of establishing an absolute chronology, a series of radiocarbon dates is used. The series includes datings “made to order” while this book was worked on and others taken from other authors. The diversity of sample selection criteria and different methods of lab analysis justify their very close scrutiny.

II.2.1. CATALOGUE OF ^{14}C DATES AND THEIR CRITICAL ANALYSIS

The radiocarbon chronology of the eastern group of the GAC is based at present on a series of 14 dates concerning “pure” GAC assemblages and on eight dates assigned to sources of mixed traits. The dated GAC assemblages are located in Volhynia (7 dates), Podolia (5 dates) and in the central part of the Forest zone (2 dates). The mixed assemblages come from the south-eastern coast of the Baltic (4 dates) and from the central part of the Forest zone (4 dates). Fifteen datings were made for bone samples, six were obtained from charcoals or wood and one from a sample of an organic substance from a vessel surface. Classified by their explanatory significance [Czebreszuk, Szmyt 2000], 15 samples fit into category IA, 1 into IB, 2 into IIA and 4 into IIB.

A word of comment is necessary concerning the selection of samples sent to labs. Namely, the majority of bone materials discovered in GAC features (particularly in graves) are missing. In the collections held by various institutions in Belarus, Russia and Ukraine only a small part of expected sources was found and

it was those samples that were sent to labs. Hence, in many a case, it was not possible to obtain full information that would allow us to closely connect the analysed bones to the accompanying context (e.g. to determine to which skeleton found in a multi-burial grave a given bone belongs). In this sense, the selection of samples was made at random.

A. Volhynia

Out of seven dates from Volhynia, six were obtained by dating human bones from graves, while one was secured from animal bones found in a settlement pit.

Tovpyzhyn (Plate 40). In a cist grave remains of one male, aged 40-50 years, were found [Maleyev, Pryshchepa 1996]. The feature was used only once. The pottery placed in the grave represents group/phase VA. Two dates were obtained (Ki-5011 and Ki-5010; sample category IA) whose joint calibration points to ca 2900 BC. The dating interval at 1 sigma level covers the period from 2990 to 2860 BC.

Ozdiv (Plate 29:1-6). In a grave without any stone structure, remains of three individuals were found (2 adults and a child) [Mazurik, Panyshko 1998]. The pottery belongs to group/phase VC. The bones of one of the adult individuals rendered a date (Ki-5919; sample category IA) fitting into the interval of 2840-2640 BC and after “adjusting” it to the calibration curve falling on ca 2700 BC. The grave may be deemed to have been filled only once. If so, the date corresponds to the “moment” of the interment of bodies.

Ivanye (Plate 11). In a cist grave, remains of two persons, an older and a younger man, were found [Sveshnikov 1973; 1983:25-26]. The grave-goods may be taken to belong to group VB. The bones of one of the individuals rendered two dates (Le-5021 and Ki-5141; sample category IA) whose joint calibration set the date of ca 2510 BC. The dating interval (1 sigma) covers the period from 2780 to 2510 BC. Due to the fact that the arrangement of the skeletons is not clear [Sveshnikov 1983:25], it is hard to tell if the feature was used once or twice. Hence, it is possible that the dating refers to one of the two episodes of filling the grave.

Suyemtsy II (Plate 38:4-11, 39). In a cist grave, remains of five individuals were found [Levitskiy 1929:196-199]. The grave-goods belong to group VD. From a human bone, a date (Ki-6930; sample category IA) was procured which fits into the interval of 2500-2350 BC. The bodies were arranged in the grave in a complex manner. Two men were placed in a sitting position with their backs leaning against the SW wall. In the centre of the chamber, two women in a flexed position were placed one on top of the other. Next to the upper skeleton, remains of a child were discovered [Levitskiy 1929:196-199; Sveshnikov 1983:31]. The description does not give enough details to determine whether the grave was used only once or many times.

Peresopnitsa (Plate 58, 59). In a settlement pit, very rich pottery material was found [Shelomentsev-Terskiy 1996] resembling VD grave assemblages. Animal

bones found inside the pit were dated giving the result (Ki-5075; sample category IB) of 2460-2320 BC. The feature was connected with one settlement phase (there are no other GAC pits on the site nor any other sources related to other cultures of a similar chronology), hence the dating should reflect the period when the pit was in use.

B. Podolia

A series of five dates from Podolia was procured from human bones found in graves.

Vorvulintsy. In a cist grave, remains of five persons were found. The skeletons, in a flexed position, were placed one upon another. Outside the chamber, next to the N wall of the cist, there was found another skeleton [Gereta, Kharitonov 1970; Sveshnikov 1983:46; Maleyev 1996:61]. Since the materials are still worked on, I could access only that part of them which is on display in the Natural History Museum in Ternopil. The pottery found there belongs to group PA. The burial ritual suggests that the bodies were placed in the grave on a number of occasions. This hypothesis cannot be verified because the assemblage has not been published in full yet. From a human bone found in the grave, the date (Ki-5008; sample category IA) of 2890-2680 BC was secured which — after adjusting it to the curve — rendered the value of ca 2880 BC. The date may indicate one of the possible episodes of the use of the grave.

Loshniv. In a cist grave, remains of four persons were found [Gereta 1970; Sveshnikov 1983:46; Maleyev 1996:61]. There is no information on the arrangement of the deceased. It does not follow from the description whether the grave was filled once or several times. A single vessel was discovered which is currently unavailable, thus making it impossible to assess the relative chronology of the assemblage. From the bones of one of the individuals the date (Ki-5006; sample category IA) of 2840-2640 BC was obtained or, after adjusting it to the curve, of ca 2700 BC. The date has to be taken to refer to one of the possible episodes of grave use.

Khartonivtsy II (Plate 13). In a cist grave, remains of five persons were found [Sveshnikov 1983:48-50]. The arrangement of bones in the grave suggests that the bodies were placed in it on several occasions. The grave goods represent group PB. From the bones of one of the individuals two dates (Ki-5586 and Ki-5587; sample category IA) were procured, which fall on ca 2590 BC. The 1 sigma interval of the dating is 2820-2550 BC. The grave must have been used several times and the datings refer to only one episode of its use.

Dovge (Plate 6). In a cist grave remains of three individuals were found [Maleyev 1971:53-56; Sveshnikov 1983:40-41; Maleyev 1996:57-60]. The observed arrangement of the skeletons may be a result of both a single burial or of two or three burials. The pottery belongs to group PB. From the bones of one of the individuals

the date (Ki-5009; sample category IA) of 2730-2500 BC was obtained or, after adjusting it to the curve, of ca 2500 BC. In these circumstances, the date has to be taken to refer to one of the possible episodes of grave use.

C. Interior of the Forest zone

From the central belt of the Forest zone, we have two dated GAC features and two mixed assemblages belonging to the Middle Dnieper culture but including GAC elements as well. In total, we have six ^{14}C dates, which should be divided into two spatial groups. One refers to the Upper Neman drainage (Krasnaselski 1), while the other to the drainage of the Upper and Middle Dnieper (Turinshchina, Prorva 1).

Krasnaselski 1 (Plate 22). A ritual feature (no. 3) was investigated, in which 13 animals had been placed [Charniauski 1996:89-92]. Four vessels found in the grave, through their very simple ornamentation, relate to the assemblages of group VC as well as to the materials of the Mazovia-Podlasie group of the GAC. The feature seems to be a single-phase one. The animal bones were dated (Gd-9249; sample category IA) giving the result of 2830-2450 BC or, after “adjusting” it to the curve, 2580 BC. The dating interval is quite large due to a considerable standard error (140 years).

Turinshchina (Plate 41). Animal bones from a pit (no. 3) located close to two GAC graves were dated [Shmidt 1992; Shmidt, Szmyt 1996]. There were no decorated pottery fragments in the feature, but those vessel fragments that were found in the graves are related to group VC. The result (Gd-10082; sample category IB) of 2670-2410 BC was obtained, which, after “adjusting” it to the curve, rendered 2480 BC.

Prorva 1/grave 1. In a Middle Dnieper culture grave, a vessel decorated in a manner similar to GAC ornaments was found [Kryvaltsevich 1996]. After dating fragments of the timber structure of the grave, two dates were obtained (Le-5020 and Ki-5140; samples category IIA), whose joint calibration marks out the interval of 2820-2550 BC. Within it, the most probable statistically is the date of ca 2590 BC⁹.

Prorva 1/grave 10. From another Middle Dnieper culture grave on the same cemetery, a similarly decorated vessel was retrieved [Kryvaltsevich, Kovalyukh 1999]. Two ^{14}C dates were obtained: one for unburned bones (Ki-6206; sample category IA) and the other for an organic substance that adhered to the surface of the vessel (Ki-6205; sample category IA). The dates are not consistent and it is difficult to find reasons why it is so. By “simulating” the adjustment of both dates to the calibration

⁹Different results were obtained by analyzing both dates using the calibration curve of 1993 [Weninger 1993]. A joint calibration of the dates was not possible, which was a proof of their inconsistency. This situation was interpreted as a sign of the fact that the samples must have contained fragments of two different trees, of which one was at least 30 years older than the other. If this was the case the origin of the older sample can be dated to ca 2620 BC, while that of the younger one to 2650 BC [Kadrow, Szmyt 1996:109-110].

curve, it is possible to obtain the minimum time difference between them, which is at least 30 years. Taking into consideration the similarity of ornamentation of pottery from graves 1 and 10 and the proximity of two dates from each pair (Ki-5140 and Ki-6206), it seems the most plausible to associate both graves with the same phase of cemetery use taking place ca 2590 BC (grave 1) — 2550 BC (grave 10). The variation of the younger date may be the result of a lab error.

D. Baltic Coast

As related to the GAC, four dates may be taken which were procured from wood (? , insufficient information) found in the settlements of the late Narva culture in Šventoji (nos. 4 and 6, sample category IIB). In the pottery from both settlements, GAC traits are distinguishable. The dates are rather imprecise — they have large standard errors (100-110 years). In addition, it should be remembered that wood as a material for ^{14}C dating gives best (precise) results only under special conditions. The most important among them is the right choice of material for lab analyses, i.e. using single rings from the youngest layer of the trunk or thin branches. Hence, lab analyses must be preceded by dendrological ones. When such information is missing, datings give in general a *terminus post quem* for a given cultural phenomenon. This is how I treat the dates given below.

Šventoji 4. From among a series of ^{14}C dates obtained for this feature, at least two may be associated with layer B, i.e. with the settlement stage of the late Narva culture with GAC elements (Vs-957 and Vs-967) [Rimantiene 1996a]. It is quite possible that a part (or all?) of slightly earlier datings, falling on ca 2800-2900 BC [Rimantiene 1996a] date the same stage¹⁰. The two dates can be jointly calibrated marking out the interval of 2860-2580 BC within which statistically the most probable date falls on ca 2720 BC.

Šventoji 6. For the layer associated with GAC settlement, two datings were obtained (Vs-499 and Vs-500) [Rimantiene 1996b]. Both should concern the same settlement phase, therefore they can be analysed jointly. They set the interval of 2840-2520 BC within which statistically the most probable date falls on ca 2630 BC.

¹⁰The criteria of cultural classification of datings from Šventoji 4 are not clear — ca 2800-2700 four dates fall [Rimantiene 1996a].

II.2.2. GLOBULAR AMPHORA CULTURE CHRONOLOGY IN EASTERN EUROPE

Before interpreting the ^{14}C dates presented above, it is necessary to discuss their relationships to the calibration curve. The curve is characterised, in the period of interest to us here, by alternating flat sections (*plateaux*) and peaks. As shown by D. Raetzel-Fabian [1996; see also Müller 2000], the position of dates with respect to the flat sections and peaks is of tremendous importance for the interpretation of datings. High precision dating is possible only in respect of dates falling on short periods of peaks in the curve. Whereas the interpretation of dates located within the *plateaux* requires laborious treatment and not always gives desired (precise enough) results. In particular, it is difficult to analyse a series of dates located within the same *plateau* [Czebreszuk, Szmyt 2000]. Generally speaking, if there are no clues offered by stratigraphy or dendrochronology, it is not possible to order dates in a series unequivocally. In such a case, adopting a specific ordering depends on initial assumptions, which may be based, for instance, on assemblage typology. Furthermore, it is of great importance for interpretation if dates lie within separate flat sections. Then, it is possible to ascertain without any doubt that a given phenomenon is chronologically diversified.

Looking at the dates for the eastern GAC at our disposal from the perspective outlined above, it seems that the following interpretation of them is the most plausible now.

A. Volhynia

A combined (assemblage) distribution of all the dates from Volhynia is shown in Fig. 18. With the probability of 1 sigma, they fit into the interval of 2850-2420 BC, however, it is more plausible to place the lower (older) division ca 3000-2950 BC and the younger one ca 2400/2350 BC (see below).

The datings fit into three successive *plateaux* of the calibration curve (Fig. 19). The two oldest dates (from Tovpyzhyn) fall on the peak section of the curve which was designated “K” in D. Raetzel-Fabian’s proposal. The next two dates (Ozdiv and an older date from Ivanye) fit into flat section L, a younger date from Ivanye into *plateau* M, and dates from Suyemtsy II and Peresopnitsa into *plateau* O. It can be seen that the analysis of the dates regarding their position on the curve confirms the absolute seniority of the dates from Tovpyzhyn. Because the two dates from Ivanye fall on different sections of the curve, the claim that this assemblage is much younger than that from Ozdiv seems to be more plausible. At the same time, however, different versions of the relationship between the dates from Suyemtsy II and Peresopnitsa are possible. It is conceivable that either the former or the latter assemblage is senior. Taking into account the results of the grave assemblage analysis, the Peresopnitsa assemblage is assumed to be slightly older with its most

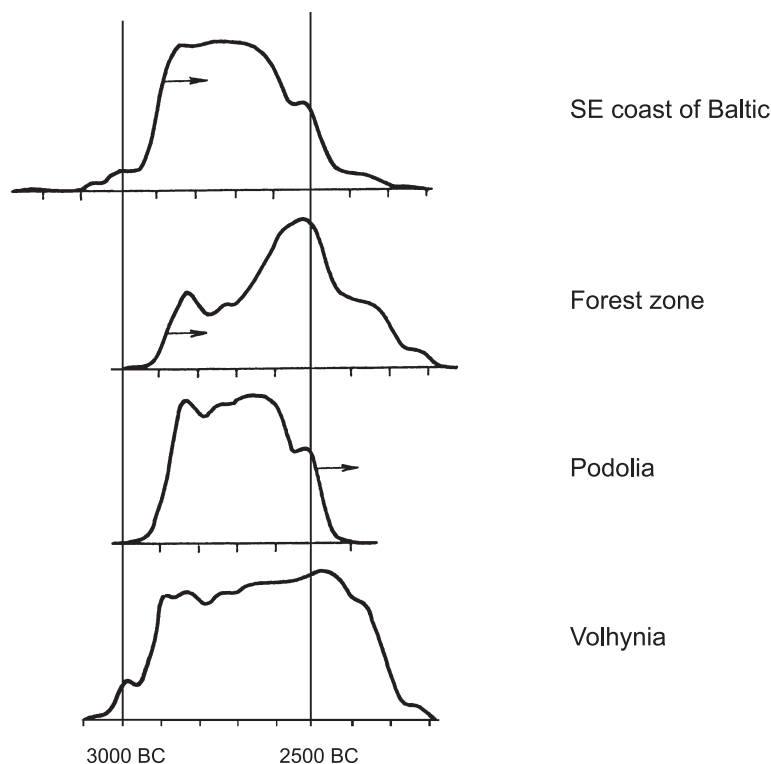


Fig. 18. Calibration of radiocarbon datings for different regions of the Globular Amphora culture in Eastern Europe (1 sigma = 68%).

plausible dating falling on ca 2450 BC. Whereas, the grave from Suyemtsy II can be tentatively dated to 2400 BC.

B. Podolia

A combined distribution of all the dates from Podolia is shown in Fig. 18. They lie within the interval of 2830-2560 BC. In this case, however, the dividing lines may be drawn at the maximum ca 2880-2500 BC.

The dates are situated within two successive *plateaux* of the calibration curve (Fig. 19), i.e. L (Vorvulintsy, Loshniv and an older date from Khartonivtsy II) and M (a younger dating from Khartonivtsy II and the date from Dovge). Doubts may be raised only by the position of the datings from Khartonivtsy, which are divided between two flat sections. It can be assumed that they are closer to the younger portion of the dating range. Let us also remember that 'Podolian' traits appear in Volhynia as late as ca 2450 BC (Peresopnitsa).

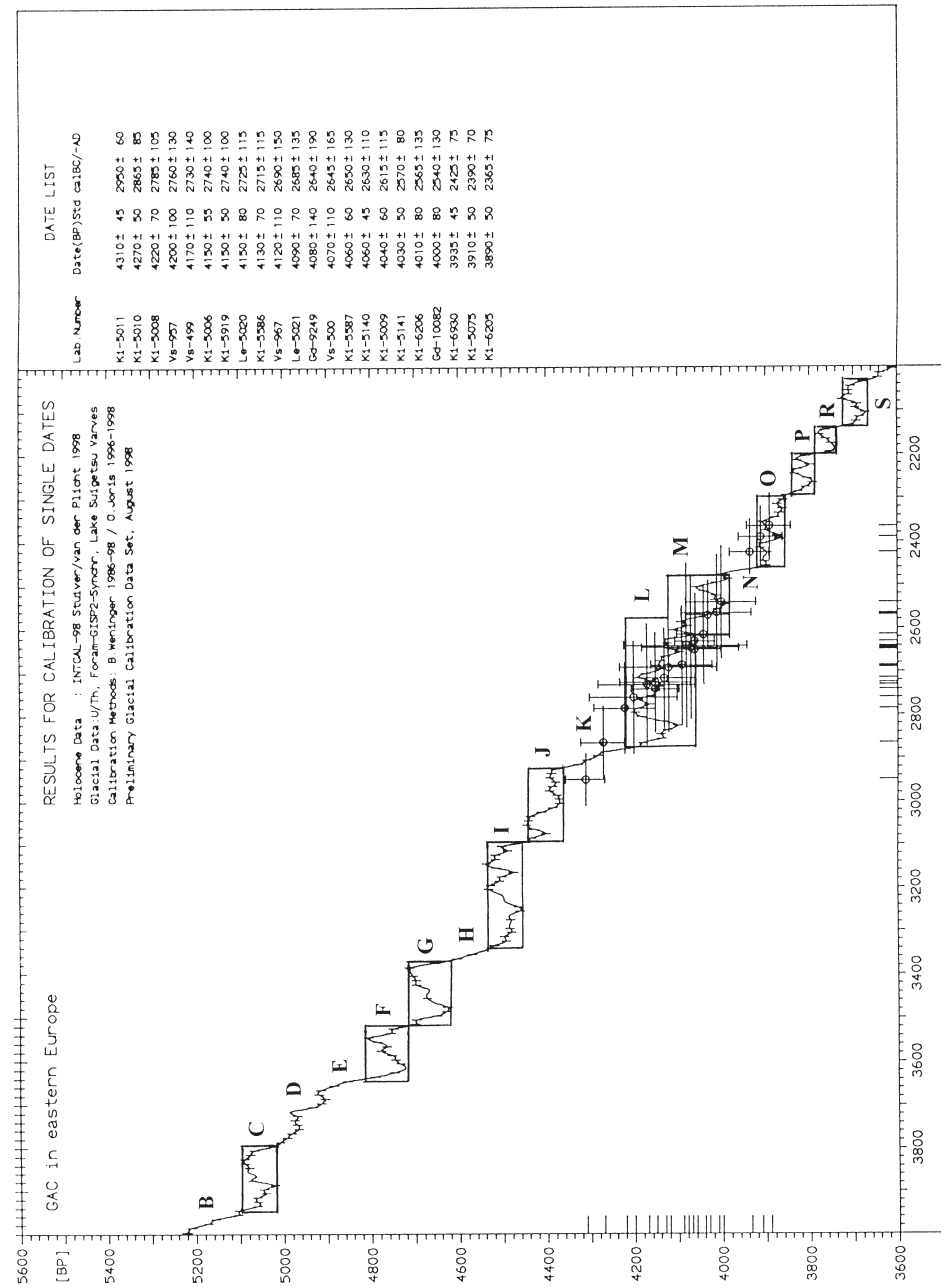


Fig 19. 14C datings for the Globular Amphora culture in Eastern Europe plotted on the calibration curve.

In sum, the datings of Volhynia and Podolia GAC assemblages lie within four sections of the curve: 1 peak one (K) and 3 flat ones (L, M, O). They mark out the minimum interval of 2840-2480 BC. However, it is more plausible to have it expanded to 3000/2950-2400/2350 BC. Generally speaking, the datings from Volhynia cover a longer period than those from Podolia.

C. Forest zone

The datings from the Forest zone fall on flat sections L and M (Fig. 19). Jointly, they mark out the interval of 2760-2400 BC (Fig. 18). It is significant that practically the same observations are true for the GAC settlement and functioning of GAC traditions in the Upper Dnieper drainage (Turinshchina) as in the northern portion of the middle drainage basin of the river (Prorva).

D. Baltic Coast

All the analysed datings fit into *plateaux* L and M (Fig. 19). Their joint calibration marks out the interval of 2850-2550 BC (Fig. 18).

II.3. DATING OF EAST EUROPEAN GLOBULAR AMPHORA CULTURE SETTLEMENT AGAINST THE ABSOLUTE CHRONOLOGY OF THE CENTRAL AND WESTERN GROUPS

In the last decade, our knowledge of the absolute chronology of the GAC has greatly expanded. This is particularly true in respect of the area between the Elbe and Bug rivers, i.e. two territorial groups — western and central — of the GAC. New, large series of ^{14}C dates, together with accompanying periodisation proposals of regional groups, now allow us to build a comprehensive, comparative chronology of the culture.

II.3.1. ABSOLUTE CHRONOLOGY OF THE CENTRAL GLOBULAR AMPHORA CULTURE GROUP

At present, we have available a series of 98 ^{14}C dates concerning graves and other ritual features as well as settlement ones from the area of the central group of the GAC [Szmyt 2000]¹¹. I shall present here a current version of the radiocarbon

¹¹The datings from Dudka, associated with the GAC by the author of the investigations, have been omitted [Gumiński 1997, 181 and 184]. The reason was insufficient information on the context of samples and the

chronology constructed for individual regions within the central group. A detailed analysis of the dates together with their interpretation is included in a separate work [Szmyt 2000]. Unfortunately, a regional version of GAC periodisation has been constructed so far only for Kujawy [Szmyt 1996a]. In the case of other regions, scholars primarily use T. Wiślański's general periodisation [Wiślański 1966; 1970] or refer to the Kujawy.

A. Kujawy

It is there that the most numerous concentration of GAC sites in the Vistula drainage basin is located, specifically over 1,400 sites. The GAC periodisation in Kujawy [Szmyt 1996a] is based on distinguishing six groups of pottery assemblages (for the most part from settlements) and designating them phases (or sub-phases) I, IIa, IIb, IIIa, IIIb and IIIc (see section II.3.3. below). We have now at least 61 ¹⁴C dates for the GAC in Kujawy (excluding dates of unclear contexts; I also leave out one clearly erroneous date from feature C2 in Kuczkowo 1) [for a complete critical analysis see Szmyt 2000]. Of four cases where charcoals were used, one sample belonged to category IIa (Krusza Zamkowa 13), two to category IIb (Dęby 29/32, Opatowice 3/35) and one to category IIC (Opatowice 34/34). In all the remaining cases, samples were taken from bones (either animal or human) collected from graves, ritual features with animal burials (category IA — 34 dates) and pits located in settlements (categories IB — 18 dates and IC — 5 dates). From the point of view of the archaeological context credibility, the highest value should be attached to dates concerning graves and “animal burials” (sample category IA). At the same time, however, the specific character of GAC graves (frequent multiple inhumations, disturbed position of corpses, possible use of certain features in several phases) decreases the significance of dates originating with them.

Only one dating (and an uncertain one) [Szmyt 2000] concerns phase I, two concern phase IIa, 17 phase IIb, 29 phase IIIa, 10 phases IIb and IIIa (precise determination is impossible for the time being) and two concern phase IIIb. There are no dates for phase IIIc.

The current set of dates marks out the period of 3965 ± 175 – 2285 ± 105 BC as the shortest possible period of GAC existence. The distribution of calendar age values is significantly more uniform now than it was in the previous versions [Czebreszuk, Szmyt 1998]. Lacking any clear hiatuses, the radiocarbon information seems to show a relative continuity of settlement in the whole region. GAC longevity is clearly observable — the dates are grouped within six successive *plateaux* of the curve.

The 1 sigma interval lies between 3130 and 2410 BC. Unlike the series of dates concerning the western group of GAC (see Ch. I.2.3.1.), the analysed bar chart is

inconsistency of the radiocarbon chronology with stratigraphy [e.g. Gumiński 1995:Table 2; 1997:181].

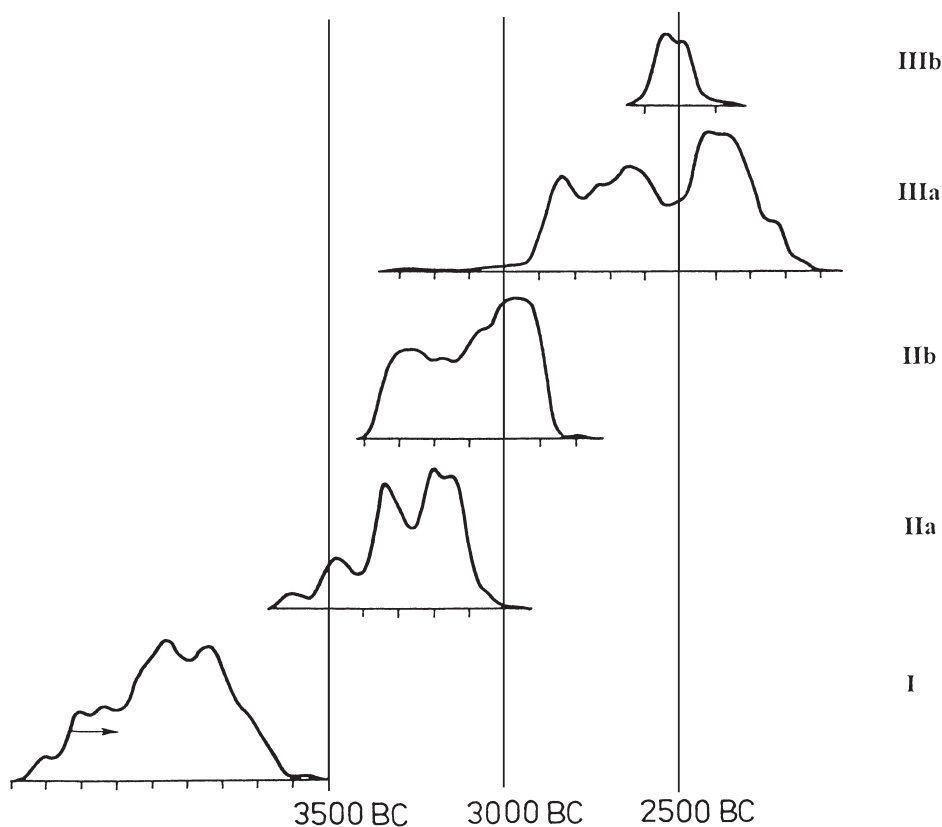


Fig 20. Calibration of radiocarbon datings for Globular Amphora culture phases in Kujawy (1 sigma = 68%).

slightly false. This is a result of the vast overrepresentation of dates relating to phases IIb and IIIa, i.e. the period of 3100-2400 BC. Against this background, older dates, earlier than 3100 BC, “disappeared”. A more credible picture is shown by a comparison of calibration diagrams of dates for individual phases (Fig. 20).

The oldest date, hypothetically taken to refer to phase I [Koško 1989:19-27], comes from Krusza Zamkowa 13 (Gd-309). Here, I wish to reiterate my doubts concerning its credibility which I have expressed earlier [Szmyt 1996a:64 and 73; 2000]. Its greatest shortcoming is the material from which it was procured, namely, charcoals. Consequently, the result of the analysis may be influenced by the “old wood effect”. Additional difficulty is posed by the low accuracy of the date (standard deviation is 140 years) and the ambiguity of its context. It comes from an “animal grave” for which another dating was made (GrN-14022) considerably more credible. The feature was located in a much older GAC settlement to which the older date

could refer [Koško 1989:19-23]. To a certain extent it is corroborated by a ^{14}C (accelerator) dating of the organic substance found on the surface of a vessel that may have belonged to the GAC from Żuławka Mała (see below). Until, however, the relevant materials are published in full I must treat both dates with reserve.

In respect of phase IIa we have two dates — from Dęby (Gd-2148) [Czebreszuk, Szmyt 1992:108-114] and Kołuda Wielka 13 (GrN-4525) [Andrałojć 1990:398-403]. The first, procured from a charcoal sample, could raise doubts, but it is corroborated by the comparative analysis of accompanying pottery. The other dating does not raise any doubts, either. In sum, both dates mark out the interval of 3410-3140 BC.

Phase IIb enjoys a rich radiocarbon record — 17 “certain” dates procured from bone samples. They all lie within the interval of 3260-2940 BC. Still more numerous is a series of dates referring to phase IIIa (29 dates), for the most part obtained from bones. The dates mark out the interval of 2790-2340 BC. The temporal gap that can be observed between the datings referring to phases IIb and IIIa is only apparent being caused by the difficulties in precise subsuming “transitional” assemblages (10 in total) under one of the categories.

Only two datings relate to phase IIIb most probably marking out its beginning and fitting into the interval of 2560-2460 BC.

Fig. 20 shows probable extension or shortening of a given phase.

B. Chełmno Land

Over 600 GAC sites have been explored here [Kirkowski, Sosnowska 1987; Kukawka, Sosnowska 1994]. It follows from the analyses hitherto carried out that GAC settlement emerges here after a very intensive Funnel Beaker culture settlement, not earlier than ca 3250-3000 BC, i.e. simultaneously with the beginning of phase IIb in Kujawy. The source of migrations was in the south, most probably in Kujawy [Kukawka, Sosnowska 1994:201]. GAC chronology is based on six dates now, all of which were obtained from charcoals. Five dates originated in pits (category IIB samples), while the sixth came from a pit of unclear nature (with stone pavement in the floor; this might have been a grave or another ritual feature — category IIA?) [Sosnowska 1990a; 1990b; 1993; Wawrzykowska 1990].

The calibration of the dates is shown in Fig. 21. With the probability of 1 sigma, the distribution lies within the interval of 3070-2500 BC. An “ageing” of the dates cannot be ruled out due to the nature of the dated material. However, there are no reasons to question the dates.

C. Middle Noteć drainage

This area supplied two series of dates. The first includes dates referring to the bone samples (category IA) from a grave in Chodzież [Prinke, Wiślański 1977] and a ritual feature in Straduń [Szmyt et al. 1997]. In both cases, ceramic sources reveal clear traits of the western GAC group. The dates lie between 2870 and 2670

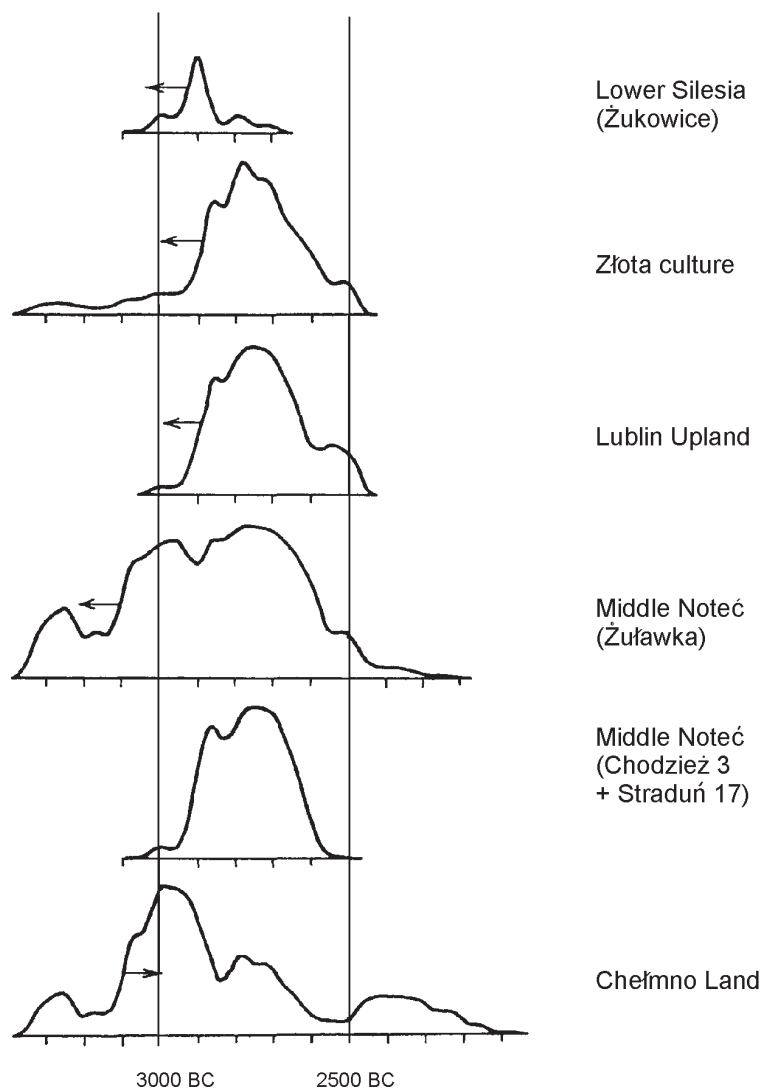


Fig 21. Calibration of radiocarbon datings for different regions within the central group of the Globular Amphora culture (excluding Kujawy; 1 sigma = 68%).

BC. In both assemblages, the traits of the western group are clearly marked [Szmyt 2000]. It must be noted that the date from a multi-burial and badly damaged grave in Chodzież may refer only to one of the episodes of its use.

The other series (10 dates) concerns the area around the dyke across the river (a dyke) in Żuławka Mała, immediately NW of Kujawy [Rola 1993; Krapiec et al.

1996]. The dating of wood samples (category IIC) rendered the interval of 3020-2590 BC with 1 sigma probability. It must be added that stratigraphic observations suggest yet another, older phase of GAC settlement dated beyond 3400 BC [Krapiec et al. 1996:36]. This hypothesis awaits verification by ^{14}C datings [Langer, Rola 1997, 35]. It is worth mentioning that in respect of Żuławka we have several sections of dendrochronological scales of which two (or three) can be associated with the GAC [Krapiec et al. 1996].

D. Middle Oder drainage

In respect of relatively rich GAC settlement in Lower Silesia, only two datings are available concerning two features in the settlement in Żukowice (sample category IB). The dated features are related to the second (younger) phase of the settlement. The material found in them may be regarded as typical of the majority of Silesian settlements. A joint calibration of both dates points to 2890 BC. The 1 sigma interval of the dating is 2950-2800 BC.

E. NE part of the Małopolska Uplands

In respect of the area in question, twelve ^{14}C dates are available now.

A “pure” GAC assemblage is referred to by only one date coming from grave VIII in Sandomierz 78 [Ścibior, Ścibior 1990:181-185]. The date is the oldest GAC date in the area but, being procured from a cluster of charcoals (sample category IIA), it could have been aged.

A series of eight dates comes from graves associated with the so-called Złota culture [Krzak 1976]. “Złota-type assemblages” seems to be a better term. It was a phenomenon which occurred at the Sandomierz Uplands and whose origins continue to be debated [Krzak 1976:194-216; Ścibior 1991:61]. All we practically know is only graves with characteristic goods (especially peculiar ceramics) displaying syncretic traits (elements of GAC, Funnel Beaker culture, Baden culture, Corded Ware culture and Bell Beakers). The graves contain many burials and the position of skeletons is frequently disturbed. This causes considerable difficulties with the dating of features. Out of eight published dates, the oldest was obtained from charcoals, while the others were secured from human bones. The “charcoal” date comes from a grave on “Salve Regina” Hill in Sandomierz (category IIA) [Ścibior 1993]. It has a large standard error and, in addition, it may be made older, which makes it less credible. Furthermore, the remaining samples come from graves where remains of several persons have been found (category IA) [Krzak 1989]. We are not certain if these were single-phase features or whether bodies were interred there at different times. In any case, it may be believed that each time one of several possible episodes of grave use was dated. The calibration of all the dates is shown in Fig. 21. The interval of 1 sigma probability is 2890-2640 BC.

The third series comes from the mine of banded flint in Krzemionki Opatowskie [Borkowski, Zalewski 1992; Pazdur et al. 1992] and is the most controversial

one. The dates were obtained from charcoals (category IIC). There are, however, considerable difficulties with the interpretation of these dates, which may result from their “ageing” (the oldwood effect). This can be illustrated by the datings from a GAC flint workshop at the mine. Samples of charcoals were taken from two hearths located within the workshop. Remains of a post-structure building were discovered underneath a dump of earth excavated from shaft 7/610. Hence, it follows from stratigraphic observations that the workshop is older than shaft 7/610. Surprisingly enough, the dates from the workshop (3280-2930 BC) turned out to be younger than the series of dates from shaft 7/610 (3300-2990 BC). All the dates, however, are located within the same *plateau* of the calibration curve, have considerable standard errors (60-110 years) and their ranges overlap to a large extent. All this means that different versions of their relationships are possible, including the seniority of the workshop dates. Consequently, one has to be very cautious in using the dates. Generally speaking, however, they can be considered as aged.

F. The Lublin Uplands

From the Lublin Uplands, six dates, referring to GAC features, come at present (five from graves and one from a settlement pit). Two older dates were obtained from charcoals (category IIA), while four younger ones from bones (category IA — 3 samples, IB — 1 sample).

The remains of the wooden structure of grave 7 in Klementowice IV yielded two dates (KN-1255 and GrN-5046) [Kowalczyk 1968; Breunig 1987:10]. The dates cannot be fitted together into one slot of the calibration curve, therefore, they are either equally credible or one of them is more credible [Kadrow, Szmyt 1996:109]. If the former case is true, the dates refer to two different wood fragments dating back to different periods at least ten years apart. In favour of the latter hypothesis speaks a remark of J. Kowalczyk who said that J.A. Bakker, while preparing a sample to be sent to Groningen, chose fragments with bark [Kowalczyk 1968:368, footnote 2]. The absence of such information in the case of the sample sent to Cologne justifies a conclusion that the material was not equally carefully selected. Under these circumstances, it could be assumed that the younger date is more reliable, while the older is made older (“old wood” effect).

The three “bone” dates come from graves in Świerszczów 27, Krasnystaw 8 and Łopiennik Dolny Kolonia 1 that have been used only once [Gołub 1996a; 1996b; Kadrow, Szmyt 1996; Ścibior, Koman 1996] and are fully reliable. The date referring to the household pit from Podlódów 2 [Bagińska, Taras 1997] does not arouse any controversy, either.

Assuming that all the datings are reliable, the 1 sigma interval is 2850-2610 BC. If only the bone samples are included, the interval covers the period from 2830 to 2580 BC. In principle, the dividing line of ca 2850 is consistent with the reservations expressed earlier.

G. Upper Narew drainage (Podlasie)

We have a date procured from a human bone of an adult buried in a single-burial megalithic grave in Brańsk-chojew (Ki-6909) [Antoniewicz 1938:355-365]. The dating sets the interval of 3040-2910 BC and after “matching” it to the calibration curve — ca 2920 BC.

H. Conclusion

Fig. 21 shows the results of analyses of radiocarbon chronologies from different regions of the central group. The figure also shows the probable extension or shortening of the functioning of GAC settlement in individual areas of the Vistula and Oder drainages.

In sum, the period of the functioning of the GAC in the discussed areas lies between 3700 — 2000/1950 BC, with radiocarbon dates documenting the period of 3325 ± 165 BC (Gd-2148) – 2285 ± 105 BC (Gd-8036).

II.3.2. ABSOLUTE CHRONOLOGY OF THE WESTERN GLOBULAR AMPHORA CULTURE GROUP

The series of ^{14}C dates relating to the western group of the GAC numbers 21 now. Seventeen dates concern the Mittelelbe-Saale Gebiet, three Mecklenburg and one comes from Bohemia.

A. Mittelelbe-Saale Gebiet

This is a region of the most intensive GAC settlement within the western group [Beier 1988; Müller 1997] with the most detailed GAC periodisation as well (see Ch. II.3.3. below). Relying on the analysis of pottery ornamentation, four groups of grave assemblages (designated as A, B, C, D) were distinguished as well as three groups of settlement assemblages (SA, SB, SC) [Müller 1997; 2000].

Out of 17 dates [Müller 2000], six refer to “pure” GAC assemblages, while 11 to mixed ones, most often consisting of Bernburg culture and GAC items. A joint calibration of the datings is shown in Fig. 22. They mark out the period of 3070-2670 BC with the probability of 68%. If we limit the analysis to short-lived samples only (bone, in this case), then the interval will cover the years from 2830 to 2610 BC. However, full credit should be given to the findings of J. Müller who set the maximum time span of the central German GAC settlement at 3250-2600 BC [Müller 1997]. In the light of his analyses [Müller 2000], the lower cut-off point is determined by a series of stratigraphic sequences and the datings for mixed assemblages (Bernburg + GAC) from Pevestorf. Also, another date from Zachow in Brandenburg (Bln-4005: 3240-2960 BC) is of some significance because

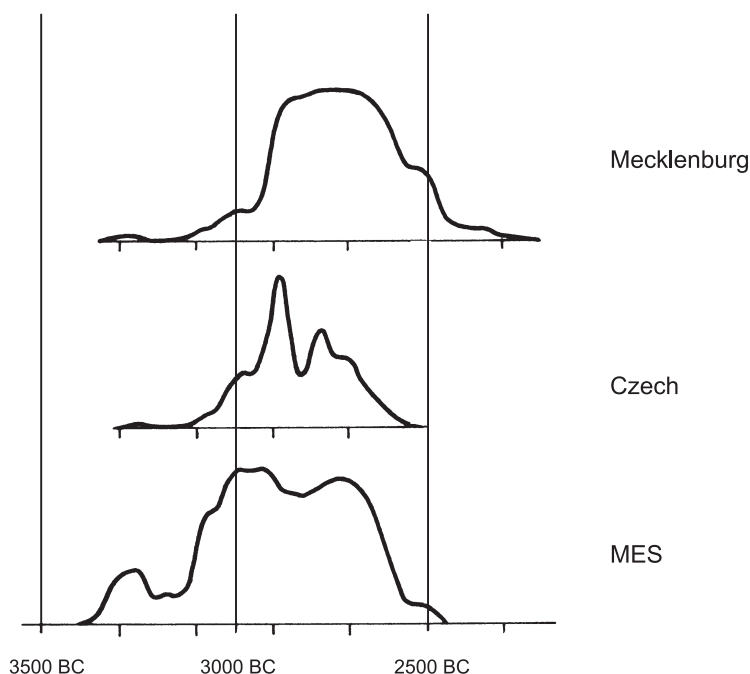


Fig 22. Calibration of radiocarbon datings for different regions within the western group of the Globular Amphora culture (1 sigma = 68%).

it determines *terminus ante quem* by referring to a feature from an earlier phase of the Walternienburg culture superposed over the GAC assemblage [Müller 2000]. Thus, the beginnings of the GAC should at least precede the upper limit of the interval set by the date, i.e. 2960 BC. The oldest of the available dates for “pure” GAC assemblages comes from Rositz [Müller 2000] and was procured from charcoals, but their credibility is confirmed by datings for mixed assemblages and the date from Zachow. In turn, the upper limit is corroborated by datings for late GAC grave assemblages (group D) from Oschersleben and Augsdorf. Implausible (too late ? — ca 2200 BC) seem to be two dates concerning a feature from Kleinzerbst-Schwabenheide [Müller 1997], hence they were omitted from the analysis.

B. Mecklenburg

From the Mecklenburg site concentration (mainly of GAC graves) three dates come [Nagel 1985]. A joint calibration of the datings points to 2730-2130 BC. All were procured from charcoal samples. However, only the date from Serrahn (Bln-342) is relatively credible (2870-2570 BC). The other two — from Katelbogen and Poggendorfer Forst (Bln-990 and Bln-554) — are controversial. Both come from graves used over long periods by different cultural groups [cf. Schuldt 1972].

The dates are close to one another and may be related to the later stages, than the “Globular Amphora” ones, of the use of the graves.

C. The Bohemia subgroup and the transitional zone

In respect of the so-called Czech subgroup within the western group, only one ^{14}C date is available as of today. It comes from the site at Stehelčeves/Homolka (GrN-4065) [Breunig 1987:170] and relates to syncretic sources included in the Řivnáč culture. Lying within the period of 2960-2720 BC, it corresponds to the older section of the dating of group C in Mittelelbe-Saale Gebiet or, possibly, to the decline of group B, as well.

From the transitional zone between the western and central groups, there come four datings concerning assemblages combining traits of both groups — two from the Middle Oder (Žukowice) and two from the Middle Noteć (Chodzież 3 and Straduń). They are discussed in greater detail in section II.3.1.

D. Conclusion

Fig. 22 shows a joint distribution of ^{14}C dates for the western group of the GAC. With the probability of 68% (1 sigma), the distribution fits into the interval of 3070-2670 BC (doubtful datings from Mecklenburg were left out). It is reasonable, however, to expect an extension of the period in which the western group functioned.

II.3.3. COMPARATIVE CHRONOLOGY OF GLOBULAR AMPHORA CULTURE GROUPS

The above review of data concerning ^{14}C dates allows us to discuss now more general questions, in particular the chronological differences between territorial and regional GAC groups. This, in turn, will enable us to construct, for comparative purposes, relative chronologies of the GAC in the main settlement centres within the three territorial groups.

A. Chronological differences between GAC groups

The currently available sources allow us to outline chronological relationships between the three territorial groups of the GAC relying on a uniform type of source data, i.e. ^{14}C dates. Fig. 23 gives the number of discussed dates falling on successive periods of time — flat and steep sections of the calibration curve. What can be clearly seen there is a domination of dates concerning the central group (mainly Kujawy), which culminate between 3100-2300 BC. The series of dates for western and eastern groups are more balanced. Nevertheless, in the case of all groups we lack dates for certain GAC stages (see comments below).

Fig. 24 gives a synthesis of deliberation results arrived at in the previous part. What it shows is the consolidated dating distributions that prove the chronology of

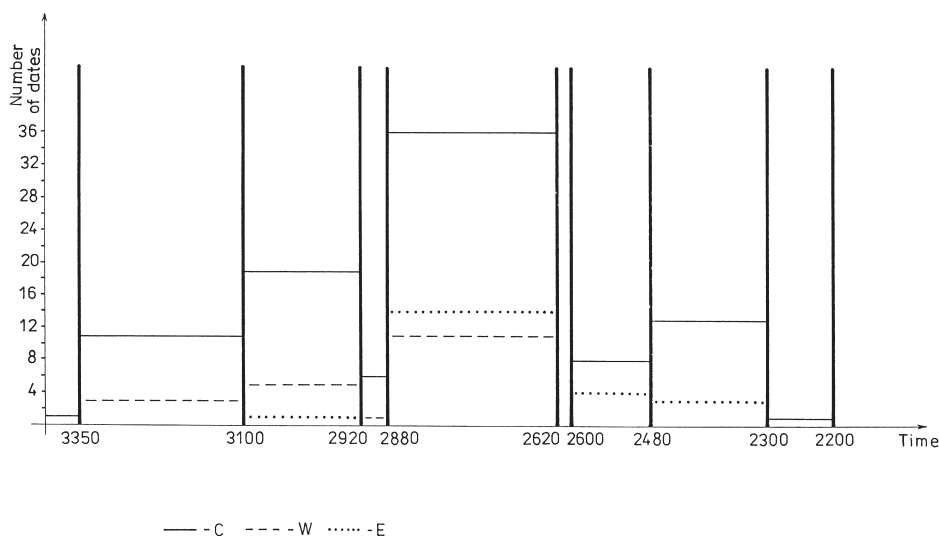


Fig 23. Number of radiocarbon datings falling within particular sections of the calibration curve.
Key: C - the central group; W - the western group; E - the eastern group.

the central group to be the longest. Within it, the chronology in Kujawy, confirmed by the radiocarbon method, turns out to be the longest. Although the context of the oldest date (from Krusza Zamkowa 3) is controversial (see above), it has to be stressed that a similar chronology (beginning of the 4th millennium BC) is indicated by typological analyses of the oldest GAC assemblages [Czerniak 1980:87; Szmyt 1996a:74 and 239-241]. Fully reliable datings currently begin from ca 3400 BC (GAC phase IIa). Directly related to the migration from Kujawy, the settlement in the Chełmno Land began ca 3100 BC or rather later (ca 3000 BC ?). Around 3000 BC, GAC settlement appeared also in the eastern portion of the Małopolska Uplands (Sandomierz Uplands) and somewhat later on the Lublin Uplands. Around the same time Podlasie was settled. Around 2900 BC, GAC settlement is observed in the Middle Oder and Noteć drainage basins. In both regions, though, it may have begun earlier.

The oldest traces of the GAC in Eastern Europe can be found in Volhynia ca 2950 BC. Slightly later, approx. 2900-2850 BC, GAC settlers reached Podolia. To the SE Baltic coast, GAC patterns came around 2850 BC. About 2650 BC at the latest, traces of GAC presence can be found on the Lower Neman River, ca 2600 BC on the Middle Dnieper and ca 2500 BC in the Upper Dnieper drainage.

The datings for the oldest assemblages of the western group cluster around 3200 BC, but it seems that further research may move them earlier.

There are differences in the lifetime of GAC structures. They last the longest

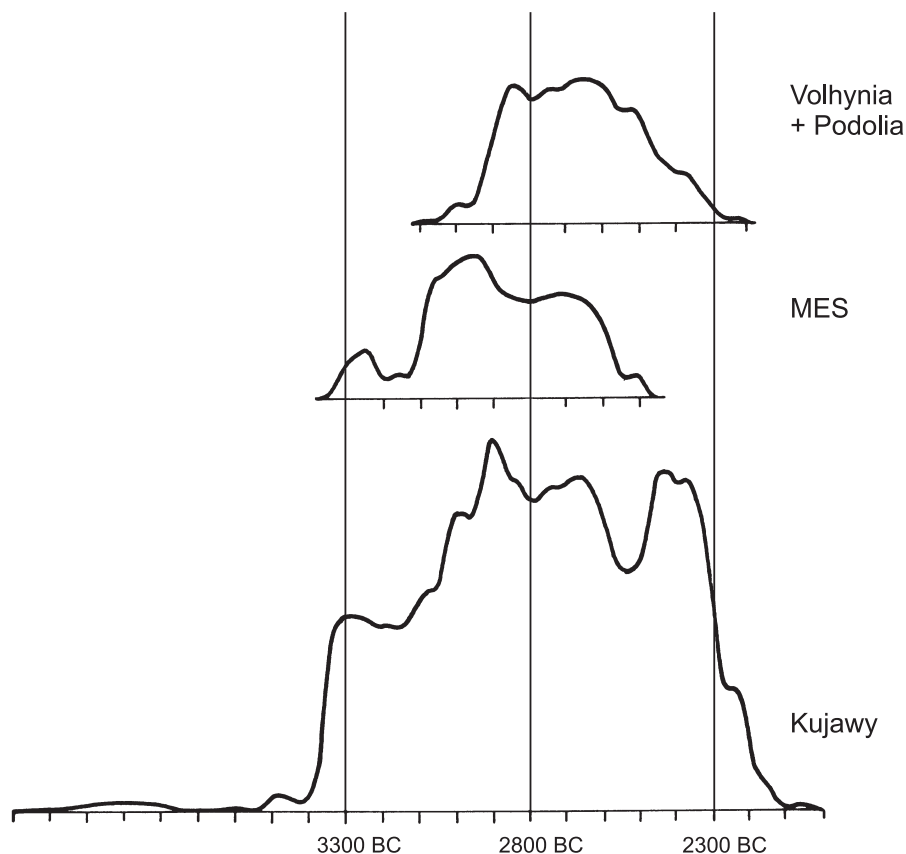


Fig 24. Absolute chronology of the Globular Amphora culture in selected regions.

within the central group, in Kujawy to be specific, where the latest ^{14}C dates point to ca 2300 BC. Typological arguments suggest that this period be extended as far as 1950/1850 BC [Szmyt 1996a:250-254]. The youngest, “certain” datings for the western group concentrate around 2600 BC, but also in this case one may expect the radiocarbon chronology to be moved upwards with the increase in the number of datings. Within the eastern group, the youngest dates currently reach as far as 2400/2350 BC.

B. Relative chronology and periodisation of the GAC in the main settlement centres within the territorial groups

As it has been mentioned earlier, only for a few regional GAC groups detailed periodisation charts have been drawn. This applies to the following regions: Mittelbe-Saale Gebiet within the western group, Kujawy within the central group

and the regions of Volhynia and Podolia discussed here. Since the description of the transformations affecting the latter two groups is the main purpose of this book, I shall focus now on a summary presentation of the underlying assumptions and results of the analysis of the central German and Kujawy GAC agglomerations.

The GAC periodisation in Mittelbe-Saale Gebiet is the latest proposal of J. Müller [1997]. The quoted author suggested to view the transformations of the GAC in the region as two independent sequences of which one is based on grave assemblages and the other on settlement ones. Both charts rely on differences in pottery traits, or rather in pottery ornamentation. The significance of initial observations was verified with statistical tests (correspondence analysis).

The applied procedures led to the distinguishing of four groups of grave assemblages (designated as A, B, C and D) and three groups of settlement assemblages (SA, SB, and SC). The suggested ordering is consistent with ^{14}C datings (Fig. 25). The most important temporal dividing line occurs around 2800 BC and is related to the spreading of Corded Ware culture patterns. Of great importance are J. Müller's observations concerning clear incoherences in the emergence and continuance of particular ornamentation motifs in both types of assemblages [Müller 1996:221].

The GAC periodisation in Kujawy is a result of investigations begun in the 1970s [Bednarczyk et al. 1975]. Its current version is an effect of gradual processing of a large corpus of source material [Czerniak, Czerniak 1985; Szmyt 1996a; 1999], which is undoubtedly the richest one in the whole GAC oecumene. The periodisation of GAC settlement in Kujawy for the most part relies on settlement sources, while grave assemblages serve only as supplementary ones still requiring more detailed research [see pleas included in Szmyt 1996a:8]. Of considerable importance is the series of ^{14}C dates, presented in Ch. II.3.1, which is the most numerous of all GAC regional series. However, it was obtained primarily for assemblages from settlements, as well [Czebreszuk, Szmyt 1998; 2000; Szmyt 2000].

The periodisation consists in distinguishing six phases/sub-phases designated as I, IIa, IIb, IIIa, IIIb and IIIc (Fig. 25). The chief distinguishing elements are such pottery traits as ornamentation, technology and vessel forms [for a detailed analysis see Szmyt 1996a:9-64]. Correlated with the named units, the changeability of other source categories shows that temporal dividing lines separating phases or sub-phases are of different rank. Two most significant ones justify joining some phases into the following stages of cultural development (essential periodisation): early (phases I, IIa), classic (phases IIb, IIIa) and late (phases IIIb and IIIc) [Szmyt 1996a:78].

The Kujawy GAC is characterised by the co-existence of different cultural states, which is confirmed by ^{14}C dates that are close to each other but, nevertheless, relating to different phases. This justifies such a construction of the chart in which relatively long periods of the decline of one phase co-exist with the begin-

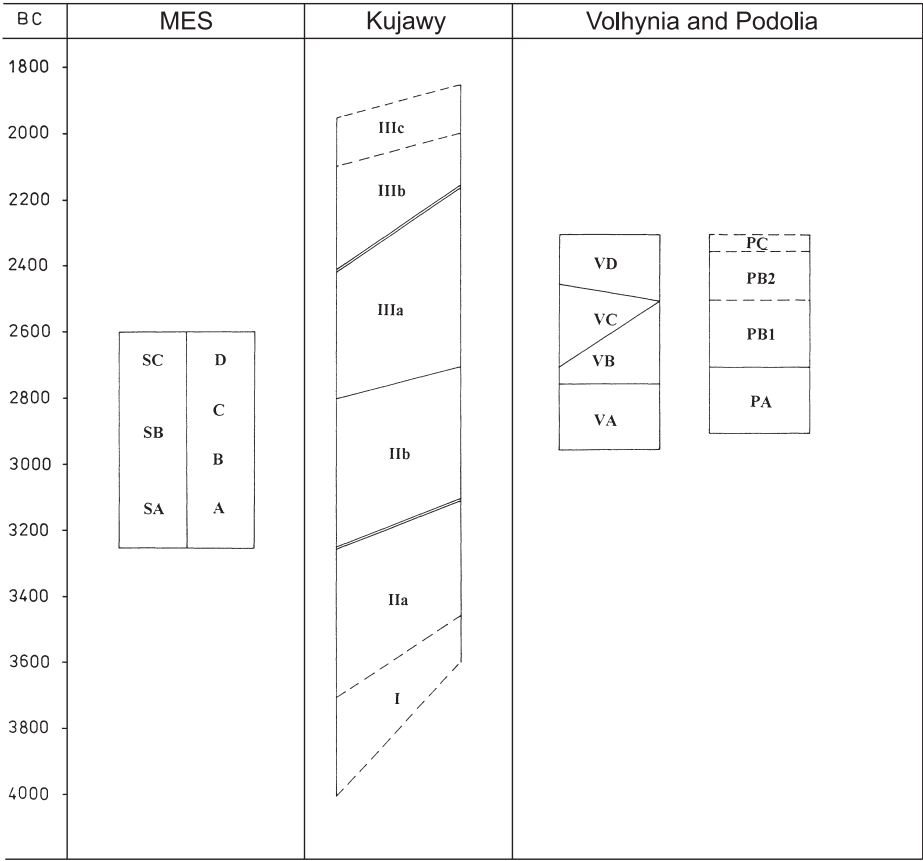


Fig 25. Periodisation of the Globular Amphora culture in selected regions.
Sources: Müller 1997; Szmyt 1999b.

nings of another. The matters are complicated even further by stylistic variations within pottery assemblages of the same phase, which has been recently observed. This specifically concerns phases IIb and IIIa in which one may identify quantitatively dominant corded patterns (containing ornaments made with the use of a cord, mainly a two-strand, less frequently a three-strand one) and considerably less frequent “cordless” patterns (lacking any ornaments made with a cord). The status of “cordless” patterns is controversial and calls for more studies because they were identified in materials discovered during rescue excavations carried out in a limited area [Szmyt 1999].

The current version of the conventional periodisation chart of the Kujawy GAC group is shown in Fig. 25. As it has been already mentioned, there are still no

fully reliable datings for phases I and IIIc, hence their chronological limits are only hypothetical.

Juxtaposing GAC periodisation charts concerning Mittelbe-Saale Gebiet, Kujawy, Volhynia and Podolia, we obtain a picture shown in Fig. 25. What is clearly visible in it is the longest development line in Kujawy. The sequences from Mittelbe-Saale Gebiet, Volhynia and Podolia occur parallelly to the main (classical) development stage of the Kujawy GAC. The beginnings of the GAC in Volhynia take place during phase IIb in Kujawy and about 200 years later than the oldest GAC settlement in Mittelbe-Saale Gebiet when type B/SB structures continued there. In turn, the oldest GAC settlement in Podolia arose from ca 2900-2850 BC, i.e. at the decline of phase IIb in Kujawy and at the same time as group C in Mittelbe-Saale Gebiet. The wane of both eastern agglomerations occurred approx. 300 years after the GAC had disappeared from Mittelbe-Saale Gebiet, i.e. in the period when structures of the classical stage (end of phase IIIa) continued and the first assemblages dated to the late stage (beginning of phase IIIb) emerged in Kujawy.

III. NEIGHBOURS. CULTURAL ENVIRONMENT OF EASTERN EUROPE AS THE CONTEXT OF GLOBULAR AMPHORA CULTURE POPULATIONS

Having placed the eastern GAC in the context of other groups of the culture, it is high time to discuss the cultural environment in which it subsisted, i.e. other cultural units distinguished in Eastern Europe from the end of the 4th to the last quarter of the 3rd millennium BC. In this case, too, comparative chronology for the most part will rely on radiocarbon chronometry. This is warranted even more strongly since the classical comparative analysis of sources from that part of Europe, lacking radiocarbon data, has rendered more than often highly controversial results. In the last twenty years, however, the knowledge of absolute chronology of various cultural units has greatly expanded. A number of new data have been obtained that made it possible to tentatively define the chronological brackets of the majority (but by no means all!) of cultures contemporaneous with the GAC.

In the review presented below I have included only those units that at least partially overlapped with the GAC in time and could potentially come into contact with GAC populations. Spatial contacts and/or evidence of such contacts are of crucial significance here. Among those units one may distinguish endogenous and exogenous systems. The former refer to cultures of eastern European origin, including those that originated there only secondarily (the case of the Tripolye culture). Among them, most of the units discussed below can be counted. Whereas exogenous systems refer to the cultures of central European origin, alien to the cultural environment of Eastern Europe. In the period of interest to me here, they include the Funnel Beaker culture and Corded Ware culture. The brief description of the cultures given below accentuates the temporal and spatial aspects of their existence while referring other questions to the appropriate literature.

III.1. ENDOGENOUS STRUCTURES

The highly diversified nature of the cultural units (Figs.26-27) discussed below makes it necessary to group them into three blocks: Forest zone cultures (including the Baltic coast), Forest-Steppe and Steppe ones.

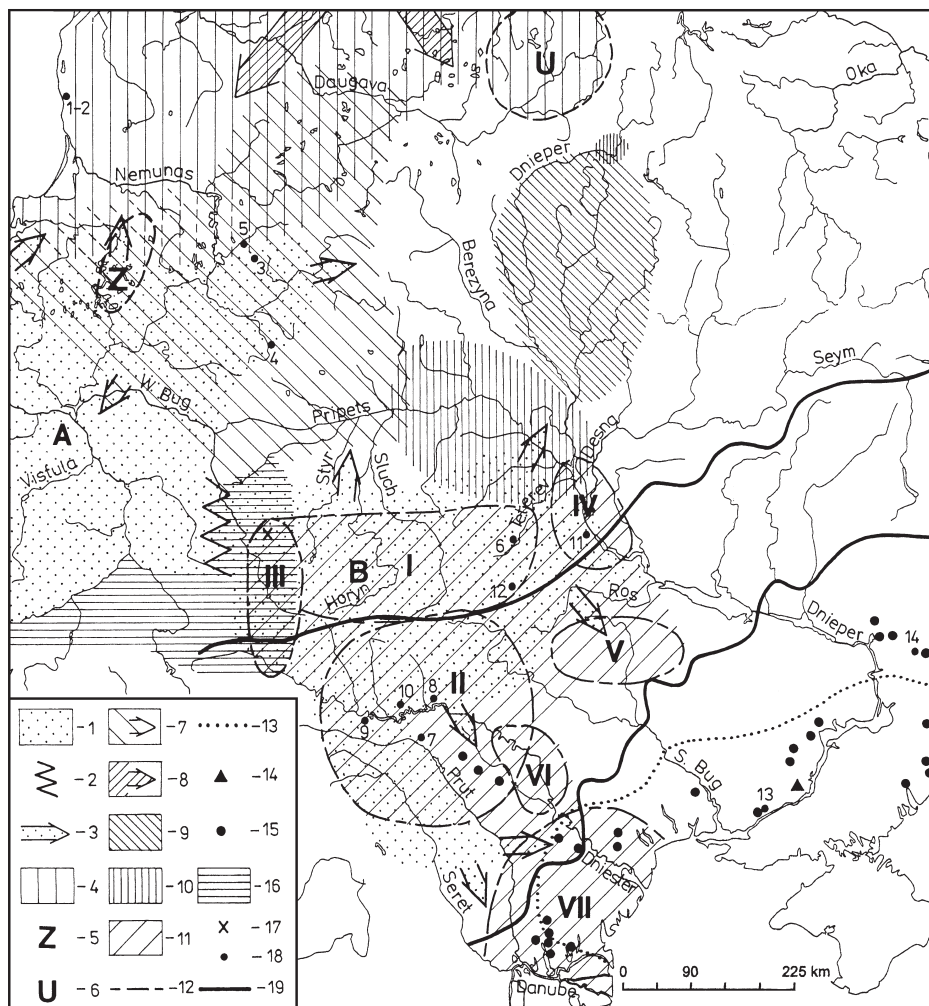


Fig 26. Cultural situation in Eastern Europe at the turn of the IV and III mill. BC.

Key: 1 - areas settled by Globular Amphora culture populations; 2 - border between central and eastern group; 3 - directions of Globular Amphora culture influence; 4 - late Narva culture area; 5 - post-Zedmar sites; 6 - Usvyaty culture; 7 - Neman culture; 8 - directions of Comb Pottery culture influence; 9 - Upper Dnieper culture; 10 - late Dnieper-Donets (?); 11 - late Tripolye culture (phase CII); 12 - range of late Tripolye groups (I - Gorodsk, II - Kasperivtsy/Gordinești, III - west Volhynian, IV - Sofievka, V - Kosenivka, VI - Brynzeny, VII - Usatovo); 13 - range of Mikhailivka I culture and zone of influences; 14 - Mikhailivka site; 15 - Zhivotilovka-Volchansk sites; 16 - south-eastern border of Funnel Beaker settlement; 17 - Zimno site; 18 - syncretic sites with evidence of Globular Amphora culture traits (1-2 - Šventoji, 3 - Barzdžio Miškas, 4 - Dobry Bor, 5 - Varena, 6 - Gorodsk, 7 - Costești IV, 8 - Shebutintsy, 9 - Tovtri, 10 - Velika Slobidka-Khreshchate, 11 - Krasny Khutor, 12 - Troyaniv (?), 13 - Baratovka, 14 - Boguslav); 19 - borders of ecological zones.

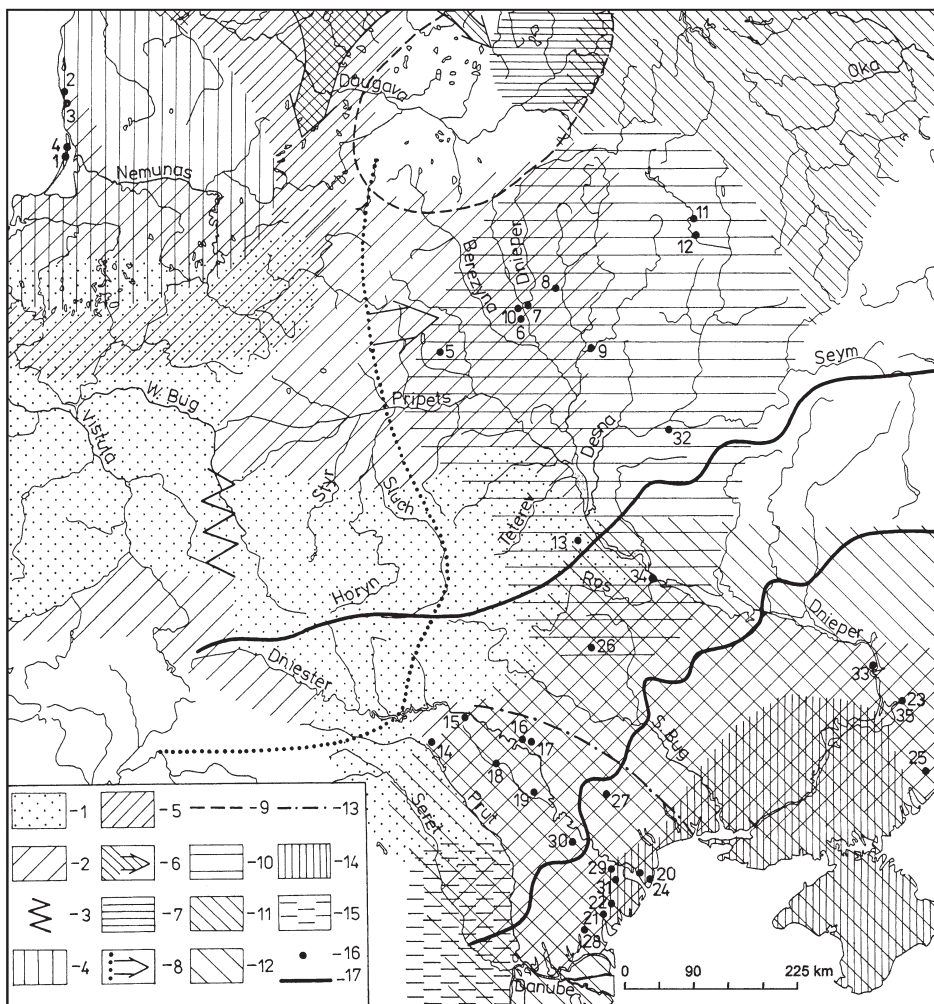


Fig 27. Cultural situation in Eastern Europe in approximately the middle of the III mill. BC.

Key: 1 - areas settled by Globular Amphora culture populations; 2 - areas penetrated by Globular Amphora culture populations; 3 - border between central and eastern group; 4 - Pamariu/Rzucewo culture area; 5 - zone of Pamariu/Rzucewo culture influences; 6 - directions of Comb Pottery culture influence; 7 - Zhizhitskaya culture; 8 - eastern border of "pure" Corded Ware site; 9 - North Belarussian culture; 10 - Middle Dnieper culture; 11 - Fatyanovo culture; 12 - Yamnaya culture; 13 - eastern border of Dniester group; 14 - Kemi-Oba culture and influences; 15 - Foltești culture; 16 - syncretic sites with evidence of Globular Amphora culture traits (1 - Nida; 2 - Butinge; 3 - Palanga; 4 - Juodkrante; 5 - Azyaroye; 6 - Mali Rogi; 7 - Prorva; 8 - Strumen/Losha; 9 - Syabrovichi; 10 - Luchin-Zavale; 11 - Lunevo (?); 12 - Belynets; 13 - Losiatyn; 14 - Corpaci; 15 - Ocnîța; 16-17 - Camenca; 18 - Marculești; 19 - Orhei; 20 - Efimovka; 21 - Tatarbunary; 22 - Novoselitsa; 23 - Primorskoye; 24 - Sanzhiyka; 25 - Akkermen; 26 - Maydanetskoye; 27 - Grigorevka; 28 - Kholmokoye; 29 - Purcari; 30 - Roșcani; 31 - Semenovka; 32 - Grishevka; 33 - Durna Skela; 34 - Iskrovshchina; 35 - Primorskoye); 17 - borders of ecological zones.

III.1.1. THE BALTIC COAST AND FOREST ZONE

As far as the issues discussed here are concerned, the following cultures, thriving in the zone of eastern European forests, should be taken into account: Narva, Comb Pottery, Neman, Dnieper-Donets, Upper Dnieper, Pamariu/Rzucewo, Middle Dnieper and Fatyanovo. From the point of view of the character of settlement and economy, they can be divided into two basic types. The first type comprises cultures that in general continue local Mesolithic patterns (i.e. extant, regardless of their chronology, as it were, “before the Neolithic revolution”). The other type includes cultures positively linked to Neolithic patterns. The first type encompasses the following units: Narva, Comb Pottery, Neman, Dnieper-Donets and Upper Dnieper. The other type is represented by Pamariu/Rzucewo, Middle Dnieper and Fatyanovo cultures.

The groups of the first type may be called “para-Neolithic” or “sub-Neolithic” because of their selective adoption of patterns developed by Neolithic societies. The reception chiefly concerned goods, in particular pottery. Subsistence, however, relied on foraging technologies related to gathering, hunting and fishing. In the late stages of their existence, admittedly, signs of agriculture economy appeared (in particular livestock raising) [e.g. Telegin 1985b:171; Rimantiene 1992b:121; Charniauskis, Isayenka 1997:164], but they are rather negligible. Only Upper Dnieper culture sites have not rendered yet even so weak signs of production economy [Oshibkina 1996; Kalechyts 1997]. The settlement network was usually made up of short-lived settlements only lightly marked in the landscape. In this respect, Narva settlements, located on lake shores or along the sea coast, stood out. Owing to favourable natural conditions, conducive to fishing and gathering, the settlement network was relatively stable. This can be seen in relatively permanent dwelling structures and a long use of those microregions that were especially rich in sources of subsistence. In particular, fishing was well developed, which is evidenced by the amount and diversity of surviving tackle (including pieces of nets and dugouts) [Rimantiene 1992b:105-108; 1996a; 1996b]. Hunting was popular, too [Dolukhanov, Miklayev 1985; Rimantiene 1992b:108-109; Daugnora, Girininkas 1995; Loze 1998]. The elements of production economy that are traceable to external influences played only a minor role in the life of Narva culture societies. In today’s Lithuania, such traces are of twofold nature [Daugnora, Girininkas 1995:44-45]. The first variety, found in the east and north of the country was marked by livestock raising only, while in the western and south-western portions of the Narva culture oecumene, traces of crops were found, as well. As far as other spheres are concerned, wood- and amber-working are well documented [e.g. Loze 1975; Rimantiene 1996a; 1996b].

The Pamariu/Rzucewo, Middle Dnieper and Fatyanovo cultures, included in the other type, carry clear signs of subsistence based on production. This is most vividly

seen in post-consumption animal remains which include a considerable share of domestic animal bones. Significant differences can be discerned between the “coastal” group, in this case the Pamariu culture, and the other two cultures that flourished in the “interior”. Within the Pamariu culture oecumene, we know of relatively long-lasting settlements located on lake or sea shores featuring post-houses or half-buried dwellings. Some of them, encircled by pales, are interpreted as having been fortified (e.g. Šventoji 1A) [Rimantiene 1980:36-44; 1992b:130]. The deceased were buried within settlements or in places that were set aside for this purpose. The subsistence may be described as versatile. It was dominated by the intensive use of sea and inland water resources (seal hunting and fishing) as well as forest ones (hunting and gathering), but farming is also well documented (mainly livestock raising, to a lesser degree crop cultivation) [Rimantiene 1992b:131-132; Lasota-Moskalewska 1997; Makowiecki 1997; Miotk-Szpiganowicz 1997]. In the sphere of manufacturing, one has to stress the functioning of specialized amber workshops [Mazurowski 1985]. On the other hand, the settlement network of Middle Dnieper culture and Fatyanowo culture populations was organized around relatively long used cemeteries (*kurgan* and flat in the Middle Dnieper culture, flat in the Fatyanovo culture) [e.g. Artemenko 1976; cf. also datings quoted above]. Settlements, or rather camp sites, were not very stable and much less is known about them. The beginnings of social ranking of individual members of a society become apparent, which is manifested by grave-goods deposited next to their bodies [e.g. Krainov 1987b:64-65]. The subsistence must have relied on both agriculture technologies (mainly livestock raising, to a lesser degree crop cultivation) and foraging ones [Artemenko 1985:374; Krainov 1987b:65-66; Kalechys, Kryvaltsevich 1997:298].

The short description of selected groups of the Forest zone presented above, allows us to proceed now to determine accurately their temporal and spatial parameters, thus defining their relationships with GAC societies.

A. The Narva culture

The maximum range of the Narva culture stretched from Estonia to north-eastern Poland and northern Belarus. Developing from the second half of the 6th to the first half of the 3rd millennium BC [Loze 1988:100-105; Rimantiene 1992b:100-101], the culture's lifetime is divided into three phases of which the last one is of interest to us. It is either called the late phase [e.g. Girininkas 1985;1996] or it is taken to be a stage of the post-Narva phenomena [Loze 1985]. In the opinion of different scholars, this phase is primarily marked by exogenous influences from the north (from the circle of the Comb Pottery culture) and from central Europe (Funnel Beaker culture, GAC and Corded Ware culture) [e.g. Rimantiene 1992b:100; Girininkas 1996:45]. The impact of central European groups is most clearly intelligible in the south-western portion of the Narva culture's range, i.e. within its western variety [Loze 1985:12]; according to another terminology —

in the south-western territory [Girininkas 1985:51]. Depending on the adopted assumptions, the chronological brackets of the late phase are set differently. At a maximum, from the 1st quarter of the 4th millennium BC [the end of the 4th millennium bc — Girininkas 1985:129-130] or at a minimum from the 2nd quarter of the 4th millennium BC [the beginning of the 3rd millennium bc — Rimantiene 1992b:100]. The Narva culture is then highly diversified. Within its circle, different “cultural types” are distinguished, for instance, Šventoji, Zedmar [Rimantiene 1979; Timofeyev 1987; 1991], or even cultures, for example, the Usvyaty culture [Miklayev 1992]. Some of these phenomena are syncretic entities. As an example may serve the Zedmar type (culture) believed to be a synthesis of the elements of the Narva and Neman cultures which take turns in coming to the fore (initially the Narva culture is dominant, then the Neman culture) [Timofeyev 1987; 1991b; 1998:48]. A different variety of syncretism is observable in Šventoji and in the Usvyaty culture (see below).

¹⁴C dates give some idea of the chronology of the late Narva culture. Particular importance is attached to the dates relating to the decline of its presence in areas important from the point of view of the GAC, namely, in the south-western portions of the Narva oecumene. Although there is not any detailed information in the literature, there are reasons to believe that samples used in the dating contained mostly wood, which was extremely well preserved, especially in Šventoji [Rimantiene 1979; 1996a; 1996b], and charcoals. Hence, they can be generally treated as being aged. In addition, note should be taken of the low accuracy of the datings shown below (excessive number of dates with standard errors of more than 100 years), which lowers the value of their calibration.

A series of the youngest dates for the Narva culture from Lithuania (primarily from the complex of sites in Šventoji) [Rimantiene 1996a; 1996b] and northern Belarus (Krivina) [Charniauski 1978:44-45] marks out the period of 3030-2200 BC. The end of the interval, however, is dated by the three youngest dates from north-eastern Lithuania (Žemaitiške 1,2 and Papiškes 4) only recently discussed in the literature [Rimantiene, Ostrauskas 1998:215]. They clearly depart from the other dates that point to ca 2550/2500 BC at the latest. Until the youngest dated assemblages are published in full, it is hard to decide whether we deal with traces of the long surviving of Narva traits in certain enclaves or whether the discussed datings are unreliable¹².

The Usvyaty culture is a small group occupying the area between the Western Dvina and Lovat rivers [Miklayev 1992:28-30]. In the course of its development, one may distinguish three phases which differ in the reception of influences of different

¹²According to the more recent findings of V.I. Timofeyev, a series of late dates from Zedmar D, lying within the period of ca 3100-2500 BC, is not linked to the Zedmar type (culture) [Timofeev, Zaitseva, Possnert 1994:126-128].

central European cultures (including the Funnel Beaker culture and GAC). It is dated by series of ^{14}C datings concerning multi-strata peat sites [Miklayev 1992:28-30; Zaitseva et al. 1994; see also Dolukhanov, Miklayev 1979]. The datings lie within the maximum bracket of 3905 ± 95 - 2570 ± 80 BC, but a more credible interval of calendar values (1 sigma) covers the period of 3540-2640 BC. It must be stressed that most of the diagnostic traits of the unit continue in successive groups distinguished by A.M. Miklayev in the area in question, i.e. in the Zhizhitska (see item B below) and North Belarussian cultures [Miklayev 1992].

To conclude, in the light of the above data, the decline of the Narva culture (or post-Narva structures) may be dated to ca 2600/2500 BC. Only in certain enclaves could the Narva traditions survive until even 2200 BC.

B. The Comb Pottery culture

The Comb Pottery culture is a relatively little known phenomenon, which, at present, appears to be very complex and internally diversified. It spread from southern Finland and Karelia to western Latvia and the drainages of the Upper Dvina, Dnieper and Volga [Äyräpää 1930; Jaanits 1973; Miklayev 1992]. The populations of the culture also appeared south-west of the area reaching as far as the Lower Neman drainage and the Mazurian Lake District [Kempisty 1983:193-194; Kempisty 1989:326]. From the point of view of the area in question, the Comb Pottery culture is a marginal group which, nevertheless, exerted a significant impact on the transformations within the Narva culture in a certain period. The development of the Comb Pottery culture is divided into three stages (so-called styles I, II and III), each of which has two phases [Äyräpää 1930]. The rise of the culture in the original area can be dated to 4400 BC at the latest [Siiriäinen 1973, quoted in Rimantiene 1992b:120] or to the last quarter of the 4th millennium BC [to the 2nd half of the 4th millennium bc — Timofeyev 1995:33]. Whereas its expansion to the south and south-west began at the turn of the 5th millennium BC [ca 3300-3200 bc — information by J. Zagorska, quoted in Kukawka 1997:73]. A series of ^{14}C dates confirms the presence of the Comb Pottery culture in today's Latvia and in the upper drainage of the Dvina in the period of 3450-2800 BC [2750-2250 bc — Dolukhanov, Liiva, Miklayev 1978:28; Timofeyev et al. 1978:15-16]. A.M. Miklayev drew attention, however, to a particularly conspicuous presence of elements genetically related to the Comb Pottery culture in the materials of the Late Neolithic Zhizhitska culture in the Upper Dvina drainage [Miklayev 1992]. A series of ^{14}C dates places this group between 2440 and 2210 BC.

Hence, the chronological brackets of the phenomenon in question are very broad stretching from 4400 to 2200 BC in the extreme. The dispersed sites in the drainage of the Neman and on the Mazurian Lakes rather come from the late phases of the Comb Pottery culture representing styles II and possibly III [Kempisty 1983:194]. At present, however, it is not possible to determine their chronology with any greater

accuracy.

C. The Neman culture

The Neman culture originally covered western Belarus, south-eastern Lithuania and north-eastern Poland [Charniauski, Isayenka 1997]. In this area, the culture is dated to the period from the 2nd half of the 5th millennium BC to the 2nd half of the 3rd [Charniauski 1979:75-79; Rimantiene 1992b:116]. At the northern limit of the area, a transition, Narva-Neman zone is distinguished [Timofeyev 1991:146; Rimantiene 1992b:116]. In the late period of the Neman culture's development, its expansion to the south-east, first to Podlasie and Mazovia, is clearly observable. It is there that a syncretic entity comes into being known by the name of the "Linin type" [Kempisty 1973].

Clear relationships with the GAC (and Corded Ware culture) mark the late stage of the Neman culture development [Rimantiene, Česnys 1990:344], especially the so-called Dobry Bor type distinguished in the drainage basin of the Neman and Upper Pripets rivers [Charniauski 1979:63; 1987a:40; 1987b:433]. The region, intensively used by "Neman" societies [Arkhealogiya Belarusi 1997:Fig. 37], was also penetrated by GAC populations (cf. Ch. I.3.). Thus it is an area where societies of both cultures may have come into contact.

The chronology of late Neman materials, constructed mainly by comparatively analysing pottery, covers the period of about 2800-1800 BC [from the last quarter of the 3rd to, at a maximum, the half of the 2nd millennium bc — Charniauski 1979:78]. There is little chance that this hypothesis can be verified because there are no ¹⁴C dates concerning appropriate materials. We have one date relating to pottery exhibiting late Neman traits from Kujawy (Opatowice 35/feature 83). The date bears out the late chronology of the spreading of Neman elements to the west of Mazovia [Czebreszuk, Szmyt 1998:Abb. 6B; 1999]. However, hypothetically earlier traces of the culture were recorded in Bronocice (Małopolska), which were dated to ca 3575-3400 BC (2800-2700 bc). The dating was possible because of their place in a sequence of settlement at this site, whose age was accurately determined by the radiocarbon method [Kruk, Milisauskas 1985:64-65, 78].

D. Prick-Comb Pottery cultures

In the period of interest to us here, the circle of cultures with prick-comb pottery could have been represented by the Dnieper-Donets culture, specifically its late stage [Telegin 1985b], and — a decline one as well — the Upper Dnieper culture [Kalechyts 1997].

The Dnieper-Donets culture formed the major component of the discussed cultural circle. The territory which was occupied by that culture covered, at a maximum, the whole Dnieper area, part of Volhynia and Polesie [Telegin 1985b:157-165; Isayenka 1997]. Within the broadly conceived Dnieper-Donets culture, separate regional varieties are identified [e.g. Isayenka 1997]. Its chronology stretches from

the beginning of the 5th millennium BC until the end of the 4th [decline of the 5th millennium bc — middle of the 3rd — Telegin 1985b:171]. The culture originated in the forest-steppe on the Dnieper, while in the Forest zone its settlement appeared later. The course of its development is conventionally divided into three stages [Telegin 1985b] of which the most important for the issues discussed here is the third. The Dnieper-Donets culture settlement of this stage in the northern (forest) part of the Middle Dnieper region could have survived until the turn of 4th millennium BC (until the middle of the 3rd millennium bc — Telegin 1985b:171). Only in eastern Polesie was a fourth stage of the culture distinguished and dated roughly to (without ¹⁴C dates) to the 1st half of the 3rd millennium BC [from the middle of the 3rd until the first centuries of the 2nd millennium bc — Isayenka 1976:112-113]. The sites of the Dnieper-Donets culture from its decline period, as defined here, were identified on Lake Vyachera, where dispersed GAC traces occur as well [Kryvaltsevich 1999:23-24]. Unfortunately, the hypothetical late settlement of the Prick-Comb culture has not been borne out by radiocarbon dating yet.

The Upper Dnieper culture is distinguished on the Upper Dnieper and the Sozh River [Kalechyts 1987:121] on account of strong influences from the Pit-Comb Pottery culture [Kalechyts 1987:123]. However, according to D.Y. Telegin [1985b:157] it is a variety of the Dnieper-Donets culture. Its beginning is dated to the 3rd quarter of the 6th millennium BC, while its end must have occurred in the middle of the 3rd millennium BC [middle of the 5th millennium bc — the turn of the 3rd — Kalechyts 1997:171-175]. Also in this case, the chronology relies solely on the comparative analysis of sources. The lifetime of the unit is divided into two stages of which the second (late) is placed between the 3rd quarter of the 4th and the middle of the 3rd millennium BC [the 2nd half of the 4th — the turn of the 3rd millennium bc — Kalechyts 1997:175]. It is assumed that the decline of the Upper Dnieper culture continued parallelly to the development of the Middle Dnieper culture with both units supposedly forming the basis for the emergence of cultures of the developed Bronze Age [Kalechyts 1997:187].

E. The Pamariu (Rzucewo) culture

The Pamariu culture, known also as the Rzucewo culture, the Bay Coast culture or the *Haffküstenkultur* [Žurek 1954; Kilian 1955; Tetzlaff 1970; Machnik 1979a; Rimantiene 1980; 1984:199-219; 1989; 1992b:127-135; 1992c], developed on the south-eastern shorelines of the Baltic, from Courland Lagoon in the east to the Bay of Gdańsk in the west.

Despite a number of traits held in common, it is a highly diversified phenomenon due to its origins. A basic sub-stratum for the Pamariu culture in the east was the populations of the Narva and Neman cultures [Rimantiene 1992b:127], while in the west (Rzucewo), the traditions of the two cultures are less distinct [Machnik 1979a:377]. A unifying role was played by the impact of the Corded

Ware culture, GAC and the late Funnel Beaker culture [Žurek 1954:26-31; Kilian 1955; Tetzlaff 1970:361-364; Machnik 1979a:377; Jastrzębski 1982]. The difference in the intensity of the presence of western elements served as the grounds for distinguishing two groups of the culture, i.e. a western (Rzucewo) and an eastern (Courland) group [Tetzlaff 1970:365].

Actually, there are two different periodisations of the Pamariu/Rzucewo culture. The eastern version, best presented on the basis of Lithuanian sources [Rimantiene 1984:215-217; 1992b:128; 1992c], divides the culture into three phases associated with the changes in the Baltic coastline: an early one — pre-transgression, middle one — transgression and late one — post-transgression. They are preceded by the so-called *Vorstufe* [Rimantiene 1992c], i.e. a proto-Pamariu phase whose characteristic traits are determined by GAC and Corded Ware culture (horizon A) influences [Rimantiene, Česnys 1996]. In turn, the western version of the periodisation [Machnik 1979a:378] also provides for a division into three phases, but takes into account, in the first place, the changeability of traits originating with the Corded Ware culture [for a recent controversy concerning the grounds for the division and periodisation see Machnik 1997]. However, the hypothetically earliest stage seems to be revealed by materials exhibiting clear ties with the Funnel Beaker culture [Jastrzębski 1982].

The chronology of the Pamariu/Rzucewo culture is set at 2800-2000 BC [Rimantiene 1992b:129] or 2550-1800 BC [2100-1500 bc — Butrimas, Česnys 1990:364]; or at 3300-2000/1950 BC [Król 1991] in the western part.

The current set of ^{14}C datings concerns materials from settlements in Lithuania (Šarnelė, Šventoji, Spiginas, Sirmė, Nida, Daktariskė, Kaniukai) [Rimantiene, Butrimas 1991] and Poland (Rzucewo, Osłonino) [Król 1991]. The dates were for the most part procured from charcoals and wood. After calibration, they set the interval of 2770-2090 BC. It has to be noted, however, that the series does not include the oldest datings from Rzucewo [Wiślański 1978:412] obtained from charcoals collected during pre-war investigations conducted by Józef Kostrzewski. The relationship between the materials and charcoals is not known. Another objection concerns the two youngest datings from Kaniukai and Nida, which look clearly late against other dates and may be unreliable. After they are eliminated, the lifetime of the Pamariu culture, as confirmed by the radiocarbon method, falls on ca 2800-2000 BC with the datings of the western part (Rzucewo group) lying within the period of 2630-2110 BC.

F. The Middle Dnieper culture

The origins of the Middle Dnieper culture most likely can be traced to the forest-steppe on the Dnieper [Artemenko 1985:373-374], but its wide spreading in the forest zone warrants discussing it here. The Middle Dnieper culture settlement primarily concentrates between the Berezina, Dnieper and Sozh rivers, on the Desna and in the drainage basin of the Middle Dnieper, from the confluence with the Pripets

in the north to the confluence with the Ros in the south [Artemenko 1987a:Map 3]. Highly dispersed, the traces of the Middle Dnieper culture occur as far as the Middle Pripets, Upper Neman and the Seym drainage basins [Kalechyts, Kryvaltsevich 1997:Fig. 99].

The chronology and periodisation of the Middle Dnieper culture have been extensively discussed [Artemenko 1967; Berezanskaya 1970; Rumyantsev 1972 and 1974]. According to the most frequently quoted hypothesis [Artemenko 1967; 1985: 368-373; 1987a:38-41], the Middle Dnieper culture continued from ca 3250 to 1800 BC (2600-1500 bc) and was divided into three stages whose characteristics are being questioned now [Serdyukova 1994]. A contradictory position held that the Middle Dnieper culture chronology was shorter spanning the period of 2500-1800 BC [from the turn of the 3rd to the middle of the 2nd millennium bc — Berezanskaya 1976:81-82]. I must stress that in both cases the absolute chronology was constructed exclusively by performing comparative analyses (mainly of pottery and metal goods) without any reliance on radiocarbon dating. A strong internal diversification of the Middle Dnieper culture creates a need to develop its regional periodisations, the beginnings of which can be observed now [Kalechyts, Kryvaltsevich 1997].

Owing to the recent publications, we are in the position to discuss comprehensively the question of the radiocarbon chronology of the Middle Dnieper culture for the first time. Now, we have at our disposal a long series of datings from cemeteries referring to the Middle Dnieper culture [Kryvaltsevich, Kovalyukh 1999; Klochko 1999; Klochko, Koško, Szmyt 1999]. Together with one old charcoal dating of a grave in Belynets [Artemenko 1985:373] the series consists of 19 dates. Additional information is supplied by datings of grave assemblages, identified either as Corded Ware culture features with Middle Dnieper culture elements or as “pure” Middle Dnieper culture features, from the drainages of the upper courses of the Bug and Vistula rivers [Machnik, Pilch 1997; Machnik 1999].

The analysis of Middle Dnieper culture dates coming from sites situated in the drainage basins of the Middle Dnieper, Pripets and Desna and included in the middle and late stages of the Middle Dnieper culture according to I.I. Artemenko [1987a] shows that they all lie within the interval of 2530-1790 BC. However, it must be noted that the ^{14}C datings concern samples of different nature, for instance, charcoals (including those being the effect of adding organic temper to the ceramic mix), bones and carbon deposits. The results of the analysis will be different if we limit ourselves to the dating of “short-lived” samples (bones, carbon deposits). Then, the maximum interval will cover the period from 2380 to 1760 BC. It is justified, however (see Ch. II.2.1.3.), to extend the period in the case of the dated samples until ca 2500/2550 BC or even 2590 BC.

A new quality is brought into the study of the origins and development of the Corded Ware culture by the results of the investigations carried out in the area lying

between the upper courses of the Vistula, Bug and Dniester rivers, specifically on Grzęda Sokalska in south-eastern Poland [Machnik 1999]. There have been recorded recently a number of Corded Ware culture graves containing certain Middle Dnieper culture elements (especially observable in the form and ornamentation of pottery). Furthermore, grave features entirely related to the Middle Dnieper culture have been found as well [Machnik, Pilch 1997]. At present, we have first ^{14}C datings for assemblages in which Middle Dnieper culture traits have been identified. The series comprises five datings secured from human bones [Machnik 1999]. A joint calibration of all the five dates marks out maximally the period of 2700-2450 BC. The context of the finds made it possible to narrow down this bracket to ca 2650-2500 BC with the majority of dates lying between 2600-2500 BC [Machnik 1999]. At the same time, the analysis of traits of those assemblages which cannot be dated by the radiocarbon method supports the hypothesis that the oldest of them should precede the 2650/2600 BC dividing line [Machnik 1999:241].

Against the background of the Middle Dnieper culture datings from the area of the Middle Dnieper discussed earlier, the chronology of Middle Dnieper culture traits between the Upper Vistula and Bug is surprisingly early (Fig. 28) and, what's more, it cannot be explained under either of the genetic hypotheses cited earlier [see, however, comments by O.M. Rumyantsev 1972 and 1974 on the links between the Middle Dnieper culture and the Carpathian Foothill Corded Ware culture]. The problem thus calls for further study that would focus on the genesis (including topogenesis) of the culture and its periodisation.

To sum up, the oldest dates for Middle Dnieper culture graves from the Middle Dnieper drainage (included in the middle stage of the culture) fall at a maximum on ca 2590 BC. On the other hand, the earliest datings from the area between the Upper Vistula and Bug lie within the period of 2650-2600 BC, but the oldest (however not dated) assemblages exhibiting Middle Dnieper culture traits may even precede that period. Taking into account the import of both series, it must be assumed that the beginnings of the Middle Dnieper culture come before the period of 2650-2600 BC.

G. The Fatyanovo culture

The area covered by the Fatyanovo culture (or Fatyanovo-Balanovo according to D. Krainov) [Krainov 1987:58-76; see also Bader, Khalikov 1987] occupied the centre of the Russian Plain, from Lake Ilmen and the Upper Dnieper drainage to the Wiatka River and the middle course of the Volga. This is the easternmost group of the circle of Corded Ware cultures.

In accordance with the results of typological analyses, the chronology of the culture is referred to the 2nd half of the 3rd millennium BC [1st half of the 2nd millennium bc – Krainov 1992:322]. Only few ^{14}C dates relating to the Fatyanovo culture are known. Three oldest of them (from sites at Sakhtysh I, Modlona I

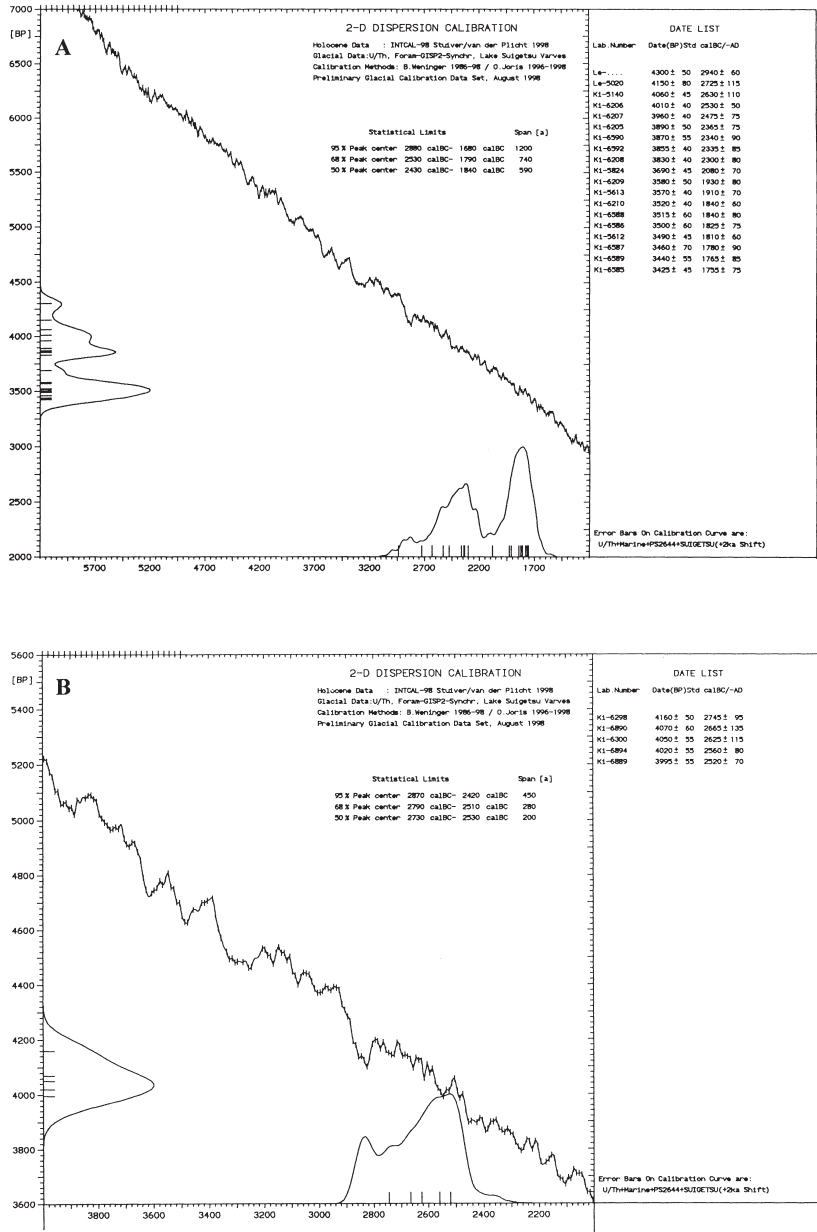


Fig 28. Absolute chronology of the Middle Dnieper culture (A) and the Corded Ware culture with Middle Dnieper elements (B).
Sources: Machnik 1999, Kryvaltsevich, Kovalyukh 1999.

and Yazykovo I) date settlement strata of the late Volosovo culture containing also Fatyanovo materials [Krainov 1992:322]. They are believed to attest the beginnings of the Fatyanovo culture. Two much later datings (from cemeteries in Turgino and Volosovo-Danilov) were obtained from samples of charcoals found in the graves of this culture [Krainov 1992:323].

A joint calibration of all the dates sets the interval of 2720-2080 BC. Nevertheless, it is accepted that the dates do not refer to the end of the Fatyanovo culture, with at least one group (Sura-Sviyaga, i.e. Balanovo), out of those distinguished within its bounds, surviving much longer [Krainov 1992:323]. Taking into account the dated material (most likely wood and/or charcoals), it can be assumed that the opening date is aged to an unknown degree, i.e. the beginnings of the culture after all must have taken place after 2720 BC.

III.1.2. THE FOREST-STEPPE ZONE

Out of all groups found in the forest-steppe, the Tripolye culture shall be discussed in greater detail now. Other units partially inhabiting this zone are discussed in the sections devoted to the Forest (Middle Dnieper culture) and Steppe zones (Yamnaya culture, Catacomb culture).

The period of interest to me here is partially overlaid by the last stage of the Tripolye culture, i.e. stage CII. Since various aspects of the Tripolye culture have been amply described in a number of works [for more works on the subject see e.g. Davna istoriya 1997], a summary presentation of it here would serve no purpose. It is worth mentioning, however, that within eastern Europe, "Tripolye" societies can be called a Neolithic "ideal type" transplanting a full spectrum of socio-economic behavioural patterns, formed in the environment of the Balkan Neolithic and Eneolithic, into the east European Forest-Steppe zone [e.g. Gimbutas 1991:101-111]. The late Tripolye culture, in particular its stage CII, is characterized by the processes of socio-economic differentiation [e.g. Chernysh 1982b:237-240]. Their effects are most readily visible in the Usatovo group that combines Tripolye culture traditions with many steppe elements [Zbenovich 1974; Dergachev 1980]. Whereas the Gorodsk-Kasperivtsy (Gordinești) group, of particular importance for the question in hand, has been studied only preliminarily.

The studies of the chronology of the final (CII) stage of the Tripolye culture [Passek 1949] relied chiefly on comparative analyses of ceramic and metal sources and on ¹⁴C datings [e.g. Zbenovich 1972; Chernysh 1982a; Movsha 1985a]. The latter, however, were for the most part related to the extremely southern, steppe

group of the late Tripolye culture, i.e. the Usatovo group. Based on such grounds, the varieties of stage CII chronology covered in most cases the 2nd half of the 4th millennium BC: 3600-3250 BC [Chernysh 1982a:tab. 10], 3575/3450-2950/2900 BC [2800/2750-2400/2350 bc — Movsha 1985a:255], 3580/3530-3245/3275 BC [Patokova et al. 1989], 3400/3300-3200/3100 BC [Parzinger 1993:290], 3150-2880 BC [Wechler 1994:13].

At present, owing to the implementation of a special research program [Klochko, Koško, Szmyt 1999], we have a new series of radiocarbon datings for the stage in question [Kovalyukh, Videiko, Skripkin 1995; Videiko 1999]. Unlike the old series which relied chiefly on charcoal samples, the new set of dates was procured from different organic materials (charcoals — 3 dates, bones without traces of burning — 22 dates, charred bones — 6 dates, shells — 2 dates, carbon deposit — 1 date). The set is made up of 34 new dates coming from nine sites in Volhynia (Trojaniv, Gorodsk, Sandraki), on the Lower Dniester (Zatoka/Akkiembetskij *kurgan*), in the Middle Southern Bug drainage (Vilkhovets) and on the Middle Dnieper (Sofievka, Krasny Khutor, Zavalovka). Including earlier radiocarbon analyses (Mayaki, Usatovo, Danku 2, Gorodsk, Gorodnitsa-Gorodyshe) [Telegin 1985; Patokova et al. 1989; Wechler 1994], we have now a series of 46 dates concerning stage CII. A joint calibration of all the dates marks out the interval of 3240-2580 BC.

The differentiation of the cultural structures of the late Tripolye culture makes the spatial analysis of the series of dates most sensible (Fig. 29). Out of several currently available spatial divisions of the Tripolye area in its CII stage [e.g. Dergachev 1980; Chernysh 1982a; Movsha 1985a], I mainly follow T. Movsha's and V. Dergachev's proposals.

Zhvanets group. This group is localized in the drainage of the Middle Prut and Dniester rivers [Movsha 1985a:232-235]. According to V. Dergachev's division, it basically corresponds to the Brynzeny group [Dergachev 1980:111-119]. In Movsha's opinion, the main development stage of the unit falls on phase CI and only its decline partially overlaps the limits of phase CII [Movsha 1985a:254-255].

The five dates that are at our disposal come from Zhvanets-Shchovb site [Videiko 1999]. They fit into the interval of 3290-2960 BC splitting into two time horizons — two older ones fit between ca 3310-3110 BC, while the three younger ones between ca 3100 and 2910 BC. Furthermore, the older stage is determined by the datings of bone samples (Ki-6745, Ki-6743), while the younger one is defined by bone (Ki-6744) and charcoal datings (Ki-6754 and Ki-6753). In this case, "coal" datings do not make older a chronology set by other datings, therefore, they can be taken to be relatively reliable. The objection follows from the fact that one of the dates (Ki-6753) refers to charcoals collected from an embankment (category IIC), while the location context of the other (Ki-6754) is not known (no information on the location of the charcoal cluster is given) [Videiko 1999].

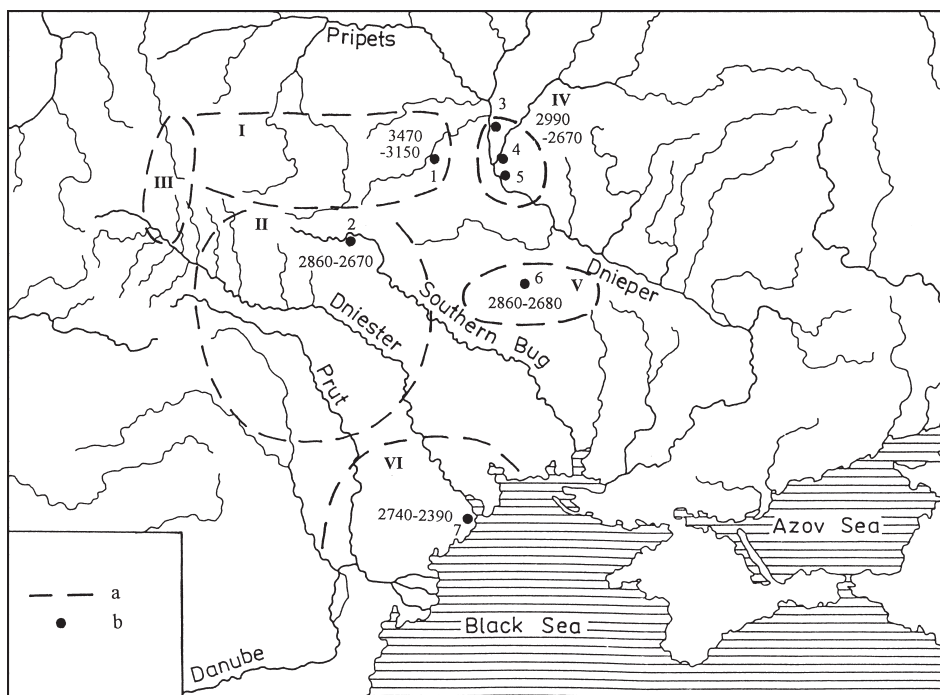


Fig 29. Absolute chronology of the Tripolye culture (end of the phase CII).

Key: a - range of latest Tripolye groups (I - Gorodsk, II - Kasperivtsy/Gordinești, III - western Volhynia, IV - Sofievka, V - Kosenivka, VI - Usatovo); b - selected sites (1 - Gorodsk, 2 - Sandraki, 3 - Zavalivka, 4 - Krasny Khutor, 5 - Sofievka, 6 - Vilkhovets, 7 - Zatoka/Akkiembetskiy kurgan).

Sources: Szmyt, Chernyakov 1999, Videiko 1999.

Troyaniv group. The territory of the group covers the drainage basins of the Pripets southern tributaries, the Teterev, Sluch and Horyn, i.e. eastern Volhynia [Movsha 1985a:237]. The group is believed to have preceded the Gorodsk group [Dergachev 1980:127]. The period of the greatest activity of the Troyaniv group took place in stage CI with only its decline supposedly coinciding with the emergence of the structures of CII [Dergachev 1980:Fig. 26]. From the site in Troyaniv, three datings have been obtained for single bones collected in dwelling-type features [Videiko 1999]. They mark out the interval of ca 3240-2950 BC. However, the datings coincide with one another, which may be interpreted as a sign of the same stage of site occupation that may have taken place around 3020 BC.

Gorodsk-Kasperivtsy. This group is distinguished by T. Movsha in the area previously occupied by earlier units, namely the Zhvanets and Troyaniv groups [Movsha 1985a:237-242]. In Dergachev's division, the Kasperivtsy group (found on the upper courses of the Southern Bug, Dniester and Prut rivers) is called the Gordinești group

[Dergachev 1980:119-123]. Of the dates at our disposal, six datings can be linked to the Gorodsk-Kasperivtsy group. Two of them come from the northern (Gorodsk) and the other four from the southern part (Gorodyshche, Sandraki, Tsviklovtsy).

Of the two “northern” dates, one was obtained from a sample that must have contained charcoals (GrN-5090), while the second was procured from a shell sample collected during old excavations (Ki-6752) [Videiko 1999]. There is no information on the location of samples and their contexts. A joint calibration of the two dates indicates the period of 3370-3150 BC, while the dating of the shell sample fits into the period of 3310-3110 BC.

Dates from Sandraki were procured from bone samples coming from a single dwelling feature [Videiko 1999]. They together set the period of 2860-2680 BC. Whereas the dating from Tsviklovtsy was obtained from charred bones collected most probably from a grave during old excavations [Videiko 1999]. It points to the interval of 2550-2380 BC but its value seems to be too low (see below). The datings concerning the Kasperivtsy/ Gordinești group are therefore much later than those from Gorodsk.

The combined analysis of all the six dates permits us to place all the Gorodsk-Kasperivtsy structures in the period from 3430 to 2650 BC with the beginning and end of this sequence being uncertain.

Kosenivka group. The group is localized in the area between the Southern Bug and Dnieper rivers. The chronology of this group is associated with stages CI and CII [Kruts, Ryzhov 1985:54; Movsha 1993:43]. Assigned to this group, the settlement in Vilkhovets [Videiko 1999] supplied four dates (all from bone samples found in pit 1). Their joint calibration marks out the interval of 2860-2670 BC. Within this bracket the most likely date is ca 2710 BC.

Sofievka group. It is believed to be the oldest stage of the Tripolye culture in the Middle Dnieper Area [Kruc 1977:148-149; Movsha 1985a:246-259; Dergachev 1980:141]. For three cemeteries of the Sofievka type (Sofievka, Zavalivka and Krasny Khutor), eight ¹⁴C dates were secured from samples of different materials (charred bones, carbon deposits, coals) [Kovalyukh, Videiko, Skripkin 1995; Kadrow 1995]. The consistency of the datings of different samples should be emphasized, which is of utmost importance for the interpretation of bone dates. The oldest group of three dates was obtained for the cemetery in Sofievka, where charred bones and — in one case — charcoals were analyzed. The “coal” date fits between those for the bones. When combined, the three dates set the maximal interval of 3030-2790 BC. The younger datings from Sofievka coincide with two dates from the cemetery in Zavalivka (both date samples of burnt bones). They indicate the period of 3000-2700 BC. The youngest series of dates from the cemetery in Krasny Khutor partially overlaps the datings from Sofievka and Zavalivka. In two cases, we deal with datings obtained from samples of charred bones and in one case from

a sample of carbon deposit. Taken together, the three dates indicate the interval of 2920-2610 BC.

In the mentioned time range, following from the analysis of all the eight samples, the interval of 2990-2670 BC is the most credible one.

Usatovo group. The Usatovo series comprises eight old datings from Mayaki, Usatovo and Danku 2 [Patokova et al. 1989; Burdo, Videiko 1998:tab. 3] and 11 new dates from the Akkiembetskiy *kurgan* [Szmyt, Chernyakov 1999]. The samples from Mayaki, Usatovo and Danku contained charcoals [Videiko 1999], whereas the datings from the Akkiembetskiy *kurgan* were procured from eight bone samples and one wood sample taken from six graves. In addition, two dates from the same *kurgan* concern a ritual feature, in which a horse skull was placed.

Altogether, all the dates from the Akkiembetskiy *kurgan* lie within the period of 2740-2390 BC. The fact that the “Usatovo” stage of the *kurgan* use was long is unequivocally borne out by the analysis of the place of the datings with respect to the *plateaux* of the calibration curve [for an indepth analysis see Czebreszuk, Szmyt 2000; Müller 2000]. Specifically, the datings are linked to two flat sections of the curve, to be precise, to their subsections representing ca 2600 BC and 2400 BC.

However, old datings of “long-lived” materials (Mayaki, Usatovo, Danku 2) indicate a much earlier period, namely 3380-2950 BC. The discrepancy between the old and new datings seems to be caused by different materials subjected to the radiocarbon analysis. It is hard to tell whether the discrepancy shows actual time differences between the discussed complexes if it is assumed that the Usatovo group functioned over a long period [Dergachev 1980:108-109]. This issue calls for more research and more control radiocarbon dates.

Conclusion. Putting together all the presented information, one may set the maximum time limits for stage CII at 3240-2580 BC. Out of the discussed groups, Zhvaniets and Troyaniv had survived until the beginning of the 3rd millennium BC, Gorodsk-Kasperivtsy, Kosenivka and Sofievka continued in the 1st half of the 3rd millennium, while Usatovo structures may have lasted as late as the middle of the 3rd millennium BC.

III.1.3. THE STEPPE ZONE

This section briefly discusses “pre-Yamnaya” steppe groups, the Yamnaya culture and “post-Yamnaya” ones (in this case the Catacomb culture). I use here the term “pre-Yamnaya” to designate late structures of the steppe Eneolithic [Koško 1985]. They comprise culturally diversified groups, of which we usually learn from

their cemeteries, hence their peculiarities are most often determined on the basis of differences in sepulchral rituals [Rassamakin 1993]. They include Mikhailivka I culture and, according to some authors, the Kemi-Oba culture. All the named units represent successive stages of development of a specific discovery of the peoples of Eurasian steppes, namely nomadic shepherding. They can be classified as early pastoral formations or rather quasi-pastoral ones [Koško, Klochko 1994].

The economic description of the Mikhailivka I culture (Nizhna Mikhailivka) is being developed on the basis of sources (faunal remains) from the eponymous settlement which point to the prevalence of sheep/goat raising [e.g. Shaposhnikova 1985a:329-330]. A majority of sites of this culture are flat and *kurgan* cemeteries. Discoveries were also made of ritual complexes (“temples”) [Shaposhnikova 1985a:328-329]. On the other hand, Kemi-Oba culture societies are known to us mainly through sepulchral features — stone cist graves. Relying on bone remains of livestock (cattle, sheep, goats, pigs and a horse), tool finds, figurative representations from graves and stelae as well as petroglyphs (including scenes interpreted as depicting ploughing), it is believed that their major economic occupations were animal raising and land cultivation [Shchepinskiy 1985:335].

What set apart Yamnaya culture societies in terms of settlement and economy was migration induced by semi-migratory grazing of animal herds (cattle, sheep, goats and horses). A permanent trace of such migrations is thousands of *kurgans* spread across the Caspian and Black Sea steppes. Permanent settlements are found only in selected places (e.g. Mikhailivka II). The sources found on such sites give clear signs of land cultivation as well [Shaposhnikova 1985b:350], which may be interpreted as a symptom of the division of the societies into two segments (a group of shepherds and a group of farmers).

The way of life of Catacomb culture populations was in principle similar to that of Yamnaya culture ones, but the economic specialization of particular groups was closely reflected in their social hierarchy with the dominant role of shepherds-warriors [Pustovalov 1994:125-126]. The production of weaponry was particularly well developed, especially those made of bronze [Klochko, Pustovalov 1994]. The instruments relating to combat are abundant and highly diversified, which is interpreted as an indication of the militaristic nature of the social organization of the Catacomb culture and its hierarchic structure with the dominant role of the Ingul (culture) group population [Pustovalov 1994].

A more precise absolute chronology of the named units is difficult to establish, which is shown by the analyses given below.

A. “Pre-Yamnaya” cultures

Relying on comparative analyses (especially of references to the Tripolye culture chronology), it is believed that these societies continued until the turn of the 4th millennium BC [Rassamakin 1994:Fig. 11]. It is until then that the decline

structures of the Sredniy Stog (chiefly Kvitanska culture) and Mikhailivka I are supposed to have lasted. A culturally syncretic group (type), Zhivotilovka-Volchansk [Rassamakin 1994:45; 1996:129-130], is also dated to the second half of the 4th millennium BC.

The Mikhailivka I type materials tend to be variously interpreted: as a connecting link between the Maikop culture and the Tripolye culture [Danilenko 1974:87], an early phase of the Maikop culture on the Lower Dnieper [Gimbutas 1991:369; 1997c:59], an entirely separate unit in the so-called Azov-Black Sea line of development [Shaposhnikova 1985a; 1987; see also Rassamakin 1994:42-44] or part (variety) of the Kemi-Oba culture [Telegin 1971:17]. Stress is laid on the complexity of the Mikhailivka I origins in which the populations of the northern Caucasus from the Sredniy Stog circle and Tripolye culture as well as “local” Neolithic groups are supposed to have participated [Shaposhnikova 1985a:331]. The culture is ascribed now to a vast expanse of steppes from the drainage of the Don to the Southern Bug River [Shaposhnikova 1987:Fig. 3] or even the Danube [Rassamakin 1994:44]. In the opinion of O.G. Shaposhnikova, initially (in the older phase) contacts with the Sredniy Stog [Kvitanska culture according to Y.Y. Rassamakin 1994] and pre-Maikop groups of the Caucasus are identifiable, while in the late phase such contacts with the Maikop culture are traceable. Throughout the period, links to the Tripolye culture are observable. In the course of Mikhailivka I’s development two or three chronological phases are distinguished [Telegin 1971:15; Shaposhnikova 1985a:324; 1987:12]. The dating of this culture relies on typological and stratigraphic analyses with special importance being assigned to contacts with the Tripolye culture, specifically its stages BII/CI (or possibly BII), CI and CII [Rassamakin 1994:44]. The chronological brackets set in this way span the 1st quarter of the 4th millennium BC and the turn of this millennium [Rassamakin 1994:44] or the last quarter of the 5th millennium BC and the turn of the 4th [2nd half of the 4th — 1st half of the 3rd millennium bc; Shaposhnikova 1987:14]. Bearing in mind the grounds on which they are based, both versions of the chronology must be deemed disputable. The situation is not made any better by the analysis of three radiocarbon dates that we have. From a settlement in Novorozanovka, assigned to phase II of the group, there comes a date (lab. no. ?) fitting into the interval of 3780-3540 BC [Shaposhnikova 1985a:330]. The bottom stratum of a settlement at the eponymous site in Mikhailivka, dated to the same phase, is associated with two datings temporally quite apart. The older one (Bln-630) fits into the interval of 3190-2850 BC, while the younger (Le-355) stays between 2810 and 2380 BC. All the three datings may have been procured from charcoals, which may explain the ageing of at least one, the oldest of them. It is worth mentioning that the discussed radiocarbon dates are treated selectively. On the one hand, a date from Novorozanovka is accepted, while on the other, younger dates from the lower level

in Mikhailivka are ignored as being too late [Shaposhnikova 1987:14; for a different view see Mallory 1977:253-254 and Gimbutas 1991:369]. However, authors question, in the first place, the youngest date [Mallory 1977:253-254].

Among the “pre-Yamnaya” cultures, a type of features, widespread on Black Sea and Azov steppes (from the Danube to the Kuban River), is distinguished and recently called Zhivotilovka-Volchansk [Rassamakin 1996]. In the opinion of Y.Y. Rassamakin [1996:129], it is an effect of “... a definite migration process, which united the Danube and Prut regions with the lower Don, the Kuban basins and the Northern Caucasus”. According to the suggested reconstructions, the spreading of the Zhivotilovka-Volchansk type supposedly proceeded from the west to the east as far as the Northern Caucasus and Ciscaucasia and then back west [Rassamakin 1996:130]. Constructed on the basis of comparative analyses, the chronology of this phenomenon (ca 3500-3000 BC) [Rassamakin 1994:Fig. 11] cannot be verified due to the lack of ^{14}C datings.

B. The Kemi-Oba culture

The Mikhailivka I (Nizhna Mikhailivka) culture and the Kemi-Oba culture are included in the Azov-Black Sea line of development of the Neolithic on the Black Sea to be distinguished from the Sredniy Stog-Khvalynsk line [Danilenko 1974:87-92]. The relationships between these two units still remain unclear; according to D.Y. Telegin [1971:17], the culture of the Mikhailivka I type (in particular in the late stage of its development known as Shirokoye-Baratovka) is a North Pontic variety of the Kemi-Oba culture. O.G. Shaposhnikova [1985a:325], in turn, includes in Mikhailivka I some steppe sites of the Kemi-Oba. By the way, it must be stressed here that both the criteria of distinguishing and origins as well as the dissemination and chronology of the Kemi-Oba culture continue to be debated. According to the most popular view, initially distinguished only for the Crimea, the Kemi-Oba culture is now believed to have been a more extensive phenomenon [Shchepinskiy 1985]. Its maximum range would have covered the Crimea and Black Sea steppes (as far as the mouth of the Dniester in the west) as well Azov ones [Shaposhnikova 1987:Fig. 6]. According to a more moderate version, the area of the Kemi-Oba culture would have covered the Crimea and the steppes of the northern Black Sea region, while the north-western Black Sea region was an area where graves of the Kemi-Oba type appeared in the context of the late Yamnaya culture [Subbotin 1995:196]. In addition, another hypothesis is advanced claiming that features or artifacts designated as Kemi-Oba are merely manifestations of local divergences within the Yamnaya culture [Gening 1987].

The lifetime of the Kemi-Oba culture is widely believed to have spanned the beginning and the end of the 3rd millennium BC [2500-1700 bc, Shchepinskiy 1985:336]. This chronology was arrived at by carrying out a comparative analysis of sources or, rather, by comparing them with the Yamnaya culture and the cultural

changes in the Caucasus [cf. Telegin 1977:17-18 — here a dating prior to 2500 bc]. Until now, the literature cited only one ^{14}C date and with little precision (“middle of the 3rd millennium bc”). The date came from a grave with a wooden cist discovered in the Mezhlimniiy *kurgan* [Korovina 1974:209].

The radiocarbon analyses of samples from the Akkiembetskiy *kurgan*, mentioned here several times already and located at the mouth of the Dniester, produced five datings for four graves associated with the Kemi-Oba [Szmyt, Chernyakov 1999]. All of them were secured from short-lived materials (human bones, reed in one case). The dates are very close to each other (2490-2310 BC). The dating results are borne out by the stratigraphic position of the burials, i.e. between an older stage associated with the Usatovo group and the younger one of the Yamnaya culture. In part, Kemi-Oba features may be contemporaneous with the oldest Yamnaya culture graves from the *kurgan*. The discussed dates are hard to interpret more broadly because of the lack of adequate information from the centre of this culture supposedly located in the Crimea.

B. The Yamnaya culture

The chronological brackets of the Yamnaya culture tend to be determined rather broadly, e.g. 3050-2450 BC [middle of the 3rd millennium bc — the beginning of the 2nd, Shaposhnikova 1985b:351] or even 3400-2350 BC [2700-1900 bc, Telegin 1987:13]. To a large degree, this is a result of relying on a long series of ^{14}C dates [Telegin 1985a; 1987] which, however, should be approached with strong criticism.

In the published series of dates, the most come from Yamnaya culture graves located east of the Dnieper with only few dates referring to Yamnaya culture burials found in the western portion of the northern Black Sea board [Telegin 1985a]. The spread of datings is quite large — at the maximum about 3575-1820 BC, but the majority concentrate between 3250/3050 and 2325/2175 BC [2600/2500-1900/1800 bc — Telegin 1977:12-13; 1985a]. These deficiencies are made up for in part by the datings from “ochre graves” in the Carpathian Basin [Bojadžiev 1992:404-405; Forenbaher 1993:tab. 1; Görsdorf, Boyadžiev 1996:156], but their spread is quite large, as well (3300-2500 BC).

The problems with the interpretation of ^{14}C dates cited in the literature are diverse. In the first place, an overwhelming majority of samples sent to the radiocarbon analysis contained charcoals or wood that could have made the samples older (“old wood effect”). An equally important problem is the joint discussion of datings coming from various parts of the very vast area occupied by Yamnaya culture populations, which, consequently, led to the obliteration of the spatial change dynamism. Thirdly, it is difficult to use the existing set of dates because a number of assemblages have never been fully published.

In an effort to avoid the above problems, I use in the following discussions the latest series of dates obtained under the Polish-Ukrainian research programme

[Klochko, Koško, Szmyt 1999]. During its implementation, series of datings of features (*kurgans*) with preserved stratification were made permitting us to verify ^{14}C dates. The datings focused on bone samples from Yamnaya culture graves, while other materials (wood — six datings) were used only supplementarily.

The dated features come from various areas of the steppe and forest-steppe west of the Dnieper, specifically from the right-bank part of the Middle Dnieper Area (forest-steppe: Myronivka, Talyanki, steppe: Ordzhonikidze, Golovkovka) and the Lower Dniester Area (Akkiembetskiy *kurgan*). The latter ones are associated by the author of investigations (I.T. Chernyakov) with the Budzhak group (culture). It must be noted that the dated features did not include any “old Yamnaya” complexes, which results in a certain narrowing down of interpretation [for a discussion of the grounds for distinguishing the oldest Yamnaya horizon see, e.g. Nikolova 1994].

After performing analyses [Klochko 1999; Klochko, Koško, Szmyt 1999; Klochko, Kruts 1999; Nikolova 1999a; 1999b], it was found out that the series of dates for the Yamnaya culture in the Dnieper and Dniester Areas lay within the 2nd half of the 3rd millennium BC (Fig. 30). One sigma intervals of calendar value distribution are respectively as follows: on the steppes on the right bank of the Dnieper (Ordzhonikidze, Golovkovka) — 2560-2320 BC, on the forest-steppe (Myronivka, Talyanki) — 2510-2260 BC, and on the Lower Dniester (Akkiembetskiy *kurgan*) — 2410-2170 BC. Hence, the earliest dates (I take into account only those procured from bone samples) — from ca 2600 to 2550 BC — come from the steppe Dnieper Area, while others — from about 2500 BC — from the region of forest-steppe on the river's right bank. Over 100 years separate these dates from the oldest datings from the Lower Dniester Area (Akkiembetskiy *kurgan*). A similar situation prevails in the case of the oldest datings. On the Dnieper, they occur around 2350/2300-2250 BC, while on the Lower Dniester about 2170 BC.

C. The Catacomb culture

Unlike the Yamnaya culture, the chronologies of the Catacomb culture made too little use of ^{14}C datings relying almost exclusively on comparative analyses of artifacts and grave forms. Developed on such grounds, the Catacomb chronology spanned the period from 2500 to 1900 BC [2000-1600bc, Bratchenko, Shaposhnikova 1985:417-418]. It is also accepted that Catacomb structures located on the Donets and Don rivers (so-called Donets Catacomb culture) emerged relatively early [Bratchenko, Shaposhnikova 1985:419], whereas those found in the north-western Black Sea board have a generally late chronology [Chernyakov 1979].

Radiocarbon datings for the Catacomb culture have been relatively few until recently [Mallory 1977:350; Telegin 1992; Mallory, Telegin 1994; Aleksandrovskiy et al. 1997]. Moreover, the dated features are for the most part situated in the eastern expanses of the territory occupied by the Catacomb culture. Regional series of datings were obtained, for instance, for the Northern Donets basin, where they mark

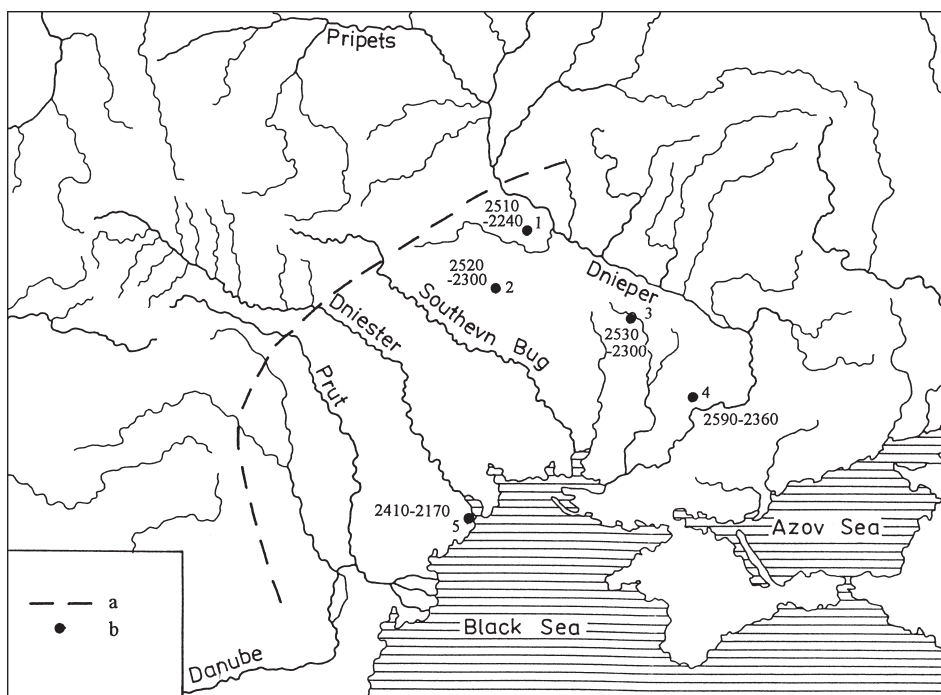


Fig 30. Absolute chronology of the Yamnaya culture (selected sites).

Key: a - north-western border of the Yamnaya culture; b - selected sites with series of ^{14}C datings (1 - Myronivka, 2 - Talyanki, 3 - Golovkovka and Protopotopovka, 4 - Ordzhonikidze-Chkalovo, 5 - Zatoka/Akkiembetskiy kurgan).

Sources: Szmyt, Chernyakov 1999, Nikolova 1999a, 1999b.

out the interval of 2900-1900 BC [Telegin 1992; Kaiser 1999] and for Kalmykia, where they lie within the period of 2600-1950 BC [Aleksandrovskiy et al. 1997; Shishlina 1997]. The datings were obtained mostly from wood samples, which may have caused their ageing.

The recently published papers by E. Kaiser and A. Nikolova brought a set of new ^{14}C dates concerning the Catacomb culture in the steppe, right-bank Dnieper Area, in the vicinity of Ordzhonikidze. All the datings were procured from samples containing human bones. The features selected for the radiocarbon analyses gave us a chance to verify the obtained results because of the stratigraphic arrangements into which the Catacomb culture graves were fitted [Kaiser 1999; Nikolova 1999a; 1999b]. Generally speaking, when analyzed jointly, the new dates for the Catacomb culture delineate the interval of 2310-2060 BC.

III.1.4. THE CAUCASIAN UNITS

The North Caucasian Maikop culture is believed now to be a genetically non-homogeneous phenomenon consisting of many components [Munchayev 1994; Rezepkin 1991b; Trifonov 1991a; see there for extensive bibliography]. Attention is drawn to the presence of patterns coming from Asia Minor and the steppes as well as — in certain hypotheses — from central Europe (see below). In rather radical hypotheses, it is treated as a vanguard of the Asia Minor civilization [Trifonov 1987:20], although, as M.B. Rysin [1997:105, note 16] observes, it is an overstated assessment based on two unique finds (materials from the Oshad *kurgan* and Staromyshastovskiy “hoard”). Both material culture and the ritual as well as economy were diversified [Rysin 1997:105-107]. In the economic sphere, for instance, three varieties were distinguished. In the first, mixed one, land cultivation dominated over domestic animal raising (mainly pigs), in the second, “settled” cattle raising dominated, while in the third, mixed one, animal raising was dominant [Rysin 1997:105-106].

Constructed using comparative analyses, the chronology of this culture was traditionally placed in the period of ca 3000-2500 BC [2500-2000 bc — Munchayev 1994:168]. After taking into account the Asia Minor analogies, the Maikop culture may be dated to 3700-3000 BC [3000-2500 bc — Trifonov 1991a:165; see also Piotrovskiy 1991] or 3700-2800 BC [3000-2250 bc — Munchayev 1994:171-172]. Some scholars, however, still use the old chronology [e.g. Lovpache 1991:35]. The only ¹⁴C dates available, coming from the site at Galugaye [Munchayev 1994:172, note], mark out the period of 3680-3110 BC.

The origin of dolmen groups or rather the culture of dolmen builders [Rysin 1997], located in the western and northern Caucasus, is at least partially linked to the Novosvobodnaya type [e.g. Rysin 1997:113] or is considered independent [e.g. Rezepkin 1991a:188]. There are views linking the emergence of Caucasian dolmens to migrations from the Mediterranean [Markovin 1994a:252]. Also in this case there is no clear chronology, although in the latest publications the dolmens of the western Caucasus are dated by analogy to ca 3300-1700 BC [from 2700-2600 to about 1400 bc — Markovin 1994a:251]. The Northern Caucasus culture, in turn, is dated to approx. 2900-1400 BC [2300-1200 bc — Markovin 1994b:282-283].

III.2. EXOGENOUS STRUCTURES

Besides the GAC, two other groups originating from Central Europe (more precisely from the Vistula drainage basin) marked their presence in Eastern Europe, namely the Funnel Beaker culture and Corded Ware culture. They represent two different socio-economic systems whose co-occurrence is characteristic of the local Late Neolithic/Eneolithic [Kruk 1993; Kadrow 1994; Czebreszuk 1996; Kruk, Milisauskas 1999]. The Funnel Beaker culture was older, more stable, relied on land cultivation and domestic raising of livestock herds and used forest clearing by fire on vast areas, which led to very radical transformations of the natural environment (deforestation). Whereas the Corded Ware culture was younger, more mobile and used such anthropogenic effects for itinerant animal raising.

III.2.1. THE FUNNEL BEAKER CULTURE

The presence of the Funnel Beaker culture in Eastern Europe (to be precise in its western expanse) is recorded in at least three different forms. The first one is made up of relics of more or less stable settlement structures, the second consists of individual elements (chiefly vessels) found in local cultural contexts, while the third comprises altered patterns of pottery-making. The first form is found only in the area between the Upper Bug, Dniester and Pripets rivers (with its centre on the Volhynia Uplands), while the second and third were encountered both in that area and in the Forest zone (in the drainage basins of the Upper Dnieper and Dvina and on the Baltic coast). Here, I am primarily interested in the possibilities of dating the youngest traces of the Funnel Beaker culture in Eastern Europe, thus in what follows below I shall concentrate on this very issue.

A. Area between the Upper Bug, Dniester and Pripets

It follows from a map published a few years ago [Peleshchysyn 1990b:Fig. 1], that Funnel Beaker culture populations penetrated the area from the Upper Pripets in the north to the Upper Dniester drainages in the south. The main concentration was located on the Upper Bug. The eastern limit of migrations was on the Horyn with only single points discovered in the drainages of the Seret and Zbruch rivers. All these sites are included in the south-eastern group of the Funnel Beaker culture [Wiślański 1979b:Fig. 89], and within it, in the Bug group [Gurba 1989:219]. Among them are relatively stable settlements, known as highland settlements (e.g. Zimno), as well as small outposts [e.g. Machnik, Sosnowska, Cyhyłyk 1997:23-24]. The studies of local Funnel Beaker culture chronology, which have been carried out

so far [e.g. Burchard, Jastrzębski, Kruk 1991; Ścibior 1994], relied on typological analyses (comparing appropriate materials with western portions of the south-eastern group and taking advantage of links to the Tripolye culture) and on a series of ^{14}C datings from a highland Funnel Beaker culture settlement in Gródek Nadbużny on the west bank of the Bug [Gumiński 1989; Jastrzębski 1989; 1991]. Building on these foundations, the Funnel Beaker culture was believed to have existed in the area in question in 3975-3050/2900 BC [3200 -2500/2300 bc; Burchard, Jastrzębski, Kruk 1991:98-99; Jastrzębski 1991:189]. The period was divided into three development phases, the last of which was thought to have covered the period of 3575/3400-3050/2900 BC [2800/2700-2500/2300 bc; Jastrzębski 1991:189] or 3450/3400-3050/2950 BC [2750/2700-2500/2400 bc; Ścibior 1994:41].

Now, owing to the resumption of work on the materials from the settlement in Zimno [Bronicki 1997], we have the first local series of ^{14}C dates for the borderland of the south-eastern Funnel Beaker culture group. The ^{14}C dates, obtained from bone samples excavated from settlement pits, revealed that the settlement in question occurred at least in two stages. The older stage took place ca 3670-3420 BC, that is as expected, while the younger one must be dated to 3000-2640 BC¹³. The disjunction of both series is beyond any doubt, because they are located in completely different *plateaux* of the calibration curve. The number of dates making up the younger series (8 in total) and practically the mono-cultural nature of sources discovered in the dated features and in their immediate vicinity seem to exclude the possibility of associating the dates with, for instance, GAC settlement. If this hypothesis is confirmed after the analysis of sources from the settlement in Zimno is completed, then it will mean that Funnel Beaker culture settlement enclaves may have existed parallelly to the GAC and over a relatively long period, too.

In the area concerned (also in eastern Volhynia) we know of finds of GAC vessels discovered in the settlements of the late Tripolye culture and examples of adaptation by the latter of some Funnel Beaker culture ornamentation patterns [Movsha 1985b:22-27; Peleshchyshyn 1985:279]. These observations, however, do not make us introduce any significant corrections to the dating of Funnel Beaker culture settlement.

B. The area between the Upper Dnieper and Dvina

The ornamentation of the already mentioned (Ch. III.1.1.) Usvyaty culture was perceived as a transformation of Funnel Beaker culture (and GAC) ornamentation patterns [Miklayev 1992]. In A.M. Miklayev's opinion this culture should be treated as a "specific eastern variety of the Funnel Beaker culture and GAC" [Miklayev 1992:30]. Due to the fact that relevant sources have not been published in full yet and all we have is a modest selection of analytical drawings [Dolukhanov,

¹³Personal communication of Andrzej Bronicki, M.A., for which I am grateful.

Miklayev 1979; Miklayev 1992], the problem must be left in abeyance. It should be remembered, however, that ^{14}C dates allow us to set the chronology of the Usvyaty culture at 3540-2640 BC. Any Funnel Beaker culture influence should be synchronized with the younger section of this unit's development.

C. Baltic Coast

In this area, traces of contacts with the Funnel Beaker culture, chiefly in the form of elements of Funnel Beaker culture ornamentation, are recorded in the pottery of the Narva and Neman circles.

The oldest artifacts of this kind, however highly controversial, are related to the Early Neolithic phases of the Narva culture [Timofeyev 1991b:139]. Clearly identifiable, albeit single fragments of Funnel Beaker culture vessels were found in the context of materials representing the Middle Neolithic stage of the Narva culture in Zvidze on the Lubana Lowlands [Loze 1988:Fig. LVIII]. The chronology of this settlement layer may be set on the basis of ^{14}C dates at 3500-3100 BC [Loze 1988:101]. An earlier period, specifically ca 4350-3700 BC, is mentioned in relation to Funnel Beaker culture references identifiable in the early phase of the Zedmar type [5500-4900 BP — Timofeev, Zaitseva, Possnert 1994:132; in older hypotheses 5300-4800 BP — Timofeyev 1991b:143-146]. It should be remembered here that it is the period of 3975/3875-3050/2900 BC (with the intensity culminating between 3600 BC and 3050/2900 BC) that is associated with the influences of the Narva circle affecting the regional Funnel Beaker culture group in the Chełmno Land [3200/3100-2400/2300 bc, Kukawka 1997:75-77].

In sum, the contacts of Funnel Beaker culture societies with Narva circle populations may be most likely dated to the decline of the 1st and the whole 2nd half of the 4th millennium BC.

We face a more difficult task when we try to construct a chronology of contacts between the Funnel Beaker culture and the Neman culture. Cultural patterns originating with the Funnel Beaker culture are recorded in the middle phase (Lysaya Gora) of the Neman culture. Unfortunately, the dating of this phase is not based on any radiocarbon data. Relying on typological analyses, its chronology is set at ca 3700-2800 BC [from the beginning of the 3rd millennium bc to ca 2250 bc — Charniauski 1979:78].

III.2.2. THE CORDED WARE CULTURE

Different groups of the central European Corded Ware culture penetrated practically the whole western expanse of Eastern Europe. We still have too little infor-

mation to be able to reconstruct the changes in Corded Ware culture settlement in this area. A relatively accurate determination of the temporal brackets of the presence of Corded Ware culture populations is possible only in respect of the northern portion of the Forest zone (more precisely, the Baltic coast) and the area located between the upper courses of the Vistula, Bug and Dniester rivers.

A. Baltic Coast Corded Ware culture

It is widely accepted that the oldest groups of Corded Ware culture populations on the south-eastern shores of the Baltic possessed goods typical of generally European Corded Ware culture horizon ("A") [Loze 1996:60-63; Rimantiene, Česnys 1996:49-50]. The appearance here of successive groups of Corded Ware culture populations, from younger development phases, is evident, as well [Loze 1996:64-68].

The presence of Corded Ware culture populations on the SE coast of the Baltic is dated to 2950-2550 BC [2400-2100 bc, Butrimas, Česnys 1990:360]. We have a quite numerous series of ^{14}C dates that can be analyzed.

In my opinion the most significant radiocarbon datings come from settlements in Latvia (Abora, Iča, Eini) [Loze, Liiva 1991], Lithuania (Šventoji, Šarnelė, Sirmė) [Rimantiene, Butrimas 1991] and Belarus (Osovets, Krivina) [Krainov 1991:59]. Only two dated features are graves (Spiginas 2, Parkhuty) [Butrimas, Česnys 1990:359; Lakiza 1999]. The dated materials included charcoals, wood and peat. The oldest dates, indicating periods beyond 3000 BC (Abora, Iča), were obtained from charcoal and wood samples. This justifies a presupposition that these dates are affected by the "old wood effect" and the whole sequence is made older. After calibration it fits into the interval of 3020-2350 BC, yet it is more credible to place its inception at ca 2850 BC. It is difficult to determine the credibility of the final date.

B. The so-called Sub-Carpathian Corded Ware culture

In Podolia, Volhynia and the adjacent territories, separate Corded Ware culture settlement, linked to the territories on the Upper Vistula, flourished next to groups of the epi-Corded Carpathian circle (Mierzanowice and Strzyżów cultures) [Sveshnikov 1974; 1985b; 1990; Machnik 1979b; Kadrow, Machnik 1997]. I accept in this context the last proposal of S. Kadrow and J. Machnik [1997:139-142] who propose to give up using a unit called by I.K. Sveshnikov [1974:80-118] the Gorodok-Zdolbitsa culture. The dynamics of chronological and spatial changes of the Corded Ware culture and epi-Corded cultures in the discussed area was best reconstructed by J. Machnik [1979b; 1991; 1998; Kadrow, Machnik 1997], on whose results I rely here.

The remains of the oldest Corded Ware culture phases (corresponding to the general and central European horizons [Machnik 1979b:54-61]) are recorded in the

drainage basin of the Upper Dniester (as far as the sources of the Bug in the north). In the east, their limits extended to the area lying between the Gnyla Lypa and Zolota Lypa rivers, while further south it followed the Bystritsa River. The exceeding of these limits and subsequent expansion to the north (the Bug Basin), the east (Podolia as far as the Zbruch) and the south-east (Carpathian Foothills as far as Halicz) took place in the late period of the Corded Ware culture development (phase III) [Machnik 1979b:60; 1991:12]. Simultaneously with decline Corded Ware culture groups, ca 2400 BC, there appeared first settlers who represented the epi-Corded Carpathian circle [Kadrow, Machnik 1997:15-26]. Whereas the elements of the oldest (proto-) phase of the Mierzanowice culture emerged, in the context of Corded Ware culture sources, only on the Upper Bug and in the northern part of the Upper Dniester drainage basin, the next (early) phase was relatively widely spread. It is found in Volhynia as far east as the Horyn, on the Dniester as far as the Seret and in the Upper Prut drainage basin. In the third (classical) phase, the settlement of the Mierzanowice culture continued on the Upper Bug and in Podolia. Most likely already in its beginning (ca 2000/1950 BC), the Strzyżów culture rose on the Volhynia Uplands [Kadrow, Machnik 1997:29-73]. In the late phase, the territory occupied by Mierzanowice culture populations dwindled to cover only the Upper Bug drainage and fringes of Volhynia with most of the province being dominated by the Strzyżów culture.

More light is shed on the above developments by a long series of ^{14}C dates which, for the most part, come from the western portion of the Upper Bug drainage basin and neighbouring areas of the Upper Vistula drainage. These areas, including the Upper Dniester Area, made up the oecumene of closely related Corded Ware culture groups (followed by epi-Corded ones), which justifies the use of information concerning both regions. It is the more necessary as the analysis must be rid of old datings that were procured from charcoals and are obviously aged (Bolekhovtsy, *kurgan 7* — a date concerning the so-called Sub-Carpathian Corded Ware culture and Zozów II — a date concerning the so-called Gorodok-Zdolbitsa culture) [Sveshnikov 1985:390]. Hence, from the Upper Dniester, only three dates are relatively credible — from Klimentovka [Sveshnikov 1974] and Side [Machnik, Sosnowska, Cyhyłyk 1997:22]. They were procured from charcoals as well, but they fit well into a sequence made up of dates obtained west of the Bug. The latter ones include datings of both coals and bones. The samples were collected from complexes representing all the mentioned Corded Ware culture phases (excluding epi-Corded structures). After calibration the whole series lies within the period of 2890-2430 BC. If we restrict the calibration to short-lived samples, the interval will be shortened to 2840-2550 BC. Lacking any symptoms of ageing, the first of the named intervals may be taken to be reliable, too.

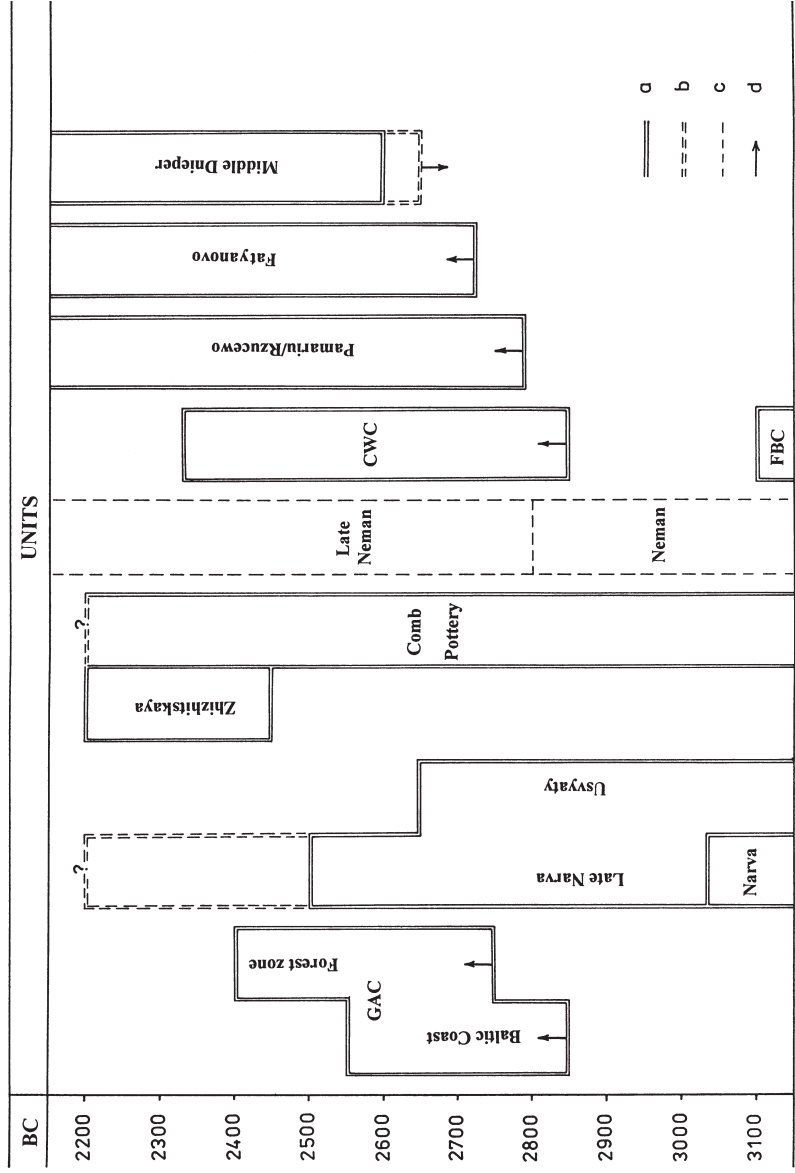


Fig 31. Relative chronology of cultural units in the Forest zone.
Key: a - chronology based on reliable radiocarbon datings, b - chronology based on questionable radiocarbon datings, c - chronology established without radiocarbon datings, d - suggested extension or narrowing of chronology.

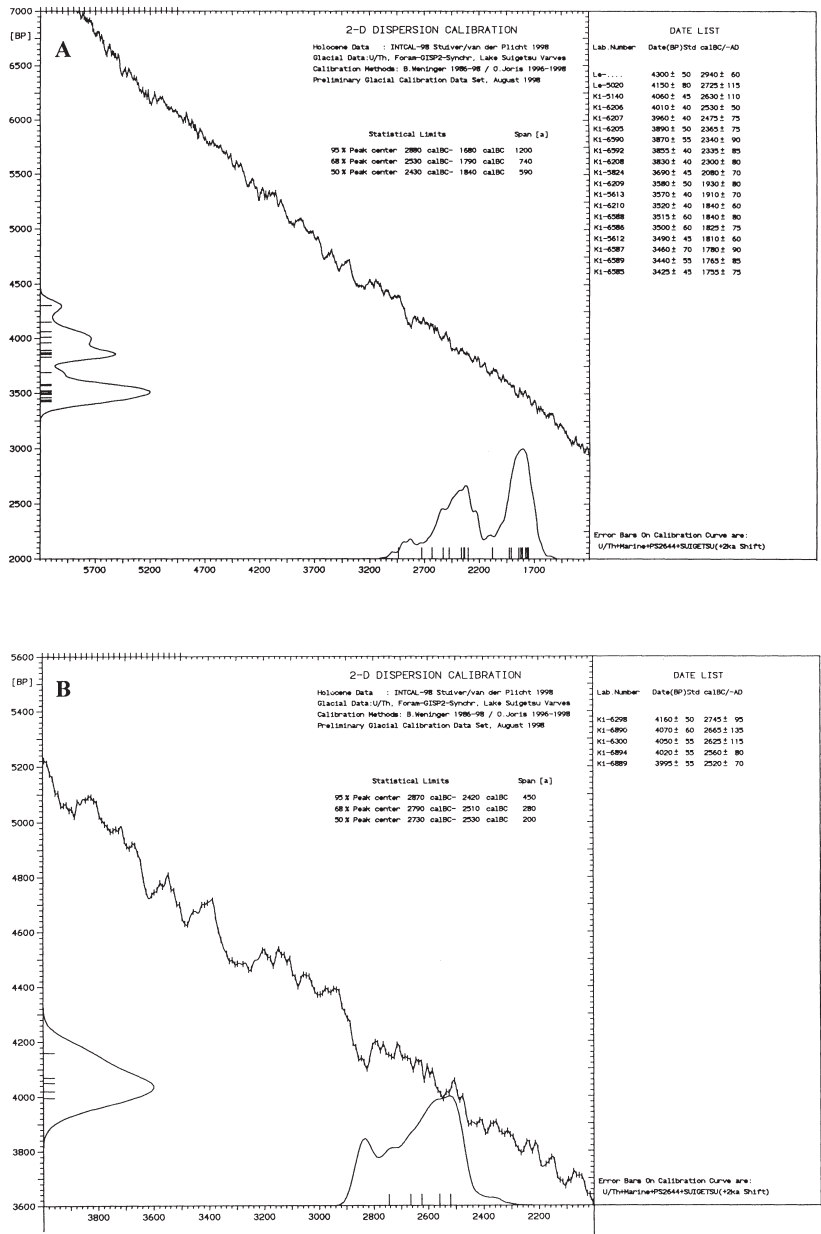


Fig 32. Relative chronology of cultural units in the Forest-Steppe and Steppe zones.
Key: see Fig. 31.

III.3. CONCLUSION

A comparative radiocarbon chronology of the units discussed so far is presented in Fig. 31 and 32.

In the light of the presented data, GAC settlement in the Forest zone of Eastern Europe and on the Baltic coast is contemporaneous with the following groups: late Narva culture, late Neman culture, late Comb-Pottery culture, older sections of the Pamariu/Rzucewo and Fatyanovo cultures, and the late Middle Dnieper culture, possibly also with the decline groups of the Dnieper-Donets and Upper Dnieper cultures. It is also with the same period that the presence of Corded Ware culture populations may be synchronized.

In turn, in the Forest-Steppe and Steppe zones, the GAC emerges in the period of decline of late Tripolye (CII groups and the Nizhna Mikhailivka (Mikhailivka I) group as well as the steppe Eneolithic. On the other hand, towards the end of the GAC, the development of units related to the Yamnaya culture and the Kemi-Oba culture takes place. It is possible that in the rudiments of Volhynia GAC structures there continued to survive decline Funnel Beaker culture settlements and that throughout the whole period of development of the Volhynia-Podolia agglomeration, in the western (Carpathian) portion of the zone, the Corded Ware culture was present as well.

IV. CONTACTS. RELATIONS OF THE GLOBULAR AMPHORA CULTURE WITH OTHER SOCIETIES OF EASTERN EUROPE

On the extensive territory of Eastern Europe into which they had penetrated (see Ch. I.), GAC societies came into interaction with populations representing various cultural traditions. The establishment of a time-scale for this penetration (see Ch. II.) within the context of the chronology of eastern European cultural units (Ch. III.) now permits us to move on to the issue of intercultural contacts of GAC societies. A great deal of attention has already been directed towards this question [e.g. Sulimirski 1970; Sveshnikov 1983]. On the basis of similarities in form of a variety of physical artifacts, particularly of clay vessels, a far-reaching hypothesis has been constructed on the subject of the significance of GAC societies on the territory under consideration [e.g. Sulimirski 1970; Nikolayeva, Safronov 1974]. This chapter aims to provide a degree of order to the knowledge concerning the intercultural contacts of the society in question, and subsequently to define the directions and forms of these contacts. This will provide a foundation for the attempt, made in chapter V, to reconstruct the process of cultural transformations in which the GAC population participated.

IV.1. IDENTIFIERS OF CONTACTS

The subject of interest here is the material identifiers of contacts between the GAC and other eastern European groups. These are traits of two kinds: those genetically linked to the GAC and recorded in cultural environments of Eastern Europe and those recognised in the GAC but originating from eastern European groups. The classification of these identifiers, presented below, is accompanied by a commentary substantiating its reliability. The subsequent sections of this sub-chapter discuss the forms in which selected traits are present. By way of conclusion to the considerations presented, particular attention is paid to the controversial question of the relations between the GAC and 'megalthic' Black Sea and Caucasus cultures.

IV.1.1. LIST OF IDENTIFYING TRAITS OF INTERCULTURAL CONTACTS

A. Traits genetically linked to the GAC, present in eastern European groups (Figs. 33-38):

- A1.** Ceramics ornamentation in the form of 'stamp' impressions (Fig. 33:1)
- A2.** Ceramics ornamentation in the form of 'bird feather' impressions (small rings; Fig. 33:2)
- A3.** Ceramics ornamentation in the form of multiple festoons (Fig. 33:3)
- A4.** IA1, IA2 and IB2 type bowls (Fig. 34)
- A5.** IIC1 and IIC3 type vases (Fig. 35)
- A6.** IIIA and IIIB type pot (Fig. 36)
- A7.** VB1 and VBII type amphorae (Figs. 37 and 38)
- A8.** Trapezium-shaped flint axes with a four-sided section and traces of smoothing (Fig. 33:9)
- A9.** Flint chisel with a four-sided section (Fig. 33:10)
- A10.** Double-edged bone blades (Fig. 33:11)
- A11.** Amber discs with a cross-shaped ornament (Fig. 33:12)
- A12.** Stone cist graves (Fig. 33:13)

B. Features genetically linked to eastern European groups, present in the GAC:

- B1.** Ceramic lids
- B2.** The use of a shell admixture in ceramics production
- B3.** The use of a flint admixture in ceramics production
- B4.** Laurel-shaped flint arrowheads with grips
- B5.** The use of ochre in sepulchral rituals

A. Traits genetically linked to the GAC, present in eastern European groups

A1. The term 'stamp ornamentation' is restricted here to geometrical ornaments made by the impression of an even-surfaced rectangular stamp. It is a specific type of ornamentation, alien to eastern European cultures (where comb-like implements were used to give a multi-toothed effect) and originating from cultures of the Central European Lowlands: the Funnel Beaker culture and the GAC. At present, the most credible hypothesis concerning the origins of such ornamentation links it with the lowland Funnel Beaker culture groups from whom, in turn, it was adopted by the societies of the central GAC group [Wiślański 1966:99; Koško 1991a:91; Szmyt 1996a:242]. In both of the above-mentioned cultures, the basic pattern of stamp impression ornamentation remained identical: vertical, oblique and zigzag lines. The most important differentiating element is chronology. In the Funnel Beaker culture, these patterns were often applied especially in 'classical phases' (II-IIIc in Kujawy and Bronocice II-III on the western Małopolska Loess Uplands) [Czerniak

et al. 1991; Kruk, Milisauskas 1983], and in later phases (after approx. 3100-3000 BC) a reduction of their significance can be observed. In the GAC, meanwhile, they were proportionally the most often used type of ornamentation in the central group (e.g. in phases I-IIIb in Kujawy) [Szmyt 1996a:34-35]. They were also present in all phases of the eastern group of the GAC, particularly frequent in the Volhynia sub-group (see Ch. II.4.). To summarise, the appearance of this ornamentation in eastern Europe can be linked to either the Funnel Beaker culture or the GAC. Of decisive significance, therefore, is the chronology of stamp impression patterns within a particular cultural environment: before 3000 BC they could have appeared only as a sign of contacts with the Funnel Beaker culture [Dołuchanow, Tretiakow 1979:45-47; Timofeyev 1996:48-51], whereas after 3000 BC — with the GAC.

A2. Small ring (or ‘bird feather’) impressions are an ornamental element peculiar to the Polish group and eastern GAC, most probably throughout the whole period of their development. In other central and eastern European groups they appear only sporadically and their presence is perceived as the effect of links with the GAC [e.g. Koško 1991a:92-93]. In both of the above-mentioned GAC groups, they were most often elements in complex patterns which included ‘stamp’ impressions.

A3. Multiple festoons, composed from a variety of features (such as two-strand cord impressions, small hollows, pressed, incised and edged lines), are often discovered in the central GAC group, where they indicate, for example, the ‘classical’ stage of the Kujawy group of this culture (phases IIb and IIIa) [Szmyt 1996a:35]. In the eastern group, the presence of these ornaments is characteristic of the Volhynia sub-group in the VB phase and the Seret sub-group. It should be noted that festoons made by cord impressions are generally considered to be alien to the whole tradition of the Corded Ware culture as well as of the Tripolye culture. In groups of the late Tripolye culture, most probably in the period before 3000 BC (phase CI), occasional specimens of vessels with cord festoons can be found (e.g. Petreny) [Markevich 1981:Fig. 17, 21].

A4. So-called IA1, IA2 and IB2 type bowls (Fig. 34) are relatively often discovered in inventories of the central GAC group, although in the eastern group this type of vessel is found only in isolated contexts (Ivanye — type IB2aa α).

A5. So-called IIC1 and IIC3 type vases (see Fig. 35), with two or four handles, are a common element in eastern GAC assemblages, as well as among central groups. They are known, for instance, from graves at Tovpyzhyn (IIC3ba), Kutyanika (IIC1bb?) and Mykolaiv (IIC3bb), as well as from the pit at Peresopnitsa (IIC1bb, IIC1bb?, IIC2ba).

A6. So-called IIIA and IIIB type pots (Fig. 36) are also relatively frequent. They were discovered in, for example, Kutyanika (IIIA11aa, IIIB11ba), Krasnaselski 1/feature 3 (IIIA21bb, IIIB12ab, IIIB12ac), Serbești (IIIB11aa) and Peresopnitsa (IIIA12aa, IIIB12bb).

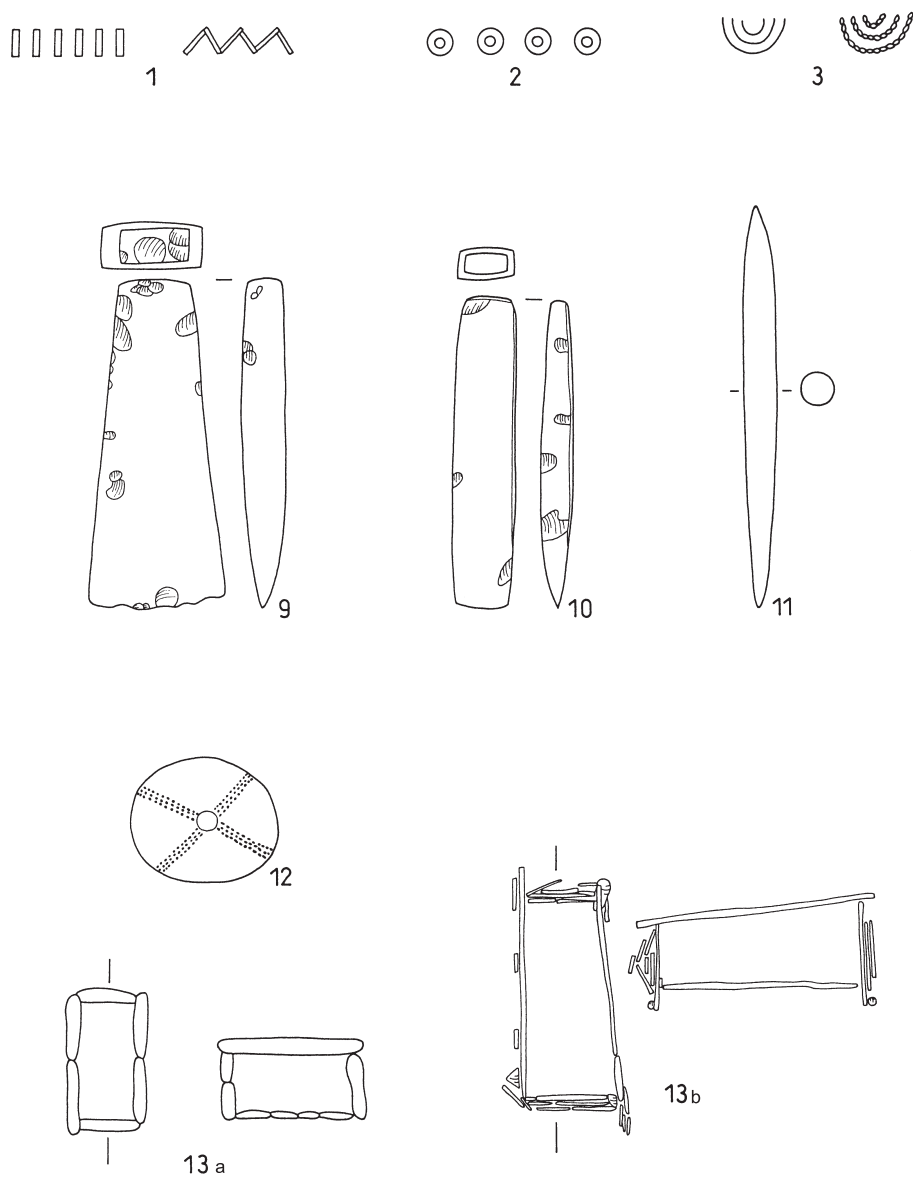


Fig 33. Identifying traits of the Globular Amphora tradition in Eastern Europe.

Key: 1-3 - pottery ornamentation; 9-10 - flint axes and chisels; 11 - double-edged bone spearheads; 12 - amber discs with cross-shaped ornamentation; 13 - stone cist graves.

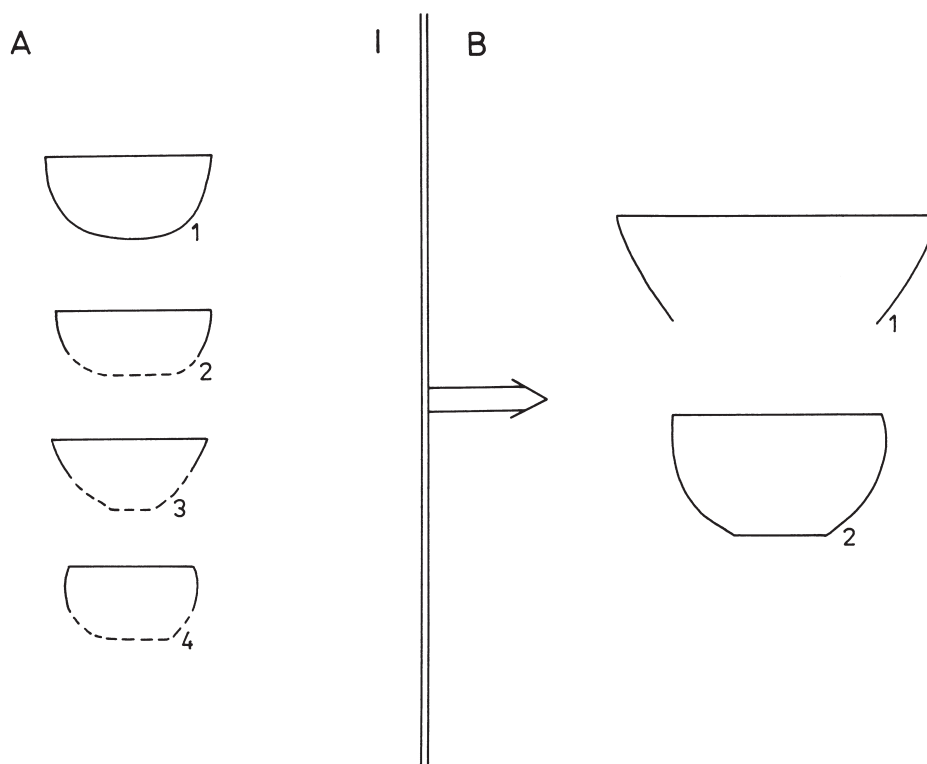


Fig 34. Identifying traits of the Globular Amphora tradition in Eastern Europe: type I (bowls).

Key: A - from Globular Amphora culture sites - central and eastern groups; B - from sites with syncretic traits.

A7. So-called VBI and VBII type amphorae (Fig. 37 and 38) represent the most typical GAC form, clearly predominant in both the eastern and central groups. Type VBI covers specimens of a more slender shape, whilst type VBII examples are squatter in form (including specimens similar to the so-called ‘Kujawy amphorae’). The bottom of the vessels are round or flat, and the handles (two or four) are usually located in the upper part of the belly or at the joining of the neck with the belly.

A8. One of the GAC artifacts most characteristic in all of its territorial groups is a trapezium-shaped (wedge-shaped) flint axe, four-sided in section, ground across most of its surface. It is not, however, a tool of a clear cultural classification. In the region of central Europe such axes can be found in inventories not just of the GAC, but also of the Funnel Beaker culture and, sporadically, the Corded Ware culture (especially in the Baltic Corded Ware culture, mainly at the beginning of the Single Grave culture) [Damm 1994:58]. However, it was only the GAC population that

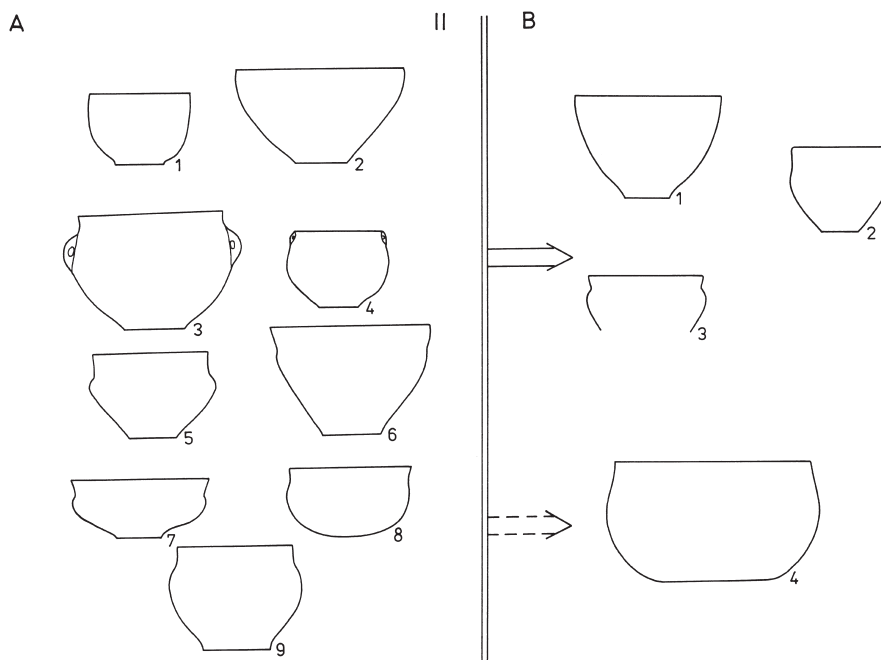


Fig 35. Identifying traits of the Globular Amphora tradition in Eastern Europe: type II (vases).
Key: see Fig. 34.

produced specimens displaying particularly advanced forms of processing (in rare cases, thoroughly ground and additionally smoothed and polished — see Ch. I.). On the territory of eastern Europe, the A8 type of flint axe appears in GAC groups and, to a lesser extent in the Corded Ware culture (especially on the Baltic Coast, and more rarely in the area between the Upper Dniester and the Bug) [e.g. Krainov, Loze 1987; Sulimirski 1968:Fig. 15].

A9. Chisel-type flint tools are, as has already been mentioned, relatively rare in the territory of eastern Europe, being generally alien to the cultural groups of this region. Specimens of a clear cultural classification come mainly from GAC features and, sporadically, from the Funnel Beaker and Tripolye cultures [e.g. Konopla 1998b:Fig. 7, 5]. They are also found in the Corded Ware culture of the Baltic Coast (see A8 above).

A10. So-called ‘double-edged blades’ (possibly fulfilling the function of a dagger or an arrowhead) are an artifact unique to the GAC population, recorded in all the territorial groups of this culture. They have been found in human graves as well as in animal burial graves, often between bones. On the territory of the eastern group, one specimen was found in Zhvanets (on the Middle Dniester). In this case, however,

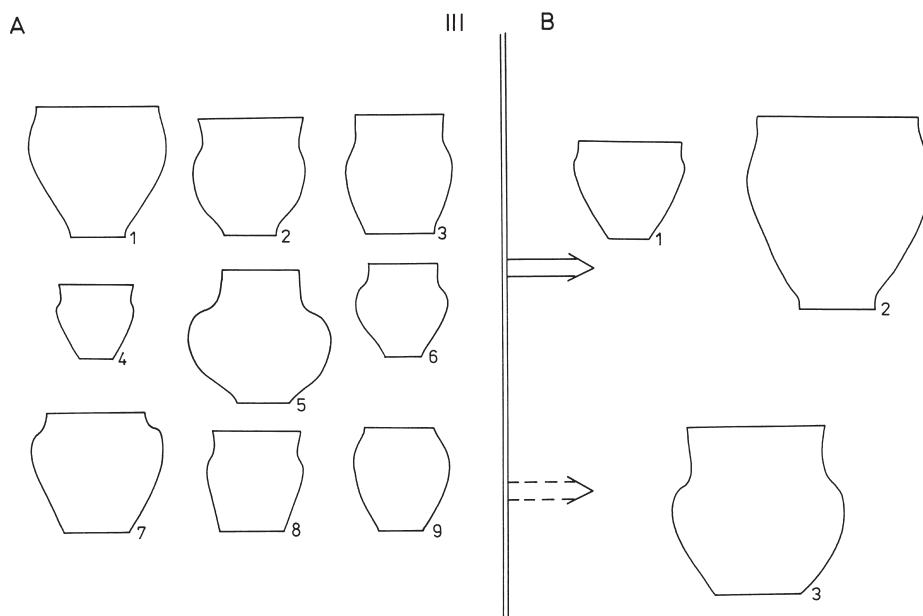


Fig 36. Identifying traits of the Globular Amphora tradition in Eastern Europe: type III (pots).
Key: see Fig. 34.

the connection with GAC is not certain, since the object comes from a layer. Only a hypothetical link to the GAC can similarly be made for several (at least four) such specimens found ‘in the layer’ on the territory of the Funnel Beaker culture settlement in the Zimno-‘Gorodyshche’ site, in the region where GAC ceramics occur¹⁴. However, two blades from Krasnaselski 1 (Middle Neman region) were excavated in a typical context: between animal bones buried in “grave” 3 (see Ch. II.2.). ¹⁴C dating enables the chronology of the specimens from Krasnaselski to be set at approx. 2580 BC. It should be mentioned that in the central group (more precisely: in Kujawy), two blades were found in ritual complexes of a syncretic character (GAC, Funnel Beaker culture, Corded Ware culture) [Koško, Kurzawa 1997].

A11. Symbols in the form of a cross or a star, used to decorate discs mainly of amber, but also of clay and bone, are known principally from the central group (e.g. Naruszewo, Rańsk, Rzeszynek, Szczepankowo) [Nosek 1967:332-335], from the period corresponding to the classical GAC horizon in Kujawy (3250 -2200 BC). In the eastern group, there is just one example of such an artifact (Ivanye), dated to approx. 2510 BC.

¹⁴Personal communication from Andrzej Bronicki M.A. and Dr. Anna Zakościelna, for which I am most grateful.

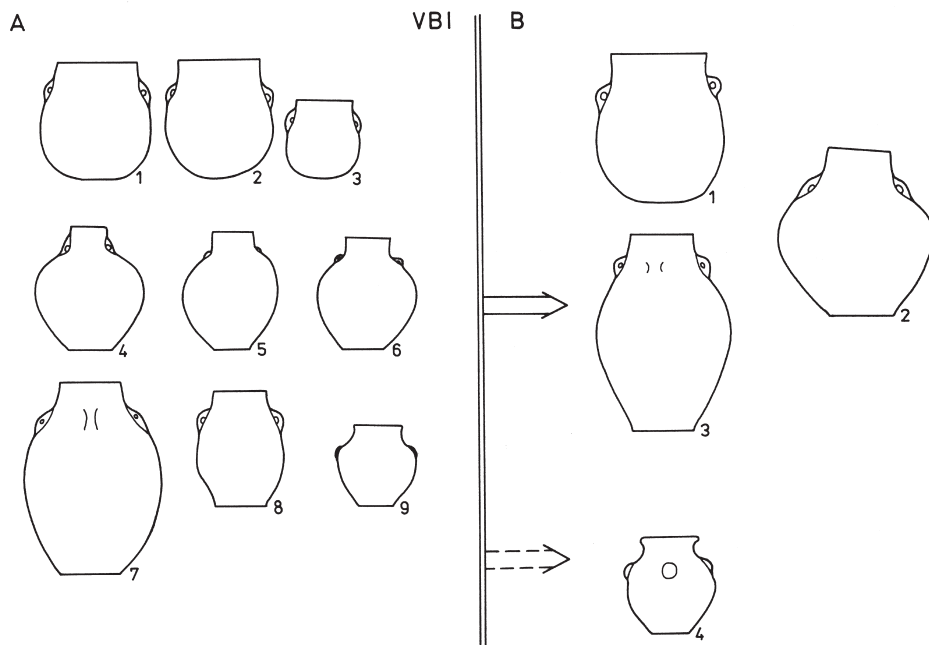


Fig 37. Identifying traits of the Globular Amphora tradition in Eastern Europe: type VBI (amphorae). Key: see Fig. 34.

A12. The form of a rectangular or trapezium-shaped cist grave constructed from stone slabs should be regarded as specific for GAC in the region of Podolia and the Moldavian Uplands and, to a lesser extent, in Volhynia. The size of these features varies, although most often they are about 1.0 m (Volhynia) or up to 1.0 m (Podolia) wide and over 2.0 m (Volhynia) or 1.5-2.0 m long. Most cist graves contained the remains of two or more people (see Ch. II.2.). The chronology of these forms is long, since they are present in all phases of the eastern group (VA-VD and PA-PC). In the Forest zone and its border area with the Forest-Steppe, the form of cist graves is completely alien to the local cultural tradition. In the steppes, however, features of a similar form are characteristic for the Kemi-Oba culture. This question will be dealt with later in this chapter.

As can be seen from the survey presented above, the group A identifiers are of varying value. Above all, some of them are of limited spatial range. For example, trait A12 might be found only rarely in the Steppe zone (see comments above), whilst traits A8 and A9 are less significant in environments of the Baltic Coast (and parts of the Forest zone?).

B. Traits genetically linked to eastern European groups, present in the GAC

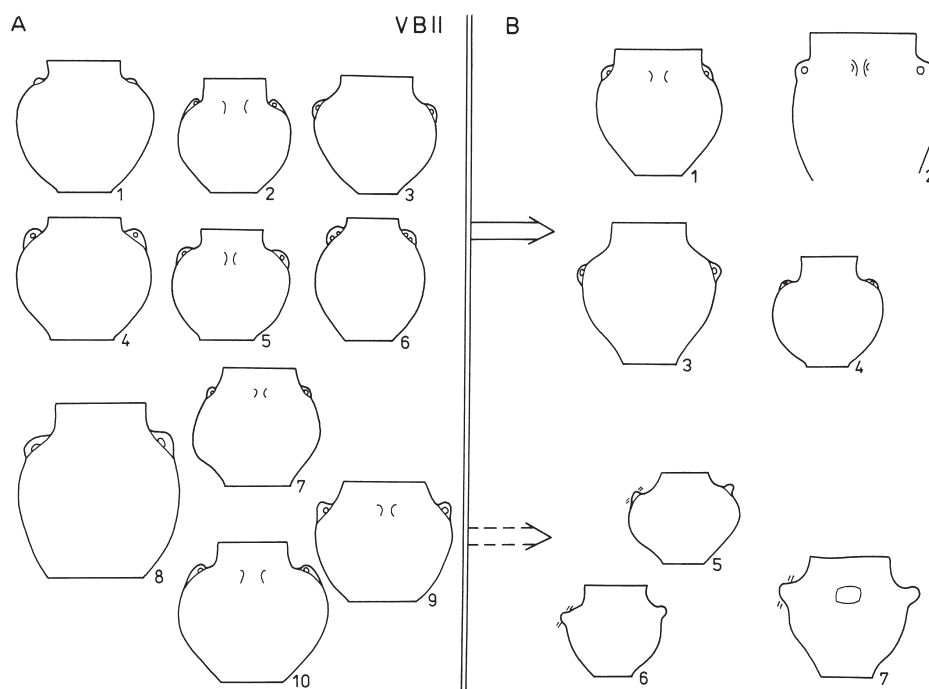


Fig 38. Identifying traits of the Globular Amphora tradition in Eastern Europe: type VBII (amphorae). Key: see Fig. 34.

B1. Ceramic lids are consistently found among Tripolye culture vessels throughout the whole period of its development. Most common are semi-globular or bell-shaped specimens, usually with one or two handles in their upper part [e.g. Chernysh 1982c:Fig. LIII, LXIII, LXVI, LXX, LXXIII].

B2. An admixture of crushed shells in the ceramic mass was used by various cultural groups of eastern Europe over the period of interest in this volume: particularly by the Tripolye culture (in the production of so-called 'kitchen' ceramics) and the Narva culture (also, sporadically, by the Neman culture, under the influence of the Narva culture), as well as by the Yamnaya culture.

B3. A flint admixture in the ceramic mass was less frequently used. Examples are known from the circle of Prick-Comb Pottery cultures [Borispolskiy 1978].

B4. The form of a laurel-shaped flint arrowhead, with a poorly defined grip, is documented in inventories of various cultures of the Forest zone within the period under consideration [e.g. Kalechyts 1987:Fig. 29, 1; Artemenko 1976:Fig. 4 and 6; 1985:Fig. 99; Krainov 1987a:Fig. 27, 8, 22; 1987b:Fig. 4:2, 4], although it is not an artifact 'typical' of any specific unit. To groups of the Steppe and Forest-Steppe

zones, however, it is fundamentally alien.

B5. The use of ochre in the sepulchral rite was a constant trait of eastern European societies from the Palaeolithic onwards [Gavrilov 1990]. In the period of interest in this volume, ochre was a constant element of the burial rite among Steppe cultures (particularly the Yamnaya culture, but also 'pre-Yamnaya' Eneolithic groups) [Shaposhnikova 1985a; 1985b; Rassamakin 1993], appearing as well among groups of the Forest zone [e.g. Krainov 1987a:64].

Among the above-mentioned identifiers of group B, two (B1 and B2) are linked to the Tripolye culture, the next two (B3 and B4) generally with Forest zone societies, and one (B5) above all with the population originating from the steppes. At this point, it is important to note that these traits are rarely recorded in GAC sources.

IV.1.2. THE BALTIC COAST

In the south-eastern area of the Baltic Coast, GAC elements appear in the context of the late Narva and Pamariu/Rzucewo cultures.

Within the environment of the **late Narva culture** (in its western variant), links to the GAC were most clearly identified at two sites: Šventoji 4 and 6 (see Ch. II.2.1.). In Šventoji 4, the stratigraphy was established [Rimantiene 1996a] and divided into two cultural layers: the lower (layer B) revealing relics of the settlement of the late Narva culture only; the upper layer revealing material defined by R. Rimantiene as GAC [Rimantiene 1996a:69]. However, on the basis of the publication and examination of a part of the material, it would appear that we are dealing here with syncretic sources, in which the participation of the GAC can be discerned, but where features of the late Narva culture, most prominently, and the Corded Ware culture, less spectacularly, are evident [see also remarks of Rimantiene 1996a:76]. GAC elements were most evident in ceramics (Fig. 39). In accordance with the classification proposed above, these are traits A1, A4, A5 and A7. The GAC tradition may also be represented by the ceramic technology used, based on a crushed stone admixture, although it should be pointed out that layer B also contained ceramics of a crushed shell admixture, as well as one of a crushed stone admixture. The vessel fragments from layer A are, however, harder than the Narva ceramics from layer B [Rimantiene 1996a:76]. In addition to this, the presence in the upper layer of objects indicating the raising of domestic animals is linked to the GAC: the fragment of a shovel plough and an apparent model (?) of a yoke, as well as the find of cattle horns (Fig. 40). Besides this, wheat pollen was identified in the pollen diagram on the level corresponding to layer A [Rimantiene 1996a:75]. In the

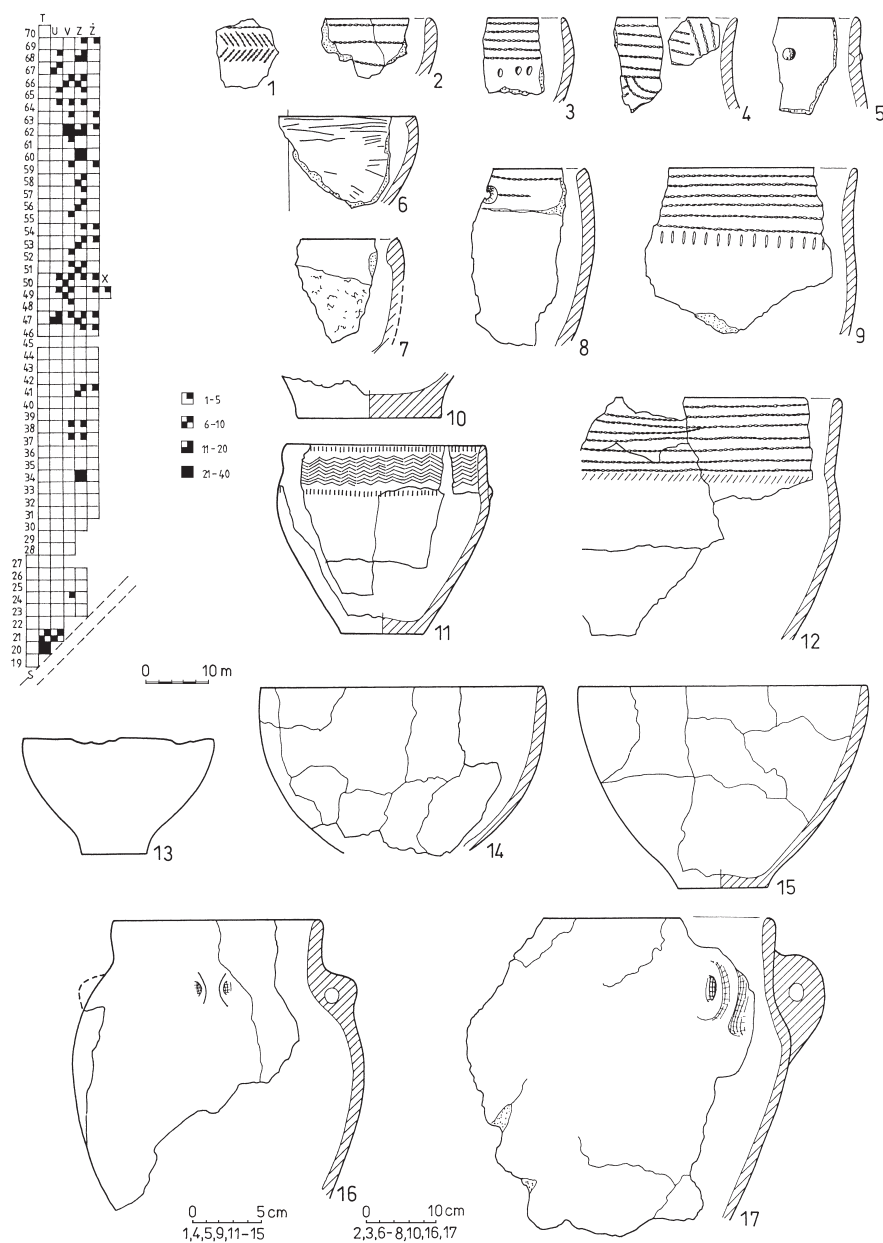
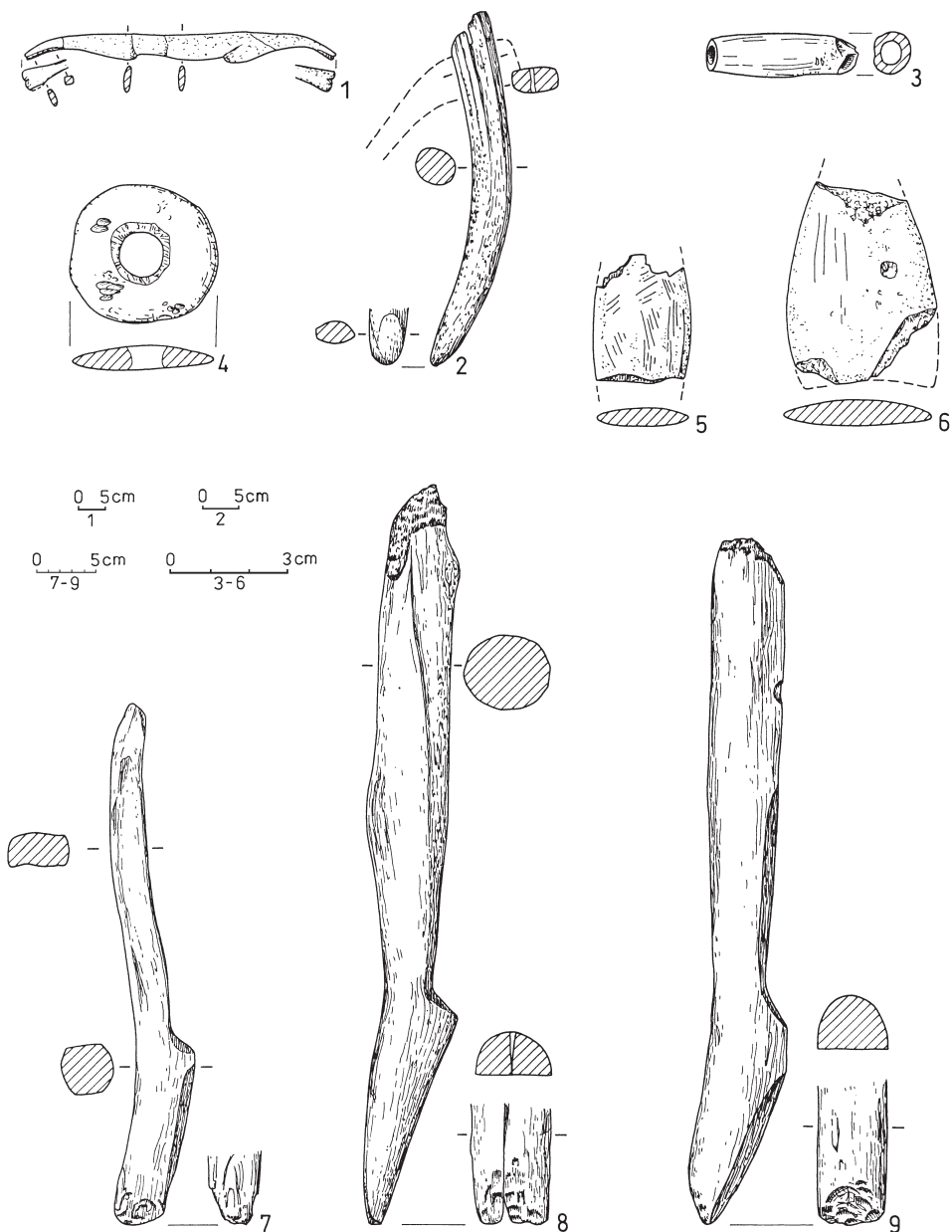


Fig 39. Šventoji 4. Pottery with Globular Amphora traits (from the 'A' layer) and its distribution in the northern part of the excavation.
Source: Rimantiene 1996a.



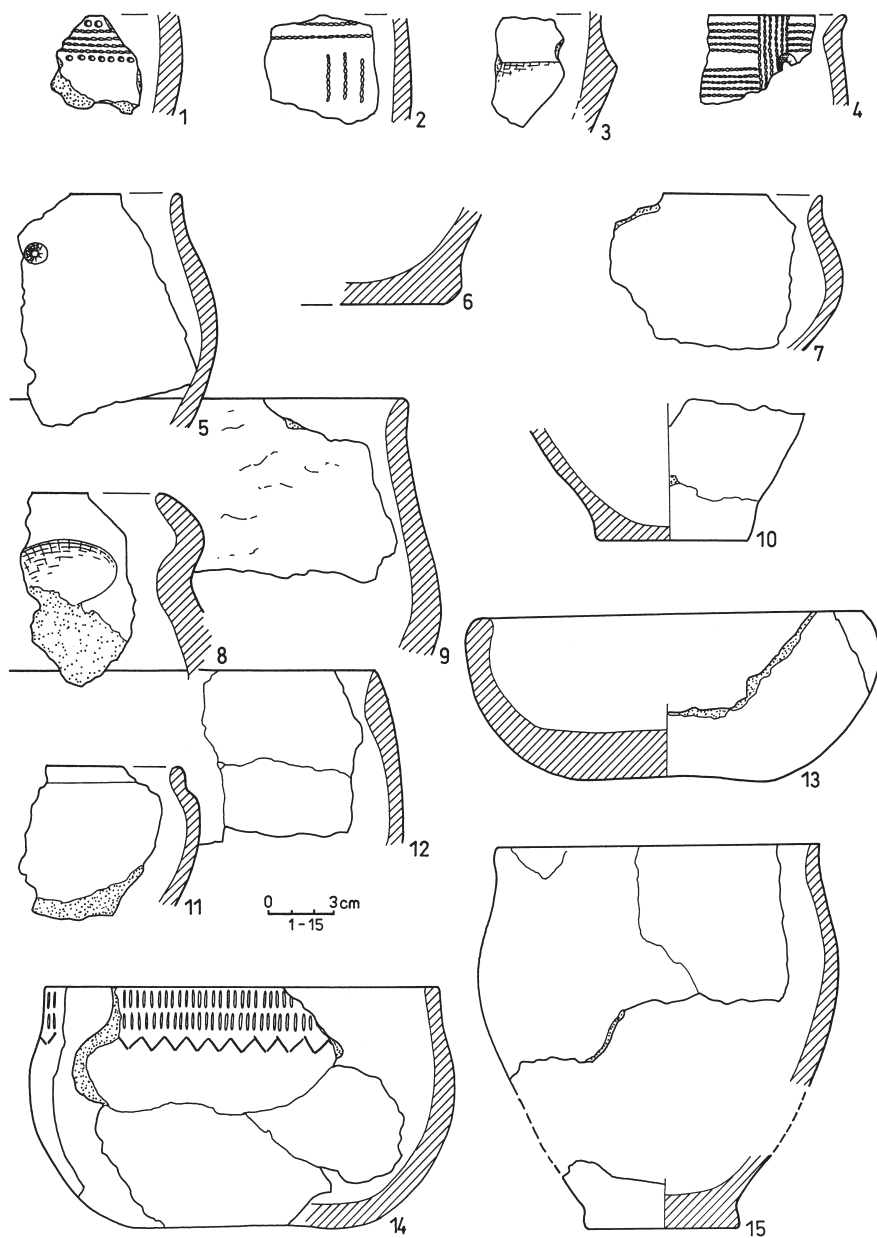
F i g 40. Šventoji 4 (1-6) and 6 (7-9). Finds probably connected with the Globular Amphora culture.
 1 - "yoke model"; 2 - part of a wooden ard; 3-6 - amber adornments from the 'A' layer; 7-9 - wooden ards.
 Source: Rimantiene 1996a, 1999b.

light of information from the cited monograph, it appears that the numerous remains of wooden constructions found on the excavated site were connected with layer B, i.e. with the Narva culture settlement. From layer A, meanwhile, comes a greater quantity of amber artifacts than from the 'Narva' level [Rimantiene 1996a:55]. A further element essential to the interpretation of the described source is the discovery in layer A of two stone axes (made from 'central European' materials) [Rimantiene 1996a:75], possibly connected with the Corded Ware culture.

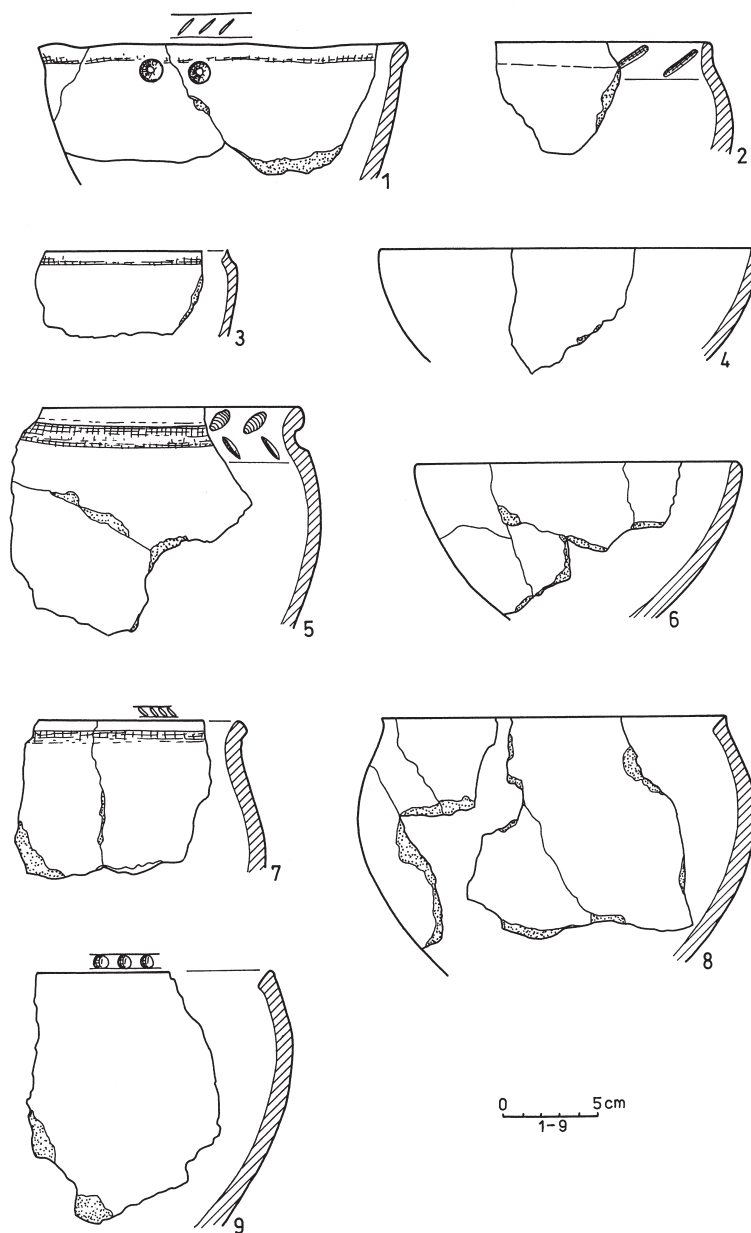
In Šventoji 6, meanwhile, a single-layer system was identified, with the remains of wooden constructions and culturally syncretic artifacts [Rimantiene 1996b]. In the source publication, three vessel groups were distinguished: those produced in accordance with the norms of the late Narva culture; those linked to the GAC; and a mixture of the two [Rimantiene 1996b:143-168]. Among the material presented as being 'pure' GAC (Fig. 41), only two forms of vessel can actually be considered as typically GAC: an IA2ca type bowl (trait A4) and a IIIA22bb type pot (trait A6). Some fragments of selected shallow vessel bottoms are also of an 'Globular Amphora' type. Such ceramics are characterised by an extreme hardness. Among the ornamentation can be found stamp ornamentations (trait A1) and festoons (trait A3). Among vessels defined as 'hybrid' there is, in principle, a lack of typical GAC forms, although certain characteristics distinguish them from diagnostic forms of the Narva culture (Fig. 42). In terms of hardness, the vessels of mixed features are placed between the 'Narva' and 'amphora' vessels. Abundant amber artifacts (almost 200 items) include trapezoid and oval pendants, discs, and beads both tubular, and round with a V-shaped perforation. Also found at this site were three wooden shovel ploughs. Additionally, the remains of cultivated plants were identified — foxtail millet (*Setaria italica*) and emmer (*Triticum dicoccum*) [Rimantiene 1996b:113]¹⁵. In the context presented, all of this evidence pointing to the cultivation of land is necessarily associated with the GAC.

Sites of the **Pamariu/Rzucewo culture** also provide a range of evidence of links with the GAC (Fig. 43), particularly noticeable in ceramic artifacts: stamp ornamentation (A1), 'bird feather' impressions (A2) and festoons made using a variety of techniques (A3). The first of these were recorded in Rzucewo [Żurek 1954:13], Suchacz [Kilian 1955:Abb. 177] and Nida [Rimantiene 1989:Fig. 50, 7-9, 12;61, 8; 78, 1, 2, 5-8, 10; 91, 3]. A2 type ornaments can be found in Nida (examination); A3 in Rzucewo [Żurek 1954:Fig. 15, 2-3] and Suchacz [Kilian 1955:Abb.105]. A part of the vessels represent forms derived from GAC patterns: IB2 type bowls (feature A4; e.g. Rzucewo, Suchacz) [Żurek 1954:Tabl. VII], and IIC type vases (A5; Rzucewo) [Żurek 1954:Fig. 15:6, 9]. Yet it is patterns of the Corded Ware culture which dominate. Probably connected with GAC traditions are ornamenta-

¹⁵I rely here on information included in the site monograph. In earlier publications, the names of other species were given [Rimantiene, Česnyš 1990:342]; [Daugnora, Girininkas 1995:44].



F i g 41. Šventoji 6. Pottery of the Globular Amphora culture.
Source: Rimantiene 1996b.



F i g 42. Šventoji 6. So-called mixed (hybrid) type pottery.
Source: Rimantiene 1996b.

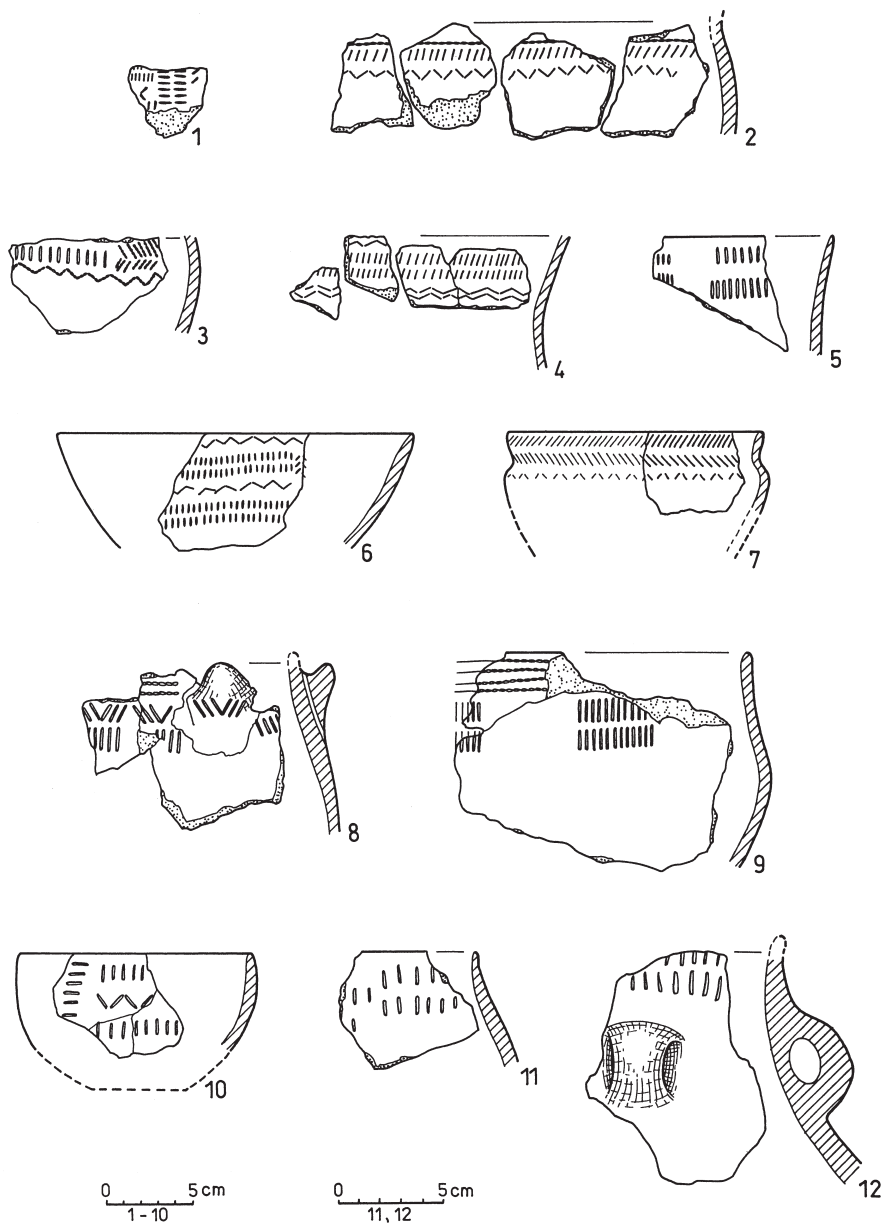


Fig 43. Nida. Pamariu/Rzucewo culture pottery with Globular Amphora culture traits.
Source: Rimantiene 1989.

tions in the shape of a cross, which decorate amber artifacts — discs, pendants and button-beads (trait A11, e.g. Butinge, Juodkrante, Palanga) [Rimantiene 1984:Fig. 146].

In closing this section of our considerations, attention should be drawn to the lack of indicators of contacts between Baltic Coast societies and the GAC population of the eastern group and even of the Middle Neman basin. The great majority of material evidence presented above indicates connections between populations of the Narva culture (and later the Pamariu/Rzucewo culture) and societies of the central group. Such a trend in contacts is also clearly reflected in the distribution of the specific type of amber artifact which is the V-perforated bead [type 1B according to Mazurowski 1983]. It was most probably the Narva culture population that initiated the production of this form, whose earliest traces within this circle date to the Middle Neolithic (from approx. 3600 BC) [2800 bc — Loze 1988:45-46, 100-102 and Fig. XLII, 3-4]. Later found in the circle of the Prick-Comb Pottery [Gimbutas 1985:234] and Pamariu/Rzucewo [Mazurowski 1983:66] cultures. From the societies inhabiting the south-eastern Baltic coastal region, these ‘buttons’ were adopted by the populations of the Late Neolithic groups from the territory of central and western Europe (the GAC, Corded Ware culture, Złota and Bell Beaker cultures) [Czebreszuk, Makarowicz 1993]. In the GAC, this type of amber bead is familiar from burial inventories from the territory of the central group [Mazurowski 1983:55-65]. They are circular or oval in shape, and lenticular or slightly convex in cross-section. The finds from Kujawy (Kuczyna, Pikutkowo, Skoczka, Stary Brześć) can be dated to the IIb-IIIa phase. Complexes dated using the radiocarbon method (Chodzież 3, Skoczka, Brańsk-Chojewo) show that beads appeared in the grave-goods of the GAC population approx. 3000-2900 BC. In eastern European GAC sites, there is no record of these artifacts.

IV.1.3. THE FOREST ZONE

Certain GAC features have been identified in the Forest zone among several cultural units: namely Usvyaty (an extreme south-eastern group from the Narva cultural circle; see Ch. III.2.1.), Neman culture, Middle Dnieper culture and Fatyanovo culture.

A.M. Miklayev [1992:30] defines the **Usvyaty culture** as a peculiar variant of the Funnel Beaker culture and the GAC. On the basis of a comparison of the set of sources presented by the above-mentioned author [e.g. Dolukhanov, Miklayev 1979; Miklayev 1992], it would appear that he detects GAC-inspired traits above all in the

final (third) phase of the Usvyaty culture. These could be represented by certain forms of ceramic ornamentation, such as various types of stamp ornamentation (A1; particularly zigzags), as well as rings ('bird feather'? — A2) and cord impressions. Flat-bottomed vessels also appear in this phase [Dolukhanov, Miklayev 1979:78] — evidently not a natural feature for this cultural environment. Despite this, it is decorative patterns and vessel types familiar from earlier phases which are dominant. Also alien to the GAC is the ceramic technology, based upon a plant admixture, in which the vessels are only dried and not fired. This stage also sees the appearance of bones of domestic animals (sheep/goats, pigs and cattle), forming 4% of the whole incidence of animal remains [Miklayev, Dolukhanov 1986:4; Miklayev 1992:43]. The lack of complete publications for the relevant sources renders the verification of the above evaluations problematic, and they should be treated as no more than preliminary hypotheses.

As mentioned above (Ch. III.2.2.), connections with central European cultures — GAC and Corded Ware culture — have been established for the late phase of the **Neman culture**. They represent one of the features which mark out the Dobry Bor phase in the Upper and Middle Neman basin. As far as 'amphora'-style finds are concerned (Fig. 44), there are only a few examples of stamp ornamentation (trait A1; e.g. Dobry Bor, Varena). Less certain is the link with the GAC suggested by breakstone admixture [Černjanskij 1987:432-433], since this technique was already in evidence during the previous phase (Lysa Gora) [Charniauski 1979:55]. Mention should also be made of the appearance of flat-bottomed vessels (e.g. Barzdžio Miškas 1) [Rimantiene 1984:Fig. 121, 16].

Significantly clearer and less equivocal are the GAC artifacts in the **Middle Dnieper culture** (Fig. 45). The contacts between these two cultures were dated by I.I. Artemenko to the middle stage of the Middle Dnieper culture. GAC features can be seen above all in ceramic production, both in the upper and middle stretches of the Dnieper basin [Kryvaltsevich 2000], and are chiefly represented by stamp ornamentations (trait A1) and, much less frequently, by festoon motifs (A3). It is possible to isolate both ornamentations precisely mirroring GAC patterns as well as a range of variations. Replicas of GAC decorative motifs can be found at burial sites including Prorva 1 (graves 1 and 10) [Kryvaltsevich 1996; Kryvaltsevich, Kovalyukh 1999] and Syabrovichi [Artemenko 1970:Fig. 30], as well as at settlements such as Azyarnoye 1 [Kryvaltsevich 1999], Zavale [Artemenko 1962:Fig. 19], Maliye Rogi [Artemenko 1959:Fig. 10, 17] and Strumen VI/Losha II [Kalechyts 1987:Fig. 35, 1-3].

One should add that I.I. Artemenko referred to finds of GAC ceramics at the burial site in Lunevo [Artemenko 1987b:8]. These were said to include fragments of ceramics decorated with triangular stamp impressions — noted at the *kurgan* mounds 8 and 16 and on the original surface of the ground as well as fragments of two-

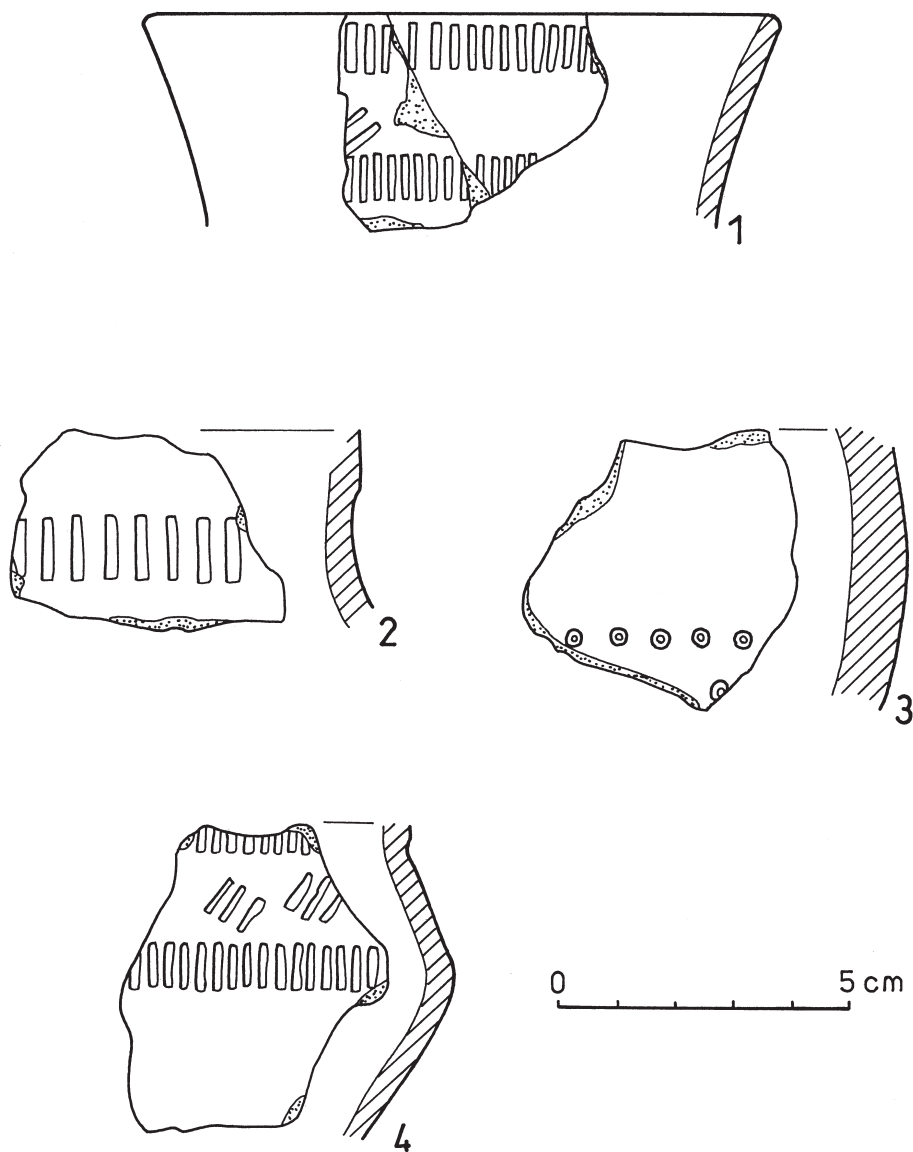


Fig 44. Dobry Bor. Late Neman culture pottery with Globular Amphora culture traits.
Source: collection of the Institute of History of the Academy of Sciences in Minsk.

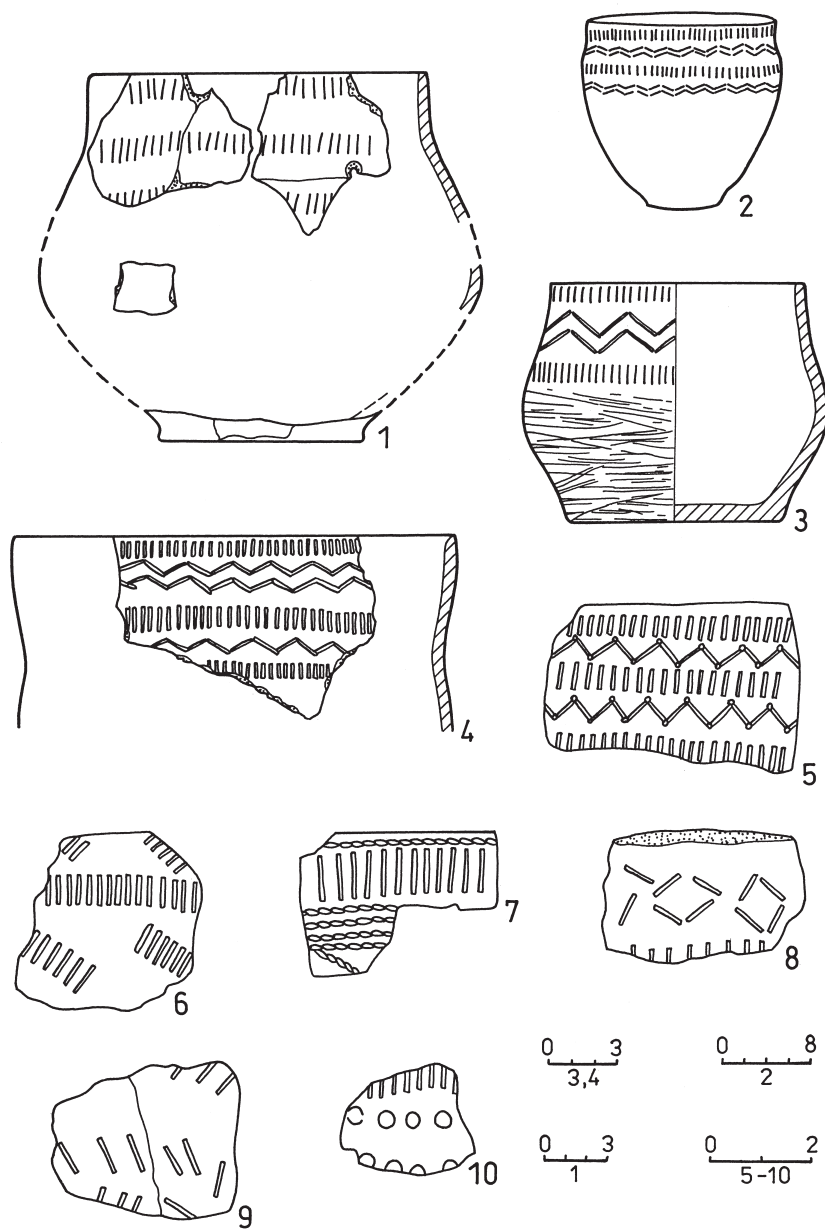


Fig 45. Middle Dnieper culture pottery with Globular Amphora culture traits.
 1 - Azyaroye 1; 2 - Syabrovichi; 3-4 - Strumen-Losha; 5-10 - Luchin-Zavale.
 Sources: Artemenko 1962, 1970, Kalechyts 1987, Kryvaltsevich 1999.

-handled amphorae (“...resembling vessels discovered in the GAC in Kikova...”) [Artemenko 1987b:8]. Analogous vessels are thought to come from under *kurgans* 1 and 5 at Belynets cemetery, although since these findings have not been published, it is difficult to form an opinion concerning the evaluations presented above.

In Middle Dnieper culture sites dating from the middle and late stages, one can find trapezoid flint axes with a four-sided section, including examples with the surfaces of the head almost completely ground (feature A8). The flint chisels with four-sided section from the settlement in Azyaroye [Kryvaltsevich 1999:Fig. 35:8], meanwhile, represent a rare find – alien to the flintwork of this culture, yet typical for the GAC (feature A9). Hence the particular focus on this find in Ch. II.

Certain GAC features can be singled out from the so-called Iskovshchina material, originally linked to the Middle Dnieper culture [Berezanskaya, Bondar 1964]. At present, a more plausible hypothesis links these sources most strongly with the Catacomb culture [Serdyukova 1996:149-155]. Again, further attention is thus paid to this below – in further sections of the present sub-chapter.

The links of the closely associated **Fatyanovo** and **Balanovo cultures** with the GAC have been dealt with previously by T. Sulimirski [1970:167-169,198]. In both cases, the most definite evidence of such links (Fig. 46) is the presence of stamp ornamentations (trait A1). As with the Middle Dnieper culture, replicas of typical GAC ornamentations can be found here, for example in Balanovo, grave 38 [Bader 1963:127 and Fig. 63], Dyakovo [Gadzyatskaya 1976:tabl.VII:2], and Seyma [Gadzyatskaya 1976:tabl.XI:2]. More widespread, however, are transformations of original designs, such as those from Dikarikha [Nikitin 1963:Fig. 7/1, 8/18], Krivtsovo [Gadzyatskaya 1976:tabl.III], Gorki [Gadzyatskaya 1976:tabl.V], Seyma [Gadzyatskaya 1976:tabl.XI:5], Skomorokhovo [Gadzyatskaya 1976:tabl.XVII:2], Balanovo [Bader 1963:Fig. 135/2; 139/1]. At the Stanok II site, there were even documented flat-bottomed vessels (similar to the III type pot — trait A6) — extremely rare in this cultural region — decorated with stamp ornamentation [Gurina 1963:Fig. 36].

In both Fatyanovo and Balanovo materials, there is a high incidence of wedged (trapezoid) flint axes, four-sided in section, with the surfaces of the head more or less ground down (feature A9) [e.g. Krainov 1963:33-34; 1987a:Fig. 26, 1-19; Gadzyatskaya 1976:59-62]. With regard to the Balanovo culture, these are believed to be present above all in its earliest phase [Bader, Khalikov 1987:Fig. 37]. It is worth remembering here that flint axes were an extremely common element in burial grave-goods of the Fatyanovo culture, unlike in that of the neighbouring Middle Dnieper culture. They are found in male, female and even in children's graves; and absent only from the richest tumuli [Krainov 1987b:65-67; see also Gadzyatskaya 1976:59].

Only two traits recorded in the eastern GAC appear to be of a ‘**Forest-eastern**’

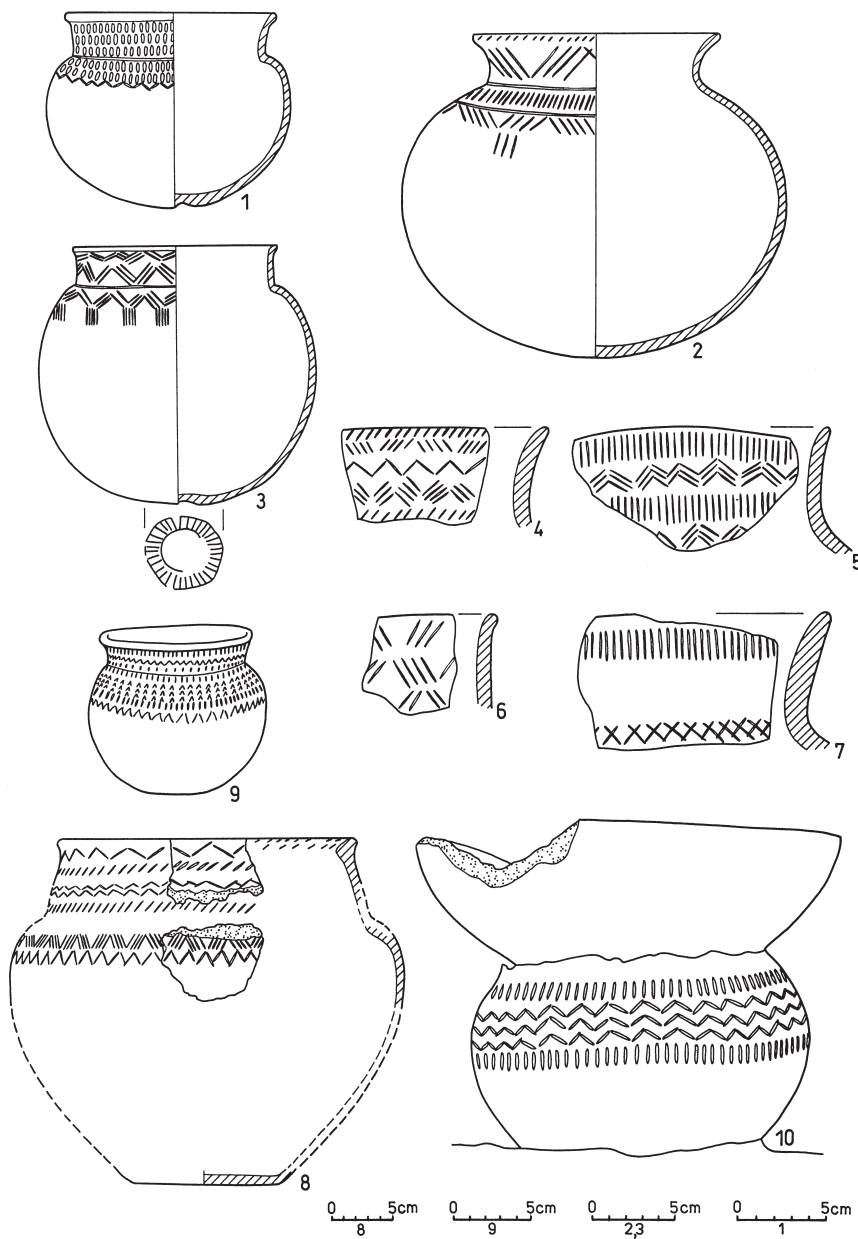


Fig 46. Fatyanovo culture pottery with Globular Amphora culture traits.

1 - Dyakovo, 2 - Skomorokhovo, 3 - Krivtsovo, 4-7 - Seyma (settlement), 8 - Stanok II (settlement), 9 - Balanovo, 10 - Balanovo (cemetery 38, grave 67).

Sources: Bader 1963; Gadzyatskaya 1976; Gurina 1963.

European provenance: the flint arrowhead from Turinshchina (feature B4) and, probably, the addition of crushed flint to the ceramic mass (feature B3).

Flint arrowheads are extremely rare finds throughout the entire area of the GAC. Within the central group, GAC societies used arrowheads such as those characteristic of the Corded Ware culture (e.g. heart-shaped arrowheads from the GAC settlement in Opatowice 36 — excavated by the author, and Stok A/grave 1) [Nosek 1967:Fig. 171, 1] as well as trapezoid examples (Skoczka 1, Stok A/grave 1) [Kostrzewski 1930:Fig. 2, 1; Nosek 1967:Fig. 171, 2-3]. Four arrowheads were found among eastern European GAC sites, of which one disappeared (Koshylivtsy), and one remained unpublished (Vorvulintsy), whilst the third (Skolobiv) represents a type characteristic of groups of the developed phase of the Bronze Age¹⁶. The fourth arrowhead, discovered in Turinshchina (grave I; Plate 42:1), has a laurel-shaped blade and poorly defined grip (trait B7). This specimen, completely alien to GAC tradition, is found (in a version with a triangular or laurel-shaped blade and an even less defined or sometimes more strongly defined grip) among various groups of the Forest zone in the course of the Neolithic and Bronze Ages, e.g. the Upper Dnieper culture [Kalechyts 1987:Fig. 29, 1; 1997:Fig. 68:1], Volosovo [Krainov 1987a:Fig. 4:2, 4], Middle Dnieper culture [Artemenko 1976:174 and Fig. 4, 6; 1985:Fig. 99] and Fatyanovo [Krainov 1987b:Fig. 27, 8, 22].

Were the flint admixture identified by I.K. Sveshnikov [1983] in the vessel clay of several sites belonging to the eastern group (i.e. trait B5) to be confirmed, this would indicate a link with the circle of cultures with Prick-Comb Pottery. It should be remembered that the examination of sources from Slobidka Koshylivetska did not confirm the above-mentioned author's suggestion (see Ch. II.2.).

It should further be added that in the central group of the GAC, some ceramic ornamentations were identified as deriving from the 'Forest'-eastern European circle, although it was impossible to provide a more precise cultural classification [Szmyt 1996a:247-248]. These are impressions made with a so-called 'wound cord', 'pressed buttons' (i.e. buttons made by pushing from the inside of the vessel in such a way as to leave hollows in the inside wall), incised decorations made using a wide implement, and belly ornamentations of a 'carpet' pattern. These features have been noted mainly in the IIb-c phases, according to the Kujawy periodisation [Szmyt 1996a:248], and in small quantities beginning with phase IIa. No cases have yet been identified among eastern GAC material. The same can be said in relation to the 'brushing' (with a bundle of grass) of the vessel surface, which appears occasionally in the central group.

¹⁶Evaluation of Dr. Viktor Klochko, for which I am most grateful.

IV.1.4. THE FOREST-STEPPE AND STEPPE ZONES

Since a part of the units examined below are found both in the Steppe and the Forest-Steppe, the following survey deals with these regions together. The question of the following relations will, however, be considered separately: (1) those between the GAC and the Tripolye culture as a genetically forest-steppe phenomenon and (2) the GAC and structures genetically linked to the Steppe, i.e. the so-called 'Steppe Eneolithic', the Yamnaya culture and the Catacomb culture. Before proceeding to a systematic consideration of these units, however, mention should be made of material from the Forest-Steppe region whose cultural context is unclear.

These are sources from explorative excavations carried out in the regions of Kanev, Kiev, Chernigov and Zhitomir (Fig. 47) [Serdyukova 1996:142-148]. They are represented by sites (currently numbering 10) in which a small amount of ceramic fragments have been discovered (the remains of 1-5 vessels) featuring stamp ornamentation (trait A1: Grezlya, Kanev, Khmelna-Dubrovka, Khristinovka, Konche-Zaspa, Obmachevo, Starosele and Zvizdale), occasionally accompanied by cord ornamentations or 'bird feather' impressions (trait A2: Kozintsy). Stamp ornamentation appears in 'classical' form, i.e. typical of the GAC (e.g. Kanev, Khristinovka, Obmachevo, Starosele, Zvizdale) or atypical forms (e.g. Khristinovka). The majority of vessels discussed here were made from clay with an admixture of chamotte and only one example of a breakstone admixture was identified (Konche-Zaspa). Only a limited number of the identifiable forms have analogies in the GAC (e.g. Khristinovka — a IIC1 type vase, i.e. trait A5). The remainder possess micro-morphological features (mainly the forms of vessel rims and the shaping of the neck) which are alien to the GAC.

The fragmentary nature of the above sources and the unclear context in which they appear make it difficult to unequivocally state which cultural groups they belong to. At least two hypotheses are possible: these findings could provide proof of the links between the GAC and the Tripolye culture (the 'chamotte' technique?), or it may be necessary to link them with syncretic structures of a later time-scale (post-GAC). At present, it is difficult to express a broader opinion on this question.

A. The GAC and the Tripolye culture

The relations between the GAC and the Tripolye culture have most frequently been assessed on the questionable basis on the appearance of material from both cultures in the same sites, which has been regarded as confirmation that the two cultures were contemporary to one another [e.g. Passek 1949:222; Sveshnikov 1983:18]. Taking into account the undoubtedly migratory character of GAC settlements and the equally certain distinctness of their socio-economic systems in relation to the Tripolye culture, the GAC population was seen as an invader, destroying centuries of heritage and achievements of Tripolye societies [e.g. Zakharuk 1971:179;

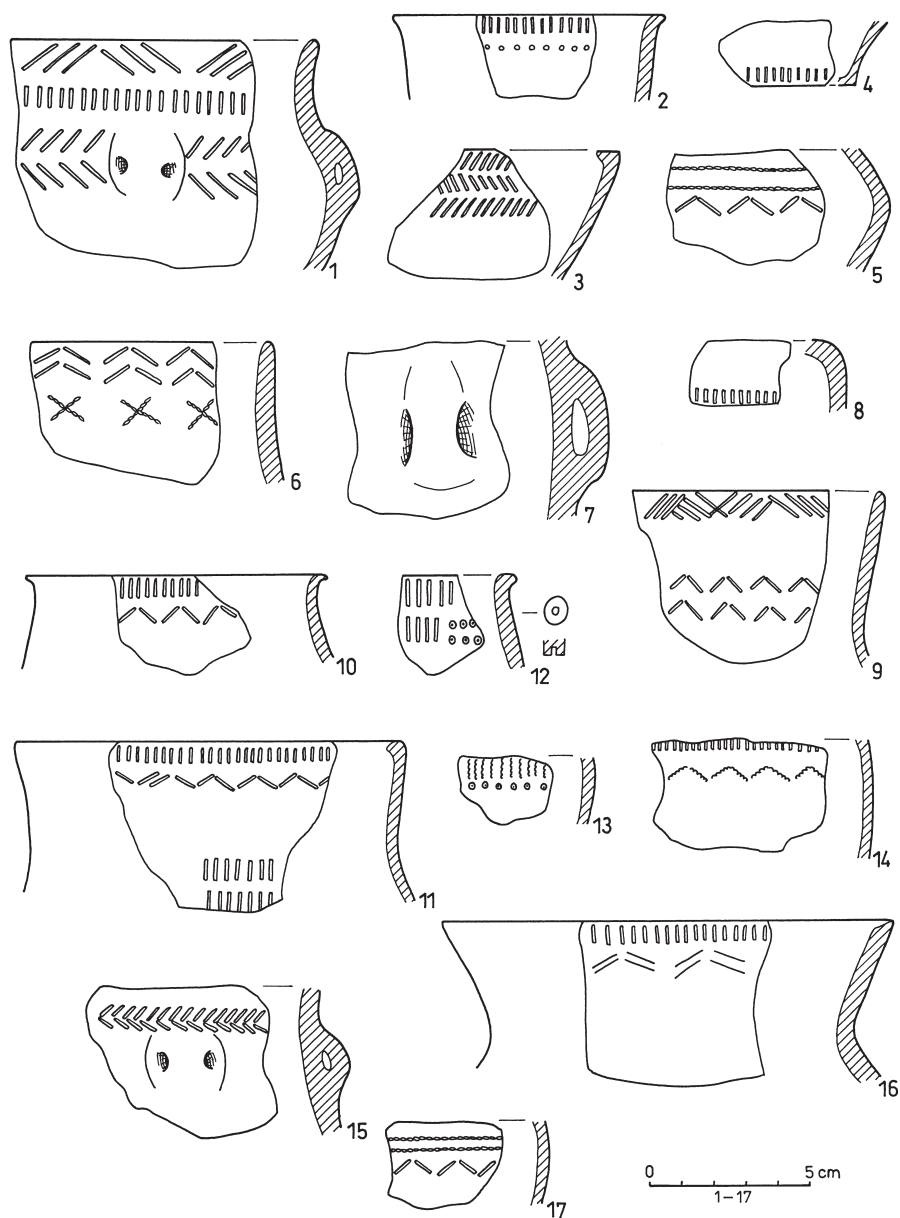


Fig 47. Pottery with Globular Amphora culture traits from the region of the Middle Dnieper.

1-4 - Khristinovka, 5-6 - Zvizdale, 7-8 - Grezlya, 9 - Konche-Zaspa, 10-12 - Starosele, 13- Kozintsy, 14 - Kanev, 15 - Khmelna-Dubrovka, 16-17 - Obmachevo.

Source: Serdyukova 1996.

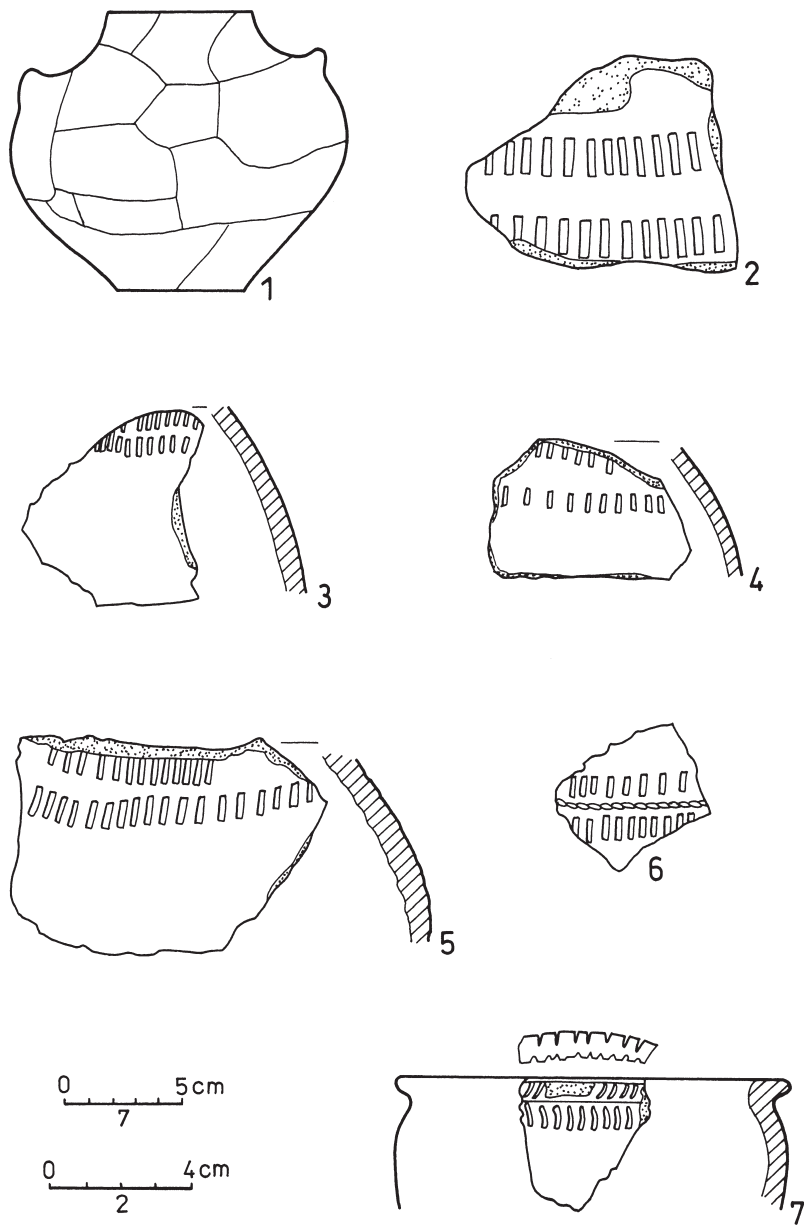


Fig 48. Tripolye culture pottery with Globular Amphora culture traits.
 1 - Troyaniv, 2 - Gorodsk, 3 - Tovtri, 4-6 - Velika Slobidka-Khreshchate, 7 - Shebutintsy.
 Sources: Krichivskiy 1940, Movsha 1985b, Sulimirski 1970, Yakubenko 1999.

Zbenovich 1976:46]. To illustrate this thesis, T. Sulimirski [1970:166] even evoked the findings (never fully published) from the Werteba cave in Bilcze Złote where, among the remains of Tripolye settlers, a GAC flint axe was discovered.

Despite this, there is no such spectacular evidence of the links between the GAC and the Tripolye culture as there is of the contacts between the latter and the Funnel Beaker culture [e.g. Ścibior 1993; 1994]. One could even assert that such evidence is strikingly scarce¹⁷.

In the case of the Tripolye culture, this evidence is limited principally to a small number of examples of the application of the simplest stamp motifs (trait A1) in the ceramic production, with the preservation of 'Tripolye' technological principles (Fig. 48). Such fragments have been recorded in the Gorodsk-Kasperivtsy group, e.g. in Gorodsk [Krichevskiy 1940:Fig. 143], Costești IV [Movsha 1985b:Fig. 6, 2], Shebutintsy [Yakubenko 1999:Fig. 2, 11], Tovtri [Movsha 1985b:Fig. 6, 1] and Velika Slobidka-Khreshchate II [Movsha 1985b:Fig. 6, 3-5]. In addition, the burial site at Krasny Khutor (the Sofievka group) has provided vessels decorated with 'bird feather' impressions (trait A2) [Kadrow, Koško, Videiko 1995:209-212], whilst vessels similar to GAC amphora forms (VBII12 -trait A7) were found in the Troyaniv site at the settlement of the group of the same name (Shmaglii 1961:tabl.III,2; Sulimirski 1970:Pl.XX).

It is also worth considering the cultural provenance of two collections (34 specimens in all) of half-finished flint axes and chisels from the locality of Kislitski [Makarevich 1964]. All the examples have slanting butts and a four-sided section. They are generally treated as Tripolye products from the CII phase (Kasperivtsy/Gordinești group) [Dergachev 1980:121], although their form and production method are not typical of the Tripolye culture. However, the closest analogies, in a spatial sense, come from GAC sites. It is, therefore, likely that both collections of artifacts, which are convergent in terms of both form and technology, are linked to the GAC, rather than to the Tripolye culture.

Within the GAC group, the surest evidence of links with the Tripolye culture is the use of a crushed shell admixture in the ceramics (trait B2), and possibly the special form of vessel that is lids (B1)¹⁸. A shell admixture in the ceramic mass has been identified in several sites of the eastern group [e.g. Sveshnikov 1983; Shelomentsev-Terskiy 1996]. On the basis of my own examination, I personally consider that some of these (e.g. Glibochok, Kutyanika, Peresopnitsa) may, indeed,

¹⁷Contrary to earlier opinion [Sveshnikov 1983], interpreted as an 'GAC-Tripolye' hybrid, the vessels from Mali Dorogostai are not related to the GAC.

¹⁸The suggestion has also been advanced that the chamotte admixture or 'ceramic sherds' occasionally found among GAC ceramics [Ścibior, Kokowski, Koman 1991:101] is of Tripolye origins. However, this is a controversial question, since the use of chamotte is also a feature of the Funnel Beaker culture, with which the GAC is closely linked. This admixture has been noted, for example, in GAC material from Kujawy [e.g. Szmyt 1996a:26-27].

include the admixture in question (or, alternatively, limestone), which means that a VI technological group can be isolated (see Ch. II.2.). Where there may be differences of opinion is over the question of the origins of this type of admixture. Taking into account the geographical location of the above-mentioned sites, the most plausible source is Tripolye, since a shell admixture was used in the production of 'kitchen' ceramics in the Tripolye culture from the B1 stage [Movsha 1985c] to the end of CII. Bearing in mind the chronology of the GAC sites listed above (dated to the PB, VC and VD phases), the adaptation of the 'shell' technique would have taken place quite late — approx. 2650 BC, i.e. towards the end of the functioning of Forest-Steppe structures of the Tripolye culture (of the Gorodsk and Kosenivka groups, and certainly also of the Gordinești group — as yet lacking in ¹⁴C datings). A more problematic alternative would be to link the adoption of this technique to the Yamnaya culture.

Lids, as a special form of vessel, are recorded in the central and eastern groups of the GAC. In the former, they were found in graves in Brańsk-Chojewo [Antoniewicz 1938:Fig. 21, 22], Las Stocki C/grave II [Nosek 1967:Fig. 161, 2, 162] and Sandomierz 78/grave VII [Ścibior, Ścibior 1990:Fig. 29b], as well as in the grave complexes of the so-called Złota culture [Krzak 1976:114-117]. Meanwhile, in the eastern group, they are known from complexes dating to the PB (PB1 and PB2) and VD phases (i.e. approx. 2650-2400 BC): Kolosivka (Plate 15-16), Khar-tonivtsy II (Plate 13), Slobidka Koshylivetska (Plate 35-36) and Suyemtsy II (Plate 39). The majority of the lids have straight sides, broadening slightly towards the rim; in two cases, the joining of the sides with the bottom is rounded (Khar-tonivtsy II, Kolosivka). Whilst none of the specimens possesses handles, both plain and ornamented versions are to be found. Analogies to these forms are difficult to find. Attention should be drawn, however, to the spread of lids throughout the Tripolye culture: they appear in findings from every phase [Chernysh 1982c:Fig. LII-XC], although not in every group (e.g. no finds of lids were made in the Sofievka group) [Videiko 1995]. Tripolye lids are of fundamentally distinct shapes and possess handles or grips. Moreover, they have been recorded in settlement contexts, which is not the case for the GAC. Therefore, one cannot speak of any formal analogy. One should, however, consider the possibility of the adaptation of the Tripolye idea of a lid as an element for covering or closing a vessel, against the context of a far-reaching transformation in its form and its application in other cultural contexts.

Strong confirmation of links with Tripolye culture has recently been obtained through an analysis of the most recent GAC sources from the central group, more specifically from Kujawy, where the first signs have been discovered of the use of dyes in GAC ceramic production [Szmyt 1999b]. Fragments of vessels have been identified which display traces of a deliberate colouring (black or red) of the external surface, recorded in four archaeological sites (Fig. 49; Bożejewice 22, Kuczkowo

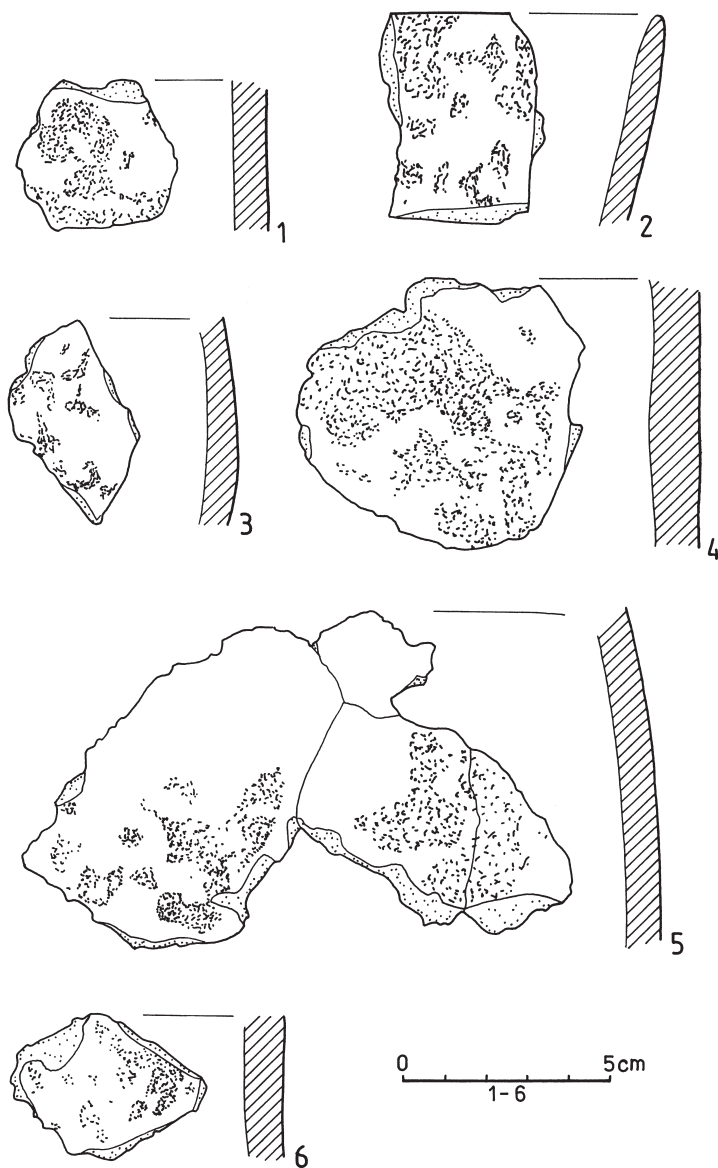


Fig 49. Globular Amphora culture pottery from Kujawy (central group) with traces of organic (1-2) and mineral (3-6) dyes.

1 - Bożejewice 22 (feature A10), 2 - Kuczkowo 1 (feature A136), 3 - Bożejewice 22 (feature A2), 4-5 - Żegotki 2 (trench B1a), 6 - Piecki 8 (feature 18).

Source: Langer, Szmyt 1999.

1, Piecki 8, Żegotki 2). Both organic dyes (produced from substances related to wood tar) and mineral dyes (derived from iron oxides) have been identified [Langer, Pietrzak 1999; Langer, Szmyt 1999]. The relatively advanced degradation of the coloured surfaces precludes the identification of any possible decorative motifs. The vessels are from graves dated to phases IIb and IIIa, and, in every case, their chronology ranges between approx. 3030-2900 BC (organic dyes) and 2900-2460 BC (mineral dyes). Among finds from the eastern group, on the other hand, no traces of the use of dyes have yet been detected. Only in the grave in Kikova 1 (phase VB) has there been a suggested find of vessels (one vessel?) with ground ochre on its walls [Levitskiy 1929:202]. This may have represented the traces of a red (or brown) mineral dye, but the verification of this information is impossible, due to the disappearance of part of the findings.

B. The GAC and groups originating from the Steppe zone

Single features providing a link to the GAC can be found in structures of the so-called Steppe Eneolithic (qualified as 'pre-Yamnaya'), the Yamnaya culture and the Catacomb culture.

The Steppe region is home to at least two graves in which links to the GAC have been distinguished, and which are generally classified by researchers as 'Eneolithic'. They were discovered in the basins of the lower Ingulets (Baratovka, *kurgan* 1/grave 6) and lower Samara rivers (Boguslav, *kurgan* 23/grave 12), i.e. right and left-bank tributaries of the Lower Dnieper. Somewhat greater attention is paid to these sites due to their crucial importance.

The Baratovka grave (Fig. 50) was recently the subject of a re-analysis by Y.Y. Rassamakin [1996:120-128]. It is a megalithic multi-burial site, with the grave chamber constructed from stone slabs in the form of an elongated trapezium (interior dimensions 2.65 x 1.0 m). Above the cist was discovered an area 'paved' with slabs and smaller stones, covering about 4 m in diameter. This was situated 1.0-1.25 m above the original surface of the ground. The cist was oriented in a west-east direction. Its walls were constructed from 8 slabs (3 slabs along the side walls and 1 each at the ends). The inner surfaces of the tiles were fashioned and the gaps between slabs smeared with a mixture of clay and soil. The upper edge of the tiles lay 0.62-0.8 m above the original surface, and its foundations had been sunk at a depth of 0.2 m. The highest of the walls was on the eastern side. Rows of vertically-arranged tiles supported the northern, southern and eastern walls from the outside. Only at the western wall — probably the entrance wall — was there one obliquely-positioned slab, covering the space between the wall and the 'paving'. In the burial chamber were discovered the remains of six bodies. One skeleton was found in the north-eastern corner, four in the centre of the cist, and the sixth at the western wall. A significant quantity of assorted bones were found in the eastern part of the chamber. Only two skeletons had been preserved *in situ* in the

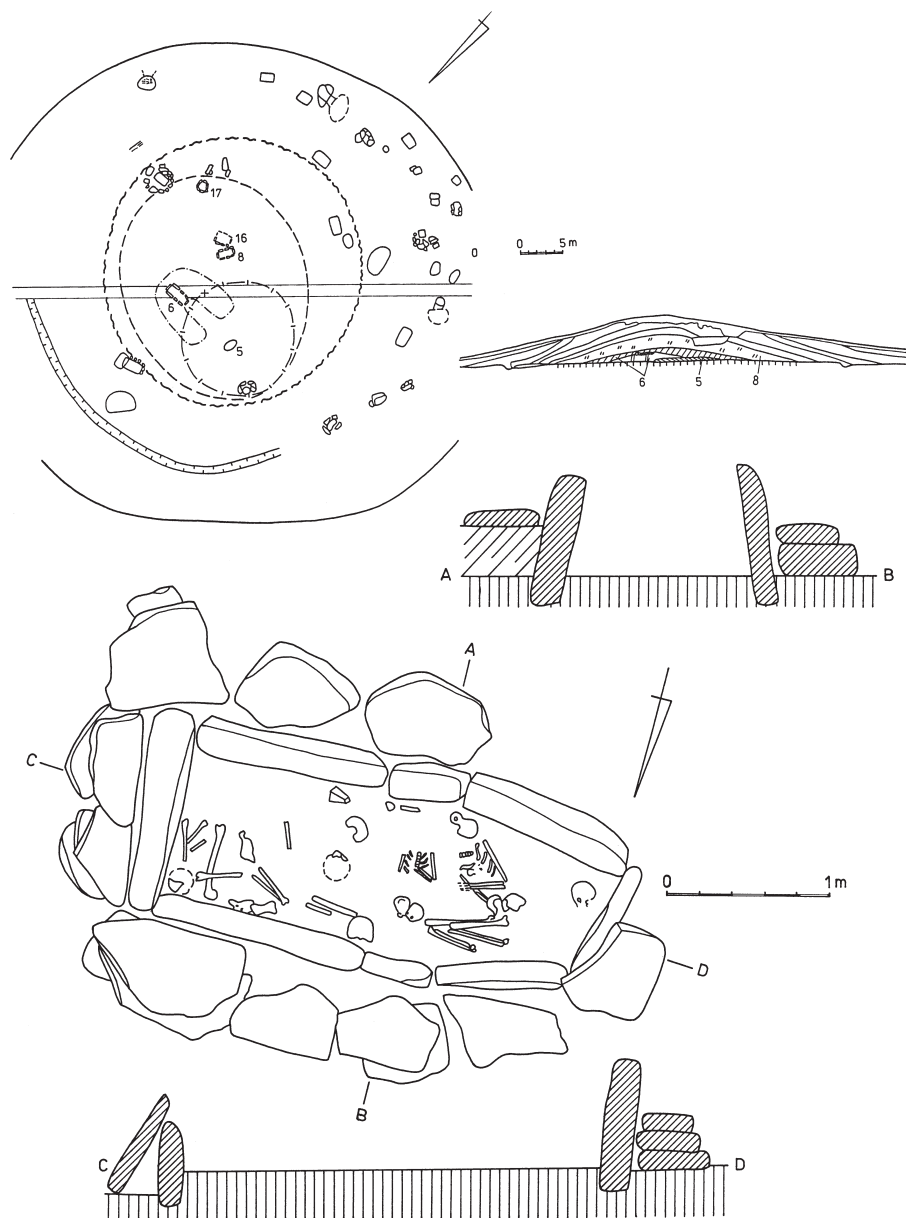


Fig 50. Traits of the Globular Amphora culture in Late Eneolithic ('pre-Yamnaya') graves in the Steppe zone: Baratovka (plans and cross-sections of kurgan 1 and grave 6).
Source: Rassamakin 1996 (without key).

western part, although the skulls were missing. One skeleton belonged to an adult and was positioned in a foetal position on its right side, head oriented to the SSE. The second was that of a child, and was probably placed in a foetal position and oriented similarly to the first. The skulls of both had been dusted with ochre. Only one grave good was found in the chamber: a lump of ochre formed in a pyramid shape, 14.3 cm high, with a smoothed surface. Several grooves were identified on one of the edges¹⁹.

Within the stratigraphic sequence of *kurgan* 1, the grave under discussion here — grave 6 — is placed between the earlier ‘Eneolithic’ graves 5, 16 and 17 (which can be dated to a period corresponding to phases CII of the Tripolye culture), the later grave 8 (representing the Kemi-Oba culture) and even later graves of the Yamnaya culture. This sequence has not been directly corroborated by ¹⁴C dating. It can only be indirectly placed on the absolute chronology, bearing in mind the datings for the CII phase of the Tripolye culture advanced in Ch. III.2. and the indications concerning Kemi-Oba culture graves from the Akkiembetskiy *kurgan*. Under such circumstances, the most probable interpretation is that grave 6 dates from the first half of the 3rd millennium BC. The form and dimensions of the chamber, as well as the nature of the burials, indicating the repeated laying of bodies (whilst removing earlier remains to the back of the grave), are unique within the Steppe region (feature A12), and the nearest analogies are found in the GAC (see Ch. II.2.).

The second of the graves discussed here — grave 12 of *kurgan* 23 in the locality of Boguslav [Androsova, Marina, Zavgorodniy 1991; see also Kovaleva 1991:86] — was of a catacomb form (Fig. 51). The entrance shaft was in the form of a pit (0.8 x 0.65 m) reaching 0.65 m below the original surface. At the bottom of this pit were discovered several bones not belonging to the burials found in the pit beneath. The entrance (0.45 x 0.21 m) to the passage (a dromos 0.18 m in length) leading to the burial chamber was found in the western wall of the entrance pit. It was closed off by a partition of five charred wooden poles. The burial chamber was oval in shape (1.3 x 0.74 m) and 0.38 m high. In the pit was discovered the skeleton of a child, lying in a foetal position on its right side, head to the NNW. Near the knees was an unornamented vessel — a small, double-handled round-bottomed amphora, of similar dimensions to the GAC type VB1 (feature A7). It was made from clay containing a rich shell admixture, coarse-grained hematite, and traces of plants and bones. The external surface of the amphora was smooth and the interior surface displayed traces of burnishing [Androsova, Marina, Zavgorodniy 1991:12-14]. The grave described here is classified as ‘Eneolithic’, and

¹⁹Fashioned lumps of ochre are a relatively common find in graves of Steppe groups. In this context, it is worth recalling the find of a deliberately shaped (in the form of an irregular cube) lump of hematite in a GAC grave at Sandomierz, site 78 [Ścibior, Ścibior 1990:161].

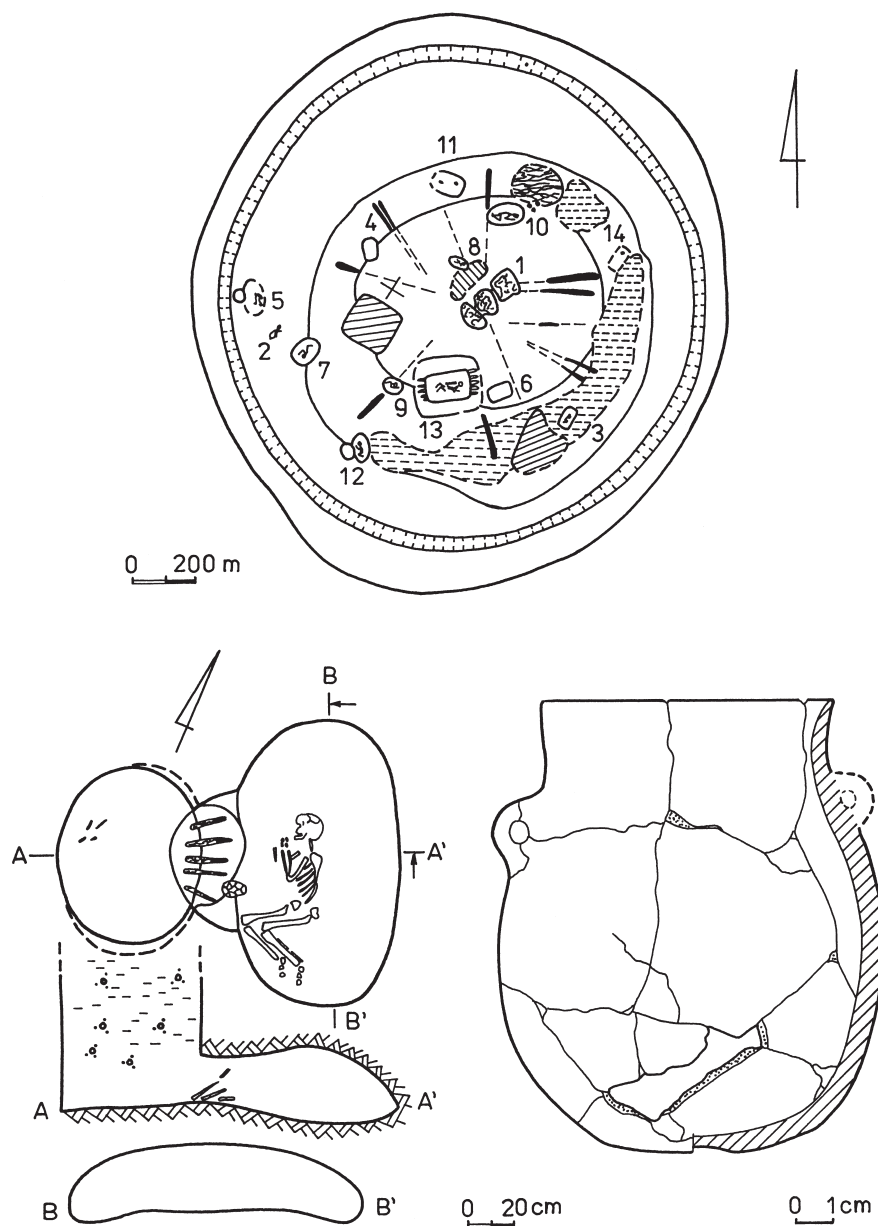


Fig 51. Traits of the Globular Amphora culture in Late Eneolithic ('pre-Yamnaya') graves in the Steppe zone: Boguslav (plan of kurgan 23, plan and cross-section of grave 12, vessel from grave 12).
Source: Androsov, Marina, Zavgorodniy 1991 (without key).

its buried form considered to be “evidence of the appearance of catacomb rites within the Steppe zone during the passage from the Eneolithic to the Early Bronze Age” [Androsoy, Marina, Zavgorodniy 1991:18]. Due to the destruction of the central part of the *kurgan*, it has only been established that grave 12 and three others similarly classified (nos. 7, 9 and 10), as well as the early Yamnaya culture grave (no. 4) are stratigraphically later than two other graves (also ‘Eneolithic’ — nos. 1 and 3), yet earlier than the Yamnaya culture graves 11 and 13 and other younger graves which are linked to the early Catacomb culture and Late Bronze Age, and are culturally unclassified. It is not possible to establish more precisely the absolute chronology of the grave under consideration. Despite this, the Boguslav grave appears to require a dating similar to that of the earlier considered grave in Baratovka, i.e. between the first half (possibly the first quarter) of the 3rd millennium BC.

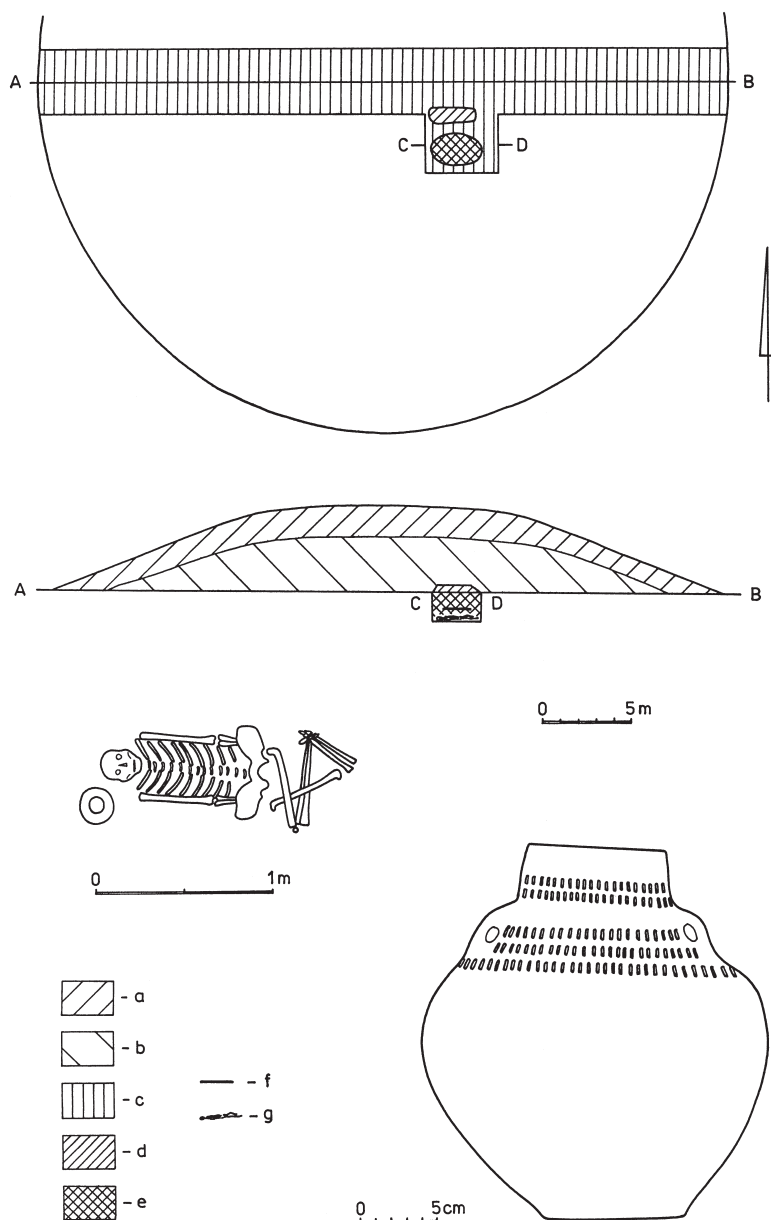
In a recently proposed classification of Eneolithic sites, both of the above graves were included in the Zhivotilovka-Volchansk group of relics displaying western links, earlier defined as the IV group of Eneolithic graves [Rassamakin 1993:10-11 and Fig. 13:9; 1996].

The question of links between the **Yamnaya culture** and the GAC has already been the subject of an initial elucidation within the literature of this field [see Szmyt 1998 for a general outline], although omissions can be found in even key works [Alekseyeva 1992]. A certain amount of material has been presented which provides a base for research, or which at least is considered to do so [e.g. Subbotin, Shmagliy 1970:122; Yarovoy 1979; 1984; 1985; Subbotin 1982; 1988; Chernyakov, Toshchev 1985; Dergachev 1986; 1998; Beylekchi 1992]. These are sources found in a Yamnaya context (more precisely, in graves characteristic of this culture), which display individual GAC features. A number of the materials presented in the works referred to above do, indeed, show such features. Others, however, were mistakenly defined. Moreover, a small number of sources exist which have, until now, been classified as GAC, regardless of the entirely alien context in which they appear. In relation to the above, this issue demands a more detailed consideration.

The traces of GAC links among Yamnaya culture sources can be divided into 3 groups: vessels similar to those of the GAC in terms of their ornamentation (traits A1, A2, A3) or form (traits A4, A5, A7, A8), flint axes (trait A9) and cist graves (trait A12). Ornamentation characteristic of the GAC have been recorded in several Yamnaya culture graves:

- rectangular stamp impressions (feature A1) on an amphora from the well-known grave in Losiatyn (Fig. 52) [Ossowski 1889:12; Sveshnikov 1983:36]. This detail was additionally filled with a white paste (a relatively common application in the GAC).
- festoons made with a two-strand cord (trait A3), from Corpaci²⁰, *kurgan* 2/grave

²⁰Rus. Korpach.



F i g 52. Traits of the Globular Amphora culture in Yamnaya culture graves: Losiatyn (plan and cross-section of kurgan, plan of grave, vessel from grave).

Key: a - chernozem; b - chernozem with clay admixture; c - excavated area; d - digging (yellow clay); e - grave; f - belt of rotten tree bark; g - skeleton.

Source: Ossowski 1889.

7 (Fig. 53) [Dergachev 1982:129; Yarovoy 1984:44 and Fig. 4, 1, 3], Orhei²¹, *kurgan* 1/grave 3 (Fig. 54:6) [Yarovoy 1985:Fig. 19, 2; Dergachev 1986:Fig. 11, 26]; and Primorskoye, *kurgan* 1/grave 7 (Fig. 55c) [Popandopulo 1992:Fig. 3, 6].

- round stamp impressions, probably ‘bird feather’ (trait A2), from Camenca²², *kurgan* 445/grave 7 (Fig. 54:4) [Kachalova 1974:12; Sveshnikov 1983:54].

Only in Primorskoye did the trait in question appear on a vessel typical of the Yamnaya culture. The remaining cases concern forms which are completely alien to this culture (Losiatyn, Corpaci, Camenca), or at least very rarely encountered (Orhei).

The following vessel forms deserve particular mention.

- VBI1-type amphorae (trait A7), found in Losiatyn (Fig. 52) [Ossowski 1889:12; Sveshnikov 1983:36], Mărculești²³ (Fig. 54:3) [Beylekchi 1992:Fig. 3, 2], and Tatarbunary, grave 2 (Fig. 56) [Subbotin 1988:Fig. 2, 3].
- VBII-type amphorae (trait A7), recorded in Efimovka, *kurgan* 2/grave 14 (Fig. 54:5) [Dergachev 1986:Fig. 10, 4; Alekseeva 1992:Fig. 19, 4], Corpaci, *kurgan* 2/grave 7 (Fig. 53) [Dergachev 1982:129; Yarovoy 1984:Fig. 4, 3], Ocnița²⁴, *kurgan* 3/grave 14 (Fig. 57) [Manzura, Klochko, Savva 1992:Fig. 12, 6] and Novoselitsa, *kurgan* 19/grave 13 (Fig. 58) [Subbotin, Ostroverkhov, Dzigovskiy 1995:Fig. 27, 12].

In addition to these, a pot similar to type IIIB (trait A6) was found in Camenca, *kurgan* 445/grave 7 (Fig. 54:4) [Kachalova 1974:Fig. 7, 2; Sveshnikov 1983:Plate XXIII,9].

The vessels mentioned here mostly display certain departures from GAC tradition. While vessels from ‘Forest-Steppe’ assemblages (Losiatyn, Camenca, Corpaci, Mărculești and Ocnița), show, in principle, fidelity to the GAC, specimens from complexes located in the Steppe zone (Efimovka, Novoselitsa, Tatarbunary) are found to have undergone greater transformations²⁵.

The (relative) chronology of the graves containing the ceramics under consideration is based on an analysis of the form of burial (more precisely, of the way

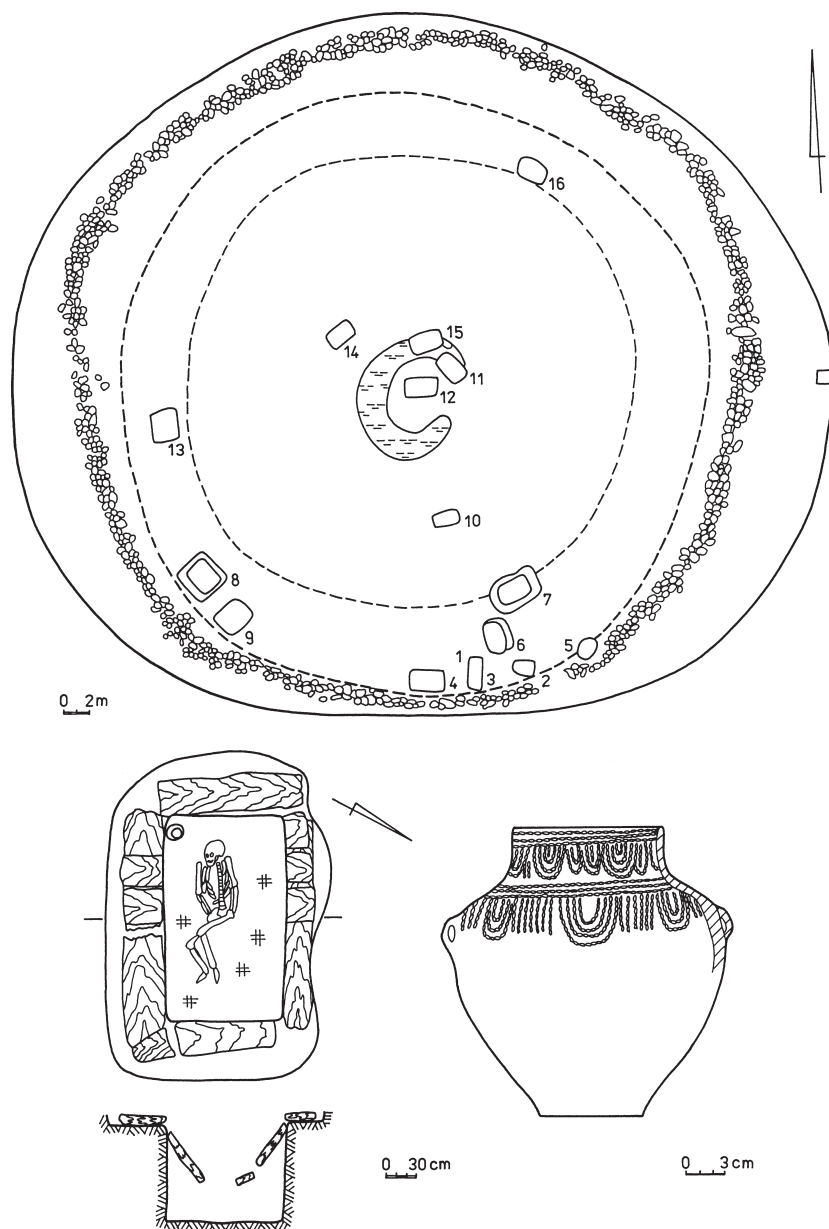
²¹Rus. Orgeyev.

²²Rus. Kamenka.

²³Rus. Merkulesshty.

²⁴Rus. Oknitsa.

²⁵On the other hand, the linking of the two-handled amphorae with handles situated on the broadest part of the belly, which were found in Baldovineshty [Chernyakov, Toshchev 1985:Fig. 3, 7] and Bolgrad [Subbotin, Shmagliy 1970:Fig. 8, 2, 5-6], to the GAC is erroneous. The examples, often referred to in literature, which are given by E.V. Yarovoy [1979], were not published by him, but it is possible to identify them on the basis of work by other authors. In these cases — namely in Bursucheni [Dergachev 1986:46], Gura Galbena [Alekseyeva 1992:Fig. 16, 6], Căsueni [Dergachev 1986:Fig. 9, 13; Chebotarenko, Yarovoy, Telnov 1989:Fig. 34, 2], Nadlimanskoye [Alekseyeva 1992:Fig. 16, 3], Ogorodnoye [Dergachev 1986:Fig. 9, 16], Ostrovnnoye [Alekseyeva 1992:74], Iabloana [Dergachev 1986:46] and Yasski [Dergachev 1986:Fig. 9, 15; Alekseyeva 1992:Fig. 16, 2] — the form of the vessels is alien to GAC norms.



F i g 53. Traits of the Globular Amphora culture in Yamnaya culture graves: Corpaci (plan of kurgan 2, plan and cross-section of grave 7), vessel from grave 7).
Source: Yarovoy 1984 (without key).

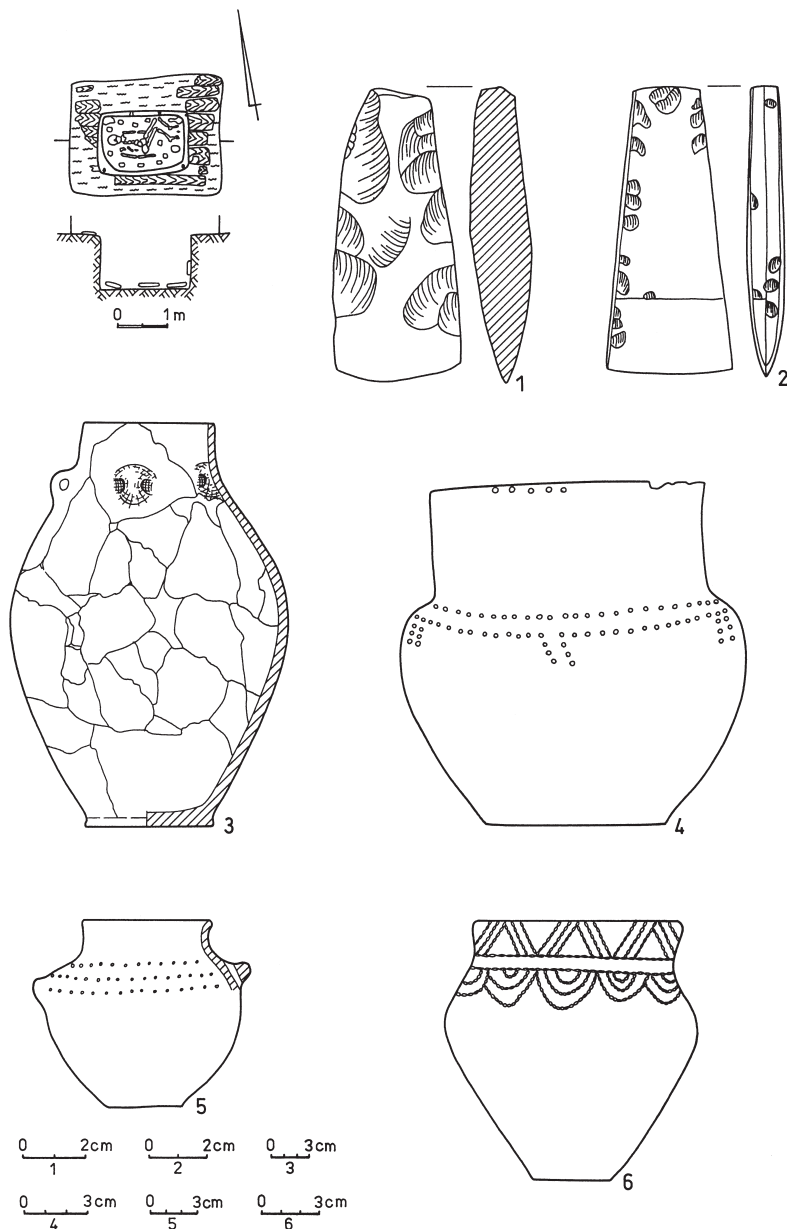


Fig 54. Traits of the Globular Amphora culture in Yamnaya culture graves. Plan of grave 8 in Marculești, kurgan 3 (without key). Goods: 1 - Roșcani; 2 - Camenca, kurgan 444, grave 3; 3 - Marculești, kurgan 3, grave 8; 4 - Camenca, kurgan 445, grave 7; 5 - Efimovka, kurgan 2, grave 14; 6 - Orhei, kurgan 1, grave 3. Sources: Beylekchi 1992; Dergachev 1986; Kachalova 1974; Yarovoy 1985.

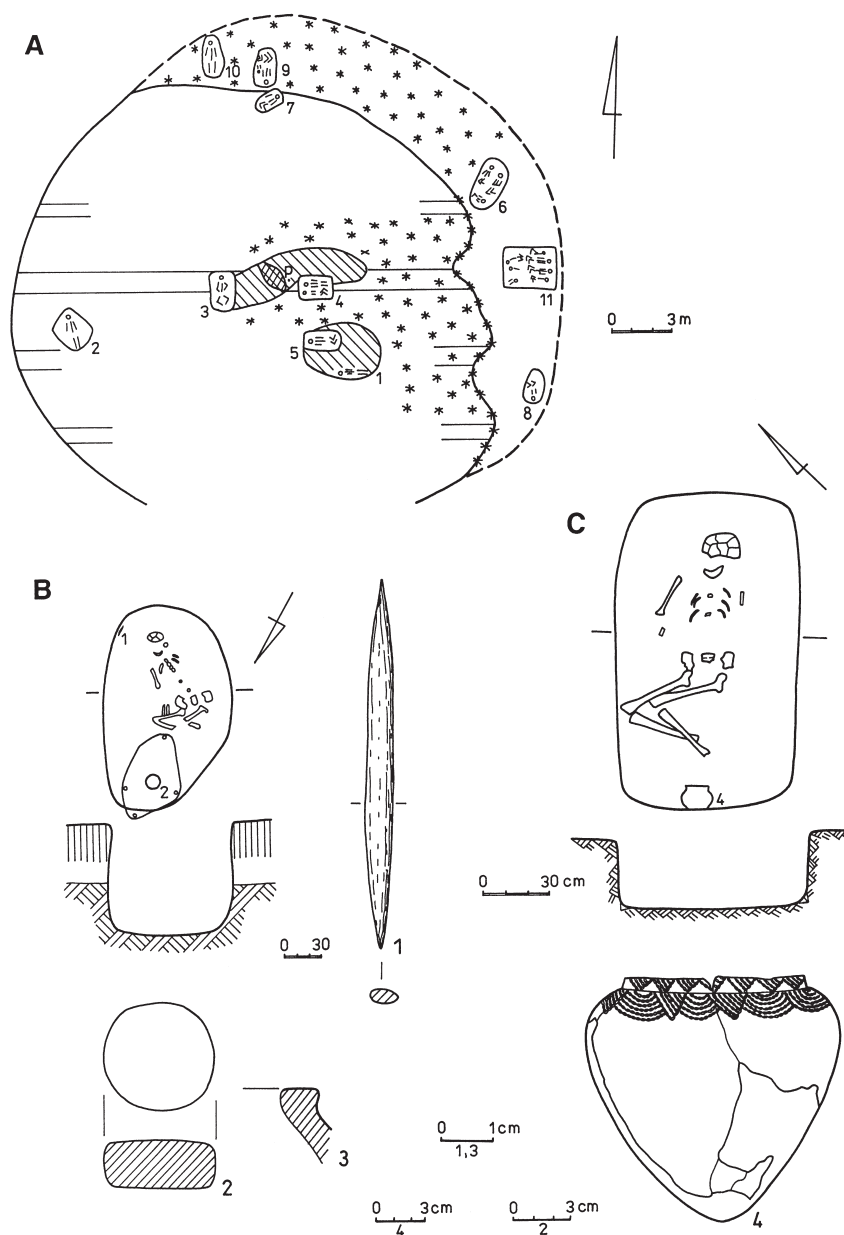
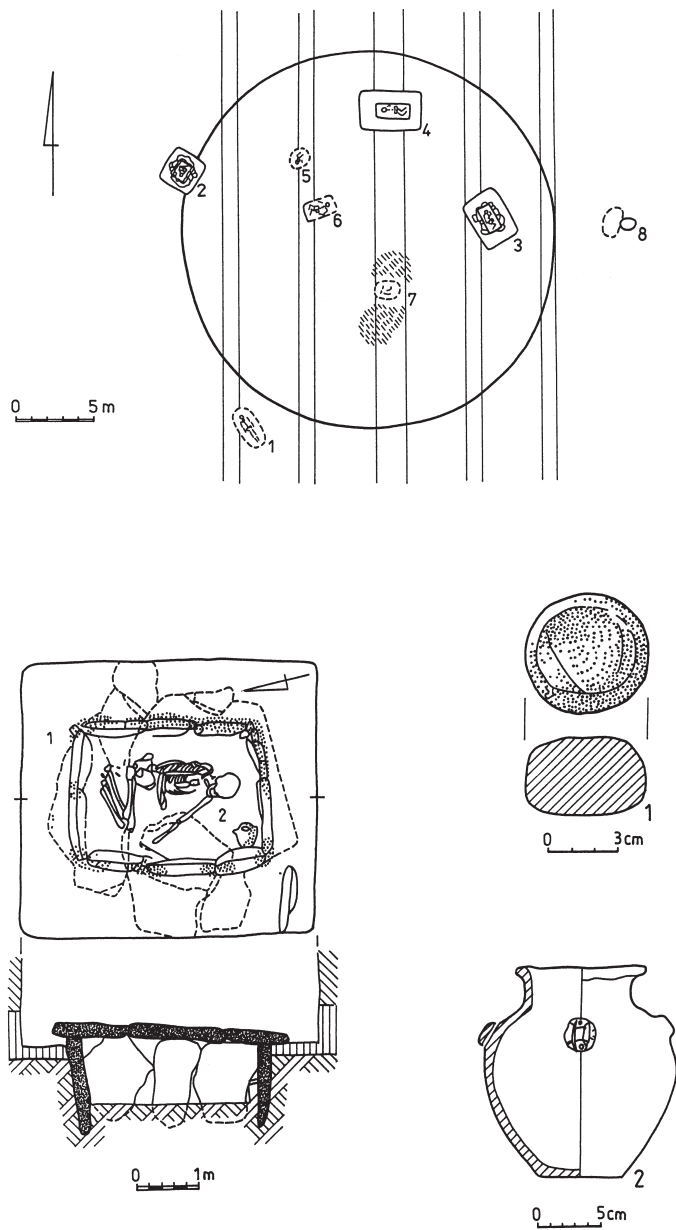
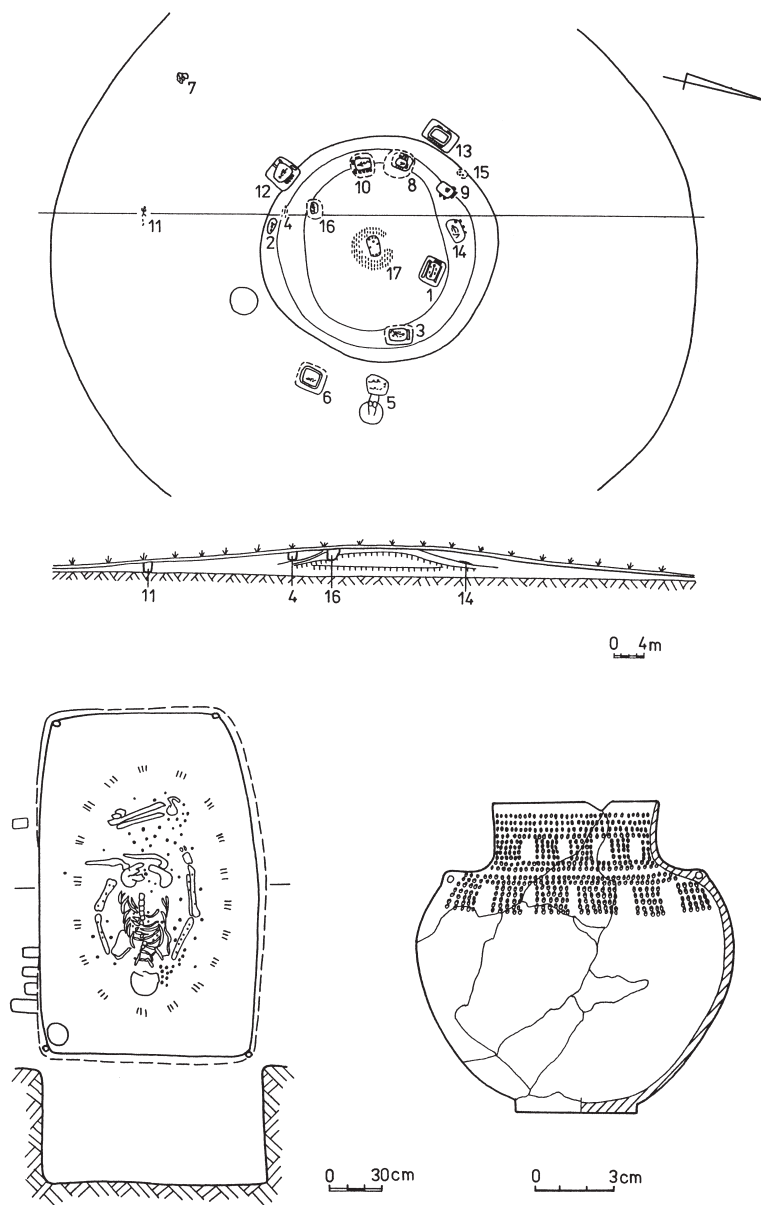


Fig 55. Traits of the Globular Amphora culture in Yamnaya culture (C) and Catacomb culture (B) graves: Primorskoye, kurgan 1 (A), grave 8 (B) and grave 7 (C).
Source: Popandopulo 1992 (without key).



F i g 56. Traits of the Globular Amphora culture in Yamnaya culture graves: Tatarbunary (plan of kurgan, plan and cross-section of grave 2, material from grave 2). 1 - stone, 2 - vessel.
Source: Subbotin 1988 (without key).



F i g 57. Traits of the Globular Amphora culture in Yamnaya culture graves: Ocnița (plans and cross-sections of kurgan 1 and grave 3, vessel from grave 3).
Source: Manzura, Klochko, Savva 1992 (without key).

in which the body was positioned) and the stratigraphy of specific *kurgans*. With this in mind, it is a crucial fact that the burials discussed here do not represent an earlier form in the Yamnaya culture. Only in Losiatyn this was a primary grave over which a *kurgan* was constructed. Sites of the Dniester region can be included in the IV and V groups of the chronology suggested by E.V. Yarovoy [1985:108], both of which he linked to the late Yamnaya culture. The graves of interest here are never the earliest in the stratigraphic sequence; they normally represent subsequent (most often the second or third stage) of the use of a particular *kurgan* by Yamnaya culture societies (e.g. Corpaci, Mărculești). The only grave which could provide a more precise temporal specification is that found in Novoselitsa, situated in a *kurgan* for which a series of ^{14}C datings are available for five graves of the Yamnaya culture [Subbotin, Ostroverkhov, Dzigovski 1995:73-96; Kovalyukh, Nazarov 1999]. The chronology of this *kurgan* falls between 2780 ± 90 BC (Ki-7080) — 2755 ± 95 BC (Ki-7085) and 2255 ± 105 BC (Ki-1220). The first two dates come from Yamnaya culture graves sunk in the fourth mound, the third from mound 6, i.e. with a stratigraphic position analogous to that of grave 13 discussed here.

It should be added that two of the graves considered above, containing ceramics with GAC features, were hitherto directly linked with that culture — Losiatyn and Camenca, *kurgan* 445/grave 7, similarly to Camenca *kurgan* 444/grave 3 (containing an axe; see below) [e.g. Sveshnikov 1983]. The changes to their cultural classification proposed by myself thus require some justification.

All three of the above-mentioned graves were discovered in *kurgans*, and in all three the burial rite was typical of the Yamnaya culture²⁶. In Losiatyn, in a pit covered by logs, the remains of one body were found (Fig. 52). The body lay on its back in a foetal position and was dusted with ochre. By the head stood a two-handled amphora (see above) of a form ‘classical’ for the GAC, and alien to Yamnaya culture technology (an admixture of sand and shingle) and featuring ‘classical’ GAC ornamentation (white incrustated rectangular stamp impressions). Although the vessel is, admittedly, of an asymmetrical, imperfect form, similarly ‘negligently’ made specimens are found in the GAC (e.g. in Kikova II). Grave 7 in *kurgan* 445 at Camenca was a pit 1.8 x 1.4 m in size, and 0.9 m deep. The body lay in a foetal position on its right side, head to the SSE. The earlier-mentioned vessel was found near its legs. The last of the three graves, grave 3 of *kurgan* 444 in Camenca, was also a wood-covered pit, 2.3 x 1.6 m in size, with its long sides oriented along the SE-NW axis. The ochre-dusted skeleton lay in a foetal position on its back, head to the NW, with its arms extended along the body. A flint axe was found by the left shoulder. The graves described here thus represent the basic elements of

²⁶With regard to the Losiatyn grave, a similar evaluation was proposed by A. Häusler [1976:92], while divergent assessments were given by T. Sulimirski [1968:183] and I. Artemenko [1987b:8], who linked it to the Middle Dnieper culture.

Yamnaya culture ritual: burial pits in *kurgans*, wooden pit coverings, the presence of ochre, the position of the body (foetal position on its back or on one side). The only reference to the GAC is in the grave-goods. All things considered, in the circumstances presented, I would judge the most crucial cultural indicators to be the features of the burial rite, unequivocally alien to the GAC.

Wedge-shaped flint axes are extremely rare in the Yamnaya culture. Single specimens are encountered in the Middle Southern Bug basin (e.g. Maidanetskoye) [Shmaglii, Videiko 1988:134 and Fig. 2:III]. They are sporadically found in the Dniester and Prut basins, where they are most commonly associated with the latest stage in the development of the local Yamnaya culture [Dergachev 1986:83]. These finds come from Grigorevka, *kurgan* 1/grave 10 [Subbotin 1982:Fig. 1, 9; Dergachev 1986:Fig. 13, 30], Kholmskoye, *kurgan* 5/grave 14 [Dergachev 1986:55], Camenca, *kurgan* 444/grave 3 [Kachalova 1974:Fig. 7, 1; Sveshnikov 1983:Plate XXIII,2], Purcari²⁷, *kurgan* 1/grave 4 [Yarovoy 1990:Fig. 19,v2], Roşcani²⁸, *kurgan* 1/grave 13 [Dergachev 1986:55], Semenovka, *kurgan* 8/grave 13 [Dergachev 1986:Fig. 13, 29; Subbotin 1988:106; Alekseyeva 1992:81] and Voroshylovgrad [Subbotin 1982:106]. The source publications are lacking complete descriptions of the above-mentioned artifacts, and their illustrations are rather inexact, which makes it difficult to determine forms and processing methods. Nevertheless, it is clear that flint axes are an alien element for the Yamnaya culture, borrowed from the GAC or the Corded Ware culture (I exclude the Tripolye culture due to chronological considerations), or else — which is most likely — from both of these groups. The only example of a trapezoid, four-sided in section, and almost entirely smoothed axe — the ‘classical’ GAC form (trait A8) — is the specimen from Camenca (Fig. 54:2). Among the remainder, only the example from Roşcani (Fig. 54:1) seems to refer more to the GAC, whilst the others are of culturally ambiguous forms. It should be mentioned that the use of flint axes within the north-western Black Sea region was not restricted to the Yamnaya culture. The only examples of axes found in graves come from this same territory: of the Kemi-Oba culture in Alkaliya (Shirokoye) [Subbotin 1995:Fig. 2, 8] and of the Catacomb culture in Svetliy, *kurgan* 1/grave 11 [Toshchev 1991:Fig. 5, 14].

The third of the elements under consideration are tombs in the form of stone cists, which are found, albeit rarely, in the Yamnaya culture, especially to the west of the Dnieper, where the tradition of using stone in a variety of grave constructions dates back to the Eneolithic Age [Shaposhnikova, Phomenko, Dovzhenko 1986:15]. In terms of the details of their construction, the majority of these are close to features of the Kemi-Oba culture (see below). A survey of the large amount of source literature gave rise to no more than three examples which could hypothetically be

²⁷Rus. Purkary.

²⁸Rus. Roshkany.

linked to GAC traditions (trait A12): two graves in the Lower Dniester basin — Tatarbunary grave 2, and grave 1, *kurgan* 1 at Sanzhiyka — and one tomb in the Molochna basin — grave 14, *kurgan* 11 at Akkermen.

The tomb at Tatarbunary (Fig. 56) was linked directly to the GAC by L.V. Subbotin [1988]. Within the stratigraphic sequence of the *kurgan*, it was placed between the series of typically Yamnaya culture graves and the grave of the Catacomb culture. A stone cist, oriented along the NNE-SSW axis, it was constructed from ten rectangular slabs, 10-15 cm thick, sunk 5-20 cm into the ground. The longer walls were made up of three slabs, the end walls from two. The dimensions of the chamber were 1.4 x 0.95 m at the bottom. The slabs were arranged in such a way that the northern (entrance) wall was approx. 10 cm higher than the remaining three. The gaps between slabs were filled with small stones and smeared with clay, which also covered the upper vertical edges. The chamber was fitted with a cover consisting of three large slabs with a combined surface area of 2.3 x 1.9 m. On the floor of the chamber, there were traces of some kind of covering. The tomb contained one skeleton (sex and age undefined) in a foetal position on its side, head to the SSW. Behind the body lay a lump of ochre, and a small, four-handled amphora stood in the corner opposite the head (see above). The grave could be classified as belonging to the final stage of the late Yamnaya culture (V group in the chronology of E.V. Yarovoy [1985:108]). The traits which most clearly allow the tomb described here to be linked to the GAC tradition are the asymmetry of its profile (raised entrance wall) and the manner in which the gaps between slabs were filled.

The Sanzhiyka tomb (Fig. 59A) possessed a chamber oriented along the east-west axis, constructed from four precisely-finished and interlocking slabs. Two smaller, additional slabs were vertically positioned by the eastern slab on the outside of the tomb, and were covered with smaller stones. These slabs constituted not so much a reinforcement for the construction as a support for the cover. This latter comprised three slabs — two four-sided and one oval in shape. The remains of one body were found in the chamber, dusted with ochre and lying in a foetal position of its back, head to the west. The form of the grave permits it to be included in the IV chronological group of E.V. Yarovoy [1985:108], i.e. dated to the late Yamnaya culture. According to I.L. Alekseyeva [1992:61-62 and Fig. 4, 6], it belongs to the earlier relics of the so-called 'Dniester-Danube' culture. No objects were buried with the deceased. Links with GAC traditions could hypothetically be suggested by the type of cover — comprising three slabs fitting snugly to one another and to the walls of the chamber, and the placing of additional external slabs. The tight fit of the slabs was achieved here without any grooves being etched into them, as was often done in the Kemi-Oba culture [Subbotin 1988:128].

The third of the graves presented, in Akkermen I [Häusler 1974:188 and Taf.

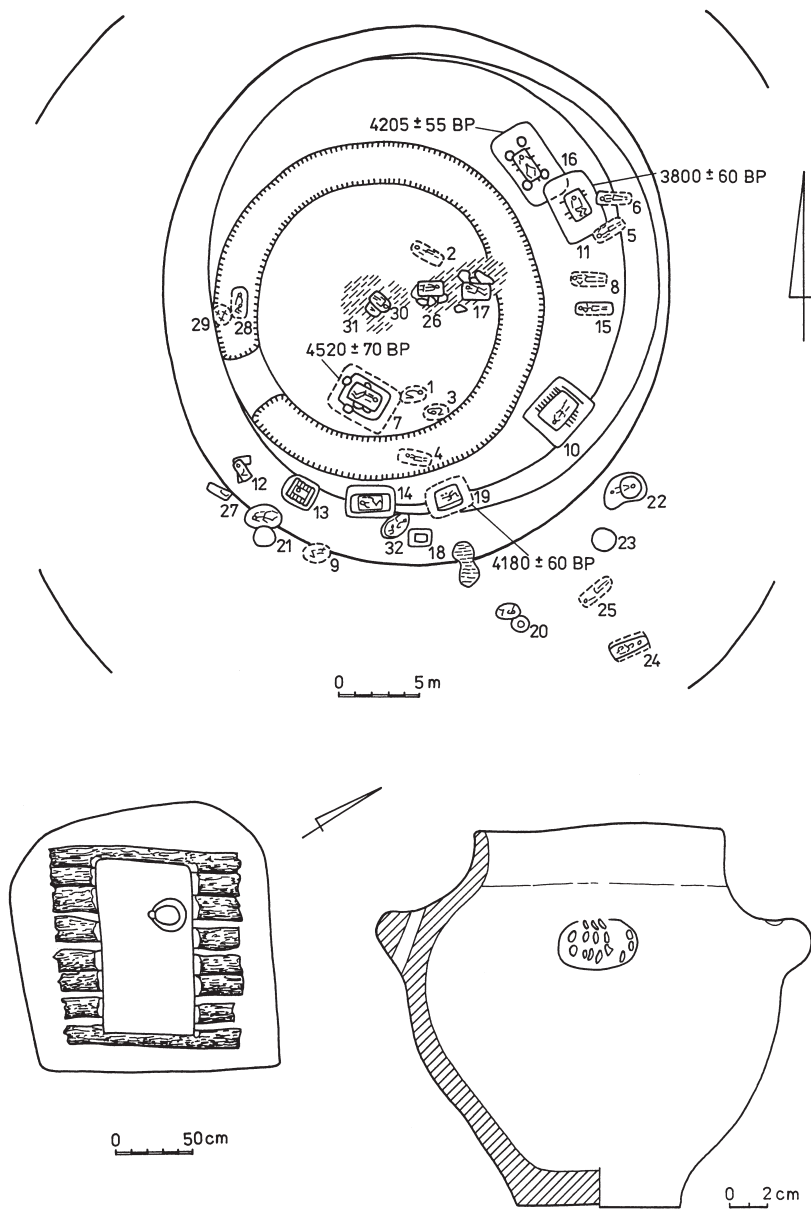


Fig 58. Probable traits of the Globular Amphora culture in Yamnaya culture graves: Novoselitsa (plans of kurgan 19 and grave 13, vessel from grave 13).

Source: Subbotin, Ostroverkhov, Dzigovskiy 1995 (without key).

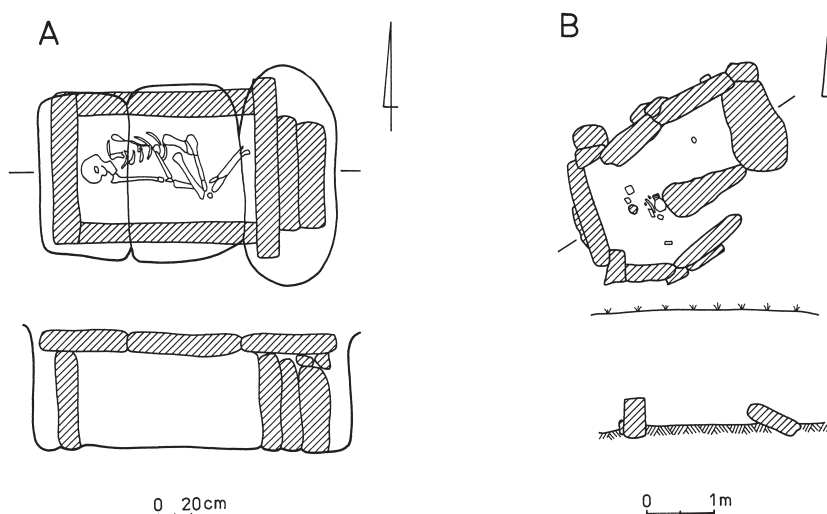


Fig 59. Traits of the Globular Amphora culture in Yamnaya culture graves: A - Sanzhiyka, kurgan 1, grave 1; B - Akkermen, kurgan 11, grave 14 (plans and cross-sections of graves).
Sources: Alekseyeva 1992; Häusler 1974.

64:3a-b], represents a form of tomb which is extremely rare within this particular region, i.e. with a passage (Fig. 59B), which links it to the GAC. The tomb was oriented with its long sides along the NE-SW axis. The entrance was made in the SE wall, with the opening to the 'pasage' facing the NE. The walls were constructed from ten slabs, and painted red on the outside. No lids were recorded. In the SW corner was found a human bone, dusted with ochre, and to the SE, traces of fire. Animal bones appeared in the filling²⁹.

To summarise, GAC features are documented in both 'classical' (Losiatyn?) and — mainly — late Yamnaya culture contexts (the majority of sites in the Dniester and Prut basins), within the area extending from the left bank of the Lower Dnieper in the east to the estuary of the Dniester and Prut in the west, with the largest collections in the north-west Black Sea area (particularly the Dniester and Prut basins).

Among the features of interest here, the most commonly found in the **Catacomb culture** are indications of the application of stamp ornamentation (trait A1). Ceramics ornamented in this manner come from settlements excavated in the regions of the Middle and Lower Dnieper (e.g. the Durna Skela site – Fig. 60:1) [Serdyukova, Yakubenko 1997], especially from so-called Iskovshchina-type sites,

²⁹It is worth remembering that two graves 'with a passage' covered by mounds were supposedly discovered in Tokarevka. They are linked to GAC (see Catalogue 1C).

originally linked to the Middle Dnieper culture (Fig. 60:3-4) [Berezanskaya 1966; Serdyukova 1996:149-155]. In addition to the continued application of patterns of stamp impressions typical of the GAC, we find here considerably more frequent examples of their transformations. In the opinion of I.L. Serdyukova [1997:153], such ornamentations are characteristic of the Catacomb culture in the Middle Dnieper basin, particularly of the Kiev group.

Further examples of links to the GAC, from Grishevka in the Chernigov region (Fig. 60:2), are more controversial, with regard to their debatable cultural provenance: a small quantity of ceramics (made from clay with a rich admixture of coarse and medium-coarse sand) ornamented with rectangular stamp impressions, and a flint chisel (traits A1 and A9). In the source publications, these finds are linked to the settlement of the Prick-Comb Pottery culture population (from its late phase) discovered at this site [Berezanskaya 1975:157-159]. However, the pottery and chisel were found in different layers related to phases III and IV of the occupation of the site. Consequently, they should be discussed separately. Suggested links between these sources (the ceramics, to be more precise) and the late Catacomb culture have recently appeared [Serdyukova 1996:135]. Without resolving discussions on this subject, an examination of the sources leads me to state that the technology of the ceramics is completely alien to the GAC, and that the patterns are actually constructed either through the application of rectangular stamp impressions or by using arrangements specific to the group in question. Accordingly, one would have to admit that they only distantly recall GAC ornamentation.

The attribution, in source documents, of grave 8 from *kurgan* 1 in the locality of Primorskoye to the Catacomb culture could also be considered controversial [Popandopulo 1992:83-89]. Here, in a modestly-sized oval pit (1.6 x 1.05 m), a body of undetermined sex and age was lain in a foetal position on its back, head to the south-east (Fig. 55B). In the north-western section of the pit, 65 cm above the bottom, a stone slab and several smaller stones were discovered. In addition to the bone remains, the following relics also came from this grave: a pestle, fragments of an unornamented vessel made from clay with an admixture of sand and fine chamotte, a lump of ochre, and doubleedged bone blades 8cm in length. The only analogies for this last object are in the GAC (trait A10). The stratigraphic analysis of the *kurgan* indicates that the grave described, situated on the south-eastern edge of the *kurgan*, is later than the three oldest 'central' graves of the Yamnaya culture, and occupies a similar position to the next two Yamnaya culture graves and the four graves of the Catacomb culture. In the source publication, the grave was classified as belonging to the Catacomb culture [Popandopulo 1992:83]. It should be remembered that one of the Yamnaya culture graves from this *kurgan* (no. 7) also contained an artifact considered to be indicative of GAC tradition (trait A3; see above).

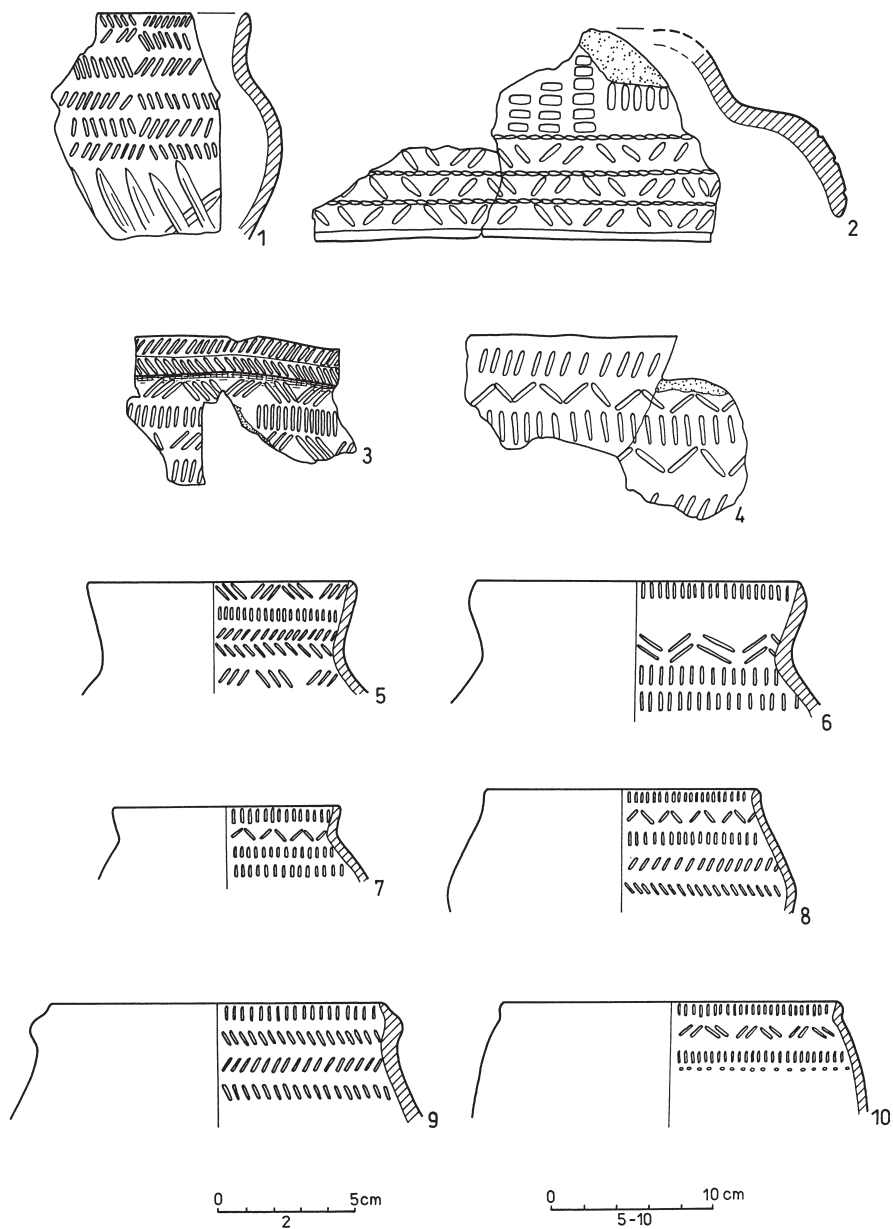


Fig 60. Traits of the Globular Amphora culture in Catacomb culture. 1 - Durna Skela, 2 - Grishevka, 3-4 - Iskovshchina, 5-10 - Middle Dnieper region.
Sources: Berezanskaya 1975, Serdyukova 1996, Serdyukova, Yakubenko 1997.

The use of ochre in the burial rite (trait B5), as recorded in the **eastern GAC group** (see Ch. II.2.) can be deemed a ‘Steppe’ element within the GAC. It was dusted either on the body (Kolodiezno, Ostrog-Karpaty) or on the surface of the burial chamber (Suyemtsy II). Ochre was also used in cremation graves, sprinkled on the chamber floor (Kikova 1, Skolobiv). The most likely origins of this ritual, completely foreign to the GAC, were in Steppe groups, which were probably of the Yamnaya culture, where it was a common custom [see, for example, the overview of Yamnaya culture graves in Häusler 1974; 1976]. Bearing in mind the location of all the above-mentioned GAC graves in Volhynia (no similar graves have been found in Podolia) and their chronology (the VB, VC and VD phases, i.e. from 2700 BC), one can surmise that the ritual in question was adopted as a result of contacts with Forest-Steppe Yamnaya culture groups from the Middle Dnieper region. This hypothesis is supported by the location in this area of features combining both GAC and Yamnaya culture traditions — originally entirely alien to one another (e.g. Losiatyn — see above).

IV.1.5. DEBATABLE ISSUES: THE GLOBULAR AMPHORA CULTURE AND THE KEMI-OBA, MIKHAILIVKA I, MAYKOP AND CAUCASUS DOLMEN CULTURES

The parts of cultural groups from the southern limits of eastern Europe which are listed in the title above: Kemi-Oba, Mikhailivka I, Maikop (more precisely, its Novosvobodnaya stage/type) and — in accordance with the terminology proposed by M.B. Rysin [1997:85] — the dolmen-building cultures of the western and Northern Caucasus (mainly the northern Caucasus culture, according to Markovin [1994b] or the Kuban-Terek culture, according to Nikolayeva [1981]), besides many differences, possess the common characteristic feature of ‘megalithic’ structures constructed for the funeral rite³⁰. In all of the above-mentioned groups, we can find stone cist graves (or graves of similar form) and other stone structures (e.g. cromlechs, stelae), which is often interpreted as being an element convergent with the GAC.

As yet, relatively little is known about the temporal and territorial relations between these two cultures, as well as their common links and related origins. As a result, the literature of this field includes mutually exclusive hypotheses. One key aspect of this question which is widely discussed is that of the possible links of the above-mentioned Caucasus and Black Sea groups with central European societies, including the GAC. Generally speaking, three standpoints can be distinguished, of which one [Gimbutas 1997a; 1997b] links the origins of certain central European

³⁰The Usatovo group of the late Tripolye culture is occasionally attached to these entities, and sometimes treated as an independent culture [e.g. Nikolayeva, Safronov 1974].

cultures (including the GAC) to influences arriving from the Caucasus-Black Sea circle (Maikop-Mikhailivka I). The second position [Nikolayeva, Safronov 1974; Rezepkin 1987] is the antithesis of the first: here, the central European groups (the GAC, Corded Ware culture and Funnel Beaker culture) are considered to be at the origin of processes leading to the formation of Black Sea-Caucasus structures (Kemi-Oba, Mikhailivka I, Novosvobodnaya, and Caucasus ‘dolmen’ cultures). Finally, the third option [e.g. Markovin 1994a; 1994b] refutes the idea of any kind of ties between the two regions. In terms of my own studies, the first two standpoints are the most essential, and they are focussed on in the following sections.

The hypothesis of M. Gimbutas constitutes one element of that author’s overall vision, according to which, impulses from the circle of Steppe cultures (which she brackets together under the common name of ‘*Kurgan* culture’) were the key factor in the cultural transformations which took place in Europe over the period of 4400-2800 BC [Gimbutas 1997a; 1997b]. These influences from the Steppe took the form of three waves of migration — or rather ‘invasion’ — of ‘*Kurgan* culture’ populations: no.1 ca. 4400-4200 BC, no.2 ca. 3400-3200 BC and no.3 ca. 3000-2800 BC. The source of the second wave was the Maikop culture, or rather Mikhailivka I — treated as being the early phase of this culture. This author also considers Kemi-Oba as part of Maikop. Under the influence of Steppe populations, an almost complete transformation of the cultural map of central and south-eastern Europe is assumed to have taken place. A cycle of new cultures with a significant influence of ‘*Kurgan* culture’ took shape at this time: Usatovo-Gorodsk-Foltești, Ezero, Baden and Coțofeni, as well as GAC. In the opinion of Gimbutas: “There is a complete congruence between the burial rites of the Globular Amphora people and those of the *Kurgans* of the Mikhailivka I stage of the Maikop culture in the North Pontic region: mortuary houses built of stone slabs, cromlechs, and stone stelae, engravings on stone slabs, ritual burial of horses, cattle and dogs; also human sacrifice in connection with funeral rites honoring high-ranking males” [Gimbutas 1997b:283]. A particularly strong similarity is also said to characterise ceramics of the GAC and Mikhailivka I (globular vessel bellies, shell, sand and plant admixtures) as well as settlement types (small, briefly-settled encampments) [Gimbutas 1997b:285; 1997c:363-365].

In terms of the aspect of interest to me here, the concept that the origins of the GAC may indirectly be attributed to the Steppe zone raises fundamental objections, since a significantly more credible thesis postulates entirely central European origins for this culture, anchored in endogenous processes of cultural and social transformation on the North European Plain [for a broader view, see Szmyt 1996a]. The hypothesised Steppe origins of the GAC also require far-reaching revision with relation to the above-mentioned analogies between the GAC and Mikhailivka I [e.g. Häusler 1985:61-64].

The second of the standpoints related above, actually more of a group of hypotheses, supposes the participation of European models (and even groups of people), deriving from the circle of the GAC or of the Funnel Beaker culture, in the origins of Black Sea and Caucasus groups. This discussion was initiated with the suggestion by A. Äyräpää [1933:121] of possible links between the GAC population, erecting megalithic tombs in Volhynia and Podolia, and the builders of the so-called 'northern Caucasus dolmens'. These views were revived in the 1970s and are still presented in a range of versions today. The most extreme viewpoint pertaining to this issue assumed a direct link between Novosvobodnaya (Tsarskaya) type tombs in the Caucasus and the GAC, and was represented by Nikolayeva and Safronov [1974]. The starting point for them was the discussion concerning the origin of the grave type under consideration, which was most often thought at the time to be the late phase of the Maikop culture [Yessen 1950; Popova 1963]. Nikolayeva and Safronov emphasised the lack of any genetic link between Novosvobodnaya and Maikop. Judging the most important feature of the Novosvobodnaya type (which they linked with the 'Dolmen culture' of the northern Caucasus) to be the megalithic graves, they saw the closest analogy to these in the Kemi-Oba and Usatovo cultures. However, since even these elements were, in the opinion of the authors, alien to earlier local traditions, the ultimate source of megalithic ceremony was deemed to be the Volhynia-Podolia GAC. From here, a migrational movement was assumed to have taken place which, contributing to the creation of new groups on the Black Sea (Usatovo) and the Crimea (Kemi-Oba), eventually reached the Caucasus, where they left their mark in the form of Novosvobodnaya type tombs and northern Caucasus dolmens [Kuban-Terek culture in Nikolayeva 1981].

The hypothesis of Nikolayeva and Safronov was regarded as highly controversial, and even as completely unfounded [e.g. Maleyev 1980; Sveshnikov 1983:20; Markovin 1990; Häusler 1994:195; Munchayev 1994:163]. Alternative propositions saw the origins of megalithic rite within the above-mentioned cultures in the evolution of local cultural structures [e.g. Shchepinskiy 1985:336; Rassamakin 1991; 1993], Mediterranean influences [in relation to the Caucasus dolmens: Markovin 1994a:251-252] and, finally, also in the Funnel Beaker culture [in relation to Novosvobodnaya: Rezepkin 1987; 1991a].

To summarise, from the point of view of the question addressed in this volume, the most crucial aspect is the dispute over the role and the dating of the so-called Novosvobodnaya (Tsarskaya) type, i.e. groups of complexes associated with megalithic graves ('dolmens'). In the classical position of A.A. Yessen [1950], the Novosvobodnaya type was treated as the second (late) phase in the development of the Maikop culture, with the first phase being exemplified by finds from the Maikop *kurgan*. By contrast, Nikolayeva and Safronov [1974:177-180] emphasised, among others, the lack of any genetic link between Novosvobodnaya and

Maikop. In the opinion of these authors, Novosvobodnaya type complexes would have been the effect of the migration of the central European population, particularly of the GAC, with the participation of peoples of the Corded Ware culture [Nikolayeva 1981:77]. In recent years, lively debate was raised by the hypothesis of A.D. Rezepkin, according to which the Novosvobodnaya type is not only genetically distinct from sources formerly linked to the earlier phase, but also contemporary to them [Rezepkin 1991a:189-197; 1991b]. In the opinion of this author, the development of the Novosvobodnaya type is connected to the activity, across the area from central Europe to the north-western Caucasus, of the so-called 'block' of cultures with shiny black ceramics [Rezepkin 1987:29-30; 1991a:173]. Understood to be a cultural movement with its origins in central Europe, this 'block' would have included, for example, Mikhailivka I, with Novosvobodnaya type complexes constituting its extreme eastern branch. The central European element in this 'block' was the Funnel Beaker culture [Rezepkin 1991a:73], with a certain level of participation from the GAC [Rezepkin 1987:29; see also Lovpache 1991]. The hypothesis put forward by Rezepkin, particularly the position of Novosvobodnaya type complexes within the development of the Maikop culture which he proposed, and the role of central European (mainly Funnel Beaker culture) societies in the stimulation of cultural processes in the northern Black Sea region and in the Caucasus, aroused much discussion [e.g. Munchayev 1994:163-164; Häusler 1994]. Of particular importance is the exhaustive criticism of the arguments put forward by Rezepkin to support links with the Funnel Beaker culture [Häusler 1994].

In a detailed consideration of the issue of the relations of the above-mentioned cultural units with the GAC, it should be emphasised that the range of potentially significant analogies is restricted to the form of cist grave and the shape of certain types of vessel. A close look at the published sources brings to light both clear differences in the form of stone structures, especially grave structures, between the Mikhailivka I and Kemi-Oba cultures on the one hand, and Caucasus groups on the other. The former, jointly included in the distinct, so-called 'Azov-Black Sea' line of the development of the Eneolithic Age [Danilenko 1974:87-92], display a range of features essentially close to the GAC: the rectangular shape of the cists, walls built from several (often 4-6) slabs, sometimes with a covering and a flagstone on the pit floor. At the same time, the differences between graves of these two units are clearly visible in those sites where they have been documented in the stratigraphic sequence (e.g. Starorogozheno, *kurgan* I — Fig. 61) [Shaposhnikova, Phomenko, Balushkin 1977]. Generally speaking, Mikhailivka I cists are smaller, often irregularly-shaped, composed of poorly finished or completely rough slabs, and most often contain the remains of single bodies, less frequently two. These features link them to cist graves already sporadically found in the Steppe region previously (considered as parallel to the BI phase of the Tripolye culture) [Rassamakin 1993]. Most typical of the Kemi-

-Oba culture are rectangular constructions comprising 4-6 well-finished slabs which fit into one another precisely, thanks to the application of special etched grooves [Shchepinskiy 1985; Shaposhnikova 1987:14-15; Subbotin 1988:128]. The walls were sometimes placed at an inward slant, and the gaps between slabs were smeared with clay. One distinguishing feature of Kemi-Oba graves are the ornamented interior surfaces of the walls, usually featuring geometrical motifs made using black, red or white dye. There are also examples of wooden cists [e.g. Korovina 1974]. The graves usually contained one body, less frequently two, and occasionally even a greater number (up to 30 individuals) [Shchepinskiy 1985:334]. It should be stressed, however, that in terms of their form, it would be difficult to distinguish these graves from those of the GAC.

Caucasus tombs, meanwhile, constructed from stone, feature a variety of forms, including some for which no analogies can be found in the northern Black Sea area (e.g. the Novosvobodnaya tomb or the similar, so-called 'dolmens' of the western Caucasus). This region has also seen the discovery of graves in the form of a more or less regular cist. Published examples from Maikop culture territory (Novosvobodnaya type) possess walls constructed from slabs which have been partially smoothed through striking, with the cists of a regularly rectangular shape (e.g. Nalchik, where the walls were composed of a series of small slabs approx. 0.5 m in length) or irregular, with a less formal wall construction (e.g. Skala, Grushevskoye) [Munchayev 1994:Fig. 44:2, 4, 5]. Regular rectangular cists are rare in the western Caucasus (type I 'slab' dolmens, e.g. Ilskiy) [Markovin 1994a:Fig. 62:1], and relatively frequent in the northern Caucasus (e.g. Kislovodsk, *kurgan* 4; Piatigorsk, *kurgan* 1) [Markovin 1994b:Fig. 74, 3, 5, 6, 9].

In the case of Mikhailivka I, attention has also been drawn to the similarities of certain forms of vessel without handles from the lower level of the eponym settlement (Fig. 62:1-2) to GAC pitchers and amphorae [Gimbutas 1997b:283-285 and Fig. 13]. I must stress in this context that the indicated convergence of vessel forms could be crucial in terms of general form, despite the inaccuracy of the analogies put forward to support them — they are based on very rare forms which, to make matters worse, are erroneously documented³¹. The fact that the provenance of this form continues to be disputed is evident from its being often linked to the late Tripolye Kasperivtsy/Gordinești group [Movsha 1993:44]. On the other hand, it is true that a whole series of vessels from the lower level at Mikhailivka (Mikhailivka I [Lagodovska, Shaposhnikova, Makarevich 1962: table I] displays certain convergences with the vessels of GAC (type III — pots; Fig. 62:3-4). However, these similarities are of an extremely general nature, with no possibilities

³¹The vessel from Kalsko cited by M. Gimbutas [1997b:Fig. 13, 1] from S. Nosek [1967:Fig. 20, 3] is actually a single-handled pitcher, with different ornamentation, and originating from a mixed region between the Polish and western GAC groups [see Wiślański 1966:Fig. 34, 16]. In the eastern group, no such vessels have been identified.

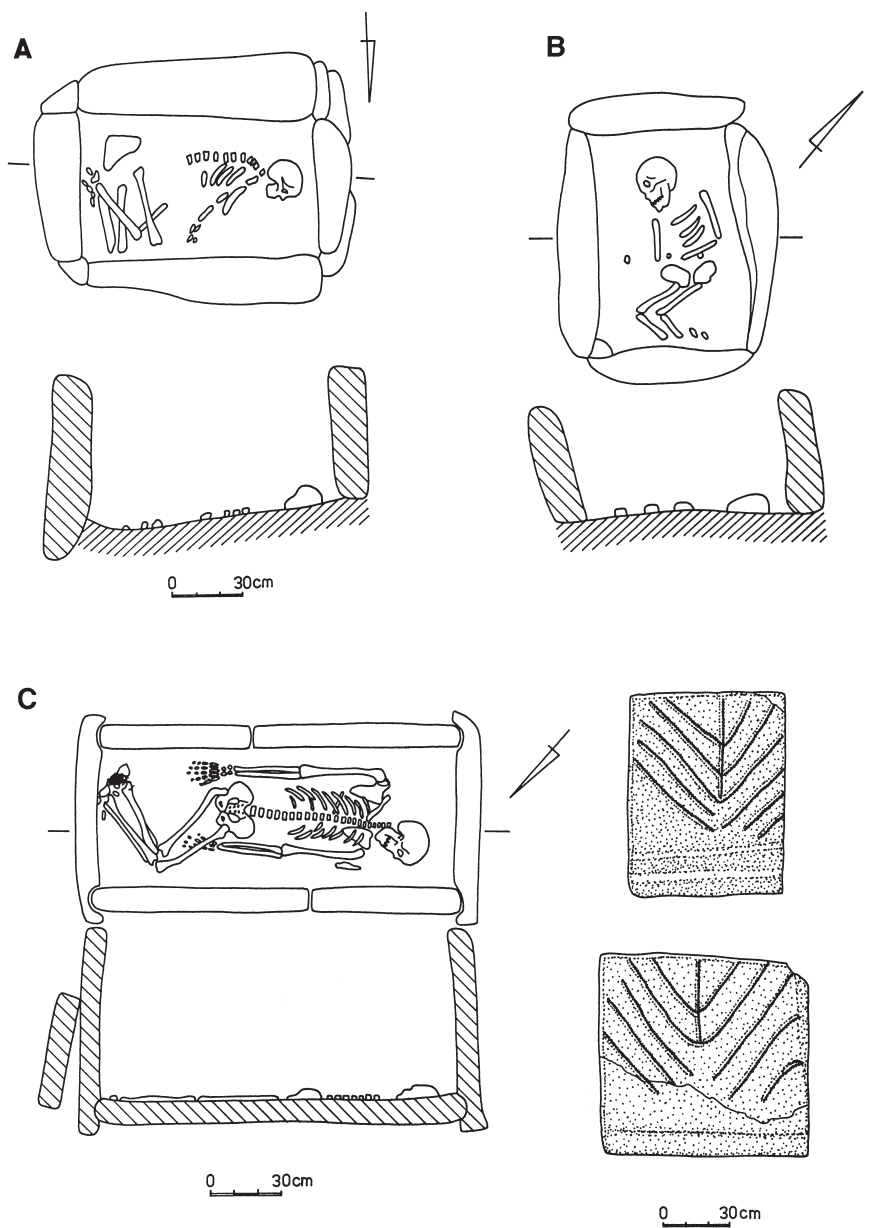


Fig 61. Examples of Mikhailivka I (A, B) and Kemi-Oba (C) culture graves: Starorogozhenko, kurgan 1, grave 24 (A), grave 11 (B) and grave 1 (C).
Source: Shaposhnikova, Fomenko, Balushkin 1977.

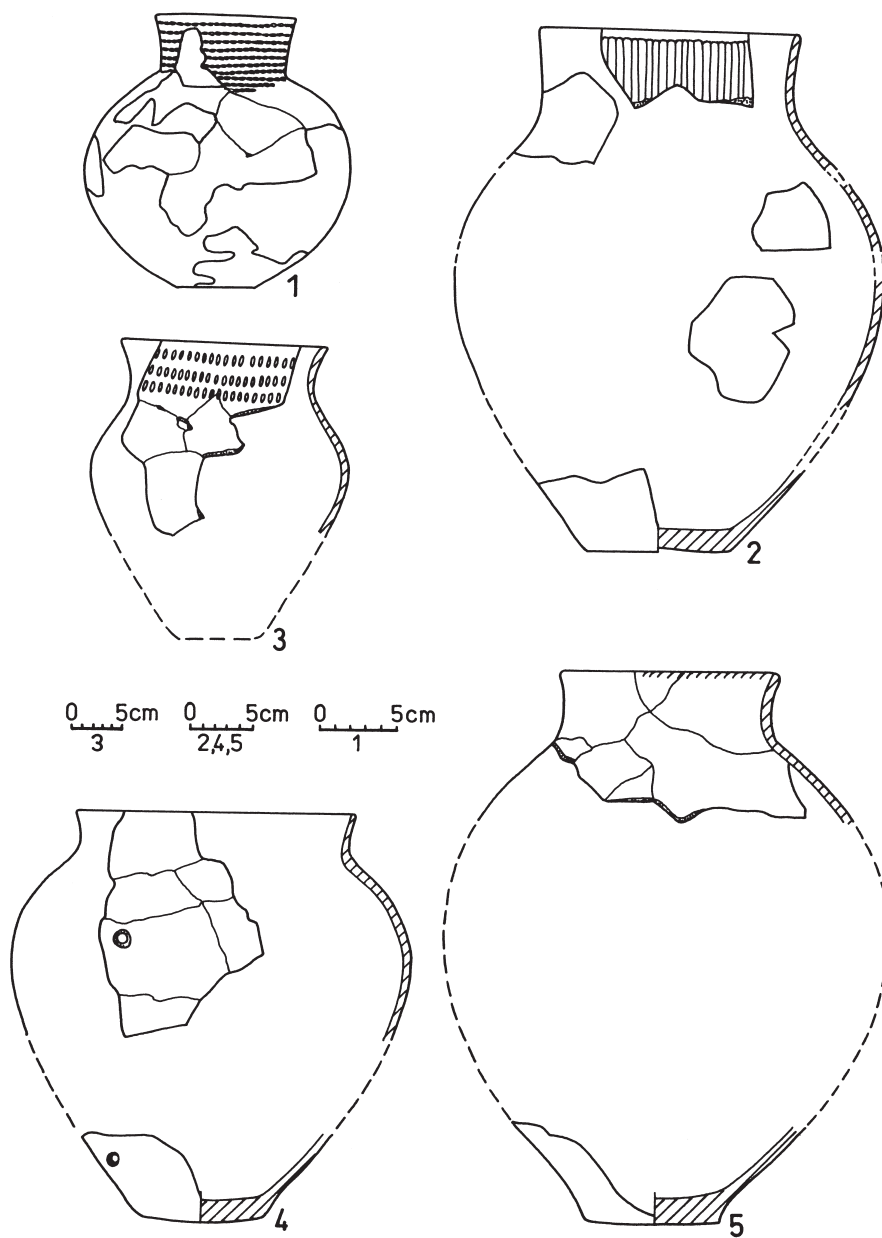


Fig 62. Mikhailivka. Vessels from lower layer (= Mikhailivka I).
Source: Lagodovska, Shaposhnikova, Makarevich 1962.

for a more detailed analysis, which means that the list of identifiers presented cannot be applied. The complexity of this question is revealed by the comparison of observations made by the explorers of Mikhailivka. On the lower level of this site (Mikhailivka I), they found Sredni Stog and Maikop ceramics [Lagodovska, Shaposhnikova, Makarevich 1962:38], while in the middle layer (Mikhailivka II, linked to the Yamnaya culture) late Tripolye pottery fragments from the Kasperivtsy/Gordinești group [Lagodovska, Shaposhnikova, Makarevich 1962:96-97; Manzura 1990:32]³². At the same time they stressed that both settlement phases at the site (i.e. Mikhailivka I and II) were chronologically close to one another [Lagodovska, Shaposhnikova, Makarevich 1962:38]. In this context, it is worth mentioning that the features cited earlier (see above Ch. IV.1.4.) from Baratovka and Boguslav, displaying clear GAC traits, show that ‘amphora’ patterns may have reached the Lower Dnieper region already in the first centuries of the 3rd millennium BC. Hence, there did exist ‘spatial possibilities’ for an impulse from the GAC circle to reach Mikhailivka, too. However, ‘temporal possibilities’ continue to remain unclear. To resolve this question in the case of Mikhailivka I, new information is needed, specifically new radiocarbon dates, which would set its reliable chronology.

IV.2. FORMS OF CONTACT

In terms of their chronological relationship to the GAC, the eastern European groups considered above can be divided into two categories: those generally contemporary to the GAC and those principally younger (not excluding, however, a partial contemporaneity amongst the latter). In addition, two ‘neighbouring’ categories can be distinguished from an evaluation of their territorial relations: namely, those where GAC settlement appears within their oecumene boundaries, and those whose oecumenes are simply adjacent to areas penetrated by the GAC population, or even distant from them. A combination of these two types of categorisation provides a starting point for the interpretations of the contacts of GAC societies presented below.

³²It is worth mentioning that the authors of the Mikhailivka monograph saw in materials from the middle level (Mikhailivka II) certain GAC elements, in my opinion mistakenly [Lagodovska, Shaposhnikova, Makarevich 1962:93-94].

IV.3. THE BALTIC COAST

Approx. 2850 BC, representatives of the GAC were present within the western section of the oecumene of the late Narva culture. Their initial contact with the Narva population should be dated earlier — to approx. 3000 BC (see below). At that time, the society of the Narva culture was characterised by an advanced stability of settlement in micro-regions where the natural environment was favourable to an intensive hunter-gatherer economy (see Ch. III.1.1.). In a number of coastal micro-regions (e.g. Šventoji), evidence of the stay of GAC representatives is manifest in the form of relics of the existence of culturally syncretic population groups. In addition, the structure of GAC features indicates that the starting point for the migrants was probably the area of the north-eastern border with the central GAC group. There, in the Warmia-Mazury Lake District and in the region of the middle Narev River, can be found the nearest concentrations of GAC megalithic tombs to the region under discussion (e.g. Drozdowo, Piątница, Rańsk, Romany, Szczepankowo, Szczytno, Trelkowo — all in the province of Warmia-Mazury) [Nosek 1967]. The lack of any similar graves (relatively easily identifiable even from archive material) in the south-eastern Baltic coastal region testifies to a fundamentally distinct type of GAC population settlement — ‘undomesticated’ — in this area. At the same time, the clear presence at these same sites of two distinct cultural traditions (Narva and GAC), as well as ‘mixed’ sources linking them to one another, is evidence of close, probably direct (‘face to face’) relations of representatives of the two societies. In this context, the less marked influence of Corded Ware cultural traditions is signalled by the more indirect nature of the contacts with groups of the ‘cord’ population who were also penetrating the north-eastern Baltic coastal region at this time (see Ch. III.2.). It is worth emphasising that a further range of sites in this same region provide contrasting evidence of close ties between the Narva population and the Corded Ware culture (e.g. Šarnelė) [Butrimas 1996].

It was precisely in such chronologically divergent sites, representing various forms of cultural syncretism formed on the basis of the Narva culture, that the earliest signs of a production economy appeared in the western part of the Narva culture oecumene: crop cultivation and the raising of domestic animals. Two sites discussed here (Šventoji 4 and 6) revealed evidence of cultivation (emmer and foxtail millet) and implements probably used for such work (wooden shovel ploughs), in addition to cattle remains. The accompanying model of a yoke points to the use of animals (cattle?) for farm work and transport. The difference in the range of species of domestic animals found between the eastern and northern areas of the Narva oecumene (the oldest remains were of sheep and goats) appears to justify a hypothesis of two different forms and directions to the arrival of production economy models in the south-eastern Baltic coastal region [Daugnora, Girininkas 1995:44-45].

In the search for factors which determined the above-mentioned direction of the migration of GAC elements, it would be impossible to avoid the question of amber. Still today, the south-eastern Baltic Coast is awash with succinite, the large-scale use of which led to the development of the Narva culture society [Loze 1975]. In GAC graves within the boundaries of the central area, amber artifacts appear from approx. 3000 BC, including forms which were evidently adopted from the Narva population, such as V-perforated button-beads (see Ch. IV.1.2.). The earliest contacts between the GAC population and the Narva culture can be dated to precisely this period. In this context, the above-mentioned sources from Šventoji represent the later phase of contacts between populations of the two cultures.

The close contacts described here between societies of the Narva (and Neman) culture and the populations of the Corded Ware culture, the GAC and, probably, also the late Funnel Beaker culture led to the formation of a new, syncretic cultural system — Pamariu/Rzucewo, which combined eastern and central European traits. There is a clear heritage from GAC tradition in Pamariu (Ch. IV.1.2.), although the dominant role here was undoubtedly played by Corded Ware culture models.

IV.3.1. THE FOREST ZONE

In territorial terms, GAC society penetrated deep into the Forest zone: the most easterly traces of its stay are from the Upper Dnieper basin (near the present-day Smolensk) and are approx. 500 km from the nearest settlement concentration of the Upper Dnieper culture. Between the Middle Bug and upper reaches of the Narva rivers in the west and the Dnieper to the east, the remains of GAC settlement are represented by individual sites, the only concentration of sites being in the Middle Neman basin. Here, as in the Upper Dnieper region, the GAC population preserved its economic model (animal raising and soil cultivation) and characteristic society organisation of land (with the unifying role of ancestral graves). Evidence of this is provided by the spectacular find in Krasnaselski 1, where a ritual feature (no. 3) revealing an exceptional collection of domestic animal remains was discovered next to a group of poorly preserved graves, and also by the find in Turinshchina where, despite the extremely poor state of the graves, the bones of domestic animals were found, along with the impressions of cereals. The lack in this region of the megalithic tombs so common in the GAC, replaced by graves with single stones in the filling, is probably related to the difficult access to stone deposits.

In contrast to the Baltic coastal region, in the eastern European Forest zone, the GAC population came into contact with local societies — of diverse cultures.

The situation in the western and northern areas appears to be relatively straightforward. As can presently be supposed, the basin of the Neman and Upper Pripets and its tributaries (including the Yaselda) saw the spread of the oecumene of late Neman cultural societies [Arkhealogiya Belarusi 1997:Fig. 37]. To the north and north-west from here dwelt societies of the late Narva culture, including — in the area of the Upper Dvina — the Usvyaty culture [Arkhealogiya Belarusi 1997:Fig. 38]. The cultural ‘map’ was probably more complicated in the western sector, the key to which lies in the origins and chronology of the Middle Dnieper culture in this region, of which different versions exist. The predecessors of this culture were the Dnieper-Donets culture, in the Middle Pripets area, and the Upper Dnieper culture in the area of the same name. Due to the lack of any credible hypotheses, it is not possible to specify the chronology of their decline. Despite this, data from neighbouring regions indicates that at least the Dnieper-Donets culture could have lasted up to the beginning of the 3rd millennium BC. The dating of the origins of the Middle Dnieper culture, however, is more controversial. The current possibilities in relation to this issue are rather modest (though the first actually available!), consisting in the datings of two sets of complexes: from the Middle Dnieper region (graves attributed to the middle and late phases, according to I.I. Artemenko) and the region lying between the Upper Dniester, the Bug and the Vistula (Cord Ware culture graves with elements of the Middle Dnieper culture). The earliest dates for Middle Dnieper culture graves in the Middle Dnieper basin fall approx. 2590 BC (range 1 sigma 2820-2250). The earliest indications from the second set fall approx. 2650-2600 BC, whilst the earliest (although undated) complexes with Middle Dnieper culture features could even come from before that time. Taking all the above-mentioned information together, it should be assumed that the beginning of the Middle Dnieper culture pre-dates 2650 BC [Machnik 1999]. Consequently, considering the decisive role played in the origins of the Middle Dnieper culture by the population of the Corded Ware culture, one should assume that the latter also arrived in the Middle Dnieper region in the period prior to 2650 BC.

In the cultural circle under consideration, GAC societies probably appear in the second quarter of the 3rd millennium BC. Radiocarbon datings indicate that in the area of flint deposits on the Ros River, in the western part of the region in question, GAC settlers were present at least around 2580 BC, whilst in the eastern part (on the Upper Dnieper) — approx. 2480 BC. However, as shown by the chronology of the adoption of GAC features in the Dnieper agglomeration of the Middle Dnieper culture (see above and Ch. II.3.), the arrival of the settlers at the line of the (Middle) Dnieper occurred, at the latest, approx. 2590 BC. This means that GAC societies reached the region in question later than populations of the Corded Ware culture or, at the earliest, simultaneously.

The consequences of the presence of GAC settlers in the Forest zone were various. Direct ('physical') contacts with them are conceivable for societies of the Neman and Middle Dnieper cultures (omitting possible contacts with the population of the Dnieper-Donets and Upper Dnieper cultures), i.e. with those within whose oecumenes traces of the residence of the GAC population have been recorded. Contacts with the late Neman population resulted in the transformation of the culture of the latter, although this was chiefly (exclusively?) on a material level (more precisely: in the production of Dobry Bor type ceramics). Of a more durable nature appear to be relations with the Middle Dnieper culture, shown in the production not only of ceramics, but also of flint implements (if we consider as a GAC trait the fact that the demand for axes was greater than in the Corded Ware culture). This last factor is usually related to the form of economy applied, i.e. increased forest felling. Transformations within the Usyvaty culture (changes in ceramics production and the limited adoption of techniques of animal raising), which have been hypothetically linked to the GAC, can be interpreted as an effect of direct contacts, bearing in mind the relative proximity of the regions of the Upper Dnieper and Upper Dvina rivers.

A more complex issue appears to be the relations between the GAC and the Fatyanovo culture. These two units shared no territorial boundaries. Yet, one factor in the origins of the Fatyanovo culture (at least of the Moskva-Klazma group) is deemed to be the translocation eastwards of part of the Middle Dnieper culture groups from the banks of the Desna [Artemenko 1987b:10-12; see also: Krainov 1987a:63]. Thus, it would seem logical to accept the hypothesis of the arrival of GAC designs in the Fatyanovo cultural environment through the intermediary of the Middle Dnieper culture population, and in an already evolved form.

IV.3.2. THE FOREST-STEPPE ZONE

The cultural situation in the Forest-Steppe zone and along its border with the Forest zone was highly complex. The GAC societies migrating to this territory from approx. 3000-2950 BC entered land that was mostly settled by the Tripolye culture population, which by then was in its late phase. Funnel Beaker culture settlement might still have been present in the region around the banks of the Bug (in isolated enclaves?). At the same time as the GAC, or possibly somewhat later, Corded Ware culture population groups arrived in the region under discussion.

GAC settlers took over the territory of the Forest-Steppe groups of the late Tripolye culture (phase CII): the whole of the Gorodsk group area and a part of the area of the Kasprivtsy/Gordinești, Kosenivka and Sofievka groups. According to

the chronological information put forward in Ch. III.1.2., all of these groups were probably still functioning, at least during the first quarter of the 3rd millennium BC. Their representatives, thus, potentially had the possibility of direct contacts with the GAC population. Material evidence of such links, although admittedly relatively small in quantity, comes from complexes of the Gorodsk and Kasperivtsy/Gordinești groups, as well as from Sofievka³³. One should bear in mind that the central (more specifically Kujawy) GAC group provides strong evidence of contacts with the Tripolye culture leading to the adaptation of techniques specific to the latter (in this case: the production of 'painted' vessels; see Ch. IV.1.4.).

The poor state of our knowledge of the latest structures of the Forest-Steppe Tripolye culture makes it extremely difficult to form an interpretation of the data which has thus far been collected. An inevitable consequence of the recognition of the reliability of the most recent ¹⁴C datings is the hypothesis of the relatively long period (even up to approx. 2650 BC) of co-existence of the above-mentioned Tripolye culture groups with the GAC. This is in no way contradicted by the intensive exploitation of the territory in question by the GAC population and the existence here of its major settlement concentrations. In relation to this, there are interesting observations concerning, for example, the Vistula basin where, in certain areas, thriving GAC agglomerations developed simultaneously with settlements of other cultures (e.g. in Kujawy, concurrently with the Funnel Beaker and Corded Ware cultures) [see Czebreszuk, Szmyt 1998]. This issue is further illuminated by the comparable character of the distribution of features of the Kasperivtsy/Gordinești group and the GAC in the Steppe region (see Ch. IV.1.4.), which suggests the existence of special forms of contact between the two. At the same time, it should be stressed that, in the light of current knowledge, no traces are evident of links between the GAC and the longest developing group of the Tripolye culture, i.e. Usatovo.

The most recent data available (presented in Ch. III.2.) point to the possibility of settlement enclaves of the Funnel Beaker culture functioning in the western part of the Volhynia Uplands up to the second quarter of the 3rd millennium BC, i.e. parallel with the Volhynia subgroup of the GAC. In the absence of a more complete illumination of this problem, one should stress the presence on the territory of the settlement in Zimno of traces of the stay of GAC representatives.

From approx. 2850 BC, representatives of the Corded Ware culture began to appear in the Upper Dniester basin — arriving here from the west. The oldest relics of their stay come from a line running through the Dniester basin at the level of the area between its tributaries: the Bystritsa Solotwinska and Nadwirnianska rivers, as well as the Gnyla Lypa and the Zolota Lypa. This line — a crucial cultural

³³It is difficult to evaluate the question of the presence of an amphora of a form similar to those of the GAC among the objects from the settlement in Trojaniv (dated to approx. 3240-2950 BC), since the relations of such an artifact with features already dated have not been defined.

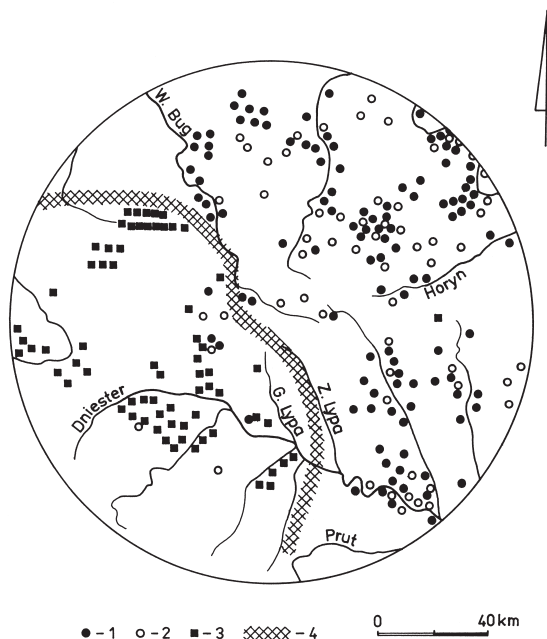


Fig 63. Spatial relations between the Globular Amphora culture and the Corded Ware culture (early and middle phases) in the region of the Upper Dniester.

Key: 1 - Globular Amphora culture sites, 2 - sites probably linked to Globular Amphora culture, 4 - Corded Ware culture sites, 5 - reconstructed border between Globular Amphora and Corded Ware settlements.

Source: Machnik 1998, with additions of the author.

border [Machnik 1979b; 1998:22 and Fig. 1] — separated the territory penetrated by the Corded Ware culture population from GAC settlement (Fig. 63). Further to the north, the boundary extended along the line of the Upper Bug, and then along the northern edge of the Hrubieszów Valleys. The border (or rather the border area) was only crossed occasionally in both directions, as testified to by the small number of GAC finds discovered to the west of the Gnyla Lypa (e.g. cemeteries — Busk, Zvenigorod; encampments — Kolokolin, Lubiela, Zvenigorod; and temporary camps — Drohobych, Rokitno I, Zholkva), and of the Corded Ware culture on the eastern side of the frontier (e.g. the *kurgan* in the locality of Lysenchytse) [Machnik 1998:23]. In the situation outlined here, it should be assumed that contacts between populations of the two cultures did, in fact, take place, albeit sporadically. With this in mind, one should note the lack of any material evidence to this effect, although this is the most commonly recorded state of affairs (a kind of norm) in relations between the GAC and the Corded Ware culture both in the Vistula basin and on the territory of eastern Europe (see above).

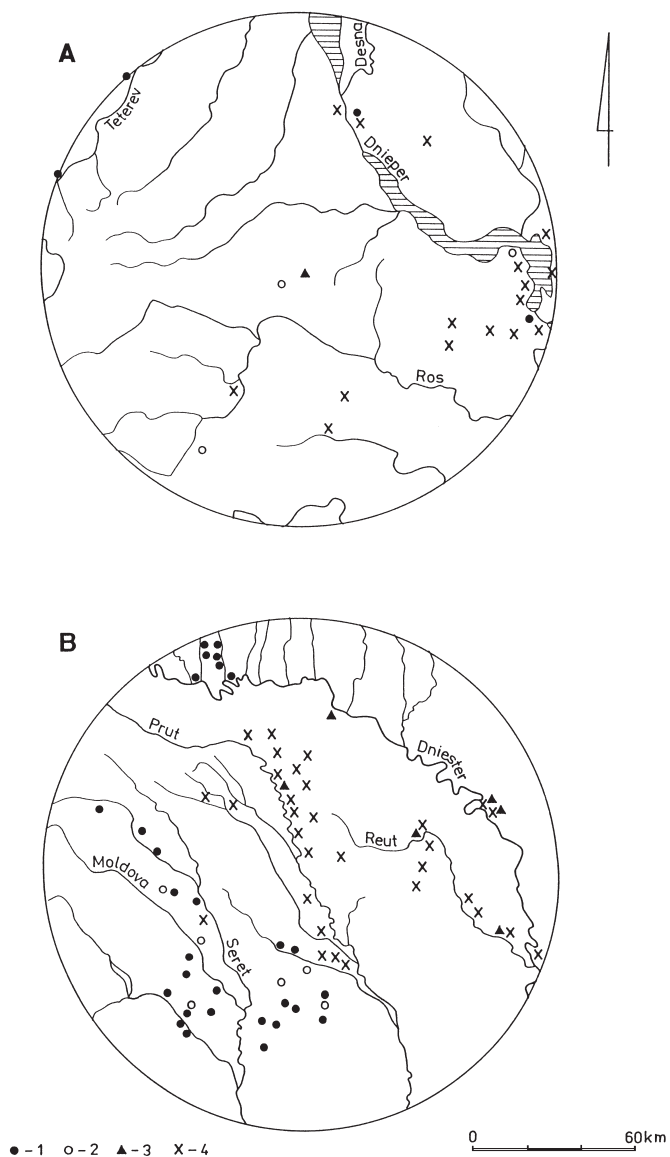


Fig 64. Spatial relations between the Globular Amphora culture and the Yamnaya culture in the Forest-Steppe zone: A - Ros River (Middle Dnieper tributary) area, B - Dniester - Prut area.

Key: 1 - Globular Amphora culture sites, 2 - incidental finds of flint axes or chisels, probably linked to Globular Amphora culture, 3 - Yamnaya culture graves with traits of Globular Amphora culture, 4 - Yamnaya culture sites.

Source: Dergachev 1998, with additions of the autor.

According to the hypothesis of J. Machnik [1979b:60; 1991:12], the breaching of the border in question occurred during the late period of the development of the Corded Ware culture (phase III), and led to the territorial expansion of the Corded Ware culture population, traces of which can be found in the Bug Valley, in Podolia (as far as the line of the Zbruch River to the east), in the Halicz area in the Carpathian Foothills, and in the Carpathian Mountains. Despite this, the likelihood is that the GAC tradition, and most probably a part of the population (possibly some form of settlement enclave) settled in Podolia. This is indicated, for example, by the territorial convergence of the Podolian concentration of the GAC with the small group linked to the influence of the early Mierzanowice culture which inhabited the area from approx. 2200 BC [Kadrow, Machnik 1997:145-147]. Similarities in form are illustrated here by the use in the burial rite of stone cist type tombs. Given the unclear origins of this ritual (an element taken from the GAC or from the Schneckenberg-Glina III culture?), the issue in question is impossible to resolve.

Even more marked is the territorial connection of the Strzyżów culture with the western Volhynia settlement concentration of the GAC. Together with the presence of certain GAC features in the ceramic production and the rituals of the Strzyżów culture, this points to the long-lasting (at least from approx. 2000-1950 BC) [Kadrow, Machnik 1997:73] preservation of GAC tradition in western Volhynia.

In contrast to the relations presented above, the Yamnaya culture and GAC oecumenes are, in principle, mutually-exclusive, as the most recent cartographic studies show (Fig. 27) [Arkheologiya 1985:Map 8; Dergachev 1986:Fig. 2B; 1998:Fig. 19; Davna istoriya 1997:Map 10]. There do exist, however, two areas in which 'pure' material of both cultures are recorded: a section of the Middle Dnieper (from the Ros River basin in the south to the Desna estuary in the north) and the area between the Prut and Seret rivers.

The above-mentioned area of the Middle Dnieper (Fig. 64A) was used only occasionally by the GAC population as, for example, the grave in Kanev and the settlement in Kiev-Nikolskaya Slobodka III testify. The finds of flint axes and chisels in such sites as Doslidnitskoye and Tetyiv could also provide links to the GAC. Yamnaya culture objects which appear in the same area represent both the 'classical' and late phases of this culture (e.g. Myronivka) [Klochko 1999; see also Ch. II.2.5.]. Contrary to the opinion of I.L. Serdyukova [1996:142], there are sites here in which sources from both cultures have been recorded (e.g. Kiev — Nikolskaya Slobodka), although the incomplete nature of the source publications makes it difficult to assess the relations which existed between them (territorial, stratigraphic etc). However, this region is also home to a highly crucial site, already discussed above (Ch. IV.1.), of a pronounced syncretic nature: namely, the grave in Losiatyn, which links distinct features of the funeral rites

of both the Yamnaya culture (the form of both the burial and the grave) and the GAC (the form, ornamentation and even technology of the vessels placed in the grave). The dating of this grave remains an open question. The vessels do not possess sufficiently 'sensitive' features, chronologically speaking, to enable their specific classification within the periodisation of the eastern GAC group proposed above. Similarly, the form of burial, i.e. the placing of the body in a foetal position on its back, is not typical of the late Yamnaya culture, although it can occasionally be found there [for the right bank Dnieper region, however, see the comments of L.G. Samoylenko 1988:69]. Indirect chronological clues could be provided by the ^{14}C dates for Yamnaya culture graves in Myronivka, situated in this region: the oldest of these dates back to approx. 2550-2500 BC, i.e. contemporary to the VC phase of the GAC. For further indirect signs, one could also use the dating of the evidence of the application of ochre in the funeral rite of the Volhynia societies of the GAC (Ch. I.1.2.): after 2700 BC, although from no later than approx. 2550 BC (the upper limits of the VB phase). As has already been mentioned, the most likely scenario is that the adoption of the ritual under consideration occurred as a result of the contact with Forest-Steppe groups of the Yamnaya culture, precisely from the territory of the Middle Dnieper. Considering the relatively small amount of evidence in the Dnieper region of the contacts under analysis, one should conclude that these did not last long.

One of the largest GAC settlement concentrations was formed in the area between the Prut and Seret rivers (see Ch. I.1.3.; Fig. 64B). The penetration of this territory by Yamnaya culture societies, however, was of a rather incidental nature. The small number of Yamnaya culture *kurgans* are located on the Prut and Seret [Dergachev 1986:Fig. 1], with none in the areas further from these rivers. From this region, there are no known sources combining both traditions. The Yamnaya culture population may, therefore, have appeared here after the disappearance of GAC settlement. A different situation is presented on the eastern side of the Prut: more precisely, between the Prut and Dniester rivers. Here, there are Yamnaya culture graves recorded which contain certain GAC elements — to be found in ceramic and flint artifacts. The furthest of these traces reach to the left bank of the Middle Dniester (Camenca). A comparison of information from the above-mentioned regions indicates that the settlement of the two cultures were most probably contemporary to one another, at least in part, and that the dividing line ran along the Prut and Middle Dniester rivers. This border, identically to that discussed earlier between the GAC and the Corded Ware culture, separated the GAC settlement concentration, situated to the west of the Prut, from the Yamnaya culture territory located to the east. The presence of individual GAC traits in the Yamnaya cultural circle, in graves classified both in the

Dniester group and in the Budzhak group, could be interpreted as a sign of the continued preservation of the above-mentioned border, above all during the life-time of the former. The adoption of GAC features in the Budzhak group could point to the disappearance of the border at that time and the absorption by the Yamnaya culture population of at least a section of GAC peoples. Let us add that the active adoption of patterns from other cultural groups (Balkan-Carpathian and central European) remains one of the major diagnostic features of the Dniester Yamnaya culture, and one which distinguishes it from other groups of this culture in this region [see, for example, Chernyakov 1978; 1979; Subbotin 1980]. From the perspective of the situation presented above, of particular importance is the presence in this same region of clear evidence of links between the Yamnaya culture and the Corded Ware culture [e.g. Yarovoy 1985:90-91; Dergachev 1986:79-87; Alekseyeva 1992:78-83]. Research into the nature of these links, and also into the GAC — Corded Ware culture relations remains a crucial task for the future.

To conclude, GAC and Yamnaya culture societies were linked by direct contacts in at least two regions of the Forest-Steppe: in the right bank area of the Middle Dnieper and in the area between the middle Prut and the Dniester. In both instances, these led to the formation of rather short-lived syncretic structures of a variety of specific forms (a more marked participation of GAC in the Middle Dnieper, against a significantly lesser contribution on the Dniester).

Still to be considered is the presence of individual GAC traits in the ceramic artifacts of the Forest-Steppe groups of the Catacomb culture. Bearing in mind the distinct chronological positions of the two cultures, these features are probably the effect of an indirect transmission: by the Middle Dnieper culture and Yamnaya culture populations. This question is presently impossible to resolve.

IV.3.3. THE STEPPE ZONE

The GAC population settlement did not penetrate the Steppe region. Only individual traits deriving from this culture have been documented, in three contexts: 'pre-Yamnaya', 'Yamnaya' and 'post-Yamnaya'.

Crucial among the so-called 'pre-Yamnaya' groups of grave types (of late structures of the 'Steppe Eneolithic'), is the Zhivotilovka-Volchansk group (Fig. 26). It should be remembered (see Ch. III.1.2.) that, according to proposed reconstructions, the Zhivotilovka-Volchansk type is assumed to have spread from the west to the east, reaching the northern Caucasus and the Ciscaucasia, and then — in reverse — back

towards the west [Rassamakin 1996:130]. A diagnostic trait of this type is its syncretic character: sites attributed to it have revealed relics originating from the late Tripolye culture (especially the Kasperiivtsy/Gordinești group) and Balkan-Danube and central European cultures [Manzura 1990; Rassamakin 1991; 1993:10-11], as well as from Caucasus cultures (Maikop) [Rassamakin 1996:129]. A component local to the Steppe region is represented by traits typical of Mikhailivka I [Rassamakin 1996:114]. The relations between the above-mentioned components alter from the west (domination of Tripolye traits) to the east (domination of Maikop traits).

Up to now, the possible GAC element of the profile of the Zhivotilovka-Volchansk type has been either considered in a general way [Rassamakin 1996:129-130] or else denied [Dergachev, Manzura 1991b:57-58]. Yet, the participation of the GAC is confirmed by links to this culture provided by elements found in both of the 'Eneolithic' graves discussed in Ch. IV.1.4. — namely Baratovka and Boguslav. These are located in the area of two local groups: the Dnieper-Ingulets group (Baratovka) and the Samara group (Boguslav).

In attempting to determine the origins of the presence of GAC traits in Zhivotilovka-Volchansk type relics, attention should be paid to the role of the forms linked to the Kasperiivtsy/Gordinești group, diagnostic for this type and widespread throughout the Steppe region (Fig. 65) [Manzura 1990]. Taking into consideration the contacts of this group with the GAC (see Ch. IV.1.4.), one could advance the hypothesis that GAC features arrived among the Eneolithic Steppe groups together with Tripolye elements. In general terms, Forest-Steppe patterns were probably disseminated in the form of a syncretic 'package', dominated by Tripolye culture elements. More accurately, population groups (at least a part of them) originating from the Forest-Steppe region between the Prut and Dniester rivers were of a mixed cultural character.

The remaining issue to be considered is that of chronology. Up to now, the chronology (particularly the absolute chronology) of the Steppe Eneolithic has generally been defined in terms of the dating of the Tripolye culture [e.g. Rassamakin 1993]. If the duration of the CII phase (Ch. III.1.2.) of this culture is extended, it would therefore seem appropriate to make the corresponding adjustments to the chronological charts of the Steppe region. From the perspective of the question of interest to me in this volume, the functioning of the Forest-Steppe settlement of the Kasperiivtsy/Gordinești group up to approx. 2650 BC is of critical significance. From a comparison with the dating of the Podolian subgroup of the GAC (Ch. II.3.2.), the most likely period for the arrival of GAC patterns among Eneolithic Steppe structures can be specified as 2850-2650 BC. Furthermore, taking into account the assumed 'pre-Yamnaya' provenance of these structures, the period indicated would need to be narrowed down to its earlier range, where the upper

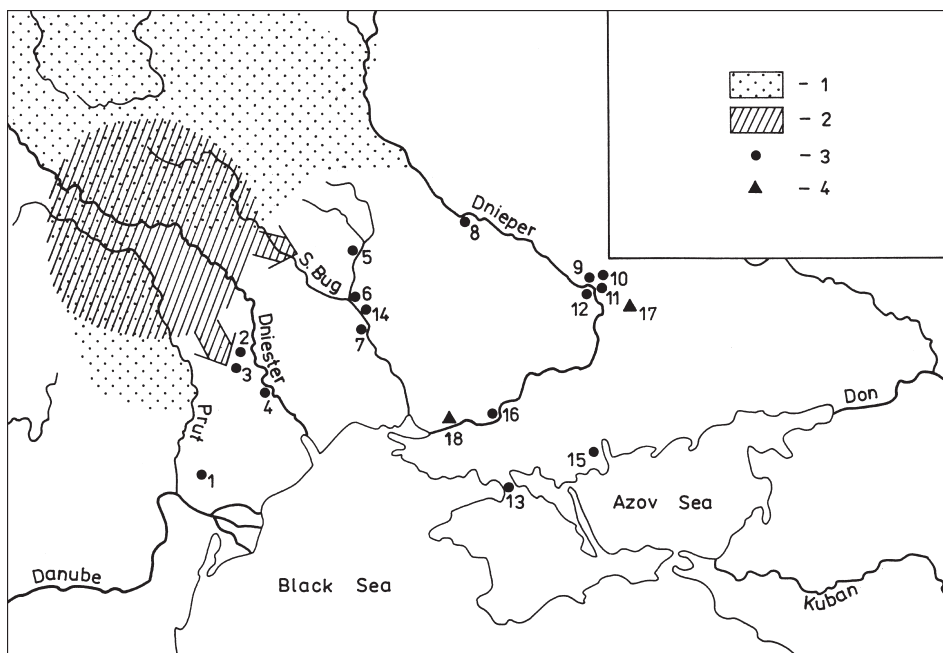


Fig 65. The territorial range of traits of the Gordinești group (late Tripolye culture) in the Forest-Steppe and Steppe zones ('pre-Yamnaya' stage: 1-15; Yamnaya culture: 16) and sites with traits of the Globular Amphora culture ('pre-Yamnaya' stage).

Key: 1 - eastern group of the Globular Amphora culture, 2 - Gordinești group, 3 - sites with traits of the Gordinești group (1 - Taraclia, 2 - Mana, 3 - Dancheny, 4 - Gura Bykului, 5 - Vladimirovka, 6 - Grushevka, 7 - Gard, 8 - V.Andrusovka, 9 - Podgorodnoye, 10 - Zhivotilovka, 11 - Sokolovo, 12 - Novomoskovsk, 13 - Risovoye, 14 - V.Aleksandrovka, 15 - Volchansk, 16 - Mikhailivka II [= layer II]), 4 - sites with traits of Globular Amphora culture (17 - Boguslav, 18 - Baratovka).

Sources: Manzura 1990, Rassamakin 1996, with additions of the author.

limit is dependent on the chronology of the beginning of the Yamnaya culture in the region of the lower Ingulets, Dnieper and Samara rivers — which is, however, as yet unclear (see the comments concerning the dating of the Yamnaya culture in Ch. III.1.2.).

Within the environment of the Yamnaya culture in the Steppe region, GAC features have been identified (Fig. 66) on the Lower Dniester and the Lower Dnieper (the Molochna and the Samara rivers). The sites discussed in Ch. IV.1.4. represent the 'classical' and, above all, late phase of the Yamnaya culture. In these cases, the GAC features do not display such spectacular forms as those focussed on in relation to the Forest-Steppe Yamnaya culture. For example, the vessels recorded in Steppe sites are more or less faithful to the original 'amphora' designs. At the same time, however, it is in this region where cist type graves similar to those of

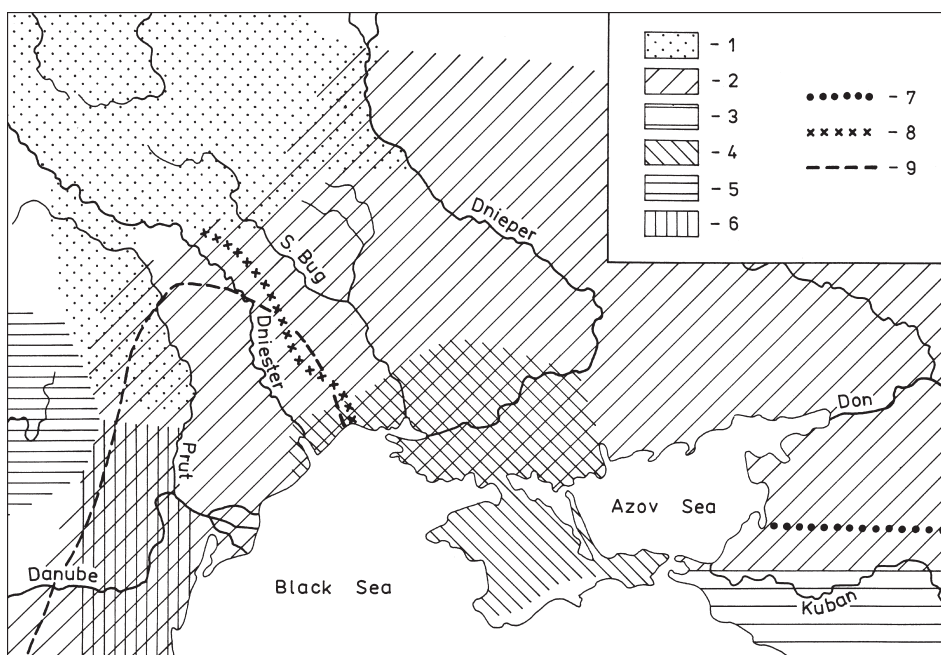


Fig 66. Cultural situation on the Black Sea in approximately the middle of the III mill. BC.

Key: 1 - the eastern group of the Globular Amphora culture, 2 - Yamnaya culture, 3 - areas previously occupied by the Maikop culture, 4 - Kemi-Oba culture and Kemi-Oba type graves, 5 - Coțofeni culture, 6 - Foltești culture, 7 - northern border of the appearance of so-called Caucasus dolmens, 8 - eastern border of the Dniester variant of the Yamnaya culture, 9 - Budzhak group (culture).

Sources: Bogataya, Manzura, Savva 1995, Davna istoriya 1997, Markovin 1994a, 1994b, Munchayev 1994, with modifications of the author.

the GAC appear which have not yet been identified in Forest-Steppe areas. It would appear that contacts with the GAC were maintained through the intermediary of Forest-Steppe groups of the Yamnaya culture. Neither can it be precluded that this tradition was transmitted indirectly *via* Eneolithic societies.

Traces of references to the GAC in 'post-Yamnaya' environments, and more precisely in the Catacomb culture, should be linked to their indirect transmission (probably by Yamnaya culture societies), as in the case of the Forest-Steppe zone.

Still to be considered is the question of contacts between GAC societies and Kemi-Oba, Mikhailivka I and Maikop type groups.

Despite much lengthy discussion, the fundamental question concerning this issue remains the establishment of credible temporal relations between the Kemi-Oba and Mikhailivka I cultures and the GAC, indispensable for which are not only typological analogies and stratigraphic observations, but primarily independent data — especially series of ^{14}C datings. The key areas are the region of the Lower

Dniester, i.e. the area most likely to have been the point of contact for the traditions of the GAC and the Kemi-Oba culture (Fig. 66) [e.g. Subbotin 1995], and the left-bank region of the Lower Dniester — the area representing both the eastern limit of the distribution of relatively certain GAC patterns (see above), and the centre of Mikhailivka I. Until these issues are resolved, the formulation of any further hypotheses would appear pointless.

A similar evaluation applies to the question of the relations of the GAC with the Maikop culture and other ‘megalithic’ Caucasus groups. A survey of the published sources reveals their divergence from GAC traditions. The only common element, although somewhat of a distant parallel, is the form of stone tombs. However, the knowledge hitherto obtained does not permit the formulation of detailed and sufficiently substantiated hypotheses. Crucially significant here is the confusion that still reigns over fundamental questions of the periodisation-chronology of Caucasus structures [Munchayev 1994:170-171; see also the relative scepticism expressed on this matter by Piotrovskiy 1991].

At the same time, however, it should be emphasised that, in the light of new sources and the reanalyses of old information, there is increasing evidence of the activity of influences originating from Balkan and central European groups on the territory of the northern Black Sea region, as exemplified by the Zhivotilovka-Volchansk type discussed above. Links between these culturally syncretic societies and groups from the northern Caucasus, and even their arrival in this region, are now accepted by some researchers [Rassamakin 1996:130]. Nevertheless, the defining of their relations with the Novosvobodnaya structures remains problematic [Rassamakin 1991:55].

V. CONTINUITY AND CHANGE. AN OUTLINE OF THE HISTORY OF THE GLOBULAR AMPHORA CULTURE POPULATION IN EASTERN EUROPE

In the light of the current knowledge, the origin of the GAC is traceable to the North European Plain, more precisely, to the territories between the Middle Vistula and the Middle Elbe rivers [Wiślański 1966; Czerniak 1980; Szmyt 1996a; cf. opposing views, e.g. Gimbutas 1991]. It is a relatively late comer to eastern Europe bringing there hitherto unknown patterns of social, ideological and economic behaviour.

V.1. BASIC FEATURES OF SOCIO-ECONOMIC STRUCTURES OF THE GLOBULAR AMPHORA CULTURE PEOPLE

When appearing in eastern Europe, GAC societies had their early stage of development already behind them [Szmyt 1996a]. About 3000 BC, the 'classical' structure, typical of them, had already taken shape. It had a readily observable social, ideological and economic peculiarities which can be best described on the example of the central territorial group.

Within the Vistula drainage, the fundamental characteristics of the GAC social structure have been best identified in Kujawy [Szmyt 1996a:201-216]. The social organization of GAC populations here was arranged in three tiers namely: village, microregional (microlocal) and regional groups. The basic unit of social organization was the home group (family) numbering at least 4-5 persons. It was also this group that in most cases formed a village group, which was relatively mobile (i.e. moved quite frequently). Under special circumstances (e.g. seasonally), a few families would form one village group that would share one settlement consisting of several houses. At least 3-5 (related) basic families made up a microregional group whose domain covered 160-310 sq. km. Members of such a group were related by blood (being linear descendants of a single ancestor ?). A manifestation of this group's unity and also a sign of their right (not necessarily real, could be mythical) to the area was a ritual zone marked by a megalithic cemetery (or cemeteries). About 20 microregional groups made up a regional group. It was a communication community

within the bounds of which marriages must have been arranged. This form of social organization seems to reflect well the situation found only in some areas of the GAC oecumene in the Vistula drainage, while in others the organization could have been simpler or its quantitative parameters different [Kruk, Milisauskas 1999:198-201].

Relations within groups were generally based on the supremacy of adult males to whom women, adolescents and children were subjected [Wiślański 1969:312; Sulimirski 1970:166; Gimbutas 1991:383]. In comparison with other cultures living at the same time, GAC societies were marked by advanced internal ranking. It is indicated by a large set of prestige objects, including ones that were exchanged over large distances, for instance, axes and chisels made of banded flint mined in the northern foothills of the Holy Cross Mountains (Krzemionki Opatowskie) [more on this subject see Borkowski 1995]. Other examples comprise amber products [Czebreszuk, Makarowicz 1993; Szmyt 1996a] as well as objects that were a peculiar and highly spectacular “invention” of these societies (e.g. certain bone articles).

In the ideology of the discussed societies, an important role was played by beliefs and rituals related to the raised animals (cattle, less frequently pigs or others). This is evidenced by animal burials (whole individuals or only parts of their bodies) in ritual pits located within the bounds of settlements or in cemeteries as well as in the graves of humans [Wiślański 1970; Szmyt 1996a:188-189]. Particularly high was the rank of cattle, the burials of which (including double ones) were exceptionally rich (e.g. contained such votive offerings as amber or bone plates) [Wiślański 1969].

From the point of view of economy, the GAC population represented a mixed, animal raising-farming system marked, in principle, by the predominance of animal raising over soil cultivation, with hunting and gathering playing a supplementary role [Wiślański 1969; Kruk 1980:305-307; Szmyt 1996a:161-191]. However, inter- or intra-regional differences in the economy of these populations are possible, as well [e.g. Szmyt 1996a:191].

Further research will permit the determination how adequate the details of the above picture are in relation to the eastern European GAC societies. It seems, at present, that the picture, in broad outline, corresponds to the situation recorded in different ecological zones of eastern Europe. Particularly important is the presence of a large set of relics of ritual behaviour (graves in the form of stone cists, prestige objects made of different materials, ritual animal burials) and similar settlement and economic models. Taken together, this body of knowledge permits a preliminary description of the societies under consideration which will serve as a point of departure for further studies.

Small and poorly marked (hence difficult to discover), camp sites are indications of a mobile way of life of GAC societies. It is also here that as an anchor of settlement networks served cemeteries made up of graves most often having the form of stone cists that dominated in the territory of the eastern group (Volhynia, Podolia,

Moldavian Uplands). The construction of such cist graves required considerable effort in which at least several basic families must have participated. Apart from the large size of some of these features, this is also suggested by the observations concerning, for instance, the tomb in Tovpyzhyn (Plate 40). The raw material from which it was made (8 slabs, of which the largest was 1.6 x 0.9m) had to be transported from a distance of at least 20 km [Maleyev, Pryshchepa 1996:63]. The discovery of a number of cases of multiple use of some graves (see Ch. I.) may testify to a relatively long life of certain groups.

The often cited grave in Kolodiezno (formerly Wojciechówka, cf. Ch. I.; Plate 19-20) unequivocally testifies to the supremacy of males in the social structure. Worth taking notice is the rich set of objects which can be considered as indicators of prestige. Next to particularly carefully finished flint axes and chisels, there were articles made of amber and bone. It must be stressed that in several instances axes were made of banded flint from Krzemionki Opatowskie, while in others Volhynian striped flint, similar in appearance, was used as a substitute (e.g. Glibochok — Plate 9:7, 8). Amber plates-pendants and necklace elements were found in Ivanye (Plate 11:1) and Kotsiubintsy (Plate 18:8). As no specialist analyses have been made, it is impossible to determine the sources of this raw material (Baltic? or local — from inland sources?). Spectacular, richly decorated objects made of bone include, in the first place, T-shaped plates known also from other groups as well as unique articles specific to the populations of the eastern group: so-called buckles (actually, accessories fastened to the belt), bracelets and tubular holders. Quite possibly, as an indicator of prestige may have served an unfinished stone axe (a type with no clear cultural connotations) discovered in Suyemtsy II.

It is from different zones of eastern Europe that sources come bearing out the agrarian (animal raising-farming) character of the GAC population economy. The raising of domestic animals is best attested. The evidence includes not only post-consumption bone remains recorded in graves and settlement pits, but also a specific category of sources, namely ritual features with animal burials (cattle, pigs and others). In graves, the most frequently found remains are those of pigs. The only settlement pit that was carefully investigated, to be found in Peresopnitsa (Table 3), supplied bones of a sheep or goat as well as of wild animals. In ritual features, remains of cattle, pigs, sheep/goats and a horse were found.

In conclusion of this brief description, I would like to emphasize two of its elements, i.e. the stabilizing (socially, in the first place) function of the megalithic graves and the relatively advanced intra-group ranking. In the cultural environment of eastern Europe, these socio-organizational forms had not been known earlier. I believe that especially the latter of the characteristics grew in importance in this context (manifestation of one's own distinct character), which resulted in the appearance of new prestige indicators.

V.2. EAST-EUROPEAN TOPOGENESIS

The topogenesis of the GAC population in eastern Europe was a complex process whose time and speed were different in individual eco-cultural zones. The process can be divided into two general stages: dissemination (migration-diffusion) and differentiation/transformation. The essence of the first stage is the emergence and stabilization of the eastern European oecumene of GAC societies, while the second comprises the processes of the culture's differentiation and disintegration caused by transformations that pulled it asunder. In fact, each of the stages embraces several separate lines of cultural transformations. In the approach presented below I pay special attention to the factors determining the nature of the presence of GAC populations in the territories specified as well as to its consequences³⁴.

V.2.1. DISSEMINATION STAGE

The presence of the GAC in eastern Europe is an effect of the migration of people of this culture from the west, specifically from within the bounds of the central group [cf. discussions on general factors of migrations: Neustupný 1982; Titov 1982; Rouse 1986; Kristiansen 1989]. This is clearly visible in the extraneousness of GAC population patterns of behaviour as compared to indigenous, eastern European cultural structures and, at the same time, in their resemblance to GAC traits identified in the Vistula drainage basin. A confirmation of this is supplied by chronological and typological findings related earlier (Ch. II.), which also show that what we deal with here is the effects of a cycle (series) of multidirectional movements of populations. At the end, they engulfed the western expanse of eastern Europe as far as the Dnieper. The penetration by GAC populations of such a vast territory is the first phenomenon of this kind in the history of the borderland between the western and eastern parts of our continent since earlier migrations of a similar territorial range taking place there headed west (e.g. case of the Comb-Prick Pottery circle). Preceding the 'amphora' migrations, the movements of Funnel Beaker culture populations covered a much smaller area and consisted rather in expanding their oecumene (e.g. in the Bug and Pripets drainages) or diffusing certain cul-

³⁴The 4600-4500 BP dividing line is of considerable paleogeographic significance. Efforts to reconstruct the natural environment of eastern Europe show that both the Steppe and Forest-Steppe [e.g. Kremenetskiy 1991] zones as well as the Forest zone [e.g. Chotinski, Starkel 1982] experienced then dramatic changes (deterioration of parameters) in temperature and humidity as well as in the vegetation cover. These facts justify placing a dividing line between the Atlantic and Subboreal periods at that time (hence, 700 years later than in central Europe).

tural elements (the case of observations from Zwidze or from the Usvyaty culture compass).

Bearing in mind the demographic potential and nature of GAC population movements, as they are now believed to have been, as well as their consequences in the cultural aspect, one may identify two types of such movements. The first comprises movements of groups of people that ‘merged’ into the encountered cultural environment without building any autonomous (‘amphora’) settlement structures. This type of movement has many analogies in the then central Europe [Neustupný 1982]. Meanwhile, the other of the two types consisted of much less frequent migrations, the effect of which was the emergence of the GAC’s own settlement structures. While the first type seems to correspond to the situation recorded on the south-eastern shores of the Baltic, possibly also (at least partially?) in the Steppe zone, the second is characteristic of the interior of the Forest and Forest-Steppe zones.

A. The Baltic Coast

The territory of departure in this case coincided with the north-easternmost branch of the central group of the GAC, i.e. the Mazury-Warmia (sub)group. It is from there that GAC migrants reached the Courland Lagoon. The process began about 2850 BC (or rather slightly later?), to which the settlement complex in Šventoji testifies (see Ch. I.). The newcomers encountered here populations of the late Narva culture, who — owing to the developed gathering-fishing-hunting economy made the best use of the potential of sea-coast ecological niches — had relatively stable settlement and economic structures. For further discussion, the following three observations are crucial: the relics of the presence of GAC populations known from this zone are culturally syncretic, they were found only in the context of settlements and there are no GAC sepulchral features and only several “loose” (without a context) finds of flint axes and chisels characteristic of this culture. These observations may give rise to alternative hypotheses. The first hypothesis interprets the observations as a mere effect of the diffusion of cultural patterns, while another as the indication that the region under discussion was reached only by few groups of migrants. Here, taking into consideration the remoteness of the potential ‘contact’ zone of both cultures, I opt for the second hypothesis which — in my opinion — allows us to explain in a comprehensive manner the whole set of data. The data concern both pottery production (in particular the appearance of new, GAC-related, pottery forms and ornamentation) and subsistence economy (the first symptoms of agrarian technologies) as well as amber working. In the last case we deal with the reception of genetically ‘Narva’ goods by the GAC societies (discs, V-perforated buttons) which undergo certain transformations (e.g. addition of solar ornamentation to discs, a change in the manner of making perforations in buttons). The beginnings of the reception, preceding the discussed settlement movements, go back to ca 3000-2900 BC (see Ch. III.). It seems that it was the amber resources controlled by Narva

culture populations that attracted the GAC people. A presumption has already been made that the latter people obtained amber by exchanging it for farm produce. With interests so defined, the groups of GAC migrants could have been small in number. More significant factors generating changes would be in this case stability (or periodic character?) and the long-lasting nature of the assumed contacts. Such a situation is also implied by the comparison of the 'culture-making effects' of the presence of GAC representatives and xpeople of the Corded Ware culture (of its oldest stage) in the late Narva environment. As I have already mentioned (Ch. II.), the traits of both cultures come approx. from the same time, while the occurrence of separate syncretic structures ('Narva-Globular Amphora' and 'Narva-Corded Ware') testifies to the original independence of the two processes of migrations. In the origin of the Pamariu/Rzucewo culture, however, the share of patterns from the circle of the Corded Ware culture is much larger than those from the GAC (see below).

B. The Forest zone

The penetration of the Forest zone affected a vast area stretching from the Neman drainage to the Upper and Middle Dnieper (see Ch. I.). Located at the two opposite ends of this territory, GAC sepulchral complexes known to us prove that populations of this culture once lived there. In both cases, the agrarian (in particular animal-raising) character of their economy, hitherto unknown in this zone, is clearly marked.

GAC settlers must have flowed into the Middle Neman basin from the Podlasie-Mazovia (sub)group. Their presence in the new territory around 2600 BC has been confirmed, but the beginning of the migration must have taken place much earlier. This is so, because a grave from Brańsk-Chojewo, dated to ca. 2900 BC, is situated at a relatively small distance (approx. 100km). Having no clear indications, one can only presume that the migrants encountered communities of hunters-gatherers belonging to the late Neman culture (Dobry Bor type). The contact between the cultures had, in fact, a wider spatial dimension as at the same time (with the greatest intensity from about 2700-2600 BC) some Neman populations set off in the opposite direction — to Mazovia and Podlasie and farther west (for instance Chełmno Land and Kujawy). In the new environment, GAC migrants took up mining flint deposits on the Ros River and penetrated the areas lying much farther east, along the Pripets (and its tributaries) as far as the Berezina River.

It is not clear whether these movement should be linked to the origins of a GAC enclave on the Upper Dnieper active about 2600-2500 BC. Alternatively, it may have originated with the (eastern) Volhynia GAC settlement that moved up the Dnieper (see below). Given the adaptation of certain GAC traits by Middle Dnieper culture societies, it is justifiable to assume that the migrants may have reached the Upper and Middle Dnieper even earlier. The relations between the societies of both

cultures were, in fact, complex, which is shown, on the one hand, by the reception of GAC traits in the circle of the Middle Dnieper culture and, on the other, by the presence of the populations of the latter culture in the Upper Bug drainage, i.e. in the area separated from the Dnieper by the Volhynian GAC settlement (see Ch. III.).

C. The Forest-Steppe zone

The Forest-Steppe zone, together with the adjacent margin of forests, more precisely Volhynia and Podolia as well as the Moldavian Uplands, make up the area settled by GAC populations with the intensity unmatched elsewhere in eastern Europe. 'Amphora' populations reached this area from the territory of the so-called Lublin group (or rather its eastern Lublin subgroup) ca. 3000-2950 BC. They reached Volhynia first and only slightly later — ca. 2900-2850 BC — they appeared in Podolia. It was there that the core of a separate — eastern — territorial group of the GAC took shape and later developed two segments: the Volhynian and Podolian subgroups. Keeping in mind the stylistic characteristics of sites from the interfluvium between the Seret and Prut rivers, it can be accepted that GAC migrants emerged south of the Dniester around 2700 BC and developed there a separate structure, i.e. the Seret (or Moldavian) subgroup. The spreading of GAC people in the area in question, however, did not proceed in a simple manner. While in the settlement of Volhynia the populations coming from the area between the Vistula and Bug played a fundamental role, in the case of Podolia one has to accept a certain participation of groups migrating from the area remaining under the influence of the western group of the GAC. The settlement between the Seret and Prut rivers (Seret — Moldavian subgroup) brings together both these traditions, which is clearly visible in its pottery. Another issue is the reasons for a long continuance, lasting virtually throughout the lifetime of both cultures, of differences between Volhynian and Podolian populations. The differences subsisted despite empirically attested contacts between the populations of these groups. At present, these differences cannot be explained otherwise but by an actually existing (on the social level) feeling of a separate identity.

Despite the differences, the discussed groups have similar socio-economic characteristics. It is in the most complete manner that they mirror the 'classic' rules of social organization and economy, typical of GAC societies, as described above, in eastern Europe. The 'amphora' settlement created here relatively stable structures that continued in existence for at least 500 (Volhynia) to 250 (Moldavian Uplands) years.

The local (indigenous) cultural environment, in which GAC migrants appeared, was for the most part made up of societies representing a version of the late Tripolye culture known as the Gorodsk group (in Volhynia) and Kasperivtsy/Gordinești (in Podolia). The most complicated situation was found in the western part of Volhynia, where enclaves of the settlement of the Funnel Beaker culture ("Zimno type") may have functioned, possibly accompanied by the still surviving populations of a

local variety of the late Tripolye culture known as “Listvin type” [Peleshchyshyn 1990a]. In the Upper Dniester drainage, quite early (ca. 2850-2800 BC at the latest), the appearance of the first representatives of the Corded Ware culture is recorded. Whereas in the present state of knowledge it is difficult to delineate spatial borders between the late Tripolye and Funnel Beaker culture settlement, of the one part, and the GAC of the other, between the latter and the Corded Ware culture there stretched a margin separating the oecumenes of both units. It cut across the drainage of the Upper Dniester (along the Bystritsa River and across the interfluvium of the Gnyla Lypa and Zolota Lypa rivers) and continued north across the Bug drainage [Machnik 1998:22]. In a later period, a significant new development is the entry of Yamnaya culture populations into the southern (central drainage of the Dniester and Prut) and eastern (on the Dnieper) parts of the forest-steppe, which took place after approx. 2700 BC (see Ch. V.2.2.).

D. The Steppe zone

In the Steppe zone, sources genetically related to the GAC are recorded in two regions, namely on the Lower Dniester and in the Lower Dnieper region and only in syncretic arrangements. The latter include the contexts of the pre-Yamnaya (Dnieper region) and Yamnaya culture (in both regions). On the steppes separating the two regions (e.g. on the lower Southern Bug) there are no such traces. Hence, their link to water arteries is clear. The central portions of their drainage basins were — at least partially — used by GAC societies. In both cases we deal either with “loans” (diffusion of cultural patterns) or with the appearance of small groups of GAC people (or possibly single representatives, for instance, women?) among strange societies. However, both cases may be true, as well. The extremely small number of such relics do not help to clarify the issue, while the above hypotheses may be considered equally legitimate.

To determine the chronology of the onset of these phenomena, one must first date the decline of the steppe Eneolithic, i.e. pre-Yamnaya structures. Any contacts with the GAC were possible only after GAC settlers reached the region of the Middle Dniester and Dnieper drainage basins, i.e. definitely after 2950 BC, or more precisely — taking into account the dating of the beginning of the Podolia GAC group — after 2900/2850 BC. This adjusts the conventionally accepted date of the end of pre-Yamnaya phenomena [Rassamakin 1994:Fig. 11].

V.2.2. DIFFERENTIATION — TRANSFORMATION STAGE

The emergence of groups of GAC people in a number of cultural arrangements must have brought about a diversity of GAC transformations. Those which can be

traced now do not exhaust all the issues. I treat them rather as major directions of change leaving the issue of their precise definition open.

A. The Baltic Coast

Direct contacts between GAC populations and those of the late Narva culture were one of the major stimuli leading to the formation of a new cultural unit of a syncretic nature, i.e. the Pamariu/Rzucewo culture. Yet, of decisive importance were impulses originating with the circle of the early Corded Ware culture, with elements of the Funnel Beaker culture being visible as well. The rising of the Pamariu culture did not end the relations of GAC populations with Baltic Coast societies. I believe, on the contrary, that such relations intensified, but this may be true only for some zones (centres?) of the Pamariu/Rzucewo oecumene. That it could be like that is evidenced by the varying share of GAC-related elements in the Pamariu environment (cf. high share of such elements in the settlements in Nida and Rzucewo).

The demand for amber continued to be a major stimulus to maintain those contacts. In the period of GAC declining importance in the Vistula drainage (ca. 2400 BC), the interest in this commodity and specific products made of it (especially V-perforated buttons and plates) was taken over by the societies linked to the Bell Beaker influence, in particular the Iwno culture.

B. The Forest zone

As far as it can be judged by a relatively small number of sites, the groups of GAC people that migrated to the interior of the Forest zone were rather small in number. Nevertheless, they carried there the full, virtually unmodified structure of traits formed in central Europe, including developed agrarian technologies (relating both to the raising of animals and the cultivation of land). In this context, it is symptomatic that even the north-easternmost GAC site in Turinshchina has supplied evidence of the use of both domestic animals (pigs, cattle) and crops. On the bottom of an amphora from feature I, impressions of cereals have been found (barley or wheat, maybe millet?) [Shmidt, Szmyt 1996:80 and Fig. 4]. Worth of special attention is an exceptionally high number of animals buried in feature 3 in Krasnaselski 1 (cattle, pigs, sheep/goats, a horse; in total 13 individuals; Plate 22).

The absence of unequivocally GAC-related megalithic graves in the discussed area seems to be caused by the difficulty in finding suitable raw material. However, a similar function could have been fulfilled by cemeteries consisting of several “stoneless” graves or others having small (substitutive?) stone elements (Krasnaselski, Turinshchina). Take note that in these features, objects that could serve as indicators of prestige are rather meagre (a pair of wild boar tusks in Mali Yodkavichi, a flint axe in Turinshchina; Plates 26:2-3, 42:1, 43:3).

Information collected earlier (Ch. IV.) implies that contacts between GAC populations and ‘autochthonous’ groups were rather limited. Actually, the only

aspect that can be mentioned in this connection is the possible borrowing of certain hunting techniques (a proof of which may be a flint arrowhead found in feature I in Turinshchina; Plate 42:2)³⁵. It must be remembered that GAC societies and local ones were wide apart due to completely different social, religious and economic rules. The distance may have been manifested by ignoring one another but in special circumstances it may have caused opposite behaviour, i.e. a more intensive display of one's own identity. The latter type of behaviour of GAC migrants is revealed, in my opinion, by an exceptional intensity of ritual behaviour, a relic of which is the feature with many animal burials from Krasnaselski 1. The local societies already mentioned here (or rather their part representing the Neman and Usvyaty cultures) show certain, albeit enigmatic, traces of the borrowing of selected production elements (mainly of pottery) from the GAC.

Paradoxically enough, the mutual contacts between the GAC and local groups are most clearly indicated by 'amphora' traits to be found in the Middle Dnieper culture rising at that time. However, in its genesis, GAC societies played only a secondary role. Similarly to the situation on the Baltic, also in the interior of the Forest zone, the culture-making capacity of the GAC yields to the Corded Ware culture. The latter becomes the principal driving force of the transformations that finally led to the formation of peculiar groups of the corded circle, i.e. the Middle Dnieper and Fatyanovo cultures.

The process of changes may have been initiated among the sub-Neolithic (para-Neolithic) societies inhabiting the territory between the Neman and Dnieper and representing the late stages of the Neman, Dnieper-Donets and Upper Dnieper cultures. As it has already been mentioned, the migrations of GAC populations into this territory must have begun after 2900 BC and are confirmed to have taken place ca. 2600-2500 BC. Meanwhile, probably beginning with ca. 2800-2700 BC, there appeared groups of Corded Ware culture people, too. It must be stressed here that there was a fundamental difference between the spreading of the GAC and Corded Ware culture in the Forest zone. In the latter case, we do not deal with the movement of the whole, complicated structure of traits. As an analogy may rather serve penetrations by GAC populations, related earlier, of the south-eastern Baltic Coast (see above). One has to reckon rather with the influx of migrants from different directions. In the first place, from the north-west (from the Baltic Coast, from the circle of the circumbaltic Corded Ware culture) and the south-west (from the Sub-Carpathian groups?) [Rumyantsev 1972]. On the Dnieper, possibly with the participation of steppe groups (?), a

³⁵This hypothesis assumes that the arrowhead was one of grave-goods deposited with the deceased. However, this interpretation is not certain because in the grave in question the human remains were completely destroyed. An alternative explanation treats the arrowhead as a proof that the deceased died shot with an arrow. The latter explanation, frequently recorded among steppe groups, was suggested to me by Dr. Victor Klovko to whom I am grateful for it.

new quality is then being born bearing a clear ‘corded’ mark — the Middle Dnieper culture. The acculturation of sub-Neolithic societies brought about a relatively quick expansion of this culture’s oecumene and resulted in the emergence of another group counted among the ‘corded’ ones — the Fatyanovo culture.

Both in the Middle Dnieper culture and in the Fatyanovo culture the share of GAC traditions is beyond question. However, only in the case of the former culture, we can speak of the possibility (taking into account temporal and spatial parameters) of direct contacts of its people with GAC representatives. ‘Amphora’ elements in the Fatyanovo culture are a result of an indirect transfer, specifically through the intermediary of Middle Dnieper culture people.

To conclude this part of the discussion, let us remember that the Middle Dnieper culture was one of the substrata of a phenomenon (or process) linking the lowland regions of eastern and western Europe at the decline of the Early Bronze Age (according to the central European periodisation). What I mean here is the Trzciniec culture or the Trzciniec horizon. Stressed by M. Kryvaltsevich [1998:348], the share of GAC traditions in the origins of the eastern branch of Trzciniec (more precisely, Pripets variant) would have been thus a result of transfer effected through the intermediary of the Middle Dnieper culture. Also in some regions within the western segment of Trzciniec, elements that can be traced to the GAC are evident [Czebreszuk, Makarowicz, Szmyt 1998]. In this sense, one can point to a general parallel of ‘effectiveness’ and vitality of GAC traditions in the zone of eastern European forests and on the North European Plain.

C. The Forest-Steppe zone

In the light of the series of new radiocarbon datings adduced earlier, it seems that GAC settlement structures in Volhynia and Podolia co-existed with settlements of other cultures, such as the Funnel Beaker and Tripolye cultures, until ca. 2700-2650 BC. Possible contacts with the former cannot be proven now. All we know is that, for instance, at the great settlement in Zimno, GAC presence is marked by a cemetery (?) probably from phase VA or VB, hence, close to the end of the Funnel Beaker culture settlement there or soon after it. Although the record of traces documenting the reception of ‘Late-Tripolye’ traits by GAC populations is relatively meagre as well, yet there is no doubt that these two groups came into contact with one another. It has to be remembered that, for instance, the societies of the central group of the GAC turned out to be quite ‘resistant’ to the reception of patterns of other contemporaneous Late Neolithic units, especially the Funnel Beaker and Corded Ware cultures [Szmyt 1996a]. Consequently, more weight goes to secondary coincidences. In the case in hand it is important, for instance, that already in the oldest GAC graves (e.g. Tovpyzhyn; Plate 40) articles of Volhynia flint were placed. It can be concluded that the GAC population quite early on explored

the occupied area and its raw material value. A relatively intensive use of Volhynia flint deposits and, later, of those located on the Dniester as well as of other local raw materials is documented by a very high incidence of artifacts made of them in graves and the concentration of GAC settlement in flint-bearing regions (see Ch. I.). It is hard to tell now if this would have been possible without contacts with 'Tripolye' populations. Below (item D), I shall point to certain coincidences between the spreading of GAC cultural traits and those of the Kasperivtsy (Gordinești) group. However, such coincidences took place in areas remote from the main settlement centres of the GAC.

After ca. 2700 BC, one has to reckon with Yamnaya culture people entering the Forest-Steppe zone. Their presence is positively confirmed in the Middle Dnieper drainage (Myronivka) around 2550-2500 BC. Although, in respect of the forest-steppe interfluvium of the Dniester and Prut rivers there are no relevant indications (^{14}C dates), yet it may be plausibly accepted that Yamnaya culture representatives entered that area around the same time. The relations of GAC and Yamnaya culture populations are well documented by sources. Contacts between these two cultures took place in the peripheries of regions penetrated by them, namely in the forest-steppe, right-bank part of the Middle Dnieper region and in the area between the Prut and Dniester (see Ch. IV.). A series of graves displaying rituals typical of the Yamnaya culture, but containing 'foreign' grave-goods that bear numerous analogies to the GAC confirms direct contacts ('face to face') of the people of both cultures. As can be seen from the dispersion of sites, in the western section, it is possible to reconstruct the boundary separating (for some time?) both groups. The border followed the Prut and the Middle Dniester, but, of course, it did not prevent contacts. It is symptomatic that in the Podolia subgroup no 'Yamnaya' traits can be found, while they can be found in the Volhynia subgroup if one accepts the steppe provenance of the use of ochre in funerary rituals. It should be remembered that GAC graves containing this mineral can be dated after 2700 BC (see Ch. II.), i.e. in the period of particularly intensive population movements in the area in question. From this point of view, it would be necessary to accept that Yamnaya culture people on the Dnieper were more active (expansive) than those inhabiting the interfluvium of the Dniester and Prut as well as that people of the eastern Volhynia group of the GAC were more reactive (susceptible to change).

Let us observe that it is approximately to 2700 BC that the expansion of GAC people to the Moldavian Uplands can be hypothetically dated. Prior to 2600 BC, movements of groups of people of the Middle Dnieper culture of indeterminate size also took place from the Dnieper drainage to the region stretching between the Upper Vistula and Dniester, i.e. across the territory controlled by GAC populations [Machnik 1999]. Hence, the period from 2700 to 2500 BC appears to have abounded in population and culture transformations that do not easily lend themselves to

interpretation now. They must have culminated in the eastward expansion of the Corded Ware culture breaking the boundary discussed earlier (see Ch. IV.) that separated its territory from that of the GAC [Machnik 1979b:60; 1991:12]. Of key importance seem to be the movements of the Yamnaya culture populations which stimulated other shifts according to the 'billiard ball model' [Koško 1990].

All these shifts must have led to the disintegration of the complicated structure of the eastern group of the GAC. Although some of its people did continue to live after 2500 BC, yet the range of its settlement had narrowed. It covered (partially?) Volhynia and probably some parts of Podolia as well as possibly some enclaves on the Moldavian Uplands. A part of the population may have moved on towards the Vistula basin (see Ch. V.3.), while another part could have roamed into the Forest zone (cf., for instance, the chronology of settlement in Turinshchina; item B). The process of cultural disintegration did not mean, however, a complete demise of the GAC population; it meant rather a gradual loss of cultural independence and assimilation of GAC people by other societies, chiefly from the circle of the Corded Ware culture.

The suggested reconstruction of the 'decline' of the eastern group of the GAC is made possible by observations indicating possible long survival ('dormant' — e.g. in myths) of certain, single GAC traits, related chiefly to beliefs and funeral rituals, among the Corded Ware culture population. It is not by mere accident that in the areas where GAC settlement had flourished earlier, in an entirely different ('post-Corded') cultural context, appeared stone cist graves which were absolutely alien to the 'Corded' tradition. This can be observed both in Podolia (a group linked to the influence of the early Mierzanowice culture) after ca. 2200 BC and in Volhynia (Strzyżów culture) after ca. 2000 BC [Kadrow, Machnik 1997:73 and 145-147]. In the latter case, attention is drawn, as it happens, to a larger set of traits suggestive of the GAC [Głosik 1962]. Whether a similar interpretation is possible in respect of other units characterized by the presence of cist graves, namely the Schneckenberg culture (specifically its branch in the Seret River drainage) [Machnik 1987] and a much later group of Biały Potok of the Komarov culture distinguished in Podolia [Sulimirski 1968], remains debatable.

D. The Steppe zone

The situation in the Steppe zone is similar in certain respects to that discovered on the Baltic. There are no 'autonomous' GAC structures, but patterns drawn from it appear in the context of local cultural groups. Yet, the specific nature of steppe societies puts the relations in a totally different dimension. In the present state of our knowledge, I believe, it is plausible to speak of their differentiation in terms of chronology and form. In accordance with my previous remarks (Ch. IV.), I distinguish two stages in the relations between GAC societies and steppe populations. The first one, hypothetically older whose symptoms appear in the

context of 'pre-Yamnaya' groups and the other, younger, observable against the background of the Yamnaya culture.

In respect of the older stage we have only meagre collection of sources among which I propose to distinguish (see Ch. IV.) two groups of traits found in 'pre-Yamnaya' contexts, of which the other is controversial (e.g. Mikhailivka I). Those of them whose origins can be unequivocally traced to the GAC (assemblages of the Baratovka and Boguslav type) are so suggestive that they cannot be treated as an effect of the mere diffusion of cultural patterns. I believe that they attest the presence of small groups of GAC people in the Steppe zone. This is, however, a much more complicated problem touching on the period of development of steppe societies that still has not been explored well. In the older stage, the GAC is a component of a larger network of relations joining Forest-Steppe and Steppe societies which, in taxonomic terms, are known as the Zhivotilovka-Volchansk group [Rassamakin 1996]. It can be taken to be an indicator of the movements of populations of relatively low demographic potential and a changeable (dynamic) cultural composition. A hypothetical point of departure would have been the area between the Danube and Dniester, with the main direction of diffusion running from the west to the east, as far as the Ciscaucasia and northern Caucasus. This general direction certainly included a number of less determined shifts and not a single 'wave' of migration. However, this is a phenomenon (process) that is only now being investigated, thus it is difficult to define it more accurately. From the point of view of the role of the GAC in this process, of primary importance is the character of participating groups of people. Heterogeneous and changeable, they represented different cultures and taxa. On the one hand, in assemblages linked to the Zhivotilovka-Volchansk group, several components can be distinguished, viz. Balkano-Danube, Late Tripolye, Steppe, Caucasian and — the least conspicuous — Central European [Rassamakin 1996]. On the other hand, it is difficult to find two identical configurations of traits within its range. Incidentally, it is worth mentioning that the presented opinions give grounds to interpret the Zhivotilovka-Volchansk type sites as remnants of social groups close to the so-called *colluvies gentium* [cf., for instance, the analysis of the mechanism of the development of such groups in the beginnings of the Bronze Age in Małopolska — Kadrow 1995:114, 128-129].

Especially important for this process seems to be the participation of late Tripolye people, in particular those representing the Forest-Steppe Kasperivtsy/Gordinești group. The latter is characterized by a very active steppe penetration, which is shown by the wide dissemination of sites linked to it [Manzura 1990; Movsha 1993]. This is also a late Tripolye culture group that — as shown by information presented in the preceding parts of this book (Ch. IV.) — manifests the most traces of relations with the GAC. New chronological data suggest that the expansion of GAC populations to Podolia may have brought them into phys-

ical contact with the members of the Kasperivtsy/Gordinești group. The latter's territory became the place where the Podolian and Seret (Moldavian) subgroups of the GAC were formed. Drawing conclusions from the above facts, one may form a hypothesis that the Kasperivtsy/Gordinești group societies had already earlier (prior to 2900 BC) begun to penetrate steppes extensively and that their activities were intensified by the entering of GAC populations into the group's oecumene about 2900-2850 BC. These population movements, which involved only a part of the Kasperivtsy/Gordinești population, included also small groups of GAC representatives and I have already specified — other cultural groups. Thus, owing to the network of links between forest-steppe and steppe societies established earlier, 'merged' into moving heterogeneous groups of people, representatives of the GAC could reach areas of the steppe distant from their oecumene, for instance, the region stretching from the Lower Dnieper to the Sea of Azov. The question if (if yes, then to what degree) their appearance in those areas became an impulse for the transformations that ended in the emergence of the 'megalithic' groups of the Crimea and the Caucasian Mts. must remain an object of further study.

In the other, younger stage of GAC contacts with steppe societies, we deal with a much less complex situation. The partners of 'amphora' people are representatives of the Yamnaya culture. As it has been noted above, the territories controlled by both cultures came into direct contact in the Forest-Steppe zone. The appearance of GAC traits among steppe 'Yamnaya' societies is a result, I believe, of migrations of few GAC representatives as well as of the transfer of some cultural patterns through the intermediary of the forest-steppe Yamnaya culture (see sect. IV.2.4). The former possibility, much less frequent as it happens, is indicated by the examples of relatively accurate imitation of 'Amphora' rules (e.g. Tatarbunary). The other possibility may be attested by transformations of GAC patterns particularly well visible in pottery production (see Ch. IV.). I must stress, however, that the main region of contacts between the societies of both cultures continued to be the forest-steppe. Generally speaking, the contacts of GAC societies with those of the steppe Yamnaya culture were limited in range. It is possible, however, that certain, single elements of GAC tradition survived there until the emergence of the Catacomb culture population (see Ch. IV.).

V.3. PARTICIPATION OF EASTERN GROUP SOCIETIES IN THE CULTURAL TRANSFORMATIONS IN THE VISTULA DRAINAGE

The departure of a certain portion of the GAC population from the Lublin Uplands to the eastern part of the Bug drainage and then to the Horyn around 3000-

-2950 BC could not have been a single occurrence. Some time had to pass before manifestations of disparity with respect to the original locations could develop in the areas east of the Bug River. Nevertheless, the boundary between the central and eastern GAC groups continued to be indeterminate and crossed in both directions. Consequently, it is difficult to spatially define this borderland (or rather a transition zone) (see Ch. I.5.). Because of free movements of populations, both these groups practically formed together a common structure of cultural pattern circulation. This is suggested not only by an overall similarity of traits of the Volhynia subgroup and the (eastern) Lublin branch of the central group, but also by a number of specific observations such as an occasional appearance of Baden culture traits in Volhynia (e.g. bowl form from Ivanye), which were widely distributed in the Vistula drainage. Moreover, the chronology of the occurrence of traits classified as 'eastern' in the sources from within the central group testifies to stable (unbroken) contacts. It should be remembered here that, for instance, vessels painted with mineral dyes (i.e. without analogies in the Funnel Beaker culture) appear in the Kujawy GAC as early as ca. 2900 BC (see Ch. IV.). Even slightly earlier may be the chronology of the only vessel form of hypothetically eastern ('Tripolye') connotations, namely lids which were found in the assemblages that were subsequently dated using the radio-carbon method. The assemblages came from Brańsk-Chojewo or were related to the Złota culture (see Ch. II.). The continuity of contacts may be also deduced from the influx of Volhynia flint [Budziszewski 1990], although there are few assemblages ¹⁴C dated in this aspect (as, for instance, Świerszczów 27, Ki-5433: 2840-2680 BC). It is also worth mentioning that the discovery of the GAC participation in 'pre-Yamnaya' phenomena in the Steppe zone, specifically the grave from Boguslav cited here (see Ch. IV.), sheds new light on the genesis of niche graves in Złota type assemblages [Klejn 1964; Krzak 1980:196].

It is not a coincidence that it was in the eastern part of the Vistula drainage that traces of contacts along the north-south axis were recorded. These traces include features combining patterns of the eastern group with northern traits (from the amber-bearing regions) as, for instance, graves from Brańsk-Chojewo, mentioned here already a number of times, (among finds recorded there were lids and V-perforated beads) or Kosewo (e.g. bone clasps and amber products).

Bearing in mind the outline history of the eastern group proposed above (see Ch. V.2.), a major influx of its populations into the west ('reverse current' according to A. Koško) should be expected after 2700 BC, in particular ca. 2500 BC. This is consistent, for example, with the dating of a grave from Łopiennik Dolny Kolonia 1, built in a manner typical of the eastern group [Klejn 1964; Krzak 1980:196]. Unfortunately, in respect of the most spectacular assemblages containing eastern elements, as for instance Kosewo or Klementowice B/grave I (see Ch. I.5.), it is not possible at present to define their chronology with any greater accuracy. The

suggested period is, nonetheless, borne out by the use of basalts coming from the Horyn drainage by the Kujawy GAC societies of phase IIIa [Szmyt 1996a:195] as well as by a rough chronology of the occurrence of the so-called multi-element ornaments made with the use of a two-strand cord in the central group [Szmyt 1996a:35]. Since the origin of the last mentioned trait is unclear [Szmyt 1996a:233-234], this is a rather weak premise.

In sum, I believe that the contacts between the discussed territorial groups (central and eastern) of the GAC were stable, with the greatest intensity of them expected to fall after ca. 2700 BC. Within the central group, the reception of 'eastern' traits was primarily characteristic of the area between the Vistula and Bug, northern Mazovia and the Sandomierz Uplands (see Ch. I.5.).

V.4. CONCLUSION. THE ROLE OF THE GLOBULAR AMPHORA CULTURE POPULATION IN THE HISTORY OF EASTERN EUROPEAN SOCIETIES

There are no doubts about the complexity of the origins of the eastern European GAC settlement. The appearance of these people in eastern Europe was a result, as I have attempted to show earlier, of a number of different settlement processes that had originally been triggered by the transformations taking place within the central GAC group, more specifically, in various branches of the latter. The mechanisms, course and consequences of these transformations still remain largely unexplored rendering their detailed presentation rather unfeasible [cf. tentative presentation: Szmyt 1996a]. Consequently, it is difficult to give a satisfactory answer to the question which factors generated the east European migrations of GAC populations. It appears that such an answer can be given now only in respect of the penetration of the Baltic coast by these societies. Socio-ideological factors come to the foreground, more specifically, the needs relating to the legitimization of social structures. This is made absolutely clear by the rank enjoyed by amber articles, which were chief prestige indicators among GAC societies

This issue makes me stress an important trait of the GAC, namely its share in the blazing or activating of long-distance exchange trails. The driving force behind it was socioideological needs. Relevant arguments can also be found in respect of the east European segments of the discussed population. Here, one could mention contacts along the 'north-south' axis that bound the Baltic coast, the Vistula drainage and the eastern group. In addition, it is worth remembering of the emerging relationship between the concentration of GAC settlements and raw-material deposits (especially flint — Ch. I.). A case in point is the beginning of

the mining of flint on the Ros River, in the drainage of the Middle Neman. In turn, the presence of GAC elements in the Steppe zone may be linked to the penetrations by late Tripolye people, who are credited with the setting up of a dense network of trails connecting Forest-Steppe and Steppe groups [Movsha 1993:42].

Leaving these questions to further study, I wish to emphasize that the outlined role of the GAC may be viewed in a broader spatial context as a peculiar *signum temporis*. It is a variation of the phenomenon that characterized western Europe in the transition period from the Neolithic to the Bronze Age, i.e. an acceleration of social differentiation. The most obvious manifestation of this phenomenon in western Europe was the cultural trend related to Bell Beakers [more on this subject: Waldren & Kennard (Eds.) 1986]. Whereas to eastern Europe these patterns were brought by no other than GAC societies.

From the perspective of the prehistory of eastern European societies, the presence of the GAC population is but an episode whose consequences, nevertheless, modified somewhat the directions of cultural transformations in the broadly understood physiographic borderland between eastern and western Europe. The spatial range of the GAC migrations happens to be one of the most important markers of this borderland in its socio-cultural aspect, specifically the fact of its reaching as far as the line of the Dvina and Dnieper rivers [Koško 1994].

The body of observations collected in this book allows us to distinguish two forms of GAC influence. The first of them is recorded in the Forest and Forest-Steppe zones where less (forest) or more (forest-steppe) stable settlement structures of the said people formed. It is there that the transfer of the whole culture took place. Entirely alien from the endogenous point view, beliefs, rules of social organization and an economy type were transported to new locations. The second form of influence has been recorded at the northern and southern frontiers of the above-mentioned territory, namely on the Baltic Coast and in the Steppe zone. In both cases, certain — rather small in terms of population number — population movements took place, but their participants ‘merged into’ local cultural environments. On the Baltic Coast, among populations characterized by assimilating economy, the modifying influence of migrants, or rather long and stable contacts in which migrants played a specific function, was manifested chiefly in familiarizing endogenous populations with agrarian forms of agriculture which were new to this area. Whereas in the Steppe zone, contacts with the GAC resulted in the enrichment of the symbolic — mainly ritual — sphere of life.

It is a paradox that the effects (consequences) of both forms of GAC presence on eastern European societies were similarly ‘filtrated’ and transformed by another — in principle contemporaneous — wave of influences coming from the west, i.e. from the Corded Ware culture circle. From the perspective of long-lasting cultural transformations, it was those influences that turned out to have far more profound effects.

INSTEAD OF EPILOGUE

A careful reader will notice that this book has been written by me from a specific viewpoint which links the genesis of the phenomenon discussed in it and referred to as the Globular Amphora culture to the lowland areas of central Europe. The reason for this belief is the absence of any credible grounds for an alternative hypothesis despite earlier efforts to find them. I have tried to saturate the book with empirical facts, to order them, analyze critically and interpret. However, while finishing the book I do not feel completely satisfied: in spite of many attempts it is still difficult to understand the reasons for making long treks by people hiding behind the name of the 'Globular Amphora culture'. Why do we find relics of their sojourning in the vicinity of today's Smolensk? Why do we record remains left behind by them in the steppes? Why did they cross the Dnieper close to today's location of Kiev? Why did they carry with them — almost intact — their own beliefs, exotic in all these new environments, as well as rules of social organization and even a peculiar form of economy? Why were they so resistant to the influence of surrounding peoples? What was the essence of their culture that supported such behaviour?

Let us focus our attention on highly instructive differences between the two central European groups that left their marks on the history of eastern Europe at that time. These two groups were the Corded Ware culture and Globular Amphora culture. In the former case, only in restricted areas do we find direct migrations of groups of people. To a larger degree its impact consisted in the dissemination of certain elements of new cultural patterns, which were undergoing gradual transformations. Consequently, they brought forth entirely new cultural units (archaeological cultures) that are generally classified as belonging to the circle of 'cultures with corded pottery'. What a big difference there is, however, between, for instance, the Middle Dnieper culture or the Fatyanovo culture and, for instance, the Uplands ("Sub-Carpathian") Corded Ware culture! Meanwhile, the far-reaching movements of the Globular Amphora culture chiefly consisted in the movements of the whole cultural structure. That is why materials found near Smolensk could have been found just as well in Volhynia or on the Vistula. A plausible explanation of the specific nature of the reception of Corded Ware culture traits in eastern Europe is offered by the 'package' hypothesis. Under this hypothesis, a 'package' is acceptable

to various populations because it does not change their cultures completely affecting ('replacing') only some of their elements [Czebreszuk 2000]. The eastern European Globular Amphora culture would be an example of a converse phenomenon: a 'classical' migration of people from one territory to another. Historical consequences of these shifts were, in contrast to the Corded Ware culture, much more limited. What was the reason behind this secondary role of the GAC in spite of the physical presence of its representatives in the very centre of the discussed transformations?

This question, similarly to all previous ones, I leave without an answer. I hope that some of them will serve as an impulse to write another book.

Annexe 1. Catalogue of Globular Amphora culture sources

Introductory Remarks

The catalogue includes all the GAC sites from eastern Europe known from the literature and/or museum or archive queries. It is divided into four parts in accordance with the site typology proposed in Ch. I. An efforts was made to use current, official place names, which was not always possible. Alternate spellings of place names, which may be encountered in the literature or archival materials, are given in brackets.

Abbreviations:

U	– Ukraine
B	– Belarus
L	– Lithuania
R	– Rumania
Ru	– Russia
AMK	– Archaeological Museum in Kraków
AU	– Academia Umiejętności in Kraków
HMK	– Historical Museum in Kiev
HML	– Historical Museum in Lviv
SAM	– State Archaeological Museum in Warsaw
IA	– Institute of Archaeology
IA NAS	– Institute of Archaeology National Academy of Sciences in Kiev
IH AS	– Institute of History Academy of Sciences in Minsk
IU NAS	– Institute of Ukrainian Studies National Academy of Sciences in Lviv
Ped. Ins.	– Pedagogical Institute
M.	– Museum
U.	– University
fr.	– fragment
frs.	– fragments

Group I of Globular Amphora culture sites (graves belonging to Globular Amphora people)

No.	Locality	State	Administrative district	Chronology	Type of grave	Number of corpses	Grave-goods				Collections	References	Plate
							Pottery	Flint artifacts	Other artifacts	Non-artifacts			
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	Aneta	U	Zhitomir	VC	A12,2c	2	3 vessels	axes	amber beads		M. Zhitomir - part	Levitskiy 1929:200-1; Sveshnikov 1983:28-9	1:1-3
2	Basarabi	R	Suceava		A12,1a	1	2 potsherds	1 chisel, flakes				Spinei, Nistor 1968	
3a	Bavoriv - Zastave I (Zastawie)	U	Ternopil	PB	A12,1a	3	2 vessels	2 axes			M.Ternopil - part	Grebenyak 1915:8; Janusz 1918:235; Kozłowski 1924:187; Antoniewicz 1938:Fig.60; Sveshnikov 1983:39	2
3b	Bavoriv - Zastave II (Zastawie)	U	Ternopil	PB	A12,1a	6-7	+	+			M.Ternopil - part	Grebenyak 1915:9; Janusz 1918:235; Kozłowski 1924:187	
4	Beremiany II	U	Ternopil				1 potsherd	2 axes, 1 retouched blade		a wildboar's (?) tusk	AMK		1:4
5	Birgăoani	R	Neamț		A12,1a	6	6 vessels	2 axes	1 bone artifact	animal bones		Cucoș 1985:141-145; Necrasov et al. 1990:198	31
6	Busk ¹	U	Lviv	VB			1 vessel				U. Lviv	Sveshnikov 1983:57	1:5
7	Calu-Piatra Șoimului	R	Neamț		A12,1a	1	3 vessels					Cucoș 1982; 1985:142-143	
8	Cherniakhov	U	Rivne				1 vessel	1 axe			M. Rivne	Sveshnikov 1983:27	
9	Chornivody (Czarnowody, Chorna Voda)	U	Khmelnitskiy	PA	A11	1	1 vessel	2 axes			HML	Sveshnikov 1983:50-51; Kozłowski 1924:186	3:1, 6, 7
10	Chornikintsy (Czarnokońce)	U	Ternopil	PA	A12,1a	1	+	1 axe, 1 blade	1 stone axe, 1 bone buckle	animal bone (pig)	AMK, HML	Kirkor 1878:5; Kopernicki 1879:138; Janusz 1918:132; Sveshnikov 1983:44-45	3:2-5
11	Cut - Dumb-rava Roșie	R	Neamț		A12,1a	1					M. Piatra Neamț	Mătașa 1959:723-724; Dinu 1960a:91; Cucoș 1982	

1	2	3	4	5	6	7	8	9	10	11	12	13	14
12	Dobryvoda	U	Rivne		A11,1		1 vessel		1 stone artifact		IU NAN	Sveshnikov 1983:25	1:6
13a	Dolcheştii Mari grave 1	R	Suceava		A12,1	4	+	3 axes, 1 blade	2 bone buckles			Dinu 1960a:92; 1960b	4:1-2
13b	Dolcheştii Mari grave 2	R	Suceava		A12,1	2	6 vessels	2 chisels	5 bone buckles			Dinu 1960a:93; 1960b	4:3-8, 5:3-6, 8-9
13c	Dolcheştii Mari grave 3	R	Suceava		A3	1	1 vessel					Dinu 1960a:93; 1961	5:1
13d	Dolcheştii Mari grave 4	R	Suceava		B	2	2 vessels					Dinu 1960a:93; 1961	5:2
14	Dovge	U	Ternopil	PB	A12,1b	3	2 vessels	1 axe, 1 stamp	10 amber beads, 2 bone buckles		M.Ternopil	Maleyev 1971:53-6; Sveshnikov 1983:40-1	6
15	Glibochok	U	Ternopil	PB	A12,1a	3	4 vessels	5 axes, 2 chisels	1 antler point	animal bones (pig)	HML	Sveshnikov 1957:27; 1983:46-7	8, 9
16	Gorbasiv	U	Khmelnitskiy	PD	A12,1a	5	3 vessels		1 bone buckle		M.Khmelnitskiy	Maleyev, Yakubovskiy 1973; Sveshnikov 1983:52-3; Maleyev 1986:99-103	10
17	Gorodnitsa – Vojevodintse	U	Ternopil	PA-PB	A12,1a	1	1 vessel		1 bone artifact		SAM	Antoniewicz 1938:395; Głosik 1962:137; Sulimirski 1968:201; Sveshnikov 1983:42-43	7:2
18	Gorodok	U	Rivne	VB	B	3	6 vessels (?)	1 axe			HMK, HML	Sveshnikov 1983:22	7:3-4
19	Humărie	R	Iaşi		A1		1 vessel					Chirica, Tanasachi 1985:384	
20	Ivanye	U	Rivne	VB	A12,1a	2	7 vessels		1 amber disc		M.Dubno	Sveshnikov 1983:25-6	11
21	Kamyany Brid (Kamenniy Brod) ²	U	Zhitomir		A		1 vessel				M.Zhitomir	Sveshnikov 1983:34	7:5
22	Kanev ³	U	Cherkassy				1 vessel	2 axes	1 bone buckle, 1 bone artifact		M Kanev (part)	Sveshnikov 1983:53	17:1-2
23a	Khartonivtsy I (Khartonovtsy)	U	Ternopil	PC	A12,1a	3	3 vessels	1 axe, 1 chisel, 1 blade, 1 flake	1 antler points		M.Zalishchiki	Maleyev 1971:53-60; Sveshnikov 1983:47-48	12

1	2	3	4	5	6	7	8	9	10	11	12	13	14
23b	Khartonivtsy II (Khartonovtsy)	U	Ternopil	PB	A12,1b	5	7 vessels	2 axes	4 bone buckles		HML	Sveshnikov 1983:47-50	13
24	Khorostkov (Chorostków)	U	Ternopil		A12,1	2	2 vessels	3 axes, 1 chisel			HML	Janusz 1918:131-132; Sulimirski 1968:200; Sveshnikov 1983:41	17:3- -5
25a	Kikova I	U	Zhitomir	VB	A11?, 1 a	crema- tion?	9 vessels	1 chisel + ?			HMK, M.Zhitomir	Sveshnikov 1983:29	14, 15:1- -2
25b	Kikova II	U	Zhitomir	VC			2 vessels				HMK, M.Zhitomir	Sveshnikov 1983:30	17:6- -7
26	Kiyanka	U	Zhitomir				4 vessels					Maleyev-arch	
27	Kolodiezno II (Kolodiazhno- ye, Vojtsiekhiv- ka)	U	Zhitomir	VC	A11	10	6 vessels	5 axes, 2 chisels, blades and fla- kes (re- touched)	1 bone artifact	animal bones (pig), wild boar's (?) tusks		Levitskiy 1930; Sveshnikov 1983:32-3	19, 20
28	Kolosivka (Kolosovka)	U	Zhitomir	VC?	A5?		5 vessels	3 axes + 1 fr., 1 blade, 2 flakes			IA Kiev	Sveshnikov 1983:33-34	15:3- -7, 16
29	Kolubayevka (Kolubayevtsy) - Kozavshchi- na ⁴	U	Khmel- nitskiy	PA- PB	A		3 vessels	1 axe			M. Kamyanets Podilskiy	Sulimirski 1968:201; Sveshnikov 1983:52	15:8- -9
30	Korshiv 12	U	Lutsk	VB	B	1	1 vessel	1 axe			M. Lutsk	Konopla, Ivanovskiy 1997:36	29:7- -8
31	Koshylivtsy (Koszyłowce)	U	Ternopil	PC?	A12,1b	1	frs. of 2 vessels (+?)	2 flakes, 1 arrow- head	1 stone hammer		AMK	Kirkor 1879:13-14; Janusz 1918: 264-265; Sveshnikov 1983:45	15:10 -11
32	Kotsiubintsy (Kociubinice)	U	Ternopil	PB	A12,1b	3	2 vessels	3 axes	1 amber disc, 1 stone bead	2 wild boar's (?) tusk	AMK	Kirkor 1877:25-30; Kopernicki 1877:55; Janusz 1918:136-137; Antoniewicz 1938:Fig.57; Sveshnikov 1983:43	18
33	Kozlin (Kozłin)	U	Rivne		A		1 vessel				SAM	Głosik 1962:143; Sveshnikov 1983:22	

1	2	3	4	5	6	7	8	9	10	11	12	13	14
34a	Krasnaselski (Krasnoye Selo) grave 1 ⁵	B	Grodno		?		1 vessel				IH Minsk	Charniauski 1996:87-89	21:1
34b	Krasnaselski (Krasnoye Selo) grave 2	B	Grodno		A4	crema- tion?	potsherds	1 pinch	1 stone axe		IH Minsk	Charniauski 1996:89	21:2- -3
34c	Krasnaselski (Krasnoye Selo) grave 4 ⁶	B	Grodno		?						IH Minsk	Charniauski 1996:91	
35	Kutyanka (Ła- chów, Lakhiv)	U	Rivne	VC	A1	2	6 vessels		1 stone stamp	animal bones (pig)	M. Lutsk	ZOW 13:104	23
36a	Lepesivka (Lepesovka) I	U	Khmel- nitskiy	PA			3 vessels				M. Zhitomir	Levitskiy 1929:tabl.III; Sulimirski 1968:194; Sveshnikov 1983:50	24:2- -7
36b	Lepesivka (Lepesovka) II	U	Khmel- nitskiy			3	+	2 axes				Cynkałowski 1962:39; Sulimirski 1968:194	
37	Letychev- Zavovk	U	Khmel- nitskiy		A12,1a	1	+	axes			M. Khmelnitskiy	Prikhodnyuk 1970; Sveshnikov 1983:53	25:1
38	Loshniv	U	Ternopil		A12,1a	4	1 vessel	1 axe		animal bones (pig)	M. Ternopil	Gereta 1970:231; Sveshnikov 1983:39; Maleyev 1996:61	
39	Mali Yodkavichi	B	Grodno		A		1 vessel		1 bone chisel	2 wild boar's (?) tusks		Charniauski 1996:94 - 96	26
40	Mastačan 1 ⁷	R	Neamț		A1	1	8 vessels	1 chisel				Cucoș 1982:260; 1985:143-4	
41	Mezhirichi (Międzyrzecz)	U	Rivne	VB	A1	1	+	(preserved 4 vessels)	3 axes		SAM, M. Ostrog	Kozłowski 1924: 187-8; Głosik 1962:154; Sulimirski 1968:194; Sveshnikov 1983:27	27
42	Mikhnov (Mikhnev)	U	Khmel- nitskiy		A12,1		2 vessels				IA Petersburg	Sveshnikov 1983:50	25:2- -3
43	Minieyki (Mi- niny, Miniyki)	U	Zhitomir		A		1 vessel				Historical M. Moskva	Tallgren 1926:Fig.56:9; Antoniewicz 1938:404; Passek 1949:219-220; Sveshnikov 1983:36	25:5

1	2	3	4	5	6	7	8	9	10	11	12	13	14
44	Miropol (Stariy Miropol)	U	Zhitomir	VB	A1		1 vessel				M. Zhitomir	Levitskiy 1929:194; Sveshnikov 1983:32	25:4
45	Mykolaiv (Nikolayev, Mikołajów)	U	Lviv	VA			6 vessels				Natur-Historisches M. Vienna	Sulimirski 1968:193; Sveshnikov 1983:37	28
46	Nova Sinyava	U	Khmel-nitskiy				1 vessel			animal bones		Ossowski 1890; Sulimirski 1968:197; 1983:53	25:6
47a	Ostrog - "Belmazh" ⁸	U	Rivne	VB	A12,1	1	2 vessels		stone axes		M. Ostrog	ZOW 1939:104; Sveshnikov 1957:90, 1983:27; Sulimirski 1968:195; Kostrzewski's archives (e.g. a photograph with 2 vessels)	
47b	Ostrog - "Karpaty"	U	Rivne	VB	A12,1	3	3 vessels			animal bone (pig)	M. Ostrog	Sveshnikov 1983:27	
48	Ozdiv	U	Lutsk	VC	B	3	3 vessels	1 axe			M. Lutsk	Mazurik, Panyshko 1998	29:1-6
49	Piatra Neamț	R	Neamț		A12,1b	3-4	2 vessels + ?	3 axes, 1 chisel, 1 blade, 1 scraper	2 stone polishing plates (?)		M. Piatra Neamț	Mătasă 1959; Necrasov et al. 1990:198	32
50	Preotești	R	Suceava		A	1						Necrasov et al. 1990:198	
51	Șerbești	R	Neamț		A12,1	1	+ (preserved 1 vessel)					Cucoș 1982:260; 1985:143	
52	Skolobiv (Skolobov)	U	Zhitomir	VD	A12,2c	cremation?	19 vessels	12 axes, 12 blades and flakes	3 amber beads		M. Zhitomir - part	Levitskiy 1929:199-200; Sveshnikov 1983:34-5	33, 34
53	Slobidka Koshylivetska (Słobódka Koszylowiecka)	U	Ternopil	PC	A1		13 vessels				HML	Antoniewicz 1938:397-399; Sveshnikov 1983:44	35, 36

1	2	3	4	5	6	7	8	9	10	11	12	13	14
54a	Suyemtsy I	U	Zhitomir	VB	A12,3	5	9 vessels	2 axes	1 stone axe	animal bones (pig)	HMK	Levitskiy 1929:196; Sveshnikov 1983:30-1	37; 38:1-3
54b	Suyemtsy II	U	Zhitomir	VD	A12,2b	5	10 vessels	2 axes + frs. of axes	6 stone/flint artifacts 1 bone pendant + 1 fr	animal bones (pig)	HMK, M. Zhitomir	Levitskiy 1929:196-9; Sveshnikov 1983: 31	38:4-11; 39
55	Tartak	U	Vinnitsa		A1	2	3 vessels				M. Vinnitsa	Sitsinskiy 1930:29-30; Antoniewicz 1938:403; Sulimirski 1968:197; Sveshnikov 1983:54	44:1
56	Tovpyzhyn ⁹	U	Rivne	VA	A12,1b	1	6 vessels	2 axes, 5 blades, 1 flakes	1 bone T-shaped plate, 1 bone chisel			Maleyev, Pryshchepa 1996	40
57	Tovstolug - Zastinka ¹⁰	U	Ternopil		A1	2	+		1 bone buckle		M. Ternopil	Gereta 1970:231; Sveshnikov 1983:39	
58a	Turinshchina grave I	Ro	Smolensk		A4		4 vessels	1 axe, 1 arrow-head				Shmidt 1992a; 1992b; Shmidt, Szmyt 1996	42
58b	Turinshchina grave II	Ro	Smolensk		A4		6 vessels + potsherds			animal bones (e.g. a pig)		Shmidt 1992a; 1992b; Shmidt, Szmyt 1996	43
58c	Turinshchina grave III ¹¹	Ro	Smolensk		B		+			animal bones (pig, cattle)		Shmidt 1992a; 1992b; Shmidt, Szmyt 1996	41
59	Ulashkivtsy (Ulaszkowce)	U	Ternopil	PB			5 vessels	1 axe			AMK	Janusz 1918:101-2; Antoniewicz 1938:394-395; Sveshnikov 1983:45	44:2, 4, 6-8
60	Ulvivok (Ulwówek, Vilkhovy)	U	Lviv	VB	A12,1b		4 vessels	1 axe		animal bones (pig), 1 wild boar's (?) tusk	HML - part	Antoniewicz 1938:399-400; Sulimirski 1968:192; Sveshnikov 1983:36-7	48
61	Uvisla (Uwisła)	U	Ternopil	PA	A12,1	3	2 vessels	1 blade retouched	3 bone buckles + 1 fr.		AMK	Ossowski 1891:19-26; Janusz 1918:145-7; Sveshnikov 1983:42	45; 46:1-2
62	Varkovichi	U	Rivne	VB	A		1 vessel					Levitskiy 1929:Pl.III, 12; Sveshnikov 1983:27	44:5

1	2	3	4	5	6	7	8	9	10	11	12	13	14
63	Velikaya Slobodka (Velikaya Muksha, Wielka Muksha)	U	Khmel-nitskiy	PA	A12,1a	2 inside + 1 outside	4 vessels	7 axes			M. Kamyanets Podilskiy - part	Gerinovich 1926:14; Sitsinskiy 1930:14; Antoniewicz 1938:402; Sulimirski 1968:204; Sveshnikov 1983:51-2	47:1-4
64	Vorvulintsy	U	Ternopil	PA	A12,1a	5 inside + 1 outside	4 vessels	2 blades, 1 retouched blade, 1 arrowhead			M. Ternopil	Gereta, Kharitonov 1970:153-4; Sveshnikov 1983:46; Maleyev 1996, 61	
65	Vysokoye	U	Zhitomir	VB	A11,2a	cremation?	6 vessels	3 axes, 2 chisels				Levitskiy 1929:199; Sveshnikov 1983:35	47:5
66	Yagolnitsa	U	Ternopil		A12,1a	1	1 vessel				HML	Sveshnikov 1983:43	47:6
67	Zavadyntsy (Zawadyńce)	U	Khmel-nitskiy	PA?	A12,1a	1	1 potsherd	1 flake			SAM	Pułaski 1890:1-4; Antoniewicz 1938:401-2; Głosik 1962:175; Kostrzewski's archives	46:3
68	Zimno	U	Lutsk	VA-VB	A		2 potsherds				HML	Sulimirski 1968:192; Sveshnikov 1983:21; Kuchinko, Okhrimienko 1995:114; Kostrzewski's archives	
69	Zvenigorod (Dźwinogród)	U	Lviv		A		Several vessels					Kostrzewski 1948:note 14; Sveshnikov 1983:37	

¹³ graves (?); ²Partly missing; ³Partly missing; ⁴Missing; ⁵Destroyed; ⁶Destroyed; ⁷A double stone cist; ⁸Missing; ⁹A pit was located near the grave;

¹⁰ 1 ritual pit (with 2 pigs bodies) near the grave; ¹¹ Near the grave - 1 posthole.

Group II of Globular Amphora culture sites (graves hypothetically belonging to the Globular Amphora people)

No.	Location	State	Administrative district	Type of grave	Number of corpses	Grave-goods		Collections	References	Plate
						Pottery	Other artifacts			
1	2	3	4	5	6	7	8	9	10	11
1	Băcești	R	Iași	A1	1				Cucoș 1982; 1985:145; Necrasov et al. 1990:198	
2	Beremiany I ¹	U	Ternopil	A1	3 or 5		several flint axes		Janusz 1918:256; Sveshnikov 1983:43-44	
3	Blishchanka ²	U	Ternopil	A12,1					Maleyev, Konopla 1999; Maleyev's archives	
4	Bratyshev II (Bratyszów)	U	Ivano-Frankovsk	A			1 flint axe	AMK	Sulimirski 1968:200; Sveshnikov 1983:38	
5	Chornolitsa ³ (Czernolica)	U	Ivano-Frankovsk	A12,1	1	2 vessels		AMK	Kirkor 1879:14; Przybysławski 1906:25; Janusz 1918:114	
6	Duliby	U	Ternopil	A12,1		several vessels	2 flint axes	HML	Janusz 1918:92-3; Sveshnikov 1983:81	7:1
7	Fasova	U	Zhitomir	A		+			Levitskiy 1929:176; Sveshnikov 1983:34	
8	Girceni	R	Iași	A1					Petrescu-Dîmbovița 1959:733; Dinu 1960a:91; Cucuș 1982:260	
9	Goloskiv ⁴	U	Khmelnitskiy	A1	2	1 vessel	2 flint axes	M. Kamyanets Podilskiy	Sitsinskiy 1901:30-1; Antoniewicz 1938:403; Sveshnikov 1983:51	
10	Granicești	R	Rădăuți	A1	2	2 vessels + potsherds	remains of "wooden macehead", 1 flint axe		Nestor 1932:70; Sulimirski 1968:205; Cucuș 1982:260; 1985:145	
11	Horodnicul de Jos	R	Rădăuți	A1					Nestor 1932:70	
12	Khotiachiv	U	Lutsk	A1	1	1 vessel			Cynkałowski 1961:38; Sveshnikov 1983:21	
13	Kostianets	U	Rivne	A1	1	1 vessel	1 flint item		Sveshnikov 1983:27	
14	Kremenets	U	Ternopil	A1	1		2 flint axes		Antonovich 1901:86; Sveshnikov 1983:38	

1	2	3	4	5	6	7	8	9	10	11
15	Krovinka	U	Ternopil	A1	2				Sulimirski 1968:202; Sveshnikov 1983:39	
16	Kruty Brody	U	Khmelnitskiy	A1		several vessels	2 stone axes		Vinokur et al. 1984:101	
17	Kugaivtsy	U	Khmelnitskiy	A2	1	1 vessel	1 flint axe		Vinokur et al. 1984:95	
18	Kuzminchyk ⁵	U	Khmelnitskiy			1 vessel	1 flint axe	AMK	Sulimirski 1968:173	24:1
19	Litobiezh	U	Lutsk	A1	2	1 vessel	1 flint ax		Cynkałowski 1961:39; Sveshnikov 1983:21	
20	Mezhirichi	U	Rivne	A1			2 flint axes	SAM	Głosik 1962:154; Sveshnikov 1983:28	
21	Muncelu	R	Iași	A1	2				Chirica, Tanasachi 1985:384-6	
22	Nikolayevka - Gubin	U	Ternopil	A1			1 flint axe		Janusz 1918:93; Kozłowski 1924:188; Sveshnikov 1983:43	
23	Obych	U	Ternopil	A1			2 flint axes		Cynkałowski 1961:39; Sveshnikov 1983:38	
24	Oniceni 1	R	Neamț	A1					Cucoș 1985:144-145	
25	Oniceni 2	R	Neamț	A1					Cucoș 1985:144-145	
26	Podliptysy ⁶ (Podlipce)	U	Lviv	A1	2		1 flint axe, 1 antler point	AMK	Janusz 1918:288; Kozłowski 1924:187; Sulimirski 1968:193; Sveshnikov 1983:37	
27	Potoczyska	U	Ivano- Frankovsk	A12		1 vessel			Janusz 1918:126	
28	Ripiniets	U	Khmelnitskiy	A12,1					Rek 1968:149; Maleyev's archives	
29	Rivne	U	Rivne	A12,1a	1	4 vessels			Teleżyński 1911:472, 550-551; Sveshnikov 1983:22	
30	Rydoml	U	Ternopil	A1	1		1 flint axe		Cynkałowski 1961:40; Sveshnikov 1983:38-39	
31a	Scheia 1	R	Iași	A1					Cucoș 1982:260	
31b	Scheia 2	R	Iași	A1					Cucoș 1982:260	
32	Sokal	U	Lviv		1		1 flint chisel, 1 stone axe		Janusz 1918:211	
33	Stănțești	R	Botoșani	A1					Petrescu-Dîmbovița 1959:733; Dinu 1960a:91; Cucuș 1985:145	

1	2	3	4	5	6	7	8	9	10	11
34	Strakiv	U	Rivne	A1			2 flint chisels		Lagodovska's archives	
35a	Suceava 1	R	Suceava	A1					Cucoş 1982:260	
35b	Suceava 2	R	Suceava	A1					Cucoş 1982:260	
36	Tăcuta	R	Iaşi	A1					Petrescu-Dîmboviţa 1959:733; Dinu 1960a:91	
37a	Tokarevka I ⁷	U	Vinnitsa	A11?			1 flint axe		Sietsinskiy 1901:27; Sveshnikov 1983:54	
37b	Tokarevka II ⁸	U	Vinnitsa	A1			1 flint (or stone) axe		Sietsinskiy 1901:27; Sveshnikov 1983:54	
38	Usteczko ⁹	U	Ternopil	A1			1 flint axe		Sulimirski 1968:203; Sveshnikov 1983:46	
39	Vikhrivka	U	Khmelnitskiy	A1					Zakharyev 1992:40	
40	Vikniny (Okniny)	U	Khmelnitskiy	A1	1				Sveshnikov 1983:50	
41a	Vyshevichi I	U	Zhitomir	A12,1		1 vessel	2 flint axes		Antonovich 1901:58; Sveshnikov 1983:35	
41b	Vyshevichi II	U	Zhitomir	A1		5 vessels	1 flint axe, 1 amber artifact		Antonovich 1901:58; Sveshnikov 1983:35	
42	Zarvanitsa ¹⁰ (Zarwanica)	U	Ternopil	A1			2 flint axes	HML	Janusz 1918:108; Sulimirski 1968:204; Sveshnikov 1983:42	47:7-8
43	Zaychiki	U	Khmelnitskiy	A1	several persons			Ped.Inst. Kamieniets Podilskiy	Vinokur et al. 1984:27	
44	Zbranki	U	Zhitomir	A1		1 vessel	1 flint axe	HMK	Antonovich 1901:19; Sveshnikov 1983:34	
45	Zhitomir ¹¹	U	Zhitomir	A1					Gamchenko 1930:5-15; Sulimirski 1968:199; Sveshnikov 1983:36	
46	Zhvanets ¹² (Żwaniec)	U	Khmelnitskiy				1 bone spearhead	HMK	Kirkor 1877:24-25	
47	Zviniach ¹³ (Zwiniacz)	U	Ternopil	A1			1 flint axe	AMK	ZOW 1928:47; Sveshnikov 1983:43	
48	Zykovo	B	Minsk	A1		4 vessels	1 flint axe		Zhivopisnaya 1882:238	

¹ Missing; ² So-called "Gorbi"; destroyed; ³ Missing; ⁴ Missing; ⁵ From kurgan no. II; ⁶ Missing; ⁷ In a kurgan; ⁸ In a kurgan; ⁹ Missing; ¹⁰ Several excavated graves; ¹¹ Informations of Gamchenko are unclear; ¹² In 1692 stone tombs were discovered; ¹³ Missing.

Group IV of Globular Amphora culture sites (settlements – IVA, flint workshops – IVB, camps and unidentified sites – IVC)

No.	Locality	State	Administrative district	Chronology	Type of site	Artifacts			Other materials	Collections	References	Plate
						Pottery	Flint	Other				
1	2	3	4	5	6	7	8	9	10	11	12	13
1	Arshichin	U	Rivne		IVC	2 frs.	1 chisel, 1 axe			School no. 2 in Mlyniv	Sveshnikov 1983:22; Sveshnikov's, archives	49:1,4,5
2	Bariliv	U	Lviv		IVC	+					Peleshchysyn 1998a:131	49:3
3	Beresk I ¹	U	Lutsk		IVC	+					Konopla, Oprisk 1991:61	
4	Bilokrynitsa ²	U	Ternopil		IVC	1 vessel				SAM	Sulimirski 1968:194, Pl.13,7	49:2
5	Bodyaki ³	U	Ternopil		IVC	+					Cynkałowski 1961: caption to Fig. V	
6	Chervonograd	U	Lviv		IVC	+					Peleshchysyn 1998a:129	49:12-13
7	Chudvy - Pieski	U	Rivne		IVC	1 fr.				IU NAS	Sveshnikov 1983:21	49:6
8	Detyniche	U	Rivne		IVC	1 fr.				SAM		
9	Dolgoye Pole - Tartak	U	Rivne		IVC	4 frs.				M. Rivne		49:8-11
10	Dubniki	U	Lutsk		IVC	1 fr.				SAM		
11	Dvorishche	U	Zhitomir	VC?	IVA2	+	1 axe+ other artifacts		1 pit		Misiats 1998	50:1-8
12	Dymitrovka	B	Lida		IVC	+				SAM		49:7
13	Erbiceni	R	Iași		IVC	+					Roman et al. 1992:53	
14	Foltești	R	Galați		IVC	+					Roman 1981:38; Roman et al. 1992:53	51:1
15	Frumușica	R	Neamț		IVC	1 fr.				M. Piatra Neamț	Cucoș 1985:144	
16	Girka Polonka	U	Lutsk		IVC	+					Kuchinko, Okhrimenko 1991:132	
17	Gnieuchytsy	B	Brest		IVC	+				M.Motel	Kryvaltsevich's archives	51:2-4
18a	Gorbuliv 2	U	Zhitomir		IVC	+					Serdyukova 1996:137	51:5-6
18b	Gorbuliv 4	U	Zhitomir	VA-VB?	IVA2	+	axes, blades, flakes	1 clay disc (?)	2 pits		Berezanska, Pyasetskiy 1979:79; Serdyukova 1996:137-140	50:9-28
19	Horodıştea	R	Botoșani		IVC	+					Roman et al. 1992:53	
20	Hrydky	U	Lutsk		IVC	1 fr.				SAM		
21	Ivanye	U	Rivne		IVA2	+			1 pit		Information of S.Terskiy and B.Pryshchepa	

1	2	3	4	5	6	7	8	9	10	11	12	13
22	Kadevtsy	U	Khmelnitskiy		IVC	1 fr.				M.Kamyanets Podilskiy	Sveshnikov 1983:51	51:7
23a	Khichiv 1 ⁴	U	Zhitomir		IVA2	+	+		1 pit; animal bones		Berezanska, Pyasetskiy 1979: 76-8; Serdyukova 1996:137	54:7-24
23b	Khichiv 2	U	Zhitomir		IVC	+					Berezanska, Pyasetskiy 1979:76	51:8-9
23c	Khichiv 3	U	Zhitomir		IVC	1 fr.					Berezanska, Pyasetskiy 1979:76	51:10
24	Khoriv 1 ⁵	U	Rivne		IVC	+				U. Lviv	Peleshchysyn 1998a:131-4	51:13-21
25	Khrinniki	U	Rivne		IVC	+				U. Lviv	Peleshchysyn 1976:376; 1998a:134; Sveshnikov 1983:22	52:1-4
26	Kiev - Nikolskaya Slobodka III	U	Kiev		IVC	2 fr.				IA NAS	Sveshnikov 1983:36	51:11-12
27	Kolokolin ⁶ (Kolokolin)	U	Ivano-Frankovsk		IVC	+	frs. of axes			HML (part)	Sulimirski 1968:141-3,206; Sveshnikov 1983:38	53:1-6
28	Kolosivka	U	Zhitomir		IVC	3 frs.	1 fr. of axe			IA NAS	Sveshnikov 1983:34	
29a	Koshylivtsy - "Oboz" (Koszyłowce - "Obóz")	U	Ternopil		IVC	1 fr.				HML	Hadaczek 1914:69; Sveshnikov 1983:45	53:8
29b	Koshylivtsy	U	Ternopil		IVC	2 frs.				HML	Sveshnikov 1983:45	
30	Kozlin (Kozlin)	U	Rivne		IVC	8 frs.				SAM		53:7
31	Krasnaselski 5 (Krasnoye Selo)	B	Grodno		IVC	+				IH AS	Charniauski, Kudrashou, Lipnitskaya 1996:60 - 61	52:8-10
32	Krizhivka	U	Lutsk		IVC	+					Konopla, Oprisk 1991:71	
33	Krupa 5	U	Lutsk		IVC	+					Konopla, Ivanovskiy 1997:38-9	52:7
34	Lepiesivka ⁷ (Lepiesovka)	U	Khmelnitskiy		IVC	+					Tikhanova 1963:178	
35	Lichytsy 2	B	Grodno		IVC	+					Charniauski, Kudrashou, Lipnitskaya 1996:71-5	52:14-15
36	Likhachy	B	Grodno		IVC	3 frs.				M.Grodno	Charniauski 1996:96-97	52:11-13
37a	Lipa 19 ⁸	U	Rivne		IVC	+				SAM		
37b	Lipa 23 ⁸	U	Rivne		IVC	+				SAM		
37c	Lipa 5 ⁸	U	Rivne		IVC	+				SAM		
37d	Lipa 7 ⁸	U	Rivne		IVC	+				SAM		

1	2	3	4	5	6	7	8	9	10	11	12	13
38	Lishnia	U	Ternopil		IVC	2 frs.				SAM		
39a	Lubela	U	Lviv		IVC	+					Peleshchysyn 1998a:131	52:5-6
39b	Lubela - "Bila kladovishcha"	U	Lviv		IVC	+					Peleshchysyn 1998a:129-31	
40	Lutsk - Gnidava	U	Lutsk		IVC	+				SAM	Glosik 1962:137; Kuchinko, Okhrimienko 1991:111	
41	Mezhireche (Chekno)	U	Rivne		IVA2	+				IU NAS	Konopla 1978:333; Sveshnikov 1983:23-25	54:1-6
42a	Mezhirichi - "Popivshchina"	U	Rivne		IVC	+					Pozikhovskiy 1998:141	53:8-12
42b	Mezhirichi - "Shtani"	U	Rivne		IVC	+					Pozikhovskiy 1998:,41	53:13-14
43	Meleni	U	Zhitomir		IVB		axes, flakes				Berezanska, Pyasetskiy 1979:79	5:1-2
44	Motel 11	B	Brest		IVC	+				M.Motel	Kryvaltsevich's archives	55:10
45	Movniki	U	Lutsk		IVC	+					Zakleka 1981:248; Kuchinko, Okhrimienko 1991:122	
46	Neverivka	U	Zhitomir		IVC	+	1 semi-finished finished axe				Berezanska, Pyasetskiy 1979: 78-9; Serdyukova 1996:137	55:3-6
47	Noviy Dvir (Nowy Dwór)	U	Rivne		IVC	+				U. Vienna	Sulimirski 1968:207	
48	Ozliyeu	U	Rivne		IVA2	+	1 nucleus, 2 flakes			IA NAS	Sveshnikov 1983:22	56:1
49	Pasieka Zaborolska	U	Rivne		IVC	7 frs.				SAM		
50	Peresopnitsa	U	Rivne	VD	IVA2	remains of 18 vessels	25 flakes, 4 blades	1 fr. of bone point (?)	1 pit; animal bones	HML	Shelomentsev-Terskiy 1996	58; 59
51	Piatydni	U	Lutsk		IVC	+					Zakleka 1981:248	
52	Polonka	U	Lutsk		IVC	+					Kuchinko, Okhrimienko 1995:136	
53	Rayki	U	Zhitomir		IVC	1 fr.					Berezanska, Pyasetskiy 1979:75	55:7
54	Raymisto	U	Lutsk		IVC	+					Konopla, Oprisk 1991:79	
55	Remel	U	Rivne		IVC	7 frs.				SAM		
56	Rivne - Bandera str.	U	Rivne		IVC	1 fr.				M. Rivne	Inf. of B.Pryshchepa	55:9
57	Romashkivka	U	Lutsk		IVC	1 fr.					Inf. of S.Terskiy	55:8
58	Rozhishche	U	Lutsk		IVC	+					Ivanovskiy et al. 1988:280	
59	Rudnya - Shlakhova	U	Zhitomir		IVB		flakes, blades				Berezanska, Pyasetskiy 1979:79	

1	2	3	4	5	6	7	8	9	10	11	12	13
60	Samchyntsy	U	Vinnitsa		IVC	3 frs.				IA NAS	Sveshnikov 1983:54	57:11-13
61	Shchurin	U	Lutsk		IVC	+					Konopla, Oprisk 1991:83	
62	Slavuta	U	Khmelnitskiy		IVC	+	+				Berezanska, Pyasetskiy 1979: 75-6; Serdyukova 1996:137	55:11-14
63	Sokal	U	Lviv		IVC	+					Sulimirski 1968:192; Sveshnikov 1983:37	
64	Studiny II ⁹	U	Lutsk		IVC	+					Ivanovskiy et al. 1988:280; Konopla, Oprisk 1991:82	
65	Suyemtsy	U	Zhitomir		IVC	+					Berezanska, Pyasetskiy 1979:75	
66	Szpil - Haradok	U	Grodno		IVC	3 frs.				SAM		
67	Tatariski	U	Khmelnitskiy		IVC	1 fr.					Berezanska, Pyasetskiy 1979:75; Lagodovska's archives	56:2
68	Tovpyzhyn 2	U	Rivne		IVC	+					Peleshchysyn 1976	
69	Trostanets	U	Lviv		IVC	1 fr.				SAM		
70	Trusești	R	Botoșani		IVC	+					Miclea, Florescu 1980:95	
71	Velika Bereznia	U	Khmelnitskiy		IVC	+					Vinokur et al. 1984:71-2	
72a	Velikosilka	U	Lviv		IVC	+					Inf. of M.Bandrivskiy	
72b	Velikosilka 2	U	Lviv		IVC	+					Konopla 1996:21-22	
73	Vichini	U	Lutsk		IVC	+					Konopla, Oprisk 1991:63	
74	Viliya III	U	Rivne		IVC	+	frs. of axes				Pozikhovskiy 1998:140	56:3
75	Vinnitsa	U	Vinnitsa		IVC	1 vessel				M. Vinnitsa	Sulimirski 1968:197; Sveshnikov 1983:53	56:4
76	Vladimir Volinskiy	U	Lutsk		IVC	+					Zakleka 1981:248	
77a	Volitsa II	U	Rivne		IVC	1 fr.	1 axe			M. Rivne		56:11-12
77b	Volitsa	U	Rivne		IVA2	10 frs.			1 pit	M. Rivne		56:5-9
78	Voronchin	U	Lutsk		IVC	+					Konopla, Oprisk 1991:64	
79	Vorovske	U	Zhitomir		IVC	+	+				Berezanska, Pyasetskiy 1979: 79; Serdyukova 1996:137	57:6,9
80	Władynopol	U	Lutsk		IVC	2 frs.				SAM		
81	Yaroslavichi - Bereg	U	Rivne		IVC	+	+				Sveshnikov 1983:23	
82	Yasenivka	U	Lutsk		IVC	+					Konopla, Oprisk 1991:84; Kuchinko, Okhrimenko 1991:151-152	

1	2	3	4	5	6	7	8	9	10	11	12	13
83	Yastrubichi	U	Lviv		IVC	+					Ivanovskiy et al. 1998:176	
84	Zalitsi	U	Lutsk		IVC	+					Konopla, Oprisk 1991:66	
85a	Zimno - "Go-rodyshe"	U	Lutsk		IVC?	+		several bone spearheads		M. Lutsk, U. Lviv	Bronicki 1997:Fig.53; Peleshchysyn 1998a:131	57:1-5, 7-8
85b	Zimno - "Tovarnaya Gora"	U	Lutsk		IVC	+					Sveshnikov 1983:21	
86	Zozov	U	Rivne		IVC	1 fr.				M. Rivne		56:10
87	Zvenigorod	U	Lviv		IVC	1 fr.					Sveshnikov 1983:37	57:10

¹ Area ca. 1 ha; ² Missing; ³ The caption to Fig. V reads: "a - potsherd of GAC", but there is no drawing designated as "a" in the figure; ⁴ Area 100 x 50 m;

⁵ So-called "Pidluzhzhya"; ⁶ From kurgans nos. I, III, IV, V, VII; ⁷ 350-400m to S from the grave I (see catalogue 1A); ⁸ Materials under processing (K.Piotrowska, SAM);

⁹ So-called "Zhuravetske".

Group V of sites (axes and chisels without context)

No.	Locality	State	Administrative district	Number of axes/chisels	Collections	References	Plate
1	2	3	4	5	6	7	8
1	Alekseyevichi	B	Brest	1	M.Pinsk	Kryvaltsevich's archives	60:9
2	Aminovichi	B	Mahileu	1		Klevanets 1998:Fig.7:33	60:6
3	Azyarnitsa (Jeziornica)	B	Grodno	1 fr.	SAM		
4	Azyarnoye	B	Minsk	1		Kryvaltsevich 1999:Fig.35:8	60:1-2
5	Bekhi	U	Zhitomir	1	HML	Mikhalchyshyn 1993	
6	Beshty	B	Grodno	1	M.Grodno	Kryvaltsevich's archives	60:5
7	Bilostok	U	Lutsk	1	M.Lutsk		
8	Błudniki (Błudniki)	U	Ivano-Frankovsk	1	SAM		
9	Bobrowniki Wielkie	U	Ternopil			Janusz 1919:95; Głosik 1962:129	
10	Bodaki	U	Ternopil	1	SAM		61:1
11	Bolshaya Garozha	B	Mahileu	1		Klevanets 1998:Fig.3:11	60:7
12	Bovsunny	U	Zhitomir	3 + 4 fr.	HMK		
13	Boryszkowice	U	Ivano-Frankovsk	1	SAM		
14	Buderazh	U	Rivne	2	HMK		61:2
15	Buyani	U	Lutsk	2 fr.		Konopla, Ivanovskiy 1997:12	
16	Buzhani	U	Lutsk	5		Peleshchysyn 1998a:138	
17	Busk	U	Lviv	2	HML		
18	Buzhkovichi	U	Lutsk	1		Kuchinko, Okhrimienko 1991:120	
19	Calu	R	Neamț	12	M.Piatra Neamț	Mătașa 1959:729; Florescu 1959:80-81	
20	Cherievki	U	Zhitomir	1 fr.	HMK		
21	Chodziejowszczyzna	B	Lida	1	AMK		

1	2	3	4	5	6	7	8
22	Chorna	U	Lviv	1	HML	Sveshnikov's archives	62:1
23	Chornivody	U	Khmelnitskiy	2	HML		
24	Chugali	U	Ternopil	1	M.Kremenets	Sveshnikov's archives	
25	Davidkovichi	U	Zhitomir	1	HML	Mikhalchyshyn 1993	
26	Dubrovitsa (Dąbrowa)	U	Rivne	1 fr.	SAM		
27	Demidovka - "Zamchishche"	U	Rivne	3	School in Demidovka	Sveshnikov's archives	61:6; 62:3
28	Demkovtsy (Demkowce)	U	Rivne	1	SAM		
29	Derevyane	U	Rivne	1	M.Rivne		61:4
30	Didkovichi	U	Zhitomir	1	HML	Mikhalchyshyn 1993	
31	Dobrovlany	U	Ternopil	3	M.Zalishchiki		61:5,7-8
32	Doslidnitskoye	U	Kiev	1		Maleyev's archives	61:9
33	Drohobycz - "Za Gorka"	U	Lviv	1	AMK		62:2
34	Drozdni	U	Lutsk	2		Kuchinko, Okhrimienko 1991:128	
35	Dubičiai	L	Varena	1	M.Grodno	Kryvaltsevich's archives	60:10
36	Fosna	U	Zhitomir	1	HMK		
37	Glodovka	B	Lida	1	AMK		
38	Golodky	U	Vinnitsa	1	M.Vinnitsa	Sulimirski 1968:197	
39	Golovne	U	Lutsk	1	M.Lutsk		
40	Gordiivka	U	Zhitomir	1	M.Zhitomir		
41	Gorodnitsa	U	Ivano- Frankovsk	1 fr.	M.Ternopil		
42	Gorodnitsa (Horodnica)	U	Ternopil	4		Przybysławski 1906:33	
43	Huta	U	Ternopil	1	SAM		62:4
44	Iłowica Mała	U	Ternopil	1 fr.	SAM		62:6
45	Jaromirka	U	Khmelnitskiy	1	SAM	Głosik 1962:140	62:5
46	Jurkudzie	B	?	1	AMK		
47	Kalagarivka	U	Ternopil	2	M.Ternopil	Sveshnikov's archives	62:8; 63:1
48	Kamienna Gora	U	Rivne	1	SAM		
49	Karpov Khutor	U	Zhitomir	1 + 3 fr.	HMK		

1	2	3	4	5	6	7	8
50	Khvoyniki	B	Brest	1		Kukhareno 1962:Plate XI,2	60:3
51	Koliki	U	Zhitomir	1	HML	Sveshnikov's archives	62:9
52	Korets	U	Rivne	1	M.Rivne		63:3
53	Korist	U	Rivne	1	M.Rivne		63:5
54	Korytnitsa	U	Lutsk	1	HMK		
55	Kostianets	U	Rivne	1 fr.	M.Rivne		
56	Kotiv	U	Lutsk	1	M.Lutsk		
57	Kozhukhovka	U	Zhitomir	1	HML	Sveshnikov's archives	63:4
58	Kozlin (Kozlin)	U	Rivne	1	SAM		63:7
59	Kremenets	U	Ternopil	1	HMK		
60	Kubilniki	B	Grodno	1		Charniauski 1981:48	60:11
61	Kupin	U	Ternopil	1 + 1 fr.	SAM		
62	Lipa	U	Rivne	1	SAM	Glosik 1962:149	
63a	Listvin	U	Rivne	Ca. 20		Peleshchyshyn 1998a:138	
63b	Listvin	U	Rivne	3 + 1 fr.	AMK, SAM	Glosik 1962:150	
64	Ludvishche (Ludwiszcze)	U	Ternopil	1 fr.	SAM	Glosik 1962:151	
65	Lutsk	U	Lutsk	1	M.Lutsk		
66	Malaya Moshchanitsa	U	Rivne	1 + 1 fr	HMK		
67	Maliye Novoselishchy	U	?	2	HMK		
68	Maydan	U	Rivne	1	HMK		63:6
69	Maydan Mokwinski	U	Rivne	1	SAM		
70	Mikhailivka	U	Zhitomir	1	HMK		64:3
71	Mikhnivka	U	?	1	HMK		
72	Mykolaivka	U	Ternopil	1	M.Ternopil		
73	Mircesti	R	Iasi	1		Florescu 1959:82	
74	Mirnoye	U	Rivne	1 fr.	M.Rivne		64:6
75	Mirogoshcha	U	Rivne	7 + 2 frs.	SAM, M. Rivne	Glosik 1962:154-6	64:4-5;65:1
76	Moța	R	?	1		Dinu 1960a:Fig.4,5	
77	Motel 1	B	Brest	2 fr.	M.Motel	Kryvaltsevich's archives	
78	Mylatyn - Sokolets	U	Rivne	1 fr.	HMK		

1	2	3	4	5	6	7	8
79	Naberezhne	U	Ternopil	1 fr.	M.Ternopil		
80	Nikiforivtsy	U	Vinnitsa	1	HMK		65:2
81	Norynsk	U	Zhitomir	2 + 1 fr.	HMK		
82	Nosowce	U	Vinnitsa	1	AMK		
83	Noviy Dvir (Nowy Dwór)	U	Rivne	1	AMK		
84	Onyshkivtsy	U	Rivne	1	M.Kremenets	Sveshnikov's archives	64:2
85	Ostrog	U	Rivne	1	HMK		
86	Ostrov	U	Rivne	2	M."Kazatske Mogily"	Sveshnikov's archives	
87	Ovruch	U	Zhitomir	2 fr.	HMK		64:7
88	Padgoryny	B	Baranavichi	4		Charniauski 1996:97	
89	Pasenichy	B	Brest	1		Kukharenko 1967:Plate XI,7	60:4
90	Pashiny	U	Zhitomir	1	HMK		
91	Penyaki	U	Lviv	3	HML	Sveshnikov's archives	65:10;66:1
92	Perepilchyntsy	U	Vinnitsa	1 fr.	HMK		
93	Ploshchovka	U	Zhitomir	1	HML	Sveshnikov's archives	66:2
94	Polovla	U	Rivne	1 fr.	M.Lutsk		
95	Polunichna	U	Rivne	1	IU NAN		66:3
96	Povch	U	Rivne	5 + 1 fr.	HML	Sveshnikov's archives	65:3-8
97	Probabin - "Gora"	U	Ivano-Frankovsk	1	School in Strilche	Sveshnikov's archives	65:9
98	Pryberezhne (Kaśmirówka)	U	Vinnitsa	1	SAM	Glosik 1962:141	
99	Rivne - "Plazh"	U	Rivne	7	M.Rivne	Okhrimienko 1994:15	6:4-8;67:1-2
100	Rokitno I	U	Lviv	2		Sulimirski 1968:144-146	
101	Sakhny - "Chervona Girka"	U	?	1	HMK		
102	Sapanov	U	Ternopil	2 fr.	AMK		
103	Scheia	R	Iași	1		Florescu 1959:83	
104	Serby (or Tobyivka?)	U	Vinnitsa	1 fr.	HML	Sveshnikov's archives	66:9

1	2	3	4	5	6	7	8
105	Shabelnia	U	Vinnitsa	2	M.Vinnitsa	Sulimirski 1968:197	
106	Shatrishche	U	Zhitomir	1	HML	Mikhalchysyn 1993	
107	Shumsk	U	Ternopil	1	M.Kremenets	Cynkałowski 1961:81	
108	Shutromintsy	U	Ternopil	1	M.Ternopil		
109	Silne	U	Lutsk	1	M.Lutsk		
110	Simno	B?	?	1	M.Grodno	Kryvaltsevich's archives	
111	Sivky	U	Rivne	1 fr.	HMK		
112	Skipche	U	Khmelnitskiy	1 fr.	SAM		
113	Sloboda	U	Zhitomir	1	M.Zhitomir		
114	Slobodka	B	Minsk	1	SAM		60:8
115	Slobodka Smotrycka	U	Khmelnitskiy	1 fr.	SAM		
116	Stadniki	U	Rivne	1	SAM	Głosik 1962:166	
117	Stara Mikhailivka	U	Zhitomir	1	M.Zhitomir		67:6
118	Strizhovka ¹	U	Zhitomir	Several axes	M. Zhitomir	Sveshnikov 1983:36	
119	Stupno	U	Rivne	1 + 1 fr.	AMK, HMK		
120	Suhuleț	R	Iași	1		Chirica, Tanasachi 1985:397	
121a	Syrvatyntsy ² (Serwatynice)	U	Khmelnitskiy	11 + 1 fr.	SAM, HMK		
121b	Syrvatyntsy - "Medobor"	U	Khmelnitskiy	1 fr.	HMK		
121c	Syrvatyntsy - "Selishche"	U	Khmelnitskiy	1 fr.	HMK		
122	Teolin	B	Grodno	1 fr.	AMK		
123	Terebovla (?)	U	Ternopil	1	M.Ternopil	Sveshnikov's archives	67:3
124	Tetyiv	U	Kiev	2	AMK		69:1
125	Tirpești	R	Bacău	1		Sulimirski 1968:206	
126	Tovste (Touste)	U	Ternopil	1	AMK		
127	Turya - "Dovhord" (Turia)	U	Lutsk	1 fr.		Cynkałowski 1961:82	
128	Tuta Dmitrovskaya	U	Cherkassy	1	HMK	Sulimirski 1968:207	

1	2	3	4	5	6	7	8
129	Ustenska (Derman)	U	Rivne	2	SAM	Głosik 1962:133	
130	Valea Adințe	R	Iași	5		Florescu 1959:83-84	
131	Vaskovichi	U	Zhitomir	3	HMK		69:3
132	Vaskovichi - Mikhailivka (Waškowicze-Michajłowka)	U	Zhitomir	1	AMK		67:5
133	Velka Khaycha	U	Zhitomir	1	HML	Sveshnikov's archives	64:1
134	Velke Birky	U	Ternopil	1	M.Ternopil		
135	Verbychna (Werbyczna)	U	?	2	SAM		67:4;68:4
136	Vila-Yaruzki - "Selishche"	U	Vinnitsa	1 fr.	HMK		
137	Yarychev	U	Lviv	1	HML	Sveshnikov's archives	68:5
138	Yasnogorod	U	Zhitomir	1	HMK		
139	Yastrubichi 5	U	Lviv	1 + 6 fr		Ivanovskiy et al. 1998:175-176	68:1-3
140	Zablotce	U	Brody	1 fr	AMK		
141	Zaborol	U	Rivne	1	SAM	Głosik 1962:173	
142	Zalishchiki	U	Ternopil	1	M.Zalishchiki		68:8
143	Zbranki	U	Zhitomir	1 + 1 fr	HMK		68:7,9
144	Zeleniy Gay - "Sokolil"	U	Ternopil	2	M.Zalishchiki		
145	Zgorany	U	Lutsk	2	M.Lutsk	Kukharenko 1962: Plate XI/4; Sveshnikov's archives	69:4-5
146	Zhezhava (Zielony Jar)	U	Ternopil	1 fr	SAM		68:6
147	Zhmerynka	U	Vinnitsa	1	HMK		
148	Zholkva	U	Lviv	1	HML		69:6
149	Zlazne	U	Rivne	1	M.Rivne		69:2
150	Zvinia ³	U	Ternopil	2	AU Kraków	Janusz 1918:260-261	

¹ Deposit (missing); ² In the vicinity of the village, graves in stone cists were found; ³ Missing.

Annexe 2. List of ^{14}C datings used in the book

Introductory Remarks

1. Citations refer to publications containing the information on particular datings and their contexts (i.e. these are not always the first publications of datings).
2. In the case of the datings that are published here for the first time, works presenting their archaeological contexts are given in brackets.
3. Category of sample foll. Czebreszuk, Szmyt 1998.
4. Calibration of all the datings are based on Weninger & Joris 1998.
5. Abbreviations: (Type of feature) K = kurgan, settl. = settlement; (sample) AB = animal bones, B = bones, (b) = burnt, G = grain, HB = human bones, N = nagar (organic deposit on the surface of the pot), P = peat.

No.	Locality	Site	Feature no.	Type of feature	Sample	Category	Lab. no.	BP	BC-1 sigma	References
1	2	3	4	5	6	7	8	9	10	11
GAC - Eastern Europe										
1	Tovpyzhyn	I		grave	HB	IA	Ki-5011	4310±45	3010-2890	Kadrow, Szmyt 1996; Maleyev, Pryshchepa 1996
2	Tovpyzhyn	I		grave	HB	IA	Ki-5010	4270±50	2950-2780	Kadrow, Szmyt 1996; Maleyev, Pryshchepa 1996
3	Vorvulinty			grave	HB	IA	Ki-5008	4220±70	2890-2680	Kadrow, Szmyt 1996; Sveshnikov 1983; Maleyev 1996
4	Loshniv			grave	HB	IA	Ki-5006	4150±55	2840-2640	Kadrow, Szmyt 1996; Sveshnikov 1983; Maleyev 1996
5	Ozdiv			grave	HB	IA	Ki-5919	4150±50	2840-2640	(Mazurik, Panyshko 1998)
6	Khartonivtsy	II		grave	HB	IA	Ki-5586	4130±70	2830-2600	(Sveshnikov 1983)
7	Ivanye			grave	HB	IA	Le-5021	4090±70	2820-2550	Kadrow, Szmyt 1996; Sveshnikov 1983; Maleyev 1996
8	Krasnaselski	I	3	ritual	AB	IA	Gd-9249	4080±140	2830-2450	Kadrow, Szmyt 1996; Charniauski 1996
9	Khartonivtsy	II		grave	HB	IA	Ki-5587	4060±60	2780-2520	(Sveshnikov 1983)
10	Dovge			grave	HB	IA	Ki-5009	4040±60	2730-2500	Kadrow, Szmyt 1996; Sveshnikov 1983; Maleyev 1996
11	Ivanye			grave	HB	IA	Ki-5141	4030±50	2650-2490	Kadrow, Szmyt 1996; Sveshnikov 1983; Maleyev 1996
12	Turinshchina		III	grave?	AB	IA	Gd-10082	4000±80	2670-2410	Kadrow, Szmyt 1996; Shmidt, Szmyt 1996
13	Suyemtsy	2		grave	HB	IA	Ki-6930	3935±45	2500-2350	(Levitskiy 1929; Sveshnikov 1983)
14	Peresopnitsa	3		pit	AB	IB	Ki-5075	3910±50	2460-2320	Kadrow, Szmyt 1996; Shelomentsev-Terskiy 1996
GAC - central group										
A. Kujawy										
15	Krusza Zamkowa	13		ritual	CH	IIA	Gd-309	5140±140	4140-3790	Koško 1989; 1991
16	Dęby	29	32	hut	CH	IIB	Gd-2148	4600±90	3490-3160	Czebreszuk, Szmyt 1992
17	Kołuda Wielka	13	3	hut	AB	IB	GrN-13593	4525±40	3330-3130	Andrałojć 1990
18	Kuczkowo	1	C2	ritual	AB	IA	Ki-6920	4525±45	3330-3130	Szmyt 1999b
19	Kuczkowo	1	C2	ritual	AB	IA	Ki-6496	4520±45	3320-3130	Szmyt 1999b
20	Kuczkowo	1	C2	ritual	AB	IA	Ki-6919	4490±40	3310-3110	Szmyt 1999b
21	Kuczkowo	1	C2	ritual	AB	IA	Ki-6921	4480±40	3300-3100	Szmyt 1999b
22	Kuczkowo	1	A136	ritual	AB	IA	Ki-6927	4420±55	3260-2970	Szmyt 1999b
23	Kuczkowo	1	A136	ritual	AB	IA	Ki-6917	4415±45	3250-2960	Szmyt 1999b

1	2	3	4	5	6	7	8	9	10	11
24	Kuczkowo	1	A136	ritual	AB	IA	Ki-6929	4400±50	3220-2950	Szmyt 1999b
25	Kuczkowo	1	A136	ritual	AB	IA	Ki-6928	4385±45	3090-2940	Szmyt 1999b
26	Kuczkowo	1	A15	pit	AB	IB	Ki-6918	4380±40	3070-2940	Szmyt 1999b
27	Kuczkowo	1	A136	ritual	AB	IA	Ki-6926	4370±50	3080-2930	Szmyt 1999b
28	Siniarzewo	1	I48	ritual	AB	IA	Ki-5910	4350±45	3040-2920	Czebreszuk, Szmyt 1998
29	Opatowice	36	123	ritual	AB	IA	Gd-6522	4350±120	3240-2860	Czebreszuk, Szmyt 1998
30	Bożejewice	22	F44	pit	AB	IB	Ki-6913	4335±40	3020-2910	Szmyt 1999b
31	Krusza Zamkowa	13		ritual	AB	IA	GrN-14022	4330±35	3010-2910	Koško 1989; 1991
32	Bożejewice	28	B40	pit	AB	IB	Ki-6916	4315±40	3000-2900	Szmyt 1999b
33	Bożejewice	22	A2	ritual	AB	IA	Ki-6914	4305±45	3000-2890	Szmyt 1999b
34	Siniarzewo	1	I127	pit?	AB	IB	Ki-5909	4290±40	2970-2880	Czebreszuk, Szmyt 1998
35	Opatowice	3	35	pit	CH	IIB	KN-3765	4290±120	3120-2720	Czebreszuk, Szmyt 1998
36	Bożejewice	28	A14	pit	AB	IB	Ki-6915	4280±45	2960-2860	Szmyt 1999b
37	Bożejewice	22	A3	pit	AB	IB	Ki-6912	4275±45	2940-2820	Szmyt 1999b
38	Kierzkowo	1		grave	B	IA	GrN-15412	4270±40	2930-2840	Bakker 1992
39	Piecki	8	16	pit	AB	IB	Ki-5681	4270±30	2920-2870	Szmyt 2000b
40	Opatowice	34	2	pit	AB	IC	Ki-5138	4250±45	2910-2750	Czebreszuk, Szmyt 1998
41	Piecki	1	90	pit	AB	IB	Ki-6232	4230±40	2890-2730	Szmyt 2000b
42	Piecki	8	13	pit	AB	IB	Ki-5680	4230±25	2890-2770	Szmyt 2000b
43	Opatowice	3	64	ritual	AB	IA	Gd-4117	4230±110	2970-2650	Koško 1991
44	Skoczka	1		grave	HB	IA	Ki-6329	4220±40	2880-2720	Czebreszuk, Szmyt 1998
45	Opatowice	34	34	pit	CH	IIC	Gd-8033	4200±70	2870-2660	Czebreszuk, Szmyt 1998
46	Opatowice	36	123	ritual	AB	IA	Ki-5136	4180±70	2850-2650	Czebreszuk, Szmyt 1998
47	Opatowice	32	51B	pit	AB	IC	Ki-5597	4160±70	2840-2630	Czebreszuk, Szmyt 1998
48	Zegotki	2	A68	pit	AB	IB	Ki-6220	4150±45	2840-2650	Szmyt 1999b
49	Rzadkwin	21	7	grave	B	IA	Ki-6233	4150±40	2840-2650	Szmyt 2000b
50	Kierzkowo	1		grave	B?	IA	GrN-15411	4135±40	2830-2640	Bakker 1992
51	Opatowice	35	82	pit	AB	IB	Ki-5594	4130±65	2830-2610	Czebreszuk, Szmyt 1998
52	Nakonowo	1		grave	HB	IA	Ki-7013	4130±45	2720-2510	Unpublished
53	Nakonowo	1		grave	HB	IA	Ki-7019	4120±50	2830-2610	Unpublished
54	Piecki	8	18	grave	HB	IA	Ki-6513	4105±40	2820-2600	Szmyt 2000b
55	Nakonowo	1		grave	HB	IA	Ki-7015	4090±40	2820-2580	Unpublished
56	Opatowice	34	34B	pit	AB	IC	Ki-5131	4060±55	2770-2520	Czebreszuk, Szmyt 1998
57	Nakonowo	1		grave	HB	IA	Ki-7014	4050±50	2720-2510	Unpublished
58	Kuczkowo	5	C114	pit	AB	IB	Ki-6508	4040±35	2620-2500	Szmyt 1999b
59	Zegotki	2	A113	ritual	AB	IA	Ki-6221	4030±60	2690-2490	Szmyt 1999b

1	2	3	4	5	6	7	8	9	10	11
60	Opatowice	36	67	ritual	AB	IA	Gd-6438	4010±100	2730-2390	Czebreszuk, Szmyt 1998
61	Kuczkowo	1	E2	pit	AB	IB	Ki-6510	3990±35	2560-2470	Szmyt 1999b
62	Siniarzewo	1	O9	pit	AB	IB	Ki-6511	3980±45	2560-2440	Szmyt 1999b
63	Opatowice	35	34	ritual	AB	IA	Ki-5595	3950±60	2540-2350	Czebreszuk, Szmyt 1998
64	Opatowice	36	101A	ritual	AB	IA	Ki-5137	3920±60	2490-2310	Czebreszuk, Szmyt 1998
65	Siniarzewo	1	H126	pit	AB	IB	Ki-6512	3915±40	2460-2340	Szmyt 1999b
66	Kuczkowo	1	A132	ritual	AB	IB	Ki-6509	3910±40	2450-2330	Szmyt 1999b
67	Nakonowo	1		grave	HB	IA	Ki-7016	3905±45	2450-2320	Unpublished
68	Opatowice	1	38	ritual	AB	IA	Gd-8035	3900±60	2460-2290	Czebreszuk, Szmyt 1998
69	Kuczkowo	1	D6	pit	AB	IB	Ki-6507	3895±45	2450-2310	Szmyt 1999b
70	Opatowice	35	78	pit	AB	IC	Ki-5922	3890±50	2440-2290	Czebreszuk, Szmyt 1998
71	Nakonowo	1		grave	HB	IA	Ki-7017	3880±50	2440-2280	Unpublished
72	Opatowice	35	78	pit	AB	IC	Ki-5593	3870±60	2430-2240	Czebreszuk, Szmyt 1998
73	Nakonowo	1		grave	HB	IA	Ki-7018	3870±45	2430-2270	Unpublished
74	Opatowice	36	101A	ritual	AB	IA	Gd-8037	3850±50	2410-2230	Czebreszuk, Szmyt 1998
75	Opatowice	1	38	ritual	AB	IA	Gd-8036	3820±60	2390-2180	Czebreszuk, Szmyt 1998
B. Other regions										
76	Krzemionki Opatowskie			mine 7/610	CH	IIC	Gd-2661	4510±70	3330-3090	Borkowski, Zalewski 1992; Pazdur et al. 1992
77	Krzemionki Opatowskie			mine 7/610	CH	IIC	Gd-4142	4510±70	3330-3090	Borkowski, Zalewski 1992; Pazdur et al. 1992
78	Krzemionki Opatowskie			hearth	CH	IIB	Gd-4422	4480±110	3330-3010	Borkowski, Zalewski 1992; Pazdur et al. 1992
79	Żuławka Mała	1		settl.	W	IIB	Gd-3687	4470±60	3300-3050	Krapiec et al. 1996
80	Żuławka Mała	1		settl.	W	IIB	Gd-7484	4420±40	3250-2970	Krapiec et al. 1996
81	Krzemionki Opatowskie			mine 7/610	CH	IIC	Gd-5130	4400±60	3240-2950	Borkowski, Zalewski 1992; Pazdur et al. 1992
82	Krzemionki Opatowskie			mine 7/610	CH	IIC	Gd-4428	4380±90	3250-2940	Borkowski, Zalewski 1992; Pazdur et al. 1992
83	Stablewice	4	1	pit	CH	IIB	Gd-4019	4380±60	3180-2940	Wawrzykowska 1990
84	Sandomierz	78	VIII	grave	CH	IIA	Gd-2452	4370±70	3200-2930	Ścibior, Ścibior 1990
85	Żuławka Mała	1		dam	W	IIB	Gd-7495	4370±40	3060-2930	Krapiec et al. 1996
86	Krzemionki Opatowskie			hearth	CH	IIB	Gd-6040	4370±110	3260-2910	Borkowski, Zalewski 1992; Pazdur et al. 1992
87	Krzemionki Opatowskie			hearth	CH	IIB	Gd-6039	4350±90	3220-2910	Borkowski, Zalewski 1992; Pazdur et al. 1992
88	Bartlewo	21	9	pit	CH	IIB	Gd-6093	4350±70	3120-2920	Sosnowska 1990b

1	2	3	4	5	6	7	8	9	10	11
89	Wichorze	24	2	pit	CH	IIB	Gd-2428	4340±90	3190-2890	Sosnowska 1990a
90	Brańsk-Chojewo			grave	HB	IA	Ki-6909	4340±50	3040-2910	(Antoniewicz 1938; Nosek 1967)
91	Żuławka Mała	1		dam	W	IIB	Gd-7416	4330±60	3050-2910	Krapiec et al. 1996
92	Bartlewo	21	8	pit	CH	IIB	Gd-6092	4300±90	3170-2770	Sosnowska 1990b
93	Klementowice	IV (D)	7	grave	CH	IIA	KN-1255	4300±40	2990-2890	Kowalczyk 1968; Breunig 1987
94	Chodzież	3		grave	B	IA	Bln-1549	4265±50	2930-2770	Prinke, Wisłański 1977
95	Żuławka Mała	1		dam	W	IIB	Gd-7496	4260±60	2940-2740	Krapiec et al. 1996
96	Żuławka Mała	1		dam	W	IIB	Gd-7290	4200±50	2860-2690	Krapiec et al. 1996
97	Żuławka Mała	1		dam	W	IIB	Gd-7286	4189±50	2850-2690	Krapiec et al. 1996
98	Klementowice	IV (D)	7	grave	CH	IIA	GrN-5046	4175±30	2840-2690	Kowalczyk 1968; Breunig 1987
99	Bartlewo	21	2	pit	CH	IIB	Gd-5572	4170±50	2840-2660	Sosnowska 1990b
100	Świerszczów	27		grave	HB	IA	Ki-5433	4170±35	2840-2680	Kadrow, Szmyt 1996
101	Podlódów	2		pit	AB	IB	Ki-6545	4160±45	2840-2660	(Bagińska, Taras 1997)
102	Straduń	17		ritual	AB	IA	Ki-5952	4150±40	2840-2655	Szmyt et al. 1997
103	Żuławka Mała	1		dam	W	IIB	Gd-7456	4130±40	2830-2630	Krapiec et al. 1996
104	Krasnystaw	8		grave	HB	IA	Ki-5841	4120±30	2830-2630	Kadrow, Szmyt 1996
105	Żuławka Mała	1		settl.	W	IIB	Gd-7410	4080±60	2810-2540	Krapiec et al. 1996
106	Żuławka Mała	1		dam	W	IIB	Gd-10041	4020±110	2760-2390	Krapiec et al. 1996
107	Łopiennik Dolny Kolonia	1		grave	HB	IA	Ki-5434	4010±30	2570-2490	Kadrow, Szmyt 1996
108	Linowo	25	?	pit?	?	?	Gd-6755	3890±80	2470-2240	Kukawka, Sosnowska 1994
GAC - western group										
109	Rositz			pit	CH	IIB	Bln-1779	4430±60	3270-2980	Müller 1999
110	Quenstedt		284A	pit	G	IA	KN-2418	4420±45	3250-2970	Behrens, Schröter 1980; Breunig 1987
111	Zachow ¹			pit	B	IB	Bln-4005	4410±50	3240-2960	Müller 1999
112	Barleben			pit	AB	IB	Hd-19347	4406±25	3080-2950	Müller 1999
113	Quenstedt		151	pit	G	IA	KN-2420	4380±55	3140-2940	Behrens, Schröter 1980; Breunig 1987
114	Pevestorf	19		grave	CH	IIA	KN-2461	4330±55	3040-2910	Breunig 1987; Meyer 1993
115	Quenstedt		284B	pit	G	IA	KN-2417	4310±50	3010-1890	Behrens, Schröter 1980; Breunig 1987
116	Żukowice			pit	AB	IB	Ki-6910	4285±45	2970-2870	(Hendel 1993)
117	Quenstedt		283	pit	G	IA	KN-2419	4280±50	2970-2820	Behrens, Schröter 1980; Breunig 1987
118	Pevestorf	19		grave	CH	IIA	KN-2459	4270±55	2960-2770	Breunig 1987; Meyer 1993
119	Zukowice			pit	AB	IB	Ki-6911	4265±50	2930-2770	(Hendel 1993)
120	Homolka				?	?	GrN-4065	4260±70	2960-2720	Breunig 1987
121	Wandersleben			grave	B	IA	Bln-2371	4220±70	2890-2680	Müller 1999

1	2	3	4	5	6	7	8	9	10	11
122	Görzig-Reinsdorf			grave	HB	IA	KN-4896	4218±54	2880-2700	Müller 1999
123	Grossörner			grave	B	IA	Bln-1346	4185±60	2850-2660	Breunig 1987; Müller 1999
124	Serrahn			grave	CH	IIA	Bln-342	4160±120	2870-2570	Breunig 1987
125	Gross Weissandt			grave	HB	IA	KIA-354	4150±30	2840-2670	Müller 1999
126	Deesdorf-Pfingstberg			grave	HB	IA	KN-4895	4112±54	2820-2600	Müller 1999
127	Oschersleben			ritual	AB	IA	Bln-4709	4100±40	2820-2590	Müller 1999
128	Augsdorf-Broedelberg			grave	HB	IA	KN-4894	4071±40	2840-2680	Müller 1999
129	Poggendorfer Forst			grave	CH	IB	Bln-990	3805±100	2400-2090	Breunig 1987
130	Katelbogen			grave	CH	IB	Bln-554	3800±120	2410-2060	Breunig 1987
Złota culture										
131	Sandomierz	Salve Regina		grave	CH	IIA	Gd-6094	4390±100	3270-2940	Ścibior 1993
132	Złota	Grodzisko I	33	grave	HB	IA	GrN-9143	4260±80	2980-2710	Krzak 1989
133	Złota	Grodzisko I	10	grave	HB	IA	GrN-9141	4220±40	2880-2720	Krzak 1989
134	Złota	Nad Wawrem	10	grave	HB	IA	GrN-9145	4195±35	2860-2700	Krzak 1989
135	Złota	Nad Wawrem	4	grave	HB	IA	GrN-9144	4180±35	2850-2690	Krzak 1989
136	Złota	Grodzisko I	43	grave	HB	IA	GrN-12514	4155±30	2840-2670	Krzak 1989
137	Złota	Grodzisko I	42	grave	HB	IA	GrN-9142	4080±55	2810-2550	Krzak 1989
138	Złota	Grodzisko I	10	grave	HB	IA	GrN-9147	4070±55	2800-2530	Krzak 1989
Funnel Beaker culture - upper Bug (youngest datings)										
139	Gródek Nadbużny	1C	22/85	pit	CH?	IIB	Gd-2427	4690±70	3590-3390	Jastrzębski 1991
140	Gródek Nadbużny	1C	15a	pit	CH?	IIB	GrN-16124	4665±40	3520-3390	Gumiński 1989
141	Gródek Nadbużny	1C	18	pit	CH?	IIB	GrN-16125	4665±40	3520-3390	Gumiński 1989
142	Gródek Nadbużny	1C	10/85	pit	CH?	IIB	Gd-2440	4580±90	3470-3130	Jastrzębski 1991
143	Gródek Nadbużny	1C	XIV	concentration	CH?	IIB	GrN-16126	4565±35	3370-3150	Gumiński 1989
144	Gródek Nadbużny	1C	23/85	pit	CH?	IIB	Gd-242	4530±70	3350-3110	Jastrzębski 1991
145	Gródek Nadbużny	1C	7/84	pit	CH?	IIB	Gd-2455	4330±80	3110-2890	Jastrzębski 1991
Corded Ware culture - South-Eastern Baltic area										
146	Abora	I	layer 6	settl.	CH	IIB?	TA-2144	4490±80	3320-3050	Loze, Liiva 1991; Loze 1991
147	Iča			settl.	W	IIB?	TA-2248	4420±80	3270-2970	Loze, Liiva 1991; Loze 1991
148	Iča			settl.	W	IIB?	TA-2247	4390±80	3250-2950	Loze, Liiva 1991; Loze 1991
149	Šarnelė ²			settl.	CH /W	IIB?	Vs-318	4260±90	3000-2700	Butrimas 1996
150	Iča			settl.	W	IIB?	TA-2249	4260±70	2960-2720	Loze, Liiva 1991; Loze 1991
151	Abora	I	layer 4	settl.	W	IIB?	TA-2145	4250±100	3010-2670	Loze, Liiva 1991; Loze 1991
152	Iča		layer 7	settl.	W	IIB?	TA-2143	4120±90	2830-2670	Loze, Liiva 1991; Loze 1991; 1992

1	2	3	4	5	6	7	8	9	10	11
153	Šventoji	1A		settl.	?	?	TA-246	4120±80	2830-2680	Rimantiene, Butrimas 1991
154	Šventoji ³	1A		settl.	?	?	Vs-22	4100±100	2820-2530	Rimantiene, Butrimas 1991
155	Spiginas ⁴	2		grave	?	?	GIM-5570	4080±120	2820-2480	Rimantiene, Butrimas 1991; Butrimas 1992
156	Sirmė ⁵	1		settl.	?	?	Vs-319	4070±80	2800-2520	Butrimas, Česnys 1990
157	Eini ⁶			settl.	W	IIB	Le-751	4000±60	2610-2450	Loze 1992; 1999
158	Parkhuty ⁷		14	grave	CH *	IIB	Ki-6212	3965±40	2550-2410	Lakiza 1999
159	Asavets ⁸			?	?	?	Le-936	3880±80	2460-2330	Charniauskis 1997
160	Krivina ⁹			?	?	?	Le-757	3880±60	2440-2260	Charniauskis 1997
161	Abora	I		settl.	P	IIC	Le-671	3870±70	2440-2230	Loze, Liiva 1991
162	Abora	I		settl.	P	IIC	Le-749	3860±100	2460-2180	Loze, Liiva 1991
163	Abora	I		settl.	W	IIC	TA-394	3770±60	2300-2090	Loze, Liiva 1991
Cord Ware culture - upper Vistula (eastern part), upper Bug and upper Dnestr										
164	Bolekhovtsy	K 7		?	CH	?		4590±105	3490-3130	Sveshnikov 1985
165	Średnia	1	?	grave	CH	IIB	Gd-10402	4390±100	3270-2940	Machnik, Sosnowska 1996
166	Werszczyca	1	1	grave	HB	IA	Ki-6301	4305±45	3000-2890	Machnik 1999
167	Średnia	1	?	grave	CH	IIB	Gd-10397	4290±90	3050-2750	Machnik, Sosnowska 1996
168	Side	?		pit	CH	IIB	Gd-10536	4290±90	3050-2750	Machnik, Sosnowska, Cyhyłyk 1997
169	Bierówka	K a		?	?	?	Gd-1877	4240±40	2900-2750	Machnik 1992
170	Łubcze	2	1	grave	HB	IA	Ki-6297	4210±60	2870-2680	Machnik 1999
171	Klimentovka			?	?	?		4175±90	2860-2620	Sveshnikov 1974
172	Łubcze ¹⁰	2/K 2	2	grave	HB	IA	Ki-6298	4160±50	2840-2650	Machnik 1999
173	Side			pit	CH	IIB	Gd-10537	4160±80	2840-2650	Machnik, Sosnowska, Cyhyłyk 1997
174	Bierówka	K B			?	?	Gd-2759	4120±80	2830-2580	Machnik 1992
175	Bierówka	K A			?	?	Gd-3129	4100±80	2820-2550	Machnik 1992
176	Brzezinki	K III			?	?	Bln-?	4100±100	2820-2530	Machnik, Ścibior 1991
177	Hubinek ¹¹	3	3	grave	HB	IA	Ki-6890	4070±60	2800-2530	Machnik 1999
178	Bierówka	K B			?	?	Gd-2760	4070±60	2800-2430	Machnik 1992
179	Łubcze ¹²	37	3	grave	HB	IA	Ki-6300	4050±55	2740-2510	Machnik 1999
180	Niepla				?	?	Gd-5796	4030±50	2650-2490	Machnik, Ścibior 1991
181	Brzezinki	K I			?	?	Bln-?	4030±100	2770-2430	Machnik, Ścibior 1991
182	Nedeżów ¹³	22/K 2	1	grave	HB	IA	Ki-6894	4020±55	2640-2480	Machnik 1999
183	Hubinek ¹⁴	3	2	grave	HB	IA	Ki-6889	3995±55	2590-2450	Machnik 1999
184	Wola Węgierska	3/K 1		grave	CH	IIB	Gd-11353	3920±80	2520-2280	Machnik, Sosnowska 1998
185	Brzezinki ¹⁵	K I			?	?	Bln-?	3870±100	2400-2090	Machnik 1992

1	2	3	4	5	6	7	8	9	10	11
186	Wola Wegierska	3/K 1		ditch	CH	IIC	Gd-11354	3860±70	2430-2220	Machnik, Sosnowska 1998
187	Łukawica	K K			?	?	Bln-	3800±100	2400-2090	Machnik, Scibior 1991
Middle Dnieper culture										
188	Belynets	K 5	5	grave	?	?	Le-?	4300±50	3000-2880	Artemenko 1985
189	Prorva	1	1	grave	CH	IIA	Le-5020	4150±80	2840-2610	Kadrow, Szmyt 1996
190	Prorva	1	1	grave	CH	IIA	Ki-5140	4060±45	2740-2520	Kadrow, Szmyt 1996
191	Prorva	1	10	grave	B	IA	Ki-6206	4010±40	2580-2480	Kryvaltsevich 1999b
192	Prorva	1	18	grave	CH	IIA	Ki-6207	3960±40	2550-2400	Kryvaltsevich 1999b
193	Prorva	1	10	grave	N	IA	Ki-6205	3890±50	2440-2290	Kryvaltsevich 1999b
194	Prorva	2	1	grave	CH	IIA	Ki-6590	3870±55	2430-2250	Kryvaltsevich 1999b
195	Khodosovichi	3	2	grave	HB	IA	Ki-6592	3855±40	2420-2250	Kryvaltsevich 1999b
196	Prorva	1	20	grave	CH	IIA	Ki-6208	3830±40	2380-2220	Kryvaltsevich 1999b
197	Myronivka	K 8	6	grave	HB	IA	Ki-5824	3690±45	2150-2010	Kryvaltsevich 1999b
198	Azyaroye	1		vessel	N	IA	Ki-6209	3580±50	2010-1850	Kryvaltsevich 1999a, 1999b
199	Prorva	1	2	grave	CH	IIA	Ki-5613	3570±40	1980-1840	Kryvaltsevich 1999b
200	Azyaroye	1		vessel	N	IA	Ki-6210	3520±40	1900-1780	Kryvaltsevich 1999a, 1999b
201	Strelitsa		53	grave	HB	IA	Ki-6588	3515±60	1920-1760	Kryvaltsevich 1999b
202	Strelitsa ¹⁶		43	grave	AB	IA	Ki-6586	3500±60	1900-1750	Kryvaltsevich 1999b
203	Prorva	1	2	grave	CH	IIA	Ki-5612	3490±45	1870-1750	Kryvaltsevich 1999b
204	Strelitsa ¹⁷		53	grave	AB	IA	Ki-6587	3460±70	1870-1690	Kryvaltsevich 1999b
205	Strelitsa ¹⁸		56	grave	AB	IA	Ki-6589	3440±55	1850-1680	Kryvaltsevich 1999b
206	Strelitsa ¹⁹		14	grave	HB	IA	Ki-6585	3425±45	1830-1680	Kryvaltsevich 1999b
Fatyanovo culture										
207	Yazykovo I ²⁰			settl.	?	?	Le-1082	4100±40	2820-2590	Krainov 1992
208	Sakhtysh I ²¹			settl.	?	?	Le-1020	4060±60	2780-2520	Krainov 1992
209	Modlona I ²²			settl.	?	?	?	3960±120	2660-2290	Krainov 1992
210	Turginovo ²³		5	grave	CH	IIA	Le-1046	3780±100	2370-2060	Krainov 1992
211	Volosovo Danilov		58	grave	CH	IIA	Le-1044	3650±80	2150-1920	Krainov 1992
So-called Gorodok-Zdolbitsa group (culture)										
212	Zozov	II			?	?	?	4073±80	2810-2520	Sveshnikov 1985b
Strzyżów culture										
213	Raciborowice Kolonia			grave	?	?	?	3740±80	2280-2030	Wróbel 1991
Late Narva culture - western area										
214	Šventoji	3B		settl.	?	?	Vib-9	4410±70	3260-2960	Rimantiene 1996a
215	Šventoji	4		settl.	?	?	Vs-23	4400±100	3270-2950	Rimantiene 1996a
216	Šventoji	4		settl.	?	?	Bln-4385	4360±50	3070-2930	Rimantiene 1996a
217	Šventoji	4		settl.	?	?	Vs-956	4300±180	3230-2670	Rimantiene 1996a

1	2	3	4	5	6	7	8	9	10	11
218	Šventoji	4		settl.	?	?	Vs-812	4290±110	3100-2730	Rimantiene 1996a
219	Krivina	1		settl.	?	?	?	4270±40	2930-2840	Charniauskis 1997a
220	Šventoji	4		settl.	?	?	Vs-968	4230±90	2930-2670	Rimantiene 1996a
221	Šventoji ²⁴	4		settl.	?	?	Vs-957	4200±100	2890-2630	Rimantiene 1996a
222	Šventoji	23		settl.	?	?	Vib-1	4190±80	2860-2640	Rimantiene 1992a
223	Šventoji ²⁵	6		settl.	?	?	Vs-499	4170±110	2870-2590	Rimantiene 1996b
224	Šventoji	4		settl.	?	?	T-11004	4145±80	2840-2600	Rimantiene 1996a
225	Šventoji ²⁶	4		settl.	?	?	Vs-967	4120±110	2840-2540	Rimantiene 1996a
226	Šventoji ²⁷	6		settl.	?	?	Vs-500	4070±110	2810-2480	Rimantiene 1996b
227	Žemaitiške	1		settl.	?	?	Vs-312	3710±160	2350-1910	Rimantiene, Ostrauskas 1998
228	Papiškes			settl.	?	?	T-10602	3685±75	2190-1970	Rimantiene, Ostrauskas 1998
229	Žemaitiške	2		settl.	?	?	Vs-311	3570±120	2100-1770	Rimantiene, Ostrauskas 1998
Usvyaty culture										
230	Serteya	II,VIII,XI		settl.	W	IIB	Le-4113	5120±80	4000-3810	Miklaev 1992; Zaitseva et al. 1994
231	Rudnya Serteyskaya			settl.	W	IIB	Le-2567	4870±40	3700-3630	Miklaev 1992; Zaitseva et al. 1994
232	Serteya	II,VIII,XI		settl.	W	IIB	TA-242	4830±30	3660-3540	Miklaev 1992; Zaitseva et al. 1994
233	Serteya	II,VIII,XI		settl.	W	IIB	Le-4112	4760±100	3640-3410	Miklaev 1992; Zaitseva et al. 1994
234	Dubokray			settl.	CH	IIB	Le-3003	4720±40	3610-3410	Miklaev 1992; Zaitseva et al. 1994
235	Serteya ²⁸	II,VIII,XI		settl.	W	IIB	Le-4110	4620±65	3500-3230	Miklaev 1992; Zaitseva et al. 1994
236	Serteya	II,VIII,XI		settl.	W	IIB	Le-4103	4590±65	3480-3160	Miklaev 1992; Zaitseva et al. 1994
237	Usvyaty			settl.	W	IIB	Ta-105?	4570±70	3450-3140	Miklaev 1992; Zaitseva et al. 1994
238	Rudnya Serteyskaya ²⁹			settl.	Gittyta	IIB	Le-2585	4440±60	3280-3000	Miklaev 1992; Zaitseva et al. 1994
239	Usvyaty ³⁰			settl.	?	?	Le-243	4310±80	3070-2840	Miklaev 1992; Zaitseva et al. 1994
240	Dubokray			settl.	W	IIB	TA-202	4210±70	2880-2670	Miklaev 1992; Zaitseva et al. 1994
241	Dubokray			settl.	W	IIB	TA-817	4150±80	2840-2610	Miklaev 1992; Zaitseva et al. 1994
242	Dubokray			settl.	W	IIB	TA-633	4120±60	2830-2600	Miklaev 1992; Zaitseva et al. 1994
243	Dubokray			settl.	W	IIB	TA-203	4100±70	2820-2570	Miklaev 1992; Zaitseva et al. 1994
244	?? ³¹				?	?	TA-203 *	4090±70	2820-2550	Miklaev 1992
245	Naumovo			settl.	W	IIB	Le-1007	4030±50	2650-2490	Miklaev 1992; Zaitseva et al. 1994
Zhihetskaya culture										
246	?			settl.	?	?	TA-583	3945±70	2540-2330	Miklaev 1992
247	Usvyaty ³²			settl.	?	?	Le-2649	3920±90	2530-2270	Miklaev 1992; Zaitseva et al. 1994
248	Usvyaty			settl.	?	?	TA-466	3905±70	2480-2280	Miklaev 1992; Zaitseva et al. 1994
249	Usvyaty			settl.	?	?	Le-2840	3870±40	2430-2280	Miklaev 1992; Zaitseva et al. 1994
250	Usvyaty			settl.	?	?	TA-469	3860±60	2430-2230	Miklaev 1992; Zaitseva et al. 1994
251	Usvyaty			settl.	?	?	Le-2833	3830±40	2380-2220	Miklaev 1992; Zaitseva et al. 1994
252	?			settl.	?	?	TA-467	3800±80	2380-2120	Miklaev 1992

1	2	3	4	5	6	7	8	9	10	11
253	Rudnya Serseyskaya ³³			settl.	P	IIC	Le-2675	3790±40	2290-2160	Miklaev 1992
Zedmar D - latest datings (culture?)										
254	Zedmar	D		settl.	W	IIC	TA-1173	4350±80	3180-2910	Timofeev, Zaitseva, Possnert 1994
255	Zedmar	D		settl.	W	IIC	Le-3169	4300±40	2990-2890	Timofeev, Zaitseva, Possnert 1994
256	Zedmar	D		settl.	W	IIC	Le-3171	4250±40	2910-2770	Timofeev, Zaitseva, Possnert 1994
257	Zedmar	D		settl.	CH	IIC	Le-1176	4240±90	2950-2680	Timofeev, Zaitseva, Possnert 1994
258	Zedmar	D		settl.	W	IIC	Le-3170	4210±45	2870-2700	Timofeev, Zaitseva, Possnert 1994
259	Zedmar	D		settl.	CH	IIC	Le-848	4180±50	2850-2670	Timofeev, Zaitseva, Possnert 1994
260	Zedmar	D		settl.	W	IIC	Le-3177	4170±45	2840-2670	Timofeev, Zaitseva, Possnert 1994
261	Zedmar	D		settl.	W	IIC	Le-3992	4120±100	2830-2550	Timofeev, Zaitseva, Possnert 1994
262	Zedmar	D		settl.	W	IIC	Le-1181	4020±80	2720-2450	Timofeev, Zaitseva, Possnert 1994
263	Zedmar	D		settl.	W	IIC	Le-3168	3890±60	2450-2270	Timofeev, Zaitseva, Possnert 1994
264	Zedmar	D		settl.	CH	IIC	Le-3925	3870±290	2750-1960	Timofeev, Zaitseva, Possnert 1994
Pamariu (Rzucewo) culture										
265	Šarnelė			settl.	CH	IIB	Vs-318	4260±90	3000-2700	Rimantiene, Butrimas 1991
266	Oslonino			settl.	CH?	IIB	Lod-289	4200±170	3030-2560	Król 1991
267	Šventoji	1A		settl.	?	?	TA-246	4120±80	2830-2580	Rimantiene, Butrimas 1991
268	Oslonino			settl.	CH?	IIB	Lod-288	4100±170	2870-2420	Król 1991
269	Šventoji	1A		settl.	?	?	Vs-22	4100±100	2920-2530	Rimantiene, Butrimas 1991
270	Spiginas	2		grave	?	?	GIM-5570	4080±120	2820-2480	Rimantiene, Butrimas 1991
271	Sirmė			settl.	?	?	Vs-319	4070±80	2800-2520	Rimantiene, Butrimas 1991
272	Nida		59	hearth	?	?	Bln-2592	4070±50	2790-2430	Rimantiene, Butrimas 1991
273	Daktariskė	5A			?	?	Vs-813	4020±100	2750-2410	Rimantiene, Butrimas 1991
274	Oslonino			settl.	CH?	IIB	Gd-1607	3940±60	2530-2340	Król 1991
275	Oslonino			settl.	CH?	IIB	Gd-1606	3930±60	2510-2330	Król 1991
276	Oslonino			settl.	CH	IIB	Gd-1752	3910±70	2480-2290	Król 1991
277	Šventoji ³⁴	9		settl.	W?	IIB?	Vib-8	3860±90	2450-2190	Rimantiene, Butrimas 1991
278	Rzucewo	1		pit	AB	IB	Ki-5951	3810±40	2330-2190	Dr D.Makowiecki pers. com.
279	Oslonino			settl.	CH?	IIB?	Gd-1879	3710±60	2200-2020	Król 1991
280	Oslonino			settl.	CH	IIB	Gd-3067	3680±70	2170-1970	Król 1991
Tripolye culture - phase CII										
281	Mayaki			ditch?	CH	II?	Ki-870	4670±110	3580-3240	Telegin 1985; Videiko 1999
282	Gorodsk				?	?	GrN-5099	4651±35	3500-3390	Telegin 1985; Videiko 1999
283	Gorodishche-Gorodnitsa				?	?	GrN-5088	4615±35	3490-3360	Telegin 1985; Videiko 1999
284	Danku	2	2	grave	CH	IIB	Le-1054	4600±60	3480-3190	Wechler 1994; Videiko 1999
285	Mayaki			ditch?	?	?	Ki-282	4580±120	3490-3110	Telegin 1985; Videiko 1999
286	Zhvanets	Shchovb	1	hut	B	IB	Ki-6745	4530±50	3330-3130	Videiko 1999

1	2	3	4	5	6	7	8	9	10	11
287	Gorodsk			?	B	I?	Ki-6752	4495±45	3310-3110	Videiko 1999
288	Zhvanets	Shchovb	2	ploshchadka	B	IB	Ki-6743	4480±40	3300-3100	Videiko 1999
289	Mayaki			ditch?	?	?	Ki-281	4475±130	3350-2990	Telegin 1985; Videiko 1999
290	Troyaniv		25	hut	B	IB	Ki-6750	4430±45	3270-2990	Videiko 1999
291	Troyaniv		1	hut	B	IB	Ki-6749	4410±50	3280-2960	Videiko 1999
292	Mayaki			ditch?	CH	II?	Bln-629	4400±100	3270-2950	Telegin 1985; Videiko 1999
293	Zhvanets	Shchovb		?	CH	IIC	Ki-6754	4380±60	3180-2940	Videiko 1999
294	Mayaki			ditch?	CH	II?	UCLA-1642G	4375±60	3160-2940	Mallory 1977; Telegin 1985; Videiko 1999
295	Mayaki			ditch?	CH	II?	UCLA-1642B	4375±60	3160-2940	Mallory 1977; Telegin 1985; Videiko 1999
296	Troyaniv		28	hut	B	IB	Ki-6748	4360±55	3080-2930	Videiko 1999
297	Zhvanets	Shchovb	6	hut	B	IB	Ki-6744	4355±60	3090-2920	Videiko 1999
298	Mayaki			ditch?	CH	II?	Le-645	4340±65	3080-2910	Telegin 1985; Videiko 1999
299	Mayaki			ditch?	?	?	Bln-609	4340±65	3080-2910	Telegin 1985
300	Usatovo			grave	CH	IIA?	UCLA-1642A	4330±60	3050-2910	Mallory 1977; Videiko 1999
301	Sofievka		1	grave	HB(b)	IA	Ki-5012	4320±70	3060-2890	Kovalyukh, Skripkin, Videiko 1995
302	Sofievka			?	CH	IIC?	Ki-5029	4300±45	3000-2880	Kovalyukh, Skripkin, Videiko 1995
303	Zavalivka		6	grave	HB(b)	IA	Ki-5015	4290±90	3050-2750	Kovalyukh, Skripkin, Videiko 1995
304	Zhvanets	Shchovb		rampart	CH	IIC	Ki-6753	4290±55	3000-2860	Videiko 1999
305	Krasny Khutor		2	grave	HB(b)	IA	Ki-5038	4280±110	3070-2710	Kovalyukh, Skripkin, Videiko 1995
306	Sofievka				HB(b)	IA	Ki-5013	4270±90	3010-2720	Kovalyukh, Skripkin, Videiko 1995
307	Zavalivka		10	grave	HB(b)	IA	Ki-5014	4230±80	2910-2680	Kovalyukh, Skripkin, Videiko 1995
308	Vilkhovets		1	pit	B	IB	Ki-6925	4225±55	2890-2700	Videiko 1999
309	Sandraki			hollow	AB	I?	Ki-6747	4210±45	2870-2700	Videiko 1999
310	Vilkhovets		1	pit	B	IB	Ki-6924	4205±50	2870-2690	Videiko 1999
311	Sandraki			hearth	AB	I?	Ki-6746	4175±50	2840-2670	Videiko 1999
312	Zatoka	Akkiembetskiy K		ritual	AB	IA	Ki-6800	4170±60	2840-2650	Szmyt, Chernyakov 1999
313	Vilkhovets		1	pit	B	IB	Ki-6922	4170±55	2840-2660	Videiko 1999
314	Vilkhovets		1	pit	B	IB	Ki-6923	4165±60	2840-2650	Videiko 1999
315	Krasny Khutor		98	grave	HB(b)	IA	Ki-5039	4160±90	2850-2610	Kovalyukh, Skripkin, Videiko 1995
316	Krasny Khutor		6	grave	N	IA	Ki-5016	4140±110	2850-2560	Kovalyukh, Skripkin, Videiko 1995
317	Zatoka	Akkiembetskiy K		ritual	AB	IA	Ki-6801	4095±65	2820-2560	Szmyt, Chernyakov 1999
318	Zatoka	Akkiembetskiy K	6	grave	HB	IA	Ki-6803	4090±60	2820-2560	Szmyt, Chernyakov 1999
319	Zatoka	Akkiembetskiy K	6	grave	HB	IA	Ki-6802	4020±65	2680-2480	Szmyt, Chernyakov 1999
320	Zatoka	Akkiembetskiy K	9	grave	HB	IA	Ki-6804	3990±60	2590-2430	Szmyt, Chernyakov 1999

1	2	3	4	5	6	7	8	9	10	11
321	Tsviklovtsy			grave	B (b)	IA	Ki-6751	3960±50	2550-2380	Videiko 1999
322	Zatoka	Akkiembetskiy K	7	grave	HB	IA	Ki-6807	3950±60	2540-2355	Szmyt, Chernyakov 1999
323	Zatoka	Akkiembetskiy K	24	grave	HB	IA	Ki-6810	3945±50	2530-2355	Szmyt, Chernyakov 1999
324	Zatoka	Akkiembetskiy K	7	grave	HB	IA	Ki-6808	3935±45	2500-2350	Szmyt, Chernyakov 1999
325	Zatoka	Akkiembetskiy K	10	grave	HB	IA	Ki-6805	3930±55	2500-2330	Szmyt, Chernyakov 1999
326	Zatoka	Akkiembetskiy K	23	grave	HB	IA	Ki-6809	3920±60	2490-2310	Szmyt, Chernyakov 1999
Mikhailivka I (Nizhna Mikhailivka) culture										
327	Novorozanovka			settl.	?	?	?	4870±100	3780-3540	Shaposhnikova 1985
328	Mikhailivka I			settl.	?	?	Bln-630	4330±100	3190-2850	Mallory 1977
329	Mikhailivka I			settl.	?	?	Le-355	4050±150	2810-2380	Mallory 1977
Kemi-Oba culture										
330	Zatoka	Akkiembetskiy K	1	grave	HB	IA	Ki-6812	3950±60	2540-2350	Szmyt, Chernyakov 1999
331	Zatoka	Akkiembetskiy K	2	grave	HB	IA	Ki-6813	3930±50	2490-2340	Szmyt, Chernyakov 1999
332	Zatoka	Akkiembetskiy K	12	grave	HB	IA	Ki-6815	3925±55	2490-2330	Szmyt, Chernyakov 1999
333	Zatoka	Akkiembetskiy K	1	grave	Reed	IA	Ki-6811	3900±65	2460-2280	Szmyt, Chernyakov 1999
334	Zatoka	Akkiembetskiy K	3	grave	HB	IA	Ki-6814	3890±50	2440-2290	Szmyt, Chernyakov 1999
Yamnaya culture - west form the Dnieper (selected datings)										
335	Novoselitsa	K 19	7	grave	W	IIA	Ki-1219	4520±70	3330-3100	Telegin 1987; Subbotin, Ostroverkhov, Dzigovskiy 1995
336	Myronivka	K 1	8	grave	W	IIA	Ki-6741	4235±60	2900-2710	Klochko 1999
337	Novoselitsa	K 19	16	grave	?	?	Ki-7080	4205±55	2870-2690	Kovalyukh, Nazarov 1999
338	Novoselitsa	K 19	19	grave	?	?	Ki-7085	4180±60	2850-2660	Kovalyukh, Nazarov 1999
339	Ordzhonikidze	Chkalovo/K 11	11	grave	HB	IA	Ki-6572	4060±55	2770-2520	Nikolova 1999
340	Novoselitsa	K 19	19	grave	W	IIA	Ki-7127	4055±60	2770-2510	Kovalyukh, Nazarov 1999
341	Ordzhonikidze	K 11	90	grave	HB	IA	Ki-6571a	4035±50	2600-2500	Nikolova 1999
342	Golovkovka	K 11	5	grave	HB	IA	Ki-6723	4030±60	2690-2490	Nikolova 1999
343	Myronivka	K 3	1	grave	HB	IA	Ki-5828	4010±60	2900-2710	Klochko 1999
344	Ordzhonikidze	Chkalovo/K 11	9	grave	HB	IA	Ki-6828a	4010±50	2600-2480	Nikolova 1999
345	Ordzhonikidze	K 11	11	grave	HB	IA	Ki-6572a	4005±55	2610-2470	Nikolova 1999
346	Golovkovka	K 5	5	grave	HB	IA	Ki-6731	4005±55	2610-2470	Nikolova 1999
347	Ordzhonikidze	Chkalovo/K 11	11	grave	HB	IA	Ki-6829a	3990±50	2570-2450	Nikolova 1999
348	Talyanki		1	grave	HB	IA	Ki-6714	3990±50	2570-2450	Klochko, Kruts 1999
349	Ordzhonikidze	Chkalovo/K 11	9	grave	HB	IA	Ki-6571	3985±45	2560-2450	Nikolova 1999
350	Golovkovka	K 7	4	grave	HB	IA	Ki-6722	3980±60	2580-2400	Nikolova 1999
351	Golovkovka	K 6	8	grave	HB	IA	Ki-6719	3970±55	2560-2390	Nikolova 1999
352	Golovkovka	K 12	3	grave	HB	IA	Ki-6724	3950±50	2540-2360	Nikolova 1999
353	Protopopovka	K 2	2	grave	HB	IA	Ki-6733	3945±50	2530-2360	Nikolova 1999

1	2	3	4	5	6	7	8	9	10	11
354	Talyanki		2	grave	HB	IA	Ki-6715	3945±50	2530-2360	Klochko, Kruts 1999
355	Ordzhonikidze	Shakhta 22/K 2	9	grave	HB	IA	Ki-6834a	3930±50	2490-2340	Nikolova 1999
356	Golovkovka	K 5	3	grave	HB	IA	Ki-6730a	3925±55	2490-2330	Nikolova 1999
357	Golovkovka	K 3	1	grave	HB	IA	Ki-6718	3920±60	2490-2310	Nikolova 1999
358	Golovkovka	K 14	9	grave	HB	IA	Ki-6729	3920±50	2480-2330	Nikolova 1999
359	Zatoka	Akkiembetskiy K	14	grave	W	IIA	Ki-6817	3920±45	2470-2330	Szmyt, Chernyakov 1999
360	Golovkovka	K 14	2	grave	HB	IA	Ki-6727	3910±55	2470-2320	Nikolova 1999
361	Ordzhonikidze	Chkalovo/K 11	8	grave	HB	IA	Ki-6827	3910±45	2470-2320	Nikolova 1999
362	Talyanki		3	grave	HB	IA	Ki-6716	3905±60	2470-2290	Klochko, Kruts 1999
363	Golovkovka	K 14	7	grave	HB	IA	Ki-6728	3905±55	2460-2300	Nikolova 1999
364	Ordzhonikidze	Shakhta 22/K 2	6	grave	HB	IA	Ki-6833	3900±55	2460-2300	Nikolova 1999
365	Myronivka	K 7	2	grave	HB	IA	Ki-5823	3895±60	2450-2280	Klochko 1999
366	Golovkovka	K 14	3	grave	HB	IA	Ki-6725	3895±55	2450-2290	Nikolova 1999
367	Protopopovka	K 1	4	grave	HB	IA	Ki-6732	3890±55	2450-2280	Nikolova 1999
368	Ordzhonikidze	K 10	4	grave	HB	IA	Ki-6830	3890±40	2440-2310	Nikolova 1999
369	Golovkovka	K 6	9	grave	HB	IA	Ki-6720	3880±55	2440-2270	Nikolova 1999
370	Myronivka	K 2	3	grave	HB	IA	Ki-5826	3875±60	2440-2255	Klochko 1999
371	Zatoka	Akkiembetskiy K	17	grave	HB	IA	Ki-6819	3865±60	2430-2240	Szmyt, Chernyakov 1999
372	Talyanki		4	grave	HB	IA	Ki-6717	3865±50	2430-2250	Klochko, Kruts 1999
373	Zatoka	Akkiembetskiy K	13	grave	W	IA	Ki-6816	3865±50	2430-2250	Szmyt, Chernyakov 1999
374	Golovkovka	K 6	11	grave	HB	IA	Ki-6721	3850±55	2420-2230	Nikolova 1999
375	Zatoka	Akkiembetskiy K	17	grave	W	IIA	Ki-6818	3840±65	2410-2200	Szmyt, Chernyakov 1999
376	Golovkovka	K 14	4	grave	HB	IA	Ki-6726	3840±50	2400-2220	Nikolova 1999
377	Zatoka	Akkiembetskiy K	22	grave	HB	IA	Ki-6822	3810±55	2370-2170	Szmyt, Chernyakov 1999
378	Myronivka	K 2	4	grave	HB	IA	Ki-5825	3810±55	2370-2170	Klochko 1999
379	Novoselitsa	K 19	11	grave	W	IIA	Ki-1220	3800±60	2360-2150	Telegin 1987; Subbotin, Ostroverkhov, Dzigovskiy 1995
380	Zatoka	Akkiembetskiy K	22	grave	W	IIA	Ki-6821	3775±60	2310-2100	Szmyt, Chernyakov 1999
381	Zatoka	Akkiembetskiy K	21	grave	W	IIA	Ki-6820	3760±45	2260-2090	Szmyt, Chernyakov 1999
Catacomb culture - west from the Dnieper (selected datings)										
382	Golovkovka	K 14	10	grave	HB	IA	Ki-6735	3905±55	2460-2300	Kaiser 1999
383	Golovkovka	K 23	1	grave	HB	IA	Ki-6736	3845±60	2410-2210	Kaiser 1999
384	Ordzhonikidze	Chkalovo I/K 7	8	grave	HB	IA	Ki-6558	3835±40	2390-2220	Kaiser 1999
385	Ordzhonikidze	Chorna Mogila/K 3	28	grave	HB	IA	Ki-6555	3825±40	2370-2210	Kaiser 1999
386	Ordzhonikidze	Krugla Mogila/K 11	12	grave	HB	IA	Ki-6568	3810±50	2360-2180	Kaiser 1999
387	Ordzhonikidze	Chorna Mogila/K 3	27	grave	HB	IA	Ki-6554	3805±45	2340-2180	Kaiser 1999
388	Ordzhonikidze	Chkalovo/K 11	12	grave	HB	IA	Ki-6609a	3800±50	2340-2160	Kaiser 1999

1	2	3	4	5	6	7	8	9	10	11
389	Ordzhonikidze	Krugla Mogila/K 1	18	grave	HB	IA	Ki-6563	3775±50	2290-2120	Kaiser 1999
390	Ordzhonikidze	Chkalovo/K 11	6	grave	HB	IA	Ki-6608a	3770±50	2280-2100	Kaiser 1999
391	Ordzhonikidze	Gurskij/K 1	30(2)	grave	HB	IA	Ki-6557	3765±60	2290-2080	Kaiser 1999
392	Ordzhonikidze	Krugla Mogila	k.8.g.13	grave	HB	IA	Ki-6566a	3760±50	2270-2080	Kaiser 1999
393	Ordzhonikidze	Krugla Mogila/K 1	15	grave	HB	IA	Ki-6562	3750±45	2250-2070	Kaiser 1999
394	Ordzhonikidze	Chkalovo/K 11	7	grave	HB	IA	Ki-6610a	3750±45	2250-2070	Kaiser 1999
395	Ordzhonikidze	Chorna Mogila/K 3	17	grave	HB	IA	Ki-6553	3745±50	2250-2060	Kaiser 1999
396	Ordzhonikidze	Chkalovo II/K 1	20	grave	HB	IA	Ki-6559	3740±45	2230-2060	Kaiser 1999
397	Ordzhonikidze	Krugla Mogila/K 11	17	grave	HB	IA	Ki-6569	3730±45	2210-2050	Kaiser 1999
398	Ordzhonikidze	Gurskij/K 1	30 (1)	grave	HB	IA	Ki-6556	3720±55	2210-2030	Kaiser 1999
399	Ordzhonikidze	Krugla Mogila/K 1	7(1)	grave	HB	IA	Ki-6561	3710±40	2170-2040	Kaiser 1999
400	Ordzhonikidze	Krugla Mogila/K 8	12(5)	grave	HB	IA	Ki-6565	3690±45	2150-2010	Kaiser 1999
401	Ordzhonikidze	Krugla Mogila/K 11	7	grave	HB	IA	Ki-6567	3680±50	2140-1990	Kaiser 1999
402	Ordzhonikidze	Krugla Mogila/K 8	5(1)	grave	HB	IA	Ki-6564a	3620±55	2080-1910	Kaiser 1999
Maikop culture										
403	Galugaye			settl.	?	?	OXA-3779	4930±120	3890-3600	Munchayev 1994
404	Galugaye			settl.	?	?	OXA-3778	4600±80	3490-3160	Munchayev 1994
405	Galugaye			settl.	?	?	OXA-3777	4480±70	3310-3050	Munchayev 1994
Dolmen culture (Caucasus)										
406	Psynako I			K	CH	IIC	Le- ?	4290±40	2970-2880	Markovin 1993
407	Psynako I			K	CH	IIC	Ki- ?	3520±110	2010-1720	Markovin 1993
408	Psynako I			K	CH	IIC	Ki- ?	3330±50	1680-1550	Markovin 1993
Flint mines on Ros river (Belarus) - selected datings										
409	Krasnaselski			mine	CH?	IIC	GIN-148	4310±45	3010-2890	Gurina 1976
410	Krasnaselski			mine	CH?	IIC	Le-799	3590±150	2170-1760	Gurina 1976
411	Krasnaselski			mine	CH?	IIC	Le-915	3510±110	1990-1710	Gurina 1976

¹Terminus ante quem; ²Foll. Rimantiene 1992 - a transitional phase to Pamariu culture; ³Elements of a late Narva culture; ⁴A transitional phase to Pamariu culture;

⁵Foll. Rimantiene, Butrimas 1991 - connected with Pamariu culture; ⁶Elements of Corded Ware culture; ⁷Charcoals in a clay (relics of an organic temper in a pottery).;

⁸North Belarusian culture; ⁹North Belarusian culture; ¹⁰Elements of Middle Dnieper culture; ¹¹Elements of Middle Dnieper culture; ¹²Elements of Middle Dnieper culture;

¹³Elements of Middle Dnieper culture; ¹⁴Elements of Middle Dnieper culture; ¹⁵Machnik, Ścibior 1991 - 3880±100 BP; ¹⁶Artifact; ¹⁷Artifact; ¹⁸Artifact; ¹⁹Teeth;

²⁰A settlement of the late Volosovo culture with elements of Fatyanovo; ²¹A settlement of the late Volosovo culture with elements of Fatyanovo; ²²A settlement of the late

Volosovo culture with elements of Fatyanovo; ²³In Kraynov 1991 - 3780±130 BP; ²⁴Elements of GAC; ²⁵Elements of GAC; in Rimantiene 1992b -

4160±110 BP; ²⁶Elements of GAC; ²⁷Elements of GAC; ²⁸In Zaitseva et al. 1994 - Le-4108; ²⁹In Zaitseva et al. 1994 - 4440±50 BC; ³⁰In Zaitseva et al. 1994 -

TA-243; ³¹Error?; ³²In Zaitseva et al. 1994 - Le-649; ³³Or Sertey [Zaitseva et al. 1994]; ³⁴In Rimantiene 1992b - Vib-1.

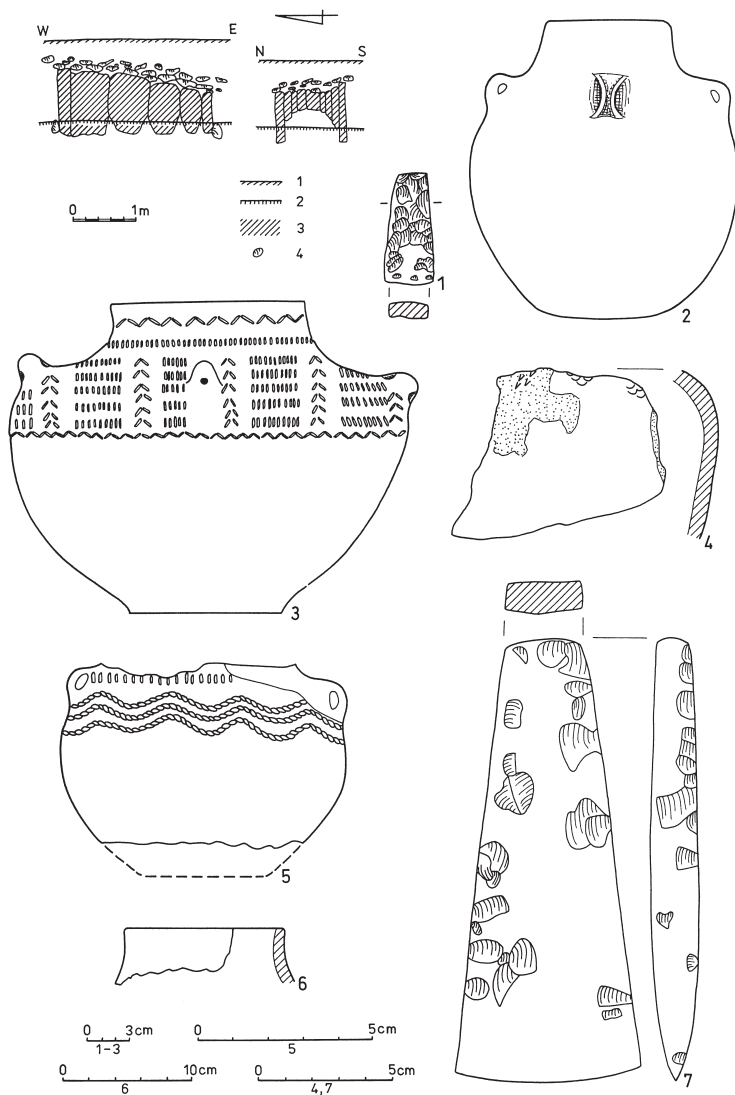


Plate 1. Graves of the Globular Amphora culture (group I and II).

Plan and cross-section of grave from Aneta (Key: 1 - humus, 2 - rock-bed, 3 - slabs, 4 - stones) [foll. Sveshnikov 1983]. Goods: 1 - 3 - Aneta [foll. Sveshnikov 1983]; 4 - Beremiany II (coll. of AMK); 5 - Busk [foll. Sveshnikov 1983]; 6 - Dobryvoda [foll. Sveshnikov 1983]; 7 - Bratyshev II (coll. of AMK). 1, 7 - flint, 2-6 - pottery.

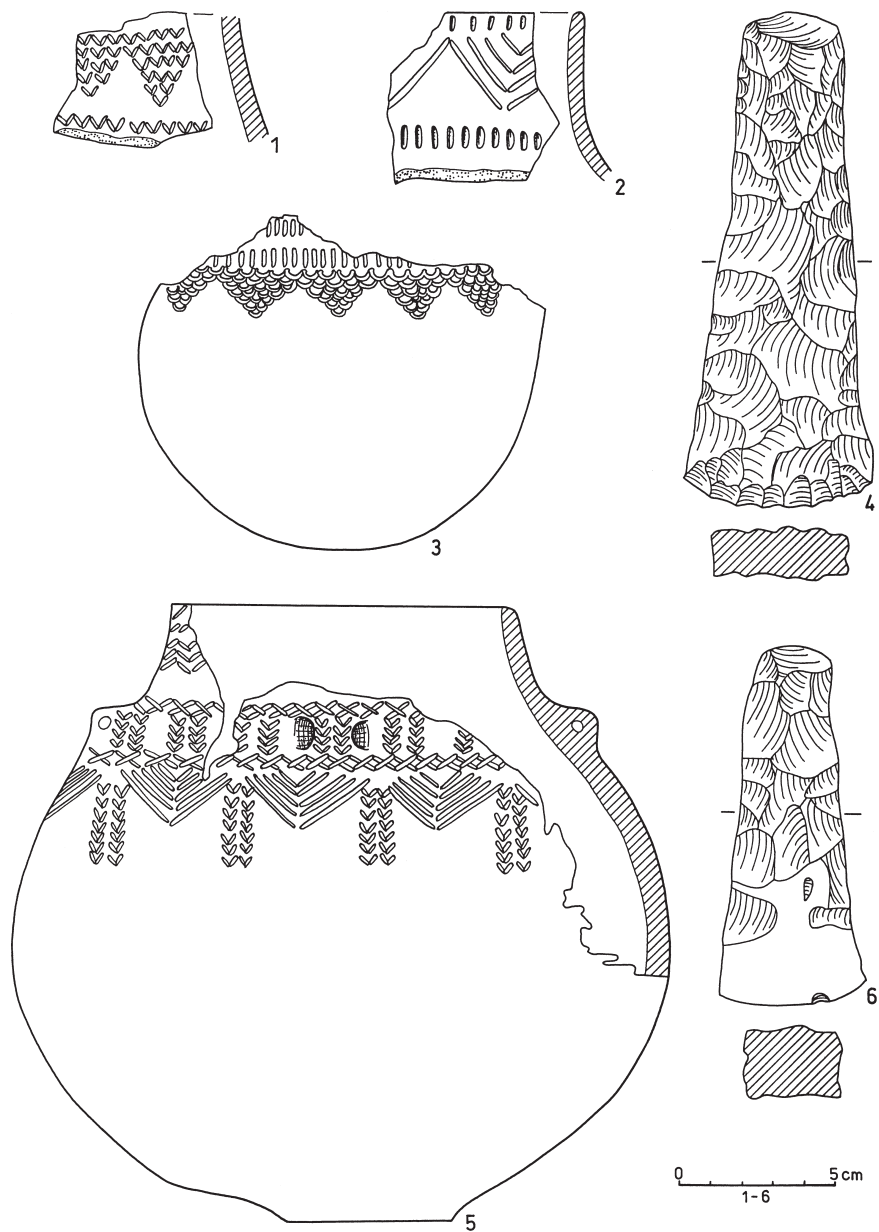


Plate 2. Graves of the Globular Amphora culture (group I).

Goods: 1,2,4,6 - Bavoriv-Zastave I or II [archives of Sveshnikov]; 3,5 - Bavoriv-Zastave I [archives of Sveshnikov]. 1-3,5 - pottery, 4,6 - flint.

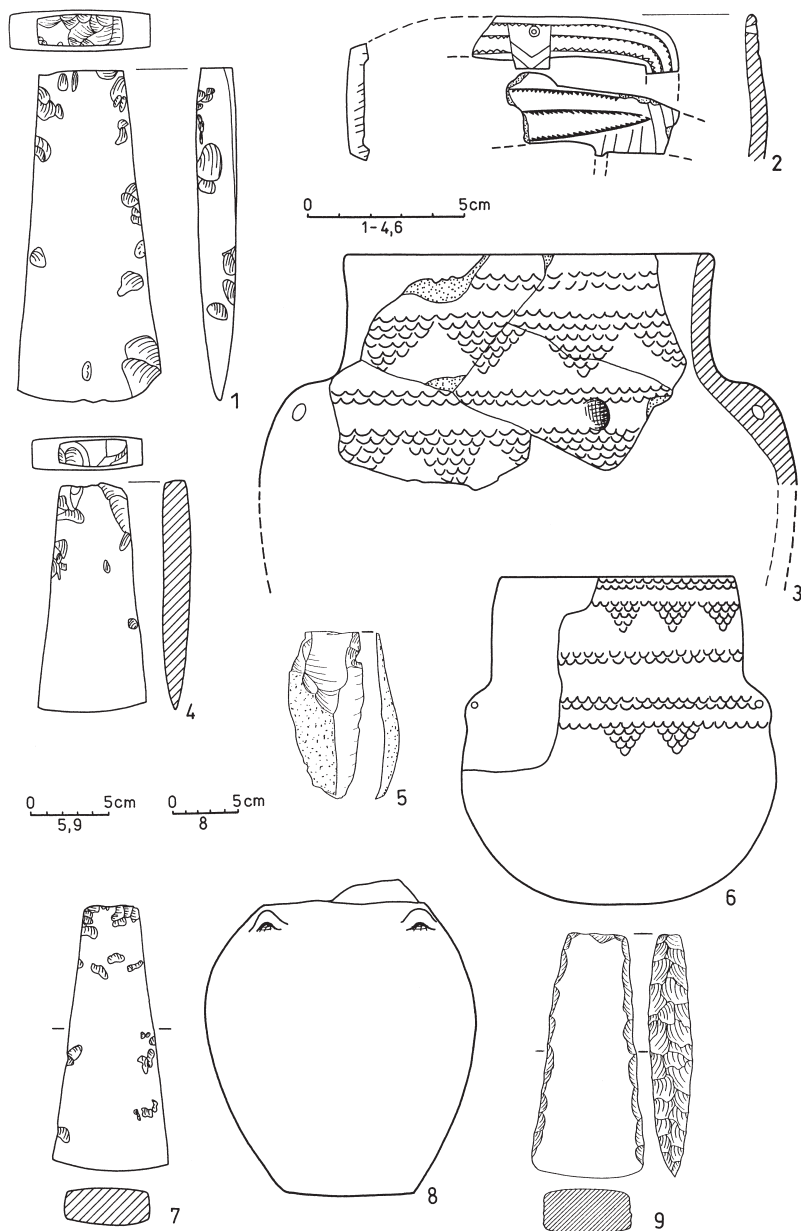


Plate 3. Graves of the Globular Amphora culture (group I and II).

Goods: 1,6,7 - Chornivody (coll. of HML) ; 2-5 - Chornokinty (coll. of AMK and HML); 8-9 - Cherniakhiv [archives of Sveshnikov]. 1,4-5,7,9 - flint, 2 - bone, 3,6,8 - pottery.

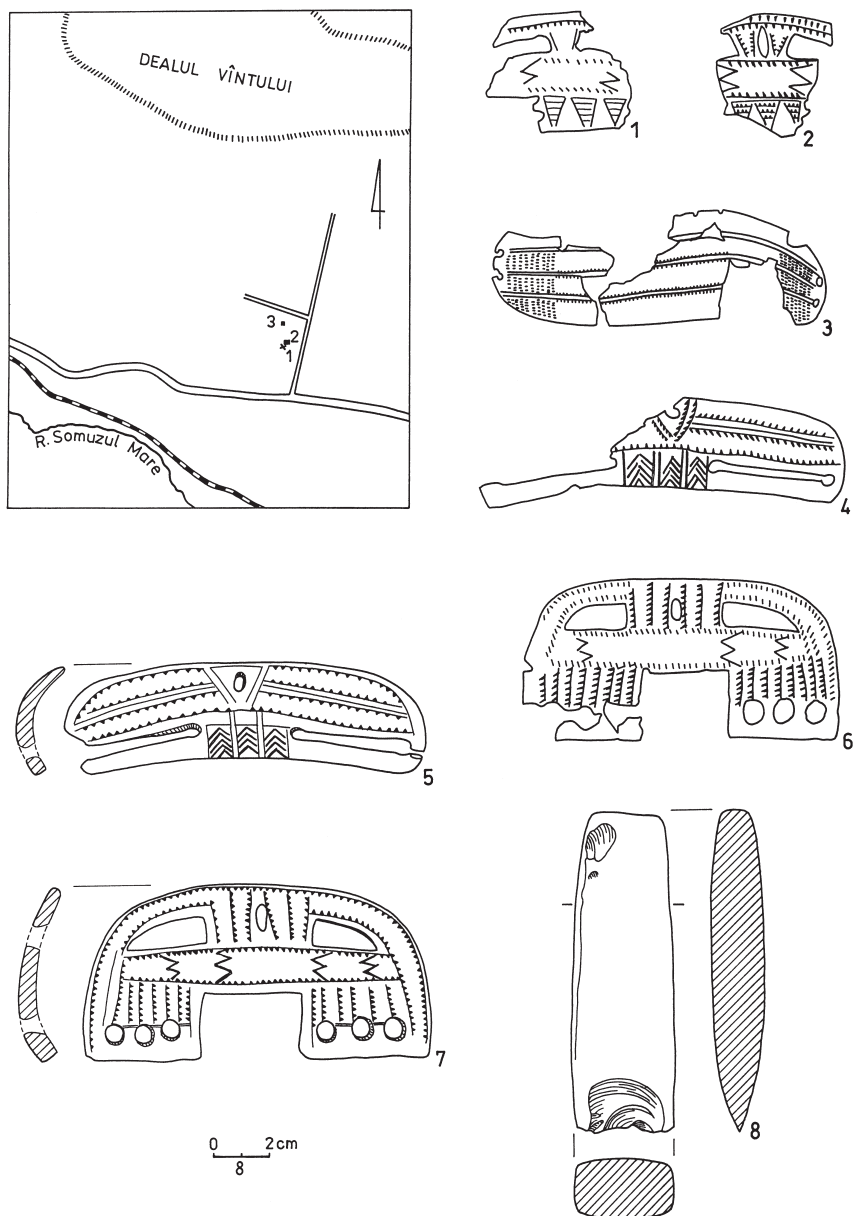


Plate 4. Graves of the Globular Amphora culture (group I).
 Dolheştii Mari [foll. Dinu 1960a]. Location of graves (Key: 1 - grave no.1, 2 - "animal grave", 3 - grave no. 2). Goods: 1-2 - grave 1; 3-8 - grave 2. 1-7 - bone, 8 - flint.

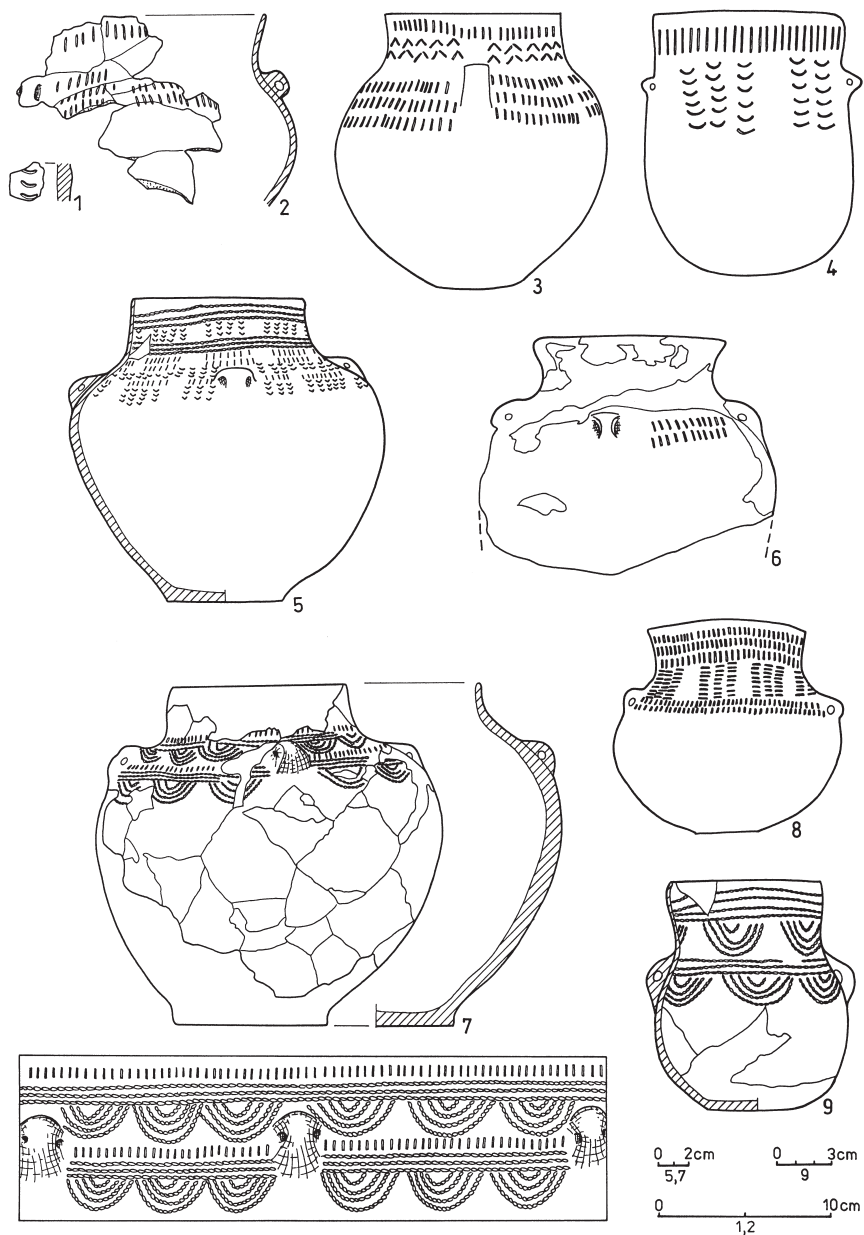


Plate 5. Graves of the Globular Amphora culture (group I).
 Dolheştii Mari [foll. Dinu 1959, 1960a, 1960b]. Goods: 1 - grave 3; 2 - grave 4; 3-6,8,9 - grave 2; 7 -
 "animal grave"; 1-9 - pottery. Note: nos. 3,4,6,8 - not to scale.

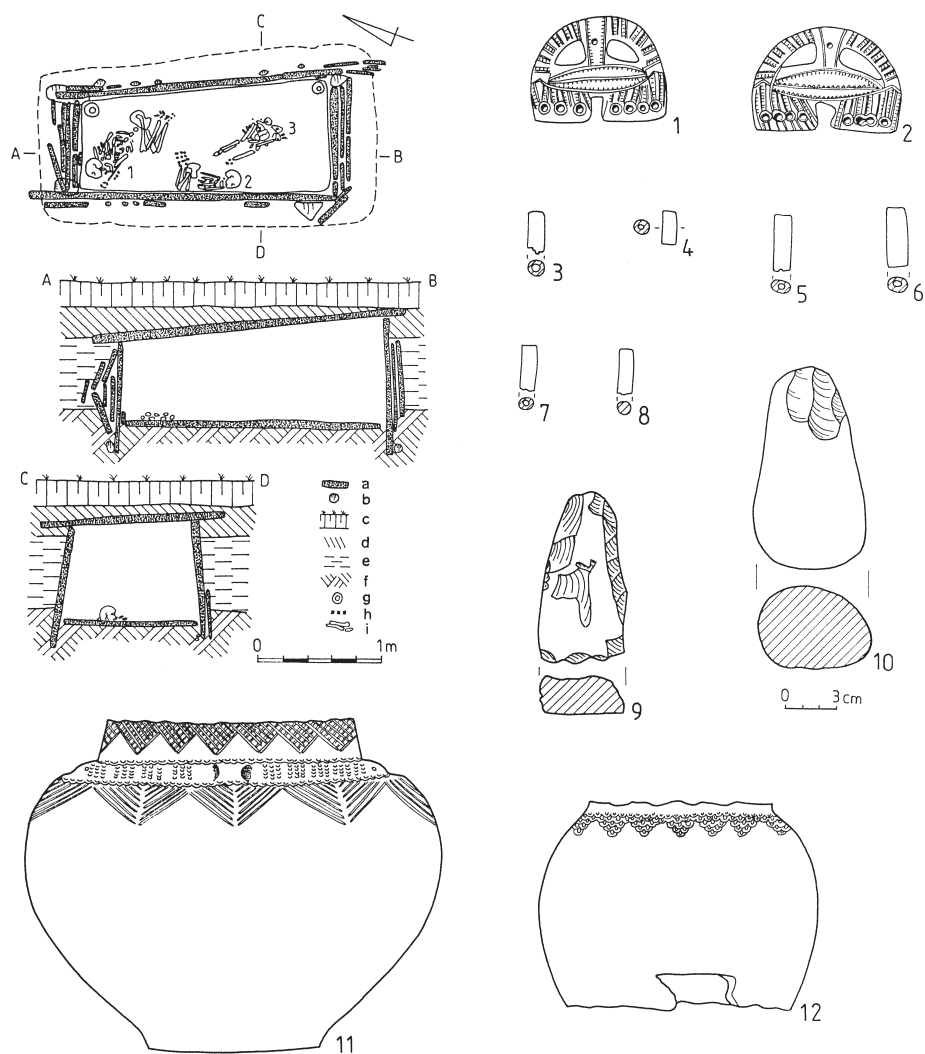
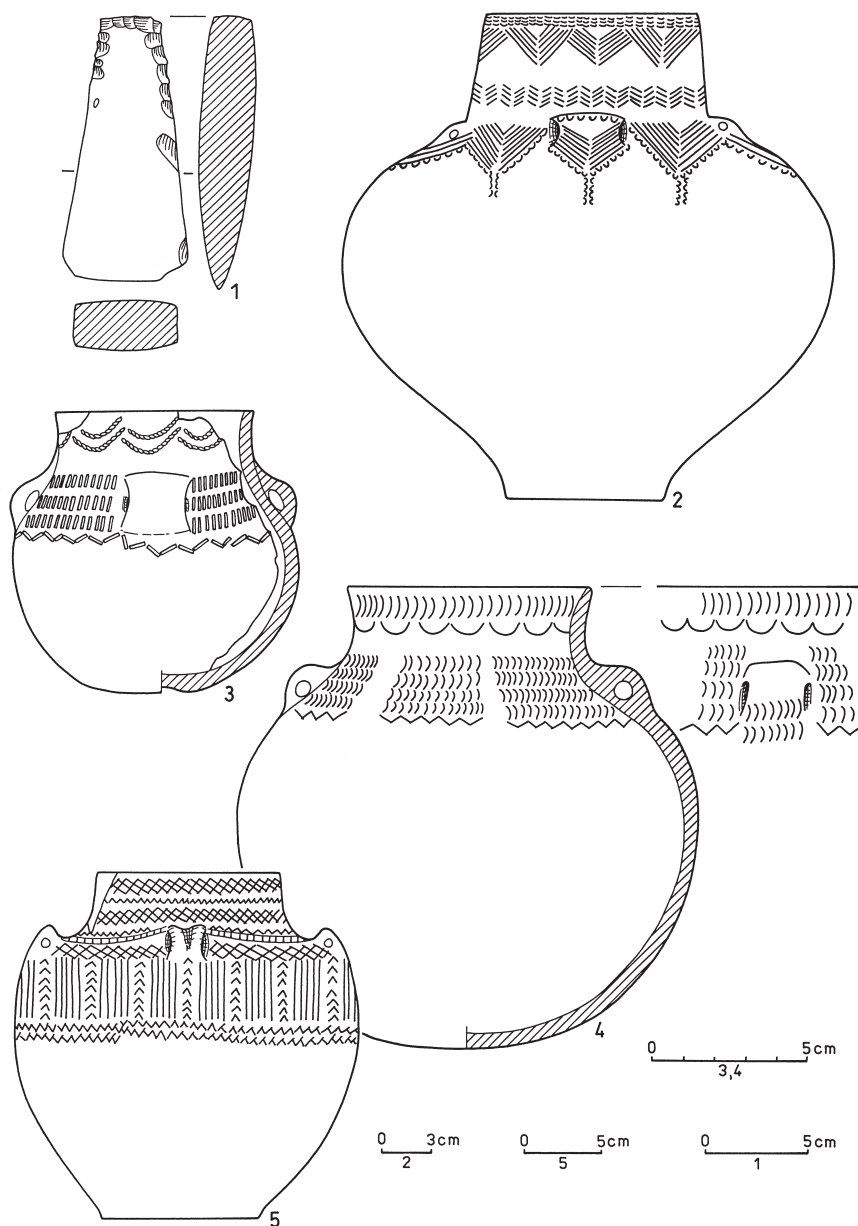


Plate 6. Graves of the Globular Amphora culture (group I).

Dovge [foll. Sveshnikov 1983]. Plan and cross-sections of grave and goods (Key: a - slabs, b - stones, c - arable layer, d - chernozem, e - sandy clay, f - rock-bed, g - vessels, h - amber ornaments, i - bones). 1-2 - bone, 3-8 - amber, 9-10 - flint, 11-12 - pottery.



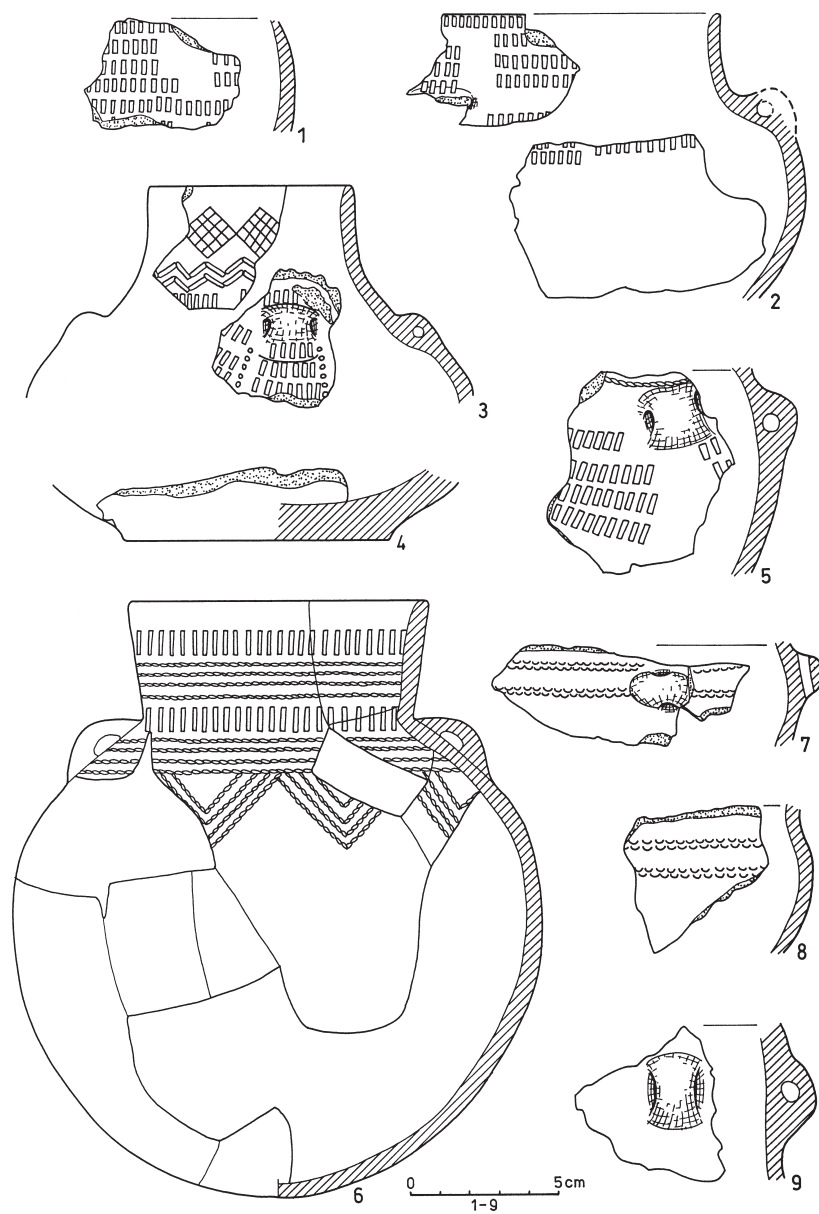


Plate 8. Graves of the Globular Amphora culture (group I).
Glibochok-Popovy doliny. Goods (coll. of HML). 1-9 - pottery.



Plate 9. Graves of the Globular Amphora culture (group I).
 Glibochok-Popovy doliny. Goods [coll. of HML; foll. Sveshnikov 1983]. 1 - bone, 2-8 - flint.

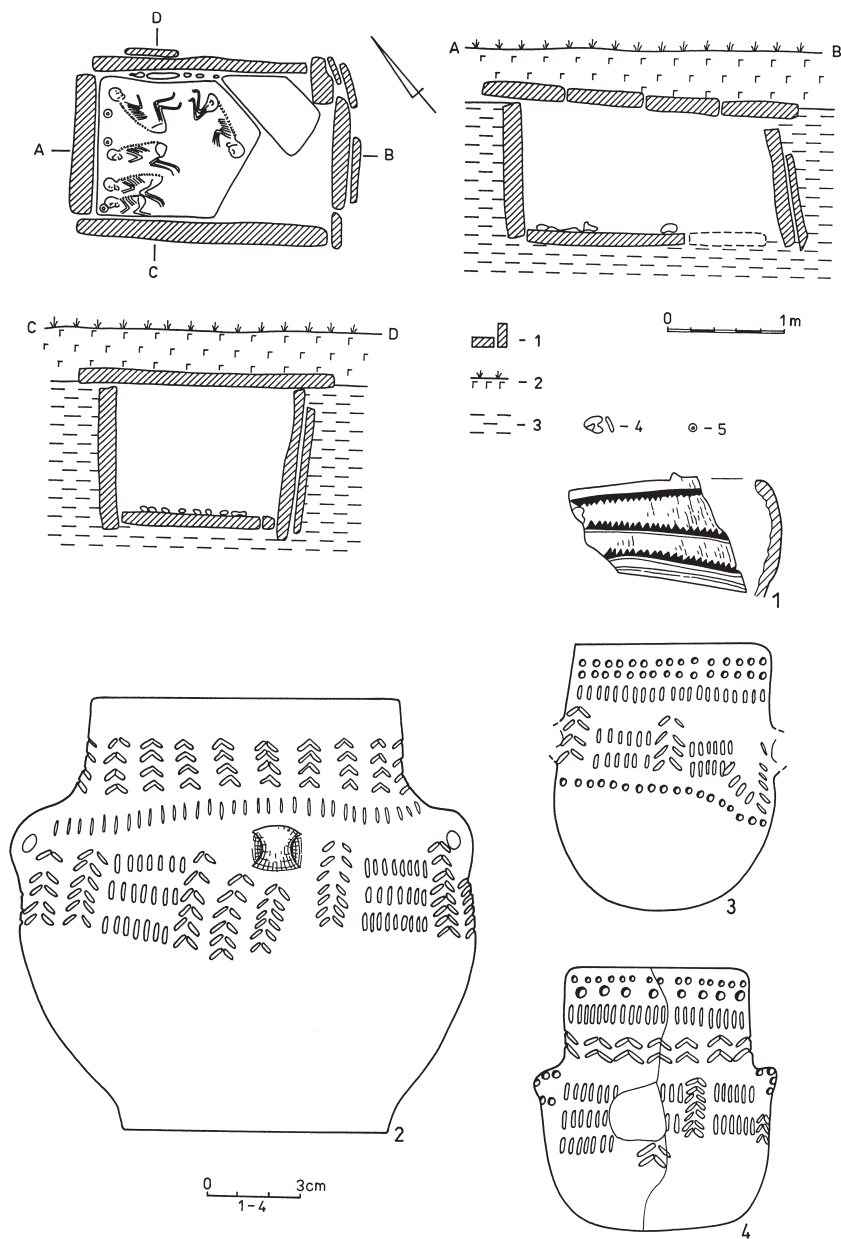


Plate 10. Graves of the Globular Amphora culture (group I).
 Gorbasiv [foll. Sveshnikov 1983]. Plan and cross-sections of grave and goods (Key: 1 - slabs, 2 - present surface, 3 - sandy clay, 4 - skeletons, 5 - vessels). 1 - bone, 2-4 - pottery.

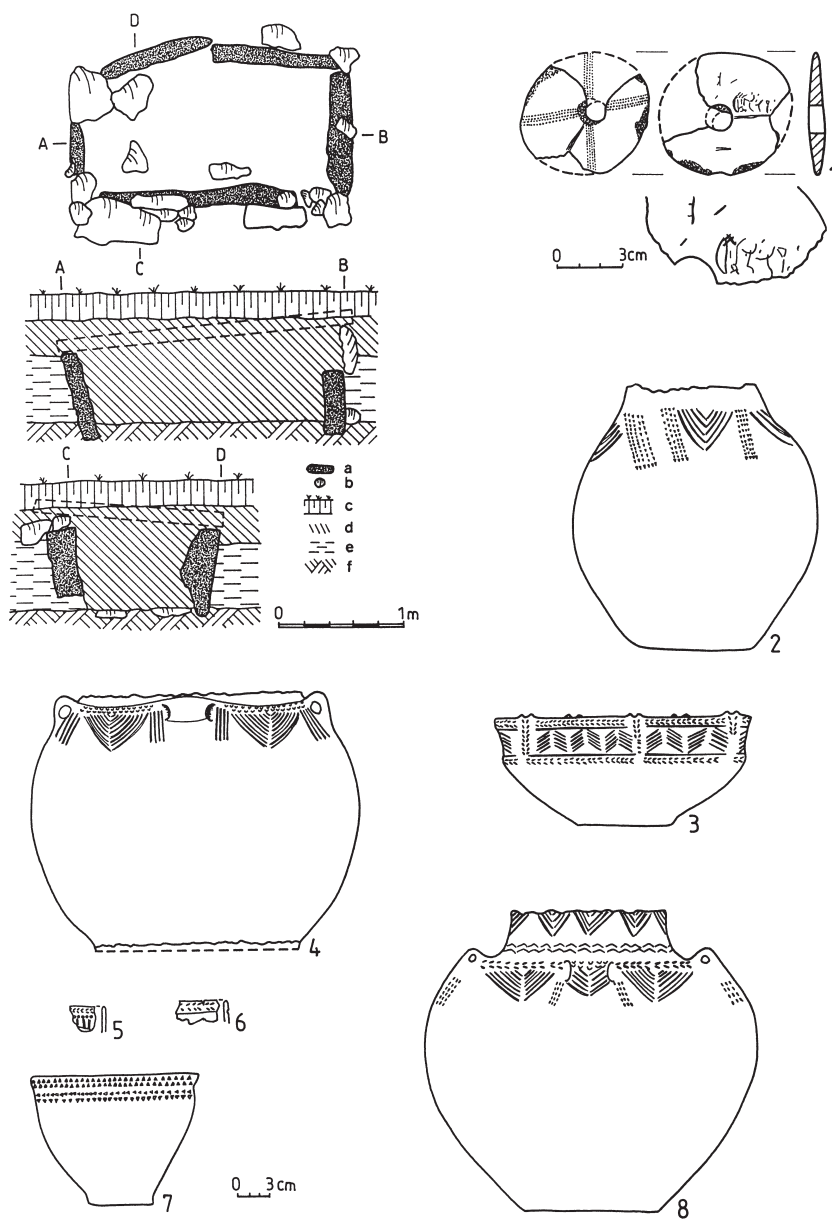


Plate 11. Graves of the Globular Amphora culture (group I).

Ivanye [foll. Sveshnikov 1983]. Plan and cross-sections of grave and goods (Key: a - slabs, b - stones, c - arable layer, d - chernozem, e - sandy clay, f - rock-bed). 1 - amber, 2-8 - pottery.

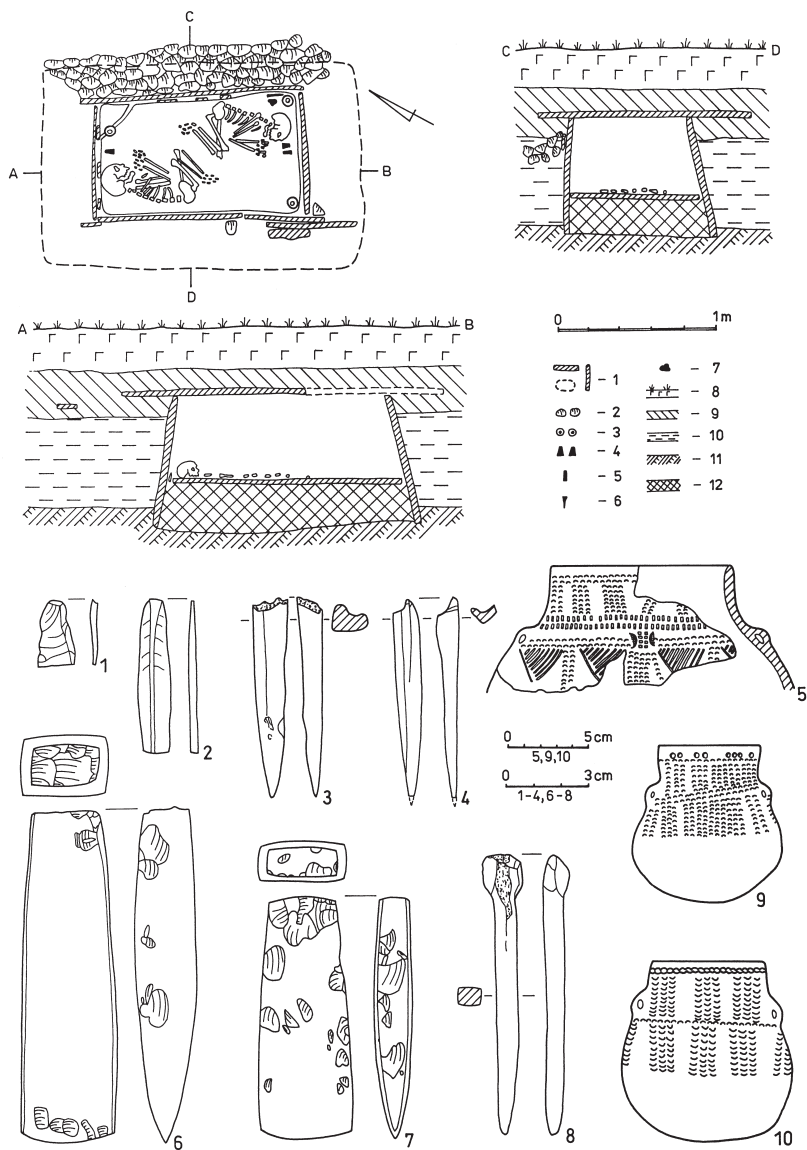


Plate 12. Graves of the Globular Amphora culture (group I).

Khartonivtsy I [partially foll. Sveshnikov 1983]. Plan and cross-sections of grave and goods (Key: 1 - slabs, 2 - stones, 3 - vessels, 4 - axes, 5 - flint knife, 6 - horn implements, 7 - flake, 8 - humus, 9 - chernozem, 10 - sandy clay, 11 - rock-bed, 12 - earth scattered on the floor of the grave). 1-2, 6-7 - flint, 3-4, 8 - bone, 5, 9-10 - pottery.

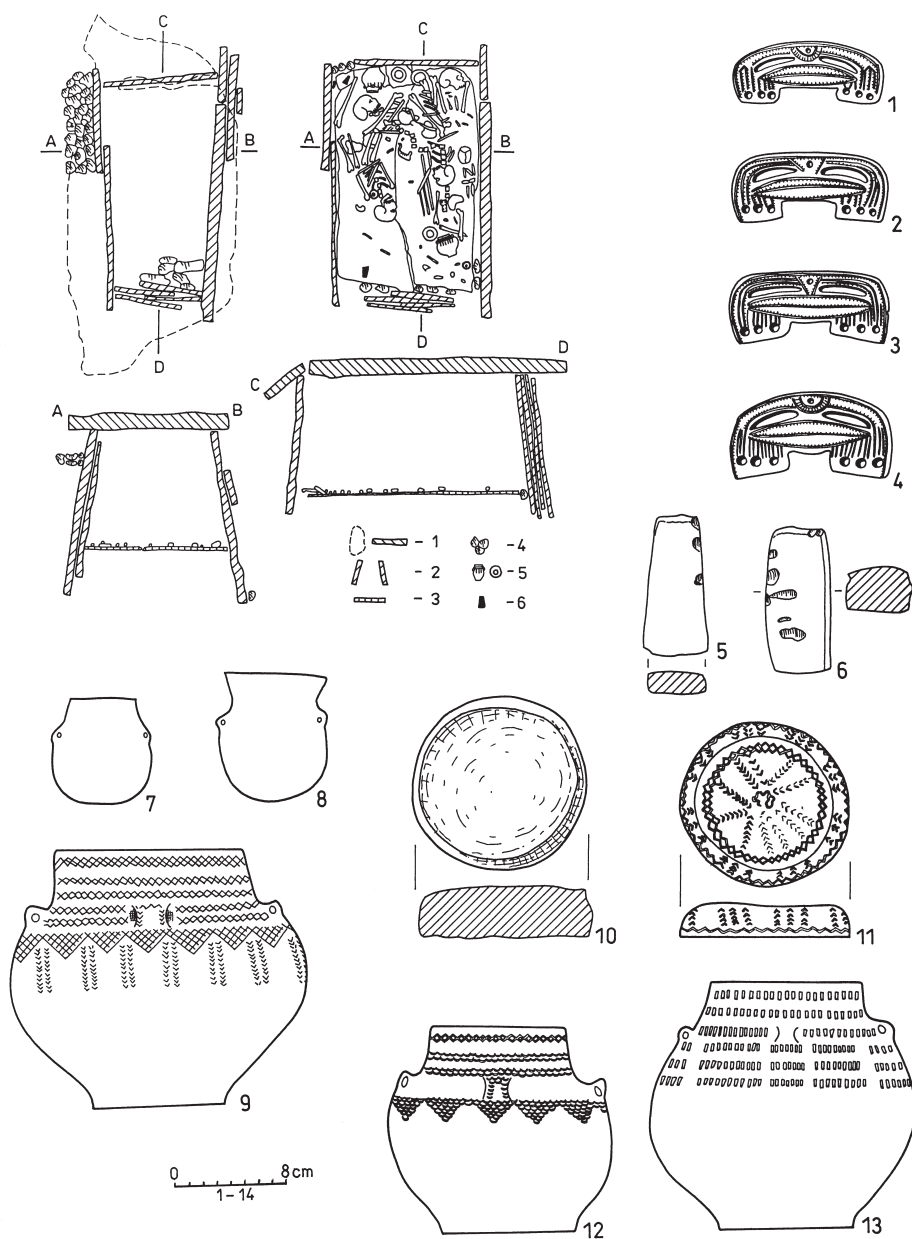


Plate 13. Graves of the Globular Amphora culture (group I).
 Khartonivtsy II [foll. Sveshnikov 1983]. Plan and cross-sections of grave and goods (Key: 1-3 - slabs, 4 - stones, 5 - vessels, 6 - flint axes). 1-4 - bone, 5-6 - flint, 7-13 - pottery.

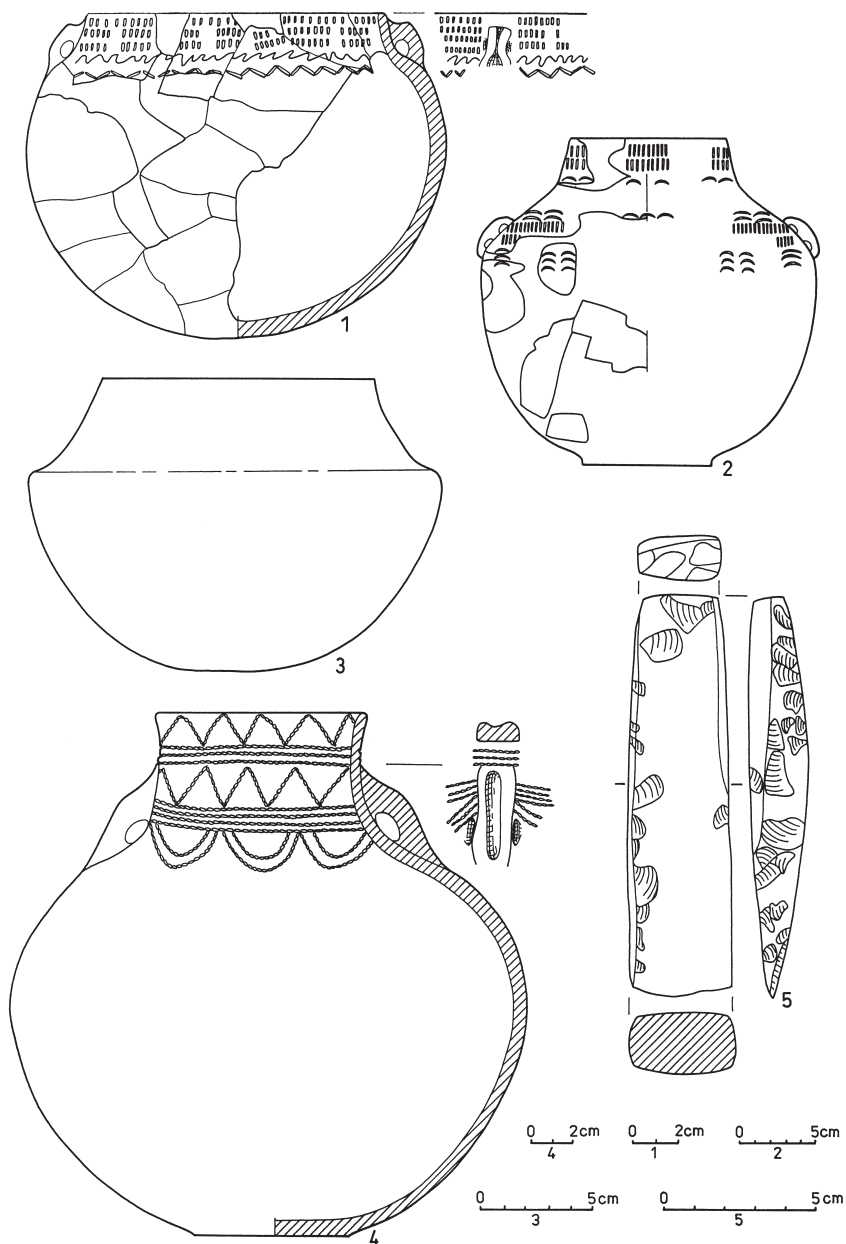


Plate 14. Graves of the Globular Amphora culture (group I).

Kikova I. Goods [1,4 - coll. of HMK.; 3 - foll. Sveshnikov 1983; 5 - archives of Maleyev]. 1-4 - pottery, 5 - flint.

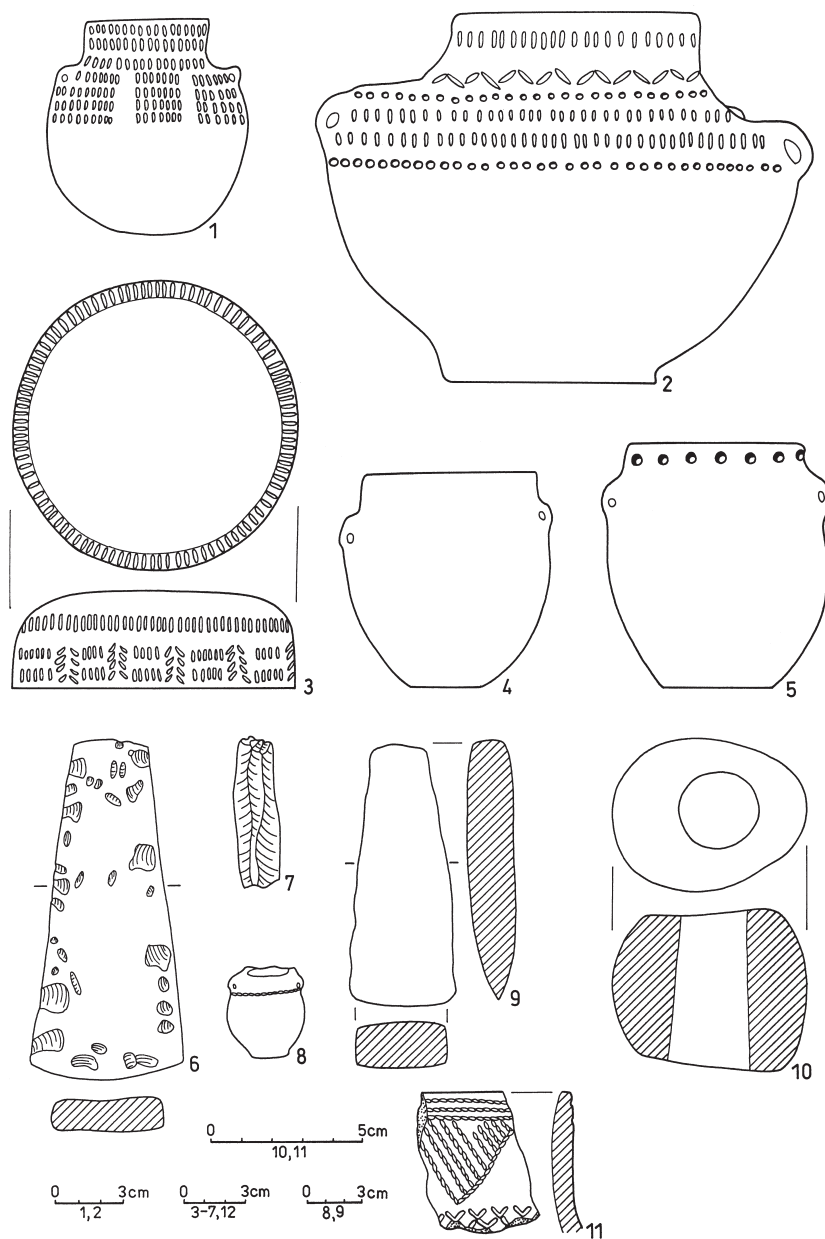


Plate 15. Graves of the Globular Amphora culture (group I).

Goods: 1 - 2 - Kikova I [foll. Sveshnikov 1983]; 3 - 7 - Kolosivka [foll. Sveshnikov 1983]; 8 - 9 - Kolubayevka-Kozavshchina [foll. Sulimirski 1968]; 10-11 - Koshylivtsy (coll. of AMK). 1-5,8,11 - pottery, 6-7,9 - flint, 10 - stone.

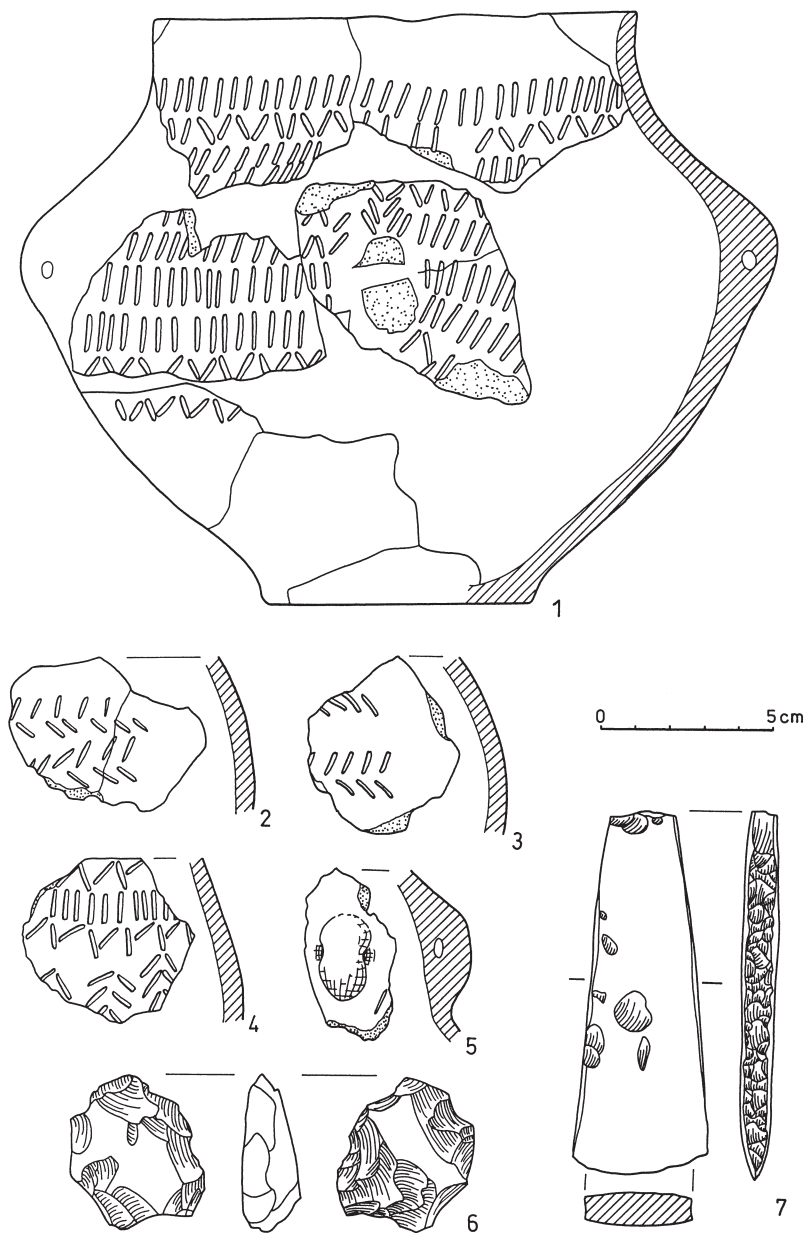


Plate 16. Graves of the Globular Amphora culture (group I).
Goods: Kolosivka (coll. of IA NAS). 1-5 - pottery, 6-7 - flint.

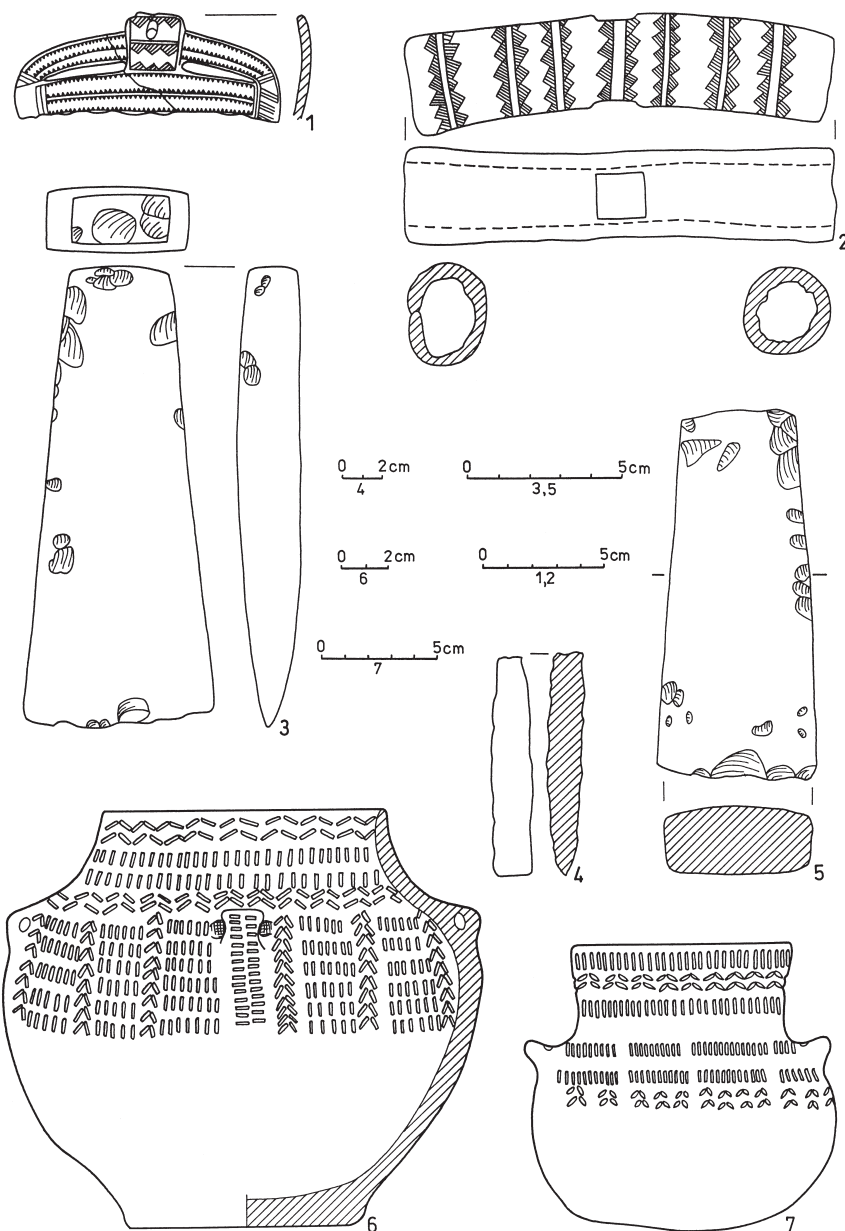


Plate 17. Graves of the Globular Amphora culture (group I).

Goods: 1-2 - Kanev [archives of Maleyev]; 3 - 5 - Khorostkiv [4 - foll. Sulimirski 1968; 5 - archives of Sveshnikov]; 6 - 7 - Kikova II [6 - coll. of HMK; 7 - Sveshnikov 1983]. 1-2 - bone, 3-5 - flint, 6-7 - pottery.

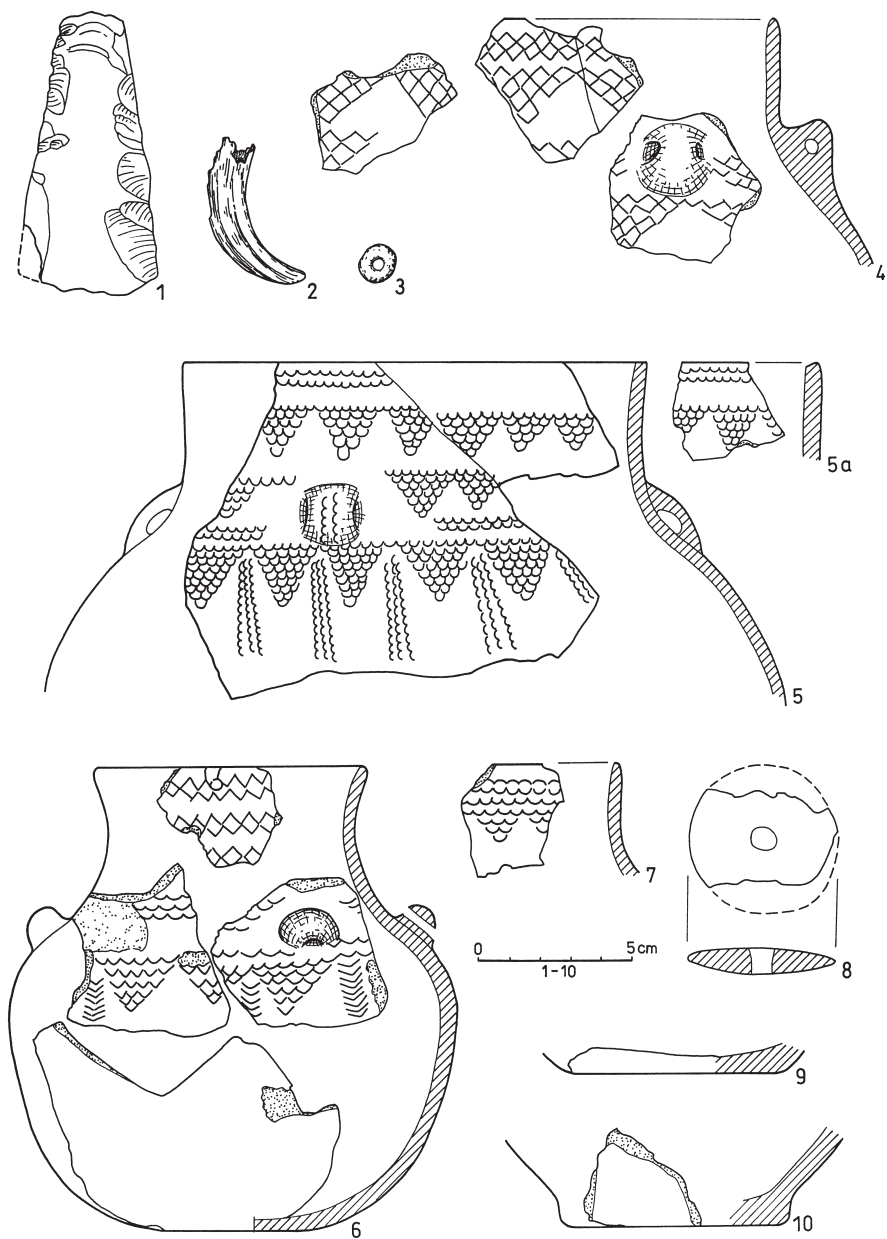


Plate 18. Graves of the Globular Amphora culture (group I).
Kotsiubintsy. Goods [1-3 - foll. Antoniewicz 1938; 4-10 - coll. of AMK]. 1 - flint, 2 - bone, 3 - stone,
4-7,9-10 - pottery, 8 - amber.

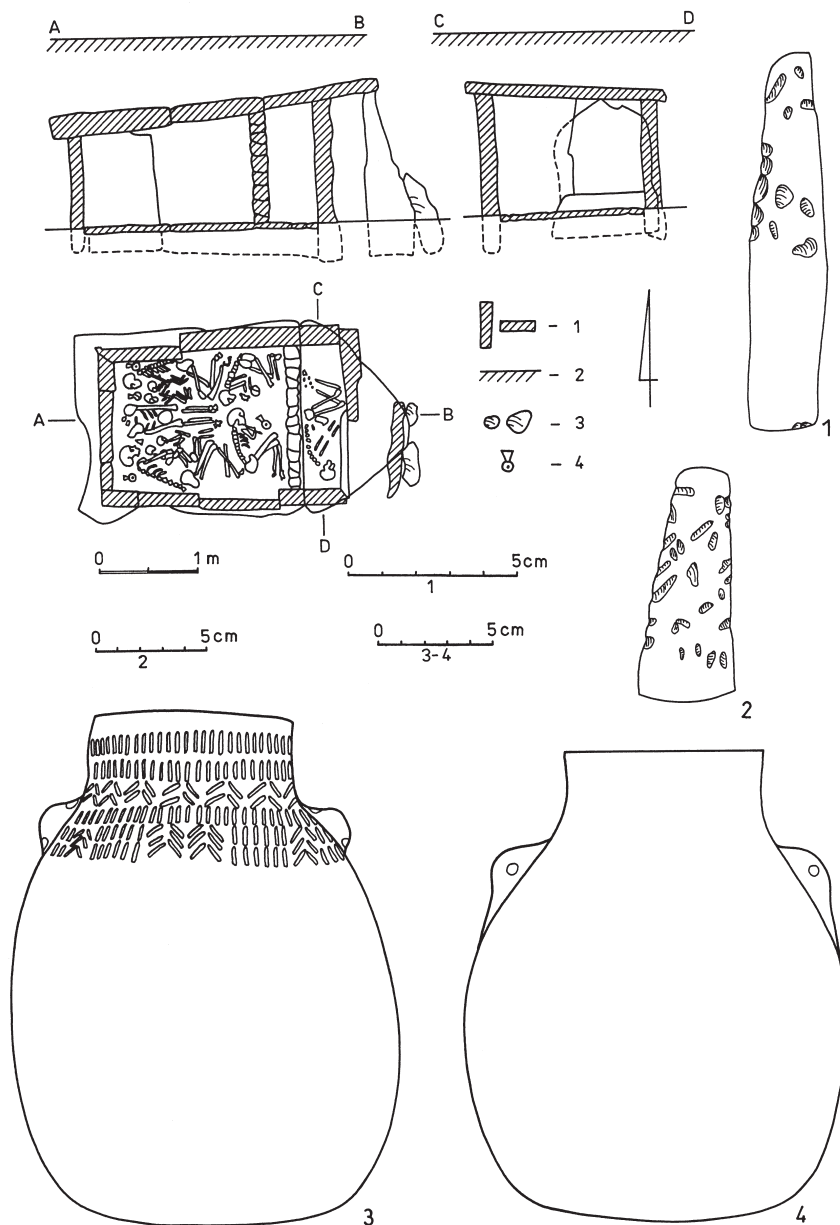


Plate 19. Graves of the Globular Amphora culture (group I).

Kolodiezno II. Plan and cross-sections of grave (Key: 1 - slabs, 2 - present surface, 3 - stones, 4 - vessels) [foll. Levitskiy 1930]. Goods [1-2 - foll. Sveshnikov 1983; 3-4 - archives of Lagodovska]. 1-2 - flint, 3-4 - pottery.

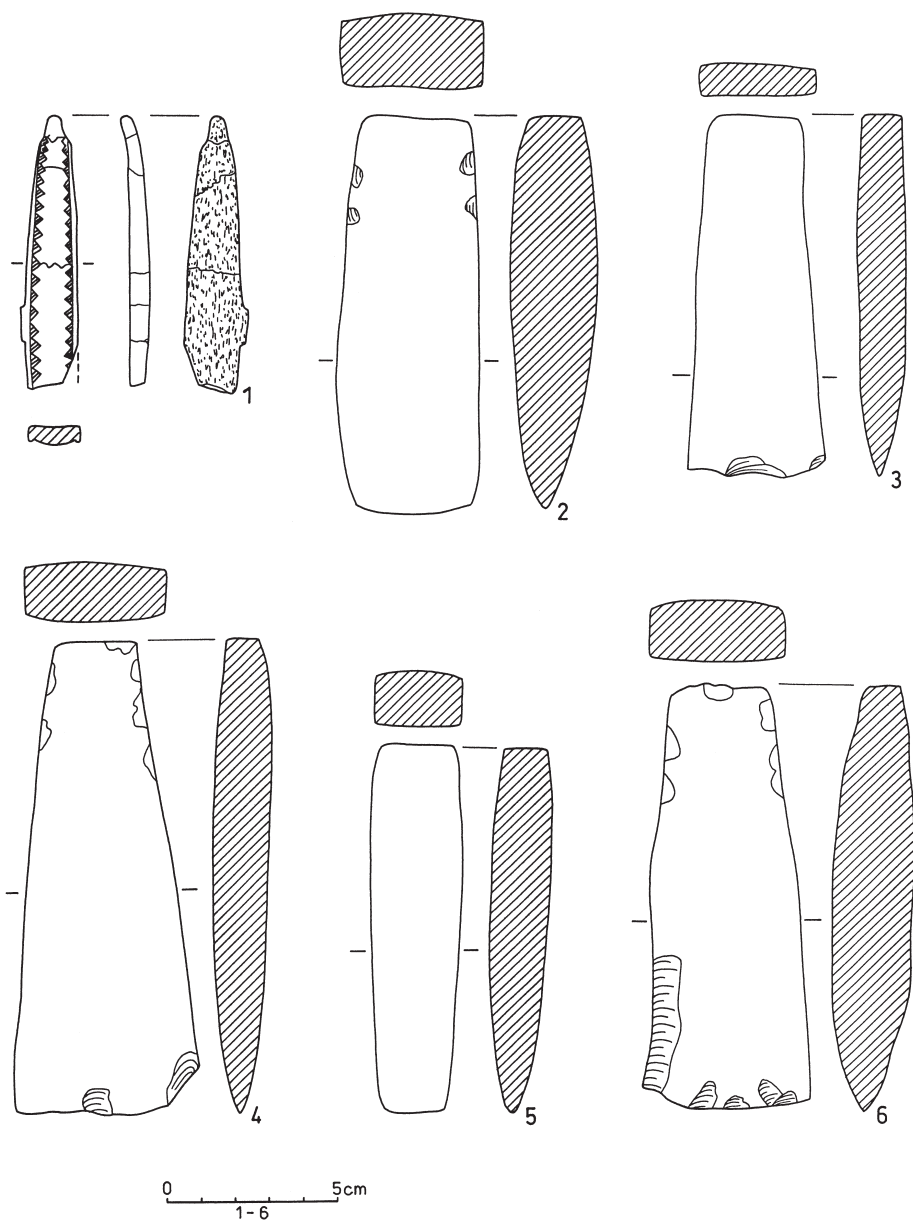


Plate 20. Graves of the Globular Amphora culture (group I).

Kolodiezno II. Goods [1 - coll. of HMK.; 2 - 6 - archives of Lagodovska]. 1 - bone, 2-6 - flint.

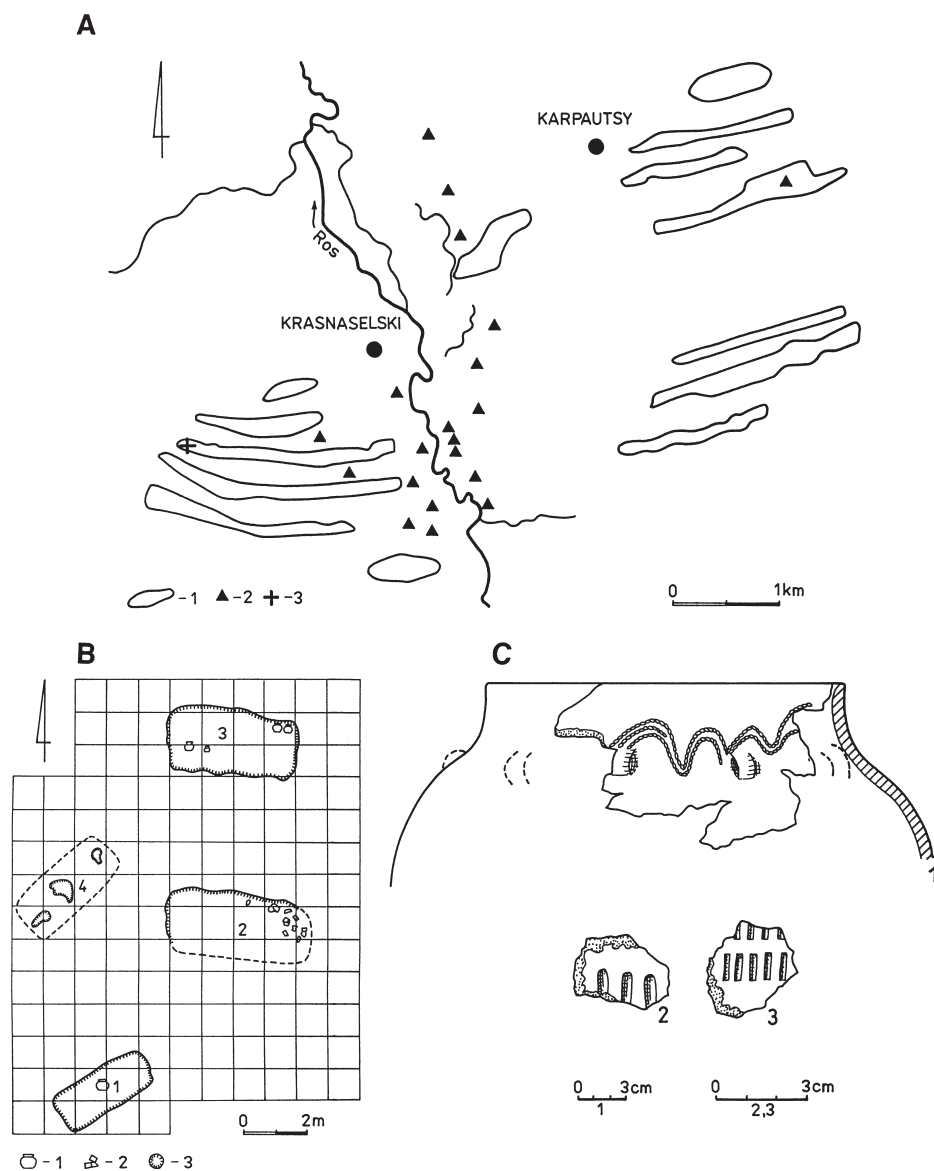


Plate 21. Graves of the Globular Amphora culture (group I).

Krasnaselski 1. A. Location of cemetery (Key: 1 - chalk layers, 2 - sites, 3 - GAC cemetery). B. Location of features (Key: 1 - vessels, 2 - stones). C. Goods (1 - feature 1; 2 - 3 - feature 2) [foll. Charniauski 1996; Charniauski, Kudrashou, Lipnitskaya 1996]. 1-3 - pottery.

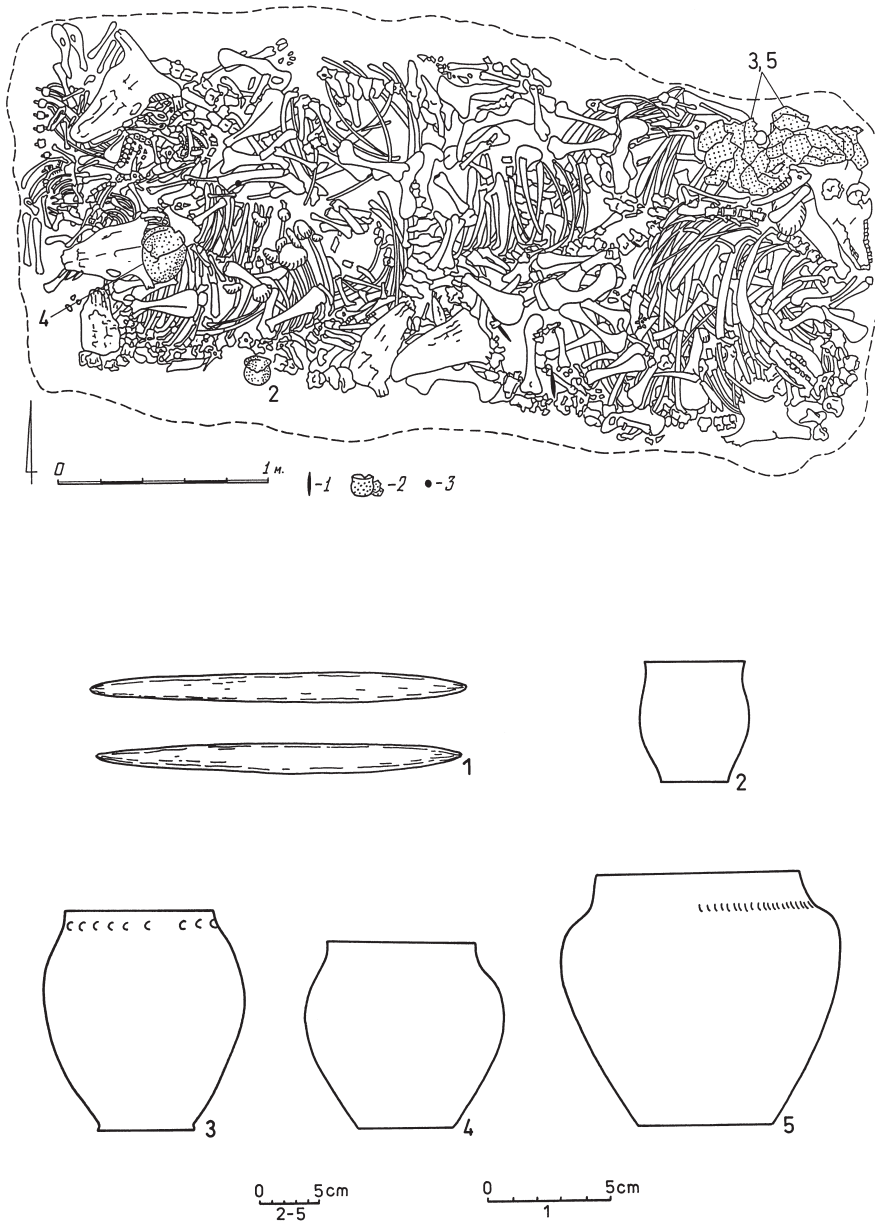


Plate 22. Ritual features of the Globular Amphora culture (group III).
Krasnaselski 1. Plan of the feature 3 and goods [foll. Charniauski 1996]. 1 - bone, 2-5 - pottery.

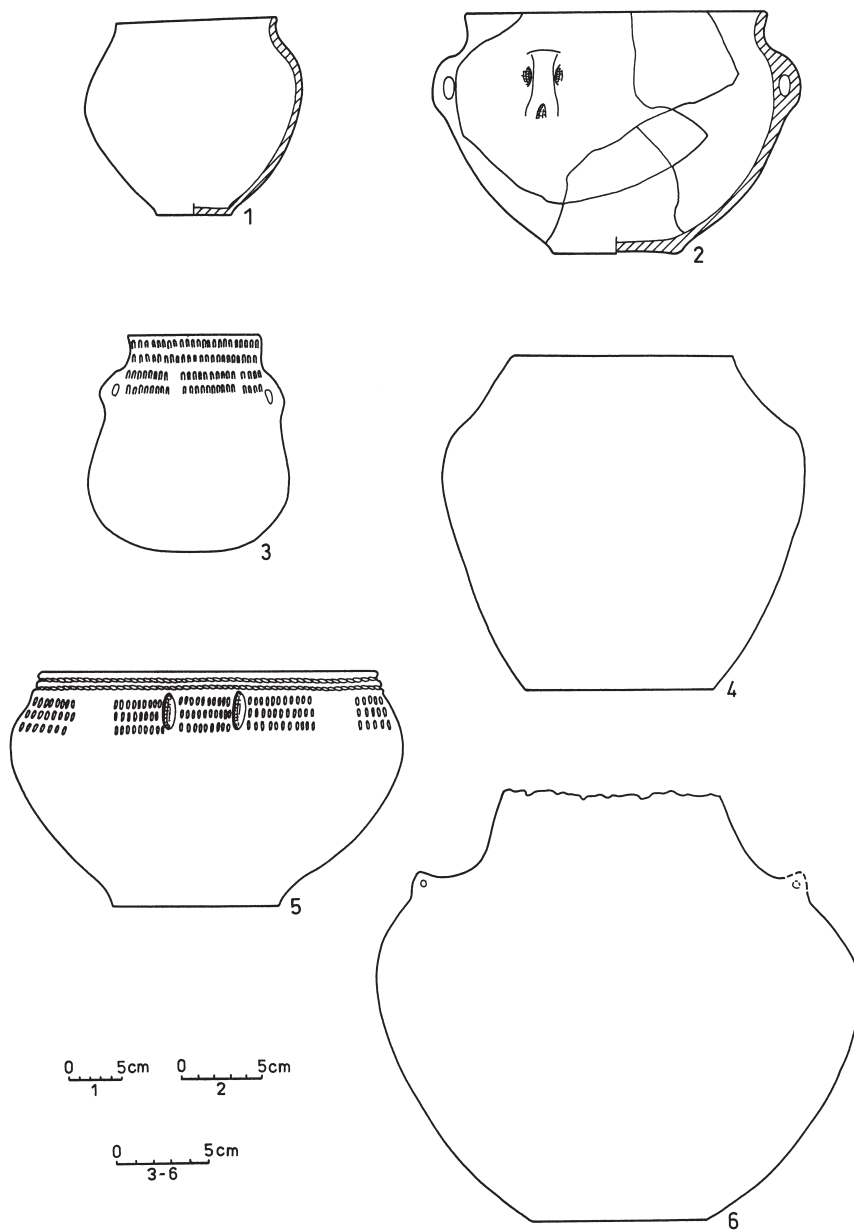


Plate 23. Graves of the Globular Amphora culture (group I).
Kutyanka. Goods [foll. Sveshnikov 1983 and coll. of Volhynian Museum in Lutsk]. 1-6 - pottery.

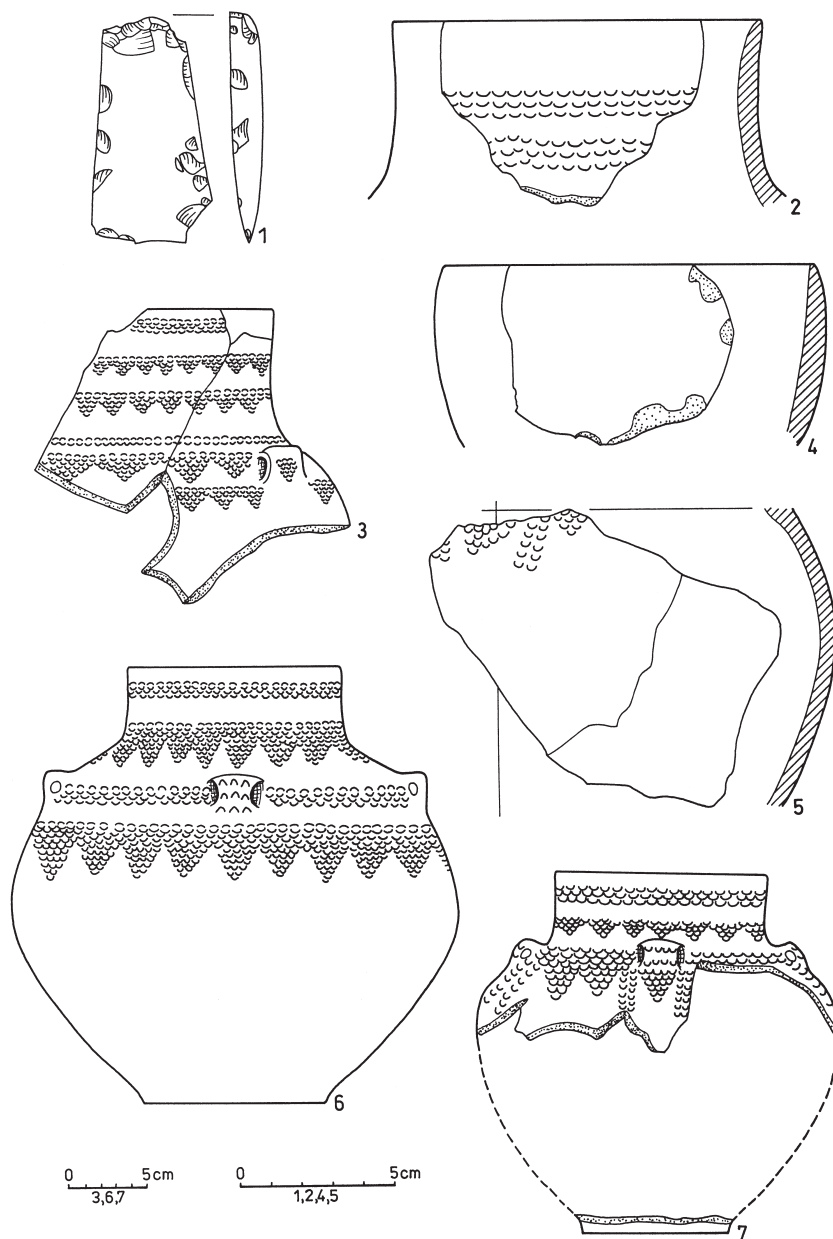


Plate 24. Graves of the Globular Amphora culture (group I and II).

Goods: 1 - Kuzminchyk (coll. of AMK); 2 - 7 - Lepesivka [2,4,5 - coll. of Museum in Zhitomir; 3,6,7 - foll. Sveshnikov 1983]. 1 - flint, 2-7 - pottery.

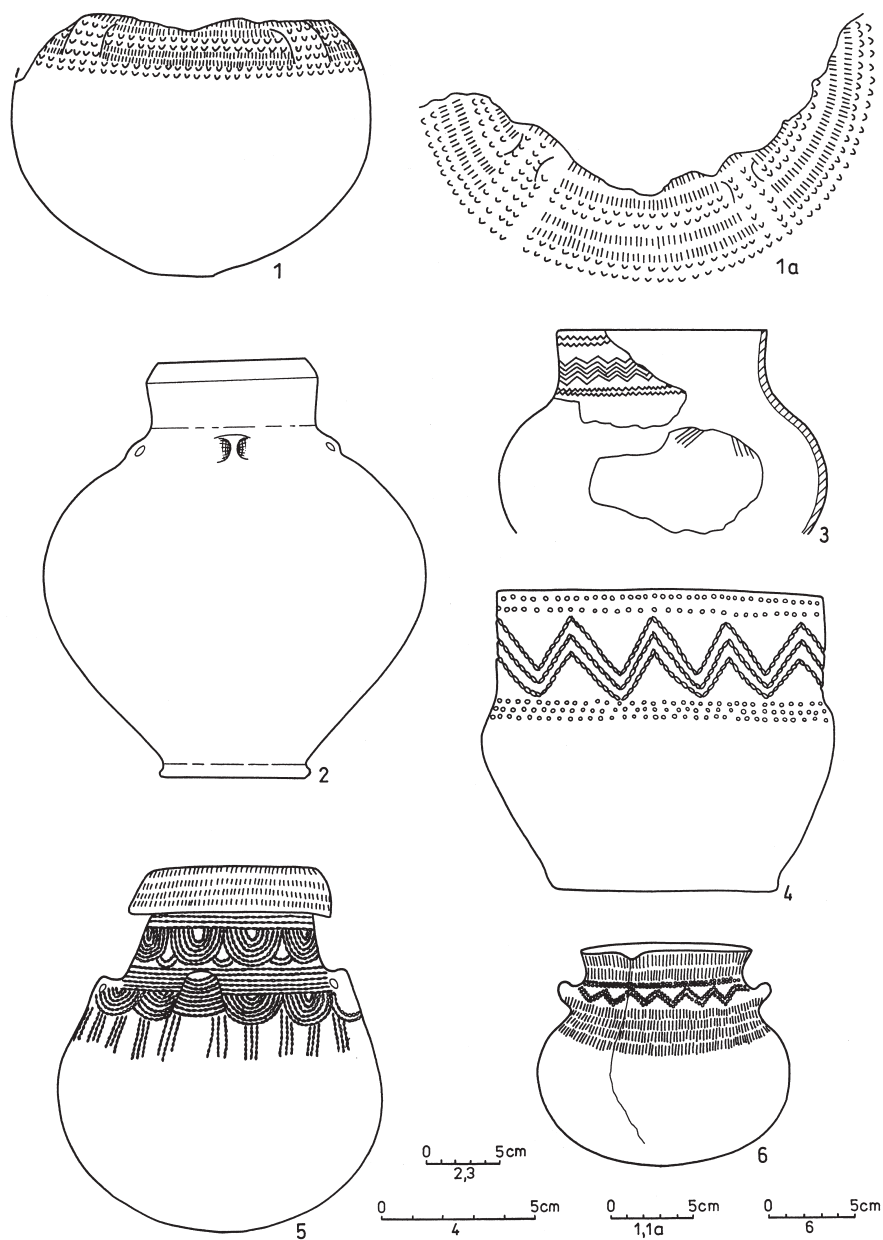


Plate 25. Graves of the Globular Amphora culture (group I).

Goods: 1 - Letychev-Zavovk [foll. Prikhodnyuk 1970]; 2 - 3 - Mikhnov [foll. Sveshnikov 1983]; 4 - Miropol [archives of Sveshnikov]; 5 - Miniyki [foll. Antoniewicz 1938]; 6 - Nova Sinyava [foll. Sulimirski 1968]. 1-6 - pottery. Note: no. 5 - not to scale.

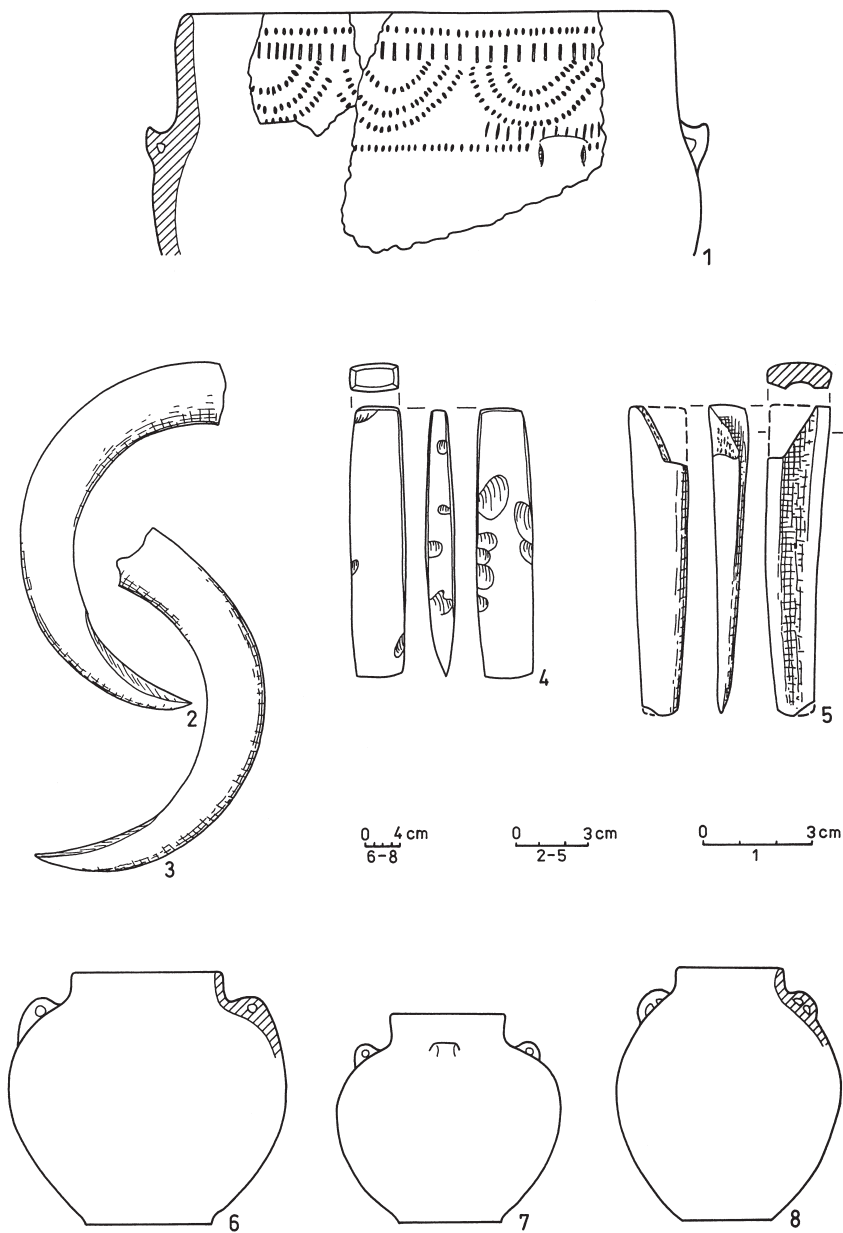


Plate 26. Graves of the Globular Amphora culture (group I).
Mali Yodkavichi. Goods [coll. Charniauski 1996]. 1,6-8 - pottery, 2-3,5 - bone, 4 - flint.

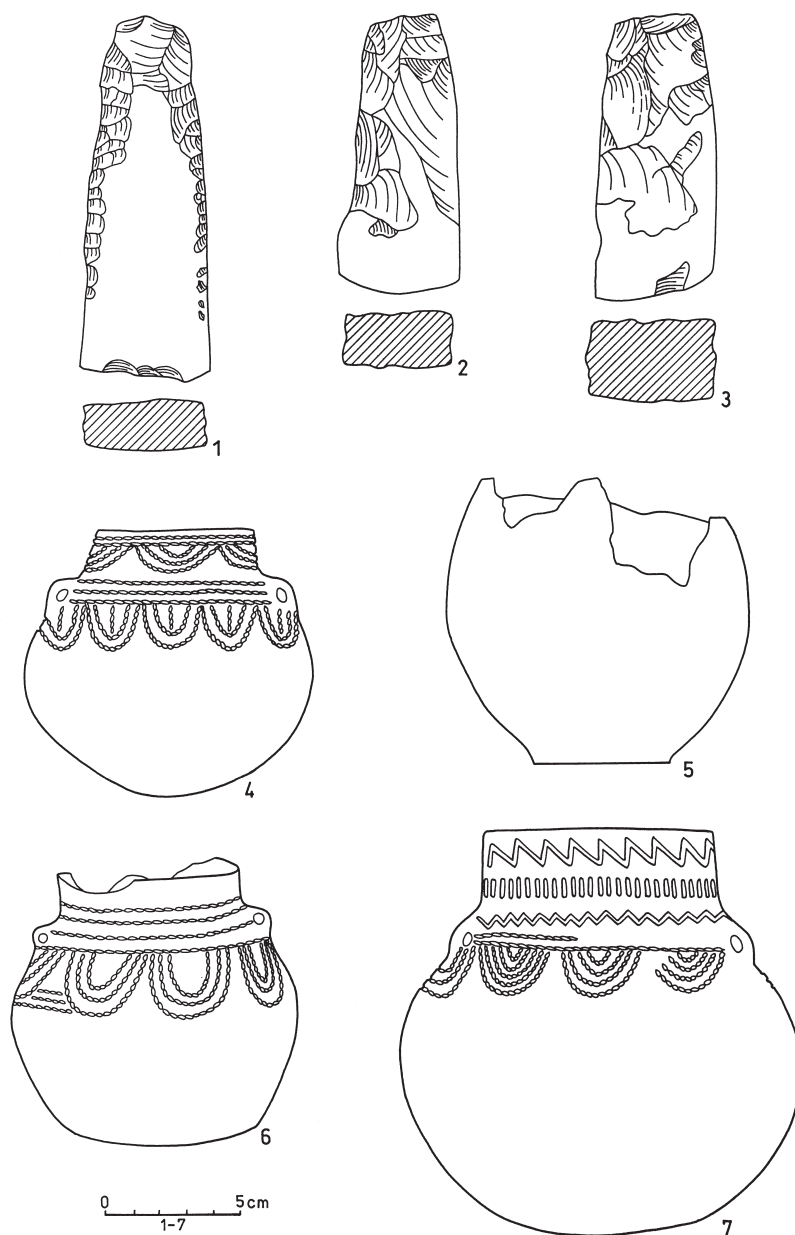


Plate 27. Graves of the Globular Amphora culture (group I).
 Mezhirichi. Goods [1-5,7 - foll. Sveshnikov 1983; 6 - foll. Głosik 1962]. 1-3 - flint, 4-7 - pottery.

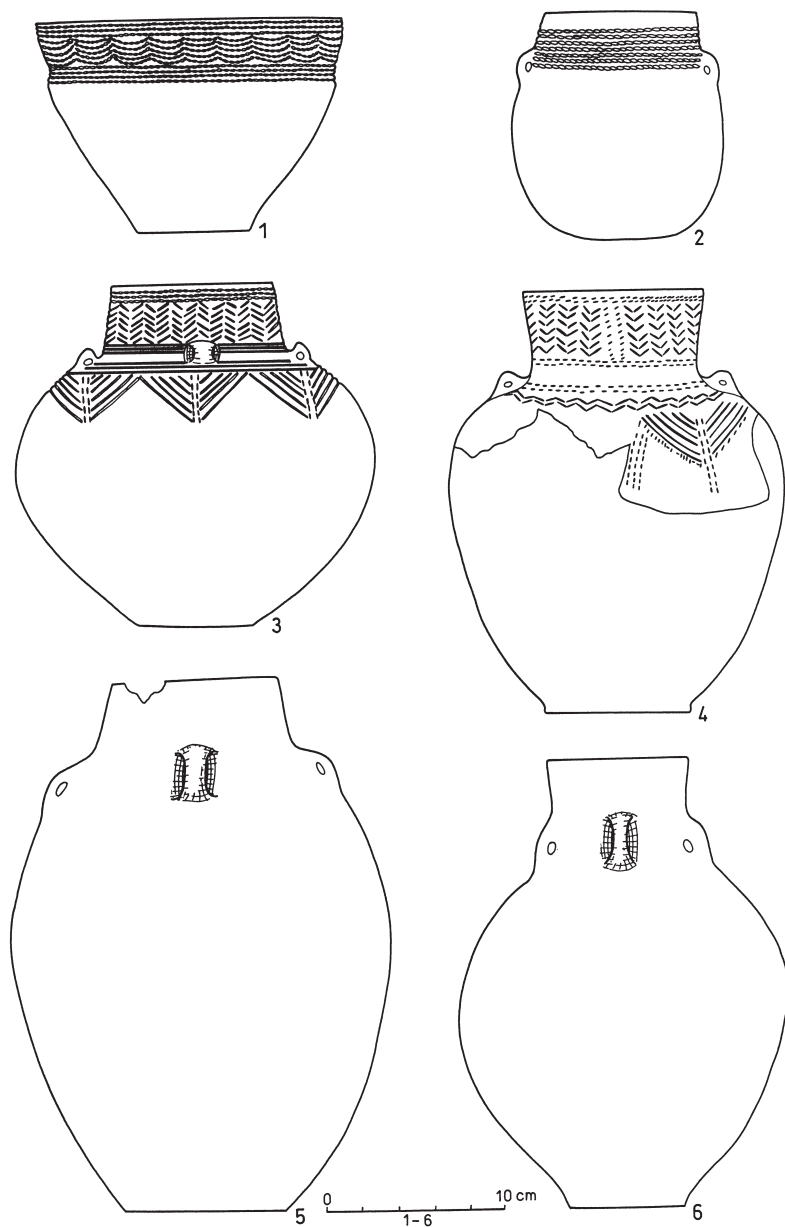


Plate 28. Graves of the Globular Amphora culture (group I).
 Mykolaiv. Goods [1,4 - foll. Sulimirski 1968; 2,3,5,6 - foll. Sveshnikov 1983]. 1-6 - pottery.

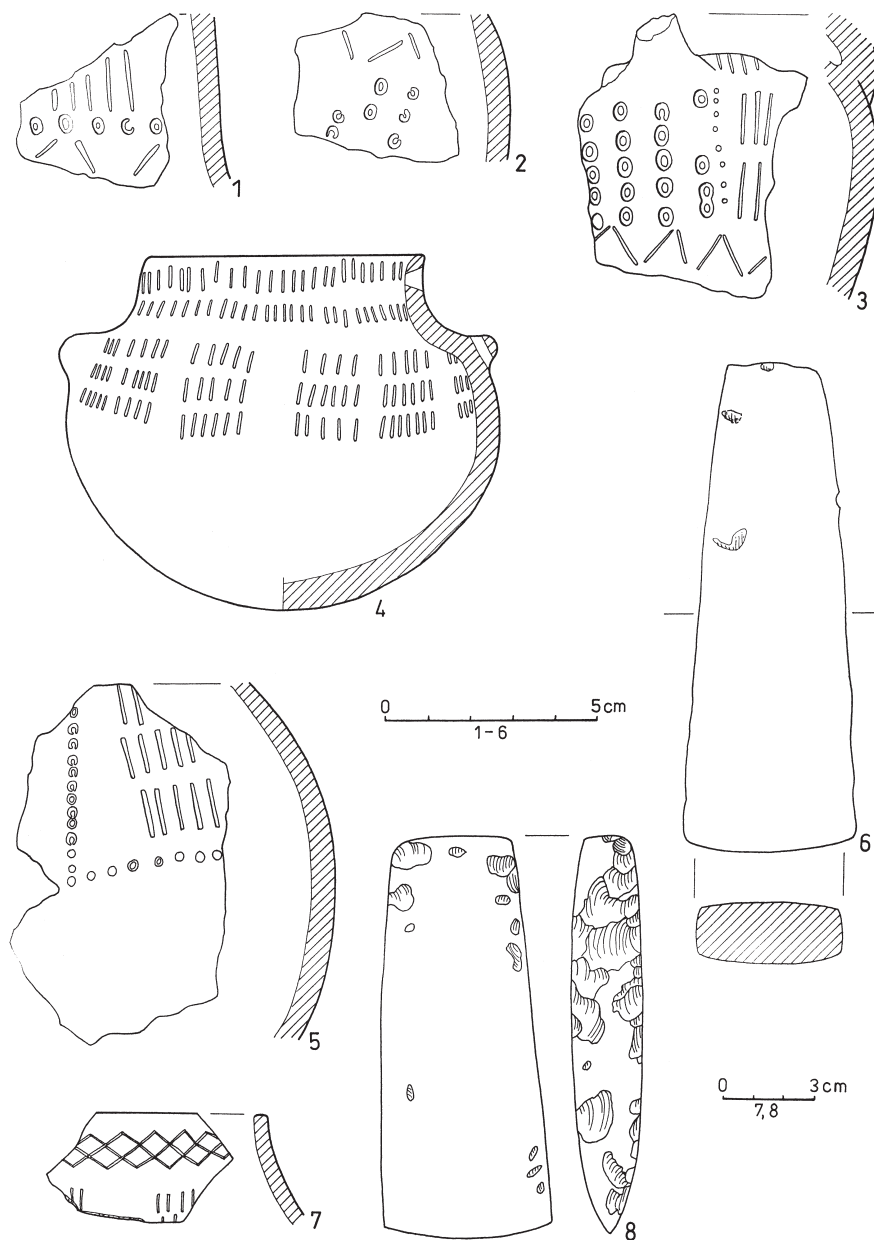


Plate 29. Graves of the Globular Amphora culture (group I).

Goods: 1-6 - Ozdiv [foll. Mazurik, Panyshko 1998]; 7-8 - Korshiv 12 [foll. Konopla, Ivanovskiy 1997].

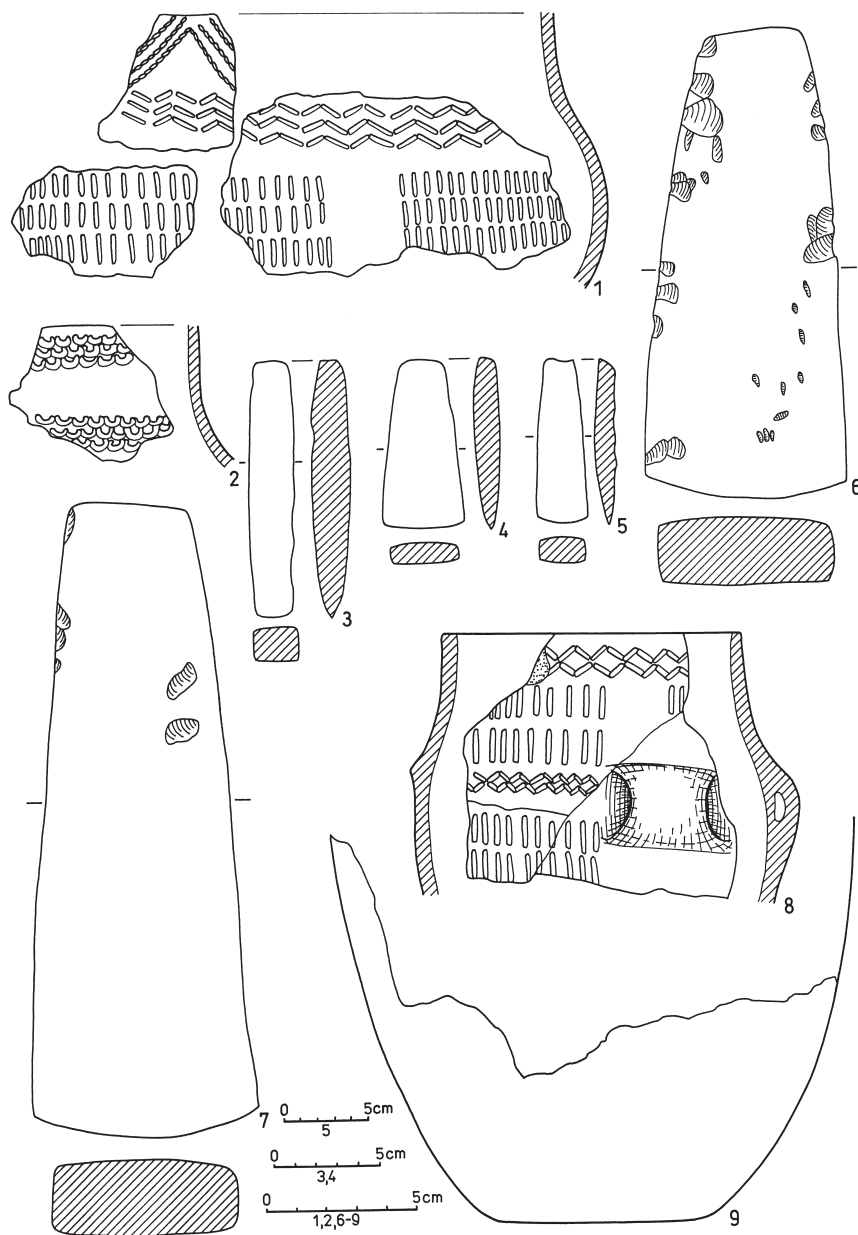


Plate 30. Graves of the Globular Amphora culture (group I and II) and incidental finds of flint implements (group V).

Goods: 1, 2, 8, 9 - Ostrog-Karpaty; 3, 4 - Rokitno I; 5 - Podliptysy; 6, 7 - Ostrov [1,2,6-9 - archives of Sveshnikov; 3-5 - Sulimirski 1968]. 1-2,8-9 - pottery, 3-7 - flint.

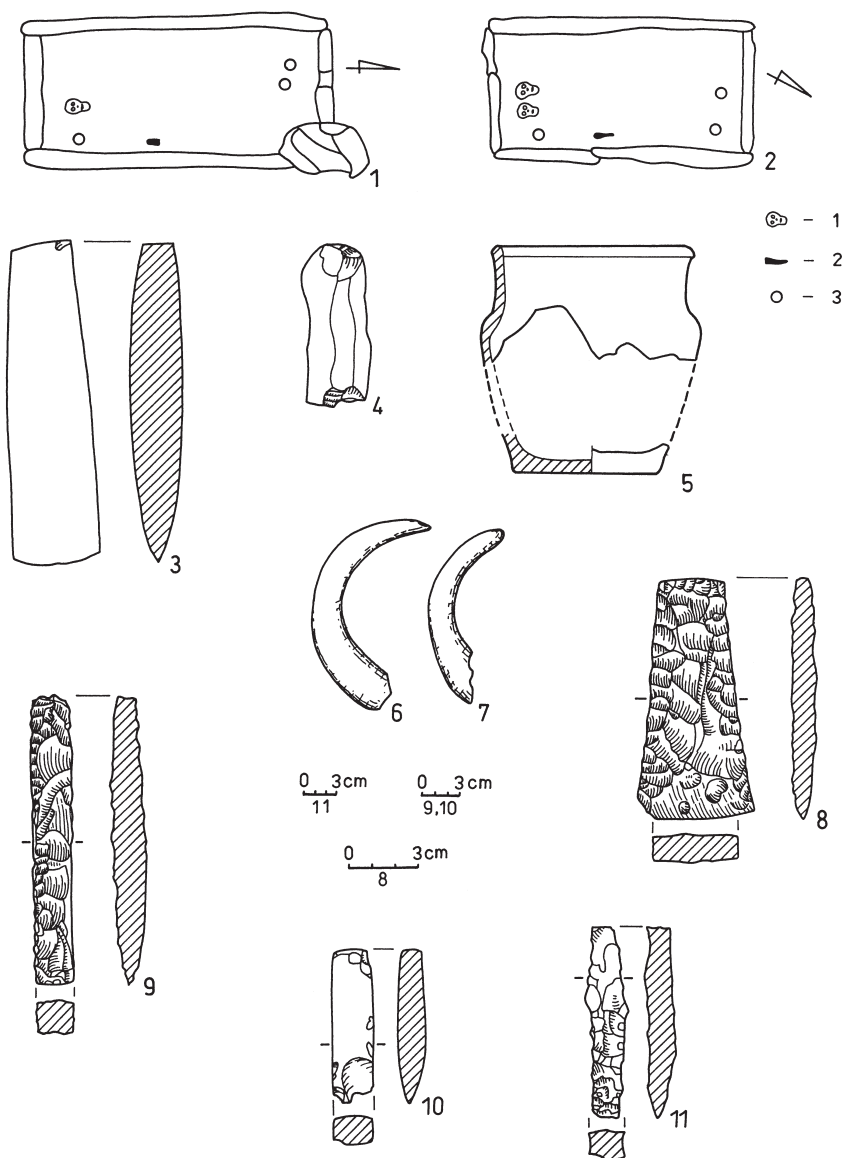


Plate 31. Graves of the Globular Amphora culture (group I) and incidental finds of flint implements (group V).

Plans of graves [foll. Cucuș 1985]: 1 - Calu-Piatra Soimului, 2 - Birgăoani. Goods: 3,4,6,7 - Birgăoani [foll. Cucuș 1985]; 5 - Serbești [foll. Cucuș 1985]; 8,9 - Calu [foll. Florescu 1959]; 10-11 - Valea Adince [foll. Florescu 1959]. 3-4,8-11 - flint, 5 - pottery, 6-7 - bone.

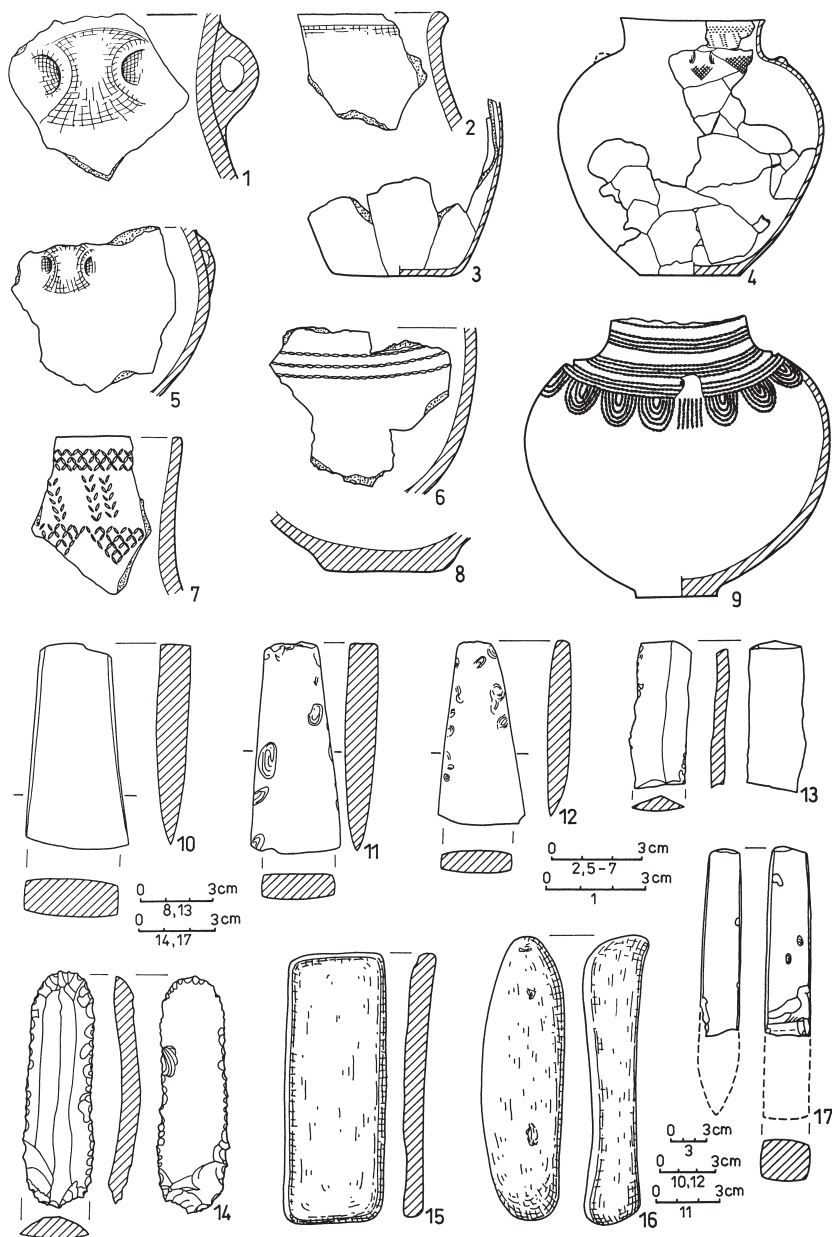


Plate 32. Graves of the Globular Amphora culture (group I).

Piatra Neamț. Goods [foll. Mataša 1959]. 1-9 - pottery, 10-14,17 - flint, 15-16 - stone.

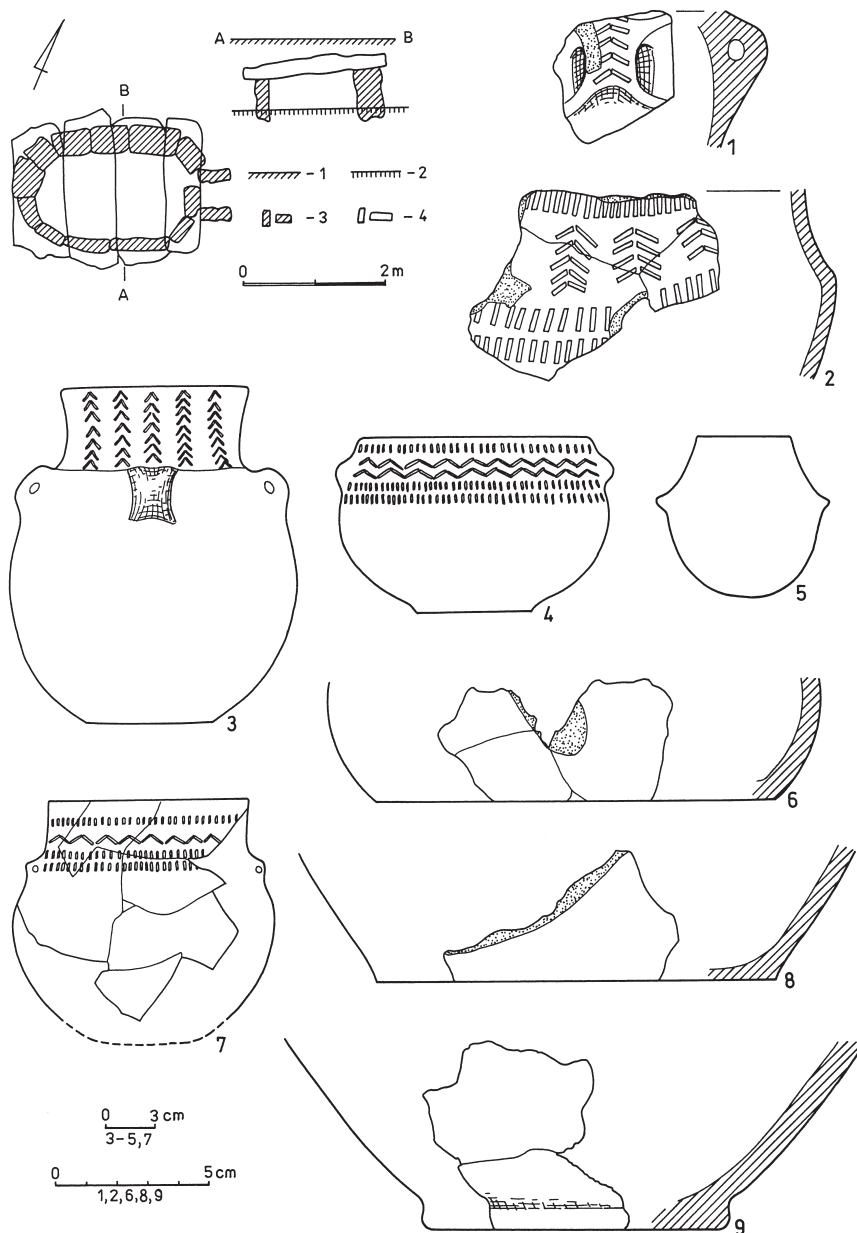


Plate 33. Graves of the Globular Amphora culture (group I).

Skolobiv [foll. Levitsky 1929, Sveshnikov 1983 and coll. of Museum in Zhitomir]. Plan and cross-sections of grave and goods (Key: 1 - arable soil, 2 - 3 - wall slab, cover slabs). 1-9 - pottery.

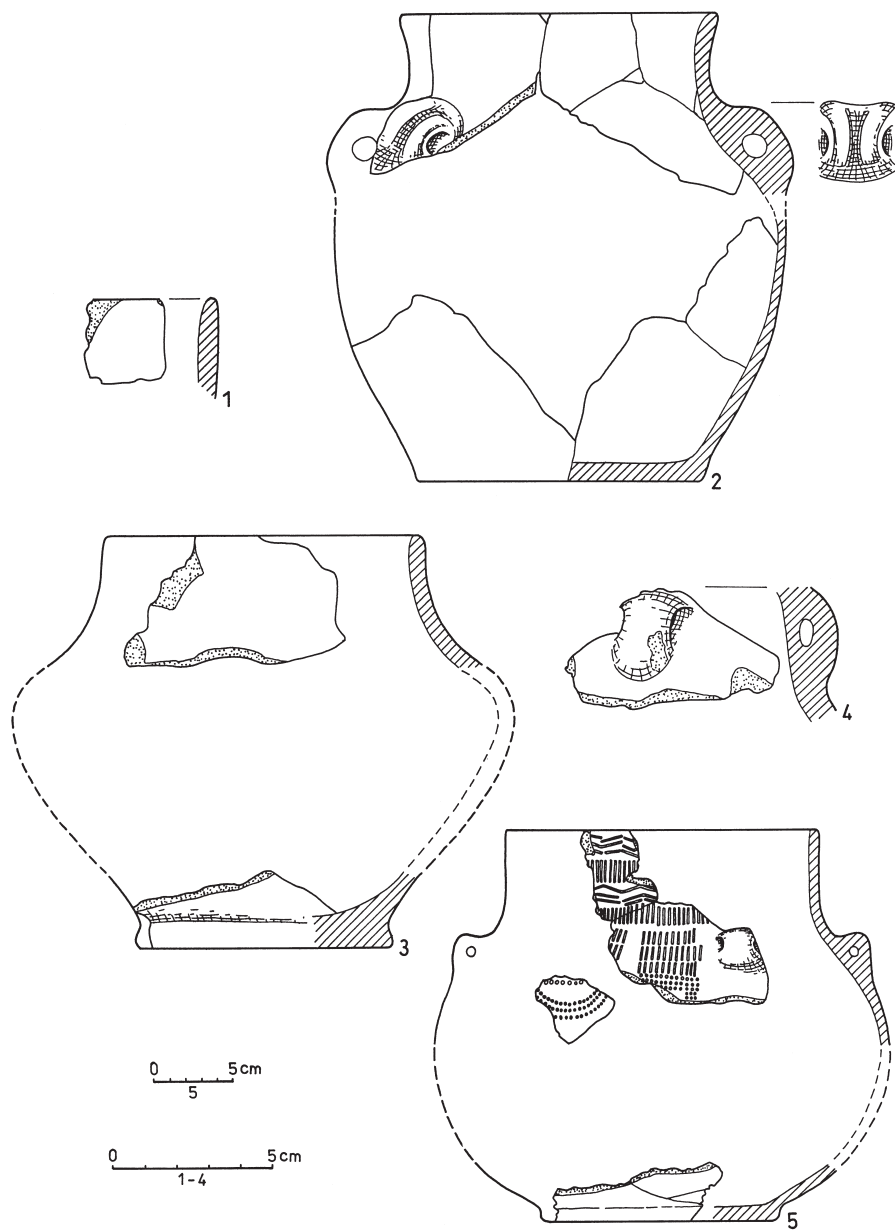


Plate 34. Graves of the Globular Amphora culture (group I).
Skolobiv. Goods (coll. of Museum in Zhitomir). 1-5 - pottery.

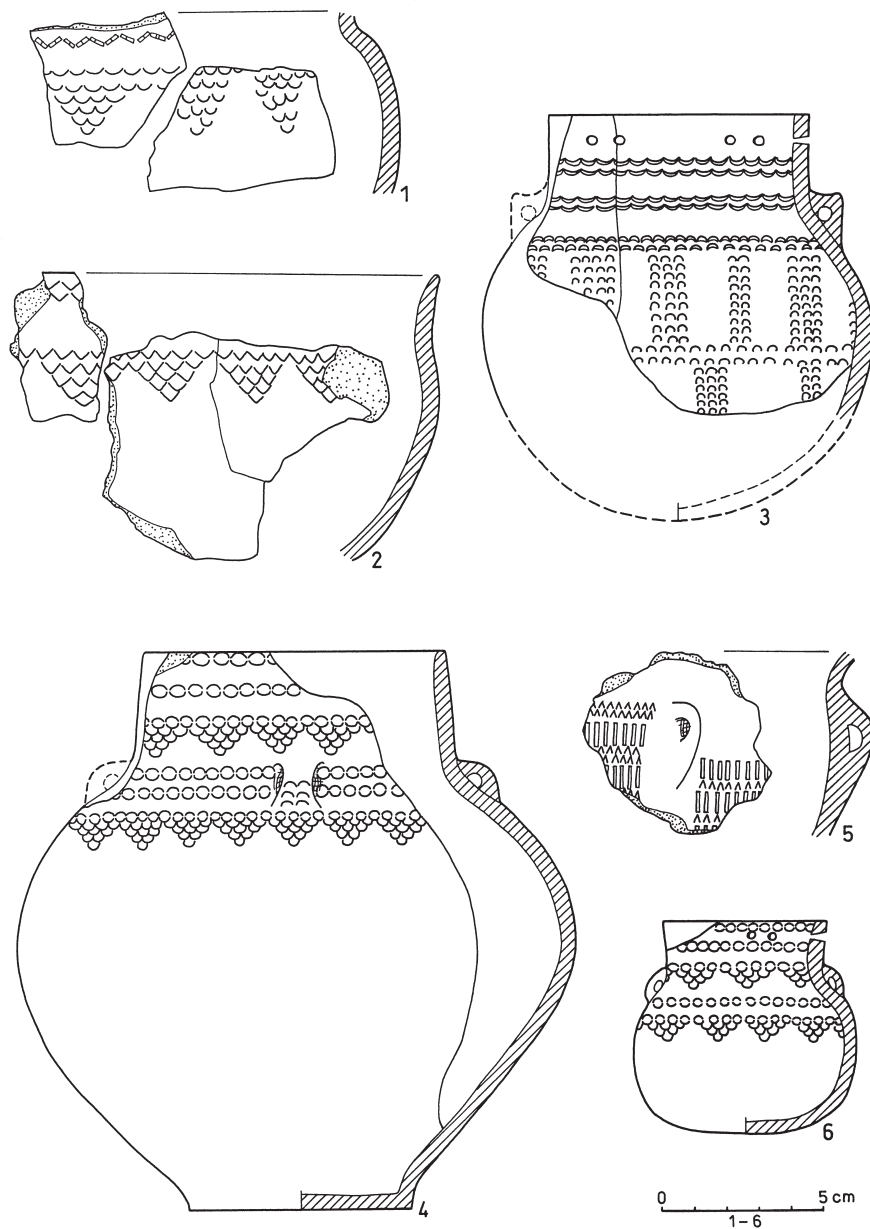


Plate 35. Graves of the Globular Amphora culture (group I).
Slobidka Koshylivetska. Goods (coll. of HML). 1-6 - pottery.

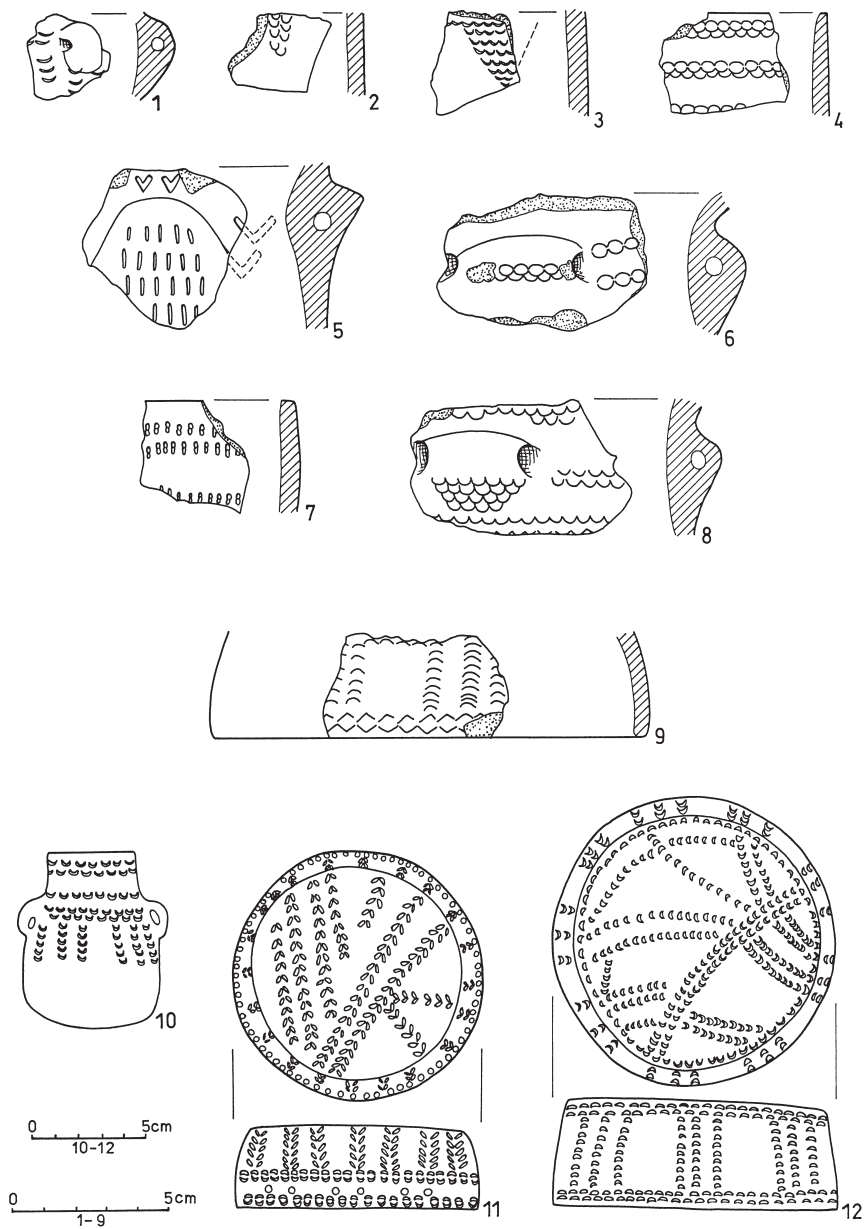


Plate 36. Graves of the Globular Amphora culture (group I).
 Slobidka Koshylivetska. Goods [1-9 - coll. of HML, 10-12 - foll. Sveshnikov 1983]. 1-12 - pottery.

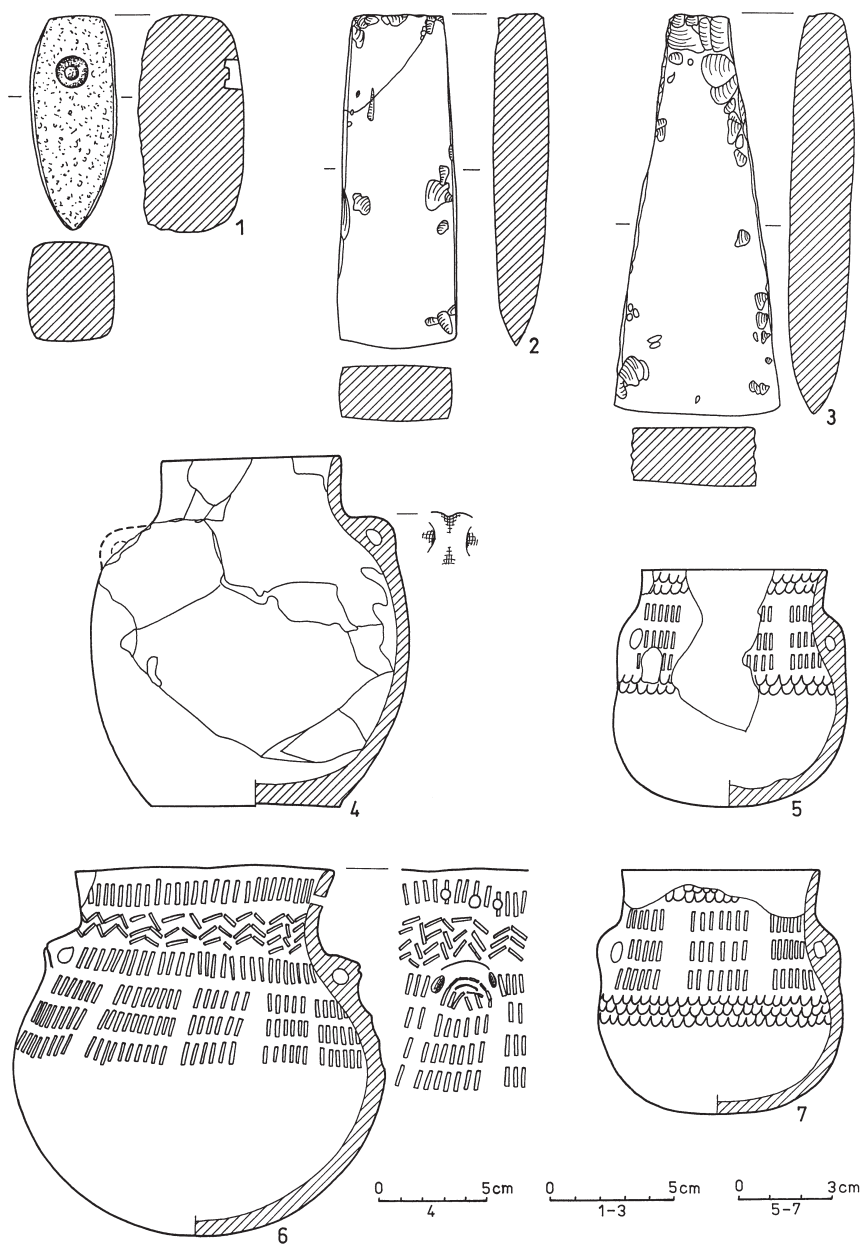


Plate 37. Graves of the Globular Amphora culture (group I).
 Suyemtsy I. Goods (coll. of HMK). 1 - stone, 2-3 - flint, 4-7 - pottery.

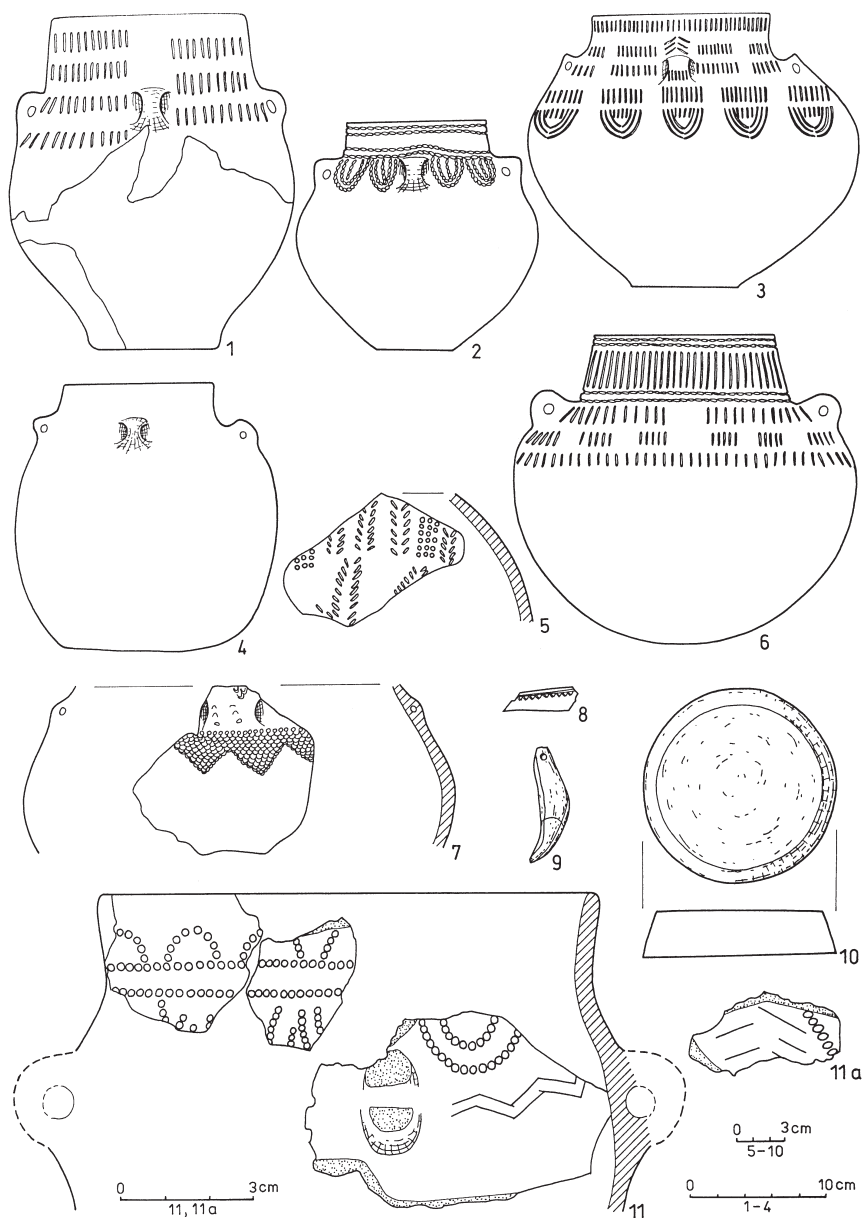


Plate 38. Graves of the Globular Amphora culture (group I).

Goods: 1 - 3 - Suyemtsy I [foll. Sveshnikov 1983], 4 - 11 - Suyemtsy II [foll. Sveshnikov 1983 and coll. of HMK]. 1-7,10-11 - pottery, 8-9 - bone.

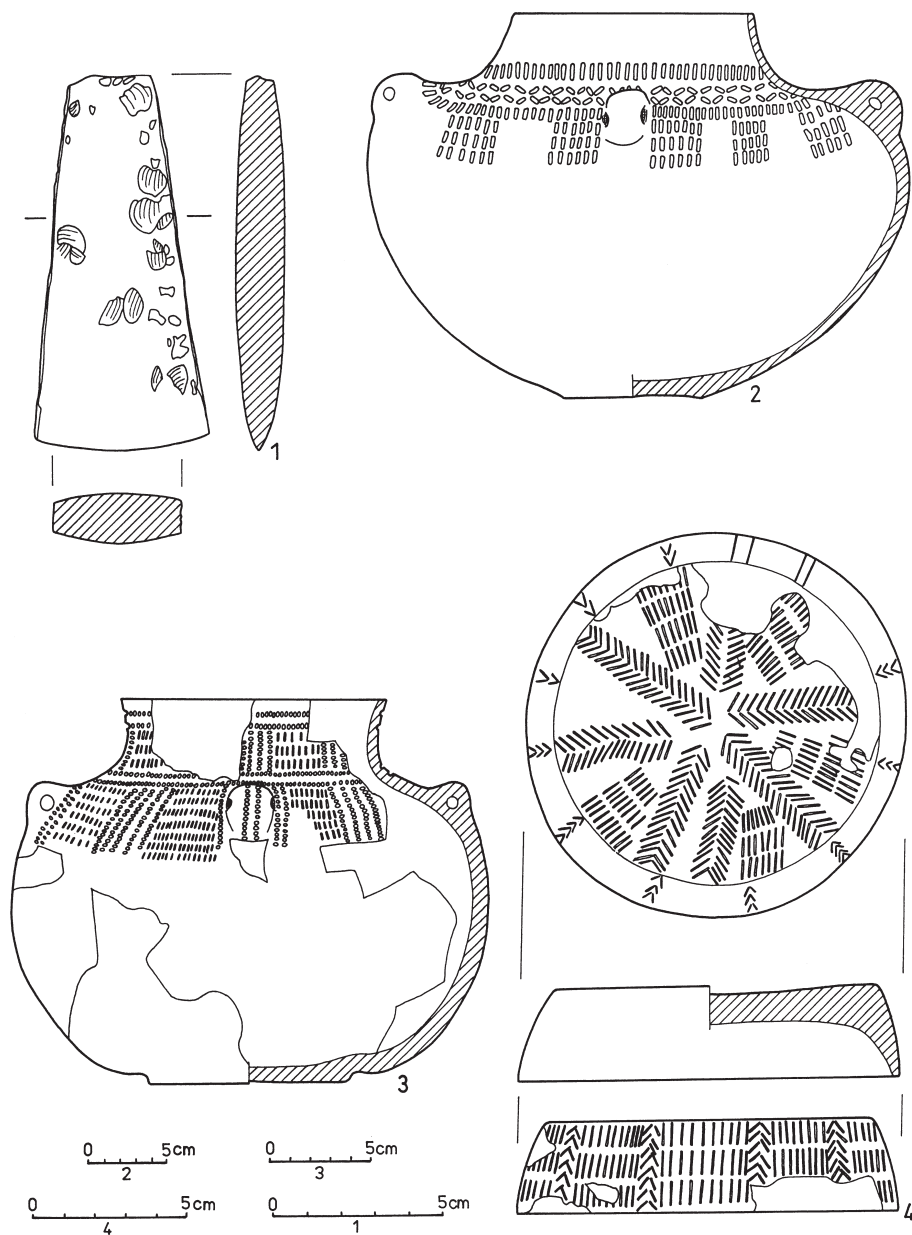


Plate 39. Graves of the Globular Amphora culture (group I).
 Suyemtsy II. Goods (coll. of HMK). 1 - flint, 2-4 - pottery. Note: no. 3 - from Suyemtsy I [Sveshnikov 1983] or Suyemtsy II [information from HMK].

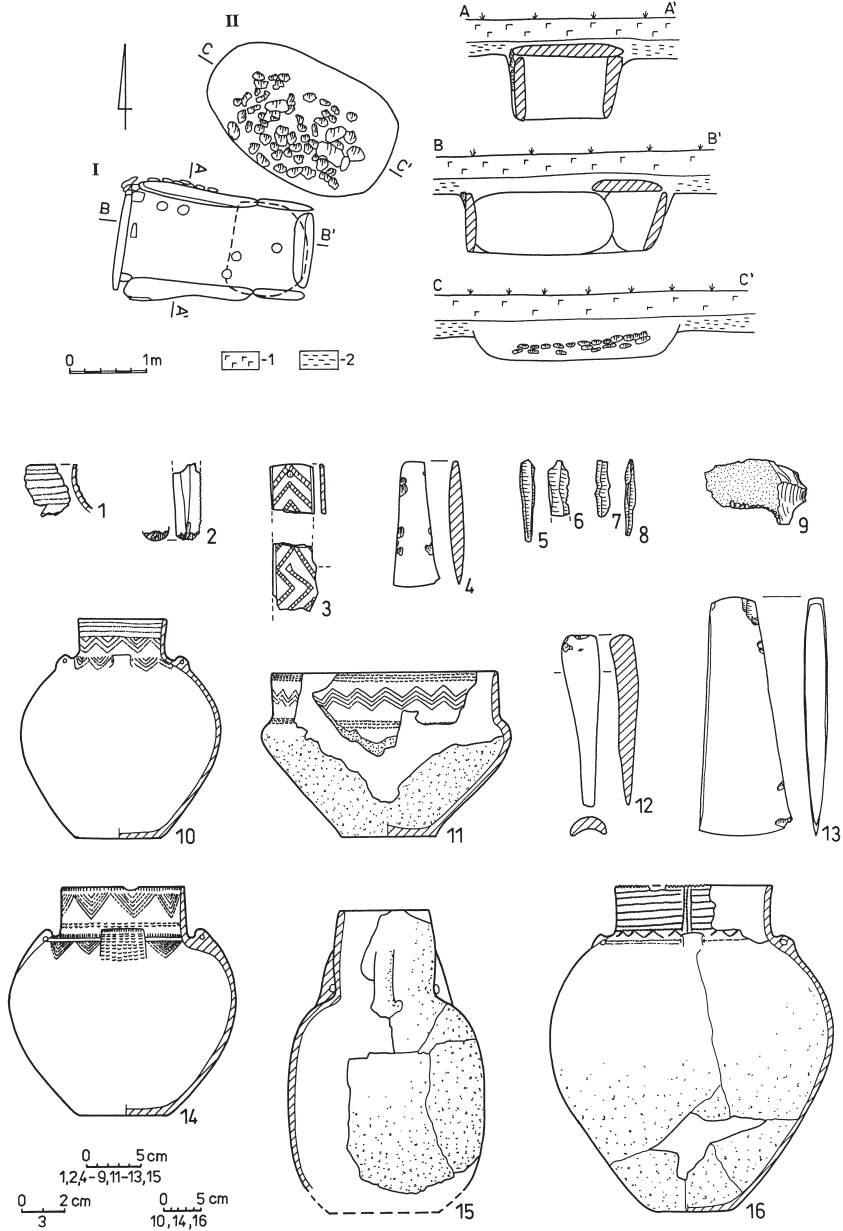


Plate 40. Graves of the Globular Amphora culture (group I).
 Tovpyzhyn [foll. Maleyev, Pryshchepa 1996]. Plan and cross-sections of grave (I) and pit (II) and goods
 (Key: 1 - humus, 2 - sandy clay). 1,10-11,14-16 - pottery, 2,4-9,13 - flint, 3,12 - bone.

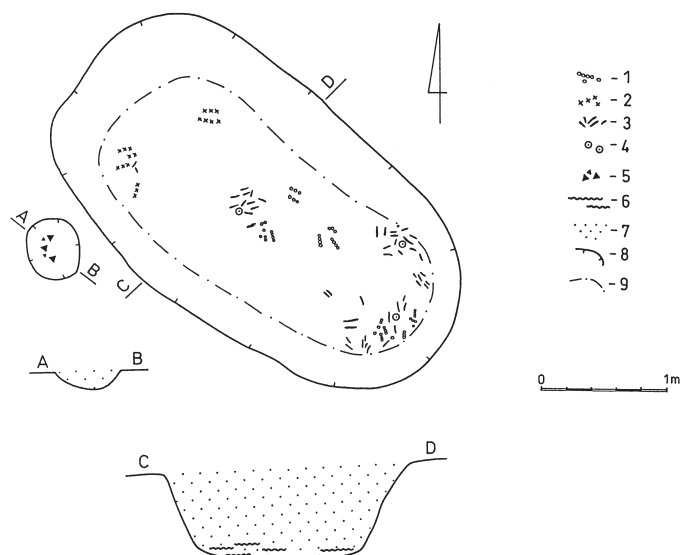
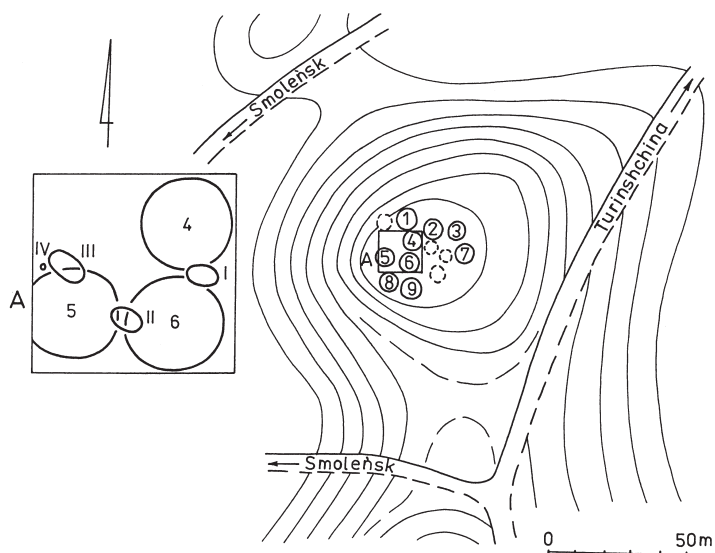


Plate 41. Graves of the Globular Amphora culture (group I).

Turinshchina [foll. Shmidt 1992]. A. Location of a cemetery. B. Plans of features III and IV (Key: 1 - pig's bones, 2 - cattle's bones, 3 - fragments of bones, 4 - location of bones sample for 14C analysis, 5 - pottery, 6 - layer with bones, 7 - sand, 8 - range of the feature, 9 - hypothetical range of the bottom of the feature).

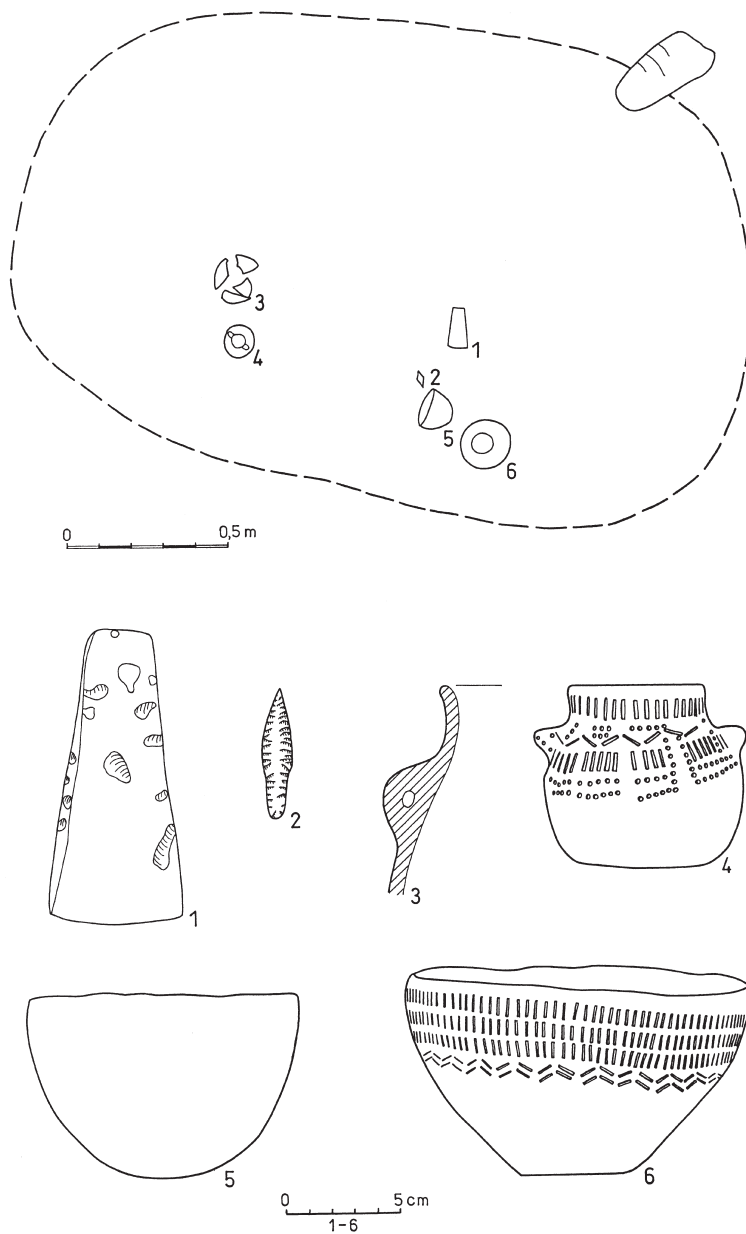


Plate 42. Graves of the Globular Amphora culture (group I).
Turinshchina [foll. Schmidt 1992]. Plan of feature I and goods. 1-2 - flint, 3-6 - pottery.

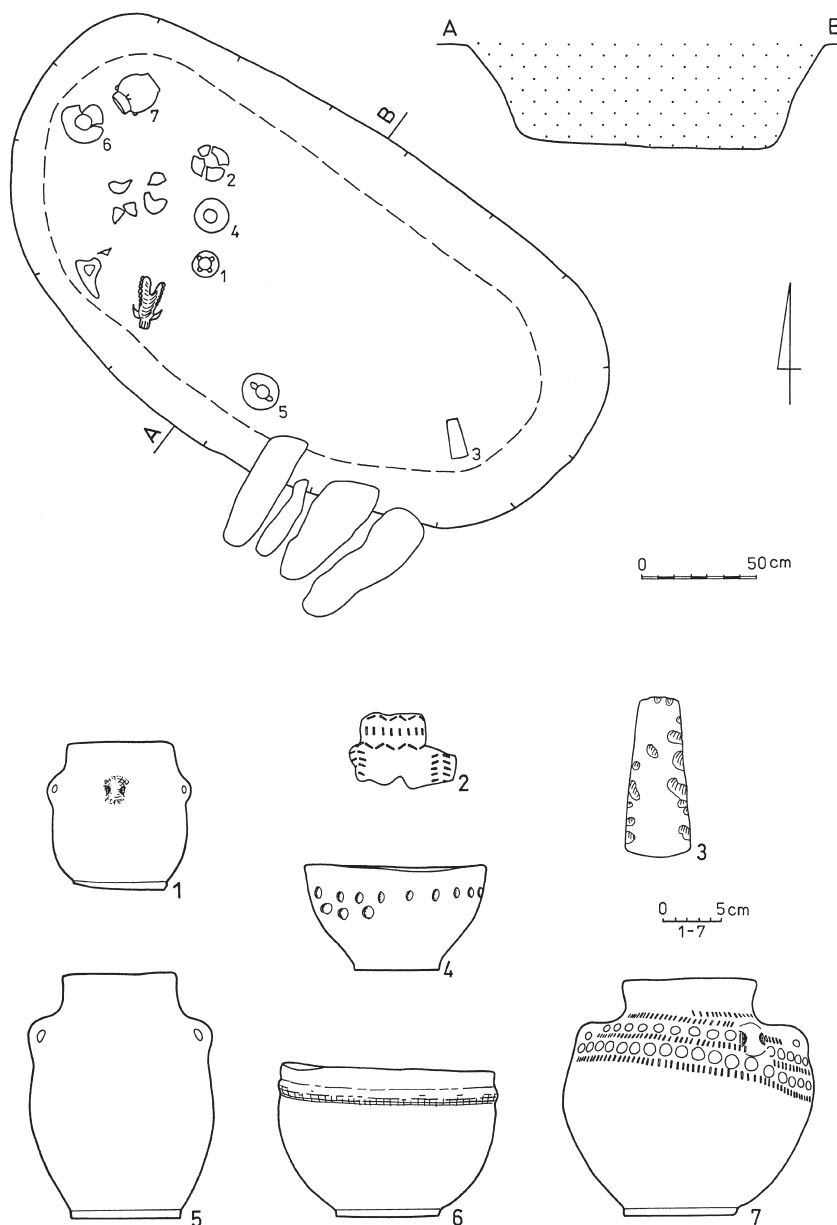


Plate 43. Graves of the Globular Amphora culture (group I).
 Turinshchina [foll. Schmidt 1992]. Plan and cross-section of feature II and goods. 1-2,4-7 - pottery, 3 - flint.

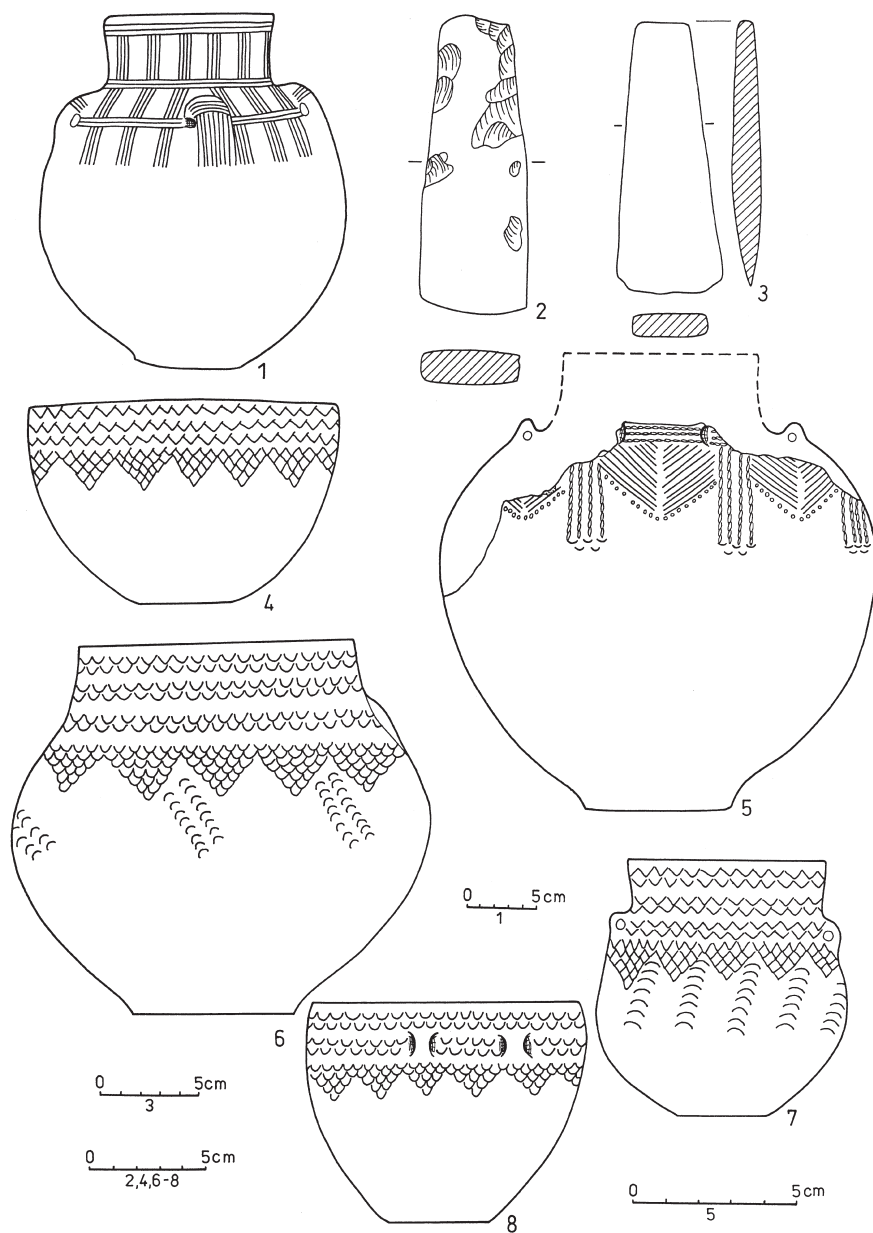


Plate 44. Graves of the Globular Amphora culture (group I and II).

Goods: 1 - Tartak [archives of Lagodovska]; 2, 4, 6-8 - Ulashkivtsy [foll. Sveshnikov 1983]; 3 - Usteczko [foll. Sulimirski 1968]; 5 - Varkovichi [foll. Sveshnikov 1983]. 1,4-8 - pottery, 2-3 - flint.

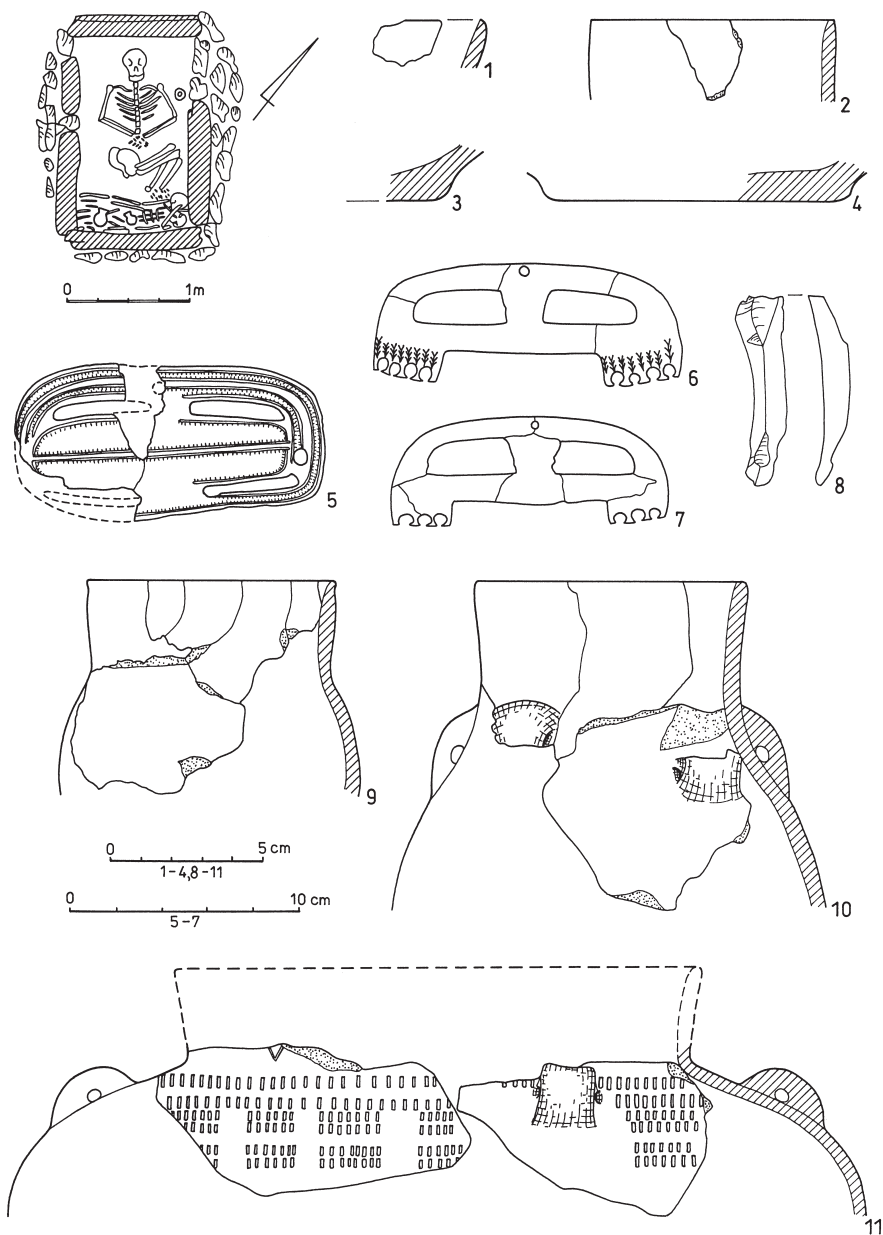


Plate 45. Graves of the Globular Amphora culture (group I).

Uvisla. Plan of grave and goods [1-4,8-11 - coll. of AMK; 5 - 7 - foll. Antoniewicz 1938]. 1-4,9-11 - pottery, 5-7 - bone, 8 - flint.

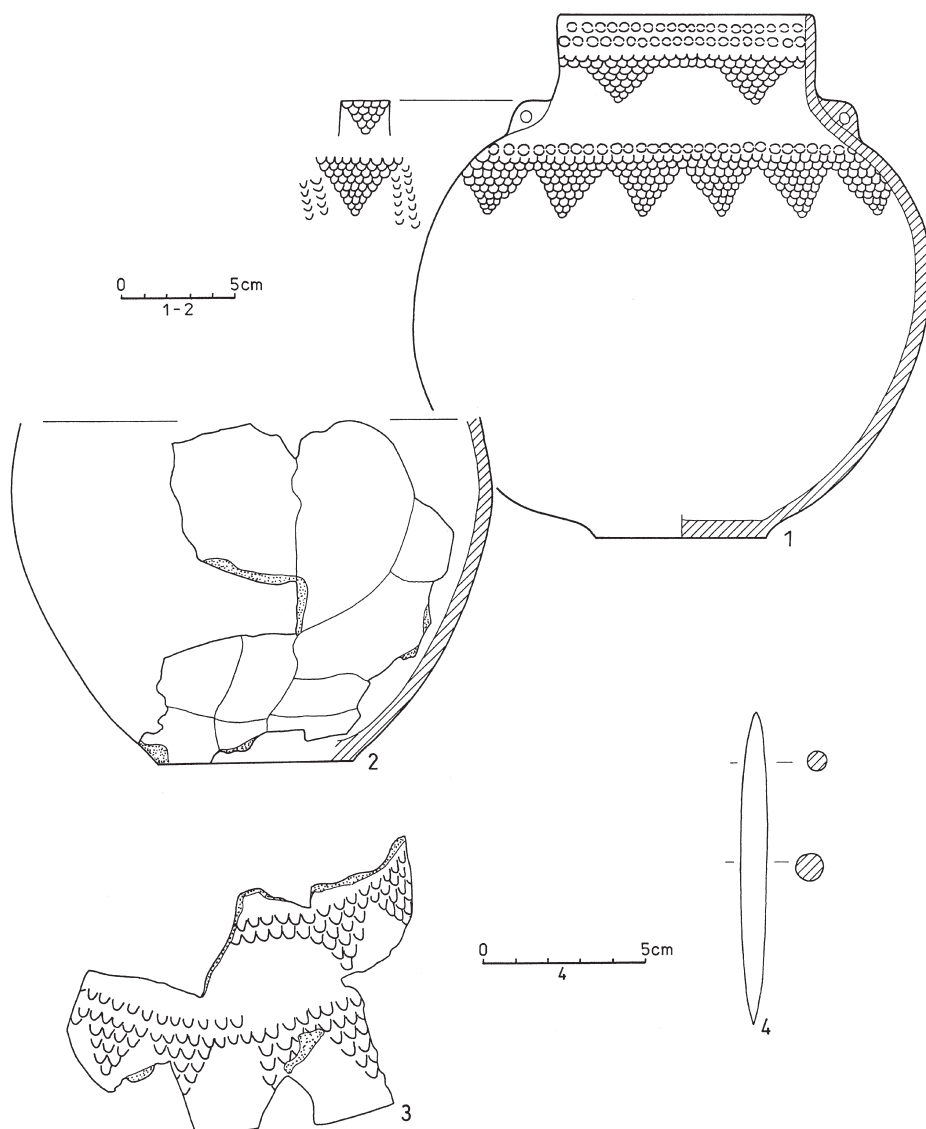


Plate 46. Graves of the Globular Amphora culture (group I and II).

Goods. 1 - 2 - Uvisla (coll. of AMK); 3 - Zavadyntsy [foll. Antoniewicz 1938]; 4 - Zhvanets-Shchovb (coll. of HMK). 1-3 - pottery, 4 - bone.

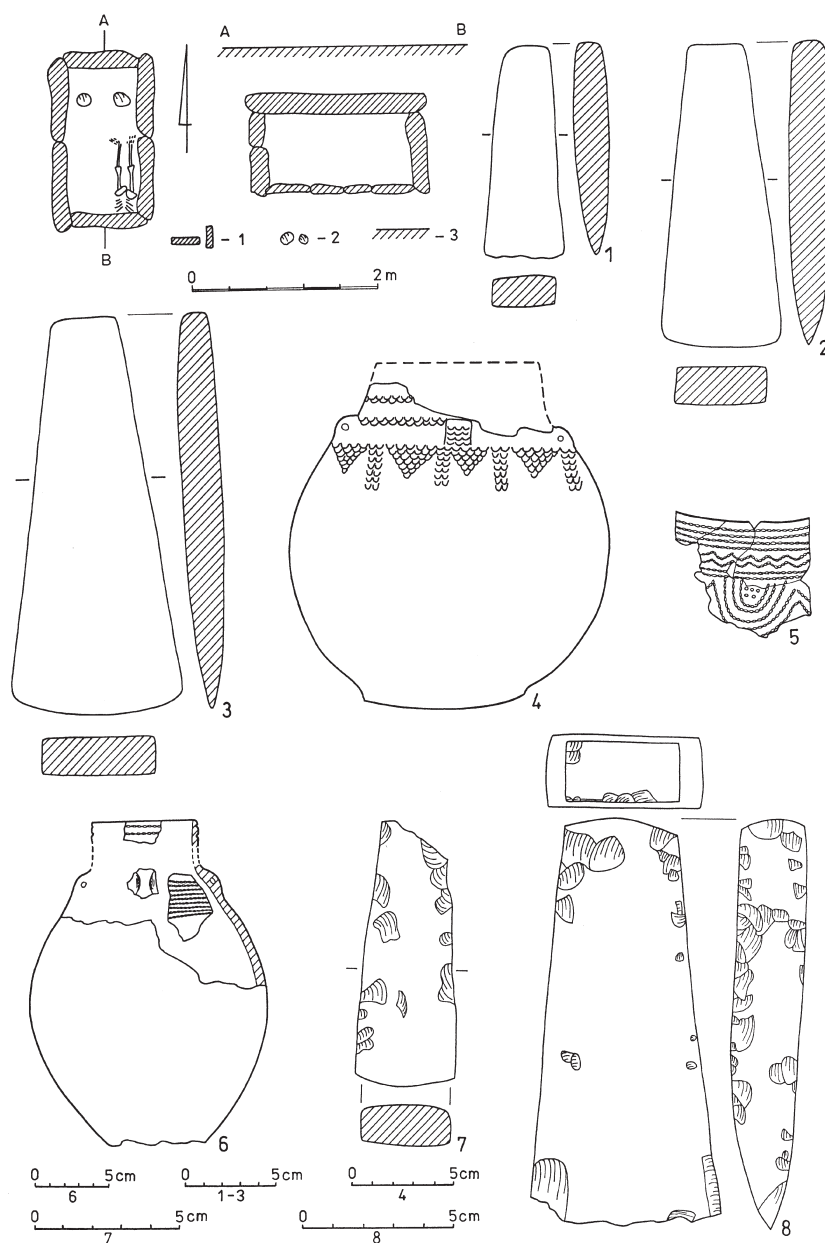


Plate 47. Graves of the Globular Amphora culture (group I and II).

Plan and cross-section of grave from Velika Slobidka [foll. Sveshnikov 1983]. Goods: 1 - 4 - Velika Slobidka [foll. Sulimirski 1968], 5 - Vysokoye [foll. Levitskiy 1929], 6 - Yagolnitsa [foll. Sveshnikov 1983], 7 - 8 - Zarvanitsa (coll. of HML). 1-3,7-8 - flint, 4-6 - pottery. Note: no. 5 - not to scale.

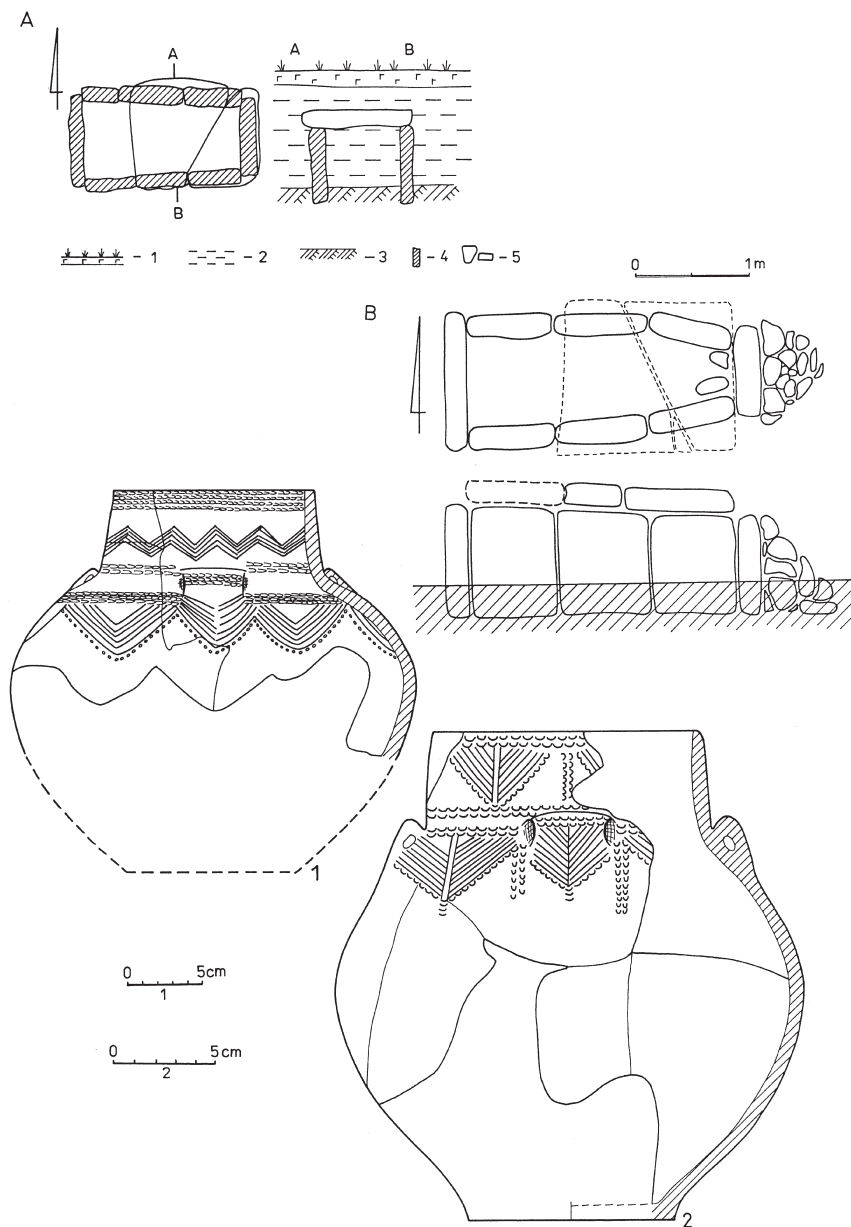


Plate 48. Graves of the Globular Amphora culture (group I).
 Ulvivok. Plans of grave [A - foll. Sveshnikov 1983; B - foll. Sulimirski 1968] and goods (coll. of HML).
 1-2 - pottery.

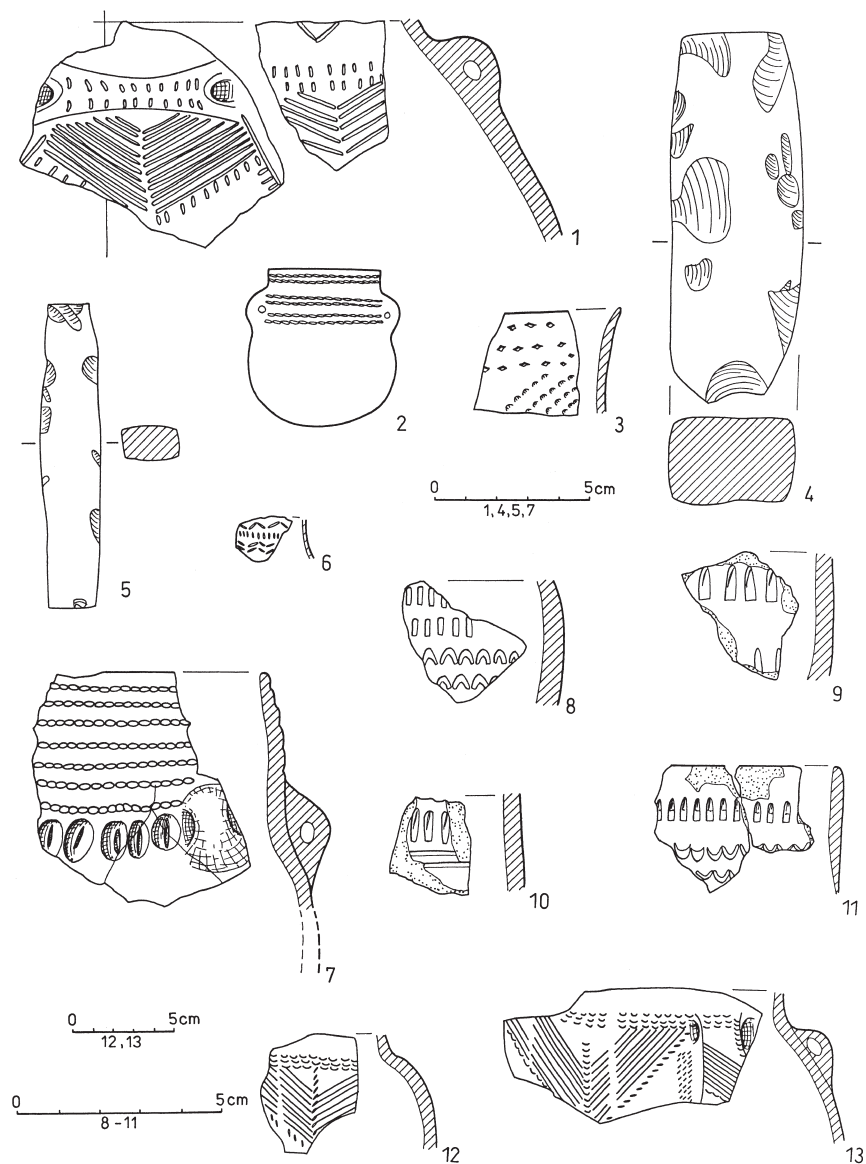


Plate 49. Sources from settlements or camps (group IV).

1,4,5 - Arshichyn [archives of Sveshnikov]; 2 - Bilokrynitsa [foll. Sulimirski 1968]; 3 - Bariliv [foll. Peleshchysyn 1998a]; 6 - Chudvy-Pieski [archives of Sveshnikov]; 7 - Dymitrovka (coll. of SAM); 8-11 - Dolgoye Pole-Tartak (coll. of Museum in Rivne); 12-13 - Chervonograd [foll. Peleshchysyn 1998a]. 1-3,6-13 - pottery, 4-5 - flint. Note: nos. 2,3 and 6 - not to scale.

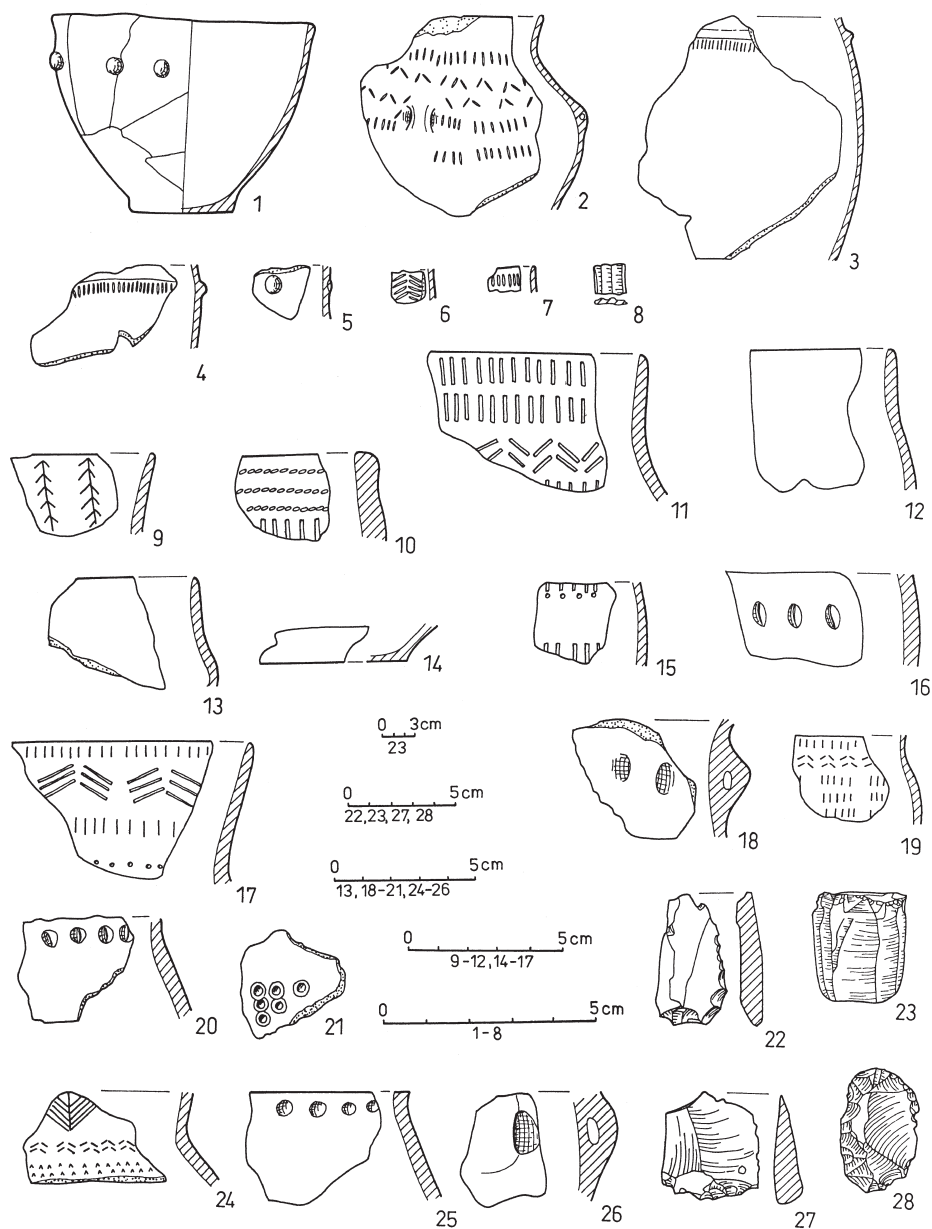


Plate 50. Sources from settlements or camps (group IV).

1-8 - Dvorishche [foll. Misiats 1998]; 9-28 - Gorbuliv 4 [foll. Berezanska, Pyasetskiy 1979; Serdyukova 1996]. 1-7, 9-21, 24-26 - pottery, 8, 22-23, 27-28 - flint.

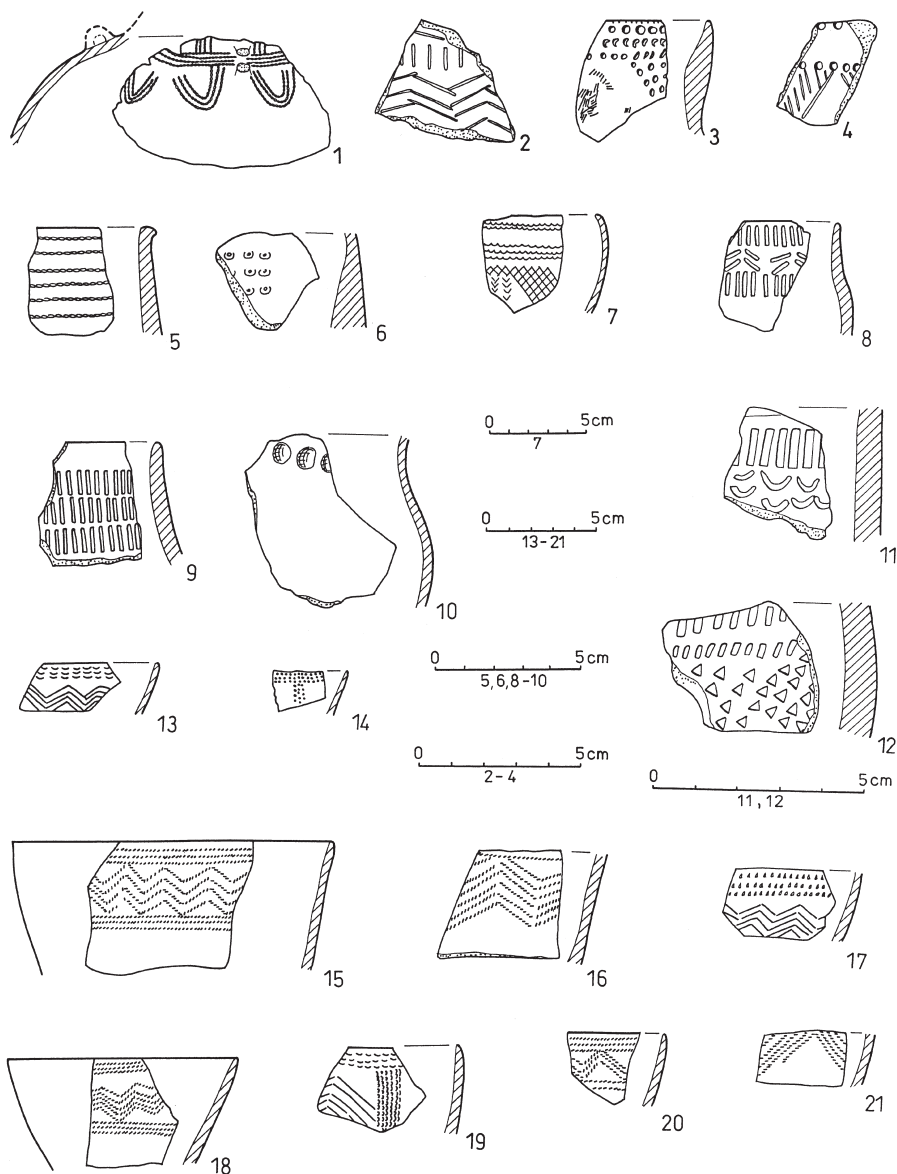


Plate 51. Sources from settlements or camps (group IV).

1 - Foltești [foll. Roman et al. 1992]; 2-4 - Gnieuchytsy [archives of Kryvaltsevich]; 5-6 - Gorbuliv 2 [foll. Serdyukova 1996]; 7 - Kadiettsy [archives of Sveshnikov]; 8-9 - Khichiv 2 [foll. Berezanska, Pyasetskiy 1979]; 10 - Khichiv 3 [foll. Berezanska, Pyasetskiy 1979]; 11-12 - Kiev-Nikolskaya Slobodka III (coll. of IA NAS); 13-21 - Khoriv 1 [foll. Peleshchyshyn 1998a]. 1-21 - pottery. Note: no. 1 - not to scale.

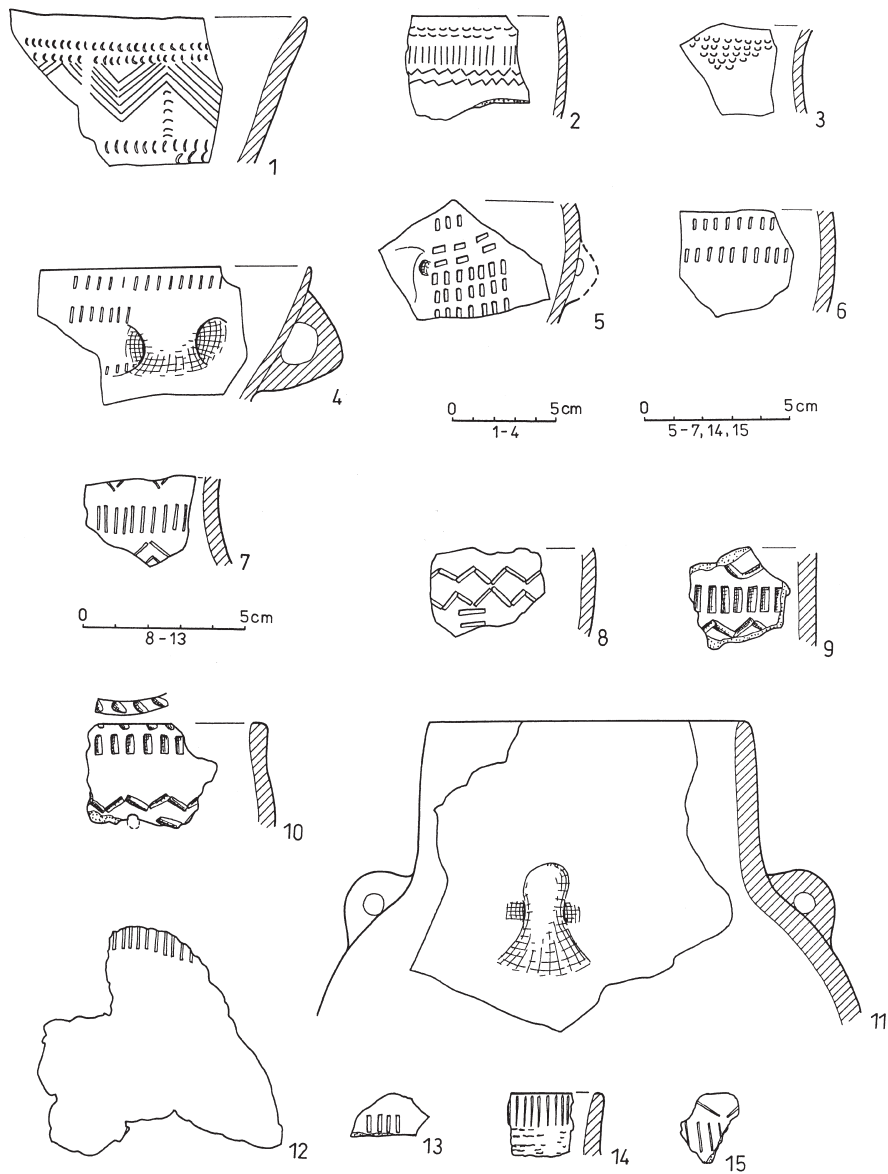


Plate 52. Sources from settlements or camps (group IV).

1-4 - Khrinniki [foll. Peleshchyshyn 1998a]; 5-6 - Lubela-Bila kladovishcha [foll. Peleshchyshyn 1998a]; 7 - Krupa 5 [foll. Konopla, Ivanovskiy 1997]; 8-10 - Krasnaselski 5 (coll. of IH AS Minsk); 11-13 - Likhachy [foll. Charniauski 1996]; 14-15 - Lichytsy 2 [foll. Charniauski, Kudrashou, Lipnitskaya 1996]. 1-15 - pottery.

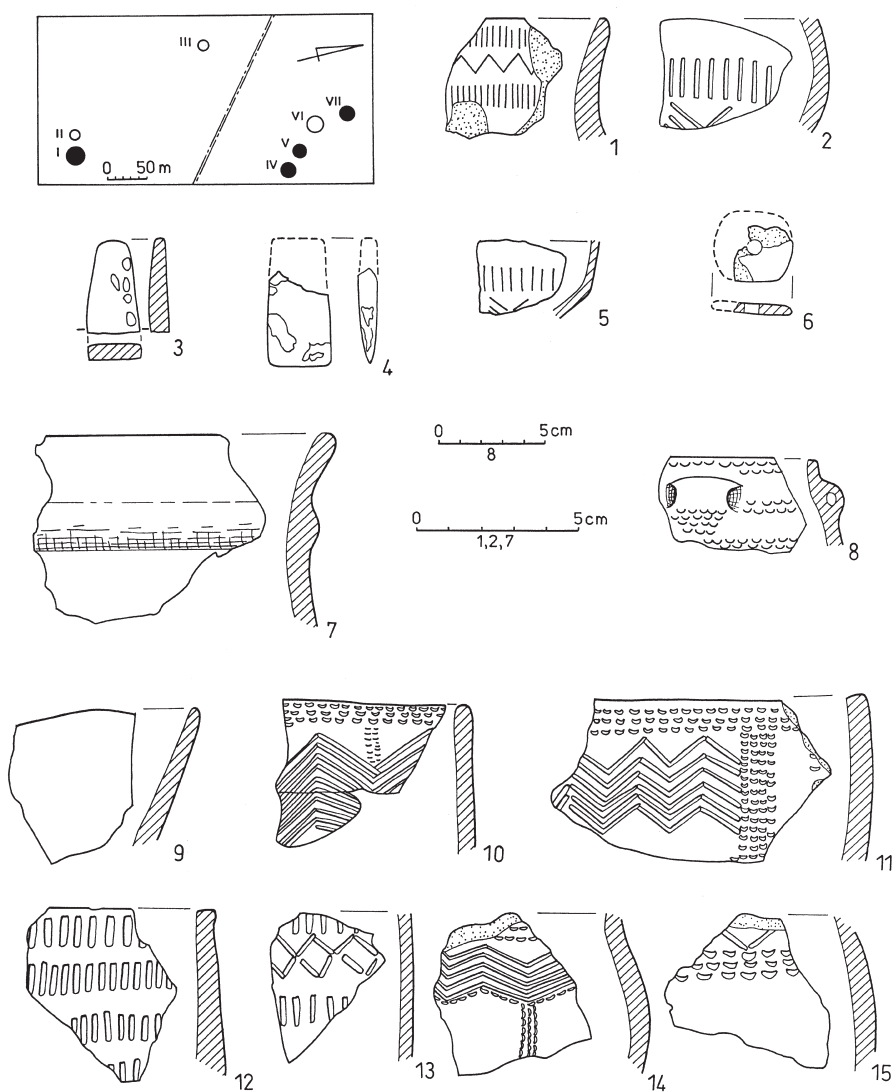


Plate 53. Sources from settlements or camps (group IV).

Location of barrows in Kołokolin (Key: black dots - barrows with GAC materials) [foll. Sulimirski 1968]. 1-2 - Kołokolin I; 3-4 - Kołokolin IV; 5 - Kotokolin V; 6 - Kołokolin VII [foll. Sulimirski 1968 and coll. of HML]; 7 - Kozlin (coll. of SAM); 8 - Koshylivtsy-Oboz [foll. Sveshnikov 1983]; 8-12 - Mezhirichi-Popivshchyna [foll. Pozikhovskiy 1998]; 13-14 - Mezhirichi-Shtany [foll. Pozikhovskiy 1998]. 1-2,5,7-15 - pottery, 3-4 - flint, 6 - amber. Note: 3-6 and 8-14 - not to scale.

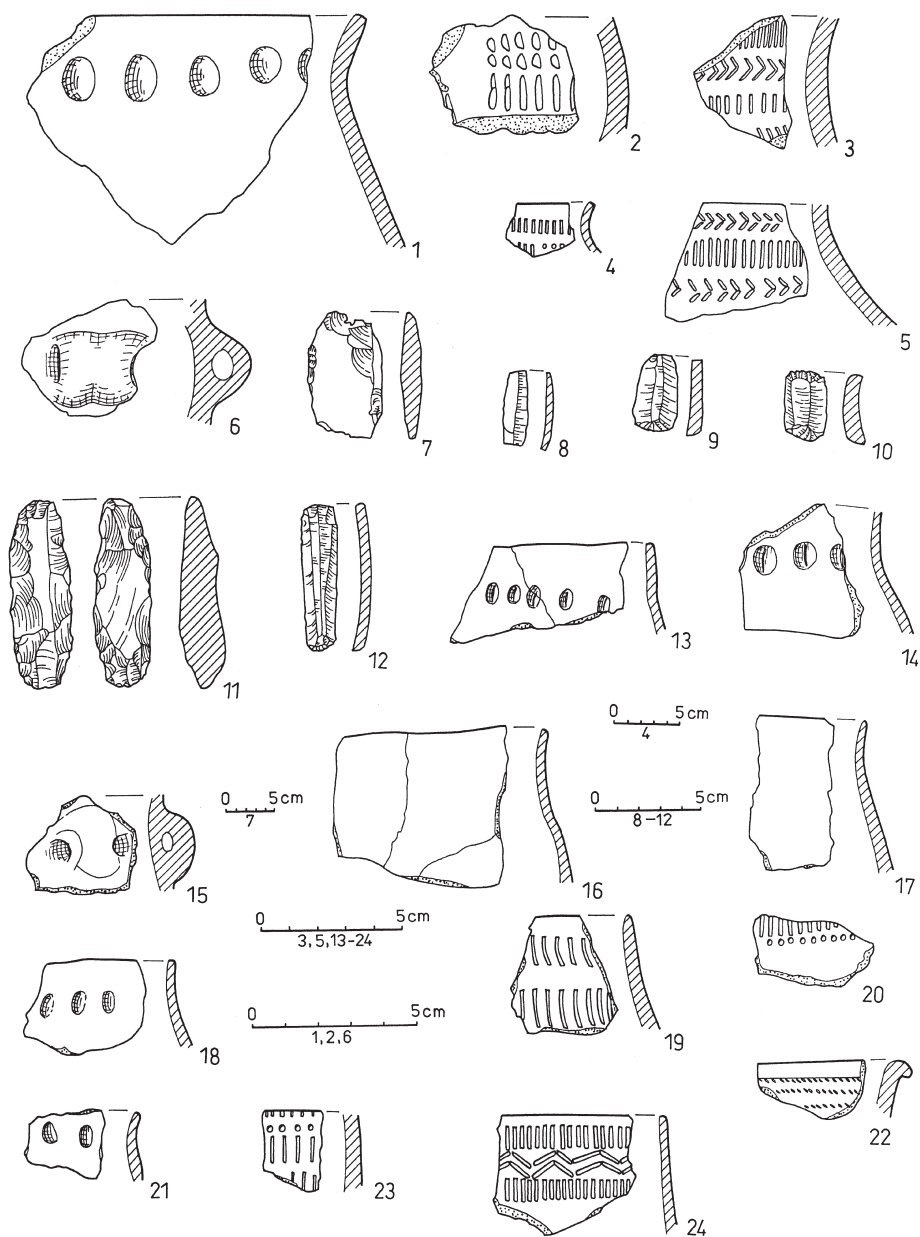


Plate 54. Sources from settlements or camps (group IV).

1-6 - Mezhireche [archives of Sveshnikov]; 7-24 - Khichiv 1 [foll. Berezanska, Pyasetskiy 1979; Serdyukova 1996]. 1-6,13-22 - pottery, 7-12 - flint.

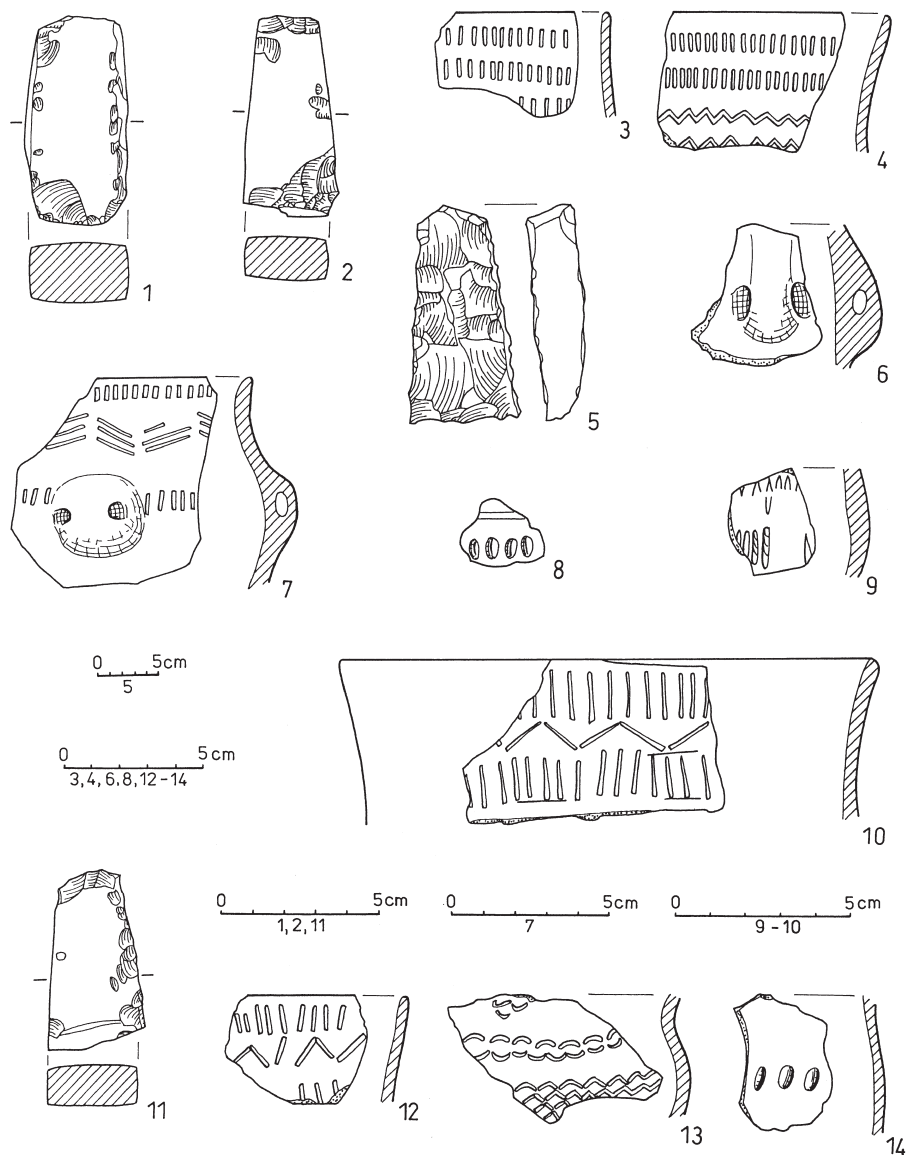


Plate 55. Sources from settlements or camps (group IV).

1-2 - Melen [foll. Berezanska, Pyasetskiy 1979]; 3-6 - Neverivka [foll. Berezanska, Pyasetskiy 1979]; 7 - Rayki [foll. Berezanska, Pyasetskiy 1979]; 8 - Romashkivka [archives of Terskiy]; 9 - Rivne-Bandera str. (coll. of Museum in Rivne); 10 - Motel 11 [archives of Kryvaltsevich]; 11-14 - Slavuta [foll. Berezanska, Pyasetskiy 1979]. 1-2, 5, 11 - flint, 3-4, 6-10, 12-14 - pottery.

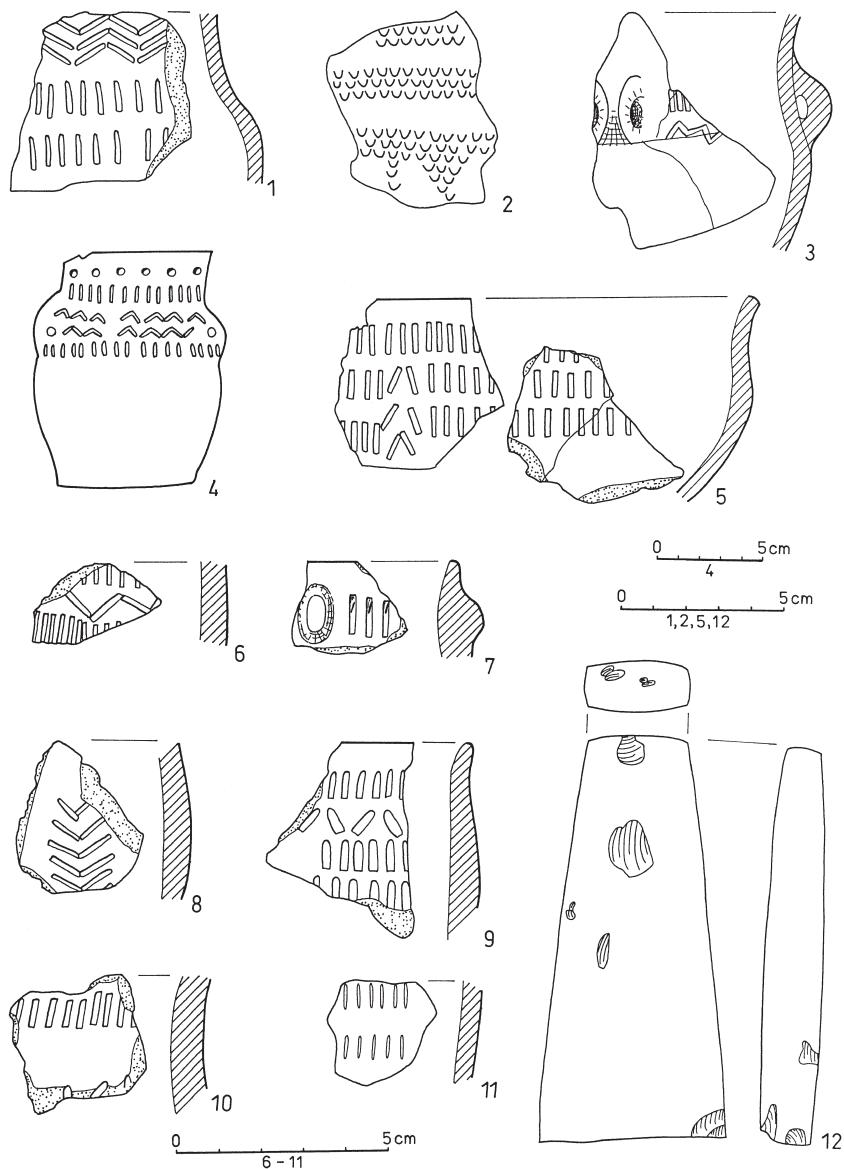


Plate 56. Sources from settlements or camps (group IV).

1 - Ozliyev [archives of Sveshnikov]; 2 - Tatariski [archives of Lagodovska]; 3 - Viliya III [foll. Pozikhovskiy 1998]; 4 - Vinnitsa [foll. Sulimirski 1968]; 5-9 - Volitsa (coll. of Museum in Rivne); 10 - Zozov [foll. Berezanska, Pyasetskiy 1979]; 11-12 - Volitsa II [foll. Berezanska, Pyasetskiy 1979]. 1-11 - pottery, 12 - flint. Note: no. 3 - not to scale.

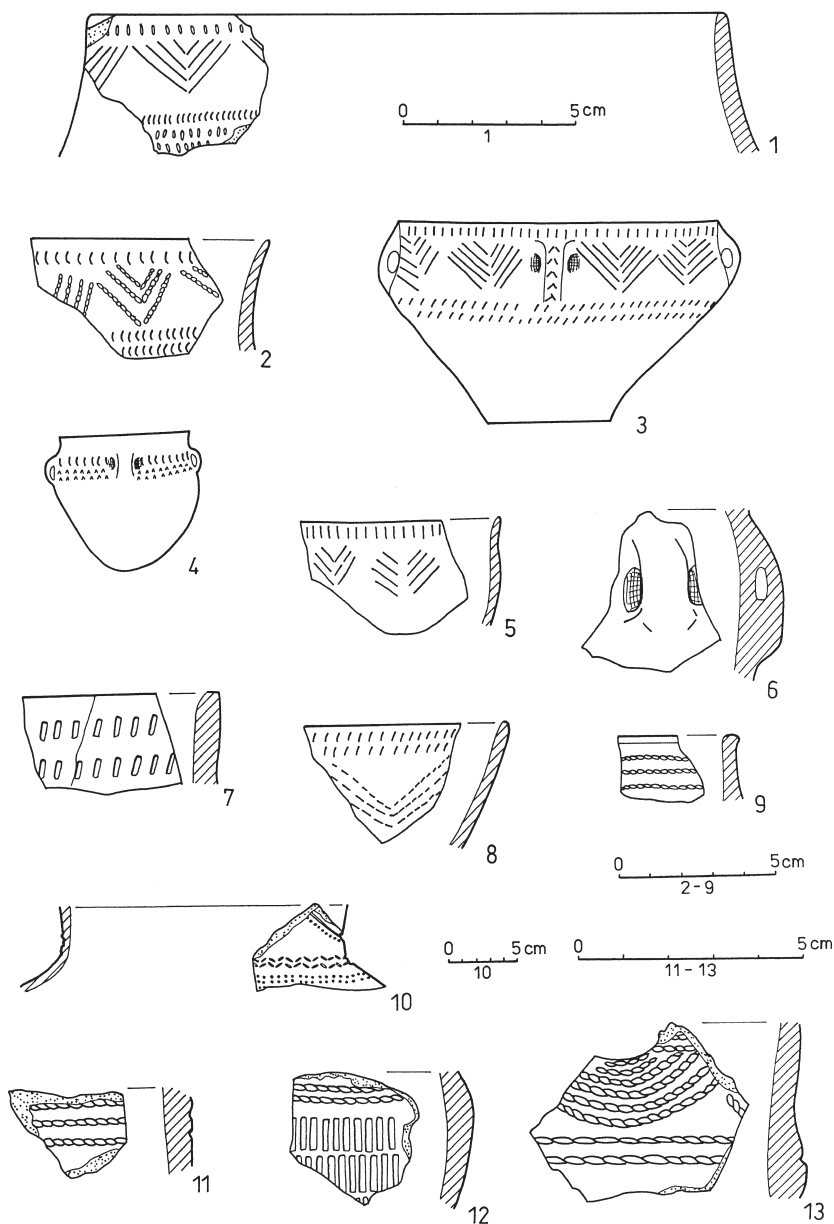


Plate 57. Sources from settlements or camps (group IV).

1-5,7-8 - Zimno-Gorodyshe [foll. Bronicki 1997; Peleshchyshyn 1998a]; 6,9 -Vorovske [foll. Berezanska, Pyasetskiy 1979]; 10 - Zvenigorod [foll. Sveshnikov 1983]; 11-13 - Samchyntsy (coll. of IA NAS). 1-13 - pottery.

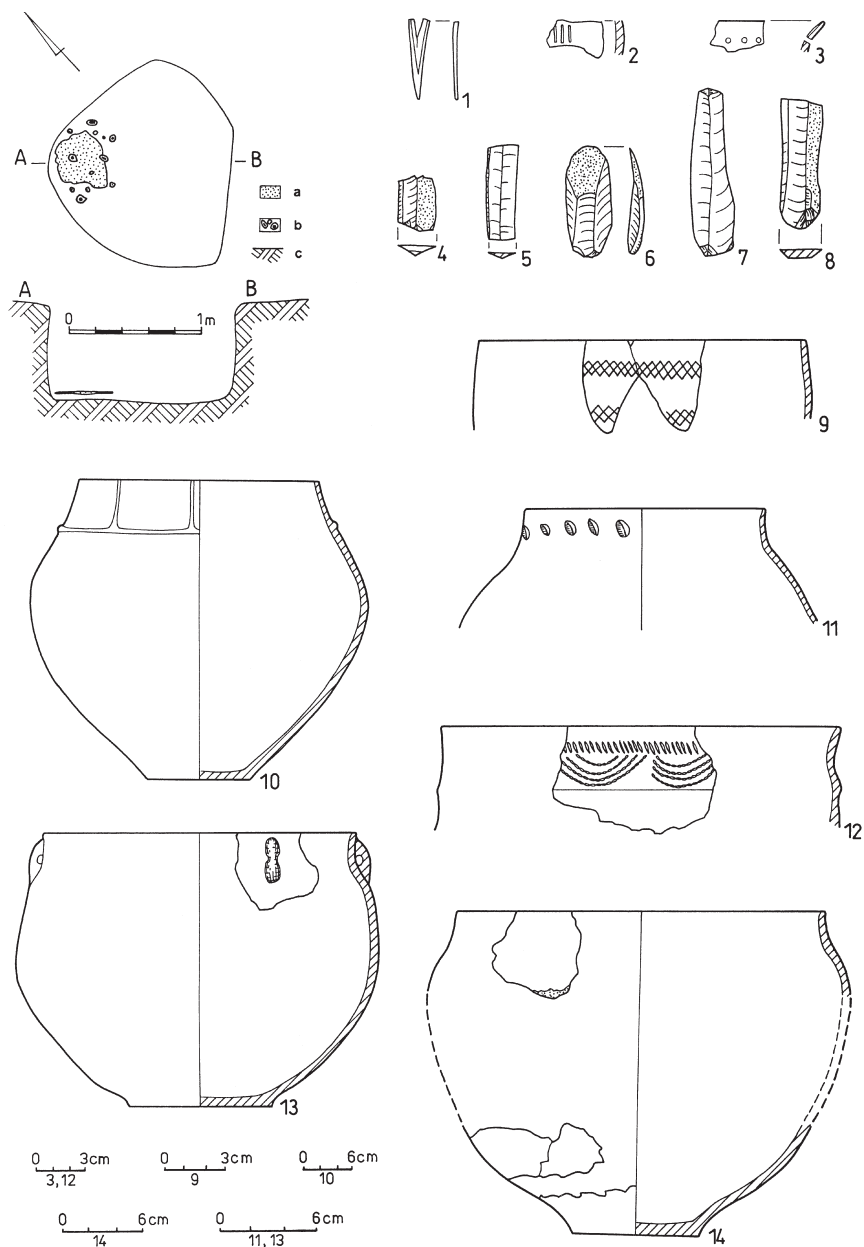


Plate 58. Sources from settlements or camps (group IV).

Peresopnitsa [foll. Shelomentsev-Terskiy 1996]. 1 - bone, 2-3,9-14 - pottery, 4-8 - flint.

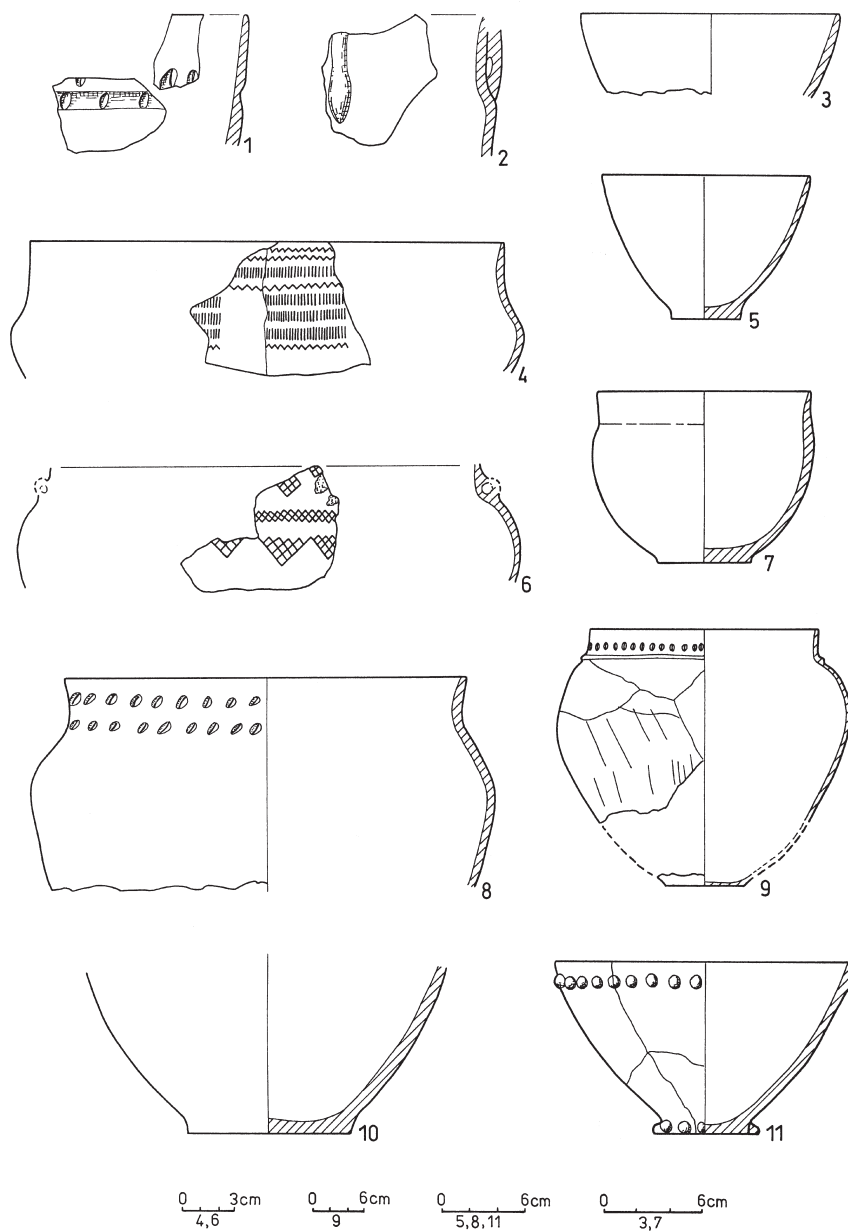


Plate 59. Sources from settlements or camps (group IV).
 Peresopnitsa [foll. Shelomentsev-Terskiy 1996]. 1-11 - pottery.

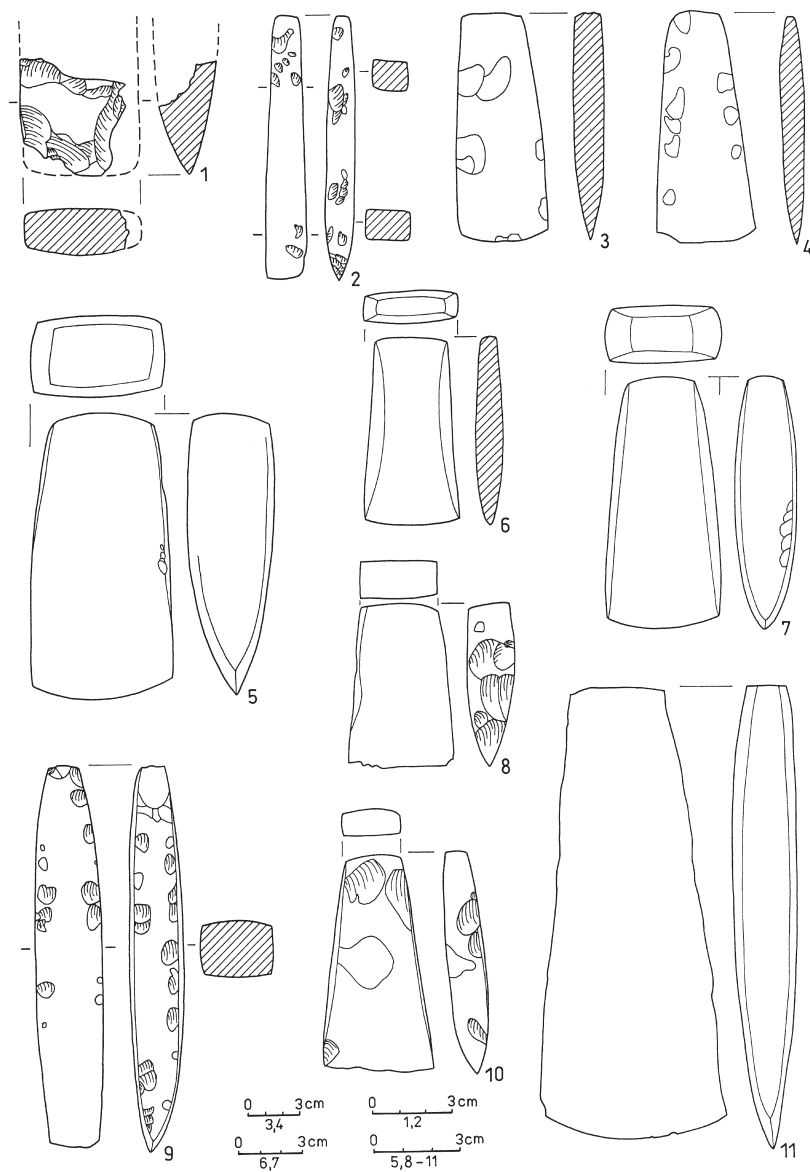


Plate 60. Incidental finds of flint implements (group V).

1-2 - Azyarnoye 1 [foll. Kryvaltsevich 1999]; 3 - Khvoyniki [foll. Kukhareno 1962]; 4 - Pasenichy [foll. Kukhareno 1962]; 5 - Beshty [archives of Kryvaltsevich]; 6 - Aminovichi [foll. Klevanets 1998]; 7 - Bolshaya Garozha [foll. Klevanets 1998]; 8 - Slobodka ; 9 - Alekseyevichi [archives of Kryvaltsevich]; 10 - Dubičiai [archives of Kryvaltsevich]; 11 - Kubilniki [archives of Kryvaltsevich].

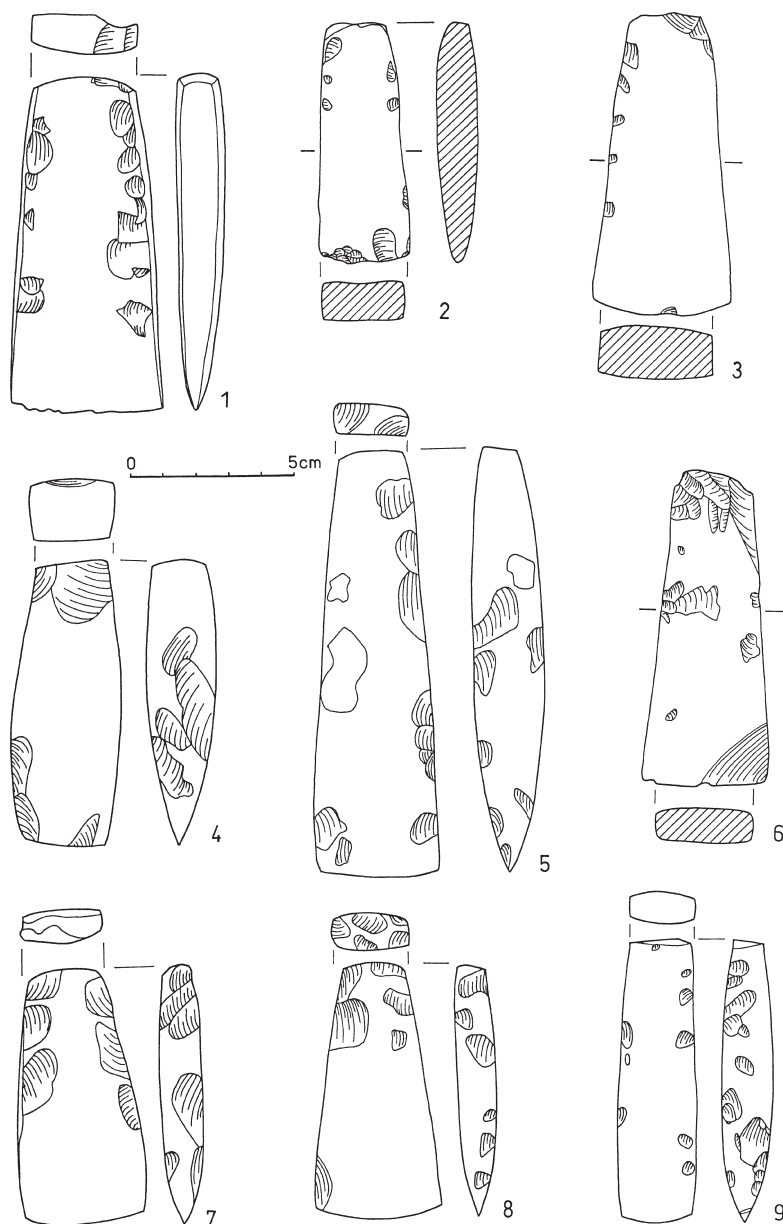


Plate 61. Incidental finds of flint implements (group V).

1 - Bodyaki (coll. of SAM); 2 - Buderazh (coll. of HMK); 3 - Chugali [archives of Sveshnikov]; 4 - Derevyane (coll. of Museum in Rivne); 5, 7, 8 - Dobrovlany (coll. of Museum in Zalishchyki); 6 - Demidovka-Zamchishche [archives of Sveshnikov]; 9 - Doslidnitskoye [archives of Maleyev].

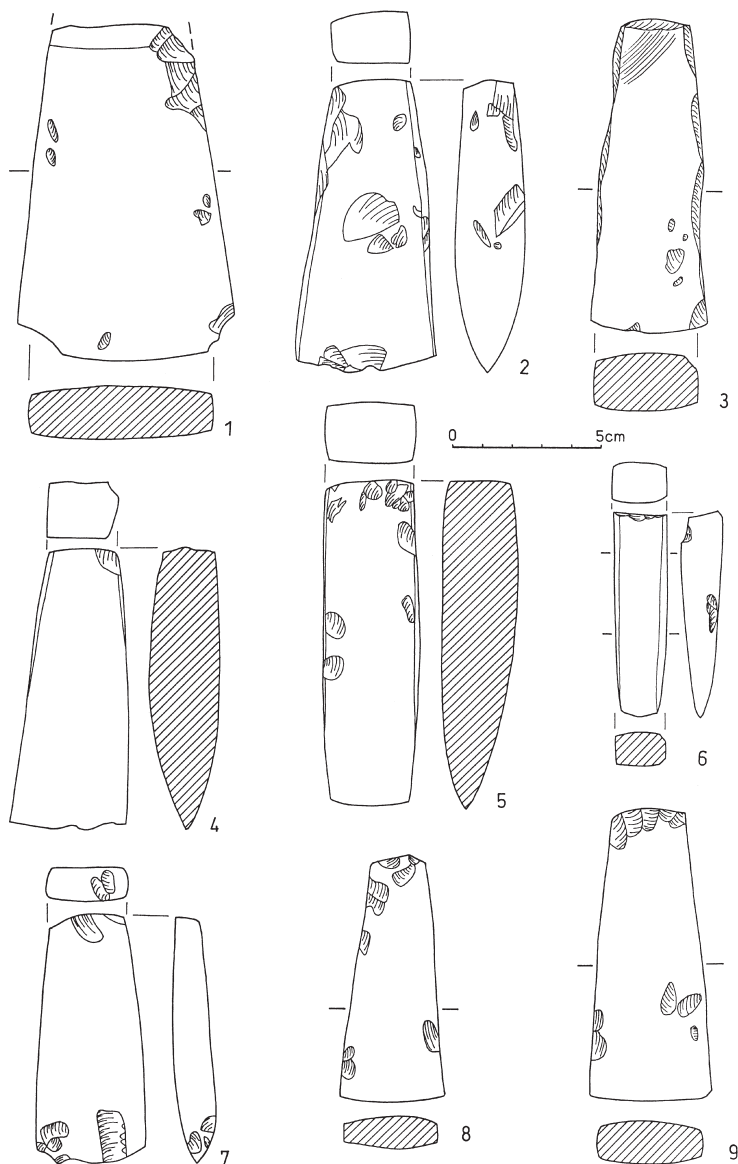


Plate 62. Incidental finds of flint implements (group V).

1 - Chorna [archives of Sveshnikov]; 2 - Drohobych-Za Gorka (coll. of AMK); 3 - Demidovka-Zamchishche [archives of Sveshnikov]; 4 - Huta (coll. of SAM); 5 - Jaromirka (coll. of SAM); 6 - Howica Mała (coll. of SAM); 7 - Gordiivka (coll. of Museum in Zhitomir); 8 - Kalagarivka [archives of Sveshnikov]; 9 - Koliki [archives of Sveshnikov].

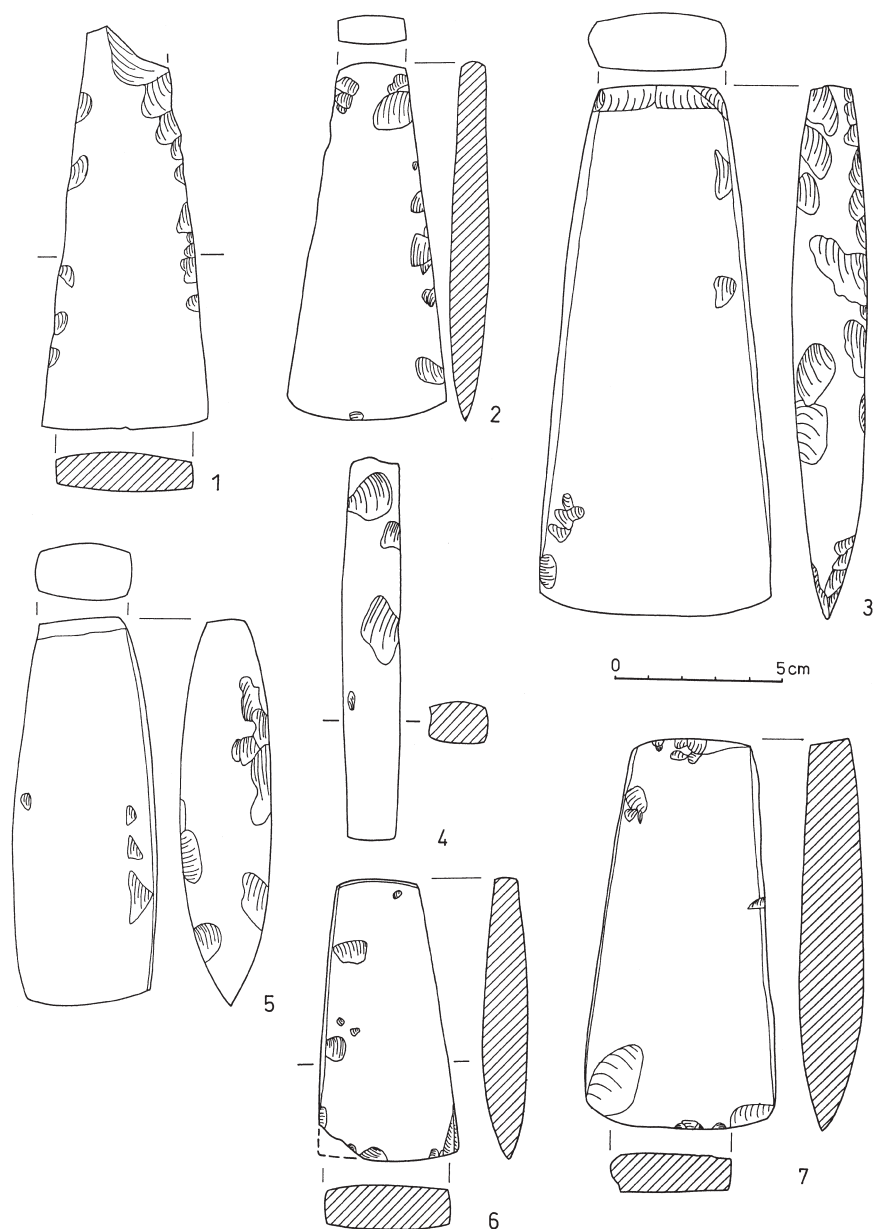


Plate 63. Incidental finds of flint implements (group V).

1 - Kalagarivka [archives of Sveshnikov]; 2 - Kupin (coll. of SAM); 3 - Korets (coll. of Museum in Rivne); 4 - Kozhukhovka [archives of Sveshnikov]; 5 - Korist (coll. of Museum in Rivne); 6 - Maydan (coll. of HMK); 7 - Kozlin (coll. of SAM).

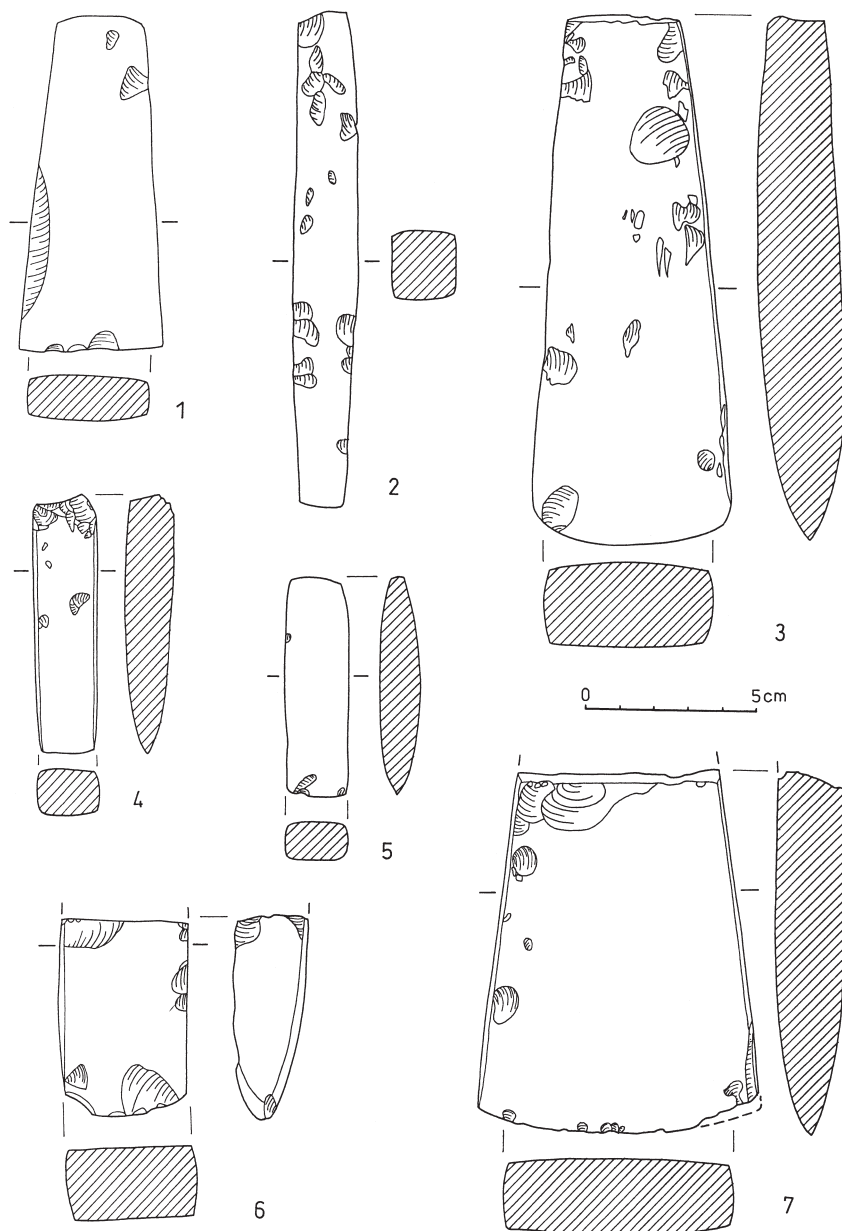


Plate 64. Incidental finds of flint implements (group V).

1 - Velikaya Khaycha [archives of Sveshnikov]; 2 - Onyshkivtsy [archives of Sveshnikov]; 3 - Mikhailivka (coll. of HMK); 4, 5 - Mirogoshcha (coll. of HMK); 6 - Mirnoye (coll. of Museum in Rivne); 7 - Ovruch (coll. of HMK).

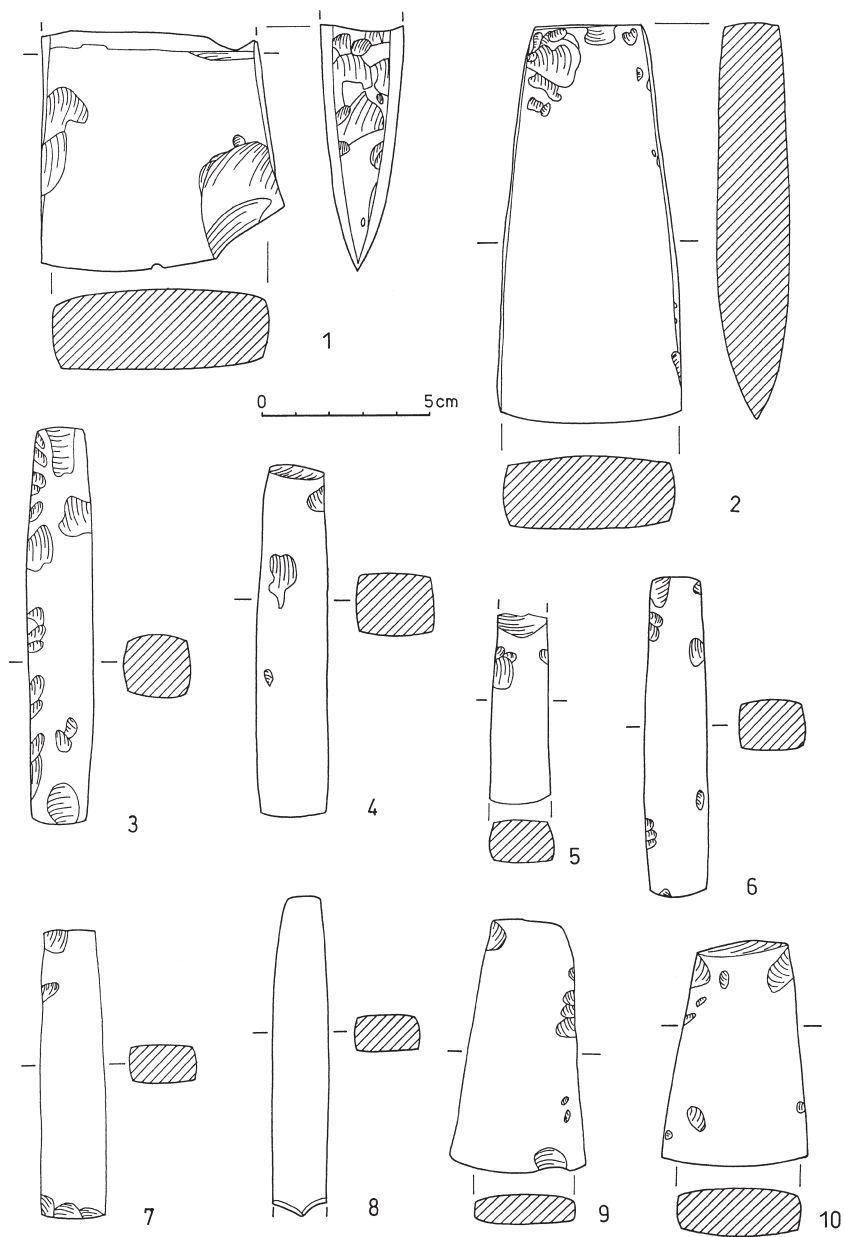


Plate 65. Incidental finds of flint implements (group V).

1 - Mirogoshcha (coll. of Museum in Rivne); 2 - Nikiforivtsy (coll. of HMK); 3 -8 - Povch [archives of Sveshnikov]; 9 - Probabin-Gora [archives of Sveshnikov]; 10 - Penyaki [archives of Sveshnikov].

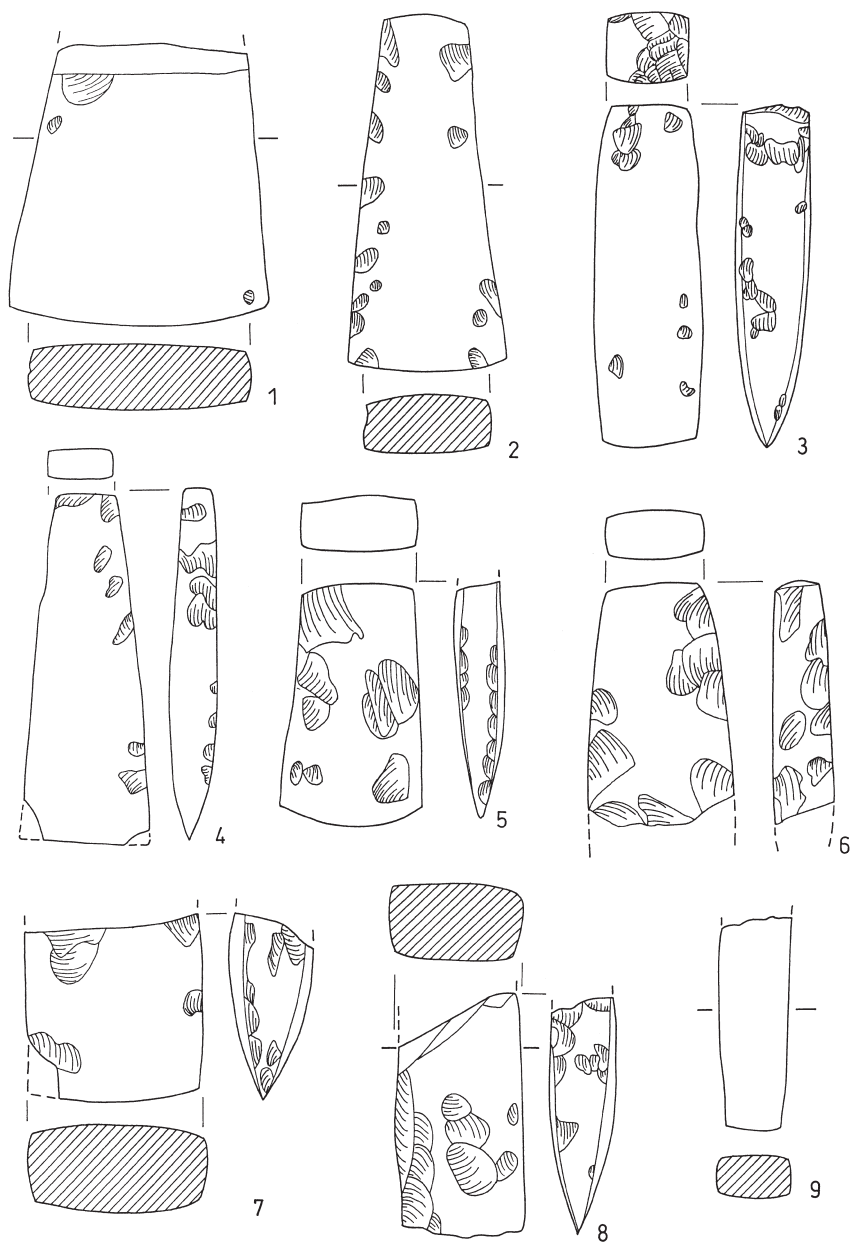


Plate 66. Incidental finds of flint implements (group V).

1 - Penyaki [archives of Sveshnikov]; 2 - Ploshchovka [archives of Sveshnikov]; 3 - Polunichna (coll. of IU NAN); 4 - 8 - Rivne-plazh (coll. of Museum in Rivne); 9 - Serby [archives of Sveshnikov].

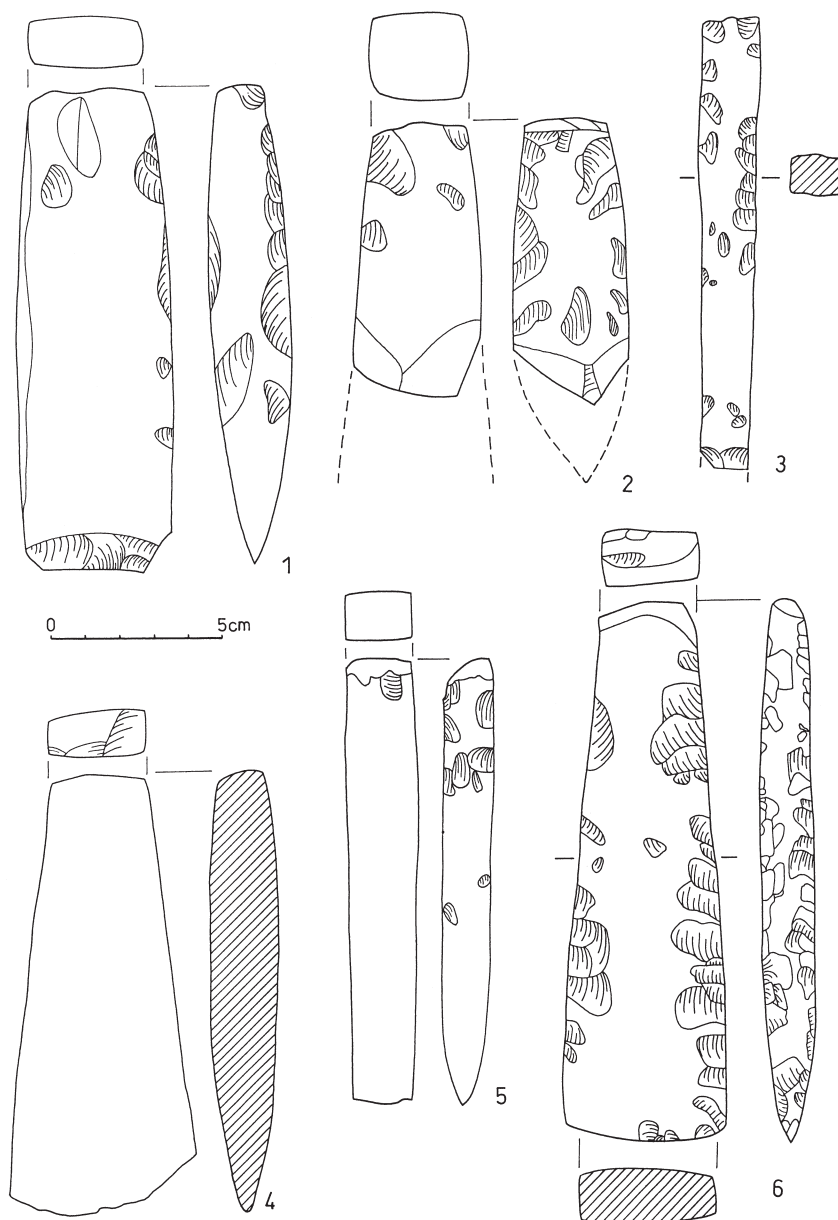


Plate 67. Incidental finds of flint implements (group V).

1 - 2 - Rivne-plazh (coll. of Museum in Rivne); 3 - Terebovla (?) [archives of Sveshnikov]; 4 - Verbychna (coll. of SAM); 5 - Vaskovichi-Mikhailivka (coll. of AMK); 6 - Stara Mikhailivka (coll. of Museum in Zhitomir).

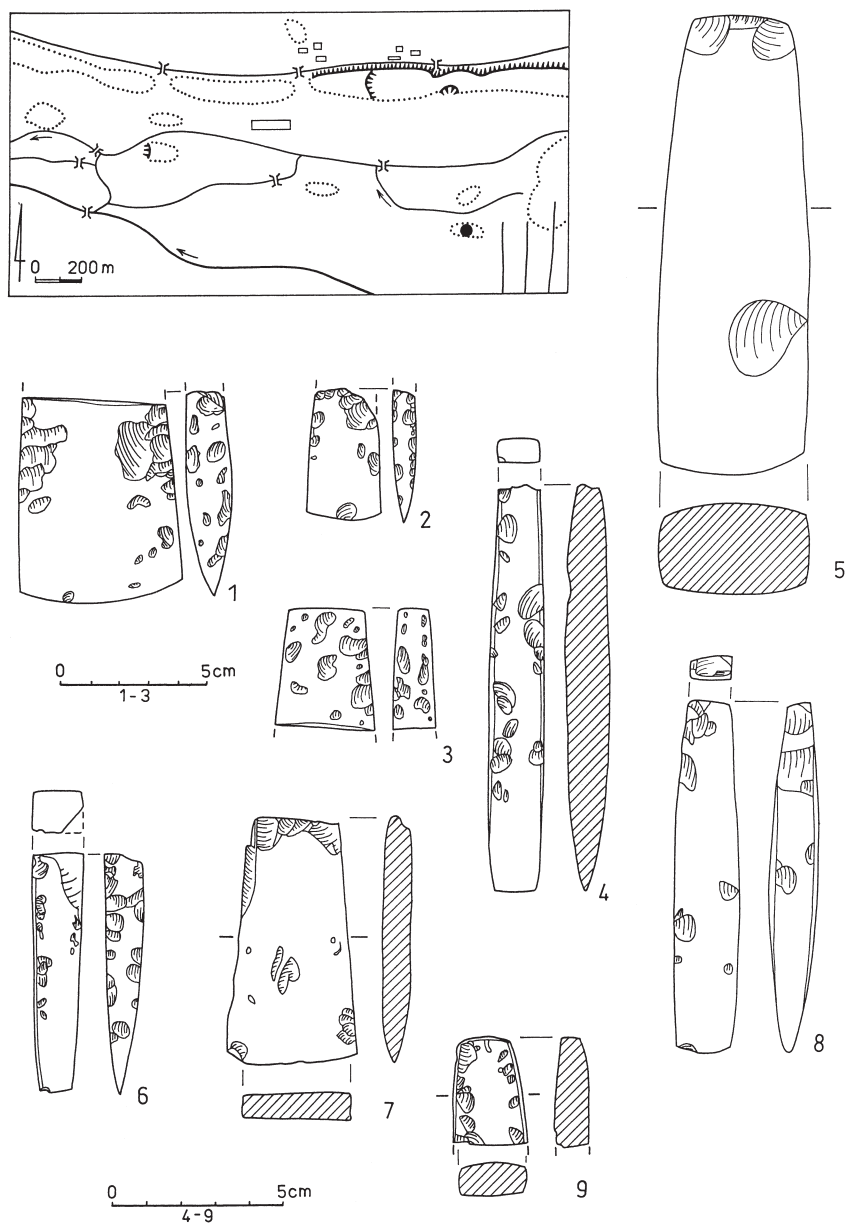


Plate 68. Incidental finds of flint implements (group V).

Location of sites in Yastrubichi (Key: black dot - site no. 5). 1 - 3 - Yastrubichi [foll. Ivanovskiy et al. 1998]; 4 - Verbychna (coll. of SAM); 5 - Yarychev [archives of Sveshnikov]; 6 - Zhezhava (coll. of SAM); 7, 9 - Zbranki (coll. of HMK); 8 - Zalishchyki (coll. of Museum in Zalishchiki).

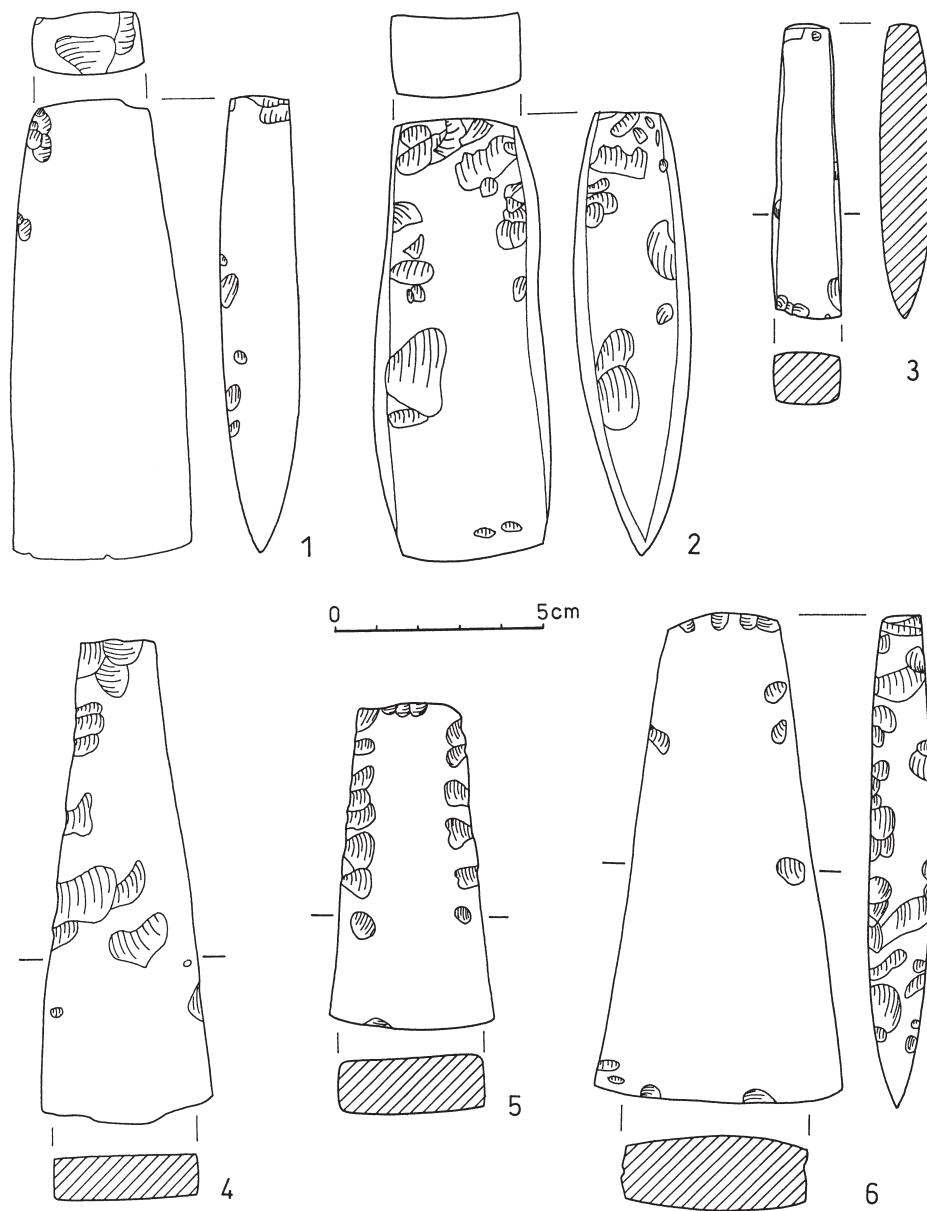


Plate 69. Incidental finds of flint implements (group V).

1 - Tetyiv (coll. of AMK); 2 - Zlazne (coll. of Museum in Rivne); 3 - Vaskovichi (coll. of HMK); 4 - 5 - Zgorany [foll. Kukhareno 1962]; 6 - Zholkva (coll. of HML).

ABBREVIATIONS

AAC	– Acta Archaeologica Carpathica, Kraków
BPS	– Baltic-Pontic Studies, Poznań
JIES	– The Journal of Indo-European Studies, Washington D.C.
KSIA	– Kratkiye soobshcheniya Instituta Arkheologii, Moskva
MIA	– Materialy i issledovaniya po arkheologii, Moskva
PA	– Przegląd Archeologiczny, Poznań-Wrocław
PMMAiEŁ	– Prace i Materiały Muzeum Archeologicznego i Etnograficznego, Seria Archeologiczna, Łódź
SA	– Sovetskaya Arkheologiya, Moskva
SAI	– Svod Arkheologicheskikh Istochnikov, Moskva
SPA	– Sprawozdania Archeologiczne, Kraków
WA	– Wiadomości Archeologiczne, Warszawa
ZfA	– Zeitschrift für Archäologie, Berlin
ZWDAK	– Zbiór wiadomości do antropologii krajowej, Kraków

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The publication is carried out within the project T-271//206//P-DOT//99 (in part No. 1H01G05912) financed by Committee for Scientific Research and supplied with funds of the Poznań Prehistoric Society, Adam Mickiewicz University and Adam Mickiewicz University Foundation.

ISBN 83-86094-07-9 (print:1999)
ISBN 978-83-86094-15-8 (CD-ROM)
ISSN 1231-0344