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## **THE WEAPONRY OF THE PASTORAL SOCIETIES IN THE CONTEXT OF THE WEAPONRY OF THE STEPPE — FOREST-STEPPE COMMUNITIES: 5000–2350 BC**

Considering the current level of knowledge, it is hardly possible to define accurately enough the period when warfare emerged as a social life phenomenon in Ukraine. The history of weaponry proves it originated from the Palaeolithic and the Mesolithic hunting implements which had been the oldest tools used by the man and had determined principle directions of human productive activities at early stages of development of the society. Although those implements could have been used against human beings as well, it is inappropriate to speak about warfare of that historically remote period.

Most probably, this social phenomenon emerged on the territory of Ukraine during the Neolithic in the course of development of productive activities, together with emergence of cropping and cattle-breeding accompanied by mass migration of population from Asia Minor and the Balkans, and struggle for fertile lands and pastures. Mesolithic hunter tribes had been forced out to Northern forests and swamps. Various archaeological monuments discovered on the territory of Ukraine, which belong to this period revealed articles which could be interpreted as the oldest special-purpose weaponry — maces and different types of axe-hammers made of firm kinds of stone, often of complex, and sometimes even of sophisticated forms, polished, with a drilled aperture for fastening to a haft. These weapons are often regarded as insignia of power which, however, does not exclude, but rather confirms their war fighting function. Remarkably, all those articles point out to emergence of a developed tradition of processing firm kinds of stone previously known only in the Middle East.

In the following characteristics of the weaponry, the implements from the Neolithic and Eneolithic periods are discussed together because it appears impossible to distinguish between them.

## 1. NEOLITHIC: 5000–3150 BC

## 1.1. STEPPE TRIBES

Weaponry of the steppe population of that period is best represented by materials of the Dnieper-Donets and the Sredny Stog cultures [Telegin 1985a, 1985d].

*Arrow-heads.* Triangular flint articles ground from both sides. Existed in two versions: with a level base: Vovnigi, Strilcha Skela, the Mariupol cemetery (Fig. 1: 11; 2: 4) and with a slightly concave base Vovnigi, Dereivka (Fig. 1: 3,12,13).

*Dart-heads.* Flint articles polished from two sides:

- a) triangular level-base (Dereivka; Fig. 1: 9);
- b) triangular short-tanged (the Nikolsk cemetery, Alexandria; Fig. 1: 8). These dart-heads can be regarded as prototypes for the Seyma arrow-heads of the Bronze Age.
- c) Leaf-like long-tanged dart-heads: Petro-Svistunovo, prototypes of the Yamnaya and the Catacomb culture dart-heads.

*Flat axes.* Flint articles represented by a polished double-faced axe which was found in settlement Studenok 2 (Fig. 1: 1); a polished-bladed axe was found in the Mariupol cemetery (Fig. 2: 5,6); axes with polished blades and facets (Yama, the Mariupol grave, Fig. 1: 10). Flat polished axes made of firm kinds of stone were discovered in the Nikolsk and the Yama graves (Fig. 1: 7).

*Hammers.* The so-called "boats" can be considered as prototypes for fighting hammers. These were articles made of firm polished stone with a bored diametrical gutter, for instance, found in Vovnigi (Fig. 1: 4).

A developed, though a rather peculiar type of a fighting axe was discovered in the Mariupol cemetery (Fig. 2: 2). The sophisticated-shaped article was made of firm stone, was polished and had drilled haft hole in the middle part.

*Maces.* A round flattened artifact with a "collar" at the lower aperture was found in the Nikolsk cemetery (Fig. 1: 5). Cruciform maces displaying four knobs found in the Mariupol cemetery (Fig. 2: 1; 2: 3) represent the oldest finds of cruciform maces which are regarded as prototypes for the Bronze-Age Borodino-type maces.

*Defensive armour.* It is represented by finds in the Mariupol cemetery. Most probably, it was made of leather with plates made of polished boar fangs. The defensive armour included helmets of two types: dome-like helmets found in graves 6, 30, 74, and 83, and soft helmets represented only by broad bone "diadems", found in graves 50, 56, 86. Graves 6 and 30 revealed breast-plates — pectorals made of broad plates [Makarenko 1933].

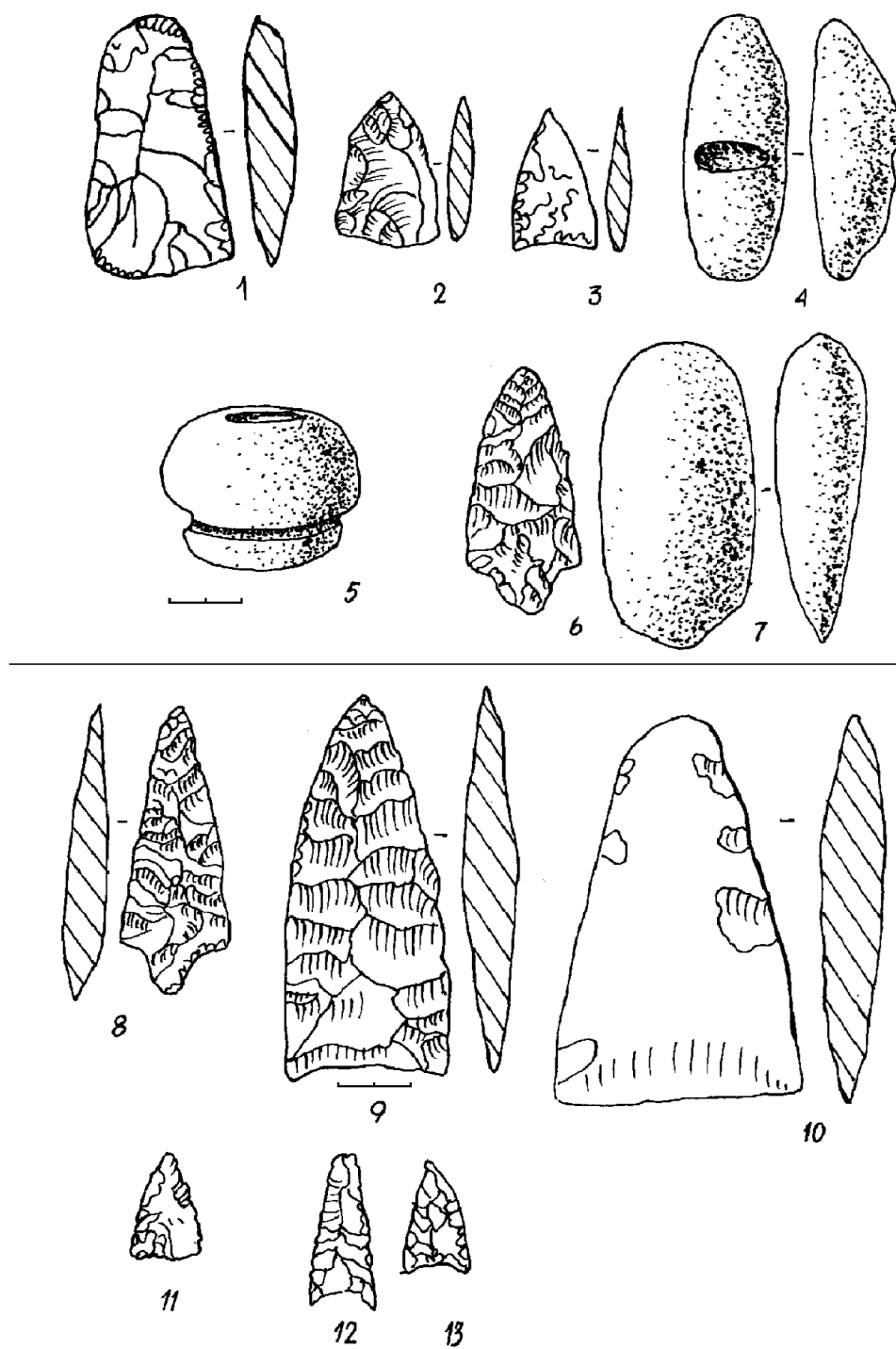


Fig. 1. The Dnieper-Donets culture: 1 — Studenok-2; 2 — Oskol; 3-4 — Vovnigi; 5-7 — the Nikolsk cemetery. The Sredny Stog culture: 8 — Alexandria; 9,12,13 — Dereivka; 10 — Yama; 11 — Strilcha Skela.

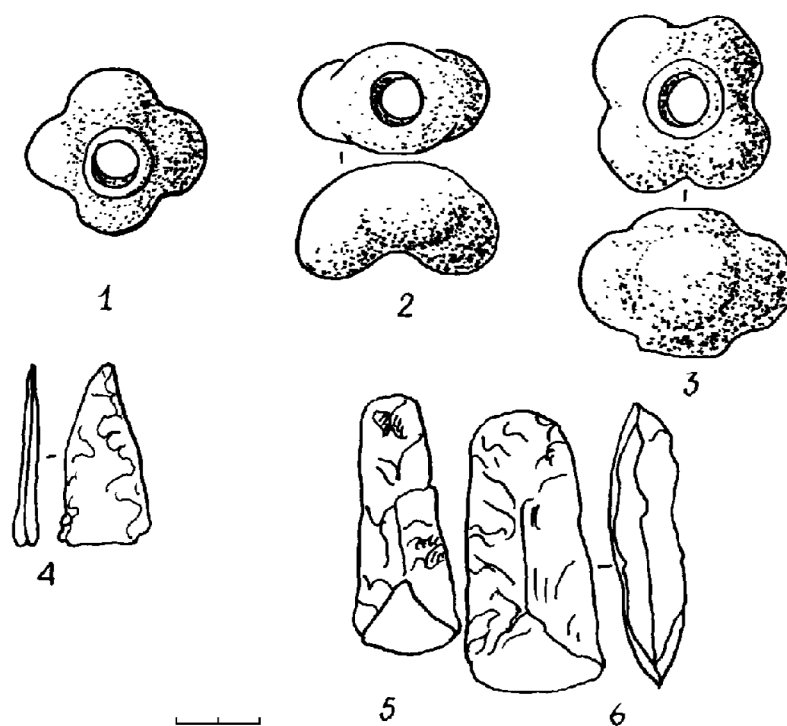


Fig. 2. The Mariupol cemetery: 1 — grave VIII; 2 — grave XXIV; 3 — grave XXXI; 4 — grave XXI; 5,6 — grave LI.

## 1.2. TRIPOLYE CULTURE

The Tripolye culture is one of the major Late Neolithic cultures of Europe which covered vast territories of present-day Romania, Moldova and the forest-steppe zone of the right-bank Ukraine. Periods A and B are dated back to Late Neolithic/Eneolithic [Bibikov, Zbenovich 1985; Movsha 1985].

*Arrow-heads* are represented by triangular flint double-faced level-based articles (Fig. 3: 9-10).

*Dart-heads* are represented by flint double-faced level-based articles, usually triangular or leaf-shaped [Zbenovich 1975: 34] (Fig. 3: 4-5).

*Flat axes* were polished shale, or more seldom, flint weapons (Fig. 3: 7-8).

*Axe-hammers* include beak-hammers and rounded-butted axes. Beak-hammers are artifacts which feature elongated proportions with a long narrow face made of firm kinds of stone and furnished with a drilled hole (Karbuna hoard, settlement Okopy; Fig. 3: 11). Axe-hammers are also represented in the Karbuna hoard and in Luka Vrublevetskaya (Fig. 3: 6). A copper axe-hammer was found in the Karbuna



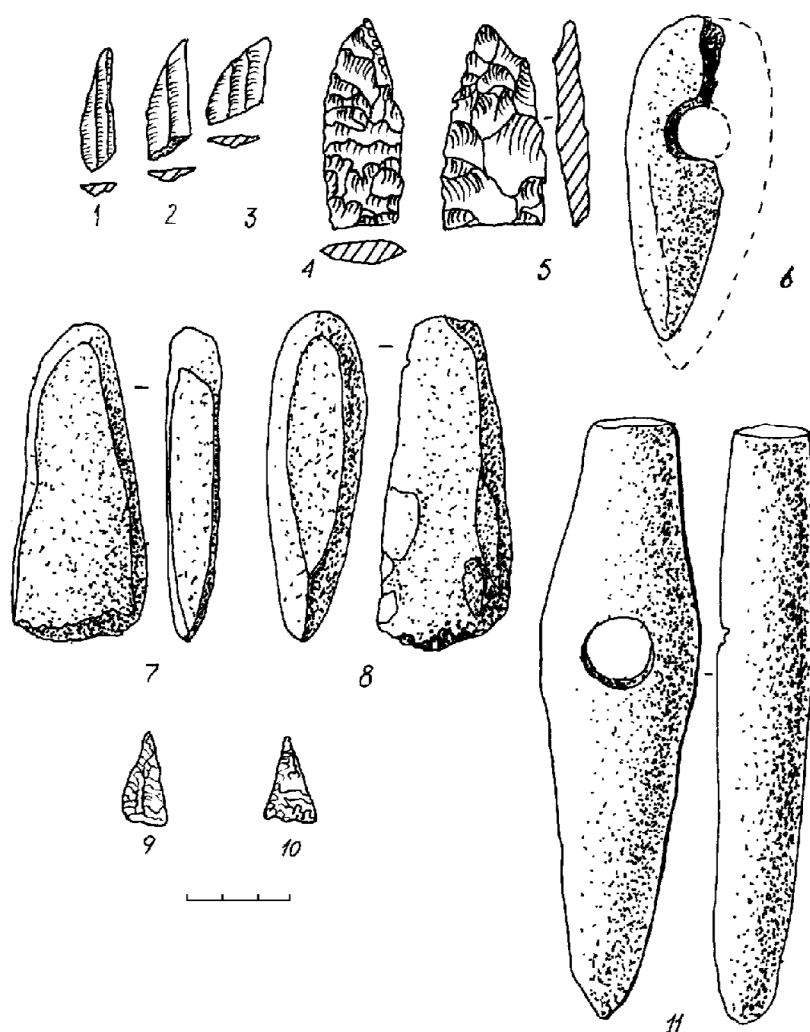


Fig. 3. The early and middle Tripolye culture: 1-5 — Florești; 6 — Luka Vrublevetskaya; 7-8 — Bernashevka; 9 — Nezvisko; 10 — Vladimirovka; 11 — Okopy.

hoard. This artifacts is a replica of respective stone weapons. V.G. Zbenovich classed some bone and stone articles among weapons [Zbenovich 1975]. Beak-hammers represent the most authentic articles among them [Zbenovich 1989: Fig. 43].

The Tripolye culture is the most ancient among Eastern European cultures which feature early stages of fortifications [Zbenovich 1975]. Local relief, in particular, plateau capes and terraces over river basins, surrounded by precipices and ravines, was used in combination with smaller man-made trenches and walls on the floor-side (Trusheshty, Khabasheshty, Polivanov Yar, etc.) [Zbenovich 1975]. V.A. Kruts offered a radically different approach to fortifications found in major Late Tri-

polye settlements which featured special planning of outer rows of huts representing houses-walls [Kruts 1990: 44].

It is difficult, however, to consider the principles of the Eneolithic military organization and tactics on the basis of the materials presently available. Still, observations made by N.V. Ryndina and A.V. Engovatova at the Tripolye settlement Drutsy 1 present a special interest: the settlement displayed about 100 flint arrow-heads. The settlement was located on a high cape. Major finds of arrow-heads were discovered on the edges of all huts which suggested attacks from the floor side. The attackers were people acquainted with the Tripolye arrow-making tradition [Ryndina, Engovatova 1990: 110]. Therefore one may suggest that bow was a common weapon used for storming fortifications. Relatively wide usage of flat-faced beat weapons (for instance, maces and axe-hammers) allows to argue that during the Eneolithic military action was aimed not only at physical extermination of the enemy, but also at stunning, presumably for taking him prisoner (Fig. 3: 6; 3: 11).

Materials of armaments revealed in the course of excavations do not allow to distinguish professional warriors of that period. The bulk of weapons of the period is rather simple: a bow and arrows, spear-darts, axe-hammers or beak-hammers. Eventually, the army was formed of community men. Single, often unique weapons like scepters, maces or hammers made of firm kinds of stone, perfectly polished, often of sophisticated shape, point out to emergence of chiefdoms. There are no obvious substantial differences in weaponry of major Late Neolithic cultures on the Ukrainian territory, while there are some versions of technological and cultural traditions with regard to stone processing. Military power of an individual society of that period depended more on a number of warriors than on quality of weapons and army organization.

Special niche was occupied by the Pit- and Comb Pottery cultures mostly of the forest zone [Neprina 1985]. These tribes were mostly involved in hunting and possessed only hunting weapons.

## 2. THE EARLY BRONZE AGE: 3150–2350 BC

At first, discovery of metallurgy did not have substantial impact on the rate of development of the historic process. However, representing an element of the technological process, this feature reflected qualitative changes which had occurred in the contemporary society.

## 2.1. TRIPOLYE CULTURE

The Tripolye culture continued to evolve in the right-bank Ukraine in early times of this period. However, the late Tripolye monuments differed from each other to a larger extent than the early Tripolye sites which prompts researchers to divide them into local versions and even to raise the issue of individual archaeological cultures within the framework of the late Tripolye [Movsha 1985a].

Articles of armaments are represented the most extensively in the monuments of the Usatovo and the Sofievka late Tripolye local groups; these groups display the most evident differences from the monuments of the previous period.

## 2.1.1. THE USATOVO GROUP

It covered the territory of the steppe North-Western Pontic region.

*Arrow-heads.* Alongside with traditional Tripolye heads — triangular level-based articles — the Usatovo settlement (Fig. 4: 7) revealed flint arrow-heads made in a new technique: on plates, with chopped-off edges. Some of the arrow-heads have concave bases (the Usatovo settlement; Fig. 4: 5); some, for instance, found in Usatovo, barrow 1, grave 13 (Fig. 4: 6) have level base, and some feature leaf-like shape (Fig. 4: 8). Similar technique of making arrow-heads appeared during somewhat earlier period in Central Europe, in the Funnel Beaker culture [Müller-Karpe 1974: Taf. 454].

*Dart-heads.* Flint triangular level-based dart-heads are analogous to dart-heads typical for the previous period and were found in Usatovo and Mayaki (Fig. 4: 4).

*Flat axes.* Those are represented by copper trapeziform articles (the so-called "chisels" in Usatovo, barrow 1, grave 13, and barrow 1, grave 12 (Fig. 4: 1-2). During that period, similar weapons were widespread in the Balkans and Asia Minor.

*Daggers.* They were characterized by a narrow subtriangular blade and a hole for fastening the dagger to a haft at the base. Two versions of daggers have been distinguished: with a blade lens-shaped in section and with a rib. A dagger with a lens-shaped blade section was found in Usatovo, barrow 1, grave 4 and had been made of As-bronze (Fig. 4: 3). This type of daggers, widespread at the Balkans and in Central Europe, is considered to be of the East Mediterranean origin and dates ca 3150 BC. Eventually, this type of metal daggers is the most ancient in Europe [Goldmann 1981]. Ribbed daggers — from Usatovo, barrow 1, grave 3 and grave 1 near Sukleya — were made of quality alloyed As-bronze and were arsenium-plated,

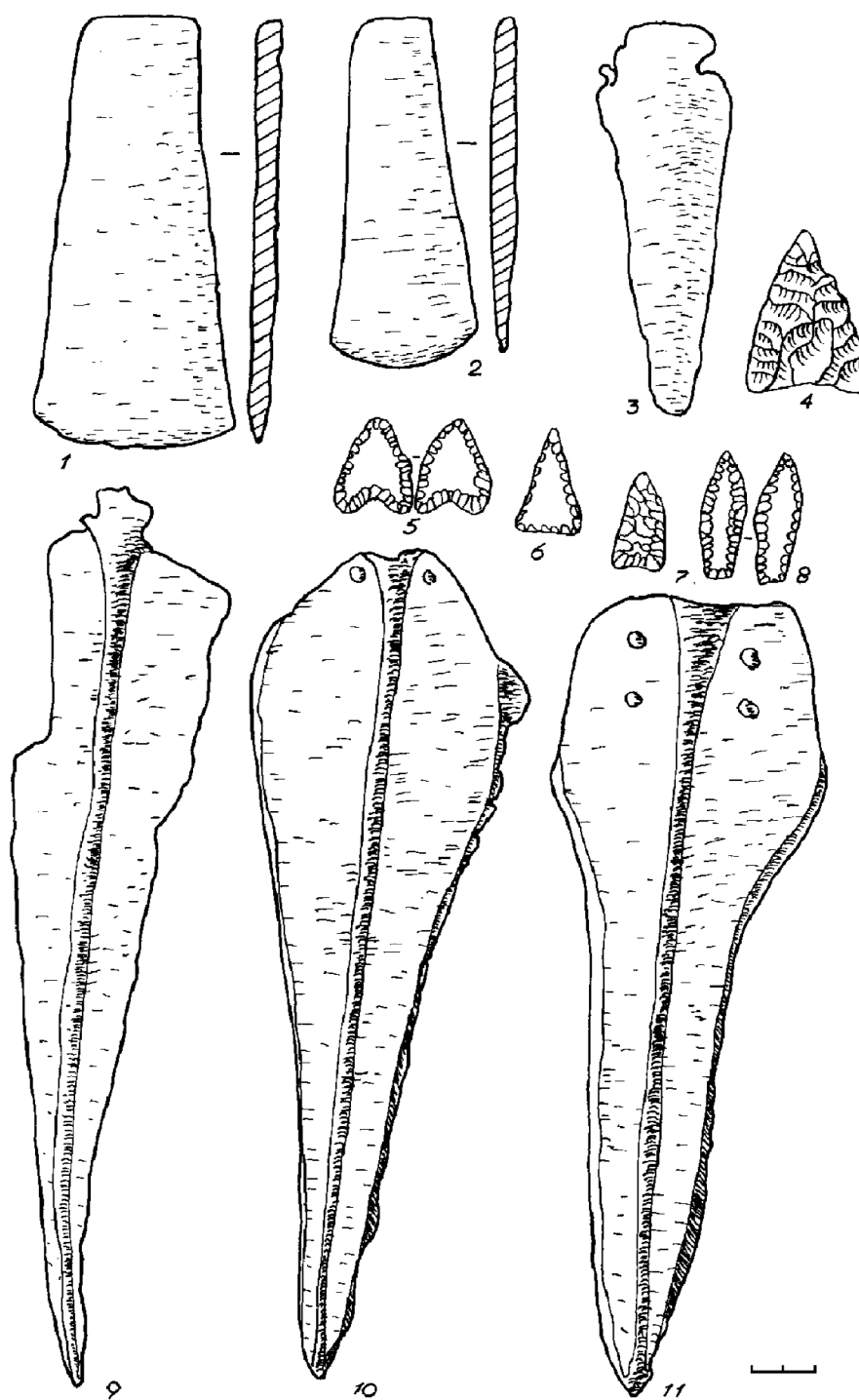


Fig. 4. The Usatovo group: 1 — Usatovo, barrow 1/13; 2 — Usatovo, barrow 1/12; 3 — Usatovo, barrow 1/4; 4 — Mayaki; 5, 7, 8 — Usatovo, settlement; 6 — Usatovo, barrow 1/13; 9 — Usatovo, barrow 1/1; 10 — Usatovo, barrow 1/3; 11 — a barrow near Sukleya.

which accounts for their silver hue [Ryndina, Konkova 1982] (Fig. 4: 9-11). Due to metal composition and technology of making, the articles may be classed among imports from Anatolia and dated ca 3150 BC.

Therefore, unlike articles of armament found in other Tripolye-culture monuments, the Usatovo weapons display similarity to a substantial amount of the Balkan and Anatolia elements. No stone axe-hammers were found in the Usatovo; though there appeared metal weapons represented by flat axes and daggers.

#### 2.1.2. THE SOFIEVKA GROUP

Monuments of this group are located on the territory of the Kiev region. The weaponry was discovered in the Sofievka [Zakharuk 1952] and the Krasniy Khutor [Danilenko 1956] graves.

*Arrow-heads.* The excavation revealed triangular level-based (Fig. 5: 2-3) flint arrow-heads; arrow-heads resembling an isosceles triangle (Fig. 5: 6), and triangular concave-based arrow-heads made on plates (Fig. 5: 4-5). The two latter types are new for the Tripolye culture. Plate-based arrow-heads were mentioned above, while isosceles triangle-shaped arrow-heads are common for the Central European Funnel Beaker culture. A copper fine leaf-shaped short-tanged arrow-head was found in the Krasniy Khutor grave.

*Dart-heads.* A copper tanged head originates from the Sofievka grave (Fig. 5: 7).

*Flat axes.* The culture revealed flint flat axes with grinded blades (Fig. 5: 1). A copper axe from the Sofievka grave (Fig. 5: 8) is different from the Usatovo articles and features similarity to the Balkan axe-chisels [TD-16 — Chernykh 1978a].

*Daggers.* A dagger with holes used for riveting it to the "base" resembles the Usatovo articles (Fig. 5: 10), while daggers (or rather fighting knives) from the Sofievka cemetery — short-tanged, with a fine leaf-like blade (Fig. 5: 9) — are similar to a dagger found in the Pusztáistvánháza of the Bodrogkeresztur culture [Müller-Karpe 1974: Taf. 454].

*Axe-hammers.* Discovered articles were made of firm kinds of stone, had polished faces and short proportions. Some of them had mushroom-shaped caps and imitations of casting seams (Fig. 6). These axes approximate axe-hammers of the Funnel Beaker culture. Their origin becomes more clear if considered in comparison with the Tripolye axes from the settlement of Troyanov of the Zhitomir region [Movsha 1985a: 237]. The Troyanov axes represent typical axe-hammers of the Funnel Beaker culture: according to M. Zapotocky, they refer to the types K VII and K VIII, characteristic of the Carpathian region [Zapotocky 1989]. The Troyanov

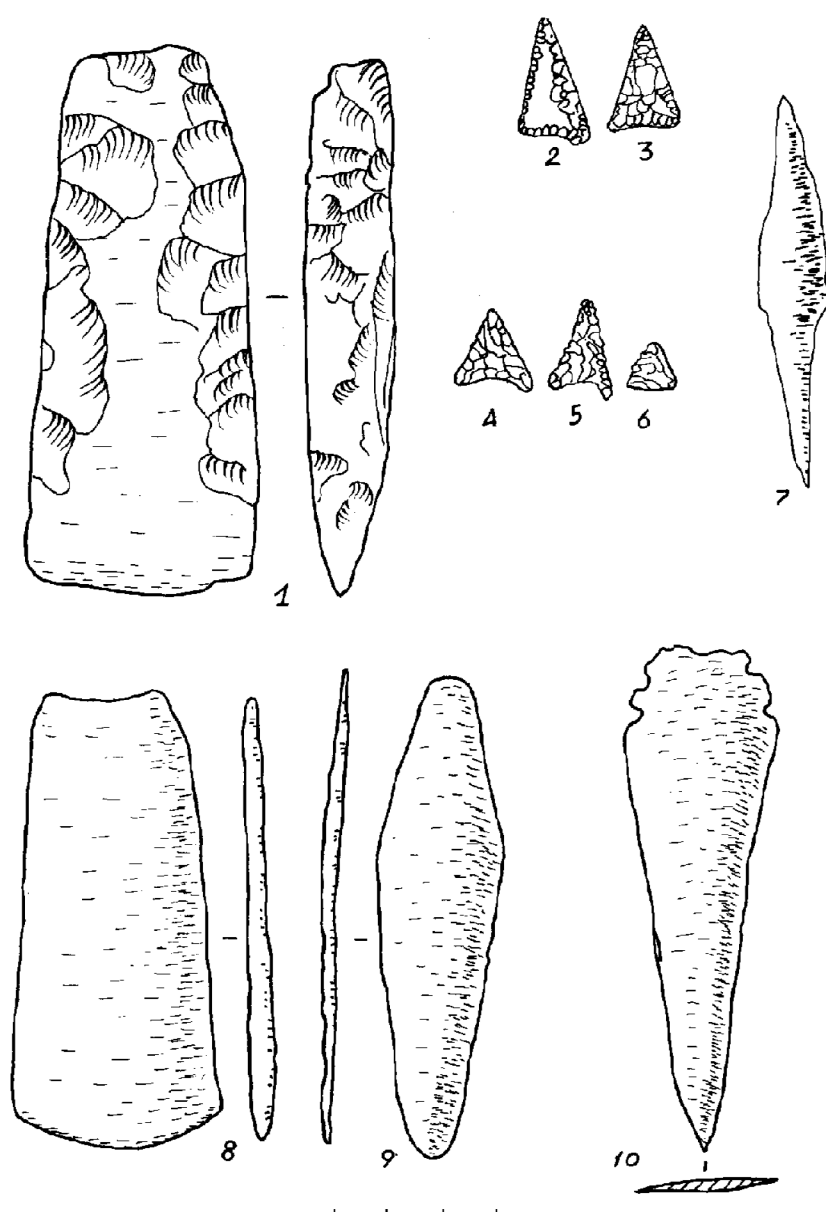


Fig. 5. The Sofievka cemeteries: 1,2-9 — Sofievka; 10 — Krasniy Khutor.

settlement also revealed a substantial amount of the Funnel Beaker culture ceramics which provides grounds for considering the impact this culture might have had on the late Tripolye of the Volhynia and the Kiev regions. This impact was displayed in emergence of the Central European and the Balkan types of weapons and vast dissemination of axe-hammers made of firm kinds of stone. Sofievka-type

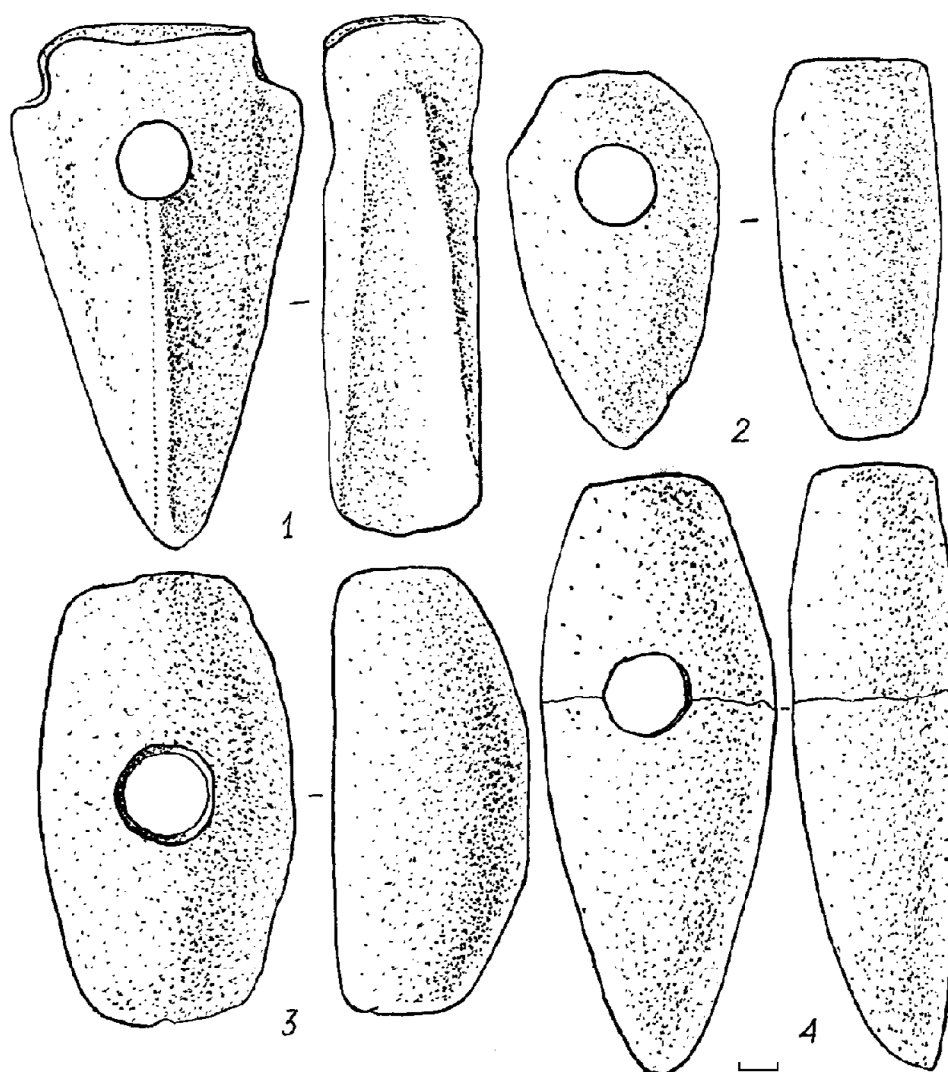


Fig. 6. Axe-hammers from the Sofievka cemeteries: 1,3,4 — Sofievka; 2 — Krasniy Khutor.

axe-hammers appear to belong to an earlier type than the Funnel Beaker culture axes and are closer to their possible metal prototypes — copper axe-hammers of the Bodrogkeresztur culture.

Graves of the late Tripolye Sofievka group represent, for the first time, a complete set of offensive weapons including a bow, darts, an axe-hammer and a dagger, which later became the principle selection of armament for the Catacomb and the Corded Ware cultures. A large number of war-related articles in the Sofievka graves reflects a high degree of militarization of the society, most probably involved in a territorial expansion and permanent wars with their neighbors.

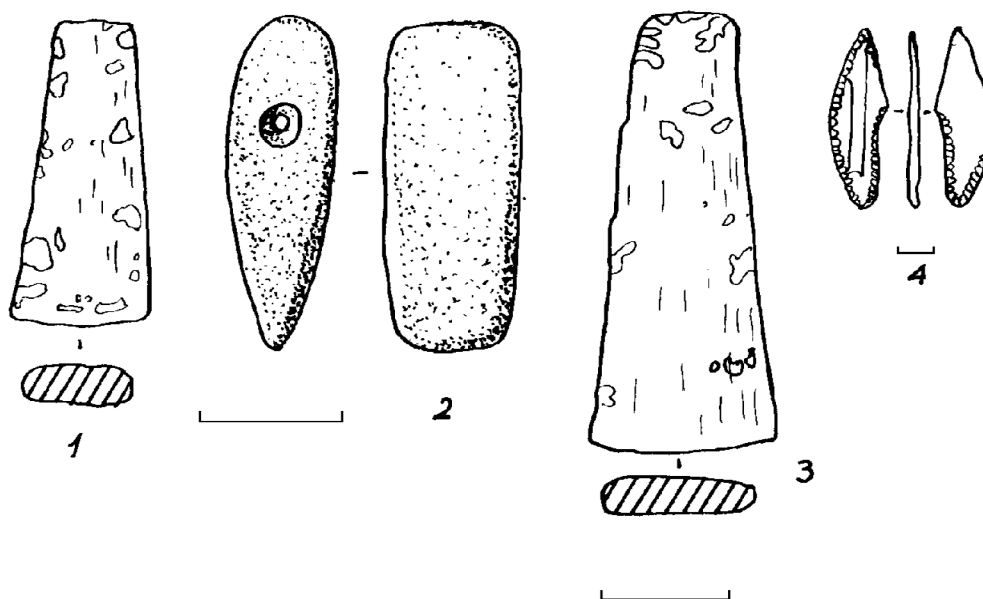


Fig. 7. The Globular Amphora culture: 1 — Kolosovka; 2 — Suyemtsy; 3 — Chernavoda; 4 — Mezhirechye.

With regard to this aspect, the Sofievka graves approximate some burial mounds of the Middle Dnieper Corded Ware and the Catacomb cultures.

## 2.2. GLOBULAR AMPHORA CULTURE

The late Tripolye of the right-bank Ukraine is immediately associated with monuments of the Globular Amphora culture, particularly of its eastern version widespread on the territory of the Podolia and the Volhynia [Sveshnikov 1985]. Finds of weapons in these monuments are not numerous and include flat flint axes peculiar for their trapeziform configuration and carefully grinded faces (Fig. 7: 1,3). An axe-hammer from Suyemtsy refers to the round-butted Tripolye type (Fig. 7: 2). A specific asymmetric leaf-shaped plate-based flint arrow-head was found in the Mezhirechye (Fig. 7: 4).



## 2.3. POST-MARIUPOL GRAVES

Notwithstanding a considerable number of monuments, weapons of the steppe population of the Early Bronze Age are represented rather poorly.

Special attention should be paid to finds of moulds for casting lugged axes discovered in "post-Mariupol" burial interments near the village of Mayevka of the Dnepropetrovsk region; barrow group XII, barrow 2, grave 10 [Kovaleva et al. 1977: 20-22, Tables XV, XVI] and on the Samara island in the vicinity of the village of Sokolovo, the Novomoskovsk district of the Dnepropetrovsk region; barrow 1, grave 6 [Kovaleva 1979: 64, Fig. 6]. These graves of foundry artisans are the most ancient in Eastern Europe [for more details on these graves, see an article of V.I. Klochko "The metallurgy..." in this volume].

## 2.4. THE YAMNAYA CULTURE

Regardless of wide territories covered by this culture and a substantial number of monuments, the study of the culture weapons leaves much to be desired. This is due to lack of weapons in graves and insufficient research of settlements. Scarce finds of articles of armaments in the graves often appear typical for some other culture. This is especially true for the late Yamnaya monuments, all of which contain the Catacomb-type weapons. This phenomenon will be discussed further in this study, while now the author suggests considering materials of the early Yamnaya period.

*Dart-heads* are represented by flint double-faced long-tanged articles with leaf-like blades, for instance, like found in Antonovka, barrow 5, grave 7 and in Semenovka, barrow 2, grave 7 (Fig. 8: 1,3). This kind of dart-heads is common for the majority of European cultures ca 3150–2500 BC.

Heads with triangular blades and broad short tangs were discovered in Starogorozhenko, barrow 1, grave 17, and in Mikhailovka settlement (Fig. 8: 2). They also occur in the Corded Ware and the Catacomb cultures. A pointed leaf-shaped dart-head from Mikhailovka settlement features a rather peculiar sample.

*Axe-hammers* from Mikhailovka settlement represent replica of the Sofievka axes, differing from the latter only in larger dimensions. Surprisingly big sizes of Mikhailovka hammers make them unique among other similar Bronze-Age weapons. Most probably, those articles were not intended for daily usage, but were cult articles instead.

*Daggers*. A flint double-faced dagger found in Mikhailovka settlement represents a typical item of the Corded Ware culture.

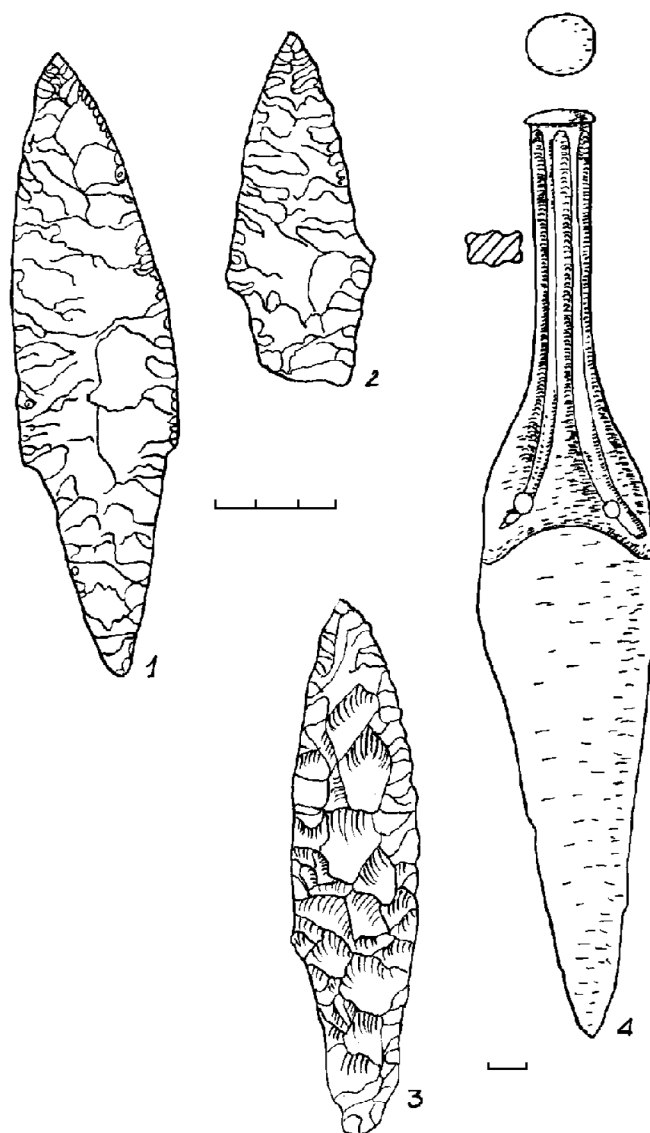


Fig. 8. The Yamnaya culture: 1 — Antonovka, barrow 5/7; 2,4 — Starogorozheno, barrow 1/17; 3 — Semenovka, barrow 2/7.

A bronze dagger from Starogorozheno, barrow 1, grave 17 (Fig. 8: 4) features another unusual version of the Usatovo daggers. The latter had hafts made of organic materials, while the Starogorozheno dagger was whole-cast and had a metal haft copying the form of a wooden or a bone haft including holes unnecessary in such a case.

## 2.5. THE CATACOMB CULTURAL-HISTORIC ENTITY

The Yamnaya cultural-historic entity which had existed in the Ukrainian steppe was superseded by the Catacomb entity. Such a brief writing piece is unable to contain the abundance of articles of armaments in the Catacomb burial mounds of all cultures which belonged to this entity, as well as a substantial number of such graves investigated up to the present. Therefore, the Catacomb weaponry is a subject for discussion in a separate article [see an article by V.I. Klochko and S.Z. Pustovalov "The warfare..." in this volume].

## 2.6. CORDED WARE CULTURES

On the vast territories of the right-bank Ukraine the Tripolye culture was superseded by the Corded Ware culture which was generally synchronous with the Catacomb cultures.

### 2.6.1. CORDED WARE CULTURE IN THE AREAS OF CARPATHIANS, THE PODOLIA AND THE VOLHYNIA

The Sub-Carpathian culture, the Pochapy group of monuments, the Gorodsk-Zdolbitsa and the Strzyżów Corded Ware cultures occupied the territories of the Sub-Carpathian region, the Podolia and the Volhynia regions. Weaponry of these cultures is rather similar and is considered in complex.

*Arrow-heads.* Most common are flint triangular appertured articles with sharply protruding calks found in Rokitnoye, Rusilov, Torchin (Fig. 10: 8-9; 12: 4-5). The second type of flint arrow-heads typical for these monuments represent triangular level-based items, like those found in Klimovtsy (Fig. 10: 6). A metal lancet-shaped head was found in the Pochapy burial mound, grave 3 [Ryndina 1980: Fig. 3: 12].

*Dart-heads* featured two major types: flint items with short broad tangs and long pointed (Rusilov, Zozov; Fig. 10: 13; 11: 2) and short leaf-like blades (Gorodok, Ozliev; Fig. 11: 6; 12: 3).

*Flat axes* represent flint double-faced finished articles of two major types: trapezoid-shaped axes (Ostapie, Balichi, Krilos, Gorodok, Lotatniki; Fig. 9: 4,11,12;

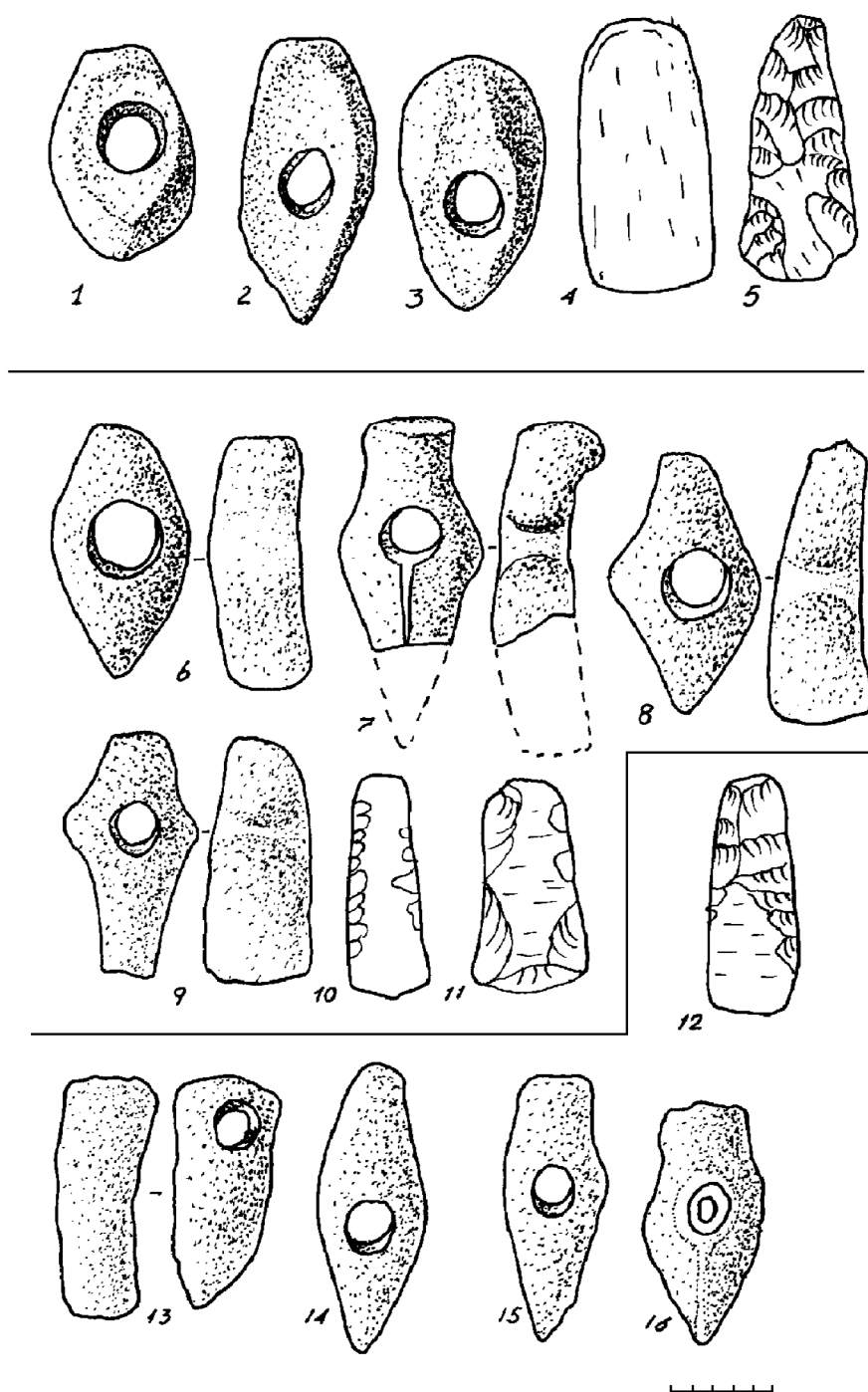


Fig. 9. The Sub-Carpathian culture: 1-4 — Kavsko; 5 — Kulchitsy; 6,7,14,15 — Kolokolin; 8-11,16 — Balichi; 12 — Krilos; 13 — Lopatniki.

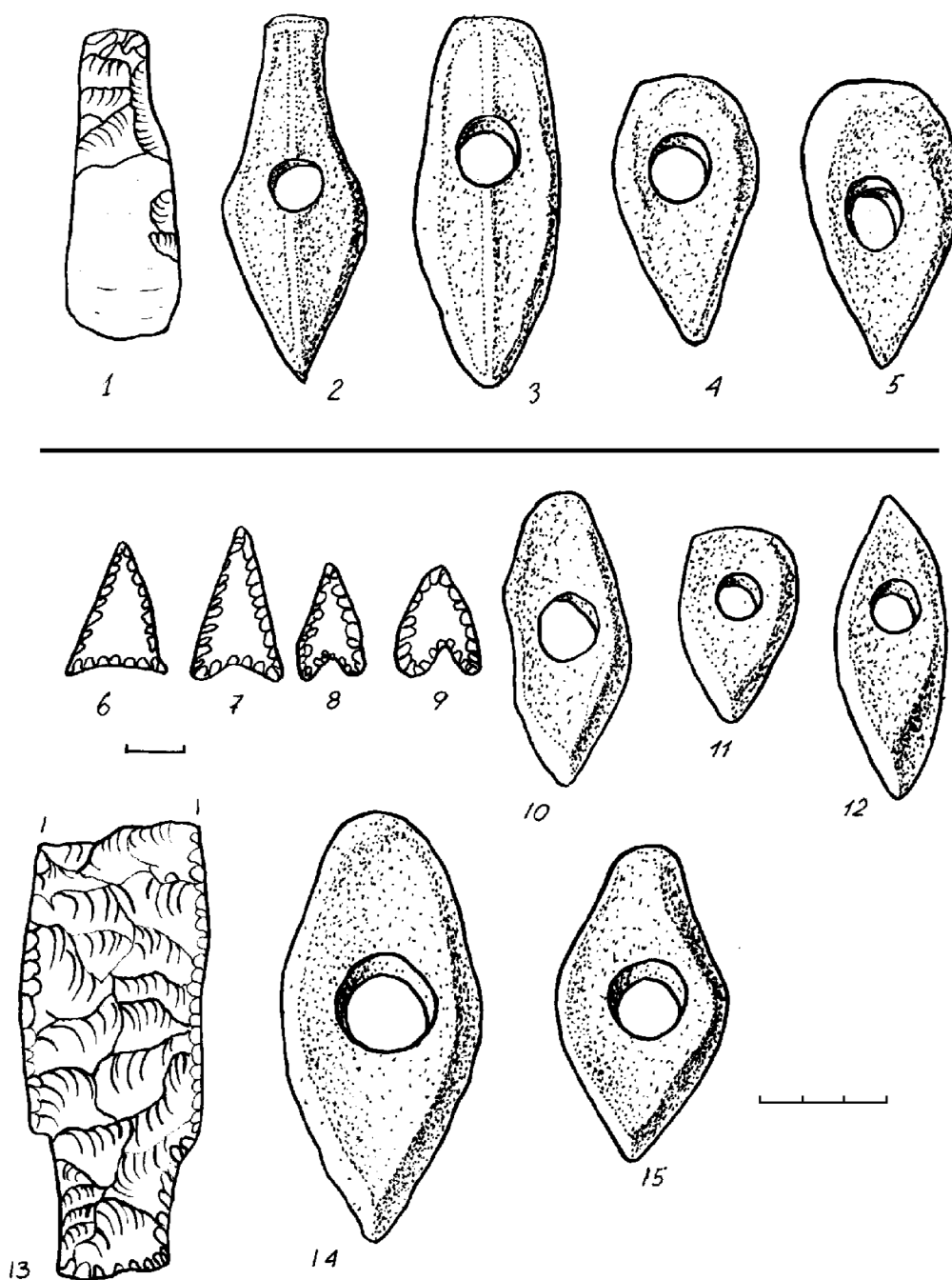


Fig. 10. The Podolia group of the Sub-Carpathian culture: 1 — Ostapie; 2 — Tomashivtsy; 3 — Verkhnyaya Belka; 4 — Vorolivtsy; 5 — Berezhany; 6,7 — Klimovtsy; 8,9,13 — Rusilov; 10,11,15 — Belogorka; 12 — Kachanovka; 14 — Strygany (1-5 — the early stage, 6-15 — the late stage).

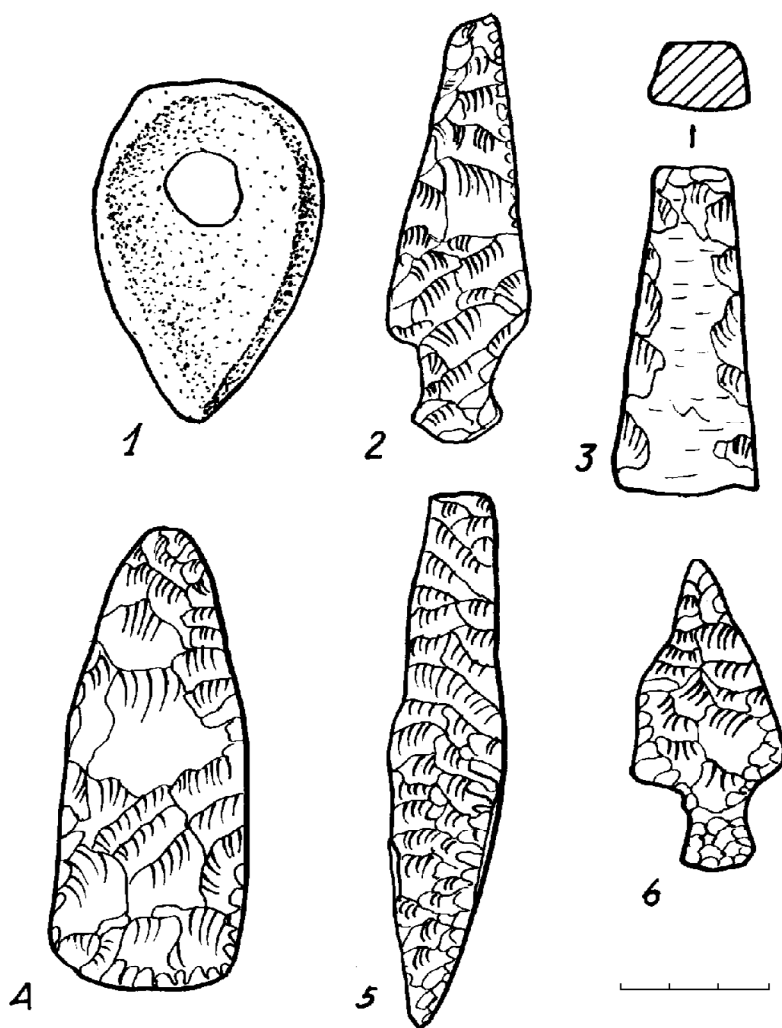


Fig. 11. The Gorodsk-Zdolbitsa culture: 1,5 — Zdolbitsa; 2 — Zozov; 3,6 — Gorodok; 4 — Zozov-II.

10: 1; 11: 3), as well as rounded-based axes (Zozov II, Kolokolin, Podgaytsy; Fig. 11: 4; 12: 1-2). Some of the axes had polished blades.

*Axe-hammers* were made of firm kinds of stone and had polished faces. Axe-hammers may be classed into several types: rounded-butted (Kavsko, Vorolivtsy, Berezhany, Malye Ilovichi, Strygany, Zdolbitsa, Cherniakhov; Fig. 9: 1-3; 10: 3-5,14; 11: 1; 12: 6) which represented a developed Tripolye tradition and differed from previous forms by their shorter proportions. Flat-butted axe-hammers were found in Belogorka, Lotatniki, Peredivanie (Fig. 9: 13). Prototypes of such axes were discovered in different layers of Ezero [Merpert (Ed.) 1979]. Axe-hammers from Tomavshitsy, Kolokolin, Balichi, Yasenovka (Fig. 9: 15; 10: 2) belong to the F-type

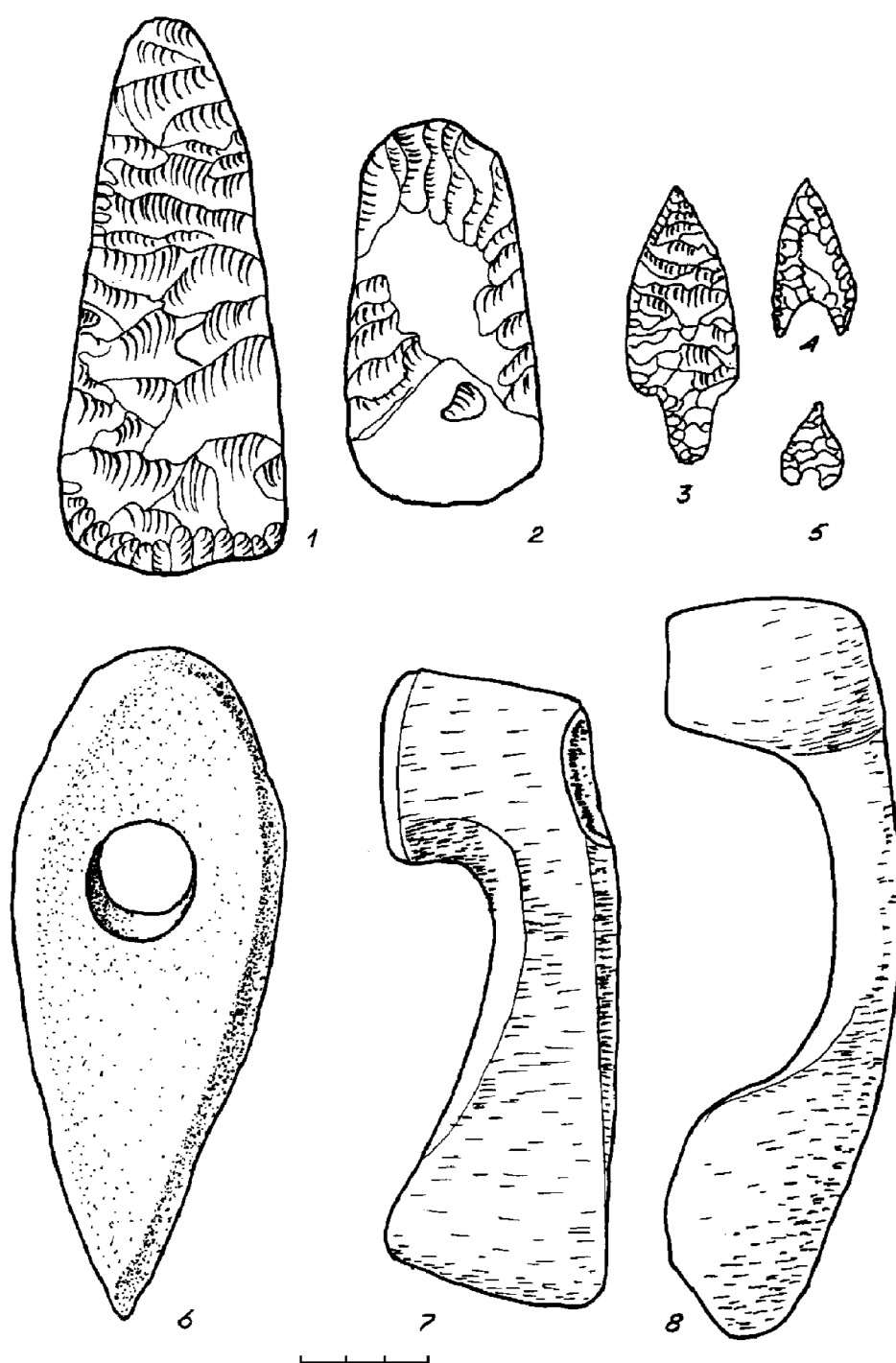


Fig. 12. The Strzyżów culture: 1 — Podgaytsy; 2 — Dikov; 3,4 — Ozliev; 5 — Torchin; 6 — Cherniakhov; 7,8 — the Stublo hoard.

axes of the Funnel Beaker culture as defined by M. Zapotocky [1989]. A hammer found in Balichi may be considered as a version of such weaponry (Fig. 9: 9).

Mushroom-shape-capped axe-hammers which were excavated in Balichi, Kolkolin, and Serniki (Fig. 9: 7,16) belong to the K-type of the Funnel Beaker culture, according to M. Zapotocky [1989].

*Metal axes.* Lugged axes were found among other articles of the Stublo hoard [Antoniewicz 1929: Abb.12]. Both axes represent versions of the Kostroma-type axes which are associated with the Ingul Catacomb culture. By its elongated tubular butt, one of them (Fig. 12: 7) resembles the Middle Bronze Age Balkan axes: T-16 and T-18, according to E.N. Chernykh. The other has a peculiar pole-axe-like face (Fig. 12: 8). The aforementioned differences between the Stublo axes suggest their local production by the Corded Ware culture metallurgists. An axe from Dereviannoye [Ryndina 1980: Fig. 1: 17] belongs to the Kolontayevka type characteristic of the Donetsk Catacomb culture. However, axes of this type occur rather often to the West of the Dnieper as well.

*Daggers.* Flint leaf-like-bladed daggers, for instance, those found in Zlochev, Zdolbitsa, Krasov (Fig. 11: 5) are rather typical artifacts of the European Corded Ware culture.

Bronze daggers from Rusilov; Serniki, barrow 1, and Vysotskoye, barrow 8, with broad subtriangular blades and apertures for a haft to be fastened to a "base" represent the Central European dagger type ca 2500 BC.

## 2.6.2. THE MIDDLE DNEPER CULTURE

The Middle Dnieper culture [Artemenko 1967, 1985] is represented by a large number of weapons.

*Arrow-heads.* Flint triangular fluted heads with broadly-positioned calks were excavated in Khodosovichi, barrow 1, grave 1, and barrow 10; Strelitsa, grave 53 (Fig. 13; 14). Level-based arrow-heads found in Strelitsa, grave 53 continue traditions of the Tripolye culture. In grave 53 of the Strelitsa burial mound, an arrow-head of equilateral triangular shape was found, which resembled arrow-heads common for the Baden culture. Flint tanged arrow-heads are represented by lancet-like articles found in Khodosovichi, barrow 10, grave 1; Strelitsa, grave 53 (Fig. 14), and triangular short-tanged heads from Strelitsa, grave 25 and grave 53, and Khodosovichi, barrow 10, grave 1 (Fig. 14; 15).

*Dart-heads.* Typical dart-heads were double-faced finished short-tanged articles (Fig. 15: 4). A metal dart-head with a triangular blade and a long tang was exca-



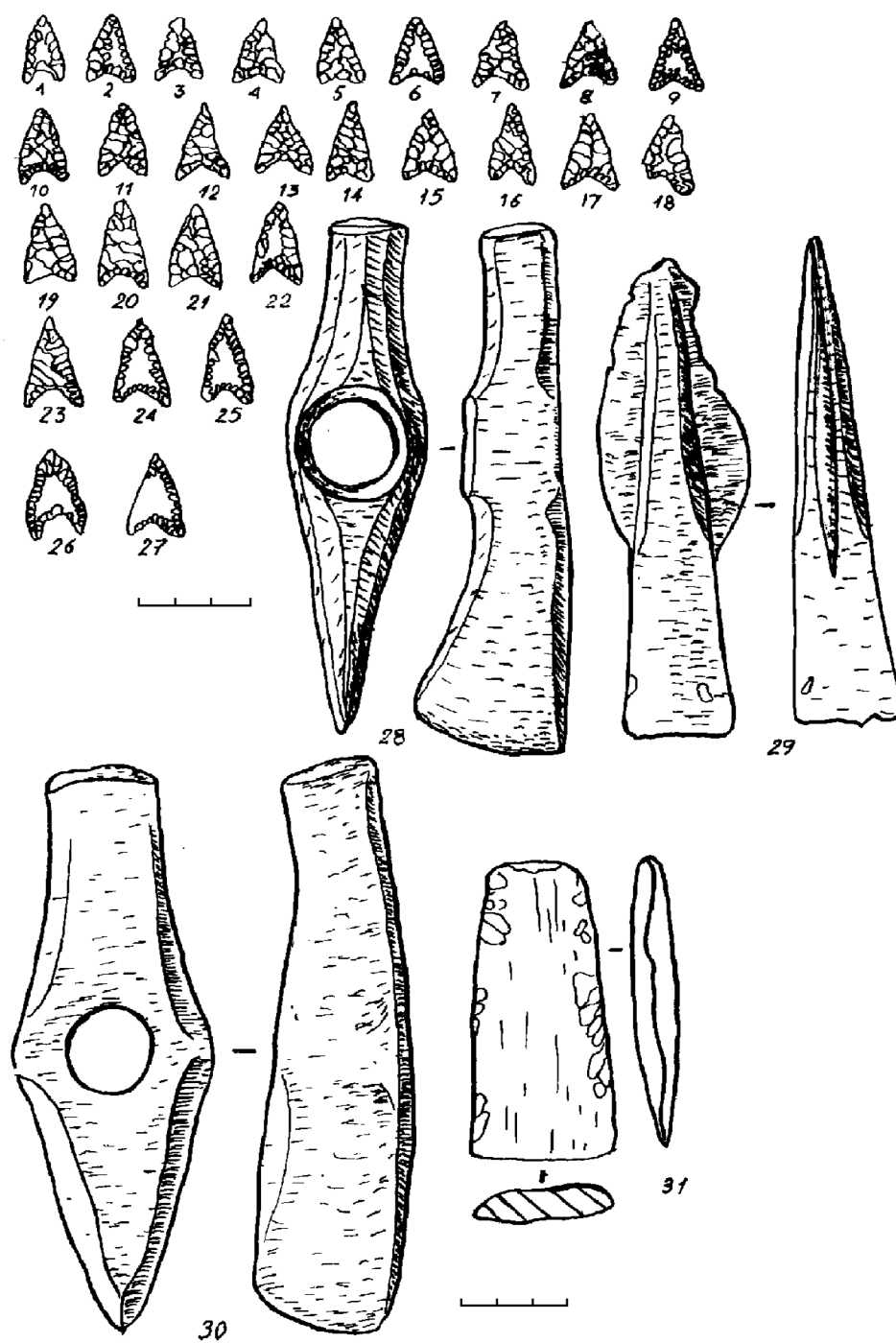


Fig. 13. The Middle Dnieper culture: Khodosovichi, barrow 11/1.

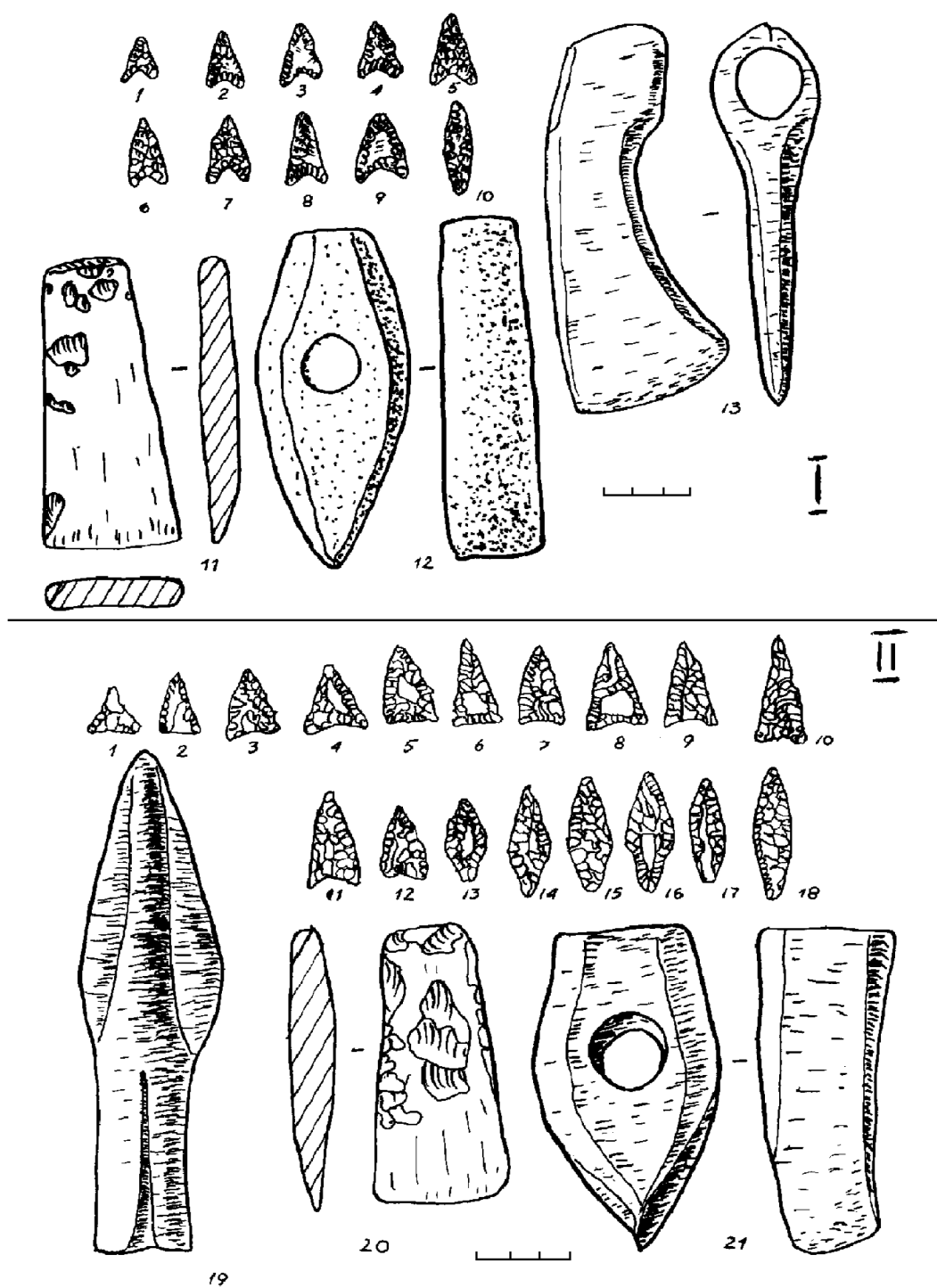


Fig. 14. The Middle Dnieper culture: I — Khodosovichi, barrow 10/1; II — Strelitsa, grave 53.

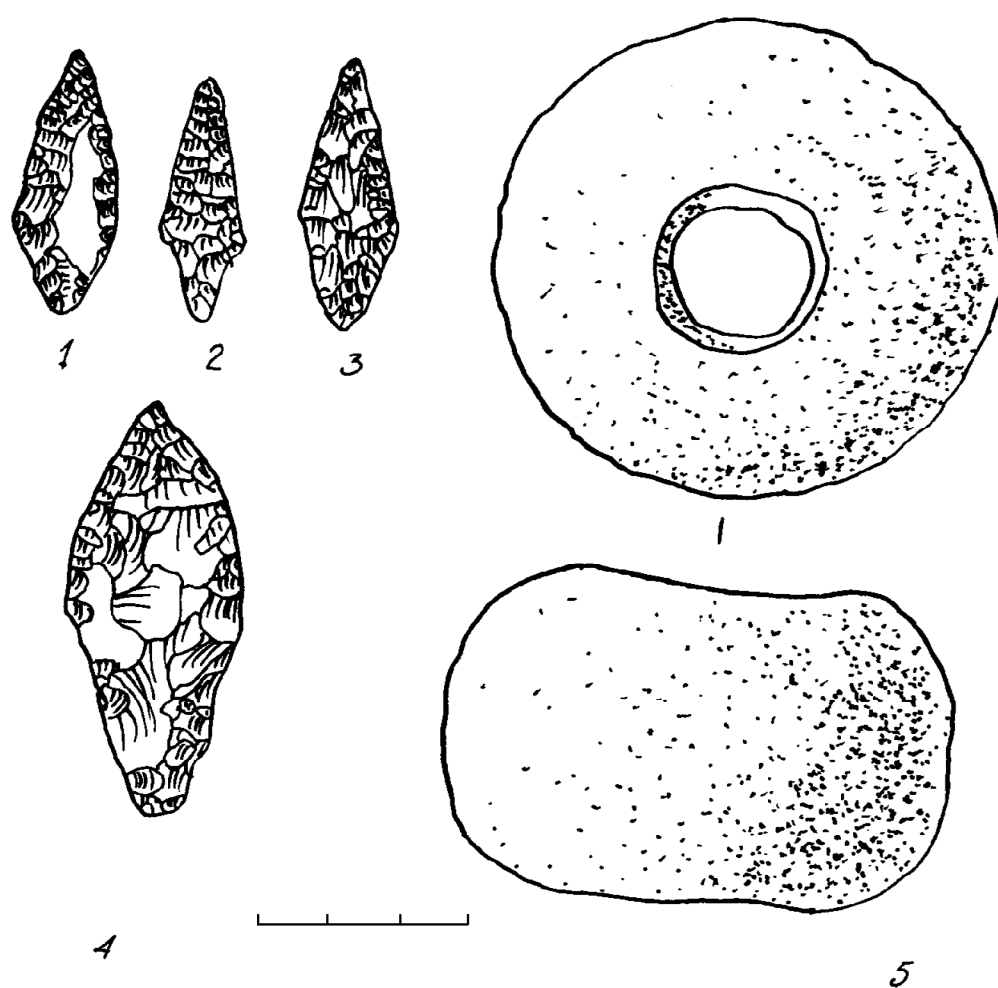


Fig. 15. The Middle Dnieper culture: Strelitsa, grave 25.

vated from barrow 12, grave 1 of the Khodosovichi cemetery [Artemenko 1967: Fig. 18, 3].

*Spear-heads.* A cast socketed head with a leaf-like blade and asymmetrical positioned holes for fastening a shaft to the lower part of the socket (Fig. 13: 8-9) was found in Khodosovichi, barrow 11, grave 1 [Artemenko 1967: Fig. 47, 32]. It had been made of arsenious bronze. A cast copper head with a holly-like blade, open socket and two apertures in the lower part of the socket was found in Strelitsa, grave 53 [Artemenko 1967: Fig. 27]. A forged open-socketed head served as a model for a casting mould used for making this head (Fig. 14: II 19).

An arrow-head from Khodosovichi is rather similar to a cast head with a broad holly-like blade found in the village of Sukhiny of the Rzhishchev district as well as to

a short-socketed head, cast — judging from its surface — in a ceramic mould which had a narrow pointed leaf-shaped blade and was found in the vicinity of Pereyaslav-Khmelnysky, a town in the Kiev region. Those were the most ancient among metal socketed spear-heads known in Eastern Europe [Klochko 1993], similar to the Únětice culture spear-heads.

*Flat axes.* Excavations in Ivankovichi, Khodosovichi, barrow 10, grave 1; and barrow 11, grave 1, and Strelitsa, grave 53 (Fig. 13; 14) revealed flint trapezoid axes. Many of the axes had well-polished surfaces which might appear as a development of the Globular Amphora culture. Rounded-based axes were found in the gully of Sergeyeva Griva, barrow 2, grave 1, and the Dednoye Lake, barrow 2, grave 1 [Artemenko 1967: Fig. 29].

*Axe-hammers.* This type of armaments was represented by rounded-butt axes like those found in Burty, Zelenki, Gatnoye, and Stretovka (Fig. 16: 1,3-4). The Middle Dnieper axes of this type were distinguished for their short proportions and a rhomboid shape.

Axe-hammers from Zabara, Lipovets, Budkivka, and Khodosovichi, barrow 10 and 11 (Fig. 13: 30; 14: I 12; 14: II 21; 16: 2) represent F-type artifacts of the Funnel Beaker culture. A metal (bronze) copy of such an axe was found in the Khodosovichi burial mound, barrow 11, grave 1 (Fig. 13: 21). The so-called "boat-like" axes, for instance, like those found in Khirovka (Fig. 16: 5), may be regarded as a version of this kind of axe-hammers. Their peculiar feature was their pole-axe-like blade typical for the Balkan tradition [Merpert (Ed.) 1979]. An axe-hammer from Strelitsa, grave 53 (Fig. 14: II 21) features a flat butt and also represent development of the Balkan tradition. An axe-hammer excavated in Dolinka of the Monastyrshchina district belongs to the Akkermen type of the Catacomb culture.

*A metal "Kolontayevka-type" axe* found in the Khodosovichi burial mound, barrow 10, grave 1 (Fig. 14: I 13) most probably was imported from the areas covered with the Catacomb culture.

*A flattened mace* was found in the Strelitsa burial mound, grave 25 (Fig. 15: 5).

Some of the Middle Dnieper burial mounds — like Khodosovichi, barrow 10, grave 1, and barrow 11, grave 1, as well as Strelitsa, grave 25 and 53 (Fig. 13; 14; 15) — reveal several components of offensive weaponry: arrows, a spear, axe-hammers, a flat axe; or a metal axe, axe-hammer, a flat axe, and arrows; or arrows, darts, and a mace. Alongside with warrior burial mounds of the Catacomb culture, these represent the most ancient war burial mounds known in Eastern Europe.

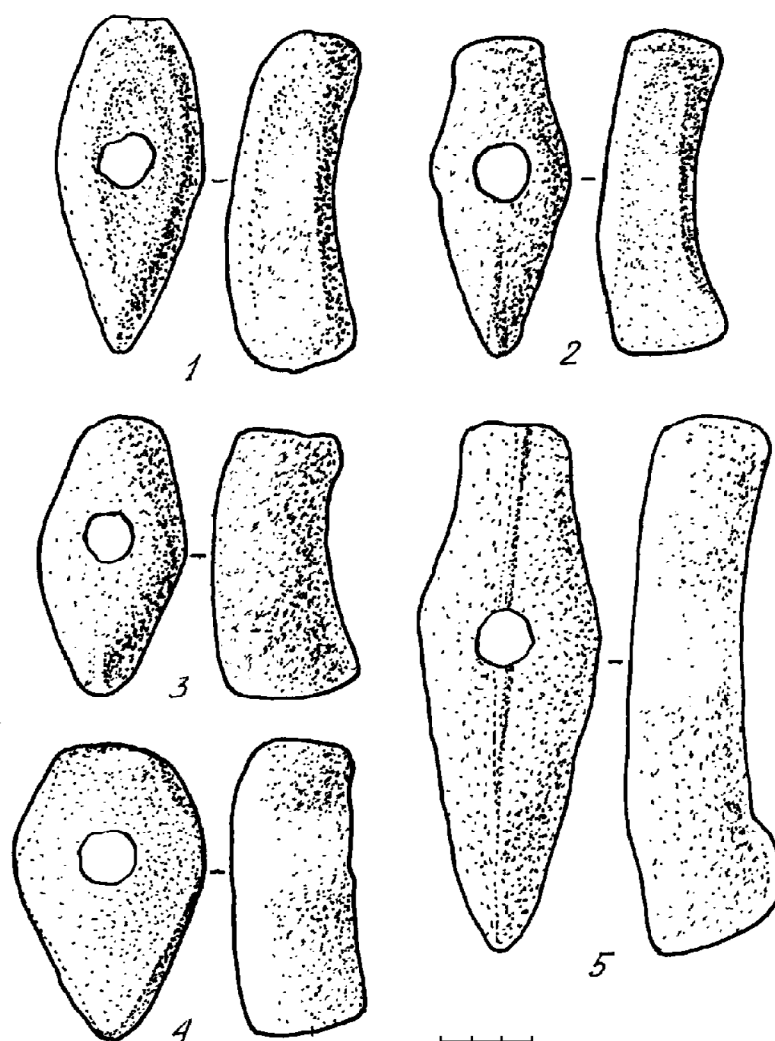


Fig. 16. The Middle Dnieper culture: 1 — Zabara; 2 — Lipovets, barrow 266/5; 3,4 — Zelenka, barrow 343/5, 5 — Khirovka.

## 2.7. THE MNOGOVALIKOVA POTTERY CULTURE

The majority of weaponry of this culture is represented by the Catacomb and the Corded Ware cultures artifacts [Bratchenko 1985: Fig. 123]. Disc-shaped cheek-pieces associated with chariots may be regarded as an improvement brought in during that period.

The Borodino hoards the most distinguished among others due to a rich selection of weapons which belong to the period. The Borodino hoard's association

with the Mnogovalikova Pottery culture is proved by finds of Borodino-type stone weapons in complexes of this culture.

Stone weapons of the Borodino hoard included maces and axe-hammers.

*Maces.* Several types of maces may be distinguished among discovered articles: globe-shaped maces, flattened-oval maces with rims at the lower apertures, and four-knobbed pear-shaped maces representing the Borodino type. Maces of all those types occurred in Catacomb monuments of the Northern Pontic region, and by the end of Early Bronze Age had been established as local types. All the maces revealed in the hoard had been made of talc shale, a rather soft stone, plastic enough to be easy to process, but lacking in strength as a weapon, which makes their possible usage as articles of armament rather dubious. Most probably, those were decorative artifacts. Intensive development of the talc shale deposits on the southern edge of the Ukrainian crystallin shield began during the Late Bronze Age, when talc shale was widely used for making casting moulds [Sharafutdinova 1985].

*Axe-hammers.* Three axe-hammers representing versions of the Akkerman axe-hammer type display a peculiar mushroom-shaped cap. As mentioned hitherto, the mushroom-shaped cap first occurred in some types of the Balkan axes and axes of the Funnel Beaker culture. During the Catacomb period, this feature was displayed on local-made axes. Actually, the Borodino type combines features of two types of the Catacomb axes: the Akkermen-type weapons and axe-hammers headed with mushroom-shaped caps. The third axe is distinguished by its broad pole-axe-shaped blade. All of the axes were made of Krivoy Rog nephrite. Metal weapons made of silver are rather rare: three spear-heads (one represented only by a socket), a dagger and a pin.

*Spear-heads.* This kind of weapons is represented by a head with a broad pointed leaf-shaped blade, a fork-shaped shaft, a long socket decorated with a cast ornament of triangles, three rims at the socket base and a lug. It was made of a silver-based alloy; the ornament on the socket was plated with gold. By its shape, this spear-head is similar to fork-shaped heads found in the Seyma and the Torbino cemeteries [Chernykh 1976: 45]. The other head displayed a pointed leaf-shaped blade, a powerful rib rhomb-shaped in section, a long socket strengthened by a rim at the base with turned-down lugs with holes to be fastened to a shaft. This spear-head was made of silver, the socket was encrusted with gold and decorated with a sunk ornament of zigzags, triangles and strokes. It is generally similar to the Seyma spear-heads in form; however, they vary substantially in metal composition as well as ornamentation (both with regard to subjects and ornamentation techniques). The spear head in question may be regarded as a prototype to the Golovurovo-type spear-heads of the Sosnitsa culture dated back to the Late Bronze Age. The third spear-head is represented by a socket (the blade perished), and it is similar in form and metal composition to the second head. However, its distinguishing features

are absence of lugs, presence of penetrating apertures on the socket, and sinking ornament representing a "running spiral" and summit-up triangles.

*A dagger.* This artifact was made of silver and encrusted with gold. The blade was cast in a folding mould with a funnel located from the pointing side. After being cast, the blade was forged, grinded, and three holes were perforated on the tang for fastening a haft. By its form and type of haft fastening, this dagger is similar to swords and daggers found in Circle B of the shaft graves [Mylonas 1957] in Mycenae, while different from the latter in ornamentation.

The Borodino hoard presents a new metallurgical and weaponry tradition which became dominating in Eastern Europe during the Late Bronze Age [for more detailed information, see article "The metallurgy..." by V.I. Klochko in this volume].

### 3. CHANGES OF AGRICULTURAL AND PASTORAL WEAPONRY (NEOLITHIC — EARLY BRONZE AGE)

Materials of the Early Bronze Age archaeological cultures which occurred on the territory of Ukraine point out to substantial changes in military craft during this period. Metal weaponry emerged, and alongside with efforts to realize traditional forms of stone weapons in metal, contemporary artisans developed new specific metal types of weaponry: daggers and socketed spear-heads. New kinds of military transportation means emerged, represented by four-wheel — and later also two-wheel — vehicles-chariots [Cherednichenko, Pustovalov 1991].

Occurrence of a large number of weapons in burial mounds of this period reflects enhancing in significance of wars in pastoral societies' life-styles, as well as changes in economic and social structures of the societies expressed in emergence of warriors and establishment of military aristocracy.

Early stages of using a horse deserve special consideration. Many scholars refer emergence of horse-back riding in Eastern Europe to the Sredny Stog culture, argumentating their assumptions by materials excavated in the settlement of Dereivka dated back to the 4000 BC [Telegin 1986; Anthony, Telegin, Brown 1991]. D.W. Anthony dated early stages in using a horse for covering long distances and as a draught animal in harness to 3150–3000 BC [Anthony, Brown 1989]. These assumptions neglect the issues of differences between domesticated and non-domesticated equides. Two different issues are mixed in one: the issue of emergence of wheeled means of transportation and the issue early stages of using a harnessed horse, while results of special investigations in history of development of horse harness.

A. Häusler pointed out that development of wheeled vehicles should not be associated with the issue of using the horse harness, and affirmed that archaeological materials prove that only bull-drawn carriages had been used in the Neolithic and the Early Bronze Age [Häusler 1992b].

Efforts to single out bone cheekpieces in the Early-Bronze Age materials have led to misunderstandings. Hence, I.F. Kovaleva distinguished the bone beak-hammers found in burial mounds of the Yamnaya culture in the Dnepropetrovsk region as "cheekpieces" and interpreted these burial mounds as "riders' graves" [Kovaleva 1993].

On the basis of studies conducted by N.N. Cherednichenko [1987] and new materials, one may distinguish the three principle stages of using a horse in the Eurasian steppes.

1. First period can be dated to *4th-3rd millennia BC*. The way of horse-back riding during this period remains unclear, as no information is available except the fact that by that time a horse had already been domesticated.

One can only assume that herds of domesticated horses were followed by mounted herdsmen. However, that did not mean wide-spread horse-back riding, and moreover, that did not prove emergence of cavalry as a kind of armed forces. There is also a possibility that during the period in question a horse was used in disc-wheeled cart gear similarly to the way donkeys and onagres was used for carrying war chariots in the Ancient East. Obviously, this assumption is hard to prove, as well as to negate. No authentic remainders of horse harness (that is, found on a horse's bones), and no horse graves related to this period have been discovered so far. If horse harness was used during this period, most probably, it looked like a modern halter or onagre gear common in the Ancient East. In addition to such a harness, a ring was used, which had been run through the animal's nostrils. In the East this kind of harness was in use until a new type of horse harness with cheekpieces appeared there about mid-2nd millennium BC. Presumably, such a harness was used in the steppe before cheekpieces were invented as long ago as in the first half of the 2nd millennium BC.

In general, this period should be defined as a period of herdsmen, that is, the period when horses were used by herdsmen in order to follow their grazing herds of horses. For this purpose people could domesticate new-born foals and later use them as means of transportation to follow their herds. Those domesticated horses could have been harnessed with a primitive gear similar to a halter, with no bit or cheekpieces.

A mono-axle chariot found in the Catacomb burial mound in the vicinity of village Marievka suggests that first efforts to use a horse as a draught animal may be dated by the middle of the 3rd millennium BC. However, it is important to note that M.V. Gorelik's attempt [1985] to relate the origin of chariots only to the Middle



East contradicts the archaeological materials which proves that Middle Eastern-type chariots (both bull-drawn four-wheeled vehicles on solid wheels and later versions of horse-drawn chariots on two perforated wheels) emerged — according to new information — in Eastern Europe about the end of 4th millennium BC. Early stages of development of wheeled means of transportation, including chariots, on the territory of Ukraine is dated back to that period.

2. Next period — *2nd millennium BC* — differs from the previous one by emerging of a soft-bit harness with bone cheekpieces found in horse graves displaying remainders of harness. During this period, a horse was used as a draught animal. Horse-back riding continued to be of limited importance and was spread mainly among herdsman. Emerging of cavalry as a kind of military force was practically impossible with use of soft bit, as necessary breaking-in could be done only with metal bit. Therefore, the second period is distinguished as draught, or rather, chariot stage of using a horse, and as a chariot stage of development of a steppe bridle.

3. The last stage commenced *in the end of 2nd millennium BC to the early 1st millennium BC* with emergence of metal bit, and has lasted till the present time. During this period, horse-back riding has become as wide-spread as the use of draught horses. Cavalry has developed into one of the main — and in some cases, the principle — kind of forces. Emergence of cavalry was likely to be brought in by economic reasons, since in the early 1st millennium BC steppe tribes passed on from settled to nomadic cattle-breeding, in which a horse was attributed a major role.

The need to protect huge herds and flocks, as well as the necessity to assimilate and capture new pastures, required an armed force which could be more mobile than chariots, easy to equip and could possess good cross-country abilities. In the contemporary conditions, cavalry alone could be such a force. From the Eurasian steppes cavalry disseminated to all other regions of the Old World as the main kind of armed forces.

Although a horse continued to be used as a draught animal, this period may be referred to as the period of horse-back riding. The period in question reflects a new stage in the development of a horse-bridle, since one may rightfully discuss emergence of a bridle after invention of metal bit.

*Translated by Inna Pidluska*