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TRANSCAUCASIA AND NEOLITHIC OF SOUTH OF EASTERN EUROPE

The authors examine the development of Transcaucasian archaeological cultures during the Early Holocene and their relationship to the beginning of the Neolithic in the south of Eastern Europe. The authors describe the migration activity of carriers of the Kobuletian, Darkvetian, Edzanian and Trialetian cultures. The role of migrants in the process of Neolithization of Eastern Europe is considered. The authors aim to show the relationship of the Kukrek, Hrebenyky, Matveev Kurgan, Shpan-Koba, Murzak-Koba cultures with the migratory activity of the Transcaucasian population.

Key words: Transcaucasia, Early Holocene, migrations, Neolithization, criteria of migration, pressure flaking, backed bladelets, trapezes, lunates, triangles.

Introduction

The current state of the study of the Neolithic of Eastern Europe is far from ideal. At present, the theory of the Balkan-Danube origin (Залізняк 1998; Котова 2002) of the Eastern European Neolithic dominates. This situation has become possible as a result of the improper research methodology. Specialists, as a rule, discuss the Neolithic, which has been already formed. However, the Neolithization process is not rapid, the transition to the Neolithic takes a long time. If we ignore this fact, we will simply leave outside the research all the events that had led to the transition of the Neolithic way of life. Taking into account only the migration activity of the carriers of the already formed Neolithic traditions, we will never understand what was going on at the beginning of the Holocene. Separately should be noted the migration of the carriers of the Criş culture, who moved into the basins of the Dnister and the Southern Buh

at the beginning of the 6th millennium BC. However, the Neolithic had been already developing by that time for at least half a millennium. The migration of the Criş culture population could not have led to the Neolithic in the south of Eastern Europe. The development of the Matveev Kurgan and Rakushechnyi Yar cultures begins at the Boreal-Atlantic boundary, the Buh-Dnister culture begins its development in the second quarter of the 7th millennium BC, the Donetsk culture — in the third quarter of the 7th millennium BC, the Sursk culture — in the late 7th millennium BC. The Neolithic in the north of the Caspian Sea is also very old, its development began according to the different data at the beginning or in the middle of the 7th millennium BC. Stone industries, which characterize the above cultural phenomena are very specific, their origin cannot be associated with the Balkan-Dnister region. The only exception is the stone industry of the Buh-Dnister culture, materials of which contain imports of the Criş culture. Nevertheless, even these materials, as has been already mentioned, are very late.

The Neolithic of the south of Eastern Europe demonstrates a rather stable development, when population movements were slow, related to adjacent territories. It was a diffusion of the population connected with the movement in the northern direction. The carriers of the Neolithic traditions thus pulled the autochthonous population of the forest-steppe and forest zones into the new information system within which the Neolithic innovations were spread. Although the first impulse of the Neolithization could not have been associated with such movements. The Neolithic emerges at the beginning of the Holocene in the Near and Middle East. The spread of the Neolithic traditions had to be associated with the movement of populations from regions that were as close as possible to the centers of the Neolithization. Transcaucasia was just one of such regions. The purpose of the article is to show how the carriers of the Transcaucasian archaeological cultures were related to the

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centers of the Neolithization and how their migration to the south of Eastern Europe had led to the beginning of the Neolithic.

Theoretical foundations and methods

The theoretical basis of our study is the idea of understanding the Neolithic as an epoch of formation of global information networks, within which innovations created in the Near and Middle East were disseminated. Neolithic researchers list such innovations and interpret the Neolithic as a sum of such innovations. There is no need to list mentioned definitions of the Neolithic, as they are well known. We will mention only one of the modern definitions of this period, authored by L. L. Zalizniak: “The Neolithic is the epoch of the birth and spread of a productive economy (farming, cattle-breeding), the archaeological criterion of which is clay pottery. The transition to a productive economy led to a radical change in human history, for which it was called the Neolithic Revolution. This important event divides history into two great epochs — of the appropriating and producing economy” (translation — V. O. Manko) (Залізник та ін. 2005).

This definition repeats the tradition of describing the Neolithic as a sum of attributes. What is the disadvantage of such a definition of the Neolithic? The Neolithic is not defined as an epoch; researchers only list the regional features of this chronological period. L. L. Zalizniak’s definition describes the peculiarities of the Neolithic of the Mountain Crimea, the steppe, and the forest-steppe zones of Ukraine. Even the North of Ukraine cannot be squeezed into this definition. Farming of the Neolithic in the forest zone has never been studied.

Many signs of the mentioned epoch may be enumerated, but such an enumeration will always reflect regional peculiarities and nothing more. Pottery cannot be a sign of the Neolithic, as the Neolithic had existed for two and a half thousand years without pottery. We cannot list among the signs of this period different techniques of knapping, because this account would also reflect regional peculiarities. Even G. Childe did not avoid this mistake when he listed the signs of the Neolithic Revolution (Манько 2013a). The signs such as the formation of trading networks and weaving were on the same list. Naturally, such features cannot be grouped together, because they reflect completely different hierarchical structures. G. Childe mentions both pottery and farming, as well as the development of religious and magical ideas. However, the researcher understood

perfectly that the characteristics he listed hadn’t arisen simultaneously and were not common to all groups of the Neolithic population. Even farming and cattle-breeding, which researchers perceive as an indisputable feature of the Neolithic, were not a necessary element. The development of the Pre-Pottery Neolithic A (PPNA) perfectly demonstrates the absence of this “obligatory”. If in the Sultanian, Aswadian, Mureybetian cultures we see elements of farming, the Nemrikian culture demonstrates the presence of a developed hunting economy without any elements of farming and cattle-breeding. Sure, these branches of farming did appear in Nemrikian culture, although it happened already outside the Pre-Pottery Neolithic A. The thing that united different cultures of the first Neolithic phenomenon into one area was the presence of common elements of material culture. The El-Khiam were common cultural elements of the material culture of the PPNA. It can also be noted the presence of common burial rites, common traditions of house-building, and common magical-religious beliefs. The latter is perfectly illustrated by the Göbekli Tepe temple, actively visited by the population of both the Near and the Middle East.

As we can see, the PPNA is a global informational unity that has been steadily developing for more than a thousand years. The presence of stable cultural ties, the exchange of innovative technologies of stone knapping and farming led to the emergence of the first in the history of mankind Cultural-Historical Region (CHR). Such areas created all prerequisites for the unification of material and spiritual culture over vast areas. Does it mean that such unification had taken place in reality? No, it doesn’t. Complete unification had never come. The population of the separate regions, carriers of different archaeological cultures chose different innovative packages.

We should keep in mind that the tradition of pottery manufacturing didn’t arise in the Neolithic. The population of the Far East invented ceramics in the Late Palaeolithic. What happened to this cultural tradition? This tradition disappears along with the population that created it. The CHR of the Neolithic had provided continuity. The disappearance of one or even several cultures that make up the CHR does not lead to the disappearance of the cultural traditions created within that or another archaeological culture. The information network is never destroyed. However, even if its destruction occurs, a new global information network emerges on its place.

The mechanism of the CHR creation is inseparably connected with migrations of big or small



Fig. 1. Early Holocene sites with backed bladelets.

M'lefaatian (Kozłowski, Aurenche 2005): 1 — Ali Kosh; 2 — Chagha Sefid; 3 — Sabz; 4 — Tepe Guran; 5 — Sarab; 6 — Ganj Dareh; 7 — Asiab; 8 — Karim Shahr; 9 — Jarmo; 10 — M'lefaat; 11 — Hajji Firuz. Kobuletian (Gabunia 1976; Nebieridze 1978): 12 — Bavra, Bavra 1, Bavra 2, Bavra-Ablari; 13 — Kobuleti, Khutsubani, Kvirike; 14 — Anaseuli 1; 15 — Darkvety (layer V); 16 — Sosruko (layer M2, M1). Kukrek: 17 — Triitsia Cape; 18 — Shan-Koba (layer IV); 19 — Kukrek; 20 — Vyshenne 1; 21 — Ivanivka; 22 — Frontove I-IV; 23 — Myrne; 24 — Trapivka; 25 — Kamiana Mohyla 1; 26 — Abuzova Balka; 27 — Konetspol; 28 — Varvarivka; 29 — Frumushykh; 30 — Kizlevyi; 31 — Ihren 8; 32 — Dobrianka 1, 2, 3.

people groups, which bring innovation technologies to new territories. There are other ways of the CHR creation, but we have discussed only migrations yet, because only migrations led to appearance of the Neolithic in south of East Europe.

The criteria of migration in archaeology were indicated by L. S. Klein (Клейн 1999, с. 52-71)

that are the following: the complex similarity (coincidence in the main typological characteristics); the spontaneity, abrupt change of cultures at the final point of migration; the possibility of joining migration activity in time and space.

Based on the theoretical constructions of L. S. Klein, we have been able to study the patterns

of industries distribution with various microlithic complexes; evaluate the migration activity of their carriers; find out the possibility of the participation of migrants in the Neolithization of Transcaucasia and Eastern Europe.

We observed four migrations, which connected Transcaucasia and Eastern Europe. These are:

1. The migration of carriers of the M'lefaat culture of the Middle East (Hole, Flannary, Neely 1969; Hole 1977, 1983; Dittermore 1983; Howe 1983). Transcaucasia was a transitional region, where Kobuletian culture (Манько, Чхатарашвили 2020a; Chkhatarashvili, Manko 2020; Chkhatarashvili et al. 2020) appeared at the beginning of the Holocene. The result of migration was the appearance of the Kukrek culture (Векилова 1951; Яневич 1984, 1987; Манько 2013b) of the Ukrainian steppe zone and the Mountainous Crimea.

2. The migration of carriers of Trialetian culture of Western Turkey (Rosenberg 1994) and Transcaucasia (Meshveliani et al. 2007), which led to appearance of the Shpan-Koba culture (Яневич 1993) of the Mountainous Crimea and rapids of the Dnipro River.

3. The migration of carriers of the Darkvety culture of Transcaucasia (Nebieridze 1978; Манько, Чхатарашвили 2020b), which led to appearance of the Matveev Kurgan (Крижевская 1992) and Hrebenuky cultures (Залізняк 1998) of the Lower Don and south of Ukraine.

4. The migration of carriers of the Edzani culture (Gabunia 1976, 2001; Manko, Chkhatarashvili 2020) of Transcaucasia, which led to appearance of the Platovskii Stav (Казакова 1973) and Seroglazovka cultures (Мелентьев 1975) of the Lower Don and Lower Volga basins.

All these migrations had begun in Pre-Neolithic times and led to the appearance of the Neolithic in three of four occasions.

Waves of migrations from Transcaucasia to the south of Eastern Europe M'lefaatian migration.

M'lefaatian migration in Transcaucasia (fig. 1). The M'lefaatian appears in Iran and Iraq at the end of the Pleistocene (Table 1). If we disregard the anomalous dates, the appearance of this culture is associated with the Allerød-Dryas III boundary. The main sites of this culture are: M'lefaat (Dittermore 1983), Karim Shakhir (Howe 1983), Jarmo (Hole 1983), Ganj Dareh, Asiab (Kozłowski 1999), Sefid (Hole 1977), Ali Kosh

(Hole, Flannary, Neely 1969), Chagha Sefid (Hole 1977), Hajji Firuz (Kozłowski 1999), etc.

The main features of this culture are the following:

1. The use of hand pressure technique for obtaining blades, bladelets, and microblades.

2. The use of conic and bullet-like cores (fig. 2: 1—7).

3. The main type of microliths are backed bladelets and microblades (fig. 2: 8—21).

4. The use of burins of various types: angle burins, angle bilateral burins, burins on truncated faceted blades, bilateral burins on truncated faceted blades, dihedral burins (fig. 2: 22—34).

5. The use of round and oval scrapers. The presence of end-scrapers in complexes (fig. 2: 35—42).

6. The presence of notched and denticulated blades (fig. 2: 1—9), blades with fine retouch, perforators, chisels.

7. The presence of woodworking tools with invasive flake retouching of ventral surfaces of blades (fig. 3: 10—16).

8. Sporadic use of microburin technique (fig. 3: 17—22).

9. The presence of asymmetric triangles in early complexes (fig. 3: 23—33).

10. The presence of Kashkashok side-blow blade-flakes (fig. 3: 34—36).

11. The presence of grooved tools.

The origin of the M'lefaatian is attributed to the Zarzian culture, but this conclusion should be treated with great caution. We attribute the origin of the M'lefaatian to the Epipalaeolithic of Afghanistan (Meadow 1989), where the tradition of using of pressure technique emerged as early as the Late Pleistocene. The earliest M'lefaatian sites are dated in frames of Younger Dryas (Table 1: 1—3).

The first migration was fixated at the very beginning of Holocene, when there was observed the appearance of the so-called Kobuleti culture in Western Transcaucasia and Central Caucasus. The main sites of this culture are Kobuleti (Gogitidze 1977; 2008; Chkhatarashvili, Manko 2020a; Chkhatarashvili et al. 2020), Anaseuli I and II (Nebieridze 1972), Darkvety (layer 5) (Nebieridze 1978), Bavra, Bavra I and II (Gabunia 2001; Gabunia, Tsereteli 2003), Bavra-Ablari (Varoutsikos et al. 2017), Kvirike, Khutsubani (Gogitidze 2008), Sosruko (layers M1 and M2) (Замятнин, Акритас 1957; Леонова 2021), etc.

Kobuletian flint and obsidian complexes demonstrate full similarity with the M'lefaatian. Both cultures developed synchronically during the

Table 1. Radiocarbon dates.

№	DATE (BP UNCAL)	Lab. index	Sample	Site	Context	Publication
Earliest M'lefaatian dates						
1	10850±200	Gd-4465	charcoal	M'lefaat	M'lefaatian	Kozłowski 1994
2	10890±140	Gd-6150	charcoal	M'lefaat	M'lefaatian	Kozłowski 1994
3	10425±145	UCLA-305	?	Chagha Sefid	M'lefaatian	Hole 1977
Kobuleti culture						
4	9960±140	LU-9477	bone	Sosruko	Layer 4	Golovanova et al. 2020
5	9945±35	IGANams-7988	bone	Sosruko	Layer M2	Леонова 2021
6	8670±30	BETA -393559	bone	Bavra Ablari	Level 4	Varoutsikos, et al. 2017
7	9420 ± 40	BETA -363172	charcoal	Bavra Ablari	Level 4	Varoutsikos, et al. 2017
8	9410 ± 40	Poz-61370	charcoal	Bavra Ablari	Level 4	Varoutsikos, et al. 2017
9	9530 ± 40	Poz-66742	charcoal	Bavra Ablari	Level 4	Varoutsikos, et al. 2017
10	10250 ± 50	Poz-61367	tooth	Bavra Ablari	Level 5	Varoutsikos, et al. 2017
11	9700 ±140	?	?	Bavra	Culture level	Varoutsikos, et al. 2017
12	9720±45	OS-90615	charcoal	Anaseuli 1	Culture level	Мешвелиани 2013
13	9540±40	OS-78999	charcoal	Anaseuli 1	Culture level	Мешвелиани 2013
14	8260±35	OS-78998	charcoal	Anaseuli 1	Culture level	Мешвелиани 2013
15	8050±35	OS-78997	charcoal	Anaseuli 1	Culture level	Мешвелиани 2013
16	6840±35	OS-72158	charcoal	Anaseuli 1	Culture level	Мешвелиани 2013
17	8670±100	SPb-3084	charcoal	Kobuleti	Level 2	Manko, Ckhatarashvili 2020
M'lefaatian complexes without geometrics						
18	8850±210	S-1174	charcoal	Ali Kosh	Ali Kosh phase	Hole 1977
19	8490±90	Beta-118723	charcoal	Ali Kosh	Ali Kosh phase	Zeder, Hesse 2000
Secondary appearance of geometrics						
20	7655±75	GrN-6353	pottery	Jarmo	Pottery Neolithic	Berger, Protsch 1973
21	7410±35	Tka-13814	bone	Mushki	Pottery Neolithic	Nishiaki 2018
Near and Middle East complexes with Kashkashok side-blow blade-flakes						
22	7770±150	Beta-8240	charcoal	Gritille	Phase B, PPNB	Stein 1992
23	7880±110	TK-859	?	Kashkashok 2	Level 3, Proto-Hassuna	Matsutani 1991
24	7730±90	TK-803	?	Kashkashok 2	Level 3, Proto-Hassuna	Matsutani 1991
25	7490±110	TK-860	?	Kashkashok 2	Level 3, Proto-Hassuna	Matsutani 1991
26	7720±50	GrN-24248	charcoal	Sabi Abyad*	Op. III, level 2, Pre-Halaf	Akkemans, Verhoeven 2000
27	6930±45	GrN-26924	charcoal	Sabi Abyad*	Op. II, level 2, Pre-Halaf	Akkemans, Verhoeven 2000
28	8155±45	GrN-8261	?	Bouqras	Level 4, Late PPNB	Bernbeck 1991
29	7465±45	GrN-10589	?	Bouqras	Level 3-4, Proto-Hassuna	Bernbeck 1991
30	7269±86	P-455	charcoal	Hajji Firuz	Layer D5, Late M'lefaatian	Chataigner 1995
Çayönü tools in the Transcaucasia						
31	7915±25	PLD-30829	charcoal	Lernagog 1	Pre-pottery Neolithic	Arimura et al. 2018
32	7855±30	PLD-30831	charcoal	Lernagog 1	Pre-pottery Neolithic	Arimura et al. 2018
33	7440±25	UCIAMS-40181	?	Areni 1	Pre-pottery Neolithic	Petosyan et al. 2021
34	8080±90	GrN-8819	charcoal	Çayönü	Large room building phase	Çambel 1980
Beginning of pottery making in the M'lefaatian culture						
35	7820±190	I-1494	charcoal	Ali Kosh	Pottery Neolithic	Hole 1987
36	7220±160	I-1495	charcoal	Ali Kosh	Pottery Neolithic	Hole 1987
Kukrek culture						
37	9740±60	Ki-6304	bone	Vyshenne 1	Culture layer	Zaitseva et al., 2000
38	9680±70	Ki-6264	bone	Vyshenne 1	Culture layer	Zaitseva et al., 2000
The appearance of extended burials (M'lefaatian and Eastern Europe)						
39	8040±90	UCLA-297	charcoal	Chaga Sefid	Mohammad Jaffar phase	Hole 1987
40	7955±50	OXA-6199	human bone	Mar'ivka	Pre-pottery Neolithic	Telegin et al. 2002
Donetsk culture						
41	7345±60	Ki-6056	human bone	Klishnia 3	Grave 1	Manko, 2003

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Donetsk culture						
42	7405±70	Ki-6057	human bone	Klishnia 3	Grave 1	Manko, 2003
43	6700±130	Ki-9436	pottery	Zelena Homytsia 1	Culture layer	Manko, 2003
44	6510±120	Ki-9435	pottery	Zelena Homytsia 5	Culture layer	Manko, 2003
45	6455±120	Ki-9434	pottery	Zelena Homytsia 6	Culture layer	Manko, 2003
46	7080±90	Ki-11635	pottery	Velyka Pererva I	Culture layer	Manko, 2003
Trialeitian culture						
47	10800±220	Beta-46649	charcoal	Hallan Çemi	Pre-pottery Neolithic	Rosenberg 1994
48	9535±75	OxA-12878	charcoal	Hallan Çemi	Pre-pottery Neolithic	Rosenberg 1994
49	10400±60	RTT-4703	bone	Kotias Klde	Culture layer	Meshveliani et al. 2007
50	9270±60	RTT-4698	bone	Kotias Klde	Culture layer	Meshveliani et al. 2007
Shpan-Koba culture						
51	9575±45	GrA-50244	bone	Shan-Koba	Layer 4.4	Benecke 2006
52	9940±50	KIA-3688	bone	Shpan-Koba	Layer 3.6	Яневич 2004
53	10210±80	KIA-3687	bone	Shpan-Koba	Layer 3.5	Яневич 2004
54	9930±60	Ki-5824	bone	Shpan-Koba	Layer 3.4	Яневич 2004
55	9890±80	KIA-3685	bone	Shpan-Koba	Layer 3.2	Яневич 2004
56	9760±60	KIA-3684	bone	Shpan-Koba	Layer 3.2	Яневич 2004
57	9730±50	Ki-5823	bone	Shpan-Koba	Layer 2.5	Яневич 2004
58	9790±50	KIA-3683	bone	Shpan-Koba	Слой 2.4	Яневич 2004
59	10060±105	OxA-3807	human bone	Vasylivka 3	Cemetery	Zaitseva at al. 2000
60	9980±100	OxA-3808	human bone	Vasylivka 3	Cemetery	Zaitseva at al. 2000
61	10080±100	OxA-3809	human bone	Vasylivka 3	Cemetery	Zaitseva at al. 2000
Caucasian Epipalaeolithic with trapezes						
62	12 953±150	SPb-1215	?	Mesmayskaia	Layer 1-3	Голованова и др. 2021
63	13 820±200	LU-9901	?	Mesmayskaia	Layer 1-3	Голованова и др. 2021
64	11 200±110	Ki-14280	?	Satanay	Layer 2b	Голованова и др. 2021
65	10 020±160	GIN-14706	?	Dvoynaia	Layer 6	Голованова и др. 2021
66	11 830±160	GIN-14703	?	Dvoynaia	Layer 6	Голованова и др. 2021
67	11 720±320	LU-10114	?	Psituaghe	Layer 2	Голованова и др. 2021
68	14 640±350	U2AM-630	?	Apiancha	Layer 4	Голованова и др. 2021
69	14 490±70	OxA-27498	?	Satsurbliia	Layer B	Голованова и др. 2021
Darkvetian culture						
70	8170±25	IGANams-987b	?	Sosruko	Layer M1	Леонова 2021
71	8940±30	IGANams-7987a	?	Sosruko	Layer M1	Леонова 2021
72	8780±170	LU-9167	?	Sosruko	Layer 4	Golovamova et al. 2020
The earliest Eastern European sites with trapezes on pressing blades						
73	7075±45	GrA-50242	bone	Shan-Koba	Layer 3.3	Benecke 2006
74	8210±80	Ki-15178	bone	Razdorskaia 2	Culture Layer	Горелик и др. 2014
75	7505±210	GrN-7199	bone	Matveyev Kurgan 1	Culture Layer	Крижевская 1992
76	7515±120	Bln-588	bone	Soroki 1	Layer 3	Маркевич 1974
77	7420±80	Bln-587	bone	Soroki 1	Layer 2	Маркевич 1974
The appearance of trapezes on pressing blades in Eastern Transcaucasia and Middle East						
78	7500 ± 30 BP	IAAA-160722	?	Damjili Cave	Unit 5	Nishiaki et al. 2019
Near East sites related with Edzani culture origin						
79	12200±150	OxA-2137	?	Nahal Sekher 23	Late Ramonien	Grosman 2013
80	12610±130	OxA-892	?	Neve David	Geometric Kebara	Kaufman 1988
81	13400±180	OxA-859	?	Neve David	Geometric Kebara	Kaufman 1988
82	12840±140	OxA-1772	charcoal	Jilat 22. Phase C	Geometric Kebara	Housley 1994
83	13040±180	OxA-1771	charcoal	Jilat 22. Phase C	Geometric Kebara	Housley 1994
European sites related with Helwan retouch lunates						
84	8125±120;	Le-6869	bone	Rassypnaia 6	Platovskii Stav culture	Цыбрий 2008

№	DATE (BP UNCAL)	Lab. index	Sample	Site	Context	Publication
European sites related with Helwan retouch lunates						
85	7130±170	Le-6226	charcoal	Kremenaia 2	Platovskii Stav culture	Цыбрий 2008
86	7440±160	Le-6956	charcoal	Kremenaia 3	Platovskii Stav culture	Цыбрий 2008
87	7060±190	Le-6871	charcoal	Kremenaia 3	Platovskii Stav culture	Цыбрий 2008
88	7255±95	Ki-7663	bone	Kairshak 5A	Seroglasovo culture	Комаров 2002
89	7950±90	Ki-14133	pottery	Kairshak 3	Seroglasovo culture	Выборнов 2008
90	7560±90	Ki-14500	pottery	Kugat 4	Seroglasovo culture	Выборнов 2008
91	7680±100	Ki-14501	pottery	Kugat 4	Seroglasovo culture	Выборнов 2008

early Holocene and transformed in other culture phenomenon after the Event.

Most ancient sites of the Kobuletian are: Sosruko (layers M1(4) and M2) (Table 1: 4—5), Darkveti (layer 5), cluster of sites near Bavra (Table 1: 6—11) and lower layers of Anaseuli 1 (Table 1: 12—16). This phase of development can be characterized by the presence in complexes of archaic geometrics (lunates, trapezes, triangles), which demonstrate contacts with carriers of the Zarzian. Later lunates and trapezes of the early M'lefaatian and early Kobuletian disappeared with the disappearance of the Zarzian (Table 1: 17—19).

We observe the full absence of lunates and trapezes in the M'lefaatian and Kobuletian complexes during the 9—8th millennium BC (cal). The site of Jarmo (Hole 1983) gives us an excellent picture of the secondary appearance of geometric microliths in the M'lefaatian complexes. This event occurs together with the appearance of pottery and cannot be dated by the time earlier than the beginning of the Atlantic (Table 1: 20). Secondary appearance of geometric microliths was a global process. The traces of this process can be observed in materials of Mushiki in Fars (Nishiaki 2018) (Table 1: 21).

Approximately at the same time in the M'lefaat complexes the so-called “Kashkashok side-blow blade-flakes” appear. The same processes are seen in Western Georgia. The materials of the Kobuleti site, dated by the beginning of the Boreal, demonstrate the absence of geometric microliths. The Kashkashok side-blow blade-flakes appear in the materials of the Kvirike and Khutsubani sites. These sites are associated with the beginning of the Atlantic. The dates of these sites are not available, but the palynological columns from the Khutsubani show us a very warm and humid climate. This circumstance reliably considers the later age of the sites in contrast to the arid boreal climate of the Kobuleti.

The time of presence of the Kashkashok side-blow blade-flakes in the Kobuletian complexes characterized dates of the Near and Middle East

complexes in frames of the end of the Boreal and the beginning of the Atlantic (Table 1: 22—30). The abovementioned blade-flakes are associated with a specific method of blade segmentation, when a wooden hummer is struck on the dorsal side of the plate on a stone anvil. This technique of blade segmentation was used to obtain narrow blade segments. The place of the chipping was retouched. As a result, “cores” remained after the blade processing was completed. Such “cores”, similar to trapezes with semi-step ventral retouching, were found in the Eastern Ukraine in layer 1 of Sabivka 1. This complex contains undoubted signs of the Kukrek culture: bullet-like cores, points with microburin spalls, bilateral truncated faceted burins and etc. The appearance of the Kashkashok side-blow blade-flakes technology is associated with the pre-pottery stage of the Kukrek development, so, once again, there can be observed the process of parallel development of the M'lefaatian, Kobuletian and the Kukrek.

The appearance of pottery in the M'lefaatian and in Kobuletian occurred at the same time at the beginning of the Atlantic (Table 1: 20—21). The ancient pottery of Jarmo (layers 4 and 3) (Hole 1983) and Mushki (Nishiaki 2018) is connected with the first half of the 7th millennium BC (cal).

The appearance of pottery at the Kobuleti site is observed in the complexes of two circular dwellings, which overlapped the Boreal layer. We have not obtained absolute dates so far, because the dwellings were excavated in the summer-autumn of 2021. Nevertheless, we have markers in the complexes that indicate the age of the dwellings.

These markers are the findings of Çayönü tools — bladelets with two partly backed edges, which were found in Çayönü Tepesi (Ozdogan 1994; Caneva et al. 1994) at first. Such tools appeared in the 10th millennium BC (cal) and disappeared in the 7th millennium BC (cal).

Here should be noted the time when the Çayönü tools appeared in Transcaucasia. At present, there



Fig. 2. M'lefaatian (A), Kobuletian (B) and Kukrek (C): 1–7 — bullet-shaped and conic cores; 8–21 — backed bladelets; 22–34 — burins; 35–42 — scrapers. 1–2 — Karim Shakhir (Howe 1983); 3, 11–13, 25–27, 30–31, 37, 40 — Kobuleti; 4 — Sosruko (Golovanova et al. 2020); 5, 14–15 — Kvirike; 6–7 — Kukrek (Vekilova 1966); 8–10 — Ganj Dareh (Nishiaki 2016); 16–18, 28, 32–34 — Dobrianka I (Zaliznyak et al. 2013); 19–21 — Triitsia Cape (Яневич 2017); 22–24, 28, 35–36 — Jarmo (Hole 1983); 38–42 — Dobrianka III (Zaliznyak et al. 2013).

can be named several dated complexes with these tools: Kmlo (Arimura, Chataigner, Gasparyan 2009; Arimura, Gasparyan, Chataigner 2012), Lernagog 1 and Areni 1 (Arimura et al. 2018). The site of Kmlo, unfortunately, has been excavated not carefully enough. As a result, we have a huge range of dates throughout the Early and Middle Holocene. Such wide dating should be used with the utmost caution. The dates of the Lernagog 1 and Areni 2 (Table 1: 31—33) sites that are associated with the beginning of the Atlantic, show us a compact series. We have every reason to consider these dates as the time reflecting of the Çayönü tools manufacturing in Transcaucasia. Unfortunately, the obtained set of dates is presented in the publications only in graphic representation. Only two dates of Areni 2 are published in a traditional form and shown in Table 1. It can be seen that the dates of the mentioned sites correspond to the Large-room building subphase of the Çayönü (Table 1: 34).

It is extremely important to note that the specified subphase of the Çayönü is not connected with pottery. So, it can be suggested that the pottery and Çayönü tools appear in the materials of the Kobuleti culture as a result of co-existence of different systems of cultural interaction at the beginning of the Atlantic.

The starting point of pottery making correlated with appearance of grooved tools in Kobuletian pottery. These tools are absolute analogies of grooved tools of the M'lefaatian sites of Ali Kosh and Sabz (Hole, Flannery, Neely 1969; Nishiaki, Darabi 2018). Most numerous findings of grooved tools are connected with layers of Mohammed Jaffar (Hole, Flannery, Neely 1969) phase, which is dated in frames of the beginning of the Atlantic (Table 1: 35—36).

To sum up, the parallel development of the M'lefaatian and Kobuletian demonstrate full accordance with L. S. Klein (Клейн 1999) criteria of migration.

1. Complex similarity (coincidence in the main typological characteristics). We described its criteria and indicated ten features, which proved the similarity of two cultures. It should be added that the cultures demonstrate not only similarity, but also synchronicity of development. Some elements of material culture appear or disappear at the same time.

2. Spontaneity, abrupt change of cultures at the final point of migration. We haven't found the predecessors of the Kobuletian in the territory of Transcaucasia. Any archaeological culture doesn't

contain elements of similarity with the Kobuletian, which appears in a ready-made form and suddenly.

3. The possibility of joining migration activity in time and space. The M'lefaatian appeared at the end of the Allerød or at the beginning of the Dryas III. The Kobuletian appeared at the very beginning of the Preboreal. The distance between the start and end points of migration is no more than 500 km.

Thus, here is a proven fact of migration of the M'lefaatian carriers to Transcaucasia.

Kobuletian migration to the south of Eastern Europe.

The analysis of the Early Holocene materials in the territory of the south of Eastern Europe shows us that Transcaucasia was not the final point of migration of the M'lefaatian carriers. At the beginning of the Holocene, there can be noted the appearance of the Kukrek culture in the Mountainous Crimea and in the steppe zone of Ukraine. When evaluating the coincidence in the main typological characteristics of the M'lefaatian, Kobuletian and Kukrek, there might well be used the list of ten points written above. The presence of a large series of the so-called Kukrek-type inserts is one of the features of the Kukrekian. Nevertheless, the use of similar implements for woodworking is also recorded in the M'lefaatian and Kobuletian, only to a lesser extent. Probably the usage of the Kukrek-type inserts was the result of the migrants' adaptation to the conditions of the Crimean Mountains, where the most ancient Kukrek culture sites (Vyshenne 1, Ivanivka, Kukrek) (Векилова 1951; Яневич 1987) were recorded (Table 1: 37—38).

Preboreal sites of the Kobuletian and M'lefaatian are connected with the presence of Trialetian artefacts. The Kukrek culture is not an exception. The Trialetian artefacts are present in the Vyshenne 1 site complex. This is a fragment of an asymmetric triangle and a scalene resembling a triangle. The classic Trialetian triangle is present in the Ivanivka complex. The Kukrekian complexes with the Trialetian features occur in the steppe zone of Ukraine too. The Trialetian triangles are found in the Dobrianka (Залізняк та ін. 2013) cluster complexes. The dating of the Preboreal-Boreal boundary corresponds to these finds. There can be observed the evidence of availability of Zarzian artefacts in the early Kukrek. The Abuzova Balka complex has a series of low symmetrical lunates. Thus, it can be seen that in the early M'lefaatian, Kobuletian and Kukrek complexes there is the same evidence of cultural contacts with the Zarzian and Trialetian carriers. This cir-



Fig. 3. M'lefaatian (A), Kobuletian (B) and Kukrek (C): 1–9 — notched blades; 10–16 — woodworking tools (blades with ventral retouch of utilization); 23–33 — trialetian microliths; 34–36 — cores of kashkashok side-blow blade-flakes. 1–3, 10–11, 17–18 — Jarmo (Hole 1983); 4–7, 12, 19 — Kobuleti; 20–22, 29–33 — Dobrianka 1 (Zaliznyak et al. 2013); 23–25 — Karim Shakhir (Howe 1983); 26–28 — Bavra (Gabunia 1976); 35 — Kvirike; 36 — Sabivka 1 (upper level).

cumstance is an additional evidence for the migration of the M'lefaatian population.

The disappearance of the Zarzian and Trialetian features in the Boreal times is observed. All these features are absent in the Kukrekian Boreal complexes of Kamiana Mohyla 1 (Даниленко 1986), Myrne (Станко 1982) and Ihren 8 (Телегин 1985)

sites. Thus, we have proofs of parallel development of three cultures in the Boreal times too.

The Preboreal-Boreal boundary was marked by an important event. It can be noticed the parallel appearance of extended burials in the M'lefaatian and Kukrek complexes. Unfortunately, there is no evidences about the burial rites of the Kobuletian carriers, because at

present the Kobuletian cemeteries have not been found yet.

The appearance of extended burials at the Ali Kosh and Chagha Sefid (Hole, Flannary, Neely 1969) sites in the layers associated with the Mohammad Jaffar phase (Boreal-Atlantic boundary, Table 1: 39) can be noticed. The appearance of the early Mariupol type burials (Mar'ivka, Vasyliivka 2, Osypivka, Table 1: 40) occurs at the beginning of the Atlantic. Thus, the parallels can be seen in the development of the two cultures, which evidences that the connection of migrants with the Motherland persists after two thousand years after the initial migration.

As in the Kobuletian, M'lefaatian and Kukrek assemblages are related with findings of grooved tools known as "chovnyky" in Ukrainian historiography. The appearance of grooved tools took place in the pre-pottery stage of development of the Kukrek culture in complexes of Ihren 8, Kamiana Mohyla 1, Sursk Island 5(III), Popiv Mys. Pottery sites of the Kukrek is linked with the grooved tools findings too (island sites of the Dni-pro River rapids, sites of Zelena Hornytsia cluster at the Siverskyi Donets) (Тубольцев 2013).

The grooved tools from Zelena Hornytsia cluster of sites demonstrate full similarity with such tools from pottery objects of the Kobuleti and with Mohammad Jaffar phase layers of Ali Kosh and Sabz in the Middle East.

Kobuletian Historic-Cultural Region.

As we can see, the initial migration of the M'lefaatian carriers led to the creation of a stable cultural unity, which developed in the 9—7th millennia BC. The synchronous development of the M'lefaatian, Kobuletian and Kukrek is an indicator of the fact that stable cultural ties between the regions of the Middle East, Western Transcaucasia and South-Eastern Europe had been preserved for three millennia.

What mechanisms ensured these cultural links? We can only speculate on how this unity was maintained. It is possible that the initial migration only opened the way for further migrations of the M'lefaatian carriers. It is quite possible that reverse migrations had taken place. Scenarios when the inhabitants of the Middle East or Transcaucasia visited remote regions of Eastern Europe cannot also be ruled out. This topic should be the subject of a separate scholarly study. In any case, we must state the existence of the Kobuletian Historic-Cultural Region (KHCR), which was a global informational unity that ensured the penetration of in-

novative technologies from the Middle eastern region into Transcaucasia and Eastern Europe. The area of distribution of the Kobuletian was a kind of bridge, a transit territory through which innovative technologies reached Eastern Europe. Our choice of the name of the KHCR is based on this fact.

What are the main characteristics of the KHCR?

1. This HCR appeared as the result of migration.
2. Migrations in other regions had not led to appearance of informational network, in frames of which new technologies were distributed.

3. All parts of the KHCR demonstrate the tendency of parallel development.

4. The existence of the KHCR was the condition of the Neolithization process of Transcaucasia and south of Eastern Europe. Only global informational network provided the appearance of new methods of stone knapping, stone tools making and changes in husbandry.

5. The existence of the HCR does not exclude the possibility of the formation of temporal networks outside of the HCR. The KHCR creates synthetic cultural traditions with the Zarzian, Trialetian, late Pre-Pottery Neolithic B (PPNB) etc. at different periods of its existence. Such networks are temporary and disappear along with the disappearance of the cultural phenomena that took part in the formation of temporal networks.

6. Two ways of the HCR creating are known: integrationist and expansionist. The KHCR shows us the expansionist type of the HCR creation, associated with the formation of networks by carriers of the same cultural tradition during the penetration on new territories.

7. The destruction of the KHCR at the end of the 7th millennium BC had not led to the complete disappearance of cultural traditions. Individual parts of the KHCR are integrated into new cultural phenomena. In particular, the late carriers of the Kukrek cultural traditions are integrated into the new HCR known to us as the "Dni-pro-Donets Historic-Cultural Region" (DDHCR).

8. The KHCR became the basis for the creation of several Neolithic archaeological cultures. These are the M'lefaatian of the Middle East, Çatalhöyük (a component), Odisha culture of Transcaucasia, Sursk and Donets cultures of Ukraine (Table 1: 41—46).

Trialetian migration.

Trialetian culture and Transcaucasia (fig. 4). The term "Trialetian" appeared in 1975, when



Fig. 4. Early Holocene sites with asymmetric triangles.

Trialetian, Caspian and Anatolian variants: 1 — Komishan; 2 — Hotu; 3 — Belt; 4 — Ali Tappeh; 5 — Dam-Dam Cheshme I and II; 6 — Djebel; 7 — Kailu; 8 — Hodje-su; 9 — Nevali Cori; 10 — Hallan Çemi; 11 — Demirkoy; 12 — Kortic Tepe; 13 — Hasankeyf Höyük; 14 — Gusir Höyük; Trialetian, Transcaucasian variant: 15 — Chokh; 16 — Zurtaketi; 17 — Kotias Klde; Mixed Trialetian and Kobuletian complexes: 18 — Bavra; 19 — Darkvety (layer V); Shpan-Koba: 20 — Shpan-Koba; 21 — Fatma-Koba (layer III); 22 — Shan-Koba (layer IV); 23 — Su-At 3; 24 — Frontove 3; 25 — Vasylivka 1 and 3.

N. Gabunia published materials of the Edzani and Zurtaketi sites in Georgia (Gabunia 1976).

Most common features of the Trialetian culture are the following:

1. The usage of methods of direct and indirect percussion in cores reduction strategy.

2. The presence of asymmetric triangles (fig. 5: 1—9).

3. The presence of bitroncated faceted blades with backed edges (fig. 5: 10, 31—32, 42).

4. The presence of asymmetric lunates (fig. 5: 11—13, 41).

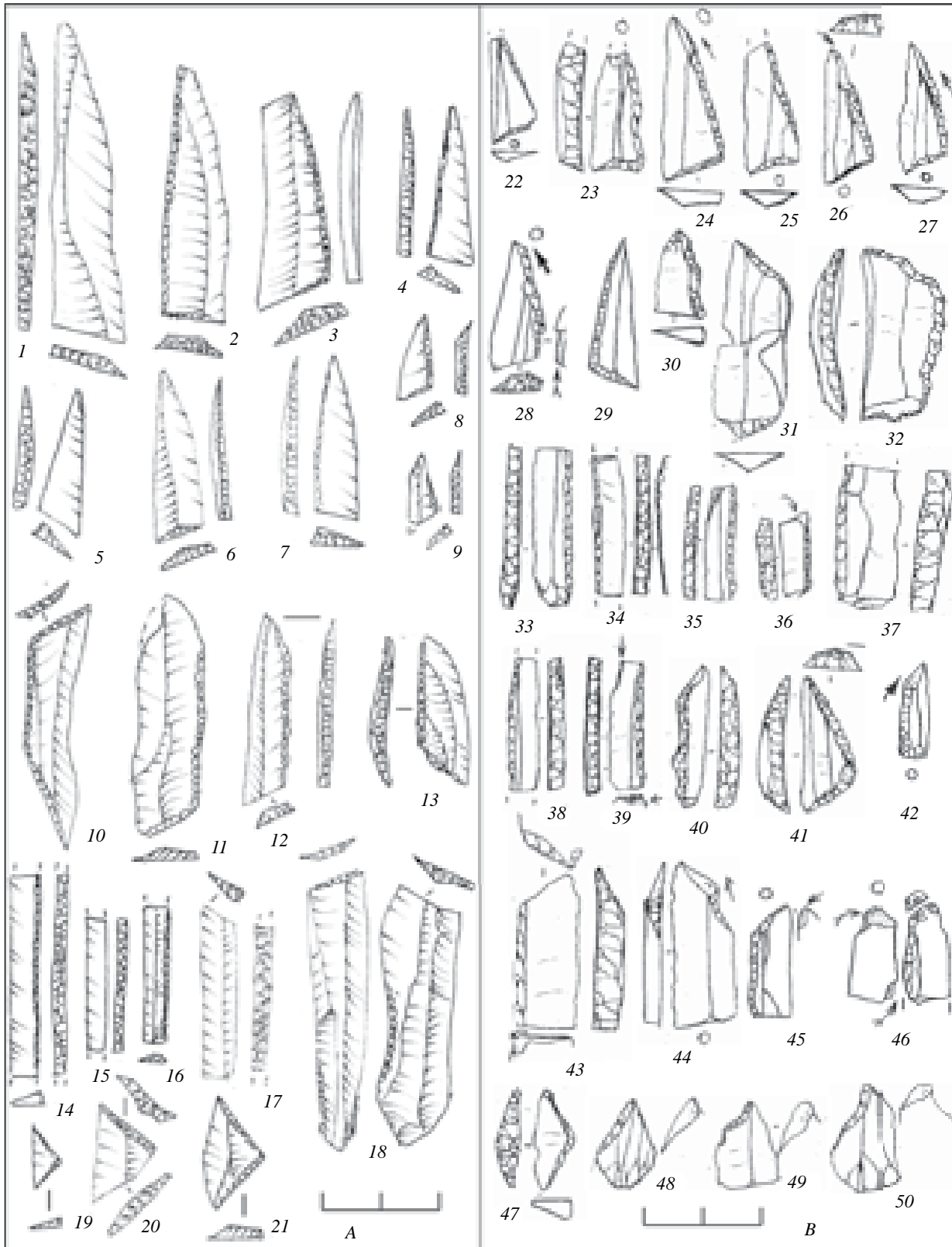


Fig. 5. Trialetian (A) and Shpan-Koba (B): 1–20 — Kotias Klde (Meshveliani et al. 2007); 21–27 — Shan-Koba (layer 5) (after D. Yu. Nuzhnyj); 30–41, 43–44, 47–50 — Shan-Koba (layer 4) (after D. Yu. Nuzhnyj); 28–29, 42, 46 — Vasylivka 3 (Nuzhnyj 2007); 45 — Vasylivka 1 (Nuzhnyj 2007).

1–9 — asymmetric triangles; 10, 31–32, 42 — bi-truncated faceted blade with backed edge; 11–13, 41 — asymmetric lunates; 14–16, 33–40 — bladelets with bipolar abrupt retouch; 17–18, 43–46 — truncated faceted blades; 19–21, 47 — symmetric triangles; 48–50 — microburins.

5. The presence of bladelets with bipolar abrupt retouch (fig. 5: 14—16, 33—40).

6. The presence of truncated faceted blades (fig. 5: 17—18, 43—46).

7. The presence of symmetric triangles (fig. 5: 19—21, 47).

8. The usage of microburin technique (fig. 5: 48—50).

In 1999, S. Kozłowski described the Trialetian and compiled a list of the most important sites (Kozłowski 1999, p. 140). He associated with Trialetian culture the sites of Edzani (Georgia), Halan Çemi (Turkey) (Rosenberg 1994), Belt, Hotu (Coon 1951, 1952), Ali Tappeh (Iran) (McBurney, Payne 2014), Dam-Dam Cheshme 2 (Turkmenistan) (Марков 1966), Chokh (Dagestan, Russia) (Амирханов 1987). S. Kozłowski described the most important features of the Trialetian. The blade detachment connected with methods of indirect percussion and with usage of conic and subconic cores. The main features of retouched instruments are the presence of big end-scrapers, denticulated pieces, truncated blades, retouched blades, perforators, backed blades, asymmetric triangles, lunates and trapezes.

Not all the Trialetian features are equivalent. In our opinion, the main is the presence of asymmetric triangles, most of which differ from similar triangles of the Zarzian complexes in size.

The new Trialetian sites became known after the publication of S. Kozłowski.

In 2007, materials from the Kotias Klde site in Georgia were published (Meshveliani et al. 2007). The excavations showed that the use of indirect percussion is not a necessary characteristic of the Trialetian.

In 2016, materials from the Komishan site in Iran were published (Jayez, Vahdati Nasab 2016). The authors proposed to consider the Mesolithic of the South Caspian Sea outside the Trialetian framework. Perhaps, the authors are right. Nevertheless, the origin of the Mesolithic of the South Caspian and the Trialetian is related to the Zarzian. If there are differences, they are insignificant.

We should pay attention to the presence of the Trialetian artefacts in the complex of Darkvety (layer 5) (Nebieridze 1978; Korobkova 1996).

We cannot agree that the Edzani site in Georgia relates to the Trialetian. We are confident that the site materials reflect a more ancient cultural phenomenon, as we will write about below. For the moment it should be noted that the publications

of the staging materials often do not reflect the specifics of the typology of the geometrical complex. Only the primary publication of M. Gabunia (1976) is correct.

The list of the Trialetian sites by S. Kozłowski does not include Zurtaketi in Georgia. The Trialetian chronology shows that this industry developed between the Dryas III and the beginning of the Atlantic (Table 1: 47—50). The Late Trialetian represented materials of Dam-Dam Cheshme 2 and Chokh. The Late Trialetian and Chokh that are connected with the use of pressing technique of blades detachment. Nevertheless, the use of pressing technique is not a staged feature of the industry. The same characteristics are found in the Final Pleistocene Komishan complex.

The relative chronology of the Trialetian (after Kozłowski 1999, p. 141) was founded on the geometric microliths typology. S. Kozłowski is sure that the oldest complexes are associated with asymmetric triangles and segments, the further development of the industry correlates with the appearance of low long symmetric trapezes, and at a later stage the dimensions of the trapezoids become smaller.

Unfortunately, only one full-fledged Trialetian complex is known in Transcaucasia. This is the Kotias Klde site. The Zurtaketi complex is unrepresentative, and the connection between Edzani and the Trialetian is doubtful.

The Kotias Klde site (Meshveliani et al. 2007) is situated in Western Georgia in karstic cave on limestone Mandaeti plateau on the Kvirila River. The Trialetian complex was revealed in stratigraphic layer B (grey clay interspersed with limestone fragments). About 5000 artefacts of flint and obsidian were found, 512 tools among them.

The flint-knapping technology consisted of 22 cores. There are one-platform prismatic cores, two-platform cores with opposite platforms, and multiplatform cores. Typology of cores is like typology of Halan Çemi complex (Table 1: 47—48, which is contemporary with Kotias Klde (Table 1: 49—50). It is even more surprising that the conclusions about the knapping methods turned out to be different for Halan Çemi and for Kotias Klde, as we have already written above.

Microlithic complex of the Kotias Klde is the most interesting. There are 13 backed bladelets, 45 truncations and 46 geometric microliths. Backed bladelets have bipolar retouch on edges. Truncated faceted bladelets have bipolar re-

touch on edges and on truncated parts of bladelets. A lot of geometric microliths are asymmetric triangles with bipolar or single abrupt retouched sides. There are two symmetric triangles, elongated trapeze and asymmetric lunate. The fabrication of geometric microliths related to the usage of microburin technique. There are three microburins in the complex. The age of the complex is indicated within the end of the Dryas III and Preboreal.

Consequently, the Trialetian culture appeared in Eastern Anatolia, South Caspian and in Western Transcaucasia at the end of the Pleistocene.

The only Trialetian burial found at the Kotias Klde should also be mentioned. The extended burial of a man connected with the Trialetian layer is dated in frames of the very beginning of the Preboreal (Jones et al. 2015).

Trialetian migration to the south of East Europe.

The beginning of the Preboreal connected with appearance of the Shpan-Koba culture (Яневич 1993) in the Mountainous Crimea and at the Dni-pro River rapids. The main sites of the Shpan-Koba culture are Shpan-Koba, Shan-Koba (layer IV), Ala-Chuck, Su-At 3 (the Crimea) and Vasylivka 1 and 3 cemeteries (the Dni-pro River rapids).

The Shpan-Koba site in the Crimea has got the oldest radiocarbon dates. The most ancient complex of the mentioned site appeared in a fringe of the Dryas III — Preboreal, other dates are connected with the Preboreal. Flint complexes of the Shpan-Koba (layers 1—4, 1—5, 2—1, 2—2, 2—3, 2—4, 2—5) and Shan-Koba (layer IV) are the most representative and well dated (Table 1: 51—58). The typological analysis of these complexes demonstrates the full similarity with the Trialetian complexes of Transcaucasia. The presence of asymmetric triangles with traces of microburin spalls, truncated faceted blades, bladelets with abrupt bipolar retouch can be observed. They see less diagnostic Trialetian features in these complexes: the presence of asymmetric lunates and microburins.

The findings in burial complexes of Vasylivka 1 and 3 cemeteries give us an opportunity to detect correlation of microliths of the Trialetian types with the types of burials. Vasylivka 3 cemetery (Столяр 1959а) (Table 1: 59—61) is connected with two types of burials. These are flexed and extended burials, which have similar radiocarbon dates in frames of the Early Preboreal. Vasylivka 1 cemetery (Столяр 1959b) is connect-

ed only with flexed burials. All findings of the Trialetian microliths (Нужний 2007, с. 144) correlated only with flexed burials of both cemeteries. Large number of such microliths was found in people's bones. Only three microliths were found in areas of extended burials, but only one of those microliths was not connected with bone's damages. In this occasion authors correlate the usage of the Trialetian microliths with carriers of extended burials tradition. This fact is not unexpected, because an extended burial was found at the area of Kotias Klde.

The authors have no idea, who had left flexed burials in the Dni-pro River rapids area. Maybe, carriers of the Shan-Koba or Osokorivka cultures are connected with this tradition. The indication of this fact is a task for the future studies.

The main types of the Vasylivka cemeteries microliths are the following: asymmetric triangles with microburin spalls or their parts, asymmetric triangles, truncated faceted blades, blades and bladelets with abrupt bipolar retouch. It should be noted that full similarity of the Dni-pro rapids, the Crimean Mountains and Western Transcaucasia complexes is a real fact.

The radiocarbon dates of the Shpan-Koba complexes show the long-term existence of the culture in the Mountainous Crimea since the beginning of the Preboreal to the end of the Boreal and episodic appearance in the Dni-pro rapids. The appearance of the Murzak-Koba culture in the Crimea may be the result of the beginning of the pressure flaking usage, since the style of microliths production was changed. This hypothesis hasn't got proofs yet.

The Trialetian migration was one of the possible ways of the future appearance of the Neolithic in Eastern Europe, which was not realized. If the Kobuletian migration led to formation of the first Neolithic cultures in the Atlantic, the development of the Shpan-Koba culture was stopped on the pre-pottery phase. It's a big surprise, because the Trialetian cultures of the West and East Caspian reached the Neolithic phase. In our opinion, this occasion was possible in the Caspian region, as the relations with carriers of the other culture were absent in this region.

Darkvetian migration.

Darkvetian culture and Transcaucasia (fig. 6).

The Early Holocene sites with trapezes in Western Transcaucasia the authors called the "Darkvety culture". The main sites of this culture are Darkve-



Fig. 6. Holocene sites with trapezes.

M'lefaatian: 1 — Djarmo (layers 1—3); 2 — Ali Kosh (Mohammad Jaffar phase), Chagha Sefid (Mohammad Jaffar phase); 3 — Sabz; 4 — Sarab; 5 — Jari B; 6 — Mushiki.

Darkvety: 7 — Darkvety (layer IV); 8 — Jvartskhma; 9 — Melouri; 10 — Pirveli Gali; 11 — Zemo Lemsá; 12 — Apiancha.

Matveyev Kurgan and Hrebenyky cultures: 13 — Frontove 4; 14 — Murzak-Koba (layer III); 15 — Fatma-Koba (layers IV—III); 16 — Shan-Koba (layer III); 17 — Tuba 5; 18 — Myrne; 19 — Kamiana Mohyla 3; 20 — Hrebenyky; 21 — Hirzhove; 22 — Kazanka; 23 — Matveyev Kurgan 1, 2; 24 — Razdorskaya 2; 25 — Soroki 1, 2.

ty (layer IV) (Nebieridze 1978), Jvartskhma (Манько, Чхатарашвили 2020b), Melouri, Pirveli Gali (Kalandadze 1986), Zemo Lemsá (Воронов 1984), Sosruko (layer 4) (Golovanova et al. 2020; Манько, Чхатарашвили 2021), Apiancha (layer 1) (Церетели и др. 1982).

The main features of the Darkvety stone industry are the following:

1. The presence of pressure flaking based on flat monofrontal and prismatic cores usage (fig. 7).
2. The aim of pressure flaking is the obtaining of blades and bladelets.

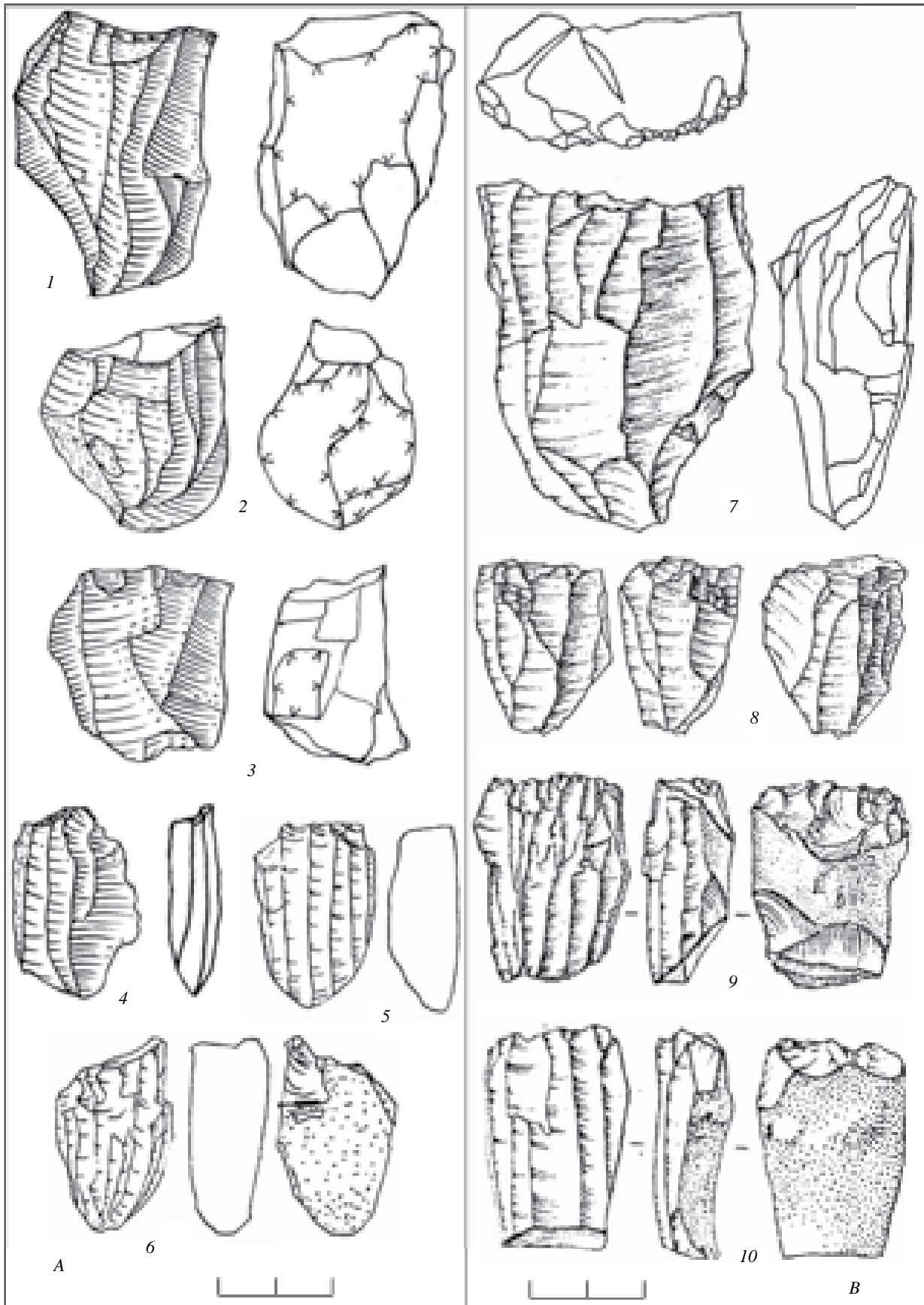


Fig. 7. Darkvetian (A) and Matveyev Kurgan cultures (B). Cores.

1—4 — Ivartskhma; 5—6 — Sosruko (layer M-1) (Golovanova et al. 2020); 7—8 — Tuba 5 (Теліженко 2005); 9—10 — Matveyev Kurgan (Крижневская 1992).

3. The presence of low symmetric trapezes or trapezes-rectangles with abrupt retouch on sides (fig. 8: 1—19, 22—25, 27—43).

4. The presence of lunates with Helwan retouch in early complexes (fig. 8: 20, 26).

5. The presence of truncated faceted blades, which were used like blanks for trapezes manufacturing.

6. The presence of end-scrapers on blades, oval and round scrapers on flakes, angle burins, notched bladelets.

7. The presence of polished tools (fig. 8: 21, 44).

The origin of the Darkvety culture is connected with the Transcaucasian Epipalaeolithic. The tradition of trapezes with two retouched sides usage is observed in the South Caucasian Final Pleistocene of Apiancha (layer 2); complexes with trapezes are known in the Final Palaeolithic complexes of the Northern Caucasus (Mesmayskaia, layer 1—3; Satanay; Dvoynaia, layers 4—6; Psytuaje, layer 2) (Table 1: 62—67) (Голованова и др. 2021). However, complexes with trapezes are absent in neighboring regions of the Middle East after the disappearance of the Zarzian culture.

Perhaps, the Darkvety culture has got deeper roots. The archaic feature of the Darkvety microlithic complexes is the presence of trapezes-rectangles with three sides with abrupt retouch. This type of trapezes is the ancient type of geometric microliths of the Transcaucasia. The trapezes with three retouched sides are known in complexes of Apiancha (layers 5 and 4; Table 1: 68) and Satsurbliya (layer B; Table 1: 69). In L. Golovanova's and other researchers' opinion the origin of this type of trapezes is connected with the Geometric Kebaran (Голованова и др. 2021, с. 95-96).

The oldest complex of the Darkvety culture is Sosruko (layer M1(4)) (Manko, Chkhatarashvili 2021). This complex contains of flat one-platform monofrontal cores for obtaining blades and bladelets with hand pressing methods and low symmetric trapezes on pressed blades. Radiocarbon dates in frames of the beginning of the Boreal is associated with this complex (Table 1: 70—72). Probably, the appearance of the Darkvety complex in the Central Caucasus is connected with the movement of carriers' traditions of the Epipalaeolithic of the Northern Caucasus and with contacts of carriers of the Kobuleti culture, the peoples of which used the pressure flaking.

During the Boreal the carriers of the Darkvety culture inhabited the territory mountain systems in Guria (Jvartskhma) and Imeretia (Darkvety, layer 4). The pressure flaking was not good developed

in the Boreal time. The co-existence of traditions of direct percussion and hand pressing techniques can be observed. All these complexes consist of artefacts, which have got the Kobuleti origin. These are bilateral angle burins and conic cores. The proofs of contacts of the Kobuleti and Darkvety cultures carriers in the Kobuleti complexes are fixated. The series of symmetric trapezes was found at the site Anaseuli I (Korobkova 1996).

The beginning of the Darkvety culture development, the appearance of axes and chisels from soft kinds of stone are also marked (fig. 8: 21).

Further development of the Darkvety culture had been connected with complexes of Melouri, Pirveli Gali and Zemo Lemsia in Abkhazia. This phase was characterized with the domination of the pressure flaking technique. Complexes of this phase can be dated in frames of the beginning of the Atlantic (7th millennium BC). Trapezes with flat invasive retouch are absent in complexes of this phase. The latter fact is a proof for the dating not later than the end of the 7th millennium BC, when the described type of trapezes appeared and became the leading type in the Neolithic complexes of the Transcaucasia.

Migration of carriers of the Darkvety culture in the south of Eastern Europe.

The co-existence with neighboring culture habitation groups (the Kobuleti, Late Trialetian, Edzanian cultures) had taken place during the Boreal since the appearance of the Darkvety culture. This situation stimulated the migration processes. The main way of the migration related to the Crimea, Lower Don River basin, North Azov Sea region. The first appearance of the Darkvety carriers is observed in the Crimea, where complexes Frontove 4 (Манько 2013b), Murzak-Koba (layer III), Fatma-Koba (layers IV—III), Shan-Koba (layer III) (Бибииков, Станко, Коен 1994), Frontove 1 (Manko 2013b) marked this process. These complexes are mixed with materials of the Murzak-Koba culture, however, clear Darkvety complexes in sublayers of the Murzak-Koba and Fatma-Koba are recorded too (Манько 2018, 2019). The earliest stage of the Darkvety migration is dated in frames of the second half of the Boreal (Table 1: 73).

The Sea of Azov hadn't appeared during this time yet. A large number of the Crimean rivers related to the Lower Don basin and were the good ways in the Lower Don area (Razdorskaia 2, Цыбрий 2008). First Darkvety complexes were fixated in this region at the end of the 8th millennium BC on a fringe of

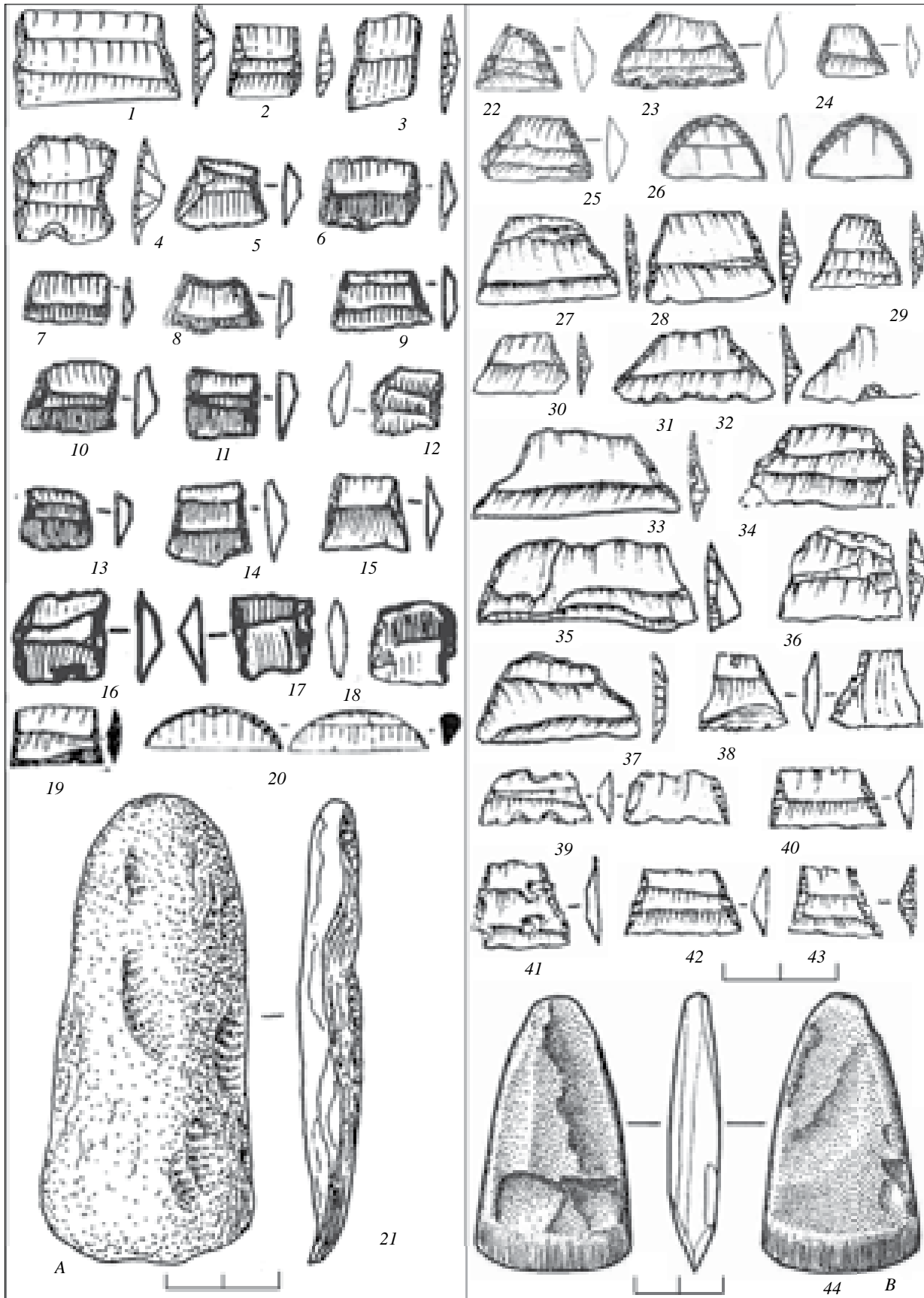


Fig. 8. Darkvety (A) and Matveyev Kurgan cultures (B): 1–19, 22–25, 27–43 — trapezes; 20, 26 — lunates; 21, 44 — polished tools. 1–4 — Jvartskhma; 5–15, 21 — Melouri (Kalandadze 1986); 16–18 — Pirveli Gali (Kalandadze 1986); 19–20 — Zemo Lemsa (Воронов 1984); 22–26, 44 — Rozdorska 2 (Цыбрий 2008); 27–37 — Tuba 5 (Телиженко 2005); 38–43 — Matveyev Kurgan (Крижневская 1992).

the Boreal and Atlantic periods (Table 1: 74). Further movement of the Darkvety population led to inhabitation of the areas of the Siverskyi Donets basin (Tuba 5) (Теліженко 2005) and the North of the Sea of Azov basin (Matveev Kurgan 1 (Table 1: 75) and II, Каміана Мохула III) (Крижевська 1992; Тубольцев 1995). This cluster of complexes was named the “Matveev Kurgan culture”. All complexes of this culture contain series of prismatic and flat monofrontal cores from pressed blades and bladelets, symmetric trapezes and trapezes with three retouched sides. The complex of Razdorskaia 2 is connected with the presence of a small number of lunates with Helwan retouch. The microliths, which were made from soft kinds of stone, are found too.

The tradition of clustering complexes with trapezes from pressed blades and bladelets led to the usage of titles the “Hrebenyky culture” and the “Buh-Dnister culture”, when the North-Western Black Sea, Buh, Dnister and Lower Danube basins sites are under discussion. This occasion, in our opinion, mark the process of creation of unnecessary terms. In reality, the Hrebenyky and the early Buh-Dnister complexes are full copies of complexes of the Darkvety and the Matveev Kurgan cultures. The Hrebenyky sites marked the movement of the Darkvety inhabitants in the second half of the 7th millennium BC (Table 1: 76—77).

The Darkvety migration had led to the speed process of the Neolithization of the Mountainous Crimea and the steppe zone of the south of Eastern Europe. This process is related to creation of the Hrebenyky Cultural-Historical Region, which is connected with Transcaucasia and Eastern Europe and made conditions for the distribution of the Neolithic innovations in husbandry.

Darkvety culture diffusion in areas of the Middle East.

We have already written that the carriers of the Kobuletian and the Darkvety cultures came into contact over a long period of co-existence. We can trace this process outside of the Transcaucasia as well. The emergence of the tradition of geometric microlithic production in the Middle East in the early Atlantic can be observed too. However, the direct connection between the carriers of the two cultures cannot be considered, since the appearance of trapezes is accompanied by the appearance of lunates. It can be mentioned only about the indirect influence of the carriers of the Darkvety industry on the development of the M'lefaatian culture. The mechanism of this indirect influence can be identified. Understanding such a mechanism be-

comes possible by analyzing the materials of the Armenian sites Lernagog 1, Areni 1 (with lunates only) and II (Petrosyan et al. 2021) and Azerbaijani site Damjili Cave (Nishiaki et al. 2019).

The Armenian sites are connected with presence of lunates in complexes. Materials of the Damjili Cave characterized the presence of trapezes and lunates. The analysis of microliths of the Damjili Cave show us the uniting of two technologies of microliths production. The lunates of the Damjili Cave demonstrate the similarity with lunates of the Armenian sites. These are symmetric lunates with bipolar retouch on arches. The trapezes of the Damjili Cave demonstrate similarity with the Darkvety microliths. These trapezes are symmetric with low or semi-high proportions, made without the usage of microboring technique. There is a trapeze with three retouched sides. This fact makes it possible to formulate a hypothesis about the formation of a mixed cultural tradition in the Transcaucasia. This tradition could arise based on the interaction of the Darkvety and Lernagog industries. The carriers of this tradition could have influenced the change in the appearance of the M'lefaatian culture.

The data of absolute chronology show that our hypothesis may be correct. The Transcaucasian sites have radiocarbon dates within the very beginning of the Atlantic (Table 1: 31—33, 78). The appearance of trapezes and lunates in the M'lefaatian complexes is associated with the Atlantic time too. The Jarmo and Mushiki complexes are especially important for us. The appearance of microliths in Jarmo is connected with pottery complexes (Table 1: 20). The complex of the Mushiki is well dated in frames of the middle of the 7th millennium BC (Table 1: 21). These dating has good corresponding pottery complex date of Jarmo.

The thoughts expressed are only a hypothesis that needs to be tested further. Nevertheless, only the presence of mediated connections with the Middle East can explain the rapid Neolithization of the carriers of the Darkvety traditions both in the Transcaucasia and Eastern Europe.

Edzanian migration (fig. 9).

Edzani complex and the origin and development of the Edzani culture.

For a long time, wrong interpretation of this complex hindered the solution of one of the most difficult issues of the Transcaucasian archaeology — search for the origin of local Neolithic cultures. M. K. Gabunia investigated the Edzani site in 1962—64 (Gabunia 1976). The site was found



Fig. 9. Final Pleistocene and Holocene sites with Helwan retouch lunates.

Ramonien and Geometric Kebara: 1 — Har Harif K-V; 2 — Ein Quadis 2; 3 — Nahal Sekher 23; 4 — Wadi el-Jilat; 5 — Karaneh 4 (layer D).

Edzanian: 6 — Edzani; 7 — Gumurishi, Chkhortoli; 8 — Kistriki; 9 — Nighnaia Shilovka; 10 — Satanai, Chagai, Dvoinaia; 11 — Ovechka, Khadjokh.

Platovskii Stav and Seroglasovo cultures: 12 — Frontove 1 (layer III—I); 13 — Rassypnaia 6; 14 — Khutor Kurganni; 15 — Tsiganitsa; 16 — Tu-Buzgu-Khuduk 1; 17 — Kharba; 18 — Kugat 4; 19 — Kairshak 1, 3; 20 — Seroglasovo; 21 — Kulagaysi; 22 — Dghangar; 23 — Varfolomiivka (layer III); 24 — Zhukovska 1, 2; 25 — Dolzhyk, Murzina Balka; 26 — Platovskii Stav; 27 — Zimovniki 1.1; 28 — Kreminna 2, 3.

in Eastern Georgia under a basalt canopy, situated 23—25 m above the left bank of the Ktsia-Khrami River. The height above the sea level is 1600 m. The cultural layer was found in dark

brown soil deposits. The thickness of the cultural layer was 10—40 cm.

Initially, the researcher had assumed a Pleistocene age, but later it was assumed that the site was

of the Mesolithic age. The materials were attributed to the Early Holocene Trialetien archaeological culture (Gabunia 1976, 2001; Бадер, Церетели 1989). This conclusion was speculative in fact. One of the arguments in favor of the Mesolithic age was the presence of geometric microliths. M. K. Gabunia considered that trapezes and lunates had just appeared in the Mesolithic. At present, it is well known that this is not the case and that their appearance relates to the Final Pleistocene.

The main features of the Edzani complex are:

1. The usage of direct percussion methods of core reduction (fig. 10). The usage of two- and one-platform monofrontal flat cores, which characterize two stages of core reduction. The presence of conic cores. This type of cores may relate to indirect percussion methods.

2. Geometric microliths are a major part of the complex of hunting weapons. These are asymmetric triangles (fig. 11: 8—11), lunates with abrupt retouched arches and lunates with Helwan retouched arches (fig. 11: 1—7, 22—33), long trapezes with two or three retouched sides (fig. 11: 12—14, 45—47).

3. Nongeometric microliths (fig. 11: 34—39) include bladelets with abrupt retouch, truncated faceted blades with abrupt retouch on edges.

4. The presence of tanged points (fig. 11: 13—16, 44).

5. Two main types of scrapers (fig. 11: 17—18, 48, 50): end scraper on blades and oval or round scrapers on flakes.

6. Two main types of burins (fig. 11: 19—21, 49, 51): angle burins on broken blades and burins on truncated faceted blades.

7. The presence of notched blades, perforators and chisels.

8. The microburin technique using (fig. 11: 40—43).

The geometric complex is unique and unparalleled in other Transcaucasian Epipalaeolithic complexes. The combination of asymmetrical triangles, elongated trapezes and lunates with Helwan retouch is found nowhere else. This circumstance allows considering that the Edzani complex relates to a specific type of stone industry, characterizing a separate archaeological culture.

When M. K. Gabunia published the Edzani complex, she pointed out that many types of tools have analogies in the Epipalaeolithic complexes of the Near and Middle East (Gabunia 1976). This conclusion was correct. Lunates with Helwan retouch, elongated trapezes and asymmetric trian-

gles have counterparts in Ramonien, Geometric Kebaran and Early Natufian cultures.

The Late Ramonien culture in the Near East territory has got a big similarity with Edzani. A complex similarity between the two industries is visible. The best-known complexes of the Late Ramonien industry are Nahal Sekher 23, Har Harif K-V, Ein Qadis 2 (Goring-Morris 1987, p. 204-256), which existed in the Belling or Dryas II (Table 1: 79). All the above complexes contain a series of the so-called Ramonien points, which resemble asymmetrical Edzani triangles. Common components are lunates with Helwan retouch and archbacked blades. There are series of microburins in complexes too. In addition, parallels in the core reduction system are observed. Especially interesting for us are the complexes, where two-platform monofrontal flat cores, one-platform monofrontal flat cores and one-platform conic cores were revealed. As we can see, the core reduction system in the two industries is almost identical. It is difficult to imagine what prompted the late Ramonien carriers to migrate to the Transcaucasia, but the similarities are so striking that they cannot be ignored.

There are also undoubted similarities between the Edzani culture and the Geometric Kebara complexes. We use the publication of assemblages of the Nahal Sekher 22, Shunera 1, III, XII B, Azariq II, XVI, XVIII (Goring-Morris 1987), Neve David (Yeshurun et al. 2015). The mentioned complexes existed at about the same time as the late Ramonien complexes (Table 1: 80—81). The latter contain a series of elongated trapezes with three retouched sides, as well as a series of asymmetric trapezes with the same characteristics. The Kharaneh Geometric Kebara complex (layer D) (Mueheisen 1988) should also be mentioned. The elongated trapezes of the Kharaneh D form the basis of the geometric complex of the site, resembling Edzani trapezes stylistically and repeating their proportions.

An important problem is the presence of tanged points in the Edzani complex. We usually associate such points with the PPNB. However, the Edzani tanged points are not associated with the Neolithic. The shape of the points and the characteristics of their blades show that they could not be associated with the navyform cores of the PPNB. Tanged points first appear at the Wadi el-Jilat 22 site in Jordan (Garrard, Byrd 1992). The shape of these points resembles that of Edzani points. Thus, this element comes from the Near East too.



Fig. 10. Edzanian (A) and Late Ramonien (B). Cores.
 1—7 — Edzani (Gabunia 1976); 8—10 — Har Harif K-V (Gorring-Morris 1987); 11—12 — Ein Qadis 2 (Gorring-Morris 1987).



Fig. 11. Edzanian (A), Late Ramonien and Geometric Kebaran (B): 1–7, 22–33 — lunates; 8–11 — asymmetric triangles; 34–39 — ramonien points; 12–14, 45–47 — trapezes; 13–16, 44 — tanged points; 17–18, 48, 50 — scrapers; 19–21, 49, 51 — burins; 40–43 — microburins.

1–21 — Edzani (Gabunia 1976); 22–25 — Ein Qadis 2; 26–27, 48–51 — Har Harif K-V; 28–43 — Nahal Sekher 23 (Gorring-Morris 1987); 44 — Wadi el-Jilat (Garrad, Byrd 1992); 45–47 — Karaneh 4 (layer D) (Muheisen 1988).

The presence of parallels between the Edzani industry and the Geometric Kebara and late Ramonien complexes shows a deep connection between the Epipalaeolithic of the Transcaucasia and the Near East. It would be tempting to link the Edzani and Natufien industries. It is with the Natufien we associate lunates with Helwan retouch. However, this type of tool is the only element of similarity. It seems that the influence of the Natufien on the formation of the Edzani industry is indirect, the result of interaction with the late Ramonien.

Development of the Edzanian culture.

The Edzani culture continues to exist in the Early Holocene. We are dealing with a rather rare phenomenon when a synthetic archaeological culture, which emerged because of migration, does not disappear with the disappearance of those archaeological cultures that took part in its formation.

The Gumurishi (fig. 12: 1—6; fig. 13: 1—25) and Chkhortoli sites (Kalandadze 1986) are associated with the early Holocene times.

The typology of these complexes demonstrates a full similarity with the Edzani, but the appearance of pressed flaking methods is a proof of the Holocene age.

The development of the Edzani culture in Transcaucasia ends in the 6th millennium BC only. The most recent monuments are associated with the appearance of pottery. These sites are Kistrik (Лукин 1950), Nizhnyaya Shilovka (Solov'ev 1967), Ovechka (Каменецкий 2001) and etc. Even in the most recent sites of the Edzani culture a stable combination of two types of geometric microliths can be observed. The complexes contain trapezes with three retouched sides and lunates with Helwan retouch. An innovative feature of the complexes is the use of dorsal flat invasive retouch for the design of geometric microliths.

Thus, the Edzani culture was a very stable cultural phenomenon, emerging in the Final Pleistocene and surviving until the mid-Atlantic. At the same time, the significance of the Edzani culture goes far beyond the Transcaucasus, as we record the spread of the Edzani population on the Lower Don and Lower Volga basins.

The migratory activity of the Edzani culture carriers.

At the Boreal-Atlantic boundary, the Edzani population exhibits extraordinary migratory activity. The first path relates to the development of the Lower Don and Manych basins. The second route

relates to migration to the territory of the North Caspian Region. The Manych Passage, which at that time connected the Black Sea and the Caspian Sea, was used to penetrate the North Caspian.

The sites with Helwan retouch lunates were called the Platovskii Stav culture in the basin of the right bank of the Kuban, in the Lower Don basin and in the lower basin of the Siverskyi Donets. We will describe materials from the most informative sites only.

The ancient site with the Helwan retouch lunates in Eastern Europe is Rassypnaia 6 (Цыбрий 2008) in the basin of the left bank of the Manych River. The site has a radiocarbon date in frames of the very beginning of the Atlantic (Table 1: 84). The Rassypnaia 6 site is characterized by tongue-shaped and cylindrical cores, lunates with Helwan retouch, lunates with abrupt retouched arches, trapezes with three retouched sides. Some trapezes have notches on low bases. The Rassypnaia site complex repeats all the basic types of cores and tools of the Early Holocene Edzani culture of the Transcaucasia. The geographical location of the site is approximately at the fork of two roads, at the crossroads to the Don and to the North Caspian Sea.

In the basin of the Lower Don and Siverskyi Donets there are the Platovskii Stav sites Kremennaia 2 and 3 (Цыбрий 2008) (fig. 12: 7—11; fig. 13: 26—52), Platovskii Stav (Казакова 1973), Murzina Balka (Бритюк 2006), Dowzhyk (Горелик, Шестаков, Викулина 2005), Zimovniki I.1 (Горелик 1984). Judging by the available dates (Table 1: 85—87), the Platovskii Stav culture existed at the beginning of the Atlantic in the frames of the 7th millennium BC. It appears that this culture was displaced from the Lower Don and the Siverskyi Donets region by the carriers of the Lower Don culture.

Only the complex of Zimovniki 1.1 site is associated with pottery production. There is no evidence of cattle-breeding or farming. The migration of people from the Transcaucasia seems to have been linked to the desire to continue the traditional way of life, based on hunting and gathering.

A second group of migrants travelled along the Manych River to the North Caspian Sea region. There are many sites with Helwan retouch lunates in the North Caspian Sea region. We will mention only the most informative sites, the complexes of which have been reliably dated.

There is a problem with the interpretation of complexes with Helwan retouch lunates in the North Caspian region. Here, sites of the Seroglazovo culture (Мелентьев 1975), sites of Khar-

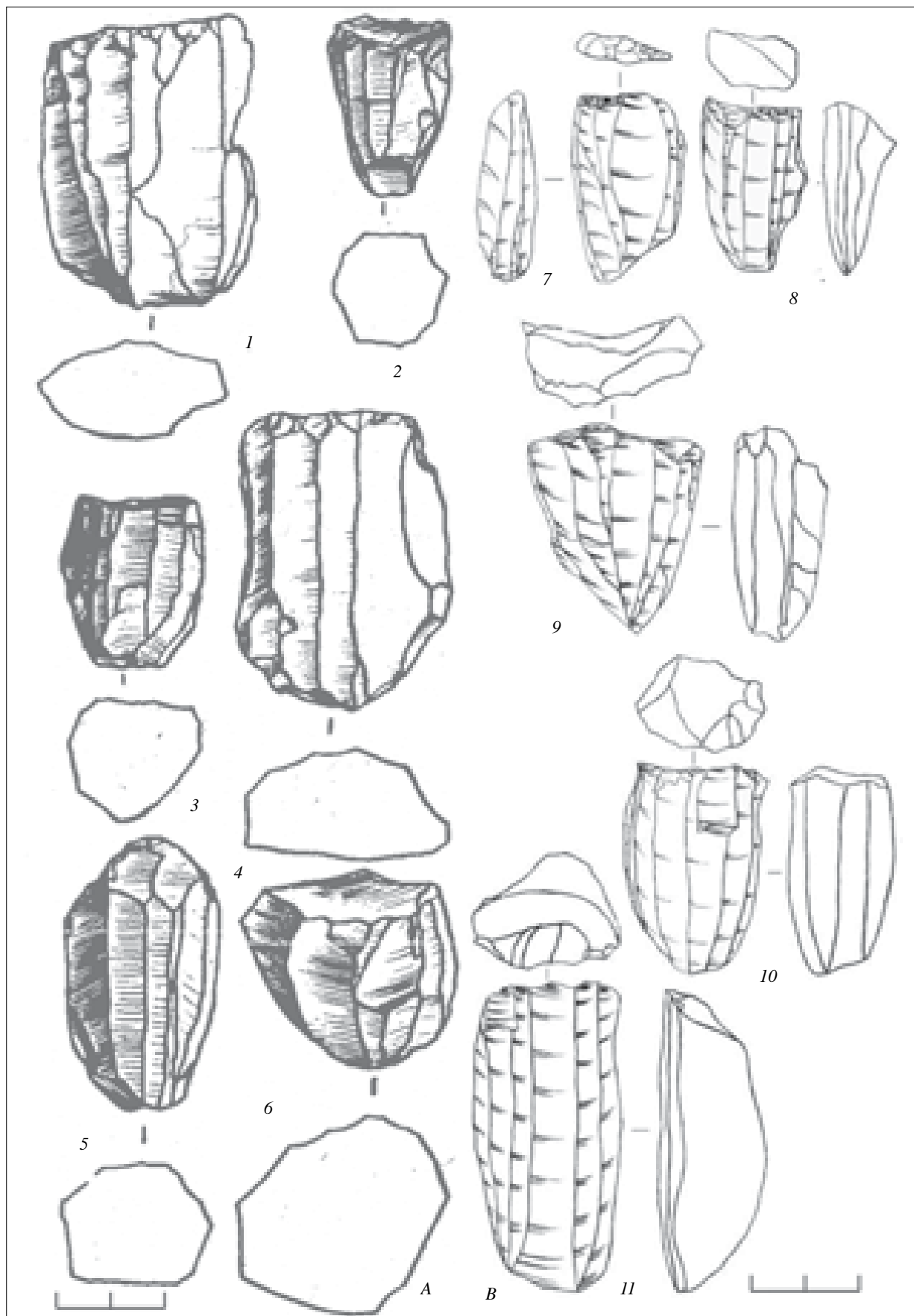


Fig. 12. Edzaniian (A) and Platovskii Stav cultures (B). Cores.
 1—6 — Gumurishi (Kalandadze 1986); 7—11 — Kreminna 2 (Цыбрий 2008).

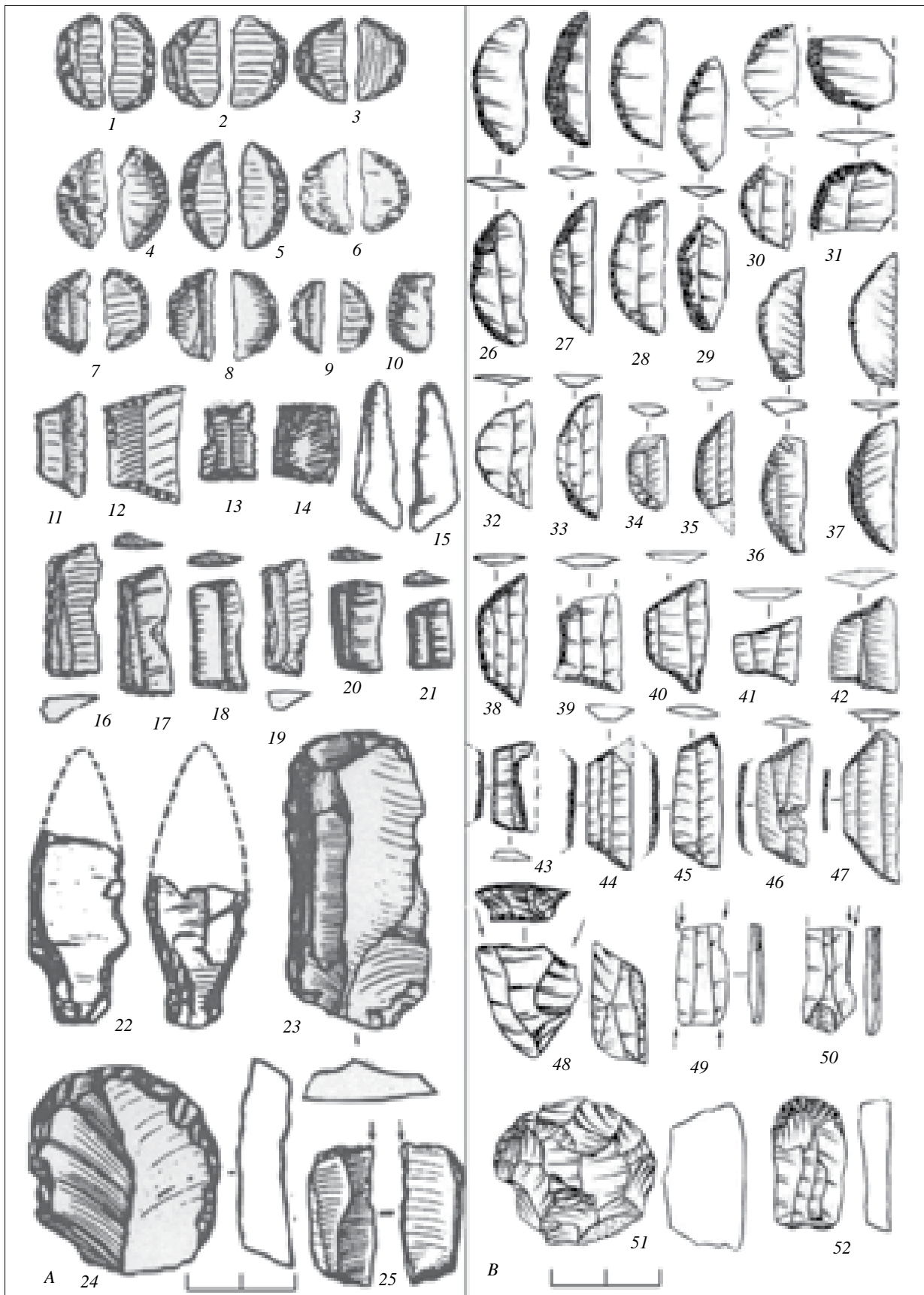


Fig. 13. Edzanian (A) and Platovskii Stav cultures (B): 1–10, 26–37 — lunates; 11–14, 16–21, 38–47 — trapezes; 15 — a triangle; 22 — a tanged point; 23–24, 51–52 — scrapers; 23, 49–50 — burins.

1–25 — Gumurishi (Kalandadze 1986); 26–52 — Kreminna 2 and 3 (Цыбрий 2008).

ba-type (Выборнов 2008), Istai and Zhe-Kalgan types (Васильев и др. 1988) are distinguished, which are considered “mesolithic”, as they are not connected with the production of pottery. Many authors write about several cultures within the Neolithic, i.e., they divide sites with similar flint complexes and sites with pottery. The tendency towards fragmentation of the cultural phenomenon appears to be entirely unjustified.

In our opinion, the presence of sites with and without pottery is due to the function of the sites. The radiocarbon dates indicate that sites with ceramics have older dates than the “pre-pottery sites” (Kairshak 5A, Table 1: 88) (Комаров 2002). For this reason, we use the term the “Seroglazovo culture” for all sites with Helwan retouch lunates.

The most ancient site of the Seroglazovo culture of the North Caspian is Kairshak 3 (Выборнов 2008) (Table 1: 89). There is a series of absolute dates within the very beginning of the Atlantic. The complex has conical and tongue-shaped cores, end- and round-scrapers, perforators, lunates with Helwan retouch, trapezes with three or two retouched sides. As we can see, all the main components of the Edzani industry are also traced in the North Caspian Region.

Very informative is the Kugat 4 complex (Козин, Комаров 1989), dated from the mid 7th millennium BC (Table 1: 90—91) and Kairshak 1 (Выборнов 2008). Here, together with the traditional lunates with Helwan and symmetric trapezes with retouched low base we found asymmetric triangles.

Thus, we state the fact that a giant Historical-Cultural Region (HCR) was formed as a result of population migrations from the Transcaucasia in the 7th — first half of the 6th millennia BC. This HCR was the result of migrations along the mountain passes of the Caucasus and major waterways (Don, Siverskyi Donets, Kuban, Manych, Volga). At the end of the 7th millennium BC, this HCR covered the territories of Western Transcaucasia and the Caucasus, the Lower Don and the Siverskyi Donets basins, the Kalmyk and the Northern Caspian area. The population of those regions had common elements of material culture.

Conclusion

To summarize, four main events, connected with migratory activity of the Transcaucasian inhabitants, had taken place in the Early Holocene. Only one of these migrations hadn't led to the appearance of the Neolithic cultures in Eastern Europe (Trialetian). The result of three other migrations was the development of first Neolithic cultures in the south of Eastern Europe. However, the development of the Trialetian culture had led to appearance of the Chokh Neolithic culture in the Western Caspian region.

All migration activities didn't have Neolithic features at the beginning of population movement process. Migrations were not the reasons of Neolithization, but prerequisites of this action. Migration activity had led to the creation of Historical-Cultural regions, in which borders of the informative continuity emerged. This continuity provided a constant flow of new information to the regions that the migrators were mastering. This reality formed a cultural and perhaps linguistic continuity within which the Neolithic innovations could spread.

This occasion must explain to us that the Neolithization process was not the result of migration, diffusion or the result of cultural exchange. This process was indicated with preliminary result of inhabitation of carriers of similar traditions on the boundaries of some neighboring regions. Its inhabitation created a zone, which we can name the “Oikumene”. This zone may be characterized like an area, which was a contact for the whole people, which had a similarity in origin, in elements of the language. Peopling of this zone was a player in sustainable unity, in frames of which movements were multidirectional.

Our main conclusion is the following: one-vector migrations can not lead to the new quality of life, can not lead to the Neolithization. Only multivector replacement of people must lead to the beginning of the Neolithic way of life. The beginning of the Neolithic in Eastern Europe cannot be the result of one migration process. The sums of a large number of migrations can create the background to the constant flow of information about the new achievements of the Neolithic Revolution and their integration among the new settlers.

- Амирханов, Х. А. 1987. *Чохское поселение, человек и его культура в мезолите и неолите горного Дагестана*. Москва: Наука.
- Бадер, Н. О., Церетели, Л. Д. 1989. Мезолит Кавказа. В: Кольцов, Л. В. (отв. ред.). *Мезолит СССР*. Москва: Наука.
- Бибиков, С. Н., Станко, В. Н., Коен, В. Ю. 1994. *Финальный палеолит и мезолит Горного Крыма*. Одесса: ОНУ.
- Бритюк, А. А. 2006. Неолитические стоянки Мурзина Балка 1 и 2 и Барагуста. В: Синюк, А. Т. (ред.) *Археологические памятники Восточной Европы*. Воронеж: Изд-во ВГПУ, с. 21-34.
- Васильев, И. В., Выборнов, А. А., Комаров, А. Н. 1988. Мезолитические стоянки Северного Прикаспия. В: Мерперт, Н. Я. (ред.) *Археологические культуры Северного Прикаспия*. Куйбышев: Куйбышевский государственный педагогический институт, с. 3-41.
- Векилова, Е. А. 1951. Эпипалеолитическая стоянка Кукрек в Крыму. *Краткие сообщения Института истории материальной культуры*, 36, с. 87-95.
- Воронов, Ю. Н. 1984. *Памятники каменного века Военно-Сухумской дороги*. Тбилиси: Мецниереба.
- Выборнов, А. А. 2008. *Неолит Волго-Камья*. Самара: Самарский государственный педагогический университет.
- Голованова, Л. В., Дороничев, В. Б., Дороничева, Е. В., Недомолкин, А. Г. 2021. Геометрические микролиты в верхнем палеолите Кавказа и сопредельных территорий. *Известия Иркутского государственного университета. Серия Геоархеология. Этнология. Антропология*, 38, с. 78-111. <https://doi.org/10.26516/2227-2380.2021.38.78>
- Горелик, А., Шестаков, И., Викулина, В. 2005. Материалы неолитической стоянки Должик. В: Отрощенко, В. В. (ред.) *Материалы конференции археологов и краеведов*. Луганск: Луганский краеведческий музей, с. 112-118.
- Горелик, А. Ф. 1984. Исследование мезолитических комплексов стоянки Зимовники в северо-восточной части бассейна Азова. *Советская археология*, 2, с. 115-133.
- Горелик, А. Ф., Цыбрий, А. В., Цыбрий, В. В. 2014. О чем поведали череп тура, топор и женские статуэтки? (К проблеме начальной неолитизации Нижнего Подонья). *Stratum plus*, 2, с. 247-282.
- Даниленко, В. М. 1986. *Кам'яна могила*. Київ: Наукова думка.
- Залізник, Л. Л. 1998. *Передісторія України Х—V тис. до н.е.* Київ: Бібліотека українця.
- Залізник, Л. Л., Моця, О. П., Зубар, В. М., Бунятян, К. П., Отрощенко, В. В., Терпиловський, Р. В. 2005. *Археологія України*. Київ: Либідь.
- Залізник, Л. Л., Товкайло, М. Т., Манько, В. О., Сорокун, А. А. 2013. Стоянки біля хутора Добрянка та проблема неолітизації Буго-Дніпровського межиріччя. *Кам'яна доба України*, 15, с. 194-257.
- Замятнин, С. Н., Акритас, П. Г. 1957. Археологические исследования 1957 года в Баксанском ущелье. *Ученые записки Кабардино-Балкарского научно-исследовательского института, XIII*. Нальчик: Кабардино-Балкарское книжное издательство, с. 471-473.
- Казакова, Л. М. 1973. Новые мезолитические местонахождения на Нижнем Дону. В: Кияшко, В. Я. (ред.) *Археологические раскопки на Дону*. Ростов-на-Дону, с. 3-18.
- Каменецкий, И. С. 2001. Неолит юга Европейской равнины. *Swiatowit*, 3(44), с. 41-90.
- Клейн, Л. С. 1999. Миграция: археологические признаки. *Stratum plus*, 1, с. 52-71.
- Козин, Е. В., Комаров, А. М. 1989. Ранне-неолитические стоянки в южноуральских песках. В: Мерперт, М. (ред.) *Неолит и энеолит Северного Прикаспия*. Самара: Куйбышевский государственный педагогический институт, с. 3-18.
- Комаров, А. М. 2002. Проблемы периодизации и хронологии мезолита Северного Прикаспия. В: Выборнов, А. А. (ред.) *Исторические исследования*. Самара: Куйбышевский государственный педагогический институт, с. 3-10.
- Котова, Н. С. 2002. *Неолитизация Украины*. Луганск: Шлях.
- Крижевская, Л. Я. 1992. *Начало неолита в степях Северного Причерноморья*. Санкт-Петербург: Санкт-Петербургский университет.
- Леонова, Е. В. 2021. Грот Сосруко: ревизия материалов из раскопок С. Н. Замятнина и радиоуглеродная хронология верхних слоев каменного века. *Camera Praehistorica*, 1, с. 101-119.
- Лукин, А. Л. 1950. Неолитическое селище Кистрик близ Гудаут. *Советская археология*, XII, с. 247-286.
- Манько, В. О., Чхатарашвили, Г. Л. 2020а. Кам'яна індустрія стоянки Кобулети. *Археологія і давня історія України*, 4(37), с. 94-106. <http://orcid.org/0000-0002-2990-7234>
- Манько, В. А., Чхатарашвили, Г. Л. 2020б. Раннеголоценовая стоянка Джварцхма в Западной Грузии. *Revista Arheologică*, 16(1), с. 63-77. <https://doi.org/10.5281/zenodo.4058041>
- Манько, В. А., Чхатарашвили, Г. Л. 2021. Стоянка Сосруко: проблемы интерпретации каменных комплексов. *Camera Praehistorica*, 2, с. 36-57. <http://doi.org/10.31250/2658-3828-2021-2-36-57>
- Манько, В. О. 2013а. Ідеї Г. Чайлда та їх застосування для вивчення неоліту Східної Європи. *Археологія*, 1, с. 16-32.
- Манько, В. О. 2013б. *Фінальний палеоліт — неоліт Криму: культурно-історичний процес*. Київ: Видавництво Філюка.
- Манько, В. О. 2019. Поширення трапецій на відтискових пластинах на півдні Східної Європи та процес неолітизації. В: Чабай, В. П. (відп. ред.) *І Всеукраїнський археологічний з'їзд: матеріали роботи*. Київ: ІА НАНУ, с. 159-170.
- Манько, В. О. 2018. Гребениківська культурно-історична область. В: Сминтина, О. П. (ред.) *Археологія, етнологія та охорона культурної спадщини Південно-Східної Європи*. Одеса: ОНУ, 2018, с. 70-92.
- Маркевич, В. И. 1974. *Буго-Днестровская культура на территории Молдавии*. Кишинев: Штинница.
- Марков, Г. Е. 1966. Грот Дам-Дам-Чешме 2 в Восточном Прикаспии. *Советская Археология*, 2, с. 104-125.
- Мелентьев, А. Н. 1975. Памятники сероглазовской культуры. *Краткие сообщения Института Археологии*, 141, с. 112-117.
- Мешвелиани, Т. 2013. К вопросу о возникновении неолита в Западной Грузии. *Археология, этнография и антропология Евразии*, 2(54), с. 61-72.
- Нужный, Д. Ю. 2007. *Розвиток мікролітичної техніки в кам'яному віці*. Київ: Видавництво КНТ.
- Станко, В. Н. 1982. *Мирное. Проблема мезолита степей Северного Причерноморья*. Київ: Наукова думка.
- Столяр, А. Д. 1959а. Первый Васильевский мезолитический могильник. *Археологический сборник*, 1. Ленинград: Издательство Государственного Эрмитажа, с. 78-158.
- Столяр, А. Д. 1959б. Разведка 3-го Васильевского могильника и изучение отдельных погребений в районе с. Васильевки. *Археологический сборник*, 1. Ленинград: Издательство Государственного Эрмитажа, с. 159-165.
- Телегин, Д. Я. 1985. *Памятники эпохи мезолита на территории Украинской ССР*. Киев: Наукова думка.
- Теліженко, С. А. 2005. Туба-5, Туба-6 — неолітичні пам'ятки в Середньому Подіннів'ї. *Кам'яна доба України*, 7, с. 133-142.
- Тубольцев, О. В. 2013. Типи знарядь з некрем'яних порід на поселеннях сурскої культури. В: Тощев, Г. М. та ін. (ред.) *Північне Приазов'я в епоху кам'яного віку — енеоліту. Матеріали міжнародної наукової конференції*. Мелітопіль: Музей Кам'яної Могили, с. 194-200.

- Тубольцев, О. В. 1995. Новое неолитическое поселение Каменная Могила 3. *Старожитності Причорномор'я*, 1, с. 1-6.
- Церетели, Л. В., Клопотовская, Н. Б., Куренкова, Е. И. 1982. Многослойный памятник Апианча (Абхазия). *Четвертичная система Грузии*. Тбилиси: Мецниереба, с. 199-212.
- Цыбрий, В. В. 2008. *Неолит Нижнего Дона и Северо-Восточного Приазовья*. Ростов-на-Дону: Издательство Северо-Кавказского научного центра высшей школы Южного федерального университета.
- Яневич, А. А. 1984. Кукрекская стоянка Ивановка в Восточном Крыму. В: Телегин, Д. Я. (ред.). *Материалы каменного века на территории Украины*. Киев: Наукова думка, с. 69-73.
- Яневич, О. О. 1987. Этапы развития культуры Кукрек в Крыму. *Археологія*, 58, с. 7-18.
- Яневич, О. О. 1993. Шпанська мезолітична культура. *Археологія*, 1, с. 3-15.
- Яневич, О. О. 2004. Таш-аірська неолітична культура Гірського Криму (сучасний стан дослідження). *Кам'яна доба України*, 5, с. 169-191.
- Яневич, О.О. 2017. Мис Трійці 1 — кукрецька пам'ятка на Південному березі Криму. *Кам'яна доба України*. 17-18, с. 175 -187.
- Akkermans, Peter M.M.G., Verhoeven, M. 2006. *Tell Sabi Abyad II – The Pre-Pottery Neolithic B Settlement*. Leiden & Istanbul: Nederlands Historisch-Archaeologisch Instituut.
- Arimura, M., Chataigner, C., Gasparyan, B. 2009. Kml0 2. An Early Holocene Site in Armenia. *NEO-LITHICS*, 2, p. 17-19.
- Arimura, M., Gasparyan, B., Chataigner, C. 2012. Prehistoric Sites in Northwest Armenia: Kml0-2 and Tsaghkahovit. In: Curtis, J. L et al. (eds.). *Proceedings of the 7th International Congress on the Archaeology of the Ancient Near East 12 April – 16 April 2010*, 3. London: British Museum and UCL, p. 135-149.
- Arimura, M., Petrossyan, A., Arakelyan, D., Nahapetyan, S., Gasparyan, B. 2018. A Preliminary Report on the 2015 and 2017 Field Seasons at the Lernagog-1 Site in Armenia. *Armenian Journal of Near Eastern Studies*, XII (1), p. 1-18.
- Benecke, N. 2006. Zur Datierung der Faunensequenz am Abri San-Koba (Krim, Ukraine). *Beiträge zur Archäozoologie und Prähistorischen Anthropologie*, 5, 2006, S. 12-15.
- Berger, R., Protsch, R. 1973. The Domestication of Plants and Animals in Europe and the Near East. *Orientalia*, Nova seria, vol. 42, p. 214-227.
- Bernbeck, R. 1991. *Die Auflösung der häuslichen Produktionsweise*. Berlin: Freie Univ.
- Çambel, H. 1980. Chronologie et organisation de l'espace à Çayönü. In: Sanville, P. (ed.). *Préhistoire du Levant*. Paris: CNRS, p. 531-553.
- Caneva, I., Conti, A. M., Lemorini, C., Zampetti, D. 1994. The Lithic Production at Çayönü: a Preliminary Overview of the Aceramic Sequence. In: Gebel, H. G., Kozłowski, S. K. (eds.). *Neolithic Chipped Stone Industries of the Fertile Crescent*. Berlin: Ex Oriente, p. 253-266.
- Chataigner, C. 1995. *La Transcaucasie au Néolithique et au Chalcolithique*. Oxford: BAR International Series.
- Chkhatarashvili, G., Manko, V. 2020. Kobuleti Site: The Evidence of Early Holocene Occupation in Western Georgia. *Documenta Praehistorica*, XLVII, p. 28-35.
- Chkhatarashvili, G., Manko, V., Kakhidze, A., Esakiya, K., Chichinadze, M., Kulkova, M., Streltsov, M. 2020. South-East Black Sea Coast in Early Holocene Period (According to Interdisciplinary Archaeological Investigations in Kobuleti Site). *Sprawozdania Archeologiczne*, 72(2), p. 213-230.
- Coon, C. S. 1951. *Cave Explorations in Iran 1949*. Philadelphia: University of Pennsylvania.
- Coon, C. S. 1952. Excavations in Hotu Cave, Iran, 1951: a Preliminary Report. *Proceedings of the American Philosophical Society*, 96(3), p. 231-249.
- Dittermore, M. 1983. The Soundings at M'lefaat. In: Braidwood, L. S., Braidwood, R. J., Howe, B., Reed, C. A., Watson, P. J. (eds.). *Prehistoric Archaeology along The Zagros Flanks*. Chicago: Chicago University Press, p. 671-692.
- Gabunia, M. 1976. *Trialetian Mesolithic Culture*. Tbilisi: Metsniereba.
- Gabunia, M. 2001. Javakhetian Mesolithic Culture. *Javakheti. History and Archaeology*, I, p. 136-165.
- Gabunia, M., Tsereteli, L. 2003. Mesolithic Cultures of Caucasus. *Journal of the Centre for Archaeological Studies*, 12, p. 5-12 (in Georgian).
- Garrard, A. N., Byrd, B. F. 1992. New Dimensions to the Epipalaeolithic of the Wadi el-Jilat in Central Jordan. *Paléorient*, 18(1), p. 47-62.
- Gogitidze, S. 1977. *The Neolithic Culture of the South-Eastern Black Sea Littoral*. Tbilisi: Metsniereba (in Georgian).
- Gogitidze, S. 2008. *The Archaeological Sites of the Stone Age in the Kintrishi Valley*. Batumi: Batumi University.
- Golovanova, L. V., Doronichev, V. B., Doronicheva, E. V., Tregub, T. F., Volkov, M. A., Spasovskiy, Y. N., Petrov, A. Yu., Maksimov, F. E., Nedomolkin, A. G. 2020. Dynamique du climat et du peuplement du Caucase Nord-Central au tournant de Pléistocène et de l'Holocène. *L'anthropologie*, 124(2), p. 1-20.
- Goring-Morris, A. N. 1987. *At the Edge. Terminal Pleistocene Hunter-Gatherers in the Negev and Sinai*. Oxford: BAR International.
- Grosman, L. 2013. The Natufian Chronological Scheme. New Insights and Their Implications. In: Bar-Yosef, O., Valla, F. (eds.). *The Natufian Foragers in the Levant. Terminal Pleistocene Social Changes in Western Asia*. Michigan: Ann Arbor, p. 622-637.
- Hole, F. 1977. *Studies in the Archeological History of the Deh Luran plain: the Excavation of Chagha Sefid*. Michigan: Ann Arbor.
- Hole, F. 1983. The Jarmo Chipped Stone. In: Braidwood, R. J., Braidwood, L. S., Howe, B., Reed, C. A., Watson, P. J. (eds.). *Prehistoric Archaeology Along the Zagros Flanks*. Chicago: Chicago University Press, p. 233-284.
- Hole, F. 1987. Chronologies in the Iranian Neolithic. Auranche, O. (ed.). *Chronologies in the Near East*. Oxford: BAR International Series.
- Hole, F., Flannery, K. V., Neely, J. A. 1969. *Prehistory and Human Ecology of Deh Luran Plain. An Early Village Sequence from Khuzistan, Iran*. Michigan: Ann Arbor.
- Housley, R. A. 1994. Eastern Mediterranean Chronologies: The Oxford AMS Contribution. *Radiocarbon*, 36, p. 55-73.
- Howe, B. 1983. Karim Shahir. In: Braidwood, R. J., Braidwood, L. S., Howe, B., Reed, C. A., Watson, P. J. (eds.). *Prehistoric Archaeology Along the Zagros Flanks*. Chicago: Chicago University Press, p. 23-154.
- Jayez, M., Vahdati Nasab, H. 2016. A Separation: Caspian Mesolithic vs Trialetian Lithic Industry. A Research on the Excavated Site of Komishan, Southeast of the Caspian Sea, Iran. *Paléorient*, 42(1), p. 75-94.
- Jones, E. R., Gonzalez-Fortes, G., Connell, S., Siska, V., Eriksson, A., Martiniano, R., McLaughlin, R. L., Liorete, M., G., Cassidy, L. M., Gamba, C., Meshveliani, T., Bar-Yosef, O., Müllen, W., Belfer-Cohen, A., Matskevich, Z., Jakeli, N., Higman, T.F.G., Currat, M., Lordkipanidze, D., Hofreiten, M., Manica, A., Pinhasi, R., Bredly, D. C. 2015. Upper Palaeolithic Genomes Reveal Deep Roots of Modern Eurasians. *Nature Communications*, 6, p. 1-8.
- Kalandadze, K. 1986. *Neolithic Culture of Western Georgia in a Light of New Discoveries*. Tbilisi: Metsniereba. (In Georgian).
- Kaufman, D. 1988. New Radiocarbon Dates for the Geometric Kebaran. *Paléorient* 14(1), p. 107-109.
- Korobkova, G. F. 1996. The Neolithic Chipped Stone Industries of the South Caucasus. In: Gebel, H. G.,

- Kozłowski, S. K. (eds.). *Neolithic Chipped Stone Industries of the Fertile Crescent, and Their Contemporaries in Adjacent Regions*. Berlin: Ex Oriente, p. 57-90.
- Kozłowski, S. K. 1994. Radiocarbon Dates from Aceramic Iraq. *Radiocarbon*, 36, p. 255-264.
- Kozłowski, S. K. 1999. *The Eastern Wing of Fertile Crescent: Late Prehistory of Great Mesopotamian Lithic Industries*. Oxford: BAR International Series.
- Kozłowski, S.K., Aurenche, O. 2005. *Territories, Boundaries and Cultures in the Neolithic Near East*. Oxford: BAR International.
- Manko, V., Chkhatrashvili, G. 2021. Final Pleistocene — Early Holocene Edzani Culture on Caucasus and Transcaucasia and Problems of Neolithization of East Europe. *Sprawozdania Archeologiczne*, forthcoming.
- Matsutani, T. 1991. *Excavation Report on Kashkashok II*. Institute of Oriental Culture.
- McBurney, C. B. M., Payne, R. 2014. The Cave of Ali Tappeh and the Epi-Palaeolithic in N.E. Iran. *Proceedings of the Prehistoric Society*, 34, p. 385-413.
- Meadow, R. H. 1989. Prehistoric Wild Sheep and Sheep Domestication on the Eastern Margin of the Middle East. In: Crabtree, P., Campana, D., Ryan, K. (eds.). *Early Animal Domestication and Its Cultural Context*. Philadelphia: University Museum of Archaeology and Anthropology, University of Pennsylvania, p. 24-36.
- Meshveliani, T., Bar-Oz, G., Bar-Yosef, O., Belfer-Cohen, A., Boaretto, E., Jakeli, N., Koridze, E., Matskevich, Z. 2007. Mesolithic Hunters at Kotias Klde in Western Georgia: Preliminary Results. *Paleorient*, 33(2), p. 47-58.
- Muheisen, M. 1988. La Gisement de Karanekh IV. Note Sommaire Sur la phase D. *Paléorient*, 14, p. 265-269.
- Nebieridze, L. 1972. *The Neolithic of Western Transcaucasia*. Tbilisi: Metsniereba (in Georgian).
- Nebieridze, L. 1978. Multilayer Rock Shelter *Darkveti*. Tbilisi: Metsniereba (in Georgian).
- Nishiaki, Y., Zeynalov, A., Mansrov, M., Akashi, C., Arai, S., Shimogama, K., Guliyev, F. 2019. The Mesolithic-Neolithic Interface in the Southern Caucasus: 2016—2017 Excavations at Damjili Cave, West Azerbaijan. *Archaeological Research in Asia*, 19, p. 1-16.
- Nishiaki, Y., Darabi, H. 2018. The Earliest Neolithic Lithic Industries of the Central Zagros: New Evidence from East Chia Sabz, Western Iran. *Archaeological Research in Asia*, 16, p. 46-57.
- Ozdogan, M. 1994. Çayönü: The Chipped Stone Industry of the Pottery Neolithic Layers. Gebel, H. G., Kozłowski, S. K. (eds.). *Neolithic Chipped Stone Industries of the Fertile Crescent*. Berlin: Ex Oriente, p. 267-278.
- Petrosyan, A., Arimura, M., Nahapetyan, S., Arakelyan, D., Gasparyan, B. 2021. A Step Forward to the Neolithization: Early Holocene Sites of the Republic of Armenia. In: Avetisyan, P., Bobokhyan, A. (eds.). *Archaeology of Armenia in Regional Context*. Yerevan: Institute of Archaeology and Ethnography, p. 1-18.
- Rosenberg, M. 1994. A Preliminary Description of the Lithic Industry from Hallan Cemi. In: Gebel, H. G., Kozłowski, S. K. (eds.). *Neolithic Chipped Stone Industries of the Fertile Crescent*. Berlin: Ex Oriente, p. 223-238.
- Solov'ev, L. N. 1967. *Neolithic Sites of Black Sea Coast of Caucasus, Nizhneshilovskoe and Kistrik*. Tbilisi: Metsniereba. (In Georgian).
- Stein, G. J. 1992. Archaeological Survey at Sürük Mevkii: a Ceramic Neolithic Site in the Euphrates River Valley, Southeastern Turkey. *Anatolica*, 18, p. 19-32.
- Telegin, D., Potekhina, I., Lillie, M., Kovaliukh, M. 2002. The Chronology of the Mariupol-type Cemeteries of Ukraine Re-visited. *Antiquity*, 76(292), p. 356-363. <https://doi.org/10.1017/S0003598X0009044X>
- Varoutsikos, B., Mgeladze, A., Chahoud, J., Gabunia, M., Agapishvili, T., Martin, L., Chataigner, C. 2017. From the Mesolithic to the Chalcolithic in the South Caucasus: New Data from the Bavra Ablari Rock Shelter. In: Batmaz, A., Bedianashvili, G., Michalewicz, A., Robinson, A. (eds.). *Context and Connection: Essays on the Archaeology of the Ancient Near East in Honour of Antonio Sagona*. Leuven: Peeters, p. 233-255.
- Yeshurun, R., Kaufman, D., Shtober-Zisu, N., Gershtein, E., Riemer, Y., Rosen, A. M., Nadel, D. 2015. Renewed Fieldwork at the Geometric Kebaran Site of Neve David, Mount Carmel. *Journal of the Israel Prehistoric Society*, 45, p. 31-54.
- Zaitseva, G. I., Timofeev, V. I., Zagorska, N. N., Kovaliukh, N. N. 2000. Radiocarbon Dates of the Mesolithic Sites of Eastern Europe. *Radiocarbon and Archaeology*, 1, p. 33-52.
- Zeder, M., Hesse, B. 2000. The Initial Domestication of Goats (*Capra hircus*) in the Zagros Mountains 10,000 Years Ago. *Science*, New Series, vol. 287, 5461 (Mar. 24, 2000), p. 2254-2257.

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ЗАКАВКАЗЬЯ ТА НЕОЛІТ СХІДНОЇ ЄВРОПИ

Початок голоцену був пов'язаний із серією міграцій населення Закавказзя на територію Східної Європи. Ми відзначаємо чотири масштабних міграції: носіїв кобулетської, триалетської, даркветської та едзанської культур.

Походження кобулетської культури пов'язане із Середнім Сходом. Кам'яна індустрія характеризується наявністю техніки ручного відтиску, заснованої на використанні конічних та олівцеподібних нуклеусів, а також застосуванням пластинок із притупленими краями. Культура сформувалася на початку пребореалу. Розселення носіїв кобулетської культури призвело до появи кукрецької й донецької культур на території Гірського Криму та степової зони Північно-Західного Причорномор'я.

Триалетська культура походить зі Східної Анатолії та Південного Прикаспію. Культура характеризується використанням технології ударного розщеплення й розщеплення за допомогою посередника. Мікролітичні комплекси характеризуються наявністю асиметричних трикутників і сегментів. Міграція на територію Гірського Криму та порогів Дніпра почалася на межі плейстоцену-голоцену й призвела до появи шпан-кобинської культури, що існувала до кінця бореалу. Не виключено, що мурзак-кобинська культура Криму з'явилася внаслідок розвитку триалетських традицій шпан-кобинської культури.

Даркветська культура є автохтонною культурою Закавказзя. Кам'яна індустрія характеризується використанням ручного відтиску й наявністю сплюснених нуклеусів. Мікролітичні комплекси представлені в основному трапеціями, які виготовлялися з відтискних пластин.

Переселення носіїв даркветської культури в середині бореалу призвело до появи матвіскоурганської, гребениківської та буго-дністерської культур Північно-Західного Причорномор'я і Приазов'я.

Поява едзанської культури пов'язана з фінальним плейстоценом, а її формування — з епіпалеолітичними культурами Близького Сходу. Розщеплення нуклеусів здійснювалося ударним методом. Мікролітичні комплекси характеризує наявність сегментів із гелуанською ретушню, низьких трапецій, асиметричних трикутників. Міграція носіїв культури почалася на межі бореалу атлантику та призвела до появи платовоставської та сіроглазівської культур на Нижньому Дону та в Північному Прикаспії.

Міграції закавказького населення в ранньому голоцені стали передумовою подальшої неолітизації Східної Європи.

Ключові слова: Закавказзя, ранній голоцен, міграції, неолітизація, критерії міграції, відтискна техніка розщеплення, пластинки з притупленими краями, трапеції, сегменти, трикутники.

References

- Amirhanov, H.A. 1987. *Chohskoe poselenie, chelovek i ego kultura v mezolite i neolite gornogo Dagestana*. Moskva: Nauka.
- Bader, N. O., Tsereteli, L. D. 1989. Mezolit Kavkaza. In: Koltsov, L. V. (exec. ed.). *Mezolit SSSR*. Moskva: Nauka.
- Bibikov, S. N., Stanko, V. N., Koen, V. Iu. 1994. *Finalnyi paleolit i mezolit Gornogo Kryma*. Odessa: ONU.
- Britiuk, A. A. 2006. Neoliticheskie stoianki Murzina Balka 1 i 2 i Baragusta. In: Siniuk, A. T. (ed.) *Arkheologicheskie pamiatniki Vostochnoi Evropy*. Voronezh: Izd-vo VGPU, p. 21-34.
- Vasilev, I. V., Vybornov, A. A., Komarov, A. N. 1988. Mezoliticheskie stoianki Severnogo Prikaspiia. In: Merpert, N. Ia. (ed.) *Arkheologicheskie kultury Severnogo Prikaspiia*. Kuibyshev: Kuibyshevskii gosudarstvennyi pedagogicheskii institut, p. 3-41.
- Vekilova, E. A. 1951. Epipaleoliticheskaia stoianka Kukrek v Krymu. *Kratkie soobshcheniia Instituta istorii materialnoi kultury*, 36, p. 87-95.
- Voronov, Iu. N. 1984. *Pamiatniki kamennogo veka Voенно-Sukhumskoj dorogi*. Tbilisi: Metsniereba.
- Vybornov, A. A. 2008. *Neolit Volgo-Kamia*. Samara: Samarskii gosudarstvennyi pedagogicheskii universitet.
- Golovanova, L. V., Doronichev, V. B., Doronicheva, E. V., Nedomolkin, A. G. 2021. Geometric Microliths in the Upper Paleolithic of the Caucasus and Adjacent Territories. *Izvestiia Irkutskogo gosudarstvennogo universiteta. Seriia Geoarkhologiya. Etnologiya. Antropologiya*, 38, p. 78-111. <https://doi.org/10.26516/2227-2380.2021.38.78>
- Gorelik, A., Shestakov, I., Vikulina, V. 2005. Materialy neoliticheskoi stoianki Dolzhik. In: Otroshchenko, V. V. (ed.). *Materialy konferentsii arkheologov i kraevedov*. Lugansk: Luganskii kraevedcheskii muzei, p. 112-118.
- Gorelik, A.F. 1984. Exploration of Mesolithic Complexes of Zimovniki I Site North-East of Azov Sea. *Sovetskaya arheologiya*, 2, s. 115 -133. (In Russian)
- Gorelik, A.F., Tsybriy, A.V., Tsybriy, V.V. 2014. What did the Skull of Aurochs, an Axe and Female Statuettes Tell Us about? (On the problem of the initial neolithisation on the Lower Don). *Stratum plus*, 2, s. 247 -282. (In Russian)
- Danylenko, V. M. 1986. *Kamiana mohyla*. Kyiv: Naukova dumka.
- Zalizniak, L.L. 1998. *The prehistory of Ukraine in the X-V millennia BC*. Kyiv: Biblioteka ukrainca. (In Ukrainian)
- Zalizniak, L.L., Motsia, O.P., Zubar, V.M., Buniatian, K.P., Otroshchenko, V.V., Terpylovskiy, R.V. 2005. *The archaeology of Ukraine*. Kyiv: Lybid. (In Ukrainian)
- Zalizniak, L.L., Tovkailo, M.T., Manko, V.O., Sorokun, A.A. 2013. Sites in the Vicinity of the Dobryanka Hamlet and Issue of Bug-Dniester Interfluvial Neolithization. *Kamiana doba Ukrainy*, 15. Kyiv: Shliakh, s. 194 -257. (In Ukrainian)
- Zamiatnin, S. N., Akritas, P. G. 1957. Arkheologicheskie issledovaniia 1957 goda v Baksanskom ushchele. *Uchenye zapiski Kabardino-Balkarskogo nauchno-issledovatel'skogo instituta, XIII. Nalchik: Kabardino-Balkarskoe knizhnoe izdatel'stvo*, p. 471-473.
- Kazakova, L. M. 1973. Novye mezoliticheskie mestonakhozhdeniia na Nizhnem Donu. In: Kiiashko, V. Ia. (ed.) *Arkheologicheskie raskopki na Donu*. Rostov-na-Donu, p. 3-18.
- Kamenetskii, I. S. 2001. Neolit iuga Evropeiskoi ravniny. *Swiatowit*, 3(44), p. 41-90.
- Klejn, L.S. 1999. Migration: Archaeological hallmarks. *Stratum plus*, 1, p. 52-71. (In Russian).
- Kozin, E. V., Komarov, A. M. 1989. Ranneneoliticheskie stoianki v iuzhnouralskikh peskakh. In: Merpert, M. (ed.) *Neolit i eneolit Severnogo Prikaspiia*. Samara: Kuibyshevskii gosudarstvennyi pedagogicheskii institut, p. 3-18.
- Komarov, A. M. 2002. Problemy periodizatsii i khronologii mezolita Severnogo Prikaspiia. In: Vybornov, A. A. (ed.) *Istoricheskie issledovaniia*. Samara: Kuibyshevskii gosudarstvennyi pedagogicheskii institut, p. 3-10.
- Kotova, N.S. 2002. *The Neolithization of Ukraine*. Shliakh: Lugansk. (In Russian).
- Krizhevskaiia, L. Ia. 1992. *Nachalo neolita v stepiakh Severnogo Prichernomoria*. Sankt-Peterburg: Sankt-Peterburgskii universitet.
- Leonova, E.V. 2021. Sosruco Rockshelter: Revision of Materials of the Excavation by S.N. Zamiatnin and the Upper Horizons Radiocarbon Chronology. *Camera Praehistorica*, 1, p. 101 -119. (In Russian).
- Lukin, A. L. 1950. Neoliticheskoe selishche Kistrik bliz Gudaut. *Sovetskaia arheologiya*, XII, p. 247-286.
- Manko, V. O., Chkhatarashvili, H. L. 2020a. The Stone Industry of Kobuleti Site. *Arkheologiya i davnia istoriia Ukrainy*, 4 (37), s. 94 -106. (In Ukrainian). <http://orcid.org/0000-0002-2990-7234>
- Manko, V. A., Chkhatarashvili, G. L. 2020b. Rannegolotsenovaia stoianka Dzhvartskhima v Zapadnoi Gruzii. *Revista Arheologica*, 16(1), p. 63-77. <https://doi.org/10.5281/zenodo.4058041>
- Manko, V.A. Chkhatarashvili, G.L. 2021. Sosruco site: Problems of Interpreting of the Chipped Stone Assemblages. *Camera Praehistorica*, 2, p. 36 -57. (In Russian) <http://doi.org/10.31250/2658-3828-2021-2-36-57>
- Manko, V.O. 2013a. G. Childe's Ideas and their Application for Eastern Europe Neolithic Studies. *Arkheologiya*, 1, c. 16 -32. (In Ukrainian)
- Manko, V.O. 2013b. *The Final Palaeolithic and Neolithic of Crimea*. Kyiv: Vydavnytstvo Filiuka.
- Manko, V.O. Grebeniky Cultural and Historical Region. 2018. O.P. Smyntyna (red.) *Arkheologiya, etnologiya ta okhorona kulturnoi spadshchyny Pivdenno-Skhidnoi Yevropy*. Odesa: ONU, 2018, s. 70-92. (In Ukrainian).
- Manko, V. O., Chkhatarashvili, H. L. 2020b. Zakhidna Hruziia yak tranzitna terytoria na shliakhu mihratsii protoneolitychnoho nase-lennia u Skhidnu Yevropu. *Arkheologiya i davnia istoriia Ukrainy*, 4 (37), p. 329-339. <https://doi.org/10.37445/adiu.2020.04.27>
- Markevich, V. I. 1974. *Bugo-Dnestrovskaia kultura na territorii Moldavii*. Kishinev: Shtinitsa.

- Markov, G. E. 1966. Grot Dam-Dam-Cheshme 2 v Vostochnom Prikaspii. *Sovetskaia Arkheologiia*, 2, p. 104-125.
- Melentev, A. N. 1975. Pamiatniki seroglazovskoi kultury. *Kratkie soobshcheniia Instituta Arkheologii*, 141, p. 112-117.
- Meshveliani, T. 2013. K voprosu o vozniknovenii neolita v Zapadnoi Gruzii. *Arkheologiia, etnografiia i antropologiia Evrazii*, 2(54), p. 61-72.
- Nuzhnyi, D. Yu. 2007. *Rozvytok mikrolitychnoi tekhniki v kamianomu vitsi*. Kyiv: Vydavnytstvo KNT.
- Stanko, V. N. 1982. *Mirnoe. Problema mezolita stepei Severnogo Prichernomoria*. Kyiv: Naukova dumka.
- Stoliar, A. D. 1959a. Pervyi Vasilevskii mezolitieskii mogilnik. *Arkheologicheskii sbornik*, 1. Leningrad: Izdatelstvo Gosudarstvennogo Ermitazha, p. 78-158.
- Stoliar, A. D. 1959b. Razvedka 3-go Vasilevskogo mogilnika i izuchenie otdelnykh pogrebenii v raione s. Vasilevki. *Arkheologicheskii sbornik*, 1. Leningrad: Izdatelstvo Gosudarstvennogo Ermitazha, p. 159-165.
- Telegin, D. Ia. 1985. *Pamiatniki epokhi mezolita na territorii Ukrainiskoi SSSR*. Kyiv: Naukova dumka.
- Telizhenko, S.A. 2005. Tuba 5 and Tuba 6, Neolithic sites in Middle Don area. *Kamiana doba Ukrainy*, 7, s.133-142. (In Ukrainian).
- Tuboltsev, O. V. 2013. Typy znariad z nekremianykh porid na poseleenniakh surskoi kultury. In: Toshchev, H. M. et al. (eds.). *Pivnichne Pryazovia v epokhu kamianoho viku — eneolitu*. Materialy mizhnarodnoi naukovoï konferentsii. Melitopol: Muzei Kam'ianoi Mohyly, p. 194-200.
- Tuboltsev, O. V. 1995. Novoe neolitieskoe poselenie Kamennaia Mogila 3. *Starozhitnosti Prichernomoria*, 1, p. 1-6.
- Tsereteli, L. V., Klopotovskaia, N. B., Kurenkova, E. I. 1982. *Mnogosloinyi pamiatnik Apiancha (Abkhaziia). Chetvertichnaia sistema Gruzii*. Tbilisi: Metsnierba, p. 199-212.
- Tsyibrii, V.V. 2008. *The Neolithic of Lower Don and Northern-Western Azov basin*.
- Yanevich, A. A. 1984. Kukrekskaia stoianka Ivanovka v Vostochnom Krymu. In: Telegin, D. Ia. (ed.). *Materialy kamennogo veka na territorii Ukrainy*. Kyiv: Naukova dumka, p. 69-73.
- Yanevych, O. O. 1987. Etapy rozvytku kultury Kukrek v Krymu. *Arheologia*, 58, p. 7-18.
- Yanevych, O. O. 1993. Shpanska Mesolithic Culture. *Arheologia*, 1, p. 3-15.
- Yanevych, O. O. 2004. The Tash-Air Neolithic Culture of Mountainous Crimea. *Kamiana doba Ukrainy*, 5, p. 169-191.
- Yanevych, O.O. 2017. Troitsa Cape 1 — Kukrek site on the South Coast of the Black Sea. *Kamiana doba Ukrainy*, 17-18, p. 175-187.
- Akkermans, Peter M.M.G., Verhoeven, M. 2006. *Tell Sabi Abyad II – The Pre-Pottery Neolithic B Settlement*. Leiden & Istanbul: Nederlands Historisch-Archaeologisch Instituut.
- Arimura, M., Chataigner, C., Gasparyan, B. 2009. Kml0 2. An Early Holocene Site in Armenia. *NEO-LITHICS*, 2, p. 17-19.
- Arimura, M., Gasparyan, B., Chataigner, C. 2012. Prehistoric Sites in Northwest Armenia: Kml0-2 and Tsaghkahovit. In: Curtis, J. L et al. (eds.). *Proceedings of the 7th International Congress on the Archaeology of the Ancient Near East 12 April – 16 April 2010*, 3. London: British Museum and UCL, p. 135-149.
- Arimura, M., Petrossyan, A., Arakelyan, D., Nahapetyan, S., Gasparyan, B. 2018. A Preliminary Report on the 2015 and 2017 Field Seasons at the Lernag0-1 site in Armenia. *Armenian Journal of Near Eastern Studies*, XII (1), p. 1-18.
- Benecke, N. 2006. Zur Datierung der Faunensequenz am Abri San-Koba (Krim, Ukraine). *Beitrage zur Archäozoologie und Prähistorischen Anthropologie*, 5, 2006, S. 12-15.
- Berger, R., Protsch, R. 1973. The Domestication of Plants and Animals in Europe and the Near East. *Orientalia*, Nova seria, vol. 42, p. 214-227.
- Bernbeck, R. 1991. *Die Auflösung der häuslichen Produktionsweise*. Berlin: Freie Univ.
- Çambel, H. 1980. Chronologie et organisation de l'espace à Çayönü. In: Sanville, P. (ed.). *Préhistoire du Levant*. Paris: CNRS, p. 531-553.
- Caneva, I., Conti, A. M., Lemorini, C., Zampetti, D. 1994. The Lithic Production at Çayönü: a Preliminary Overview of the Ceramic Sequence. In: Gebel, H. G., Kozlowski, S. K. (eds.). *Neolithic Chipped Stone Industries of the Fertile Crescent*. Berlin: Ex Oriente, p. 253-266.
- Chataigner, C. 1995. *La Transcaucasie au Néolithique et au Chalcolithique*. Oxford: BAR International Series.
- Chkhatarashvili, G., Manko, V. 2020. Kobuleti Site: The Evidence of Early Holocene Occupation in Western Georgia. *Documenta Praehistorica*, XLVII, p. 28-35.
- Chkhatarashvili, G., Manko, V., Kakhidze, A., Esakiya, K., Chichinadze, M., Kulkova, M., Streltsov, M. 2020. South-East Black Sea Coast in Early Holocene Period (According to Interdisciplinary Archaeological Investigations in Kobuleti Site). *Sprawozdania Archeologiczne*, 72(2), p. 213-230.
- Coon, C. S. 1951. *Cave Explorations in Iran 1949*. Philadelphia: University of Pennsylvania.
- Coon, C. S. 1952. Excavations in Hotu Cave, Iran, 1951: A Preliminary Report. *Proceedings of the American Philosophical Society*, 96(3), p. 231-249.
- Dittermore, M. 1983. The Soundings at M'lefaat. In: Braidwood, L. S., Braidwood, R. J., Howe, B., Reed, C. A., Watson, P. J. (eds.). *Prehistoric Archaeology along The Zagros Flanks*. Chicago: Chicago University Press, p. 671-692.
- Gabunia, M. 1976. *Trialetian Mesolithic Culture*. Tbilisi: Metsniereba.
- Gabunia, M. 2001. Javakhetian Mesolithic Culture. *Javakheti. History and Archaeology*, 1, p. 136-165.
- Gabunia, M., Tsereteli, L. 2003. Mesolithic Cultures of Caucasus. *Journal of the Centre for Archaeological Studies*, 12, p. 5-12 (in Georgian).
- Garrard, A. N., Byrd, B. F. 1992. New Dimensions to the Epipalaeolithic of the Wadi el-Jilat in Central Jordan. *Paléorient*, 18(1), p. 47-62.
- Gogitidze, S. 1977. *The Neolithic culture of the South-Eastern Black Sea Littoral*. Tbilisi: Metsniereba (in Georgian).
- Gogitidze, S. 2008. *The Archaeological Sites of the Stone Age in the Kintrishi Valley*. Batumi: Batumi University.
- Golovanova, L. V., Doronichev, V. B., Doronicheva, E. V., Tregub, T. F., Volkov, M. A., Spasovskiy, Y. N., Petrov, A. Yu., Maksimov, F. E., Nedomolkin, A. G. 2020. Dynamique du climat et du peuplement du Caucase Nord-Central au tournant du Pléistocène et de l'Holocène. *L'anthropologie*, 124(2), p. 1-20.
- Goring-Morris, A. N. 1987. *At the Edge. Terminal Pleistocene Hunter-Gatherers in the Negev and Sinai*. Oxford: BAR International.

- Grosman, L. 2013 The Natufian Chronological Scheme. New Insights and Their Implications. In: Bar-Yosef, O., Valla, F. (eds.). *The Natufian Foragers in the Levant. Terminal Pleistocene Social Changes in Western Asia*. Michigan: Ann Arbor, p. 622-637.
- Hole, F. 1977. *Studies in the Archeological History of the Deh Luran plain: the Excavation of Chagha Sefid*. Michigan: Ann Arbor.
- Hole, F. 1983. The Jarmo Chipped Stone. In: Braidwood, R. J., Braidwood, L. S., Howe, B., Reed, C. A., Watson, P. J. (eds.). *Prehistoric Archaeology Along the Zagros Flanks*. Chicago: Chicago University Press, p. 233-284.
- Hole, F. 1987. Chronologies in the Iranian Neolithic. Auranche, O. (ed.). *Chronologies in the Near East*. Oxford: BAR International Series.
- Hole, F., Flannery, K. V., Neely, J. A. 1969. *Prehistory and Human Ecology of Deh Luran Plain. An Early Village Sequence from Khuzistan, Iran*. Michigan: Ann Arbor.
- Housley, R. A. 1994. Eastern Mediterranean Chronologies: The Oxford AMS Contribution. *Radiocarbon*, 36, p. 55-73.
- Howe, B. 1983. Karim Shahir. In: Braidwood, R. J., Braidwood, L. S., Howe, B., Reed, C. A., Watson, P. J. (eds.). *Prehistoric Archaeology Along the Zagros Flanks*. Chicago: Chicago University Press, p. 23-154.
- Jayez, M., Vahdati Nasab, H. 2016. A Separation: Caspian Mesolithic vs Trialetian Lithic Industry. A Research on the Excavated Site of Komishan, Southeast of the Caspian Sea, Iran. *Paléorient*, 42(1), p. 75-94.
- Jones, E. R., Gonzalez-Fortes, G., Connell, S., Siska, V., Eriksson, A., Martiniano, R., McLaughlin, R. L., Liorete, M., G., Cassidy, L. M., Gamba, C., Meshveliani, T., Bar-Yosef, O., Müllen, W., Belfer-Cohen, A., Matskevich, Z., Jakeli, N., Higman, T.F.G., Currat, M., Lordkipanidze, D., Hofreiten, M., Manica, A., Pinhasi, R., Bredly, D. C. 2015. Upper Palaeolithic Genomes Reveal Deep Roots of Modern Eurasians. *Nature Communications*, 6, p. 1-8.
- Kalandadze, K. 1986. *Neolithic Culture of Western Georgia in a light of new discoveries*. Tbilisi: Metsniereba. (In Georgian).
- Kaufman, D. 1988. New Radiocarbon Dates for the Geometric Kebaran. *Paléorient* 14(1), p. 107-109.
- Korobkova, G. F. 1996. The Neolithic Chipped Stone Industries of the South Caucasus. In: Gebel, H. G., Kozłowski, S. K. (eds.). *Neolithic Chipped Stone Industries of the Fertile Crescent, and Their Contemporaries in Adjacent Regions*. Berlin: Ex Oriente, p. 57-90.
- Kozłowski, S. K. 1994. Radiocarbon Dates from Aceramic Iraq. *Radiocarbon*, 36, p. 255-264.
- Kozłowski, S. K. 1999. *The Eastern Wing of Fertile Crescent: Late Prehistory of Great Mesopotamian Lithic Industries*. Oxford: BAR International Series.
- Manko, V.O. 2019. The dissemination of Trapezes on Pressing Blades in Southern Eastern Europe and the Neolithization Process. V.P. Chabai (red.) *I Vseukrainskyi arkeolohichnyi zizd: materialy roboty*. Kyiv: IA NANU, s. 159–170. (In Ukrainian).
- Manko, V.O. Grebeniky Cultural and Historical Region. 2018. O.P. Smyntyna (red.) *Arkeolohiia, etnolohiia ta okhorona kulturnoi spadshchyny Pivdenno-Skhidnoi Yevropy*. Odesa: ONU, 2018, s. 70 -92. (In Ukrainian)
- Matsutani, T. 1991. *Excavation Report on Kashkashok II*. Institute of Oriental Culture.
- McBurney, C. B. M., Payne, R. 2014. The Cave of Ali Tappeh and the Epi-Palaeolithic in N.E. Iran. *Proceedings of the Prehistoric Society*, 34, p. 385-413.
- Meadow, R. H. 1989. Prehistoric Wild Sheep and Sheep Domestication on the Eastern Margin of the Middle East. In: Crabtree, P., Campana, D., Ryan, K. (eds.). *Early Animal Domestication and Its Cultural Context*. Philadelphia: University Museum of Archaeology and Anthropology, University of Pennsylvania, p. 24-36.
- Meshveliani, T., Bar-Oz, G., Bar-Yosef, O., Belfer-Cohen, A., Boaretto, E., Jakeli, N., Koridze, E., Matskevich, Z. 2007. Mesolithic Hunters at Kotias Klde in Western Georgia: Preliminary Results. *Paleorient*, 33(2), p. 47-58.
- Muhsen, M. 1988. La Gisement de Karanekh IV. Note Sommaire Sur la phase D. *Paléorient*, 14, p. 265-269.
- Nebieridze, L. 1972. *The Neolithic of Western Transcaucasia*. Tbilisi: Metsniereba (in Georgian).
- Nebieridze, L. 1978. Multilayer Rock Shelter *Darkveti*. Tbilisi: Metsniereba (in Georgian).
- Nishiaki, Y., Zeinalov, A., Mansrov, M., Akashi, C., Arai, S., Shimogama, K., Guliyev, F. 2019. The Mesolithic-Neolithic Interface in the Southern Caucasus: 2016–2017 Excavations at Damjili Cave, West Azerbaijan. *Archaeological Research in Asia*, 19, p. 1-16.
- Ozdogan, M. 1994. Çayönü: The Chipped Stone Industry of the Pottery Neolithic layers. Gebel, H. G., Kozłowski, S. K. (eds.). *Neolithic Chipped Stone Industries of the Fertile Crescent*. Berlin: Ex Oriente, p. 267-278.
- Petrosyan, A., Arimura, M., Nahapetyan, S., Arakelyan, D., Gasparyan, B. 2021. A Step Forward to the Neolithization: Early Holocene Sites of the Republic of Armenia. In: Avetisyan, P., Bobokhyan, A. (eds.). *Archaeology of Armenia in Regional Context*. Yerevan: Institute of Archaeology and Ethnography, p. 1-18.
- Rosenberg, M. 1994. A Preliminary Description of the Lithic Industry from Hallan Cemi. In: Gebel, H. G., Kozłowski, S. K. (eds.). *Neolithic Chipped Stone Industries of the Fertile Crescent*. Berlin: Ex Oriente, p. 223-238.
- Solov'ev, L. N. 1967. *Neolithic Sites of Black Sea Cost of Caucasus, Nizhneshilovskoe and Kistrik*. Tbilisi: Metsniereba. (In Georgian).
- Stein, G. J. 1992. Archaeological Survey at Sürük Mevkii: a Ceramic Neolithic Site in the Euphrates River Valley, Southeastern Turkey. *Anatolica*, 18, p. 19-32.
- Telegin, D., Potekhina, I., Lillie, M., Kovalyukh, M. 2002. The Chronology of the Mariupol-type Cemeteries of Ukraine Revisited. *Antiquity*, 76(292), p. 356-363. <https://doi.org/10.1017/S0003598X0009044X>
- Varoutsikos, B., Mgeladze, A., Chahoud, J., Gabunia, M., Agapishvili, T., Martin, L., Chataigner, C. 2017. From the Mesolithic to the Chalcolithic in the South Caucasus: New Data from the Bavra Ablari Rock Shelter. In: Batmaz, A., Bedianashvili, G., Michalewicz, A., Robinson, A. (eds.). *Context and Connection: Essays on the Archaeology of the Ancient Near East in Honour of Antonio Sagona*. Leuven: Peeters, p. 233-255.
- Yeshurun, R., Kaufman, D., Shtober-Zisu, N., Gershtein, E., Riemer, Y., Rosen, A. M., Nadel, D. 2015. Renewed Fieldwork at the Geometric Kebaran Site of Neve David, Mount Carmel. *Journal of the Israel Prehistoric Society*, 45, p. 31-54.
- Zaitseva, G. I., Timofeev, V. I., Zagorska, N. N., Kovalyukh, N. N. 2000. Radiocarbon Dates of the Mesolithic Sites of Eastern Europe. *Radiocarbon and Archaeology*, I, p. 33-52.
- Zeder, M., Hesse, B. 2000. The Initial Domestication of Goats (*Capra hircus*) in the Zagros Mountains 10,000 Years Ago. *Science*, New Series, vol. 287, 5461 (Mar. 24, 2000), p. 2254-2257.