RUSSIAN ACADEMY OF SCIENS

Peter the Great Museum of
Anthropology and Ethnography

The N.I. Grodekov Khabarovsk
Regional Museum

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Begining of the Neolithic in the Amur river basin:

the Goncharka-1 site

Saint-Petersburg, 2012

УДК 903(571.6)
ББК 63.4
Ш37

Shewkomud I.Y., Yanshina O.V. Beginning of the Neolithic in the Amur river basin: The Goncharka-1 site. – SPb.: MAE RAS, 2012. – 270 р.

ISBN 978-5-88431-190-9

This book contains materials of the Goncharka-1 site, one of the most interesting site of the Osipovka culture of Initial Neolithic in the Lower Amur River basin (Russia Far East). Authors analyze the stratigraphic situation of the Osipovka artifacts at the Goncharka-1 which prove their terminal Pleistocene age; report the results of radiocarbon dating and palinological analysis; consider paleogeographic situation in which the Osipovka cultural complex was formed; and give detailed technical-typological descriptions of artifacts belong to the Osipovka culture. Materials of the Goncharka-1 site are compared to the terminal Pleistocene assemblages of the Gromatukha, Selemdzha, and Ustinovka cultures in neighboring regions of the Russia Far East, as well as with the Early Holocene cultural complexes. On this basis, authors offer their conclusions regarding several crucial research problems in the study of early stages of the Neolithic in greater Far East. The book is intended for archaeologists, historians, and other professionals dealing with problems of evolution in prehistoric societies.

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ISBN 979-5-88431-190-9

CONTENT

GONCHARKA-1 – THE UNIQUE SITE OF THE OSIPOVKA CULTURE

Site location and brief research history

The Goncharka-1 site is located within *Sredneamurskaya* (Middle Amur) Depression on the high (15-25 m) and steep right bank of *Amurskaya* channel of Amur river, 20 km to the southwest of the City of Khabarovsk and near the Novotroitskoye Village; it occupies the promontory formed by the bank of channel and the small *Goncharka* stream (fig. 1-2). It was discovered in 1989 by B.N. Deneko, the secondary school teacher of the Osinovaya Rechka Village situated nearby. In 1995-1996, site was excavated by the team under direction of I.Y. Shewkomud, researcher of the Khabarovsk Regional Museum. During two years, about 350 sq. m was excavated (fig. 3); as a result, very interesting and well-preserved archaeological materials belonging to the Osipovka culture were obtained, including a very rich collection of stone tools and pottery (the latter is of especially great value). To that moment, only two Osipovka sites with pottery were known: Gasya and Khummi.Therefore,new data from the Goncharka-1 caused big scientific interest. As a result, excavation continued in 2001 by joint Russian-Japanese team of the Khabarovsk Museum (led by I.Y. Shewkomud) and the Tokyo and Hokkaido universities (led by M. Naganuma) [see Шевкомуд и др. 2002 б; Shewkomud et al. 2003]. In that year, about 181 sq.m. were excavated. Thus, the size of total excavation at the Goncharka-1 site is now 530 sq. m. Today, the Goncharka-1 is one of the best-excavated sites of Osipovka culture. Moreover, this site has definite advantage compared to other sites of the same culture complex because it lacks serious disturbances of cultural component. This book contains the results of 1995-1996 excavation campaign.

Stratigraphy

The surface of promontory and all layers within the excavated area have light inclination (around 7-8 degree) to the southwest, which is to the valley of Goncharka Stream. The stratigraphy was controlled by walls of excavation pits and by the overlapping balks within each pit. As a result, 20 stratigraphic profiles were obtained during 1995-1996 compaign. All of them show an uniform stratigrafic situation (fig. 4-8). In the base of section, poorly sorted pebbles with sand, gravel, and dark-yellow or reddish loam are situated (layer 4). Above it, the sequence from top to bottom is the following: grass (Layer 1); gray pulverulent loam (Layer 2) and light brown, reddish, or yellowish loam (Layer 3). By both color and density, the Layer 3 is sub-divided into two horizons: the upper one (Horizon 3A) and the lower one (Horizon 3Б). The former is represented by light-brown pulverulent loam with pebbles and gravel, and the latter is represented by dense dark-yellow, sometimes reddish loam, with admixture of sand, pebbles, and gravel. The lowest part of Horizon 3Б has the greatest density. There are also two large frost cracks deepen into the bedrock (fig. 19). One of them crosses excavation pits 1-3 from north to south, and the second crack stretches along pits 2 and 5 from east to west (see fig. 3A). Both cracks have asymmetrical wedge-shaped cross-section, a bit convex upper limit, and were filled with very dense coherent loams and sandy loams of the brownish-black and brown colord, with inclusions of pebbles and sand (Layer 5). Coloration of this layer in the upper part is darker (Sub-Layer 5A) than in the lower part (Sub-Layer 5Б). It is very important that the infill of the cracks was separated from Layer 3 by the thin sterile stratum of dense gray or light-gray loam (Horizon 3B).

Assemblages

There are three different kinds of artifacts assemblages at the Goncharka-1 site: Poltse culture of Early Metal epoch, Voznesenovka culture of Late Neolithic, and Osipovka culture of Initial Neolithic. The latter cultural complex absolutely dominates in the collection of stone artifacts : 6149 items belong to the Osipovka culture, and only 11 artifacts are associated with both Poltse and Voznesenovka assemblages (fig. 45, *7*; 43, *5, 6, 7*). Of about 4230 potsherds, a bit more than 2000 belong to the Poltse culture (fig. 75), 70 to the Voznesenovka culture, and a bit more than 2100 represent the Osipovka culture:

ExPit	Layer	POLTS	VOZN	OSP	Total
1	1-2	176	–	–	
	3A	1	–	162	
	3Б	–	–	900	
	5	–	–	31	1270
2	1-2	1769	1	–	
	3A	50	70	–	
	3Б	–	1	120	
	5	–	–	66	2077
3	1-2	10	–	–	
	3A	3	1	60	
	3Б	–	–	320	
	5	–	–	34	428
4	1-2	3	–	–	
	3A	–	–	–	
	3Б	–	–	450	453
	Total	2012	73	2143	4228

The majority of late (both Poltse and Voznecenovka) potsherds and all late stone artifacts are found in the excavation pit 2 within its northern and northeastern sections, whereas the Osipovka artifacts in this pit are found in much smaller quantity than in the other pits. Moreover, the Poltse pottery is located mainly in the Layer 2, and the Voznesenovka ceramics is situated in the Horizon 3A (first stratum of Layer 3); the Osipovka pottery is associated with the Horizon 3Б (second and third strata of Layer 3), especially with its lowest part (Horizon 3Б) and the upper part (20-30 cm thick) of the Layer 5 (infill of frost cracks). This means that in the major part of excavations the Osipovka layer is not disturbed by later occupations. This is the unique situation observed at the sites of Osipovka culture.

It is very important to highlight what, according to stratigraphy, artifacts of the Osipovka culture which are located in the frost cracks (Layer 5) are older than Osipovka artifacts situated in the Horizon 3Б. This is absolutely clear proven by sterile Horizon 3B which separate Layers 3 and 5, and by the results of C^{14} dating (see below). So, we can say that collection of the Osipovka artifacts from Goncharka-1 site represents at least two diachronous assemblages.

The oldest Osipovka assemblage had been re-deposited, and its artifacts have gradually moved into the cracks during the thawing of their icy infill. The artifacts belonging to the youngest assemblage, on the contrary, were found mainly *in situ*. Most of them are concentrated in three clusters, including hearths, broken pots, artificially made pits, big boulders, concentrations of chipped stone, etc. (fig. 12; 15; 16; 20-21). These clusters could be interpreted as household units or multi-activity areas. Between these concentrations, small amount of artifacts is found. So, we can assume that these three clusters were not associated with each other, and may be it means that the late Osipovka assemblage had micro-chronological differences. Two non-utilitarian complexes were also found in 1995-1996 company. One of them can be interpreted as burial (fig. 23-24). The second complex is preserved only partially (fig. 18). Both complexes have the several anthropomorphic figures with different level of stylization (fig. 18; 52-53; 71-72).

Palinology

Palinological analysis was carried out by Dr. A.V.Chernyuk [Шевкомуд и др. 2001]. Samples were collected in the western wall of excavation pit 3 (grid Ж'/10). This area has minimal degree of disturbance in the Osipovka cultural layer. Samples were taken through every 10 cm to the depth of 1 m. Ten phase of vegetation dynamics were identified. The Osipovka culture existed during the phases 1-6. Two of the earliest and the coldest phases (numbered 1 and 2) correspond to the upper part of frost cracks' infill, and represent cold forest-steppe with admixture of birch and birch-aspen light forest. Pollen data place this time within the Older Dryas and the transition to Alleroed, which is 12500-12000 BP [Короткий и др. 1997; Короткий 2001]. The phase 3 corresponds with Layer 3В covers the frost cracks infill. That was a time of the sharp warming which most likely corresponds to the Alleroed, dated to 12000-11350 C^{14} years [Короткий 2001]. The next 4-6 are associated with Layer 3Б. Pollen data for the lowest part of Layer 3Б (phases 4-5) reflect the apparent cooling and aridization, and increase of steppe formations, this trend is even more pronounced in phase 5. It should be highlighted that the lowest part of lLayer 3Б containes the majority of the Osipovka cultural assemblage. This time is associated with the Younger Dryas, dated to 11100-9995 BP [Короткий 2001]. The phase 6 is associated with the upper part of Layer 3Б, and is associated with significant warming in the Early Holocene, 10000-8000 BP.

Chronology

Layer 5	charcoal	12500±60	LLNL-102169
sq. D/8, 25-35 sm from crack's roof, charcoal concentration near breakup of pot	charcoal	12055±75	AA-25437
Layer 3Б			
concentration of artifacts near fireplace, sq. Б-В/9	charcoal	9890±230	GaK-18981
	charcoal	10590±60	LLNL-102168
concentration of artifacts near fireplace, sq. D'/4-5	charcoal	10280±70	AA-25438
	charcoal	10280±70	AA-25439
	charred residue	11110±60	TKa-15003
	charred residue	11390±60	TKa-15004

Paleogeography

Nowadays, about 70 sites correspond to the Osipovka cultural complex. All of them are located within *Sredneamurskaya* Depression on the banks of Amur and Ussuri rivers and their tributaries. Today these banks are high but in the Late Pleistocene the water level of Amur and Ussuri was about 10 m above the modern one and space covered by water was much more compared to what is today, with many large lakes and additional channels of the Amur and Ussuri rivers. The areas higher than 15-20 m above the river level were surrounded by water, and were probably islands or peninsulas [Махинов 2006]. Now these higher elevation areas are occupied by the Osipovka sites, and we can assume that the Osipovka people lived in the presence of wide water spaces nearby. It seems that such places were comfortable for prehostoric life because they were rich in biological resources and raw material. Such circumstances could have contributed to theearly formation of sedentism, and the early begining of Neolithization process.

Stone Industry

All stone artifacts found in 1995-1996 can be subdivided into three groups: 1) primary flaking (cores, core-shaped pieces, trimmed pebbles, core preparation flakes, and microblades), 2) tools and other implements, 3) debitage. Waste flakes were very rarely used for tool manufacture; these are small tools on the flakes with marginal retouch. The majority of tools are made on other blanks, are of larger size, and have facial secondary treatment. Most of stone artifact are found in Layer 3Б:

	Primary flaking	Tool, implements	Debitage
Layer 3Б	170	508	4922
Layer 5	12	52	485
Total	182	560	5407

The raw materials for manufacture of tools were acquired near the site. These are large size pebbles and cobbles, with different degree of roundness. There were three main rock types used: gray aleurolith, rhyolith, and different siliceous rocks (chalcedony, jasper, and carnelian); other rocks used are andesite, basalt, sandstone, granitoid. Obsidian is presented by a single flake; the source of this rock most probably is located in the northern Primorye province, on the eastern slope of the Sikhote-Alin Range between Samarga, Koppi and Svetlaya rivers [Glascock et al. 2011]. The use of various kinds of raw materials was strictly differentiated. Tools and implements were produced on grey aleurolith, but for primary flaking rhyolith and isotropic siliceous rocks were the most common material:

	Aleurolith		Rhyolith		Siliceous rocks		Other rocks	
	lay. 2-3	lay. 5	lay. 2-3	lay. 5	lay. 2-3	lay. 5	lay. 2-3	lay. 5
Primary flaking	6	–	80	3	84	9	–	–
Tools, implements	379	41	48	4	31	2	50	5
Total	385	41	128	7	115	11	50	5
Debitage	4526		250		448		183	

Primary processing of raw material was carried out at the site. A small number of primary flakes with pebbles cortex (only 3% of total amount) and, on the contrary, the prevalence of finished products and flakes left after facial treatment can prove this conclusion. So, we can think that Goncharka-1 site was not the workshop, and this distinguishes the Goncharka-1 from the majority of Paleolithic sites in Russian Far East. Primary flaking of the Osipovka industry is represented by microblade cores (group 1) and their derivatives and middle size cores (group 2), with purpose to obtain amorphic flakes. Within the group 1, a small number of *Yubetsu* technical spalls is detected, but most of artifacts of this group are associated with flaking of edge-faceted microcores on pebbles. The analysis of primary flaking shows that large blade (longer than 4 cm) technique was not used by beares of the Osipvka culture. All cores were used to obtain small products. The exact specifications of microblade flaking can be seen below:

	EP 1	EP 2	EP 3	EP 4	Total
Microblades	2	–	12	2	16
Microblades irregular	3	5	23	–	31
Microblades needle-shaped	–	–	6	–	6
Microblades' fragments unidentified	–	–	3	–	3
Primary frontal flakes	–	1	5	–	6
Secondary frontal flakes (with microblades' negatives)	–	–	3	2	5
Ski spall	–	1	2	–	3
Butt trimming longitudinal flakes (with pebble cortex)	–	–	1	–	1
Boat-shaped spall	–	–	1	–	1
Blades irregular of 3-5 sm	1	–	1	–	2
Cores' flakes unidentified	–	–	1	1	2
Total	6	7	58	5	76

Within tools and implements, three technical-technological classes are identified: facial pieces; pieces on flakes with marginal retouch and pieces with abrasive treatment (fig. 74). One of main features of the Osipovka stone industry is the great extent of facial treatment, and also the appearance of abrasive technology which was applied in order to manufacture points and adzes. On the basis of functional use, the Osipovka artifacts can be sub-divided into the following categories: points (including arrowheads) (fig. 31; 57, *3-12*; 59; 66, *2-3*), knife-scraper like tools (fig. 38, *3-6*; 39; 45, *1, 8, 9*; 64, *1, 3-5*), adze-scraper like tools (fig. 30; 46, *4*; 49; 57, *1*), scrappers (fig. 33; 60; 69), adzes (fig. 42; 46, *1*; 58, *1-2, 7*; 67, *1*), perforators (fig. 32, *7-10*; 47, *3*; 63, *3*), cutting tools (fig. 51, *4*; 63, *1*), burin-like tools (fig. 32, *11*; 51, *2-3*; 65, *4*) and burin (fig. 34, 2), hammerstone (fig. 50, *4*), arrowshaft calibrator (fig. 67, *2*), and also abrasives of non-utilitarian artifacts: dagger-shaped biface (fig. 66, 1), anthropomorphic and zoomorphic pieces (fig.43, *1-4*; 52-53; 66, *4*), and portable petroglyphs (fig. 54). It is important to stress that there are representative and well-developed typological series among points, scrapers, adzes, and adze-scraper like tools. However, there are also polymorphous groups of tools, for example knife-scraper like items.

Pottery

During 1995-1996 excavation compaign, about 2100 potsherds belonging to the Osipovka culture are found. About 100 of them are located in Layer 5 (infill of frost cracks), and the rest is unearthed from the Layer 3 (see table above). The preservation of ceramics found in the frost cracks is poor; often potsherds fallapart in hands. Pottery fragments are very small,usually 1.5-2 cm long. They are found in in clusters of few fragments or separately. A single broken pot was found in 1995, representing the bottom part (gr. Д/8). The preservation of ceramics in Layer 3 is much better compared to Layer 5. Most of potsherds are situated in concentrations, and only a small part of assemblage is located separately. Pottery was studied by binocular and petrographic analyses; the latter was carried out by Dr. B.L. Zalishchak (Far Eastern Geological Institue, Vladivostok).

Pottery of the Osipovka culture is made of intentionally tempered clay pasts. People used as tempers rocks, clay/grog and grass. Two former additions were basic, but grass was included in clay mixtures rarely and in a small amounts. Very often, or even as a rule, two or three tempers were mixed and used at the same time. We can identify the following compositions of clay mixture: clay with rocks and clay/grog (sometimes with grass); clay with clay/grog (sometimes with grass); clay with rocks (sometimes with grass). The amount of additions varies significantly.

Pottery from Layer 5 and part of pottery from Layer 3 (from concentration in excavate pit 1, burial, and partly of separately found potsherds) were tempered by small amount of additions, no more than 10% of total mass of potsherd according petrographic analysis. This pottery often has about the same amount of rocks and grog in clay paste, or only grog, or it is not tempered. Size of rock and grog grains is large. Sometimes, it seems that only large-size grains were added intentionally inclay pasts.

Pottery from Layer 3 (from concentration in excavation pits 3-4, and some of separately found potsherds) is tempered by large amount of additions, 20-30% of total mass according to petrographic analysis. Rocks apparently prevail in clay pasts, or are the only kind of additions (with the exception of grass). Another distinctive feature of this pottery is a very coarse texture of additions (fig. 86, 2; 87, 4-5; 90; 92).

The way of shaping the pottery is reconstructed without certainty. There are no the traces of mould (impressions of tissue or vegetable gasket; and paddle and anvil technique) on the surface of potsherds. Only some potsherds with traces of butt or overlap joint of slabs or wisps are found (fig. 78. 5-6; 83; 88). However, it is established that after the shaping pots were covered by the thick coat of liquid clay. That is a very common practice in the Osipovka pottery-making (fig. 78, 4; 98).

Petrographic analysis showed that clay for covering has special composition without sand and is often prepared of other kind of clay compared to clay used for manufacture of pots. The coat of the Osipovka pots often has very bright red color, and we can assume that it contain significant amount of iron. As a rule, slip was applied only to the outer surface, but there are cases when both surfaces were covering by coat.

After (!) coating, pots are processed by comb (mainly outer surfaces). The purpose of such treatment is unknown. Comb treatment could also have been used before coating (inner surfaces). In this case, it seems that such processing was aimed to alignment of walls. It is important to stress that external surfaces of the Osipovka pots have either comb traces or ornaments. There are no pots combining of the former and latter tratments.

Shapes of the Osipovka pots are quite simple. One of them is close to trunco-conical (fig. 91), second to biconical (fig. 99), third is like high and wide cylindrical bowl (fig. 85). Bottoms are flat.

Design is very diverse. Methods of decoration includes comb and comb wheel rolling (fig. 81; 85-86; 97), line applique (fig. 94-96), cord wrapped stick (fig. 99) and figure stick (fig. 90-91) impressions. Pottery from the Layer 5 has only cord wrapped stick impressions, and it has little resemblance to design. However, at the same time the pots with such cord wrapped stick impressions have also comb traces on the inner surfaces.

Combination of clay pastes and design features create very diverse picture. Basing on these combinations, one can distinguish five technical-morphological groups of the Osipovka pottery. The presence of such a large variety can be explained partly by chronological differences, but sometimes it seems that polymorphic and not yet formed ceramic tradition existed at the Goncharka-1 site.

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Fig.36. Goncharka-1. The excavation pit 1. Microcores (1-5), ski-spall (6). 1 – gr. К/9, 2 str.; 2 – gr. И/6, 2 str.; 3 – gr. К/10, 2 str.; 4 – gr. Д/7; 2 str.; 5 – gr. К/10, 2 str.; 6 – gr. Г/6, 3 str.

Fig.37. Goncharka-1. The excavation pit 1. Scraper-like (1) and knife-scraper like tools (2). 1 – gr. Ж/5, 2 str.; 2 – gr. Б/5, 2 str.

Fig.38. Goncharka-1. The excavation pit 1. Knife-scraper like tool-blank (1), arrowhead (2), knife-scraper like tools on bifaces (3-6). 1 – gr. А/7, 2 str.; 2 – gr. В/4, 3 str.; 3 – gr. А/8, 2 str.; 4 – gr. З/7, 2 str.; 5 – gr. И/6, 2 str.; 6 – gr. И/8, 2 str.

Fig.39. Goncharka-1. The excavation pit 1. Knife-scraper like tools on blade-shaped flakes (1, 4) and flakes (2, 5), arrowhead (3). 1 – gr. Б/4, 2 str.; 2 – gr. И/10, 2 str.; 3 – gr. Е/6, 3 str.; 4 – gr. Б/9, 3 str. (in fireplace); 5 – gr. И/5, 1 str.

Fig.40. Goncharka-1. The excavation pit 1. Scraper-like tool (1) и boat-shaped blank (2). 1 – sector 4; 2 – gr. Е/1, 2 str.

Fig.41. Goncharka-1. The excavation pit 1. Blanks. 1 – gr. Д/9, 2 str.; 2 – gr. И/10, 2 str.

Fig.42. Goncharka-1. The excavation pit 1. Axe-like tool (1) and arrowhead (2). 1 – gr. И/8, 2 str.; 2 – gr. Д/6, Layer 2

Fig.43. Goncharka-1. The excavation pit 1. Flatbed retouched figures (1-4), arrowheads (5-6), axe-like tool (7). 1 – gr. З/7, 2 str.; 2 – gr. В/8, 3 str.; 3 – gr. З/8, 3 str.; 4 – gr. Е/6, 2 str.; 5 – gr. З/8, Layer 2; 6 – gr. И/10, 1 str.; 7 – gr. Ж/8, Layer 2

Fig.44. Goncharka-1. The excavation pit 2. Microrocores (1-5), microblades (6-12), blank of arrowhead (13), knife-scraper like tool on the blade-shaped flakes (14). 1 – gr. Ф/6, 5 str.; 2 – gr. Л/9, 2 str.; 3 – gr. Л/7, 3 str.; 4 – gr. Т/5, 5 str.; 5 – gr. Л/8, 2 str.; 6 – gr. Н/9, 7 str.; 7 – gr. Л/10, 2 str.; 8 – gr. Л/10, 2 str.; 9 – gr. Л/10, 2 str.; 10 – gr. Н/7, 3 str.; 11 – gr. О/8, Layer 2; 12 – gr. П/2, 2 str.; 13 – gr. Р/1, Layer 2; 14 – gr. М/1, 2 str.

Fig. 45. Goncharka-1. The excavation pit 2. Knife-scraper like tools on bifaces (1, 8, 9), spearhead with local polishing (2), arrowheads (3-7, 10). 1 – gr. Н/9, 5 str.; 2 – gr. М/8, 2 str.; 3-4 – gr. У/1, 2 str.; 5 – gr. Н/8, 7 str. ; 6 – gr. Р/9, 1 str.; 7 – gr. Р/9, 1 str.; 8 – gr. О/7, 4 str.; 9 – gr. М/3, 3 str.; 10 – gr. П/9, 2 str.

Fig. 46. Goncharka-1. The excavation pit 2. Adze (1), scraper (2, 3, 5), adze-scraper like tool (4). 1 – gr. П/6, 2 str.; 2 – gr. М/7, 4 str.; 3 – gr. Л/7, 3 str.; 4 – gr. Л/7, 4 str.; 5 – gr. Н/7, 6 str.

Fig.47. Goncharka-1. The excavation pit 2. Point (1), arrowhead (6), knife-scraper like tool on biface (2) and on blade-shaped flake (5), perforating tool (3), scraper (4). 1 – gr. Н/1, 2 str.; 2 – gr. Н/8, 8 str.; 3 – gr. Н/8, 4 str.;4 – gr. Н/8, 5 str.; 5 – gr. У/5, 2 str.; 6 – gr. Н/5, 4 str.

Fig.48. Goncharka-1. The excavation pit 2. Blank of adze-scraper like tool, gr. О/7, 2 str.

Fig.49. Goncharka-1. The excavation pit 2. Adze-scraper like tools. 1 – gr. Н/7, 5 str.; 2 – gr. С/2, 3 str.

Fig.50. Goncharka-1. The excavation pit 2. Adzes (1, 3), arrowhead (2), hammerstone (4). 1 – gr. С/5, 2 str.; 2 – gr. М/8, 2 str.; 3 – gr. О/8, 2 str.; 4 – gr. Р/4, 2 str.

Fig.51. Goncharka-1. The excavation pits 2 and 4. Flakes with retouch and fissure (1, 5-6), burin-like flakes with fissure (2-3), saw-cutter on a flake (4). 1 – gr. М/6, 2 str.; 2 – gr. Н/8, 3 str.; 3 – gr. У/6, 3 str.; 4 – gr. Д/13, 1 str.; 5 – gr. Д/14, 1 str.; 6 – gr. Б/14, 3 str.

Fig.52. Goncharka-1. The excavation pit 2. У-shaped subject with anthropomorphous image from the sacral complex on the square Р/9

Fig.53. Goncharka-1. The excavation pit 2. У-shaped subject from the sacral complex in the gr. Р/9

Fig.54. Goncharka-1. The excavation pits 2 and 4. Boulders with halls from the sacral complex in the gr. Р/9 (1) and the burial (2)

Fig.55. Goncharka-1. The excavation pits 2 and 3. Finds from the frost cracks. 1 – knife-scraper like tool on biface (gr. Д'/3, 5 str.); 2 – axe-like tool (gr. Н/8, 5 str.)

Fig.56. Goncharka-1. The excavation pit 3. Microrocores (1, 3-6), ski-spall (2), flakes from pebbled flatbed microcore (7-10). 1 – gr. З'/8, 2 str.; 2 – gr. Ж'/5, 2 str.; 3 – gr. К'/4, 2 str.; 4 – gr. К'/10, 2 str.; 5 – gr. З'/3, 2 str., 6 – gr. И'/3, 2 str.; 7-10 – gr. Е'/3, 3 str.

Fig.57. Goncharka-1. The excavation pit 3. Adze-scraper like tool (1), scraper (2), point (13) and arrowheads (3-12). 1 – gr. В'/4, 2 str.; 2 – gr. Ж'/2, 3 str.; 3 – gr. Е'/2, 2 str.; 4 – gr. В'/2, 3 str.; 5 – gr. Г'/6, 2 str.; 6 – gr. К'/5, 2 str.; 7 – gr. Б'/4, 2 str.; 8– gr. И'/5, 3 str.; 9 – gr. Ж'/7, 2 str.; 10 – gr. Г'/10, 3 str.; 11 – gr. З'/4, 2 str.; 12-13 – gr. Е'/6, 3 str.

Fig.58. Goncharka-1. The excavation pit 3. Axe-like tools (1-2, 7), knife-scraper like tools on bifaces (3-4), arrowheads (5-6, 8-9). 1 – gr. Е'/2, 3 str.; 2 – gr. И'/5, 3 str.; 3 – gr. Д'/6, 2 str.; 4 – gr. Б'/2, 2 str.; 5 – gr. Д'/6, 3 str.; 6 – gr. К'/2, 2 str.; 7 – gr. Е'/4, 3 str.; 8 – gr. Г'/4, 2 str.; 9 – gr. И'/10, 2 str.

Fig.59. Goncharka-1. The excavation pit 3. Point (1) and arrowheads (2-7). 1 – gr. Г'/5, 2 str.; 2 – gr. А'/10, 4 str.; 3 – gr. Д'/3, 2 str.; 4 – gr. И'/3, 2 str.; 5 – gr. Е'/4, 3 str., 6 – gr. И'/4, 3 str.; 7 – gr. Г'/3, 2 str.

Fig.60. Goncharka-1. The excavation pit 3. Scrapers. 1 – gr. Г'/6, 1 str.; 2 – gr. Д'/4, 3 str.; 3 – gr. Ж'/7, 2 str.; 4 – gr. Д'/5, 3 str.; 5 – gr. З'/2, 2 str., 6 – gr. Ж'/5, 3 str.; 7 – gr. Е'/4, 3 str.; 8 – gr. Г'/2, 2 str.

Fig.61. Goncharka-1. The excavation pit 3. Macroscraper (1) and adze-scraper like tool (2). 1 – gr. Ж'/1, 2 str.; 2 – gr. Е'/4, 3 str.

Fig.62. Goncharka-1. The excavation pit 3. Knife-scraper like tools on flakes (1, 3, 6), slab (4) and biface (2, 5). 1 – gr. Е'/3, 3 str.; 2 – gr. Б'/5, 3 str.; 3 – gr. Е'/3, 3 str.; 4 – gr. И'/5, 3 str.; 5 – gr. Ж'/4, 3 str.; 6 – gr. В'/5, 2 str.

Fig.63. Goncharka-1. The excavation pit 3. Cutter (1), arrowheads (2, 5), perforating tool (3), spall with notched edge (4). 1 – gr. Г'/3, 2 str.; 2 – gr. Д'/6, 2 str., gr. В'/7, 1 str.; 3 – gr. И'/2, 2 str.; 4 – gr. К'/5, 3 str.; 5 – gr. Ж'/7, 2 str.

Fig.64. Goncharka-1. The excavation pit 3. Knife-scraper like tools on flakes with angular blade, wide (1) and narrow (3-4), diagonal burin (2), knife-scraper like tool on the flakes with angular thorn (5). 1 – gr. Д'/3, 2 str.; 2 – gr. И'/10, 2 str.; 3 – gr. Д'/4, 3 str.; 4 – gr. З'/5, 3 str.; 5 – gr. Г'/5, 3 str.

Fig.65. Goncharka-1. Excavation pit 3. Knife-scraper like tool on the flake with angular thorns (1), asymmetrical leaf-shaped point on the flake (2), spall from pebbled microblade core (3), burin-like tool on the flake (4). 1 – sq. В'/5, 3 str.; 2 – sq. Е'/1, 3 str.; 3 – sq. Ж'/3, 2 str.; 4 – sq. Д'/5, 3 str.

Fig.66. Goncharka-1. The excavation pit 4. Dagger-like biface (1), points (2, 3), fish-shaped retouched figure (4), knife-scraper like tool on the flake (5), core (6), frontal spall from microblade core (7). 1 – gr. В/15, 2 str., Д/15, 3 str.; 2 – gr. В/15, 2 str.; 3 – gr. Е/13, 2 str.; 4 – gr. Ж/11, 2 str.; 5 – gr. Д/12, 2 str.; 6 – gr. К/11, 2 str.; 7 – gr. З/16, 3 str.

Fig.67. Goncharka-1. The excavation pit 4. Chisel-like tool (1), calibrator for arrowhead's shafts (2). 1 – gr.Д/14, 2 str.; 2 – gr. Д/13, 2 str.

Fig.68. Goncharka-1. The excavation pit 4. Burial. Adzes (1,7), points (2) and arrowheads (3-6). 1 – № 15; 2 – № 18; 3 – № 21; 4 – № 20; 5 – № 19; 6 – № 9; 7 – № 4

Fig.69. Goncharka-1. The excavation pit 4. Burial. Scrapers. 1 – № 16; 2 – № 14; 3 – № 3; 4 – № 6; 5 – № 17; 6 – № 8

Fig.70. Goncharka-1. The excavation pit 4. Burial. Fragment of biface (2), perforating tool (1, 3), splitted pebble of carnelian (4), knife-scraper like tools on the flakes (5, 7), core (6), tool on the pebble (8). 1 – № 7; 2 – № 10; 3 – № 13; 4 – № 5; 5 – № 1; 6 – № 11; 7 – gr. Б/16, 3 str.; 8 – № 2

Fig.71. Goncharka-1. The excavation pit 4. Burial. У-shaped figure (№ 22)

Fig.72. Goncharka-1. The excavation pit 4. Burial. У-shaped figure (№ 23)

Fig.73. Goncharka-1. The excavation pit 4. Knife-scraper like tools on the flakes with angular thorns (1-2) and prolonged with the convex edges (3). 1 – gr. З-16, 3 str.; 2 – gr. Г/12, 1 str.; 3 – gr. Ж/14, 2 str.

Fig.74. Goncharka-1. Typological view of stone industry of the Osipovka culture. I – microsplitting: 1-2 – boat-shaped spalls; 3 – frontal spall from microblade core; 4-8 – pebbled microblade cores; 9-11 – microblades; 12-13 – pebbled microcores for flaking; II – class of the facial tools: 14-21 – knife-scraper like tools on the bifaces; 22-25 – spearheads and dartheads; 26-42 – arrowheads; 43-44 – adze-scraper like tools; 44a-48 – scrapers; 49 – scraper-like tool; 50-53 – perforating tools; 54-56 – adzes; III – class of tools on the retouched flakes: 57-63 – knife-scraper like tools; 64 – retouched flakes; 65 – leaf-shaped tools; 66-67 – tools on the blade-shaped blanks; 68 – knife-like tool on the slab; 69 – saw-cutter; 70-71 – perforating tools; 72 – scraper; 73 – burin; 74-75 – burin-shaped artifacts on broken flakes; IV – class of the grinded tools: 76-77 – adzes; 78 – chisel-like tool; 79-80 – arrowheads; 81 – arrowhead (awl -?); 82 – calibrator for arrowshafts; V – objects with the sacral or art function: 83 – dagger-shaped biface; 84-86 – flatbed retouched figures; 87 – portative petrogliph; 88-89 – У-shaped figures.

Fig.75. Goncharka-1. The excavation pit 2. Pottery of the Poltse culture

Fig.76. Goncharka-1. The excavation pit 2. Potsherd from the gr. Н/7, 7 str.

Fig.77. Goncharka-1. The excavation pit 2. Potsherd from the gr. О/7, 4 str.

Fig.78. Goncharka-1. The excavation pit 1. Potsherds from the pottery concentration in the gr. В/9 (1) и Ж/5 (5-7) and their thin-sections (3-5). 2 – thin-section № 011; 3 – thin-section № 012; 4 – thin-section № 014

Fig.79. Goncharka-1. The excavation pit 1. Profiles of bottoms (?) of pots from the pottery concentration in the gr. Ж/5, 3 str.

Fig.80. Goncharka-1. The excavation pit 1. Rim potsherd from the pottery concentration in the gr. А-Б/5-6, 3 str.

Fig.81. Goncharka-1. The excavation pit 1. Rim potsherd from the pottery concentration in the gr. А-Б/5-6, 3 str.

Fig.82. Goncharka-1. The excavation pit 1. Rim potsherds (1, 5) and their thin-sections (2-4) from the pottery concentration in the gr. А-Б/5-6

Fig.83. Goncharka-1. The excavation pit 1. Potsherds from the pottery concentration in the gr. А-Б/5-6, 3 str.

Fig.84. Goncharka-1. The excavated pit 3. Bottom of pot found in the gr. Д'/4-5

Fig.85. Goncharka-1. The excavation pit 3. Vessel from pottery concentration in the gr. Д'/4-5, 3 str.

Fig.86. Goncharka-1. The excavation pit 3. Fragments of pot from the pottery concentration in the gr. Д'/4-5 (1) and its thin-section (2)

Fig.87. Goncharka-1. The excavation pit 3. Potsherds found in the gr. Д'-Г'/4-5. 1 – gr. Д'/5; 2 – gr. Д'/5; 3 – gr. Д'/4-5; 4 – gr. Г'/5; 5 – gr. Д'/5

Fig.88. Goncharka-1. The excavation pit 3. Potsherd from the gr. Г'/5

Fig.89. Goncharka-1. The excavation pit 3. Potsherd from the gr. Г'/5

Fig.90. Goncharka-1. The excavation pits 3 and 4. Potsherds from the pottery concentration found in the gr. И'/2 (1-2) and З/16 (6-7) and their thin-sections (3-5). 3 – thin-section № 083; 4 – thin-section № 072; 5 – thin-section № 073

Fig.91. Goncharka-1. The excavation pit 4. Vessel from the pottery concentration in the gr. З/16

Fig.92. Goncharka-1. The excavation pit 4. Potsherds from the gr. З/15

Fig.93. Goncharka-1. The excavation pit 4. Potsherd from the gr. Е/15

Fig.94. Goncharka-1. The excavation pit 2. Potsherd from the gr. Н/8

Fig.95. Goncharka-1. The excavation pit 4. Potsherd from the gr. К/11

Fig.96. Goncharka-1. The excavation pit 4. Potsherd from the gr. И/11 (1) and its thin-section (2)

Fig.97. Goncharka-1. The excavation pits 1-4. Potsherd with comb design. 1 – gr. Б/8; 2 – gr. Б/6; 3, 10, 13 – gr. В/6; 4, 12 – gr. Г/1; 5 – gr. В'/8; 6 – gr. Е/4; 7 – gr. Ж'/8; 8 – gr. Б/14; 9 – gr. Л/2; 11 – gr. У/10; 12 – gr. Г/1; 13 – gr. В/6

Fig.98. Goncharka-1. The excavation pit 2. Potsherd from the gr. У/4 (1) and its thin-section (2)

Fig.99. Goncharka-1. Potsherd with cord (?) design. 1 – gr. В'/5, 3; 2 – gr. З/8; 3 – gr. У/1; 4 – gr. Т/5; 5 – gr. Б/7; 6-7 – gr. О/12 (infill of frost cracks, excavation of 2001 year)

Fig.100. Goncharka-1. The excavation pit 3. Potsherd from the gr. В'/5

Fig.101. Goncharka-1. Outlines of inside and outside surfaces of potsherds of the Osipovka culture

Fig.102. Khummi. Pottery of the Osipovka culture

Fig.103. Khummi. Pottery of the Osipovka culture

Fig.104. Gromatukha. Pottery of the Bel'kachi culture

Fig.105. Gromatukha. Pottery of the Malyshevo culture

Fig.106. Gromatukha. Stone tools of the Gromatukha culture. 1-4 – boat-shaped spalls; 2, 5, 7-8 – wedge-shaped microcores; 3, 15 – prismatic cores; 6, 9, 16, 20 – adze-scraper like tools; 10-11 – scrapers; 12-14 – bifaces; 17-19 – burins [after Окладников, Деревянко 1977]

Fig.107. Ust-Ulma-1. Stone tools of the Selemdja culture. 1-3 – bifacial points; 4-5 – bifacial knifes; 6, 9-10 – burins; 7-8 – technical spalls from wedge-shaped microcores; 11-12 – wedge-shaped microcores; 13 – microblade core; 15-16 – microprismatic cores; 14, 17 – cores; 18-20 – scrapers [after Деревянко, Зенин 1995].

Fig.108. Gromatukha. Potsherds with grass impressions inside

Fig.109. Gromatukha. Potsherds with grass impressions on the pot's surfaces

Fig.110. Gromatukha. Thin-section № 23-24 of pottery of the Gromatukha culture

Fig.111. Gromatukha. Vessel with cord design. 1 – rim, 2 – near bottom part, 3 – middle part of pot, 4 – bottom, 5 – shape of vessel

Fig.112. Gromatukha. Vessel with comb traces on the surfaces

Fig.113. Gromatukha. Vessel from Kokugakuin University [after Kani 1992: 67, fig. 2]

Fig.114. Gromatukha. Vessels with cord design

Fig.115. Gromatukha. Vessels with cord design 1-3 – sherds of the same pot

Fig.116. Gromatukha. Vessels with plain walls and comb ornament

Fig.117. Knyaze-Volkonskoye-1. Pottery of the Early Kondon type

Fig.118. Suchu. Typical vessel of the Mariinsky assemblage