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LATE UPPER PALEOLITHIC OF THE LOWER VITIM (BASED ON THE DATA OF KOVRIZHKA-III–IV AND BOL'SHOI YAKOR'-I SITES)

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Abstract. The multilayer sites Kovrizhka-IV and Bol'shoi Yakor'-I, Kovrizhka-III (Baikal-Patom Highlands, Lower Vitim) make it possible to characterize the Late Upper Paleolithic (LUP) at the early, 19–17 Kyr BP, and late, 15–13 Kyr BC, stages, respectively. The high information potential makes it possible to highlight the culture and activities of the inhabitants in terms of lithic production and microblade splitting, living features, settling, hunting, the transportation of mineral resources from remote sources, sign-symbolic activity and art. The lithic assemblages of LUP appearance, in general, show continuity from the early stage to the late one. In microblade splitting, this is expressed in the translation of the Kovrizhka and Yubetsu-Bol'shoi Yakor' techniques for preparing the wedge-shaped microcore and reducing the biface. For the early stage, chisel-shaped tools are more typical than for the late stage, for the late stage - transversal burins. On Kovrizhka-IV (early stage), the remains of dwelling features were found, art objects were discovered as well as numerous evidence of the use of ocher. Bol'shoi Yakor'-I and Kovrizhka-III (late stage) show various hearth complexes and specific structures made of gneiss slabs. Culturally and typologically, the LUP of the Lower Vitim correlates with the Studenovskaya culture of Southern Transbaikalia at an early stage, the Dyuktai culture of Yakutia, and the Verkholenskaya culture of Southwestern Cisbaikalia at a later stage. In the early Holocene, LUP traditions were continued in a number of sites. However, already along with the appeared complexes of the Mesolithic appearance.

Key words: Eastern Siberia, Baikal-Patom Highlands, Late Upper Paleolithic, Sartan glaciation, Final Pleistocene, lithic industry, microblade splitting, dwelling, ocher, art

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ПОЗДНИЙ ВЕРХНИЙ ПАЛЕОЛИТ НИЖНЕГО ВИТИМА (ПО МАТЕРИАЛАМ СТОЯНОК КОВРИЖКА-III–IV И БОЛЬШОЙ ЯКОРЬ-I)

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Резюме. Многослойные памятники Коврижка-IV и Большой Якорь-I, Коврижка-III (Байкало-Патомское нагорье, Нижний Витим) дают возможность характеризовать поздний верхний

палеолит (ПВП) на раннем, 19–17 тыс. л.н., и позднем, 15–13 тыс. л.н., этапах соответственно. Высокий информационный потенциал позволяет описывать культуру и деятельность обитателей в аспектах каменного производства и микропластинчатого расщепления, жилищных структур, выбора места поселения, охотничьего промысла, доставки минеральных ресурсов с удаленных источников, знаково-символической деятельности и искусства. Каменные индустрии общего ПВП-облика демонстрируют преемственность от раннего этапа к позднему. В микрорасщеплении это выражается в трансляции коврижкинской и юбецу-большеякорской техник подготовки клиновидного нуклеуса и редукции бифаса. Для раннего этапа больше, чем для позднего, характерны долотовидные орудия, для позднего этапа — трансверсальные резцы. На Коврижке-IV (ранний этап) выявлены остатки жилищных конструкций, открыты предметы искусства, многочисленные свидетельства использования охры. На Большом Якоре-I, Коврижке-III (поздний этап) представлены разнообразные очажные комплексы и специфические постройки из гнейсовых плит. Культурно-типологически ПВП Нижнего Витима соотносится со студеновской культурой Южного Забайкалья на раннем этапе, дюктайской культурой Якутии и верхоленской культурой Юго-Западного Прибайкалья на позднем этапе. В раннем голоцене ПВП традиции нашли продолжение в ряде стоянок. Однако уже наряду с появившимися комплексами мезолитического облика.

Ключевые слова: Восточная Сибирь, Байкало-Патомское нагорье, поздний верхний палеолит, сартанское оледенение, финальный плейстоцен, каменная индустрия, микропластинчатое расщепление, жилище, охра, искусство

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Introduction

The active, systematic research has been carried out in the archaeology of the Stone Age of Lower Vitim for more than 45 years. The main efforts were directed to the study of the Upper Paleolithic and Mesolithic. The first Paleolithic site of Avdeikha was explored in the 1970s. (Mochanov, 1975, 1977). In 1985–2010 the Bol'shoi Yakor-I site was studied (Ineshin and Tetenkin, 2010). It gave rich, complex information about the life of ancient people at the end of the Sartan Glaciation (MIS 2). These representations were supplemented by materials from Kovrizhka-III site, which was excavated in 2003–2012. Its Paleolithic horizons are somewhat later in relation to Bol'shoi Yakor-I (Tetenkin, 2016). Since 2007, studies have been carried out at the Kovrizhka-IV site, which made it possible to characterize the time of the end of the Last Glacial Maximum (LGM) (Tetenkin, 2017b). Another site, Mamakan-VI, characterized the Lower Vitim Paleolithic in the interval preceding the time of Kovrizhka-IV (Tetenkin, 2014a). The materials of Mamakan-VI showed a significant difference from the lithic industry of Kovrizhka-IV and Bol'shoi Yakor'-I. As a result, archaeological work opened up the possibility of a diachronic characterization of the Late Upper Paleolithic (LUP) of 19–13 Kyr BP (hereinafter, the age is calibrated), represented at an early stage (Kovrizhka Stage) by Kovrizhka-IV and at late stage (Bol'shoi Yakor' Stage) by Bol'shoi Yakor'-I and Kovrizhka-III (Tetenkin, 2018). This article is devoted to a comprehensive characterization of the LUP of the Lower Vitim in terms of paleoecology, settlement structures, stone industry, mobility, and sign-symbolic activity.

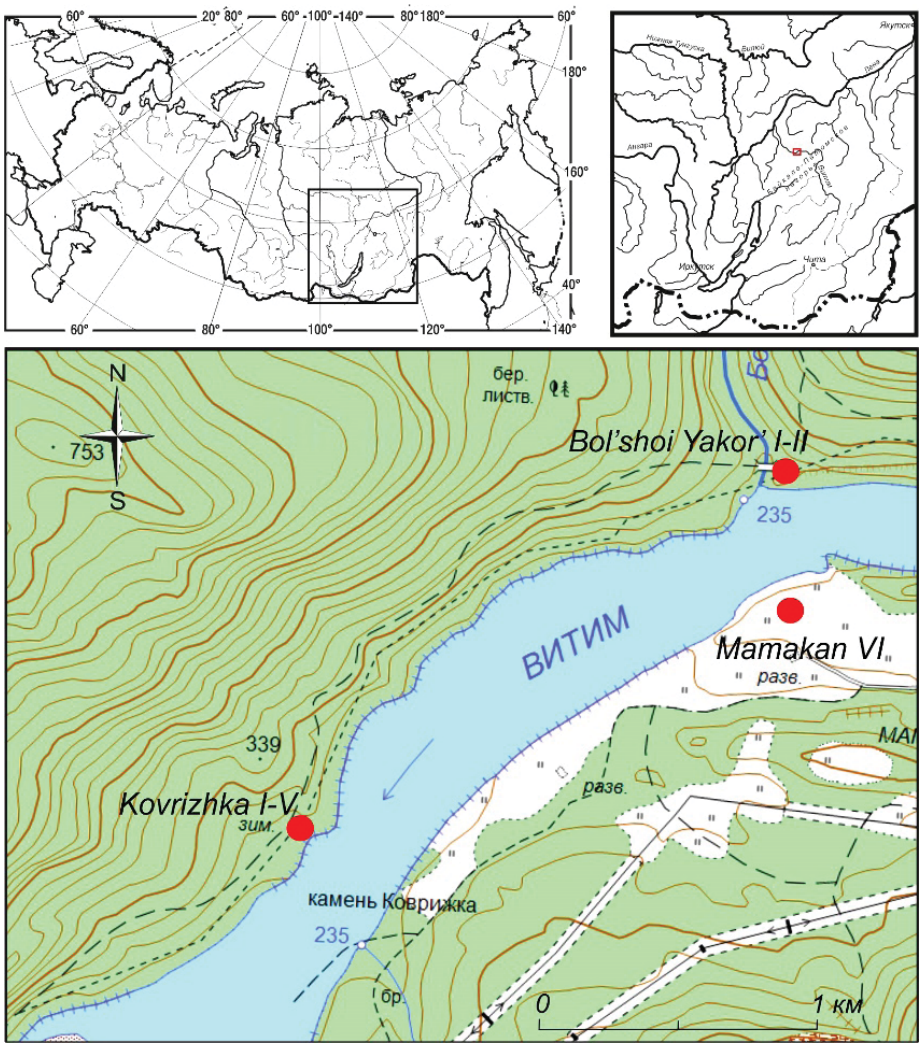


Fig. 1. Maps of the location of Bol'shoi Yakor'-I, Kovrizhka-I–V, Mamakan-VI sites

Рис. 1. Карты-схемы местоположения стоянок Большой Якорь-I, Коврижка-I–V, Мамакан-VI

Materials (General Characteristics of Reference Sites of the Late Upper Paleolithic of the Lower Vitim)

The Kovrizhka Stage (19–17 Kyr BP) is most clearly represented by 12 horizons of Kovrizhka-IV site in the Lower Vitim, dated in the interval 19000–18000 cal. BP (Fig. 1, 2) (Tetenkin, Henry, Klementiev, 2017; Tetenkin, 2017b, 2018; Tetenkin et al., 2020). On an 11-meter terrace, the remains of dwellings (Fig. 3.-*1*), as well as hearth zones, were discovered and studied. The activity situations of living on the site are characterized as a variability of functional options. The oldest objects of art in the Northern Baikal region have been discovered, including an anthropomorphic figurine made of mammoth tusk (Fig. 3.-*2*) (Tetenkin, Henry, Klementiev, 2017; Tetenkin et al., 2018).

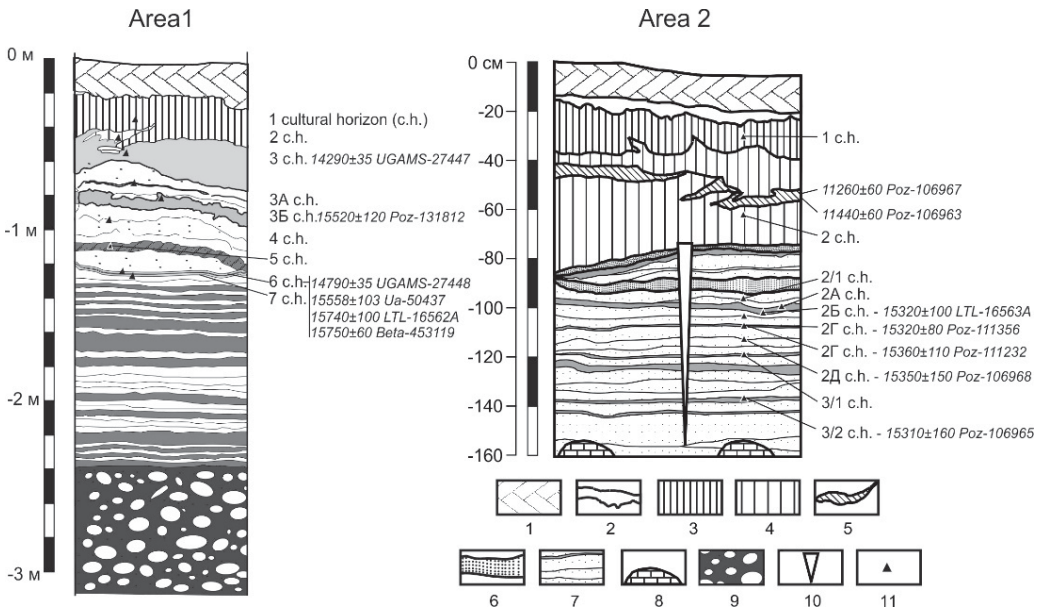


Fig. 2. Stratigraphy of the Kovrizhka-IV site. The numbers indicate:
1 — modern soil, 2 — podzol, 3 — orange-yellow sandy loam, 4 — light green sandy loam, 5 — dark brown sandy loam (buried soil), 6 — light yellow sand with grit, 7 — sands, sandy loams and aleurites horizontally and rhythmically layered, light and dark gray, 8 — bedrock, 9 — pebble bed, 10 — cryogenic crack, 11 — cultural horizon (after: Tetenkin et al., 2021, with additions)

Рис. 2. Стратиграфия стоянки Коврижка-IV. Цифрами обозначены:
1 — дерн, 2 — подзол, 3 — супесь оранжево-желтая, 4 — супесь светло-зеленая, 5 — супесь темно-коричневая (погребенная почва), 6 — песок светло-желтый с дресвой, 7 — пески, супеси и алевриты горизонтально и ритмичнослоистые, светло- и темно-серые, 8 — цоколь, 9 — галечник, культурный горизонт, 10 — криогенная трещина, 11 — культурный горизонт (по: Тетенькин и др., 2021, с добавлениями)

The phenomenon of several horizons is the widespread use of ocher up to the treatment of the hearth zone with it (Tetenkin et al., 2020). The technique for preparing the wedge-shaped core was reconstructed in detail and most completely for the Northern Baikal region, which was designated as "Kovrizhka Type of Microcore Preparation" (Fig. 4) (Tetenkin, 2017a). It represents a line of preparation of a wedge-shaped preform of a high contour from a biface or a flake and the design and revitalization of the striking platform with blows from the lateral and front. Along with this, products of the Yubetsu technique developed in the region in the Final Sartan (Fig. 3.-*14*) were found on Kovrizhka-IV (Tetenkin, 2017a). Traceologic analysis delineated cases of mounting tools in handles and using segments of microblades as inserts for slotted hunting points (Gauvrit Roux, Teten'kin, Henry, 2021).

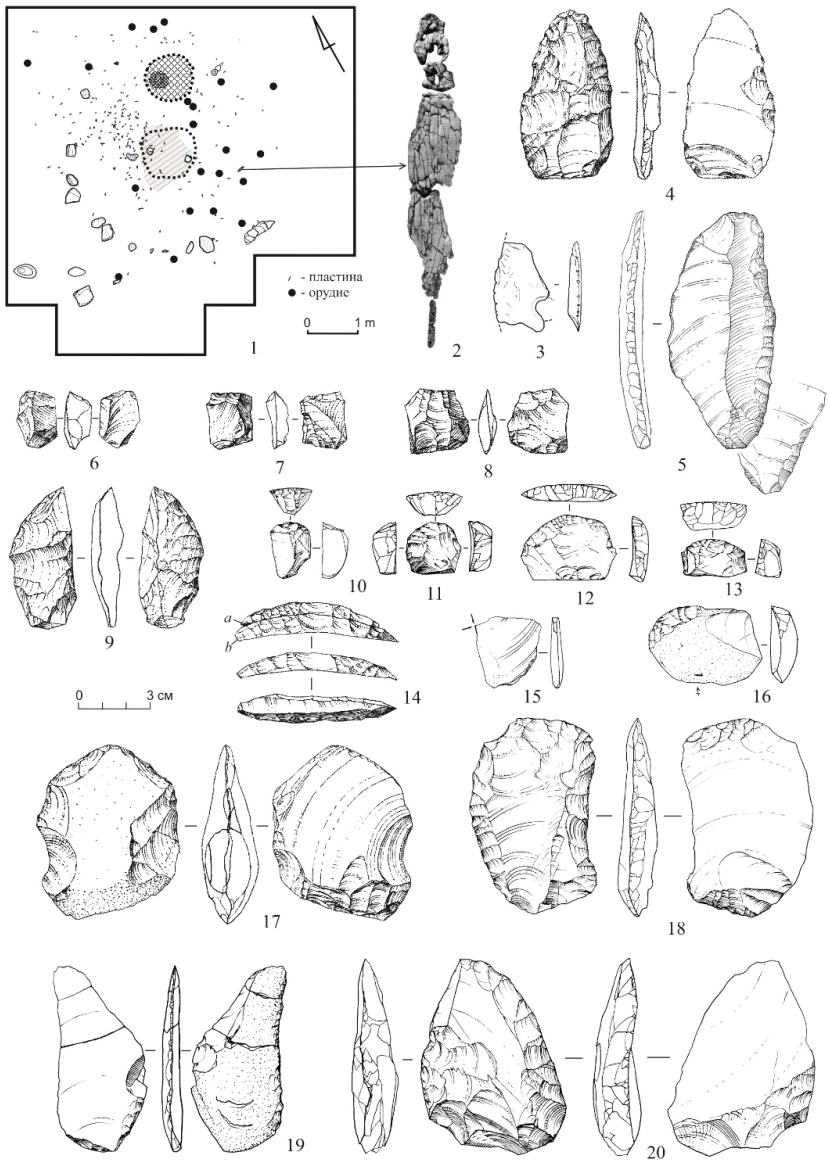


Fig. 3. Kovrizhka-IV site, cultural horizon 6 – 1, 2, 10–13, 15, 16, 18–20, c.h. 4 – 3, c.h. 3B – 4, 5, c.h. 2B – 6–9, 14, 17; 1 – scheme of the dwelling in c.h. 6, 2 – anthropomorphic figurine, 3 – fragment of graphite pendant, 4, 5, 19, 20 – knifes, 6–8 – *pieces esquillees*, 9 – biface, 10–13, 16, 17 – end-scrapers, 14 – crest spall and ski spall, 15 – burin, 18 – side-scraper (after: Tetenkin, 2017b)

Рис. 3. Стоянка Коврижка-IV, к.г. 6 – 1, 2, 10–13, 15, 16, 18–20, к.г. 4 – 3, к.г. 3В – 4, 5, к.г. 2В – 6–9, 14, 17; 1 – схема жилища в к.г. 6, 2 – антропоморфная фигура, 3 – фрагмент подвески из графитита, 4, 5, 19, 20 – ножи, 6–8 – долотовидные орудия типа *pieces esquillees*, 9 – бифасы, 10–13, 16, 17 – скребки, 14 – реберчатый и лыжевидный сколы, 15 – резец, 18 – скребло (по: Тетенькин, 2017б)

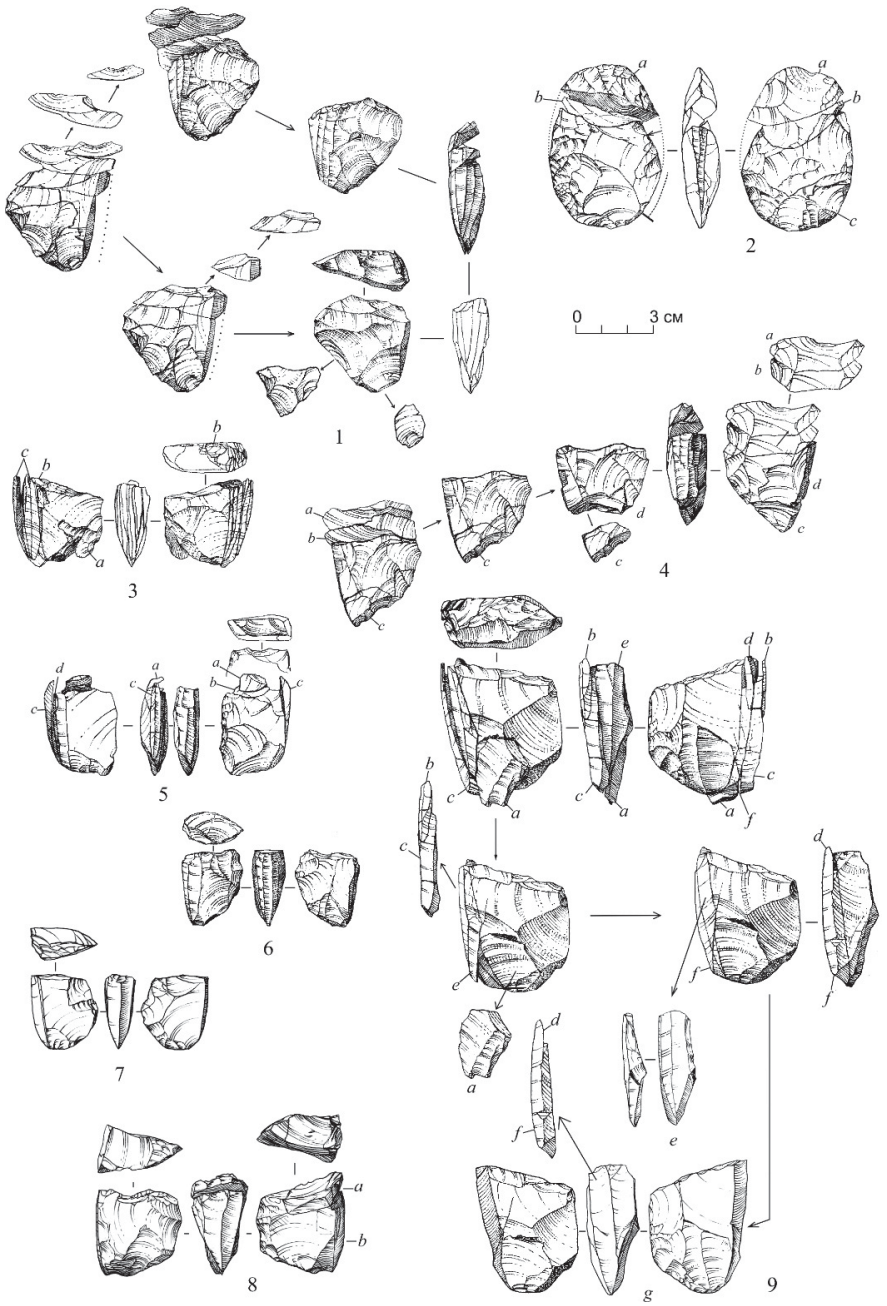


Fig. 4. Kovrizhka-IV site, cultural horizon 2B – 1–5, c.h. 6 – 7–9, 1–9 – wedge-shaped microcores (after: Tetenkin, 2017b)

Рис. 4. Стоянка Коврижка-IV, к.г. 2В – 1–5, к.г. 6 – 7–9, 1–9 – клиновидные микронуклеусы (по: Тетенькин, 2017б)

In addition to microcores the Kovrizhka-IV lithic production culture contains unifaces with longitudinal retouched working edges, traceologically identified as knives and scrapers, round and end scrapers, retouched flakes, traceologically identified as meat knives, hide scrapers, bone and horn carvers, chisel-shaped *pièce esquillée*, atypical angled burins, pebble cores of parallel and radial splitting principle (Fig. 3, 4) (Tetenkin, 2017b). The closest analogs of this industry are found in the Studenoe culture of Transbaikalia (Studenoe-1, 2, Ust-Menza-1, 2) and the Dyuktai culture of Yakutia (Konstantinov, 1994; Moroz, 2014; Mochanov, 1977). At Studenoe-1, 2, Ust-Menza-1, 2 (Transbaikalia), microcores, scrapers, chisel-shaped tools, side-scrapers are morpho-typologically similar or same (Konstantinov, 1994). The Tolbaga analogy is found in large blades (Konstantinov, 1994; Tashak, 2016). The impression from the analogies between the tools and cores of the lower horizons of Kovrizhka-IV with the Studenoe culture is enhanced by the discovery of dwellings on the Lower Vitim. The main correlate for them is exactly the dwellings of southern Transbaikalia (Konstantinov, 2001; Razgildeeva, 2018). In sum, the structurally complex dwellings and the morpho-typologically close appearance of the tools and cores of the lower horizons of Kovrizhka-IV and the complexes of southern Transbaikalia work towards a version of cultural closeness and, finally, cultural transmission from southern Transbaikalia to Lower Vitim in the considering chronological period.

In relation to the Duktai culture, several local specific features are visible. The lithic industry of the lower cultural horizons of Kovrizhka-IV contains a significant series of chisel-shaped tools of the *pièce esquilée* type, which is poorly represented in the Duktai culture. There are no transversal burins on Kovrizhka-IV site.

The study of the mineral composition of ocher established that it was obtained by mechanical crushing of brought pieces of hematite. The search for sources of ocher showed, according to the data available today, that it was delivered from iron ore deposits containing the accompanying mineral hematite, more than 500 km away from Kovrizhka (Tetenkin et al., 2020). In all three horizons 6, 2G, and 2B ocher of the quartz-hematite association was delivered from deposits located southeast of Kovrizhka, that is, upstream of the Vitim. But at the same time, in the 2G c.h. ocher of a different composition and origin from the deposits of the Angaro-Ilimsk or Severo-Baikal regions was also revealed, and in addition, ocher from the Neolithic burial ground Turuka in the north of the Upper Lena turned out to be similar in composition. The case of ocher transportation reveals for us the ability of people of that time to obtain resources from sources hundreds of kilometers away and is an example of the so-called "delayed consumption" of resources prepared well ahead of time (Testart, 1982). The southwestern and southeastern transmission vectors of hematite connect the regions of the northwestern and northeastern Baikal region in one economic episode.

In terms of dwelling constructions on Kovrizhka-IV, 19–18 Kyr BP, we reconstruct the cultural and technological complex developed by the inhabitants of Vitim valley under the conditions of the lasting Last Glacial Maximum (LGM). This is important to note, since in Paleolithic studies there is an already overcome point of view about the depopulation of Northern Siberia during the LGM period (Goebel, 2002; Pitulko, 2019).

The site of the previous time Mamakan-VI does not reveal morphological and typological similarities with the Kovrizhka-IV culture. Microcores and burins on Mamakan-VI shows a complete difference. There are no bifaces on Mamakan-VI site. Most likely, this can be ex-

plained by a chronological gap with the Kovrizhka-IV complexes and the multicultural nature of these assemblages. As regards younger sites, the cultural horizons of Kovrizhka-IV stand at the beginning of the process of the development of material culture that finally took shape in the Final Pleistocene — Early Holocene.

The most striking site of the Bol'shoi Yakor' Stage (17–12 Kyr BP) is Bol'shoi Yakor'-I on Vitim River (Fig. 1) (Ineshin and Tetenkin, 2010). It represents the several temporal, and seasonal hunting camps of the same culture to each other, and as a result forms the most complete cultural composition (Fig. 5). A series of radiocarbon dates includes the age of a pack of cultural horizons (9–3A c.h.) of about 15.1–13.6 Kyr BP. The leading forms in the assemblage are Yubetsu microcores from bifaces, transversal burins and end-scrapers from flakes (Fig. 6.-*1–5*, 6.-*6*, 7.-*6*). The technology of modification and multi-purpose weapon and core use of bifaces has been reconstructed within the framework of the technique of longitudinal reducing known as the Yubetsu technique (Fig. 7.-*6*) (Morlan, 1976; Nakazawa et al., 2005). A characteristic typological feature of several bifaces from cultural horizons 9, 8, 6, and 5 was an oblique butt (with reference to the cutting edge) (Fig. 7.-*1, 2*). All the bifaces of this form were residual — that is, they were not subjected to further reduction. This specific morphology is the example of specialization only as a tool (not tool and core-preform) seen in the bifaces from site (Ineshin and Tetenkin, 2010, p. 218; Ineshin and Tetenkin, 2017, p. 252). This type is also characteristic of a number of sites of the Dyuktai culture of Yakutia, in particular, the Khaiyrgas Cave site, located 310 km to the northeast (Mochanov, 1977, pp. 28.10, 28.11; Stepanov et al., 2003, fig. 5.13, 5.14). The set of bone tools of the Bol'shoi Yakor' consists of slotted points, blunt points, a harpoon, mallet, and needles (Fig. 6.-*10–13*). Graphite artifacts represent sign-symbolic activity.

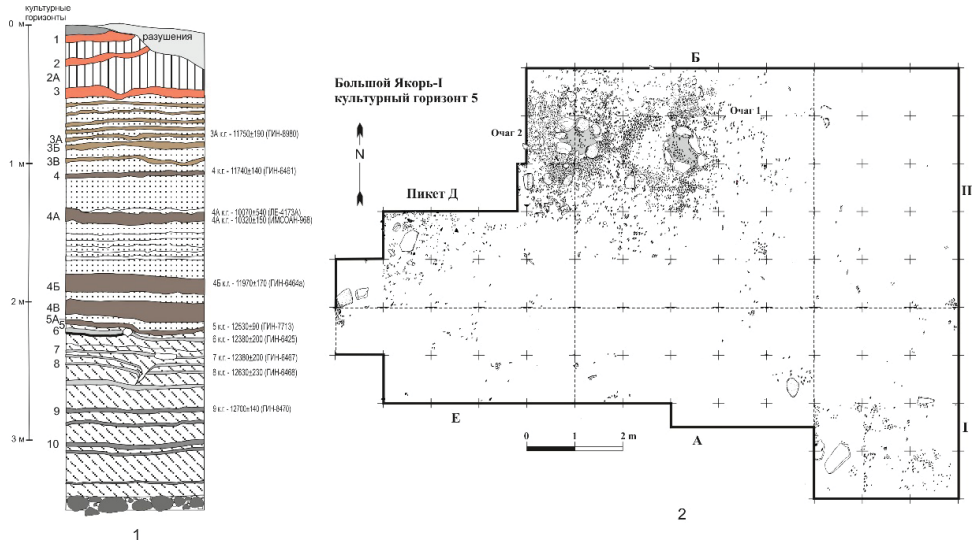


Fig. 5. Bol'shoi Yakor'-I site: 1 — stratigraphy,
2 — plan of the cultural horizon 5 (after: Ineshin, Tetenkin, 2010, with changes).

Рис. 5. Стоянка Большой Якорь-I: 1 — стратиграфическая колонка,
2 — план 5-го культурного горизонта (по: Инешин Е.М., Тетенькин А.В., 2010, с изменениями)

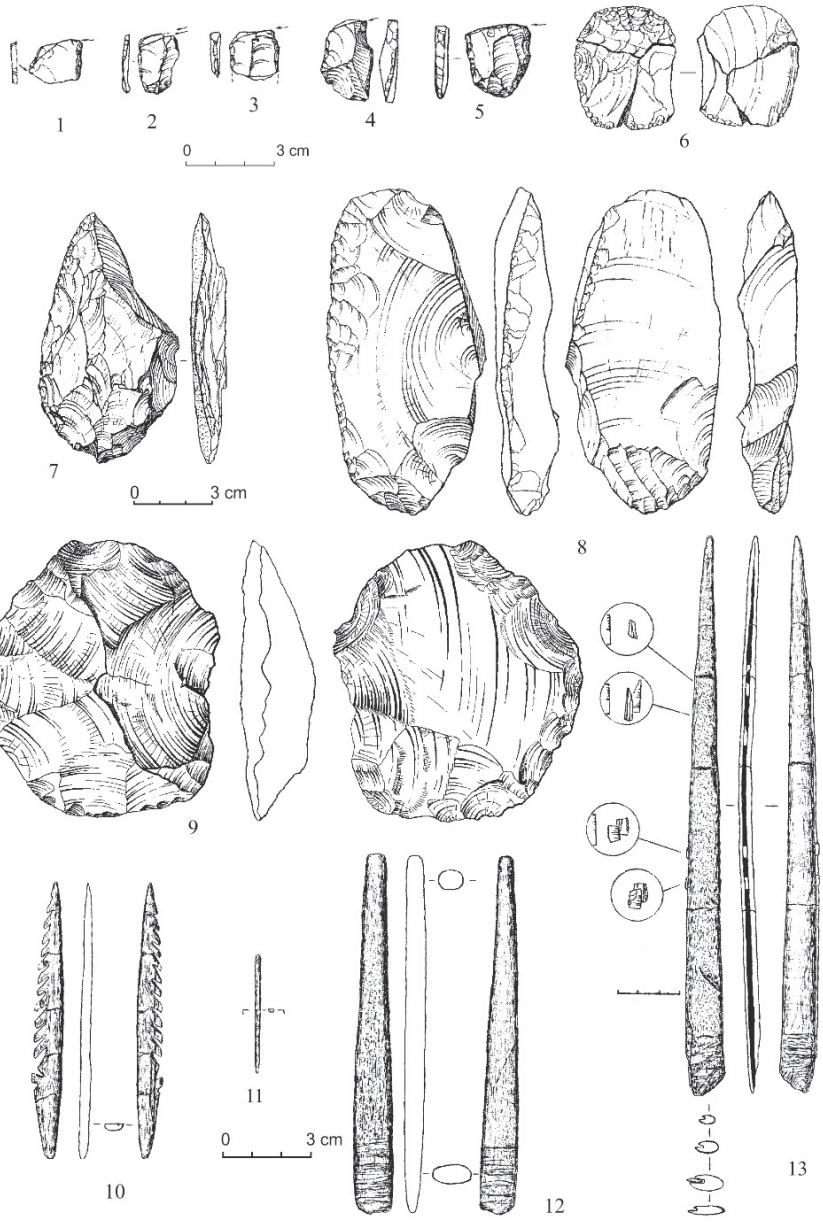


Fig. 6. Bol'shoi Yakor'-I site, cultural horizon 7 – 1–5, c.h. 5 – 6, 8, c.h. 6 – 9–13; 1–5 – transversal burins, 6 – end-scraper, 7, 8 – side-scrapers, 9 – discoid core, 10 – barbed harpoon, 11 – bone needle, 12 – bone blunted point, 13 – slotted point (after: Ineshin, Tetenkin, 2011)

Рис. 6. Стоянка Большой Якорь-I: 1–5 – 7-й культурный горизонт, 6 – 5-й культурный горизонт, 9–13 – 6-й культурный горизонт; 1–5 – трансверсальные резцы, 6 – скребок, 7, 8 – скребла, 9 – дисковидный нуклеус, 10 – гарпун, 11 – игла, 12 – затупленный наконечник, 13 – вкладышевый наконечник (по: Ineshin, Tetenkin, 2011)

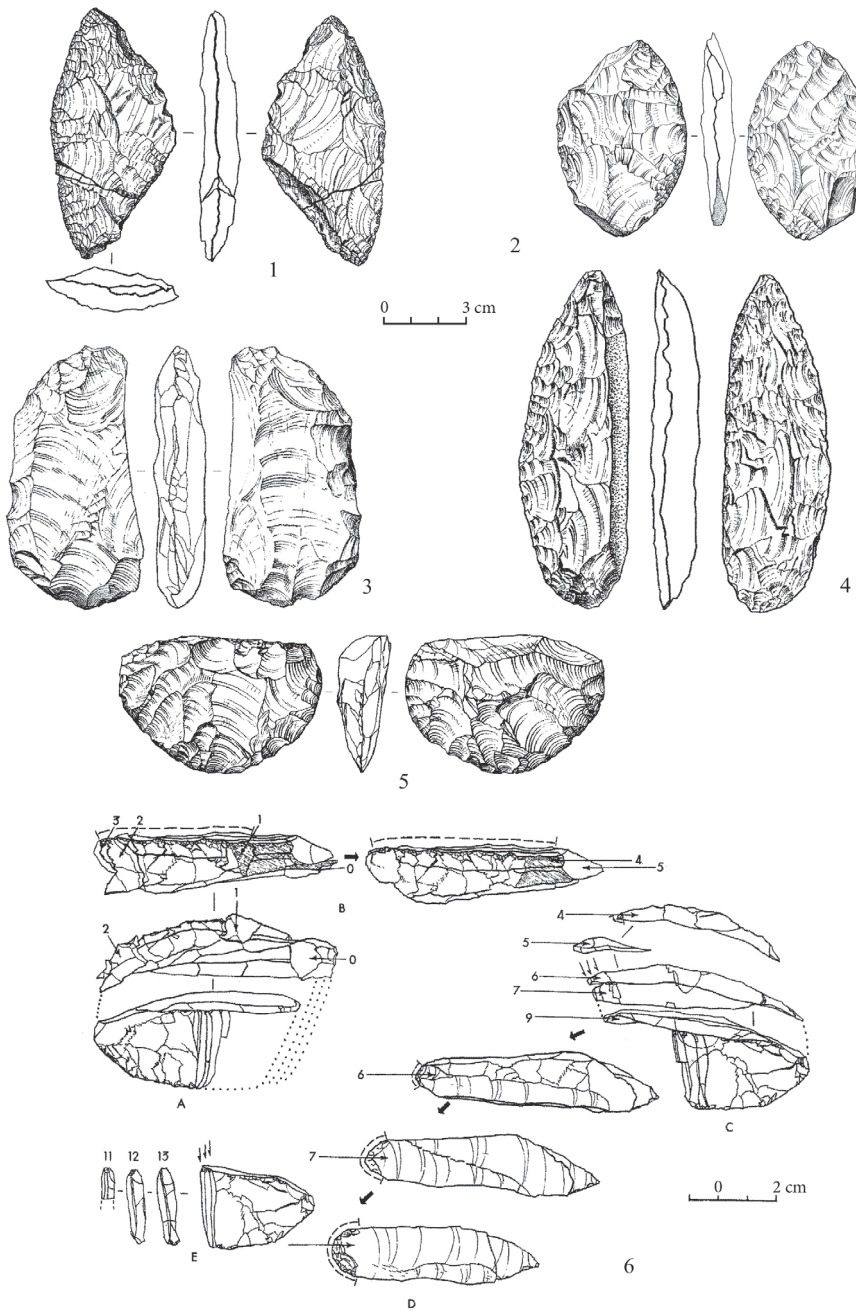


Fig. 7. Bol'shoi Yakor'-I site, cultural horizon 6 – 1–5, c.h. 3B – 6; 1–5 – bifaces, 6 – refitting block of the biface – wedge-shaped microcore (after: Ineshin, Tetenkin, 2011)

Рис. 7. Стоянка Большой Якорь-I, к.г. 6 – 1–5, к.г. 3B – 6; 1–5 – бифасы, 6 – аппликационный блок бифаса – клиновидного микронуклеуса (по: Ineshin, Tetenkin, 2011)

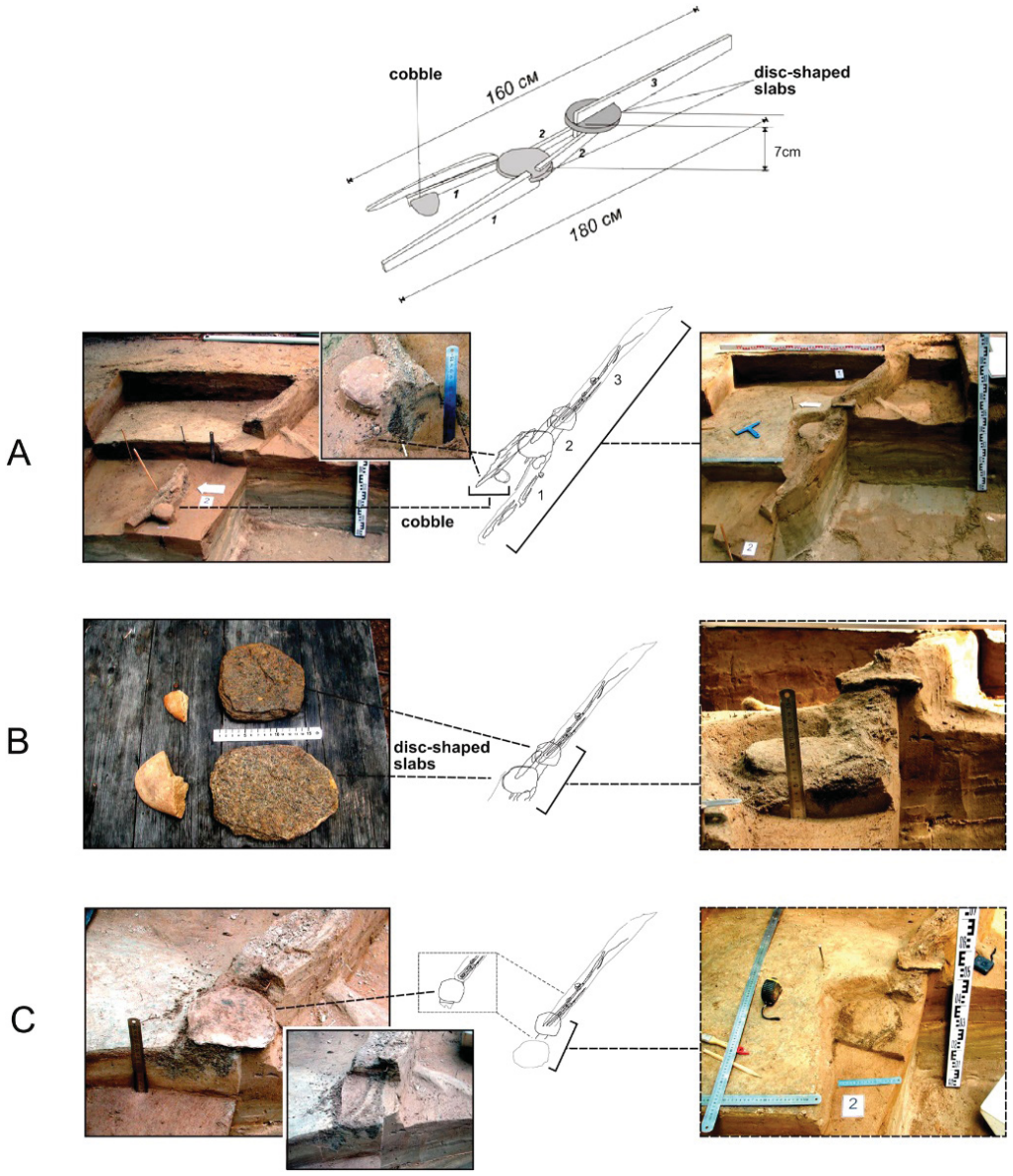


Fig. 8. Kovrizhka-III site. Composite graphic showing the slab feature from the upper level of cultural horizon 2: top and center column. Schematic diagrams of the Y-shaped slab feature: (A, left) photo of gneiss slab embedded in sediment and supported by cobble; (A, right) photo of entire feature in situ partially covered by alluvial lens; (B, left) photo of manufactured disc-shaped oval gneiss slabs and cobble pieces used to support slabs; (B, right) photo of disc-shaped slabs in situ showing vertical displacement; (C, left) photo of upper disc-shaped slab exposed in situ showing cross-sections of decomposed linear slabs arranged in an interlocking position (inset); (C, right) photo of upper disc-shaped slab in situ, alluvial lens to the left, and sediment beneath lower disc shaped slab (after: Teten'kin, Smith, Henry, 2016)

Рис. 8. Стоянка Ковpижка-III. Графические рисунки показывают конструкцию из плит из верхнего уровня 2-го культурного горизонта: вверху и центральная колонка. Схематические диаграммы Y-образной плиты: (A, слева) фотография гнейсовой плиты, погруженной в отложения и поддерживаемой галькой; (A, справа) фотография всего объекта на месте, частично перекрытого аллювиальной линзой; (B, слева) фотография изготовленных дискообразных овальных гнейсовых плит и кусков гальки, используемых для поддержки плит; (B, справа) фотография дискообразных плит на месте, показывающая разные по вертикали уровни вложения; (C, слева) фотография верхней дискообразной плиты, обнаженной на месте, показывающая поперечные сечения разложившихся линейных плит, расположенных в сцепленном положении (врезка); (C, справа) фотография верхней дискообразной плиты на месте, аллювиальная линза слева и отложения под нижней дискообразной плитой

The lithic assemblage of Bol'shoi Yakor'-I is attributed to the Duktai culture of Yakutia and the Verkhholenskaya culture of the southwestern Baikal region (Belousov et al., 1990; Ineshin, Tetenkin, 2010, 2017). In the Northern Baikal region, the closest analogues to the Bol'shoi Yakor'-I cultural complex were found in the 2nd and 1st consolidated pre-Neolithic horizons of Kurla-I–III in Northern Baikal, chronologically somewhat earlier (Shmygun, 1981; Molchanov G.N., Molchanov D.N., Lipnina, 2019), as well as in the lithic industry of 8, 8a and 7 cultural horizons of Ust'-Karenga-I–XVI on Upper Vitim (Vetrov, 2011). Within the framework of the local typological systematics of the assemblages of the Lower Vitim, the lower cultural horizons were combined into a group of assemblages of the "Bol'shoi Yakor' Type" (Tetenkin, 2011).

Close in age to Bol'shoi Yakor'-I is the Avdeikha site (Mochanov, 1975; 1977; Mochanov and Fedoseeva, 1996). However, it demonstrates, although Duktai in appearance, but different in typological specific industry. Its inhabitants were familiar with the method of Yubetsu, but the wedge-shaped cores of the Kovrizhka method of preparation dominate. Transversal burins are rare. Angled burins made of randomly shaped flakes predominate. This type of industry was designated as "assemblages of the Avdeikha Type" (Tetenkin, 2011).

In the final Pleistocene, at a somewhat later time, ca. 13.5–12.2 Kyr BP there were 2, 3 c.h. in the Kovrizhka-III site (Tetenkin, 2016). In the 2 c.h. the remains of hearths equipped with gneiss slab fragments were excavated, which are apparently a superposition of episodes of habitation at different times. A repeated phenomenon of the orientation of gneiss slabs in the southeast direction to an outstanding rock ledge on the horizon line on the opposite side of the Vitim River was revealed. The most complex construction of slabs had a Y-shape and was built using the methods of digging in, supporting with stones in a vertical position, and grooving horizontal and vertical elements (Fig. 8) (Tetenkin, 2016). "Key" stones had an artificial form of oval discs. For the first time in the Paleolithic of Eastern Siberia, we are talking about such an activity as the processing of building stone — gneiss slabs. The purpose of these structures is not clear. In the c.h. 2 in Kovrizhka-III site, pieces of volcanic pumice were found and it was established that it comes from the Udokan volcanic field, more than 500 km away from Kovrizhka along the river valleys (Demonterova et al., 2014). Following the data obtained on the transportation of ocher in the c.h. 6, 2G and 2B in Kovrizhka-IV, these materials mean the ability of the inhabitants to trip hundreds of kilometers to obtain specific mineral resources.

Lithic assemblages of c.h. 2 and 3 of Kovrizhka-III, combining the features of bifaces, microcores of the Kovrizhka Type, cores of parallel and radial principles of splitting the flakes,

end-scrapers, side-scrapers, burins, flakes with marginal retouching, and choppers, are assemblages of the Avdeikha Type (Fig. 9) (Tetenkin, 2016). A noticeable feature of c.h. 2 is macroblades up to 12 cm long (Fig. 9.-9).

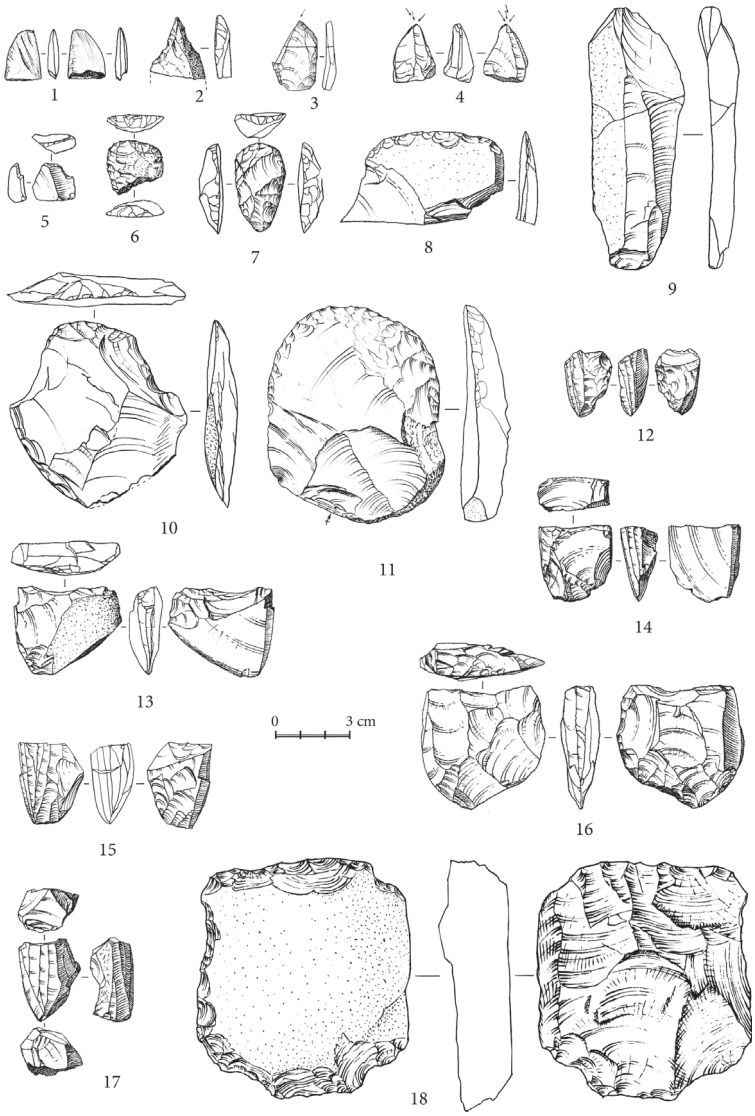


Fig. 9. Kovrizhka-III site, cultural horizon 2: 1 — graphite artifact, 2 — perforator, 3, 4 — burins, 5–7, 9 — end-scrapers, 8, 10, 11 — side-scrapers, 9 — blade, 12–17 — microblade cores, 18 — core (after: Tetenkin, 2014)

Рис. 9. Стоянка Ковpижка-III, культурный горизонт 2: 1 — графитовый артефакт, 2 — провертка, 3, 4 — резцы, 5–7, 9 — скребки, 8, 10, 11 — скребла, 9 — пластина, 12–17 — микронуклеусы, 18 — нуклеус (по: Тетенькин, 2014)

Paleoenvironmental Context and Settling

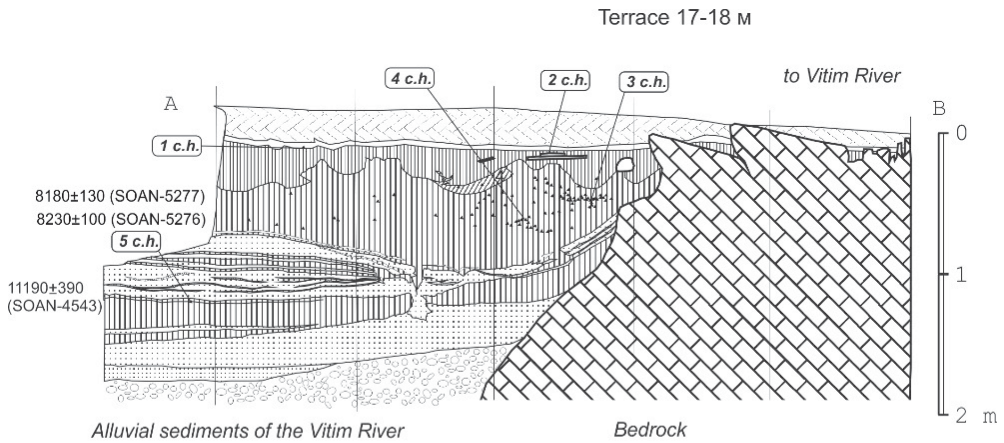
The taphonomic conditions of the Kovrizhka-IV site, unfortunately, hinder the satisfactory preservation of the bone. Only a snow sheep (*Ovis Nivicola*) was identified by teeth in several cases, and in a single case, an elk (Tetenkin, Anri, Klementiev, 2017, p. 48). However, the good preservation of charcoal made it possible to conduct anthracological studies, which established the nature of the landscape as a forest-tundra with a predominance of shrub willow in forest vegetation, in combination with dwarf birch, larch, and juniper in the form of isolated local areas of forest vegetation (Henry et al., 2018).

Radiocarbon dating of the 12 lower horizons of Kovrizhka-IV determined their age to be 19–18 kyr BP, which corresponds to the end of the LGM (Bezrukova et al., 2010, p. 194). However, two dates ca. 35 Kyr BP for the c.h. 2G and the date ca. 22 Kyr BP for c.h. 3/2 for charcoal suggest that the inhabitants probably also used ancient wood which could have been brought by a river flood. The position of the site immediately behind the steep cliff of Cape Kovrizhka indicates not only that the possibility of shelter in the wind and water shade was used, but, probably, the cape was also used for hunting purposes, since, in fact, it is a "bottleneck" in the valley. The location of the site features right on the sandy beach near the edge indicates a flood-safe season from autumn to spring, and a conclusion about the winter season made on the data of the animals teeth from c.h. 6 and 2B (Tetenkin, Henry, Klement'ev, 2017, p. 48; Tetenkin et al., 2016, p. 15).

The paleontological composition of the Bol'shoi Yakor'-I collection gave rich ideas about the paleo environment and hunting activity of people (Ineshin and Tetenkin, 2010, pp. 95–103; Ineshin and Tetenkin, 2017, pp. 105–113). The combination of such species as horse, bison, musk ox, snow sheep and elk, sable, wolf indicates a mosaic, mainly tundra-steppe cold landscape with isolated areas of forest near-valley vegetation. The range of certain fauna allows reconstructing the trade as non-specialized hunting for large animals — seasonal hunting and carrying away, and life support at the site itself due to the hunting of small species — hare, arctic fox, fish, and birds. Based on seasonal determinations made by the teeth of animals a part of the horizons are attributed to late autumn — early winter, and another part — to early spring (Ineshin and Tetenkin, 2010, p. 233; Ineshin and Tetenkin, 2017, p. 267). The site features of Bol'shoi Yakor'-I were located on the beach cape (now it's a 15-m terrace), i.e., like Kovrizhka-IV, at the bottom of the valley. On the contrary, Kovrizhka-III is located 7–8 m above Bol'shoi Yakor'-I (22-m terrace), in a place that is safer from floods. It can be assumed that this is due to the summer time of habitation.

Site Living Features

The hearth and the accumulation of cultural remains near it are the main planigraphic structural unit of the LUP sites of the Lower Vitim. Of the four such features excavated at Kovrizhka-IV in c.h. 2B, 2D, 3/2, and 6, three ones were identified as the remains of dwellings (Fig. 3.-*1*) (Tetenkin, Henry and Klement'ev, 2017; Tetenkin et al., 2021). In the c.h. 6 selectivity in the choice of stones for the building of a dwelling found expression in four pairs of rounded boulders and an unrounded slab. The most important distinctive feature of Kovrizhka-IV, unique for the Northern Baikal region, is the widespread use of ocher up to the coloring of the hearth space (Tetenkin et al., 2020).



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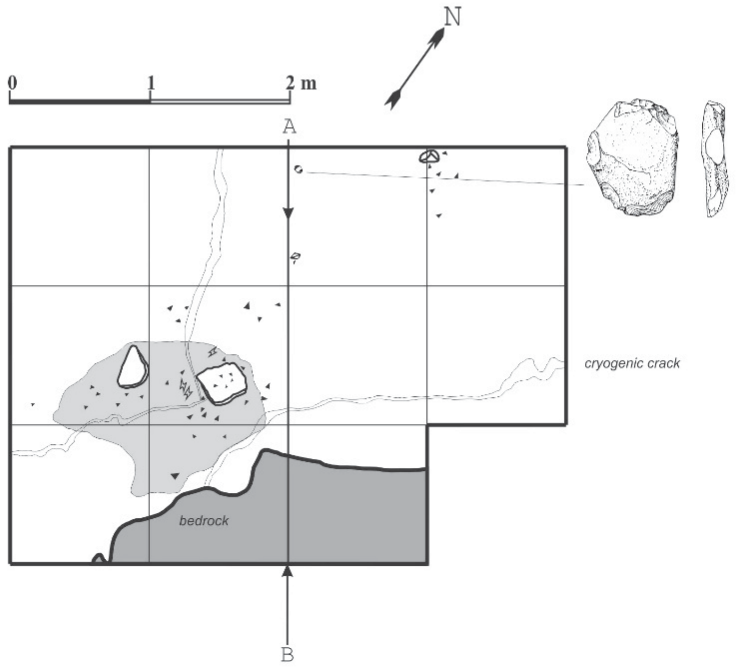

2

Fig. 10. Kovrizhka-II site: 1 – stratigraphic profile, 2 – plan of the hearth of cultural level 5 (after: Tetenkin, 2010, with changes)

Рис. 10. Стоянка Коврижка-II: 1 - стратиграфический профиль А–В, 2 – план очага 5 культурного горизонта (по: Тетенькин, 2010, с изменениями)

At Bol'shoi Yakor'-I, the planigraphy of cultural horizons contains various examples of hearth complexes. In several cases, patterns of doubled (paired) hearths were recorded, reconstructed as both belong to a single episode of habitation (Fig. 5.-*2*). Perhaps this was a certain characteristic method of heating, spending the night, but there are no distinguished structural features of dwellings. In three horizons 3B, 7, and 8, however, light dwellings are still identified due to the limits of the areas of the accumulations of artifacts (Ineshin, Tetenkin, 2010, pp. 115, 133, 197; Ineshin, Tetenkin, 2017, pp. 126–127, 145, 228). Both on Kovrizhka-IV and on Bol'shoi Yakor'-I, hearth stones were heated on a fire, not only in the form of single stones, or several along the perimeter, but also in the form of special buildings. In these cases, we find the existed technology of heat accumulation and long-term heating of the hearth space.

On Kovrizhka-III, linear buildings made of gneiss slabs became an individual feature (Fig. 8). The study of the most complex of them, the Y-shaped building, showed that some of its elements had artificial contours and dimensions (Tetenkin, 2016, pp. 279–282; Teten'kin, Smith, Henry, 2016). In fact, this brings us into a completely new field of activity in the processing of stone building materials.

On Kovrizhka-II, in cultural horizon 5, ca. 13,0 Kyr BP, a hearth with two gneiss slabs lying on charcoals was found near a rocky outcrop. The residual outcrop played the role of a wind and visual shelter from the side of the Vitim River (Fig. 10) (Tetenkin, 2010, p. 81).

Lithic Production

In the LUP of Lower Vitim, the technology of microblade production — the splitting of wedge-shaped cores was being developed. The technique of slotted insert tools is associated with it. They constitute, so called, progressive part of the assemblages, the background for which is the production of stone tools from spalls and flakes, large blades of the Upper Paleolithic appearance, in general, but also with some preserved more archaic elements.

The leading for the Bol'shoi Yakor'-I concentrations Yubetsu technique was known to the inhabitants of Kovrizhka-IV. Ski-spalls were found in three of its horizons 2B, 4 and 5 (Fig. 3.-*14*). Bifaces, although not such expressive as on Bol'shoi Yakor'-I, on Kovrizhka-IV are undoubtedly a significant part. Most of its wedge-shaped cores are made of bifaces. Large, well-finished tools are characterized by bifacial processing of the edges (Fig. 3.-*5, 18, 20*). Obvious analogies with Bol'shoi Yakor'-I are also found in end-scrapers made from short flakes. Among the differences, one should mention the absence of chisel-shaped *pièce esquillée* tools on Bol'shoi Yakor'-I, and the absence of transversal burins on Kovrizhka-IV. Macroblades of Kovrizhka-IV, found in cultural horizons 3/2, 3B, can be compared with macroblades of c.h. 2 Kovrizhka-III, on the Bol'shoi Yakor'-I there are no analogues for them.

The method of preparation of the wedge-shaped core, well presented on Kovrizhka-IV, and designated as "Kovrizhka Method" (Fig. 4), was used in the industry of Avdeikha and Kovrizhka-III sites. Assemblages of the Avdeikha Type and the Bol'shoi Yakor' Type make antithesis to each other based on the general Duktay/LUP background. As an explanation for the differences in the techniques of the wedge-shaped microcore, the idea of the Kovrizhka method of its preparation, renewal, and reshaping, which is more flexible exploitation of microcores, and the Yubetsu-Bol'shoi Yakor' method aimed more at the flexible exploitation of the biface, rather than the core, were proposed (Tetenkin, 2017a). Functional factors (economic, raw material, seasonal) are proposed as reasons for the variability. On Kovrizh-

ka-IV, this opposition is removed by the presence of the Yubetsu technique, albeit in a minority in relation to the Kovrizhka microcore technique. This circumstance reinforces the thesis that the presence or absence of Yubetsu in the LUP assemblages of the Lower Vitim was due to functional reasons. From Kovrizhka-IV to Bol'shoi Yakor'-I and Kovrizhka-III, the composition of stone raw materials remained unchanged: mainly effusive rocks, with a minority of argillite, quartz, and graphite, from which "crayons", "powder boxes" and pendants are made. In the case of the c.h. 2G of Kovrizhka 4, with an extremely small number of stone debitage, more than half of all artifacts were from quartz. As a result, the general appearance of this horizon has received a significant difference: there are no wedge-shaped and flake cores, microblades, side-scrapers characteristic of LUP (Tetenkin et al., 2021). According to the combination of indirect planigraphic and litho-technological features for the c.h. 2G the winter season for this complex and the snow cover are proposed as the reason for the quantitative and petrographic limitations of the lithic industry. During the Early Holocene the lithic raw material situation changes dramatically with the appearance of sites with an industry of microblade pressure of prismatic chert cores (sites Bol'shaya Severnaya, Invalidny-III — locations 2, 3, Pavlova, etc.), while the sites of a Paleolithic appearance based on the effusive, and argillite sources also existed (sites Kovrizhka-II — c.h. 1–4A, Invalidny-III — location 1) (Ineshin and Tetenkin, 2005; Tetenkin, 2018).

The Inhabitants' Mobility

Reconstructions of population mobility should consider the limiting factor of the presence of glaciers in the Baikal-Patom highland and Stanovoy upland (Margold et al., 2016). The ability of ancient inhabitants to obtain resources from remote sources is reconstructed by studying exotic mineral rocks such as hematite (ocher), brown argillite, volcanic pumice (Demonterova et al., 2014; Tetenkin, Vetrov, Demonterova et al., 2018; Tetenkin, Zhmur, Demonterova et al., 2018). For Kovrizhka-IV, c.h. 6 and 2B, it was found that some flakes and preforms were brought to the site along with ocher; these artifacts bear traces of contact with it. Based on the materials of Bol'shoi Yakor'-I and Kovrizhka-IV, we reconstruct the transporting to the site of already processed bifaces. In addition, the absence of cores and the debitage of the production of single macroblades of Kovrizhka-IV and III also indicate their brining in site. The Vitim Valley was an important "natural corridor" for the mobility of people. Volcanic pumice stones were transported to Kovrizhka-III along the Vitim valley. The discovery of the LUP Niryakan site on the Mama River, left tributary of the Vitim River, indicates a people habitation of ca. 13.3 Kyr BP of the middle reaches of the Mama River and interior areas of the Baikal part of the Baikal-Patom Highlands in environment of the ongoing final stage of glaciation (Tetenkin, 2021, p. 18).

Sign-Symbolic Activity and Art

A unique feature of Kovrizhka-IV was the discovery of an anthropomorphic figurine from a mammoth tusk in c.h. 6 (Fig. 3.-*2*) (Tetenkin et al., 2018). In the c.h. 4h of Kovrizhka-IV a fragment of a graphite pendant was found (Fig. 3.-*3*). At Bol'shoi Yakor'-I and Kovrizhka-III various pieces of graphite were found with traces of abrasion and scraping, some of them were given the form of "crayons", "powder boxes" (Ineshin, Tetenkin, 2010, pp. 227–228). At least in some part of the cases, ocher on Kovrizhka-IV was used for sign and symbolic purposes. The found figurine had ocher spots on the "back of the head" and the front part of the "body".

Another conditionally anthropomorphic tusk figure had several pieces of ocher at the "head" (c.h. 6). And the discovery of a large piece of ocher together with a split tubular bone at the edge of the hearth in the c.h. 2B suggests its role in the ritual with a hearth (Tetenkin, Demonterova, Kaneva et al., 2020, fig. 3.k, 3.c). At Bol'shoi Yakor'-I, in c.h. 4A, a flat pebble with traces of rubbing ocher (palette) was found (Ineshin, Tetenkin, 2010, fig. 6.68).

Conclusions

The LUP sites of the Lower Vitim, of course, were a cultural - an adaptive response to environment. The main sites Bol'shoi Yakor'-I, and Kovrizhka-III, IV characterize the time of 19–12 Kyr BP in such aspects as choosing a place for settlement, building of dwellings and shelters, organization of living space, hunting, exploitation of mineral resources, sign-symbolic activity and art. A further strategy for studying them is aimed precisely at a comprehensive, multifaceted lightning of the culture and life of the population of the Late Upper Paleolithic.

The question of the cultural and genetic connection between the early and late stages of the LUP of the Lower Vitim should be discussed, first of all, on the basis of the most massive data — stone debitage. Both Kovrizhka-IV and Bol'shoi Yakor'-I have lithic assemblages in general of a similar LUP appearance. The Kovrizhka method for preparing the wedge-shaped microcore continued in the final Sartan — Early Holocene. The Yubetsu technique characteristic of Bol'shoi Yakor'-I, although singly, was encountered already at an early stage, on Kovrizhka-IV. The expressive series of chisel-like *piece esquillee* tools were not represented at a later stage. Bifaces with an oblique butt and transversal burins, markers for Bol'shoi Yakor'-I, are not typical for Kovrizhka-IV. Scrapers, unfacial scraper-like tools with a bifacial retouching made from large blades and flakes are presented both on Kovrizhka I and Bol'shoi Yakor'-I. The resource base of lithic production, including exotic rocks brought from remote sources, remains unchanged throughout the LUP. The disappearance of some artifacts and the appearance of new ones in the transition from an early stage to a late one is the nature of the development of the culture of lithic production while maintaining continuity of the rest of the set.

The planigraphic data of Kovrizhka-IV and Bol'shoi Yakor'-I lead us to the conclusion that the technical tradition of lining - strengthening the walls of the dwelling with stones was not revealed or was not developed at a later stage. As well as the use of ocher in the coloring of living space has not been developed. At the early and late stages of the LUP of Lower Vitim, both on Kovrizhka-IV and Bol'shoi Yakor'-I, the inhabitants laid stones on the hearths. Calcined, they were used as heat accumulators for heating a limited hearth or living space, possibly also for cooking. In the appearance of the lithic assemblages pronounced cultural indicators of extensive and resource-curation behavior (Bol'shoi Yakor'-I, Kovrizhka-III, IV), planning of operations and delayed consumption (multifunctional transported bifaces at Bol'shoi Yakor'-I and Kovrizhka-IV, bringing ocher from different, distant from each other sources to Kovrizhka-IV). Circumstances of seasonality, availability of lithic raw materials, food resources, duration of habitation, and landscape topics acted as control factors. The integrated vector of activity was determined within the framework of the principle of adaptive variability, which expresses the mobility of ancient people in the choice of current technological knowledge, techniques, methods in the available cultural arsenal (Ineshin, Tetenkin, 2000, p. 228). The most studied and informative sites of Kovrizhka-IV and Bol'shoi Yakor'-I provide a reference idea of the culture of the population of the Northern Baikal region, which find a cor-

relation response in most of the reference sites of the East Siberian Late Upper Paleolithic: Krasny Yar-I, Verkholenskaya Gora, Ust-Kyakhta-17, Studenoe-1, 2, Ust-Menza-1, 2, Sukhotino-4, Dyuktayskaya Cave, Ushki-I–VII and others (Medvedev, 1966; Aksenov, 1980; Tashak, 2005; Konstantinov, 1994; Moroz, 2014; Sukhotinsky…, 2016; Mochanov, 1977; Dikov, 1993). On these grounds, an overall judgment about the LUP culture of Lower Vitim is constructed as a judgment about a local variant of the East Siberian Late Upper Paleolithic cultural complex (Derevyanko, Markin, Vasiliev, 1994, p. 260; Vasiliev, 2002, p. 120; Pitulko, Pavlova, 2010, p. 74). The LUP cultural complex of Lower Vitim is largely representative of the population determined by DNA obtained from a tooth from cultural horizon 5 of the Khaiyrgas Cave site (the northern face of the Baikal-Patom Highlands, the Lena River, 310 km northeast of Kovrizhka-IV and Bol'shoi Yakor'-I), ca. 16.7 Kyr BP (Kilinç et al., 2021). The typological similarities in lithic assemblage and dwelling features with the Studenoe culture, visible at Kovrizhka-IV at an early stage of the LUP, may be the result of cultural transmission from South Transbaikalia to Vitim basin.

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