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Study of stone tools from the settlement of Baiterek 1*

This article discusses stone tools found during exploration on the territory of the Talgar district of the Almaty region. Stone tools were collected from the surface of the emergency site – the settlement of Baiterek 1. Despite the small number of tools, information was obtained about the presence of various economic sectors in the settlement. Using the traceological method, the typology and functional purpose of stone tools were determined.

Keywords: site, Early Iron Age, trace study, stone tools, function, wear, micro-macrolinear traces

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Бәйтерек 1 қонысынан табылған тас құралдарын зерттеу

Мақалада Алматы облысы, Талғар ауданына жасалған барлау кезінде табылған тас құралдары қарастырылған. Тас құралдар апаттық жағдайдағы ескерткіш болып табылатын Байтерек 1 қонысынан жинап алынған. Құралдардың аздығына қарамастан олар қоныста әртүрлі шаруашылық түрлерінің болғанын көрсетеді. Трасология әдісінің көмегімен тас құралдарының функциясы мен түрлері анықталды.

Түйін сөздер: ескерткіш, ерте темір ғасыры, трасология, тас құрал, функция, тозу белгілері, микро-макро іздер

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Изучение каменных орудий с поселения Байтерек 1

В статье рассматриваются каменные орудия, найденные во время разведки на территории Талгарского района Алматинской области. Орудия из камня собраны с поверхности аварийного памятника – поселение Байтерек 1. Несмотря на небольшое количество орудий, была получена информация о наличии разных хозяйственных отраслей на поселении. С применением трасологического метода были определены типология и функциональное назначение каменных орудий.

Ключевые слова: памятник, ранний железный век, трасология, каменные орудия, функция, износ, микро-макролинейные следы

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The Baiterek 1 settlement is an emergency archaeological site. It is located on the territory homonymous rural district in the Talgar district of the Almaty region. The monument was opened by local historian A. Shatokhin, who reported that he found fragments of ceramic vessels, stone and metal tools among the dumps at the site prepared for the construction of the plant [Zhambulatov et al. 2022: 58].

The researchers of the Margulan Institute of Archaeology visited the site in order to establish the historical and cultural affiliation, boundaries and degree of destruction of the monument through visual inspection and laying pits. As a result, it was found that the monument was almost completely destroyed. Particularly affected was its western half, where the upper cultural layer was removed by 'heavy' techniques. The eastern half of the monument was plowed up. However, trench nr. 2, excavated in the lower layers, revealed an undisturbed archaeological layer.

By the scientific staff, a surface collection of artifacts was conducted in the deteriorating western part of the settlement, with each item mapped onto a schematic plan: fragments of ceramic and metalware, tools made of stone and metal, and weaponry items. A separate article is devoted to the arrowheads found at the settlement [Zhambulatov et al. 2022: 69]. Based on these data, the Baiterek 1 settlement can be attributed to the 6th–3rd centuries BC.

«Full-scale archaeological excavations at the settlement were not conducted. However, interesting material was obtained, revealing the characteristics of the economy and military affairs of the population of the Saka tribes in the Zhetysu region.

During the surface reconnaissance of the archaeological layer, 13 stone tools were collected. In laboratory conditions, they were washed and sorted. Stone tools with wear on the working surface were identified. Traceological analysis was conducted using the ZEISS SteREO DiscoveryV8 stereoscopic microscope, with magnification of up to 200×.

The traceological method makes it possible to explain the functional purpose of the tools and obtain complete information about the significance of the tools used. This method is based on a complex study of micro- and macro-features, as well as data obtained from morphology and technical and technological analysis [Semenov 1957: 19].

Based on the traceological analysis, the micro- and macro-coloring of the working blade was studied [Korobkova, Shchelinsky 1996: 3-4], the nature of the blade edge, the sharpening of the angle, the outline of the cross section, the polishing of the working surface and its intensity, linear traces and other surface features and their outlines, their locations, traces on the surface on the edges areas from friction of the hands and the handle, technical damage. When studying the cluster of traces on the surface of the tools from the Baiterek 1 settlement, linear traces, polishing and topography come to the fore.

The material was generalized and systematized, the functional purpose of the tools was revealed. The typology helps to reveal the properties of tools, to show the general trends in the development of the branch economy, to identify the local specifics of workshops in the settlement. The obtained data of functional analysis combined with interdisciplinary research make it possible to develop a reliable typological scheme of economic development in the Early Iron Age.

The materials used for making tools included various types of rock: granite, quartzite, diabase, sandstone. The methods of processing involved knapping, picketage, abrasive, and polishing techniques.

Smoothing tool (2 copies). The tool was initially used as a scraper for smoothing the roughness of metal. Traces of grinding and metal remnants are visible on the preserved work surface. The tool was reused as a scraper after disposal. There are linear macro- and micro-traces of bone planing on the blade. It was made of diabase of fine-grained structure, homogeneous massive texture. The height is 5.7 cm, the width of the working part is 7.5 cm, the thickness is 2.4 cm (Fig. 1, 7). The second ironer is elongated oval in shape, made of granite. The tool was processed by the method of sheeting, picketage technique. Metal remnants, scuff marks, and small linear traces are visible on the work surface. The granite grains were not much erased, probably the tool served for a short time. Based on the results of the analysis, we can say that both planes of the tool were used. The length of the tool is 10.5 cm, width is 9.3 cm, thickness is 4.7 cm (Fig. 1, 4).

Abrasives were used for processing metal products (2 copies). The mineral basalt served as the raw material for the tools. The first feature of abrasive processing is related to the process of boring blades and surfaces of metal products. The blade is positioned across the longitudinal axis of the tool, forward and backward movement is also performed across the axis. The length of the tool is 4.6 cm, width 4.4 cm, thickness 2.4 cm (Fig. 1,

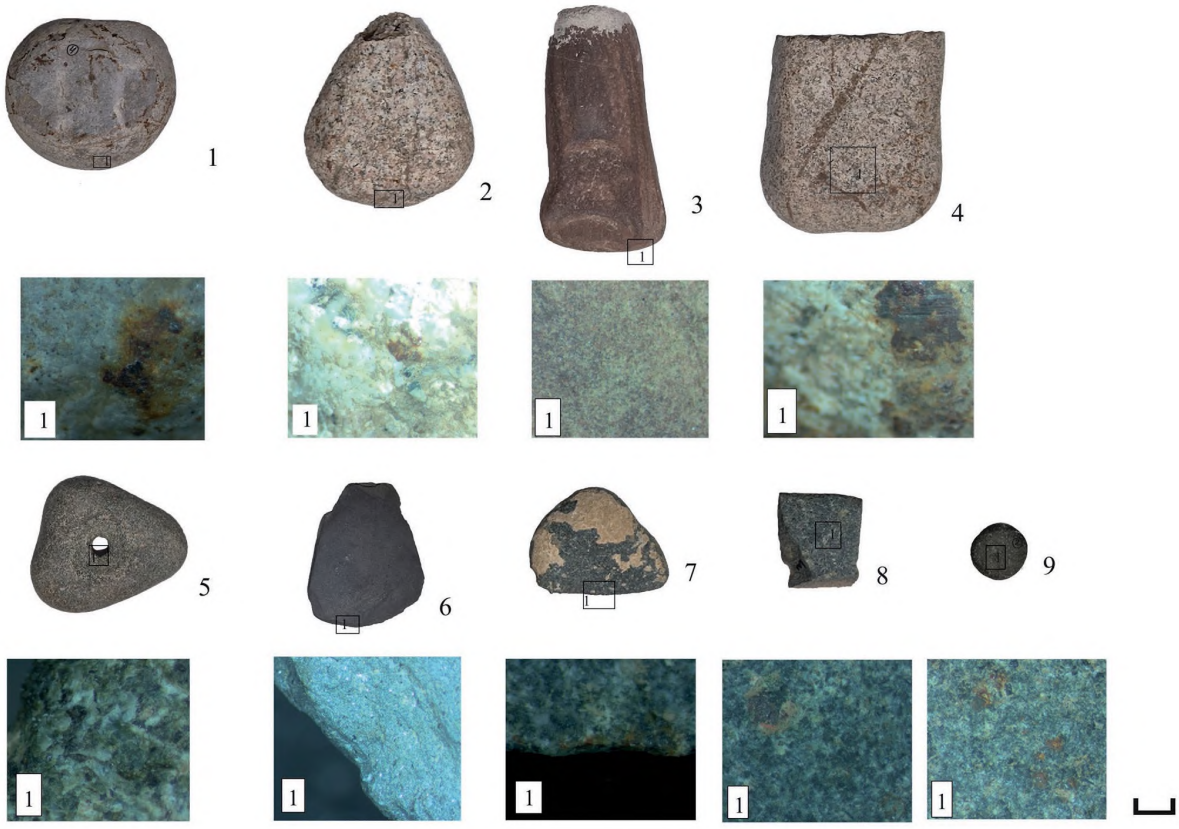


Fig. 1. Stone tools from the Baiterek 1 settlement
1-сур. Бәйтерек 1 қонысының тас құралдары
Рис. 1. Каменные орудия поселения Байтерек 1

8). Its flat part is used as an abrasive for sharpening metal products. There are traces of grinding and scuff marks on the work surface. The bulges of the basalt grains are highly sanded from constant use. Metal remains are visible on the surface of the tool. The second disc-shaped abrasive is also made of basalt. Both flat surfaces were used to correct metal products. The diameter of the tool is 3 cm, the thickness is 8 mm (Fig. 1, 9).

Grindstones (2 copies) are rounded and triangular in shape. Quartzite and granite are used for raw materials. The first grindstone is rounded in shape. Traces of wear are marked along the entire diameter, with a slope of 45 degrees (Fig. 1, 1). On the surface of the mineral, shallow notches with a diameter of 2-3.5 cm and a depth of 2 mm are visible. Metal remains are recorded on the flat and working surface, the tool was probably used in metalworking. Minor traces in the form of micro-depressions are visible on the work surface. On the second tool, the lower part was used as a working surface (Fig. 1, 2). Length – 10.2 cm, width – 8.7 cm, thickness – 4.5 cm. Traces of a soft shiny polish are visible on the work surface, partially covering the micro-relief but not penetrating the micro-indentations. The direction of polishing and linear traces characterize the kinematics of movement. The tool was used for grinding soft material. However, metal remains are found on the tool's surface. The technique of tool processing is as follows: the knapped edges were treated using picketage method to give shape to the tools.

The pestle (1 copy) is pear-shaped, made of brown fine-grained sandstone, massive (Fig. 1, 3). Arcuate notches of linear traces are marked on the working surface, which correspond to rotational movements during use. Traces of smoothness and shiny polishing of

the surface are visible. The work surface is damaged in places, probably it was thrown away due to wear. The pestle was made from a block of sandstone, having processed the upper part of the handle by the upholstery method and the picketage technique. The length of the tool is 12.8 cm, the width of the working part is 5.6 cm, the width of the handle is 4.7 cm, the thickness of the working part is 5.4 cm, the thickness of the handle is 4.3 cm. The nature of wear: linear traces of the impact of solid microparticles formed on the surface of the tool. The pestle is used for grinding grain. Such tools are found in the settlement of Butakty I [Yerzhanova et al. 2023: 69]. The inhabitants of the settlement of Butakty I used basalt rocks as raw materials for the manufacture of stone tools, and the inhabitants of the settlement of Baiterek 1 made a sandstone pestle. When using different types of stone, the technology and technique of processing tools are the same.

The mattock blank (1 copy). The tool is made of laminated slate tiles. The typological characteristic is a mattock with a grip. The technique of manufacturing the tool involves bilateral sharpening of the blade. Notching on the grips is done using the picketage technique, while the 'heel' of the tool remains untreated. The angle of retouching varies from 30 to 45 degrees. Numerous fractures and wide negative marks from impact on the bump suggest that the tool was used as a hammerstone. The length of the tool is 12.6 cm, the width of the working surface is 10 cm, the width of the upper part is 5.2 cm, the thickness is 1.4 cm. The blade shows rounding, indicating that the tool was not used in work (Fig. 1, 6).

The triangular loom weight of fine-grained basalt. It has a massive texture. The technique of making the tool involves picketage technique, flaking method to shape it. There is a through hole in the middle part. The hole is drilled on both sides. The diameter of the outer part of the hole is 4 cm, the reduced middle part is 1.2 cm. The hole is drilled with a stone drill, a circular line is visible from the inside of the hole. One surface of the tool is covered with a patina (mineral crust) (Fig. 1, 5). The length of the tool on three sides is 11.3×10×9.3 cm. There is a 4 mm deep notch on the rounded part of the hole, the width cannot be determined due to the chaotic friction of the rope. There are traces of abrasion on the surface of the groove. The tool was used as a weight, presumably in weaving.

During the analysis, it was possible to identify micro-macro traces characterizing a specific type of tools. It was the micro-macro traces that served as the methodological basis for determining the functional purpose of the stone tools from the Baiterek 1 settlement.

Based on the traceological analysis of tools, it becomes possible to identify existing domestic crafts, which, as the analysis shows, were characterized by comparative diversity. Traceological studies of the stone tools of the Baiterek 1 settlement allowed us to conclude that the inhabitants were engaged in traditional production, namely processing and dressing of leather, making ceramic ware, stone-working crafts.

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