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Bronze Age Settlements of the North-East Caspian Region[1]

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Тірек сөздер: археология; қола дәуірі; Солтүстік-Шығыс Каспий; қоныс; Тоқсанбай; Айтман; Маңайсор; архитектура; тұрғын-жай

Ключевые слова: археология; эпоха бронзы; Северо-Восточный Прикаспий; поселение; Токсанбай; Айтман; Манайсор; архитектура; жилище

The article deals with the study of the Bronze Age settlements of the Ustyurt Plateau (North-Eastern Caspian region). The work provides data illustrating the stages of studying ancient history monuments on the territory of the Ustyurt Plateau. More than a thousand years have passed from the first mentions of the Ustyurt Plateau in written sources to its comprehensive study. Scientific research conducted until the middle of the 20th century primarily concerned the study of climate, soils, geological exploration, and the possibility of economic development of land. The second half of the 20th century became a defining stage in the study of archaeological sets. The beginning of the 21st century brought several Bronze Age settlements to the treasury of archaeological sites – Toksanbay, Aitman, Manaysor. The work of the West Kazakhstan Archaeological Expedition of the Margulan Institute of Archaeology under the leadership of Zainolla Samashev and with the active participation of Antonina Ermolaeva and Lev Galkin, in fact, became a launching pad for the accumulation of archaeological material of this era. Thanks to the state strategic project "Cultural Heritage" in 2004-2009, a systematic study of these settlements was carried out. To obtain complete information, an integrated approach was used, involving specialists in related natural sciences. As a result of many years of research of the structural elements of dwellings, it was possible to study in detail the building materials used, analyze the methods of erecting a dwelling, elements of structures, the shape and size of the pit, the system of arrangement of post holes in the floor of the room, roofing techniques, which made it possible to reconstruct dwelling No. 2 of the Toksanbay Settlement. The obtained materials made it possible to identify the development of handicraft production, study the ritual practices of the settlement's inhabitants, and trace the adaptation options of the population to difficult natural and climatic conditions.
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Маңғыстау Үстіртіндегі (Солтүстік-Шығыс Каспий) қола дәуірінің қоныстары

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Мақала Маңғыстау Үстіртіне (Солтүстік-Шығыс Каспий) қола дәуірінде орныққан қоныстарға арналған. Еңбекте Үстірт аймағындағы ежелгі тарихи ескерткіштерді зерттеу сатыларын көрсететін мәліметтер келтірілген. Үстірт туралы жазба деректердегі алғашқы мағлұматтардан жан-жақты толыққанды зерттеулерге дейінгі арада мың жыл өтті. XX ғасырдың ортасына дейін жүргізілген ғылыми зерттеулер негізінен климат пен топырақ мәселесіне, геологиялық барлау және жер игеру мүмкіндіктеріне арналды. XX ғасырдың екінші жартысы археология ескерткіштерін зерттеудің жаңа сатысына айналды. XXI ғасырдың басы Тоқсанбай, Айтман, Маңайсор секілді қола дәуірінің бірнеше қоныстарын археология ескерткіштерінің тың санатына қосты. Антонина Ермолаева мен Лев Галкиннің белсе-

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не араласуымен Әлкей Марғұлан атындағы Археология институтының Зейнолла Самашев жетекшілік ететін Батыс Қазақстан археологиялық экспедициясы қола дәуірінің археологиялық материалдарын жинақтайтын старт-алаңға айналды. 2004-2009 жылдарға арналған "Мәдени мұра" мемлекеттік бағдарламаның арқасында аталған қоныстарға жоспарлы зерттеу жүргізілді. Толық ақпарат алу үшін жаратылыстану ғылымының мамандарын тартатын кешенді тәсіл қолданылды. Тұрғын-жай құрылымдарын көп жыл зерттеу нәтижесі ондағы құрылыс материалдарын, тұрғын-жай салу әдістерін, жертөле тұрпаты мен көлемін, еденге қағылған діңгектердің орын жүйесін егжей-тегжейлі анықтауға мүмкіндік берді. Мұның бәрін қалпына келтірілген №2 Тоқсанбай қонысынан көруге болады. Бұл материалдар қолөнердің даму деңгейін, қоныс тұрғындарының әдет-ғұрыптарын зерделеп, халықтың күрделі табиғи жағдайларға қалай бейімделгенін нақтырақ анықтауға ықпал етті.
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Поселения эпохи бронзы Северо-Восточного Прикаспия

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Статья посвящена исследованию поселений эпохи бронзы плато Устюрт (Северо-Восточный Прикаспий). В работе приводятся данные, иллюстрирующие этапы изучения памятников древней истории на территории плато Устюрт. От первых упоминаний о плато Устюрт в письменных источниках до его всестороннего изучения прошло более тысячи лет. Научные исследования, проводимые до середины XX века, прежде всего, касались изучения климата, почв, геологическая разведка, и возможность хозяйственного освоения земель. Вторая половина XX века стала определяющим этапом в изучении памятников археологии. Начало XXI века привнесло в копилку археологических памятников несколько поселений эпохи бронзы – Токсанбай, Айтман, Манайсор. Работы Западно-Казахстанской археологической экспедиции Института археологии имени Алькея Маргулана под руководством Зайноллы Самашева и при активном участии Антонины Ермолаевой и Льва Галкина, фактически стали стартовой площадкой для накопления археологического материала этой эпохи. Благодаря государственному стратегическому проекту «Культурное наследие» в 2004–2009 годах проводилось планомерное исследование этих поселений. Для получения полной информации применялся комплексный подход, с привлечением специалистов смежных естественно-научных дисциплин. В результате многолетних исследований конструктивных элементов жилищ, позволили детально изучить применяемые строительные материалы, проанализировать приемы возведения жилища, элементы сооружений, форму и размеры котлована, систему расположения столбовых отверстий в полу помещения, приемы возведения кровли, что сделало возможным реконструкцию жилища №2 поселения Токсанбай. Полученные материалы позволили выявить развитие ремесленного производства, исследовать ритуальные практики жителей поселения, проследить варианты адаптации населения к сложным природно-климатическим условиям.
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Introduction

Between the Aral and Caspian seas in the extreme northwest of Central Asia lies a massive desert plateau known as Ustyurt, which is separated from the surrounding territories of the Caspian, Aral and Qaraqum deserts by a winding line of steep and abrupt ledges called ‘chinks’. From a distance they resemble a chain of low mountains. Ustyurt is one of the most waterless and severe deserts with a landscape and climate typical of such Central Asian deserts as Betpakdala and Gobi. The climatic conditions of the region are severe. In the summer it is parched by heat, dust storms fly in, winters here are exceptionally cold and snowy. There is a sharp contrast between Ustyurt and the surrounding territories: the densely populated oases of the lower reaches of the Amu Darya and the climatically more humid coast of the Caspian Sea. The territories surrounding the plateau, even the vast semi-desert spaces that adjoin Ustyurt from the north, are more

populated in comparison. The geographical peculiarity of Ustyurt, which travelers imagined as a plateau with difficult to overcome cliffs, huge waterless plains, created its reputation as a gloomy, almost impassable desert.

History of scientific study of the Ustyurt Plateau

It has been over a thousand years since the first mention of the Ustyurt Plateau in written sources to its comprehensive study. Due to its extreme conditions, Ustyurt was rarely visited by scientific expeditions and travelers. The study of geology, climate, and soils was the primary focus of scientific research conducted until the mid-20th century. Direct archaeological research began after the Second World War. The desert plateau of today was once a densely populated region, according to a paradoxical scientific fact discovered by archaeological research in the 1990s. Various archaeological sites have been found here: sites, settlements, burial mounds, temples-sanctuaries, caravanserais and ancient settlements, which date from the Stone Age to the late Middle Ages. It was the second half of the 20th century that became the defining stage in the study of archaeological sites, including the Eneolithic-Bronze Age of the Caspian region. The beginning of the 21st century was marked by a new round of research into Bronze Age sites, for example, as many as five settlements: Toksanbay, Aitman, Manaysor I–III, discovered in the North Ustyurt region [Samashev et al. 1999: 49–69; Samashev et al. 2001a: 347–352], are dated to the second half of the 3rd – first half of the 2nd millennium BC. Research into these settlements has yielded interesting materials, allowing the discovery of a previously unknown type of archaeological culture and a unique type of human adaptation.

The work of the West Kazakhstan Archaeological Expedition of the Margulan Institute of Archaeology under the leadership of Zainolla Samashev and with the active participation of Lev Galkin and Antonina Ermolaeva marked the beginning of the period of accumulation of archaeological material from this era. The research was carried out in a comprehensive manner — with the involvement of specialists from related disciplines: soil science, palynology, zoology, traceology, ceramology and others. Science discovered a promising archaeological area where active development processes of the territory took place during the Eneolithic-Bronze Age, reflected in the historical past of the region [Loshakova 2020].

Characteristics of the Ustyurt Plateau

Within the study region, the Ustyurt Plateau is a remnant of a stratified arid denudation plain. Groundwater horizons have appeared on the surface because of the alternation of impermeable and permeable rocks. Groundwater is the only source of water supply for the territory, both in the past and in the present. The presence of aquifers is evidenced by springs that are still active at present [Viktorov 1971]. Wild animal trails lead to them even now.

The vegetation of Ustyurt is diverse. On the plateau and the causal plain, there is a rather variegated complex vegetation cover, in which communities of black boyalich, tasbiyurgun, white-earth wormwood, kokpek (*Atriplex cana*), black saxaul (*Haloxylon aphyllum*), curly grass (*Atraphaxis replicata*), bush bindweed, medium ephedra (*Ephedra intermedia*) and others predominate. According to researchers, more than 400 species of plants have been identified on the Ustyurt plateau, growing on seasonal pastures with a reserve of edible mass. These plant communities are suitable for grazing camels, horses and small cattle. According to experts, with rational use of these lands, they can provide forage all year round for up to 4 million heads of small cattle. The conducted research of soil scientists and paleobotanists with a high degree of probability characterize the bioclimatic conditions of soil formation of the period of existence of the settlement as close to modern ones. Thus, economic, cattle-breeding activity of man has been possible on Ustyurt since ancient times.

The saiga antelope, a unique steppe antelope, and the kulan were the main hunting objects for the ancient population, as well as today. The bones of these wild animals comprise most of the osteological material found at Toksanbay Settlement. It was interesting that the fossil bones of the kulan, a wild two-humped camel, and the goitered gazelle in the territory of the North-Eastern Caspian region were found for the first time at Toksanbay. This fact allows us to clarify and expand their habitat in the territory of modern-day Qazaqstán during ancient times. There are very few finds of bones belonging to a large bull and a horse. The horse bones come from different layers, and it is not yet possible to assert whether they belong to domestic or wild animals.

Among the fossilized bone remains of animals (saiga and goitered gazelle), a significant number of primordial bones were found, formed from cartilaginous rudiments at various stages of pregnancy. This means that the inhabitants of the settlement practiced hunting pregnant females in late autumn and winter. Seasonal migrations of the saiga from the north of Ustyurt to the south and back are due to the high snow cover in the northern part of the plateau in winter and pastures in its southern part that burn out from drought in summer. Having gone to the north of Ustyurt in spring, the saiga grazes there until winter, producing offspring, and then, in the fall, returns to its southern part.

When choosing the location of the settlements, the following was taken into account: availability of fresh water (springs are noted at the foot of the remnant on which the settlement is located); the presence of a gentle slope from the plateau, which made the path to the settlement easier not only for people, but also for wild animals; this made it possible to hunt near the settlement, at watering places and on the paths leading to them. An advantage in the event of an attack from outside was achieved by having a good view of the surrounding area.

Bronze Age settlements Toksanbay, Aitman and Manaysor 1–3

The Bronze Age settlements Toksanbay, Aitman and Manaysor 1-3, which will be discussed in this work, are localized in the territory of the North-Eastern Caspian region, along the edge of the chink, which stretches along the Shomishtykol sor (Beineu District, Mangistau Region) (Fig. 1). The settlements existed simultaneously in the 18th -17th centuries BC.

The Toksanbay Settlement occupies a landslide remnant on the slope of a cliff and has absolute heights of 118 m, a slope of 55–65° with a difference in height of 43 meters (Fig. 2). The Aitman Settlement is located 10 km to the south of Toksanbay and occupies a cape-shaped projection of the cliff (Fig. 3). Manaysor 1, 2, and 3 settlements are located 25 km to the north of Toksanbay, with separately located remnants (Fig. 4).

The study of settlement complexes in the North-Eastern Caspian region is the subject of several works, highlighting the results of field surveys and natural science studies, analyzing technical and technological aspects of ceramic materials, bone, and stone tools, that were recorded at settlements, ritual and sacrificial complexes, and dwelling reconstructions. [Samashev et al. 2001a: 347–352; Samashev et al. 2001b: 109–110; Samashev et al. 2004: 125–153; Samashev et al. 2007: 87–102; Shevnina, Loshakova 2017a: 216–222; Shevnina, Loshakova 2017b: 211–219; Loshakova 2022; Erzhanova, Loshakova 2022; [Loshakova, Usachuk 2023; Loshakova, Antonov 2023].

Initially, the Toksanbay Settlement, like Aitman Settlement, was located on a cape-shaped ledge of a cliff. As a result of destructive processes, the isthmus connecting the settlement with the platform disappeared, turning the cape-shaped ledge into an independent remnant-landslide. The settlements of Manaysor 1-3 were subjected to more global destruction compared to Aitman and Toksanbay. In fact, small fragments of masonry of the foundation of the walls of houses were noted in the settlements of Manaysor. However, from these insignificant remains of masonry,

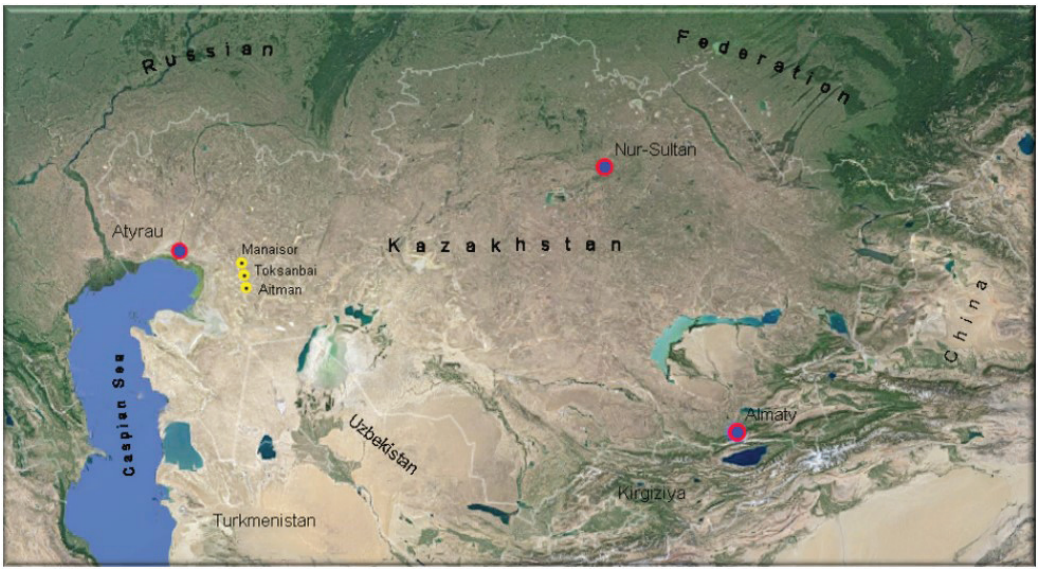

Fig. 1. Map of the location of Bronze Age settlements in North-Eastern Ustyurt. Artist: Bauyrzhan Besetayev.
1-сур. Солтүстік-Шығыс Үстірттегі қола дәуірі қоныстарының картасы. Картаны салған: Бауыржан Бесетаев.
Рис. 1. Карта расположения поселений эпохи бронзы Северо-Восточного Устюрта. Исполнитель: Бауыржан Бесетаев.

Fig. 2. Outlier on which the Toksanbay Settlement is located (view from the north). Photo: Vasily Sobolev.
2-сур. Тоқсанбай қонысы орналасқан орын (солтүстігінен қарағандағы көрінісі). Суретке түсірген: Василий Соболев.
Рис. 2. Останец, на котором расположено поселение Токсанбай (вид с севера). Фото: Василия Соболева

Fig. 3. Cape-shaped protrusion on which the Aitman Settlement is located (view from the south). Photo: Larisa Slovanovskaya.
3-сур. Айтман қонысы орналасқан шоқы (оңтүстігінен қарағандағы көрінісі). Суретке түсірген: Лариса Слованевская.
Рис. 3. Мысовидный выступ на котором расположено поселение Айтман (вид с юга). Фото: Лариса Слованевская.

Fig. 4. Outliers on which the Manaysor 1, and2 settlements are located. Photo: Tatyana Loshakova.
4-сур. Маңайсор қонысының орыны. 1,2. суреттерді түсірген: Татьяна Лошакова.
Рис. 4. Останцы на которых расположены поселения Манайсор 1,2. Фото: Татьяна Лошакова

it can be stated that the method of erecting structures is like those noted in the settlements of Aitman and Toksanbay.

Already at the first visual inspection of the Toksanbay Settlement, in the northern part, parts of structures were distinguishable, preserved fragments of walls and floors that literally hung over the cliff, clearly representing the principle of construction of premises, a stepped arrangement of structures. Dwelling No. 2 clearly demonstrates the method of erecting residential structures in the settlement. With its northern part, the building rested against the slope, and the opposite, lost one, was facing the cliff. *In situ*, the northwestern half of the dwelling and a corridor have been preserved (Fig. 5). In ancient times, the population, settling the space of the remnant, used its natural relief. People adapted the rounded natural depressions in the remnant, only deepening or leveling the surface in places, thereby forming a pit for the dwelling. The walls were erected as follows: along the side of the pit, massive flat slabs a meter or more high were installed vertically. On top of the vertical slabs, horizontal masonry was constructed from processed shell rock slabs, laid on top of each other. The rooms were heated by a hearth built into the floor. All cleared rooms in the settlement were constructed in the same way.

The Aitman Settlement is located on a cape-shaped ledge of a cliff and suffered less from natural and climatic influences. The cleared remains of stone structures consist of slabs installed and reinforced in various ways (Fig. 6). The dwellings were constructed according to the same principle as was previously described for the buildings of the Toksanbay Settlement. The Aitman Settlement differs from the formation of the living space at the Toksanbay by the presence of paired hearths. Utility pits, sometimes quite impressive in size, are noted at both settlements. Hearths with traces of prolonged exposure to high temperatures and a thick layer of ash are also present at both sites (Fig. 7, 9).

In the settlements, utility boxes were constructed from vertically installed slabs. The joints between the slabs were coated with a special solution that included clay, reed stems, and water from a freshwater reservoir [Loshakova, Gavrilov 2014]. Judging by the location of the post holes, it can be said that the boxes were located both outside the premises and inside them, as can be seen in the Toksanbay Settlement (Fig. 8, 10). When studying the filling of the boxes, the following were recorded: remains of sacrificial animal carcasses (dwelling No. 2 in the Toksanbay Settlement), filling with ash and small coals was noted in the boxes in both settlements.

When constructing the buildings, the climate, landscape, vegetation, and the availability of various building materials was considered. For example, shell limestone, a stone with unique heat-insulating properties, which was available in large quantities around, was used everywhere. Extracting and processing it did not require much labor. The developed stone house-building traditions that emerged in the settlement were due to the general level of economic development of the population and the climatic conditions of existence.

During the clearing of Dwelling No. 2 of the Toksanbay Settlement, post holes were noted in the floor, in which the remains of wood were fixed. As a result, it becomes known that saxaul, which grows in this region to this day, was used for the posts that supported the roof, as well as for the elements of the supporting structure of the roof [Loshakova, Antonov 2023]. The roof was constructed of reeds, thickets of which are found everywhere near springs located near settlements and at the present time. In addition, the thesis on the use of this material in the construction of the roof is confirmed by the remains of reeds, which were recorded during the clearing of the burnt layer on the floor of Dwelling No. 2. In addition, fragments of ash-sandy loam formation were noted on top of the burnt layer; this allows for the assumption that there was a thin layer of clay mortar with an admixture of ash in the roof structure, which was possibly applied on top of the reeds. Based on the obtained material, a reconstruction of Dwelling No. 2 of the Toksanbay Settlement was made [Loshakova, Antonov 2023] (Fig. 11).

a

b

Fig. 5. Toksanbay Settlement. Dwelling No. 2: a – part of the wall masonry preserved *in situ* (view from the east); b – northwestern wall of the dwelling. Photo: Tatyana Loshakova.

5-сур. Тоқсанбай қонысы. № 2 тұрғын-жай: a – қаланған қабырғаның сақталған бөлігі - in situ (шығыстан көрінісі); b – тұрғын-жайдың солтүстік-батыс қабырғасы. Суретке түсірген: Татьяна Лошакова.

Рис. 5. Поселение Токсанбай. Жилище № 2: a – сохранившаяся in situ часть стенной кладки (вид с востока); b – северо-западная стена жилища Фото: Татьяна Лошакова.

a

b

Fig. 6. Aitman Settlement. Dwelling No. 1. a – a part of wall masonry preserved *in situ* (view from the east); b – dwelling pit with fragments of hay structure (view from the south). Photo: Tatyana Loshakova.

6-сур. Айтман қонысы. № 1 тұрғын-жай. a – қаланған қабырғаның сақталған бөлігі - in situ (шығыстан көрінісі); b – тұрғын-жай шұқыры (оңтүстіктен көрінісі) Суретке түсірген: Татьяна Лошакова.

Рис. 6. Поселение Айтман. Жилище № 1. a – сохранившаяся in situ часть стенной кладки (вид с востока); b – котлован жилища с фрагментами сенной конструкции (вид с юга) Фото: Татьяна Лошакова.

a

b

Fig. 7. Toksanbay Settlement: a – hearth in Dwelling No. 2; b – hearth in Dwelling No. 4. Photo: Tatyana Loshakova.

7-сур. Тоқсанбай қонысы: a – №2 тұрғын-жайдағы ошақ; b – №4 тұрғын-жайдағы ошақ. Суретке түсірген: Татьяна Лошакова.

Рис. 7. Поселение Токсанбай: a – очаг в жилище № 2; b – очаг в жилище №4. Фото: Татьяна Лошакова

a

b

QazaqHistoricalReview

Fig. 8. Toksanbay Settlement: a – utility box in Dwelling No. 2; b – utility box in Dwelling No. 3. Photo: Tatyana Loshakova.

8-сур. Тоқсанбай қонысы: a – №2 тұрғын-жайдағы тұрмыстық жәшік; b – №3 тұрғын-жайдағы тұрмыстық жәшік. Суретке түсірген: Татьяна Лошакова.

Рис. 8. Поселение Токсанбай: a – хозяйственный ящик в жилище № 2; b – хозяйственный ящик в жилище №3. Фото: Татьяна Лошакова.

a

b

Fig. 9. Aitman Settlement: a – hearth in Dwelling No. 1; b – hearth in Dwelling No. 2. Photo: Tatyana Loshakova.

9-сур. Айтман қонысы: a – №1 тұрғын-жайдағы ошақ; b – №2 тұрғын-жайдағы ошақ. Суретке түсірген: Татьяна Лошакова.

Рис. 9. Поселение Айтман: a – очаг в жилище № 1; b – очаг в жилище №2. Фото: Татьяна Лошакова

Fig. 10. Aitman Settlement. Dwelling No. 3. Utility boxes. Photo: Tatyana Loshakova.
10-сур. Айтман қонысы. №3 тұрғын-жай. Тұрмыстық жәшіктер. Суретке түсірген: Татьяна Лошакова.
Рис. 10. Поселение Айтман. Жилище №3. Хозяйственные ящики. Фото: Татьяна Лошакова.

Craft production occupied significant niches in the production of leather goods, bone, stone, metal, etc.

The fact that metal products were actively cast in the settlement is evidenced by numerous traces of metallurgical production: metallurgical slag in the form of shapeless lumps, pieces and ingots of copper in the form of balls, droplets and cakes, fragments of crucibles (Fig. 12), pestles and mortars for crushing ore (Fig. 13), metal products were found in different parts of the settlement. In addition, on the northwestern slope, a dwelling is distinct because of the industrial nature of the material, which indicates metalworking. Fragments of clay crucibles and a smelter, a broken stone casting mold and a mortar found here indicate that copper products were cast and remelted in this dwelling. The inventory of bronze products is diverse. Among them are knives, awls, puncturers, and a punch. Of the three known flat double-edged knives, the most original form is that of a knife with a spatula-shaped blade and an oval point, which has been preserved almost completely. The handle of this knife is short and wide, expanding and rounded at the end, and flat in cross-section. The total length of this knife is 9.6 cm. Such identical knives of archaic form, except for Central Asia, are noted in sites of the European Steppe Bronze — the Yamna, Poltavka, and Catacomb cultures. It is known that knives of this type were widespread at the end of the 3rd - first half of the 2nd millennium BC, and by the middle of the 2nd millennium BC they fell out of use (Fig. 14).

The awls are of two types. The first type consisted of two double-edged awls, rectangular and square in cross-section with two working ends. The second, more complicated type is represented by two awls with one working end and a flattened handle. Both have a round working end and

Fig. 11. Three-dimensional reconstruction of the Toksanbay premises. View from the southeast. Computer processing by Mikhail Antonov.
11-сур. Тоқсанбай ғимаратының үш өлшемді реконструкциясы. Оңтүстік-Шығыстан қарағандағы көрінісі. Компьютермен өңдеген: Михаил Антонов.
Рис. 11. Трехмерная реконструкции помещения Токсанбай. Вид с юго-востока. Компьютерная обработка Михаил Антонов.

a square rod. The total length of the awl is 10 cm. The second awl, deformed, was 5.8 cm long. Four-sided awls with a flattened handle were common among the steppe tribes of Eurasia in the Andronovo period.

The punch has a massive four-sided rod, 9.6 cm long, tapering downwards (the end is broken off). In the upper part there is a wedge-shaped opening-sleeve, into which, apparently, a wooden handle was inserted [Samashev et al., 2001a: 109–110] (Fig. 15).

Despite the development of metallurgical production, flint tools and weapons: dart and arrowheads, drills, adzes, scrapers, were still widely used in the economy. The bulk of the tips were made using a complex technique of pressing retouching. This technique arose in the Mesolithic era. Chalcedonolites and quartzites were used as raw materials for making tools. Tools, and especially weapons, are characterized by perfect processing and manufacturing techniques. Judging by the quantity and quality of stone products, the stone industry in the settlement was mastered to perfection. During this period, the production of stone arrowheads and darts acquired a mass character (Fig. 16).

Limestone, shell limestone and sandstone were used to make “irons”, abrasive tiles, pestles, graters of various shapes, balls and chopping tools [Erzhanova, Loshakova 2022: 227–235] (Fig. 17).

Among the stone products, a grater stands out, one of the sides of which is decorated with a zoomorphic image, of a ram’s head, according to our assumption. In plan, the object is oval-shaped, one of the end faces of which is narrowed. The product has been preserved only halfway.

Fig. 12. Toksanbay Settlement. Crucible. Clay. Photo: Oleg Belyalov.
12-сур. Тоқсанбай қонысы. Тигель. Саз. Суретке түсірген: Олег Белялов.
Рис. 12. Поселение Токсанбай. Тигель. Глина. Фото: Олег Белялов.

Fig. 13. Toksanbay Settlement. Axe-hammer. Photo: Oleg Belyalov.
13-сур. Тоқсанбай қонысы. Балта-балға. Суретке түсірген: Олег Белялов.
Рис. 13. Поселение Токсанбай. Топор-молот. Фото: Олег Белялов.

Fig. 14. Toksanbay Settlement. Metal knives. Photo: Oleg Belyalov.
14-сур. Тоқсанбай қонысы. Металл пышақтар. Суретке түсірген: Олег Белялов.
Рис. 14. Поселение Токсанбай. Металлические ножи. Фото: Олег Белялов.

Fig. 15. Toksanbay Settlement. Metal punctures. Photo: Oleg Belyalov.
15-сур. Тоқсанбай қонысы. Металл біз. Суретке түсірген: Олег Белялов.
Рис. 15. Поселение Токсанбай. Проколки из металла. Фото: Олег Белялов.

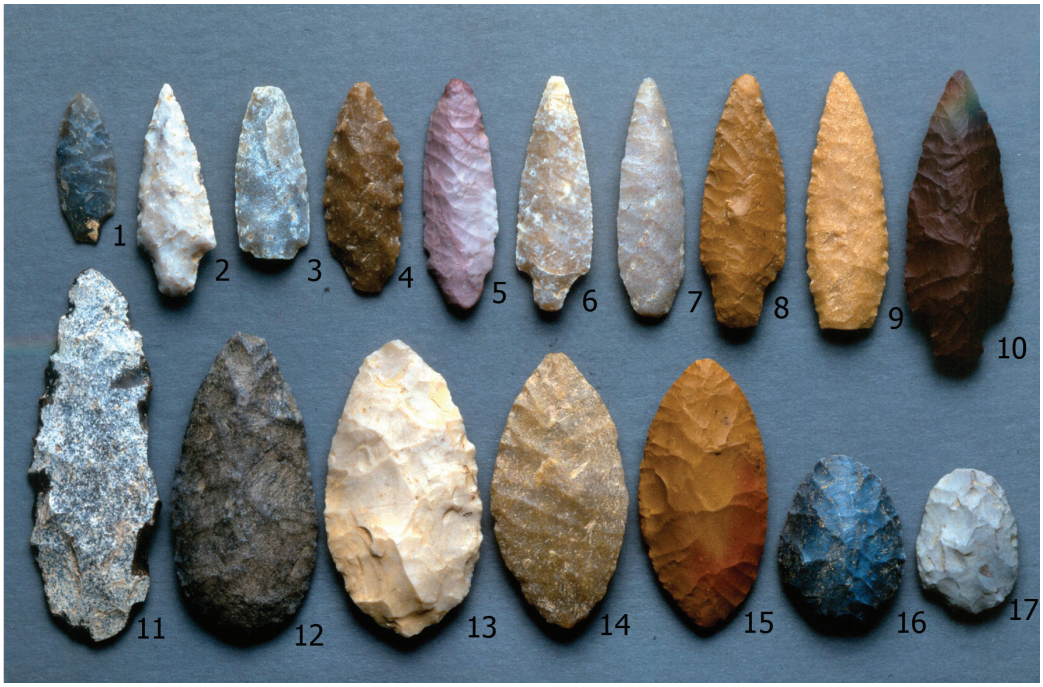

Fig. 16. Toksanbay Settlement. Weapons and tools made of flint: 1–10 – arrowhead; 11–15 – knife; 16–17 – scraper. Photo: Oleg Belyalov.
16-сур. Тоқсанбай қонысы. Кремнийден жасалған қару мен еңбек құралы: 1–10 – жебе ұшы; 11–15 – пышақ; 16–17 – қырғыш. Суретке түсірген: Олег Белялов.
Рис. 16. Поселение Токсанбай. Оружие и орудие труда из кремния: 1–10 – наконечник стрелы; 11–15 – нож; 16–17 – скребок. Фото: Олег Белялов.

Fig. 17. Toksanbay Settlement. "Iron". Photo: Oleg Belyalov.
17-сур. Тоқсанбай қонысы. Суретке түсірген: Олег Белялов.
Рис. 17. Поселение Токсанбай. «Утюжок». Фото: Олег Белялов.

Fig. 18. Toksanbay Settlement. Grater. Photo: Oleg Belyalov.
18-сур. Тоқсанбай қонысы. Теркі. Суретке түсірген: Олег Белялов.
Рис. 18. Поселение Токсанбай. Терка. Фото: Олег Белялов.

The surface of the grater is well polished. According to the trace expert's conclusion[2], the product was not used for long, and soft substances, probably cereals or ocher, were ground on it. Similar objects, with a sculptural image of a ram's head, are well known in Eurasia and were often used in ritual practice [Chenchenkova 2004] (Fig. 18).

The huge amount of osteological material deposited in the multi-meter cultural layers of the settlement indicates that pastoral cattle breeding and hunting associated with the seasonal migration of game animals formed the basis of the economic activity of the Ustyurt population in the Bronze Age. The osteological material from the settlement is dominated by game fauna. The inhabitants of the settlement ate the meat of wild animals — camel, saiga, kulan, Ustyurt mouflon, goitered gazelle; bones of wolves, foxes, corsac foxes, rodents, and birds have been noted [Makarova, Nurumov 1999: 70-79]. The paleozoological material includes bones of cattle, horses, camels, and small cattle, with the latter predominating. The paleozoological collection obtained from the settlement is enormous and is currently being studied.

Hunting and commercial activities contributed to the accumulation of bone raw materials, which were used to make tools. The collection of bone products included: chisels, dead ends, awls-piercers, burnishers, spatulas, stamps, scrapers, as well as blanks with traces of processing (cuts, chips). Processed astragals of small cattle were widely used as burnishers. Burnishers were used in ceramic and leather production. In the same industries of home production, spatulas were used, among which there are shovel-shaped ones, with a narrow handle, made from fragments of flat bones. Stamps and stamp-spatulas were made from fragments of various bones, they were used to apply ornaments and smooth the surface of clay vessels. During the period of research,

[2] Traceological study of the items was carried out by candidate of historical sciences Anatoly Pleshakov and PhD Dr. Albina Erzhanova.

significant material illustrating the tradition of processing animal bones has been accumulated and technological features of the manufacture and use of products have been determined. As a raw material, animal bone was subjected to cutting, splitting, and chipping, which was less common. In addition to traces of cutting with a metal blade, traces of chopping with both metal and stone axes, sawing-grinding with a metal blade, and occasionally scraping, which was rarely used in the Late Bronze Age, are recorded on the tools. The following categories of products are distinguished: dead ends, piercers, burnishers, drills and others. Bone tools were used mainly in leather processing, less often in the manufacture of vessels (Fig. 19, 20).

The discovery of two shield cheek-pieces at the Toksanbay Settlement is currently the only one for this region (Fig. 21). Cheek-pieces are a part of a horse bridle, intended for rigid control of a horse. The types of shield cheek-pieces, to which the Toksanbay samples belong, were in use in the 18th – 16th centuries BC. According to the zoologist[3], both cheek-pieces were made from the pelvic bone of a horse or a wild camel. The identical sizes of the items, down to the smallest details, and similar manufacturing techniques indicate that they were most likely made by the same craftsman[4]. One of the cheek-pieces has two monolithic tenons carved into it, while the other has no tenons, but has two additional holes in the shield, where small insert tenons could have been placed later. Traces of wear suggest that the fastening to the strap bars was quite rigid [Usachuk, Loshakova 2011: 9–13]. The wear of the central hole on the cheekpiece with monolithic tenons indicates that it was the right one in the Toksanbay pair. On the pegless cheekpiece, the wear marks are arranged in a mirror image to the same marks on the cheekpiece with tenons, which corresponds to the left cheekpieces in the harness.

Bone tools and objects of great importance in people's lives were used in rituals. This is evidenced by the psalms and a human burial found in the cult-oriented premises, accompanied by bone tools for processing leather, as well as fragments of animal bones. Very interesting data were obtained during the processing of ceramic material. Judging by the material remains, the cultural strata of the settlement contain artifacts with both local technological traditions and numerous signs of foreign ethnic influences brought in because of waves of migration processes. The technical and technological study of both whole vessels and fragments of ceramics made it possible to identify the general and characteristic features of ceramic production[5].

As a raw material, Ustyurt potters used ferruginous clays with a natural admixture of limestone and sand. Petrographic analysis allowed us to record two recipes for the molding mass, with the absolute predominance of the first: clay + gruss (organogenic limestone + organic matter (manure), clay + fireclay + organic matter (manure). When studying the vessel bases, several design programs were recorded: bottom, bottom-capacitive and capacitive (with a noticeable predominance of the first). In all cases, a ring-shaped molding was used. In all three programs, the junction of the bottom and the body is often processed from the inside with a hard tool with a rounded working edge. Some of the vessels were molded using a ribbon-ring molding. The relief of the ribbons of some vessels is clearly visible on the surface. The width of the ribbons ranges from 2–4 cm. The ribbons were connected to each other “overlapping”. Bundles 1 cm wide were also recorded. A patchwork-ring molding is noted sporadically. In addition, the modeling of the vessel was recorded on a hard template.

The ceramics collection is dominated by vessels with straight or weakly profiled walls. The rim cut was often flattened, less often beveled inward or outward. When analyzing the upper parts

[3] Definition made by Pavel Kosintsev.
[4] The traceological study of the cheek-piece complex was carried out by Anatoly Usachuk, a candidate of historical sciences and a research fellow at the Donetsk Regional Museum of Local History (Ukraine).
[5] Technological research of ceramics was started in 1998 by Tatyana Teplovodskaya , a research fellow of the Institute of Archaeology, and later continued by research fellow of the laboratory of archaeological research of Irina Shevnina from Kostanay State University, who also conducted a petrographic study of ceramic materials of the settlement.

Fig. 19. Toksanbay Settlement. Bone items – “dead ends”. Photo: Oleg Belyalov.
19-сур. Тоқсанбай қонысы. Сүйек бұйым. Суретке түсірген: Олег Белялов.
Рис. 19. Поселение Токсанбай. Изделия из кости – «тупики». Фото: Олег Белялов.

Fig. 20. Toksanbay Settlement. Bone items. Photo: Oleg Belyalov.
20-сур. Тоқсанбай қонысы. Сүйек бұйым. Суретке түсірген: Олег Белялов.
Рис. 20. Поселение Токсанбай. Изделия из кости. Фото: Олег Белялов.

of the vessels, it was noted that most rims had traces of a hard tool or pebble. Apparently, this is because during the process of making the vessel, processing its outer surface and drying, the product was in the position on the "mouth" for a long time. Almost all large and medium-sized vessels have a neck slightly thicker than the walls of the vessel, since under the rim cut, another strip was applied on top, apparently to strengthen the "mouth" of the vessel. At the same time, "ugly" build-ups formed on the outer and inner edges of the rims, which were then removed with the tools described above; wavy rims formed by the potter's fingers were also noted. Further shaping was done by beating the vessel walls with a mallet or a pebble with a smooth working edge, and in one case, traces of beating with a mallet through fabric were recorded. Smoothing techniques were used to process the surface of the vessels using a serrated stamp, a hard tool (wooden?), pieces of leather, bone and chips; washing and coating were also done (the outer and, in some places, the inner surface of some vessels is covered with a light thin layer of clay coating, 0.05 to 0.2 mm thick). In addition, the surface of the vessels was polished and smoothed, and in some cases covered with ochre. Drying of the vessels took place in a rational mode. All the vessels have traces of fire firing: layered fracture (dark gray or black center of the fracture with light edge areas). Reducing firing, up to 700° [Shevnina, Loshakova 2008: 270–278].

When studying the ceramic collection of the settlement, it was revealed that it is incomparable with the ceramic complexes of some specific sites of both the Neolithic and Eneolithic cultures and the Bronze Age cultures. In publications of the site materials, the authors have already noted vestiges of the Neolithic and Eneolithic features in the stone and ceramic materials of Toksanbay, parallels of metal products with the metal of the Poltavka-Catacomb circle, and even possible interaction with the cultures of the southwestern Poltavka-Catacomb circle [Samashev et al. 2004: 125–153; Samashev et al. 2002: 66–179; Samashev et al. 2007: 87–102]. The archaic nature of the settlement's products, as we see it, is not so much the result of the isolation of the population in the hard-to-reach regions of Ustyurt, but rather the manifestation of traces of the surviving culture of the population that came here from the western regions and interacted with local tribes.

Toksanbay ceramics are characterized by a variety of analogues in the complexes of the Neo-Eneoelite cultures, the Early and Middle Bronze Age. But at the same time, it is impossible to conduct direct comparisons with any specific culture or specific site. The shape of the vessels, the modeling of the rims and necks, the ornament, are characterized by extreme diversity and originality, but according to technical and typological features, the ceramic collection represents a single cultural complex. Unity is manifested in the combination of methods of applying the ornament, in the uniformity of the ornamental compositions, in the manufacturing technology.

In typological terms, the most expressive and culture-defining vessels were those with the so-called collar-shaped top. In the obtained ceramic collection, fragments of the upper part of the vessels in most cases indicate non-profiled and weakly profiled forms. The group of ceramics with archaic features includes fragments of non-profiled vessels with a characteristic Neolithic ridge-burst on the inner wall, with an inward bevel of the rim cut, with a continuous filling of the ornamental field with a uniform or simple ornament.

The group of Eneolithic-type dishes with a collar-shaped top is more numerous, characterized by a wide variety of forms and ornamental compositions. The collar does not have a stable shape, it is formed in different ways. Two forms are defined – flat and wide (up to 3 cm) and narrow relief, or roller-shaped (up to 1 cm). Roller-shaped collars are a smooth relief strip around the rim, rectangular or round in cross-section. Among the ceramics of this group, fragments from large cauldron-shaped vessels stand out. The upper part was designed as a flat wide collar, and a roller-shaped collar with a thickening or cornice (edge), a flat or pointed cut, a straight or concave wall.

Fig. 21. Toksanbay Settlement. Shield disc-shaped cheekpieces. Photo: Oleg Belyalov.
21-сур. Тоқсанбай қонысы. Ауыздықтың дөңгелек шығыршығы . Суретке түсірген: Олег Белялов.
Рис. 21. Поселение Токсанбай. Щитковые дисковидные псалии. Фото: Олег Белялов.

Another group of vessels with varying degrees of profiling and bent necks and expanding walls was identified based on morphological features. All fragments of the bottom parts were from flat-bottomed vessels, the concave bottom part of which was sometimes ornamented with a continuous vertical zigzag, made with smooth and fine-toothed stamps.

The technique of applying a pattern to vessels combines pricked-comb stamps and incised ornamentation. The most common of the pricked ornamentation were triangular and angular pricks, which formed different compositional structures, in combination with meanders. A significant number of patterns were made with a comb stamp with teeth of different sizes, set at different angles. Fragments of vessels with ornamentation in the form of large pricks with a two- to four-toothed stamp and impressions of a figured stamp - stream-shaped and in the form of a snake - were isolated. Narrow and wide incised lines on ceramics often served as a divider between ornamental zones. Ornamental compositions of geometric figures made with incised lines and bordered with a “fringe” of various types of indentations and pricks, as well as herringbone ornaments and horizontal and vertical zigzags were quite common [Loshakova 2001: 72–76].

A wide range of ornamentation methods characterized the mixed tradition of vessel decoration in the ceramic complex. The pricked and pricked-recessed techniques, including those in the form of triangles and sharp pricks, had been in use since the Neolithic era at Northern Caspian sites, while the comb ornament was typical of the population of the forested Trans-Urals region. Analogies to the main body of ceramics of the so-called Toksanbay type are found in the materials of the Volsk-Lbishchenskaya culture [Vasiliev 1999: 66–78] in the Middle Volga region, which is also characterized by a variety of rim shapes with collars and thickenings, outward beveling, pointed edges, similar ornamental motifs, and the admixture of shell in

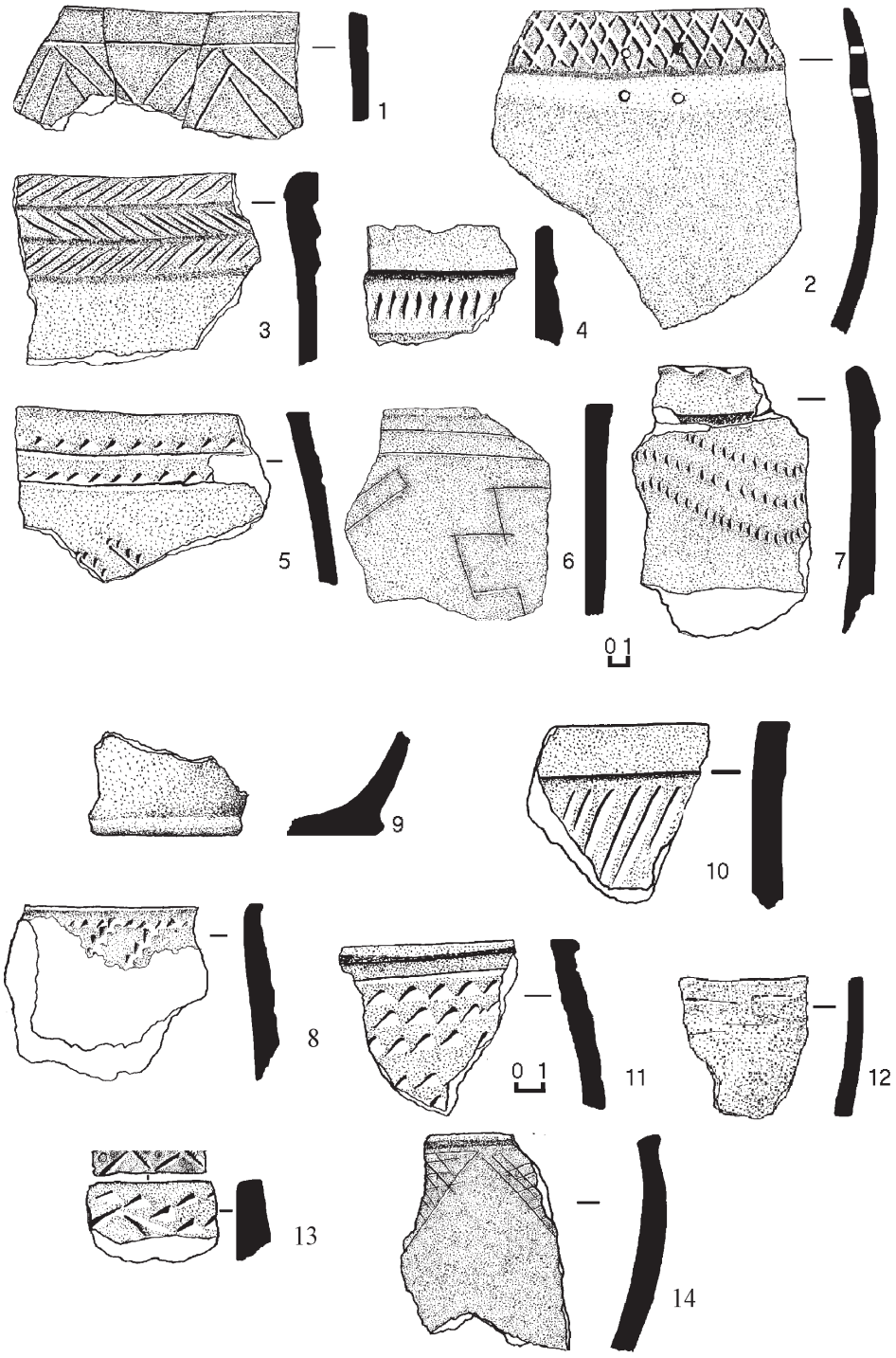

Fig. 22. Toksanbay Settlement. Ceramic fragments. Drawing by Vasily Sobolev.
22-сур. Тоқсанбай қонысы. Керамика сынықтары. Суретті салған Василий Соболев.
Рис. 22. Поселение Токсанбай. Фрагменты керамики. Рисунок Василия Соболева.

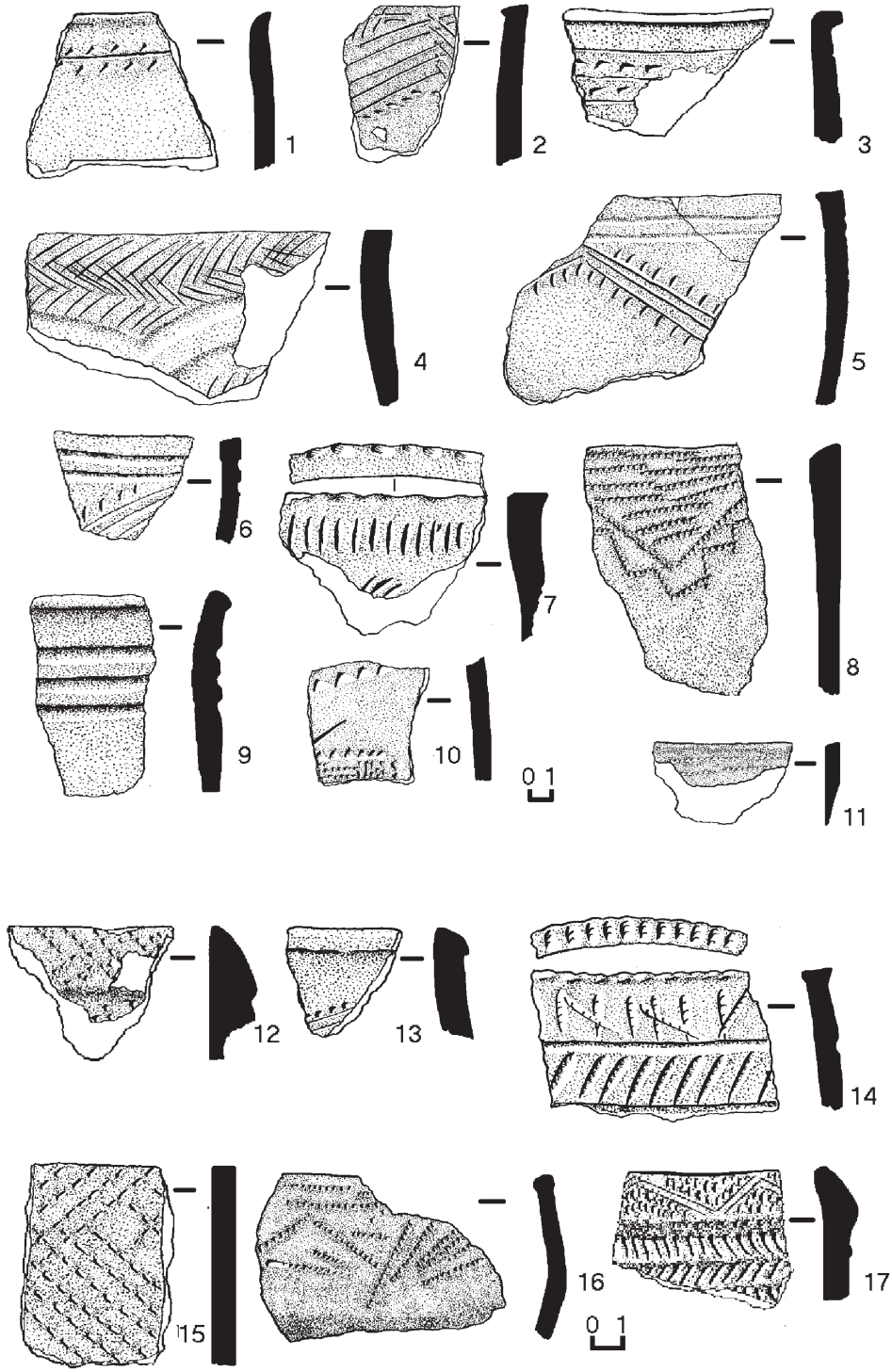

Fig. 23. Toksanbay Settlement. Ceramic fragments. Drawing by Vasily Sobolev.
23-сур. Тоқсанбай қонысы. Керамика сынықтары. Суретті салған Василий Соболев.
Рис. 23. Поселение Токсанбай. Фрагменты керамики. Рисунок Василия Соболева.

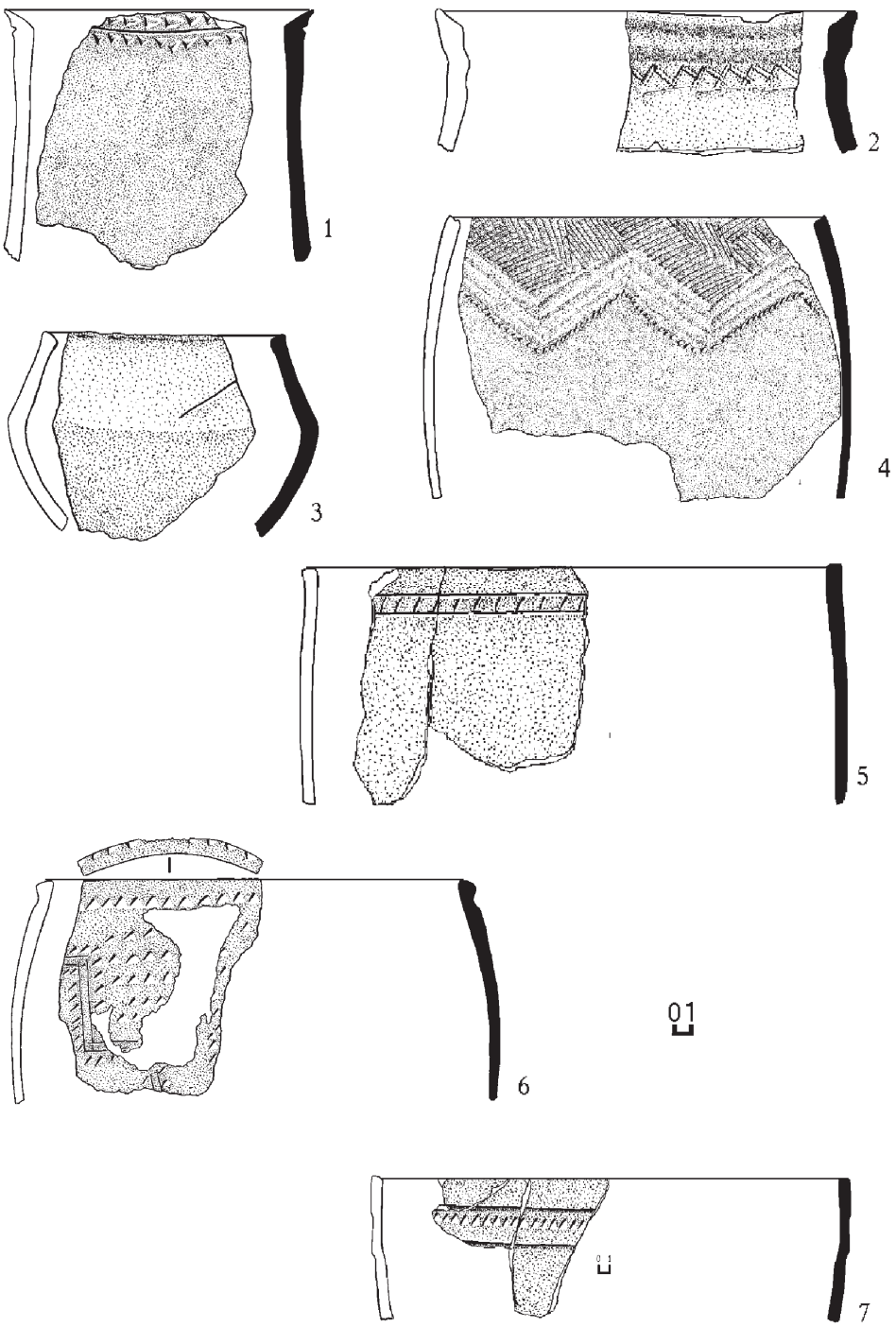

Fig. 24. Toksanbay Settlement. Settlement ceramics. Reconstructed vessels. Drawing by Vasily Sobolev.

24-сур. Тоқсанбай қонысы. Қоныс керамикасы. Қалпына келтірілген ыдыстар. Суретті салған Василий Соболев.

Рис. 24. Поселение Токсанбай. Керамика поселения. Реконструированные сосуды. Рисунок Василия Соболева.

the dough [Samashev et al. 2002: 166–179; Samashev et al. 2004: 125–153]. Similar ceramics have been found at sites in the Lower Volga region, the Northern Caspian region, and Western Qazaqstan [Vasiliev et al. 1986: 110–115].

In addition to the archaic features, Toksanbay ceramics are distinguished by their syncretic appearance. This syncretic nature is not manifested in the mechanical mixing of materials from different cultures, but in the presence of features inherent in different cultural traditions on the same vessels. The multi-component nature of the materials of the site reflects the complexity of the processes associated with the formation of antiquities of the Toksanbay type, and the alien nature of the population that left it [Samashev et al. 2009: 159–167] (Fig. 22–24).

Traces of ritual actions have been recorded at the settlement. For example, the deposition of certain parts of the human body has been noted; in both cases, only fragments of the lower limbs, pelvic bones, and ribs have been noted. Two such burials were discovered in different years of field research at the Toksanbay Settlement (Fig. 25). Both burials were discovered at the settlement during the study of residential structures. The location of the burials and the accompanying inventory confidently allow us to attribute the burials to sacrificial complexes, which are a type of certain cult actions. For this territory, these are the first burials of this kind.

In the first case, the burial was located under the outer wall of the premises located on the western slope of the settlement (Fig. 26). The builders of the dwelling, having filled in the buildings of the lower tier, turned their walls into a kind of foundation. It had walls of a standard design: with a base of a double row of vertical slabs and horizontal masonry of stone slabs on top, with a total height of over 1.5 m. The industrial nature of the material obtained from the dwelling

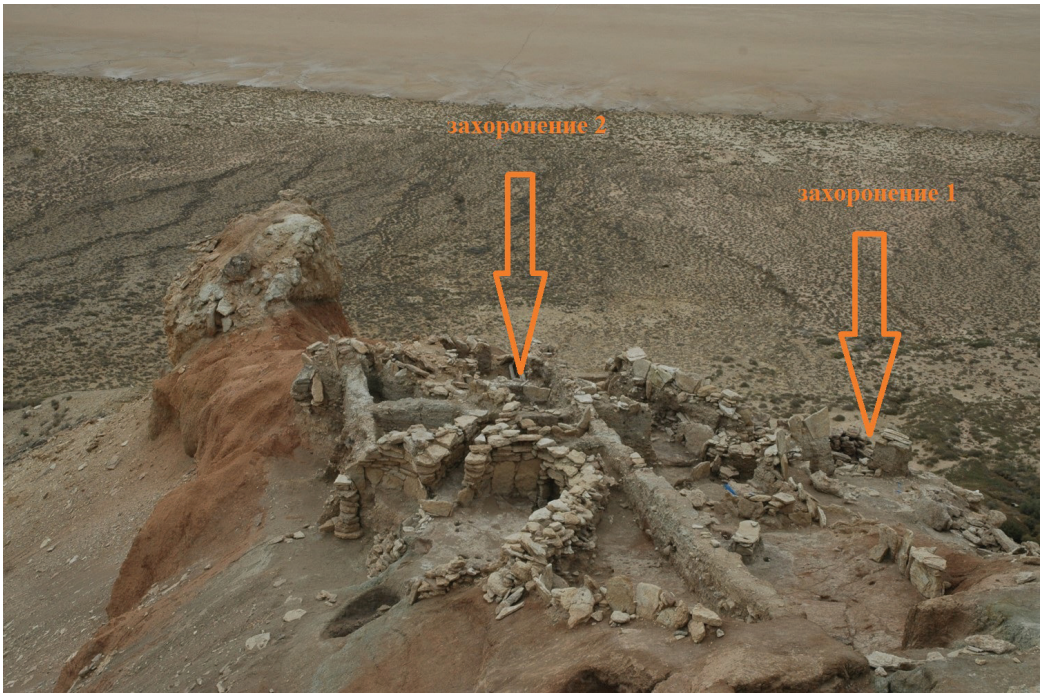

Fig. 25. Toksanbay Settlement. General view of the settlement from the north-eastern side. Arrows indicate the places of ritual burials of people. Photo: Tatyana Loshakova.
25-сур. Тоқсанбай қонысы. Солтүстік-шығыстан қарағандағы қоныстың жалпы көрінісі. Адам жерленген ұрыптық орын таяқшамен көрсетілген. Суретке түсірген: Татьяна Лошакова.
Рис. 25. Поселение Токсанбай. Общий вид на поселение с северо-восточной стороны. Стрелками указаны места ритуальных захоронений человека Фото: Татьяна Лошакова.

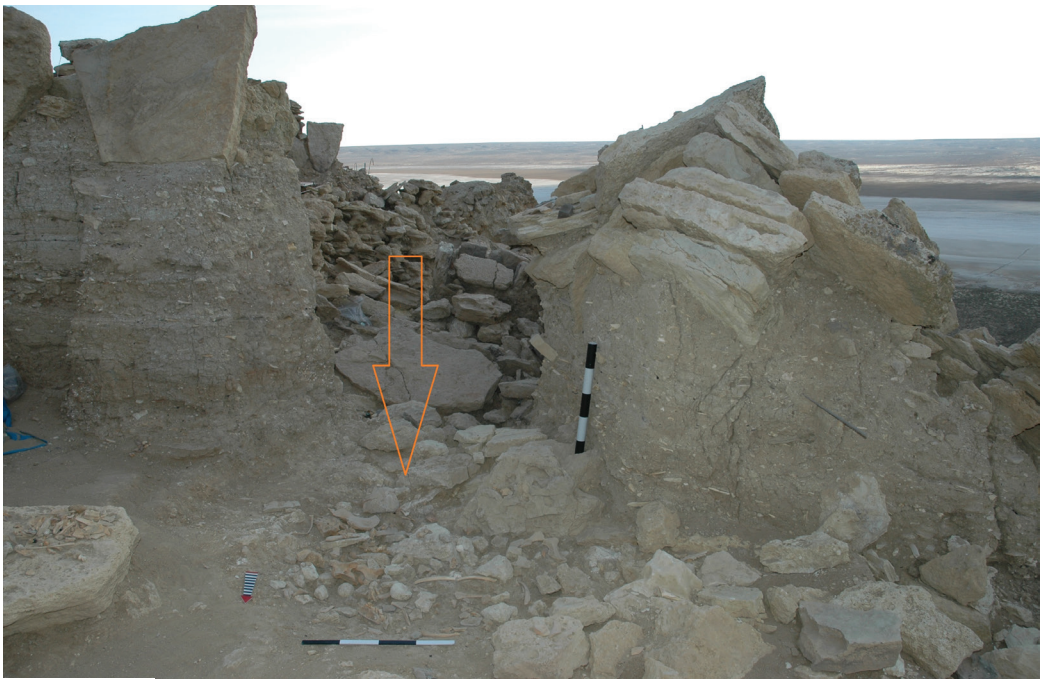

Fig. 26. Ritual burial No. 1. Photo: Tatyana Loshakova.
26-сур. №1 ғұрыптық жерлеу орыны. Суретке түсірген: Татьяна Лошакова.
Рис. 26. Ритуальное погребение № 1. Фото: Татьяна Лошакова.

Fig. 27. Ritual burial No. 2 Photo: Tatyana Loshakova.
27-сур. №2 ғұрыптық жерлеу орыны. Суретке түсірген: Татьяна Лошакова.
Рис. 27. Ритуальное погребение № 2 Фото: Татьяна Лошакова.

indicates metalworking. Fragments of clay crucibles and a smelter, a broken stone casting mold and mortar found here indicate that copper items were cast and remelted in this dwelling.

The human remains are represented by fragments of pelvic bones, ribs and several vertebrae. The anatomical order is not observed. The pelvic bones with vertebrae are elongated along the northwest – southeast line. Apparently, the burial had a ritual character, as it was accompanied by stone tools and bone products intended for leather processing, as well as fragments of animal bones. A second burial of human skeletal parts was noted during the study of a room in the central part of the settlement. Fragments of a human skeleton were found under the masonry of the foundation of the wall (Fig. 27). Bones of the lower limbs were recorded here; several fragments of a human cranium and part of a pelvic bone were noted. Accompanying inventory is missing.

In other parts of the excavation, scattered small fragments of a human skeleton were also found; these were fragments of a skull and ribs. Several fragments of a human skeleton were noted in an ash pit, or more precisely in a bone layer, in the northern part of the settlement. No burials were recorded at other known Bronze Age settlements of the North-East Caspian region – Aitman Settlement, and the Manaysor group of settlements. We presume that the burials with a broken human skeleton from the Toksanbay Settlement belong to the category of construction sacrifices. Both burials were located at the base of the wall of the room. The dwelling on the north-western slope, at the base of which a partial burial with accompanying inventory was placed, is the place where the metalworking process took place. Such ritual actions are found in burial complexes

Fig. 28. Toksanbay Settlement. A room on the south-eastern slope of the remnant. On the floor there is calcined loam with a burnt layer from the fallen roof. On the left in the lower corner there is a sacrificial box, under the eastern wall there is a second sacrificial box. Photo: Tatyana Loshakova.

28-сур. Тоқсанбай қонысы. Оңтүстік-шығыс беткейдегі қоныс орыны. Еденде құлаған шатырдың күйген қабаты. Сол жақ төменгі бұрышта - құрбандық жәшігі, шығыс қабырғада - екінші құрбандық жәшігі. Суретке түсірген: Татьяна Лошакова.

Рис. 28. Поселение Токсанбай. Помещение на юго-восточном склоне останца. На полу прокаленный суглинок с горелым слоем от упавшей кровли. Слева в нижнем углу ящик-жертвенник, под восточной стенкой – второй жертвенник Фото: Татьяна Лошакова.

from the Pit Grave culture to the Final Bronze Age culture over a vast territory of the Eurasian space [Formozov 1984: 23].

Another ritual was recorded in room No. 2 (ritual dwelling) (Fig. 28). On the floor of the room, covered with felt and, apparently, animal skins, of which melted parts were preserved, ceramic vessels, a wooden bowl (?) with a copper plate-rim, a wooden dish (?) with an article made of horn on it were laid out, and trepals, chariot harness, of which two shield cheekpieces were preserved, as well as sacrificial food in the form of individual pieces of meat and parts of animal carcasses were laid out. The dwelling was undoubtedly intended for the performance of cult actions, including those associated with the cult of fire, and, possibly, was a kind of sanctuary in the settlement. Analysis of the entire set of materials suggests that it was deliberately set on fire before the forced abandonment of the settlement. After this departure, the dwelling ceased to function forever, although people returned here and, apparently, more than once, as evidenced by the sacrifices made after the fire. Two altars - one of the parts of animal carcasses laid out under the eastern wall in the area cleared from the fire, and the second in a box near the niche under the northern wall have a different character and different ritual actions. The investigated dwelling provided valuable information for the reconstruction of not only the everyday and economic aspects of the life of the inhabitants of the settlement, but also its worldview.

Conclusion

To sum up, we can say that the settlement materials indicate a complex heterogeneous nature of the culture of the population that inhabited them. This unique type of culture existed here for a long time. It was distinguished by a unique adaptation to the extreme natural and geographical conditions of this hard-to-reach and desert region. The settlements concentrated in a small area can be considered as traces of an exclusively selective adaptation of the hunting and pastoral population, focused on exceptional, relatively favorable loci of space. The relief of Ustyurt, the alternation of stripes with vegetation of different vegetative development, created favorable conditions for seasonal migrations of cattle from the Qaraqum to the Southern Urals. And this made economic and pastoral activity of man possible in Ustyurt since ancient times. Considering these data, Ustyurt appears as one of the centers of the formation of a nomadic pastoral economy. The study of the Bronze Age settlements began to fill the chronological vacuum in the studies of this territory and signifies a breakthrough in the study of the ancient past of Ustyurt. At that time, the desert and semi-desert areas of the Eastern Caspian region and Ustyurt were the territory of contacts between the world of the Eurasian steppes and settled agricultural civilizations. It is already becoming clear that the obtained archaeological materials confirm the complexity of the historical and cultural processes in this part of the world and make it possible to re-evaluate the role of the cultures of the Eneolithic-Bronze Age in the study of the mechanism of migrations and processes of cultural mutual influences.

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