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Traditions of Settlement in Bronze Age Zhetysu (Kazakhstan)

Keywords: archaeology, Zhetysu, Bronze Age, ecological niche, settlement, half-dugout dwelling, economy, farming, cattle breeding, crafts

Түйін сөздер: археология, Жетісу, қола дәуірі, экологиялық тауашалар, қоныс, жартылай жертөле, шаруашылық, егіншілік, мал шаруашылығы, қолөнер

Ключевые слова: археология, Жетысу, эпоха бронзы, экологическая ниша, поселение, жилище-полуземлянка, хозяйство, земледелие, скотоводство, ремесло

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Abstract. This article summarizes the results of more than two decades of research concerning Bronze Age settlements in Zhetysu. The purpose of the work is to sythesize the regional cultural traditions and the development of'Andronovo" related material culture in Southeast Kazakhstan from the 3rd to 1st millennia BC. Compiling the results of various research, we offer a preliminary map of the sites and describe the nature of the settlement of the region at various stages of the Bronze Age. Settlement data documented throughout Zhetysu (Semirechye) show that foothill areas were the most commonly exploited ecological niche and also where the largest settlements are concentrated. Following settlement developmentsin mountainous and foothill areas, steppe plains, and semi-deserts were also occupied throughout the middle and late Bronze Ages. Pit-houses of frame-pillar construction were the most familiar type of housing in the cultural traditions of the Andronovo cultural communities. Data from Zhetysu also reveal a relationship between house-building traditions and the natural resources and climatic conditions of individual residential districts across Zhetysu, Kungey and Ile Alatau, as well as steppe areas of the Shu-Ile interfluve. There are two main variants of dwellings with stone and wooden foundations. Most of the settlements studied during this period were dwellings intended for a mid-sized to large residential communities. In the Late Bronze Age, large settlements are less common. In their place, there are a series of smaller settlements (up to 4–5) dwellings with different parameters and layout of the dwellings. In the Bronze Age, populations of Zhetysu were in engaged in a complex array of economic strategies, ranging from dedicated cattle-breeding to mixed farming/herding strategies (agro-pastoralism). These economies generally map on to different ecological settlement areas, with agro-pastoralists predominantly documented in the foothill zones and cattle breeders found more in higher elevation mountainous and lowland steppe areas. The allocation of handicraft production into an independent industry both among both cattle breeders and agro-pastoralists contributed to an active exchange of goods between them, an expansion in the territories of people covered by economic activity, and, as a result, an increase in the scale and welfare of the population, which significantly complicated the social structure of Bronze Age communities of Zhetysu.

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Жетісудағы (Қазақстан) қола дәуірі үй құрылысының дәстүрлері туралы

Аннотация. Бұл мақалада 20 жылдан астам уақыттағы Жетісудағы қола дәуірі қоныстарын зерттеу нәтижелері қортындыланады. Жұмыстың мақсаты – б.д.д. III–I мыңж. Қазақстанның оңтүстік-шығысындағы аймақтық мәдени дәстүрлерді және андронов материалдық мәдениетінің дамуын жүйелеу болып табылады. Әр түрлі зерттеулердің нәтижелерін қортындылай келе, қола дәуірінің әртүрлі кезеңдеріндегі ескерткіштердің алдын-ала картасы және аймақтың қоныстану сипаты ұсынылды. Жетісу бойынша құжатталған қоныстар туралы деректер тау бөктеріндегі аудандар неғұрлым жиі пайдаланылатын экологиялық тауашалар, сондай-ақ аса ірі қоныстар шоғырланған аймақ болғанын көрсетеді. Таулы және тау бөктеріндегі қоныстардың дамуынан кейін орта және кейінгі қола дәуірінде далалық жазықтар мен жартылай шөлдер де қоныстанды. Қаңқалы-бағаналы құрылымды жертөлелер андроновтықтардың мәдени дәстүрлерінде тұрғын үйдің ең қолайлы түрі болды. Жетісудан алынған деректер үй салу дәстүрлері мен Жетісу, Күнгей және Іле Алатауындағы жекелеген тұрғын аудандардың, сондай-ақ Шу-Іле өзені аралығындағы дала аудандарының табиғи ресурстары мен климаттық жағдайлары арасындағы өзара байланысты көрсетеді. Тас және ағаш негізі бар тұрғын үйлердің екі нұсқасы бар. Осы кезеңде зерттелген қоныстардың көпшілігі орта және ірі тұрғын аудандарға арналған тұрғын үйлер болды. Кейінгі қола дәуірінде ірі қоныстар сирек кездеседі. Олардың орнында әртүрлі параметрлер мен тұрғын үйлердің орналасуы бар бірқатар шағын қоныстар бар (4–5 дейін). Қола дәуірінде Жетісу тұрғындары мамандандырылған мал шаруашылығынан бастап аралас мал шаруашылығына дейінгі (агро-мал шаруашылығы) күрделі шаруашылық тәсілдерін пайдаланды. Бұл қызмет, әдетте, қоныстанудың әртүрлі экологиялық аудандарына байланысты, ал агро-малшылар негізінен тау бөктерінде, ал малшылар таулы және жазық жерлерде қоныстанды. Қолөнер өндірісін малшылар арасында да, диқаншылар арасында да дербес салаға бөлу олардың арасындағы

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О традициях домостроительства эпохи бронзы в Жетысу (Казахстан)

Аннотация. В этой статье обобщаются результаты более чем 20-тилетних исследований поселений бронзового века в Жетысу. Целью работы является систематизация региональных культурных традиций и развитие материальной андроновской культуры на юго-востоке Казахстана с III по I тыс. до н.э. Обобщая результаты различных исследований, предложены предварительная карта памятников и описание характера заселения региона на различных этапах бронзового века. Данные о поселениях, задокументированные по всему Жетысу (Семиречье), демонстрируют, что предгорные районы были наиболее часто эксплуатируемой экологической нишей, а также областью, где сосредоточены крупнейшие поселения. Вслед за развитием поселений в горных и предгорных районах, степные равнины и полупустыни также были заселены на протяжении всего среднего и позднего бронзового веков. Землянки с каркасно-столбовой конструкцией были наиболее привычным типом жилья в культурных традициях андроновцев. Данные из Жетысу также показывают взаимосвязь между традициями домостроения и природными ресурсами и климатическими условиями отдельных жилых районов в Жетысу, Кунгей и Иле (Заилийский) Алатау, а также степных районах междуречья Шу-Иле. Существует два основных варианта жилищ с каменным и деревянным фундаментом. Большинство поселений, изученных в этот период, представляли собой жилища, предназначенные для средних и крупных жилых районов. В позднем бронзовом веке крупные поселения встречаются реже. На их месте есть ряд небольших поселений (до 4–5) с различными параметрами и планировкой жилищ. В бронзовом веке население Жетысу использовало сложный набор хозяйственных приемов, начиная от специализированного скотоводства и заканчивая смешанным (агро-скотоводство). Эта деятельность, как правило, связана с различными экологическими районами расселения, при этом агро-скотоводы преимущественно расселялись в предгорных зонах, а скотоводы – в высокогорных и равнинных. Выделение ремесленного производства в самостоятельную отрасль как в среде скотоводов, так и среди земледельцев способствовало активному

белсенді тауар алмасуға, шаруашылық қызметпен қамтылған адамдардың аумақтарын ұлғайтуға, нәтижесінде халықтың саны мен әл-ауқатының өсуіне ықпал етті, бұл Жетісу қола дәуірі тайпаларының әлеуметтік құрылымын едәуір қиындатты.

Алғыс: Жұмыс ҚР БҒМ Ғылым комитетінің 2022–2023 жж., мақсатты қаржыландыру бағдарламасы аясында орындалды, жобаның ЖТН BR11765630.

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товарообмену между ними, увеличению территорий охваченных хозяйственной деятельностью людей, и, как следствие, росту численности и благосостояния населения, что существенно усложняло социальную структуру племен эпохи бронзы Жетысу.

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1 Introduction *(Goryachev A.)*

Zhetysu (Semirechye) is an administrative and geographical term for a vast area of Southeastern Kazakhstan, spanning from the Lake Alakol basin to the northern slopes of the Tien Shan – approximately 900 km from north to south – and from the Shu Valley (Chu/Shu River) to the head of the Ili/Ile River – 800 km from west to east. Historically and culturally, the region reflects a long-standing nexus between Central Asian steppe pastoralism and Central Asian agriculture, which were connected along the Inner Asian Mountain Corridor at least as early as ca. 3000 BC [Frachetti 2012; Zhou et al. 2020]. Favorable natural and climatic conditions provided opportune conditions forregular settlement of the region throughout the Bronze Age, defined by a variety of forms of living conditions and economic activities. The range of materials and economic and subsistence activities documented throughout the Bronze Age was heavily facilitated by cultural interaction amongst the population of neighboring territories, and by formative phases of (human) genetic admixture [Narasimhan et al. 2019]. These processes become especially relevant during the 2nd millennium BC, when the formation of productive forms of economy expanded dramatically across the Eurasian continent, associated with the development of individual industries and crafts, such as metallurgy [Берденов 1998].

Settlements provide a main source of information about the economic and cultural developments of Bronze Age populations of Zhetysu. Most of the archaeological monuments of this time are found in the foothill zone of the Djungarian/Zhetysu, Zailiysky/Ile and Kungey Alatau, on the northern and southern slopes of the Uzynkora ridge (Ketmen) and in the Shuili/Shu-Ile Mountains. Their study began only in the 1980s with archaeological expeditions of the Archaeology Department of the Walikhanov Institute of History, Anthropology and Archaeology (K. Akishev) and the Abay Kazakh Pedagogical Institute (A. Maryashev). Until that time, the excavations of ancient burial grounds and the analysis of the materials of hoards of bronze tools and products limited knowledge about the nature of settlement and cultural traditions of regional Bronze Age communities to hypothetical speculations [Максимова 1961: 62–71; Акишев, Кушаев 1963: 131]. The settlements of Talapty-I and Kuigan, both located in the valley of the Koksu River and Bien near the northern slopes of Zhetysu Alatau(Djungar Mountains) were the first settlements where full-scale research was launched in Zhetysu [Марьяшев, Горячев 1993: 16–17; Карабаспакова 2011: 113–115].

Studies in the 1990s expanded into the mountainous areas of the region, where they were carried out on settlements in the Tanbalytas tract in the Anrakhay Mountains, in the Maybulak and Butakty gorges in the foothill zone of the Ile Alatau and Turgen-II, Asy-I on the high-altitude plateaus of those mountains'

northern slopes [Марьяшев, Горячев 2001: 112–121; Рогожинский 2011: 167–175; Горячев 2018]. In the early 2000s, the work was continued and expanded on the settlements of Tasbas, Kalakay, Asy-II (C. Chang), Bigash, and Mukri [Марьяшев 2002: 23–30; Frachetti and Maryashev 2007; Doumani et al. 2015]. Settlements were considered as part of archaeological complexes consisting, in addition to residential, of funerary (burial grounds) and sacred (petroglyphs, temples, cup stones) objects (for English summary, Frachetti 2008).

INTAS projects on the topic played a significant role in understanding the processes of settlement of Bronze Age tribes and the structure of ancient settlements on the territory of Zhetysu («The process of forming a nomadic community during the Bronze Age and Early Iron Age. Ecological and archaeological research» 1999–2001 (curated by R. Sala) and «Cultural heritage» on the topic: «A set of historical and cultural monuments of the Almaty region» 2004–2006 (by K.M. Baipakov)). About 30 settlements, over 50 burial grounds and about 30 clusters of petroglyphs with drawings of the Bronze Age were identified. Studies of the structure and development of Bronze Age crafts and the conditions of functioning of ancient settlements in the Zhetysu mountain zone have begun [Аубекеров и др. 2009: 48–58].

The study of the ancient culture of the Bronze Age population of the region was continued by the authors during the implementation of a series of international and national projects in 2010–2020. It was possible to determine the settlement zones of the Bronze Age tribes, the chronological stages of their existence and cultural affiliation. Studies of the steppe, foothill and mountainous areas of Zhetysu in recent years have revealed a series of settlements, burial grounds and clusters of petroglyphs with rock carvings of various stages of the Bronze Age [Горячев 2020; Hermes et al. 2021]. The study of the structural organization of settlements made it possible to reconstruct ancient dwellings of the Andronovo and Late Bronze Age periods [Горячев 2018: 86–105; 2020: 130–141; Горячев, Мотов 2018: 24–31].

As a result of interdisciplinary studies of the materials of settlements and burial grounds in the region, the dynamics of natural and climatic changes were clarified, and the development of issues of economic and cultural development of the ancient population began [Горячев, Сараев 2015: 5–18; Горячев, Чернов 2017: 5–24; Аубекеров и др. 2009; Roberts et al. 2019: 39–49; Schmaus 2019: 101–117; Ventresca Miller et al. 2020] and the periodization of the Bronze Age of this territory was developed [Гасс, Горячев 2016: табл. 2].

Bronze Age settlements are now largely dated on the basis of radiocarbon analyses, spanning broadly from the 27thto the turn of the 10th–9th centuries BC; the majority of which can be dated to the so-called ‘Andronovo chronological horizon’ (19th – to the turn of the 14th–13th centuries BC). Materials from this phase reflect the commonly documented incised globular ceramics of the late (13th–11th centuries BC) and final bronze (10th–9th centuries BC) [Doumani 2016; Горячев 2018; 2020]. The earliest radiometrically dated settlements in Zhetysu are documented at the neighboring sites of Tasbas and Dali in the eastern spur of the Bayanzhurek escarpment, both which date as early as 2700 cal BC [Doumani et al. 2015, Hermes et al. 2021]. Taken together the settlement data from Zhetysu provide a rich view into the structural organization of Bronze Age occupations of the region and the main trends inhistorical and cultural dynamics among populations of the region from the 3rd to 1st millennium BC.

2 Research methods and materials

2.1 Research methodology *(Goryachev A.)*

The main method was archaeological exploration by which the settlement system of the Bronze Age tribes and the structural organization of ancient settlements on Zhetysu was revealed. In the course of these works, ancient monuments were mapped and maps of individual microdistricts were created based

on GIS technologies with reference to modern settlements and water sources. This helped to determine the location of about 100 settlements, 200 burial grounds and more than 120 sacred monuments of this period. Ancient mine workings with the output of copper and other non-ferrous metals have been identified. As part of this research stage, control pits and reconnaissance excavations were carried out, which made it possible to make cultural and chronological definitions of monuments that have not yet been sufficiently studied. The systematic nature of the exploratory surveys made it possible to identify individual microdistricts, where diverse monuments of a certain stage of the Bronze Age were located compactly, which made it possible to combine them into archaeological complexes and identify their structural organization [e.g. Frachetti 2008].

Archaeological excavations in Zhetysu were carried out to varying degrees on 23 settlements of various stages of the Bronze Age, located in different natural and climatic conditions of the steppe and foothill zones, mid-elevations and the highlands. In the course of the research, planographic data was obtained both on the topography of the settlement in the surrounding landscape and on the internal distibution of archaeological objects within each complex. The design features of residential and commercial buildings in different ecological niches of the region were recorded. An extensive complex of osteological, ceramic and finds were obtained in the form of tools, decorative products, objects with traces of processing and use.

The study of the material remains was carried out in laboratory conditions using archaeometric research methods. The data of studies of different layers of the Bronze Age settlements highlighted in the course of the work formed the basis of their cultural and chronological attribution. The results of the analysis of the planography and stratigraphy of the studied objects became the basis for the reconstruction of the structural organization of settlements and individual residential buildings in the form of graphic 3D max layouts made in the AutoCAD program. The functional purpose of these settlements was clarified based on the results of desk processing of field materials and characteristics of topolandscape features of archaeological sites.

The priority for the theoretical developments of our research is based on complex and comparative-typological methods of studying archaeological material. The systematic approach is determined by the consideration of scientific data as an integral, structured manifestation of the economic, cultural and social development of the region. Comprehension of the specifics of the landscape situation of ancient settlements, their structural organization made it possible to divide the settlements of farmers and pastoralists, as well as to allocate economic and residential farmsteads of artisans. As a result of comparing the materials of monuments of different times on the territory of Zhetysu, the changes that occurred in the economic and cultural development and household traditions of the ancient population from the Andronovo period to the final Bronze Age were revealed.

2.2 Description of research materials *(Goryachev A., Frachetti M.D.)*

Based on the results of archaeological surveys, it was possible to compile a preliminary map of the archaeological sites of the Bronze Age of Zhetysu, which represents the nature of the settlement of ancient tribes in the region (fig. 1). The analysis of the map shows that in the Bronze Age the foothill strip of Zhetysu, Kungey and Ile Alatau was most actively developed. Throughout this ecological niche, settlements of this period have been found in every gorge with even a small water source. The ancient population mastered the territory of the plains at a distance of 20–30 km from the mountains. Inside the gorges, monuments are fixed deep into 5–6 km, and at the exit of them the largestones, including fortified settlements (Maybulak-II, Butakty-I). The ancient wintering sites of cattle breeders are noted in the middle

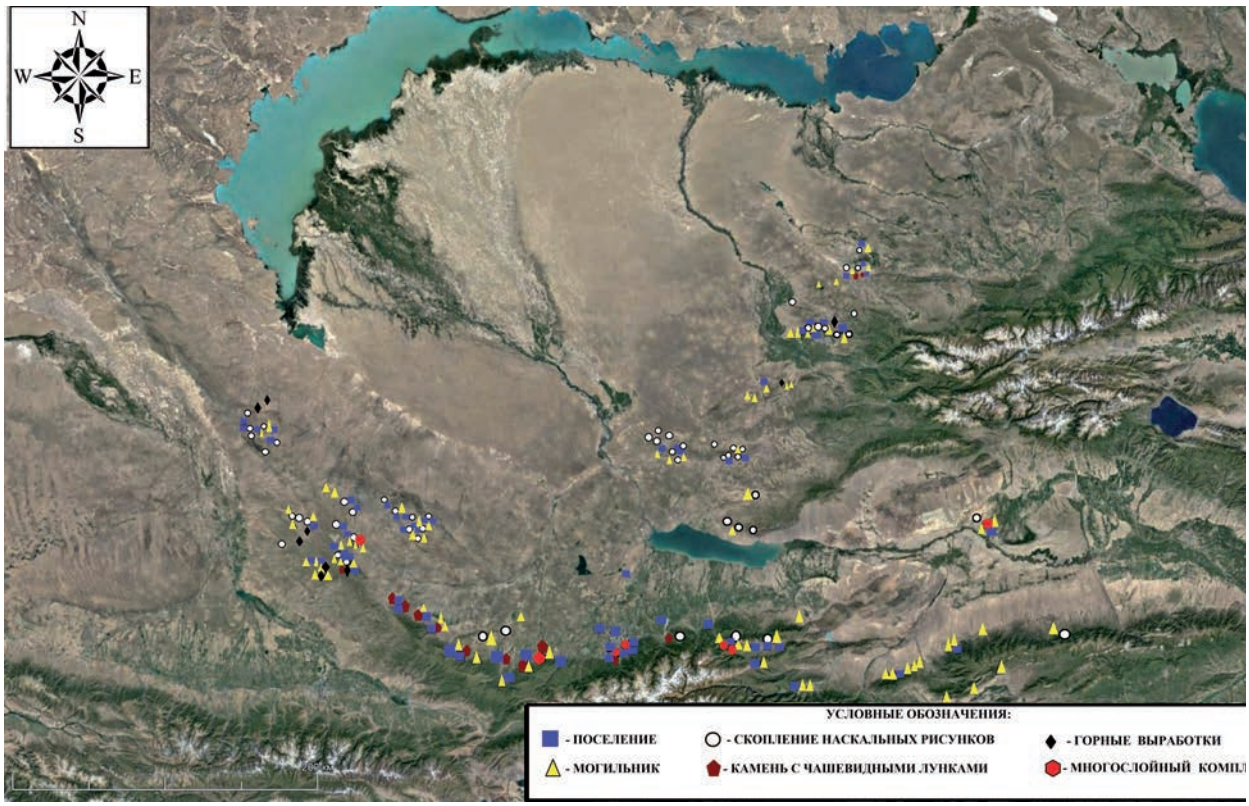
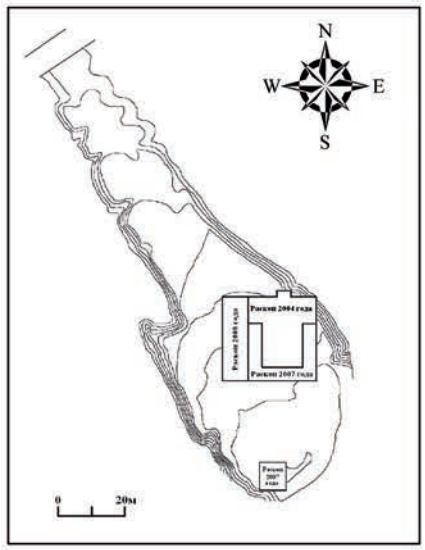


Fig. 1. Preliminary map of the location of the monuments of the Bronze Age Zhetysu. Compiled by A. Goryachev
1-сур. Жетісу қола дәуірі ескерткіштерінің орналасуының бастапқы картасы. Құрастырушы А.А. Горячев
Рис. 1. Предварительная карта расположения памятников эпохи бронзы Жетысу. Составитель А.А. Горячев

part of the mountain gorges, where there are convenient sites located on colluvial fansand at the upslope exposure of numerous springs and streams. As it turned out during the research, the population of different ecological niches of the mountainous zone and the foothill strip within each water source (river and its tributaries) had close ties with each other [Горячев, Сараев 2015: 5–18; Горячев, Мотов 2018: 124–133; Горячев 2020: 154–157].

At the mouths of mountain gorges and at the exit from them, settlements of the Bronze Age consisted of several (up to 10–12) dwellings with household yards attached to them, which, as a rule, were stretched in a line along the river bank, or concentrated around natural reservoirs (fig. 2). Dwellings at the mouths of mountain gorges and on the river terracesalong foothill plains were semi-pit-houses of square or rectangular shapes with areas ranging from 40 to 120 m^2. Materials of archaeological investigations mark individual structures on settlements with parameters from 30 to 180 m^2. Household rooms are fixed in the form of buildings adjacent to the dwellings with dimensions from 4×3 m to 5×4 m. Such settlements were intended for several family groups. The nature of some house buildings on them assumes the residence of people specializing in certain types of handicraft industries.

On the foothill plains, housing complexesare located at the foot of the mountains, or in the valleys of small rivers and streams on flat areas, most often with a southern exposure (fig. 3). There were small ledges below the level of terraces by 2–3 m in the flat floodplains of rivers, which were used as trails for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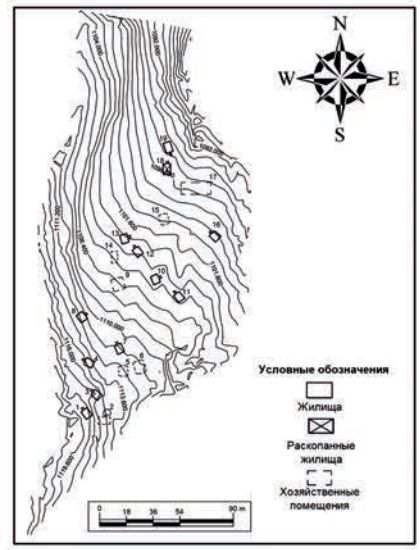
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хозяйственная постройка
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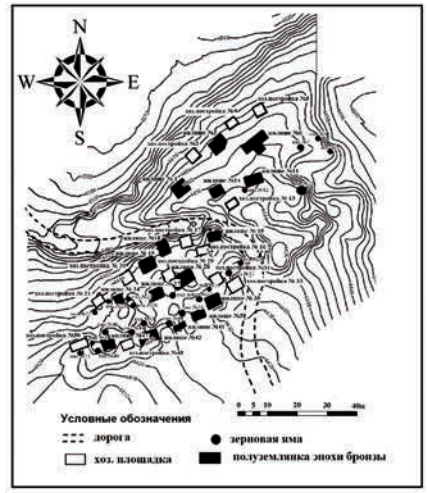
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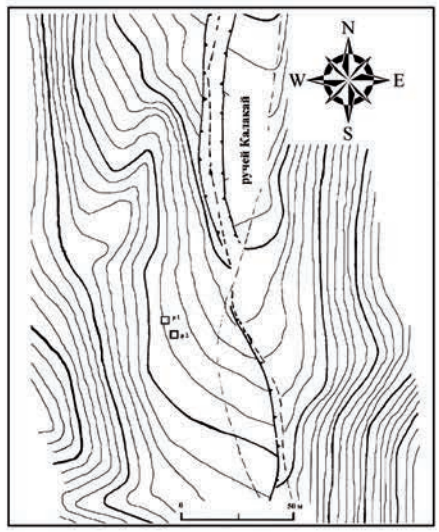
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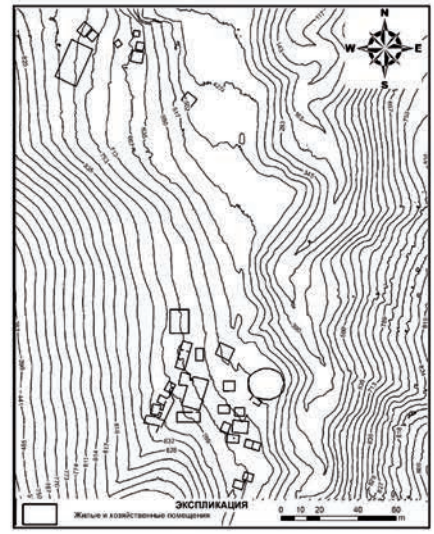
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ЭКСПЛИКАЦИЯ
Жилье и хозяйственные помещения

6

descending into floodplains and courtyards at dwellings. The size of the buildings did not usually exceed 60 m^2. There were no more than 5–6 economic and residential areas in such settlements. Drinking water was supplied to the houses from nearby springs through ditches, which were usually carried out along the edge of the upper floodplain terrace. Settlements were a place of residence of one family-generic group, where dwellings were intended for individual small families.

In the high-altitude zone and in the middle part of the gorges, the settlements of the Bronze Age consist of 2–4 rows of dwellings located along the bank of the stream and the slope of the hill on flat areas of ancient moraines (fig. 4). Due to the lack of convenient areas for living, housing buildings were located near each other (within 10–12 m), and outbuildings were carried out slightly further away. Semi-pit-houses of frame-pillar structures of square and rectangular shapes, with an area of up to 100 m^{2}are presented the dwellings at all stages of the Bronze Age here. They were usually sunk at 1–1.2 m. Outbuildings were also cut into the mountain slopes, semi-earth shelters were arranged next to the dwellings. The area of outbuildings did not exceed 12–24 m^2. Traditionally, 1–2 family-tribal groups, mainly engaged in cattle breeding, lived in such settlements. However, up to 20 residential sites have been identified in the settlements of Kyzylbulak-IV and Oizhailau-II, which may indicate a more complex social structure and economic specialization of their inhabitants.

In the foothill and mountain zone of Zhetysu, burial grounds were located to the west or north of settlements within 1–2 km on elevated sites. In some cases, at the exit of the gorges, they were built within 300–400 m in the line of sight from the village. A riverbed, stream or a low mountain hill usually separates the settlement and the burial ground. In the archaeological complexes of the Bronze Age of the high-altitude zone, two burial grounds can correspond to each settlement, one of which consisted of more monumental burial structures. Structurally, burial complexes at the early stages represented chains of stone fences, later – separate fences or low mounds, inside which burial chambers in the form of stone boxes or cysts can be traced.

The peculiarities of the construction of monuments of the Bronze Age are noted in the Shu-Ile Mountains. Almost all settlements here are marked on the bottom sections of the gorges of the meridian direction.The segments of the places of the tortuous configuration were identified by the exit of the rock massif facing south. Studies have shown that such a place provides protection from the piercing steppe winds. Temperatures are always significantly higher than in the environment at these local sites, due to natural warming, even in winter. The settlements arranged there did not exceed 4–5 household yards, located, as a rule, at springs and along the channels of shallow rivers (fig. 5). A corral for cattle was stacked near the rock, and a dwelling for themselves was built nearby. In such settlements, clusters of Bronze Age petroglyphs are necessarily recorded on the nearest rock ridges. Burial grounds are located outside residential complexes at a distance of 1–1.5 km to the east, usually inside a space enclosed in a circle by hills and hills.

◄ Fig. 2. Topographic plans of Bronze Age settlements in the foothill zone and mouths of mountain gorges: *1* – Butakty-I; *2* – Kaynar-I; *3* – Kogamshil; *4* – Kolsay-I; *5* – Kalakay-I; *6* – Yntymak-I. Performers: D. Voyakin (1); M. Gurulev (2, 6); D. Kuldeev (3); D. Sorokin (4), A. Goryachev (5)

2-сур. Тау етегі аймағындағы және тау шатқалдарының сағасындағы қола дәуірі қоныстарының топографиялық жоспарлары: *1* – Бұтақты-I; *2* – Қайнар-I; *3* – Қоғамшыл; *4* – Көлсай-I; *5* – Қалақай-I; *6* – Ынтымақ-I. Орындаушылар: Д.А. Воякин (1); М.В. Гурулев (2, 6); Д.Р. Кульдеев (3); Д.В. Сорокин (4), А.А. Горячев (5)

Рис. 2. Топографические планы поселений эпохи бронзы в предгорной зоне и устьях горных ущелий: *1* – Бутакты-I; *2* – Кайнар-I; *3* – Когамшил; *4* – Кольсай-I; *5* – Калакай-I; *6* – Ынтымак-I. Исполнители: Д.А. Воякин (1); М.В. Гурулев (2, 6); Д.Р. Кульдеев (3); Д.В. Сорокин (4), А.А. Горячев (5)

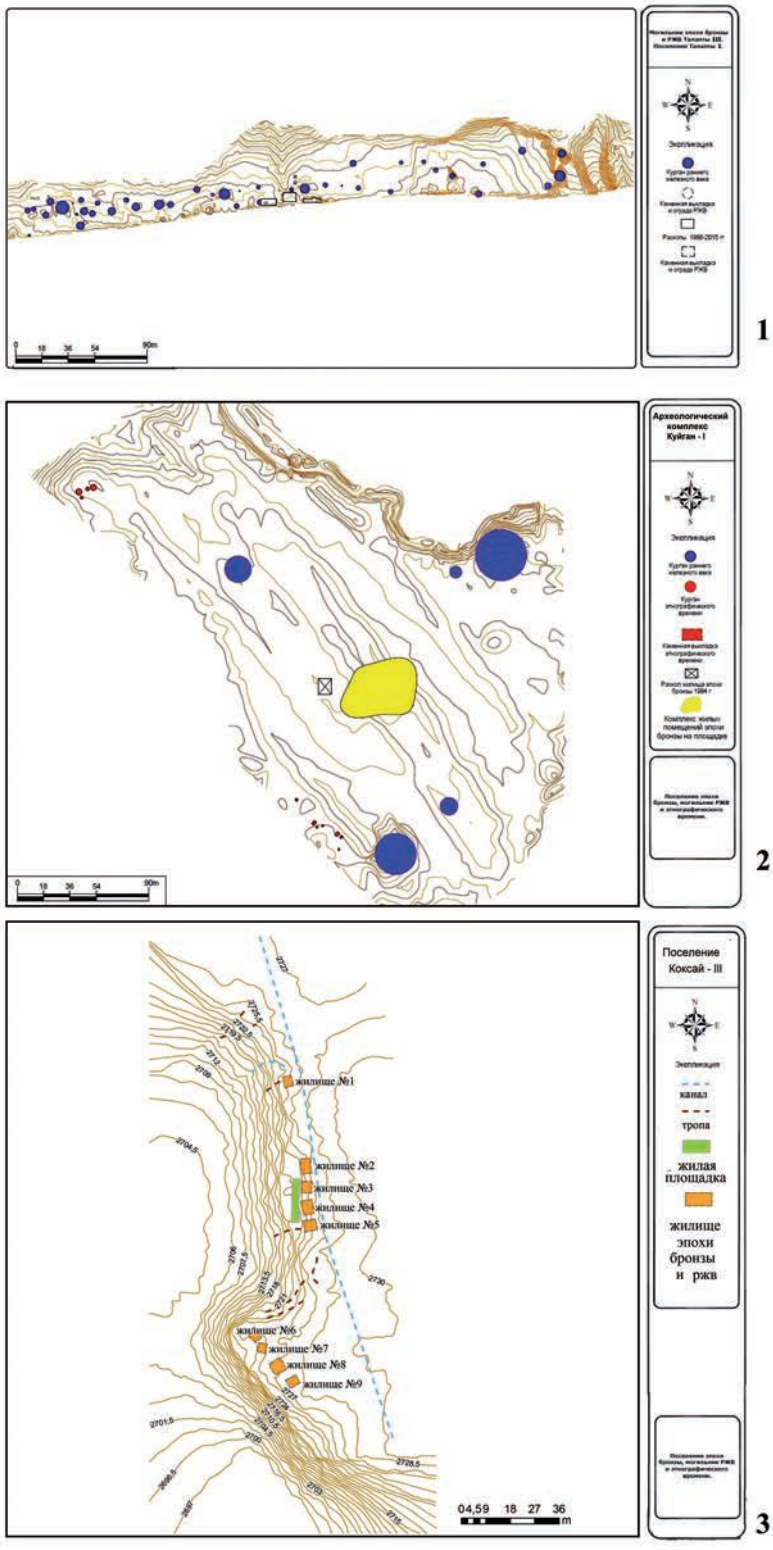

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Fig. 3. Topographic plans of Bronze Age settlements on the foothill plains of Zhetysu: *1* – Talapty-I; *2* – Kuigan-I; *3* – Koksai-III. Performers: M. Gurulev (1, 2); D. Sorokin (5)

3-сур. Жетісу тауының етегі жазығындағы қола дәуірі қоныстарының топографиялық жоспарлары: *1* – Талапты-I; *2* – Құйған – I; *3* – Көксай-III. Орындаушылар: М.В. Гурулев (1, 2); Д.В. Сорокин (5)

Рис. 3. Топографические планы поселений эпохи бронзы на предгорных равнинах Жетысу: *1* – Талапты-I; *2* – Куйган-I; *3* – Коксай-III. Исполнители: М.В. Гурулев (1, 2); Д.В. Сорокин (5)

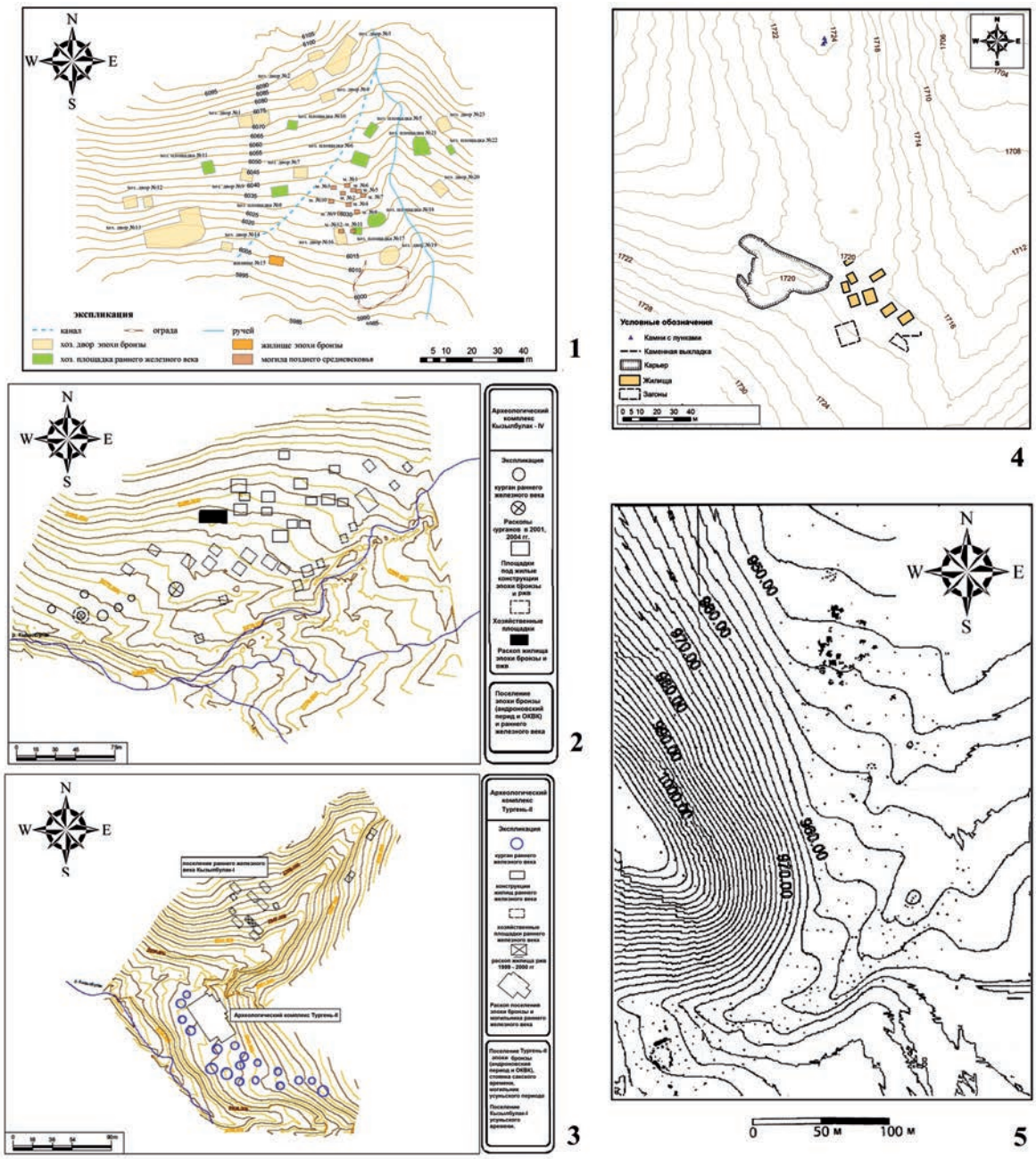


Fig. 4. Topographic plans of Bronze Age settlements in the Zhetysu mountain zone: *1* – Kokshoky; *2* – Kyzylbulak-IV; *3* – Turgen-II; *4* – Besmoinak-I; *5* – Bigash. Performers: D. Sorokin (1, 4); M. Gurulev (2, 3); M. Frachetti (5)

4-сур. Жетісудың таулы аймағындағы қола дәуірі қоныстарының топографиялық жоспарлары: *1* – Көкшоқы; *2* – Қызылбұлақ-IV; *3* – Түрген-II; *4* – Бесмойнақ-I; *5* – Биғаш. Орындаушылар: Д.В. Сорокин (1, 4); М.В. Гурулев (2, 3); М. Фрачетти (5)

Рис. 4. Топографические планы поселений эпохи бронзы в горной зоне Жетысу: *1* – Кокшокы; *2* – Кызылбулак-IV; *3* – Тургень-II; *4* – Бесмойнак-I; *5* – Бигаш. Исполнители: Д.В. Сорокин (1, 4); М.В. Гурулев (2, 3); М. Фрачетти (5)

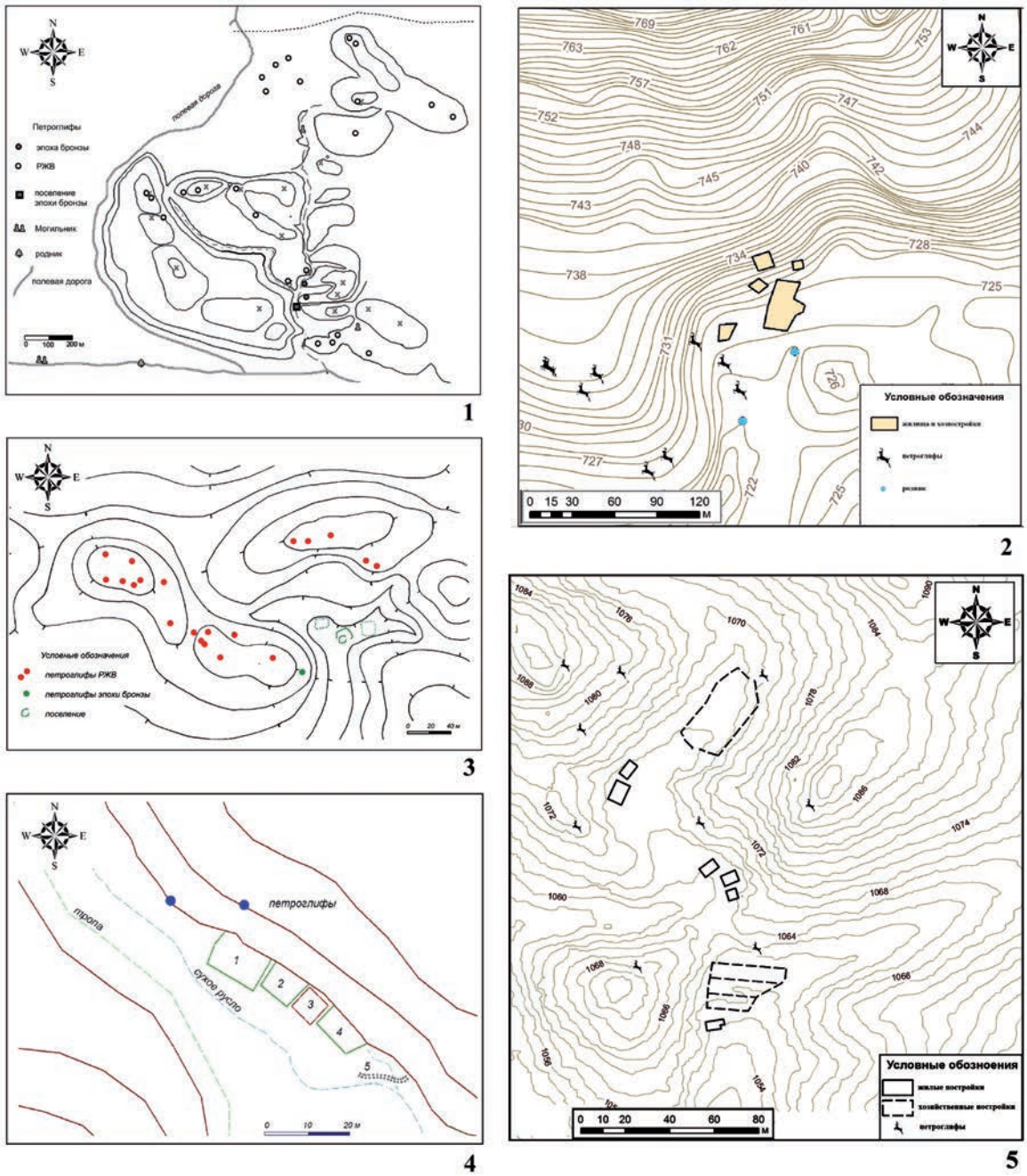


Fig. 5. Topographic plans of archaeological complexes with layers of the Bronze Age on settlements in the Shu-Ile Mountains: *1* – Kogaly–Bastau; *2* – Kostobe-II; *3* – Aschisu-II; *4* – Tyrnakty; *5* – Kulzhabasy-III. Performers: S. Potapov (1, 3, 4); M. Gurulev (2); D. Sorokin (5)

5-сур. Шу-Іле таулары қоныстарындағы қола дәуірінің қабаттары бар археологиялық кешендердің топографиялық жоспарлары: *1* – Қоғалы–Бастау; *2* – Қостөбе-II; *3* – Ащысу-II; *4* – Тырнақты; *5* – Құлжабасы-III. Орындаушылар: С.А. Потапов (1, 3, 4); М.В. Гурулев (2); Д.В. Сорокин (5)

Рис. 5. Топографические планы археологических комплексов со слоями эпохи бронзы на поселениях в Шу-Илейских горах: *1* – Когалы–Бастау; *2* – Костобе-II; *3* – Ащису-II; *4* – Тырнакты; *5* – Кулжабасы-III. Исполнители: С.А. Потапов (1, 3, 4); М.В. Гурулев (2); Д.В. Сорокин (5)

Most of the settlements of the Bronze Age of Zhetysu reflect deeply stratified occupationspunctuated by diverse archaeological remains from different periods, spanning throughout the Iron Age, Medieval and even later historical periods. In many cases these cultural layers are interrupted by significant alluvial and colluvial deposits, which makes it difficult to study them. Although widely varying in terms of scale and length of study, archaeological excavations were most often limited to control pits of individual house buildings, which only partially allowed to characterize the design features of settlements as a whole. Such studies were carried out on the settlements of Kalakay-I, Tasbas, Dali and Kuygan-I in the Zhetysu Alatau mountains; in the foothill and mountain zones of the Ile Alatau – Terenkara, Butakty-III, Kaynar-I, Yntymak-I, II, Besmoynak-I; in the tracts of Oizhailau and Tamgaly, in the Kostobe gorge of the Shu-Ile Mountains. Excavations that covered at least 1–2 dwellings and would allow to study the inter-dwelling space were carried out at the settlements of Butakty-I, Asy-I, II, Turgen-II and Kyzylbulak-IV in the foothill and mountain zone of the Ile Alatau, in the mountains of Serektas (Serektas-I, II) in the Shu-Ile interfluve, as well as Bigash, Bien-XIII, Dali, and Talapty-I of the northern and western spurs of the Zhetysu Alatau ridge.

Among the earliest monuments of the Bronze Age of Zhetysu are the settlements of Tasbas and Dali in the Bayanzhurek mountains, as well as Bigash in the Shybyndy mountains of the western spurs of the Zhetysu Alatau [Frachetti and Mar'yashev 2007; Doumani et al. 2015; Hermes et al. 2021]. Cultural layers dating to early to mid-3rd millennium BC have been recorded at these sitesand all show evidence for subsequent reoccupationspanning the 2nd millennium BC, when a regional florescence of occupation defines Zhetysu in the Late Bronze Age (Andronovo) period [Марьяшев, Фрачетти 2007: 104; Hermes et al. 2021].When analyzing the traditions of house-building at this stage in the high-altitude and mountainous zone of the region, it is noted that the sites for ancient settlements were chosen in areas closed from all sides from strong winds, and the dwellings themselves (dugouts and semi-dugouts) were cut into the mountain slopes with a southern exposure. The walls were built of flat stone slabs or boulders reinforced with clay mortar while roofs and ceilings of house buildings were likely constructed from perishable materials such as the branches of coniferous and deciduous trees.

The dwellings of the Andronovo period were exposed more widely at the settlements of Butakty-I and Turgen-II of the foothill and mountain zones of the region. The latter also excavated a temple complex of the Andronovo and Late Bronze Age periods and two dwellings of the period of common cultures of raised border ceramics. Settlements of Asy-I (A. Maryashev), Asy-II (K. Chang, P. Turtellot), Turgen-II and Kyzylbulak-IV (A. Goryachev) characterize the traditions of house-building of the Late Bronze Age in the high-altitude zone of the Ile Alatau, and Terenkara (F. Grigoriev), Bien-XIII (K. Karabaspakova) and Talapty-I (A. Maryashev, A. Goryachev) of the late and the final bronze of the foothill strip. In the Shu-Ile Mountains, as a result of control pits at ancient sites, materials of late and final bronze (Tamgaly, Uzynsu, Kostobe-II) were obtained [Рогожинский 2011: 171; Горячев 2020]. The investigated complexes in the Serektas Mountains belong to the same time, although it is possible that the period of their occurrence is much earlier, since a Seimino-Turbino type knife was discovered in their district (according to B. Aubekerov). A significant number of burial grounds of the Andronovo period are also documented here. In the mountains of Kulzhabasy and the Akkaynar gorge of the Shu-Ile microdistrict, layers of rock carvings of the early Bronze Age have been identified, near which ancient settlements have also been found, which allows us to consider the beginning of its development from earlier stages of the paleometal epoch [Аубекеров и др. 2009; Байпаков, Марьяшев 2009: 24–25; Марьяшев, Железняков 2013: 18–20].

In the cultural traditions of the population of the Andronovo stage of the Bronze Age, the most familiar type of housing appeared to be semi-pit-houses of frame-pillar structures. However, the nature

of the traditions of house-building largely depended on the natural resources and climatic conditions of individual neighborhoods. For example, in the distribution zone of the Tien Shan spruce in the Kungey andthe Ile Alatau mountains, the walls of dwellings were made of logs. On the northern slopes of the western spurs of the Ile Alatau and in the steppe zone of the Shu-Ile Mountains, they were built of stone slabs. In the Zhetysu Alatau Mountains, both traditions are marked, there are combined variants where the lower part of the walls was built of stone, and the upper aboveground was built on the basis of wooden frames. The roofs of residential premises were supported from the inside on wooden post structures, and branches, straw (reeds), clay or animal skins were used as a coating.

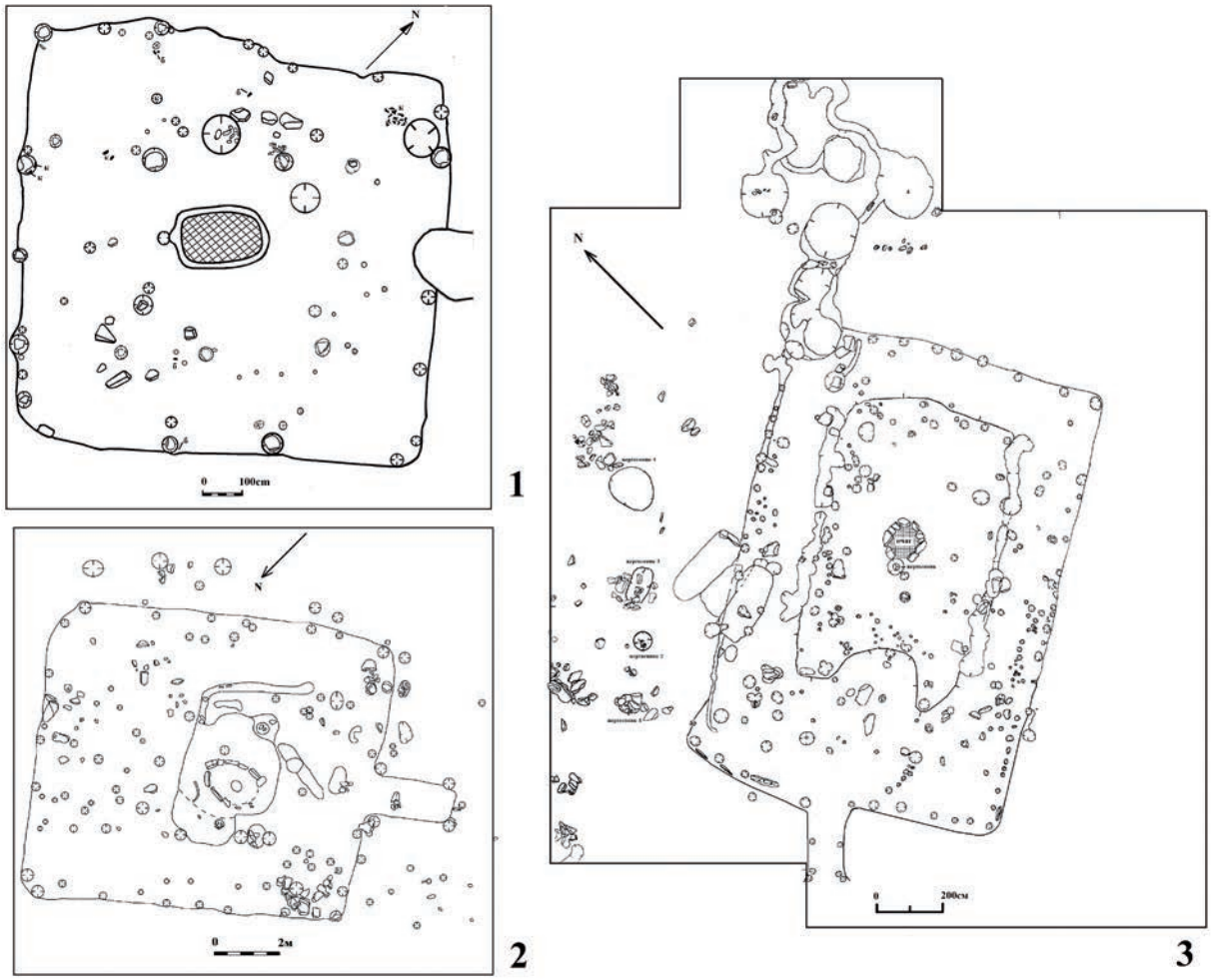


Fig. 6. Excavation plans of structures of the Andronovo period: *1* – dwelling no. 1 (Butakty-I); *2* – dwelling no. 4 (Turgen-II); *3* – temple complex (Turgen-II). Compiled by A. Goryachev

6-сур. Андронов кезеңі конструкцияларын қазу жоспарлары: *1* – № 1 тұрғын үй (Бұтақты-I); *2* – № 4 тұрғын үй (Түрген-II); *3* – ғибадатхана кешені (Түрген-II). Құрастырушы А.А. Горячев

Рис. 6. Планы раскопов конструкций андроновского периода: *1* – жилище № 1 (Бутакты-I); *2* – жилище № 4 (Тургень-II); *3* – храмовый комплекс (Тургень-II). Составитель А.А. Горячев

The Bronze Age semi-dugouts are characterized by a main pit, ranging in size from 10×10 m to 15×15 m for square ones and from 8×6 m to 12×18 m for rectangular ones, to a depth of up to 1.2 m (fig. 6). The site of the future dwelling was rammed with fine crushed stone with sand and filled with a solution of liquid clay with the addition of calcareous rocks. The soil (clay) removed during the excavation was used in the coating of walls and when pouring floors, which made it possible to protect it from groundwater and prevent or slow down deformations. The floors of the dwellings were sometimes insulated with mats, kans (channels for supplying warm air) were arranged in the mountain zone from the hearth to the rooms. They were often subjected to major repairs. At the settlement of Butakty-I in dwelling no. 1, the floors

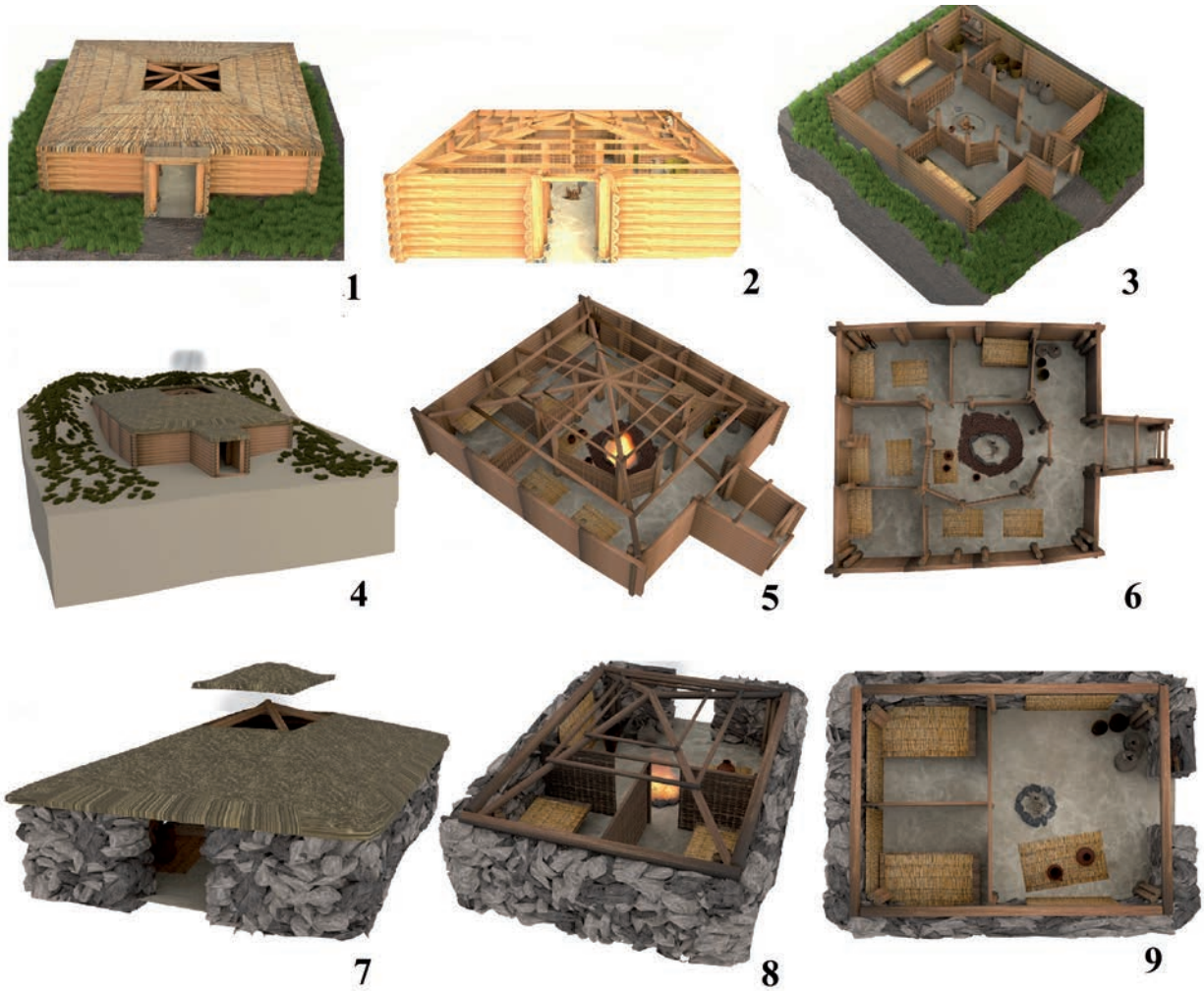
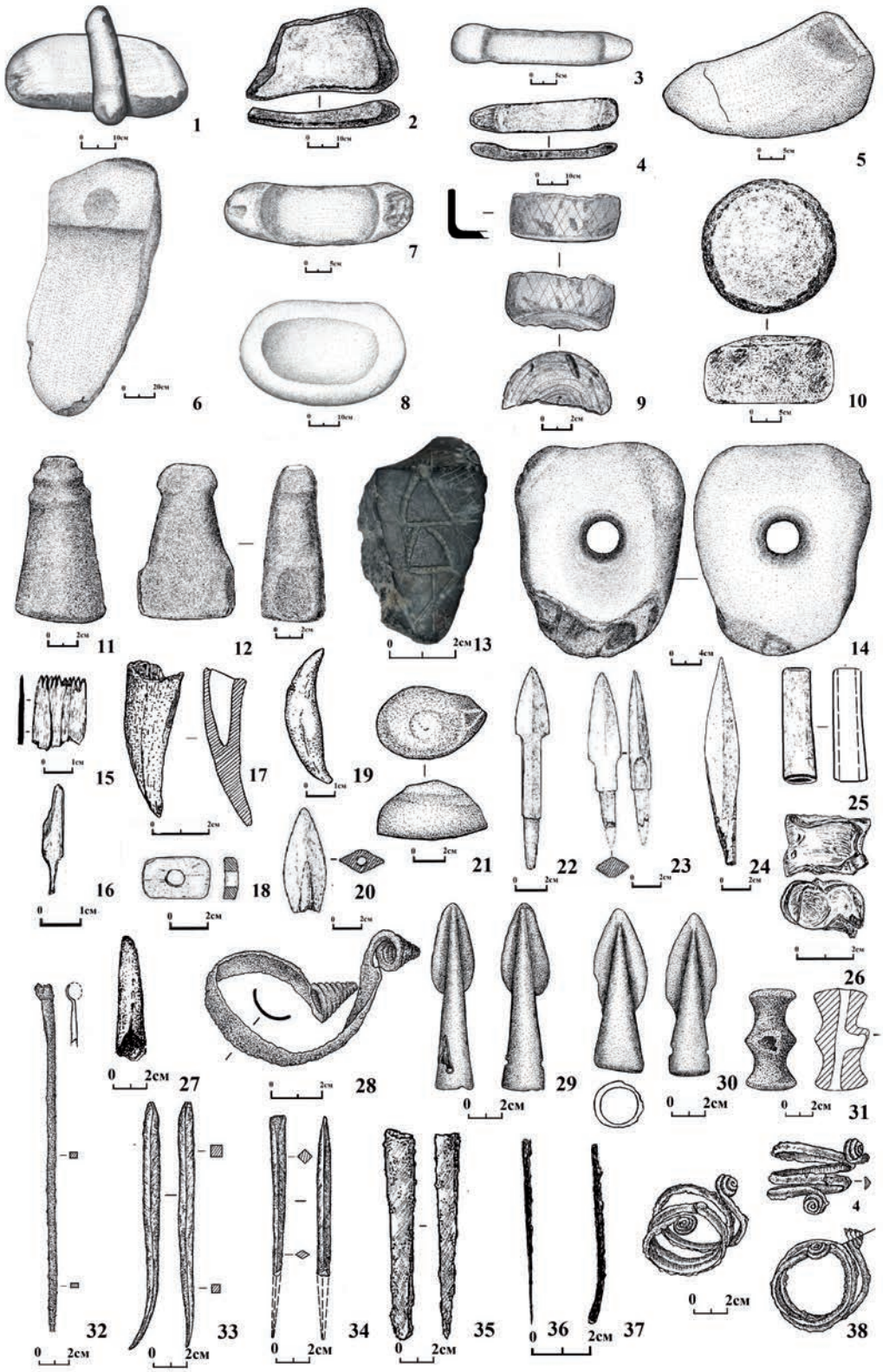


Fig. 7. Graphic reconstructions of Andronovo period dwellings: *1–3* – dwelling no. 1 (Butakty-I); *4–6* – dwelling no. 4 (Turgen-II); *7–9* – dwelling no. 1 (Yntymak-I). Illustrated by K. Potapov

7-сур. Андронов кезеңінің тұрғын үйлерін графикалық реконструкциялау: *1–3* – № 1 тұрғын үй (Бұтақты-I); *4–6* – № 4 тұрғын үй (Түрген-II); *7–9* – № 1 тұрғын үй (Ынтымақ-I). Суретші К.С. Потапов

Рис. 7. Графические реконструкции жилищ андроновского периода: *1–3* – жилище № 1 (Бутакты-I); *4–6* – жилище № 4 (Тургень-II); *7–9* – жилище № 1 (Ынтымак-I). Художник К.С. Потапов



were restored three times.Irregularities were smoothed with sand and crushed stone and filled with clay mortar. There were up to four such "repair" layers in the temple complex and dwelling no. 4 of the Turgen-II settlement.

The layout of the dwellings of the frame-pillar construction of the Andronovo period in Zhetysu is of the same type. The entrance to the dwelling of a straight or "L" shape was usually arranged from the side of a reservoir or river, most often from its south-eastern or south-western sides, in length, as a rule, was 2 m, up to 1 m wide (fig. 7, *1–6*). The doorway was closed with a dense canopy of animal skins or a wooden shield. 1–2 steps could be arranged at the entrance (Kyzylbulak-I settlement, dwelling no. 1). The floor level from the entrance gradually lowered to the center of the dwelling. There were oval-shaped hearths with a horseshoe-shaped mud-brick side or a sub-oval form, laid out of large stones up to 1.2×2.5 m in size. The dwellings consisted of a central room, residential and utility compartments. The central hall, square or rectangular in size from 4×4 m to 6×5 m, was connected to the entrance through a small vestibule or corridor. From it, three or four living rooms with separate exits to the hearth were arranged along the walls on the south and west sides. The household zone was located in the northern or eastern part of the dwelling. From 10–12 to 20 people of a large patriarchal family could live in such houses.

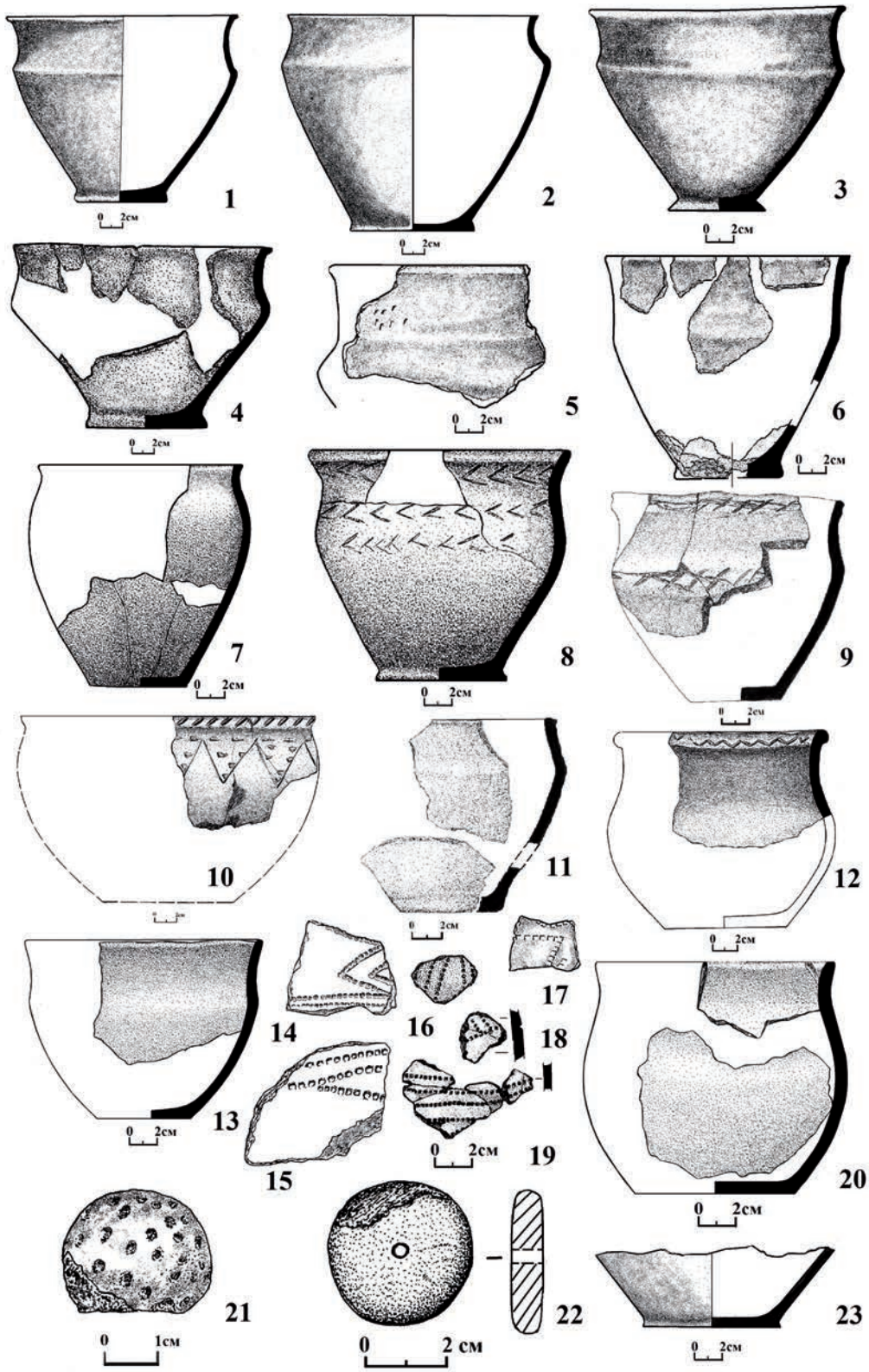
In the western spurs of the Ile and Zhetysu Alatau, as well as in the steppe zone of the Shu-Ile interfluve, the parameters of house buildings ranged from 30 to 50 m^2. The entrance, arranged from the leeward (eastern) side, led to a central room with a hearth (fig. 7, *7–9*). On the western side, two living rooms were arranged, separated by an internal partition. The utility rooms were intended for the residence of one small-family group. The economic zone was located 5 m to the northeast and consisted of a small room (4×3 m) and a cattle pen (15×12 m), marked on the surface with masonry fence reinforcement. This is how economic and residential complexes were arranged in the steppe and mountain zone of the region at the stages of common cultures of raised border ceramics.

Of interest are some details noted in the space of settlements of the Andronovo period of the foothill strip. In particular, most of them near the northern slopes of the Ile Alatau (Butakty-I, Kaynar-I, Maybulak-II, Yntymak-I, II, etc.) and at the mouths of the gorges of the western spurs of the Zhetysu Alatau (Kalakay-I, Kuygan-I) are "tied" to the sites of ancient water intakes giving rise to irrigation systems (channels with drainage ditches) that irrigated small valleys or areas of plains with fields. In addition, some of the ancient settlements on the foothill plains (Koksay-III, Almerek-I, Kyzylauyz-I, Taldybulak-I, etc.) received water from springs and streams through the same ditches, some of which were removed 400–500 m above the settlements (Maybulak-II). This fact suggests that the development of irrigation agriculture in Zhetysu began at least from the Andronovo period of the Bronze Age. At the same time, the conditions for conducting economic activity in the steppe or mountain zone of Zhetysu did not imply any other form of life support other than cattle breeding.

◀ Fig. 8. Finds from settlements of the Bronze Age (Andronovo period) Zhetysu: *1–14* – stone tools and products; *15–26* – products and tools made of horn, fangs and bone; *27–38* – bronze products, jewelry and tools. Performers: M. Chernov T. Egorova. Photo by A. Goryachev (13)

8-сур. Жетісу қола дәуірінің (андронов кезеңі) қоныстарынан табылған заттар: *1–14* – тас еңбек құралдары мен бұйымдар; *15–26* – мүйіз, азу және сүйектен жасалған бұйымдар мен құралдар; *27–38* – қола бұйымдар, әшекейлер мен құралдар. Орындаушылар: М.А. Чернов Т.А. Егорова. А.А. Горячев түсірген сурет (13)

Рис. 8. Находки из поселений эпохи бронзы (андроновский период) Жетысу: *1–14* – каменные орудия труда и изделия; *15–26* – изделия и инструменты из рога, клыков и кости; *27–38* – бронзовые изделия, украшения и инструменты. Исполнители: М.А. Чернов Т.А. Егорова. Фото А.А. Горячева (13)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The finds from the dwellings middle and late Bronze Age of Zhetysu are represented by fragments of ceramic dishes and a series of stone, bronze, ceramic, bone products and tools (fig. 8; 9). Among the stone inventory, there are peculiar "altars" with cup–shaped recesses, grain grinders with chimes, pestles, mortars, furrowers, hoes, choppers, scrapers, trowels, egg-shaped and spherical stones, as well as a chalcopyrite bowl (Kaynar I), decorative products (fig. 8, *1–14*). The set of bone products and tools consisted of fragments of beaters, blunt axes, punctures, leaf-shaped arrowheads, horn products, and numerous handles, astragalus of large and small cattle with traces of use or processing (fig. 8, *15–26*). At the settlement of Butakty-I, a geometric bone stamp made of the rib of small cattle was recorded. An awl, needles, a ring and a bracelet with spiral endings, leaf-shaped dart tips, clips, sewn plaques, a series of needles and punctures were found among the bronze products in the settlements (fig. 8, *27–38*).

Some of the ceramic products were tools. These include a spinning wheel made of the walls of broken vessels and a clay ball with point depressions (fig. 9, *21, 22*). Among the household utensils in the settlements of the Bronze Age of Zhetysu, there are pot-shaped vessels with a swollen body and jars with straight walls. The ornamented group among them is no more than 15% of ceramics (fig. 9, *8–10, 12, 14–19*). The ornament is made in the upper part of the body with a comb-shaped stamp or carved lines in the form of straight triangles with the top down, oblique and vertical notches, "horseshoes", "herringbone" and crosses", flutes, nail indentations, zigzag lines with oblique notches.

In the Late Bronze Age, in the mountainous zone of the Ile, Zhetysu and Kungey Alatau or in the Shu-Ile Mountains, settlement sites remained traditional due to the natural and geographical situation (fig. 2; 4). In the foothill zone of the Ile Alatau, ancient settlements or towns shift to the base of the foothill soles and represent settlements with fewer dwellings (up to 4–5). Previously, large settlements turn into separate family and ancestral sites (Koksay-III, Terenkara). The exception is the settlement of Kyzylbulak-IV from the tract of the same name in the upper reaches of the Kishi-Turgen gorge, where 24 sites for economic and residential yards are marked (fig. 4, *2*). In the Shu-Ile interfluve, the proliferation of small sites is recorded near each long-term spring and along the riverbeds (Serektas I, II; settlements of the Sunkar, Kotyr gorges and around Kostobe Mountain in the Khantau Mountains, etc.).

In the settlements of the Late Bronze Age, rectangular and square-plan dwellings are arranged much smaller in size than in Andronovo time (from 6×4 m to 8×8 m). These are 1–2–room spaces with a small utility compartment (fig. 10). It should be noted that such semi-dugouts are known among related Bronze Age cultures in the steppe zone of Saryarka and the Shu-Ile Mountains, where they are considered as settlements of ancient pastoralists. The multi-room premises of the Asy-I and Asy-II, settlements in the high-altitude zone of Ile Alatau, differwith a total area of 120 to 180 m^2. They have a complex layout, stone foundations of the foundations of the walls and numerous hearths in separate rooms (fig. 10, *3*). An incomplete study of some dwellings from this group leaves open the question of their functional purpose. The dwellings on the settlements were located in 1–2 rows along the outline of the above-floodplain terraces or hillsides. Along the perimeter of individual residential complexes traces of wooden fences are traced, reinforced with stone laying. In some cases, outbuildings and cattle pens were attached to them.

Fig. 9. Clay products and ceramic dishes from the settlements of the Bronze Age Zhetysu (Andronovo period): *1–6, 14–19, 23* – Butakty-I; *7–13, 20–22* – Turgen-II. Performers: M. Chernov T. Egorova

9-сур. Жетісу қола дәуірінің (андронов кезеңі) қоныстарынан табылған саздан жасалған бұйымдар және қыш ыдыстар: *1–6, 14–19, 23* – Бұтақты-I; *7–13, 20–22* – Түрген-II. Орындаушылар: М.А. Чернов, Т.А. Егорова

Рис. 9. Изделия из глины и керамическая посуда из поселений эпохи бронзы Жетысу (андроновский период): *1–6, 14–19, 23* – Бутакты-I; *7–13, 20–22* – Тургень-II. Исполнители: М.А. Чернов, Т.А. Егорова

To do this, platforms were leveled on the slope, which took into account the necessary space not only for houses, but also for household buildings (Nurlytau-II, Kokshoky-I, Kyzylbulak-IV).

In Zhetysu, the most studied complexes of the Late Bronze Age are settlements of the foothill and highland zones. On the basis of their research, reconstructions of house-building technologies and traditions of economic and cultural development of the population of the region at the stage of late and final bronze were made. In the mountainous zone and the foothill strip, there are certain differences in the arrangement of dwellings. In particular, in mountain gorges and plateaus, the floors of dwellings were protected from groundwater by dense clay backfill (35–40 cm), which was not necessary in the foothill strip, where settlements were arranged along loess banks of rivers and streams.

In the high-altitude zone, the dwellings were semi-dugouts of a frame-pillar structure of square and rectangular shapes, embedded in the slopes with a southern exposure (fig. 11, *1–4*). Their contours were determined by the column pits (d 25–30 cm), which were located at a distance of 2–2.5 m from each other. Inside the pits, a stone was usually placed on the bottom under the support pillars. The floors of the dwellings rise slightly from the inside of the room to the exit. The total area of each of the Turgen residential buildings is about 50–70 m^2. Corridor–shaped entrances (1.5–2×1 m) from the eastern and southwestern sides went out to a common water source – the Kyzylbulak stream.

Semi-dugouts of a frame-pillar structure in the foothill zone and the mouths of gorges are marked on the single–layer settlement of Talapty-I in the valley of the Koksu River (fig. 11, *6*). The traditions of housing construction characteristic of Andronovo settlements are preserved in the region until the turn of the 2nd–1st millennium BC, which dates this settlement. The fully investigated large dwelling was a rectangular semi-dugout measuring 16×11 m with a stone lining around the perimeter of the walls. The interior of the building consisted of a central room, three two-roomed chambers, as well as an elongated utility compartment (fig. 11, *5*). The residential area was located in the south (south-west and south-east) side of the house, and the utility area in the northern part. Numerous pits are found here (in two of which accumulations of purified copper ore are recorded), dug-in ceramic vessels, stone and bone tools. In the center of the dwelling there was an oval-rectangular hearth (2.4×2.2 m), made of large stone slabs dug into the edge.

Other traditions of housing construction are presented in the materials of the Asy-I, II and Bigash settlements of the Zhetysu mountain zone. Semi-dugouts of rectangular frame–pillar construction had stone bases of walls (up to 1.2 m high and up to 0.5–0.6 m wide), constructed of slabs, bonded with clay mortar and consisted of several rooms adjacent to each other [Марьяшев, Горячев 2001: 112–116]. Inside some of them, there were independent hearths of round-oval shape in the form of ground pits lined with stones. In the foothill zone of the region near the northern slopes of Zhetysu Alatau, a new type of turluk-type dwellings (buried by 20–50 cm) was noted at the settlement of Buyen-XIII [Карабаспакова 2011: 113–115]. These one- or two-chamber rooms of a yurt-like configuration had the bases of walls made of large stones bonded with clay mortar, which brings them closer to the dwellings of the Late Bronze Age settlements of the Asy plateau. A similar type of ground-based residential structures was studied in the foothill band of the Ile Alatau ridge at the sites of the final bronze Kaynar-I and Terenkara [Самашев и др. 2005: 30–33].

The finds of the dwellings of the Late Bronze Age Zhetysu are represented by a significant series of stone, bone tools and ceramic vessels. Finds of bronze products are few and are represented by fragments of plaques, beads, arrowheads and household tools – needles and punctures (fig. 12, *1–6*). Bronze products and tools are well known in the so-called "Semirechye treasures" (Andreevsky, Turksib, Kamensky, Borokhudzirsky, Shamsun, Shamshinsky, etc.) dating from the Late Bronze Age [Акишев, Кушаев 1963:

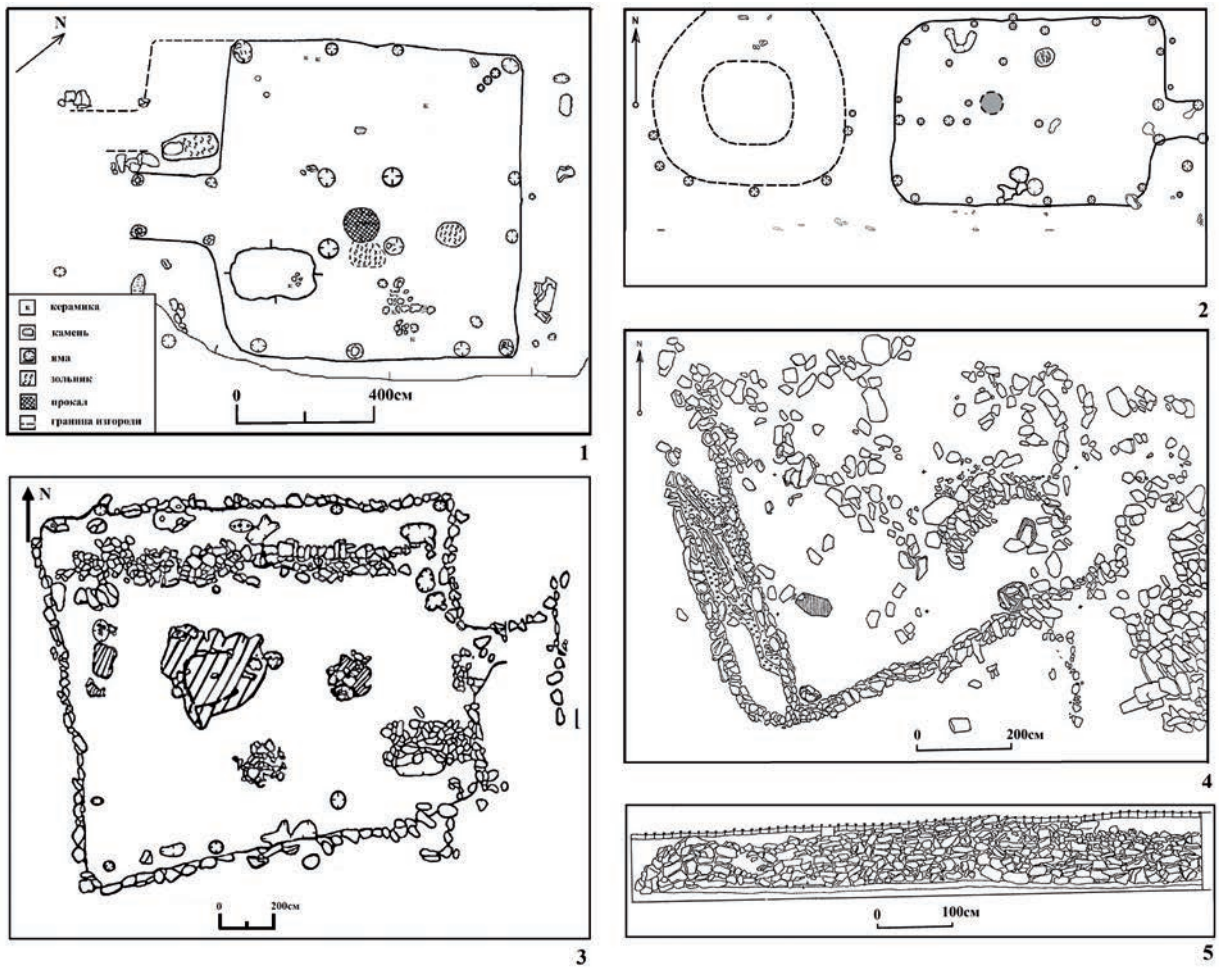

Fig. 10. Excavation plans for Late Bronze Age dwellings in the Zhetysu mountain zone: *1* – Turgen-II, dwelling no. 3; *2* – Kyzylbulak-IV, dwelling no. 1; *3* – Talapty-I, dwelling no. 2; *4* – Asy-I, dwelling no. 1; *5* – Asy-I, section of the stone base of the wall of the dwelling. Performers: A. Goryachev (1, 2); O. Ishmanov (3); S. Potapov (4, 5)

10-сур. Жетісудың таулы аймағындағы кейінгі қола дәуірі тұрғын үйлерін қазу жоспарлары: *1* – Түрген-II, № 3 тұрғын үй; *2* – Қызылбұлақ-IV, № 1 тұрғын үй; *3* – Талапты-I, № 2 тұрғын үй; *4* – Асы-I, № 1 тұрғын үй; *5* – Асы-I, тұрғын үй қабырғасының тас негізінің қимасы. Орындаушылар: А.А. Горячев (1, 2); О.И. Ишманов (3); С.А. Потапов (4, 5)

Рис. 10. Планы раскопов жилищ поздней бронзы в горной зоне Жетысу: *1* – Тургень-II, жилище № 3; *2* – Кызылбулак-IV, жилище № 1; *3* – Талапты-I, жилище № 2; *4* – Асы-I, жилище № 1; *5* – Асы-I, разрез каменного основания стенки жилища. Исполнители: А.А. Горячев (1, 2); О.И. Ишманов (3); С.А. Потапов (4, 5)

106–109; Аванесова 1991; Kuzmina 2004: 37–84; Самашев и др. 2005; Сараев, Горячев 2011: 37–47]. If we take into account that all these deposits were found near large villages of the Bronze Age at the mouth of gorges or in the foothill zone of the region, then we can assume that they were also large craft centers of ancient metallurgists of the nearest district.

A number of stone, ceramic and bone tools of Late Bronze Age settlements are characterized as tools for leather processing and weaving (fig. 12, *7–15*, *25–36*). Among them, there are spinning wheels,

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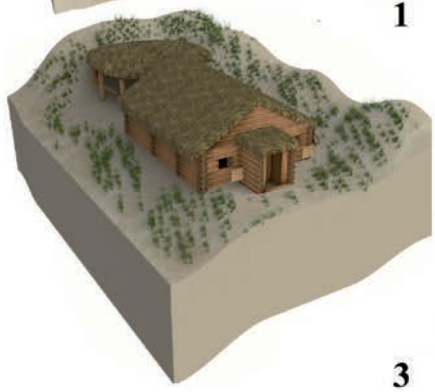

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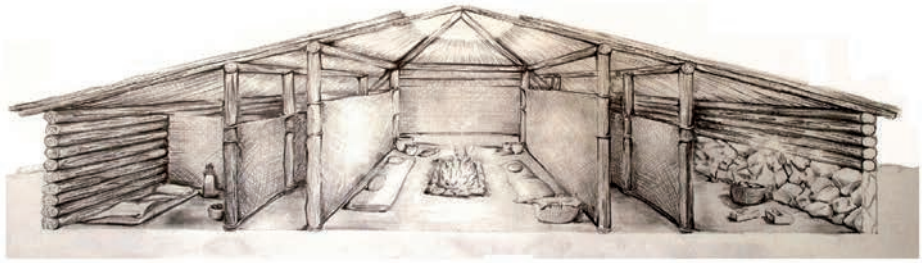

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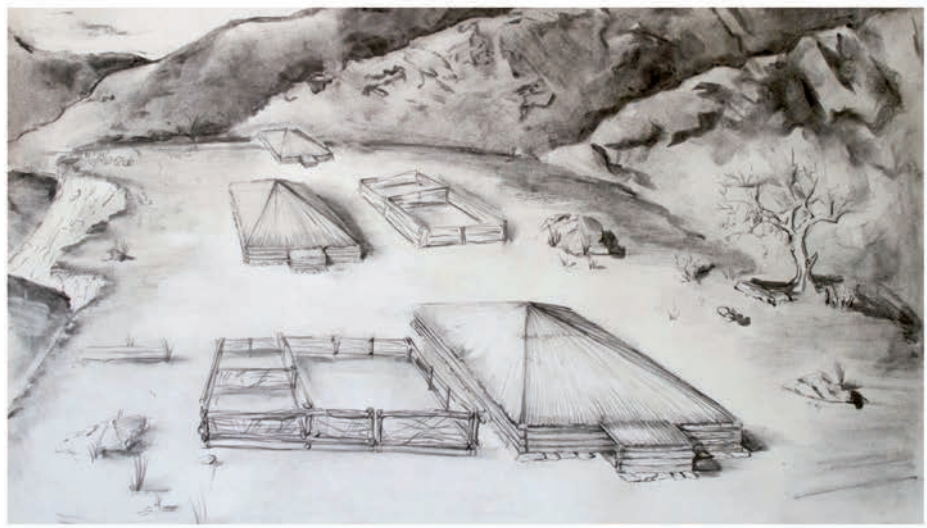

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polishers, “skate” tools, a tip for a spinning wheel, punctures, blunt axes, cutters, beaters, etc. Bright material from the dwellings of the late and final bronze of Zhetysu (Talapty-I, Turgen-II) are leaf-shaped bone tanged arrowheads (fig. 12, *16–24*). In many ways, they are similar to similar bronze products, which makes them a characteristic attribute of archaeological complexes of this time. Stone tools from the dwellings represent a wide range of tools of the late Bronze Age of the region – hoes, grain grinders, pestles, mortars, sharpeners, grinders, knives, egg-shaped tools, scrapers, vessel lids, spinning wheels, stone pommel for mace, etc. (fig. 12, *37–50*). These tools have not undergone any fundamental differences from the Andronovo period. The presence of hoes, pestles and grain grinders with grindstones indicates the development of agriculture among the population of the foothill valleys. At the same time, tools for catching animals (boleadoras) and leather processing and weaving (spinning wheels, knives, scrapers, polishes, etc.) characterize the traditions of cattle breeding and assert the existence of a complex system of economy in this period.

Most of the ceramic dishes of the late Bronze Age of the region are unornamented jars, pots, bowls and cups (fig. 13). If about 15% of ceramic vessels are ornamented in the Late Bronze settlements of the mountain zone, then it is only 5% in the foothill zone. The ornament was usually placed in the upper part of the body: along the neck finish, under the neck finish, along the neck. In high-altitude settlements, flutes, oblique and vertical notches, molded raised border, “herringbone”, “mesh”, zigzag lines of oblique notches, nail indentations, rarely triangles are marked. These elements are often found in a combined form. On the monuments of the foothill plains, dishes decorated with raised borders on the neck finish and “pearls” on the neck are marked. Rows of oblique and vertical notches, round and diamond-shaped indentations, zigzags, horizontal lines and flutes in 2–3 rows were applied in the upper part of the vessels.

3 Results and discussion *(Goryachev A., Frachetti M.D.)*

The results of decades of survey and excavation show that almost all ecological niches of Zhetysu were occupoed in the Bronze Age, from semi-desert areas and dune sites (Kosozen) to high-altitude alpine meadows with stationary settlements and seasonal sites of cattle breeders (Bigash, Asy-I, II, Kyzylbulak-IV, Turgen-II, Tasbas). The ecological conditions of the foothill zone enabled large settlements of the Andronovo period (middle to late Bronze Age) to host long-durations of occuption, and the materials indicate the range of strategies including agro-pastoralsits, herders, and artisans.

The arrangement of ancient settlements and dwellings of the 2nd millennium BC in Zhetysu has similar features of cultural and everyday traditions of this time in the steppe and forest-steppe regions of Kazakhstan, Southern Trans-Urals and Western Siberia [Маргулан и др. 1966: 126; Зданович 1988: 19–60; Зах 1995: 83–84, Hermes et al. 2021]. A similar type of frame-pillar construction dwellings is

◄ Fig. 11. Graphic reconstructions of the Late Bronze Age dwellings in the Zhetysu mountain zone:
1, 2 – Turgen-II, dwelling no. 3; *3, 4* – Kyzylbulak-IV, dwelling no. 1; *5* – Talapty-I, view from the east side of dwelling no. 2; *6* – Talapty-I, general view of the settlement on the right bank of the Koksu River.
Illustrated by K. Potapov

11-сур. Жетісудың таулы аймағындағы кейінгі қола дәуірі тұрғын үйлерді графикалық реконструкциялау: *1, 2* – Түрген-II, № 3 тұрғын үй; *3, 4* – Қызылбұлақ-IV, № 1 тұрғын үй;
5 – Талапты-I, № 2 тұрғын үйдің шығыс жағындағы көрініс; *6* – Талапты-I, Көксу өзенінің оң жағалауындағы елді мекеннің жалпы түрі. Суретші К.С. Потапов

Рис. 11. Графические реконструкции устройства жилищ эпохи поздней бронзы в горной зоне Жетысу:
1, 2 – Тургень-II, жилище № 3; *3, 4* – Кызылбулак-IV, жилище № 1; *5* – Талапты-I, вид с восточной стороны жилища № 2; *6* – Талапты-I, общий вид поселения по правому берегу реки Коксу. Художник К.С. Потапов

characteristic of the ancient population of Kazakhstan. Their closest analogies are found at the settlement of Atasu [Кузьмина 1994: 74–78, 405, рис. 9, *3*]. Residential structures of settlements in the western spurs of Zhetysu and Ile Alatau, as well as the Shu-Iley Mountains, are similar in type to those recorded at the settlement of Buguly II [Маргулан 1979: рис. 110–114]. The closest typological parallels in their structure are found in the materials of settlements in Central Kazakhstan, where they were dated earlier within the 15th–13th centuries BC [Кадырбаев, Курманкулов 1992: 230–232]. A distinctive feature of the region's dwellings are some oval-shaped hearths with horseshoe-shaped sides, characteristic of the Central Asian complexes of the Tazabagiyab culture [Итина 1977: 83].

The most stable parallels of metal inventory from Zhetysu settlements are found among Bronze Age cultures of Middle and Central Asia [Кузьмина 1966: 141, табл. XII]. But closer analogies to metal products and tools were found in the materials of the Alakul burial grounds and on the monuments of the Feodorov cultural tradition of the Southern Trans-Urals, Central and Northern Kazakhstan [Кадырбаев, Курманкулов 1992: 104, рис. 76, *21*; Усманова 2010: 152, рис. 150; Зданович 1988: табл. 10Б], as well as Middle Asia [Аванесова 1991: рис. 52; Кузьмина 1994: 432, рис. 33]. Similar bone products and tools are known in the settlements of the Middle and Late Bronze Saryarka [Кадырбаев, Курманкулов 1992: рис. 123] and East Kazakhstan [Черников 1960: рис. 13, *1, 2*; табл. XIV: *2–7*]. Their set is traditional for domestic (primarily leather) crafts of the Bronze Age tribes of the steppe zone of Central Kazakhstan [Кадырбаев, Курманкулов 1992: 157–175]. The composition of the osteological material showed the predominance of small and large cattle, which is typical for Andronovo dwellings in the region.

The ceramics of the Andronovo settlements are close to the mixed Alakul-Fedorov funerary ceramic complexes of the Bronze Age Zhetysu [Марьяшев, Горячев 1993: 5–19; Карабаспакова 2011]. Dishes with similar signs are widely distributed in the materials of the Alakul burial grounds of Central Kazakhstan [Маргулан и др. 1966: 111, 115]. Individual elements of forms and ornamentation are found in the Fedorov complexes of Eastern Kazakhstan [Черников 1960: 270]. According to the modern chronology of the monuments of the Bronze Age of the region, similar forms of dishes, previously defined by the 15th–13thcenturies. [Кузьмина 1994: 407, рис. 11], can be dated 17th/16th – 14th centuries BC. These data indicate that Zhetysu at that time was a zone of active contacts of Andronovo tribes of the steppe regions of Kazakhstan from the Urals to Altai and agricultural oases of Middle Asia.

At the turn of the 14th–13th centuries BC, according to the new periodization of the Bronze Age of Zhetysu [Гасс, Горячев 2016: 113, табл. 2], the traditions of the tribes of the Andronovo cultural and historical community are transformed into a community of raised border ceramics cultures. The changes concern, first of all, the nature of housing construction and the choice of places for settlements in the foothill zone of the region, where there is a cessation of functioning or a reduction in the territories of large

Fig. 12. Finds from the settlements of the late Bronze Zhetysu: *1–6* – bronze; *7–9* – clay and ceramics; *10, 15, 23, 29–31, 37–50* – stone; *11–14, 16–28, 32–36* – bone. Performers: M. Chernov (1–8, 11–15, 26–36, 50); T. Egorova (10, 16–18, 20, 24, 25, 38, 39, 41, 43, 44, 46).
9, 19, 21, 22, 37, 40, 42, 45, 47–49 – after: [Maryashev et al. 2017]

12-сур. Жетісудың кейінгі қола дәуірі қоныстарынан табылған заттар: *1–6* – қола; *7–9* – саз және керамика; *10, 15, 23, 29–31, 37–50* – тас; *11–14, 16–28, 32–36* – сүйек.
Орындаушылар: М.А. Чернов (1–8, 11–15, 26–36, 50); Т.А. Егорова (10, 16–18, 20, 24, 25, 38, 39, 41, 43, 44, 46).
9, 19, 21, 22, 37, 40, 42, 45, 47–49 – [Марьяшев және т. б. 2017]: бойынша

Рис. 12. Находки из поселений поздней бронзы Жетысу: *1–6* – бронза; *7–9* – глина и керамика; *10, 15, 23, 29–31, 37–50* – камень; *11–14, 16–28, 32–36* – кость. Исполнители: М.А. Чернов (1–8, 11–15, 26–36, 50); Т.А. Егорова (10, 16–18, 20, 24, 25, 38, 39, 41, 43, 44, 46).
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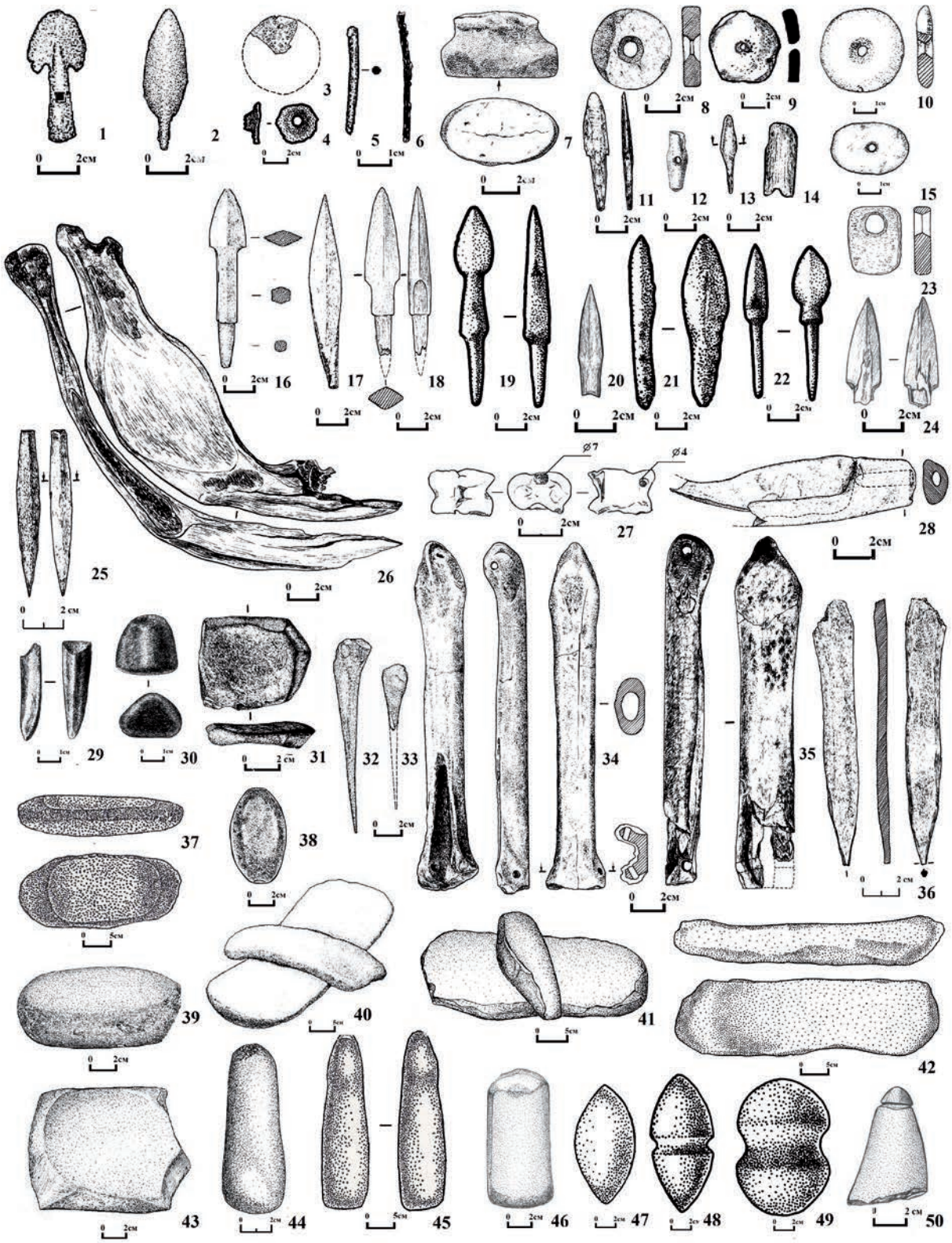

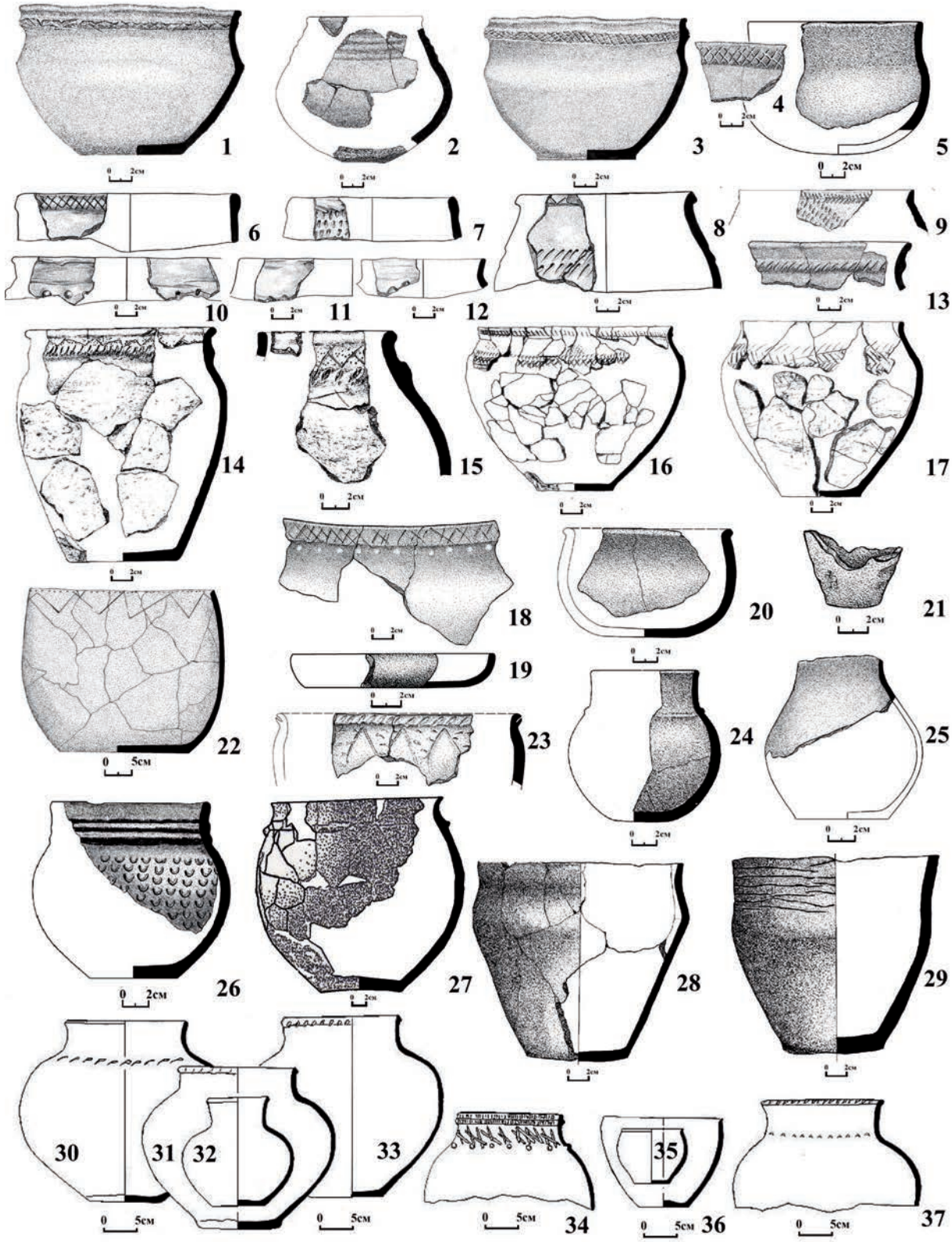
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settlements of the Andronovo period (Butakty-I, Yntymak-I and Kuygan-I) [Горячев 2018: 86–105]. A new type of yurt-like dwellings appears, which represented a transitional form from semi-earth dwellings to terrestrial dwellings characteristic of the mountainous and foothill zones of the region of the early Iron Age, as, for example, at the archaeological complexes Turgen-II and Kyzylbulak-IV. These data suggest that the occurrence of such sites in Zhetysu occurs at a transitional stage from the Bronze Age to the Early Iron Age and in the Early Saka period.

Some analogies in the planography and features of the Late Bronze Age dwellings of the Zhetysu mountain zone can be traced in the materials of the settlements of the Southern Trans-Urals [Сальников 1954: 246] and Central Kazakhstan [Маргулан и др. 1966: 248–255]. The structure of roofs belongs to the categories of four- and two-pitched roofs [Кузьмина 1994: 77–78]. The nature of the ground hearths allows us to attribute them to widespread in the Late Bronze Age on the territory of Kazakhstan [Кузьмина 1994: 80]. Above-ground dwellings of the turluk type are of particular interest. Their origin is associated by experts with the process of formation and development of various forms of nomadic cattle breeding in Central Asia. The formation of land-based yurt-like residential buildings on this territory begins with the period of the Final Bronze Age and ends by the middle of the 1st millennium BC [Вайнштейн 1991: 57]. This type of housing is being developed among pastoral tribes in connection with their transition to semi-nomadic forms of economy.

A set of stone, bone and metal tools is close to the finding complex of the Myrzhyk settlement in Central Kazakhstan [Кадырбаев, Курманкулов 1992: 57, рис. 29, *9*]. Bronze arrowheads belong to the type of cast tanged or double-bladed leaf-shaped arrowheads (fig. 12, *1, 2*). Complexes with double-bladed arrowheads are localized by specialists in the eastern part of steppe Eurasia and date from the Late Andronovo time to the final bronze [Аванесова 1991: табл. 39; Кадырбаев, Курманкулов 1992: 180–181]. Products similar to the tanged ones are characteristic of the common cultures of raised border ceramics of the Late Bronze Age of Central and Middle Asia [Аванесова 1991: рис. 8, *22*, *23*]. The remaining metal attributes (needles, punctures, plaques, beads) have a wide chronological range both in Zhetysu and in the adjacent regions of Central Asia.

Studies of individual dwellings of the foothill and mountain zones showed that part of the population of large settlements specialized in handicraft production. Sets of tools made of stone, metal, bone and clay of various types and functional purposes allow us to draw primary conclusions about the development of blacksmithing, leather, pottery and weaving. Wood, bone and stone processing were also common among the population of the region. The labor activity that these masters were engaged in excluded the possibility

◀ Fig. 13. Ceramic dishes from the dwellings of the settlements of the late and final bronze Zhetysu:
1–23, 26 – Turgen-II; *24, 25* – Kyzylbulak-IV; *27–29* – Talapty-I; *30–37* – Terenkara.
Performers: M. Chernov (1–18, 26); T. Egorova (19–25). 27–29 – after: [Maryashev et al. 2017];
30–37 – after: [Samashev et al. 2005]

13-сур. Жетісудың кейінгі және соңғы қола дәуірі қоныстары тұрғын үйлерінен алынған керамика ыдыстар:
1–23, 26 – Түрген-II; *24, 25* – Қызылбұлақ-IV; *27–29* – Талапты-I; *30–37* – Тереңқара.
Орындаушылар: М.А. Чернов (1–18, 26); Т.А. Егорова (19–25). 27–29 – [Марьяшев және т. б. 2017]: бойынша;
30–37 – [Самашев және т. б. 2005]: бойынша

Рис. 13. Керамическая посуда из жилищ поселений поздней и финальной бронзы Жетысу:
1–23, 26 – Тургень-II; *24, 25* – Кызылбулак-IV; *27–29* – Талапты-I; *30–37* – Теренкара.
Исполнители: М.А. Чернов (1–18, 26); Т.А. Егорова (19–25). 27–29 – по: [Марьяшев и др. 2017];
30–37 – по: [Самашев и др. 2005]

for them to cultivate the land or raise livestock. Mining and processing of ore in the Zhetysu mountain zone in the Bronze Age was quite developed [Берденов 1998: 180–191]. Despite the fact that the study of this problem is at an early stage, but already known (including recently discovered) Khantau, Kindykty, Tien Shan, Koktas and Tekely mining centers of the Bronze Age. For masters of other specializations, the nearest neighbors in the villages in the mountainous zone produced raw materials in the form of wool. There is evidence that in the upper reaches of the Turgen Gorge there were conditions and raw materials for the production of ceramic tableware.

The base territory of the development of Zhetysu by the ancient population was the foothill zone. According to its conditions (climate, combination of mountain slopes and plains, availability of water sources, etc.), it most corresponded to the needs of people and allowed the use of neighboring natural ecosystems. Their change in the Bronze Age occurred with an increase in the areas developed by ancient people for economic purposes. Already at the Andronovo stage, thanks to the integrated cattle-breeding and agricultural system of the economy, the inhabitants of the region expand their living space to high-altitude plateaus and plains 15–20 km from the mouths of mountain gorges. There is a fairly stable system of management, in which the population of the plains mastered irrigation agriculture, and mountain gorges – driving cattle breeding.

The inhabitants of the ancient settlements located at the exit of the gorges were engaged not only in agriculture, but also in various crafts, gardening and plantfarming [Spengler et al. 2014]. The breeding of domestic animals played a subsidiary role and most often wore a pastoral form of cattle breeding. In addition, such large settlements became craft centers in the Bronze Age, which is confirmed by a series of treasures with a significant number of metal tools. The nature of the tools and products found both during excavations of settlements and in treasures suggests a significant level of development of blacksmithing, jewelry, pottery, leather and weaving crafts for that time. Moreover, the materials of the hoards indicate specialization in certain types of industries, in particular, blacksmith craft masters [Kuzmina 2004: 37–84; Сараев, Горячев 2011: 37–47]. Another part of the population specialized in cattle breeding. They settled in the mouths of mountain gorges and in a high-altitude area with a rich variety of grasses suitable for year-round grazing. Such specialization and mutually beneficial commodity exchange contributed to the well-being of the population, an increase in the territories covered by production activities and an increase in its number during this period. The final formation of this economic system takes place at the stage of the Late Bronze Age.

4 Conclusion *(Goryachev A.)*

Climatic changes of the Bronze Age of Northern Eurasia towards aridization may have significantly influenced the directions of economic development of the ancient population of Zhetysu [Аубекеров и др. 2009: 48–58]. Changing environmental conditions in the steppe regions of Central and Eastern Kazakhstan stimulated movement of some populations to the foothill and mountain zones of Zhetysu, where conditions were more stable due to the proximity of the mountains at that time. The most versatile ecotone was the foothill strip and the mouths of mountain gorges, where ample conditions for both herding (pasture) and farming were maintained throughout seasonal environmental fluctuations. In the course of archaeological exploration, it was possible to map the monuments of the Bronze Age, to make their cultural and chronological attribution, to determine the position of ancient settlements in the structure of complexes and differences in the traditions of their arrangement and house-building in steppe, foothill and mountain ecological niches in the region.

At the Andronovo stage of the Bronze Age (20th/19th– 14th/13th centuries BC), an economic system was formed with the division of the territory into zones of preferential development of cattle breeding and mixed herding/agriculture. Archaeological studies show that settlements and farmyards of ancient pastoralists are arranged in the steppe Shu-Ile mountains and adjacent semi-deserts, as well as in mountain gorges and high-altitude plateaus of Zhetysu, Ile and Kungey Alatau. In the steppe zone, most of the gorges with springs were occupied by wintering of ancient pastoralists. In summer, they led cattle to the upper zhaylau, located on the tops of the low ridges of Anrakhay, Kindyktas, Khantau, Aytau, etc. Some of them could migrate to the northern slopes of the Ile Alatau and its spurs. The close interrelations of the ancient population of these areas are established on the materials of burial complexes of the Bronze Age [Горячев 2020; Frachetti 2008].

The economy of the foothill zone reflected a range of investments in both farming and herding, likely because the natural and climatic conditions in the Bronze Age contributed to productive mixedinvestments in millet, wheat, barely, legumes, and (predominantly) sheep-goat herding [Spengler 2015]. Studies of economic and residential complexes have also shown that water intakes of irrigation systems during this period were located, as a rule, in the mouths of mountain gorges. Water from the river was diverted to the gentle ridges of watersheds or wide bottoms of gorges located below the water intake, where fields were cultivated [Горячев 2020]. The water supply of the settlements was made from streams or springs. In the foothill and mountain zone of Zhetysu Alatau, systems of ancient ditches and channels located along the banks of large rivers Koksu, Karatal, Aksu, Bien are traced. In the Shu-Ile Mountains, a system of small fields near settlements has been identified, water to which was delivered from streams and rivers. At the exit from the gorges, their channels were blocked and water storage tanks were created – togans for irrigation in the dry season (July–August).

In the Late and Final Bronze Age (14th/13th – 10th/9th centuries BC), the economic and household traditions of local communities is associated with the separation of handicraft production into an independent type of economic activity. Large settlements along the piedmont econtonee merged as craft and agricultural centers while pastoralists reflected a range of mobile management in a complex form of cattle breeding largely based in vertical transhumance. At the same time, their main wintering is concentrated in the lower part of the mountain gorges. The general trend of economic and cultural development of the population of the Bronze Age contributed to the formation of a sustainable economic model with extensive use of natural resources and the development of all ecological niches of the region. At the same time, the population of certain areas produced all the products necessary for life and economic activity.

This stage of the Bronze Age of Zhetysu is characterized by extensive contacts with the ancient inhabitants of the adjacent territories of Kazakhstan, Middle and Central Asia. The nature of this interaction was shaped partly by the increased mobility of the population and migrations of individual tribal groups to Zhetysu from Central and Eastern Kazakhstan, as well as Altai. Interregional contacts significantly influenced the economic and cultural development of the region's population in the Bronze Age. Industrial specialization and mutually beneficial commodity exchange between farmers, artisans and cattle breeders contributed to the growth of prosperity and population during this period, which was reflected in the number and structure of ancient settlements on this territory. These processes led to a gradual property stratification of the ancient population and significantly influenced the socio-economic relations of the tribes of the Bronze Age Zhetysu.

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