DOI: https://doi.org/10.32653/CH214515-537

Research paper

Arsen L. Budaichiev,
Researcher
Institute of History, Archeology and Ethnography
Dagestan Federal Research Center, RAS, Makhachkala, Russia
arseneihae@yandex.ru

Murad Sh. Saipudinov,
Researcher
Institute of History, Archeology and Ethnography
Dagestan Federal Research Center, RAS, Makhachkala, Russia
haosta@mail.ru

JAR VESSELS FROM THE KURA-ARAXES SITES IN DAGESTAN: A TYPOLOGICAL AND TECHNOLOGICAL STUDY

Abstract. This article presents a typological and technological analysis of jar vessels from Early Bronze Age sites in Dagestan associated with the Kura-Araxes cultural-historical community. The jars are classified according to key morphological features: body shape, rim form, and the presence of handles. This classification yields six types, with Type II further divided into two subtypes (A and B). Analogies and parallels for these jars are drawn not only from regions of the Caucasus adjacent to Dagestan but also from more distant areas, including Eastern and Central Anatolia and Northwestern Iran, where Kura-Araxes sites have produced similar vessels. Applying the technical and technological analysis method developed by A.A. Bobrinsky, we obtained data on the recipes (compositions) of the molding pastes used for these jar vessels. Vessels from sites in Mountainous Dagestan were produced using a single primary recipe: clay + chamotte + organic solution. In contrast, vessels from Primorsky Dagestan employed two recipes: clay + chamotte + manure (77.8%) and clay + chamotte + organic solution (22.2%). These findings enabled the reconstruction of pottery traditions in jar production, which proved to be distinct between the two regions. This distinction suggests the persistence in Mountainous Dagestan of an older, possibly Eneolithic, technological tradition in pottery-making, alongside influences from the Kura-Araxes potters of Primorsky Dagestan. The results of this study can contribute to investigations of Kura-Araxes pottery across the Caucasus and the Middle East.

Keywords: Kuro-Araxes cultural and historical community; Early Bronze Age; Mountainous Dagestan; Primorsky Dagestan; pottery; technical and technological analysis.

For citation: Budaichiev A.L., Saipudinov M.Sh. Jar Vessels from The Kura-Araxes Sites in Dagestan: a Typological and Technological Study. *History, Archeology and Ethnography of the Caucasus*. 2025. Vol. 21. N. 4. P. 515-537. doi.org/10.32653/CH214515-537

DOI: https://doi.org/10.32653/CH214515-537

Исследовательская статья

Будайчиев Арсен Лахманович
научный сотрудник
Институт истории, археологии и этнографии
Дагестанский федеральный исследовательский центр РАН, Махачкала, Россия
arseneihae@yandex.ru

Сайпудинов Мурад Шахбанович
научный сотрудник
Институт истории, археологии и этнографии
Дагестанский федеральный исследовательский центр РАН, Махачкала, Россия
haosta@mail.ru

БАНОЧНЫЕ СОСУДЫ КУРО-АРАКСКИХ ПАМЯТНИКОВ ДАГЕСТАНА: ТИПОЛОГИЯ И ТЕХНОЛОГИЯ

Аннотация. В статье рассматриваются проблемы типологического и технико-технологического анализа баночных сосудов из памятников раннего бронзового века Дагестана, относящихся к куро-аракской культурно-исторической общности. Типология баночных сосудов осуществлена по их показательным морфологическим признакам – форма тулова, венчика, наличие ручек. В результате анализа сосудов выделяется шесть типов, среди которых в типе II представлены два подтипа (А, Б). В исследовании приводятся аналогии и параллели сосудам баночного типа не только сопредельных с Дагестаном регионов Кавказа, но более отдаленных регионов (Восточная и Центральная Анатолия, Северо-Западный Иран), где также представлены памятники куро-аракской культурно-исторической общности с сосудами подобного типа. Применение методики технико-технологического анализа баночных сосудов, разработанной А.А. Бобринским, позволило получить информацию о применявшихся рецептах (составах) формовочных масс. Рассматриваемые сосуды из памятников Горного Дагестана изготавливали по одному основному рецепту составления формовочной массы: глина + шамот + органический раствор. Для сосудов Приморского Дагестана зафиксировано использование двух рецептов составления формовочной массы: глина + шамот + навоз (77,8%); глина + шамот + органический раствор (22,2%). В ходе проведенного исследования удалось реконструировать гончарные традиции производства баночных сосудов. Они оказались различными. Это говорит об определенном различии, либо о существовании в Горном Дагестане более древней, возможно энеолитической, гончарной технологической традиции в условиях смешения с традициями куро-аракских гончаров Приморского Дагестана. Результаты исследования могут быть использованы при изучении керамики куро-аракской общности Кавказа и Ближнего Востока.

Ключевые слова: куро-аракская культурно-историческая общность; ранний бронзовый век; Горный Дагестан; Приморский Дагестан; керамика; технико-технологический анализ

Для цитирования: *Будайчиев А.Л., Сайпудинов М.Ш.* Баночные сосуды куро-аракских памятников Дагестана: типология и технология // История, археология и этнография Кавказа. 2025. Т. 21. No 4. С. 515-537. doi.org/10.32653/CH214515-537

Introduction

Among the diverse ceramic forms represented at Early Bronze Age sites of the Kura-Araxes cultural-historical community in Dagestan, jars[1] hold a prominent position and became a traditional form from this period onward. Morphologically, these are wide-mouthed, open vessels with a broad, flat base and straight vertical walls that gradually flare toward the rim. Less commonly, the walls may slightly taper or exhibit mild convexity in the mid-body. These vessels typically feature handles of various types.

The earliest examples of jars of various forms in Dagestan date to early agricultural sites, including the Chokh Neolithic settlement and the Eneolithic settlements of Ginchi and Chinna [1, p. 16, 27, fig. 3, *13*, 6, *18*; 2, pp. 69, 75, 117, fig. 13, *5*, *11*, 15, *16*, *19*, 19, *8*]. A similar pattern is observed in the South Caucasus, where jar vessels first appear at Neolithic–Eneolithic sites (e.g., Shorsu, Kultepe, Aknashen-Khatunarkh) [3, fig. 9, *3, 1*, *4*, *6*, *12–14*; 4, p. 140, fig. 5, *8–9*; 5, p. 31–32, fig. 3, 4, *4*, *8*, *11*, *14*, *15*; 5, *2*, *6*]. These findings indicate that jars represent one of the archaic clay vessel forms in the Caucasus, alongside bowls and pot-shaped vessels.

This study is based on materials from both settlement and burial sites located in various physical-geographical and natural-climatic zones of Dagestan (Fig. 1). The settlements include Velikent II, Galgalatli, Geme-Tyube II, Kabaz-kutan II, Mekegi, Sigitma, Chirkey, and Sharakun. The burial sites comprise Velikentsky I (catacomb 8), Velikentsky II (catacomb 1), Velikentsky III (catacomb 1), Gonobsky, Karabudakhkentsky II, and Shchebokha burial grounds. These sites have yielded a substantial number of jar-shaped vessels in various sizes, both complete and fragmentary. Certain small vessels (height <10 cm, rim diameter <10 cm) with handles are classified here as mugs and are excluded from the present analysis.

Typology

The typology of the jars examined here is based on key morphological features: body and rim shape, as well as the presence and placement of handles.

Type I comprises single-handled vessels with straight vertical walls and a smoothly curved, often indistinct rim. These vessels exhibit nearly equal diameters at the mouth and base (occasionally with the mouth slightly wider), resulting in a low cylindrical form. The ratio of base diameter to mouth diameter relative to height is 1:0.9–1. Jars of this type are rare, represented primarily in the early Velikent catacombs (approximately 10 specimens) (Fig. 2, *2–4*). In Mountainous Dagestan (Mekegi village) only one example occurs, featuring an indistinct, smoothly curved rim and a single ribbon handle positioned just below the rim (Fig. 2, *1*).

Type II comprises vessels with a body that gradually widens toward the mouth and features a distinct, sometimes unprofiled rim. The smooth flaring typically begins at the base, though in some smaller specimens (e.g., from the Sharakun settlement; Fig. 3, *9*), it starts midway up the body, producing a trumpet-like form. Here, the mouth diameter exceeds the base diameter (ratio 1:1.2–1.4). This type is the most numerous and widespread among the jar-type vessels studied and represents the classic form characteristic of Early Bronze Age sites in Dagestan. It includes both large vessels (h >20 cm) and smaller ones (h = 10–15 cm), equipped with one or two handles of varying types. Two subtypes are distinguished.

Subtype A – vessels with a profiled, short, everted rim and typically one (rarely two) ribbon handles terminating in tendrils. These handles are usually attached at the rim or slightly below it. Comparable vessels are characteristic of sites in the plains and foothills of Dagestan, including the Velikent I burial ground

1 For brevity, jar-shaped vessels in most cases are simply referred to as “jars” throughout this paper.

(catacomb 8) (Fig. 2, *5–8*), the Geme-Tyube II settlement (2, fig. 22, *10*, *13*), and the Karabudakhkent II burial ground (6, fig. 8).

Subtype B – vessels with an indistinct, everted rim. Both taller two-handled vessels (h 18–20 cm) and shorter single-handled examples occur at sites in Mountainous Dagestan (Galgalatli and Mekegi settlements; Shchebokha burial ground) and Primorsky Dagestan (Velikentsky I burial ground, catacomb 8) (Fig. 3, *1–3*, *5–6*, *8*). The Galgalatli settlement also yielded low jars with pseudo-handles in the form of horizontal projections positioned just below the rim (Fig. 3, *4*, *7*).

Type III comprises vessels with a slightly convex mid-body (Fig. 4). All known examples of this type originate from the early Velikent catacombs and vary in size. One representative specimen is a squat, two-handled jar with an everted, obliquely cut rim; a narrow groove encircles the exterior at the base of the rim (Fig. 4, 5). Similar grooves appear on the outer surfaces of the whisker-shaped ribbon handles. A rounded vessel fragment with a slightly incurved rim from the Sigitma settlement (Fig. 4, 6) shows some resemblance to this type.

Type IV comprises rare jars with a slightly concave mid-body and a pronounced everted rim. Vessels of this form occur at the Velikent II and Kabaz-kutan II settlements (Fig. 5). One complete example features a pseudo-handle in the form of a rounded cylindrical appliqué on the upper body (Fig. 5, 1). Fragments from Kabaz-kutan II and Geme-Tyube II settlements exhibit similar handles [7, fig. 6, *5–6*; 2, fig. 22, *13*]. Close parallels exist at the Chirkey settlement of Tad-Shob, including a large single-handled wide-mouthed vessel (rim d = 15 cm) with a broad, flat, protruding base and strongly everted rim, creating a distinct mid-body concavity; its body is decorated with a multi-row incised zigzag band [8, fig. 10, *2*]. Similar jars have also been recovered from the Treli settlement in Georgia [9, pp. 67–68, fig. 95, *3*].

The last two types come from catacomb 8 of the Velikent burial ground I, in which about 500 ceramic vessels of various shapes and sizes were found. Among them, over 60 samples, both intact and fragmented, are classified as jar vessels.

Type V comprises a small (h = 9.5 cm), squat jar with a wide, flat base (d = 9.3 cm), tapering walls, and a smoothly everted rim (d = 8 cm), producing an S-shaped profile (Fig. 5, *7*). The vessel features pseudo-handles in the form of opposed horn-shaped appliqués, each with a small vertical perforation for braids.

Type VI comprises a jar (h = 12 cm) with a near-cylindrical body, shoulders tapering toward the mouth, and a short, sharply incurved rim (rim d = 10 cm; base d = 9.5 cm) (Fig. 5, *8*). It is equipped with pseudo-handles imitating hemispherical lugs, each with a narrow horizontal perforation.

Analogies and parallels

The closest analogies and parallels to the jars from Dagestan occur at Kura-Araxes sites in the South Caucasus.

Notable examples come from the multi-layered settlement of Kültepe in Nakhichevan, where Early Bronze Age layers have yielded gray- and black-burnished cylindrical jars equipped with hemispherical handles positioned mid-body [10, p. 132, pl. XXI, *2*]. Close parallels to Type I vessels appear in materials from the Dashlytepe and Osmanbozu burial mounds [9, fig. 60, *6*; 11, p. 77, pl. XXIX, *7*].

In burial sites of Northwestern Azerbaijan, both small single-handled and two-handled jars with flaring walls occur; these are, for some reason, referred to as “ladles” [11, p. 76, fig. XXIX, *1–4*]. Vessels of similar form from the Armavir-blur and Zaglik settlements were interpreted by B.A. Kuftin as mugs [12, pp. 91–92, pl. XX, *2*, *4*, fig. 50], except for one low, wide-mouthed handled vessel from Aligryh village, which he described as a “clay ladle (or bowl with a handle)”[2] [12, p. 99, pl. XX, *1*, fig. 54a]. R.M. Munchaev classified vessels of this

2 At the same time, T.I. Akhundov continued to classify similarly shaped jar vessels as ladles.

form, in various sizes, as jar-shaped pots and mugs [6, pp. 164–165, fig. 5, *6–7*, *9*, *7*, *1*, 8; 13, p. 87, pl. VIII, *8–13*]. Small two-handled jars also appear in the Kvemo-Kartli region of Georgia[3] (Samshvilde settlement) [9, fig. 60, *4*].

The aforementioned mugs and jars from South Caucasian sites exhibit close parallels to certain Dagestan examples of Type II jars. Similarly, in the North-Eastern Caucasus, various jars occur at settlement sites (Lugovoe, Serzhen-Yurt) and are divided into two main forms: conical and cylindrical [13, pp. 108, 110, pl. XXVII, *1, 2*, fig. 32; 14, p. 358, fig. 77, *4*].

Further parallels appear in materials from settlement of Yanik Tepe near Lake Urmia (northwestern Iran), which yielded several jar forms. The most characteristic is a two-handled jar with a prominent, everted, thickened rim and a body that bulges toward the base [9, fig. 58, *2*]. Similar vessels occur in adjacent areas, on the southeastern slopes of the Lesser Caucasus [15, p. 84, pl. 54, *4*]. These differ from the Velikent Type III jars primarily in the lower placement of the maximum body expansion. Among the jars from Yanik Tepe, one squat example stands out: it features a wide, protruding base, a strongly everted widely flaring rim, and a mid-body concavity that imparts an arcuate profile [16, fig. 36, *9*; 17, fig. 25, *9*]. The vessel's surface bears geometric painted decoration. This specimen closely resembles a cup from the Chirkey settlement [8, fig. 10, *2*] in morphology. Overall, these comparisons demonstrate that jars of varying sizes are widely distributed across regions occupied by the Kura-Araxes community.

During the Early Bronze Age, jars extended beyond the core area of the Kura-Araxes cultural-historical community. For instance, the Shah Tepe necropolis in northeastern Iran has yielded small jars (h = 7.5–10.7 cm, max. 14.2 cm) decorated with alternating bands of hatched, latticed, and zigzag motifs. Some of these show morphological similarities to the Kura-Araxes jars examined here, including two-handled vessels with cylindrical bodies, jars with walls flaring toward the rim, and so-called "arc-shaped profile" vessels [18, p. 150–151, 154–155, 158, 160–161, 163, 188–189, fig. 203, no. *950*, p. 204, no. *818*, p. 205, no. *822*, p. 210, no. *541*, p. 211, no. *505*, p. 212, no. *427*, p. 225, no. *1695–1696*, p. 226, no. *1075*, p. 227, no. *1032*, p. 228, no. *1031*, p. 233, no. *987*, p. 245, no. *1626*, p. 246, no. *1629*, p. 255, no. *1433*, p. 364–365, 367–368].

Question of jars' ornamentation

Ornamentation on the jars examined from Dagestan sites (and more broadly within the Kura-Araxes cultural-historical community) is rare, occurring on only a few specimens. When present, it is consistent, consisting of incised zigzag chevron bands encircling the lower body. Examples include two vessels from catacomb 8 of the Velikent I burial ground – a jar-like mug and a Type III jar (Fig. 4, *2*), as well as the aforementioned Type III jar from the Chirkey settlement (Tad-Shob), which bears two rows of similar chevron bands around the mid-body [8, fig. 10, *2*]. A comparable chevron ornament decorating the thickened lower body appears on a jar from the Gyuzelova settlement in northeastern Anatolia [9, pp. 67–68, fig. 59, *8*]. In body shape (with mid-body constriction), this vessel is typologically close to Type IV jars from Velikent II.

It should also be noted that incised chevron bands are typical of other ceramic forms as well and occur widely at Kura-Araxes sites [9, fig. 115].

The jars examined here also occasionally bear relief decoration, including appliqués. Notable among these is a raised ridge imitating a snake on a Type III jar from catacomb 8 of the Velikent I burial ground (Fig. 4, *1*). Similar serpentine appliqué appears on a bulging-bodied pot from the contemporaneous catacomb 1 of the Velikent II burial ground [19, fig. 44, *1*]. To our knowledge, this motif is not documented on Kura-Araxes

3 Jars are also represented in sufficient numbers at other significant Kura-Araxes sites in the region. The Ilto settlement is also worth mentioning, where similar vessels of various sizes are the primary form of pottery [26, p. 51].

pottery outside Dagestan. At the Shah Tepe necropolis (in a layer dating to the late Early Bronze Age), an ovoid vessel was found bearing a relief depiction of a slithering snake across its body [18, p. 205, fig. 409]. This example differs from the Dagestan specimens in its more naturalistic rendering. Representations of a slithering or sinuous snakes on ceramic vessels are also known from Central Asian Bronze Age sites (Altyn Depe, Ak Depe) [20, p. 151].

In the post-Kura-Araxes period, specifically in the late Velikent catacombs, bronze ornaments (pins, anchor-shaped pendants, etc.) consistently feature stylized snake motifs [21, p. 13, 15, 17, fig. 3, 5, *1–7, 13*, 6, *2, 10–12*, 7, *1–3, 8–22, 24, 27*; 22, fig. 16, *29*]. However, this motif, bearing both decorative and religious-ideological significance, is entirely absent from ceramic vessels in the same burial contexts. In later periods (Early Iron Age, Albano-Sarmatian, and early medieval times), vessels with snake decoration reappear in Dagestan. The earliest evidence for stylized snake images on pottery, including jars, comes from Neolithic sites in the South Caucasus (Kültepe I and Dangreuli Gora settlements) [23, pp. 31–32, fig. 5, *6*].

Another form of appliqué decoration is a trident with downward-pointing ends, positioned on the upper body of a jar from the Gonobsky burial ground. Analogous relief tridents occur at other Kura-Araxes sites in the plains and foothills of Dagestan, including the Sigitma settlement and Karabudakhkent II burial ground [8, fig. 14, *22*, 6; fig. 5, *1–2*]. These appliqués appear to represent stylized bull horns or bucrania (though classically depicted as bidents). At the Early Bronze Age settlement of Sugyut in coastal southern Dagestan, variations of bucrania are present, with trident ends oriented both upward and downward. Similar relief appliqués are also known outside Dagestan, at sites such as Samshvilde and Serker Tepe [9, fig. 38, *3*; 24, pl. XIII, *6,* XV, *6*], etc. This article does not explore these religious-ideological elements of ceramic decoration in detail, as they warrant separate study. In summary, stylized representations of snakes and bull horns (bucrania) are among the motifs reflecting early agricultural cults widespread in Bronze Age cultures.

Regarding vessel decoration, circular or ring-shaped appliqués also occur, notably on a two-handled Type III jar with a mid-body bulge from catacomb 8 of the Velikent I burial ground (Fig. 4, *3*). On this vessel, the ring-shaped appliqués are positioned near the rim, in the spaces between the handles. Similar rounded appliqués appear at the Sugyut settlement in southern Dagestan and at Serker Tepe in northeastern Azerbaijan [24, pl. XIII, *5*].

On the question of functional purpose

As noted earlier, jar-shaped vessels are distinguished based on size and proportions as mugs and jugs. In Dagestan archaeological literature, jars of various sizes (often including mug-like forms) have traditionally been categorized as tableware. This classification raises a valid question about the actual function of these jars. V.M. Kotovich assigned similar vessels from Middle Bronze Age layers at Verkhnegunibsky settlement to kitchenware, citing soot traces on some fragments [25, p. 153]. In contrast, O.A. Abibullaev concluded that morphologically comparable vessels likely served for food storage, based on grain remains recovered inside one example [10, p. 71]. This interpretation is supported by the recovery of relatively large jars (h >20 cm) with wide mouths (d >20 cm) that exhibit no traces of exposure to fire. Such vessels were likely used for short-term storage of bulk or other foodstuffs rather than for consumption or cooking. It should be noted that these jars are considerably smaller than large stationary pithoi designed for long-term storage of dozens of liters. With reasonable confidence, the larger jars with tall vertical walls can be classified as container pottery.

In this context, the stylized snake appliqué on one specimen is highly symbolic, probably functioning as an amulet to protect the contents. Further evidence for the storage function of these jars comes from a two-handled example from Yanik Tepe, illustrated in publications with a disc-shaped lid placed over the mouth – a feature typical of ceramic food-storage containers [16, fig. 36, *16*; 17, fig. 25, *16*; 26, pl. 9, *14*].

The largest known jar within the Kura-Araxes cultural-historical community comes from the Bet Yerah (Khirbet Kerak) settlement and measures 50 cm in height [27, p. 263, fig. *5e*]. Among the Dagestani specimens, the tallest reaches approximately 30 cm and originates from catacomb 8 of the Velikent I burial ground (currently housed in the Archaeological Collections of the Institute of Archaeology and Ethnography, Dagestan Federal Research Centre, Russian Academy of Sciences).

Sites of the Middle Bronze Age Ginchin culture yield several jar types of varying sizes, some of which perpetuate Early Bronze Age traditions from Mountainous Dagestan (Galgalatli settlement) [28, pp. 99–100, figs. 91, *1, 10, 11*; 8, fig. 17, *3–5, 12*]. Elongated jars with tall walls and coated surfaces from monuments of this culture in southeastern Chechnya appear to belong to the category of storage pottery [28, p. 100, fig. 91, *3, 4*].

The Middle Bronze Age catacombs of Primorsky Dagestan (late Velikent catacombs) contain pottery conventionally classified as jars but differing markedly from the typical Early Bronze Age jar-like forms of the preceding period.[4] Nevertheless, these same burials yielded several jar-like mugs similar to those of the earlier era [22, pp. 64–65, figs. 10, *8*, 13, *11*], suggesting continuity in certain pottery traditions.

In this context, comparative technical and technological analysis of pottery production between these two periods is highly relevant, as they represent key stages in the regional history of ceramic manufacture.

Results of the technical and technological analysis

The primary focus of this study is jars from Kura-Araxes sites dating to the mid-4th to mid-3rd millennia BC. The pottery was examined using the technical and technological analysis methodology developed by A.A. Bobrinsky [29; 30, pp. 5–106; 31]. Microscopic examination was performed with a Sunshine SZM45T binocular microscope.

Two series of samples were selected for analysis: complete vessels and large fragments of jars. The first series comprises vessels from Mountainous Dagestan sites: three from the Galgalatli settlement, one from the Mekegi settlement, two from the Sigitma settlement, and three from the Shchebokha burial ground. The second series includes vessels from Primorsky Dagestan sites: five from the Kabaz-kutan II settlement and four from the Velikentsky I burial ground.

Jars from Mountainous Dagestan sites were manufactured from highly ferruginous clay (100% of samples; Table 1) that was also highly sandy (77.8% of samples; Table 2). The paste included an artificial admixture of chamotte compositionally identical to the vessel fabric itself (Fig. 8, *1–2*), with average grain sizes of 1.5–2 mm and concentrations ranging from 1:3 to 1:5. Notably, chamotte in one jar from the Galgalatli settlement consists of highly ferruginous clay but incorporates inclusions of chamotte made from low-ferruginous clay (Fig. 8, *2*). Traces of burnishing on chamotte grains were observed in vessels from the Sigitma and Galgalatli settlements and the Shchebokha burial ground (Fig. 8, *1*). All examined vessels incorporated organic solution in the molding paste (100% of samples; Table 3). This is evidenced on fracture surfaces by amorphous, rounded voids or cracks measuring 0.7–1.2 mm to 4–5 mm. In areas adjacent to chamotte, the walls of these voids are coated with a colorless, matte film exhibiting a sheen (Fig. 8, *3–4*).

Fresh fractures on complete vessels and large fragments reveal that patch (additive, slab) method functioned as structural elements during manufacture (Fig. 6, *4–5*). Jars from the Mekegi, Galgalatli, and Shchebokha sites were produced using the capacity method, documented in four vessels. This technique involves separate construction of the base and body. Diagnostic features include marked wall deformation at the base junction and an additional fastening cord along the interior junction between body and base (Fig. 6, *4–5, 7–8*). Notably, in two instances from Galgalatli and Mekegi the separately formed bases are burnished on the exterior (Fig. 6, *7–8*).

4 They appear as small squat vessels without handles, featuring profiled walls and a pronounced, stepped neck [22, p. 67, figs. 10, *3*, 13, *5*]

Four mechanical surface treatment methods were identified: burnishing, hand smoothing, grass-bundle smoothing, and polishing (Table 4). Notably, different techniques were often applied sequentially to the same surface areas, including grass-bundle smoothing followed by burnishing; hand smoothing followed by burnishing with additional surface wetting; or burnishing followed by polishing (Fig. 6, *1–3*).

Several burnishing directions were recorded: vertical, angled vertical, horizontal, and horizontal-arcuate with frequent reorientation of the tool. The exterior surfaces were most commonly burnished (45.5%) or hand-smoothed (36.4%), whereas interior surfaces were more frequently burnished (54.5%) than smoothed (27.3%). It can be cautiously assumed that this phenomenon reflects acquired experience, demonstrating the importance of polishing the inner surface of a vessel to increase its moisture resistance.

One jar each from the Galgalatli settlement and the Shchebokha burial ground was coated on both exterior and interior surfaces with an additional clay layer up to 2 mm thick, subsequently smoothed (Shchebokha) or burnished (Galgalatli) (Fig. 8, *5–6*). These sites lie in close proximity within the same geomorphological zone, suggesting their inhabitants shared similar pottery skills.

Analysis of fracture color characteristics identified three firing types:

Type 1 – firing in oxidizing atmosphere at high temperature with moderate cooling duration; uniform calcination of walls to 1.5–2 mm on both surfaces, producing light brown and orange marginal zones; sharp boundary between the color layers, dark brown core of the fracture;

Type 2 – firing in reducing (oxygen-free) atmosphere; uniformly dark gray sherd in section;

Type 3 – firing resulting in mottled light brown, orange, or dark gray surfaces; calcination limited to patchy exterior zones up to 1–1.5 mm. This reflects uncontrolled fuel combustion with rapid, uneven temperature spikes typical of “focal” firing.

Notably, the latter two types occur only at the Galgalatli settlement.

Jars from Primorsky Dagestan sites were produced from highly ferruginous clays (100%; Table 1) with low (55.6%) or medium (44.4%) natural sand content (Table 2). The only recorded natural inclusion was a single oval reddish-brown iron ore particle up to 1 mm in size, observed in one vessel from the Velikentsky I burial ground (Fig. 9, 1). No natural inclusions larger than 0.3 mm occurred in the remaining vessels, indicating that the clay was preliminarily elutriated prior to use.

Chamotte was used as an artificial temper in 100% of the samples (Fig. 9, *2–4*; Table 3). Two varieties were identified: (1) chamotte sifted through a mesh to yield grains averaging 1.0–1.5 mm (Fig. 9, *3*); and (2) chamotte added directly after crushing, without size calibration (Fig. 9, *4*). Chamotte grains with burnished surfaces occur in pottery from the Kabaz-kutan II settlement and Velikentsky I burial ground, sites situated in relative proximity (Fig. 9, *2*). In most cases, the chamotte composition matches that of the vessel paste. The temper concentration is consistently 1:4.

The next natural temper was dung from small cattle, identified in 77.8% of the examined vessels (Fig. 9, *5*). On fresh fractures, it appears as characteristic hollow, rounded voids (0.2 × 1 mm) formed by the combustion of finely crushed vegetation, along with impressions exhibiting grooves 0.3–0.7 mm wide. Organic solution was used in 22.2% of the samples (Fig. 9, *6*).

All examined vessels were constructed using the patch method combined with the capacity method (Fig. 7, *1–6*). Special base molds were employed, onto which clay was applied externally. This interpretation aligns with an earlier technological study of Early Bronze Age pottery from the Novo-Gaptsakh settlement in Primorsky Dagestan [32, pp. 15–28].

Microscopic analysis of exterior and interior surfaces identified two primary surface treatment techniques: burnishing and hand smoothing. The exterior was burnished in 100% of cases. For interiors, hand smoothing predominated (55.5%), with burnishing applied in 45.5% of vessels. Vertical burnishing was most common on exteriors, occasionally supplemented by horizontal strokes, whereas interiors received only horizontal burnishing (Table 4).

Based on the surface and fracture colors of the examined vessels, two firing types can be distinguished:

Type 1 – reducing atmosphere with limited oxygen access to the surface; these vessels exhibit dark gray coloration on both surfaces and throughout the fracture;

Type 2 – uniform oxidizing firing (in a kiln); the surfaces are light brown, with orange marginal zones 2–3 mm thick and a dark gray core in the fracture.

Conclusions

Technical and technological analysis of jars from Mountainous and Primorsky Dagestan sites has revealed distinct differences in pottery production traditions among Early Bronze Age Kura-Araxes communities in these two geomorphological zones.

In Mountainous Dagestan, potters preferred highly sandy, highly ferruginous clays containing natural inclusions such as reddish-brown iron ore particles (0.5–0.7 mm), slate fragments (1.5–2.0 × 1 mm), and dense sand fractions up to 2–3 mm for jar production. In contrast, jars from Primorsky Dagestan were made from low- to moderately sandy, highly ferruginous clays that had undergone preliminary elutriation to remove natural impurities. These differences suggest distinct approaches to raw material selection among local potters, likely conditioned by the varying availability of clay sources in the lowland and mountainous zones.

Jars from Mountainous Dagestan sites were produced using a single primary paste recipe: clay + chamotte + organic solution. In contrast, two recipes were employed for jars from Primorsky Dagestan: clay + chamotte + manure (77.8%) and clay + chamotte + organic solution (22.2%) (Table 3).

Differences also appear in surface treatment techniques. Jars from Mountainous Dagestan exhibit greater variety, including hand smoothing, burnishing, grass-bundle smoothing, and polishing. Those from Primorsky Dagestan are characterized solely by hand smoothing and burnishing (Table 4).

The patchwork technique is attested in all examined vessels. Differences emerge in vessel forming methods: Mountainous Dagestan sites predominantly employed the capacity method, whereas Primorsky Dagestan sites used a base-capacity variant. Notably, capacity-based construction techniques exhibit the greatest consistency among pottery-making skills [29, pp. 124–130].

The Early Bronze Age jars examined here exhibit morphological similarities to 19th-century ethnographic wooden measuring containers from Mountainous Dagestan, known locally as *ratl*, *sakh*, *karsi*, and *mud* (Fig. 10, *1–3*). Comparative analysis reveals a notable correspondence in manufacturing technology between these Early Bronze Age jars from Mountainous Dagestan and the ethnographic wooden examples. The wooden vessels were produced by hollowing a tree trunk through carving or chiseling, followed by insertion of a separate base. This technique closely mirrors the capacity method documented in the region's ancient pottery. Researchers have frequently observed parallels in form, production techniques, and decoration between ethnographic and ancient ceramic and wooden artifacts. The vessel-construction method identified here appears particularly archaic.

In conclusion, technical and technological analysis has revealed distinct features in jar-making traditions, as well as clear differences between Early Bronze Age populations in Primorsky and Mountainous Dagestan. Based on a single pottery category – jars – these traditions proved divergent, suggesting either cultural distinctions or the persistence in Mountainous Dagestan of an older (possibly Eneolithic) or local pottery tradition that interacted with the Kura-Araxes practices of Primorsky Dagestan. At the same time, typological similarities between jars from the two geomorphological zones are evident.

Table 1. Sand content of raw plastic material

Traditions of raw plastic material selection for jar vessels				
Sand content	*Pottery from Mountainous Dagestan sites*		*Pottery from Primorsky Dagestan sites*	
	Number	%	Number	%
Low	1	11,1	5	55,6
Medium	1	11,1	4	44,4
High	7	77,8	–	–

Table 2. Ferruginous content of raw plastic material

Traditions of raw plastic material selection for jar vessels				
Ferruginous content	*Pottery from Mountainous Dagestan sites*		*Pottery from Primorsky Dagestan sites*	
	Number	%	Number	%
Low	–	–	–	–
Medium	–	–	–	–
High	9	100	9	100

Table 3. Composition of molding pastes

Recipes for molding pastes in jar vessel production	*Traditions of molding paste production for jar vessels*	
	Pottery from Mountainous Dagestan sites	*Pottery from Primorsky Dagestan sites*
Clay + chamotte + manure	–	7 / 77,8%
Clay + chamotte + organic solution	9 / 100%	2 / 22,2%
Total vessels	9 / 100%	9 / 100%

Table 4. Surface treatment techniques ratio

Surface treatment technique	*Pottery from Mountainous Dagestan sites*		*Pottery from Primorsky Dagestan sites*	
	Number	%	Number	%

Exterior surface	Hand smoothing	4	36,4	–	–
	Grass-bundle smoothing	1	9	–	–
	Burnishing	5	45,5	9	100
	Polishing	1	9	–	–
Interior surface	Hand smoothing	3	27,3	5	55,5
	Grass-bundle smoothing	1	9	–	–
	Burnishing	6	54,5	4	45,5
	Polishing	–	–	–	–

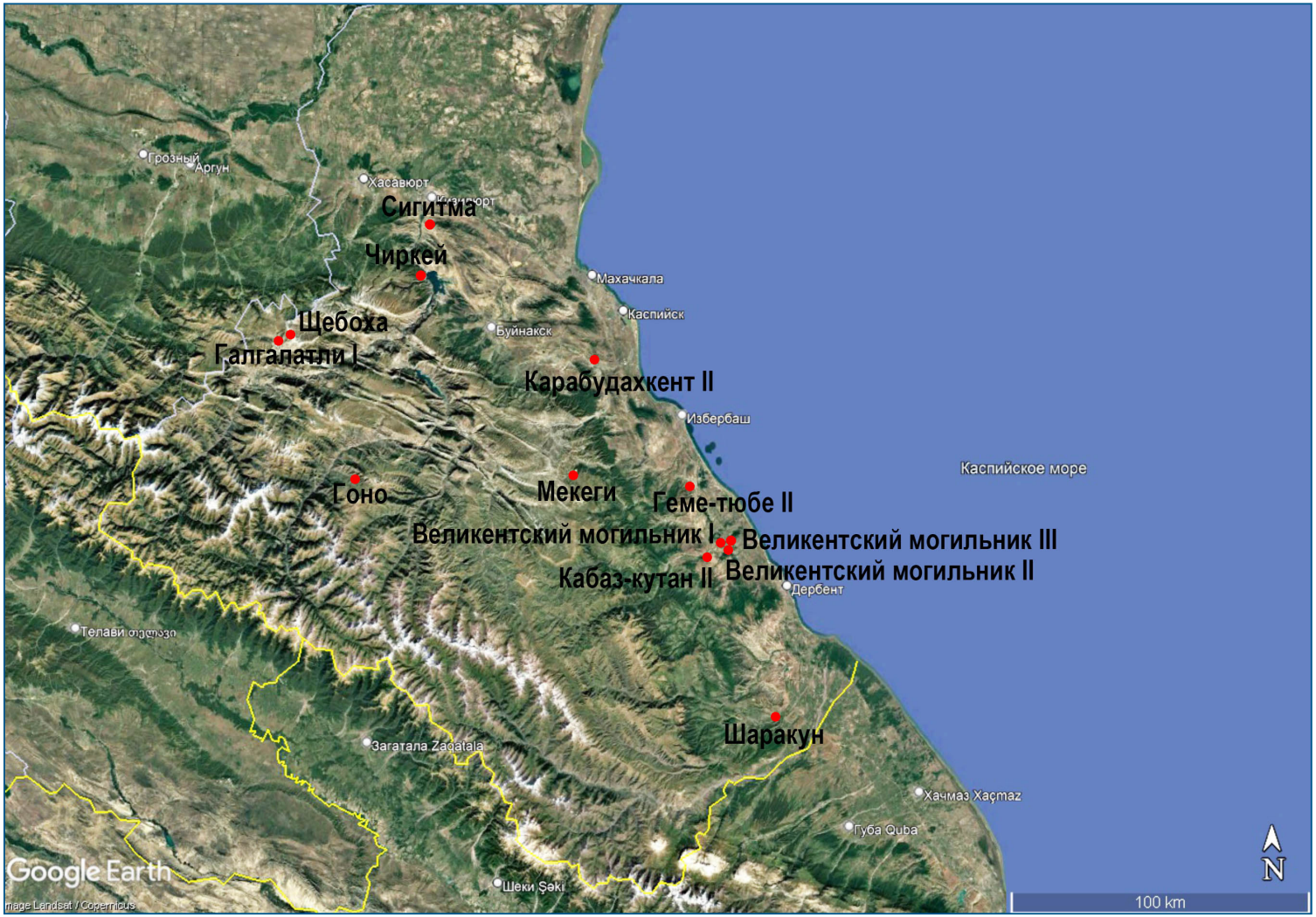

Fig. 1. Map of Dagestan showing Early Bronze Age sites

Рис. 1. Карта Дагестана с обозначением памятников эпохи ранней бронзы

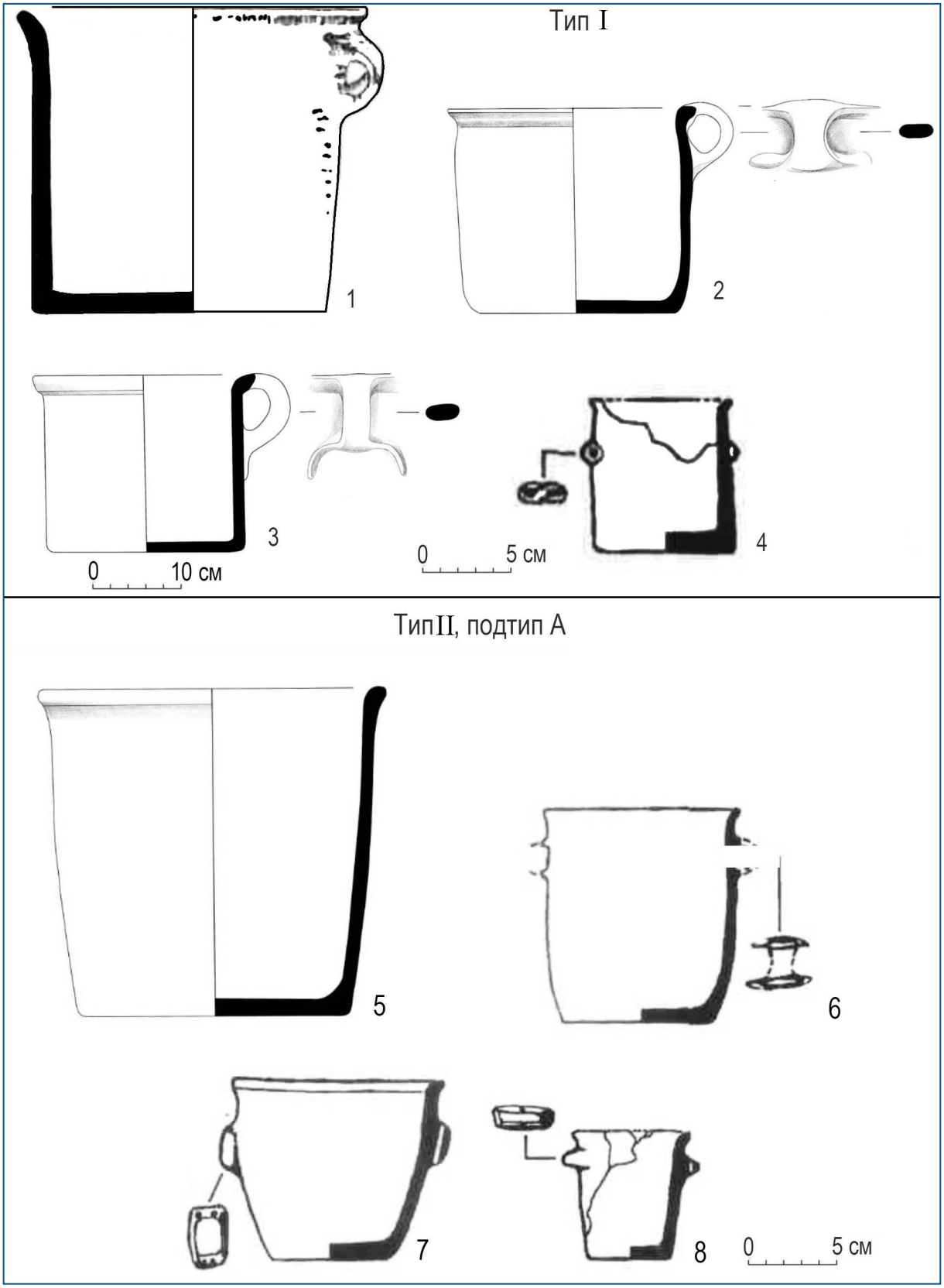

Fig. 2. Jars of Type I and Type II Subtype A: *1* – Mekegi settlement; *2–8* – Velikent I burial ground, catacomb 8

Рис. 2. Баночные сосуды типа I и типа II подтип А: *1* – поселение Мекеги; *2–8* – Великентский могильник I, к. 8

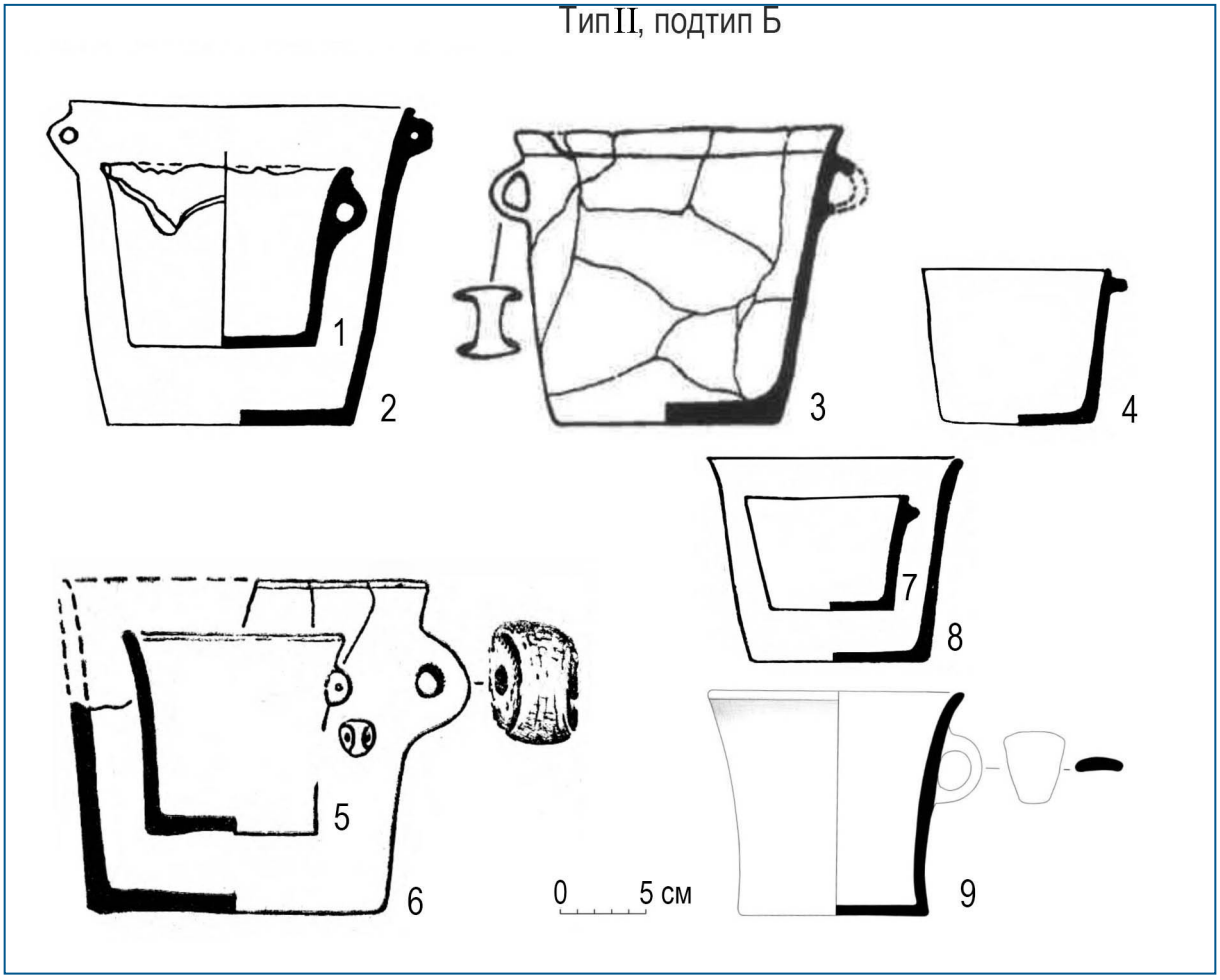

Fig. 3. Jars of Type II Subtype B: *1–2, 4, 7–8* – Galgalatli settlement; *3* – Velikent I burial ground, catacomb 8; *5–6* – Shchebokha burial ground; *9* – Sharakun settlement

Рис. 3. Баночные сосуды типа II подтипа В: *1–2, 4, 7–8* – поселение Галгалатли; *3* – Великентский могильник I, к. 8*;* *5–6* – могильник Щебоха; *9* –поселение Шаракун

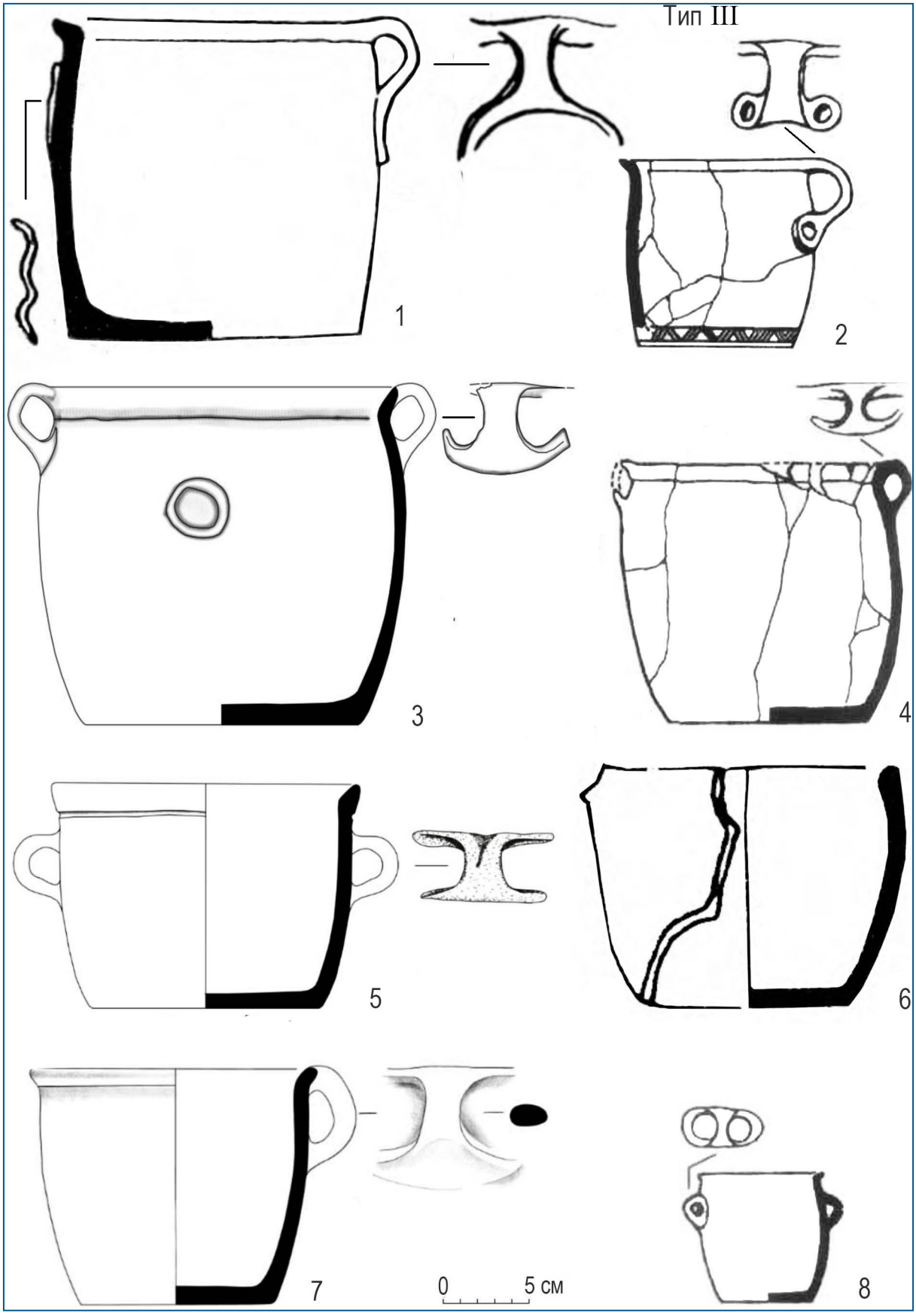

Fig. 4. Jars of Type III: *1–5, 7–8* – Velikent I burial ground, catacomb 8; *6* – Sigitma settlement

Рис. 4. Баночные сосуды тип III: *1–5, 7–8* – Великентский могильник I, к. 8; *6* – поселение Сигитма

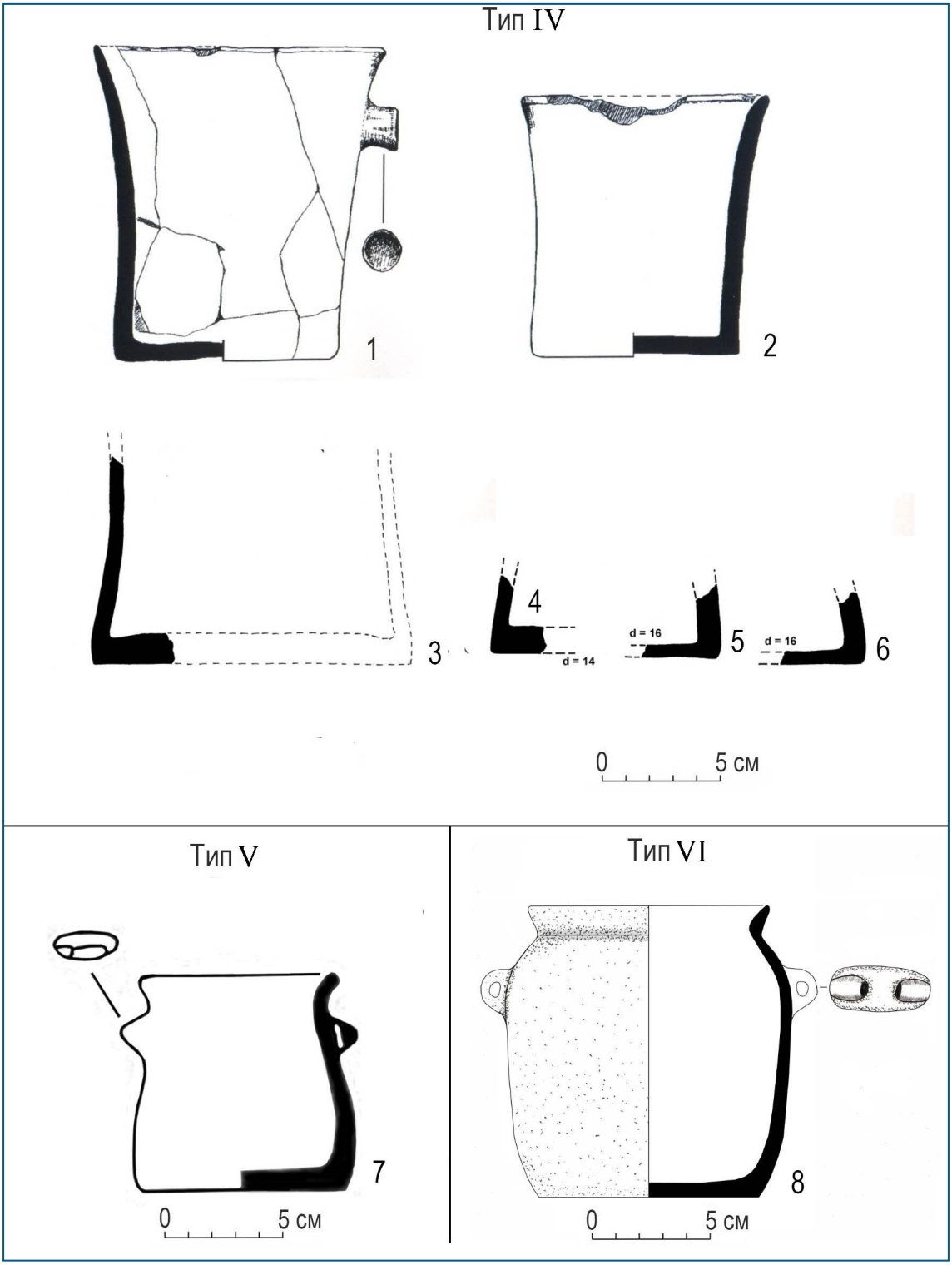

Fig. 5. Jars of Types IV, V, and VI: *1–2* – Velikent II settlement; *3–6* – Kabaz-kutan II settlement; *7–8* – Velikent I burial ground, catacomb 8

Рис. 5. Баночные сосуды Типа IV,V,VI: *1–2* – поселение Великент II; *3–6* –поселение Кабаз-Кутан II; *7–8* – Великентский могильник I, к. 8

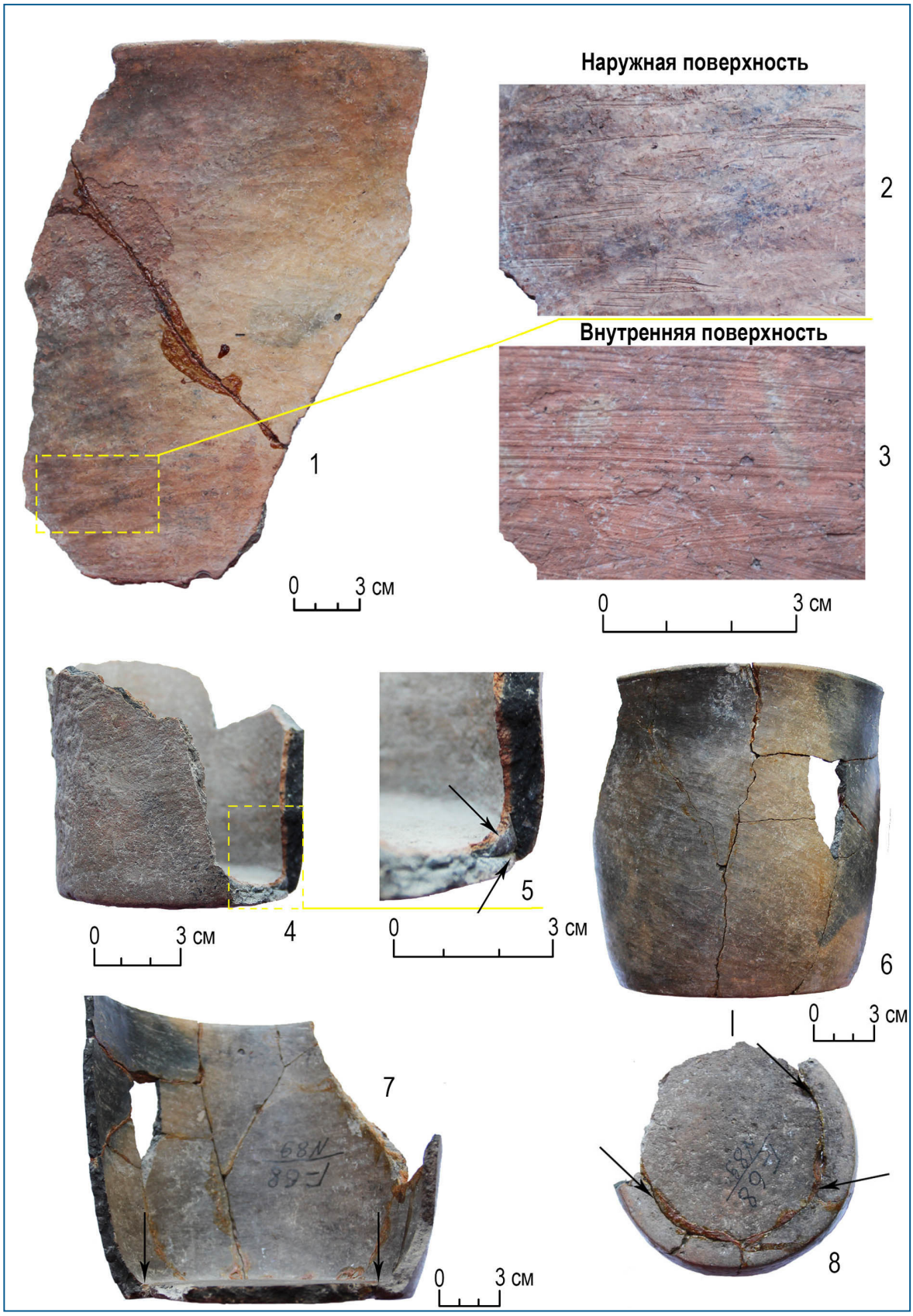

Fig. 6. Jars from Early Bronze Age sites in Mountainous Dagestan:
1–3, 6–8 – Galgalatli I settlement; *4–5* – Shchebokha burial ground

Рис. 6. Баночные сосуды из памятников раннего бронзового века Горного Дагестана:
1–3, 6–8 – поселение Галгалатли I; *4–5* – могильник Щебоха

Fig. 7. Jars from Early Bronze Age sites in Primorsky Dagestan:
1–6 – Velikent I burial ground, catacomb 8; *7* – Kabaz-kutan II settlement

Рис. 7. Баночные сосуды из памятников раннего бронзового века Приморского Дагестана:
1–6 – Великентский могильник I, к. 8; *7* – поселение Кабаз-кутан II

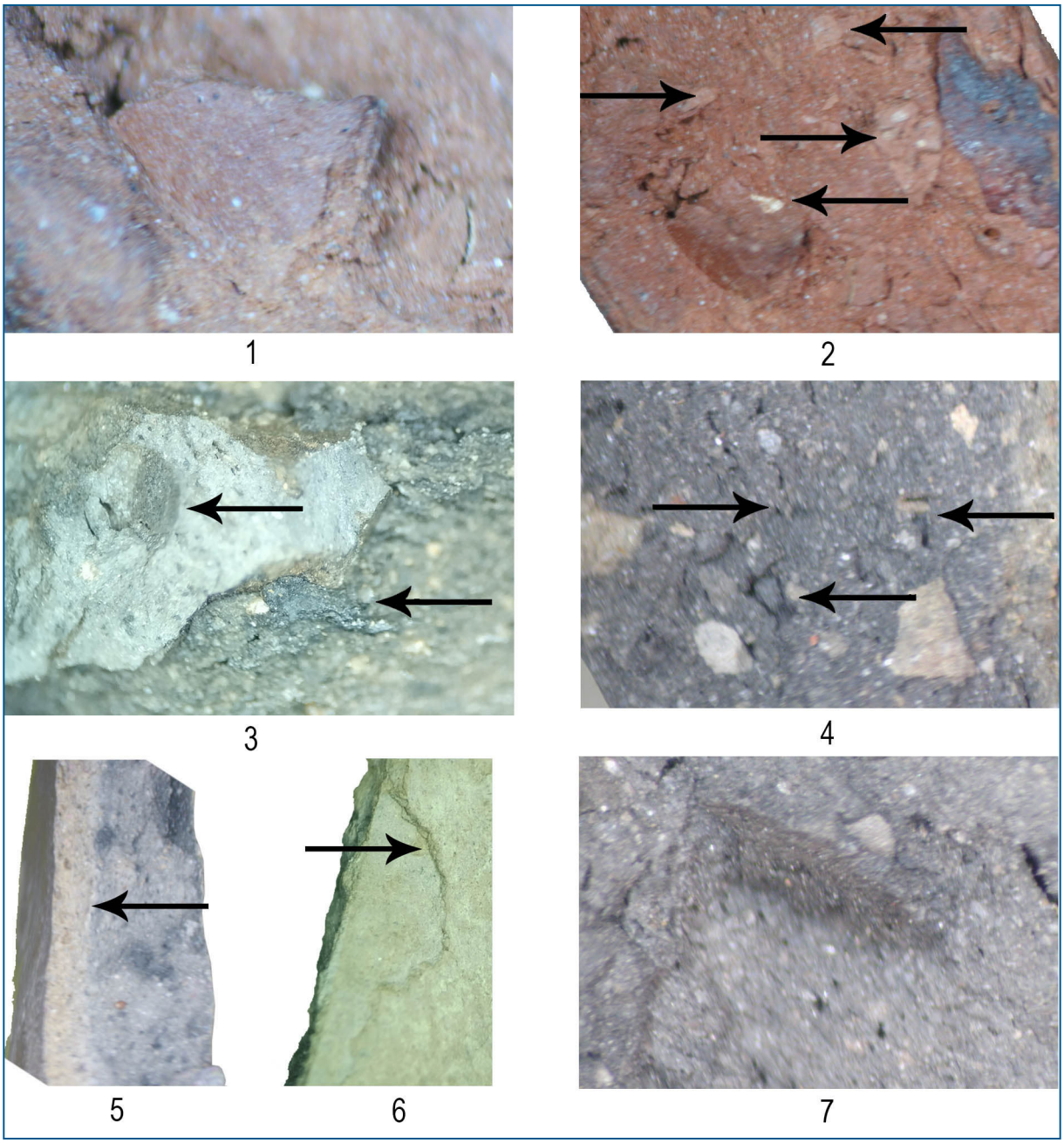

Fig. 8. Macro-photographs of artificial temper in the molding paste of jars from Early Bronze Age sites in Mountainous Dagestan:
1 – chamotte particle with burnishing, magnification ×30 – Shchebokha burial ground;
2 – chamotte particles (arrow indicates chamotte within chamotte made from low-ferruginous clay, magnification ×20) – Galgalatli settlement; *3–4, 7* – organic residues appearing as pores and voids, magnification ×30: 3 – Mekegi settlement, *4* – Sigitma settlement, *7* – Galgalatli settlement; *5–6* – application of an additional thin clay layer (slip) to the exterior surface, magnification ×10: *5* – Galgalatli settlement, *6* – Shchebokha burial ground

Рис. 8. Макрофотографии искусственных примесей в составе формовочноймассы баночных сосудов из памятников раннего бронзового века Горного Дагестана: *1* – частица шамота с лощением, увеличение (30Х) — могильник Щебоха;
2 – частицы шамота (стрелочкой указан шамот в шамоте из слабоожелезненной глины, увеличение 20Х) — поселение Галгалатли; *3–4, 7* – органические остатки в виде пор и пустот, увеличение (30Х), *3* — поселение Мекеги, *4* — поселение Сигитма, *7* — поселение Галгалатли; *5–6* – обмазывание внешней поверхности дополнительным слоем жидкой глины увеличение (10Х), *5* — поселение Галгалатли, *6* — могильник Щебоха

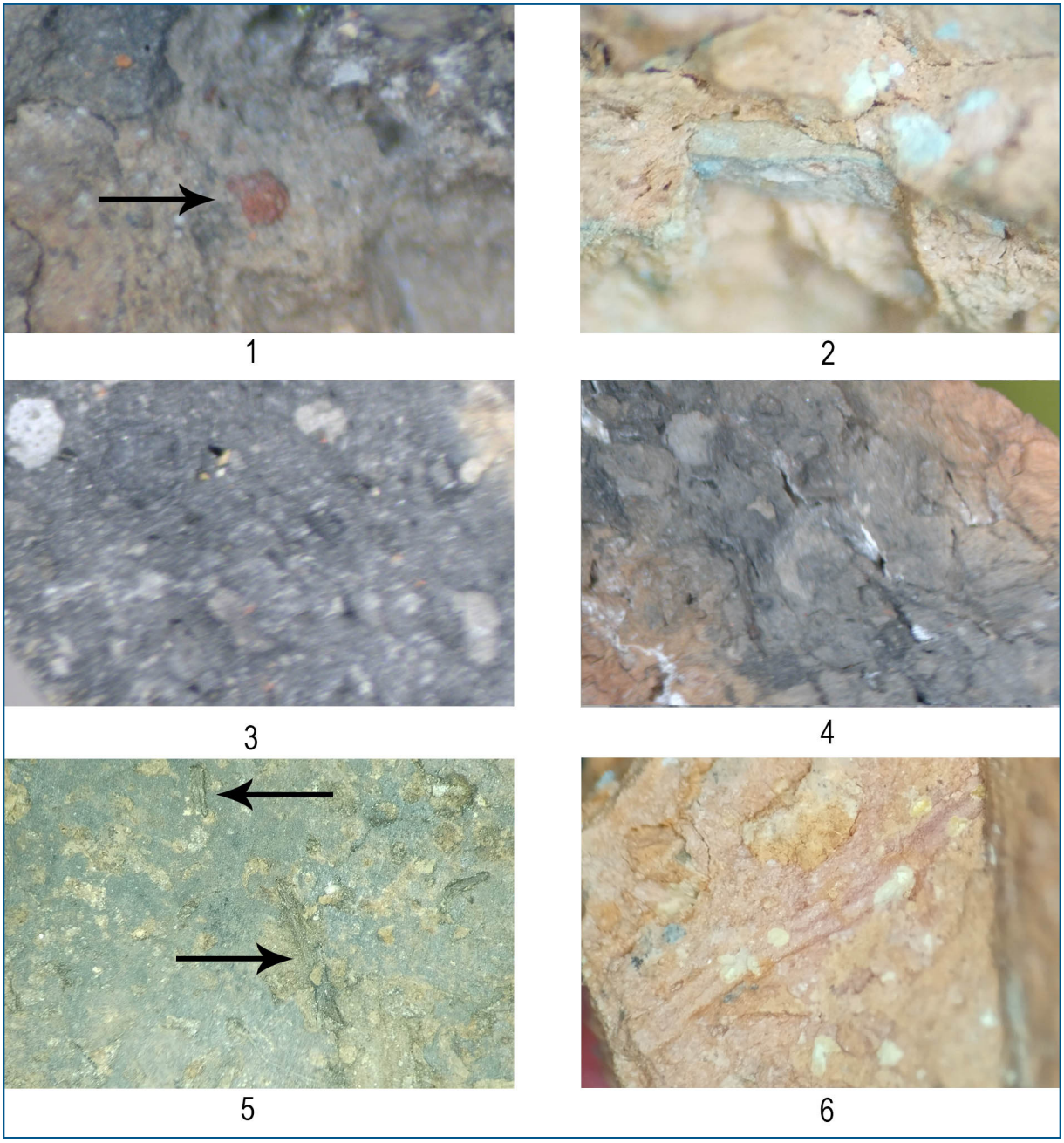

Fig. 9. Macro-photographs of temper in the molding paste of jars from Early Bronze Age sites in Primorsky Dagestan:
1 – natural inclusion of reddish-brown iron ore, magnification ×30 – Velikent I burial ground, catacomb 8;
2 – chamotte particle with burnishing, magnification ×30 – Velikent I burial ground, catacomb 8; *3* – sifted chamotte particles (upper size limit averaging 1.0–1.5 mm), magnification ×20 – Velikent I burial ground, catacomb 8; *4* – uncalibrated chamotte particles, magnification ×20 – Kabaz-kutan II settlement; *5* – traces of burnt-out organic material associated with small cattle dung, magnification ×30 – Velikent I burial ground, catacomb 8;
6 – traces of burnt-out plant remains, magnification ×30 – Kabaz-kutan II settlement

Рис. 9. Макрофотографии примесей в составе формовочной массы баночных сосудов из памятников раннего бронзового века Приморского Дагестана: *1* – естественное включение красно-бурого железняка, увеличение (30Х) – Великентский могильник I, к. 8; *2* – частица шамота с лощением, увеличение (30Х) – Великентский могильник I, к. 8; *3* – частицы шамота просеянные через сито с верхней градацией частиц со средним размером 1,0–1,5 мм, увеличение (20Х) – Великентский могильник I, к. 8; *4* – частицы шамота не калиброванные, увеличение (20Х), – поселение Кабаз-Кутан II; *5* – следы органических остатков после выгорания связанные с навозом МРС, увеличение (30Х) – Великентский могильник I, к. 8; *6* – следы растительных остатков после выгорания, увеличение (30Х) – Кабаз-Кутан II

Fig. 10. Ethnographic wooden jar vessels from Mountainous Dagestan:
1–3 – collections of the Institute of History, Archaeology and Ethnography, Dagestan Federal Research Centre, Russian Academy of Sciences

Рис. 10. Этнографические баночные сосуды Горного Дагестана, изготовленные из дерева:
1–3 – фонды хранилища Института истории, археологии и этнографии ДФИЦ

REFERENCES

1. Gadzhiev MG. Pottery of mountainous Dagestan in the Early Metal Age. *Pottery of Ancient and Medieval Dagestan*. Makhachkala, 1981: 4-34. (In Russ)

2. Gadzhiev MG. *Early Farming Culture of the North-Eastern Caucasus: Eneolithic and Early Bronze Age*. Moscow: Nauka, 1991. (In Russ)

3. Badalyan RS., Harutyunyan AA., Chataigner Ch., Le Mort F., Chabot J., Brochier JE., Balasescu A., Radu V., Hovsepyan R. The Settlement of Akhnashen-Khatunarkh, A Neolithic Site in the Ararat Plain (Armenia): Excavation Results 2004–2009. *TÜBA-AR*. 2010; 13: 185-218.

4. Bakhshaliyev VB. New materials of the Neolithic and Eneolithic from Nakhchivan. *Russian Archaeology*. 2015; 2: 136-145. (In Russ)

5. Bakhshaliyev V., Marro C., Berton R., Kulieva Z. Archaeological excavations at the settlement of Kültepe (2013–2016). P*roblems of Archaeology of the Caucasus and Near East (Neolithic – Late Bronze Age). Collection dedicated to the 90th anniversary of the prominent archaeologist, Corr. Member of the NAS of Azerbaijan I.G. Narimanov (1927–2006)*. Baku, 2017: 26-41. (In Russ)

6. Munchaev RM., Smirnov KF. Archaeological monuments near the village of Karabudakhkent. *Materials and Studies in the Archaeology of the USSR*. 1958; 68: 147-175. (In Russ)

7. Budaychiev AL. On the handles of ceramic vessels of the Early Bronze Age in Primorsky Dagestan (issues of typology and chronology). *History, Archaeology and Ethnography of the Caucasus*. 2021; 17(1): 89-114. (In Russ)

8. Gadzhiev MG. Settlements of mountainous Dagestan in the Early Bronze Age. *Ancient and Medieval Settlements of Dagestan*. Makhachkala, 1983: 6-42. (In Russ)

9. Sagona AG. The Caucasian Region in the Early Bronze Age. *British Archaeological Reports International Series 214*. Oxford, 1984.

10. Abibullaev OA. *Eneolithic and Bronze Age in the Territory of the Nakhichevan ASSR*. Baku, 1982. (In Russ)

11. Akhundov TI. *North-Western Azerbaijan in the Eneolithic and Bronze Age*. Baku: Elm, 2001. (In Russ)

12. Kuftin BA. *Urartian "Columbarium" at the Foot of Ararat and the Kura-Araxes Eneolithic*. Makhachkala: Mavraev, 2012 (reprint edition). (In Russ)

13. Munchaev RM. The earliest culture of the North-Eastern Caucasus. *Materials and Studies in the Archaeology of the USSR*. 1961; 100. (In Russ)

14. Munchaev RM. *The Caucasus at the Dawn of the Bronze Age: Neolithic, Eneolithic, Early Bronze*. Moscow: Nauka, 1975. (In Russ)

15. Ismailzade GS. *Azerbaijan in the System of the Early Bronze Age Cultural Community of the Caucasus*. Baku: Nafta-Press, 2008. (In Russ)

16. Kushnareva KKh., Chubinishvili TN. *The Earliest Cultures of the South Caucasus*. Leningrad: Nauka, 1970. (In Russ)

17. Kushnareva KKh. *The South Caucasus in the 9th–2nd Millennia BCE (Stages of Cultural and Socio-Economic Development)*. Saint-Petersburg: Petersburg Oriental Studies, 1993. (In Russ)

18. Arne TJ. *Excavations at Shah Tepe, Iran. VII*. Archaeology 9). Stockholm, 1945.

19. Magomedov RG. Report on the results of field work at the Velikent complex of Bronze Age monuments in 1995. Makhachkala, 2001. Scientific Archive of IHAE DSC RAS. Fund 3. Inventory 3. File 912/10164. (In Russ)

20. Antonova EV. *Essays on the Culture of Ancient Farmers of the Near and Middle East*. Moscow, 1984. (In Russ)

21. Gadzhiev MG., Korenevsky SN. Metal of the Velikent catacomb. *Ancient Crafts, Trade and Commerce in Dagestan*. Makhachkala, 1984: 7-27. (In Russ)

СПИСОК ЛИТЕРАТУРЫ

1. *Гаджиев М.Г.* Керамика горного Дагестана эпохи раннего металла // Керамика древнего и средневекового Дагестана. Махачкала, 1981. С. 4–34.

2. *Гаджиев М.Г.* Раннеземледельческая культура Северо-Восточного Кавказа: эпоха энеолита и ранней бронзы. М.: Наука, 1991. – 264 с.

3. *Badalyan R.S., Harutyunyan A.A., Chataigner Ch., Le Mort F., Chabot J., Brochier J.E., Balasescu A., Radu V., Hovsepyan R.* The Settlement of Akhnashen-Khatunarkh, A Neolithic Site in the Ararat Plain (Armenia): Excavation Results 2004–2009 // TÜBA-AR. 13. 2010. P. 185–218.

4. *Бахшалиев В.Б.* Новые материалы неолита и энеолита из Нахчывана // Российская археология. № 2. 2015, С. 136–145.

5. *Бахшалиев В., Марро К., Бертон Р., Кулиева З.* Археологические раскопки на поселении Кюльтепе (2013–2016) // Проблемы археологии Кавказа и Передней Азии (неолит-поздняя бронза). Сборник, посвященный 90-летию известного археолога, члена-корреспондента Национальной Академии Наук Азербайджана И.Г. Нариманова (1927–2006). Баку, 2017, С. 26–41.

6. *Мунчаев Р.М., Смирнов К.Ф.* Археологические памятники близ с. Карабудахкент // Материалы и исследования по археологии СССР. № 68. 1958. С. 147–175.

7. *Будайчиев А.Л.* О ручках керамических сосудов эпохи ранней бронзы Приморского Дагестана (вопросы типологии и хронологии) // История, археология и этнография Кавказа. 2021.Т. 17. № 1. С. 89–114.

8. *Гаджиев М.Г.* Поселения горного Дагестана эпохи ранней бронзы // Древние и средневековые поселения Дагестана. Махачкала, 1983, С. 6–42.

9. *Sagona A.G.* The Caucasian Region in the Early Bronze Age. // British Archaeological Reports Series 214. Oxford, 1984.

10. *Абибуллаев О.А.* Энеолит и бронза на территории Нахичеванской АССР. Баку, 1982, 316 с.

11. *Ахундов Т.И.* Северо-Западный Азербайджан в эпоху энеолита и бронзы. Баку: Элм, 2001, 336 с.

12. *Куфтин Б.А.* Урартский «колумбарий» у подошвы Арарата и куро-аракский энеолит. Махачкала: МавраевЪ, 2012. – 172 с. (репринтное издание).

13. *Мунчаев Р.М.* Древнейшая культура Северо-Восточного Кавказа // Материалы и исследования по археологии СССР. № 100. 1961. 191 с.

14. *Мунчаев Р.М.* Кавказ на заре бронзового века: Неолит, энеолит, ранняя бронза. М.: Наука, 1975. 416 с.

15. *Исмаилзаде Г.С.* Азербайджан в системе раннебронзовой культурной общности Кавказа. Баку: Nafta-Press, 2008. – 304 с.

16. *Кушнарева К.Х., Чубинишвили Т.Н.* Древнейшие культуры Южного Кавказа. Л.: Наука, 1970, 190 с.

17. *Кушнарева К.Х.* Южный Кавказ в IX– II тыс. до н.э. (этапы культурного и социально-экономического развития). СПб.: Петербургское востоковедение, 1993. – 312 с.

18. *Arne T.J.* Excavations at Shah Tepe, Iran. VII. Archaeology 9. Stockholm, 1945. – 480 p.

19. *Магомедов Р.Г.* Отчет об итогах полевых работ на Великентском комплексе памятников эпохи бронзы в 1995 г. Махачкала, 2001 // Научный архив ИИАЭ ДНЦ РАН. Ф. 3. Оп. 3. Д. 912/10164.

20. *Антонова Е.В.* Очерки культуры древних земледельцев Передней и Средней Азии. М., 1984, 261 с.

21. *Гаджиев, М.Г., Кореневский С.Н.* Металл Великентской катакомбы // Древние промыслы, ремесло и торговля в Дагестане. Махачкала, 1984. С. 7–27.

22. *Магомедов Р.Г.* Материалы к изучению эпохи бронзы в приморском Дагестане. Махачкала, 2000, 173 с.

23. *Бахшалиев.В., Марро. К., Бертон Р., Кулиева З.* Археологические раскопки на поселении Кюльтепе // Проблемы ар-

22. Magomedov RG. *Materials for the Study of the Bronze Age in Coastal Dagestan*. Makhachkala, 2000. (In Russ)

23. Bakhshaliyev V., Marro C., Berton R., Kulieva Z. *Archaeological excavations at the settlement of Kültepe. Problems of Archaeology of the Caucasus and Near East (Neolithic – Late Bronze Age)*. Baku, 2017: 26-41. (In Russ)

24. Musaev DL. *Serkertape – A Settlement of the Early Bronze Age*. Baku: Nafta-Press, 2006. (In Russ)

25. Kotovich VM. *The Verkhnegunib Settlement – A Bronze Age Monument of Mountainous Dagestan. On the History of Dagestani Tribes at the End of the 3rd – 2nd Millennia BCE*. Makhachkala, 1965. (In Russ)

26. Munchaev RM. Kura-Araxes culture. *Archaeology. The Bronze Age of the Caucasus and Central Asia: Early and Middle Bronze Age of the Caucasus*. Moscow: Nauka, 1994: 8-57. (In Russ)

27. Greenberg R. Transcaucasia colors: Khirbet Kerak Ware at Khirbet Kerak (Tel Bet Yerah). Les cultures du Caucase (VIe–IIIe millénaire avant notre ère). Paris: CNRS Editions, 2007: 257-268.

28. Magomedov RG. *Ginchinsky Culture: Mountains of Dagestan and South-Eastern Chechnya in the Middle Bronze Age*. Makhachkala: DSC RAS, 1998. (In Russ)

29. Bobrinsky AA. *Pottery of Eastern Europe. Sources and Methods of Study*. Moscow: Nauka, 1978. (In Russ)

30. Bobrinsky AA. Pottery technology as an object of historical-cultural study. *Current Problems in the Study of Ancient Pottery*. Samara, 1999: 5-106.

31. Tsetlin YuB. *Ancient Pottery: Theory and Methods of Historical-Cultural Approach*. Moscow: Institute of Archaeology RAS, 2012.

32. Bobrinsky AA., Tsetlin YuB., Gei IA. Some data on the technique and technology of Kura-Araxes potters based on materials from the Novo-Gaptsakh settlement in Dagestan. *Russian Archaeology*. 2011; 4: 15-28.

хеологии Кавказа и Передней Азии (неолит-поздняя бронза). Баку-2017. С. 26–41.

24. Мусаев Д.Л. Серкертепе – поселение эпохи ранней бронзы. Баку: Nafta-Press, 2006, 173 с.

25. Котович В.М. Верхнегунибское поселение – памятник эпохи бронзы горного Дагестана. К истории дагестанских племен в конце III – II тысячелетий до н. э. Махачкала 1965, 173 с.

26. *Мунчаев Р.М.* Куро-аракская культура // Археология. Эпоха бронзы Кавказа и Средней Азии: Ранняя и средняя бронза Кавказа. М.: Наука, 1994. С. 8–57.

27. *Greenberg R.* Transcaucasia colors: Khirbet Kerak Ware at Khirbet Kerak (Tel Bet Yerah) // Les cultures des Caucase (VIe–IIIe millénaire avant notre ère). Paris: CNRS Editions, 2007. P. 257–268.

28. *Магомедов Р.Г.* Гинчинская культура: Горы Дагестана и Юго-Восточной Чечни в эпоху средней бронзы. Махачкала: ДНЦ РАН, 1998. - 380 с.

29. *Бобринский А.А.* Гончарство Восточной Европы. Источники и методы изучения. М.: Наука, 1978. - 272 с.

30. *Бобринский А.А.* Гончарная технология как объект историко-культурного изучения // Актуальные проблемы изучения древнего гончарства. Самара, 1999. С. 5–106.

31. *Цетлин Ю.Б.* Древняя керамика: теория и методы историко-культурного подхода. М.: ИА РАН, 2012. 379 с.

32. *Бобринский А.А., Цетлин Ю.Б., Гей И.А.* Некоторые данные о технике и технологии куро-аракских гончаров по материалам поселения Ново-Гапцах в Дагестане // Российская археология. 2011. № 4. С. 15–28.

Recieved 17.04.2025
Accepted 01.07.2025
Published 15.12.2025

Поступила в редакцию 17.04.2025
Принята в печать 01.07.2025
Опубликована 15.12.2025