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## Classification of 9th–13th Century Arrowheads Found in Azerbaijan

*Ninety-five arrowheads dating to 800–1300 AD and found in the cities of Qabala, Shamakhi, Baku, Shabran, Shamkir, Beylagan, and Sharur, in the castles of Gulistan and Gasymkhan-qala, and in the villages of Shamdan, Burovdal, and Shakashehr are described. The study is based on the classification of Siberian, Far Eastern, eastern and western Central Asian, and Eastern European arrowheads suggested by Y.S. Hudiakov and A.I. Soloviev. All specimens are made of iron; some are stemmed and some socketed. Stemmed ones fall into eight groups in terms of cross-section. Those with sockets form a single group. In terms of function, three groups of arrowheads are described: (1) used against light armor; (2) used against chain mail; (3) used against plate armor. On the basis of casting molds, metal sheets with notches, and leather templates, manufacturing techniques are reconstructed. Arrowheads were forged from irregular metal blanks or rods, and cut from metal sheets using templates; additional forging was optional. The most representative group includes specimens with narrow faceted blades and acute-angled tips ensuring deep penetration. Flat arrowheads are the most common. A few specimens from Mongolian burials at Mingachevir, dating to the late 13th century, are described.*

Keywords: Azerbaijan, Middle Ages, weapons, arrowheads, Mongolian burials.

### Introduction

During the Middle Ages, weaponry in the territory of Azerbaijan was represented by elements differing in their character. This is largely explained by the geographic position of local states that were influenced by many Eurasian regions.

So far, archaeological studies conducted in the Republic of Azerbaijan have made it possible to accumulate materials that allow us to classify the arrowheads and to determine their role and their place in the general development of warfare.

This study covers the period of the 9th to 13th centuries, which is traditionally not considered very rich in such finds as weapons. The wide distribution of Islam in the territory of Azerbaijan put an end to the funerary

rite that involved burying warriors with weapons: while in the 7th–9th centuries weapon burials emerged because of penetration of Khazars here; after the 9th century, they became untypical of the region. Therefore, such archaeological materials pertaining to the High Middle Ages in Azerbaijan are rarer than in the epoch of antiquity.

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A classification system for the arrowheads found in Azerbaijan had not been created until recently, allowing no way of tracing the specific historical path of weapons development in time and space or revealing the regularities in evolution of their shapes. The results of the work that we started in order to classify medieval weapons—in particular, arrowheads—from the territory of the Republic of Azerbaijan have been reflected in the

study *Medieval Weapons of Azerbaijan (on the Basis of Archaeological Materials)* (Əhmədov S.Ə., Cəfərova, 2005: 43–54). This is devoted to studying the arrowheads that were described in the archaeological literature of Azerbaijan before 2004. In 2013, T. Dostiyev (2013), the head of the Shamkir Archaeological Expedition, suggested a classification of arrowheads found in the medieval fortified settlement of Shamkir in 2006–2011. This article analyzes materials presented in the above publications, and also some museum specimens (accidental finds) and arrowheads found during 2008–2010 archaeological excavations in medieval layers of the town of Qabala.

### Arrowheads from archaeological excavations

This study is based on the classification of arrowheads manufactured by the Turkic peoples of Siberia, Far East, eastern and western Central Asia, and Eastern European steppes, as presented in the papers published by Russian archaeologists Y.S. Hudiakov (1986, 1991) and A.I. Soloviev (1987). It allows us to subdivide the said finds into classes (in terms of material (bone, iron, etc.)), divisions (in terms of the stem shape (stemmed, socketed)), groups (in terms of the cross-section of blade (flat, trihedral, etc.), and types (depending on the blade-contour (rhombic, elongated-rhombic, etc.)).

The arrowheads from medieval sites of Azerbaijan (in total, 95 specimens studied) belong to a single class—iron. Among them, items of two divisions (stemmed and socketed) are identified. It has been established that stemmed arrowheads fall into eight groups in terms of cross-section.

**Group I.** Round arrowheads. Two types are distinguished.

*Type 1.* Elongated-triangular (Fig. 1, 30). One specimen from Beylagan is included (Əhmədov Q.M., 1979: 53, şək. 32). The arrowhead has an acute-angled tip and straight shoulders.

*Type 2.* Elongated-rhombic. Two specimens from Shamkir are included (Fig. 2, 1, 4) (Dostiyev, 2013: 77, tab. I, 1, 4). The arrowhead has an acute-angled tip and sloping shoulders.

**Group II.** Square arrowheads. Eight types are identified.

*Type 1.* Elongated-triangular (Fig. 2, 5, 11, 14; 3, 17; 4, 3). Twelve specimens from Shamkir are included (Ibid.: Tab. I, 5, 11, 14; II, 17; V, 3).

*Type 2.* Elongated-triangular with a rest (see Fig. 2, 2, 17, 18). Three specimens from Shamkir are included (Ibid.: Tab. I, 2, 17, 18).

*Type 3.* Warhead triangular (see Fig. 2, 6, 7). Five specimens from Shamkir are included (Ibid.: Tab. I, 6, 7).

*Type 4.* Elongated-rhombic. Three specimens from Shamkir are included (see Fig. 3, 11; 5, 10) (Ibid.: Tab. II, 11; IV, 10).

*Type 5.* Narrow elongated (see Fig. 2, 8, 9; 4, 4; 6, 5, 13). Six specimens from Shamkir are included (Ibid.: Tab. I, 8, 9; III, 13; V, 4).

*Type 6.* Pyramidal with sloping shoulders (see Fig. 4, 5). One specimen from Shamkir is included (Ibid.: Tab. V, 5).

*Type 7.* Elongated-pentagonal with a rest (see Fig. 3, 4; 4, 6). Two specimens from Shamkir are included. The items are rather large in size (11 cm long) and weight (Ibid.: 77, tab. II, 4; V, 6).

*Type 8.* Chisel-like with a rest (see Fig. 6, 1, 3). Two specimens from Shamkir are included (Ibid.: 77, tab. III, 1, 3).

**Group III.** Tetrahedral arrowheads. Six types are identified.

*Type 1.* Elongated-rhombic (see Fig. 1, 33, 35). One specimen from Qabala and one specimen from Beylagan are included (Babayev, Əhmədov Q.M., 1981: 46, şək. 29; Əhmədov Q.M., 1979: 53, şək. 32). The arrowhead has an acute-angled elongated tip and acute-angled shoulders.

*Type 2.* Rhombic (see Fig. 1, 36, 37, 44). One specimen from the castle of Gulistan, one specimen from Beylagan, and one specimen from Shakashekhr (the Astarinsky District, Republic of Azerbaijan) are included (Ciddi, 1967: 88, tab. 14; Əhmədov Q.M., 1979: 53, şək. 32).

*Type 3.* Pyramidal with sloping shoulders (see Fig. 4, 3; 6, 7). Two specimens from Shamkir are included (Dostiyev, 2013: 77, tab. A, III, 7; V, 3).

*Type 4.* Elongated-triangular (see Fig. 2, 10; 3, 10, 12). Three specimens from Shamkir are included (Ibid.: 77–78, tab. I, 10; II, 10). The arrowhead has an acute-angled tip and straight shoulders.

*Type 5.* Pentagonal (see Fig. 4, 7; 6, 10). Two specimens from Shamkir are included (Ibid.: Tab. 78, tab. A, III, 10; V, 7).

*Type 6.* Elongated-triangular with a rest (see Fig. 3, 16). One specimen from Shamkir is included (Ibid.: Tab. II, 16).

**Group IV.** Flattened tetrahedral arrowheads. Six types are identified.

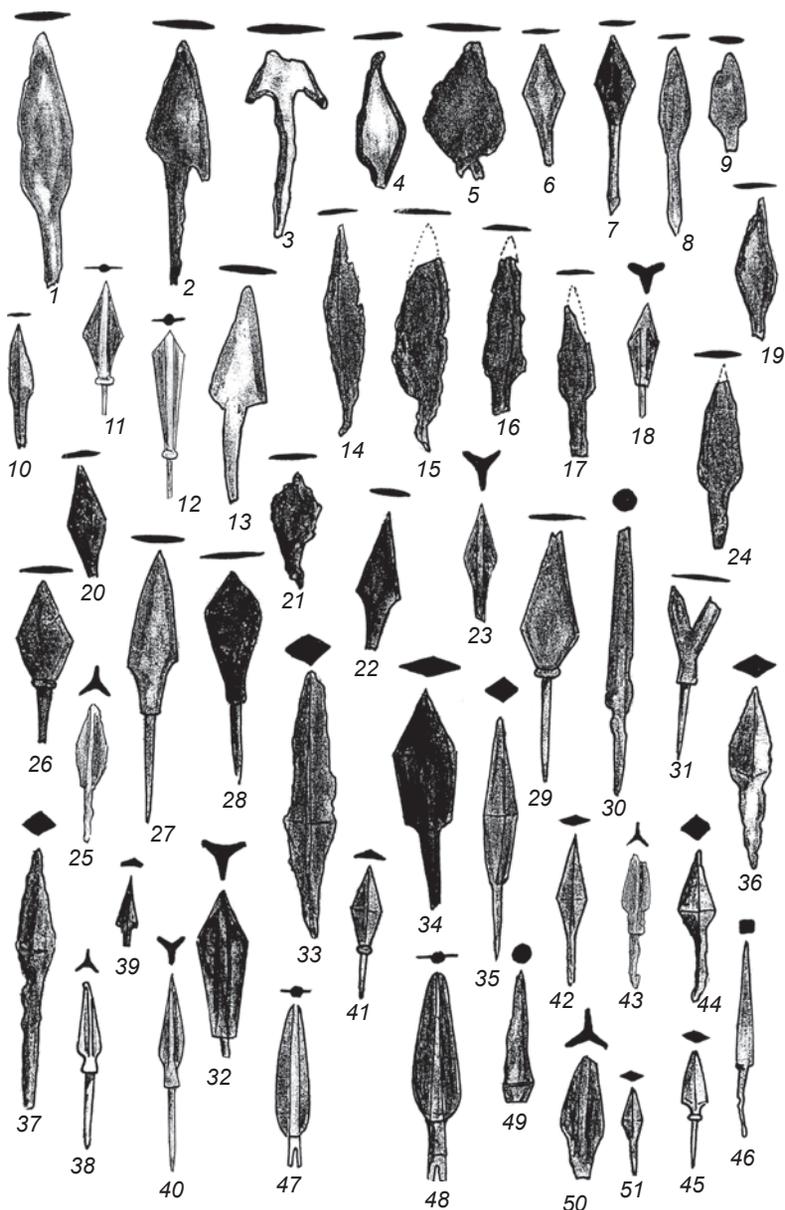
*Type 1.* Pentagonal (see Fig. 1, 34). One specimen from the territory of Azerbaijan is included (the exact location of the find is unknown) (Novruzlu, 2000: 123, tab. 24). The arrowhead has an acute-angled tip, nearly parallel sides, and sloping shoulders.

*Type 2.* Rhombic with a rest (see Fig. 4, 8). One specimen from Shamkir is included (Dostiyev, 2013: 78, tab. V, 8). The arrowhead has an acute-angled tip and similar shoulders converging at the rest.

*Type 3.* Rhombic (see Fig. 1, 42, 51). One specimen from Shabran and one specimen from Dzhanakhyr are included (Dostiyev, 2001: 133, şək. 32). The arrowhead

Fig. 1. 9th–13th-century arrowheads found in Azerbaijan.

1, 2, 9, 13, 27, 35 – Qabala; 3, 25, 30, 33, 37, 43, 50 – Beylagan (Örənqala); 4, 38 – Shamakhi; 5, 14–17, 19, 24 – Baku; 6, 7, 20, 22, 26, 41, 42, 45, 51 – Shabran and its vicinities; 8 – village of Shamdan; 10 – castle of Gasmkhan-qala; 11, 12, 47, 48 – Sharur; 18, 23, 28, 31, 32, 34, 39, 40, 46, 49 – the exact location of the find is unknown; 21, 36 – castle of Gulistan; 29 – village of Burovdal; 44 – village of Shakashekhr.



has an acute-angled tip and similar shoulders.

**Type 4.** Warhead triangular with a rest (see Fig. 1, 45). One specimen from Shabran and one specimen from Džhanakhyr are included (Ibid.). The arrowhead has an acute-angled tip, a marked warhead, and sloping shoulders converging at the rest.

**Type 5.** Asymmetrically-rhombic with a rest. One specimen from Shamkir is included (Ibid.: 78, tab. V, 12).

**Type 6.** Chisel-like with a rest (see Fig. 5, 3, 8). Two specimens from Shamkir are included (Ibid.: 78, tab. III, 5, 6).

**Group V.** Trihedral arrowheads. Three types are identified.

**Type 1.** Triangular (see Fig. 1, 39). One specimen from the territory of Azerbaijan is included (the exact location of the find is unknown) (Novruzlu, 2000: 123, tab. 24). The arrowhead has an acute-angled tip and straight shoulders.

**Type 2.** Rhombic with a rest (see Fig. 1, 41). One specimen from Shabran and one specimen from Shamkir are included (Dostiyev, 2001: 133, şək. 32; 2013: 78, tab. III, 8). The arrowhead has an acute-angled tip and similar shoulders converging at the rest.

**Type 3.** Triangular with a rest (see Fig. 5, 4). One specimen from Shamkir is included (Dostiyev, 2013: 78, tab. IV, şək. 4).

**Group VI.** Three-barbed arrowheads. Three types are identified.

**Type 1.** Warhead asymmetrically rhombic with a rest (see Fig. 1, 18, 32). Two specimens from the territory of Azerbaijan are included (the exact location of the find is unknown) (İbrahimov, 1988: 48, tab. 9). The arrowhead has an acute-angled tip, a marked warhead, and elongated acute-angled shoulders converging at the rest.

**Type 2.** Rhombic (see Fig. 1, 23, 25, 50). Two specimens from Beylagan and one specimen from the territory of Azerbaijan (the exact location of the find

is unknown) are included (Əhmədov Q.M., 1979: 53, şək. 32; Novruzlu, 2000: 123, tab. 24). The arrowhead has an acute-angled tip and acute-angled shoulders.

**Type 3.** Elongated-rhombic with a rest (see Fig. 1, 38, 40, 43). One specimen from Shamakhi, one specimen from Beylagan, and one specimen from the territory of Azerbaijan (the exact location of the find is unknown) are included (Ciddi, 1967: 53, tab. 1; Əhmədov Q.M., 1979: 53, şək. 32; Novruzlu, 2000: 123, tab. 24). The arrowhead has an acute-angled tip and wide-angled shoulders converging at the neck with a rest.

**Group VII.** Two-bladed arrowheads. Two types are identified.

**Type 1.** Rhombic with a rest (see Fig. 1, 11). One specimen from the village of Yurdchu (Sharur) is included (Novruzlu, Baxşəliyev, 1993: 45–46, tab. 48). The

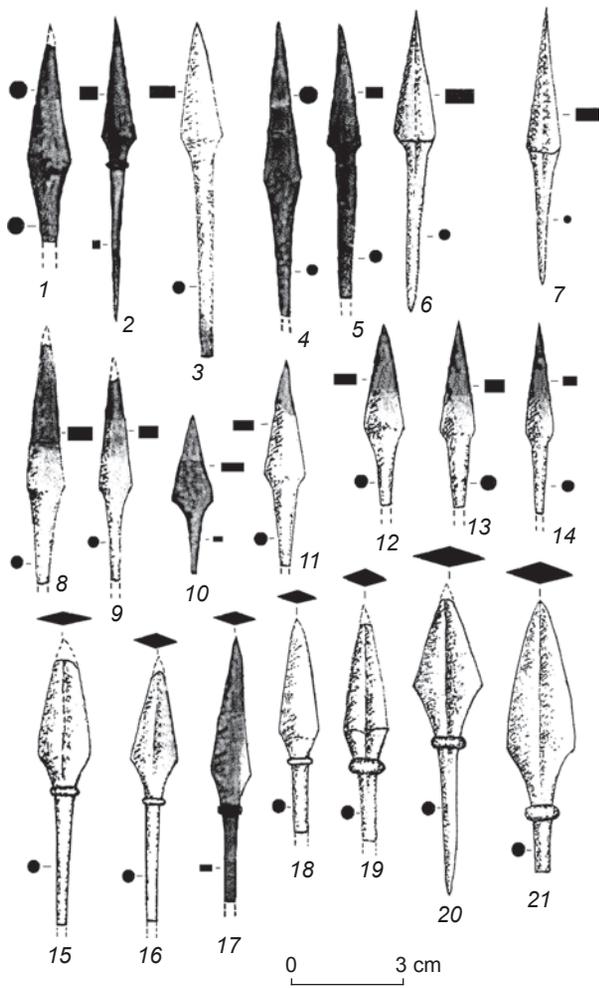


Fig. 2. 9th–13th-century arrowheads found at the medieval fortified settlement of Shamkir.

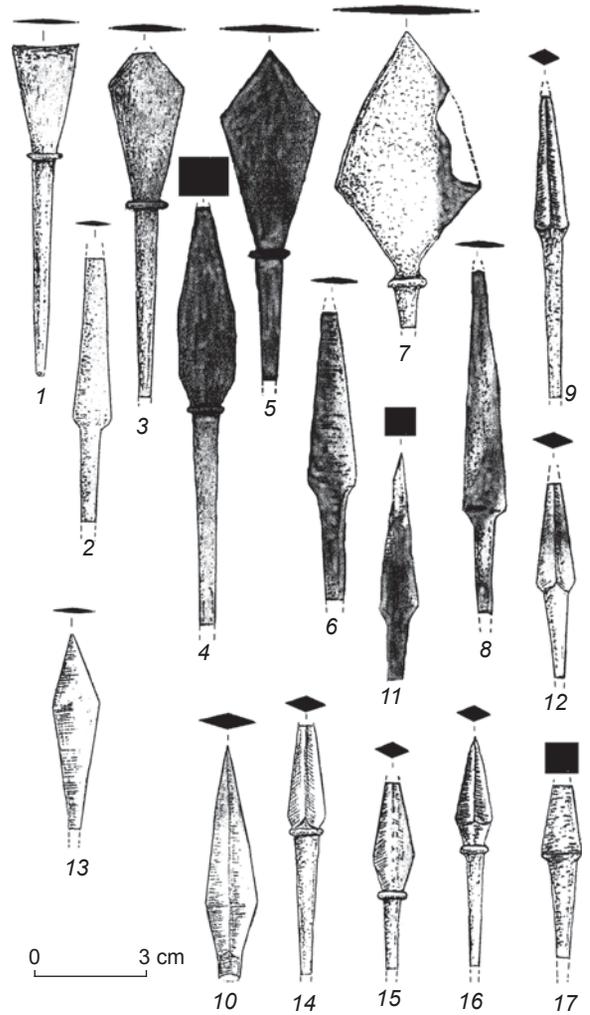


Fig. 3. 9th–13th-century arrowheads found at the medieval fortified settlement of Shamkir.

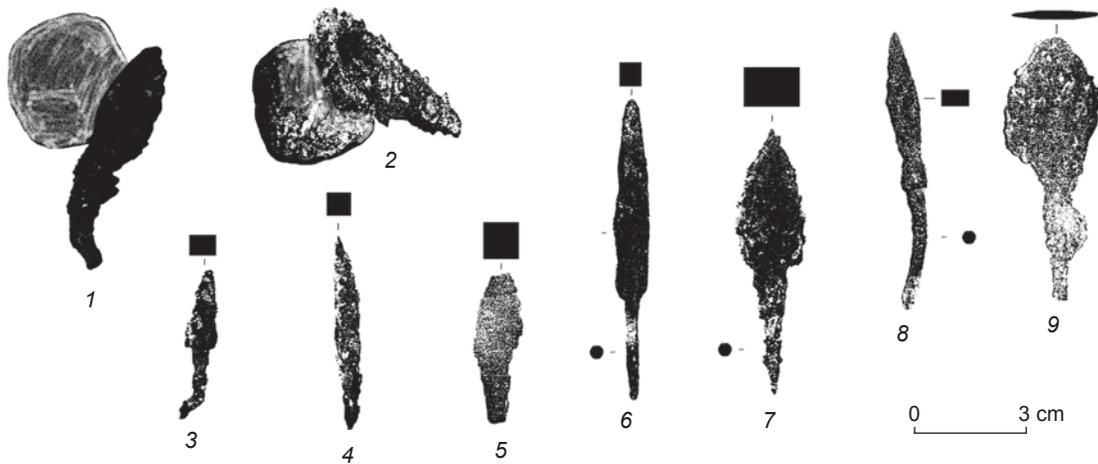


Fig. 4. 9th–13th-century arrowheads found at the medieval fortified settlement of Shamkir.

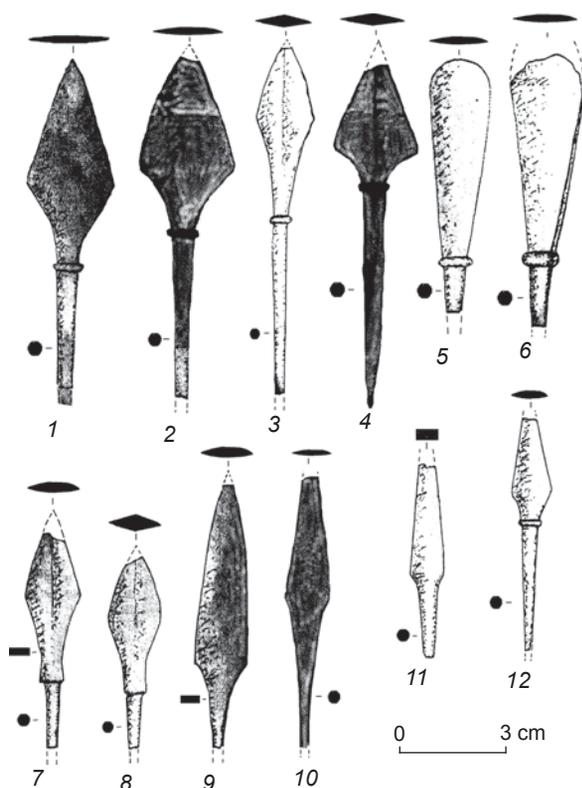


Fig. 5. 9th–13th-century arrowheads found at the medieval fortified settlement of Shamkir.

arrowhead has a marked central rod, an acute-angled tip, and shoulders converging at the rest.

*Type 2.* Asymmetrically-rhombic with a rest (see Fig. 1, 12). One specimen from the village of Yurdchu (Sharur) is included (Ibid.: tab. 48). The arrowhead has a marked central rod, a wide-angled tip, and shoulders converging at the rest.

**Group VIII.** Flat arrowheads. 15 types are identified.

*Type 1.* Warhead elongated-triangular spurred (see Fig. 1, 2). One specimen from Beylagan is included (Əhmədov Q.M., 1981: 46, şək. 29). The arrowhead has an acute-angled tip with a marked warhead, spurs, and sloping shoulders.

*Type 2.* Triangular spurred (see Fig. 1, 3). One specimen from Beylagan is included (Əhmədov, 1962: 38). The arrowhead has an acute-angled tip, spurs, and sloping shoulders.

*Type 3.* Leaf-shaped (see Fig. 1, 5; 5, 9, 11). One specimen from Beylagan, one specimen from Qabala (the Selbir quarter), and two specimens from Shamkir are included (Əhmədov Q.M., 1979: 53, tab. 32; Qəbələ..., 2011: 142; Dostiyev, 2013: 78, tab. IV, 9, 11). The arrowhead has an acute-angled tip and sloping shoulders.

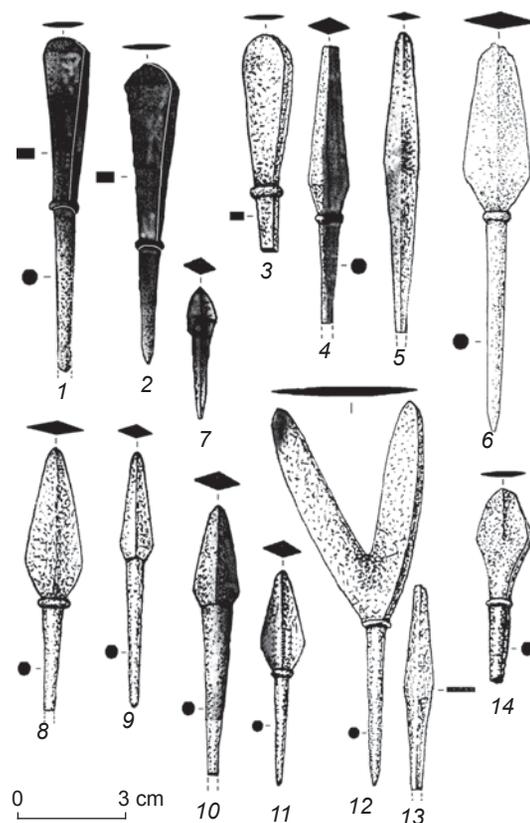


Fig. 6. 9th–13th-century arrowheads found at the medieval fortified settlement of Shamkir.

*Type 4.* Split-tail with a rest (see Fig. 1, 31; 6, 12). One specimen from the territory of Azerbaijan (the exact location of the find is unknown) and one specimen from Shamkir are included (İbrahimov, 1988: 48; Dostiyev, 2013: 77, tab. II, 13). The arrowhead has two acute-angled tips and wide-angled shoulders converging at the neck with a rest.

*Type 5.* Asymmetrically-rhombic (see Fig. 1, 14; 3, 13). Four specimens from Baku and one specimen from Shamkir are included (İbrahimov, 1995: 20, tab. 4; Dostiyev, 2013: 78, tab. II, 13). The arrowhead has an acute-angled tip and acute-angled elongated shoulders.

*Type 6.* Elongated-triangular (see Fig. 1, 13). One specimen from Qabala is included (Babayev, Əhmədov Q.M., 1981: 46, şək. 29). The arrowhead has an acute-angled elongated tip and short sloping shoulders.

*Type 7.* Elongated-rhombic (see Fig. 1, 22). One specimen from Shabran, one specimen from Qala, and one specimen from the Selbir part of the Qabala fortified site are included (Dostiyev, 2001: 133–134, fig. 32; Qəbələ..., 2011: 225). The arrowhead has an acute-angled elongated tip and gently curved shoulders.

*Type 8.* Elongated-triangular (see Fig. 3, 8). One specimen from Shamkir is included (Dostiyev, 2013: 78,

tab. II, 8). The arrowhead has an acute-angled tip and sloping shoulders.

*Type 9.* Rhombic with a rest (see Fig. 1, 26; 4, 9; 5, 7; 6, 14). One specimen from Shabran, one specimen from Salman-bulagy, and three specimens from Shamkir are included (Dostiyev, 2001: 133–134, şək. 32; 2013: 78, tab. III, 14; IV, 7; V, 9). The arrowhead has an acute-angled tip and similar shoulders converging at the rest.

*Type 10.* Warhead elongated-rhombic with a rest (see Fig. 1, 27). One specimen from Qabala is included (Babayev, Əhmədov Q.M., 1981: 46, şək. 29). The arrowhead has an acute-angled tip, a marked warhead, and sloping shoulders converging at the neck with a rest.

*Type 11.* Asymmetrically-rhombic with a rest (see Fig. 1, 28; 3, 3, 5). Two specimens from Shamkir and one specimen from the territory of Azerbaijan (the exact location of the find is unknown) are included (Dostiyev, 2013: 78, tab. II, 3, 5; Novruzlu, 2000: 123, tab. 24). The arrowhead has an acute-angled short tip and wide-angled shoulders converging at the neck with a rest.

*Type 12.* Rhombic (see Fig. 1, 1, 4, 6–10, 15–17, 19–21, 24). Two specimens from Qabala, two specimens from Shabran, one specimen from the village of Sandygtepe, one specimen from the castle of Gasymkhan-qala (Ismailli District), six specimens from Baku, and one specimen from the village of Shamdan (Ismailli District) are included (Babayev, Əhmədov Q.M., 1981: 46, şək. 29; Qədirov, 1984: 95, tab. 16; Dostiyev, 2001: 133–134, şək. 32; İbrahimov, 1995: 20, tab. 4; İbrahimov, Osmonov, 1993: 63; Kudryavtsev, 1984: 96, tab. 1). The arrowhead has an acute-angled tip and similar shoulders.

*Type 13.* Elongated-rhombic with a rest (see Fig. 1, 29). One specimen from the village of Burovdal (Ismailli District) and one specimen from Shamkir are included (İbrahimov, Osmanov, 1993: 64, tab. 4, 12; Dostiyev, 2013: 78, tab. II, 15). The arrowhead has an acute-angled tip and similar shoulders converging at the rest.

*Type 14.* Chisel-like with a rest (see Fig. 5, 7). Four specimens from Shamkir are included (Dostiyev, 2013: 78, tab. II, 1; III, 2; IV, 5–7).

*Type 15.* Leaf-shaped with a rest. One specimen from Shamkir is included (Ibid.: 78).

Socketed arrowheads comprise a single group.

**Group I.** Two-barbed arrowheads. One type is presented.

*Type 1.* Elongated-ellipsoid (see Fig. 1, 47, 48). Two specimens from the village of Yurdchu (Sharur) are included (Novruzlu, Baxşəliyev, 1993: 45–46, tab. 48). The arrowhead has a marked central rod, a rounded tip, and oval shoulders.

Analysis of illustrative materials has demonstrated that images in book-miniatures and various objects generally represented triangular or rhombic arrows (this was possibly related to a certain artistic tradition). This is with the exception of two images: a bowl from Beylagan

shows an image of a dismounted archer with an arrow provided with a split-tail arrowhead, while a plate from Gabala shows a horse archer shooting an arrow with a split-tail arrowhead (Yakobson, 1959: Tab. 9; Dostiyev, 1999: Tab. 9).

Arrowheads were manufactured using several techniques: 1) forging from irregular metal blanks (mainly, arrowheads with a complex cross-section) (İbrahimov, 1988: 48); 2) forging from iron rods (mainly, arrowheads used against chain mail) (Kudryavtsev, 1984: 96, 102); and 3) cutting from metal sheets using templates, with subsequent additional forging (judging by leather templates found in Baku, this technique was employed for rhombic and elongated-rhombic arrowheads with a rest) (Əhmədov Q.M., 1979: 53; İbrahimov, 1995: 21).

We thought fit to specify (without entering into the general statistics of 9th–13th-century arrowheads found in Azerbaijan) several arrowheads discovered in Mongolian burials dating to the late 13th century (Fig. 7). During archaeological works on the banks of the Kura River, in mound II (on the right bank) and in settlement No. 3 (on the left bank), burials of Mongolian warriors were found (for more detailed information about their locations and about artifacts from the burials see (Akhmedov, 2009)).

Mound II, 24–26 m in diameter and 3 m high, was located in the center of a burial ground, where it was excavated in 1946. The mound's top had a depression resulting from the collapse of the walls of the burial chamber of joint burial No. 8 (Aslanov, Vaidov, İone, 1959: 93). The burial pit accommodated a human skeleton, and a horse's skeleton was found above the pit.

The human skeleton belonged to a young man, who was lying extended on his back, with his head towards the north and legs towards the south (Fig. 7). A birch-bark quiver in the form of elongated trapezoid lay to the right of the thigh bone of the buried (Ibid.: 102)\*. The presence of the birch-bark quiver explains the function of the iron part found near the right knee of the warrior (archaeologists attributed this to the category of iron items that had lost their shape). Apparently, this find is a fragment of a quiver-hook: the hook was attached to the quiver's bottom by its flat end, and the hook itself was slipped over a strap suspended from the belt. Similar hooks are known from Siberian and Central Asian finds (Nesterov, Maksimov, 1990: 122–124; Soloviev, 1987: 37; Hudiakov, 1986: 173; 1991: 93, 128).

The quiver contained arrowheads of various sizes including\*\*: iron stemmed three-bladed and trihedral

\*The quiver's remains are stored in the National Museum of History of Azerbaijan (the archaeological fund (hereinafter—NMHA AF), No. 2543).

\*\*The classification data specify sequentially: material, the shape of connection with the shaft, the shape of top warhead in a cross-section, the shape of blade.

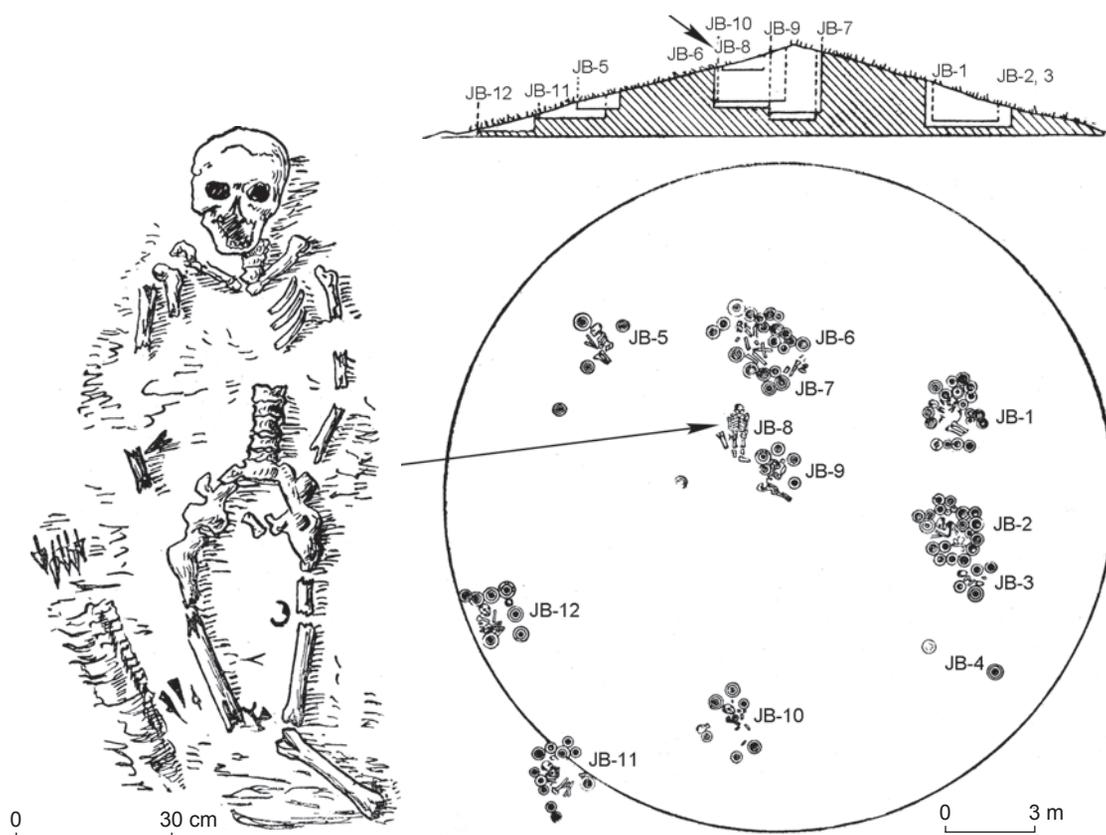


Fig. 7. Burial of a Mongolian warrior of the 13th century at Mingachevir.

triangular; iron stemmed flat chisel-like; iron stemmed round elongated-triangular (styloid); and iron stemmed flat triangular ones. Arrowheads of these types are typical of the Mongolian burials of Mongolia, Trans-Baikal, Cis-Baikal, Tuva, Northern Caucasus, and Crimea (Hudiakov, 1991: 105, fig. 54, 1, 3, 5). The set of arrows from the above grave coincides with the set of arrows from mounds No. 7 and 9 of the Olen-Kolodez cemetery on the Don River, dating to late 13th to early 14th centuries (Efimov, 2000: 172–174).

Two iron stemmed flat chisel-like heads stand out from the others (NMHA AF, No. 1977-1, 1977-2). G.M. Aslanov, R.M. Vaidov, and G.I. Ione consider them to be projectile points: the quiver contained “iron heads of arrows and projectiles of several kinds” (1959: 102). However, it is known that arrows and projectiles were never carried in the same quiver, primarily because of a great difference in the lengths of the shafts of arrows (no more than 0.6–0.7 m) and projectiles (more than 1 m). Trapezoid birch-bark quivers were only used to carry arrows. Quivers for projectiles were long (1.0–1.5 m) and made of leather. In our opinion, a false conclusion by the above researchers is based on the concept that the largest arrowheads (0.11–0.12 m) had a chisel-like shape.

This type of quiver is typical of nomadic cultures: it was comfortable for horsemen, and was encountered as early as the Scythian epoch. Trapezoid birch-bark quivers were widely distributed over a vast territory from the Pacific Ocean to the Black Sea steppes (Hudiakov, 1986: 75, 91, 99–100, and others).

Archaeologists date burial No. 8 of mound II to the late 13th to early 14th centuries. This date coincides with the dates of Mongolian graves found in Mongolia, Trans-Baikal, Cis-Baikal, Tuva, Northern Caucasus, Crimea, and also in the mountain Ingushetia and Don areas. Analysis of materials found in this burial (Fig. 8) suggests that the buried young man was a light cavalryman. The warrior wore a quiver, suspended from the belt by means of a quiver hook, on his right side. A set of arrows in the quiver allowed him to hit enemies who wore plate armor (arrows with three-bladed and trihedral triangular arrowheads), chain mail (arrows with styloid arrowheads) or light leather clothes (arrows with flat triangular arrowheads). Chisel-like arrowheads were used to shoot at enemies' horses. On the basis of materials from Mongolia, Trans-Baikal, Cis-Baikal, Tuva, Northern Caucasus, and Crimea, Y.S. Hudiakov has made a reconstruction of a lightly-armed Mongolian horseman (1991: 153, fig. 83). In our view, this can be

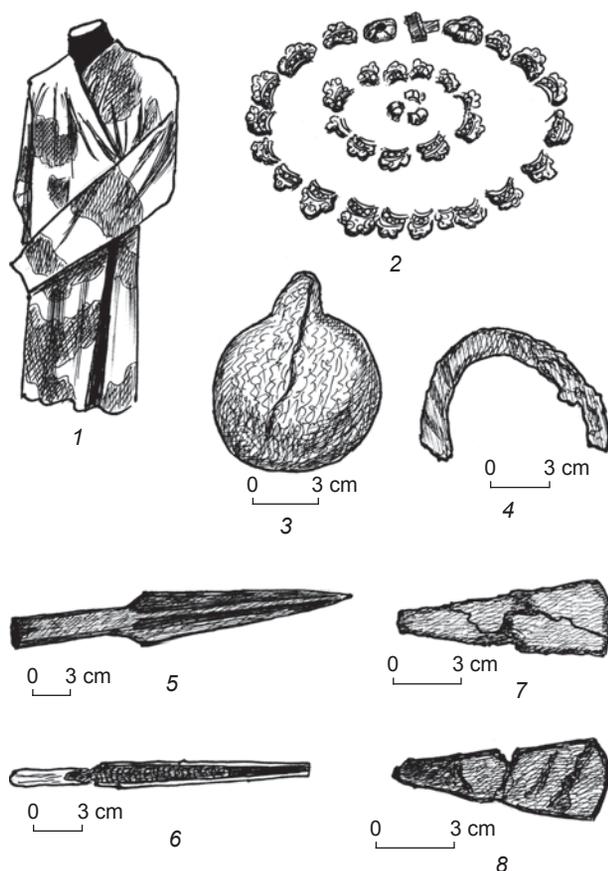


Fig. 8. Finds from the burial of a Mongolian warrior of the 13th century at Mingachevir (NMHA AF).

1 – a silk Mongolian men's robe of brownish-sandy color; 2 – decorative overlays of a thin men's belt; 3 – a round iron paiza 8.7 cm in diameter; 4 – a fragment of an iron horseshoe; 5 – an iron stemmed elongated-rhombic spearhead 37.6 cm long; 6 – a piece of a dagger with a bone handle and a preserved fragment of wooden sheath; 7 – an iron stemmed flat chisel-like arrowhead 11 cm long; 8 – an iron stemmed flat chisel-like arrowhead 12 cm long.

used to restore the appearance of the Mongolian warrior, whose skeleton has been discovered in joint burial No. 8.

### Discussion of results

The range of arrowheads under consideration is apparently far from being complete; however, the available forms give an idea of its variety. Noteworthy is a large proportion of flat arrowheads. This is explained by the fact that these were cheap and easy to manufacture, while their shape allowed more arrows to be carried in one quiver and, consequently, to increase the rate of fire.

In terms of function, the arrowheads under study can be divided into the following types.

1) Used against the light-armed enemies. They include stemmed flat, two-bladed, three-barbed, and also socketed two-barbed shapes that were incapable of penetrating metal or thick leather armor (especially at great distances) and therefore, probably, were applied to shoot at enemies without respective armature. 33 arrowheads have been found. This type is most abundant, which means that shooting at warriors without armor was most common in Azerbaijan during the period under consideration.

2) Used against enemies wearing chain mail armor. They include stemmed shapes of round or square cross-section. A narrow armor-piercing arrowhead successfully penetrated chain mail rings. Even if soldered joints or rivets of a ring could have withstood an impact, a warrior still was wounded owing to penetration of the arrowhead to some depth through the ring hole. 37 arrowheads have been found. The arrowheads of this type could have also been used against warriors who wore leather and cotton felt armor.

3) Used against enemies wearing plate armor. They include stemmed trihedral, tetrahedral, and flattened tetrahedral shapes, sufficiently powerful and heavy to penetrate a plate of leather armor or to split apart a plate of metal armor. The arrowheads of this type could have also been used against warriors who wore leather and cotton felt armor. 25 arrowheads have been found.

### Conclusions

Study of arrowheads can supplement not only our understanding of the general development level of warfare and metallurgy, but also the knowledge of certain elements of warfare among the population of Azerbaijan in the 9th–13th centuries.

All studied arrowheads pertain to the same class (made of iron) and two divisions (stemmed and socketed). In terms of cross-section, stemmed shapes fall into eight groups, while those with sockets form a single group. The majority of finds have narrow faceted blades and acute-angled tips ensuring deep penetration. This is a special feature of arrowheads found in Azerbaijan.

In terms of function, the arrowheads under study can be divided into three categories: used against light armor (34.7 %); used against chain mail (38.5 %); and used against plate armor (26.3 %). On the basis of this information, it may be concluded that armor was widely used in warfare by medieval population of Azerbaijan.

Unfortunately, the set of arrowheads found so far is insufficiently representative to elucidate their evolution within the period of time under consideration. It is also difficult to distribute the material by territorial groups to determine the local features of various regions.

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