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FOLLOWING THE LEAD: *PLUMBATAE* IN *SCYTHIA* AND *MOESIA SECUNDA*

Abstract: The lead-weighted darts (*plumbatae* or *mattiobarbuli* (*martiobarbuli*)) are some of the rarest archaeological finds among the elements of Late Roman military equipment. In recent years, however, the number of *plumbatae* discoveries has increased, particularly in the northern and north-eastern parts of the former Empire. In this regard, the territory of *Moesia Secunda* and even more so that of *Scythia* are still lacking sufficient published data.
This contribution presents a number of unpublished lead-weighted darts from the two provinces described in the context of the several discoveries known to date, thus supplementing our knowledge on their distribution in the larger zone of the dioceses of *Thracia* and *Dacia*. In addition, some comments are made on their possible places of manufacture within the region in question.

Keywords: *Plumbatae, lead-weighted darts, Scythia, Moesia Secunda, Diocese of Thrace.*

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INTRODUCTION

The lead-weighted darts (*plumbatae* or *mattiobarbuli* (*martiobarbuli*)) are some of the rarest archaeological finds among the elements of Late Roman military equipment[1] despite being mentioned by no less than three of the most important contemporary literary sources[2], and that they could also have been present in some Roman coin depictions[3]. In recent years, however, the number of *plumbatae* discoveries has enlarged, particularly in the northern and north-eastern parts of the former Empire[4]. In this regard, the territory of *Moesia Secunda* and even more so that of *Scythia* are still lacking sufficient published data, which supposedly contradicts some of the historical narratives[5].

[1] For the *plumbatae* in general, see BARKER 1979, 97-100; SHERLOCK 1979, 101-102; VÖLLING 1991, 287-298; DEGEN 1992, 139-147; BUORA 1997, 227-246; VERMAAT 2005, 42-44; BISHOP/COULSTON 2006, 200; KOZLENKO 2008, 341-343; KESZI 2018, 21-32; GLAD 2015, 177-178; BOMBLED 2024, 107-187.
[2] By Vegetius in his *Epitoma Rei Military* (VEG. *EP*. I.17; II.15, 16, 23; III.14), by the anonymous author of *De Rebus Bellicis* (ANON. *BELL*. X-XI) and in Maurice's *Strategikon* (MAUR. *STRAT*. XII.2; 4; 5).
[3] See ESTIOT 2008, 177-201; DROST/ESTIOT 2010, 435-445; ESTIOT 2017, 415-435. Counterarguments for the identification of *plumbatae* in the same depictions could be seen in KESZI 2018, 27-29.
[4] See for instance STOYCHEV 2004, 67-72; PFLAUM 2007, 285-332; VUJOVIĆ 2011, 203-218; HRISTOV 2012, 358-366; FEUGÈRE 2013, 321-323; GLAD 2015, 177-181; HARIZANOV 2024, 395-431, and the literature cited.
[5] According to Vegetius, *plumbatae* were initially part of the equipment of two legions in *Illyricum*, which were so proficient in their use that became the favourite military units of Diocletian and Maximian (VEG. *EP*. I.17). These legions were identified by some modern scholars as *Legio I Iovia* and *Legio II Herculia*, which were stationed primarily in *Scythia* (see PFLAUM 2007, 296-

Fig. 1. Map of the Diocese of *Thracia* and the eastern part of the Diocese of *Dacia* with find spots of *plumbatae* marked (author A. Harizanov).

This contribution will present a number of unpublished lead-weighted darts from the two provinces described within the context of the several discoveries known to date. It is also a continuation of an ongoing study on the *plumbatae* in the dioceses of *Dacia* and *Thracia* following the initial publication of the darts from the province of *Dacia Ripensis* and the neighbouring region[6]. In addition to the topic, some comments would be made on the possible places of manufacture within the region in question.

1. Scythia (cat. nos. 1-3)

The only *plumbata* published in some detail from the territory of *Scythia* is one find from *Halmyris* (modern-day Murighiol, Romania – **Fig. 1**), dated to the last third of the 3rd – the 4th c. AD[7] or the 380/390s and the 420s[8] **(cat. no. 1)**. If we accept the premise that the iron part of this artefact was found intact, it would testify for its divergence from the conventional darts in having a rather short iron point, shaped as a partially hollow cone narrowing to a sharp tip, and with an estimated length of circa 5 cm. The socket is enveloped in a biconical lead weight. Half of the latter's core is empty leaving more space for the wooden shaft, most likely for a firmer grip at the assembly point between the iron and the wood (**Fig. 2**).

The other dart from *Scythia,* mentioned in a few previous publications, is a supposed late 19th c. find from Cernavodă (*Axiopolis*), unearthed by G. Tocilescu along with other weaponry within the Late Antique fortified site, for which

297; KOZLENKO 2009, 290, and the literature cited). However, there is also another opinion on the topic that identifies the two military detachments with *Legio V Iovia* and *Legio VI Herculia*, formed by Diocletian and stationed in *Pannonia Secunda* (see VUJOVIĆ 2008, 127).

[6] HARIZANOV 2024, 395-431.

[7] GLAD, NUTU 2010, 136; 145, fig. 2.3.

[8] GLAD 2015, 56.

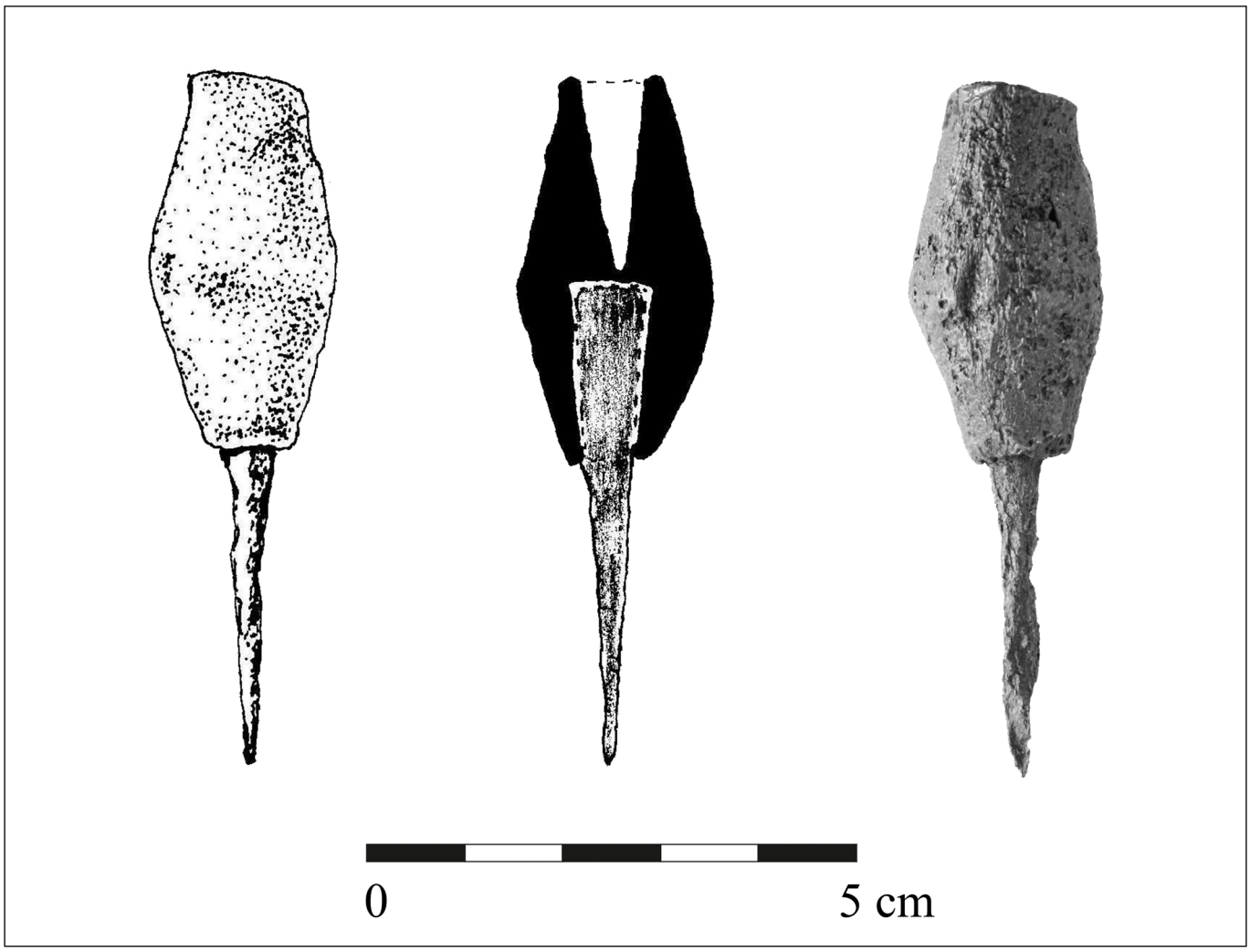

Fig. 2. The *plumbata* from *Halmyris* (original after GLAD/NUTU 2010, 145, Fig. 2.3; compiled and adjusted image in Harizanov 2024, 431, Fig. 11).

however there is no certain and detailed information available[9].

There are two previously unpublished in detail stray finds, held in the depository of the Regional History Museum in Dobrich, Bulgaria[10] (**Fig. 1**). The darts in question are of two different shapes. The first one **(cat. no. 2)** has a triangular point with swallowtail barbs, a solid slightly conical shaft ending in a hollow socket, and a biconical lead weight, positioned around the mid-length of the iron component **(Figs. 5/1, 6/1)**.

The second one **(cat. no. 3)** has close to a leaf shape (nearly pentangular), wider, slightly barbed point, and a solid shaft ending in a hollow socket, with an oblong lead weight mounted on it **(Figs. 5/3, 6/3)**.

There is no information available about the dating and context of discovery of these artefacts, apart from being found in the vicinity of the modern-day town of Dobrich.

[9] See lastly GLAD 2015, 43, no. 114.

[10] They are briefly described in HARIZANOV 2024, 405. I would like to thank once again the colleagues from the Regional History Museum in Dobrich Ms. Nikoleta Nikolova and Dr. Boyan Totev, and the Director of the museum Mr. Dobri Dobrev, for the cooperation and opportunity to study and publish these finds.

2. Moesia Secunda (cat. nos. 4-16)

For now, there are thirteen finds which could be attributed to places of discovery, situated within the borders of *Moesia Secunda*[11].

Two previously unpublished finds held in the depository of the Regional Museum of History in Varna were supposedly discovered near the village of Rogachevo or at least within its administrative territory[12] (**Fig. 1**). Both are of similar, albeit unusual shape. They have thickened rhomboid points, partially solid cylindrical shafts ending in hollow, slightly conical sockets[13]. The particularly interesting part of their design is the lead weight, which is of pyramidal shape and

[11] For the latest hypothesis about the route of the border between *Moesia Secunda* and *Dacia Ripensis*, see TORBATOV 2016, 233-276. Within the map included (fig. 1), the border in question is placed in accordance with S. Torbatov's hypothesis.

[12] I would like to thank the colleagues Elina Mircheva (Varna Regional Museum of History) and Dr. Igor Lazarenko (Director of the Varna Regional Museum of History) for the cooperation and permission to study and publish the darts, held in the exhibition and the depository of the museum.

[13] Iron points of similar design have been described elsewhere as catapult bolts (see for instance AMON 2004, 95-98; Pl. XVI), however, the presence of lead-weights of the Rogachevo finds excludes their use as such.

mounted immediately below the tip of the iron component (**cat. nos. 4 and 5; Figs. 3/1, 3/2, 4/1, 4/2)**. This fact sets them apart from the rest of the *plumbatae* published so far from the territories of the Balkan provinces of the Empire. The only parallels known to date are two finds from the early Roman military camp at Haltern, Germany. The discoveries from the site on the Lippe River have the same pyramidal shape of the lead weight, which is again positioned immediately below the tip of the iron component, which in that case is trilobate. Their use is attributed to Oriental auxiliary contingents and related to the lead-weighted arrows (*plumbatae sagittae*) supposedly used for by the natives in the province of *Arabia* for shooting birds and described by Pliny in his *Historia Naturalis*[14].

It should be mentioned that, again, there is not sufficient information about the archaeological context of these finds or regarding their precise place of discovery. Given that the modern-day village of Rogachevo is situated very close to the border between *Moesia Secunda* and *Scythia*, there is also an option for the darts to have been used and discarded within the latter' territory. If their dating proves earlier, as with the Haltern finds, they should have been used within the territories of the Roman provinces of *Moesia Inferior* or *Thracia*.

Likewise found in the depository of the Varna Regional Museum of History, there is a lead weight from a supposed *plumbata* head coming from the vicinity of the modern-day village of Avren (**cat. no. 6; Figs. 3/4, 4/4**). This one was most likely discovered within the fortified area of a site called Kaleto, supposedly used during the Medieval period and positioned on a hill at about 1 km to the NW of the village[15].

Another *plumbata* head (**cat. no. 7**) comes from the territory of the village of Tutrakantsi (or the nearby Bozveliysko), situated less than 20 km to the west of Avren. The context of the discovery is unclear, supposedly (again) originating from a fortified site in that zone[16]. The find in question has a rhomboid point and a solid shaft, ending in a hollow conical socket. A partially preserved biconical lead weight is mounted on the latter **(Figs. 3/3, 4/3)**.

At similar to the previous distance, to the west of Tutrakantsi, the modern-day village of Slaveykovo is located, where another stray find of a *plumbata* head has been discovered (**cat. no. 8**). The point is missing with only the solid shaft and conical socket remaining, and the latter enveloped in an oblong lead weight **(Figs. 3/5, 4/5)**.

Apart from these newly described darts there are five stray finds found near the villages of Markovo (10 km to the north of Slaveykovo), Kalnovo / Yankovo (the same distance to the west of Slaveykovo), Dragoevo (2 finds coming from an area located some 15 km the west of Kalnovo) and Pet Mogili, Shumen region **(cat. nos. 9-13)**, already published by S. Stoychev in 2004. All of these finds are of somewhat similar design with triangular or elongated barbed iron points, solid shafts, and hollow sockets enveloped in biconical lead weights **(Fig. 7)**[17].

The finds from Kalnovo / Yankovo and Dragoevo supposedly came from fortified sites as well, situated in the modern villages' territory, while the one from Pet Mogili came from a supposed Roman and Late Roman villa where some archaeological trenches were dug in 1987. Due to the lack of archaeological context proper, the five darts were all dated by S. Stoychev within the broad chronological frame between the 2nd and the 5th c. AD[18]. Given the current lack of secure information about the use of *plumbatae* within the Empire prior the 280s[19], the initial date of these finds could also be moved to the last decades of the 3rd c. AD.

One of the very few lead-weighted darts found during excavations proper was discovered in the course of the initial rescue research of the Late Roman and Early Byzantine fortified town near the modern-day village of Voyvoda[20] (**Fig. 1**). The find has an elongated rhomboid head and an oblong, slightly biconical lead weight (**cat. no. 14; Fig. 8**). Unfortunately, there is no detail information about the context and dating of this discovery aside from the general chronological frame of the site's habitation between the early 4th and the 6th c. AD[21].

One more stray find, this one unpublished, most likely comes from the region of the modern-day town of Ruse (the Roman *Sexaginta Prista*)[22]. It has a triangular point with one barb present, and a solid shaft ending in a hollow conical socket. The latter is enveloped in an oblong lead-weight (**cat. no. 15; Figs. 5/6, 6/6**).

The other find discovered in a well-documented and dated archaeological context is an example coming from the Late Antique fortified settlement near the modern-day village of Dichin, Veliko Tarnovo region (**cat. no. 16**). It has both the iron and lead parts preserved. The shaft has a circular cross-section and finishes in a barbed point. The lead weight is described as ovoid-shaped but seems closer to biconical

[14] VÖLLING 1992, 293-297; see also GLAD 2015, 393.

[15] For a short description of the site, see DELIDAREV 1953, 28-29. The other archaeological site, Petrich Kale, positioned to the north-northeast of the village and was used from pre-Roman times until the Late Medieval period (see lastly MANOLOVA-VOYKOVA 2019, 79-112). It seems very plausible that the Kaleto site was also used prior the Middle Ages.

[16] The find is briefly described in HARIZANOV 2024, 405. I would like to thank the Director of the History Museum in Provadia Mr. Nikolay Hristov and my colleague Asst. Prof. Petar Leshtakov (National Archaeological Institute with Museum, BAS) for the opportunity to study and publish the find, as well as for the additional information provided. The dart was likely found within the fortified zone of a supposed Late Antique fortification, registered near Tutrakantsi during a field survey and remote sensing with an Airborne LiDAR – see LESHTAKOV/SAMICHKOVA 2019, 685-687.

[17] STOYCHEV 2004, 67-72.

[18] STOYCHEV 2004, 69.

[19] See discussion in HARIZANOV 2024, 411-412, and in the literature cited.

[20] For the earliest rescue excavations of the site at Voyvoda, when the *plumbata* head was supposedly discovered, see DREMSIZOVA/ANTONOVA 1967, 30-42. However, the dart is not mentioned among the finds from this excavation. The first regular archaeological research there was conducted in 1968-1969, when again no *plumbata* find was mentioned from among the finds noted (see MILČEV/DAMYANOV 1972, 263-277). For the site in general, see for instance DINTCHEV 2009, 423-424. The most recent excavations there are currently led by S. Stoychev (Shumen Regional Museum of History) to whom I owe gratitude for the information and additional data provided for the Voyvoda dart.

[21] See again DINTCHEV 2009, 424.

[22] I would like to thank Dr. Varbin Varbanov (Ruse Regional Museum of History) for the opportunity to study and publish this find, along with the additional information provided. In this regard, it should be mentioned that this find could have originated even outside the administrative territory of modern-day Ruse.

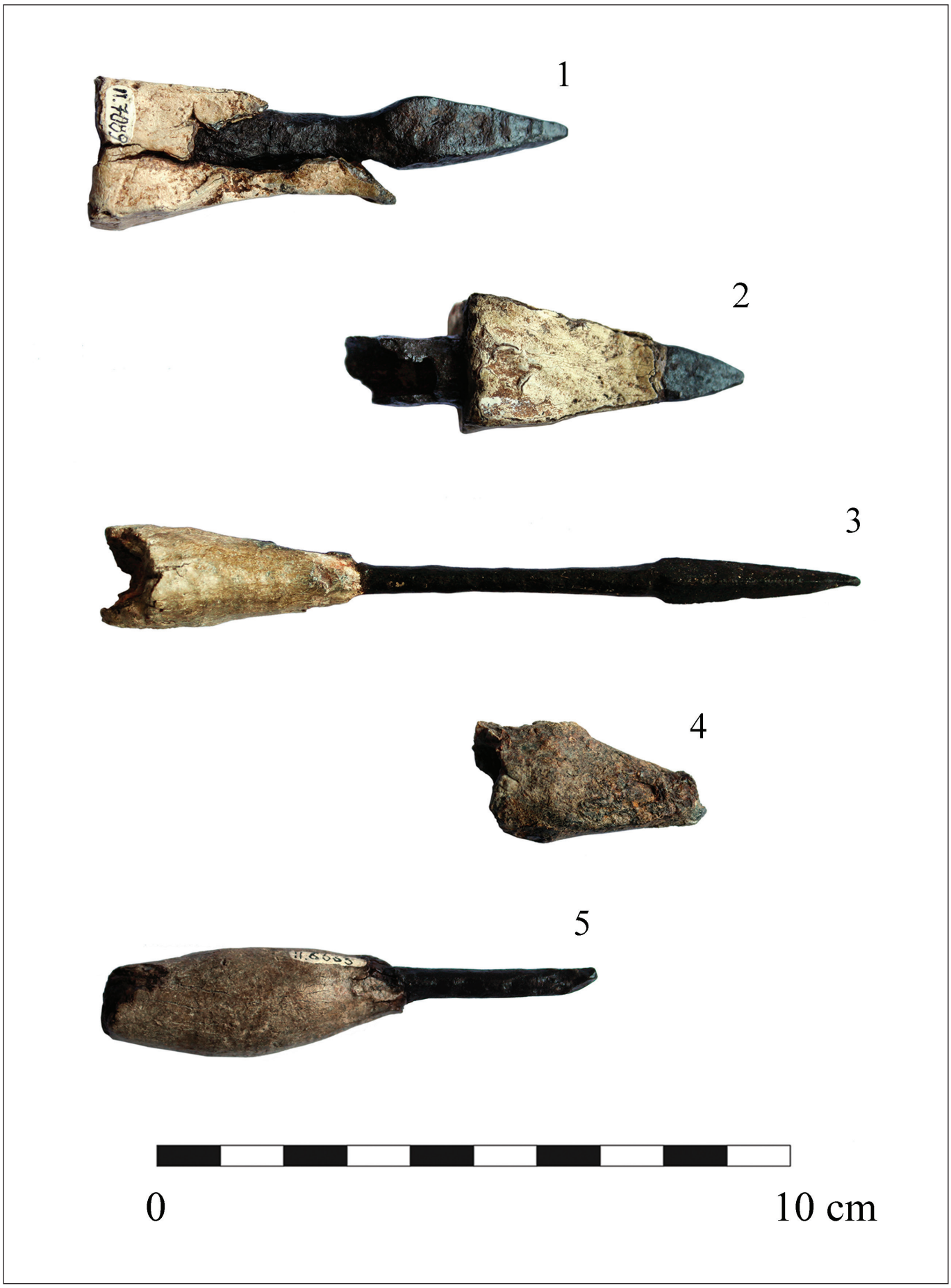

Fig. 3. Photos of the *plumbatae* from Rogachevo (1 and 2), Tutrakantsi (3) and Slaveykovo (5), and the possible lead weight from a *plumbata* head from Avren (4) (author A. Harizanov).

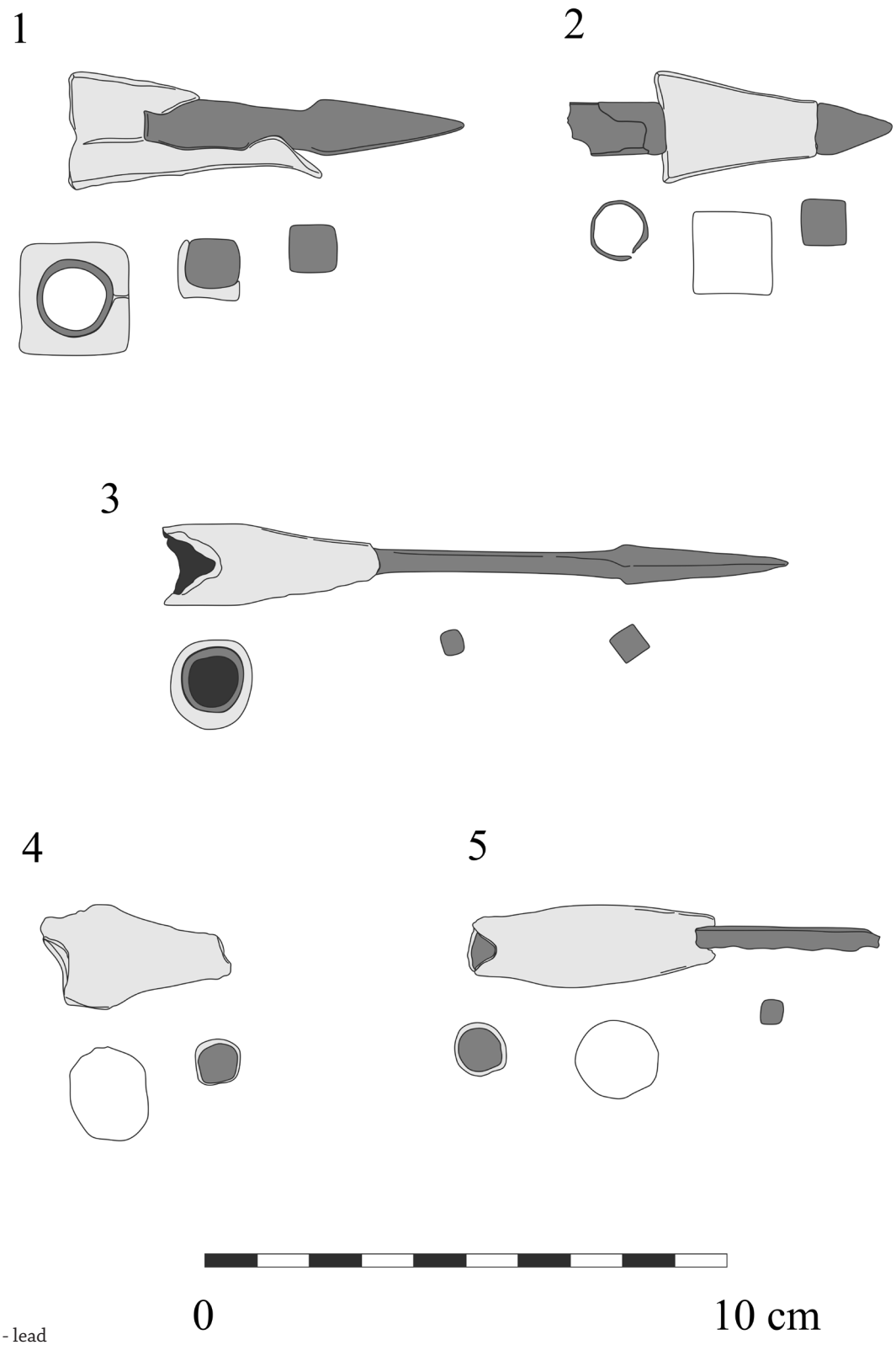

Fig. 4. Drawings of the *plumbatae* from Rogachevo (1 and 2), Tutrakantsi (3) and Slaveykovo (5), and the possible lead weight from a *plumbata* head from Avren (4) (author A. Harizanov).

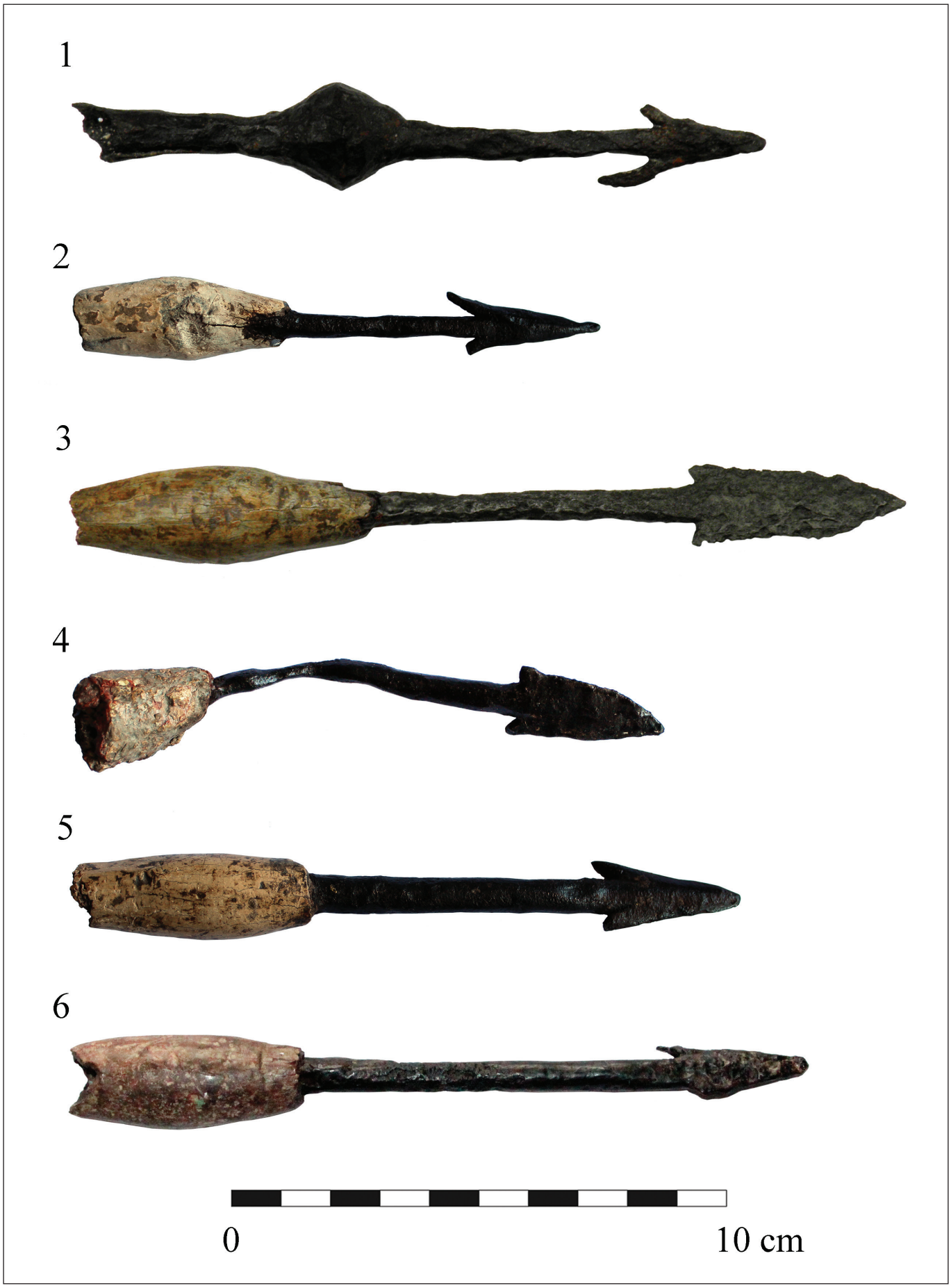

Fig. 5. Photos of the *plumbatae* from Dobrich (1 and 3), the ones with uncertain origin from the Varna Museum (2, 4 and 5) and Ruse (6) (author A. Harizanov).

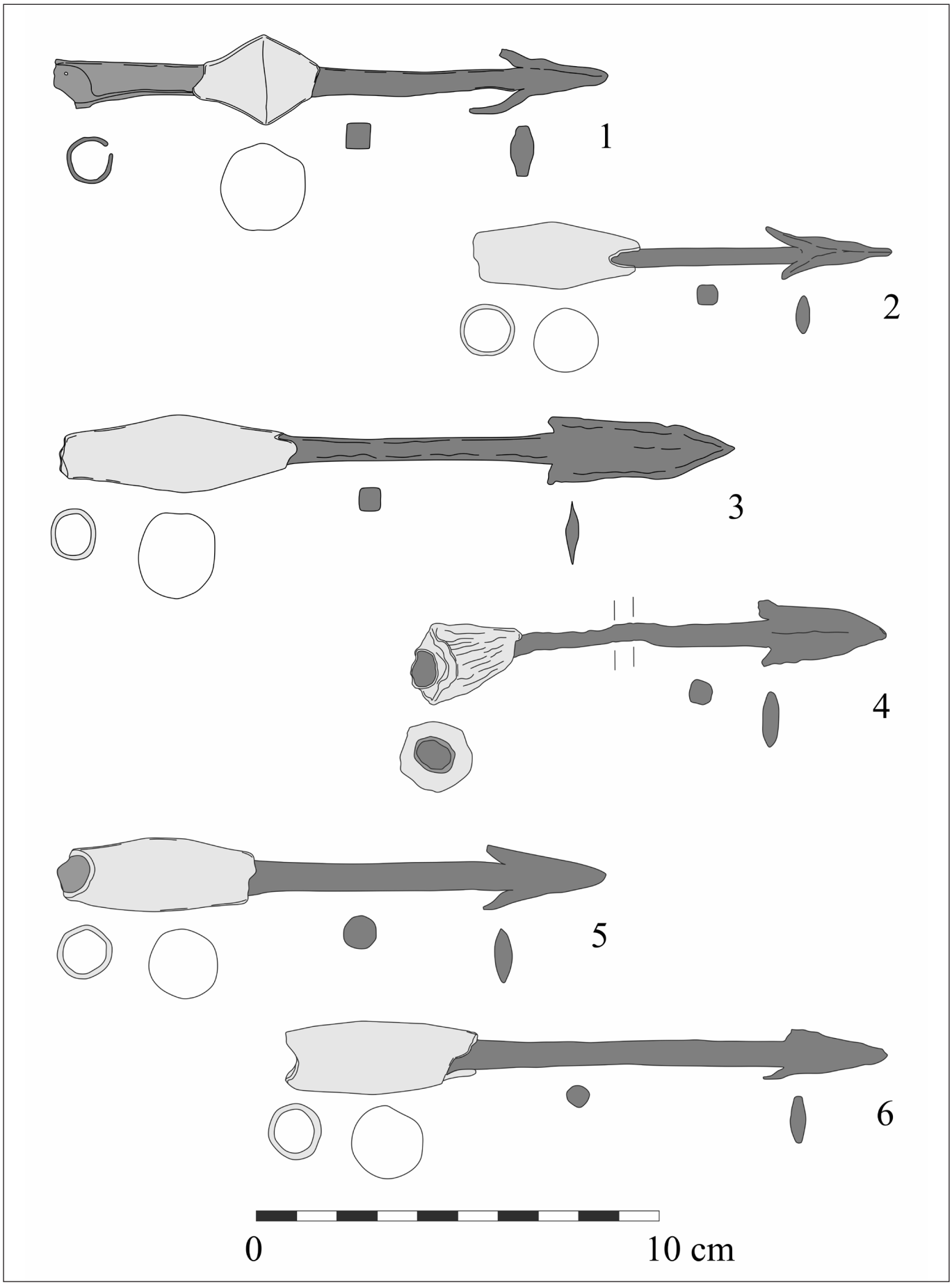

Fig. 6. Drawings of the *plumbatae* from Dobrich (1 and 3), the ones with uncertain origin from the Varna Museum (2, 4 and 5) and Ruse (6) (author A. Harizanov).

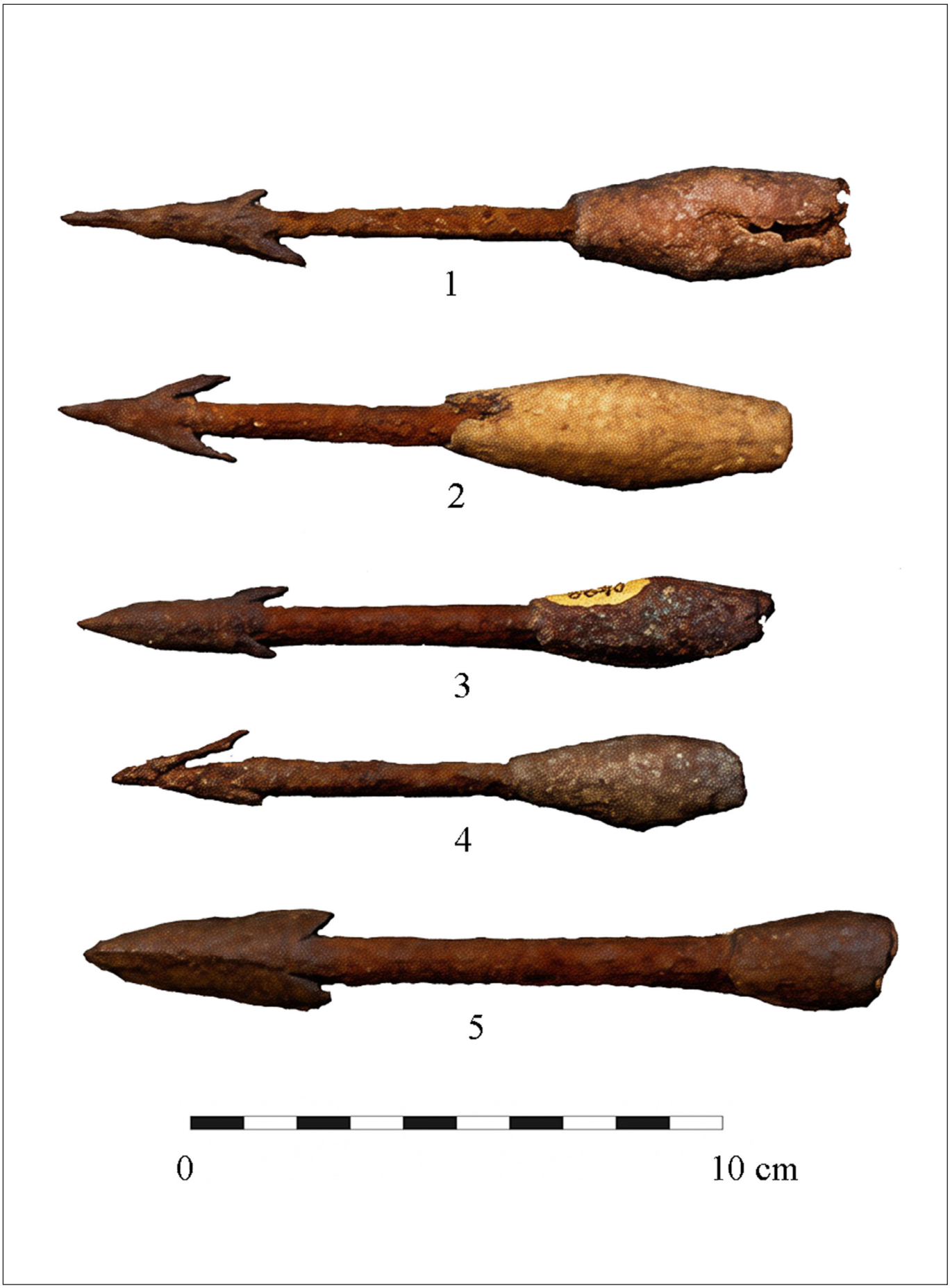

Fig. 7. Photos of the *plumbatae* from Kalnovo / Yankovo (1), Dragoevo (2 and 3), Pet Mogili (4) and Markovo (5) (after STOYCHEV 2004, 71, Table 1; with picture adjustments and additions by A. Harizanov) .

Fig. 8. Photos of the *plumbata* head from Voyvoda (author S. Stoychev).

(Fig. 9). The end-date of the archaeological context of the find is placed between c. AD 486 and AD 500[23].

3. Moesia Secunda / Scythia (cat. nos. 17-19)

There are three more unpublished stray finds of *plumbatae*, held in the depository of the Varna Regional Museum of History, however those are without information about the supposed places of their discovery **(cat. nos. 17-19)**. Given their acquisition by the Varna Museum, they could have originated both from *Scythia* and the eastern part of *Moesia Secunda*.

The first one (**cat. no. 17**) has a triangular barbed point and a solid shaft with a hollow conical socket, the latter enveloped in a partially preserved oblong lead weight **(Figs. 5/5, 6/5)**.

The second dart (**cat. no. 18**) has an almost pentangular barbed point and a solid, secondarily bent shaft, ending in a hollow conical socket. Upon the latter, a partially preserved conical / biconical lead weight is mounted **(Figs. 5/4, 6/4)**.

The third *plumbata* head of uncertain origin (**cat. no. 19**) has an elongated point with swallowtail barbs, and a solid shaft ending in a hollow conical socket, enveloped in a biconical lead weight **(Figs. 5/2, 6/2)**.

DISCUSSION

The new data presented for the discoveries of lead-weighted darts within the territories of *Scythia* and *Moesia Secunda* is an important addition to the study on the spread and use of *plumbatae* in the dioceses of *Thracia* and *Dacia*. The updated map (**Fig. 1**) with the discoveries known to date now comprises 3 darts from *Scythia* (not including the one from *Axiopolis*), 13 from *Moesia Secunda* and 3 from *Scythia* and/or *Moesia Secunda*. At the same time, the *plumbatae* from *Dacia Ripensis* are no less than 46[24], currently the largest number from a single province in the Empire[25]. New and unpublished discoveries have come to light also from the territories of the provinces of *Haemimontus* and *Dacia Mediterranea*, with the current number of darts there being 2 (?)[26] and 9[27]. At the same time the examples from *Dardania* number still 4, while those from *Moesia Prima* have a total thus far of 6[28] but with some additions that are about to be published as well[29].

Little could be added to the statistical data already presented about the types and dimension of *plumbatae* found within the two dioceses[30]. The predominant number of the darts with iron points preserved from *Moesia Secunda* and *Scythia* is again of Völling's type 1, featuring a barbed tip (either triangular or elongated with swallowtail barbs) **(Figs. 5, 6, 7, 9)**.

There are some finds of Völling's type 2 with a rhomboid point as well, comprising the examples from Tutrakantsi,

[23] See HARIZANOV 2024, 412, and the literature cited for a discussion about the precise dating of the context. For the site in general see the separate volumes dedicated to the so-called "Bulgarian" and "English" sectors in DINTCHEV *et alii* 2009 and POULTER 2019 respectively. I would like to thank Dr. Kalin Chakarov (Veliko Tarnovo Regional Museum of History) for the additional information and photos provided.

[24] With forty counted in HARIZANOV 2024, 395-431, as more securely identifiable as *plumbatae*, along with three artefacts previously unpublished and three more unrecognised as such.

[25] See lastly GLAD 2015, 177-181; BOMBLED 2024, 107-185, for lists and numbers of such finds in the Empire. There is also an internet forum page, moderated by Robert Vermaat, where a periodically updated list of *plumbatae* discoveries could be found – https://www.romanarmytalk.com/rat/showthread.php?tid=1271 (visited lastly on 21.01.2026).

[26] The first one was recently published in HRISTOV 2021, while the second one is previously unpublished find from the Roman and Late Antique settlement of *Cabyle*, with its identification as a lead-weighted dart being not entirely secure. Nevertheless, it will be presented in a follow up publication.

[27] Six were counted in HARIZANOV 2024, 395-431, with three more previously unpublished ones, that should also be considered.

[28] See HARIZANOV 2024, 408.

[29] See a brief note (abstract of a conference presentation) in BOGDANOVIĆ 2025, 7. A detailed publication is to follow up.

[30] See HARIZANOV 2024, 408-411.

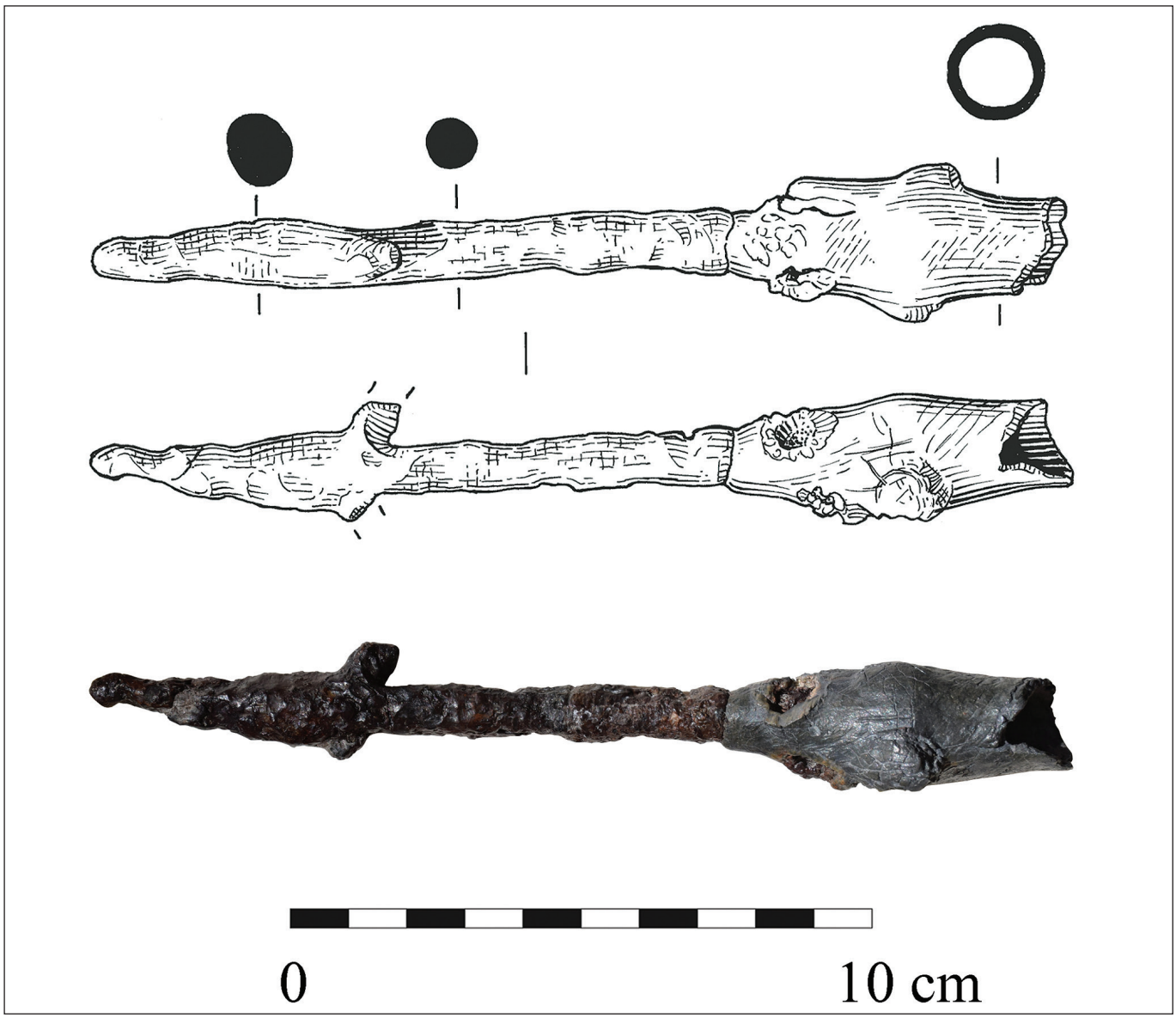

Fig. 9. Drawings and a photo of the *plumbata* head from Dichin (drawings after MANNING 2019, 325, Fig. 12.1; photo by Dr. Kalin Chakarov).

Voyvoda and *Halmyris* **(Figs. 4.3, 5.3; 9; 3)**, if we consider it possible for the latter's iron point to have been initially rhomboid shaped and most of all pertaining to its lack of barbs. In the same group the presence of the finds from Rogachevo should also be mentioned **(Figs. 3/1, 3/2, 4/1, 4/2)**. As noted above, their only close parallels for the shape and position of the lead weight are dated to the Early Roman period, however with the Haltern finds being a lot lighter (19 and 49 g[31] as oppose to 71 and 80 g[32]). Furthermore, the shape of the Rogachevo iron components is similar to that of contemporary finds of supposed catapult bolts from the region[33], so for now their use period remains unclear.

The dating of the majority of the *plumbatae* here presented is likewise not secure, given their lack of archaeological context proper. The earliest for now is the *plumbata* from *Halmyris* initially dated to the last third of the 3rd – the 4th c. AD[34] and more recently to the 380/390s – the 420s[35]. The example from Voyvoda could be only generally dated within the site's habitation period, namely the first half of the 4th – the 6th c. AD. The only other find with a somewhat secure dating is the one from Dichin, that was probably in use during the second half of the 5th c. AD.

Turning our attention to the places of discovery of these darts, there are some differences with the territories of neighbouring provinces. While the examples from *Moesia Prima* and *Dacia Ripensis* were unearthed both in the interior and along the border zone on the Danube, the *plumbatae* from *Scythia* and *Moesia Secunda* were mostly found in the hinterland of the two provinces. Of course, this could be owed to the current state of research, however, especially in the case of *Moesia Secunda*, is somewhat peculiar. There is already a number of stray finds concentrated in its eastern zone. If we take into account also the ones from the southern part of

[31] See VÖLLING 1992, 295.
[32] See catalogue nos. 4 and 5.
[33] See again AMON 2004, 95-98; Pl. XVI.
[34] GLAD/NUTU 2010, 136.
[35] GLAD 2015, 56.

Scythia and the finds possibly from the zone of modern-day Varna, there is a clearly shaped ellipse to be seen on the map, with its centre around the Roman and Late Antique town of *Marcianopolis* (modern-day town of Devnya) and a radius between 15 and 45 km. As known from *Notitia Dignitatum*, *Marcianopolis* housed one of the five imperial *fabricae* in the two dioceses, where the production of weapons for the army was implemented[36]. Following this line of thought, *Marcianopolis* could has been one of the supposed places of production of *plumbatae* as well.

A similar hypothesis could be postulated about the distribution of *plumbatae* in *Dacia Ripensis*, *Moesia Prima* and *Dacia Mediterranea*, where, as already mentioned, a total of no less than 61 darts have been discovered so far. Following the data from the *Notitia*, there were three more imperial *fabricae* in that zone positioned at *Ratiaria, Horreum Margi* and *Naissus*. However, there is no secure information about the production of missile weapons in any of them[37], and by extension the manufacture of lead-weighted darts, so, for now, this supposition remains a hypothesis pointing to only one of the available options.

There are also other possibilities for the organisation of either mass or small-scale production of such items. The several varieties of iron tips found and the much more diverse shapes and sizes of lead weights both point toward a decentralized type of manufacture. That might not have been the case in the initial stage of distribution of *plumbatae* in the late 3rd and first decades of the 4th c. AD[38], but could have developed during the peak of their use in the Northern Balkans, namely in the last decades of the 4th and the first half of the 5th c. AD[39]. This would correspond better to the spread of the weapon during the same time period when it was employed not only by the strictly military detachments (as was probably the case in the first decades of its appearance), but also within the ranks of peoples with mixed military and civic functions which inhabited the numerous fortified settlements attested in the region[40].

CONCLUSION

Further discoveries and publication of *plumbatae* from within the dioceses of *Thracia* and *Dacia* will bring us closer to ascertaining the true scope of their use in the Balkans. This, however, is only one of the steps still needed in the study of lead-weighted darts. Other important future lines of enquiry include considering their places of manufacture and types of military and paramilitary detachments that were armed with them, along with a more precise dating of their appearance and period of use.

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[36] "*Scutaria et armorum, Marcianopoli*" (*NOT. DIG.* XI.34).
[37] In the original document, there is no information available about the type of weaponry produced (*NOT. DIG.* XI, 37-39). For comments related to the omission of this data from the list, see for instance in JAMES 1988, 258.
[38] See for instance VÖLLING 1991, 291-292; BUORA 1997, 242.
[39] See HARIZANOV 2024, 411-412.
[40] For the latter, see for instance DINCHEV 2007, 479-546; BĂJENARU 2010.

CATALOGUE OF THE PLUMBATAE FROM SCYTHIA, MOESIA SECUNDA AND SCYTHIA / MOESIA SECUNDA

Legend: 'L' – full length; 'L (i)' – length of the iron component; 'L (lw)' – length of the lead weight; 'W (lw)' – maximum width of the lead weight; 'Wt' – weight; '*' – preserved length/ width/ weight.

1. Iron plumbata head with hollow socket and conical point narrowing to a sharp tip, without additionally shaped point; with a biconical lead weight with oval cross-section, mounted at the end of the socket and projecting outwards (**Fig**. **1**). Dimensions: L: 7.2/7.4 cm; L (i): 5 cm; L (lw): 3.9 cm; W (lw): 2.1 cm; Wt: 71.75 g. Völling's type: 2 (?); Place of discovery: Romania, Murighiol (Halmyris); Context: Late Roman civilian settlement, excavations in 2000; Publication: GLAD, NUTU 2010; GLAD 2015; Holdings: ICEM Tulcea.

2. Iron plumbata head with barbed triangular point with one swallowtail barb fully preserved, solid shaft with a hollow, conical socket; a biconical lead weight with an oval close to hexagonal cross-section is mounted on transition between the solid and the hollow part of the shaft (**Figs. 5/1, 6/1**). Dimensions: L: 13.8 cm; L (i): 13.8 cm; L (lw): 3.1 cm; W (lw): 2 cm; Wt: 54.4 g. Völling's type: 1; Place of discovery: Bulgaria, Dobrich, the vicinity of the modern town; Context: unknown; Publication: previously unpublished in detail; Holdings: Dobrich Regional Museum of History.

3. Iron plumbata head with a heavy leaf-shaped point, solid shaft with a hollow, conical socket, the latter enveloped in a slightly biconical lead weight with an oval cross-section (**Figs. 5/3, 6/3**). Dimensions: L: 16.8 cm; L (i): 16.8 cm; L (lw): 5.9 cm; W (lw): 2.1 cm; Wt: 113.4 g. Völling's type: 1; Place of discovery: Bulgaria, Dobrich, the vicinity of the modern town; Context: unknown; Publication: previously unpublished in detail; Holdings: Dobrich Regional Museum of History.

4. Iron plumbata head with rhomboid point and hollow, conical shaft; a partially preserved pyramidal lead weight with almost square cross-section mounted beneath the point and extending the whole length of the shaft (**Figs. 3.1, 4.1**). Dimensions: L: 7.7 cm; L (i): 7.7 cm; L (lw): 4.9 cm; W (lw): 2.2 cm: Wt: 80 g. Völling's type: 2; Place of discovery: Bulgaria, Rogachevo village territory; Context: unknown; Publication: previously unpublished; Holdings: Varna Regional Museum of History.

5. Iron plumbata head with rhomboid point and partially preserved hollow, cylindrical shaft; a pyramidal lead weight with almost square cross-section is mounted beneath the point and extends over the upper length of the shaft (**Figs. 3/2, 4/2**). Dimensions: L: 6.2* cm; L (i): 6.2* cm; L (lw): 3.1 cm; W (lw): 1.6 cm; Wt: 71 g. Völling's type: 2; Place of discovery: Bulgaria, Rogachevo village territory; Context: unknown; Publication: previously unpublished; Holdings: Varna Regional Museum of History.

6. A partially preserved biconical lead weight with a nearly oval cross-section and part of an iron shaft nested inside. Supposedly from a plumbata head (**Figs. 3/4, 4/4**). Dimensions: L: 3.7* cm; L (i): ?; L (lw): 3.7* cm; W (lw): 1.7 cm; Wt: 34 g. Völling's type: ?; Place of discovery: Bulgaria, Avren village territory; Context: unknown (supposedly from the zone of a fortified site); Publication: previously unpublished; Holdings: Varna Regional Museum of History.

7. Iron plumbata head with a rhomboid point, solid shaft with a hollow, conical socket; a partially preserved biconical lead weight with an oval cross-section is mounted on the socket. Inside the socket, a part of the wooden shaft is preserved (**Figs**. **3/3, 4/3**). Dimensions: L*: 12.2 cm; L (i)*: 12.2 cm; L (lw)*: 4.2 cm; W (lw): 1.7 cm; Wt: 48 g. Völling's type: 2; Place of discovery: Bulgaria, Tutrakantsi village territory; Context: unknown (supposed Late Roman fortification); Publication: previously unpublished in detail; Holdings: Provadia Museum of History.

8. A partially preserved iron plumbata head with the point missing; solid iron shaft with a hollow, conical socket, the latter is enveloped in an oblong lead weight with an oval cross-section (**Figs. 3/5, 4/5**). Dimensions: L: 7.9* cm; L (i): 7.9* cm; L (lw): 4.8 cm; W (lw): 1.7 cm; Wt: 55 g. Völling's type: ?; Place of discovery: Bulgaria, Slaveykovo village territory; Context: unknown; Publication: previously unpublished; Holdings: Varna Regional Museum of History.

9. Iron plumbata head with triangular slightly barbed point, solid shaft with a hollow conical socket; a partially preserved oblong lead weight with an oval cross-section is mounted on the socket (**Fig**. **7.5**). Dimensions: L*: 15.7 cm; L (i)*: 15.7 cm (?); L (lw)*: ? cm; W (lw): ? cm; Wt*: 90 g. Völling's type: 1; Place of discovery: Bulgaria, Markovo village territory; Context: unknown; Publication: STOYCHEV 2004; Holdings: Private collection.

10. Iron plumbata head with a triangular barbed point and solid shaft with a hollow conical socket; a slightly biconical lead weight with an oval cross-section is mounted on the socket (**Fig. 7/1**). Dimensions: L*: 15.2 cm; L (i)*: 15.2 cm (?); L (lw): ? cm; W (lw): ? cm; Wt: 100 g. Völling's type: 1; Place of discovery: Bulgaria, Kalnovo or Yankovo village territory; Context: unknown; Publication: STOYCHEV 2004; Holdings: Shumen Regional Museum of History.

11. Iron plumbata head with a triangular point and swallowtail barbs, a solid shaft with a hollow, conical socket; a biconical lead weight with an oval cross-section is mounted on the socket (**Fig. 7/2**). Dimensions: L: 14.1 cm; L (i): 14.1 cm (?); L (lw): ? cm; W (lw): ? cm; Wt: 120 g. Völling's type: 1; Place of discovery: Bulgaria, Dragoevo village territory; Context: unknown; Publication: STOYCHEV 2004; Holdings: Shumen Regional Museum of History.

12. Iron plumbata head with an elongated point and swallowtail barbs, a solid shaft with a hollow, conical socket; a partially preserved biconical lead weight with an oval cross-section is mounted on the socket (**Fig**. **7/3**). Dimensions: L*: 13.7 cm; L (i)*: 13.7 cm (?); L (lw): ? cm; W (lw): ? cm; Wt*: 60 g. Völling's type: 1; Place of discovery: Bulgaria, Dragoevo village territory; Context: unknown; Publication: STOYCHEV 2004; Holdings: Shumen Regional Museum of History.

13. Iron plumbata head with a triangular point and swallowtail barbs, a solid shaft with a hollow, conical socket; a partially preserved biconical lead weight with an oval cross-section is mounted on the socket (**Fig**. **7/4**). Dimensions: L*: 12 cm; L (i)*: 12 cm (?); L (lw): ? cm; W (lw): ? cm; Wt*: 60 g. Völling's type: 1; Place of discovery: Bulgaria, Pet Mogili village territory; Context: unknown; Publication: STOYCHEV 2004; Holdings: Shumen Regional Museum of History.

14. Iron plumbata head with an elongated rhomboid point, a solid shaft with a hollow, conical socket with almost entirely preserved, slightly biconical lead weight with an oval cross-section mounted on the latter (**Fig. 8**). Dimensions: L: 17.2 cm; L (i): ? cm; L (lw): 5.7 cm; W (lw): 1.6 cm; Wt*: 60 g. Völling's type: 2; Place of discovery: Bulgaria, Voyvoda village; Context: Late Roman and Early Byzantine fortified town; archaeological excavation in 1964; Publication: previously unpublished; Holdings: Shumen Regional Museum of History.

15. Iron plumbata head with a triangular point and one swallowtail barb preserved, a solid shaft with a hollow, conical socket; a partially preserved oblong lead weight with an oval cross-section is mounted on the socket (**Figs. 5/6, 6/6**). Dimensions: L*: 15 cm; L (i)*: 15 cm (?); L (lw)*: 4.8 cm; W (lw): 1.8 cm; Wt*: 83 g. Völling's type: 1; Place of discovery: Bulgaria, Rousse administrative territory; Context:

unknown; Publication: previously unpublished; Holdings: Ruse Regional Museum of History.

16. Iron plumbata head with an elongated point and one swallowtail barb preserved, a solid shaft with a hollow, conical socket; a partially preserved biconical lead weight with an oval cross-section is mounted on the socket (**Fig. 9**). Dimensions: L*: 17 cm; L (i)*: 16? cm; L (lw)*: 5.9? cm; W (lw): 2.7 cm; Wt*: 117.1 g. Völling's type: 1; Place of discovery: Bulgaria, Dichin village territory; Context: Late Antique fortified settlement; Publication: MANNING 2019; Holdings: Veliko Tarnovo Regional Museum of History.

17. Iron plumbata head with a triangular barbed point, a solid shaft with a hollow, conical socket; a partially preserved oblong lead weight with an oval cross-section is mounted on the socket (**Figs. 5/5, 6/5**). Dimensions: L*: 13.6 cm; L (i)*: 13.6 cm; L (lw)*: 4.9 cm; W (lw): 1.8 cm: Wt*: 79 g. Völling's type: 1; Place of discovery: Bulgaria, Varna region (?); Context: unknown; Publication: previously unpublished; Holdings: Varna Regional Museum of History.

18. Iron plumbata head with a heavy leaf shaped point and a solid, secondarily bent shaft ending in a hollow, conical socket; a partially preserved biconical/conical lead weight with an oval cross-section is mounted on the socket (**Figs. 5/4, 6/4**). Dimensions: L*: 12.2 cm; L (i)*: 12.2 cm; L (lw)*: 2.8 cm; W (lw): 1.8 cm; Wt*: 47 g. Völling's type: 1; Place of discovery: Bulgaria, Varna region (?); Context: unknown; Publication: previously unpublished; Holdings: Varna Regional Museum of History.

19. Iron plumbata head with an elongated point and swallowtail barbs, a solid shaft with a hollow, conical socket; a partially preserved biconical lead weight with an oval cross-section is mounted on the socket (**Figs. 5/2, 6/2**). Dimensions: L*: 10.4 cm; L (i)*: 10.4 cm; L (lw)*: 4.2 cm; W (lw): 1.6 cm; Wt*: 58 g. Völling's type: 1; Place of discovery: Bulgaria, Varna region (?); Context: unknown; Publication: previously unpublished; Holdings: Varna Regional Museum of History.

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