

ARCHAEOLOGIA BULGARICA



XXI 2017 1

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On the cover: Gold pendant from Pliska, 10th c. AD; see the paper of M. Inkova in this issue; photo by Ivaylo Levicharov.

The Early Bronze Age Rings of Type Leukas – New Considerations Regarding Their Origin, Distribution and Function

ARCHAEOLOGIA BULGARICA
XXI, 1 (2017), 1-13

Zheni VASILEVA

Abstract: The present paper is focusing attention on the Early Bronze Age rings of type Leukas and aims to study their origin, spatial and chronological distribution. The period under discussion is the Early Bronze Age – time of intensive circulation of goods, ideas and fashion all over the Aegean and the Eastern Mediterranean. Special attention is given to the distribution, the context and the function of the ornaments, type Leukas. Indeed, new find spots from the Balkans and the Carpathian Basin are added to the distribution map of Leukas-type rings. The relevant archaeological materials give us a new opportunity to examine the fashion and the directions of influences in Early Bronze Age jewellery production. The research demonstrates the idea for a Balkan origin for the Leukas-type rings and reflects some new accents of the relations between the Aegean, the Balkans and the Carpathian Basin.

Key words: Early Bronze Age, gold, rings, Leukas, Balkans, Carpathian Basin, luxurious objects, jewellery.

INTRODUCTION

The archaeological record indicates that the Early Bronze Age (henceforth EBA) was a period of constant change, the most important of which was undoubtedly the spread of metalworking techniques. Third millennium BC had been an era of economic development in the areas around the Aegean Sea. The increased commercial contacts during the EBA greatly influenced the style and technique of the jewellery fashion. Studies in the recent years significantly enlarged our knowledge about the EBA jewellery production on the Balkans and allow us to re-examine and discuss again the interpretation of certain types of ornaments.

Well known benchmarks of the third millennium BC are the items of jewellery production. Gold and silver jewellery has been one of the most vivid expressions of this dynamic period. They have yielded important information about the technical skills of the masters, but also for the aesthetic necessities, the creativity and the innovative potential of the EBA communities. The metal ornaments also shed light on the cultural and trade contacts, and the exchange of fashion ideas and technological skills between distant regions.

The close affinities in the jewellery production in the Aegean world give evidence for the existence of a jewellery *koine*. Most spectacular was the rise of Troy, but it is not the only case in question (Laffineur 2008, 323; Vasileva 2016). The rich grave assemblages and treasures found in the zones between Adriatic and the Near East demonstrate the rise of elite groups and a consumption of luxury goods. These rich grave assemblages have been analyzed and discussed by many scientists. They emphasized that there are supra-regional similarities in the way social status was evaluated. The luxury and exotic burial gifts found in these

in rich burial complexes with distinctive burial gifts like the cemeteries at Leukas, Velika Gruda, Mala Gruda, etc. Nevertheless the presence of ornaments made of precious metals in the EBA Thracian barrow graves is accepted as symbol of prestige and probably higher status of the owner (Василева 2016). Anyhow the rings from Yunatsite and the barrow grave at Venets shed new light on the distribution and the presence of rings of type Leukas in EBA Thrace. It is quite probable the number of the rings of type Leukas in present-day Bulgaria is to increase as a result from the intensive archaeological excavations and the publication of unpublished artefacts.

Similar ornaments have been found also at the rich EBA grave assemblages in present-day Montenegro. The group includes the so-called “princely” tumuli at Velika Gruda, Mala Gruda and Gruda Boljevića located at the Adriatic shore (Ciugudean 2011, 27). The main characteristics of this group of barrows include monumental mounds and rich central graves. The monumentality of the barrows, as well as the richness of the graves reflects social stratification in the local society. Among the burial inventory are found metal weapons (gold and silver daggers) and metal ornaments. Special attention is paid to the elaborated gold rings found in the central graves. M. Primas has recognized two distinctive types:

- the first type (type Leukas) has drop-shaped form with a rhomboid cross-section, the ends of the ornaments are narrow, pointed and overlapping;

- the second type (type Mala Gruda) has drop-shaped form with a rhomboid cross-section with one narrow, pointed end and one broader conical end.

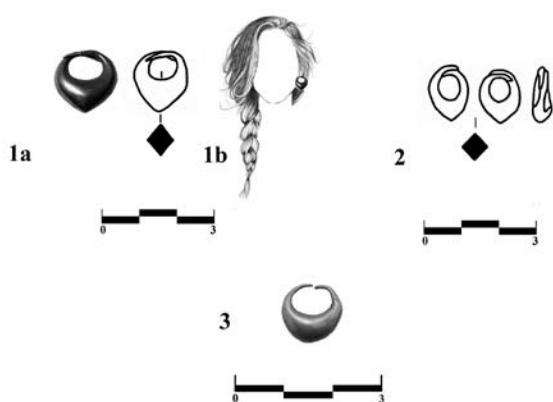


Fig. 3. Ornaments, type Leukas: **1a** The gold ornament from cemetery Turnava, Northwest Bulgaria (photo by Regional Historical Museum Vratsa), **1b** Reconstruction of the ornament as earring (after Zh. Vasileva), **2** The gold ring from Tell Yunatsite, Upper Thrace (after Mitkova 2011, fig. 1), **3** The gold ring from Tonchova mogila, Venets (after Христова / Попов, in press)

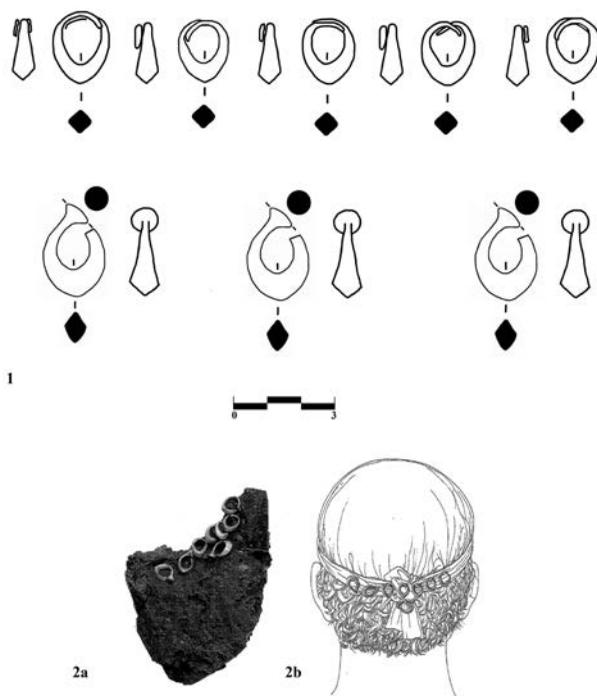


Fig. 4. The cemetery Velika Gruda: **1** The ornaments type Leukas and Mala Gruda from grave 1, Velika Gruda (after Primas 1996, Abb. 6/4), **2a** The ornaments from Velika Gruda *in situ* (after Primas 1996, Abb. 6/2), **2b** Reconstruction of the ornaments from Velika Gruda as hair-rings (after Primas 1996, Abb. 6/3)

A Verse Epitaph and Other Unpublished Inscriptions from *Heraclea Sintica*

ARCHAEOLOGIA BULGARICA
XXI, 1 (2017), 15-38

Nicolay SHARANKOV

Abstract: The paper publishes recently found Greek inscriptions from *Heraclea Sintica* (near the village of Rupite, south-western Bulgaria). A second-century AD funerary monument with verse epitaph recounts the story of the deceased Kasandros who was killed on the road; his dead body was found by his brother Pyrrhias, who erected the monument. The author of the text was influenced by Homer and Attic tragedy. Six Hellenistic funerary stelae contain several rare or previously unattested names. A statue-base from the mid-second century AD, found on the *agora* of the city, honours posthumously a citizen whose names present a peculiar combination of the local and Roman onomastic patterns.

Key words: verse inscription; Greek literacy; *Heraclea Sintica*; Hellenistic and Roman Macedonia; funerary stelae; ancient onomastics.

I. VERSE EPITAPH OF KASANDROS

The funerary monument was found in 2016 during illegal digging at the locality of Aydaritsa (belonging to the village of Mitino), close to the bank of the river Strumeshnitsa/Strumitsa; it was afterwards entered into the collection of the History Museum in Petrich. The site at Aydaritsa (Домарадски et al. 2001, 38-43, 186-195, обр. 32-44) is connected with the city of *Heraclea Sintica* which is located at a distance of less than 1 km to the north¹. For many centuries it was one of the main necropolises of the city, as evidenced by the presence of numerous grave monuments².

THE MONUMENT

It is a pedestal made of the local yellowish limestone, narrowing towards the top and moulded on top and base (fig. 1). It is 176 cm high, 76 wide and 69 thick at the upper moulding; the body is wide from 56 (top) to 65 cm (bottom), and from 60 to 62 cm thick. The upper moulding, damaged on the front and right side, has been adorned with pediments and acroteria, as seen on the preserved left side (fig. 2); similar decoration is present on other funerary monuments from *Heraclea* (fig. 3). The preserved part of the upper surface is flat; part of the stone probably broke (apparently still during the production of the monument) and was repaired, as evidenced by four slots and grooves for metal clamps to the top right (fig. 4): the slots are rectangular and with different dimensions and depth³; the clamps, as the grooves show, were about 2.5 cm wide. On the front, left, and right sides of the main body, there are profiled rectangular/trapezoid frames (fig. 5), with dimensions (from the outside): 75 x 45/52 cm (front), 75 x 40/40 (left), and 74 x 40/41 (right); the back of the monument is flat.

THE INSCRIPTION

The epigraphic field is 63.5 cm high and 34 (top) to 40 cm (bottom)

¹ The two sites are now divided by the river Strumeshnitsa, but this is due to the moving of the river bed to the north in the 1930s.

² Cf. Домарадски et al. 2001, 39, 40-41, 187, обр. 33, 190, обр. 34/а-в; Митрев 2011, 34, # 4. See, in the second part of the present article, six Hellenistic funerary inscriptions from the Aydaritsa necropolis, as well as the revised reading of a list of names found there (Зарева 1983, 29-31, #1, обр. 2 = *IGBulg* V 5922 = Манов 2008, 117, # 141).

³ 2.5 x 2.5, 2 cm deep; 4 x 2.5, 4.5 cm d.; 3 x 4, 2.5 cm d.; 5 x 5 cm, unknown depth (there is still lead in the slot).



Fig. 3. Funerary altar with verse inscription from Heraclea (IGBulg IV 2326), re-used in the church in the village of Rupite



Fig. 4. Funerary monument of Kasandros: 1-2 slots for metal clamps



Fig. 5. Funerary monument of Kasandros: 1 left side; 2 right side



Fig. 6. Funerary monument of Kasandros: inscription on the front

COMMENTARY

L. 4 ἐς Σαρμέαν: this toponym is unattested before; its nominative should be Σαρμέα (or *Σαρμαία, here written phonetically with E instead of AI?)⁵.

L. 7 Λαέρτου γόνος: the ‘son of Laertes’ is Odysseus, here adduced as an example of a trickster and deceiver betraying his friends (see below for the possible sources for the motive).

L. 8 εἶτ’ ἐπανελθών: the first letter has been corrected; originally, it was apparently I, which was then corrected into E, or rather into EI, since εἶτ’ ἐπανελθών would fit better the logic of the passage than ἔτ’ ἐπανελθών; the initial ΙΤΕΠΑΝΕΛΘΩΝ (i.e. ἴτ’ ἐπανελθών) would have been a phonetic spelling with I for EI.

L. 10-11 δε|δ<μ>ημένον: the reading on the stone is ΔΕ|ΔΑΗΜΕΝΟΝ, but δεδαημένον ‘skilled, learned’ here makes little sense, so I emended it to δεδημημένον ‘killed, murdered’. Both perfect participles δεδημημένον (from δάμνημι/δαμάζω ‘to subdue, to kill’) and

⁵ The possible meaning and location of *Sarmea* are discussed below.

Contribution to the Study of Roman Architecture in *Viminacium*: Research of *Thermae* Masonry Techniques¹

ARCHAEOLOGIA BULGARICA
XXI, 1 (2017), 39-58

Emilija NIKOLIĆ / Bebina MILOVANOVIĆ / Angelina
RAIČKOVIĆ SAVIĆ

Abstract: Previous archaeological excavations of *Viminacium*, the Roman city and military camp in the territory of today's Serbia, were mainly of a protective character and based on necropolises, while buildings on the site have been researched to a lesser extent. One of these buildings is the Roman baths, or *thermae*, which is located near the amphitheatre and the fortress. The theme of this paper is the architectural research of the building or, more precisely, a review of the masonry techniques and materials used in the building. In order to obtain relevant conclusions, it also includes a brief overview of the ceramic and numismatic material. This work shows that the results of architectural research are closely associated with the analysis of the movable material, and vice versa, and that conclusions regarding the history of a building can only be reached on the basis of multidisciplinary research.

Key words: *Viminacium*, Roman baths, *thermae*, Roman architecture, masonry technique, Roman coins, pottery, brick.

INTRODUCTION

Viminacium was a Roman city, a military camp and the capital of the province of *Moesia Superior* (*Moesia Prima* in Late antiquity). The territory was occupied by the Romans in the 1st century AD. The settlements flourished during the following centuries, but also survived different historical destructions up until the 7th century, when they finally fell under the Slav attacks (Mirković 1968, 56, 63-73). The graves excavated in the necropolises, more than 13,500 to date, offer the most valuable data for reading and interpreting the history of this city (Golubović / Korać 2013, 65). However, the buildings on the site have been researched to a much lesser extent. One of these buildings is the *Viminacium* baths, the *thermae* (fig. 1, 2), excavated under the direction of the Institute of Archaeology in Belgrade, from 1973 to 1974, and from 2004 to 2007.

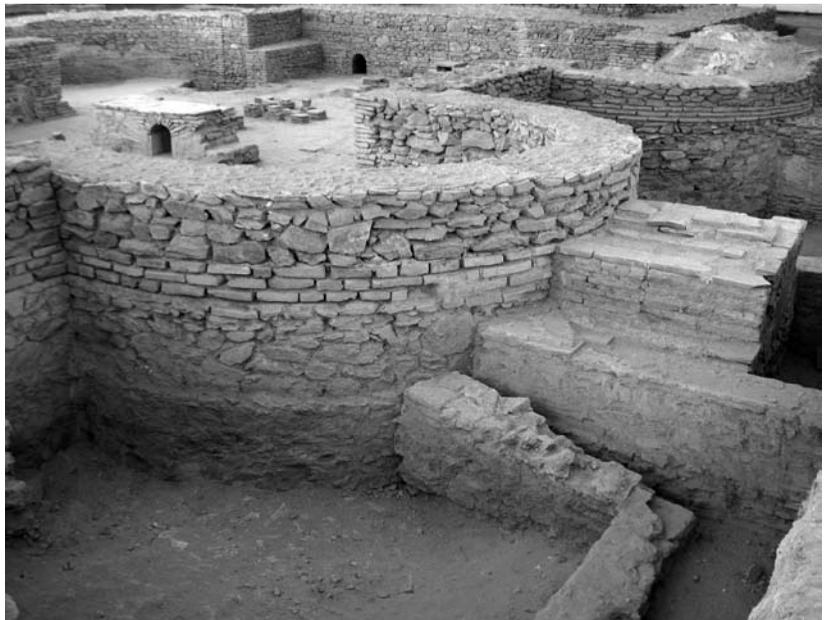
Archaeological excavations of *Viminacium* have confirmed the existence of several phases of Roman settlement (Zotović 1973, 49-50; Kondić / Zotović 1974, 96), which are visible in the baths building. Previous studies showed that there were three construction periods and that the building of each subsequent period was built on the ruins of the previous one. Based on the movable material that was found, the first building of the *Viminacium* baths was dated to the 1st and 2nd century, the middle phase belongs to the 3rd century, while the youngest phase of the building is dated to the 4th century (Kondić / Zotović 1974, 97; Миловановић 2008, 51-55). The reason for the cessation of life in the first phase of construction is unknown, while the baths

¹ The article results from the project: IRS – *Viminacium*, Roman city and military camp – research of the material and non-material culture of inhabitants, using the modern technologies of remote detection, geophysics, GIS, digitalization and 3D visualization (# 47018), funded by the Ministry of Education, Science and Technological Development of the Republic of Serbia.

Fig. 1. *Viminacium* baths today, after partial restoration: view from the southwest. Documentation of the Institute of Archaeology, Belgrade - Documentation Centre of *Viminacium*



Fig. 2. *Viminacium* baths today, after partial restoration: view from the southeast. Documentation of the Institute of Archaeology, Belgrade - Documentation Centre of *Viminacium*



(*horreum*), which dates from the late 2nd century and the beginning of the 3rd century. This was also built over an older building, of unknown function, dated to the 1st century AD. Part of the youngest building was turned into a cult object during the 4th century (Коракевич 1985, 76-78; Коракевич 2002, 116, 118, 120). The thermal complex *Aquae Iasae*, in Varaždinske Toplice, in Croatia was built in the 1st century AD. With various additions and modifications, it lasted until the 4th century. The baths also went through several phases, whereby each one was built over the previous one, and all were subjected to fire resulting in destruction and looting (Vikić-Belančić / Gorenc 1971, 121-157).

MASONRY TECHNIQUES

The different layers of the *Viminacium* baths building which lay one over the other and can be seen in the cross-section of floors in some rooms, are witness to the phases of its construction, and are certainly in accordance with the historical conditions, the ups and downs of *Viminacium*. After archaeological excavations in 1974, three explored floor surfaces were assigned to the youngest phase, two were assigned

A Tenth Century Gold Pendant from the Inner City of Pliska

ARCHAEOLOGIA BULGARICA
XXI, 1 (2017), 59-73

Mariela INKOVA

*In memory of the discoverer and first researcher
of the Preslav Treasure Professor Totyu Totev*

Abstract: The adornment was discovered in the Inner city of Pliska during regular archaeological excavations. It is a two-sided triangular shape, on one side decorated with a cabochon and triangles of three granules each, and on the other with three almond-shaped leaves, whose tips are pointing towards the periphery. It is made of high-grade gold. The presence of cracks between the side clusters of three granules and the main part, as well as the analysis of the connections between them, indicate a gradual construction. The almond motif dates the jewellery in the 10th century.

Key words: Old Bulgarian metalwork, Pliska, technology, gold, SEM-EDX, morphology, 10th century.

After more than a hundred years of researches in the first Bulgarian capital Pliska, the amount of luxury adornments of precious metal is still relatively small. Most of them come from the Outer City and its environs. The amount includes the so called Second Madara Belt Set (Мигов 1934, 429-438), the ring from Matnitsa (Мавродинов 1943, 77-88, fig. 49), the gold ring with a Greek inscription (Бешевлиев 1992, 252, # 88), the gold belt fittings from sarcophagus # 4 (Михайлов 1979, 51-59, обр. 29-38) and the gold adornments from the necropolis at the Great basilica (Въжарова 1979, 76-80, fig. 13, 15, 18). Against this background stand the separate finds from the Inner City of Pliska (Shumen region, NE Bulgaria; Pliska was the first capital until 893 AD of the First Bulgarian Kingdom, 681-1018 AD), all found in regular archeological excavations - a gold pectoral cross, found during the researches of the Western wall (Dontcheva 1976, 59-66) and the glass cabochons decorated with gold foil (Аладжов et al. 2013, 358). They come from a pit west of the Round Stone platform. It is the scanty amount of precious jewelry belonging to the Bulgarian nobility of Pliska that motivates me to publish a gold pendant - an excavated find from the archaeological research on the site to the north of the Citadel.

The gold adornment is triangular and bilaterally decorated. At the centre of the one side there is a round socket for a cabochon, framed by a pseudo-pearl wire (fig. I-III). A cluster of three large granules is set on each of the three corners and there is a suspension loop (?) attached in the middle of one side (fig. III/1-4). At the centre of the reverse side is a circle framed by a smooth edge (IV/1), and in the corners - plain almond-shaped leaves with tips pointing to the periphery (IV/2-3). The pattern is chiseled and the space between the leaves is interspersed with tiny impressed circles made with a punch (fig. IV/4). Dimensions: 1.45 x 1.53 x 0.24 cm¹. The soldered granule clusters are sized 2.09 mm to 2.41 mm (fig. V, 1-3). The loop wire is 1.41 mm wide (fig. V/4). The size of the circlets, impressed with the punch

¹ Field inv. # 64 for 2013.

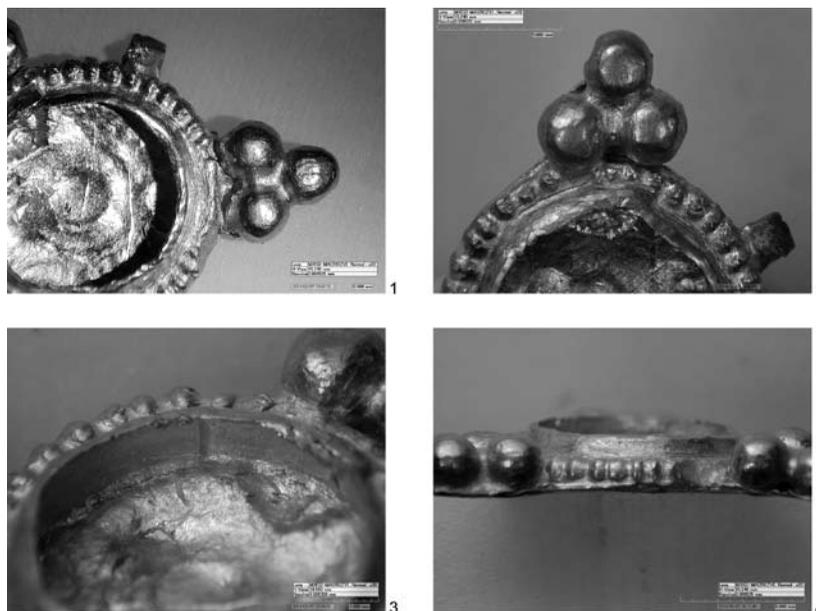


Fig. III. 1-4. Gold pendant from the Inner City of Pliska, details

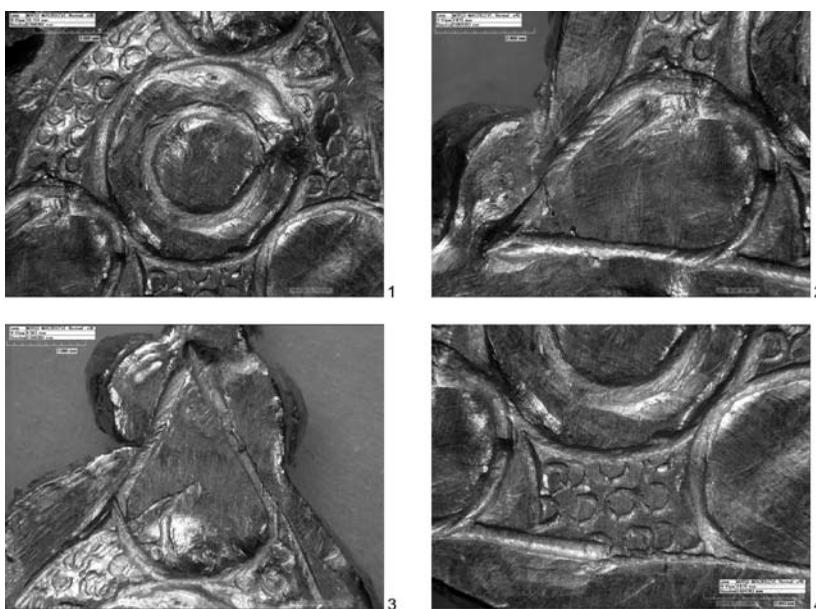


Fig. IV. Gold pendant from the Inner City of Pliska, chiseled motifs, details

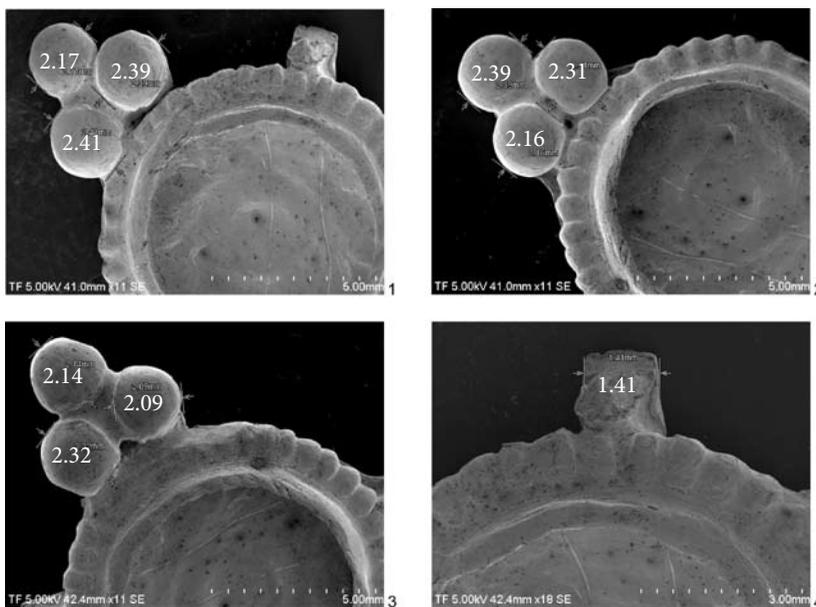


Fig. V. Gold pendant from the Inner City of Pliska, dimensions of the soldered parts in mm

Elemental Composition of Artefacts Found at the 10th Century Decorative Metalwork Centre near Nadarevo, Region of Targovishte, Bulgaria

ARCHAEOLOGIA BULGARICA
XXI, 1 (2017), 75-88

Stela DONCHEVA / Iliya PENEV / Galina TSEKOVA /
Enikő FURU / Zita SZIKSZAI / Imre UZONYI

Abstract: The production centre for decorative metalwork near the village of Nadarevo, region of Targovishte is among the three early medieval metalwork centres in North-Eastern Bulgaria known to the modern archaeologists. The centres were all located in close vicinity to the medieval capital of Bulgaria, Preslav, so their period of activity could be precisely dated back to the first half and the middle of the 10th c. AD. In practice, there were two sources of raw materials used in the metalwork centre near Nadarevo, Region of Targovishte: one of them was reused obsolete or scrapped items, and the other one was the metal ingots introduced in the alloy. All castings however have similar but not constant composition, which varies in content and depends on the available raw materials. The analyses of the items helped us determine several basic alloys used for casting purposes, which can be defined as lead-tin bronze, tin-lead bronze or multi-component alloy.

Key words: early medieval, metalwork center, capital of Preslav, X-ray emission, casting, copper alloy.

The production centre for decorative metalwork near the village of Nadarevo, region of Targovishte is among the three early medieval metalwork centres in North-Eastern Bulgaria known to the modern archaeologists. The centres were all located in close vicinity to the medieval capital of Bulgaria, Preslav, so their period of activity could be precisely dated back to the first half and the middle of the 10th c. AD. The archaeological investigations of the metalwork centre near Novosel, region of Shumen (2002-2009) were accomplished with the publication of a monograph presenting all results of the research works (Бонев / Дончева 2011), while the investigations of the centre near Zlatar, region of Veliki Preslav started in 2007 and are still in progress. The archaeological fieldwork at the centre near Nadarevo is also in progress. Nevertheless, the site can be well-dated to the first half – mid-10th c. AD, on the basis of numerous small finds kept in museum collections, as well as the coins and the pottery excavated there.

In total over 3 000 non-ferrous metal small finds are known so far to originate from the three production centres which apparently were operating contemporaneously. These assemblages consist mostly of belt fittings (buckles, applications, and strap-ends), pieces of jewellery (rings and earrings), and Christian religious artefacts (crosses and medallions). Numerous finds of completely preserved or fragmented ceramic crucibles used in metalworking complement available evidence of local craft activities.

The study of the production centres near Novosel, Zlatar, and Nadarevo addresses a wide range of questions, and the character of

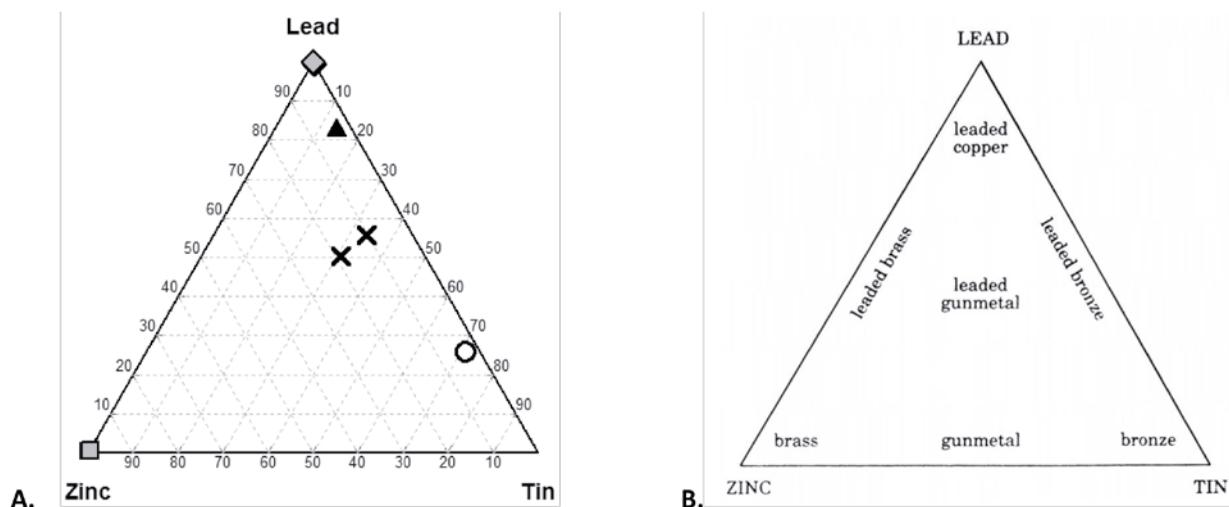
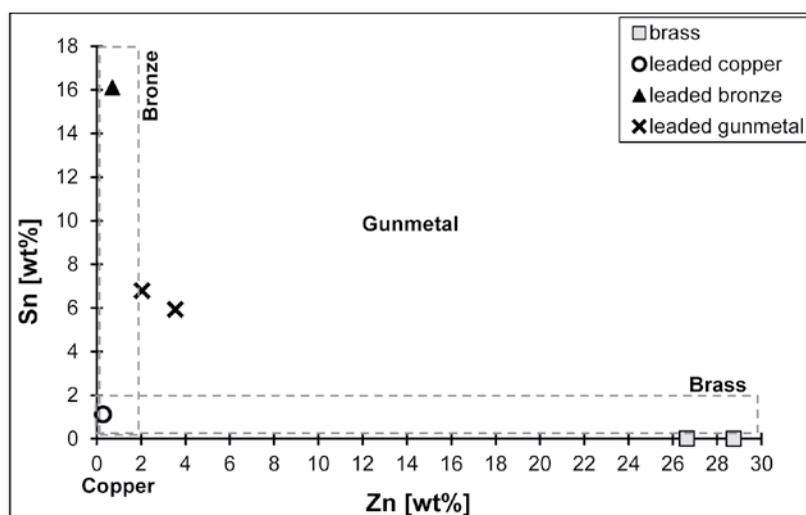


Fig. 3. A Ternary graph of lead, zinc, and tin concentrations measured in the artefacts from Nadarevo, following the approach in Bayley / Butcher (2004). The overall amount of the three main additives in copper is considered as 100% and their actual values are normalized as respective percentages of the total sum of the alloying components. Nevertheless, the lead artefacts contain only minor concentrations of copper (see [table 1](#)) and they should not be defined as made of intentionally alloyed raw material. Symbols correspond to the legend in [fig. 2](#) (Graph courtesy A. Cholakova – NAIM-BAS); **B** Distribution of copper-alloy definitions in the ternary graph of Pb, Sn, and Zn (after Bayley / Butcher 2004, fig. 7)

Fig. 4. Scatter-graph of zinc and tin concentrations measured in the copper-alloy artefacts only, following the approach in Gaudenzi Asinelli / Martín-Torres (2015, fig. 3). The low-zinc group of multicomponent copper alloys features variable but still significant lead concentrations (see [table 1](#)) (Graph courtesy A. Cholakova – NAIM-BAS)



casting. The alloys so achieved were used for long periods by continuous addition of admixtures aimed to improve the casting quality of alloys and the mechanical properties of the finished items. Adding of tin, zinc, lead, etc. was used to improve the mechanical properties of the finished items and helped achieving the desired colour effects ([fig. 2, 3](#)).

It is believed that whenever zinc content in brass reaches 25-30%, the alloy can be cast, but is only difficult to hammer. That was the case with both brass ingots, which were intended for use in the metalwork centre as new raw material. If the zinc content is within the limits of 1 to 15%, that means that either obsolete items were reused for casting purposes, or additional metals were added to the melt, such as pure copper, lead, bronze or brass (Ениосова 1999, 7). The zinc content in the investigated artefacts was within the range from 0.28 to 3.55%, which confirms the items casting from similar alloy ([fig. 4](#)). The presence of brass ingot fragments raises the question whether this alloy

REVIEWS

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XXI, 1 (2017), 89-92

Florian KLIMSCHA. Pietrele 1; Beile und Äxte aus Stein: Distinktion und Kommunikation während der Kupferzeit im östlichen Balkangebiet (= Archäologie in Eurasien 34). Deutsches Archäologisches Institut, 2016, XVI + 382 pp., 270 figs., 87 tables

Stone tools and weapons represent an important part of archaeological material, and their analysis is essential so that complete and correct conclusions can be made about a given site or an entire culture to which they pertain. They provide data on the knowledge of natural resources, level of technological development, social and religious relations, connections with distant territories, etc. It has been for years that Florian Klimscha recognizes the significance of such archaeological material. The culmination of the many years of his studies of stone adzes and axes was reached with his PhD thesis, defended at the Free University of Berlin (Klimscha 2008). Parts of that thesis found their way into this book on stone adzes and axes from the site of Magură Gorgana in Pietrele (Romania). In fact, those stone adzes and axes from Pietrele, a settlement from the Gumelnița culture, researched in the period from 2002 to 2013, were the basis for a much wider discussion on the chronological, cultural and social significance in a wider supraregional and long term framework.

Florian Klimscha's book contains 12 chapters. After the introduction, with basic details about the site of Magură Gorgana in Pietrele and the research of stone adzes and axes so far, a chapter follows which deals with the exploration level and research frameworks (*Forschungsstand und Grenzen der Untersuchung*), with a detailed representation of natural and historical conditions prevailing during the Eneolithic in the Eastern Balkans. The author also gives an overview of the research of adzes, from the 19th century up to today, in Europe, and especially in its South-Eastern part.

A detailed analysis of adzes and axes from Pietrele, a total of 422 objects, is given in chapter 3 *Der Fundstoff I: Beile und Äxte aus Silex und Felsgestein*, constituting the fundamental part of the book. All other chapters that follow after this one are discussions on stone and copper adzes and axes in a wider supraregional context in the Eneolithic. The typology of this type of stone tools defined by F. Klimscha is especially noteworthy. All adzes and axes are sorted, on the basis of their size, in three groups. The first group comprehends small, most prominently short tools, the second one slightly longer and more massive (thicker) tools, while the third group is constituted by large adzes and axes (rather large and notably heavier than tools from the first two groups). The author believes that tools from group III were the first ones in the series of products of this sort, and that adzes and axes from groups I and II were created by reducing larger examples after they had been damaged. Thus, tools from group I were actually the last ones in the recycling series and they were in fact the final products whose fragments were not large enough for another tool of the same type to be made. Diversity in

shapes in groups I and II was almost exclusively the result of continuous remodelling of damaged tools.

This typology is substantiated by the author through a very detailed representation of all dimensions of adzes (length, width of the cutting edge, thickness, weight) and their interrelations. The detailed analysis of all manners and cases of remodelling (recycling) damaged adzes and axes is rather impressive. A new tool could be made from every fragment sufficiently large to be remodelled into a group I tool – parietal part, distal part, longitudinally broken adzes etc. After this chapter, entitled *3.5 Recycling*, one can fully comprehend the author's typology of adzes and their classification into 3 basic groups according to their size. All diversity of shape noted not only on the site of Magură Gorgana in Pietrele, but also across Europe is most likely the consequence of the maximal usage of stone raw material. Good raw material – hard and resilient stone, without cracks, which would not break after mere several strikes of the tool against the material one was working upon, was not easy to find. Such stone had to be used to the maximum, and that meant that every fragment which was large enough was shaped into a tool. The author of this review has had the opportunity to analyse a large number of stone adzes from the territory of the Central Balkans herself, but she linked the typological diversity among ground stone adzes and axes to the raw material type and the manner in which they were used. Reparations of damaged artefacts were also noted, but this manner of modelling adzes was not dominant enough to be taken into consideration as a basis for a typology. The size of adzes does have a certain bearing on the characteristics of cultures from different territories. The oldest ground stone adzes and axes from the territory of the Balkans, those from the late Mesolithic and early Neolithic, are massive, cylindrical, and their shape reminds us more of axes. Their size and massiveness were reduced in later periods, which is especially conspicuous in the Eastern Balkans, thus marking a notable difference between this territory and the rest of the Balkans. In his book, F. Klimscha provides a lot of space for thought and further researches. The question is asked whether there was a continuity in the production of ground stone adzes and axes, not only in the technology of production but also in the use of stone tools from previous cultures. A partial answer to this question could be given after more precise petrographic analyses, which were not performed on the material from Pietrele.

By examining use-wear traces on stone adzes and axes from Pietrele, the author reached interesting conclusions. There are visible traces of long-term work on them, and it can be deduced from their distribution whether the person handling them was left-handed or right-handed, so the author concludes that adzes and axes were quite certainly a part of a personal toolkit of one craftsman.

Adzes made of silex certainly represent one of the most interesting occurrences in the Neolithic and Eneolithic in Europe. These tools appear in large numbers in Northern Europe, on the British Isles, but also in Eastern Europe, especially within the Cucuteni-Tripolye culture. Those are all areas where flint was the dominant raw material for making stone adzes and axes and where mines of this raw material were discovered. The Eneolithic settlement in Pietrele was not in such an area, or, at least, no flint mines have been discovered in its wider

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ARCHAEOLOGIA BULGARICA

XXI, 1 (2017), 93-98

Nathan BADOUD. LE TEMPS DE RHODES. Une chronologie des inscriptions de la cité fondée sur l'étude de ses institutions. Vestigia, Beiträge zur alten Geschichte, Band 63. München, Verlag C. H. Beck, 2015, xviii+542 pp.

The island of Rhodes has a peculiar history (cf. Nielsen / Gabrielsen 2004). For a long time it was divided between three *poleis* – Lindos, Ialysos, and Kamiros – and then, in 408 BC, they founded, by means of a synoecism, an entirely new city named after the island. In the following centuries the city of Rhodes expanded to cover a huge area of more than 400 hectares, becoming a major power to be reckoned with in the Hellenistic Mediterranean. The economy of the *polis* prospered and Rhodian amphorae spread throughout the ancient world, providing precious chronological benchmarks as they carried stamps with the name on the annual eponym of the city.

After the synoecism the old Rhodian *poleis* continued to exist, although referred to as “communities” (κοινά), whilst their institutions were preserved, including annual eponyms. Nathan Badoud's imposing book, based on his dissertation defended in 2007, is dedicated to the city of Rhodes whilst also drawing upon the evidence from Lindos, Ialysos, and Kamiros. They were bound by the so-called “triennial rule” to appoint in turn the annual eponym of Rhodes – the priest of Helios. Badoud notes one specific of Rhodian epigraphy – the paucity of decrees, but the abundance of catalogues of officials and other lists, among them the catalogues of the eponyms of Lindos, Kamiros, and Rhodes, as well as of other priests and officials. Thus, he explores local catalogues and other monuments before proceeding to the priests of Helios, the aim being “to elaborate a system that is guaranteed by the Rhodian institutions, subdivided but coherent and based on the cross-analysis of the sources” (p. 9).

The book is complex and immensely rich in detail and it would take a rather knowledgeable reader to fully grasp all the niceties of the arguments and the cross-references between various monuments and previous works. More than 1500 Rhodian citizens are listed in the inscriptions under consideration, generating a not readily accessible “epigraphy of name”, and the author constantly refers to and argues with a scholarly tradition that reaches back to the 19th c. The present review will pay special attention to those parts that directly affect the chronology of the amphora stamps that is of crucial importance for all archaeologists and historians with interest in the Hellenistic Mediterranean and beyond. Admittedly, it will not entirely do justice to this important study, but aims to provide an overview with emphasis on some points; and, of course, amphora stamp chronology (Finkielsztein 2001) is elaborated for only a part of the seven-odd centuries from Rhodes' synoecism to the end of Antiquity, discussed by Badoud.

Fifteen years ago, when discussing “intrinsic” and “extrinsic” criteria for specifying the dates of Rhodian amphora stamps, G. Finkielsztein emphasized the problematic use of inscriptions, mostly due to the widely diverging dates ascribed to some monuments – compared to what is dictated by the stamps (Finkielsztein 2001, 42, 207). It could be stated

in advance that Badoud's work changes this impression. The possible contributions of the traditional epigraphy to the chronology of the amphora stamps were summarized in an earlier article by the same author (Badoud 2014), naturally without a huge amount of the details in the monograph.

Chapter I is dedicated to the Rhodian calendar. The author starts from the sequence of the months and proceeds to distinguish two different years – a “civil” one and an “eponymous” one. The first is defined by the functioning of the political institutions of the polis – assembly and council. The inscriptions reveal two semesters (half-years) in the functioning of the council – a “winter semester” and a “summer semester”, the latter set astride two eponymous years. While the civil year begins from Καρνεῖος (October / November), the eponymous one begins two months earlier – from Δάλιος (August / September). The intercalary “leap” month in the calendar, Πάναμος δεῦτερος, becomes the 13th month in the eponymous year.

Sacrificial calendar indicates that in all communities (Lindos, Ialysos, and Kamiros) the year started from Δάλιος, hence the conclusion that the eponymous year was the old Rhodian year that the original communities kept after the synoecism. Precisely the synoecism could explain the appearance of a separate civil year, therefore its official date could be determined to be Καρνεῖος 1 (October 17), 408 BC. According to Badoud, the Rhodian calendar preserved this form without any reforms (presumed by other scholars) from the late 5th c. BC to a certain point in the 4th c. AD.

Establishing the sequence of months in the calendar allows for reconstruction of the curve of the amphora production – based on the number of stamps with the respective month. The reconstruction takes into account the fact that Πάναμος and the intercalary Πάναμος δεῦτερος are inadequately attested – according to the author, in most cases no special matrix was carved for the second one, but the officials kept using the one for Πάναμος. The curve indicates a peak of production in the summer months and a minimum in Θευδαίσιος (December / January), confirming the dependence of the production mostly on the climate and the need of conditions for drying the amphorae before baking – the increase of the production was directly proportional to the temperature and inversely proportional to precipitation. In the same context, Badoud discusses the so-called “secondary stamps”. Some authors believe that they belonged to “independent potters” that were enlisted in the periods of most active production (Palaczyk 1999; cf. Finkielsztejn 2001, 116). However Badoud rejects this hypothesis with the argument that secondary stamps are associated also with stamps from the winter months, thus there appears to be no connection between them and presumably larger volumes of production.

Three chapters (II-IV) deal with inscriptions from Lindos and most attention is dedicated to the catalogue of the priests of Athena Lindia – the “backbone” of Lindian epigraphy preserved in twelve fragments (**Chapter II**). The priest of Athena Lindia was eponym of Lindos and the triennial rule required that he be appointed in turns from the three Lindian tribes. Badoud distinguishes two separate groupings of demes in the tribes and dates the reform to c. 242 BC. The author pays attention to the role of adoption for appointing priests, as it allowed changing the tribe in order to gain access to the office; in some cases, it seems that