
The Early Iron Age Gold Treasure From Braşov

Alexandra Țârlea*, Cristiana Tătaru**, Mihai Florea**,
Migdonia Georgescu**, Zizi Baltă**

Abstract: *This paper presents a recently found gold treasure discovered near the city of Braşov, dated to Hallstatt B1 and containing 22 gold notched Brăduţ-type rings. The treasure is discussed in the context of similar finds from Transylvania, and the characteristics of the items are analysed: decoration, weight, dimensions, shape, technology, decoration techniques, metal composition. The possible functions of this type of rings are also discussed briefly.*

Rezumat: *Scopul acestui articol este de a prezenta un tezaur recent descoperit, găsit în apropierea oraşului Braşov, datat în Halstatt B1 și format din 22 de verigi crestate de tip Brăduţ. Tezaurul este discutat în contextul oferit de descoperirile similare din Transilvania, piesele fiind cercetate pentru a le determina caracteristicile: decor, greutate, dimensiuni, formă, tehnologie, tehnici de decorare, compoziția metalului. De asemenea sunt discutate pe scurt posibilele funcții ale acestui tip de verigi.*

Keywords: *treasure, Early Iron Age (Hallstatt B1), notched Brăduţ-type rings, characteristics.*

Cuvinte cheie: *tezaur, prima epocă a fierului (Halstatt B1), verigi crestate de tip Brăduţ, caracteristici.*

During March 2014 a treasure consisting of twenty-two gold notched rings was brought to the National Museum of Romanian History, where the objects are currently kept in custody for evaluation and research.

The gold rings were discovered with a metal detector¹ on the slope of a hill, on the outskirts of the city of Braşov. Although all the items were placed together (Fig. 3/1), at first only twenty-one of them were recovered, the last notched ring being found a few days later. According to the finder's explanations he came back in search for other elements which could be useful for the context analysis. The items were found at a depth of about 0.25 m, immediately underneath the vegetal layer, in

* Department of Ancient History, Archaeology and Art History, Faculty of History, University of Bucharest, Romania.

** National Museum of Romanian History, 12 Calea Victoriei, Bucarest 030026, Romania.

¹ The discovery was made by Mr. Fănel Şerban with a Garrett AT PRO International metal detector, registered at Braşov County Police Department on 25th November 2013, with the number 685 543/NG. We would like to express our thanks to Mr. Fănel Şerban for bringing the items to the National Museum and for offering information regarding the conditions and context of the find.

a close cluster (Fig. 3/1), with a few of them still fastened together (Fig. 3/2; see Cat. Nos. 2-3, 8-11)². The area was subject to a field walking in order to establish the details of the find and determine the land features as well as the possible access paths to this specific spot (Fig. 2/2)³.

LOCATION

From the geographical point of view, the treasure is located in the southern part of the city of Braşov, in the Prund-Schei neighbourhood (Fig. 2/1). The micro-region is marked by a hill, Dealul Frasinului (maximum altitude 1016.4 m)⁴, on its western slope, at the altitude 777.5 m, being the spot where the treasure was found (Fig. 2/2). From the point of maximum altitude of the hill down to the valley the slope has a mean inclination of 15°, with several more abrupt areas with an inclination up to 33°⁵. These days the area where the discovery took place is completely covered in woods, but these are plantations of recent times. It should be also mentioned that the stratigraphy consists in a thin vegetal layer immediately over the bedrock.

TYOLOGY

Based on their shape and decoration, the items belong to the category of notched rings, being representative for the so-called Brăduţ type, named after the eponym hoard⁶.

The rings of this type are closely related to the notched rings, being also notched but with a more varied decoration⁷. The notched bracelets and rings have in common the rounded cross-section of the metal bar and the thinning of the ends, as well as the almost integral decoration of the surface with narrow parallel notches. M. Rusu determined three variants of notched bracelets: the Meseşeni variant (the entire surface, excepting the ends, is ornamented with equal vertical notches, and the bracelet's bar has a round cross-section); the Şona variant (with similar notches, except on the interior face of the bracelet, so that the resulting cross-section of the metal bar is

² It should be mentioned that this find was preceded by a similar one, which took place a month earlier, when another 4 gold notched rings, with a total weight of 7 g, were discovered on the slope of an opposite hill (Fig. 2/1-2). These items, discovered also by Mr. Fănel Şerban, are now preserved in the archaeological collection of the Braşov County Museum of History. Taking into consideration the fact that the small treasure which entered the collections of the Braşov Museum was the first to be found, it will be conventionally considered here for reasons of clarity as Braşov I, while the treasure which constitutes the subject of this paper will be named Braşov II.

³ The survey was carried out by Mihai Florea and Cristiana Tătaru on August 18th 2014.

⁴ Direcţia topografică militară, foaia L-35-088-A-a, 1982 (The Military Topographical Department, sheet L-35-088-A-a, 1982).

⁵ The slopes were determined on the E-W direction.

⁶ Popescu 1956, 228.

⁷ Popescu 1956, 228, fig. 138/1-8.

in the shape of letter D); the Recaş variant (the notches are oblique on the smooth interior surface of the bracelet, and the cross-section of the metal bar is in the shape of letter D). Most of the notched rings known so far are identical – only of more reduced size – to the bracelets belonging to the Meseşeni variant, and they are present (as is also the case with the bracelets) in the Bronze D and Hallstatt A1 hoards and treasures⁸. The Brăduţ type is represented by rings for which the vertical notches alternate with ‘triangular’ or oblique false torsions. They have a round shape and are made of thin gold bar, decorated on the entire surface with the exception of the ends, which are thin and pointed, close to each other or slightly overlapping⁹.

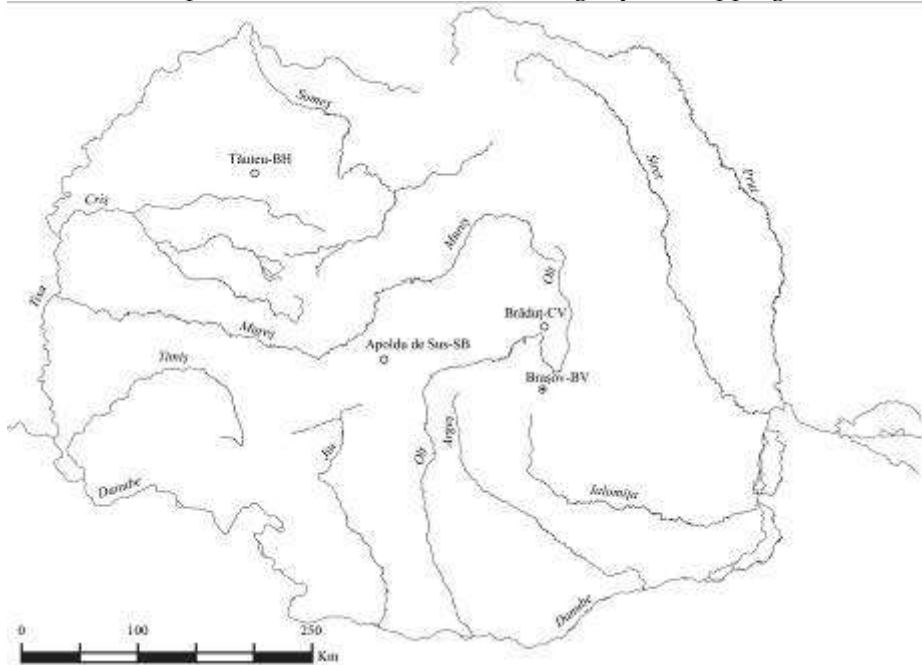


Fig. 1. The distribution of treasures and hoards containing gold notched rings of Brăduţ type from Romania.

CONTEXT AND ASSOCIATIONS

The gold notched rings of Brăduţ type belong mainly to two categories of finds: either they are part of gold treasures which contain different numbers of items of the same type (Apolde de Sus; possibly also the items from the Orghidan Collection), or they are part of bronze hoards, which contain besides bronze tools, weapons and ornaments, also representatives of this type (Brăduţ; Tăuteu).

⁸ Rusu 1972, 35-36, Pl. III/1-7.

⁹ Dumitrescu 1936, 231; Rusu 1972, 36, Pl. III/2.

CHRONOLOGY

Based mainly on their association with the bronze objects in hoards, the gold notched rings of Brăduț type are considered to belong to the Early Iron Age, more precisely to Hallstatt B1 (10th century BC), the Moigrad – Tăuteu hoarding horizon¹⁰.

ANALOGIES

As already mentioned, there are several finds in the intra-Carpathian area, both treasures and hoards, which contain items belonging to the Brăduț type (Fig. 1).

Apoldu de Sus (Miercurea Sibiului, Sibiu County). During 1843 eighteen gold notched rings of Brăduț type were found within the territorial limits of the village¹¹. No other information regarding the find context is known. The rings, attached to each other in form of a chain, are presently part of the collections of the National Museum of Romanian History¹². The find was dated to Hallstatt B1 (10th century BC), based on the characteristics of the items. All the rings are open, thicker in the median area, with undecorated and slightly overlapping pointed ends. The rings are decorated with groups of circular notches, alternating with segments of oblique notches with various orientations. The chain weighs 75.27 g and is approximately 34 cm long¹³. The rings are arranged in the chain in a relative order of size, with the biggest item at one end and the smallest item (also seeming to be the only one fragmented) at the other end¹⁴. Some rings are slightly deformed but otherwise in good condition. From the point of view of their decoration, the rings are present in several variants, having their body divided in a number of segments varying from 3 to 9.

Bihor County (?). The bronze hoard found during the 19th century contained socketed axes, saw blades, knives, hammers, spearheads, and *money-rings*¹⁵. Based on the drawings of the bronze objects and also on the observation that the socketed axes “have a much wider cutting edge than usual”¹⁶, the hoard most probably belonged to Hallstatt B1. The five items presented by V. Pârvan in Fig. 257/22 and mentioned in the archaeological

¹⁰ Pârvan 1926, 308, is dating the hoard from Brăduț to Bronze IV (1000-900 BC); Müller-Karpe 1959, 127; Petrescu-Dîmbovița 1961, 106; Petrescu-Dîmbovița 1977, 136-137; Popescu 1962, 410-411 (changing his opinion expressed earlier (1956, 228), that these hoards belonged to Hallstatt A); Rusu 1972, 36; Oanță-Marghitu 2013, 224, Cat.No.35.1-35.5; A. Popescu 2013, 225.

¹¹ Luca *et alii* 2003, 38; Mozsolics 1973, 200; A. Popescu 2013, 225.

¹² MNIR Inv. No. 47586.

¹³ Mozsolics 1972, 200; Popescu 2013, 225.

¹⁴ It is not very clear if this arrangement is the original one or it was subject to ulterior rearrangements.

¹⁵ Pârvan 1926, 404 (*inele-bani*); V. Pârvan based his discussion on the information provided by J. Hampel, *Bronzkor*, III, inclusively on the plate CCXXVI which is published in *Getica* as Fig. 257.

¹⁶ Pârvan 1926, 404.

literature as belonging to the category of notched rings¹⁷ consist of a bigger ring, with overlapping ends, to which there are attached, through a thinner ring, also with overlapping ends, 4 rings of similar size, apparently also with overlapping ends¹⁸.

Braşov I (Braşov County). The small treasure containing 4 gold notched rings, allegedly of Brăduţ type, was found during the first months of 2014, in the southern part of the city of Braşov, on the slope of a hill, at a low depth. The notched rings are small light items weighing together 7 g¹⁹.

Brăduţ (Bardocz; Tălişoara; Covasna County). The bronze hoard from Brăduţ (Tălişoara)²⁰ was found in 1858 and entered the collections of the Museum of Natural History in Vienna during 1899. The hoard contained: 2 cauldrons; 6 axes (from which 2 socketed axes); 2 sickles; 1 sword fragment; 2 bronze rings; several bronze cake ingots; 25 gold rings. In the collections of the National Museum of Transylvanian History Cluj-Napoca entered: 1 sickle; 3 bracelets; 2 fragments possibly from a fishing hook; 1 decorated gold ring²¹. The hoard was dated to Hallstatt B1, the Moigrad – Tăuteu hoarding horizon, based on the characteristics of the bronze objects²². Although in the archaeological literature²³ the rings are drawn mainly as separated items, they were described as being 25 gold rings belonging to a decorative chain²⁴. From the available information, the ten rings which are presented in drawings and for which the weight is known are small light items (most of them between 1.3 g and 3.2 g), some of them complete and the others apparently in different states of fragmentation; four of the rings are attached two by two, weighing together in one case 6.8 g and in the other case 3.2 g²⁵. The decoration of the complete items varies from the point of view of the number of segments dividing the body of the rings, from 3 to 7 segments.

¹⁷ Dumitrescu 1936, 232.

¹⁸ Taking into account the fact that the rings seem to have circular cross-section but no clear sign of decoration, it is uncertain if the items really belong to the category of notched rings.

¹⁹ Personal communication made by Mr. Fănel Şerban.

²⁰ There seems to be some confusion in the archaeological literature regarding this hoard: D. Popescu, in both his articles (1956, 228; 1962, 410), discusses Brăduţ and Tălişoara as different finds, while M. Petrescu-Dîmboviţa (1977, 127) speaks of a single hoard, Brăduţ (Tălişoara).

²¹ Petrescu-Dîmboviţa 1977, 127, Fig. 302/1-17. It is unclear if 25 is the total number of rings which were found, or the item from Cluj is the twenty-sixth item of this type. V. Pârvan speaks of "25 gold open rings (maybe coins) and bronzes: socketed axes, sickles, fragments of swords, 2 north-Italian cauldrons" (Pârvan 1926, 308, Fig. 193-196).

²² Pârvan 1926, 308 – the beginning of Bronze IV (1000-900 BC); Müller-Karpe 1959, 127; Popescu 1962, 410; Rusu 1972, 36 and footnote 23; Petrescu-Dîmboviţa 1977, 127.

²³ Both V. Pârvan (1926, 308, Fig. 193) and M. Petrescu-Dîmboviţa (1977, Fig. 302) use the drawings after E. Kenner, AoG, XXIV, 1860, p. 388-391.

²⁴ Petrescu-Dîmboviţa 1977, 127.

²⁵ Pârvan 1926, 308, Fig. 193.

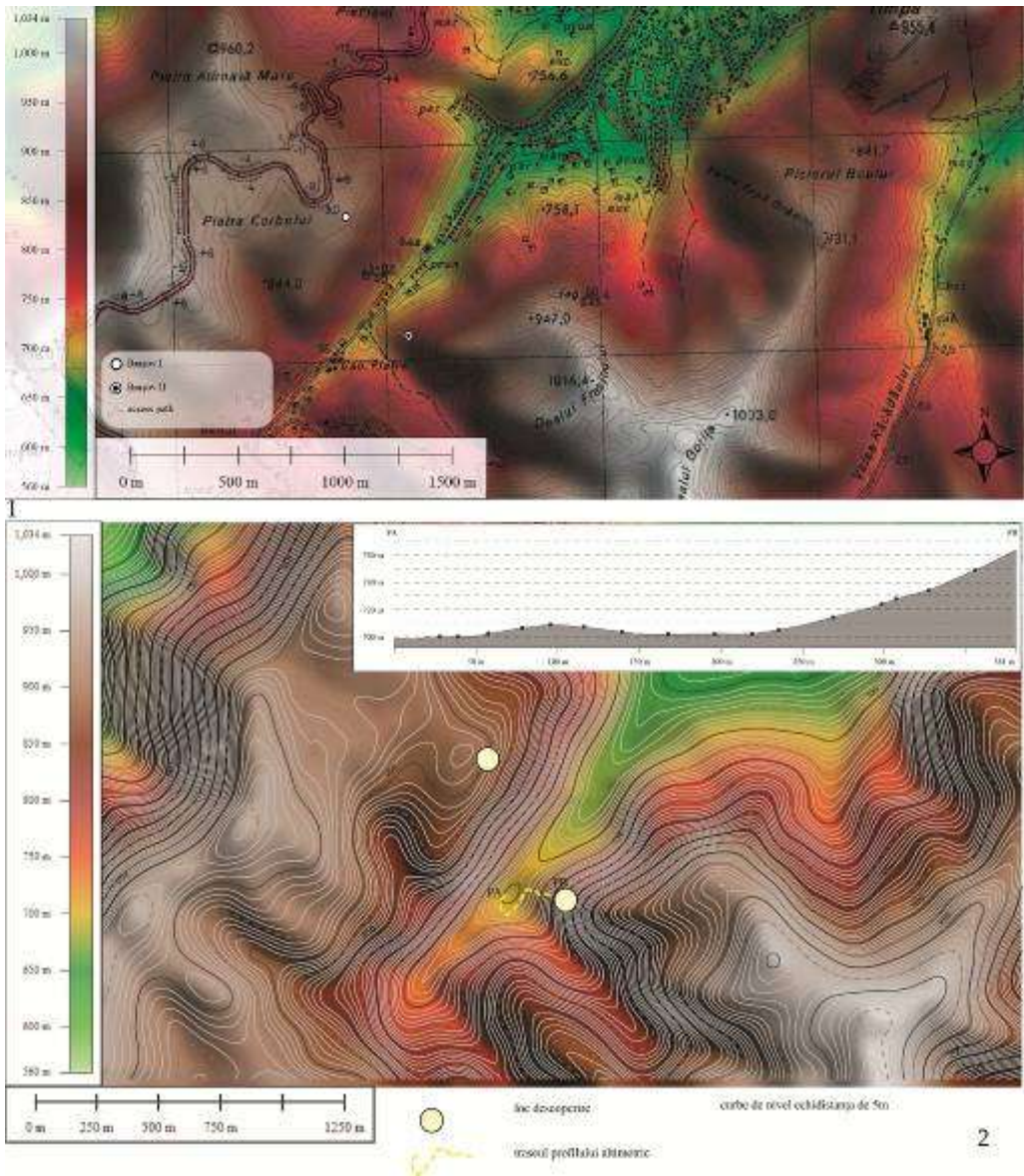


Fig. 2. 1. The area of discovery showing the characteristics of the landscape; 2. The topographic map of the area of discovery indicating the altimetric profile.



1



2

Fig. 3. 1. Photo taken at the moment of discovery; 2. The items immediately after their removal from the ground (courtesy of Mr. Fănel Şerban).

The Orghidan Collection. Eleven gold notched rings with unknown provenance entered the Orghidan collection²⁶. They were described in the archaeological literature as a part of a Hallstatt necklace consisting of 10 earrings and 1 ring, decorated with notches, with various horizontal and oblique motifs, with analogies in the early Hallstatt from Transylvania (Brăduț, Apoldu de Sus, Tăuteu). The diameter is given as 22.5 mm and their total weight as 43.02 g²⁷. Most of the rings seem to be complete, maybe with the exception of the eighth item from left to right, in the photo published by the authors. It is not clear if the fourth item is not also in a fragmentary state. Also from the photo it looks like at least half of the items have their body divided into 5 segments of decoration.

Tăuteu (Bihor County). Although the hoard from Tăuteu is probably the best documented find containing gold notched rings of Brăduț type, there are still a lot of uncertainties arising from the conditions in which the discovery took place. In the outskirts of the village of Tăuteu, on the Bereteu valley, close to Marghita, near the forest, a 10 years old boy found in September 1934 Bronze Age objects, which entered the collections of the museum of the "National House" Oradea, after being sequestrated by the gendarmerie because the gold was not declared in time²⁸. In the earliest publication of the hoard, F. Ardos presents it as consisting of: 6 bronze rings; 1 socketed axe; 2 bronze buttons; 1 knife; 2 knives in the shape of a spear and with two cutting-edges; 1 half of a socketed axe; 2 knives with two cutting-edges; 5 gold rings; 1 small clay vessel; 5 copper ingot fragments; fragments of clay vessels dated to the Bronze Age²⁹. The author was also drawing attention on the possibility that the hoard could have contained initially more bronze and gold objects: when the gendarmerie from Marghita took notice of the find, two months after the discovery, some items disappeared and the already mentioned ones were confiscated by the Oradea police from certain merchants³⁰. In the same time exactly the fact that the objects were sequestrated from several different merchants stands against ruling out the possibility that originally they came from multiple sources³¹. It seems that later other objects from that find were recovered since when the hoard was brought to the National Museum of Antiquities their number was already increased. The hoard came to this institution in

²⁶ Inv. No. O1/22.

²⁷ Gramatopol, Theodorescu 1966, 66, Cat. No. 27 (O1/22), Pl. V/1.

²⁸ Ardos 1936, 72.

²⁹ Ardos 1936, 72-73.

³⁰ Ardos 1936, 73.

³¹ Dumitrescu 1936, 225.

two lots: 27 bronze objects and 5 gold rings³² in the spring of 1935, 16 bronze objects in the fall of 1940; the second lot with the wrong indication of their find place as Terebeş³³. A field research was conducted as early as 1936 by F. Ardos, as well as a small excavation some years later by M. Petrescu-Dîmboviţa and C. Mateescu (November 13th – December 14th 1945). Although no other items were found, these researches allowed several observations regarding the find context. The hoard was located approximately 600 m SW of the township's limit and 120 m N of the meander of the Sălaş rivulet, being found on the southern slope, washed by water, of the Sălaş (*Szállás*) hill, in an area with no prehistoric settlement known. It opened only towards E and S, with forest in the rest, forming a secondary valley, closed towards W and SW, in comparison with the wider and more open valley of the Bistra River. The hoard was at a depth of only 0.05 m, with several objects scattered at the surface. The present number of objects, comprising the gold rings, is 48. The information offered by the finders indicates that a big polished black-brown clay vessel contained the bronze objects (in no particular order) together with the small clay vessel containing the gold rings placed in a whitish powder. The objects were: 1 axe with median wings; 11 socketed axes; 4 sickles; 1 knife; 4 saw-blades; 2 blade tips; 12 bracelets; 2 buttons; 5 fragments of raw bronze; 5 gold rings and 2 fragments of gold rings³⁴. The five complete gold notched rings³⁵ are open, with their extremities slightly overlapping, thinned and pointed. All are decorated with parallel, longitudinal and transversal incisions. The decoration is disposed in groups on the entire surface of the objects, only the extremities being left without decoration³⁶. Three of the complete items from Tăuteu have the length of the gold bar separated by their decoration into 9 segments (2 rings), respectively 7 segments (1 ring), the other two being decorated with simple circular notches on their entire surface, with the exception of their ends³⁷ (forming 3 segments of decoration). Their weight and maximum diameter are³⁸: 10.20 g with 55 mm; 7.20 g with 34 mm; 5.90 g with 33.2 mm; 3.05 g with 24.3 mm;

³² Most probably all the gold items: in the early publications (for example Popescu 1956, 229, Fig. 140/3) the 2 small rings made of fragments from notched rings and intertwined are presented as attached through one of them to the biggest of the 5 complete notched rings. They are now exhibited in the Treasure Room of the National Museum of Romanian History separated from the biggest ring, as an individual item. It is not known when this separation took place.

³³ Petrescu-Dîmboviţa 1961, 81.

³⁴ Dumitrescu 1936, 225-234; Petrescu-Dîmboviţa 1961, 81-114, fig. 1-5; Petrescu-Dîmboviţa 1977, 136-137, fig. 329/1-12, 330/1-19, 331/1-17; Țârlea, Popescu 2013, 223, Cat. No. 35.

³⁵ MNIR Inv. No. 8992-8996. The two fragments of notched rings attached to each other received their own inventory number (Inv. No. 8997).

³⁶ Dumitrescu 1936, 231.

³⁷ Oanţă-Marghitu 2013, 224, Cat.No.35.1-35.5.

³⁸ In the increasing order of their inventory number.

2.40 g with 21.2 mm; 1.20 g with the length of the two fragments together of 10 mm³⁹. If it is taken into account the fact that originally the two ring fragments were attached to the biggest of the complete notched rings, the total weight of the resulting item would have been 11.40 g.

DISCUSSION

Find context

It can be easily noticed from the presentation of the treasures and hoards containing gold notched rings of Brăduț type that many essential details concerning their deposition (such as location, association with structures or land features, association of items, state of preservation, integrity of the find, internal arrangement) are lost. As a result, any comparison between these finds or between them and any new find is bound to be marked by uncertainties. Keeping in mind this warning, we consider that it could still be useful to determine if the few characteristics known for the deposition of this type of rings are to be met also in the case of the treasure Brașov II.

Location. The only finds which can offer more or less viable information regarding the location are the hoard from Tăuteu and the treasure Brașov I. Both have in common with each other and with the treasure Brașov II the deposition of the items on the slope of a hill, in areas with relatively difficult access, and in spots where no other structures contemporary with them could be identified. In fact, the closest Hallstatt B1 find to our treasure seems to be so far the treasure Brașov I and vice versa. What differs is the orientation of the slope, which faces W in the case of Brașov II, E in the case of Brașov I⁴⁰ and S in the case of Tăuteu. Another common feature is that all three of them were found very close to the surface (0.25 m for Brașov II; 0.05 m for Tăuteu).

Association of items. As it was already mentioned, the gold notched rings of Brăduț type from the intra-Carpathian area are either found in treasures containing only this kind of items or in hoards in association with items of the same type and with bronze objects. Unfortunately the conditions of discovery are in many cases less clear than it could be wished, so any conclusion arising from this observation with respect to a possible pattern in the association of items should be prudently left open. Still, if the new found treasure is considered from this perspective, it seems to join the same trend of treasuring gold items of the same type. This situation is rather different to what happens during the timespan from Middle Bronze Age to Hallstatt A in this area, when the trend seems to be towards associating in treasures gold

³⁹ Oanță-Marghitu 2013, 224, cat. no. 35.1-35.5.

⁴⁰ In fact it can be considered that there is reciprocal visibility between the two spots, as they are situated on almost opposite hills, on slopes facing each other from both sides of the valley.

objects belonging to different categories and types and in the same time towards maintaining a more or less clear separation between the deposition of gold items and that of bronze items⁴¹.

Arrangement. There is not a lot of information regarding this aspect of the deposition of the gold notched rings. In the case of the hoard from Tăuteu the finders described the gold rings as being placed in a small clay vessel, in a whitish powder, next to the bronze objects, all of them being placed in a bigger clay vessel⁴². For the rest of the finds the information is even scarcer. In the case of the treasure Braşov II the close cluster of the gold objects could be as well the result of their placement as a bulk directly in the ground or a sign that initially they were placed in a container made of organic material (for example, leather bag or small wooden box) which has not survived. As long as there is no kind of proof for any of these possibilities, it is useless to speculate on this subject.

What is interesting to notice is that both in the Apoldu de Sus treasure and in the Orghidan Collection treasure, the items are attached to each other so that the result is a chain⁴³. In a similar way were described in the archaeological literature the notched rings from Brăduţ, as belonging initially to a decorative chain⁴⁴. The only question that could arise is if this is the original form in which the rings were treasured or the result of a later intervention. Still, as long as on one hand this situation is repetitive in the case of the notched rings and on another hand similar finds are known for hair-rings and rings (including the Bronze D – Hallstatt A type with lozenge-shaped cross-section)⁴⁵, there is no strong reason to doubt that this was the original arrangement.

The treasure Braşov II contains both individual items and groupings of rings attached to each another. At the moment of their arrival at the National Museum there were 9 individual rings (Cat. Nos. 1, 4-7, 12-15), 6 rings attached two by two (Cat. Nos. 2/1-2; 8/1-2; 9/1-2), and 6 rings attached three in a row (Cat. Nos. 10/1-3; 11/1-3). More difficult is to determine if the ring to which are attached two small rings made of

⁴¹ For a more complete view on this point see Popescu 1956; Popescu 1962; Rusu 1972 (with the catalogue of gold finds for Bronze D – Hallstatt A).

⁴² Petrescu-Dîmboviţa 1961, 81.

⁴³ Luca *et alii* 2003, 38; Mozsolics 1973, 200; A. Popescu 2013, 225; Gramatopol, Theodorescu 1966, 66, Cat. No. 27 (O1/22), Pl. V/1.

⁴⁴ Petrescu-Dîmboviţa 1977, 127.

⁴⁵ Popescu 1956, 209, 227, Fig. 124, 139/8; Rusu 1972, 45 (Cat. No. 27), 46 (Cat. No. 30, 33, 37), 47 (Cat. No. 43), 50 (Cat. No. 69); Gramatopol, Theodorescu 1966, 66, Cat. No. 14, Pl. II/5

fragments of notched rings (Cat. Nos. 3.1-3) should be considered as an individual item or as a grouping⁴⁶.

Number of items. The number of gold notched rings of Brăduț type associated in treasures and hoards seems to vary greatly, but again it should be kept in mind that for many finds there are serious difficulties in establishing their integrity (their original composition). Until now the lowest number of items is offered by the treasure Brașov II (4 rings), followed by the hoard from Tăuteu (5 complete rings and 2 fragments). On the other end of the spectrum are the treasure from Apoldu de Sus (at least 18 rings⁴⁷), the treasure discussed here, with 22 items⁴⁸, and the hoard from Brăduț (25 or 26 items)⁴⁹. Somewhere in between is situated the chain belonging to the Orghidan Collection, which consists of 11 rings.

State of preservation. The main problem in any situation concerning metal objects found in other conditions than archaeological excavation is to determine if their state of preservation is the original one (the state they were in at the moment of deposition) or they suffered ulterior modifications during their stay in the ground, at the moment of their discovery or after that moment. In the case of gold objects it is usually impossible to say if they were deposited being already in a state of deformation or fragmentation, if this happened because of the depositional conditions (supporting the pressure of the soil or of the associated items, for example), natural conditions and/or

⁴⁶ Mr. Fănel Șerban, in a personal communication, emphasized the fact that at the moment of the discovery, when the rings were removed from the ground, more of them gave the impression of being attached to each other and separating as a result of the movement. Taking this description into consideration, we tried to determine, based on the present state of the items, if this could really have happened. The visual analysis of the rings left us with the impression that (with very few exceptions) the way their ends touch or overlap would have made impossible a voluntary separation in the case of most of the items. In other words, in order to allow a ring to slide from the attachment to another ring the ends must be intentionally drawn apart. Thus, the conclusion which has been reached is that most probably at the moment of the discovery most of the rings were literally hanging to each other (due to the conditions of their deposition) rather than being really attached in one long chain.

⁴⁷ The expression usually found in the archaeological literature regarding the treasure from Apoldu de Sus is that it contained "18-20 rings" (Mozsolics 1973, 200; Popescu 2013, 225). It is unclear if the original number was higher than 18 or there is just an approximation expressed at some point and perpetuated in the literature.

⁴⁸ The 2 fragments of notched rings (Cat. Nos. 3.2-3) attached to a complete ring were not counted.

⁴⁹ For the uncertainty regarding the number of notched rings from Brăduț see above at *Analogies*.

unintentional anthropic interventions, or if this happened because of the intervention of the finders or subsequent owners⁵⁰.

The 22 gold notched rings from the treasure Braşov II are all complete items, in a good state of preservation, giving in general the impression of preserving their original shape. Very slight deformations are present in the case of some items, affecting especially their ends: the overlapping of the ends in the case of the item Cat No. 2.1 is exaggerated in comparison to other similar items (Fig. 4/2); Cat. No. 13 has overlapping but distanced ends (Fig. 6/1); Cat. No. 14 is slightly deformed as a whole, but most visibly at one end (Fig. 6/2). The deformations in the case of two of the items (Cat. Nos. 13-14) could be as well the result of use or of the depositional conditions. The strong overlapping of the ends in the case of the third item seems to be intentional and in all probability took place before deposition. The only clear state of fragmentation is that of the two items under the Cat. Nos. 3.2-3 (Fig. 4/3), representing two fragments from notched rings bent in shape of small rings, attached to each other and to a bigger complete item (Cat. No. 3.1). In their case it is certain that we deal with fragments broken in prehistory – if intentionally or unintentionally it is more difficult to say – from notched rings and used as a kind of pendant attached to a complete ring of the same type (Fig. 7/3 – where it can be noticed on the broken area the mineral deposition resulted from their stay in the ground).

This situation matches the general picture offered by the finds of this type. The 4 rings from Braşov II seem to be complete and apparently in a good state of preservation. The 5 rings from Tăuteu are also complete items and in a good state of preservation, although it looks as if the biggest ring was slightly flattened until it reached an almost lozenge shape with rounded corners. The find from Tăuteu also resembles our treasure in that the biggest ring had attached a “pendant” consisting of two small rings made of fragments of notched rings. The rings from Apoldu de Sus are in their majority complete items, maybe with the exception of the last ring in the chain, but some of them present different degrees of deformation. The 11 items from the Orghidan Collection are in majority complete and they seem to have preserved their original roundish shape. The hoard from Brăduţ is possible to contain the greatest number of fragmented items, but even if this is the case there is no certainty that they were deposited this way and that this is not the result of interventions which took place after the discovery of the hoard.

⁵⁰ This is with the exception of the happy (in its unhappiness) situation when modern tools leaving specific traces were used to cut the gold instead of simply breaking it, as it happens in some cases.

Characteristics

The characteristics of the gold notched rings from the treasure Brașov II which will be discussed further are their decoration, weight, dimensions, shape, technology, decoration techniques, and metal composition. Where possible, their characteristics will be compared to those of items belonging to other treasures or hoards.

Decoration. The most visible and in the same time recognisable feature of the items discussed here is their decoration, which represents together with their shape the main argument for including them in the larger category of the notched rings and in the narrower group of the notched rings of Brăduț type. As already briefly discussed above, what is characteristic in the case of the notched rings of Brăduț type is the fact that the combination of notches divides the surface of the metal bar in groups or segments of decoration. Based on this observation, an attempt was made to determine how many variants could be obtained if the number of the decoration segments is taken into consideration. It must be emphasized that these variants are established only for the treasure Brașov II, with no certainty that they will prove themselves generally applicable and more as a probing in view of eventual future research on this subject. The aim was to observe if any kind of relation can be established between different characteristics of the same item (for example, decoration and size, decoration and weight, or between these and the metal composition) or between different items (for example, the existence of sets of rings with very similar decoration, size, weight, or even gold composition).

Based on the number of decoration segments the rings from the treasure Brașov II were separated into three main variants: A – the metal bar is divided into 5 segments (2 undecorated ends; 2 segments with parallel notches; 1 central segment with more sophisticated decoration); B – the metal bar is divided into 9 segments (2 undecorated ends; 2 segments with parallel notches; 2 segments with more sophisticated decoration; 2 segments with parallel notches; 1 central segment with more sophisticated decoration); C – the metal bar is divided into 3 segments (2 undecorated ends; 1 more extended segment with parallel notches).

The problem which had to be confronted while establishing these variants was that it soon became clear that the degree of variation in the decoration went beyond merely separating it into a number of segments. The variation of the decoration itself, which seems to be mainly the result of two factors – the chosen pattern in which the notches are combined and the decoration technique –, intervenes in complicating the situation. As a result, accepting the risk that any selection of this kind is open to subjectivity, related variants were added to the main ones. Thus, the variant A has a related variant A1, also with the decoration divided into 5 segments but with stylistic

differences, while the variant B has so far four related variants (B1-4) based on the same criterion.

From the total of 22 complete items, there are: 8 rings of variant A; 1 ring of related variant A1; 6 rings of variant B; 2 rings of related variant B1; 1 ring of related variant B2; 1 ring of related variant B3; 1 ring of related variant B4; 2 rings of variant C. In the case of the two fragmented rings it was impossible to determine the original variant.

Variant A, containing rings with 5 decoration segments, is characterised by a central decoration segment consisting of triangles created through the application of parallel notches (for example, Cat. No. 1; Fig. 4.1). This segment is slightly bulging in comparison with the rest of the gold bar, enhancing this way the effect of the decoration.

The related variant A1, although based on 5 decoration segments, presents a different decoration of the central segment, which is also more reduced in length than in the case of variant A rings: simple oblique notches placed in pairs and forming a sort of “fir tree” motif, running along the length of the gold bar (Cat. No. 10.3; Fig. 5/4).

Variant B, containing rings with 9 decoration segments, is characterised by 3 segments with more complicated decoration: 2 intermediary groups consisting of a oblique notches placed in pairs perpendicular on the length of the gold bar; a central group consisting, like in the case of variant A, of triangles created through the application of parallel notches (for example, Cat. No. 2.2; Fig. 4/2). All the segments with more sophisticated decoration are slightly bulging.

The related variant B1 has the central segment decorated in the same manner as the main variant B. The difference appear in the manner of decorating the intermediary segments, which in this case consist in a “fir tree” motif running along the length of the gold bar towards the ends of the ring (Cat. Nos. 5-6; Fig. 4/5-6).

The related variant B2 is very similar to the related variant B1, but the “fir tree” motif runs this time along the gold bar toward the central segment of the ring (Cat. No. 7; Fig. 5/1).

The related variant B3 has all 3 segments decorated with triangles consisting of parallel notches (Cat. No. 10.2; Fig. 5/4).

The related variant B4 has a decoration similar to that characteristic to variant B, with the main difference that the segments with more sophisticated decoration are not put in evidence also through the bulging of the gold bar in those areas (Cat. No. 11.1; Fig. 5/5).

Variant C is characterised by simple parallel notches on the entire surface of the gold bar, with the exception of the ends (for example, Cat. No. 11.2; Fig. 5/5).

The two fragmented items have preserved each only one end and a part of the decoration with parallel notches, so it was impossible to determine to which variant

they belonged initially. As it was noticed on one hand that in general the length of the ends is proportional with the general length of the bar – the bigger the item the longer the undecorated part of the ends – and on the other hand that the length of the end is reduced in the case of both fragmentary items, it is possible to have belonged to small light rings (Cat. Nos. 3.2-3; Fig. 4/3).

Every other characteristic which will be discussed further is taken into consideration also in connection with the variants based on the decorative features of the items, in order to observe if any kind of pattern emerges.

Weight. The determination of the weight in the case of the gold notched rings is in general hampered by two difficulties: their reduced weight necessitates a very sensitive balance and their deposition attached in the form of chains makes it practically impossible to determine the weight of individual items⁵¹.

Table 1. The weight of the gold notched rings from the treasure Braşov II.

Cat. No.	Item No.	Variant	Total weight	Weight/item
1.	1.	A	7.91	7.91
2.	2.1.	A	13.97	9.73
	2.2.	B	13.97	4.24
3.	3.1.	B	7.33	5.36
	3.2-3.	X	7.33	1.97
4.	4.	A	6.99	6.99
5.	5.	B1	6.32	6.32
6.	6.	B1	6.14	6.14
7.	7.	B2	5.61	5.61
8.	8.1.	A	13.29	8.34
	8.2.	A	13.29	4.95
9.	9.1.	B	11.80	6.22
	9.2.	B	11.80	5.58
10.	10.1.	B	13.94	4.97
	10.2.	B3	13.94	5.53
	10.3.	A1	13.94	3.45
11.	11.1.	B4	13.77	5.29
	11.2.	C	13.77	2.17
	11.3.	A	13.77	6.31
12.	12.	B	3.50	3.50
13.	13.	A	2.01	2.01
14.	14.	A	3.18	3.18
15.	15.	C	5.25	5.25

⁵¹ There are in this situation the chains from Apoldu de Sus and the Orghidan Collection, as well as the rings attached two by two from Brăduț.

All the items from the analysed treasure were weighed for greater precision with a balance used for numismatic finds. The weighing was repeated for each item in order to ensure the accuracy of the results, which are presented in Table 1 and Graph 1.

In the case of the rings attached by two or three, fortunately it was possible to temporarily detach the items without causing them any damage, with the specific purpose of weighing them. The rings forming small chains received each a label with their catalogue number, were photographed before detaching them, and after being weighed were carefully replaced in exactly the same order as before, using the photographs as a safety backup. Thus, for these groups of rings there are presented in Table 1 both their total weight and the weight of the individual items. The same procedure was applied in the case of the ring having attached the “pendant” (Cat. No. 3), with the observation that the separation was possible only between the complete ring and the “pendant” consisting of two small fragments bent in shape of rings. The “pendant” itself was weighed as one item (see in Table 1 Item No. 3.2-3), as it was very clear that any attempt to detach the two fragments would have been dangerous for their integrity.

Table 2. Weight / number of items.

Weight	Number of items
≤ 2 g	1
≤ 3 g	2
≤ 4 g	3
≤ 5 g	3
≤ 6 g	6
≤ 7 g	5
≤ 8 g	1
≤ 9 g	1
≤ 10 g	1

Leaving aside the two fragmentary rings, which are as expected the lightest “item” (1.97 g), the weights of the rings cover quite a large range of values. The lightest item is only 2.01 g (Cat. No. 13) and the heaviest is 9.73 g (Cat. No. 2). The first impression left by the weight values is that there is no true cluster, with results that can be described as rather scattered between these extremes. Still, it can be noticed that half of the items (11) have weights situated between 5 and 7 g, with another significant number of items (6) with weights between 3 and 5 g (Table 2). The number of very light as well as heavy items is comparatively reduced. There are 3 items (counting also the “pendant”) weighing less than 3 g and 3 items weighing more than 7 g, although a “derogation” could prove to be necessary in the case of one ring (Cat. No. 3). In its case appears the same question expressed above regarding the ring from

Tăuteu which had initially attached a similar combination of two fragmentary rings: if the weight of the items should be considered separately, or they should be seen as one item. In other words the problem to be solved is if and how the weight of this type of rings mattered for their owners. If the “pendant” functioned as some sort of weight supplement, it would be normal to consider the items as one. In that case the weight of the ring Cat. No. 3 would become 7.33 g, sending it in another category.

From these results it can be inferred at least in the case of the treasure Brașov II some sort of preference for items of medium weight, situated especially between 5 and 7 g. That this is not a general trend can be seen when this situation is compared to what happens in the case of other associations of items. Unfortunately, the only terms of direct comparison are offered by the hoard from Tăuteu and partially by the hoard from Brăduț. The five complete rings from Tăuteu, when analysed from the perspective of their weight, leave the impression of representing a selection of almost all the possible weight values: 2.40 g; 3.05 g; 5.90 g; 7.20 g; 10.20 g. To this the weight of 1.20 g of the two fragmentary rings forming the “pendant” could be added. The individual rings from Brăduț are far more clustered but in the same time far lighter: 1 ring with less than 2 g; 3 rings between 2 and 3 g; 2 rings between 3 and 4 g. The other finds, Apoldu de Sus, Brașov I and Orghidan Collection, provided until now only access to their total weight⁵². So at this moment, from the weight perspective, the composition of the treasure Brașov II looks closer to that of the Tăuteu hoard than to that of the Brăduț hoard.

In this situation, the question was if a comparison of the mean values of the rings’ weights could prove itself more expressive (Table 3).

Table 3. The total weight and the mean weight (weight/ring) for the finds with gold notched rings.

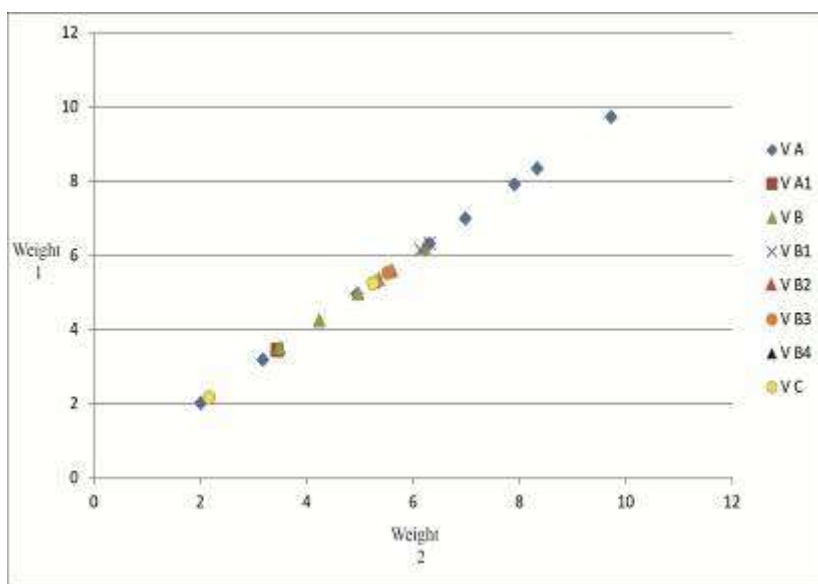
Find	Number of items	Total weight (g)	Mean value (g)
Apoldu de Sus	18	75.27	4.404
Brașov I	4	7	1.75
Brașov II	22/23	121.02	5.50 / 5.26
Brăduț	10 ⁵³	25.15	2.515
Orghidan Collection	11	43.02	3.91
Tăuteu	5/6	29.95	5.99 / 4.99

⁵² As already mentioned, the rings from Apoldu de Sus and the Orghidan Collection are attached to each other; the rings from the treasure Brașov I are not yet published.

⁵³ There were taken into account only the 10 items with published weights. It should also be kept in mind that some of the items, now apparently fragmented, may have been originally heavier (but not a lot heavier, if the weight of the complete items can be used as an indicator).

As it can be noticed, the mean values of weight vary considerably from find to find. Still, some sort of pairing seems to emerge if these values are compared. First, there are finds containing only small light items, as is the case with Braşov I treasure and possibly the Brăduţ hoard. Secondly, there are finds that could be described as containing mainly medium weight rings (also in general with similar dimensions), the chains from Apoldu de Sus and from the Orghidan Collection. Thirdly, there are the finds from Braşov II and Tăuteu which contain rings varying more visibly in weight and size, the presence of bigger heavier items offering an increase of the mean value of the finds' weight.

What was observed in the case of the treasure discussed here is that although the weights of the individual rings vary considerably not the same thing happens to the total weight of the rings attached to each other. With one exception, the two rings under the Cat. No. 9, weighing together 11.80 g, they all cluster between 13.29 g and 13.97 g (Cat. Nos. 2, 8, 10-11). Still, at the present moment it is impossible to say if this situation reflects an intention or is simply a coincidence.



Graph 1. The weight of the gold notched rings from the treasure Braşov II in view of their decoration variant.

If the weight of the rings is considered in relation to their decoration variant (Graph 1), it can be observed the tendency of the rings of variant A to be heavier than the rings of variant B and C (5 items between 6.31 and 9.73 g). Still, there are also exceptions, two rings (Cat. Nos. 13-14) placed by their decoration characteristics in

variant A are some of the lightest items. Also the ring belonging to the related variant A1 (Cat. No. 10.3) is a very light item (3.45 g). From this point of view, the rings belonging to variant B and related variants B1-4 have the most consistent behaviour, with weights between 3.50 and 6.32 g. The two rings belonging to variant C are quite separated by their weight, since one item (Cat. No. 11.2) weighs 2.17 g and the other (Cat. No. 15) weighs 5.25 g. In the same time, very interesting seem to be the two rings belonging to the variant B1 (Cat. Nos. 5-6), which have very similar weights, 6.32 and 6.14 g. Except for them, it is difficult to determine clearly any pairings or clusters.

Dimensions and shape. These two characteristics of the rings will be discussed together, as they are directly related to each other.

From the point of view of their shape, the rings of Brăduț type were described in the archaeological literature as items with a round or rounded shape, made of metal bar thicker in the middle and thinning progressively towards the ends, which are open and pointed⁵⁴. During the process of measuring the rings from the Brașov II treasure, the items were conventionally placed on the working surface in the same position they are usually presented in the photos or drawings, with their ends up and the thicker part of the gold bar down (see photo below). Then, in order to establish their size and in the same time to determine how round they really are, two diameters were measured on the interior of each item and two diameters were measured on the exterior of each item, both vertically and horizontally. For the dimensions of the gold bar itself, again two diameters were measured, in each case on the thinnest point (which proved to be at the end) and on the thickest point (which proved to be in the middle, on the central segment of decoration).

The dimensions of the rings cover quite a large range, as it can be seen in Table 4. Still, as in the case of their weight, the rings belonging to variant A have the tendency to be bigger than the rings belonging to the other variants.

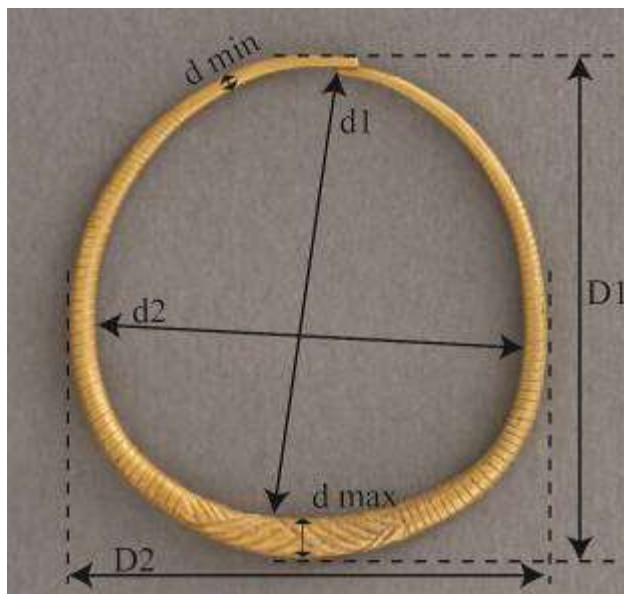
The comparison between the lengths of the vertical and horizontal diameters of the analysed rings proved that none of the measured items is perfectly round in shape. The variation of the relation between the vertical and horizontal diameters results in two shapes: ovoid or egg-shaped (when D1 is longer than D2) and oval (when D1 is shorter than D2). The next step was to see if the shape is up to some point connected to the rings' variant (Table 4).

The rings of type A adopt both the ovoid and the oval shape. From the total of 8 rings belonging to this variant, 3 have ovoid shape. It is possible that another ring of this type (Cat. No. 8.1) belonged initially to this group, its present oval shape being probably created by the ulterior accentuated overlapping of the ends. The other 5

⁵⁴ Dumitrescu 1936, 231; Rusu 1972, 36, Pl. III/2; A. Popescu 2013, 225.

items have a slightly oval shape. The ring belonging to the related variant A1 has an ovoid shape.

- Interior diameters:
 - d1 on the vertical
 - d2 on the horizontal
- Exterior diameters:
 - D1 on the vertical
 - D2 on the horizontal
- Metal bar diameters:
 - d min: on the thinnest part (the end)
 - d max: on the thickest part (the middle)



In the group of the 6 items of variant B 4 rings have an oval shape. To them the 3 rings belonging to related variants B2-4, all with an oval shape, can be added. The other 2 items have a very slight ovoid shape, being almost round (Cat. No. 9.1-2). Still, the most clear ovoid shape for the variant B and related variants is found in the case of the 2 rings belonging to related variant B1.

The 2 rings belonging to variant C have both an oval shape.

The attempt to determine the relation between the diameter of the rings (in this case D1) and their weight gave in general the expected results (Graph 2), with the greatest part of the rings of variant A offering higher values than the other rings. The rings of variant B and related variants create a more convincing cluster, having values closer to each other than it is the case with the variant A rings. Where the graph is really expressive is in showing better the distinctive behaviour of the two rings of related variant B1, which are on one hand brought by the relation diameter-weight in the area occupied by the variant A items and on another hand again very close to each other. At this point these are two items which begin to behave as a pair. This is not the case with the two rings of variant C, which are kept quite apart from each other both by their weight and their dimensions. Instead, another possible pair could be formed by 2 rings belonging to variant B which have very close dimensions, similar shape, and also close weights (Cat. Nos. 9.1-2).

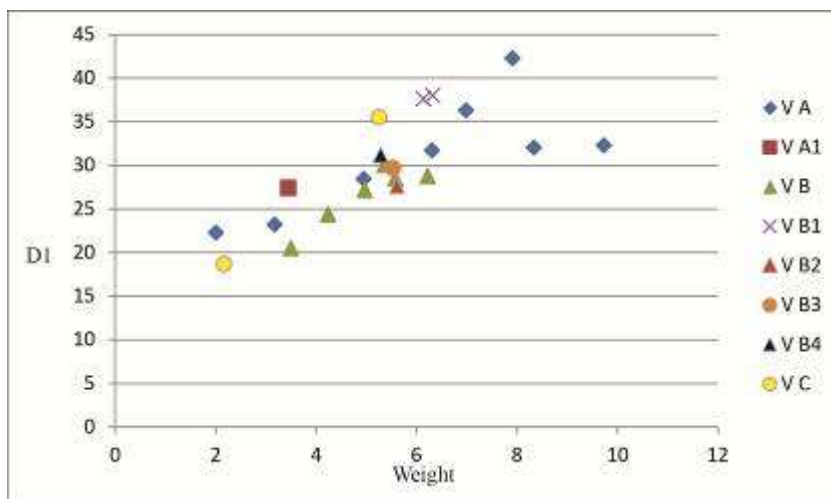
Table 4. The diameters of the notched rings from the Braşov II treasure.

Cat. No.	Variant	Shape	d1 (mm)	d2 (mm)	D1 (mm)	D2 (mm)
1.	A	ovoid	36.40	35.26	42.26	40.22
2.1.	A	ovoid	26.66	25.71	32.28	31.64
2.2.	B	oval	20.27	21.60	24.37	26.64
3.1.	B	oval	24.77	25.79	30.05	31.05
4.	A	ovoid	31.98	30.37	36.28	35.25
5.	B1	ovoid	32.70	30.30	38.01	34.91
6.	B1	ovoid	32.91	30.76	37.60	35.91
7.	B2	oval	22.7	24.39	27.63	29.55
8.1.	A	oval	26.01	27.61	32.04	33.16
8.2.	A	oval	24.54	25.90	28.42	30.53
9.1.	B	ovoid	23.18	22.86	28.80	27.81
9.2.	B	ovoid	23.67	23.00	28.48	27.83
10.1.	B	oval	21.72	22.75	27.16	27.72
10.2.	B3	oval	25.52	26.51	29.70	30.83
10.3.	A1	ovoid	23.17	24.04	27.40	27.14
11.1.	B4	oval	25.93	28.77	31.17	32.84
11.2.	C	oval	14.92	16.63	18.68	20.11
11.3.	A	oval	25.12	25.76	31.70	32.06
12.	B	oval	14.40	18.98	20.51	23.87
13.	A	oval	18.87	21.83	22.27	24.71
14.	A	oval	19.13	22.73	23.21	26.27
15.	C	oval	31.37	31.63	35.52	35.58

It was interesting to notice that a direct relation diameter – weight should not be taken for granted, in the sense that the heaviest item is not necessarily the biggest and vice versa (see for example Cat. Nos. 1 and 2.1): the general thickness of the metal bar clearly plays a role in reaching a certain weight in the case of each ring. In the same time it could be just a coincidence but it should be mentioned that in the case of the variant A the ovoid shape is associated with the heaviest items (Cat. Nos. 1, 2.1, 4, and possibly also 8.1 before its modification).

Technology. The gold notched rings of Brăduţ type were rarely more extensively approached in the archaeological literature from the perspective of their technology of fabrication. One remark on this subject regarded the entire category of notched items, being presumed that both the notched bracelets and the notched rings were cast using the lost wax technique, since the perfectly uniform notches cannot be obtained through

mechanical torsion⁵⁵. The mechanical torsion can be excluded from the start as a method for producing rings of Brăduţ type, as long as the more complicated segments would have been impossible to be obtained through torsion. The question remaining is if the rings of this type were indeed cast using the lost wax technique.



Graph 2. The weight – diameter relation for the notched rings from the treasure Braşov II.

The visual analysis of the rings cannot offer a lot of information, since the items are relatively small and the notches creating the pattern are tiny. Still, the impression left by them is the one noticed by M. Rusu before, that the notches look in general perfectly uniform, and even more, in the special case of the rings of Brăduţ type, the segments with more sophisticated decoration would have been difficult to be worked directly on the metal bar with the necessary degree of precision. But the opportunity of analysing the items under a microscope brought a different perspective on the technology implicated in the creation of this type of rings.

In the case of some of the rings, especially Cat. No. 4, an observation was made which could cast a light on the method used by the goldsmith in order to obtain the gold bar. At the end of the item, on the interior surface, it can be noticed a line running along the gold bar (Fig. 7/5). A similar line could be observed on another category of metal objects, this time made of copper and belonging to an earlier chronological framework, the rings with flat-hammered out-turned or rolled ends (*Ösenringe*). In their case the metal was poured into a groove and resulted in thin, elongated bars⁵⁶. The results of the

⁵⁵ Rusu 1972, 36.

⁵⁶ Butler 2002, 230.

investigations indicated sand casting, but stone moulds could not be completely excluded. The cross-section of the rough cast bar was then reworked to become rounder, the ends of the bar were flattened and curled more or less into loops, then the bar was bent into a ring shape. Most items were found in an annealed state, which would suggest that the final deformation was hot working. But the amount of deformation for bending the ring was determined as being comparatively low, so that also cold deformation would have left only few traces like slip lines if any. In any case, extensive hot working can be excluded⁵⁷ in the case of the *Ösenringe*. The most characteristic aspect of this method is the resulting concave aspect of the interior side of the ring, indicating cooling shrinkage which affected the surface of the initial metal bar. This characteristic is a direct result of using open moulds⁵⁸. Thus, subsequent interventions were required, the margins of the concave area being hammered inwards, in an attempt to diminish the concavity. Still, the grooves remained very often plainly visible, even in the case of ulterior smoothing, the initial groove being transformed into a fine forging seam but without completely disappearing.

It is very possible that this method was used in the case of the gold rings. The advantage is that it is a much simpler method, requiring most probably less time and skill than the lost wax technique, and creating no loss of metal. The thin metal bar would have been poured in a simple open mould and then reworked to cover the shrinkage of the metal on the surface left in contact with the colder air, and to obtain the round cross-section. If this method was indeed used, one remaining question is if the decoration was created at that point or after the bending of the metal bar in shape of a ring. This probably depends on the tool kit the goldsmith had at his disposal, but it is interesting to notice that several items display a certain degree of flattening on the sides (see for example Fig. 8/3), which could indicate the turning of the bar from one side to the other and some pressure applied on it. This would be rather consistent with placing the bar on a harder surface in order to intervene with a tool for decoration, than with placing an already shaped ring on a support and decorating it in this manner. Anyway, the fact that the decoration goes all around the metal bar would have made the last approach more difficult. Another method which would allow the intervention could have implied the use of a vice or a material like resin, for example, to fix the ring in place during decoration.

In any case, the details observed when the decoration itself was analysed come to confirm the use of another method than the lost wax technique. At least all the signs indicate the application of the decoration after the gold bar was cast. This aspect will be briefly discussed below.

⁵⁷ Junk 2003, 170.

⁵⁸ Butler 2002, 231.

Decoration techniques. The analysis through the microscope of the 22 complete items and the 2 fragmentary items indicates that all of them were decorated using most probably a specialised tool kit, with very fine tools. The fine parallel scratches left behind by the tools and observed in all the cases seem consistent with the application of the decoration on an already cast metal bar (for example, Fig. 6/4-5; 7/1; 8/1). The fact that the scratches are considered left by the tools used for decoration and not in the process of removing the soil after the discovery of the items is sustained by the fact that the mineral depositions from the earth superimpose the scratches (Fig. 6/4, 6; 9/6).

Another possible argument resides in the fact that the microscope showed that the pattern is far from perfect: the notches are rarely equal in depth and width, and similarly the spaces left between them are unequal on their entire surface (see for example Fig. 6/5-6; 7/2; 8/1, 3; 11/5). Even more, several errors noticed in the application of the pattern, errors which normally would have been either avoided or corrected in time if the pattern was originally made on wax. In several cases it is visible that the tool slid resulting in an unwanted prolongation of the notch, most noticeably in the case of Cat. No. 13 (Fig. 11/4). On another ring there is a clear error in applying the parallel notches (Cat. No. 6; Fig. 8/3). The most frequent mistake seems to be the unintentional crossing of another element of the pattern. In the case of some of the rings (for example, Cat. Nos. 1, 3.1) it can be seen how the tool used to create a notch was pushed too much and crossed another notch (Fig. 6/4; 7/1).

There seem to be two main methods of obtaining the notches, used to create the parallel notches and respectively the notches forming the most complicated pattern. The parallel notches were most probably created by a repeated intervention on parallel lines across the surface. As a result, in a number of cases a prominent ridge was left behind indicating the limit of each of the (seemingly) two interventions for each individual notch (Fig. 6/5; 8/2). In some other cases, the parallel notches could have been created by a single intervention (Fig. 9/1). The fact that each intervention in its turn looks as the sum of several very fine long lines applied with a similar pressure combined with the presence of the central prominent ridge left behind in some cases makes it possible that the goldsmith used an indented tool rather than a fine pointed one (Fig. 10/3).

The notches which form the more sophisticated pattern were more probably applied with a sharp pointed tool, sometimes in one move (Fig. 7/6) and sometimes prolonging the notch through a series of interventions with the same tool (Fig. 9/3-4).

Although the range of techniques and resulting notches is rather limited the use of the microscope offered the opportunity of sometimes noticing different approaches to similar or almost identical patterns. Even the errors seem in some cases specific for a ring or group of rings. These observations raised the question if through a more detailed research it could not be possible to determine different "hands", in other

words rings coming from the hands of different goldsmiths or at least from different workshops / traditions of decoration. One of the most interesting examples prove to be the two rings belonging to the variant B1, which are made similar to each other and distinctive from the rest not only by their dimensions, weight and pattern, but also by the way that pattern was applied. The technique used is in the same time similar for the both rings (even the slight errors, like the unequal space left between notches) and different from that used for other rings, leaving the strong impression that both rings were made and finished by the same person (Fig. 7/6; 8/1-3 – see in comparison with details for rings belonging to other variants).

An aspect open to misinterpretation on a visual analysis and cleared by the microscope analysis was the apparent wearing out of some of the rings. The first impression was that those items suffered from prolonged use which led to the polishing and partial removal of the decoration in some areas. This interpretation would not have been normally challenged, but the problem was that the affected areas were in contrast with any type of use which could be advanced for this type of rings. The “worn out” areas were mostly located towards the ends of the rings, on the notched segments, and on the lateral parts of the metal bar, more frequently only on one side. If the rings were used as ornaments, either as hair-rings, earrings, fingerings, or parts of a chain, the most polished areas should have been on the interior and/or on the ends. Still, as there is no certainty regarding the real ways of use for this category of finds, it was considered useful to investigate also this situation under the microscope, in the hope of obtaining more information. The result came as a surprise, since the weak representation of the decoration in the analysed areas seems to have nothing to do with any kind of extensive use, being instead a result of the decoration technique. In other words, in the case of several rings the goldsmith took far less pain to obtain a notch of equal depth on the entire circumference of the bar. The result is that in general the “central” part of a notch is far more visible than its “ends” which are almost disappearing (Fig. 6/7; 7/2; 8/4-5; 10/5; 11/5). What it is still unclear is if this was the result of a *recherché* effect, of the lack of experience or work in a hurry, or simply laziness.

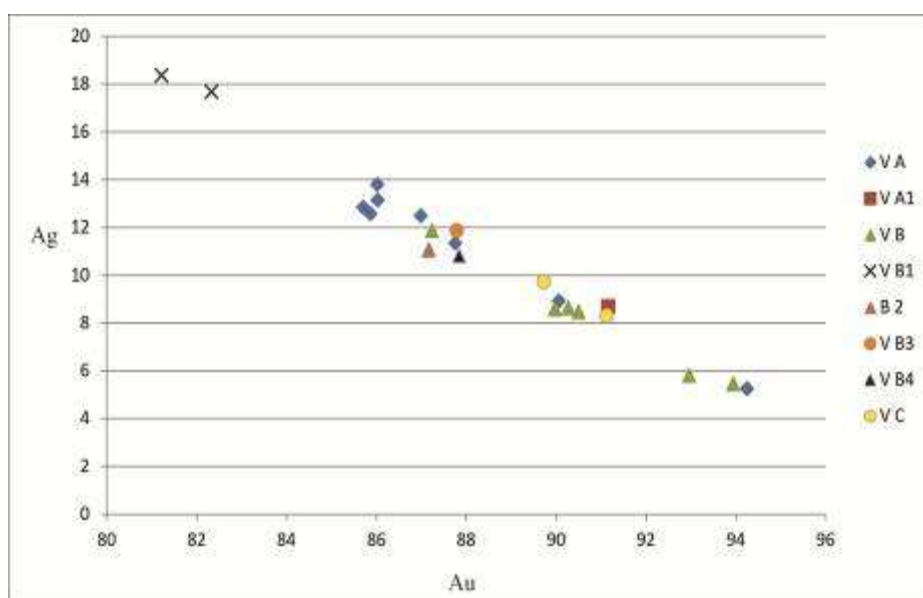
The use of a microscope to analyse in more detail the rings from Braşov II treasure proved to be a real asset to the research. It is the aim of our team to continue to analyse the photos in order to refine and better understand the results obtained so far.

Metal analysis. The notched rings from Braşov II treasure were analysed through the XRF technique, using a portable spectrometer Innov-X Systems Alpha Series, with W anticathode tube; SiPIN diode; Peltier cooling effect; work parameters 40 kV tension, 35 μ A intensity, acquisition time 30”.

The results for the 22 complete rings are presented in Graph 3, the symbols indicating the variant to which they belong. All the analysed items are made of native

gold (electrum), containing different percentages of silver. The gold in the natural alloy ranges from 81.22% to 94.25%. Trace elements were also determined: Cu (only in the spectra – 0.001%); Fe (0.001% – 1.45%); Ni (only in the spectra – 0.001%); Sn (for 2 items: Cat. No. 1 – 0.28%; Cat. No. 8 – 1.27%).

The presence of tin in some of the items and the high percentages of gold in the natural alloy in general could indicate the use of secondary sources (placer gold). Still, a degree of prudence is necessary, given the fact that the analyses were conducted on unprepared surfaces and it was observed that in the case of gold artefacts silver and especially copper are often lost from the surface (the so-called “surface enrichment”)⁵⁹.



Graph 3. The metal composition (Au-Ag) of the gold notched rings from the treasure Braşov II.

The analysis of the metal composition in relation with the rings' decoration variant reveals a trend: the rings belonging to variant B and related variants B2-4 are characterised by higher percentages of gold in the natural alloy than most of the rings belonging to variant A. The two rings of variant C have values which bring them closer to the variant B than to the variant A as a whole. Again very interesting are the two rings of B1 variant, which present both the lowest purity of gold, being very close to each other in the graph and in the same time separated from the other items. This characteristic and those discussed before give these two rings the appearance of behaving like a pair of items.

⁵⁹ Cowell, Hook 2010, 175-176.

Although the trend in the use of gold is present in the graph the resulting clusters are not as clear as to allow a definite conclusion on this subject. The connection between metal composition and variant of the rings is not strong enough to be considered mutually dependent. In other words, it cannot be considered a sign that a specific gold composition was especially searched for when a ring of a specific variant was made. A more natural explanation could be that the rings representing different decoration patterns and techniques were the product of various workshops which would have had most probably access to different sources of gold. Even if they were made in the same workshop this does not necessarily stand against using different sources of gold. The clearest connection remains so far that between the two rings of B1 variant, which seem to have been produced from the same charge of gold and by the same goldsmith.

Function

The subject of the function of the gold notched rings of Brăduț type was briefly discussed quite often in the Romanian archaeological literature, without being reached a clear conclusion. An interesting point is that from the oldest publications of this category of finds on an interpretation as possible pre-monetary signs was almost always present. V. Pârvan describes the 25 gold open rings from Brăduț as “maybe coins”⁶⁰, and the rings from Bihor County as “money-rings”⁶¹. Some years later, discussing the hoard from Tăuteu, F. Ardos considers that the finding place was a bronze workshop, and the gold rings were the payment for the objects made by the craftsman. Because money did not exist during those times, the gold rings, or in some areas even gold ingots used also as jewellery, served as money in the exchange⁶². More prudent, V. Dumitrescu cites V. Pârvan with his opinion on the function of the rings from Tăuteu, without developing the idea or expressing his acceptance of it⁶³. D. Popescu affirms that in general the notched rings are considered as ring money, but considers that they could have played also the role of hair-rings⁶⁴, followed by M. Gramatopol and R. Theodorescu in their discussion on the chain from the Orghidan Collection⁶⁵.

The other line was the one just mentioned, of considering these rings as ornaments for the body. How were exactly worn was more difficult to establish, as they are often described as too small to be worn as bracelets⁶⁶, but in the same time too

⁶⁰ Pârvan 1926, 308.

⁶¹ Pârvan 1926, 404.

⁶² Ardos 1936, 73.

⁶³ Dumitrescu 1936, 232.

⁶⁴ Popescu 1956, 227.

⁶⁵ Gramatopol, Theodorescu 1966, 67.

⁶⁶ Popescu 1956, 227.

big to be interpreted without doubts as hair-rings. Being open rings their use as fingerings was sometimes clearly rejected⁶⁷. Their interpretation as hair-rings is most frequent, as already noticed, followed by attributing to them a function as earrings, or the use of the more general term of "headdress ornaments", especially in those cases when the rings seemed to form pairs⁶⁸.

Their context, the fact that the gold notched rings of Brăduţ type are usually found in treasures and hoards, does not offer unfortunately a lot of information regarding the way they were used. Neither can this information be extracted very easy from their association, their number or their characteristics.

The analysis of the gold notched rings from the Braşov II treasure does not seem, at least at this point of the research, to support their function as pre-monetary signs; their variation in weight, dimensions, decoration, and even metal composition does not look consistent with such a use. This lack of standardisation could be of course only apparent due to the fact that from the statistical point of view the analysed items are far from being representative, so this question must be left open for now.

No traces of use were determined so far that could throw a light on the way these rings could have been worn. The only criteria that can be taken into consideration are those related to their characteristics. As it was already noticed in the archaeological literature, they are too small to be worn as bracelets (even by children) and it is clear that a great number of them are too big to be worn as fingerings. The hypothesis that they were used as headdress ornaments seems to be the safest one. Of course, at this point the analysis of the rings can only prove that they could have been used in a certain way, not that they were really used that way. The characteristics of the rings make it possible for them to be used as hair-rings or more probably as ornaments attached to a headdress made of cloth. Also a little experiment showed that they would have been very wearable and beautiful earrings (Fig. 11/6). There is not any very clear sign that they could have been habitually used in pairs or sets of more than two, but also nothing is against this possibility. Our analysed lot seems to contain both unique items and pairs (Cat. Nos. 5-6 and possibly Cat. Nos. 9.1-2). A more careful research on this subject could bring more possible sets or, on the contrary, could infirm the present impression. Anyway, the search for similarity could prove to be a trap, because there is no certainty that even in the case of sets the symmetry would have been either important or necessary. Taking the example of their use as earrings, there is nothing to say that they could not have been worn only as a single item (for one ear), or in numbers greater than two (more than one earring for one ear), or even in the case of two earrings a

⁶⁷ Dumitrescu 1936, 231.

⁶⁸ Dumitrescu 1936, 231-232.

different model for each ear. Even more, the arrangement in which the rings of this type are often found, as chains, could suggest that they were worn at least in some occasions or by some individuals as such, maybe hanging around the neck or waist, or attached to the clothes or headdresses⁶⁹.

The only clear thing at this point is that there is not enough information to determine how they were used or even if there was a standard of use. It is our hope that future researches on the subject of the gold notched rings of Brăduț type will bring more useful information.

CATALOGUE

1. Ring (Fig. 4/1).

Type: Notched ring of Brăduț type, variant A.

Weight: 7.91 g

Dimensions: *Diameters:* d₁: 36.40 mm; d₂: 35.26 mm; D₁: 42.26 mm; D₂: 40.22 mm; *Cross-section diameters:* d min: 1.09 mm; d max: 3.43 mm

Description: Ring made of gold bar with circular cross-section and tapering ends slightly overlapping. The decoration divides the gold bar into 5 segments: undecorated ends; 2 intermediary segments decorated with circular parallel incisions, perpendicular on the bar's length; 1 central segment more sophisticatedly decorated with groupings of parallel incisions, forming triangles of various sizes. The central segment is further more pointed out by the bar slightly bulging in that area. The ring has an ovoid shape.

Preservation: Good.

2. Two rings attached to each other (Fig. 4/2). Total weight: 13.97 g.

2.1. Type: Notched ring of Brăduț type, variant A.

Weight: 9.73 g

Dimensions: *Diameters:* d₁: 26.66 mm; d₂: 25.71 mm; D₁: 32.28 mm; D₂: 31.64 mm; *Cross-section diameters:* d min: 0.95 mm; d max: 3.46 mm

Description: Ring made of gold bar with circular cross-section and tapering ends with accentuated overlapping. The decoration divides the gold bar into 5 segments: undecorated ends; 2 intermediary segments decorated with circular parallel incisions, perpendicular on the bar's length; 1 central segment more sophisticatedly decorated with groupings of parallel incisions, forming triangles of various sizes. The central segment is further more pointed out by the bar slightly bulging in that area. The ring has an ovoid shape.

Preservation: Good.

⁶⁹ A find which could shed a light on more "unusual" uses of rings, this time hair-rings, is known from the Middle Bronze Age necropolis from Căndești (Monteoru Ia phase): the deceased was wearing a neck-ring like a diadem, placed on the forehead, to which was attached a chain made of bronze hair-rings which surrounded the face, reaching the mandible (Florescu, Florescu 1983, 115).

2.2. Type: Notched ring of Brăduţ type, variant B.

Weight: 4.24 g

Dimensions: *Diameters:* d₁: 20.27 mm; d₂: 21.60 mm; D₁: 24.37 mm; D₂: 26.64 mm; *Cross-section diameters:* d min: 1.18 mm; d max: 2.88 mm

Description: Ring made of gold bar with circular cross-section and tapering ends slightly overlapping. The decoration is divided into 9 segments: undecorated ends; 2 intermediary segments decorated with circular parallel incisions, perpendicular on the bar's length; 2 intermediary segments decorated with oblique incisions forming a "fir tree" pattern perpendicular on the bar's length; 2 intermediary segments decorated with circular parallel incisions, perpendicular on the bar's length; 1 central segment more sophisticatedly decorated with groupings of parallel incisions, forming triangles of various sizes. All three segments with more complex decoration are slightly bulging in comparison with the rest of the gold bar. The ring has an oval shape.

Preservation: Good.

3. Ring with two ring fragments attached to it (Fig. 4/3). The fragments are bent in the shape of small rings of slightly different sizes, intertwined, and attached to the complete ring through the bigger of the two. Total weight: 7.33 g.

3.1. Type: Notched ring of Brăduţ type, variant B.

Weight: 5.36 g

Dimensions: *Diameters:* d₁: 24.77 mm; d₂: 25.79 mm; D₁: 30.05 mm; D₂: 31.05 mm; *Cross-section diameters:* d min: 1.02 mm; d max: 2.95 mm

Description: Ring made of gold bar with circular cross-section and tapering ends close to each other. The decoration is divided into 9 segments: undecorated ends; 2 intermediary segments decorated with circular parallel incisions, perpendicular on the bar's length; 2 intermediary segments decorated with oblique incisions forming a "fir tree" pattern perpendicular on the bar's length; 2 intermediary segments decorated with circular parallel incisions, perpendicular on the bar's length; 1 central segment more sophisticatedly decorated with groupings of parallel incisions, forming triangles of various sizes. All three segments with more complex decoration are slightly bulging in comparison with the rest of the gold bar. The ring has an oval shape.

Preservation: Good.

3.2. Type: Notched ring of Brăduţ type, variant uncertain.

Weight: 1.97 g (total weight of the two ring fragments)

Dimensions: *Diameters:* d₁: 5.95 mm; d₂: 6.50 mm; D₁: 10.14 mm; D₂: 10.26 mm; *Cross-section diameters:* d min: 0.92 mm; d max: 1.98 mm

Description: Fragment of gold bar from a notched ring bent in order to create a small ring. The resulted ring has an almost round shape, with accentuated overlapping of the ends. Given the fact that the fragment used from the original ring represents one of that item's ends, the present ring has one tapering end, undecorated, and one cut or more probably broken end, decorated with circular parallel incisions, perpendicular on the gold bar. The bar has circular cross-section. As more details of the original ring's decoration cannot be determined, it is impossible to draw conclusions regarding its variant. Still, based on the fact that in general the length of the

undecorated ends of the notched rings seems to vary proportionally with their size, the smaller length of this undecorated end could indicate that the original ring was also rather small.

Preservation: Fragment.

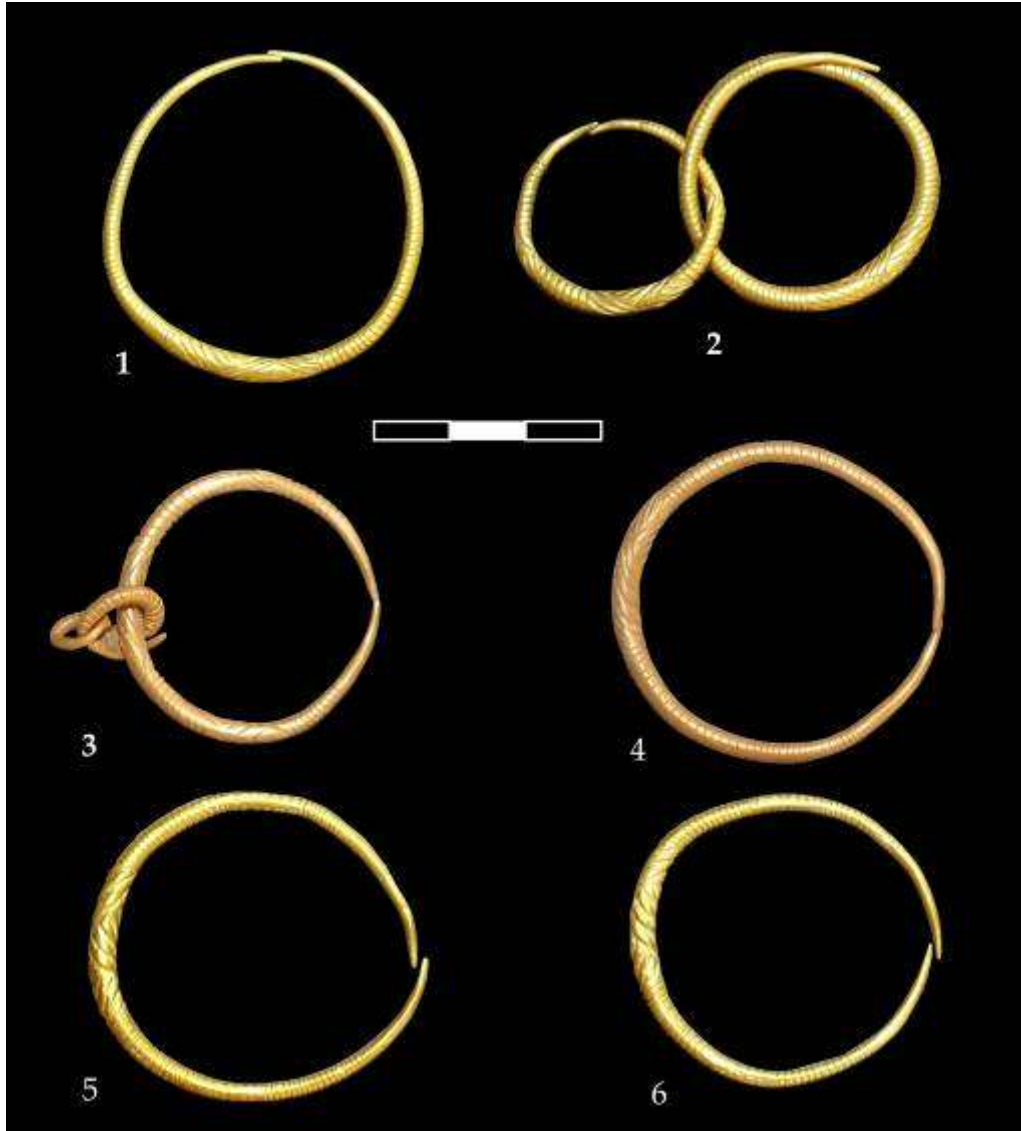


Fig. 4. 1. Cat. No. 1; 2. Cat. No. 2; 3. Cat. No. 3; 4. Cat. No. 4; 5. Cat. No. 5; 6. Cat. No. 6.

3.3. Type: Notched ring of Brăduț type, variant uncertain.

Weight: 1.97 g (total weight of the two ring fragments)

Dimensions: *Diameters:* d₁: 4.24 mm; d₂: 2.92 mm; D₁: 7.04 mm; D₂: 5.61 mm; *Cross-section diameters:* d min: 1.01 mm; d max: 1.74

Description: Fragment of gold bar from a notched ring bent in order to create a very small ring. The resulted ring has an oblong shape, with close ends. Given the fact that the fragment used from the original ring represents one of that item's ends, the present ring has one tapering end, undecorated, and one cut or more probably broken end, decorated with circular parallel incisions, perpendicular on the gold bar. The bar has circular cross-section. As more details of the original ring's decoration cannot be determined, it is impossible to draw conclusions regarding its variant. Similar to the ring discussed above (cat. no. 3.3), the smaller length of the undecorated end could indicate that the original ring was also rather small.

Preservation: Fragment.

4. Ring (Fig. 4/4).

Type: Notched ring of Brăduţ type, variant A.

Weight: 6.99 g

Dimensions: *Diameters:* d₁: 31.98 mm; d₂: 30.37 mm; D₁: 36.28 mm; D₂: 35.25 mm; *Cross-section diameters:* d min: 0.95 mm; d max: 3.07 mm

Description: Ring made of gold bar with circular cross-section and tapering ends slightly overlapping. The decoration divides the gold bar into 5 segments: undecorated ends; 2 intermediary segments decorated with circular parallel incisions, perpendicular on the bar's length; 1 central segment more sophisticatedly decorated with groupings of parallel incisions, forming triangles of various sizes. The central segment is further more pointed out by the bar slightly bulging in that area. The ring has an ovoid shape.

Preservation: Good.

5. Ring (Fig. 4/5).

Type: Notched ring of Brăduţ type, variant B1.

Weight: 6.32 g

Dimensions: *Diameters:* d₁: 32.70 mm; d₂: 30.30 mm; D₁: 38.01 mm; D₂: 34.91 mm; *Cross-section diameters:* d min: 0.87 mm; d max: 3.05 mm

Description: Ring made of gold bar with circular cross-section and tapering ends barely overlapping and a little distanced from each other. The decoration is divided into 9 segments: undecorated ends; 2 intermediary segments decorated with circular parallel incisions, perpendicular on the bar's length; 2 intermediary segments decorated with oblique incisions forming a "fir tree" pattern parallel on the bar's length (the tip of each "tree" pointing towards the end to which is closer to); 2 intermediary segments decorated with circular parallel incisions, perpendicular on the bar's length; 1 central segment more sophisticatedly decorated with groupings of parallel incisions, forming triangles of various sizes. From the three segments with more complex decoration, the main one is slightly bulging in comparison with the rest of the gold bar. The ring has an ovoid shape.

Preservation: Good.

6. Ring (Fig. 4/6).**Type:** Notched ring of Brăduț type, variant B1.**Weight:** 6.14 g**Dimensions:** *Diameters:* d₁: 32.91 mm; d₂: 30.76 mm; D₁: 37.60 mm; D₂: 35.91 mm; *Cross-section diameters:* d min: 0.99 mm; d max: 3.03 mm**Description:** Ring made of gold bar with circular cross-section and tapering ends barely overlapping. The decoration is divided into 9 segments: undecorated ends; 2 intermediary segments decorated with circular parallel incisions, perpendicular on the bar's length; 2 intermediary segments decorated with oblique incisions forming a "fir tree" pattern parallel on the bar's length (the tip of the "tree" pointing towards the end to which is closer to); 2 intermediary segments decorated with circular parallel incisions, perpendicular on the bar's length; 1 central segment more sophisticatedly decorated with groupings of parallel incisions, forming triangles of various sizes. As it is the case of the previous ring's decoration (cat. no. 5), from the three segments with more complex decoration, the main one is slightly bulging in comparison with the rest of the gold bar. The ring has an ovoid shape.**Preservation:** Good.**7. Ring (Fig. 5/1).****Type:** Notched ring of Brăduț type, variant B2.**Weight:** 5.61 g**Dimensions:** *Diameters:* d₁: 22.7 mm; d₂: 24.39 mm; D₁: 27.63 mm; D₂: 29.55 mm; *Cross-section diameters:* d min: 1.13 mm; d max: 3.07 mm**Description:** Ring made of gold bar with circular cross-section and tapering ends barely overlapping. The decoration is divided into 9 segments: undecorated ends; 2 intermediary segments decorated with circular parallel incisions, perpendicular on the bar's length; 2 intermediary segments decorated with oblique incisions forming a "fir tree" pattern parallel on the bar's length (the tip of the "tree" pointing towards the main decoration segment); 2 intermediary segments decorated with circular parallel incisions, perpendicular on the bar's length; 1 central segment more sophisticatedly decorated with groupings of parallel incisions, forming triangles of various sizes. The three segments with more complex decoration are not further evidenced through any bulging of the gold bar. The ring has an oval shape.**Preservation:** Good.**8. Two rings attached to each other (Fig. 5/2). Total weight: 13.29 g.****8.1. Type:** Notched ring of Brăduț type, variant A.**Weight:** 8.34 g**Dimensions:** *Diameters:* d₁: 26.01 mm; d₂: 27.61 mm; D₁: 32.04 mm; D₂: 33.16 mm; *Cross-section diameters:* d min: 1.48 mm; d max: 3.18 mm**Description:** Ring made of gold bar with circular cross-section and tapering ends markedly overlapping. The decoration divides the gold bar into 5 segments: undecorated ends; 2 intermediary segments decorated with circular parallel incisions, perpendicular on the bar's length; 1 central segment more sophisticatedly decorated with groupings of parallel incisions, forming triangles of various sizes. The central segment is further more pointed out by the bar

slightly bulging in that area. The ring has an oval shape, due also to the fact that the ends were made to overlap much more than in the case of other rings belonging to this variant.

Preservation: Good, the decoration is very visible.

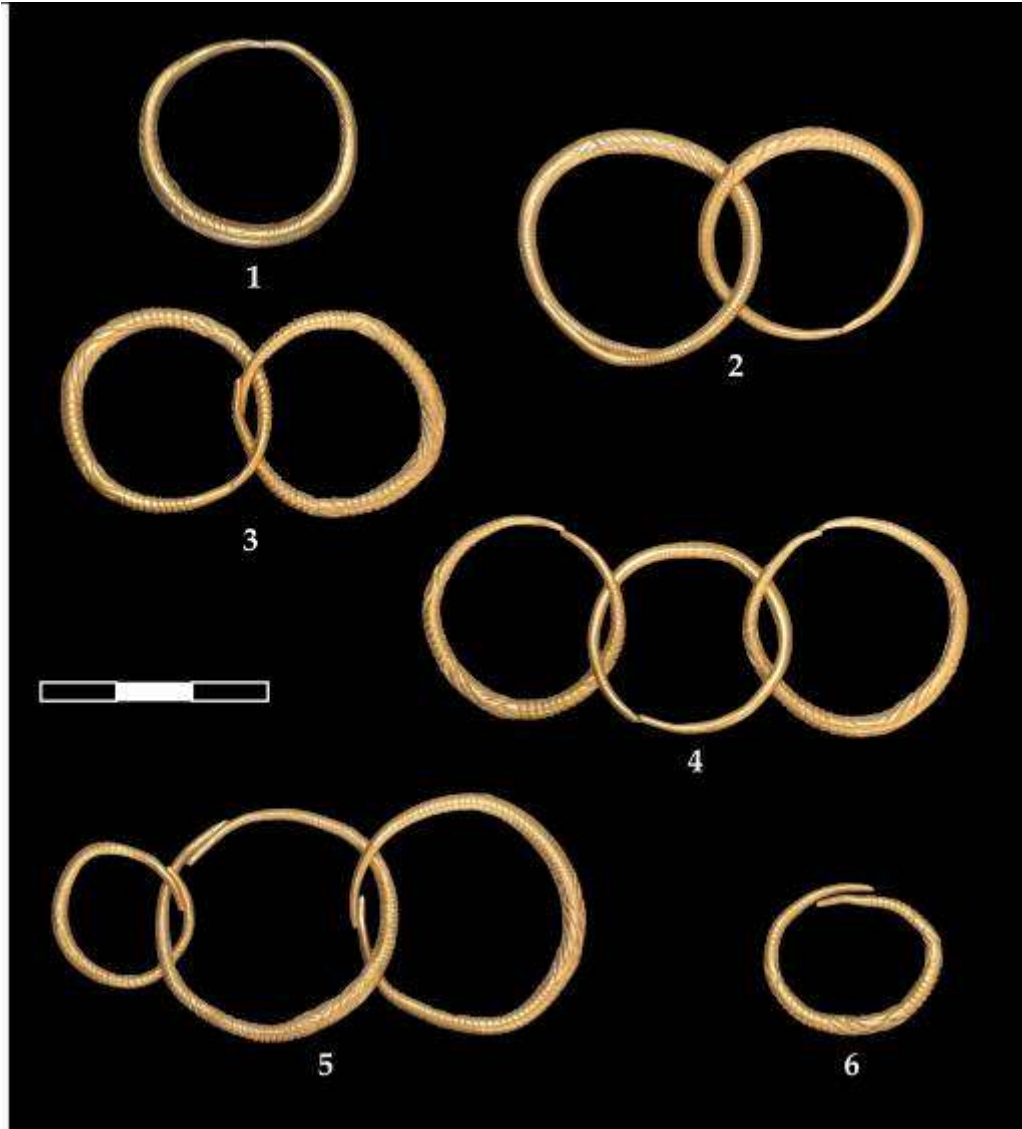


Fig. 5. 1. Cat. No. 7; 2. Cat. No. 8; 3. Cat. No. 9; 4. Cat. No. 10; 5. Cat. No. 11; 6. Cat. No. 12.

8.2. Type: Notched ring of Brăduţ type, variant A.

Weight: 4.95 g

Dimensions: *Diameters:* d₁: 24.54 mm; d₂: 25.90 mm; D₁: 28.42 mm; D₂: 30.53 mm; *Cross-section diameters:* d min: 1.20 mm; d max: 2.89 mm

Description: Ring made of gold bar with circular cross-section and tapering ends close to each other. The decoration divides the gold bar into 5 segments: undecorated ends; 2 intermediary segments decorated with circular parallel incisions, perpendicular on the bar's length; 1 central segment more sophisticatedly decorated with groupings of parallel incisions, forming triangles of various sizes. The central segment is further more pointed out by the bar slightly bulging in that area. The ring has a slightly oval shape.

Preservation: Good.

9. Two rings attached to each other (Fig. 5/3). Total weight: 11.80 g.

9.1. Type: Notched ring of Brăduț type, variant B.

Weight: 6.22 g

Dimensions: *Diameters:* d₁: 23.18 mm; d₂: 22.86 mm; D₁: 28.80 mm; D₂: 27.81 mm; *Cross-section diameters:* d min: 1.20 mm; d max: 3.16 mm

Description: Ring made of gold bar with circular cross-section and tapering ends slightly overlapping. The decoration is divided into 9 segments: undecorated ends; 2 intermediary segments decorated with circular parallel incisions, perpendicular on the bar's length; 2 intermediary segments decorated with oblique incisions forming a "fir tree" pattern perpendicular on the bar's length; 2 intermediary segments decorated with circular parallel incisions, perpendicular on the bar's length; 1 central segment more sophisticatedly decorated with groupings of parallel incisions, forming triangles of various sizes. All three segments with more complex decoration are slightly bulging in comparison with the rest of the gold bar. The ring has an oval shape.

Preservation: Good.

9.2. Type: Notched ring of Brăduț type, variant B.

Weight: 5.58 g

Dimensions: *Diameters:* d₁: 23.67 mm; d₂: 23.00 mm; D₁: 28.48 mm; D₂: 27.83 mm; *Cross-section diameters:* d min: 0.99 mm; d max: 2.95 mm

Description: Ring made of gold bar with circular cross-section and tapering ends slightly overlapping. The decoration is divided into 9 segments: undecorated ends; 2 intermediary segments decorated with circular parallel incisions, perpendicular on the bar's length; 2 intermediary segments decorated with oblique incisions forming a "fir tree" pattern perpendicular on the bar's length; 2 intermediary segments decorated with circular parallel incisions, perpendicular on the bar's length; 1 central segment more sophisticatedly decorated with groupings of parallel incisions, forming triangles of various sizes. All three segments with more complex decoration are slightly bulging in comparison with the rest of the gold bar. The ring has an oval shape.

Preservation: Good.

10. Three rings attached to each other, in the succession cat. nos. **10.2**, **10.3**, **10.1** (Fig. 5/4). Total weight: 13.95 g.

10.1. Type: Notched ring of Brăduț type, variant B.

Weight: 4.97 g

Dimensions: Diameters: d₁: 21.72 mm; d₂: 22.75 mm; D₁: 27.16 mm; D₂: 27.72 mm; **Cross-section diameters:** d min: 0.94 mm; d max: 2.70 mm

Description: Ring made of gold bar with circular cross-section and tapering ends slightly overlapping. The decoration is divided into 9 segments: undecorated ends; 2 intermediary segments decorated with circular parallel incisions, perpendicular on the bar's length; 2 intermediary segments decorated with oblique incisions forming a "fir tree" pattern perpendicular on the bar's length; 2 intermediary segments decorated with circular parallel incisions, perpendicular on the bar's length; 1 central segment more sophisticatedly decorated with groupings of parallel incisions, forming triangles of various sizes. All three segments with more complex decoration are slightly bulging in comparison with the rest of the gold bar. The ring has an oval shape.

Preservation: Good.

10.2. Type: Notched ring of Brăduţ type, variant B3.

Weight: 5.53 g

Dimensions: Diameters: d₁: 25.52 mm; d₂: 26.51 mm; D₁: 29.70 mm; D₂: 30.83 mm; **Cross-section diameters:** d min: 1.02 mm; d max: 2.85 mm

Description: Ring made of gold bar with circular cross-section and tapering ends close to each other. The decoration is divided into 9 segments: undecorated ends; 2 intermediary segments decorated with circular parallel incisions, perpendicular on the bar's length; 2 intermediary segments more sophisticatedly decorated with groupings of parallel incisions, forming triangles of various sizes; 2 intermediary segments decorated with circular parallel incisions, perpendicular on the bar's length; 1 central segment more sophisticatedly decorated with groupings of parallel incisions, forming triangles of various sizes. All three segments with more complex decoration are slightly bulging in comparison with the rest of the gold bar. The ring has an oval shape.

Preservation: Good.

10.3. Type: Notched ring of Brăduţ type, variant A1.

Weight: 3.45 g

Dimensions: Diameters: d₁: 23.17 mm; d₂: 24.04 mm; D₁: 27.40 mm; D₂: 27.14 mm; **Cross-section diameters:** d min: 1.06; d max: 2.48 mm

Description: Ring made of gold bar with circular cross-section and tapering ends close to each other. The decoration divides the gold bar into 5 segments: undecorated ends; 2 intermediary segments decorated with circular parallel incisions, perpendicular on the bar's length; 1 limited central segment decorated with a "fir tree" pattern, parallel with the bar's length, running on one side of the ring to the right, and on the other side to the left. The ring has a slightly ovoid shape.

Preservation: Good.

11. Three rings attached to each other, in the succession cat. nos. **11.2, 11.1, 11.3** (Fig. 5/5). Total weight: 13.77 g.

11.1. Type: Notched ring of Brăduţ type, variant B4.

Weight: 5.29 g

Dimensions: Diameters: d₁: 25.93 mm; d₂: 28.77 mm; D₁: 31.17 mm; D₂: 32.84 mm; **Cross-section diameters:** d min: 1.02 mm; d max: 2.90 mm

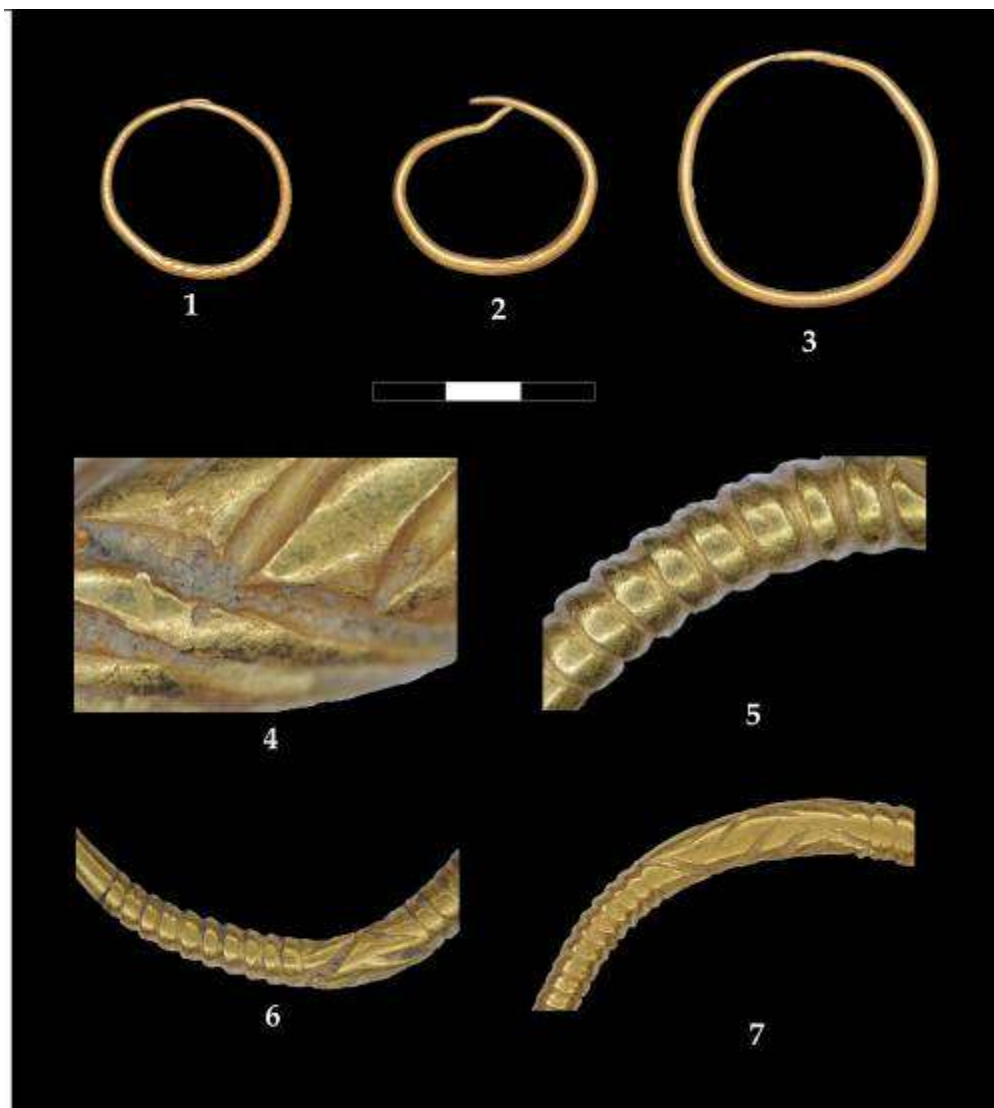


Fig. 6. 1. Cat. No. 13; 2. Cat. No. 14; 3. Cat. No. 15; 4. Detail (Cat. No. 1); 5-6. Details (Cat. No. 2.2); 7. Detail (Cat. No. 3).

Description: Ring made of gold bar with circular cross-section and tapering overlapping ends. The decoration is divided into 9 segments: undecorated ends; 2 intermediary segments decorated with circular parallel incisions, perpendicular on the bar's length; 2 intermediary segments decorated with oblique incisions forming a "fir tree" pattern perpendicular on the bar's length; 2 intermediary segments decorated with circular parallel incisions, perpendicular on the bar's length; 1 central segment more sophisticatedly decorated with groupings of parallel

incisions, forming triangles of various sizes. In fact it is very similar to the variant B rings, except for the fact that the segments with more complex decoration are not so visibly marked through the bulging of the gold bar. The ring has an oval shape.

Preservation: Good.

11.2. Type: Notched ring of Brăduţ type, variant C.

Weight: 2.17 g

Dimensions: Diameters: d₁: 14.92 mm; d₂: 16.63 mm; D₁: 18.68 mm; D₂: 20.11 mm; **Cross-section diameters:** d min: 0.97 mm; d max: 2.20 mm

Description: Ring made of gold bar with circular cross-section and tapering overlapping ends. The decoration is divided into 3 segments: undecorated ends; 1 extended central segment decorated with circular parallel incisions, perpendicular on the gold bar. The ring has an oval shape.

Preservation: Good.

11.3. Type: Notched ring of Brăduţ type, variant A.

Weight: 6.31 g

Dimensions: Diameters: d₁: 25.12 mm; d₂: 25.76 mm; D₁: 31.70 mm; D₂: 32.06 mm; **Cross-section diameters:** d min: 1.22 mm; d max: 3.27 mm

Description: Ring made of gold bar with circular cross-section and tapering ends slightly overlapping. The decoration divides the gold bar into 5 segments: undecorated ends; 2 intermediary segments decorated with circular parallel incisions, perpendicular on the bar's length; 1 central segment more sophisticatedly decorated with groupings of parallel incisions, forming triangles of various sizes. The central segment is further more pointed out by the bar slightly bulging in that area. The ring has a very slight oval shape.

Preservation: Good.

12. Ring (Fig. 5/6).

Type: Notched ring of Brăduţ type, variant B.

Weight: 3.50 g

Dimensions: Diameters: d₁: 14.40 mm; d₂: 18.98 mm; D₁: 20.51 mm; D₂: 23.87 mm; **Cross-section diameters:** d min: 1.04 mm; d max: 2.66 mm

Description: Ring made of gold bar with circular cross-section and tapering ends slightly overlapping. The decoration is divided into 9 segments: undecorated ends; 2 intermediary segments decorated with circular parallel incisions, perpendicular on the bar's length; 2 intermediary segments decorated with oblique incisions forming a "fir tree" pattern perpendicular on the bar's length; 2 intermediary segments decorated with circular parallel incisions, perpendicular on the bar's length; 1 central segment more sophisticatedly decorated with groupings of parallel incisions, forming triangles of various sizes. All three segments with more complex decoration are slightly bulging in comparison with the rest of the gold bar. The ring has an oval shape and it is comparatively small.

Preservation: Good.

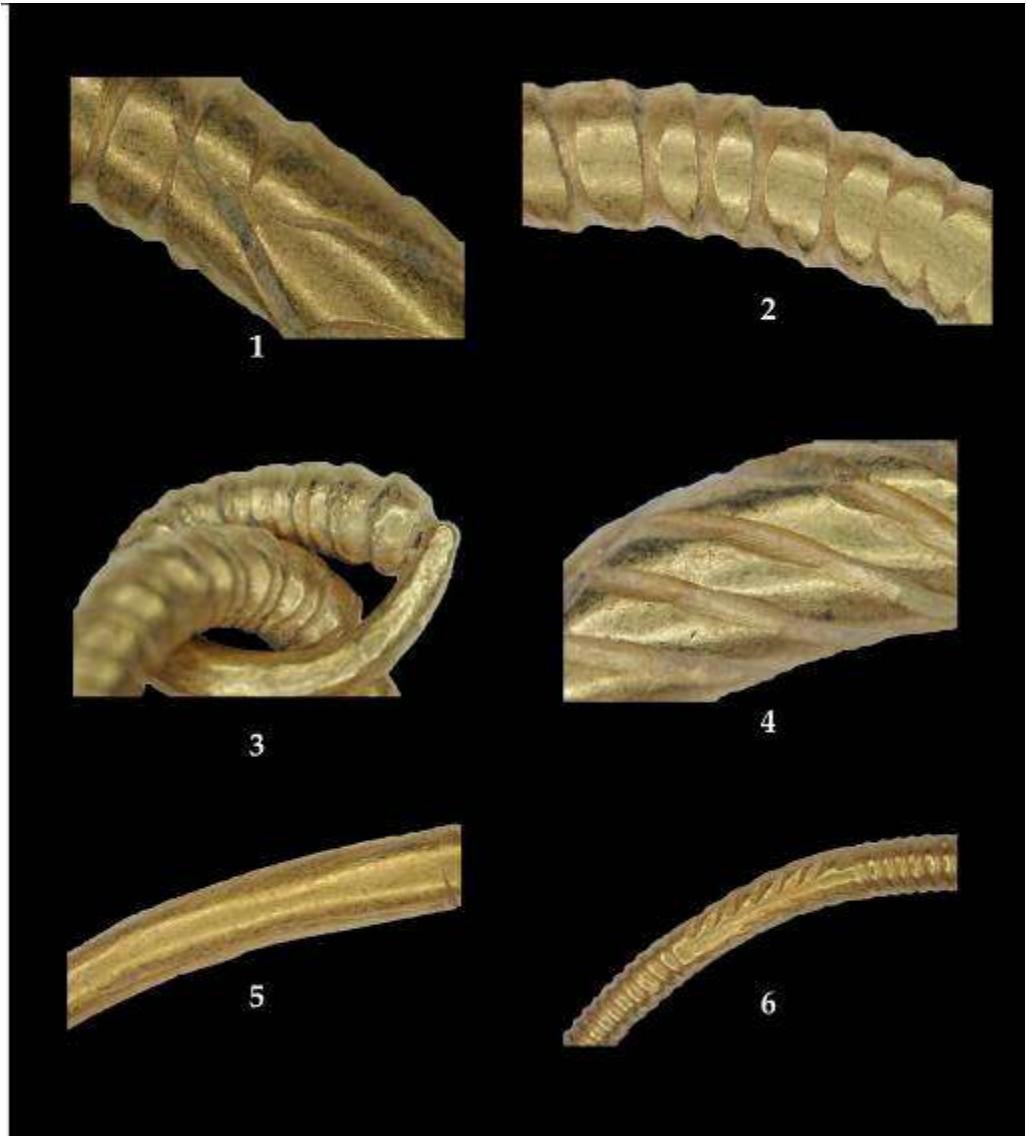


Fig. 7. 1-2. Details (Cat. No. 3); 3. Detail (Cat. Nos. 3.2-3); 4-5. Details (Cat. No. 4); 6. Detail (Cat. No. 5).

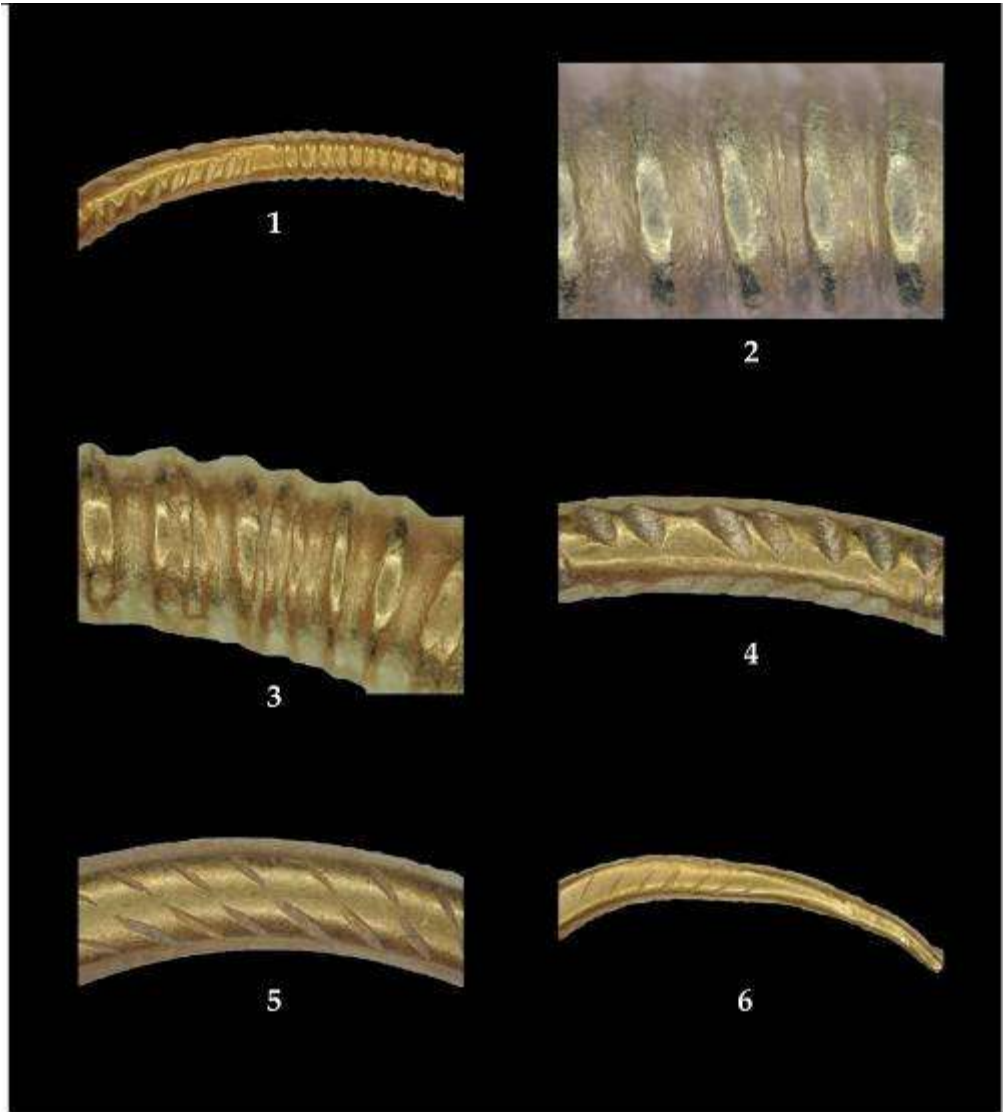


Fig. 8. 1-2. Details (Cat. No. 5); 3-4. Details (Cat. No. 6); 5-6. Details (Cat. No. 7)

13. Ring (Fig. 6/1).

Type: Notched ring of Brăduţ type, variant A.

Weight: 2.01 g

Dimensions: *Diameters:* d_1 : 18.87 mm; d_2 : 21.83 mm; D_1 : 22.27 mm; D_2 : 24.71 mm; *Cross-section diameters:* d min: 1.07; d max: 1.96 mm

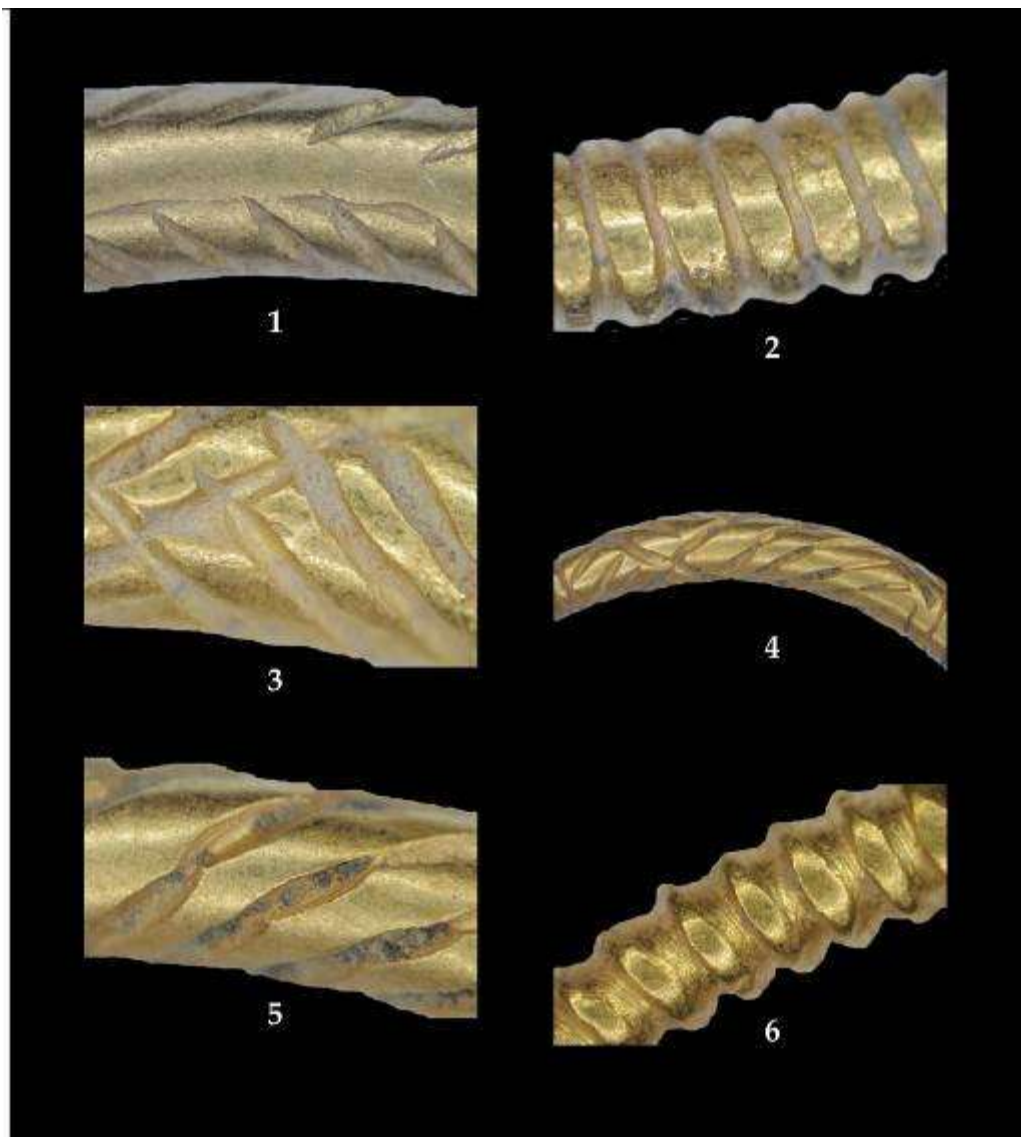


Fig. 9. 1. Detail (Cat. No. 7); 2-3. Details (Cat. No. 8.1); 4-5. Details (Cat. No. 8.2); 6. Detail (Cat. No. 9.1).

Description: Ring made of gold bar with circular cross-section and tapering ends slightly overlapping, but distanced from each other. The decoration divides the gold bar into 5 segments: undecorated ends; 2 intermediary segments decorated with circular parallel incisions, perpendicular on the bar's length; 1 central segment more sophisticatedly decorated with

groupings of parallel incisions, forming triangles of various sizes. The central segment is further more pointed out by the bar slightly bulging in that area. The ring has an oval shape. It is very small and the bar is very thin.

Preservation: Good.

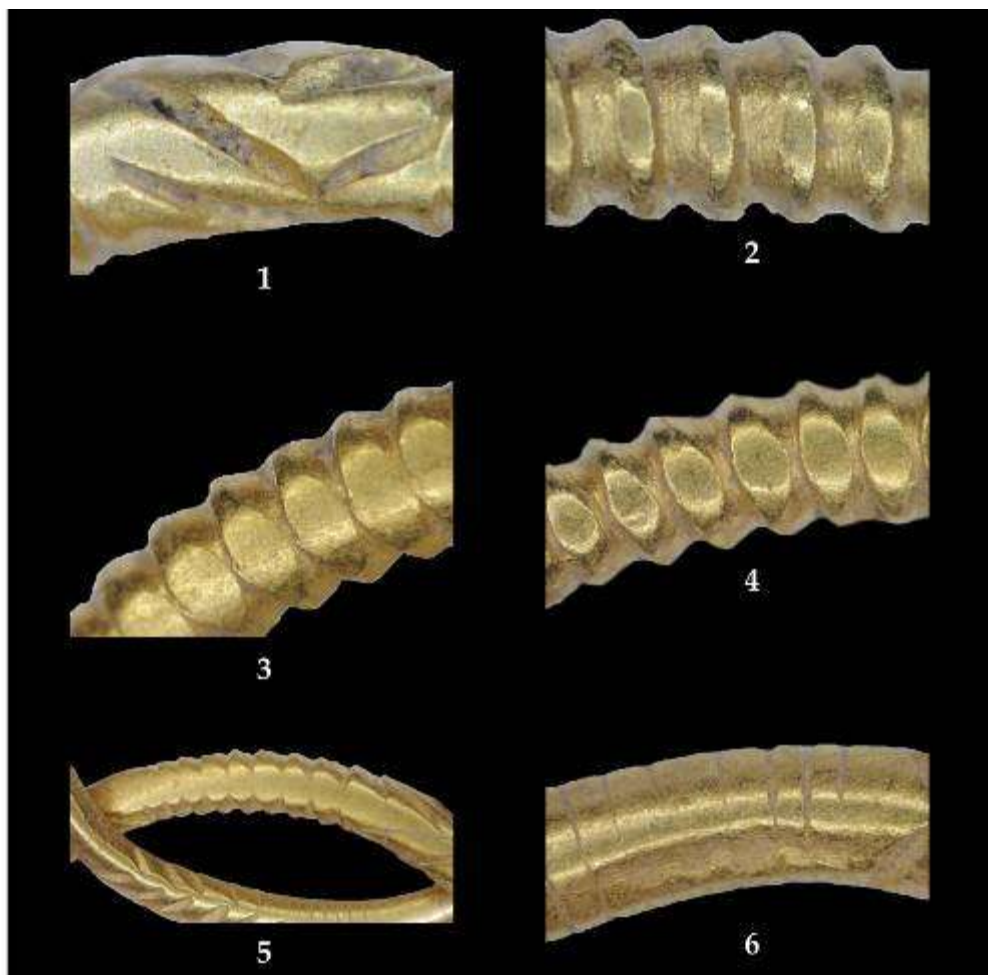


Fig. 10. 1-2. Details (Cat. No. 9.1); 3-4. Details (Cat. No. 9.2); 5. Detail (Cat. No. 10.2); 6. Detail (Cat. No. 10.3).

14. Ring (Fig. 6/2)

Type: Notched ring of Brăduţ type, variant A.

Weight: 3.18 g

Dimensions: *Diameters:* d₁: 19.13 mm; d₂: 22.73 mm; D₁: 23.21 mm; D₂: 26.27 mm; *Cross-section diameters:* d min: 1.08 mm; d max: 2.16 mm

Description: Ring made of gold bar with circular cross-section and tapering ends slightly overlapping. The decoration divides the gold bar into 5 segments: undecorated ends; 2 intermediary segments decorated with circular parallel incisions, perpendicular on the bar's length; 1 central segment more sophisticatedly decorated with groupings of parallel incisions, forming triangles of various sizes. The central segment is further more pointed out by the bar slightly bulging in that area. The ring has an oval shape. It is small and the bar is very thin.

Preservation: Good, but one of the ends is twisted.

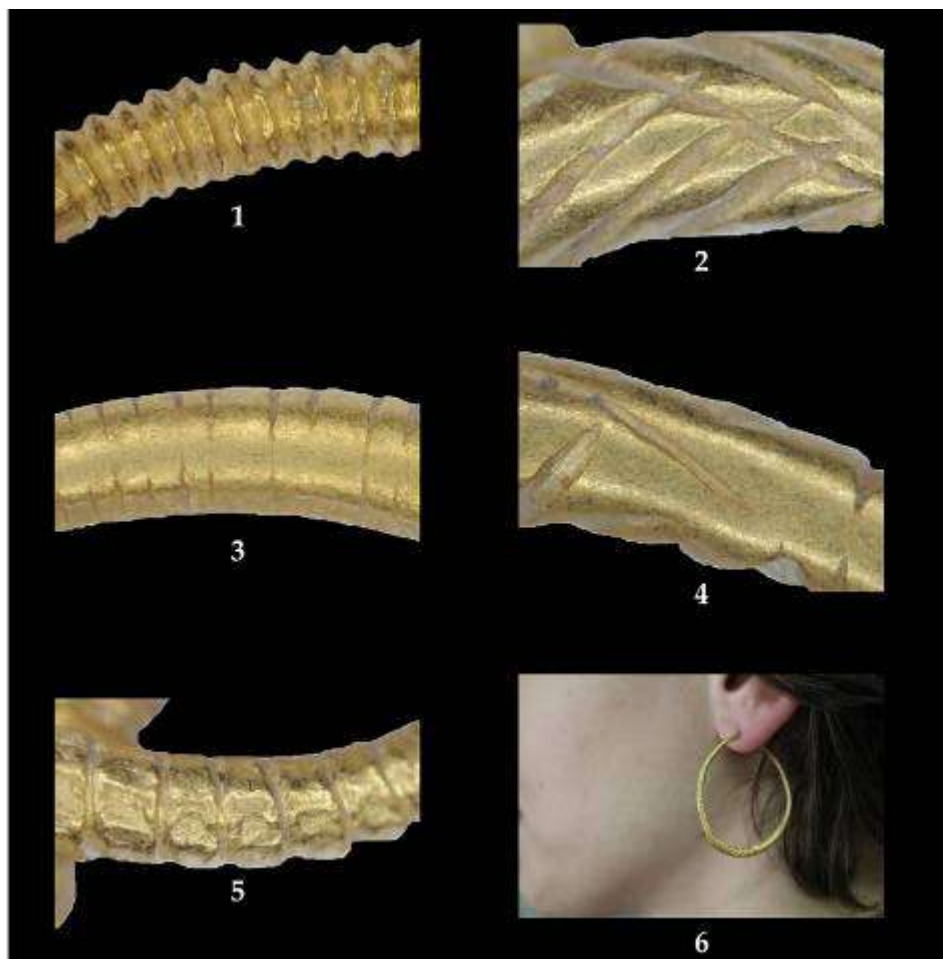


Fig. 11. 1. Detail (Cat. No. 11.1); 2. Detail (Cat. No. 11.2); 3. Detail (Cat. No. 11.3); 4. Detail (Cat. No. 14); 5. Detail (Cat. No. 13); 6. Possible use of the notched rings as earrings.

15. Ring (Fig. 6/3).

Type: Notched ring of Brăduț type, variant C.

Weight: 5.25 g

Dimensions: Diameters: d₁: 31.37 mm; d₂: 31.63 mm; D₁: 35.52 mm; D₂: 35.58 mm; **Cross-section diameters:** d min: 0.95 mm; d max: 2.22 mm

Description: Ring made of gold bar with circular cross-section and tapering ends, slightly overlapping. The decoration is divided into 3 segments: undecorated ends; 1 extended central segment decorated with circular parallel incisions, perpendicular on the gold bar. The ring has an oval shape.

Preservation: Good.

Bibliography

- Ardos, F. 1936, *Date arheologice privitoare la Oradea și județul Bihor*, Familia 3, 4, 61-76
- Butler, J.J. 2002, *Ingots and Insights: Reflections on Rings and Ribs*, in Bartelheim, M., Pernicka, E., Krause, R. (Hrsg.), *Die Anfänge der Metallurgie in der alten Welt*, Verlag Marie Leidorf, Freiberg, 229-243.
- Cowell, M.R., Hook, D.R., 2010, *The analysis of metal artefacts*, in Johns, C., *The Hoxne Late Roman Treasure. Gold Jewellery and Silver Plate*, The British Museum Press, London, 175-183.
- Dumitrescu, V. 1936, *Le depot de la fin de l'âge du bronze découvert à Tăuteni*, Dacia 5-6, 225-234.
- Florescu, M., Florescu, A. 1983, *Cercetările arheologice de la Cîndești – Coasta Banului, com. Dumbrăveni, jud. Vrancea*, Materiale 15, 112-123.
- Gramatopol, M., Theodorescu, R. 1966, *Vechi podoabe de aur în colecțiile Cabinetului Numismatic al Academiei Republicii Socialiste România*, Studii și Cercetări de Istoria Artei, Seria Arta plastică 13, 1, 63-95.
- Junk, M. 2003, *Material properties of copper alloys containing arsenic, antimony, and bismuth. The material of Early Bronze Age ingot torques*, Freiberg.
- Luca, S.A., Pinter, Z.K., Georgescu, A. 2003, *Repertoriul arheologic al județului Sibiu. Situri, monumente arheologice și istorice*, Bibliotheca Septemcastrensis 3, Ed. Economică, Sibiu.
- Mozsolics, A. 1973, *Bronze- und Goldfunde des Karpatenbeckens. Depotfund horizonte von Forró und Ópályi*, Budapest.
- Müller-Karpe, H. 1959, *Beiträge zur Chronologie der Urnenfelderzeit nördlich und südlich der Alpen*, Berlin.
- Oanță-Marghitu, R. 2013, *Depozitul de la Tăuteu, jud. Bihor*, Cat. No. 35.1-35.5, in Oanță-Marghitu, R. (ed.), *Aurul și argintul antic al României, Catalog de Expoziție*, Muzeul Național de Istorie a României, București, 224.
- Pârvan, V. 1926, *Getica*, București.
- Petrescu-Dîmbovița, M. 1961, *Date noi cu privire la depozitul de bronzuri de la Tăuteu (r. Marghita, reg. Crișana)*, ArhMold 1, 81-114.

- Petrescu-Dîmbovița, M. 1977, *Depozitele de bronzuri din România*, București.
- Popescu, D. 1956, *Prelucrarea aurului în Transilvania înainte de cucerirea romană*, Materiale 2, 196-250.
- Popescu, D. 1962, *Asupra unor tezaure de aur din epoca bronzului*, SCIV 13, 1, 399-412
- Popescu, A. 2013, *Lanț compus din verigi de tip Brăduț, Apoldu de Sus, Miercurea Sibiului, jud. Sibiu*, Cat. No. 36, in Oanță-Marghitu, R. (ed.), *Aurul și argintul antic al României, Catalog de Expoziție*, Muzeul Național de Istorie a României, București, 225.
- Rusu, M. 1972, *Considerații asupra metalurgiei aurului din Transilvania în Bronz D și Hallstatt A*, ActaMN 9, 29-63.
- Țârlea, A., Popescu, A. 2013, *Depozitul de la Tăuteu, jud. Bihor*, Cat. No. 35, Oanță-Marghitu, R. (ed.), *Aurul și argintul antic al României, Catalog de Expoziție*, Muzeul Național de Istorie a României, București, 223.