

## AT THE END OF THE LINE: TWO ÖSENRING HOARDS FROM ROMANIA

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The aim of this article is to present several rings with flat-hammered out-turned or rolled ends, which were part of two small hoards from Maglavit, jud. Dolj, and Predeal, jud. Prahova, belonging to the collections of the National Museum of Romanian History.

Several different terms were used for naming this category of finds in the archaeological literature, as various criteria or combinations of criteria were taken into consideration, like, for example, the typology of the rings, their find context and/or their possible functions. Different opinions on the role and importance of such criteria led to a certain degree of inconsistency in the terminology, which can be noticed in the German, as well as in the English-written works on this subject.

For the present article we have decided to follow the example of other authors (e.g. Butler 1978; Höppner *et al.* 2005; Niederschlag *et al.* 2003; Vandkilde 2005), and use the German term *Ösenring*, considering it the most appropriate one, due to its neutral and descriptive character.

### Catalogue

1. **Maglavit, jud. Dolj** (Pl. 7/1). Hoard found before or in 1939, when it became part of the collection of the National Museum of Antiquities in Bucharest (Muzeul Național de Antichități – MNA)<sup>1</sup>. It is mentioned briefly for the first time in the same year by D. Berciu in his book *Arheologia preistorică a Olteniei*, in

which he included the find in the chapter concerning the Middle and Late Bronze Age, as a single find, cat. no. 10: 'After completing the present book an interesting hoard from Maglavit – Dolj was exhibited at the National Museum of Antiquities, consisting of several bracelets of different kinds' (1939, 139). There are no drawings or photos, or any other details. Another brief mention is made years later by I. Nestor and M. Petrescu-Dîmbovița, the authors being the first to state that the hoard, consisting of 'ingot rings' was 'found quite long ago', probably at Maglavit, and was still unpublished, (1960, 118), without specifying their number or other characteristics. Several objects, with Maglavit as their find place, were analysed as part of the SAM project: 5 *Ösenhalsringe* (8776-8780); 1 *Ring, offen, dreikantig* (8772); 4 *Armspiralen*, with 24, 6, 10 and 16 spirals (8781-8784) (Junghans *et al.* 1968, 244-247). The hoard is published by M. Petrescu-Dîmbovița in his book *Depozitele de bronzuri din România* (1977, 48, pl. 17/11-16, 18/1-8), where it is included in the group of the Middle Bronze Age hoards. Although the only cited bibliographical reference is the book of Berciu, who presented the find as a bracelet hoard, Petrescu-Dîmbovița gives the following content: 6 'neck rings' with round or plan-convex cross-section (4 made of copper, 1 made of bronze, 1 made of copper or bronze); 1 bronze bracelet with open, but near ends, made of a metal band with plan-convex cross-section; 7 spiral bracelets, complete and fragmentary, with simple ends or lozenge-shaped endings (2 made of copper, 2 made of bronze, 3 made of copper or bronze). The metal composition of the objects is given based on the SAM analyses, and all the objects have corresponding drawings. Although the hoard is mentioned fairly frequently in the literature after Petrescu-Dîmbovița's publication, it is only used to offer chronological or typological

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frameworks for other finds and is not discussed in its own right. In the present paper, only the Ösenringe will be presented.

### 1. Ösenring (Pls. 1/1; 4/1)

*Description:* It is made of a massive metal bar, with an U-shaped to semicircular cross-section. The exterior side has a facet on the central edge, which runs along the bar disappearing at the hammered ends. The ends are flattened broader than the bar and rolled, their tips touching the bar. The interior side is shrunken.

*Technical details:* The bar was cast in an open mould. The interior side indicates cooling shrinkage and signs of reworking (Pl. 3/1). The margins of the shrunken area were hammered inwards, in order to diminish the opening and to round off the bar. One half of the bar was hammered better than the other, which still presents a deep narrow groove. The central part of the interior shows, in addition to hammering, attempts of smoothing the surface. The ends were hammered flat and turned out. The surface is rather smooth, but shows some porosity, especially towards the ends and on the edges between the exterior and interior sides. It is covered with a dark green - blackish patina.

*Modern interventions:* Small round hole on one lateral side, close to one of the ends, the drill practically traversing the bar; presently filled with wax similar in colour with the item's patina (sample for the SAM project). Analyses: SAM (one of the nos. 8777-8780); Romarchaeomet<sup>2</sup>

*Dimensions:* Maximum diameter: 12.85 cm; distance between the ends (opening): 8.2 cm; maximum thickness: 1.0 cm; weight: 91.122 g

*Location:* Muzeul Național de Istorie a României – MNIR (inv. no. 14058)

### 2. Ösenring (Pls. 1/2; 4/2)

*Description:* It is made of a thin metal bar with round cross-section. The ends are flat and narrow, with sharp tips looking like hooks, and are very close to each other.

*Technical details:* The bar was most probably cast in an open mould; the forging seam is not visible anymore, but there are signs of smoothing on the interior side (Pl. 3/2). The ends were hammered flat and turned out into hooks. The surface is covered in a dark green patina, with light green and blackish spots. In

some areas agglomerations of shiny thick dark green patina are present.

*Modern interventions:* Small round hole on one lateral side, towards one of the ends, presently filled with wax similar in colour with the patina (sample for the SAM project). Small area (approx. 1 cm length) with the patina removed for the Romarchaeomet project. It is possible that the Ösenring suffered at some moment an attempt of removing the patina from some areas. Analyses: SAM (8769) (see discussion below); Romarchaeomet

*Dimensions:* Max. diameter: 10.15 cm; opening: 1.8 cm; max. thickness: 0.8 cm; weight: 91.485 g

*Location:* MNIR (inv. no. 14059)

### 3. Ösenring (Pls. 1/3; 4/3)

*Description:* It is made of a massive metal bar, with a V-shaped to triangular cross-section. The shape of the cross-section is very variable along the bar. The ends are flattened broad and turned out, but not rolled. The exterior side presents a sharp edge which gives the triangular aspect of the cross-section. The edge is more visible in the central area and more reduced towards the ends. The interior side is shrunken.

*Technical details:* The bar was cast in an open mould. The interior side indicates cooling shrinkage (Pl. 3/3). Despite of the reworking, the initial groove is still visible even on the hammered ends. The margins of the shrunken area were hammered inwards, in order to diminish the opening and round off the bar. On the central area there are attempts of smoothing. One part of the bar was hammered better than the other, which represents approximately a third of the total length of the bar and still presents a deep, narrow groove. The ends were hammered flat and turned out; one end has an ancient crack. The patina is blackish-brownish with dark green spots.

*Modern interventions:* Small round hole on one lateral side, towards one of the ends, presently filled with wax similar in colour with the patina (sample for the SAM project). It is possible that the Ösenring suffered at some moment an attempt of removing the patina from some areas. Analyses: SAM (one of the nos. 8777-8780); Romarchaeomet

*Dimensions:* Max. diameter: 13.95 cm; opening: 9.4 cm; max. thickness: 1.1 cm; weight: 185.977 g

*Location:* MNIR (inv. no. 14060)

<sup>2</sup> For details on the project please access the sites: [www.arheomet.ro](http://www.arheomet.ro); [www.romarheomet.ro](http://www.romarheomet.ro)

#### 4. *Ösenring* (Pls. 1/4; 4/4)

*Description:* It is made of a massive metal bar, with semicircular to circular cross-section. Towards the ends the bar is much rounder than in the central area. There is a fine forging seam, visible especially in the central area of the interior side. The ends are flattened broad and turned out, one of them more than the other, so its tip touches the bar.

*Technical details:* It was cast in an open mould and carefully reworked through hammering and smoothing. The forging seam is visible as a fine groove, being more accentuated in the central area of the interior side (Pl. 3/4). The surface is smooth, without pores, with a beautiful blackish-brownish patina.

*Modern interventions:* Two small round holes, presently filled with wax similar in colour with the patina (samples for the SAM project). Analyses: SAM (one of the nos. 8777-8780); Romarchaeomet

*Dimensions:* Max. diameter: 14.2 cm; opening: 6.8 cm; max. thickness: 1.05 cm; weight: 210.134 g

*Location:* MNIR (inv. no. 14061)

#### 5. *Ösenring* (Pls. 1/5; 4/5)

*Description:* It is made of a massive metal bar, with a V-shaped to triangular cross-section. The bar has a sharp edge on the exterior side, which is a little flattened on a small area at the middle of the object. It has very short ends. The interior side is shrunken.

*Technical details:* It was cast in an open mould. The interior side indicates cooling shrinkage. The bar was subject to reworking through hammering, in order to diminish the shrunken area. This was conducted in an uneven manner, with the result that the groove remained more visible on one half of the *Ösenring* than on the other. The ends were hammered flat and very little turned out. The surface is rather porous, with a dark green patina and light green spots.

*Modern interventions:* Three small round holes, presently filled with wax similar in colour with the patina (samples for the SAM project). In some spots, on the edges between the exterior and interior areas the original colour of the metal is now visible. This could be the result of an attempt to clean the item, but the possibility of an accidental removal of the patina, can not be ruled out, as these are the more exposed areas. Analyses: SAM (one of the nos. 8777-8780); Romarchaeomet

*Dimensions:* Max. diameter: 14.15 cm; opening: 10.75 cm; max. thickness: 1.1 cm; weight: 206.692 g

*Location:* MNIR (inv. no. 14062)

#### 6. *Ösenring* (Pls. 1/6; 4/6)

*Description:* It is a massive item, made of a thick metal bar, with round cross-section. It has a large opening between the ends, which are strongly rolled and have a rectangular cross-section.

*Technical details:* It was probably cast in an open mould. There are no signs of a forging seam, but there are traces of smoothing on the interior side, perpendicular to the length of the bar (Pl. 3/6). The ends were hammered to a rectangular cross-section, not flattened, and strongly rolled. This operation must have been done while the metal was still warm, because the loops practically became one body with the bar. This is visible especially on one side (Pl. 3/5). The surface is rather smooth, but certainly not polished. It is covered with blackish-brownish patina with light green spots.

*Modern interventions:* Small round hole drilled close to one of the ends, presently filled with wax similar in colour with the patina (sample for the SAM project). Small area (approx. 1 cm length) with the patina removed, for the Romarchaeomet project. It is possible that an attempt to clean the object was made, because in one area the original colour is visible. Analyses: SAM (8776); Romarchaeomet

*Dimensions:* Max. diameter: 17.35 cm; opening: 13.15 cm; max. thickness: 1.3 cm; weight: 308.370 g

*Location:* MNIR (inv. no. 14063)

II. **Predeal, com. Sărari, jud. Prahova** (Pl. 7/2). Hoard found in 1880, by two young shepherds on the highest point of the hill *Zâmbroi*, in the place called *Vâlcetu Gârliciului* or *Vâlcetu Gârliciu*, near the village of Predeal. The find conditions of the objects (which are named 'bronze handles') are described by the mayor of the village in an official address to the Sub-prefecture Teleajen (no. 317/28.07.1880): 'some of them were on the surface and some more covered with earth' (Andrieșescu 1915, 160; Nestor 1944, 177-178). The hoard subsequently entered the MNA collections. The first mention is made in the *Catalogul Muzeului Național de Antichități*, a catalogue published in 1906 with the main purpose of offering details about the MNA exhibition to visitors. Here the objects from Predeal are described as 'big ring-

shaped bracelets, with flattened and bent ends' and occupy nr. 482-487 (Tocilescu 1906, 47). Although the author does not specifically give the total number of items, the catalogue numbers indicate that there were 6 *Ösenringe* in the hoard. In 1910, there is a mention of the find place, as one of several localities which offered 'some prehistoric objects' (Moisil 1910, 174). In 1915, I. Andrieşescu published a more detailed presentation of the hoard, accompanied by a discussion concerning typological and chronological aspects, although he talked about only '5 massive neck rings'. Despite the fact that he is citing Tocilescu's catalogue, the author makes no comments on this discrepancy (1915, 160-161). The discussion on this hoard is resumed years later by I. Nestor, who specifies that it originally contained 6 smooth 'neck rings', made of bronze, from which 5 were at that moment part of the MNA collections, and that there was no other item accompanying them when found (Nestor 1944, 177-178). These 5 *Ösenringe* were analysed as part of the SAM project (8768, 8770-8771, 8774-8775), with the specification that they belonged to a *Depotfund* (Junghans *et al.* 1968, 244-245). The hoard was also included in the catalogue of bronze hoards published by M. Petrescu-Dîmbovița, who included it in the group of Middle Bronze Age hoards. The author makes an error regarding the county, and presents the find as coming from 'Predeal, județul Braşov' instead of 'Predeal, județul Prahova'. He mentions that the hoard consisted of 'neck rings, from which 6 items were preserved (Pl. 7/1-5 one without drawing)'; although the inventory numbers in the text belong to only 5 items. The metal composition is given based on the SAM project's spectral analyses (1977, 42, pl. 7/1-5).

#### 1. *Ösenring* (Pls. 2/1; 5/1)

*Description:* It is made of a thin metal bar, with round cross-section. A very fine faceting is present on both lateral sides of the bar, more visible towards the ends, which are flattened thin. One end forms a narrow hook (Pl. 3/8), the other was recently broken.

*Technical details:* It was cast in an open mould, reworked through hammering and finely smoothed. The forging seam is no longer visible (Pl. 3/7). The ends were hammered and turned out into hooks. The surface is covered by a shiny dark green patina.

*Modern interventions:* Small round hole on one lateral, close to one of the ends, the drill traversing the metal bar; presently filled with

wax similar in colour with the item's patina (sample for the SAM project). Small area (approx. 1 cm length) with the patina removed, for the Romarchaeomet project. One of the ends was broken in modern times; at the fracture, the original colour of the item can be seen. There were also other modern interventions: in two areas on the exterior side and one area on the interior side the patina was scraped, so the metal's colour became visible. Analyses: SAM (8774); Romarchaeomet

*Dimensions:* Max. diameter: 12 cm; opening: 8.05 cm; max. thickness: 0.9 cm; weight: 108.607 g

*Location:* MNIR (inv. no. 12063)

#### 2. *Ösenring* (Pls. 2/2; 5/2)

*Description:* It is made of a thin metal bar, with round cross-section. On the lateral sides, a very fine facet can be noticed, more accentuated towards the ends. The ends probably formed originally narrow hooks, but at present are quite damaged.

*Technical details:* It was cast in an open mould, reworked through hammering and finely smoothed. The forging seam is still visible in two areas on the interior side, like a very thin line (Pl. 3/9). The end which is better preserved indicates that these were hammered flat and turned out (Pl. 3/10). The patina is shiny dark green in colour.

*Modern interventions:* Small round hole on one lateral sides, close to one of the ends; presently filled with wax similar in colour with the item's patina (sample for the SAM project). One end was broken in modern times, only a part of the narrow out-turned hook or loop being preserved (at the fracture the original colour of the metal is visible). The other end was more severely damaged: the entire hook or loop is presently missing, exposing the original colour. The end was broken, not cut (the surface is irregular). This same end also shows some scrapes, the result of an attempt to remove the patina. Analyses: SAM (8771); Romarchaeomet

*Dimensions:* Max. diameter: 11.5 cm; opening: 6.8 cm; max. thickness: 0.9 cm; weight: 101.429 g

*Location:* MNIR (inv. no. 12064)

#### 3. *Ösenring* (Pls. 2/3; 5/3)

*Description:* It is made of a thin metal bar, with round cross-section. The lateral sides present a fine facet, more accentuated on one of them. One of the ends is strongly rolled into a loop (Pl. 3/12), the other is missing.

*Technical details:* It was cast in an open mould, reworked through hammering and smoothed. The forging seam is no longer visible. The ends were hammered flat and rolled outwards. The object presents a blackish patina and a rough aspect on almost the entire surface, with the exception of the extremities, which are covered with a beautiful shiny dark green patina.

*Modern interventions:* Small round hole on one lateral sides, close to one of the ends; presently filled with wax similar in colour with the item's patina (sample for the SAM project). The item is slightly deformed, especially in the area of the preserved end. The other end was recently cut down. As already mentioned, the largest part of the Ösenring has a blackish patina and a very rough surface. The fact that this was not the original condition of the object, but was scraped after the moment of discovery is proved by the observation that the surface near the ends (especially the cut one) is smooth and has a shiny dark green patina. The metal bar is slightly thicker towards the ends in the areas which were not affected by scraping. Analyses: SAM (8770); Romarchaeomet

*Dimensions:* Max. diameter: 11.8 cm; opening: 7.7 cm; max. thickness: 0.8 cm; weight: 107.122 g

*Location:* MNIR (inv. no. 12065)

#### 4. Ösenring (Pls. 2/4; 5/4)

*Description:* It was made of a thin metal bar, with round cross-section. One of the ends is flattened and slightly turned out, probably forming initially a hook, the other end is damaged. A fine faceting is visible on the lateral sides, more accentuated towards the ends.

*Technical details:* It was cast in an open mould, reworked through hammering and finely smoothed. The forging seam is no longer visible, but on the interior side traces left by the smoothing are still to be seen (Pl. 3/11). The ends were hammered flat and out-turned. The surface has a shiny dark green patina.

*Modern interventions:* Small round hole on one lateral, close to one of the ends; presently filled with wax similar in colour with the item's patina (sample for the SAM project). The ends were damaged in modern times. One of them still survives in the form of a short, narrow hook, incompletely preserved, so it is no longer possible to determine whether it was forming a hook or a loop. The other end is broken. Both ends show strong traces of scraping. The item's body presents also traces of scraping in two

places on the exterior side, exposing the original colour of the metal. Analyses: SAM (8768); Romarchaeomet

*Dimensions:* Max. diameter: 12.1 cm; opening: 6.02 cm; max. thickness: 0.85 cm; weight: 99.309 g

*Location:* MNIR (inv. no. 12066)

#### 5. Ösenring (Pls. 2/5; 5/5)

*Description:* It is made of a thin metal bar, with round cross-section. On the laterals, a fine facet exists, more accentuated towards the ends and almost disappearing in the central areas. The ends were hammered flat and turned out into hooks; only one of the ends is completely preserved. On the exterior side, at both ends, right before the flattened area, a thin, short line is visible.

*Technical details:* It was cast in an open mould, than reworked through hammering and finely smoothed. The forging seam is present, but extremely vague, more like a series of dots where the metal is deepened. The ends were hammered until the bar was flattened and turned outwards. The surface presents a shiny dark green patina.

*Modern interventions:* Small round hole on one lateral sides, close to one of the ends; presently filled with wax similar in colour with the item's patina (sample for the SAM project). One end was broken, exposing the original colour of the metal. On several areas attempts were made of removing the patina, which exposed the original colour of the metal. Analyses: SAM (8775); Romarchaeomet

*Dimensions:* Max. diameter: 12.25 cm; opening: 7.05 cm; max. thickness: 0.85 cm; weight: 103.309 g

*Location:* MNIR (inv. no. 12067)

#### Discussion

In the case of the **Maglavit hoard**, the main problem to be overcome consisted of the lack of any information regarding the find context of the group of objects, or the conditions in which they entered the collections of the National Museum of Antiquities (MNA) in 1939. This situation raised some questions regarding the unity of the hoard, as well as the original number of items.

The information in the archaeological literature is really scarce, so we tried consulting the MNA archives. The results are far from being encouraging. Until now, we were unable to locate any entrance corresponding to the Maglavit finds in the old inventory registers. Following the hint offered

by Berciu, who specified that the objects were part of the exhibition (1939, 139), we resorted also to the exhibition's registers. Only one information was found so far in Register no. 16, p. 32. On the ground floor, apparently in the same showcase as the *Ösenringe* from Predeal, one 'bronze bracelet with close ends from Maglavit' was exhibited (inv. no. III 5972). Unfortunately, the register has no year specification, so it is impossible to say with any degree of certainty what moment was meant between 1939 and 1971, the year when most part of the MNA collections began to be transferred to the new created National Museum of Romanian History (MNIR). The only clear fact is that the above mentioned bracelet was exhibited alone at that moment.

While still in the custody of MNA, 10 objects with provenance Maglavit were sampled for the SAM project: 5 *Ösenhalsringe*, 1 *Ring* and 4 *Armspiralen*<sup>3</sup>. The authors give the inventory numbers of all the analysed objects (Junghans *et al.* 1968, 244-247), and it can be noticed that in this case they have some continuity: III 5966-5970, 5973, 5976-5979. The fact in itself can not be used as proof that these objects constituted a hoard. It merely indicates that they were acquisitioned or received by the MNA at the same time, and were inventoried together. What is disturbing from our point of view is the fact that there is no specification regarding the find context, the corresponding place in the respective column being left empty. As this kind of information was undoubtedly received by the authors from the museums, this means that in the case of Maglavit it existed no certainty at MNA that the objects initially formed one hoard. Another problem is what happened to the missing numbers, III 5971-5972 and III 5974-5975: were they part of the same group of objects, but not analysed because of some reason, or did they represent objects with a different provenance?

The answer to this question could be found in the catalogue of the bronze hoards published by Petrescu-Dîmbovița in 1977. At that time, the transfer of the MNA collections to the MNIR was already completed, and all the objects received new inventory numbers. So it

is the author's merit that he gives the new, as well as the old inventory numbers for all the hoards transferred to MNIR<sup>4</sup>. The author presents the hoard from Maglavit as consisting of 14 items: 6 'neck rings'; 1 open bracelet made of metal band; 7 spiral armrings (Petrescu-Dîmbovița 1977, 48; see also cat. no. 1). The old inventory numbers are III 5966-5979, thus corresponding to those given in the SAM tables, and also covering the 4 absent numbers. The items absent from the SAM analyses were 1 'neck ring' and 3 bracelets<sup>5</sup>.

The identification of all these items in the MNIR collections was not an easy task<sup>6</sup>. At the moment of the transfer, the objects (with one exception) received consecutive inventory numbers: 16431-16443, 16479 (Petrescu-Dîmbovița 1977, 48). This seems to indicate that most of them entered the museum's records at the same time, and subsequently there was a chance that they were placed together in the same location. It is not clear if this was indeed the situation, because the MNIR database indicates that in 1979 all the collections were subject to re-cataloguing, and as such received new inventory numbers. The present database works only with the new numbers, no reference being made to the former ones. It is possible that, for the Maglavit objects, this was the moment when a separation occurred: the 6 *Ösenringe* were placed together, while the bracelets were stored separately. This situation could be reflected in their new inventory numbers: while the *Ösenringe* received consecutive numbers (14058-14063), the bracelets have very different ones (12068, 14072, 53146, 72607, 72608). It must be noticed that the database has only 11 entrances for objects with a provenance from Maglavit: 6 *Ösenringe* and 5 bracelets. An interesting point is that the simple, open bracelet received the inv. no. 12068, being listed immediately after the items from the Predeal hoard: 12063-12067. Since it is the same bracelet which, under the inv. no.

<sup>3</sup> Four volumes entitled *Analysen. Muzeul Național de Antichități al Academiei București*, providing the results of the analyses and drawings of all the analysed items, are in the library of the Institute of Archaeology 'Vasile Pârvan'

<sup>4</sup> This transfer was not limited only to the MNA collections; important parts of museums' collections from all over the country were transferred to MNIR, so the locations and inventory numbers mentioned in earlier works were no longer valid

<sup>5</sup> One disturbing fact is that in this catalogue to the inv. no. III 5973, described in the SAM tables as *Ring, offen, dreikantig*, corresponds a multi-spiral armring (see Pl. 18/2)

<sup>6</sup> The MNIR building is currently under renovation, situation which makes the access to the deposits a lot more difficult

III 5972<sup>7</sup>, shared the showcase with the Predeal hoard in the MNA exhibition, it is possible that at least some of the objects transferred were grouped after their location in the exhibition and not after their former inventory numbers or provenance. If this is the case, the probability for items from the same context to receive different inventory numbers, and subsequently different locations in the museum, was undoubtedly higher.

Until now, it was possible to identify and have access to the 6 *Ösenringe* (cat. nos. I.1-6) and an open bracelet, made of a simple metal band (inv. no. 12068). Its former MNA inventory number (III 5972) indicates that it was not analysed in the SAM project, but it is present amongst the items presented by Petrescu-Dîmbovița as part of the hoard (1977, 48, Pl. 17/6). One problem in attributing it to the *Ösenring* hoard appeared in connection with the compositional analysis conducted as part of the Romarchaeomet project. The bracelet presents a beautiful smooth light green patina, with two reddish spots on the exterior side, close to one end, and thick light green and reddish depositions corresponding to them on the inside. The type of analysis offers no more than patina composition for un-cleaned objects, that is of the corrosion products, but the result was nevertheless quite suggestive. The patina presented the following composition: Cu 81.84%, Sn 13.17%, Pb 2.93%, As 1.27%, Sb 0.27%, Bi 0.10%, Ni 0.09%, and one reddish spot had Fe 14.11%. The conclusion was that the bracelet was in contact with one or more iron objects long enough for contamination and a difference of potential to take place while the object was still underground<sup>8</sup>. This means that either the whole hoard was chronologically much later than expected (see below), or the bracelet had nothing in common with the *Ösenringe*, maybe being part of an Early Iron Age grave inventory. Doubts were expressed also in connection with the biggest arming (24 spirals). Based on the drawing in Petrescu-Dîmbovița's catalogue (1977, 48, pl. 18/5) and on the photo in the museum's database, a Late Bronze Age – Early Iron Age chronological framework was indicated as more probable (dr.

Al. Vulpe, pers. comm.). We can not express any firm opinion on the remaining bracelets either, but the observations made on these two presented above ask for prudence, and it is our intention to try finding an answer in the near future.

The *Ösenringe* posed a different set of problems. It was already mentioned that only 5 of 6 items were analysed in the SAM project (8776-8780), being present in the tables under the inv. nos. III 5966-5970 (Junghans et al. 1968, 244-247). Presently, it is impossible to say which analysis number corresponded to which *Ösenring*<sup>9</sup>, since these MNA inventory numbers, originally written in ink on the items' surface, did not survive – with one exception. It is a real chance that this exception is exactly the *Ösenring* (cat. no. I.2) missing from the SAM analyses. At the same time we made an interesting observation. At no. 8769 in the SAM tables there is an entrance specifying the following: *Ösenhalsring* from Romania; find place unknown; no information on context and find conditions; location MNA Bucharest; inv. no. I 5971. We can assert that this is the analysis corresponding to the sixth *Ösenring* from Maglavit, since the item's drawing made with the occasion of the sampling is identical with the drawing in Petrescu-Dîmbovița's catalogue. Moreover, this *Ösenring* was sampled in exactly the same manner as the other 5 items. There is no other *Ösenring* from MNA which was reportedly sampled for SAM, outside those 5 from Maglavit, 5 from Predeal, and 7 *Ösenhalsringe* from Sărata-Monteoru (one with inv. no. I 269 and six without any inventory number – all their drawings showing that they are different items). The compositional analysis conducted as part of the Romarchaeomet project matches well with analysis no. 8769 (tin bronze). The only obstacle in this argument is the inventory number given in the SAM tables, which has the Roman figure 'I', indicating as provenance region Muntenia, and not Oltenia<sup>10</sup>. We consider that this problem could be solved if we look both at the inventory number given in

<sup>7</sup> The former inventory number from MNA was preserved, being written in black ink directly on the object's surface and lacquered

<sup>8</sup> This could be an explanation for not taking into consideration the bracelet for the SAM project (the deposition of iron rust is visible from the first moment)

<sup>9</sup> Only one correspondence could be determined, based on the results of our new analyses: inv. no. III 5966 (SAM 8776) corresponds to the actual inv. no. 14063 (cat. no. I.6). It is one of the two *Ösenringe* from this hoard made of tin bronze.

<sup>10</sup> The inventory numbers from MNA always indicate the provenance region of the object: I – Muntenia, II – Moldova, III – Oltenia, IV – Transilvania, V – Dobrogea

the SAM tables and at the MNA inventory number still preserved on the item: in the first case this is I 5971, in the second case III 5971. Unless there is a very surprising coincidence, it can be presumed that at some point a mere mistake in transcribing the inventory number was made. Still, although this item clearly comes from Oltenia and is discussed in the present article as part of the Maglavit hoard, it should be emphasized that, like in the case of the bracelets, the doubts regarding its affiliation to the hoard can not be totally ruled out.

The **Predeal hoard**, although found earlier than the Maglavit hoard, posed fewer problems, as more information is being held on the context, content, and find conditions (see cat. no. II). The main difficulty, not yet solved, lies in determining the original number of items. The 1906 catalogue of the MNA exhibition gives 6 inventory numbers for the *Ösenringe* from Predeal (Tocilescu 1906, 47). C. Moisil offers no details at all on the find from Predeal (1910, 174). Later, I. Andrieşescu discusses the hoard as containing 5 'massive neck rings'. There is absolutely no mention that the hoard could have consisted initially of more items (1915, 160). I. Nestor, specifying that he is correcting some minor errors of Andrieşescu's article, mentions among other things that originally there have been 6 items, of which only 5 belonged at that moment to the MNA collections. There is no specification regarding the fate of the sixth item. Still, one important information is that the hoard contained only *Ösenringe* (Nestor 1944, 177-178). The presentation of the hoard by M. Petrescu-Dîmboviţa does not help, since it is rather vague: 'a hoard consisting of neck rings, from which only 6 items were preserved'. Even more, the inventory numbers offered by him indicate the existence of only 5 items (1977, 42). The only information which could be found so far in the MNA archives is in the same Register no.16, p. 32: at the ground floor, 5 objects from Predeal were exhibited in the same showcase, under the current numbers 1952-1956, corresponding to the inv. no. I 5380-5384, and described as 'neck ring with the ends in form of hooks' and 'neck ring with the ends in form of loops' (with the specification that some of the ends were broken). The moment of transfer of the items from the MNA to the MNIR does not bring any new information; on the contrary, all the *Ösenringe* from Predeal entered the MNIR

collections under a unique inventory number, 15 816 (Petrescu-Dîmboviţa 1977, 42), and only in 1979 did each item receive its own inventory number.

The confusion about the find place of the hoard began with Petrescu-Dîmboviţa's catalogue, in which its county of provenance is given as Braşov instead of Prahova (1977, 42). Fortunately, this error is an easy one to correct. The previous literature on the subject presents the hoard as coming from '*judetul Prahova*' (Andrieşescu 1915, 160; Nestor 1944, 177). What is more important, all 5 *Ösenringe* still preserve their former MNA inventory numbers (I 5380-5384), written directly on their body in black ink and lacquered. These numbers show that the hoard's provenance region is undoubtedly Muntenia<sup>11</sup>.

On the next pages we will try to determine how these finds integrate into the larger framework of the Central European *Ösenring* hoards.

### Terminology

The high degree of standardisation in the material made them to be mostly understood as transportable raw material for the manufacture of various metal objects. The rings became therefore known as *Ösenringbarren* in the German literature (Vandkilde 2005, 264). This term hints both at the shape and function of the items. Yet, it is quite clear that apart from variations in their type, the rings are also found in different stages of manufacture (Butler 1978, 347). So it became customary to distinguish between crudely made ring-shaped ingots (*Ösenringbarren*), and finished rings with a smooth surface with flattened and rolled ends (*Ösenhalsringe*). However this division presented a disadvantage since rings in various stages of finish occur in the so-called *Ringbarrenhorte* (Vandkilde 2005, 264), that is, in the same context. A lot of items in many hoards are neither finished neck rings nor pure ingots, but rather something in between. For these categories of rings which had been subjected to various degrees of forging, beyond the mere fashioning of the loops, the term '*überarbeitete Barrenringe*' was proposed (Butler 1978, 347). The term of *Barrenhalsringe* was also used in some cases to describe relatively carefully reworked rings, cast in open moulds, still preserving a forging seam (Gerloff *et al.* 1993, 106). In time, a finer

<sup>11</sup> See the previous note



division of the categories was proposed. The term of *Ringbarren* or *Ösenringbarren* was used to describe copper or bronze rings with more or less rounded cross-section and flattened, outwards rolled ends, present in hoards as rough cast ingots. More or less reworked rings were described as *überschmiedete Ringbarren*, and reworked and smoothed rings as *überfeilte Ösenhalsringe* (Lernerz-de Wilde 1995, 236). The fact that such categorisations usually imply both statements on the items' functions and a certain degree of subjectivity made many archaeologists use the more neutral and descriptive term of *Ösenring* (Niederschlag *et al.* 2003, 77), despite the terminology proposed.

Similar terminological difficulties have to be overcome in the English-written archaeological literature, which shows efforts to equalise the English terms with the German ones. Usually a difference is made between *neck ring* (*Ösenhalsring*), term used only for finished objects, hammered to a circular cross-section and polished smooth, and *ingot ring* (*Ösenringbarren*), a term used for rough cast objects having the cross-section more or less triangular to U-shaped, only with the ends hammered, flattened and curled into loops (Butler 1978, 347). Yet, other variants are also employed, like *ring ingot* (Shennan 1995, 305), frequently with no statements regarding the degree of reworking; *neck ring bar ingot* as opposed to *neck ring* (Kim 2005, 126), the division being presumably based mainly on the degree of reworking; or *ingot torque* (*Ösenringbarren*), used for hoard finds, while similar items from graves are considered as *neck rings* (*Ösenhalsringe*) (Junk 2003, 11), a division based on the context (Niederschlag *et al.* 2003, 77). All these terms were subject to criticism at some point. Especially the use of the term *ingot torque* which, although recognised as hallowed by long usage, was considered as descriptively oddly inappropriate, since there is no question of torsion, and most of the rings concerned are not in any strict sense ingots (Butler 2002, 236), since they show different degrees of reworking. As a result, it was preferred in many cases to use the German terms instead of the English ones.

In the Romanian archaeological literature, the terms most frequently used for the few items from hoards are: *neck ring* (*colier*) ((Petrescu-Dîmbovița 1977, 40, 42, 48),

*massive neck ring* (*colier masiv*) (Andrieșescu 1915, 160), *ingot ring* (*colier-bară*) or *ring ingot* (*bară-colier*) (Nestor 1954, 59; Nestor – Petrescu-Dîmbovița 1960, 118). In the case of the grave finds, the terms usually employed are *neck ring* (*colier* or *colan*) or neck ring with *rolled ends* (*colier cu capetele răsucite*) (M. Florescu – A. Florescu 1983, 114; Motzoi-Chicideanu – Gugiu 2001-2002, 17; Rosetti 1975, 280), but often doubled by the German terms: *Ösenhalsring* (e.g. Motzoi-Chicideanu – Gugiu 2001-2002) or *Halsring* (e.g. M. Florescu – A. Florescu 1983), in order to make it easier for the readers which category of objects is discussed.

#### *Geographical distribution*

The *Ösenringe* were described as representing an international type during the Early Bronze Age (Nestor 1944, 177). The *Ösenring* hoards occur over a huge area of Central Europe, extending from the Po valley in northern Italy to the Baltic Sea (Butler 2002, 235). Most of them were found in the northern foothills of the Alps, in south-eastern Bavaria, in southern, central and western Bohemia, in lower Austria and in southern and central Moravia. About 80% to 90% of the hoard finds in these regions consist of *Ösenringe* (Junk 2003, 11).

From the point of view of their content, the *Ösenring* hoards form two groups: one consisting of pure *Ösenring* hoards, and another of hoards containing mixed items. Hoards from the first group are found in south-eastern Bavaria and neighbouring Austria, Bohemia, lower Austria and Moravia. Hoards from the second group are rare in Bavaria, more frequent in Bohemia and Moravia, and present on a regular basis in central Germany and Poland (Lernerz-de Wilde 1995, 291; Lernerz-de Wilde 2002, 3, Karte 1). It is noticed that Moravia and northern Bohemia constitute a zone of overlap (Vandkilde 2005, 270). The pure *Ösenring* hoards have also the greatest number of items. Some of them were even described as being of giant size, for example Hodonín in Moravia, with at least 650 items in two deposits, or Piding-Mauthausen, southwest of Salzburg, with at least 700, possibly as many as 800 items (Butler 2002, 235). The mixed hoards, with a distribution up to the coastlines of the Baltic Sea, are smaller in size, as well as in number, but show a richness of Early Bronze Age forms (Innerhofer 1997, 56). They usually include *Ösenringe* in moderate

numbers, between one and ten and not more than fifty, and in southern Scandinavia these items occur as single depositions in wetlands (Vandkilde 2005, 268-270).

These observations indicate a concentration of finds in the northern Alpine Foreland and a general decrease in size and number of the hoards from south to north, combined with changes in the depositional patterns and internal associations in the hoards. This situation led Vandkilde to propose the existence of separate geographical areas of *Ösenring* use: a primary zone of production and consumption in southern central Europe; a secondary zone of consumption in northern central Europe extending into the north European plain and a third marginal southern Scandinavian zone with limited consumption of such items (2005, 268). In this case, southern Scandinavia could be described as the end of the line for the spreading of the *Ösenringe* on a south-north axis. But what happens with the western and eastern limits of this geographical distribution: could we also speak about a west-east axis? The most western finds come from France, where the few *Ösenringe* are either single finds from wet locations (6), or items with uncertain find context (3, with the same find place) (Gerloff *et al.* 1993, 106). The eastern most distribution reaches Hungary and Romania. There are only a few finds from Hungary, despite the fact that it lies very close to regions so rich in *Ösenring* finds. One example is Lenerz-de Wilde analyses of only 3 items, all without a clear find place (1995, 267). Further east, there are the 3 hoard finds from Romania – Deva, jud. Hunedoara, Maglavit, jud. Dolj, and Predeal, jud. Prahova (Pl. 7/1-3) – adding up to a (not very certain) number of 21 items. It can be noticed that the same decrease in size and number of the hoards is visible from the Alpine Foreland towards both west and east, with the observation that this seems to be much more abrupt than on the south-north axis. From this point of view, the Romanian territory could be described as peripheral for the geographical distribution of the *Ösenring* hoards.

The state of their content is not so certain, with the exception of the Predeal hoard, which was reported as consisting only of *Ösenringe*. The hoard from Deva contains 10 *Ösenringe* and 2 'knife ingots', but the integrity of the find is under question. The same problem exists for the Maglavit hoard, which could enter the category of mixed hoards, if the

association between *Ösenringe* and spiral armrings is real (a situation which is far from being clear at this point).

### *Chronology*

The chronological framework of the Romanian hoards was always discussed in comparison with the central European situation. Thus, Andrieşescu dated the Predeal hoard, based on similar finds from Silesia and Austria, to 'the second part of the Bronze Age', a period considered at that time between 1500-1200 BC (Montelius), or 1750-1400 BC (Kossinna) (1915, 161-162). When he mentions the hoard from Maglavit, Berciu includes it in the 'Middle and Late Bronze Ages' (1939, 139). Petrescu-Dîmboviţa assigns both hoards, as well as the hoard from Deva, to the Middle Bronze Age (1977, 40, 42, 48). This opinion was taken over also in later works (e.g. Oancea 1981, 154<sup>12</sup>). In contrast, Nestor constantly included these hoards in the Early Bronze Age. The author discusses the hoard from Deva in connection with 'the habit of commercialising copper as ring ingots', which is, 'naturally, during the end of the Early Bronze Age, a characterising aspect of the eastern Alpine mines' (Nestor 1944, 176). Several years later he mentioned the same find, as well as the hoard from Predeal, as belonging to the beginning of the Bronze Age (Nestor 1954, 59).

In fact, the characteristics of these three hoards do not offer a lot of possibilities. The find from Deva can not be dated based on internal associations, due to the fact that it contains no typical items: outside the 10 *Ösenringe*, the hoard contained 2 'knife ingots' (Nestor 1944, 172) or sickles 'of archaic type' (Petrescu-Dîmboviţa 1977, 40), which do not really help establishing the chronology. The find from Maglavit, which theoretically would be a mixed hoard, comes with many questions about the original context, content and unity of the hoard. Finally, the hoard from Predeal contains only *Ösenringe*; moreover, as we shall see, this is not a 'typical' hoard find.

But the *Ösenringe* raise some chronological problems also for the central European regions, since many hoards are 'pure', thus offering no helpful associations with other types of objects. Their chronological framework was

<sup>12</sup> Who is erroneously citing Andrieşescu 1915 (Sinaia as find place instead of Predeal)

established based on internal associations in mixed hoards, parallels with grave finds, calibrated  $^{14}\text{C}$  data, and even characteristic metal compositions.

At this point, according to calibrated  $^{14}\text{C}$  dates – mostly based on material from graves – , the central European Early Bronze Age covered a time span between c. 2200 and 1500 BC (Niederschlag *et al.* 2003, 62). The *Ösenringe* are seen as a characteristic item for the earlier part of this period (Lenerz-de Wilde 1995, 236; Shennan 1995, 305). The calibrated  $^{14}\text{C}$  data, resulting from analysing human bones from the southern German (e.g. Singen necropolis – where Gr. 80 was dated to 2175-1985 BC) and south European graveyards belonging to the Bronze A1 phase, are sustaining this theory (Gerloff *et al.* 1993, 107).

It is claimed that the *Ösenringe* became customary from the beginning of the Early Bronze Age (2300-2200 BC) (Innerhofer 1997, 54), the period of maximum circulation being the transition from Early Bronze Age A1 to A2, around 2000 BC (Junk 2003, 11). Lenerz-de Wilde considers that the *Ösenringe* are characteristic for the advanced Bronze Age A1 and A2, based on changes in their form, size and weight, when they begin to be replaced by new forms (2002, 4). This is considered also the period when hoarding emerges as a phenomenon in regions like, for example, southern Germany (Kim 2005, 125).

The origin of the *Ösenring's* form was sought in the more delicate and lighter neck rings (*Ösenhalsringe*), which began to be worn 1000 years earlier and were still in use as neck ornaments during the entire Early Bronze Age, as shown by numerous skeletons (Innerhofer 1997, 54). In the Copper Age Baden culture in Lower Austria neck rings with rolled ends made of wire were found as male ornaments in graves. They have been seen as the forerunners of the neck rings, although some doubts have been expressed due to the difference in time. However, the distribution area of these Copper Age rings fits well with the area of origin of the Early Bronze Age ones (Lenerz-de Wilde 1995, 297). These grave finds with one to seven neck rings are best known in an east-west pattern along the Danube valley, with an extension northward from lower Austria into Moravia (Butler 2002, 236). The regions of lower Austria and Moravia are also those indicated as the areas where the first ingots of this form were produced, subsequently being traded to

other regions (Lenerz-de Wilde 1995, 297). The following chronological sequence was proposed, based on the hoard finds and grave finds, combined with observations on the size, form and weight of the items: *Ösenhalsringe* (ornaments) – *Ringbarren* (ring ingots) – *Spangenbarren* (rib ingots) – *Miniaturbarren* (miniature ingot) (Lenerz-de Wilde 2002, 4). It was emphasised that this chronological sequence must be understood in general terms, with considerable overlap between these main forms and their subtypes, and that various ring forms and ring sizes were in circulation at the same time in the centuries around and after 2000 BC (Vandkilde 2005, 265).

### Technology

It is safe to say that most of the *Ösenringe* from the Romanian hoards were cast in open moulds. The method was identified as being characteristic for this category of items. The metal was poured into a groove and resulted in thin, elongated bars (Butler 2002, 230). The results of the investigations indicate sand casting, but stone moulds cannot be completely ruled out. The cross-section of the rough cast bar was then reworked to a more rounded, sometimes faceted one. In some cases the bars remained un-worked, resulting in rough-cast items. The ends of the bar were flattened and curled more or less into loops. Finally, 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 is 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 excluded (Junk 2003, 170).

For Maglavit, 4 of the 6 *Ösenringe* (cat. nos. I.1, 3-5) have U or V-shaped to semicircular or triangular cross-sections, usually varying along the bar. This concave aspect of the interior side of the ring indicates cooling shrinkage which affected the surface of the initial metal bar. This characteristic is a direct result of using open moulds (Butler 2002, 231). All 4 items show subsequent interventions, the margins of the concave area being hammered inwards, in an attempt to diminish it. However, the grooves remained plainly visible, with the exception of cat. no. I.4, which was carefully reworked not only through hammering, but also smoothing, the initial groove being transformed into a fine forging seam.

The remaining 2 items (cat. nos. I.2, 6), although otherwise very different in size and general aspect, have one thing in common: a round cross-section, with no signs of cooling shrinkage, although there are some indications that re-working was conducted on the interior side of the ring. It is possible that in their case the surface of the bar was slightly convex from the beginning, when it was cast, a situation which was also often observed for open mould casting (Butler 2002, 231). There is a possibility that this difference in the original cross-sections of the 6 items from Maglavit stand in direct connection with their different metal composition (see below).

The aspect of the ends is also different. In the case of the first 4 items the ends are hammered flat and broad, then turned out into hooks or more or less rolled. Cat. no. I.2 presents also flat hammered ends, but very narrow, sharp and hooked. Cat. no. I.6 differs even more, its ends being hammered not flat, but until they reached a rectangular cross-section, and strongly rolled, being at present one with the object's body (Pl. 3/5). This situation could raise the suspicion that the object was cast into its final shape, probably in a bivalve mould, but microscope analysis rather indicates the turning out of the ends subsequently to hammering them to their present rectangular cross-section.

The 5 *Ösenringe* from Predeal are very similar in their general aspect, all of them being carefully reworked. The fact that they were also cast in open moulds is proved by the presence of very fine forging seams in the case of cat. nos. II.2 and 5. In the other cases the forging seam is no longer visible. The surface of all 5 items was beautifully smoothed. Most of their ends are very damaged, but it is still possible to determine that they were initially hammered flat and out-turned, forming narrow hooks or loops.

The shape of the *Ösenringe* from Deva, based on their description, photos and drawings (Nestor 1944, 169-170, fig. 1-2), seems to best resemble the items from Maglavit (cat. no. I.1, 3-5), indicating a similar casting method. The author determines two categories. Group A contains 9 out of 10 *Ösenringe*, which were worked starting from bars cast in open moulds, having an original cross-section almost triangular, with rounded angles. The ends were hammered flat and turned outwards, forming hooks rather than loops. Even after reworking through

hammering their cross-section remained irregular, the same ring presenting on its length different cross-sections, from semi-oval to crescent shape. The same attempt of hammering the margins of the concavity inwards resulting from cooling shrinkage (Nestor 1944, 169), observable at the 4 items from Maglavit was mentioned. Group B contains 1 item, described as cast in a bivalve mould, with a slight lozenge-shaped cross-section and a prominent casting seam on the interior side ('bavure' in original), which was hammered inwards (Nestor 1944, 169). This item is far from being unique, although this method is rarely observed in connection with this category of finds. It was determined that some experiments with casting *Ösenringe* in bivalve moulds were conducted in central Europe, as a few items in the hoards from Sierndorf and Geitzendorf seem to indicate. These have distinct casting seams which could only have resulted from such a technique (Butler 1978, 349).

### Typology

The *Ösenringe* occur in hoards in every stage of manufacture (Vandkilde 2005, 272). The typological features within this artefact group range from rough cast to roughly or carefully reworked items with faceted or smooth surfaces. The cross-sections vary from rounded, roundish or triangular to quadrilateral, the ends can be turned out into loops, slightly rolled, or only flattened. In some hoards only rough cast ingots are found, other hoards contain several types (Junk 2003, 11). The rough cast items are characterised by the presence of an undisturbed casting skin and an absence of hammer-and-anvil marks. The fully finished neck rings, smooth and of round section, are situated at the other extreme. All those in between can be grouped together as partially worked, the exact degree being infinitely variable (Butler 2002, 239).

Although these important distinctions were mentioned in the descriptions of the items, they have unfortunately not been reflected in the distribution maps hitherto published. It is therefore not yet possible to compare and evaluate the spread of true ingot rings, partially finished, and fully finished neck rings. Butler has drawn attention to differences which seem to exist between the content of the hoards in different regions. For example, he noticed that the pure hoards in lower Austria and Moravia consist almost exclusively of partially finished

rings, in contrast to the situation in the mixed hoards, in which fully finished items are typical (Butler 2002, 237). In Poland, as far as it can be recognised, there are no real rough casts; all the items have received a certain degree of reworking (Lenerz-de Wilde 1995, 267). In central Germany, both rough casts and smoothed items are found, sometimes in the same hoards, which are usually mixed ones; but the proportion between the two groups is in favour of the reworked, smoothed items (176) compared to the rough cast items (only 20) (Lenerz-de Wilde 1995, 265).

For Romania the number of finds is too small to allow firm conclusions regarding this aspect. What can be said at the present moment is that there are no rough cast items in any of the three hoards known so far, all presenting a certain degree of intervention after casting, from roughly reworked (Deva, Maglavit) to carefully reworked and smoothed ones (Maglavit, Predeal).

#### *Weight and number*

The 10 Ösenringe from Deva weigh between 169 and 216 g. A little more than half of them (6 out of 10) range between 190 and 210 g (Pl. 6). Another 3 items are lighter (169, 175 and 187 g) and 1 item is heavier (216 g). Their total weight is 1956 g and their medium weight 195.6 g. If the weight of the 2 'knife ingots', one complete and one fragmentary, is added (22 g and 14 g, respectively), the total weight of the hoard is 1992 g and the medium weight 199.2 g.

The 6 items from Maglavit weigh between ca. 91.5 and 308.37 g (Pl. 6). From these, 4 items range between ca. 186 and 215 g. The medium weight of these 4 'normal' Ösenringe is 204.5 g. One item is much lighter (91.5 g) and one is much heavier (308.37 g). The total weight of the items is 1217.78 g and the medium weight is 202.96 g.

The 5 items from Predeal weigh between 99.309 and 108.67 g (Pl. 6). The difference of weight between the heaviest and the lightest item is less than 10 g. Their total weight is 519.776 g and the medium weight 103.955 g.

It should be emphasized that most probably the original weight for most of these Ösenringe was a little different, taking into consideration their present state of preservation (especially as the ends are damaged in almost all the cases).

Based on Lenerz-de Wilde's study, we tried to determine if there are any similarities with

the other regions, although it is clear that the very small number of items from Romania makes this parallel little conclusive. The author conducted her study on a number of 2510 items from southern Germany (1020), Czech Republic (686), Austria (636), central Germany (99), Poland (66), Hungary (3) (1995, 238).

For southern Germany the statistical research gives a medium weight of 187 g, with a range from 115 g to 255 g. The histogram shows one peak between 190 and 200 g, decreasing gradually on both sides, yet with another small peak at 150-160 g (Lenerz-de Wilde 1995, 238, Abb.3). The Austrian items have a medium weight of 200.53 g, with a range between 165 and 235 g. The histogram reaches a peak at 200 g and decreases gradually on both sides (Lenerz-de Wilde 1995, 247). For the Czech Republic (304 items from Bohemia, 294 from Moravia), the standard weight is 195 g. The histogram is asymmetrical: 27% of the weight fall into 200-210 g; 26% into 190-200 g; then the curve falls weakly towards lighter weights and more accentuated towards heavier weights (Lenerz-de Wilde 1995, 257). The histogram (258, Abb. 35) shows also a small peak at 100-110 g. For central Germany, the medium weight is 182.19 g, and the histogram presents a peak at 200-210 g. On both sides the histogram falls, having equal heights at 170-180 g and 180-190 g, a second peak at 150-160 g and a third peak at 100-110 g (Lenerz-de Wilde 1995, 265, Abb.49-50). For Poland, the medium weight is 196.72 g. The histogram shows a peak at 190-200 g, the distribution being asymmetrical (Lenerz-de Wilde 1995, 266, Abb.51).

The medium weight for all three Romanian hoards is 167.47 g and, excepting the lightest and the heaviest items, the weights range between 99.309 and 216 g. This situation is a direct result of including the light items from Predeal in the equation. Taking the hoards into consideration separately, it can be easily noticed that the items from Deva and Maglavit can be considered comparable to the central European Ösenringe due to the medium weight, as well as the range of weights. Even the hoard from Predeal does not represent an exception, although it must be admitted that such lightweight items are much more rare than their heavier counterparts. But, as was mentioned above, items ranging between 100-110 g are known for example from central Germany or the Czech Republic (although

usually not forming hoards, but found together with 'normal' *Ösenringe*)

Regarding our lightest *Ösenring* (cat. no. I.2), weighing only 91.485 g, similar and even much lighter items are known from all the regions presented above, as part of the hoards (Lenerz-de Wilde 1995, 243-244, 255-256, 266). Also the heaviest item (cat. no. I.6) has counterparts in central Europe, where there are several much heavier items, like for example the 683 g *Ösenring* from Ried, upper Austria (Lenerz-de Wilde 1995, 255-256), or one weighing 774 g from central Germany (Lenerz-de Wilde 1995, 243). Even this combination from Maglavit, bringing together 'normal' *Ösenringe* with both much lighter and much heavier items is not unique, as it is shown by the Pilszcz hoard, Poland, containing 2 items of 330 and 360 g, and 2 of 60 and 80 g (Lenerz-de Wilde 1995, 266).

In central Europe it was noticed, when the find conditions allowed, that the *Ösenringe* are often present in hoards in groups of 5 or multiples of 5. This number and its multiples played a role easy to recognise, and naturally anybody would think about the fingers of one hand. In some cases, in bigger hoards, the items were arranged in bundles, usually of 5, much more rarely associated with bundles of 6. It was also possible to determine that the items in these bundles were carefully combined. For example at Valley, the owner of the 12 bundles made the effort of combining lighter with heavier items, so that in the end the difference in weight between the bundles was not too great (between 881 and 994 g, so a difference of maximum 113 g). At Unteradlberg the difference of weight between the two bundles was only 11 g (Lenerz-de Wilde 2002, 20). The fact that people were really interested in reaching some standard weights is also shown by numerous *Ösenringe* presenting weight corrections, in the form of metal wire wrapped around their ends (Lenerz-de Wilde 1995, 238).

All three Romanian hoards raise questions regarding their integrity, as they are chance finds. Nevertheless, some observations in connection with this aspect should be made. The hoard from Deva, if the find is indeed reflecting the original deposition, contained 10 *Ösenringe*. The hoard from Maglavit contained 6 items. The hoard from Predeal has presently 5 items, but there are indications that it originally contained 6 items. These numbers of items also appear sometimes as bundles or

other groupings in central Europe, as it was already mentioned. As for an interest in a specific weight, two observations will be made, but only as simple hypotheses. The first one regards the hoard from Deva, which contained together with the *Ösenringe* 2 other small items, so-called 'knife ingots', for which parallels can be found in upper Austria and Bohemia (Nestor 1944, 178). They weigh 22 g (the complete one) and 14 g (the fragmentary one). It could of course be just a coincidence, but there could also be a possibility that this association was seen as a kind of weight correction of the hoard, as long as the lightest 2 *Ösenringe*, with 169 and 175 g, are somehow detaching themselves from the rest of the items. The second observation regards the hoard from Maglavit, containing, outside the 4 items with 'normal' weights, a very light item and a very heavy one. This situation could be again the result of chance or other types of decisions, but we could not help remarking that the weights of these two eccentric items tend to 'annihilate' each other's effect on the total weight of the hoard, as they have together the same weight as two 'normal' items.

#### *Metal composition*

The *Ösenringe* were made of many different types of copper, sometimes of bronze rare examples in gold or silver are also known (Butler 1978, 348). Butler proposed the term of 'classical *Ösenring* copper', justifying his choice with the fact that a very large percentage of Central European *Ösenringe* are made of a specific kind of high-impurity copper. He based his observation on the results of the SAM project, where this type of copper is named C2, having also minor related types. Extensive statistics, based on the first 12,000 analyses, show that around 3/4 of all *Ösenringe* analysed are of C2 metal, and of all the objects assigned to C2 metal, around 3/4 are *Ösenringe*. The major impurities are As, Sb and Ag, occurring as an average ratio approximated by the author as 2:2:1. The presence of Bi, at around 0.05-0.1%, is considered highly characteristic. The regular occurrence of Bi at this level is not found in other types in Europe, and certainly not in the Central European area. Ni is characteristically absent, or present only in small traces (Butler 1978, 353). About 67% of the *Ösenringe* are made of this type of copper (Junk 2003, 15). The variations observable in composition could reflect the primary source, but could also

indicate different smelting technologies (Junk 2003, 59).

The existence, during the earlier Early Bronze Age, of big, stable metal groups, characterised mainly by Fahlerz copper with and without nickel (copper of Singen type and *Ösenring* metal with and without nickel), stands in clear contrast with the previous Neolithic copper types and was emphasised also by other authors (Krause – Pernicka 1998, 197). The 'classical *Ösenring* metal' was described as containing up to 2%, or even 4% Sb, an equal amount of, or somewhat less As, between 0.5% and 1% Ag and, significantly, 0.05-0.2% Bi. Ni is usually below 0.01% (Niederschlag et alii 2003, 83). It was also noted that the ratio of 2:2:1 for Sb:As:Ag is sometimes rather a tendency than a reality (Junk 2003, chapter 2).

Low-impurity coppers were used for casting *Ösenringe*: otherwise pure copper with traces of Ag (EOO type); nearly pure copper with Ni as the principal impurity, at a level of around 0.1% (FC type); low-impurity copper of type Gammersham, around 99.9% pure, on the average with somewhat less Ni than the previous type, low traces of As and Sb, traces of Ag and Bi (Butler 1978, 353-354). About 8% of the *Ösenringe* are made of these various low-impurity coppers, which seem to be characteristic for the provenance of the material (Junk 2003, 13).

These high-impurity and low-impurity coppers have different distributions or present various geographical overlaps. The 'classical *Ösenring* copper' is present in 85-90% of all *Ösenring* hoards from lower Austria and Moravia. In Bavaria the percentage is lower, at around 50%, the rest consisting of low-impurity coppers. The FC metal is present everywhere, but normally in small percentages (Lenerz-de Wilde 1995, 289).

During the later Early Bronze Age a stronger differentiation appears, and the types of copper are not as homogenous anymore. Sn is mainly connected to the later Early Bronze Age metal cluster groups, as it was only sporadically used, during the first part of the Early Bronze Age. Some of the metal groups seem to indicate signs of mixing different raw coppers or ores (Krause – Pernicka 1998, 194-197). Tin is also rarely present in the composition of *Ösenringe*. Lenerz-de Wilde presents the following situation: in southern Germany there are practically no tin bronze items, in Bohemia 14, in Moravia 8, in Tyrol and upper Austria one each, in lower Austria

10, and 3 from the 'Danube lands' (Lenerz-de Wilde 1995, 291).

All the *Ösenringe* from the Romanian hoards were analysed as part of the SAM project. The 10 items from Deva (9130-9139) have As (0.26-1.75%), Sb (0.9-1.65%), Ag (0.37-0.6%), Ni absent or present only in small amounts (0-0.02%), Bi in all cases (0.018-0.14%). Two of the items (9134-9135) present in composition small traces of Sn (0.31 and 0.38%), in the first case associated with Pb (0.03%), and having the lowest percentage of As and Sb. The same two elements are also present in the metal composition of the 2 'knife ingots' (9140-9140), in similar percentages.

The hoard from Maglavit contains 4 items (cat. nos. I.1, 2-5) with As (1.25-2%), Sb (1.45-1.6%), Ag (0.27-0.6%), Ni less than 0.02%, and Bi (0.024-0.098%) (8777-8780). Cat. no. I.2 (8769) has Sn (5.1%), Pb (0.23%), As (0.95%), Sb (1.05%), Ag (0.06%), Ni (0.9%), Bi (0.01%). Cat. no. I.6 has Sn (4.8%), Ag (0.03%), Ni (0.08%), and no Bi or other trace elements.

The hoard from Predeal (cat. nos. II.1-5) present the following composition (8768, 8770-8771, 8774-8775): Sn (5.4-6.9%), Pb (0.6-1%), As (0.44-0.69%), Sb (0.28-0.45%), Ag (0.05-0.07%), Ni (0.51-0.84%), Bi (0.009-0.012%).

As part of the Romarchaeomet project, the *Ösenringe* from Maglavit and Predeal were analysed using a portable InnovX  $\alpha$  Series EDXRF spectrometer, W anode, 30 KV, 40  $\mu$ A, time of exposition 300". Only the analysis of the surface was possible, that is of the objects' patina. For 3 of the items (cat. nos. I.2, 6; II.1) small areas were cleaned, in order to determine the differences between the composition of patina and that of the original metal. All the items with high percentages of tin, the 2 from Maglavit and the 5 from Predeal, show Sn and Pb enrichment of the surface, in the detriment of Cu. The Sn enrichment was especially high for the items from Predeal (around 30%). As long as the original percentage of Sn was not too different, this situation could reflect rather the differences in the corrosion products, and as such be a result of different environment conditions (type of soil). The percentages of the impurities determined through this method agree with the analyses from the SAM project. A linear correlation can be observed between the concentration of Cu and the concentration of Sn in the case of cat. nos. I.2, 6, II.1-5, indicating, together with the high percentage of

Sn (4.8-6.9%), that the copper was intentionally alloyed with tin. From the 7 items, 6 are made from high-impurity copper, the only item with a different composition being cat. no. I.6, with a low-impurity copper containing Ag and Ni. The presence of Pb in the composition of these items seems to be connected to the presence of Sn. The same situation could be noticed in the case of the Deva hoard, where 3 of the 4 items containing small amounts of Sn (2 *Ösenringe* and 2 'knife ingots') have also Pb in their composition, an element which is absent from the rest of the objects.

Several other observations were made on the metal composition of the *Ösenringe* from the Romanian hoards. One of them regards the presence of tin. Usually, more than 1% of tin is taken as intentional, because copper ores rarely contain any tin (Niederschlag et al. 2003, 94). This suggests that the presence of a low tin content in 2 of the Deva items could be the result of a copper deposit containing more tin than usual, rather than of intentional alloying. From a number of 21 items, 7 are tin bronzes, thus representing one third of the total. This percentage is extremely high if we consider the small number of tin bronze *Ösenringe* known from central Europe.

Another observation was made on a possible correlation between metal composition and the degree of reworking. For the Deva hoard, the two items containing traces of Sn in their composition are showing the highest degree of reworking (inv. no. 5092, 5218). At Maglavit, the 2 objects with high tin levels are also the most reworked items of the hoard, smooth and with round cross-section. The same situation can be observed at Predeal, where all the items combine the tin bronze composition with full reworking and smoothing. In the case of the items from Deva this correlation can very well be apparent or the result of a certain subjectivity, the items from Maglavit and Predeal could be seen in a different light. In all the cases it can be said that we deal with special items. Cat. no. I.2, based on its small size and weight, combined with the fully finished aspect, could be best described as an ornament, an *Ösenhalsring*. Cat. no. I.6 is very special in another sense, being bigger and much heavier, but also carefully reworked. The items from Predeal are fully reworked, carefully smoothed and polished, around half the weight of the 'normal' *Ösenringe*, so the question can be

raised if they can not be interpreted as *Ösenhalsringe*. Even more, their percentages of tin are very close to each other. Since a great variation in the content of tin is one of the characteristics of the earlier Early Bronze Age objects (Niederschlag et al. 2003, 94), this balanced presence of tin looks a little unusual. One explanation could be given in chronological terms. However, exactly these similarities not only in the metal composition, but also in their shape and general aspect, together with the small number of items could lead to another conclusion. They might have been produced at the same time, using only one charge of metal.

### Functions

Many discussions have taken place in the past regarding the function of the *Ösenringe*. Many opinions have been expressed, in favour of one or several combined functions. For example, I. Nestor and M. Petrescu-Dîmbovița were placing the 'ring ingots' in the same category with the metal cakes in standardised sizes, and objects like tools (axes, sickles) or ornaments (bracelets, rings), stating that during the Bronze Age copper and bronze circulated not only as metal ingots, but serving also as an exchange equivalent, as a kind of 'money'-object, and in general as a symbol of wealth. This also explained why some of these objects are not finished or at least do not present signs of practical use (Nestor – Petrescu-Dîmbovița 1960, 119).

It was stated that their function as ingots led to their specific form, convenient for storage and transport. An opposite opinion was also expressed that on the contrary, the ingots took their form from a much loved ornament of the time, the neck ring (Lenerz-de Wilde 1995, 295). Another possible function of such ingots was to divide the metal into convenient units of size, weight, or value for purposes of counting, or for further manipulation such as melting, alloying, casting, or forging. Subsidiary functions, or perhaps even main functions, could theoretically be the use as a medium of exchange, or as objects for votive purposes. None of these explanations are mutually exclusive, they could have served all these purposes or any combination of them (Butler 1978, 355).

For a long time it was considered that the main purpose of *Ösenringe* as ingots was the production of neck rings and other types, like



bracelets, pins, and different wire ornaments (Butler 1978, 348, 355; 2002, 236). This interpretation was lately challenged based on the results of compositional analyses, because the 'classical *Ösenring* metal' mainly occurs in the form of *Ösenringe* (Höppner et al. 2005, 297). The weight centre for the spreading of this type of metal lies in the hoards of southern Bavaria. The classical *Ösenring* metal is to be found especially in ingots, and mostly in *Ösenringbarren*. The result is that this kind of copper is present in all the areas where this type of ingot was found: southern Bavaria, lower Austria, Moravia, Bohemia. Based on these observations, new interpretations were proposed for the function of these ingots as an early form of money (Krause – Pernicka 1998, 198).

Lenerz-de Wilde demonstrated that the *Ösenringe* could have played this role of a currency or 'primitive money' at the beginning of the Early Bronze Age, by determining that they have standard weights (Lenerz-de Wilde 1995, 236). Based on this study, Pare proposed a reconstruction of the metrological system, starting from a hypothetical unit of 175-200g (Pare 1999, 478). It has also been argued that apparently standardised ingot weights are simply a result of the repeated use of the same or similar moulds, and that no particular concern with weight is implied. However, there are many cases when extra weight is added after casting, showing a considerable concern for standardisation, and correspondingly for exchange values (Shennan 1995, 305).

### Interpretation

Several aspects regarding the *Ösenring* hoards from Romania will be reviewed and discussed here, like a distribution map, chronological framework, provenance, relation with grave finds, and their possible functions.

So far, only 3 hoards containing *Ösenringe* were found in Romania, but they are scattered over a large territory: one comes from Transylvania (Deva, jud. Hunedoara) (Pl. 7/3); one from Oltenia (Maglavit, jud. Dolj) (Pl. 7/1), and one from Muntenia (Predeal, jud. Prahova) (Pl. 7/2). Several *Ösenhalsringe* found as part of grave inventories can be added. Their chronological framework, for reasons already discussed above, was established based on central European parallels. It is considered that the Romanian finds can be included in the central European Early Bronze Age A1-A2. Following the high

chronology proposed for the Romanian Bronze Age, this corresponds to the earlier part of the Romanian Middle Bronze Age (2300/2200-1500) (Vulpe 2001, 223).

Two main points of view regarding their provenance can be determined. It is either considered, more or less implicitly, that they represent imports from central Europe, or that only their form was 'imported', the production being local. This second opinion was expressed by Nestor, in connection with the hoard from Deva. The special form of these items was reflecting connections with the eastern Alpine centres rather than their metal composition. In fact, the author saw the presence of these items as a proof of Early Bronze Age mining activities in Transylvania. In the absence of compositional analyses, the main argument was relying on the circumstance that copper ores (chalcopyrite and malachite) were identified close to Deva. As Nestor stated, it was difficult to imagine, in this situation, that copper ingots would have been imported to this area from the eastern Alps (Nestor 1944, 176-177). The same opinion was expressed later both for Deva and Predeal (Nestor 1954, 59). Subsequent compositional analyses conducted on the items from this hoard indicate in any case a Fahlerz type of ore, matching similar investigations conducted on central European *Ösenringe*. It is in fact risky to assume that metal objects which are found close to a specific ore source were automatically made from that ore source, as was shown through lead isotope analysis on Early Bronze Age artefacts from the vicinity of the 'Erzgebirge' (Niederschlag et al. 2003, 61-100). This situation was discussed by Shennan, in connection with the northern Alpine copper ores. Both ethnographical and historical researches have suggested that, whatever the geological distribution of copper sources may be, there are likely to be centres of production which emerge for social, economic and demographic reasons, while other sources are used for local needs or not at all. It can not be assumed that everybody would start exploiting their nearest local copper source as soon as the technology was available; on the contrary, the benefits of doing so had to outweigh the costs. This means that it was an economic and social question, which groups became copper producers, and not a geological one. Once one area within a given larger region had begun to invest in copper production, it would have been difficult for others to compete since the

advantage to be gained would not justify the costs involved. Precisely which area began first might have been more or less a matter of chance, although obviously conditioned by the geological possibilities. The author emphasises the fact that the advantage of being first should not be under-estimated (Shennan 1995, 304-307).

The determination of provenance raises also questions about the exchange routes, in the case of 'imported' goods. A map which would signal only the hoard finds is quite useless in the case of the Romanian *Ösenringe*, because of their small number and lack of direct cultural associations. However the possible relationship between the *Ösenringe* from hoard contexts and their counterparts, neck rings found in graves, so-called *Ösenhalsringe*, is quite often discussed. The connections between the two categories of finds was and still is a subject of great interest also in the central European archaeology, be it from the point of view of their composition (e.g. Krause – Pemicka 1998, 199), or their chronology and reciprocal influences (e.g. Lenerz-de Wilde 1995; Vandkilde 2005).

The present state of information on the Romanian *Ösenhalsringe* is as follows: in the western part of the country there are finds in the area of the Periam-Pecica (Mureş) culture, from the graveyard of Beba Veche, and also two settlement finds, from Pecica (Motzoi-Chicideanu – Gugiu 2001-2002, 19) and Periam, level IX, an almost complete item (one loop missing) (Soroceanu 1991, 115-116, Pl. 82, A, 4). One more find, a half of an *Ösenhalsring*, comes from Cetea, jud. Alba, a settlement belonging to the Wietenberg culture (Boroffka 1994, 232, cat. no. 107, Taf. 146,2). A complete item, probably from a cist grave, comes from Cetățeni – La Cruce, jud. Argeş. The connection between the neck ring and the cist grave is uncertain, the information being offered by the local teacher (Rosetti 1975, 280, fig. 10). Since these cist graves were dated to a period between 3000-2300 BC, there are two possibilities: either the neck ring comes from another context, or, if the association is real, this would represent an indication that the 'fashion' of burying the dead in such funerary structures continued until the end of the 3<sup>rd</sup> millennium (Motzoi-Chicideanu – Olteanu 2000, 25-26). The *Ösenhalsringe* are also present in some of the graves of the Monteoru culture, being usually associated with women. The first finds were made at Sărata Monteoru

(Nestor 1944, 177). The total number of items found so far is unclear. One item from Necropolis 2 (N.2), phase Monteoru Ia is mentioned in the literature (Motzoi-Chicideanu – Gugiu 2001-2002, 17). In the old exhibition registers from the MNA, 2 items from this site are mentioned, one from Necropolis 1 (N.1), Gr. 30, inv. no. I 2584, described as a 'bronze neck ring with looped ends'; the other, fragmentary, being exhibited under a single inventory number (I 22092) together with the crouched skeleton, a two-handled cup, a stone battle-axe, and 2 bronze beads. As part of the SAM project, 7 neck rings from Sărata-Monteoru were analysed (3 from N.1 and 4 from N.2): one torque, complete, from N.2, Gr. 28, inv. no. I 269 (8588); one complete neck ring, with overlapping ends, from N.1, Gr. 11 (8600), one neck ring with a broken end, from N.2, Gr. 67 (8613), one neck ring broken in two and deformed, without loops, from N.1, Gr. 8 (8614), one deformed neck ring from N.2, Gr. 46 (8620), one neck ring with overlapping ends, without loops, from N.2, Gr. 0 (8621) and one complete neck ring from N.1, Gr. 30 (8635) (Junghans et al. 1968, 238-241). Two finds come from Pietroasa Mică, being found around the neck of the deceased, in Gr. 3 and 16 (Oancea 1981, 154, fig. 5/10, 11/8). The graveyard from Căndești – Coasta Banului, jud. Vrancea, offered also similar finds. One find, dated to Monteoru, phase Ia, has a rather unusual position. It is used like a diadem, placed on the forehead of the deceased, having a chain made of lock-rings attached (M. Florescu – A. Florescu 1983, 115). Three other items come from two graves, one from Gr. 664, two from Gr. 666, dated to Monteoru IIb phase (M. Florescu – A. Florescu 1983, 117, fig. 1, fig. 2/3-4). At Cârломănești – La Arman, jud. Buzău, Gr. 2 produced a fragment of a neck ring, with a rolled end; Gr. 1 a neck ring, presenting an old deformation, ends with rectangular cross-section, and a small wire ring wrapped around it (Motzoi-Chicideanu – Gugiu 2001-2002, 6-8); Cpl. 10 a-b another neck ring (Motzoi-Chicideanu et al. 2004, 21; Vasilescu 2004, 39). The neck rings from the Monteoru graves are considered to date a little later than those from the Periam-Pecica culture (Motzoi-Chicideanu – Olteanu 2000, 26).

The map (Pl. 7) reflects the distribution of the *Ösenhalsringe*, showing two concentrations. The first one is present in the westernmost part of Romania, in the area of the

Periam-Pecica (Mureş) culture: the graveyard Beba Veche (Pl. 7/9) (most of the graveyards with similar finds belonging to this culture are situated outside the Romanian borders), and the two finds from settlements, Periam (Pl. 7/11) and Pecica (Pl. 7/12). A second concentration, further east, belongs to the Monteoru culture, the graveyards from Sărata Monteoru, Căndeşti, Pietroasa Mică and Cărlomăneşti (Pl. 7/4-7). Two more find places are Cetea (Pl. 7/10) and Cetăţeni (Pl. 7/8).

Attention has been drawn to the fact that the analogies between these items have limited value, the neck rings from the Monteoru culture being morphologically different to the western items, like those from the Periam-Pecica area, or the hoards from Predeal, Deva or Maglavit. While the neck rings from Periam-Pecica culture belong to the same world as those from the middle Danube, the Monteoru items could be described as representing a variant – to which the neck ring from Cetăţeni could be added – based on their reduced thickness, and differences in the treatment of the ends (Motzoi-Chicideanu – Gugiu 2001-2002, 19-20). It can be presumed rather than asserted that the Monteoru items show a large variety of dimensions and weight. Unfortunately, not all the neck rings are properly published, and some not at all. Their dimensions are only rarely given by the authors, who sometimes content themselves to specify that the items are similar in shape, if not in the quantity of metal used, with those belonging to the hoards (Oancea 1981, 154). This situation is combined with the frequent absence of scale bars in the drawings. Based on the drawings where a scale bar is present, some dimensions can be approximated, like in the case with the item from Cetăţeni (max. diameter 11 cm; opening 5.3 cm, max. thickness 0.6 cm) and the two neck rings from Căndeşti, Gr. 666 (max. diameter 8.2 and opening 6 cm; max. diameter 9.3 cm and 7.2 cm). From the drawings of the Sărata-Monteoru items offered for the SAM analyses, the following information can be gained (in order max. diameter, opening, max. thickness): 11.8 cm, 2.3 cm, 0.4 cm (N.2, Gr. 28); 11.7 cm, overlapping ends, 0.45 cm (N.1, Gr. 11); 12.1 cm, 6.8 cm, 0.3 cm (N.2, Gr. 67); 14.5 cm, 5.8 cm, 0.7 cm (N.1, Gr. 8 – not certain, because the item is broken and deformed); 12.2 cm, 5.3 cm, 0.4 cm (N.2, Gr. 46); 12.3 cm, overlapping ends, 0.4 cm (N.2, Gr. 0); 15.8 cm, 6 cm, 0.6 cm (N.1, Gr. 30). The recent excavations, like

those from Cărlomăneşti, brought more information: the neck ring from Gr. 1 was described as made of bronze wire, with a thickness of 0.35 cm, a length of 38 cm, and a weight of 20.996 g (Motzoi-Chicideanu – Gugiu 2001-2002, 17). The neck ring from Cpl. 10 is a small, thin item, very similar to the previous one (Vasilescu 2004, 39, fig. 3.7).

The variation of dimensions and, consequently, also weight, is not a characteristic specific only to the funerary finds of the Monteoru culture. This situation was emphasised as generally characterising the neck rings from graves, in contrast with their counterparts from hoards. In Bavaria the weights of such neck rings range between 66 and 210 g, two neck rings from children graves weighing 43 and 27 g. Similar variations were noticed for the Austrian graves, from 58 to 174 g, with an exception of 381 g. While some of the weights of the Ösenringe, together with their degree of reworking and smoothing, could indicate that they were transformed directly into ornament rings, other grave items are much lighter (Lernerz-de Wilde 1995, 267-269), indicating intermediary interventions in order to achieve the final size and weight. The light Ösenringe from the Predeal hoard, with their careful reworking and polishing, could be considered as items prepared for use. Still, while their maximum diameter matches quite well those of most of the neck rings from Sărata-Monteoru, as, their opening is usually larger and, more important, the maximum thickness of their bars exceeds that of these neck rings, being in most cases more than double. Interestingly their size matches from this point of view that of items from child graves from central Europe, as they are presented for graveyards like, for example, Franzhausen (Vandkilde 2005, 272). If the Ösenringe from Predeal were imports from the west in connection with the Monteoru communities, and used for ornaments, it is possible that the lack of metal in this area led to further reworking of the items in order to create a greater number of lighter and thinner neck rings. But it should be emphasized that the metal composition does not seem to sustain this interpretation, at least for the neck rings from Sărata-Monteoru. More analyses would be needed, for items from other graveyards of this culture, in order to establish with certainty if there is any connection with the items from the hoard.

Looking at the geographical distribution of all the *Ösenringe* and *Ösehalssringe*, the impression that they spread on a west-east direction can not be avoided. This spreading seems to follow a route which runs along the Mureş river, with the Periam-Pecica finds and the hoard from Deva, ending with the Predeal hoard and the Monteoru neck rings further east. The only eccentric find place remains that from Maglavit, which could be connected to a more southern route.

The 'adoption' of the fashion of wearing neck rings in the Monteoru culture from central Europe was already taken into consideration, being placed in the larger context of long distance exchange, the metal being most probably the main commodity, since the copper ores are absent from this area (Motzoi-Chicideanu – Gugiu 2001-2002, 19-20).

In this line of argument, the hoard from Predeal, jud. Prahova, could prove to be an important asset. Its geographical position, between the site from Cetățeni and the Monteoru sites which provided *Ösehalssringe*, can not be accidental. Even more, the Predeal hoard is located on the Teleajen valley. The river received most probably its name in medieval times, from the Slavic term *telega* (cart, chariot), designating the 'valley with a road for carts'. It is interesting that also Drajna (where the well-known Late Bronze Age hoard was found), situated at 5 km distance from Predeal, derives its name from the same meaning. These medieval names indicate in fact the frequent use of this route from and to Transylvania, through the Teleajen valley, from which further connections were made with the Buzău valley, the Drajna and Bâsca valleys (Niculescu 1981, 10). This area was no doubt very interesting also for the prehistoric populations which wanted to establish longer distance contacts. Another point of interest for this area is that salt is present in several locations, and there is evidence that it was exploited during Roman and medieval times (Niculescu 1981, 38). In this light, the fact that the village of Predeal belongs to a township called Sărari (approx. 'salt places', 'places where salt is found') is not without importance, as a hypothesis, when the question arises what could have been offered in exchange by the Monteoru communities for the imported metal.

If the role of the *Ösenringe* was the same in this region as in its original area of production is difficult to establish., In her research on the

south-north spreading of this category of items, Vandkilde noticed deviations and changes in their use, as well as in the people's perception on them, which she puts in connection with different cultural areas. While in the Danubian region of production they were surely intended as a standard means of exchange, or money, in the northern areas money became transformed into ingots. This opinion is based on the observation that in the production area the 'classical *Ösenring* metal' is found mainly in form of items from hoards. Going up north, the situation changes in that less and less *Ösenringe* are found, and more and more other types of objects show this specific metal composition, culminating in the southern Scandinavian area, where this specific metal was fully used for manufacturing local types of artefacts, while the *Ösenringe* are rarely present as single finds (Vandkilde 1998, 119-120; Vandkilde 2005, 264).

While the function of the *Ösenringe* as pre-monetary currency makes sense in a coherent economic system, based on shared cultural views, it is hard to determine if this would have played an important role in an area which can only be described as remote from the core. More probable is their use as ingots, but in order to bring arguments in favour of this opinion, extensive compositional analyses are required, especially for the grave finds.

This is the present view on this subject, as the small number of finds and the incomplete publication of the material, is far from the reality of the prehistoric times. All that can be said for now is that the *Ösenringe* from Romania seem to represent the end of a west-east axis stretching from central Europe to this region, reflecting, together with other categories of artefacts, contacts between communities along that line<sup>13</sup>.

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**Pl. 1:** Colierele din depozitul de la Maglavit.  
**Pl. 1:** The Ösenringe from the Maglavit hoard.





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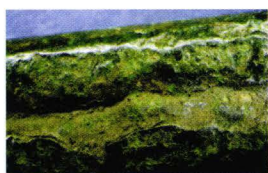
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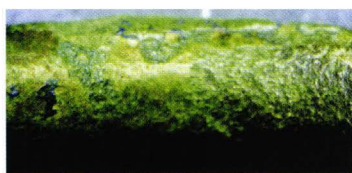
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**Pl. 2:** Colierele din depozitul de la Predeal.  
**Pl. 2:** The Ösenringe from the Predeal hoard.

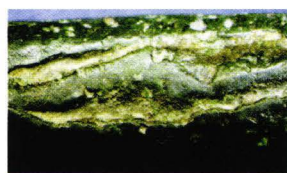




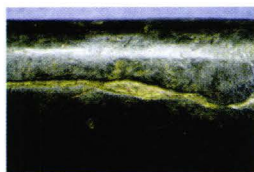
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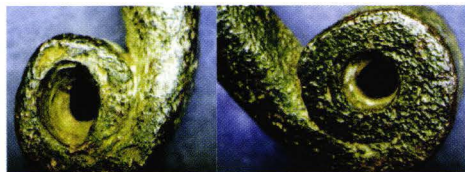
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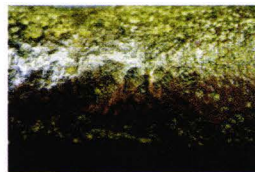
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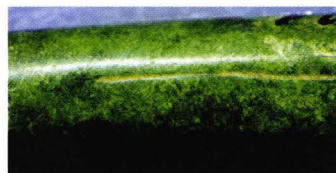
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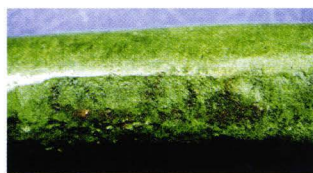
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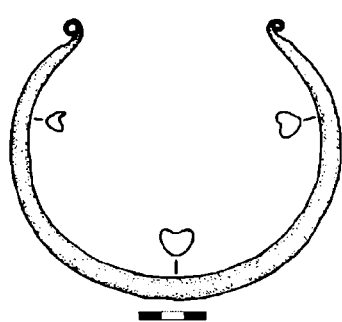


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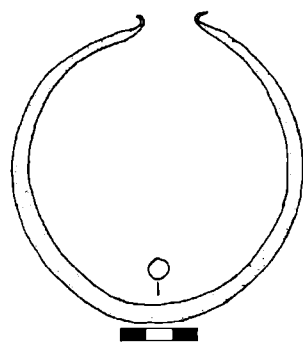


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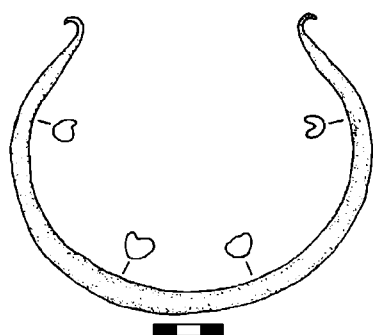
**Pl. 3:** Colierele de la Maglavit și Predeal (detalii).  
**Pl. 3:** The Ösenringe from Maglavit and Predeal (details).



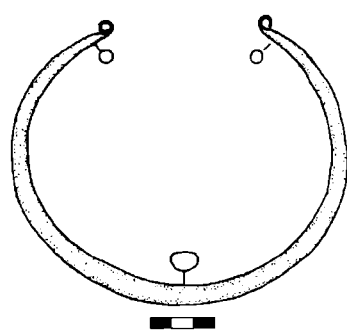
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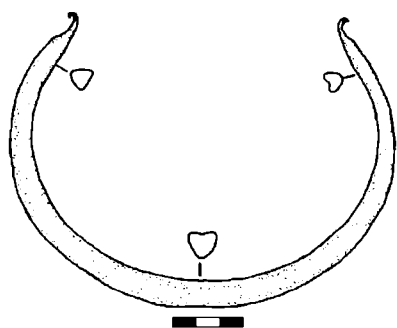
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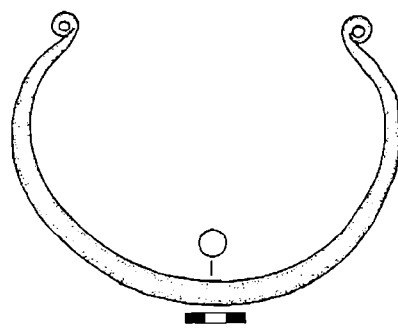
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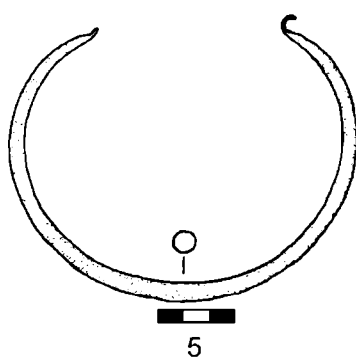
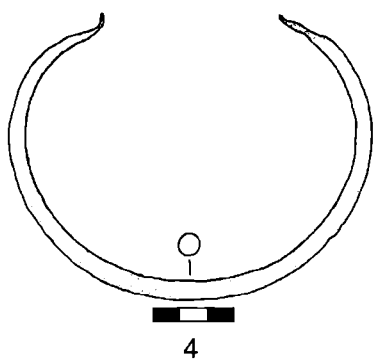
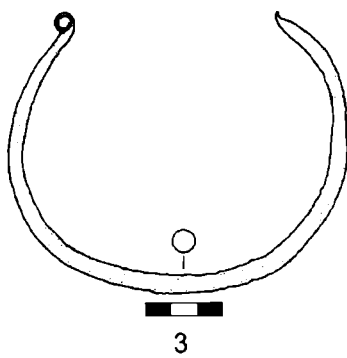
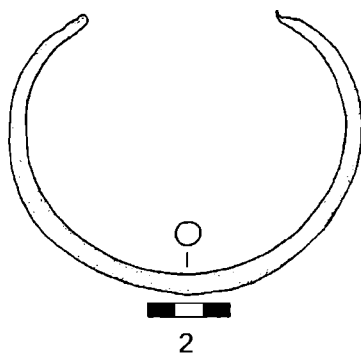
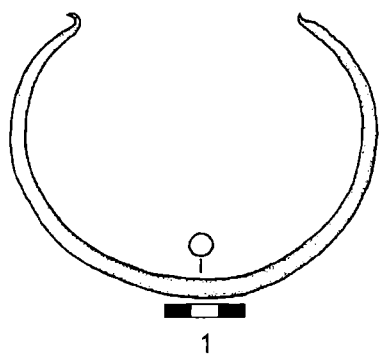


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**Pl. 4:** Colierele din depozitul de la Maglavit.  
**Pl. 4:** The Ösenringe from the Maglavit hoard.

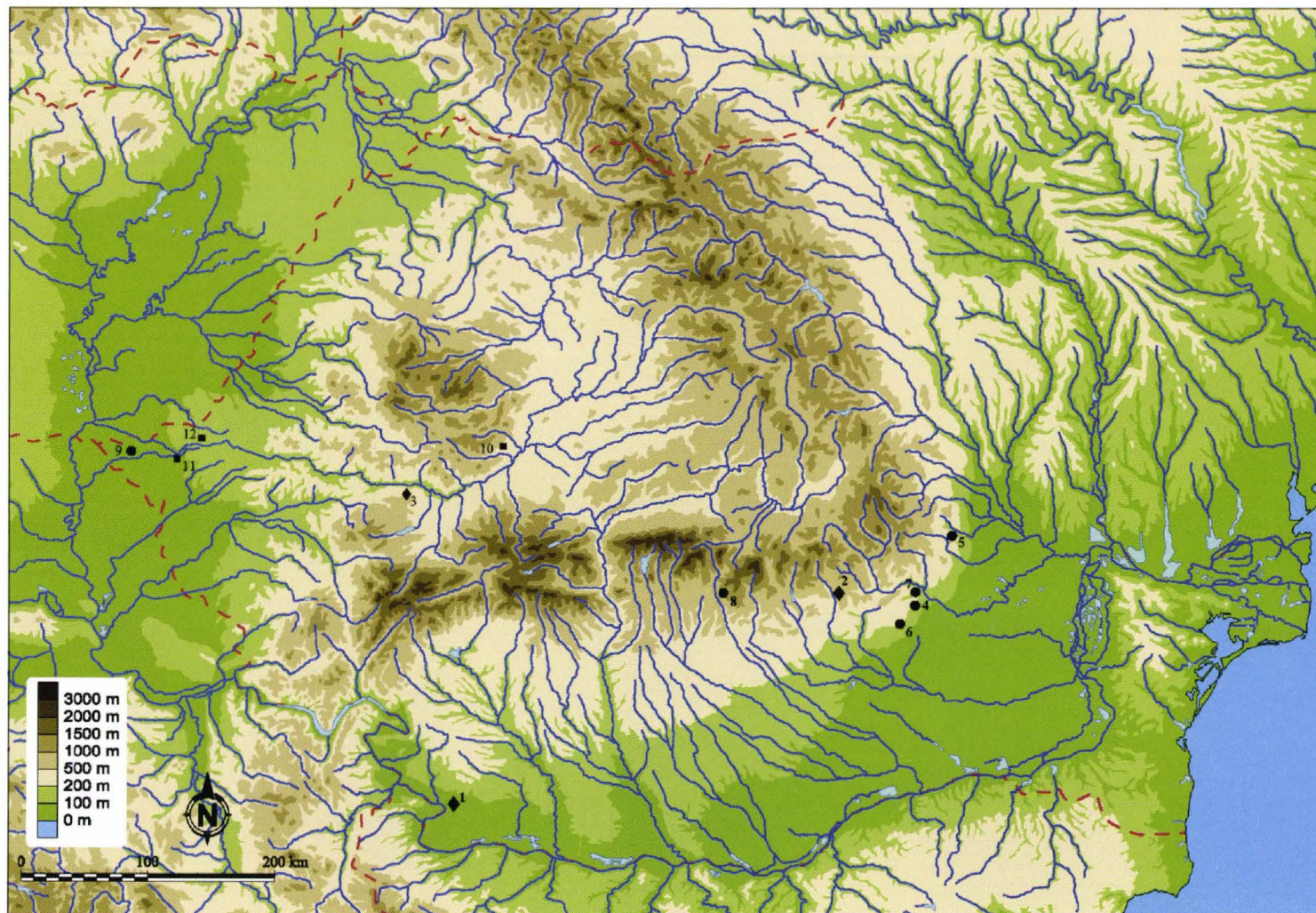


**Pl. 5:** Colierele din depozitul de la Predeal.  
**Pl. 5:** The Ösenringe from the Predeal hoard.

Hoard	Cat. no.	Inv. no.	Maximum diameter	Opening	Maximum thickness	Weight
<b>Deva*</b>		5089	13.5	10	1.3	169
		5090	14.4	9.8	1.3	204
		5091	13.3	9.3	1.2	198
		5092	12.2	9.1	1.3	187
		5093	13.8	8	1.6	195
		5094	12.5	7.5	1.5	202
		5095	13.6	7.3	1.2	200
		5216	13.5	7.7	0.7-1.5	216
		5217	13.5	7.8	0.8-1.5	175
		5218	13.8	9.2	0.9-1.1	210
<b>Maglavit</b>	I.1	14058	12.85	8.2	1.0	215.122
	I.2	14059	10.15	1.8	0.8	91.485
	I.3	14060	13.95	9.4	1.1	185.977
	I.4	14061	14.2	6.8	1.05	210.134
	I.5	14062	14.15	10.75	1.1	206.692
	I.6	14063	17.35	13.15	1.3	308.370
<b>Predeal</b>	II.1	12063	12.0	8.05	0.9	108.67
	II.2	12064	11.5	6.8	0.9	101.429
	II.3	12065	11.8	7.7	0.8	107.122
	II.4	12066	12.1	6.2	0.85	99.309
	II.5	12067	12.25	7.05	0.85	103.309

**Pl. 6:** Colierele din depozitele din România (după Nestor 1944).  
**Pl. 6:** The Ösenringe from the Romanian hoards (after Nestor 1944).





**Pl. 7:** Răspândirea geografică a colierelor de tip Ösenringe (romb: depozit, cerc: mormânt, pătrat: așezare). 1. Maglavit; 2. Predeal; 3. Deva; 4. Sărata Monteoru; 5. Cândești; 6. Pietroasa Mică; 7. Cârlomănești; 8. Cetățeni; 9. Beba Veche; 10. Cetea; 11. Periam; 12. Pecica

**Pl. 7:** Geographical distribution of the Ösenringe (rhomb: hoard, circle: grave, quadrat: settlement). 1. Maglavit; 2. Predeal; 3. Deva; 4. Sărata Monteoru; 5. Cândești; 6. Pietroasa Mică; 7. Cârlomănești; 8. Cetățeni; 9. Beba Veche; 10. Cetea; 11. Periam; 12. Pecica

