

# Celtic or Roman? Late La Tène-Style Scabbards with Copper-Alloy or Silver Openwork Plates

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## 1. INTRODUCTION

This article discusses a group of scabbards and associated swords from roughly the second half of the 1<sup>st</sup> century BC. Elaborate copper alloy or, rarely, silver openwork (*opus interrasile*) plate on the front of the scabbard is the most distinctive feature of the group.

The group was first discussed by Joachim Werner in his fundamental paper (Werner 1977). He pointed to their wide distribution particularly among the Celtic and Germanic tribes, proposed their Norican origin and dated them to the Augustan period.

Detailed publications of scabbards with non-ferrous openwork plates and associated swords from Germany (Büchel, Wederath-Belginum, Badenheim) and Luxemburg (Göblingen-Nospelt), as well as an in-depth survey by Astrid Böhme-Schönberger followed much later (Böhme-Schönberger 1998; Haffner 1995; Metzler / Gaeng 2009, 243-249, fig. 65/22a).

A thorough interdisciplinary research of the group, based on the examination of a sword and its sheath from the River Ljubljanica (**fig. 1**) and three swords with associated sheaths from graves from present-day Slovenia (**figs. 2–4**), was carried out. Reports on the findings of the investigation were published in Istenič 2010 (detailed description of the individual objects and general interpretation of the findings); Šmit et al. 2010 (characterisation of metals); and Istenič et al. 2011 (metallographic and scanning electron investigation of the laddered chape of the scabbard from the Ljubljanica). Only the salient points regarding the interactions between the Romans and barbarians in the last decades BC and beginning of the 1<sup>st</sup> century AD shall be the topic of the present paper.

## 2. OBJECTIVES

There was no consensus regarding the origin of the discussed swords and scabbards. In addition to the thesis of their Norican origin (e.g. Werner 1977 and Böhme-Schönberger 1998, 240, 243), several authors of later publications suggested they were manufactured in various regions, including the regions inhabited by the *Norici* and *Treveri* (e.g. Haffner 1995, 150-151; for details see Istenič 2010, 122-123).

Examining the Polish examples, Łuckiewicz (Łuckiewicz 2000, 370-375) suggested that scabbards with bronze openwork plates were imported (Celtic), whereas the ones with an iron fitting with a much simpler decoration (i.e. net-like decoration), were Germanic. The latter were defined as a group by Böhme-Schönberger (Böhme-Schönberger 1998, fig. 7) and later studied by Czarnecka (Czarnecka 2002).

The metallographic analysis of the sword from Büchel showed that its quality was in no way superior to that of the common Celtic swords (Schwab 2005, 334), challenging an important argument for locating the production of this group in the Norican region. Werner (Werner 1977, 386) and several others (most recently Böhme-Schönberger 1998, 240) assumed that richly decorated scabbards contained first-rate swords, which they associated with the high-quality Norican iron (*ferrum Noricum*) mentioned in Pliny.

The copper-alloy of the openwork scabbard plates was characterised in the case of the scabbard from Büchel (it is alloy of copper, zinc, tin and lead; Schwab 2005, 332), and grave 78 at Zemplín (it is brass with 18% zinc; Longauerová / Longauer 1990).

The evidence regarding brass was extremely interesting as in the 1<sup>st</sup> century BC the use of brass in Europe was closely related to the Romans. An ex-

ception to the said seems to be the thin pure brass foils on the two stamps of the Isleworth sword from the River Thames, dated to the second half of the 3<sup>rd</sup> – 2<sup>nd</sup> century BC (Stead 2006, 32-34, 168, 228, 48-49, fig. 62, Cat. # 76). They suggest that in decoration of very rare pre-Roman objects tiny amounts of brass, supposedly produced in Anatolia, were used (Craddock / Cowell 2006).

It is generally assumed that it was the Romans who spread the use of brass through Europe (Craddock et al. 2004; Istenič / Šmit 2007). The close link between the use of brass and the Romans is even more relevant for pure brass, i.e. undiluted brass, which was produced intentionally, by cementation, and typically contained about 20 % zinc and very little lead and tin (cf. Jackson / Craddock 1995, 93-94).

The Romans started to produce and use brass about 60 BC (Istenič 2005, 189-190, 198-201; Istenič / Šmit 2007). Published analyses suggest that from the Augustan period, brass was widely used in coinage, Roman military equipment and brooches (Istenič 2009, 238, fn. 12, 13). In the early period the use of brass seems to be linked primarily to the imperial coinage and the Roman army, both of which were controlled by the central administration (Istenič 2009, 242).

### 3. RESEARCH STRATEGY, ANALYTICAL AND RESEARCH METHODS AND TECHNIQUES

In our view, an in-depth examination of objects of the group from Slovenia, which would include characterisation of copper-alloy applied to the scabbards and/or swords, could provide important evidence for the interpretation of the whole group.

Two techniques were used to examine the composition of the non-iron metals from which the scabbards and swords were made. Energy dispersive X-ray fluorescence spectroscopy (XRF), carried out at the National Museum of Slovenia (NMS), was ap-

plied to the unprepared surface of the objects and provided only an estimate of the metal composition. Proton induced X-ray emission spectrometry (PIXE) was used on unprepared and prepared areas (Šmit et al. 2010) and provided far more accurate characterisation of the metal. A detailed description of the techniques is found in Šmit et al. 2005 (Šmit et al. 2005, 214-215).

### 4. ANALYTICAL RESULTS

Copper alloy was characterised on four (out of five known) scabbards and associated swords of the group from Slovenian sites. The results are presented in **table 1**.

The proportion of zinc in analysed brass is between c. 16 and 22 %.

### 5. OBSERVATIONS AND DISCUSSION

Scabbards' openwork plates are very skilfully made and suggest that these weapons were artefacts of high quality and probably also of prestigious character; this is obvious in the items which were made entirely of copper alloy (**list 1 / 14, 16c, d**) and particularly in the ones in which silver was applied instead of copper alloy (**list 1 / 8, 25**) or in combination with copper alloy (**list 1 / 24, 26**).

Regarding their length, the scabbards and swords fall into two sub-groups:

a) c. 70 cm long scabbards (Wesołki gr. 3, items from Slovenia and an unknown site; **list 1 / 13a, 18-21, 25**) and c. 82 cm long swords with pointed tips, which resemble *gladii* (items from Wesołki gr. 3 and Slovenia; **list 1 / 13a, 18-21**);

b) c. 80 cm long scabbards (items from Göbblingen-Nospelt, Büchel, Wederath, Badenheim, Stara Wieś, Belozem; **list 1 / 1, 3-5, 11, 24**) and 90-95 cm long swords with a long and pointed tip (from Zemplín gr. 78, 128 and the Danube; **list 1 / 16b, d, 22**) or with a short tip (from Büchel and Wederath; **list 1 / 3, 4**).

**Table 1.** Scabbards and associated swords from Slovenian sites

Site	Scabbard	Sword
The river Ljubljana	brass: front plate, openwork plate	brass: knob lining, campanulate hilt end
Strmec above Bela Cerkev	brass: whole scabbard	knob lining and campanulate hilt end not preserved
Verdun Gr. 37	brass: front plate; openwork plate not preserved	brass: knob lining; campanulate hilt not preserved
Verdun Gr. 131	brass: front plate; copper alloy: openwork plate (not characterised)	brass: front plate; copper-alloy: campanulate hilt end (not characterised)

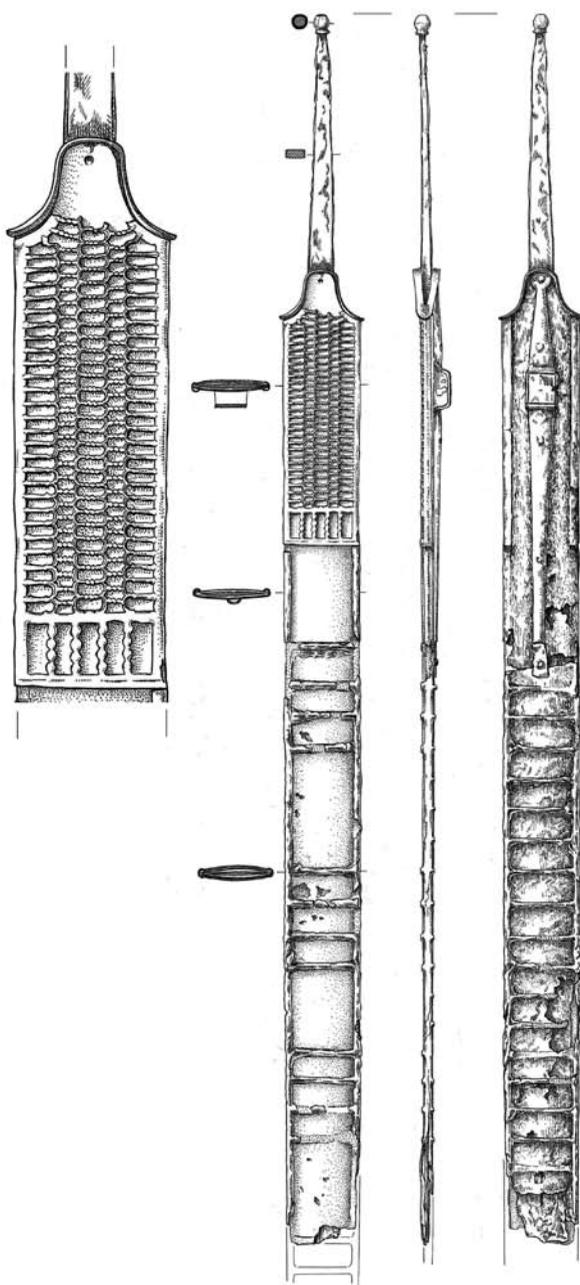


Fig. 1. The Ljubljana sword in its scabbard. Scale 1 : 4, detail 1 : 2. Drawing by D. Knific Lunder

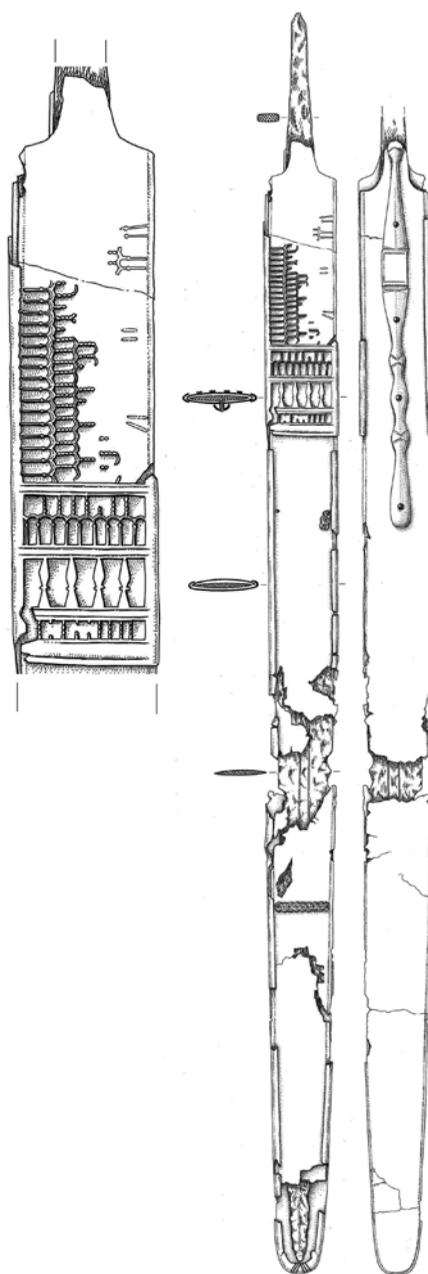


Fig. 2. Strmec above Bela Cerkev, sword in its scabbard (reconstruction of the original shape). Scale 1 : 4, detail 1 : 2. By I. Murgelj, NMS

There are two sub-groups of scabbards regarding their form and the applied metals:

a) scabbards with a laddered chape, made in combination of iron and copper alloy; they have a spur-shaped end (items from the Stara Wieś, Ciecierzyn, Büchel, Ljubljana, Verdun; **list 1 / 3, 11, 12 18, 20**) and in one case a boat-shaped end (Badenheim; **list 1 / 5**);

b) scabbards without a laddered chape, made of non-ferrous metals (copper-alloy or/and silver); scabbard's ends are rounded (items from Witaszewicze, Zemplin gr. 128 and perhaps 108,

Strmec, Belozem and the two scabbards from unknown sites; **list 1 / 14, 16c, d, 19, 24-26**).

Graves in which the discussed scabbards and swords were found suggest that their wider time span is La Tène D2. Grave B from Göblingen-Nospelt, which provides the only reliable narrow dating for this type of scabbard, would suggest a more precise time-span for their main period of use between 40/30 and 15 BC. The scabbard from grave 131 at Verdun which cannot be earlier than late Tiberian would support this dating (Istenič 2010, 140-142).

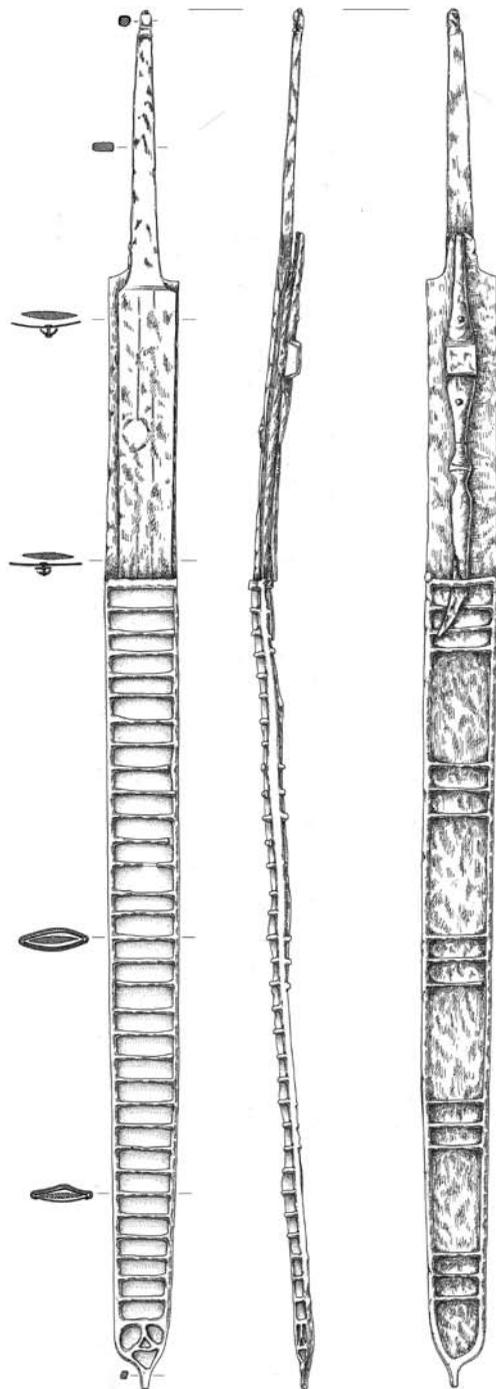


Fig. 3. Verdun, grave 37, sword in its scabbard. Scale 1 : 4.  
Drawing by I. Murgelj, NMS

The distribution of the discussed scabbards indicates areas inhabited by Celtic and Germanic tribes; one or two examples come from the Thracian area. Distinctly high concentrations (five examples) appear in the wider area of the Moselle and on the territory of central and south-eastern Slovenia; also

notable are the finds from Magdalensberg, Zemplín and Poland (fig. 5; list 1).

30 of 34 scabbards of the group or their fragments come from graves, which suggests that their distribution may be related to the distribution of the graves with weapons of that period. It would seem, however, that inside the Roman Empire, these swords and scabbards were mainly used in the wider areas of the Moselle, the Middle Rhine and eastern Alps, which were inhabited by the *Treveri*, *Norici* and *Taurisci*. In the early Augustan period, these regions were already part of the Roman state or in close friendship with it. In the regions which never became part of the Roman Empire, the swords and scabbards under discussion appear in the wide territory inhabited by various tribes called *Germani* by the Romans; the scabbard and its associated sword from Belozem (and perhaps also the example list 1 / 25) suggest their sporadic occurrence in Thracian tribes.

The scabbards and swords of the group clearly exhibit Celtic/La Tène characteristics, as indicated by their construction and technique of decoration. The possible Roman influences are the long and narrow blades and pointed ends, which appear on some of the blades, as well as the decoration motif of arcades (Istenič 2010, 142-143).

Considering the obvious links of these scabbards and swords to Celtic tradition, the results of copper-alloy characterisations were surprising. Copper alloy of eight items was analysed. In seven of them (from Zemplín, grave 78, Wederath, Badenheim<sup>1</sup> and four from Slovenia) it proved to be pure brass (i.e. brass with about 20% zinc), indicating that brass ingots were used for their manufacture rather than melted brass objects; when brass is melted, the proportion of zinc is namely reduced (cf. Nieto 2004). On the scabbard from Büchel, brass diluted by tin and lead (most probably obtained by melting brass and bronze objects together) was applied (cf. Schwab 2005, 332, tab. 2).

The interpretation of the use of pure brass in the scabbards and swords under discussion is made difficult by the fact that elemental composition of only very few Late La Tène metal objects has been published. Two swords of the group, which bear a name stamp on their blade, provide additional evidence: the swords from grave 20 at Wesolki, and from Grave 78 at Zemplín (list: 1 / 13c, 16b). The names most probably refer to the makers of the swords; in the first case (stamp ALLIVS.PA), the person

<sup>1</sup> The author would like to thank Dr. Roland Schwab (Curt-Engelhorn-Zentrum Archäometrie, Mannheim) for the information regarding the composition of copper alloy of the scabbards from Wederath and Badenheim.

had a Latin name, while in the second case (stamp VTILICI) this seems possible, but not certain.

The distribution of the scabbards under discussion (fig. 5), concentrated in Celtic and Germanic regions, does not necessarily reflect relations between the Celts and their eastern neighbours, as has been presumed. In our view, it seems more likely that they reflect Roman contacts with the Celts and other peoples of the newly conquered regions, as well as the ones from the Barbaricum, in the last decades BC and the beginning of the 1<sup>st</sup> century AD.

The *Treveri* had had intense links to the Roman army as early as Caesar's Gallic wars (alternately as allies and enemies). Rich cavalry graves from Göblingen-Nospelt, including grave B with the sword and scabbard under discussion, are related to the members of *Treveri* aristocracy (Metzler / Gaeng 2009, 513-519, 521), which commanded their military forces within the Roman army.

The link of the *Taurisci* to the Roman army during the middle and late Augustan period and also later is indicated by the graves with Roman-type military equipment from Verdun (Breščak et al. 2002, 139, 141-142, cat. # 74, 82) and Mihovo (Windl 1975, pls. 21/1-5, 28/1-3, 43/1-5, 51/15-19, 61/5-7). In our opinion, the grave with the sword and scabbard of the discussed group from Strmec above Bela Cerkev and grave 37 from Verdun also belonged to Tauriscan warriors, who were presumably members of the ruling class with military-political relations with the Romans. In addition to the discussed swords and scabbards, they used their traditional weapons and attire and were buried with La Tène type pottery (cf. Božič 1999, 211). Considering the narrower date-span of the scabbards in question, the most probable dating of the said graves would seem to be between 40/30 and 15 BC. This would be consistent with the new situation which developed in the South-Eastern Alps after Octavian's Illyrian wars (35-33 BC).

The leaders of Thracian tribes, and their warriors, took part in the civil wars following Caesar's death (in the battle of *Philippi* 42 BC with 3000 cavalrymen on each side, and in the battle of *Actium* 31 BC), and after the middle Augustan period, when a vassal kingdom was established there, its men fought on Roman side in many wars, including the Dalmatian-Pannonian war of AD 6-9 (Danov 1979, 121-132).

The use of pure brass in the discussed scabbards and swords, which in form and appearance exhibit Celtic characteristics, indicate they were produced in a milieu of intense Celto-Roman relations. A Latin name stamp on one of the swords suggests that

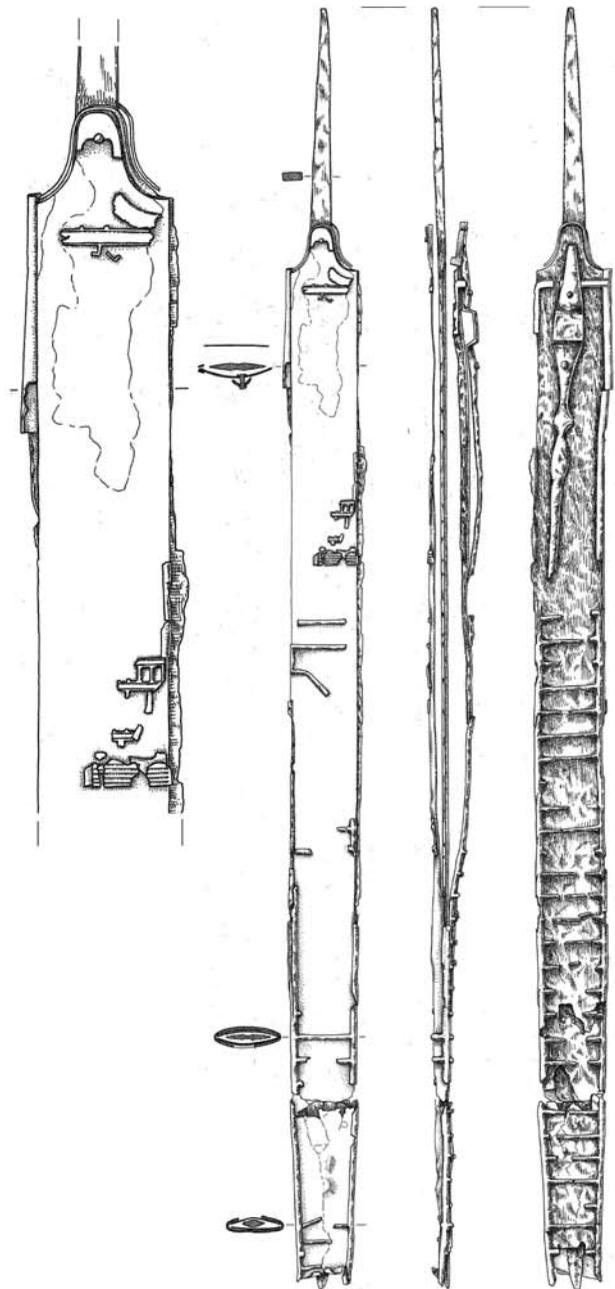


Fig. 4. Verdun, grave 131, sword in its scabbard. Scale 1 : 4, detail 1 : 2. Drawing by I. Murgelj, NMS

Romans took part in their manufacture. They were made in Celtic tradition, but with materials used in the production of Roman weapons (brass). These observations, as well as the distribution of these weapons lead us to the assumption that their production and distribution were in Roman hands. They were intended for cooperating Celts and others, who valued Celtic swords. The Romans distributed these weapons as gifts and trade goods. Their presence at Zemplín and on sites in Poland might reflect Roman gifts in the regions along the Amber Route.

The manufacture of the discussed weapons pre-

sumably took place in a region from where a wide distribution of products to the territories indicated by their find-spots (**fig. 5; list 1**) can be expected, and where the relations between the Celts and the Romans were close. In our opinion, the eastern part of *Gallia Cisalpina*, the province which became part of Italy in 42 BC, seems to best meet the described requirements.

The two lengths of the scabbards and swords suggest that the longer ones were made for cavalrymen, while the shorter ones were intended for infantrymen. This assumption is in accordance with grave B from Göblingen-Nospelt and grave 129 from Zemplín, in which relatively long scabbards and swords of the discussed group were associated with spurs (Metzler / Gaeng 2009, fig. 65/70a, b; Budinský-Krička / Lamiová-Schmiedlová 1990, pl. 18/1, 2). It is also supported by the fact that only the longer items come from the territory of the *Treveri* and that all the four scabbards and swords from the territory of the *Taurisci* fall in the subgroup of shorter items (**list 1 / 19-21**).

## 6. CONCLUSIONS

Scabbards with openwork copper-alloy or silver plates make up a relatively homogenous group of La Tène-style weapons, which, according to the available information, add up to 34 examples. Thirty come from graves, two from rivers and two from unknown sites. They were manufactured and used roughly between 40/30 and 15 BC.

The use of pure brass, established for seven items (four from Slovenia, two from Germany and one from Slovakia), and a stamp bearing a Roman name on the sword from Wesołki, indicate strong links between their production and the Romans. It follows from our research that their production (perhaps in eastern *Gallia Cisalpina*) and distribution were under Roman control.

### LIST 1

A list of Late La Tène-style scabbards with non-ferrous openwork plates or their fragments and swords related to them.

For each object the latest publication with an illustration is cited, as well as others, when relevant for determining the scabbard and/or sword, their find-spot or the character of the non-ferrous metals.

For scabbards only the non-ferrous metal is given; items made (presumably) only of non-ferrous metals are marked "no iron".

For swords, equally, only non-ferrous metal is mentioned, where it survives, i.e. if a campanulate hilt-end or a knob-lining survives.

### LUXEMBURG

1. Göblingen-Nospelt, grave B; scabbard (copper alloy) and sword (copper alloy).

Metzler-Gaeng 2009, 80, 84, 243-244, figs. 65/22a, 213, 215/1.

2. Titelberg, eastern cemetery and Celto-Roman sanctuary; part of the scabbard with openwork plate (copper alloy) and sword.

Metzler-Gaeng 2009, 248-249, figs. 214, 215/2.

### GERMANY

3. Büchel, grave; scabbard (gunmetal) and sword.

Haffner 1995, 137-142, 148, figs. 2, 3, 9/1, folding plate 1; Schwab 2005.

4. Wederath, grave 784; scabbard (copper alloy) and sword.

Haffner 1995, 141-143, figures 4, 9/2, folding plate 1.

5. Badenheim, grave; scabbard (brass) and sword.

Böhme-Schönberger 1998, 218-223, fig. 11-13, Beilage 4; Istenič 2010, 143.

6. Groß Romstedt, grave; fragment of a scabbard's openwork plate (copper alloy) and a sword's blade.

Czarnecka 2002, 97, # 6; Werner 1977, 381-382, fig. 11/2.

7. Schkopau, cemetery; fragment of the upper part of a scabbard with openwork plate (copper alloy).

Schmidt / Nitzschke 1989, 93, E 7, pl. 78/7.

### SWEDEN

8. Eggeby, barrow; openwork plate (silver).

Böhme-Schönberger 2001, 79-80, fig. 1.

### POLAND

9. Kopaniewo, grave 10; fragment of a scabbard with an openwork plate (copper alloy).

Werner 1977, 377, fig. 6.

10. Rządź, cemetery; fragment of an openwork plate (copper alloy).

Werner 1977, 382-383, fig. 11/1.

11. Stara Wieś, grave 1; scabbard (copper alloy) and sword (copper alloy).

Kaszewska 1977, 119, # 21, fig. 3.

12. Ciecierzyn, grave 118; scabbard (copper alloy) and sword.

Martyniak et al. 1997, 28, t. 117/1, 2.

13a. Wesołki, gr. 3; scabbard (copper alloy) and sword.

Dąbrowska / Dąbrowski 1967, 14, sl. 7/8; Kokowski 2003, 107, sl. 16; Czarnecka, pers. comm.

13b. Wesołki, grave 50; scabbard's openwork plate and spur-like chape-end (copper alloy).

Dąbrowska / Dąbrowski 1967, 56, fig. 57/1, 8; Łuckiewicz 2000, 370, table 1, fig. 13/1, 8.

13c. Wesołki, grave 20; sword (copper-alloy knob) with stamp ALLIVS.PA.

Dąbrowska / Dąbrowski 1967, 28, fig. 23 / 6, pl. 8/2.

14. Witaszewice, grave 147/1937; fragments of scabbard (no iron, copper alloy) and sword.

Werner 1977, 391-392, fig. 18; Kaszewska 1977, 108, 120, # 46, fig. 1/3-5; Łuckiewicz 2000, 370, table 1, 376, fig. 17.

15. Kamięńczyk, gr. 301; scabbard (only iron?) and sword.

Dąbrowska 1997, 62, 90, pl. 138/4, 201/1; Bochnak / Czarnecka 2004-2005, 29, fig. 4.

According to the published evidence, the scabbard (now lost) had an iron high-quality *opus interrasile* plate. It would be the only scabbard with an iron openwork plate, which is of the same quality and decorated with the same motifs as the copper alloy plates.

### SLOVAKIA

16a. Zemplín, grave 77; two fragments of an openwork plate (copper alloy).

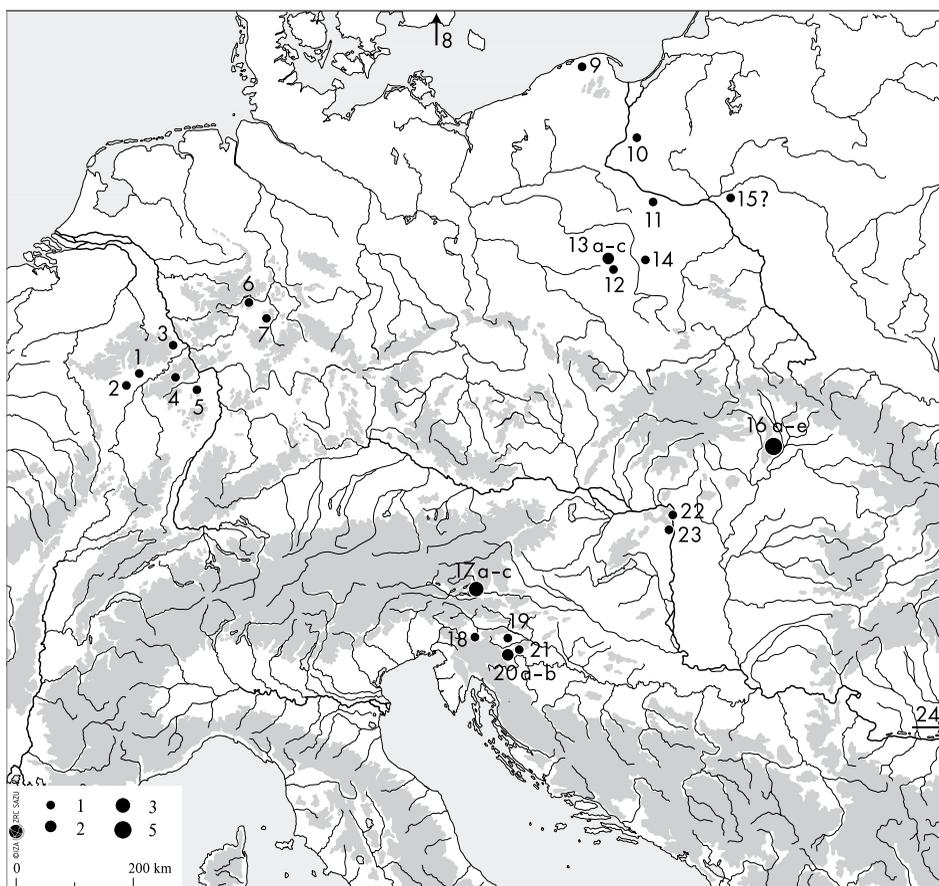


Fig. 5. Distribution of scabbards with non-ferrous openwork plates or their fragments. For details see List 1

Budinský-Krička / Lamiová-Schmiedlová 1990, 253, 255, pl. 11/10, 11.

**16b.** Zemplín, grave 78; sword with a stamp VTILICI and remains of a scabbard (copper alloy).

Budinský-Krička / Lamiová-Schmiedlová 1990, 255, fig. 20a, pl. 11/20; Lamiová 1993, 25, 27, fig. 18, 19, 25; Pleiner 1993, 97.

**16c.** Zemplín, gr. 108, a fragment of the upper scabbard part with openwork plate and a fragment of its end (copper alloy, no iron).

Cosack 1977; Budinský-Krička / Lamiová-Schmiedlová 1990, 260-261, pl. 15/30, 31; Böhme-Schönberger 1998, 227, 233, 234, 237, fig. 3.

**16d.** Zemplín, grave 128; sword and two fragments of a scabbard – of an openwork plate and of a chape (copper alloy, no iron).

Budinský-Krička / Lamiová-Schmiedlova 1990, 265, pl. 18/11, 13.

**16e.** Zemplín, grave 136; small fragment of openwork plate (copper alloy).

Budinský-Krička / Lamiová-Schmiedlova 1990, 267, pl. 18/27.

**AUSTRIA**

**17a-c.** Magdalensberg, Lugbichl, cemetery; fragments of three openwork plates (copper alloy).

Deimel 1987, 263-264, pl. 69/6-8.

**SLOVENIA**

**18.** The River Ljubljanica, near Bevke; scabbard (brass) and sword (brass).

Istenič 2010, 124-127, figs. 2-3.

**19.** Strmec above Bela Cerkev, grave 1; scabbard (brass, no iron) and sword.

Istenič 2010, 127-131, figs. 4-7.

**20a.** Verdun, grave 37; scabbard (brass) and sword (brass).

Istenič 2010, 131-133, figs. 8-9.

**20b.** Verdun, grave 131; scabbard (brass) and sword.

Istenič 2010, 133-135, figs. 8-11.

**21.** Mihovo, grave 1657/8; scabbard (copper alloy) and sword; Istenič 2010, 136-137, fig. 12.

**HUNGARY**

**22.** The Danube, near Pomáz and Szentendre, single find; scabbard (copper alloy) and sword.

Hunyady 1942/1944, 115, pl. 44/5, 5a, b; Bóna 1963, 253, pl. 38/4; Hellebrandt 1999, 35-36, t. 4/4.

**23.** Nagytétény, grave; scabbard (copper alloy) and sword. pers. comm. András Márton.

**BULGARIA**

**24.** Belozem, barrow; scabbard (copper alloy and silver, no iron) and sword.

Werner 1977, 372, fig. 3/1, 378, 379, fig. 8.

**25.** Unknown site, perhaps in Bulgaria, auction at Christie's, sale 5524, lot 126; scabbard (silver, no iron).

Böhme-Schönberger 1998, 230, fn. 42; [http://www.christies.com/LotFinder/lot\\_details.aspx?pos=8&intObjectID=4265305&sid](http://www.christies.com/LotFinder/lot_details.aspx?pos=8&intObjectID=4265305&sid) (date of accession 8.1.2013)

**26.** Unknown site, auction at Christie's 14.4.2011, sale 6060, lot 255; scabbard (copper alloy and silver, no iron) and fragments of sword.

<http://www.christies.com/lotfinder/LotDetailsPrintable.aspx?intObjectID=5425424> (date of accession 8.1.2013)

## BIBLIOGRAPHY

- Bochnack, T. / Czarnecka, K. 2004-2005. Iron scabbard-plates decorated in openwork technique (opus interrasile) in Central Europe. Celtic import or locally made copy? – *Anodos* 4-5, 25-34.
- Böhme-Schönberger, A. 2001. Das silberne Zierblech von Eggeby. – *Fornvännen* 96, 79-88.
- Böhme-Schönberger, A. 1998. Das Grab eines vornehmen Kriegers der Spätlatènezeit aus Badenheim. – *Germania* 76, 217-256.
- Bóna, I. 1963. Beiträge zur Archäologie und Geschichte der Quaden. – *Acta Archaeologica Academiae Scientiarum Hungaricae* 15, 239-307.
- Božič, D. 1999. Die Erforschung der Latènezeit in Slowenien seit Jahr 1964. – *Arheološki vestnik* 50, 189-213.
- Breščak, D. / Galović, I. / Gregl, Z. / Križ, B. / Radovčić, J. / Škoberne, Ž. 2002. Revived cultures: archaeological excavations in the Gorjanci/Žumberak Hills from prehistory to the early Middle Ages. Ljubljana.
- Budinský-Krička, V. / Lamiová-Schmiedlová, M. 1990. A late 1<sup>st</sup> century BC – 2<sup>nd</sup> century AD cemetery at Zemplín. – *Slovenská archeológia* 38/2, 245-344.
- Craddock, P. T. / Cowell, M. / Stead, I. 2004. Britain's first brass. – *Antiquaries Journal* 84, 339-346.
- Czarnecka, K. 2002. Die Schwertscheiden mit dem Gittermusterornament in Mitteleuropa um die Zeitwende. In: Carnap Bornheim, C. et al. (eds.). *Bewaffnung der Germanen und ihrer Nachbarn in den letzten Jahrhunderten vor Christi Geburt. Akten der Internationalen Tagung in Nałęczów*, 23. bis 25. September 1999. Lublin. 93-106.
- Dąbrowska, I. / Dąbrowski, K. 1967. Cmentarzysko z okresów późnolateńskiego i wpływów rzymskich w Wesółkach, Pow. Kalisz. Wrocław / Warszawa / Kraków.
- Danov, C. M. 1979. Die Thraker auf dem Ostbalkan von der hellenistischen Zeit bis zur Gründung Konstantinopels. In: *Aufstieg und Niedergang der römischen Welt* 2/7. Berlin / New York. 21-185.
- Deimel, M. 1987. Die Bronzekleinfunde vom Magdalensberg. Klagenfurt.
- Haffner, A. 1995. Spätkeltische Prunkschwerter aus dem Treverergebiet. In: Wegner, H.-H. (ed.). *Berichte zur Archäologie an Mittelrhein und Mosel* 4. Trier. 137-151.
- Hellebrandt, M. 1999. Celtic finds from Northern Hungary. Budapest.
- Hunyady, I. 1942/1944. Die Kelten im Karpatenbecken. Budapest.
- Istencič, J. 2010. Late La Tène scabbards with non-ferrous openwork plates. – *Arheološki vestnik* 61, 121-164.
- Istencič, J. 2009. Roman military equipment and the beginnings of the Roman use of brass in Europe. – *Xantener Berichte* 16, 237-242.
- Istencič, J. 2005. Brooches of the Alesia group in Slovenia. – *Arheološki vestnik* 56, 187-212.
- Istencič, J. / Kosec, L. / Perovšek, S. / Gosar, M. / Nagode, A. 2011. Research on a laddered chape from a Late La Tène scabbard with an openwork fitment from the River Ljubljanica. – *Arheološki vestnik* 62, 317-337.
- Istencič, J. / Šmit, Ž. 2007. The beginning of the use of brass in Europe with particular reference to the southeastern Alpine region. In: La Niece, V. / Hook, D. R. / Craddock, P. T. (eds.). *Metals and mines: studies in archaeometallurgy*. London. 140-147.
- Jackson, R. P. J. / Craddock, P. T. 1995. The Ribchester Hoard: A Descriptive and Technical Study. In: Raftery, B. (ed.). *Sites and Sights of the Iron Age*. Oxford. 75-102.
- Kaszewska, E. 1977. Problem der keltischen Besiedlung in Mittel und Nordpolen. In: Chropovský, B. (ed.). *Symposium Ausklang der Latène-Zivilisation und Anfänge der Germanischen Besiedlung im mittleren Donaugebiet*. Bratislava. 107-122.
- Kokowski, A. 2003. Die Przeworsk-Kultur. In: *Die Vandalen. Nordstammen*. 77-184.
- Lamiová, M. 1993. Zemplín. Košice.
- Longauerová, M. / Longauer, S. 1990. Structural analysis of a scabbard and a ring mail from Zemplín. – *Slovenská archeológia* 38, 349-354.
- Łuczkiwicz, P. 2000. Zur späteisenzeitlichen Bewaffnung in Polen. Stand der Forschung. – *Jahrbuch des Römisch-Germanischen Zentralmuseums Mainz* 47, 355-437.
- Martyniak, G. / Pastwiński, R. / Pazda, S. 1997. Cmentarzysko kultury przeworskiej w Ciecierzynie, gmina Byczyna, woj. opolskie. Wrocław.
- Metzler, J. / Gaeng, C. 2009. Goebange-Nospelt, une nécropole aristocratique trévir. Luxembourg.
- Nieto, S. 2004. Monnaies arvernes (Vercingétorix, Cas) en orichalque. – *Revue Numismatique* 160, 5-25.
- Schmidt, B. / Nitzschke, V. 1989. Ein Gräberfeld der Spätlatènezeit und der frührömischen Kaiserzeit bei Schkopau, Kr. Merseburg. Berlin.
- Schwab, R. 2005. Untersuchung eines spätkeltischen Prunkswertes von Büchel, Kreis Cochem-Zell. In: Wegner, H.-H. (ed.). *Berichte zur Archäologie an Mittelrhein und Mosel* 10, (= *Trierer Zeitschrift Beiheft* 29). Trier. 327-336.
- Šmit, Ž. / Istencič, J. / Gerdun, V. / Milič, Z. / Mladenović, A. 2005. Archaeometric analysis of Alesia group brooches from sites in Slovenia. – *Arheološki vestnik* 56, 213-233.
- Šmit, Ž. / Istencič, J. / Perovšek, S. 2010. PIXE analysis of Late La Tène scabbards with non-ferrous openwork plates (and associated swords) from Slovenia. – *Arheološki vestnik* 61, 165-173.
- Stead, I. M. 2006. *British Iron Age swords and scabbards*. London.
- Werner, J. 1977. Spätlatène-Schwerter norischer Herkunft. In: Chropovský, B. (ed.). *Symposium Ausklang der Latène-Zivilisation und Anfänge der Germanischen Besiedlung im mittleren Donaugebiet*. Bratislava. 367-401.
- Windl, H. 1975. Das latène- und kaiserzeitliche Gräberfeld von Mihovo, Unterkrain (Dolenjsko). Unpublished PhD thesis. University of Vienna.

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