Svend Hansen

The Hillfort of Teleac and Early Iron in Southern Europe

The large hillfort of Teleac, commanding the Mureş River valley, the principal East-West connecting axis in the Carpathian Basin, was likely built in the second half of the 11th century BC and occupied until the end of the 10th or the early 9th century BC. The fortification wall was destroyed around 920 BC, according to recent investigations. More than 40 iron objects were discovered in the fortified complex. These iron finds viewed together with numerous other iron finds from other sites signify that Transylvania was an early centre of the implementation of iron and presumably iron production. Thereby, the use of iron for producing weapons probably stood in the foreground. This is indicated by corresponding grave finds in Greece that contain a sword as offering, but also iron swords found in Slovenia and Romania.

Introduction

The hillfort of Teleac, located only five kilometres from Alba Iulia in Transylvania, crowns the left bank of the Mureş River (**Fig. 1**). It covers an area of c. 30 ha and, thus, represents the largest fortified hill settlement in the vicinity and in fact is one of the largest known in the Carpathian Basin. According to data that rely upon a series of 14C-datings, the settlement was erected during the second half of the 11th century BC and inhabited until the end of the 10th or early 9th century BC.[1] A clearly smaller settlement still stood in this location in the 7th century BC. The complex is impressive evidence for the significant role played by fortresses in times of violent conflicts. Around 920 BC a larger section of the hillfort and parts of the inner settlement were destroyed, yet it continued to be inhabited for some time thereafter. A 600-m long stretch of the burnt fortification wall is recognisable in the magnetogram (**Fig. 2**).[2]

Archaeological investigations were carried out at the site of Teleac for the first time in the 1950s.[3] Comprehensive excavations took place between 1978 and 1987.[4] Corresponding to excavation methods at that time long trenches, but only 1.5 m in width were installed in the complex. Their narrowness hardly provided a satisfactory picture of settlement on the hill. Since 2010 a Romanian-German team has been active in studying the hillfort, initially within the framework of the EU-project "Forging Identities". A geomagnetic plan and a new topographic map were made, and smaller trial trenches were conducted as well.[5] This work was prerequisite to resuming larger excavations in 2016 within the framework of the Loewe project "Research on Prehistoric Conflict".[6]

The Mureş river valley is the most important East-West transit axis in the eastern Carpathian Basin. Its significance for the exchange of goods and ideas has recently been convincingly described.[7] The role played by the hillfort Teleac probably pertained to the general control of this communication route. Associated with that was also the exploitation or distribution of mineral resources, which were present in abundance in the surroundings. Unfortunately, most of the direct evidence that has been gathered until now, such as mines and corresponding tools, dates to the younger Iron Age and Roman times.[8] Salt likely played an important role as well since the 13th century BC, at the latest, in the closer surround-

1 Ciugudean 2009; Uhnér *et al.* 2017; Ciugudean *et al.* 2017; 2018; see Uhnér *et al.* in this volume. On the beginnings of the hillfort, see Boroffka 1994.

2 Uhnér *et al.* in this volume; also there more on the 14C-datings.

3 Horedt *et al.* 1962.

4 Vasiliev *et al.* 1991.

5 Boroffka/Ciugudean 2012; Uhnér 2017.

6 Hansen/Krause 2017.

7 Uhnér 2017.

8 Wollmann 1999; Wollmann/Ciugudean 2005; Boroffka 2009.

Fig. 1 Teleac. View from the northeast: the hillfort and into the Mureş Valley (photo by K. Scheele)

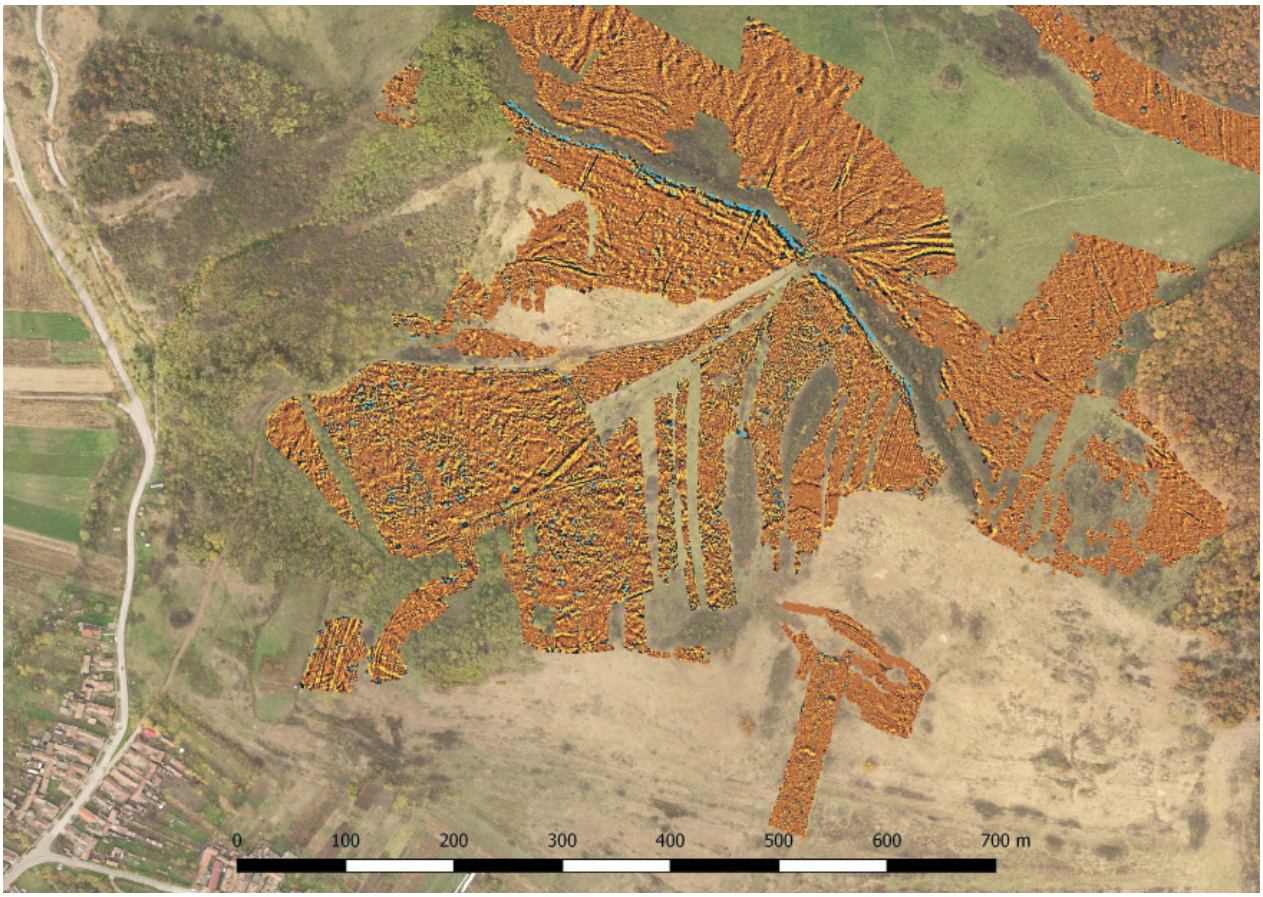

Fig. 2 Teleac. The magnetogram shows the burnt fortification wall in a length of 600 m (magnetogram by C. Uhnér)

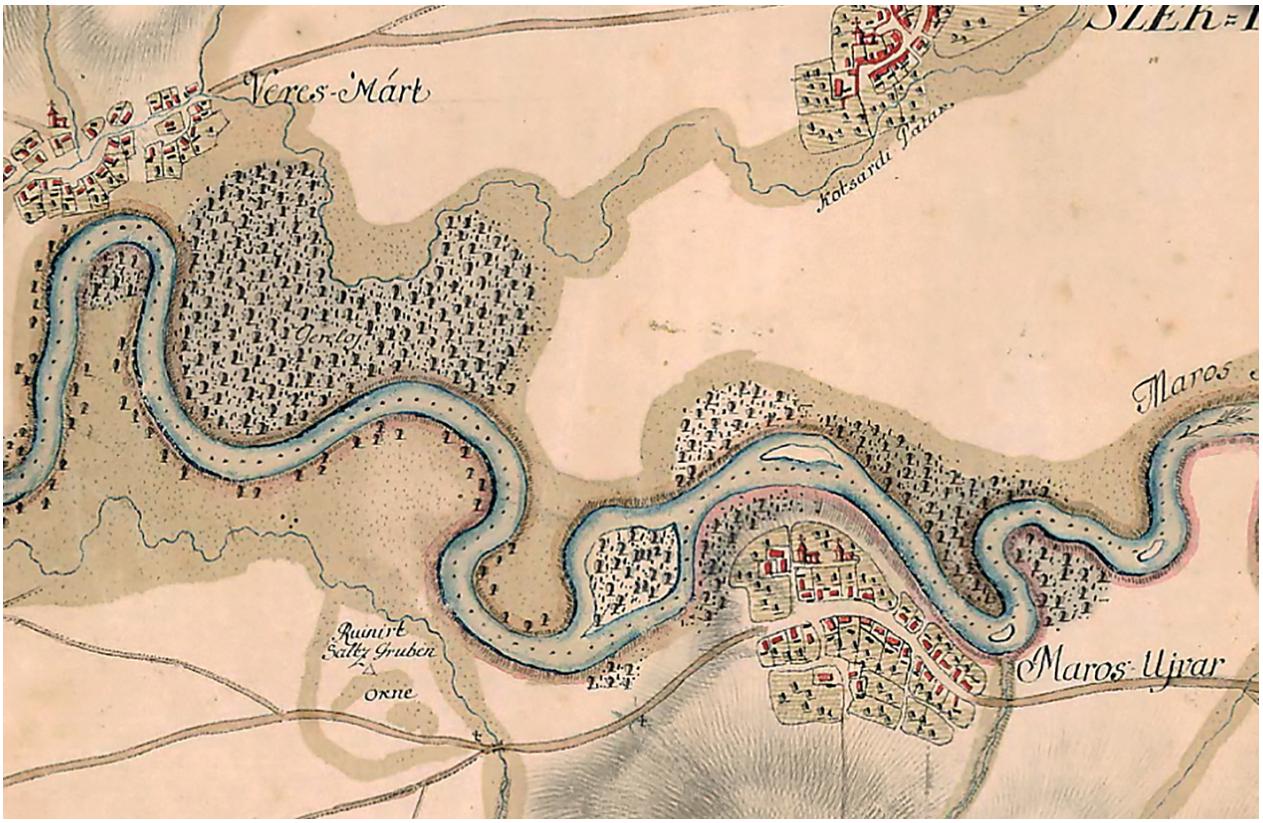

Fig. 3 Uioara de Sus (Hung.: Felsőmarosújvár) located on the Mureş River (map made during the Josephinian Land Survey)

ings of Teleac, although until now there is no evidence for the exploitation of salt deposits in and around Ocna Mureşului. Be that as it may, the largest known hoard in the Carpathian Basin, the hoard from Uioara de Sus (Felsőmarosújvár), jud. Alba, was discovered in the immediate area of a destroyed salt mine ("Ruinirt Saltz Gruben"), as shown in the Josephinian map, drawn up in 1769–1773 (**Fig. 3**).[9] The hoard was deposited there in the 12th century BC; furthermore, it contained some bronze objects that were even older in date. The bronze winged pickaxes (**Fig. 4**) in the hoard can be identified as mining equipment and could very well have been used in a salt mine.[10] Comparable winged pickaxes are known from Hallstatt and environs in upper Austria.[11] Evidence for the salt extraction process during the Late Bronze Age in Romania was recently gained in Băile Figa, c. 60 km north of Cluj/Kolosvar.[12] Gold was of importance for the region too, in Roman times in any case. Moreover, activities in gold mining in earlier times have been postulated with good arguments.[13]

The founding of Teleac

Research on conflict in prehistory requires not only empirical evidence for warlike violence, as for example the burnt fortification wall in Teleac, but also thoughts on the possible reasons that might have led to armed conflicts or warfare.[14] One very immediate reason would have been control over natural resources. In the Bronze Age (and still today) mineral raw materials were rare goods, whose exploitation was organised and controlled to varying extent. During the Bronze and Early Iron Ages there were large organised copper mines, for example the Mitterberg mining district, but also presumably smaller ore outcrops which were extracted seasonally by small communities.[15]

9 Josephinian Land Survey, Sectio 140, detail from the West edge of the map sheet.

10 Petrescu-Dîmboviţa 1977 Pls. 220,17–19; 221,1.5; Vulpe 1975 Pls. 45–46; Boroffka 2009, 124 Fig. 2,1–3.

11 For salt mining cf. Reschreiter/Kowarik 2015; on the deposition of winged pickaxes in the area of the southern Alps, see Windholz-Konrad 2012, 124 Fig. 4; Neumann 2015, 148–150.

12 Harding/Kavruk 2010.

13 Ciugudean 2012b; Cristea-Stan/Constantinescu 2016.

14 Hansen 2013; 2015.

15 For the Mitterberg district, cf. Stöllner *et al.* 2006.

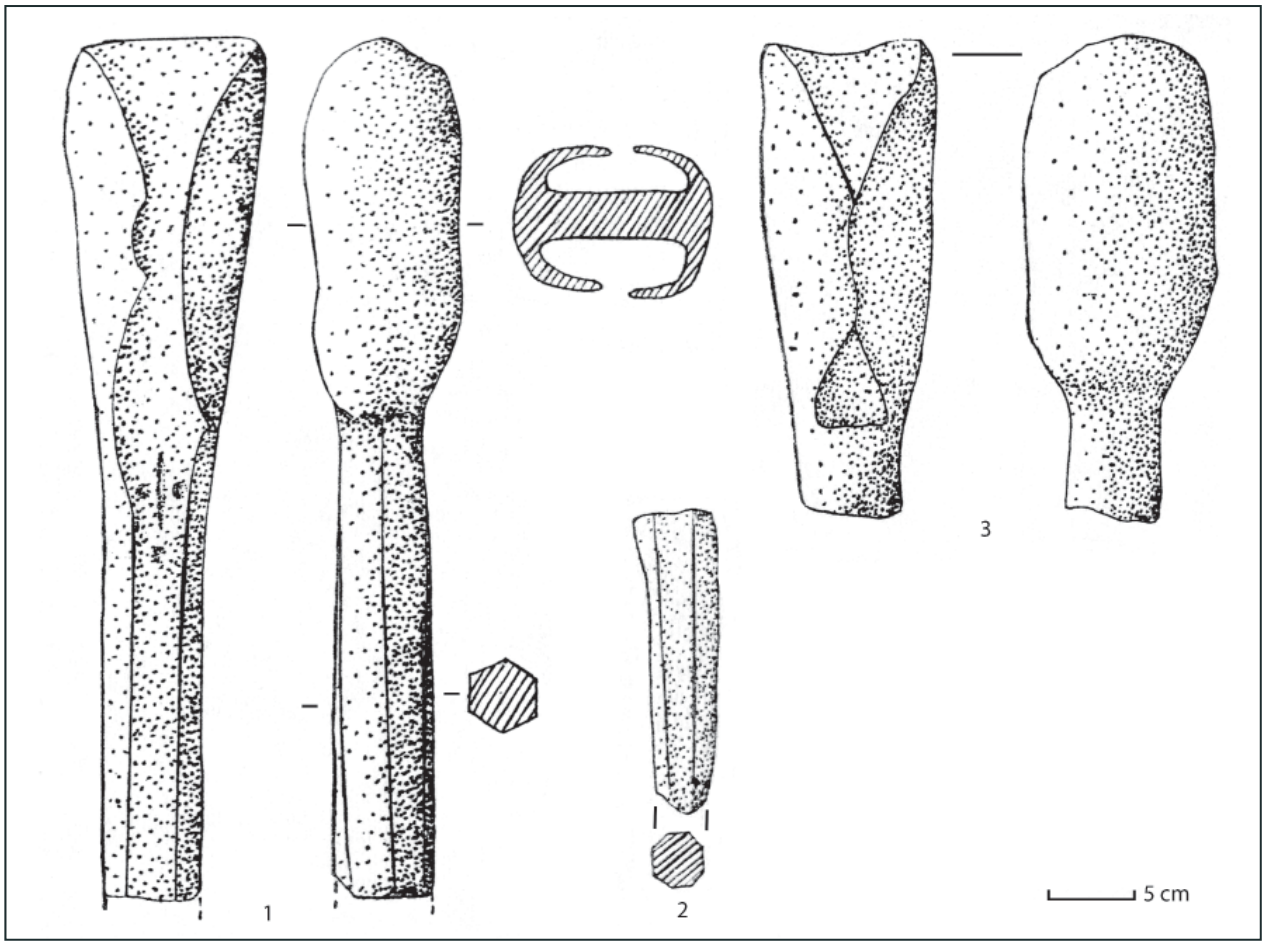

Fig. 4 Uioara de Sus. Winged pickaxes (after Petrescu-Dîmboviţa 1977 Pls. 220,17–19. 221,1.5)

In an attempt to explain the immense size of the fortress at Teleac – unusual by Central European measure – the presence of salt in the closer surroundings does not suffice alone as a probable reason. Namely, salt had already been exploited in much earlier times there. Yet, during the late 11th and 10th centuries BC this region evidently gained in economic and strategic importance, a standing that justified the construction of such a large fortification. Thus, it seems reasonable to associate this advance with the onset of the extraction and production of iron. Moreover, it was the time of the technological transition from the use of bronze to iron as the material employed to make weapons and tools. The comparatively large amount of iron finds in Transylvania in general and in Teleac in particular imply that iron extraction and production played an important role early on.

Due to its hardness and elasticity iron was far superior to bronze for the production of weaponry and implements.[16] In addition, iron occurs on the Earth's surface more frequently than the two components of bronze: copper and tin. The introduction of iron technology has still not been sufficiently elucidated; yet, without doubt Anatolia was an early centre. Iron is first mentioned only sporadically in Hittite texts of the 18th century BC, whereas in texts of the 14th and 13th centuries BC weapons made of iron are named ever more frequently.[17] The oldest object made of iron found in Europe – a knife or sickle – comes from Ganovce, district of Poprad, Slovakia, in a fortified settlement of the Otomani culture.[18] Nevertheless, this episode seems to have remained sporadic as such. It is the 11th century BC that first marks the transition from bronze to iron technology, with bronze swords replaced by those made of iron, in Southern Europe and especially in Greece. The introduction of iron technology in various regions of western Asia and Europe cannot be assessed in detail yet. Nonetheless, the catalogu-

[16] For basic information on iron, cf. Pleiner 2006; Snodgrass 1989; for Italy, cf. Abbingh/Nijboer 2014.

[17] Yalçin 2000, 310; Siegelová/Tsumoto 2011.

[18] Furmánek 2000. – The dating of this object to the 18th century BC was disputed with less convincing arguments by Benkovsky-Pivovarová 2002.

Fig. 5 Teleac. Pottery of the Gáva culture (photo by C. Suteu)

ing and critical discussion of iron finds have made great progress.[19] It was indeed a time of change in many different spheres of society, a change that can also be observed in other material remains. There proved to be differences in the production of the broad commodity of pottery: The technically demanding, black-polished pottery of the Gáva culture decorated with garland patterns or channels displays an unmistakable metallic aspect (**Fig. 5**).[20]

Changes occurred not only in the production of pottery and diverse implements, but also in symbolical and ideological aspects. The hoards in Transylvania, an important medium of communication with the imaginary supernatural powers, underwent quite a noticeable change during this time (Ha A2/Ha B1):[21] It is the expression of changed values in society. The characteristic fragment hoards of the older Urnfield culture ceased; instead hoards containing mostly intact objects were deposited.[22] On the one hand, the latter included preferably vessels and defensive arms made of sheet metal, while on the other hand large fibulae and spiral ornaments became characteristic elements of a hoard. Weaponry by contrast withdrew somewhat into the background. Yet another change in hoards came in the 9th century BC, in which jewellery or elements of dress predominated.[23] One characteristic feature in the hoards is their content of horse gear, a presence that in turn emphasises the importance of driving and riding. The density of hoards in the closer surroundings of Teleac is particular conspicuous.[24]

The early use of iron in southern Europe

A. Snodgrass distinguished three stages in the introduction of iron technology in the Mediterranean area, a distinction that is of fundamental importance.[25] Accordingly, during the Late Bronze Age iron was used to a limited extent for ceremonial purposes and prestigious objects (phase 1),

19 Pleiner 1981. – For Israel cp. Yahalom-Mack/Eliyahu Behar 2015; for Southern Europe cp. Pare 2017; for Central Europe cp. Miketta 2017.

20 Pankau 2004; Ciugudean 2012a.

21 Hansen 2016.

22 Bratu 2009.

23 Metzner-Nebelsick 1994.

24 Ciugudean *et al.* 2015.

25 Snodgrass 1980; 1989; cp. the discussion in Papadopoulos 2014.

whereas in the Early Iron Age objects of daily use were produced in iron for the first time, although still far fewer in number than those made of bronze (phase 2). Then, as of the 10th century BC iron became the prevailing metal in use (phase 3). This scheme illustrates the situation of finds; however, it does not take any possibly limiting factors into account.

Funerary customs, for instance, are a decisive factor in the tradition of iron objects.[26] Particularly during the early times of iron technology the ritual use of this valuable raw material in funerary activities stood in contradiction to very practical considerations, namely, that the objects were to be re-forged in order to make new tools or weapons. Only when a stable supply was present could offerings – especially of weapons – be placed in graves and in sanctuaries. Phase 2 according to Snodgrass, thus, represents a subject of debate. Namely, the actual extent of the use of iron is not 'precisely' denoted anywhere. Its employment could have been far greater than it seems in archaeological findings. Iron could have been re-forged at any time and made into new objects, a way of re-cycling like today.[27] The technical know-how for this was certainly not limited to specific centres, but instead was wider spread.[28] One centre of iron extraction was on the island of Thasos in northern Greece.[29] However, the finds and find contexts there do not allow a precise description of the knowledge at that time concerning carburization or other hardening processes.

The transition to iron technology in Greece, foremost in Athens and Attica, can be best drawn in great detail from the funerary practice of offering weapons.[30] Therefore, the replacement of bronze by iron in Greece is highly relevant, not in the least with regard to armed conflicts. Unfortunately, attempts at absolute chronology for the phases of ceramic styles in Greece are not at all securely confirmed and at present vary strongly.[31] Since Submycenaean times (c. 1080–1020 BC) a profound transition in the handling of the deceased took place: the transition from inhumation burial to cremation. Further, bronze weapons were not deposited with the deceased either. Hence, it cannot be determined whether iron weapons were indeed already used extensively in Submycenaean times, but not given as funerary offerings.[32]

As of Protogeometric times, traditionally dated between 1020/1000 and 900 BC, but which surely began earlier in the 11th century BC, almost all swords and most lanceheads known in Greece were made of iron.[33] B. Weninger and R. Jung have suggested the years around 1070 BC for the beginning of the Protogeometric period.[34] An early burial – grave 6 – containing a sword as grave gift was revealed in the cemetery of Kerameikos in Athens. The amphoriskos in grave 6 was associated with a flange-hilted sword made of iron (**Fig. 6**). Allegedly the 43.8-cm long sword was laid around the vessel.[35]

Grave 28 in Kerameikos also held a bent flange-hilted sword made of iron (**Fig. 7,6**) and in addition also a bent iron knife (**Fig. 7,4**).[36] The ritual bending of a sword has been attested in several findings in Athens.[37] An iron arrowhead found in the cremated remains might have caused the death of the male in grave 28 (**Fig. 7,5**). The pottery comprises two amphorae, two spherical pyxides with a lid, and a pitcher with trefoil-shaped mouth. The representations of horses on the neck of an amphora are indeed noteworthy, because they express the high esteem of the horse in society in Geometric times (**Fig. 7,2**). Grave 40 contained a larger set of clay vessels, composed of two skyphoi, two pitchers with trefoil-shaped mouth, eight lekythoi and two amphorae (**Fig. 8**). The metal objects in this grave consisted of a large bronze phalera and the fragment of a fibula; the accompanying trunnion axe *(Ärmchenbeil)* and a chisel are made of iron.[38] Grave E in Kerameikos contained a cup together with a 46-cm long iron

[26] Derrix 2001.

[27] Today c. 570 million tonnes of steel are re-melted annually and forged into new products worldwide. Cf. http://www.stahl-online.de/index.php/themen/energie-und-umwelt/recycling/ (accessed 7 May 2018).

[28] For Ionia, see Verčik 2017.

[29] Sanidas *et al*. 2016.

[30] See the catalogue of the Submycenaean and Protogeometric graves in D'Onofrio 2011.

[31] Cp. the study by Toffolo *et al*. 2013.

[32] Cp. also Bräuning/Kilian-Dirlmeier 2013, 31.

[33] Kilian-Dirlmeier 1993.

[34] Weninger/Jung 2009, 392 Fig. 14.

[35] Kraiker/Kübler 1939, 99 Pl. 57. 76; Müller-Karpe 1962, 91 Fig. 9,1-2; Kilian-Dirlmeier 1993, 110 no. 316; for the chronology cf. also Krause 1975.

[36] Kübler 1943, 34-35 Pl. 38,6.8.15.20.38; Müller-Karpe 1962, 92 Fig. 10,1-7; Kilian-Dirlmeier 1993, 106 no. 274.

[37] D'Onofrio 2011; 2017.

[38] Kübler 1943, 41 f. 27 ff. Fig. 5 Pls. 5. 8. 18. 22. 37. 38; Müller-Karpe 1962, 93 Fig. 11.

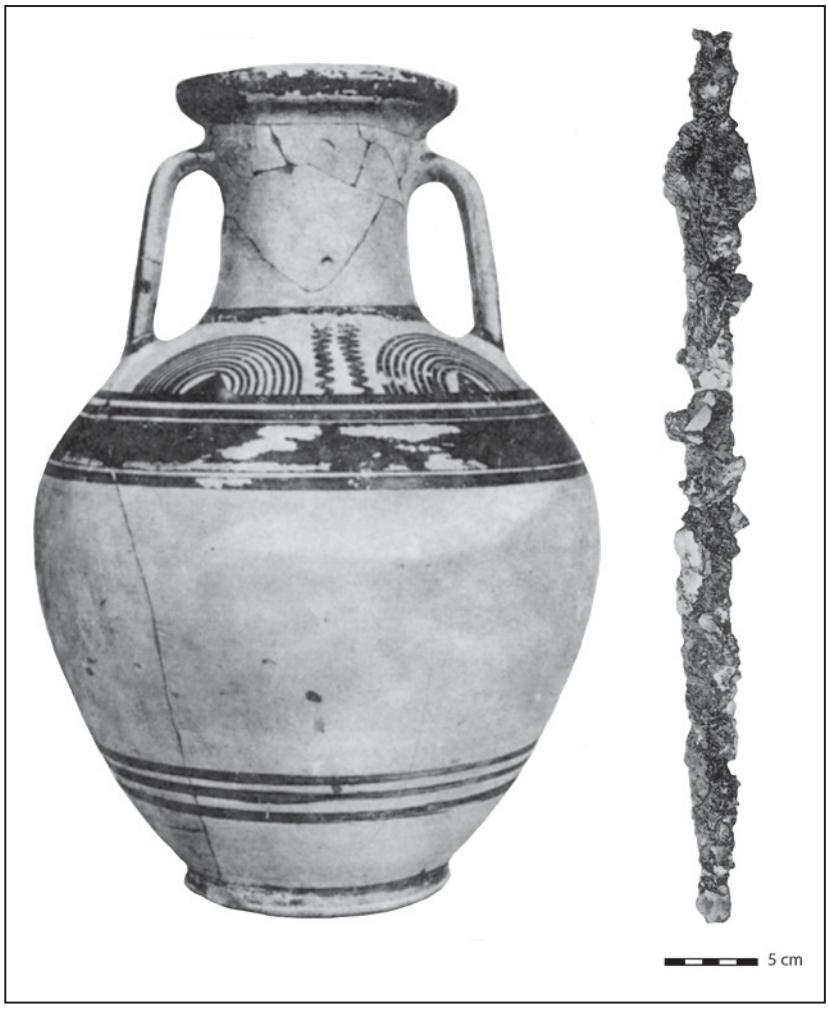

Fig. 6 Kerameikos, Athens. Protogeometric grave 6 (after Kraiker/Kübler 1939, altered)

sword that was broken in several pieces (**Fig. 9**).[39] In the present state of research these four graves cannot be dated precisely within the time span of the late 11th to late 10th century BC.[40]

A continuity can be observed then in weaponry of the Early Geometric period (probably earlier than 900–850 BC) and the Middle Geometric period (850–750 BC), whereas a definite decrease in the number of weapons in graves is noticeable at least in Attica during the Late Geometric period of the 8th century BC.[41]

It should be emphasised that initially iron played a decisive role in the production of weapons, because this new material had superior properties, which – quite significantly – were immediately used for military purposes. This confirms once again the technological basis of Christian Jürgensen Thomsen's three-period time sequence. It is indeed the "cutting tools" with which the Bronze and Iron ages should be defined.[42]

With emerging iron technology, the dynamics in exchange processes between the East and the West changed. In this regard, the expansion of the Phoenicians as far as the west of the Iberian Peninsula is obviously of great significance.[43] H. Schubart emphasised iron production in Phoenician establishments. He interpreted the precolonial find of bronze swords from Ría de Huelva in the context of early trade in iron.[44] As early as in the precolonial phase, the search for iron ore and also for silver was an important mission for Phoenicians on

[39] Kraiker/Kübler 1939, 106-107 Fig. 8 Pl. 36.

[40] Basing on stylistic features of the pottery Kübler (1943, 13) assigns the graves to the middle phase (grave 6) and to the late phase (graves 40 and 28). In Kraiker/Kübler's opinion the cup from grave E may be assigned to the mature style (Kraiker/Kübler 1939, 154).

[41] Morris 1987; Bräuning 1995.

[42] Thomsen 1836.

[43] Nijboer 2018.

[44] Schubart 2001, 301–303. 554. The find dates in the 11th/10th centuries BC: Brandherm/Moskal-del Hoyo 2014.

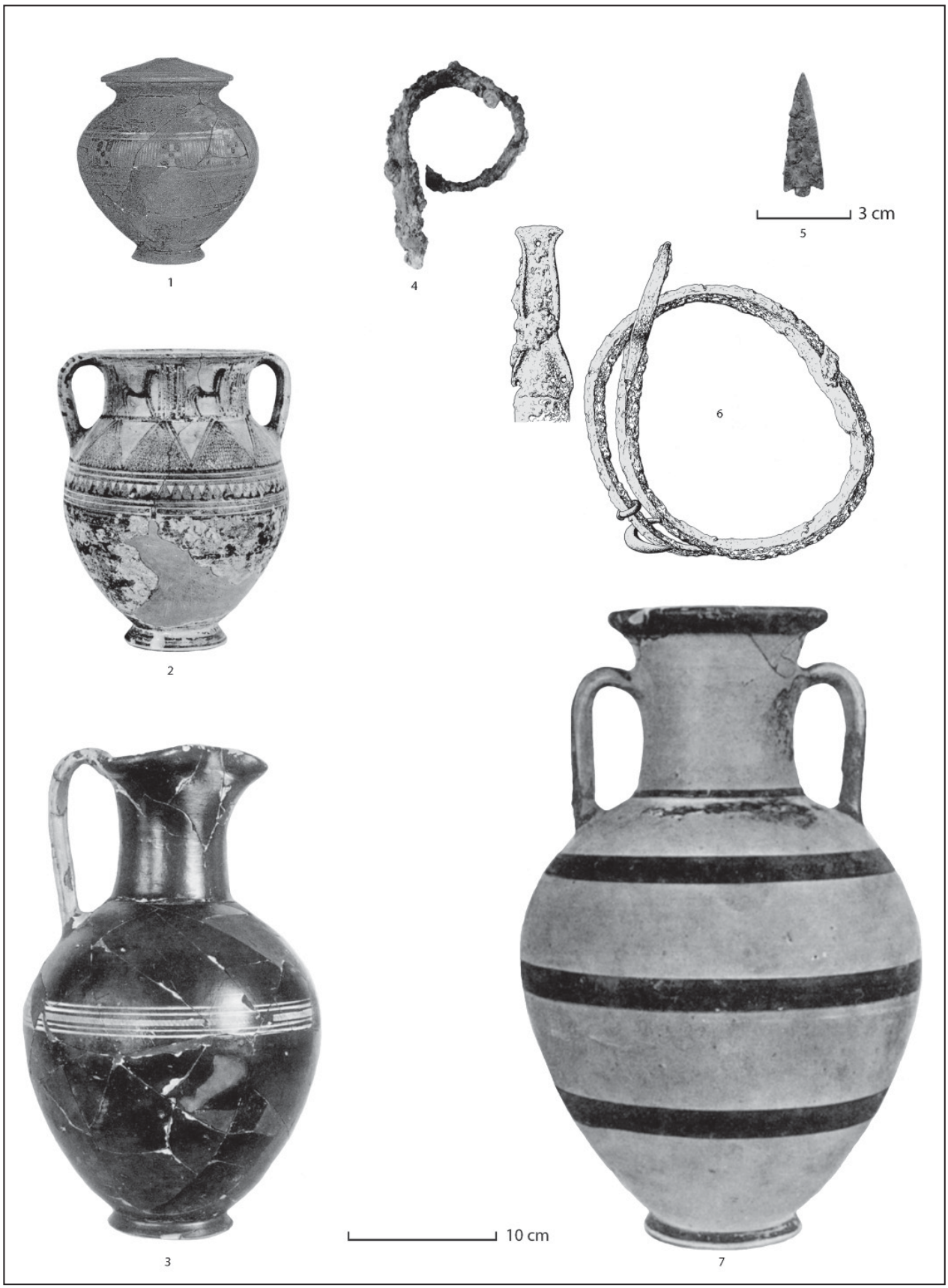

Fig. 7 Kerameikos, Athens. Protogeometric grave 28 (after Kübler 1943, altered)

Fig. 8 Kerameikos, Athens. Protogeometric grave 40 (after Kübler 1943, altered)

Fig. 9 Kerameikos, Athens. Protogeometric grave E (after Kraiker/Kübler 1939, altered)

the Iberian Peninsula. Even the Late Bronze Age cauldron found in a copper mine in Cabárceno, Cantabria, in the north of the Peninsula, may be seen in this association. Further, the occurrence of goethite there is an indication of the early exploitation of iron in the 10th century BC.[45]

Also in Italy the change from Late Bronze Age to Iron Age can be dated between 1000 and 950 BC by radiocarbon dating.[46] The course of the introduction of iron in the area of Central Europe was evidently somewhat delayed. Nevertheless, around 1000 BC a substantial decrease in the number of swords made of bronze can be observed. One might then presume that valuable iron weapons already existed in plenteous number, yet were not deposited in graves. The fact that the fragment of an iron sword was discovered in Teleac points once again to the importance of this particular site.[47] And in this regard special note should be made of the iron sword among the votive offerings found in the *Mušja jama* near Škocjan (the Fly Cave near St. Kanzian).[48] The sword, 59 cm in length, had been bent with great force prior to its deposition (**Fig. 10**). The blade has a simple form: rhombic in cross-section. The outline of the tongue bulges slightly and ends in a fish-tail shape. The hilt is likewise slightly bulged and has two rivets; two rivets are also in the tongue. Comparable swords made of bronze were summarised as the "Dalmatinian-Pannonian type" and dated to the 11th century BC.[49] Included in this type is a bronze sword of the same form found in Celldömölk-Sághegy, Kom. Vas, in Transdanubia. It should be dated to the Ha B1 period.[50] The form of the tongue as well as the scheme of the rivets are likewise present in a number of swords deposited in Early Iron Age graves in Vergina and also sporadically on Euboea and in Athens.[51] Most probably the iron sword found in *Mušja jama* can be assigned to phase Ha B1 too, as the majority of votive offerings found in the cave date to that time. Yet, the Hallstatt-period group of finds identified by the authors cannot be considered a possible date for the production of the iron sword. For this issue the sword find from Alsenborn may be

[45] Schubart 1961; de Blas Cortina 2007; for the dating, cf. Gerloff 2010, 204.

[46] Van der Plicht/Nijboer 2017/2018.

[47] See Uhnér *et al.*, Fig. 14 in this volume. Other early iron swords but without datable associated finds were discovered in Tilişca, a fortified hill settlement located between Sebes und Sibiu, which begins with the Gava culture (Lupu 1989, 125 Pl. 1,1), and Novi Sad (Koledin 2012).

[48] Teržan *et al.* 2016, 689 Pl. 14,3.

[49] Pabst 2009, 22. 57 Fig. 6.

[50] Kemenczei 1988, 69 Pl. 41,370.

[51] Cp. Pabst 2009, 22–23; Kilian-Dirlmeier 1993, 113–115 Pls. 48,356–359; 49,360–364; 50,365–376. 369; 51,368.370.372; Bräuning/Kilian-Dirlmeier 2013.

brought forth (**Fig. 11**), whose iron blade F. Sprater had already earlier compared to the sword from *Mušja jama*.[52]

Yet another extraordinary find should be mentioned here: the sword found in grave 169 in the cemetery at Brno-Obřany, Moravia (**Fig. 12–13**). The sword has a length of 56.6 cm and a similar form with two rivets in the hilt and presumably originally two rivets on the since broken-off tongue.[53] The hilltop settlement that used the cemetery was an important crossroads between the Lusatian and the Podol cultures, ever since the 11th century BC. Covering an area of 42 ha it has an unusually large expanse.[54] Moreover, grave 169 in the cemetery at Brno-Obřany contained a remarkably long iron lancehead (L. 48.4 cm), two fragments of an iron knife, and a bow-shaped iron object as well as an iron socketed axe. The last-named object belongs to a group of socketed axes with a slit in the socket, whose production – according to B. Teržan – may be presupposed as early as the 9th century BC, if not since the 10th century BC. Further, implied with that would be the dissemination of technical know-how.[55] Socketed axes such as these are also known from Teleac and surroundings (Vinţu de Jos).

The scabbard terminal of the sword from Brno-Obřany (**Fig. 12**) leads to the Caucasus, where comparable "fin-shaped chapes" *(Flossenortbänder)* are common.[56] Although their dating through 14C must still be determined, their placement in the 10th century BC seems nonetheless plausible.[57] The fin-shaped chape might have stimulated the production of semi-circular chapes of the late Urnfield period in the West.[58] Further grave goods comprise a golden spiral, a so-called whetstone and five clay vessels.[59]

Iron lanceheads are known from the *Mušja jama* as well (**Fig. 14**). Concerned here are ten examples with – as far as recognisable – a narrow blade that attaches comparatively high and a small socket.[60] Unlike the iron sword from this site, at present there are no secure typological indications for their dating to Ha B1 or to early Hallstatt times. Here however attention must be directed towards

Fig. 10 Flange-hilted sword made of iron, an offering found in the *Mušja jama* (Fly Cave) near Škocjan, Slovenia (after Szombathy 1913)

[52] Sprater 1939; in Kibbert 1984, 154–155, under "Wattenheim".

[53] Adámek 1961, 95–96 Pls. 131–133; Stegman-Rajtár 1986.

[54] Kmetova/Stegmann-Rajtár 2014.

[55] Teržan 2017, 123.

[56] Reinhold 2007, 43 Pl. 37,1–4; Metzner-Nebelsick 2002, 377–378 Fig. 171. – A 'fin-shaped' chape was found in the cemetery of Narzanniy-2 together with an Assyrian helmet: Belinskiy/Dudarev 2013, 198 A Fig. 14.

[57] Pers. communication from S. Reinhold.

[58] For example, the Heiligenberg near Heidelberg: Hein 1989.

[59] Stegman-Rajtár 1986.

[60] Teržan *et al.* 2016, 96–97 Pls. 12. 50.

Fig. 11 The hoard from Alsenborn in the Palatinate, including the fragment of an iron sword (after Sprater 1939)

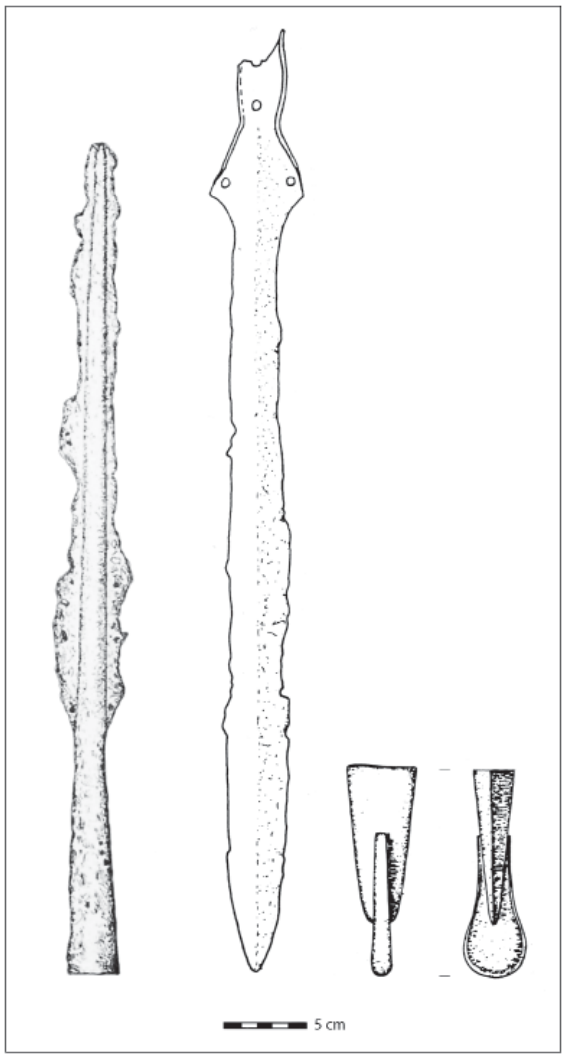

Fig. 12 Grave 169 in Obřany, Moravia: (from left to right) lancehead, sword, and fin-shaped chape made of iron (after Stegman-Rajtar 1986)

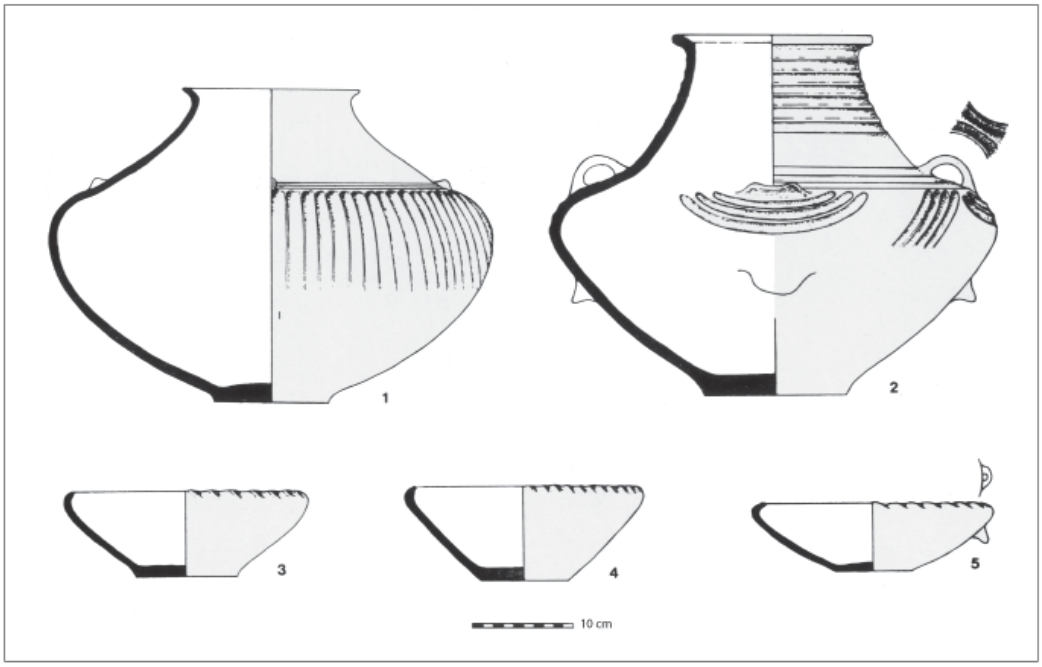

Fig. 13 Grave 169 in Obřany, Moravia. Ceramic vessels (after Stegman-Rajtar 1986)

Fig. 14 Iron lancehead from the *Mušja jama* (Fly Cave), Slovenia (after Szombathy 1913)

a lancehead found in Nidau-Steinberg near Lake Biel, which displays the characteristic decoration of the Ha B1 period. The blade is made of iron, the socket – of bronze.[61] Aside from these weapons, note should be made of the eye-catching spectacle fibulae, which were a widespread element of dress at that time and possibly illustrate the mobility of larger or also smaller groups of peoples between the Carpathian Basin and Greece.[62]

Iron in Transylvania

Outside of Greece, in Southeast Europe, the east Carpathian Basin was without doubt a centre of early iron technology. There a significant increase in iron finds can be noted in the 10th century BC. Their appearance even earlier in Transylvania, in the 12th century BC, is a subject of controversy. Whereas N. Boroffka dates the earliest iron finds to the 12th century BC, C. Pare considers early evidence for the use of iron there as insecure; he postulates instead that the picture changed substantially only after the middle of the 10th century BC with iron finds from Cernat (jud. Covasna), Hida (jud. Sălaj) and Cîţcău (jud. Cluj).[63]

The iron finds in the hoard found in the hillfort *Vârful Ascuțit* at Cernat stem from a context that is addressed as a "workshop".[64] Discovered there were – among others – a spindle whorl, a casting ladle, clay vessels, as well as a bronze lancehead and a fibula. The iron finds include a trunnion axe *(Ärmchenbeil)*, a double axe, a knife, a chisel and twelve bar ingots (**Fig. 15**). It is noteworthy that this hoard was near an area of abundant finds within the fortified complex of Cernat. Surveys with a metal detector retrieved numerous bronze

[61] Jacob-Friesen 1967, 262–273 Pl. 186,4; Tarot 2000, 13. 16.

[62] Pabst 2011, 212–215; 2012, 324–338; Bräuning/ Kilian-Dirlmeier 2013.

[63] Boroffka 1991; Pare 2017.

[64] Székely 1966.

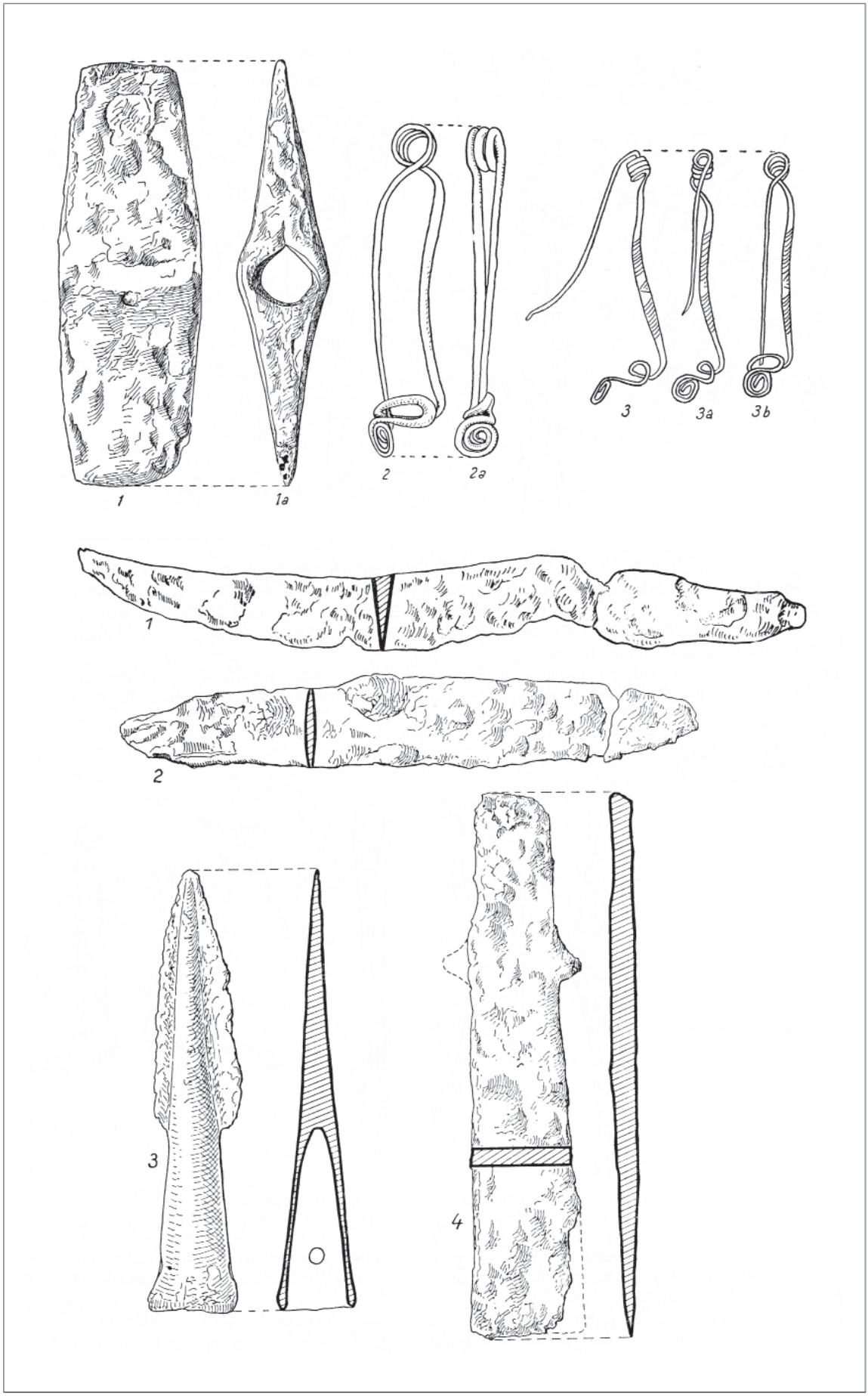

Fig. 15 Metal finds in the hoard from the hillfort "Vârful Ascuțit" in Cernat, Romania (after Székely 1966)

Fig. 16 Teleac. Double axe made of iron (Museum Cluj, photo by C. Suteu)

and iron objects, such as socketed axes and hammers, which date to the phases Ha B1 and Ha B2, as well as bronze bar ingots and hardly datable iron socketed axes, knives and lumps of raw iron. Also retrieved from within the area of finds was a "bronze hoard of the phases Ha B2-3, which consisted of six socketed axes as well as a one-piece, willow-leaf-shaped bow fibula".[65] The objects had been deposited in pits.

According to C. Pare, the bronze fibula in the hoard from Cernat can be anchored in his "hoard horizon IV" in view of a similar example in the hoard from Ghirişu Român. Pare therefore proposes its dating in the second half of the 10th century BC, which would correspond with Ha B2.[66] However, both fibulae are variants of Late Bronze Age violin-shaped fibulae.[67] Here in particular mention must be made of the fibula type Unter-Radl, as according to P. Betzler.[68]

S. Pabst recently determined that in her proposed Carpathian-northeast Alpine distribution area this fibula-type primarily stems from graves as well as from hoards of the periods Bronze Age D/Baierdorf/Čaka and Hallstatt A1/Kurd/Suseni.[69] T. Bader defined the Cernat variant, which is limited to the eastern Carpathian sphere, and is distinguished by a spring (*Federspirale*) that is wound outwards.[70] B. Teržan later made clear that the fibulae indicate a date in the phase Ha A, and that therefore the Cernat hoard certainly cannot be dated to the younger Urnfield time.[71] She also emphasises that the Ghirişu Român hoard belongs to the time Ha A2/B1, and that a late date is out of question.[72]

Among the other finds in the Cernat hoard is a double axe (**Fig. 15,1**), which is clearly indicative of ties to the Aegean. Double axes made of iron were common in Greece, at least from the early 9th into the 4th centuries BC.[73] C. Pare refers to a double axe found in the mound in Assiros (northern Greece), whose find context however is not secure (layer 2 or 3).[74] If this comparison also contains a chronological component, then it is likely associated with a clearly higher date. Namely,

65 Szabó 2011, 339.
66 Pare 2015, 281–282.
67 Pabst 2018.
68 Betzler 1974.
69 Pabst 2014.
70 Bader 1983, 16 Pls. 1,3–6. 41b.
71 Teržan 2010, 208.
72 Petrescu-Dîmboviţa 1977 Pls. 358,5–17. 359.
73 Kilian-Dirlmeier 2002, 10–11.
74 Wardle 1987, 320 Pl. 51b.

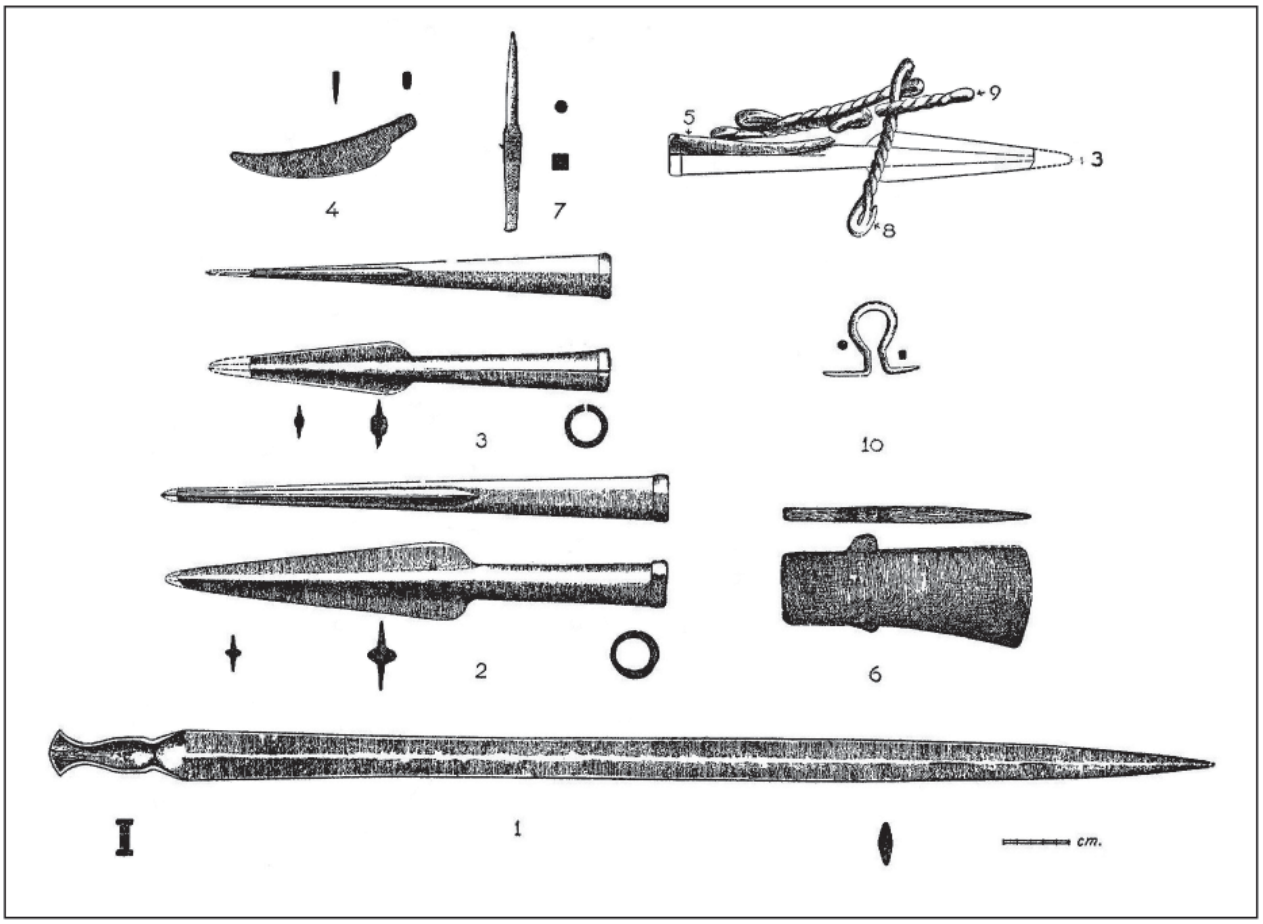

Fig. 17 Agora, Athens. Metal finds from the Early Geometric grave XXVII (after Blegen 1952)

14C-datings for Assiros indicate the beginning of the Protogeometric style (in Assiros) during the time around 1080/1060 BC.[75] This would support a higher dating for Cernat as well. Double axes made of iron are known from Teleac in Romania, too (**Fig. 16**).[76] The hoard in Bîlvăneşti, jud. Mehedinţi, contained two examples.[77]

According to A. Wesse, the trunnion axe in Cernat belongs to the type IIID,2 and is distributed over a wide area.[78] Wesse dates the trunnion axes found in Teleac to Ha B.[79] The earliest iron example in Greece was found in Protogeometric grave 40 in Kerameikos (**Fig. 8**).[80] Grave XXVII in the Athenian Agora (**Fig. 17**), considered by C. Blegen as characteristic for the transition from the Protogeometric to Early Geometric period, contained a socketed axe made of iron, too.[81] The deposition process: the neck-amphora used as an urn was placed in the grave pit. The iron sword was bent to an extreme and then laid around the urn. Two iron lanceheads, one trunnion axe, two bits from horse gear and several clay vessels completed the above-average furnishings of the grave, which included even more clay vessels.

The hoard from Hida, jud. Sălaj, contained the bronze antenna-shaped grip of a bimetallic knife, whose iron blade, unfortunately, is not preserved.[82] Its dating is disputed. A dating to phase Ha B1 is also supportable. For instance, the lance ferrule in the hoard from Hida is a characteristic object for this phase.[83]

75 Wardle *et al.* 2014.
76 Vasilliev *et al.* 1991, 53 Pl. 16,8.9.
77 Petrescu-Dîmboviţa 1977 Pl. 398,12.
78 Wesse 1990, 78. 143.
79 Wesse 1990, 144.
80 Wesse 1990, 205 no. 208.
81 Blegen 1952; Wesse 1990, 205 no. 208.
82 Petrescu-Dîmboviţa 1978, 149 no. 261 Pl. 259 C. 260 A.
83 Cp. Hansen 1991, 14–15; i.e. München-Widenmayerstraße: Brug/Weber 1899; Bader 2009.

Fig. 18 Teleac. Finds made of iron (photo by C. Suteu)

Iron in Teleac

Older excavations in Teleac recovered 29 objects made of iron (**Fig. 18**). Of these, 25 finds were attributed to settlement layer III and four finds to layer II. Reportedly, iron objects were absent in the oldest settlement phase (layer I).[84] During our research in Teleac in 2010 and 2011 a substantial number of iron objects was recovered.[85] Later excavations brought forth even more iron objects, which now can be clearly dated to the 10th century BC. In light of recent investigations, the dating of finds from older excavations should be reviewed. Proof of far-reaching connections point to the Caucasus as well. For example, a 40-cm long Caucasian dagger with an iron blade and bronze grip was discovered in Pănade, a site located north of Teleac. And it can be dated to the 10th/9th century BC, too.[86]

The connections to Greece since the 11th/10th century BC are ultimately confirmed by the spectrum of iron forms, in particular, the typifying double axes, the trunnion axes and the swords. Here too, reference must be made to spectacle fibulae, which ultimately mark the mobility of groups of persons.[87] In this regard, the small bronze figure of a horse found in Teleac (**Fig. 19**) also deserves attention.[88] Like the aforementioned horse gear, this small artwork demonstrates the high esteem held for horses, an esteem that is also sufficiently attested in Greece. Reference was made above to the representations of horses on the neck-amphora in Kerameikos grave 28 (**Fig. 7**).[89] The great partiality for figures of horses as votive offerings in sanctuaries, made of clay or bronze, is well known.[90] A team of horses with a two-wheeled wagon – according to pictorial evidence – was especially prestigious. This iconography also represents an element of continuity between the Bronze Age and the Iron Age.

[84] Vasiliev *et al*. 1991, 126–128.

[85] This field research was conducted within the framework of the European project "Forging Identities".

[86] Vulpe 1990, 20–22 Pl. 1,1; Boroffka 1991, 10 no. 27 Fig. 6,3; Metzner-Nebelsick 2002, 372–373 Fig. 168,1. The publication of the iron finds is being prepared by Nikolaus Boroffka.

[87] Pabst 2012; cp. also Aldea/Ciugudean 2005.

[88] Vasiliev *et al.* 1991, 71 Fig. 19,9; on horse figures of the Hallstatt period cf. Teßmann 2009.

[89] Benson 1970; Greenhalgh 1973.

[90] Heilmeyer 1979.

Fig. 19 Teleac. Small figure of a horse, made of bronze (L. 5.7 cm) (photo by C. Suteu)

Nothing is known about the procurement of iron ores in the surroundings of Teleac or in Transylvania during the Late Bronze Age or Early Iron Age. Ores are in abundance and not at great distance from Teleac (for example, in Băișoara, jud. Cluj, Rimetea/German Eisenburg/Eisenmarkt). A comprehensive occurrence of iron ores is recognisable in the map of Banat and of Transylvania and can be integrated within a supra regional context (**Fig. 20**). In order to identify evidence of ores and mining future studies will also concern analytical possibilities for research on iron provenance.[91]

Iron technology was an exceedingly important stimulus for innovation, at first providing warfare with a new basis for a long time. Its significance for the production of agricultural equipment, by contrast, cannot be substantially attested for early times, but quite likely it played an increasingly significant role (for example, in the production of axes, sickles, chisels etc.). In any case, the control over and access to this raw material were of economic and strategic advantage.

Thus, the fortification at Teleac comes all the more into focus. The immensity of the fort reflects the potential of violence of that time. Obviously, there was a sufficiently large population for mobilising an attack on the massive fortification and to set it on fire. At present we only know that the walls were a wood-earthen construction, but there are many details of the fortification that must still be investigated.[92] Furthermore, the burnt walls presage insight in a martial violence, which has hitherto been attested in only few places in Central Europe.[93]

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[91] Cp. Schwab *et al*. 2006.

[92] Cp. Uhnér *et al.* in this volume.

[93] Heunischenburg near Kronach: Abels 2002.

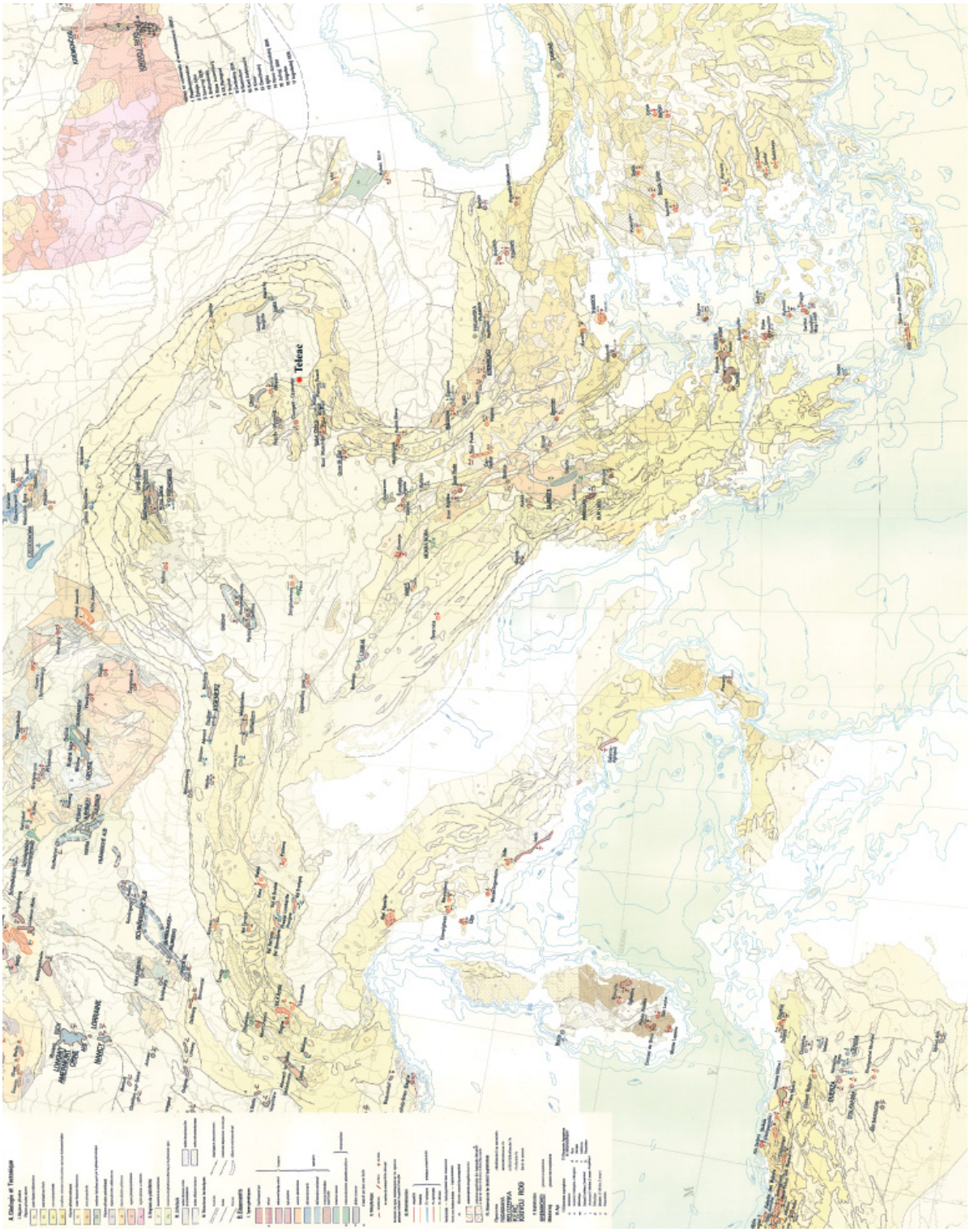

Fig. 20 Occurrence of iron ore in Southern Europe (Carte Internationale des Gisments de Fer de l'Europe, pages 11 and 15, altered and supplemented by C. Uhnér and F. Becker)

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