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SOMMAIRE  
CONTENTS  
I N H A L T

<i>ÉTUDES</i>	
FRED C. WOUDHUIZEN, Traces of Ethnic Diversity in Mycenaean Greece.....	5
ALIN FRÎNCULEASA, BIANCA PEDA, OCTAV NEGREA, ANDREI-DORIAN SOFICARU Bronze Age Tumularly Graves Recently Investigated in Northern Wallachia .....	23
ADRIAN ROBU, Le culte de Poséidon à Mégare et dans ses colonies .....	65
FLORINA PANAIT-BÎRZESCU, Le culte d'Apollon dans les cités grecques de la Mer Noire : l'apport de la documentation iconographique .....	81
VITALIE BÂRCĂ, Nomads of the Steppes on the Danube Frontier of the Roman Empire in the 1 <sup>st</sup> Century CE. Historical Sketch and Chronological Remarks .....	99
EMILIAN POPESCU, Municipium Tropaeum.....	127
<i>NOTES ET DISCUSSIONS</i>	
DAN DANA, RADU ZĂGREANU, Les indigènes en Dacie romaine ou la fin annoncée d'une exception : relecture de l'épithaphe CIL III 7635.....	145
SORIN COCIȘ, VITALIE BÂRCĂ, The Workshops and Production of "Sarmatian" Brooches (Almgren Group VII, Series I).....	161
<i>COMPTE RENDUS</i>	
A. Gramsch, U. Sommer, <i>A History of Central European Archaeology. Theory, Methods, and Politics</i> , Archaeolingua Series Minor 30, Budapest, 2011, 219 p. ( <i>Alexandra Ghenghea</i> ).....	177
Jan Bouzek, Lidia Domaradzka, Zofia H. Archibald (Eds.), <i>Pistiros IV. Excavations and Studies, Praha, Charles University in Prague</i> , 2010, 246 S., zahlr. Abb., 41 Farbtaf., 1 Beil. 4° (Studia Hercynia. 14) ( <i>Victor Cojocaru</i> ).....	180
O. Brandt, (éd.), <i>San Lorenzo in Lucina. The Transformations of a Roman Quarter</i> , Skrifter utgivna Svenska Institutet Rom, 4/61/Acta Instituti romani regni Sueciae, series in 4°, 61, Stockholm, Swedish Institute in Rome, 2012 ( <i>Irina Achim</i> ).....	183
<i>IN MEMORIAM</i>	
GAVRILĂ SIMION (18. 11. 1928–28. 04. 2010) ( <i>Sorin Ailincăi</i> ).....	187
EUGENIA ZAHARIA (29. 01. 1921 – 27. 06. 2010) ( <i>Radu Harhoiu</i> ).....	193
IVAN ORDENTLICH (18. 11. 1934 – 01. 10. 2011) ( <i>Tiberiu Bader</i> ).....	199
<i>ABRÉVIATIONS</i> .....	203



# THE WORKSHOPS AND PRODUCTION OF “SARMATIAN” BROOCHES (ALMGREN GROUP VII, SERIES I)

SORIN COCIȘ\*, VITALIE BÂRCĂ\*\*

**Key words:** workshop, brooches, bronze, moulds, half-finished.

**Abstract:** Our attempt herein is to present and to analyse on the basis of archaeological finds the workshops producing the head-knob variant of “Sarmatian” brooches. Ten workshops of the kind were prudently confirmed based on bronze and clay moulds as well as unfinished items. The authors agree that such craftsmen complexes were most likely in operation in many settlements; however they do not exclude the hypothesis according to which these brooches may have also been manufactured by traveling artisans. Following the analysis of the moulds and of the half-finished brooches, it was noted that the centres produced the variant with external chord. In addition, the authors noticed that the finds’ area pointing to the production of “Sarmatian”, head-knob brooches comprises, with one exception, the Germanic territories. Accordingly, the authors conclude that the association of these brooches with the Sarmatian world as well as the remark they are of Sarmatian origin should be abandoned.

The few such brooches in the Sarmatian environment of the Pannonian Plain in contrast to the Germanic world, the fact they are missing from the north-Pontic Sarmatian world, the distribution area of the workshops, their frequent association within graves with brooches originating in the Germanic environment are all evidence that this brooch type was adopted by the Sarmatians from the Germanic peoples.

Given all the above, the authors reach the conclusion that in the current state of knowledge one may argue with certainty that these brooches originate in the Przeworsk environment from where they were diffused southwards and eastwards.

**Cuvinte-cheie:** ateliere, fibule, bronz, tipare, semifabricat.

**Rezumat:** În studiul de față se încearcă pe baza descoperirilor arheologice o prezentare și o analiză a atelierelor unde au fost produse fibulele de tip „sarmatic”, varianta cu buton la cap. Pe baza tiparelor din bronz și lut precum și a unor piese în curs de fabricare, s-au identificat, cu precauție, zece ateliere certe. Autorii admit faptul că astfel de complexe meșteșugărești au funcționat, foarte probabil, în numeroase așezări, dar nu exclud nici ipoteza producerii lor și de către meșteri ambulanți. În urma analizei tiparelor și fibulelor în curs de prelucrare s-a remarcat că aceste centre produceau varianta cu coardă exterioară. De asemenea autorii constată că arealul descoperirilor ce indică producția de fibulele de tip „sarmatic” cu buton la cap cuprinde, cu o singură excepție, lumea germanică sau de influență germanică. Pe baza acestei realități autorii concluzionează că asocierea acestor fibule cu lumea sarmatică cât și considerația că acestea sunt de origine sarmatică trebuie abandonată definitiv.

Numărul mult mai redus al acestor fibule în mediul sarmatic din Câmpia Panonică decât din lumea germanică, inexistența lor în lumea sarmatică nord-pontică, aria de răspândire a atelierelor, asocierea de multe ori a acestora în morminte cu fibule din mediul germanic, constituie o dovadă că fibule de acest tip au fost preluate de către sarmați de la populațiile germanice.

Ținând cont de toate aceste realități autorii ajung la concluzia că în stadiul actual al cercetărilor se poate afirma cu certitudine că fibule acestui tip își au originea în mediul Przeworsk de unde s-au difuzat spre sud și est.

Brooches, a special category amongst adornment and dress items, are one of the most precious artifacts in various ancient ethnic and cultural areas. They fulfill a both functional and decorative function, being goods frequently used in cultural exchanges between the populations of various regions. Moreover, they supply multiple data on various aspects of the economic and social life, fashion, ethnicity

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and are dating elements allowing for a more accurate chronological framing of an entire series of broadly-dated artifact categories or for which chronological criteria are rather uncertain. Finally, we should mention that brooches are known to be artifacts of serial production mirroring a certain degree of economic and social structuring<sup>1</sup>.

The manufacture of these adornment and dress items required the mastership of various technical procedures, all the more that artisans made such artifacts out of various metals.

The recent publishing of new “Sarmatian” brooches, of their casting moulds and of a manufacturing workshop provides us with the opportunity to make new contributions on the workshops and production of such brooches<sup>2</sup>.

The brooches of the type have a spring fastening system made of 8-40 coils placed simply, double-fold or three-fold. The chord may be either internal or external. The body of the brooch is strongly curved. The body surface displays one or two mid ribs and usually a small narrowing in the joining area with the foot. The ornaments include the pearled design made either by granulation or decoration with a toothed wire, hence the pearl appearance. The brooch head is incorporated in the terminal part of the body and occasionally ends with a projecting knob, which in some variants flattens (being rendered more sketchily) thus even joining (by casting) the support. The spring attachment support may have either one or three orifices according to the spring type, simple, double or triple. The foot is either short or long, may be faceted and ends most often in a knob. The catchplate is rectangular, short or long, parallel or diagonal to the foot. They are made of two parts, namely the proper brooch made of one metal piece and the spring, made separately. The metal used in most of the cases is bronze, while during a certain stage, silver or extremely rare, iron-made specimens also emerge.

Without making a review of all works dealing over time with the issue and analysis of group VII brooches in O. Almgren’s classification, we wish to mention that the most complete repertoire of this brooch group at European level was drafted for the first time in 2003 by the Polish researcher M. Maczyńska<sup>3</sup>. Therein, the author analyses a number of over 250 items coming from 143 find spots located in the Sarmatian environment of the Pannonian Plain, the German barbarian world, the province of Dacia and the surrounding territories (Romania), but also those in the Barbarian environment on the current territory of Ukraine. The Polish scholar believes that the origin of this type should be sought in the Sarmatian world of the Pannonian Plain and in the area east of the Roman province of Dacia (Romanian Moldova and Muntenia), where said brooches appeared under the influence of brooches specific to the provinces of Pannonia and Dacia, later distributing to the northern territories. Chronologically, the so-called “Sarmatian” brooches are framed according to the find area between stages B2/C1-C2 (CE 150/160-310/320)<sup>4</sup>.

During the last two decades, many studies focused on variants of these brooches identified in the Chernyakhov and Kiev culture<sup>5</sup> areas, thus significantly completing existent data provided by previous works<sup>6</sup>.

The quantitative increase of group Almgren VII brooches in the region east the Dnieper was originally illustrated in the studies drawn up by A. M. Oblomskij<sup>7</sup> and M. V. Lyubichev<sup>8</sup>. M. V. Lyubichev and V. V. Didyk published all the brooches in this group found in the area east the Dnieper, known at the level of 2001<sup>9</sup>. The same authors correlated A. K. Ambroz’s classification with that drawn up by

<sup>1</sup> This work was supported grants of the Ministry of National Education, CNCS – UEFISCDI, project number PN-II-ID-PCE-2012-4-0210 and grant of the Romanian National Authority for Scientific Research, CNCS – UEFISCDI, project number PN-II-RU-TE-2012-3-0216.

<sup>2</sup> We hereby wish to thank our colleagues Dr. Al. Popa (Römisch-Germanische Kommission. Deutsche Archäologische Institut, Frankfurt am Main), Dr. B. Komoroczi, (Institute of Archaeology and Ethnography, Brno), Dr. Halina Dobrzańska, (Institute of Archaeology and Ethnography, Kraków), Dr. B. Magomedov (Institute of Archaeology, Kiev) for the bibliography brought to our attention as well as the opportunity to study some of the items.

<sup>3</sup> Maczyńska 2003, p. 303-332.

<sup>4</sup> Maczyńska 2003, p. 307-309.

<sup>5</sup> Monchyn’ska 1999, p. 87-111; Lyubichev 2000; Lyubichev 2003, p. 76–77, fig. 4; Lyubichev 2008, p. 36-47; Lyubichev, Didyk 2001-2002, p. 335-342; Gorokhovskij, Gopkalo 2004, p. 103-130; Bakumenko, Bejdin, Grigor’yantz, Didyk 2006, p. 69-95, 104.

<sup>6</sup> Ambroz 1966, p. 72-74.

<sup>7</sup> Oblomskij 1991, fig. 3/1-4; Oblomskij 2002, fig. 27/6; 32/3-4; 33/13; 43/23; 45/19, 68.

<sup>8</sup> Lyubichev 2000; Lyubichev 2003, p. 76-77, fig. 4.

<sup>9</sup> Lyubichev, Didyk 2001-2002, p. 335-342.

E. L. Gorokhovskij in his doctoral thesis, and analysed some of the group variants dated to the Late Roman period found in the forest steppe between the Dnieper and Severskij Donetz concluding that a group of population migrated from the Upper Dniester region to the forest steppe area of Dnieper-Severskij Donetz<sup>10</sup>. A year later, M. V. Lyubichev re-discussed these brooches within the context of the emergence of Chernyakhov culture graves in the Dnieper-Severskij Donetz<sup>11</sup> hydrographical basin. In 2004, E. L. Gorokhovskij and O. V. Gopkalo<sup>12</sup> published a study further analysing all group VII brooches in O. Almgren’s typological classification discovered in the Chernyakhov culture area. Therein, the authors proposed a new classification consisting of six series<sup>13</sup>, of which the first comprised 10 variants. Two years later, within an ample study tackling Roman period brooches in the territories of the upper part of Vorskla and Severskij Donetz rivers, K. I. Bakumenko, G. V. Bejdin, M. N. Grigor’yantz and V. V. Didyk also discussed group VII brooches in O. Almgren’s typology discovered there<sup>14</sup>. In fact, this work completes the conclusions drawn by A. M. Oblomskij<sup>15</sup> and A. N. Nekrasova<sup>16</sup> regarding the brooches in this group as indicators of the massive diffusion of Chernyakhov imports within the local environment of the Kiev culture and as indication of a targeted Chernyakhov colonisation of the territories left the Dnieper<sup>17</sup>.

In 2008, M. V. Lyubichev issued a study resuming the debate on the distribution of group Almgren VII brooches in the territory east of Dnieper<sup>18</sup>. The author analyses a number of 44 complete and fragmentary brooches and also two half-finished brooches coming from 23 sites in the area east of Dnieper. Following their analysis, M. V. Lyubichev infers that the emergence of the brooches in group VII of O. Almgren’s classification is related to the arrival in the region of the bearers of Dem’yanov-Cherepin culture from the Upper Dniester region, equivalent there to horizon Boromlya<sup>19</sup>, however not specific to the criteria defining Chernyakhov remains<sup>20</sup>. Furthermore, the author concludes that very likely during stages C1b-C2, the German peoples also enter<sup>21</sup> the region east the Dnieper together with the bearers of the Boromlya horizon.

Last but not least, M. V. Lyubichev disputes the idea of a first wave of Chernyakhov colonisation of the region east the Dnieper during C1b – start of C2 stages, arguing that only elements were transposed in this area and not the entire culture with all its features. Accordingly, the emergence of the “classical” Chernyakhov culture in the territory east of the Dnieper dates no earlier than the second quarter of the 4th century CE<sup>22</sup>.

In 2011, the Polish researcher M. Maczyńska resumed the discussion on the “Sarmatian” brooches in the European territory<sup>23</sup> within the study tackling the deposit at Łubiana (north Poland). Although the repertoire of this most recent study<sup>24</sup> is more comprehensive than that of 2003<sup>25</sup>, it only partially includes the novel finds in the Przeworsk culture area, the eastern German barbarian world, the Roman province of Dacia, as well as the novel finds in the Chernyakhov and Kiev cultures areas. Unfortunately, the author’s conclusions regarding these brooches are identical to those in the study of 2003, though most recent scientific contributions should have nuanced and amended some of the author’s assumptions.

The archaeological identification of workshops is difficult on both the territory of the former Roman Empire as well as in the European Barbarian environment of the first centuries CE. Compared to

<sup>10</sup> Lyubichev, Didyk 2001-2002, p. 335-342.

<sup>11</sup> Lyubichev 2003, p. 71-81.

<sup>12</sup> Gorokhovskij, Gopkalo 2004, p. 103-130.

<sup>13</sup> Gorokhovskij, Gopkalo 2004, p. 115-121.

<sup>14</sup> Bakumenko, Bejdin, Grigor’yantz, Didyk 2006, p. 69-95, 104.

<sup>15</sup> Oblomskij 1999, p. 39-41.

<sup>16</sup> Nekrasova 1989, p. 56-57.

<sup>17</sup> Bakumenko, Bejdin, Grigor’yantz, Didyk 2006, p. 69.

<sup>18</sup> Lyubichev 2008, p. 36-47.

<sup>19</sup> Lyubichev 2008, p. 44.

<sup>20</sup> Lyubichev 2008, p. 44.

<sup>21</sup> Lyubichev 2008, p. 45.

<sup>22</sup> Lyubichev 2008, p. 44.

<sup>23</sup> Maczyńska 2011, p. 63-72.

<sup>24</sup> Maczyńska 2011, p. 301-309.

<sup>25</sup> See Maczyńska 2003, p. 303-332.

other workshop types, for instance pottery workshops, they require a smaller space and are equipped with fewer tools: small heating ovens, crucibles, moulds and finishing, decoration, cutting and attachment tools. In general, the hypothesis of a workshop in existence within the *Barbaricum* is supported by finds that include moulds, patterns, crucibles or half-finished items.

The single workshop known by all its constituents (layout, installations, tools, etc.) was identified at Pasohlávky<sup>26</sup> (the Czech Republic). The house-workshop was 2.8 x 2.3 m in size (Fig. 1/1), its inventory comprising a few fragments of Roman tiles bearing the stamp of Legion X Gemina, shards, bronze waste, animal bone fragments, as well as 90 crucible fragments and clay moulds<sup>27</sup>. Some fragmentary moulds were designed for casting double-ringed belt fasteners, while the rest of the moulds served for casting the head-knob variant<sup>28</sup> of “Sarmatian” brooches (Fig. 1/2-4). On the basis of the analysis of the two artifact types at the scale of Barbarian Europe, J. Terjal believes that the workshop at Pasohlávky was of Germanic origin suffering strong northern influences and operating in the period just after CE 180 until mid 3rd century CE<sup>29</sup>.

Another workshop was most likely in function at Kleinhöflein (Lower Austria) or nearby. From an unknown context comes one piece of a bronze mould (Fig. 2/1) for making the “Sarmatian” brooches<sup>30</sup>. The preserved length of the mould is 4.5 cm, being 3.5 cm wide. From there still, come a “Sarmatian” brooch, a bronze bell, a white metal applique, a *terra sigillata* fragment (Drag. 32 type CERALIS VI) and an undeterminable pottery shard<sup>31</sup>. The feature was dated by the authors of the research in the chronological interval between the end of the 2nd century and the first half of the 3rd century CE<sup>32</sup>.

A bronze mould (Fig. 2/3) in the collection of the Art History Museum of Vienna<sup>33</sup> seems to point to the same production area (Lower Austria) according to the publishers of this artifact. The item, republished by K. Gschwandtler and H. Winter is deemed evidence of a workshop in existence in “Roman Austria”<sup>34</sup>. However, we tend to believe that the specimen most likely comes from the north-eastern territory of Austria, which during the first centuries CE was located within the *Barbaricum*. The mould is bronze-made and is 7.6 cm long. In negative, one may notice two brooches of the type with tall catchplate and head-knob (they are 4.6 cm, respectively 4.4 cm long) and a mid orifice for assembling the other mould piece. This item is the only mould known to have made two brooches at the same time.

The large number of identified head-knob brooches<sup>35</sup> as well as a half-finished specimen<sup>36</sup> (Fig. 2/2) plead in favour of a workshop at Bernhardstahl (north-east Austria).

One may assume, on the basis of a brooch under processing discovered in 2008 at Zvončín<sup>37</sup> (region Trnava, west Slovakia), that a workshop manufacturing brooches with tall catchplate and head knob existed in the area. I. Bazovský dated the discovery to the chronological interval between the end of the 2nd century CE and the first half of the 3rd century CE<sup>38</sup>. The workshop producing such brooch types was most likely in operation in this period as well.

At Neunheilingen<sup>39</sup>, in the Thüringen land (Germany), a field survey yielded one piece of a bronze mould for making tall catchplate, head-knob brooches (Fig. 3/1). By one of the ends, on the outside, the item exhibits three incised notches for joining the two-piece mould while by the other extremity, an orifice for the attachment of the other piece through a rivet<sup>40</sup>. Inside, the mould cavity lay precisely in the

<sup>26</sup> Teyral 2006.

<sup>27</sup> Teyral 2006, p. 134-135.

<sup>28</sup> Teyral 2006, fig. 7/9.

<sup>29</sup> Teyral 2006, p. 140.

<sup>30</sup> Kren, Pollak 2008, p. 681-682, fig. 41/1.

<sup>31</sup> Kren, Pollak 2008, fig. 41/3-6.

<sup>32</sup> Kren, Pollak 2008, p. 682.

<sup>33</sup> Behrens 1954, p. 235, no. 2; Drescher 1973, p. 57, fig. 2/7.

<sup>34</sup> Gschwandtler, Winter 1991, 116, 134, pl. 12/7.

<sup>35</sup> Adler, Nebehay 1990, p. 217-220, fig. 794; Adler, Stuppner 1990, p. 217, fig. 868; Adler 1991, p. 236, fig. 826; Adler 1993, p. 477, fig. 621; Allerbauer, Jedlicka 2001, p. 641-642, fig. 604, 614.

<sup>36</sup> Stuppner 1991, 236, fig. 917.

<sup>37</sup> Bazovský 2009, p. 435, Fig. 1/11.

<sup>38</sup> Bazovský 2009, p. 436.

<sup>39</sup> Walther 1996, p. 19-21.

<sup>40</sup> Walther 1996, 20, fig. 1/1; 2.



brooch support range thus forming the orifice for the spring attachment. The overall length of the mould is 5.8 cm. When analysing this brooch type, W. Walther maintained that the mould was imported to this area and that it originated somewhere in the Mid Danube area or even in the Przeworsk culture area, its emergence there being possibly related to the historical events in the Marcomannic Wars aftermath<sup>41</sup>. Chronologically, the item at Neunheilingen is dated to the period of the last two decades of the 2nd century – first decades of the 3rd century CE<sup>42</sup>.

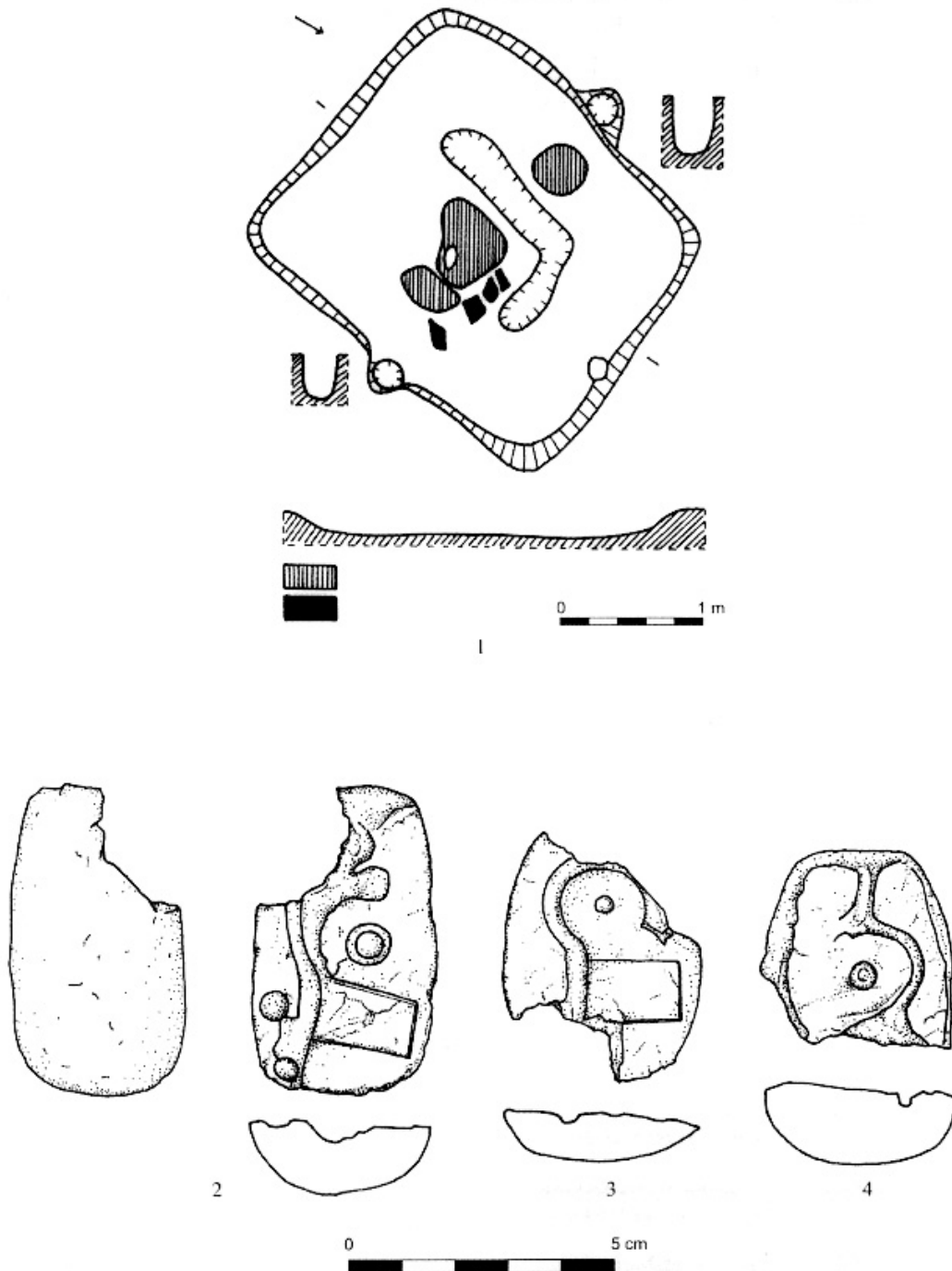


Fig. 1. 1. Layout of the workshop at Pasohlávky (after Tejral 2006);  
2-4. Clay moulds for head-knob “Sarmatian” brooches from Pasohlávky (after Tejral 2006).

<sup>41</sup> Walther 1996, p. 24-26.

<sup>42</sup> Walther 1996, p. 24-26.

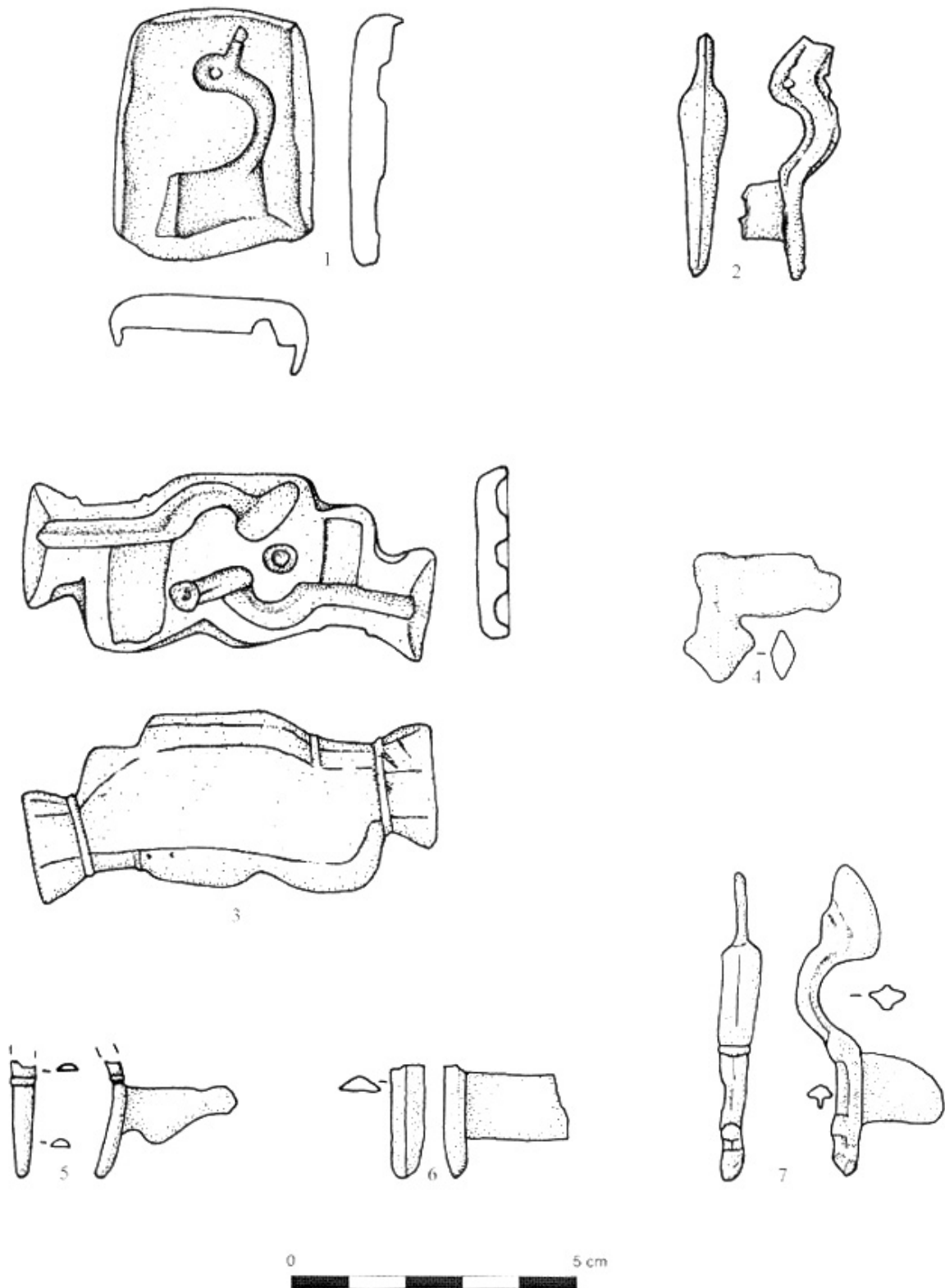
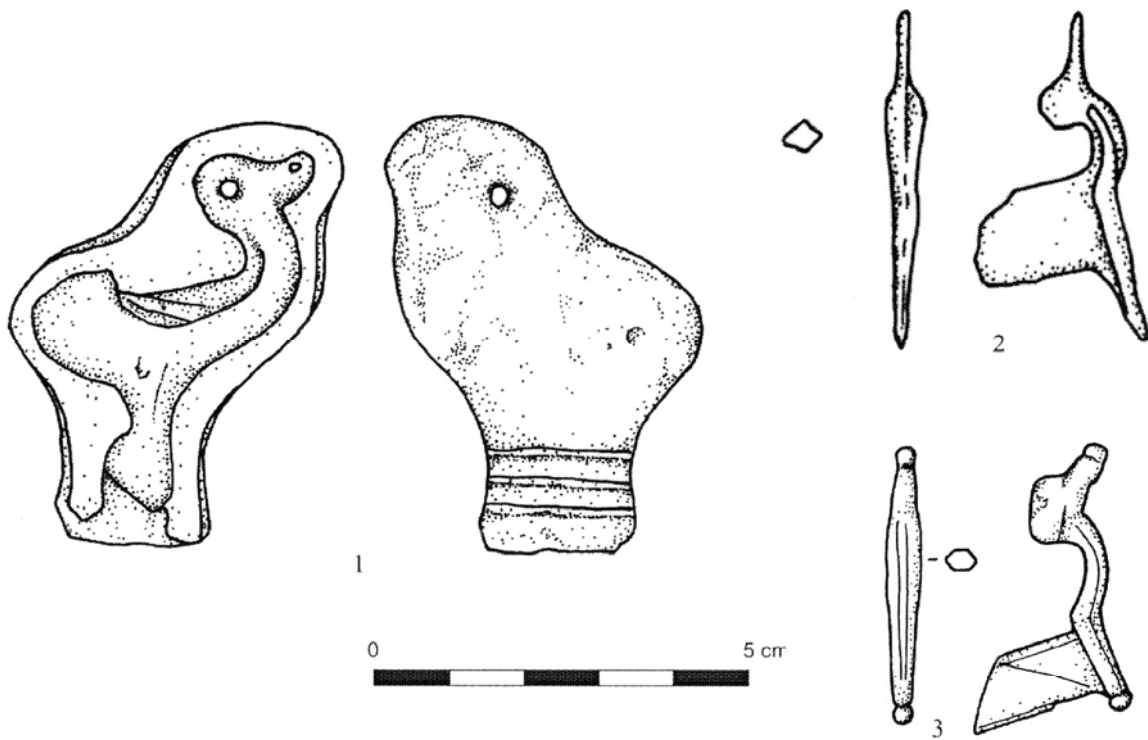


Fig. 2. 1. The bronze mould from Kleinhöflein (after Kren, Marianne Pollak, 2008); 2. Half-finished head-knob “Sarmatian” brooch from Bernhardstahl (after Stuppner 1991); 3. Bronze mould in the collection of the Museum of Natural History of Vienna (after Gschwandtler, Winter 1991); 4 Half-finished head-knob “Sarmatian” brooch from Paseki (after Bakumenko, Bejdin, Grigor’yantz, Didyk 2006). 5-7. Half-finished head-knob “Sarmatian” brooches from Ogul’ tzy (after Bakumenko, Bejdin, Grigor’yantz, Didyk 2006).



4

Fig. 3. 1. Bronze mould from Neunheilingen (after Walther 1996); 2-3. Half-finished head-knob "Sarmatian" brooches from Grodzisko Dolne (after Czopek, Podgórska-Czopek 2004); 4. The bronze mould and the rest of the grave goods at Prusiek (after Madyda-Legutko, Rodzińska-Nowak, Zagorska-Telega 2007).

Two pieces of two-piece bronze moulds identified in the Przeworsk culture area make a rather interesting case. The first item was found in a grave during the archaeological investigation of the cemetery at Prusiek (south-east Poland)<sup>43</sup>, and the second within the settlement there<sup>44</sup>. The goods in the cremation grave 24, where the mould was found, also comprised two knives (one half-finished), two mandrels, a rasp, a small hammer, comb fragments, a concentric mould fragment and one piece of a bronze mould for making tall catchplate brooches with most likely two spring orifices (?)<sup>45</sup>, as well two other iron undeterminable fragments<sup>46</sup> (Fig. 3/4). Chronologically, the grave at Prusiek was framed by the excavators in the interval B2a, B2/C1, possibly C1b<sup>47</sup>. Such artisan graves were also identified in the Przeworsk culture<sup>48</sup> area. Still in this area, one may suppose the existence of a workshop at Grodzisko Dolne (south-east Poland), where four head-knob brooches were found, of which two were either half-finished or scrap<sup>49</sup> (Fig. 3/2-3).

In the current state of research of the Sarmatian environment of the Pannonian Plain there is no certain find indicative of the production of head-knob, tall catchplate brooches. On this line, one may think on the half-finished item in the collection of the Museum at Mainz which it has been affirmed that is coming from the nowadays territory of Hungary. Still, the scholar who mentioned it did not use any argument for such a hypothesis<sup>50</sup>. As one will read on the following pages this artifact cannot come from Hungary, and, therefore, not presence of an workshop that may have produced this item can be documented, at the moment, on the Hungarian territory. Nonetheless, we should mention indirectly to the subject herein, the workshop at Tiszaföldvár-Téglagyár (Hungary)<sup>51</sup> in the Sarmatian Iazyges environment. The house-workshop had the following sizes: 3.5 x 28 m. The rather rich inventory consisted amongst other, of bronze objects' fragments used for melting (coins, vessels, appliques, nails etc.), crucibles and dozens of clay mould fragments<sup>52</sup>. According to A. Vaday, the moulds, respectively their negatives are indicative of the production of strongly profiled brooches<sup>53</sup> (Fig. 4/4) and of Roman and Germanic type knee-brooches<sup>54</sup> (Fig. 4/1-3). Chronologically, the workshop was dated to the 2nd century CE<sup>55</sup> based on the two fragmentary coins (used as raw material) and the brooch types inside the moulds. According to the classification established by M. Maczłyńska's, who identifies typologically a "Sarmatian" version<sup>56</sup> of a knee brooch variant, very similar to the head-knob variant, and also to a previous view expressed by A. Vaday<sup>57</sup>, we believe that the negative of the mould at Tiszaföldvár-Téglagyár<sup>58</sup> (Fig. 4/3) clearly points to the production of a knee brooch variant of Barbarian and not Roman type. On the basis of the two negative types for Barbarian type knee brooches<sup>59</sup>, we consider that the workshop at Tiszaföldvár may be dated in the B2/C1 time frame, while the brooches' making there may be assigned rather to an artisan travelling to the territory inhabited by the Sarmatian Iazyges or in connection to the German world. Therefore, there is no evidence that Almgren VII brooches were manufactured by the Sarmatians in the Pannonian Plain.

<sup>43</sup> Madyda-Legutko, Rodzińska-Nowak, Zağorska-Telega 2007.

<sup>44</sup> Information J. Rodzińska-Nowak, whom we thank herein for kindly bringing this recent find to our attention.

<sup>45</sup> The entire description is based on the photo image and the authors' brief comment.

<sup>46</sup> Madyda-Legutko, Rodzińska-Nowak, Zağorska-Telega 2007, p. 4-65, fig. 6.

<sup>47</sup> Madyda-Legutko, Rodzińska-Nowak, Zağorska-Telega 2007, p. 69.

<sup>48</sup> Przychodni 2005, p. 79-107.

<sup>49</sup> Czoplek, Podgórska-Czoplek 2004, p. 71-77, pl. 77/b-d, f; Podgórska-Czoplek 2009, p. 264.

<sup>50</sup> Behrens 1954, p. 236, fig. 10/2.

<sup>51</sup> Vaday 2005, p. 151-198.

<sup>52</sup> Vaday 2005, p. 160-168, pl. 2-20.

<sup>53</sup> The strongly profiled brooch type could not be specified based on the negative.

<sup>54</sup> Vaday 2005, pl. 17/1; 18/1, 3, 6.

<sup>55</sup> Vaday 2005, p. 160, 171.

<sup>56</sup> Maczłyńska 2003, pl. 3/3; 4/1 a silver specimen at Martfü (Hungary) and a specimen in eastern Slovakia.

<sup>57</sup> Vaday 1989, p. 79, fig. 13/13 (sie vertritt eine Übergangsform).

<sup>58</sup> Vaday 2005, pl. 8/1.

<sup>59</sup> Vaday 2005, pl. 18/1, 3, 6.

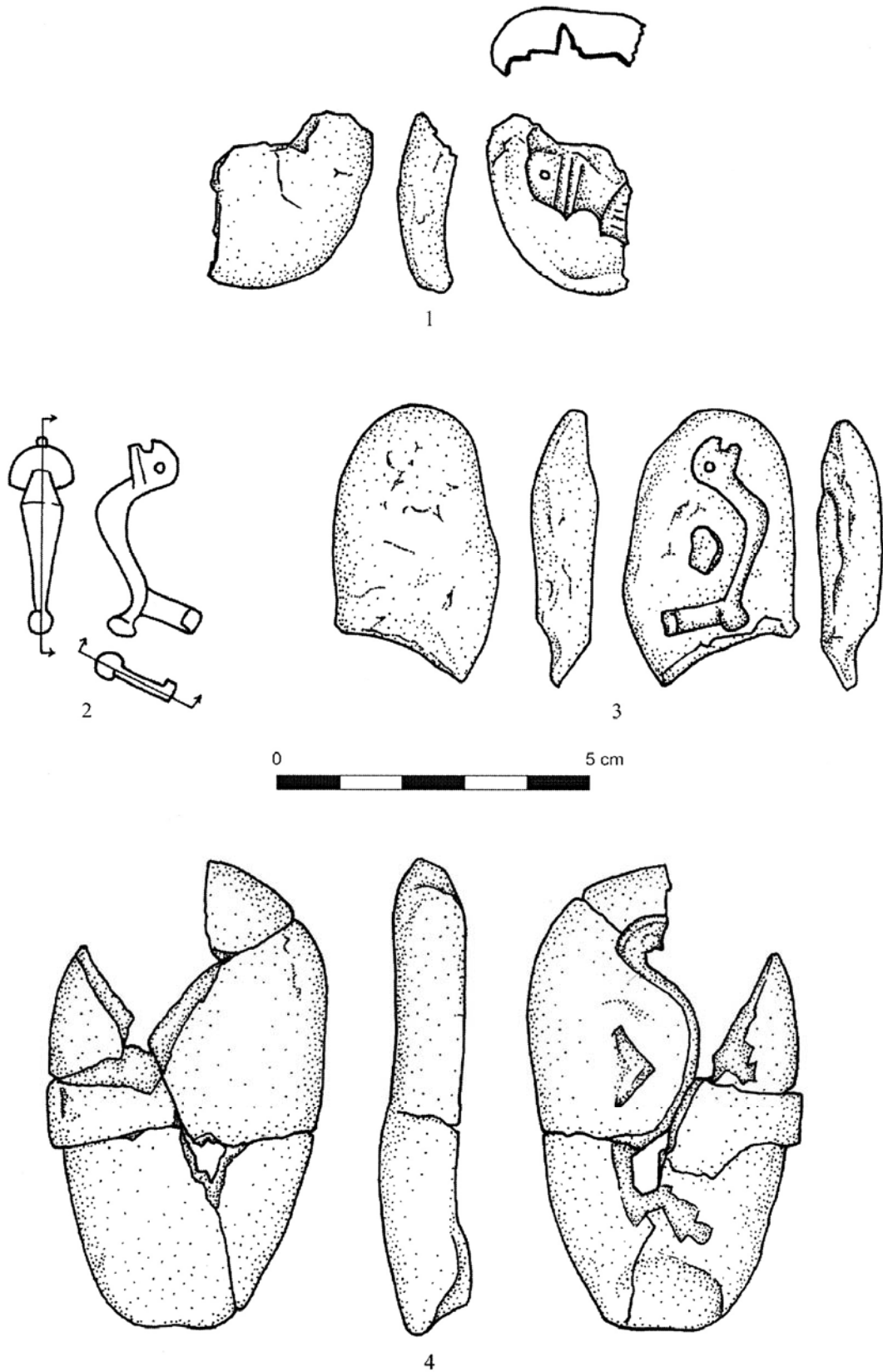


Fig. 4. Tiszaföldvár-Téglagyár. 1. Clay mould for knee brooch; 2. Reconstruction of knee brooch from mould; 3. Clay mould for knee brooch; 4. Clay mould for strongly profiled brooch (after Vaday 2005).

The existence of a workshop in operation at Poroilissum (Romania), important military, economic and commercial Roman centre located on the north-western border of the province of Dacia is supported by one piece of a two-piece bronze mould (Fig. 5/1a–1b) found in 2005 inside building LM 3/3 (Fig. 6), located left the road running from the Roman customs towards the fort on Pomet hill, namely in the Roman *vicus*<sup>60</sup>. The building was erected over the *vicus* defence ditch and vallum successively, having a few building phases (timber, stone) and changing shape and size<sup>61</sup> over time. The discovered mould is bronze-made (Fig. 5, 1a–1b) and has an overall length of 6 cm. The item consists as follows: the conical-shaped sprue hole, the runner as well as the proper negative (4 cm) formed of a knob, the bow attachment head, the short and strongly returned body, the long foot and the wide and long catchplate. The latter has an orifice by the end to attach the other mould piece. The morphological analysis of the mould shows it was used for making the head-knob, foot and long catchplate subvariant. The mould was dated to the 3rd century CE, namely its mid part<sup>62</sup> based on the stamped pottery of Poroilissum type and the coins issued under emperors Caracalla - Trebonianus Gallus identified in building LM 3/3.

Until the 21th C, no archaeological find identified in the Chernyakhov culture area accounted for the production of this brooch type. The first data come from the study drawn up by our colleagues K. I. Bakumenko, G. V. Bejdin, M. N. Grigor'yantz, V. V. Didyk<sup>63</sup>. Thus, on the basis of the half-finished items from Paseki (Fig. 2/4) and Ogul'tzy<sup>64</sup> (Fig. 2/5-7) it is believed that the brooches of the group were not only introduced but also produced by the newcomers to this region<sup>65</sup>. According to "Sarmatian" brooches (Almgren group VII, series I) finds in the area east of Dnieper it was reached the conclusion that there, they entered in use at a later date than in the area west of Dnieper<sup>66</sup>, their use being placed between CE 270-330<sup>67</sup>. The two workshops where they were manufactured operated most likely in this chronological interval as well.

In the current state of research, little is known on the workshops' internal planning, technology, rhythmicity, production and distribution market.

There were two types of casting techniques. The first method, argued in favour by H. Dreschler based on precisely the mould fragment in the collection of the Museum of Natural History of Vienna is that of the direct casting into these two-piece moulds of between 50–100 charges of bronze brooches<sup>68</sup>. The second method consists in casting bronze, lead or wax patterns later used, in order, as printing pattern by pressing into clay (the lost- form technique) and in lost – wax casting<sup>69</sup>. This latter technique is supported by A. Vaday and J. Tejral on the basis of the many clay mould fragments discovered in the workshops at Tiszaföldvár<sup>70</sup> and Pasohlávky<sup>71</sup>. Such bronze moulds are rather rare even within the Roman Empire, only two such specimens being known at Old Buckenham and Felmingham (the UK)<sup>72</sup>.

The used raw material, as shown by the Roman workshops from Dacia and *Barbaricum*, comes from used bronze objects, Roman coins or former used Barbarian artifacts<sup>73</sup>. We do not know which the raw material sources were for silver specimens. In addition, nothing is known on the artisans. Who were they? The artisan had to be highly skilled in order to wisely choose the alloy with optimal melting temperature so not to damage the mould and allow the correct detachment of all brooch parts; he had also to master the other types of technology (lost- form and lost- wax casting). Moreover, the silvering<sup>74</sup>, pearling, spring execution, polishing, incised decoration and repairs required vast technological knowledge<sup>75</sup>.

<sup>60</sup> Gudea, Tamba 2008, p. 95-96.

<sup>61</sup> Tamba 2009, p. 247-260.

<sup>62</sup> Gudea, Tamba 2008, 96.

<sup>63</sup> Bakumenko, Bejdin, Grigor'yantz, Didyk 2006, p. 93-94.

<sup>64</sup> Bakumenko, Bejdin, Grigor'yantz, Didyk 2006, p. 93-94; Lyubichev 2008, p. 39.

<sup>65</sup> Lyubichev 2008, p. 39.

<sup>66</sup> Bakumenko, Bejdin, Grigor'yantz, Didyk 2006, p. 90-91.

<sup>67</sup> Bakumenko, Bejdin, Grigor'yantz, Didyk 2006, p. 91.

<sup>68</sup> Drescher 1978, p. 90.

<sup>69</sup> Drescher 1973, p. 48-62; Hudeczek 1988, p. 341-345.

<sup>70</sup> Vaday 2005, p. 158-160.

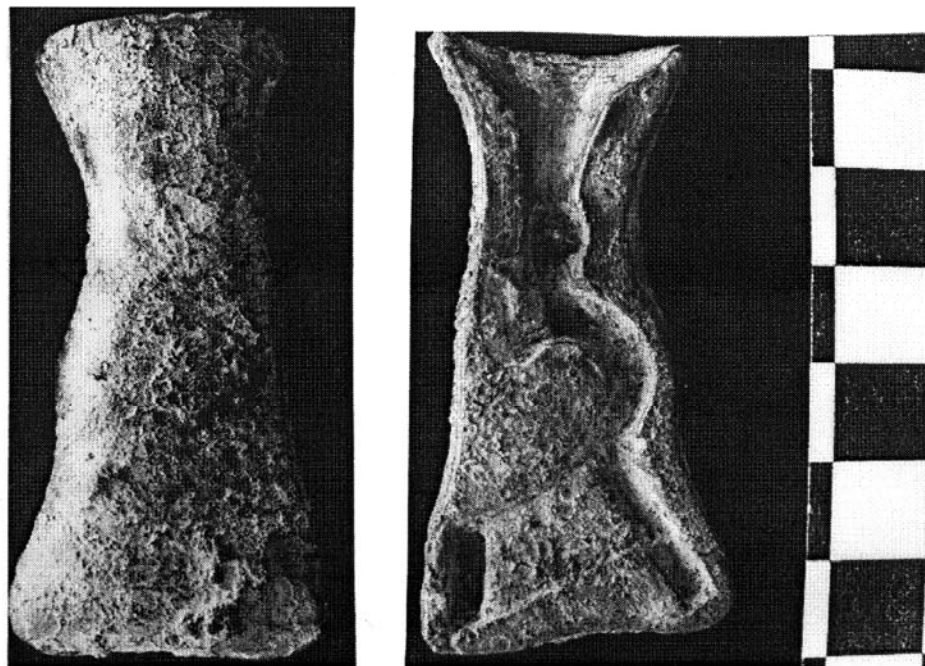
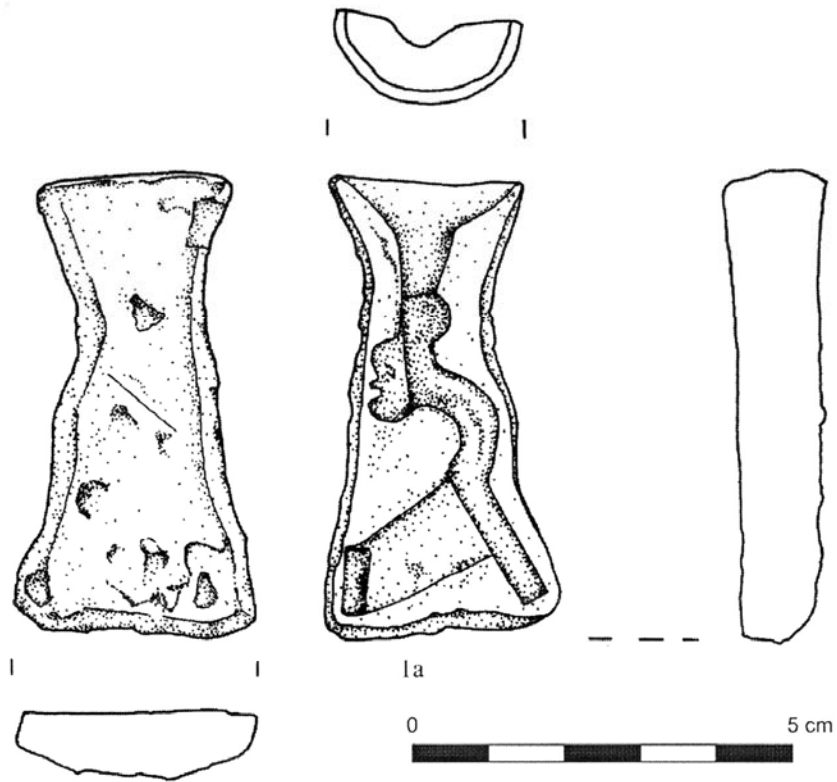
<sup>71</sup> Tejral 2006, p. 149-151.

<sup>72</sup> Bayley, Bucher 2004, p. 35-36.

<sup>73</sup> Cociș 2004, p. 24; Cociș 2006, p. 116, pl. 2/13; 3; Cociș 2007, p. 47, pl. 2; Vaday 2005, pl. 2/11, 16; 26.

<sup>74</sup> One of the specimens discovered at Jedenspeigen (north-east Austria) exhibits traces of silvering and repairs.

<sup>75</sup> Voss 1998, p. 312-313.



1b

Fig. 5. 1a–1b, the bronze mould from Porolissum (after Gudea, Tamba 2008).

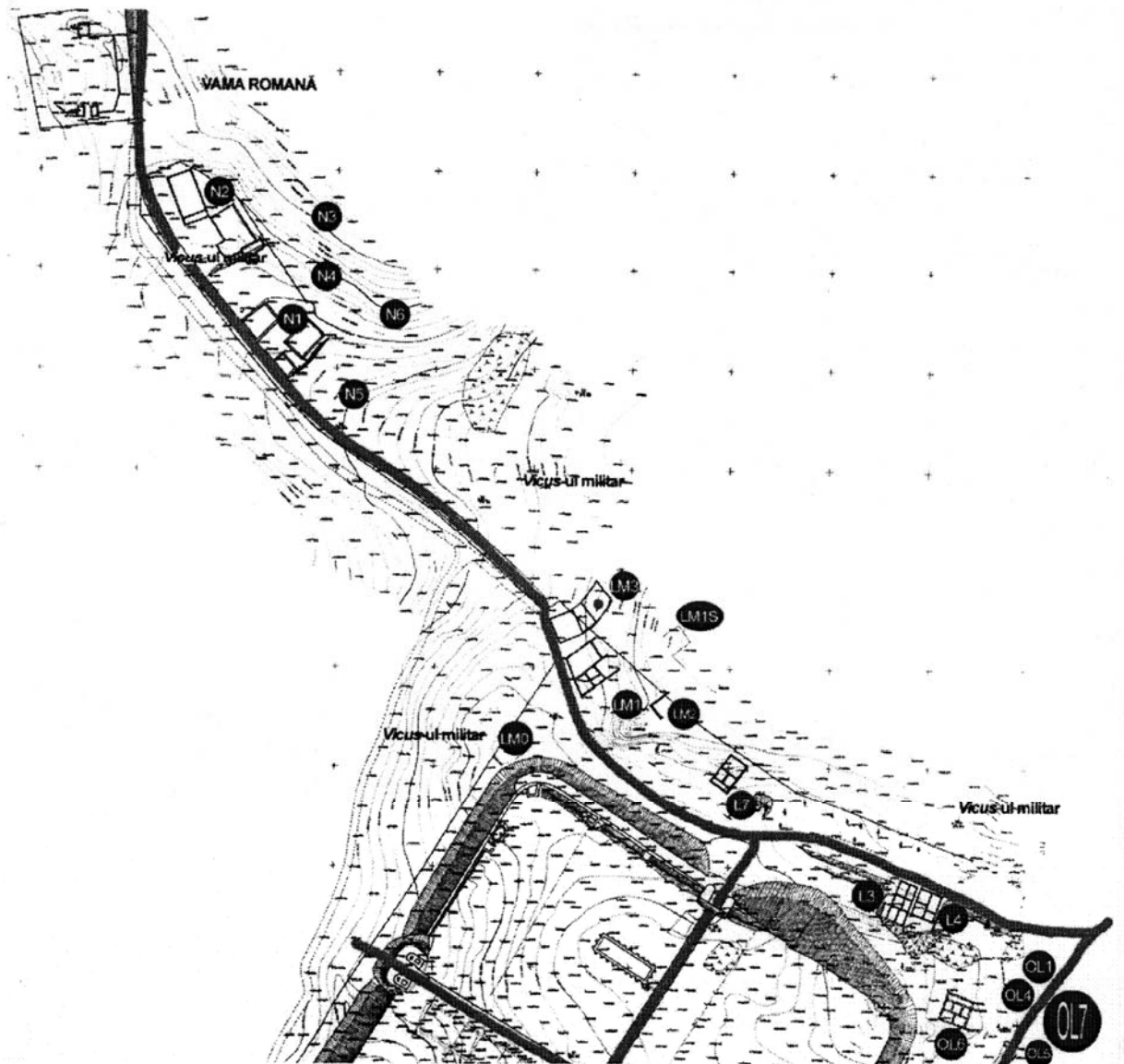


Fig. 6. Layout of the *vicus* area from Porolissum (after Gudea, Tamba 2008).

The debate whether those who made such brooches were either Roman artisans working in the *Barbaricum*, or Barbarian artisans in the *Barbaricum* or Barbarian artisans performing activities by the border of the Roman Empire and adopting the manufacturing technology remains still unresolved<sup>76</sup>. The single information on the role and status of the Barbarian artisan within the society has reached us via the inventory of the grave at Prusiek. Although 10 workshops<sup>77</sup> (Fig. 7) may be cautiously identified based on the discovered bronze and clay moulds as well as other half-finished items, one must agree that such crafting complexes were most likely operating in many settlements. They might have been either mixed, having a diversified production (brooches, domestic items, military equipment etc.) or producing only certain objects, in our case namely brooches. Neither should the hypothesis of traveling artisans be excluded.

<sup>76</sup> Hammer 1998, p. 79-200.

<sup>77</sup> Given the uncertain place of origin, neither the half-finished specimen in the collection of the Museum at Mainz, believed to come from the Hungarian territory (Behrens 1954, p. 236, Fig. 10/2), nor the bronze mould in the collection of the Museum of Natural History of Vienna (Behrens 1954, p. 235, no. 2; Drescher 1973, p. 57, Fig. 2/7) were taken into consideration.



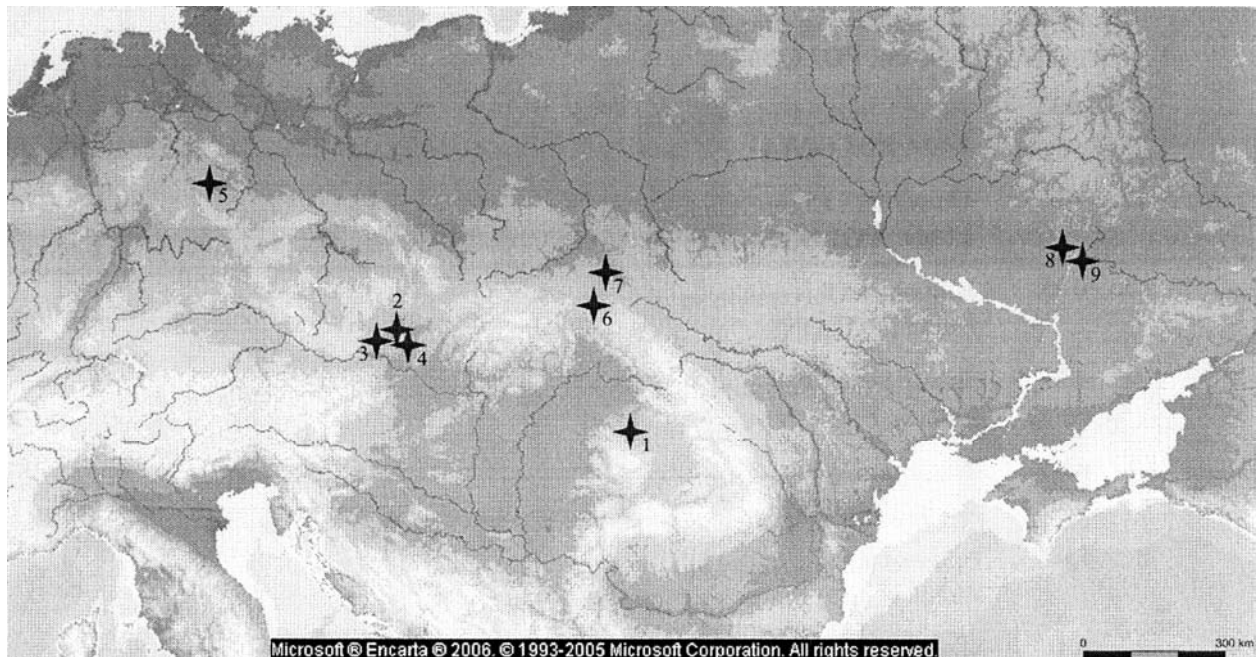


Fig. 7. Distribution area of the workshops producing head-knob "Sarmatian" brooches. 1. Porolissum; 2. Pasohlávky; 3. Kleinhöflein; 4. Bernhardstahl; 5. Neunheilingen; 6. Prusiek; 7. Grodzisko Dolne; 8. Ogultzy; 9. Paseki; 10. Zvončín.

Noticeably upon the analysis of the moulds and half-finished brooches, such centres produced the variant with external chord. Within this variant, there are though many subvariants<sup>78</sup>.

Chronologically, these production centres frame in the time span comprised between the third quarter of the 2nd century and the first quarter of the 4th century or, overall, according to the Central-European chronology, in stages B2/C1, C1a-C1b, C2. The finds area indicative of "Sarmatian" head-knob brooches includes, with one exception, the German or German influence world. The exception from Porolissum, which fulfilled an important role in the trade with the Barbarian world of the territories north and north-west of the province of Dacia, may be firstly explained by the production of such Barbarian brooches by the Romans for the Barbarians. In fact, the production of other types of Barbarian brooches (some of a single metal piece) is recorded in Dacia Porolissensis by two workshops<sup>79</sup>. Nonetheless, one should not exclude the fact that a Barbarian artisan of German origin might have worked in the Porolissum customs area.

Last but not least, it is noteworthy that although the term of Sarmatian brooches has been customarily used in the specialty literature in connection to brooches of the type, we believe that their association with the Sarmatian environment as well as the note on their Sarmatian origin should be abandoned once and for all. The few such brooches in the Sarmatian environment of the Pannonian Plain when compared to the German world, the fact they are lacking from the eastern German world, the spreading area of the workshops, their often association within graves with German origin brooches confirm that these brooches were adopted by the Sarmatians from German populations. Following the analysis of all head-knob, tall catchplate brooches we may conclude that this brooch type appeared in the Przeworsk culture<sup>80</sup>. In fact, most such brooch finds and furthermore, the most numerous variant and subvariant finds come from this cultural environment.

Given all the above, we believe that in the current state of research one may argue with certainty that the brooches of the type originate in the Przeworsk environment from where they diffused southwards and eastwards.

<sup>78</sup> Cociş, Bârcă 2012.

<sup>79</sup> Cociş 2004, p. 35, pl. LXIII/946, Cociş 2007, p. 402-427.

<sup>80</sup> Cociş, Bârcă 2012.

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## ABRÉVIATIONS

- ActaAntArch – Acta Antiqua et Archaeologica. Acta Universitatis de Attila József Nominatae, Szeged.
- ActaArchCarpathica – Acta Archaeologica Carpathica, Krakow.
- ActaAnthung – Acta Antiqua Academiae Scientiarum Hungaricae, Budapest.
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- ActaDebr – Acta Classica Universitatis Debrecienensis, Debrecen.
- ArchHung – Archaeologia Hungarica. Dissertationes Archaeologicae Musei Nationalis Hungarici a Consilio Archaeologorum Academiae Scientiarum Hungaricae redactae, Budapest.
- ActaMN – Acta Musei Napocensis, Cluj-Napoca.
- ActaMP – Acta Musei Porolissensis, Zalău.
- Alba Regia – Alba Regia. Annales Musei Stephani regis, Székesfehérvár.
- AMNG I.1 – B. Pick, Die Antiken Münzen Nord-Griechenlands I.1. Die Antiken Münzen von Dacien und Moesien, Berlin, 1898.
- AMNG I.2 – B. Pick – K. Regling, Die antiken Münzen Nord-Griechenlands I.2. Die antiken Münzen von Dacien und Moesien, Berlin, 1910.
- Analele Banatului – Analele Banatului, Muzeul Banatului, Timișoara.
- AncSoc – Ancient Society, Katholieke Universiteit te Leuven, Leuven.
- ANRV – Aufstieg und Niedergang der römischen Welt. Geschichte und Kultur Roms im Spiegel der neueren Forschung. Herausgegeben von Hildegard Temporini und Wolfgang Haase, Berlin-New York.
- Antaeus – Antaeus, Communicationes ex Instituto Archaeologico Academiae Scientiarum Hungaricae, Budapest.
- AP URSS – Arheologichni pam'yatki URSS, Kiev.
- Apulum – Apulum. Buletinul Muzeului Unirii Alba Iulia, Alba Iulia.
- ArchPolski – Archeologia. Rocznik Instytutu Historii Kultury Materialnej Polskiej Akademii Nauk, Wrocław-Warszawa-Kraków-Gdańsk.
- ArheologijaKiev – Arheologija. Nacional'na akademiya nauk Ukraini. Institut Arheologii, Kiev.
- ArhMold. – Archeologia Moldovei, Institutul de Arheologie, Iași.
- ArhRozhledy – Arheologické Rozhledy, Praga.
- ARMSI – Analele Academiei Române. Memoriile Secțiunii Istorice, București.
- ASGE – Arheologicheskij sbornik Gosudarstvennogo Ermitaya, Leningrad.
- AȘUI – Analele Științifice ale Universității „Al. I. Cuza” Iași.
- BAR Int. Ser. – British Archaeological Reports, International Series, Oxford.
- BMA – Biblioteca Memoriae Antiquitatis, Piatra-Neamț.
- BerRGK – Bericht der Römisch-Germanischen Kommission des Deutschen Archäologischen Institutes, Frankfurt am Main.
- BMA – Biblioteca Memoriae Antiquitatis, Piatra-Neamț.
- BullÉp – Bulletin épigraphique, Paris.
- CAB – Cercetări Arheologice. Muzeul Național de Istorie, București.
- Carpica – Carpica, Carpica. Complexul Muzeal „Julian Antonescu” Bacău, Bacău.
- Cercetări Arheologice – Cercetări Arheologice, Muzeul Național de Istorie a României, București.
- CCA – Cronica Cercetărilor Arheologice din România, București.
- CIL – Corpus Inscriptionum Latinarum, Berlin.
- CIRB – Corpus Inscriptionum Regni Bosporani, Moskva-Leningrad, 1965.

- CCDJ – Cultură și Civilizație la Dunărea de Jos, Muzeul “Dunării de Jos”, Călărași.
- Dacia – Dacia. Recherches et découvertes archéologiques en Roumanie, București, I-XII (1924-1928); Nouvelle Série: Revue d'archéologie et d'histoire ancienne, București.
- DMÉ – Debreceni Déei Múzeum Évkönyve, Debrecen.
- Drevnejšij temenos Ol'vii – Drevnejšij temenos Ol'vii Pontijskoj, MAIET Supl. 2, Simferopol, 2006.
- Eurasia Antiqua – Eurasia Antiqua. Deutsche Archäologisches Institut, Berlin.
- EphemNap – Ephemeris Napocensis, Cluj-Napoca.
- EpigrAnat – Epigraphica Anatolica. Zeitschrift für Epigraphik und historische Geographie Anatoliens.
- FGrHist = F. Jacoby (éd.), *Die Fragmente der griechischen Historiker*, Berlin (et Leyde) 1923-.
- FolArch – Folia Archaeologica, Budapest.
- FHDR I – *Fontes ad historiam Dacoromaniae pertinentes / Izvoare privind Istoria României I*, București, 1964.
- FÖ – Fundberichte aus Österreich, Wien..
- Fuchs, Skulptur<sup>4</sup> – W. Fuchs, *Die Skulptur der Griechen*<sup>4</sup>, München, 1993.
- HD – Epigraphische Datenbank Heidelberg.
- Histria IX – M. Alexandrescu-Vianu, *Histria IX. Les statues et les reliefs en pierre*, București-Paris, 2000.
- Historia – Historia. Zeitschrift für alte Geschichte, Leipzig.
- IDRE I – C. C. Petolescu, *Inscriptions de la Dacie romaine. Inscriptions externes concernant l'histoire de la Dacie (Ier – IIIe siècles) I. L'Italie et les provinces occidentales*, București, 1996.
- IG VII – W. Dittenberger (éd.), *Inscriptiones graecae VII : Megaridis, Oropiae, Boeotiae*, Berlin 1892.
- IGBR I<sup>2</sup> – G. Mihailov, *Inscriptiones graecae in Bulgaria repertae*, Sofia, 1970.
- ILS – H. Dessau, *Inscriptiones Latinae selectae*, I-III, Berlin, 1892-1916.
- IOIb – T. N. Knipovich, E. I. Levi, *Inscriptiones Olbiae (1917-1965)*, St. Petersburg, 1968.
- IOSPE I<sup>2</sup> – V. Latyshev, *Inscriptiones orae septentrionalis Ponti Euxini I<sup>2</sup>*, Darmstadt, 1965.
- ISM I – D. M. Pippidi, *Inscriptiones Scythiae Minoris graecae et latinae I. Inscriptiones Histriae et vicinae*, București, 1968.
- ISM – D. M. Pippidi (éd., vol. I : *Histria et vicinia*), I. Stoian (éd., vol. II : *Tomis et son territoire*), A. Avram (éd., vol. III : *Callatis et son territoire*), *Inscriptiones grecques et latines de Scythie Mineure*, Bucarest-Paris 1983-1999.
- ISM II – I. Stoian, *Inscriptiones Scythiae Minoris graecae et latinae II : Tomis et territorium*, București, 1983.
- Istros - Istros. Buletinul Muzeului Brăilei. Brăila.
- JAMÉ – Jóna András Múzeum Évkönyve, Nyíregyháza.
- JRGZM – Jahrbuh des Römisch Germanischen Zentralmuseums zu Mainz, Mainz.
- KBN – Korpus Bosporskih nadpisej, Moskva-Leningrad.
- KESAM – Kocheniviki evraziskij stepi i antichnyj mir, Novocheercassk..
- KSIA – Kratkie soobshcheniya Instituta arheologii, Moskva.
- LIMC – Lexicon iconographicum mythologiae classicae, Zürich, 1981-1999.
- Materiale (MCA) – Materiale și Cercetări Arheologice, Institutul de Arheologie Vasile Pârvan, București.
- MemAntiq. – Memoria Antiquitatis, Piatra-Neamț.
- MFME – A Móra Ferek Muzeum Evkönyve, Szeged.
- MIA – Materialy i issledovanya po arheologii SSS, Moskva-Sk.Petersburg
- MittArchInst – Mitteilungen des Archäologischen Instituts der Ungarischen Akademie der Wissenschaften, Budapest.
- Mousaios – Mousaios. Buletinul Științific al Muzeului Județean Buzău NAV - Nizhnevolzhskij arheologicheskij vestnik. Volgogradskij gosudarstvennyj universitet, Volgograd.
- Nilsson, GGR I<sup>2</sup> – M. Nilsson, *Geschichte der griechischen Religion, I. Die Religion Griechenlands bis auf die griechische Weltherrschaft*, München, 1955.
- Památky Archeologické - Archeologický Ústav Akademie Věd České Republiky, Praha.
- RE – G. Wissowa (ed.), *Paulys Real-Encyclopädie der classischen Altertumswissenschaft*, Stuttgart, München.
- PBF – Prähistorische Bronzefunde, München.

- PAS – Praehistorische Archäologie in Südosteuropa, Berlin.
- PAV – Peterburgskij arheologičeskij vestnik, Sankt Peterburg.
- Pontica – Pontica. Studii și materiale de istorie, arheologie și muzeografie, Constanța.
- Pontus, Paphlagonien, Bythynien, Berlin, 1957.
- PZ – Praehistorische Zeitschrift, Berlin–New York.
- RA – Rossijskaya Arheologiya. Institut arheologii Rossijskoj akademii nauk, Moskva.
- Rapoartele M.N.A. – Rapoartele Muzeului Național de Antichități, București.
- Revista Muzeelor – Revista Muzeelor, București.
- RevBistriței – Revista Bistriței. Complexul Muzeal Bistrița-Năsăud, Bistrița.
- RG – W. H. Waddington, E. Babelon, Th. Reinach, *Recueil général des monnaies grecques d'Asie Mineure*<sup>2</sup>. 1, Pont et Paphlagonie, Paris, 1904–1925.
- RÖ – Römisches Österreich, Wien.
- Rphil (Botez) – Revue Philologique, Paris.
- SA – Sovetskaya Arheologiya. Institut arheologii Akademii nauk SSSR, Moskva.
- SAA – Studia Antiqua et Archaeologica, Iași
- SCIV(A) – Studii și cercetări de istorie veche (și arheologie), Institutul de Arheologie “Vasile Pârvan” București
- Studii și Cercetări de Antropologie – Studii și Cercetări de Antropologie, Institutul de Antropologie Fr. Rainer, București.
- SAI – Studii și articole de istorie, București.
- SGE – Soobshcheniya Gosudarstvennogo Ermitaya, Leningrad.
- SEG – *Supplementum epigraphicum graecum*, Leiden 1923-1971, Alphen aan den Rijn 1979-1980, Amsterdam 1979-2005, Boston 2006.
- SCIV(A) – Studii și Cercetări de Istorie veche și Arheologie, București.
- StCl – Studii Clasice, București.
- Stratum plus – Stratum, Vysshaya Antropologičeskaya Shkola, Chișinău.
- StSatu Mare – Studii și comunicări, Satu Mare.
- SNG BM – Sylloge nummorum graecorum, The British Museum, IX/1. The Black Sea, London, 1993.
- SNG von Aulock – Sylloge nummorum graecorum, Deutschland, Sammlung von Aulock.
- Thrac-Dacica – Thrac-Dacica, Academia Română, Institutul Român de Tracologie, București.
- Tyragetia – Tyragetia. Arheologie Istorie Antică, Muzeul Național de Arheologie și Istorie a Moldovei, Chișinău.
- VDI – Vestnik drevnei istorii, Institut vseobshchej istorii Rossijskoj akademii nauk, Moskva.





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