

THE 6th – 8th CENTURIES METALLURGICAL ACTIVITY FROM BUDUREASCA VALLEY. THE MOULDS¹

Introduction

The Budureasca Valley is a micro zone situated in the region of the first sub-Carpathian hills, east of the Prahova County. The valley lies on the present territory of the Vadu Săpat commune, approximately 10 km north of the town of Mizil. In this narrow valley, with rather steep mountain sides, crossed by the Budureasca spring, and sprinkled with high, well-defined terraces, separated by precipices, a high level of human settlements has been noticed. On a rather small area (the valley has approx. 10 km², but the settlement area is limited to mere terraces) so far 31 archeological sites have been identified. Among them, 15 sites are dated back to the V-VII A.D.

The archeological sites in the points Budureasca 1, 2, 3, 4, 5, 6, 7, 9, 15, 17 have been partially researched or investigated. Unfortunately, the intense and particularly important research conducted by Victor Teodorescu has not been yet used as it would have deserved. It is only the excavations of Budureasca 4 that have been partially published².

In this work we shall attempt to discuss the moulds dug out of the investigated sites in Valea Budureasca.

Our focus is on them owing to the fact that they are by far the most significant concentration of moulds discovered in the area outside the Carpathians and, simultaneously, one of the least known. Unfortunately, though most of the items were excavated 30 years ago, they have not been appropriately published so far, not even distinct items. Part of the terms the present article refers to are displayed in the exhibition dedicated to the Budureasca Valley within the County History and Archaeology Museum of Prahova (MJIAPh), whereas the other part is included in the collections of the Romanian National Museum (MNIR).

Background

In the Budureasca Valley the moulds used for clothing and jewels were discovered in three archaeological sites: Budureasca 3, 4 and 5, practically in all sites where systematic excavations have been conducted. We believe that a brief account of the publication of these items is necessary, and we thus shall endeavor to highlight the need for this article³.

In 1964, during the Session of Scientific Reports of the History Museums, Victor Teodorescu was trying to provide arguments for the indication of a new archaeological culture: the Ipotești-Cândești. Then he made mention of the discovery of a mould valve⁴ in Budureasca 3. Unfortunately, he added no illustration and description of it.

Two years later, at the International Congress of Pre-Historic and Proto-Historic Sciences organized in Prague, another mould⁵ is recorded, discovered in Budureasca 4,

¹ English version by Mihaela Năstăsescu.

² Teodorescu 1993, p. 365-388; Teodorescu et alii 1999, p. 91-118.

³ We will quote only the main articles and reports, in particular the ones that contain the first record of the presented discoveries.

⁴ Teodorescu 1971, p. 107.

⁵ Teodorescu 1971, 1a., p. 1043. On p. 1044 the Budureasca 3 mould is also recorded.

on which they said it was meant for making earrings with granulated star-shaped pendant and for other granulated pendants. No illustration is available.

A new mould, still coming from Budureasca 4, is recorded on the occasion of an exhibition organized in London in 1971, along with the others, however with no descriptions or photos⁶.

In a report (The 14th International Congress of Byzantine Studies, 1971) on the Roman Byzantine type earrings⁷, the same moulds are recorded: 1 of Budureasca 3 and 2 (?) of Budureasca 4, again, with no description or illustration⁸.

A year later, in 1972, in an article that renders a detailed analysis of the metallurgic discoveries in the area of Bucharest, Victor Teodorescu records only a crafts center identified in Budureasca, reminding of a mould of Budureasca 4 meant for casting *perle-mellon*⁹. Another mould is recorded in a note, as an analogy for an item discovered in Străulești-Măicănești¹⁰.

Unfortunately, neither does Maria Comșa's 1975 article, that was intended a synthesis on the socio-economic organization north of the Danube, provide additional details, the author being content only with indicating the "center" of Budureasca and taking over Victor Teodorescu's 1972 illustration.

The best publication of the moulds discovered in Budureasca is done in 1980 when Victor Teodorescu publishes the images of three moulds, with no scale, as well as more detailed descriptions. Unfortunately, he fails to match the numbers of the images to those of the description of the items. A disagreement between the image and description of one of the moulds is even more unbecoming. Practically speaking, the description refers to a completely different item¹¹.

The much needed summary of the research is elaborated in 1981 for a session of reports organized in Târgu Mureș. Unfortunately, the report was not published. We find out from the summary that 11 moulds were known at that time among which one was discovered in Vadul Săpat. On this occasion a mould discovered in Budureasca 5 in a potential workshop is recorded¹².

In the second issue of the year book of the Museum in Ploiești, that came out in 1985, Victor Teodorescu, together with Marinela Peneș, provided a systematic presentation of the research conducted in Budureasca. The authors indicated a mould discovered in Budureasca 5¹³.

A most brief recording of the Budureasca moulds appears in 1993 concerning the discovery of "4 moulds meant for casting pseudo-filigree and granulated jewelry" in a pit excavated in 1965. Again, neither illustration, nor description¹⁴.

The last recording of a discovered Budureasca mould goes back to 1999. It is a "fragmented single-sided mould discovered among the stones of the stone oven found in Budureasca 5, house 15", considered a possible workshop. No further details are provided¹⁵.

In short, we are in possession of information published on the eight moulds among the eleven that Victor Teodorescu spoke about. Unfortunately, only two of them were published along with a description and illustration, the others remain mere recordings, despite a large number of titles that can be quoted.

⁶ Teodorescu 1971, 1b., p. 94, no. 392, 393, 396.

⁷ Teodorescu 1971, 1c., p. 157.

⁸ It is only a summary of the work.

⁹ Teodorescu 1972, p. 80, fig. 6/13 "G mould".

¹⁰ Teodorescu 1972, p. 77, note 15, fig. 6/9.

¹¹ Miclea, Florescu 1980, p. 212, no. 823, 824, 825.

¹² Teodorescu 1981.

¹³ Teodorescu, Peneș 1985, p. 46, fig. 15.

¹⁴ Teodorescu et alii 1993, p. 367.

¹⁵ Teodorescu et alii 1999, p. 93.

Archaeological context

Some of the moulds were found within archaeological complexes. We shall endeavor to present the contexts according to the published data.

In **Budureasca 3** – *La Greci*, three moulds come from one single complex (catalogue no. 6, 7, 8; figure 7). B6 / 1964 is a sunken building (the moulds were found at a depth of -1.40 m). There are no recordings on this complex. As far as we know, in Budureasca 3 several houses have been excavated and the following items have been recovered: handmade pottery with smashed sherds in it (pots, pans), a hand mill, several little carving chisels, spindle whorls, a bracelet with a one thickened end and one thinned end, a bone bilateral comb, fragments of a metal recipient¹⁶.

We are in possession of more data on **Budureasca 4** – *Puțul Tătarului*, which are, however, quite unclear.

The marking of the items shows us that two moulds were discovered in pit A / 1965 (catalogue no. 2, 9; figure 5) and some other two in pit G.T. / 1967 (catalogue no. 4, 10; figure 4 and figure 6). At first sight they seem to be two different complexes.

However, in the brief comment in 1980¹⁷, Victor Teodorescu says that the three moulds published in the volume come from one complex – a pit on which no complex number or year of discovery is marked. Moreover, in the 1993 article¹⁸, the same author speaks about “pit T / 65 where 4 moulds were discovered that were intended for casting pseudo-filigree and granulated jewelry”.

Given these data, we believe that the four moulds, though distinctly marked, belong to the same complex whose name, we think, evolved in time: when first discovered it was given the index A / 1965 (most likely it was the first pit excavated in that campaign), then, following the discovery of the other moulds as well, it became G.T.¹⁹ / 1967, after the investigation of the entire complex²⁰.

Besides these moulds, pottery fragments were taken out as well, of which we managed to identify the upper part of a recipient²¹, slow wheel made, decorated on the shoulder with a row of nail-made notches, whereas beneath there is a wave-type decoration area, negligently made with a comb.

During two campaigns (1982-1983) complex B15²² was investigated as well. It is a sunken house, sizes 3.65 (N) × 3.5 (V, partially seen), with pole holes in the middle of the north and east sides, a niche in the north-east corner for joining the wall beams in a V manner and a stone oven in the north-west corner. The inventory of the 1982 campaign includes the following items²³: a strongly oxidized iron buckle that is an imitation of the Byzantine bronze cast buckles; strongly oxidized iron buckle; spindle whorl; blue glass paste bead with a yellow eye. These are added in 1983 other several items²⁴: the blade of a scythe! (L = 20.2 cm); hand and wheel made pottery fragments, as well as a fragmented single-sided mould discovered among the stones of the stone oven²⁵. Unfortunately, the mould does not have an illustration or a detailed description. The collections of the Prahova County Museum include a fragmented item marked B15 /

¹⁶ Teodorescu 1971, p. 107-108, fig. 2/3, 5, 8; fig. 4/1-3, 6-7, 9-11.

¹⁷ Miclea, Florescu 1980, p. 212.

¹⁸ Teodorescu et alii 1993, p. 367.

¹⁹ G[roapă] T[ipare].

²⁰ In Budureasca 4, many of the complexes have been excavated during several campaigns, sometimes after long intervals of time.

²¹ Marked gr. T/1967

²² Teodorescu et alii 1993, p. 374; Teodorescu et alii 1999, p. 93.

²³ Teodorescu et alii 1993, p. 374, fig. 13/1-4.

²⁴ Teodorescu et alii 1999, p. 93, fig. 4, fig. 5/1 The figures are only mentioned in the text, in reality they are “lost” because of unpredictable “hardships” according Teodorescu et alii 1999, p. 91, note 1.

²⁵ Teodorescu et alii 1999, p. 93: “...a mould fragment in stone, double-valve probably, with one face, discovered among the stones of the stone carver’s”

1983²⁶, inv. no. 6.4.-19914, which is displayed among the other moulds (figure 11). However, the fragment shows no trace of incision or geat. Only one of the sides seems polished, (but the item may be mere wetstone!). On the other hand, the material it is worked on is different from that of the other moulds discovered in Budureasca, as it is harder. Therefore, **we do not consider it** a mould, and will not include it in the catalogue.

In **Budureasca 5 – Oncești**, only the discovery of a single mould is recorded²⁷. Victor Teodorescu makes a brief comment that house B 7, with a simple hearth and Koločin pottery, overlaps a “rich proto-Romanian workshop” that provide a mould, a carver, Romanic fibula, *chaton* with cross decoration, a pot with cross sign ornamentation, some slag and debris.

Among the moulds in the MJIAPh collections, the marking of Budureasca 5 appears on one mould only as site of discovery. It is mould catalogue no. 3 that comes from house B5/1973. We think it the self same mould (figure 8).

As regards the other two moulds in our catalogue, we are not aware of the precise circumstances of discovery. As to the first of them (catalogue no. 1; fig. 3), we know that it was found by chance²⁸ on the territory of the Vadu Săpat commune, a locality crossed by the Budureasca spring and located in the area of contact between the hills and the plains. The mould is recorded once by Victor Teodorescu in his report defended at Târgu Mureș in 1981.

The second mould is only recorded in the MJIAPh as coming from point Budureasca 4, with no specification as to the potential complex or other information (catalogue no. 5; figure 8).

Analysis of the moulds

Among the 10 moulds that we analyze in this study, only one (catalogue no. 5) is made of clay, whereas for the other nine rocks of various degrees of hardness were used. In most cases, it is soft rock, easy to incise, with soap-like aspect, yellow-grey in color. They are most likely various types of limestone²⁹. Only one mould (catalogue no. 1) is made of some other type of rock: harder, of a dark brown – grey color; probably grit stone.

The side that the items are incised on is generally flat and well polished. It is not the case of the back side of the moulds, that, except for two of them (catalogue no. 1 and 3), were not as carefully processed.

From the perspective of the mould concept, we can notice that three of them are double-sided. However, only two (catalogue no. 1 and 4) show items on the second side as well; the third one (catalogue no. 10) shows one single geat.

Similarly, most of the moulds were conceived to be used as double-valve moulds, except for the back side of mould 1 (as per our catalogue) that has neither geat, nor elements for fastening the second valve.

On the other hand, holes that supposedly helped fasten the second valve are visible on six of the ten analyzed items.

On two fragmented moulds (catalogue no. 4 and 5) one hole and three such fastening holes respectively were preserved.

On the other four whole moulds we can notice that they are provided with three fastening holes (catalogue no. 2 and 9) or ten holes as in mould catalogue no. 10. In this

²⁶ Year when the “stone oven” was excavated and the supposed mould was discovered: Teodorescu et alii 1999, p. 93

²⁷ Teodorescu 1981, *passim*.

²⁸ By Moise Nicolae Dan, in 1981.

²⁹ The items have not been analyzed by a geologist.

case, it is difficult to explain the presence of so many holes. As to the forth one (catalogue no. 8), we are dealing with a one-of-a-kind situation, for which we are not aware of any analogies whatsoever. The preserved valve is perforated on either sides of the small channel that joins the geat with the item itself. In these asymmetrical perforations two small iron rods were inserted that appear as protuberances on the active valve surface. They have a conical, round section on their upper side.

If we consider that the fastening hole valves are element 1 of the mould³⁰, then, in the case of item no. 8, we can speak of element 2 – positioned in the upper part of a mould. This would be the first situation of this kind that has so far been identified.

Other four moulds (catalogue no. 1 – side A; 3; 6 and 7) do not have any holes that can be related to the fastening of the second valve. For these, we can suppose that the second valve was made either of clay or another material and it was simply tied to it.

Side B of mould catalogue no. 1 incites other comments. It is most likely, owing to the analogies with these moulds, that in this case there is no second valve, as the casting was done directly in the mould.

On two of the Budureasca items (catalogue no. 9, 10) one can notice the narrow small channels perpendicular on the casting axis, crossing the item area. The geat does not communicate with these channels and, therefore, they were not used for casting metal. If, in the case of clay moulds, supposedly these channels served to evacuate the wax³¹ (the *à cire perdu* technique), in the case of stone moulds, as it is our case, the role of these channels was probably to evacuate the air during the casting process.

There are three moulds with several geats on the same side (catalogue no. 1, 9 and 10). They are positioned on the short sides, one opposite the other. In the other cases, we only have one geat, and in the case of side B of mould no. 1 there is no geat.

As regards the number of shapes on one side of the valve, we deal with two situations: as regards five moulds one single item was incised (catalogue no. 3, 5, 6, 7, 8); on the remaining moulds, there are several shapes, either whole items (catalogue no. 1) or elements that would be assembled after the casting in various items of clothing or jewelry (catalogue no. 2, 4, 9, 10).

On the ten Budureasca moulds a variety of 24 items or element shapes were incised, from simple granules to intricate shapes of appliques.

Some of the shapes appear several times on the same valve. This is the case with four moulds (catalogue no. 2, 4, 9, 10).

In most cases, the shapes are typical of each valve. However, a certain similarity may be noticed between item c on mould catalogue no. 1 and the item on mould catalogue no. 7, as well as between items f – h of mould catalogue no. 9 and items g – h of mould catalogue no. 10. If, in the case of moulds catalogue no. 1 and no. 7, we deal with discoveries from various perspectives (Vadu Săpat, Budureasca 3 respectively), moulds catalogue no. 9 and no. 10 come from the same complex (G.T., Budureasca 4).

Analogies with moulds found in other sites

When analyzing the moulds discovered in Valea Budureasca, we have the benefit of analogies coming from other sites. We shall further endeavor identify the most similar analogies and propose dating them on this basis.

To start with, we shall describe other moulds similar to the Buduresca ones, and then we shall show the potential analogies of finished items (objects).

³⁰ In the relevant literature, moulds actually refer to a valve, no whole mould has been discovered so far (with both valves). In the territory outside the Carpathians, only halves (one valve) of double-valve moulds appeared.

³¹ Oldeberg 1966, p. 259.

Mould catalogue no. 3, intended to manufacture files for finishing the clothing and jewelry items, corresponding to a good analogy in the Avarian epoch cemetery from Vác – Kavicsbánya³².

Among the inventory items provided by the tombe 140 is also a stone mould showing the shapes of two files. Unlike the Budureasca item, these two do not have a peduncle individualized for setting a handle. The proposed dating is late 7th century and early 8th century.

We can also indicate the discovery from the 6th – 7th centuries settlement from Zimne where a three-file fragmented mould comes³³.

For the clay mould (catalogue no. 5) we have analogies made of stone, in D'yakova settlement³⁴, and in Bernashivka, complex L 36³⁵. The last one is a workshop where 64 moulds were found, showing a variety of shapes, in particular clothing and jewelry items. The complex is dated back to the 6th century³⁶.

As to mould catalogue no. 8, meant for casting triangle-shaped pendants, one can find similar analogies, dated in 6th century, in the sites of Bernashivka, L 36³⁷ and Ladoga³⁸. A similar pendant – shaped mould appears in the last level (N VI A) of the Adamclisi – Tropaeum Traiani fortress, dated back to late 6th century and early 7th century³⁹.

Moulds catalogue no. 9 and 10 have a good analogy in a mould found in Cristur⁴⁰, inside the Carpathians area. The said mould belongs to house L 4 and is accompanied by pottery dated back to the 7th – 8th century.

Mould catalogue no. 7, as well as mould catalogue no. 1, item c., surprisingly have an analogy in the discovery at Felnac. It is here that it was discovered, along with 44 shapes for punching items, a clay mould with a semi-spherical hollow⁴¹. The Felnac deposit can be dated back to early 7th century⁴².

We saved for last the analysis of one of the most interesting moulds among the ones studied in this article: mould catalogue no. 1.

Item f has the most analogies. It appears on a series of moulds in the area outside the Carpathians: Aldeni⁴³, Cacica⁴⁴, Cucuteni⁴⁵, Poienița⁴⁶, Răcoasa⁴⁷, Rădeni⁴⁸, Soveja⁴⁹.

Unfortunately, all these have been found by chance and so was our mould.

A good indication of the dating of this series is provided by the discovery at Cacica⁵⁰. On one of the mould sides, two crosses were incised. These shapes are rather

³² Tettamanti 2000, p. 32, Taf. 5, Taf. 39.

³³ Aulih 1972, p. 74, no. 2, tabl. XV/1.

³⁴ Krenke, Tavlintseva 2002, ris. 7/4.

³⁵ Vynokur 1997, ris. 21, ris. 41.

³⁶ Vynokur 1998, p. 226 (late 5th century – early 6th century); Kazanski 1999, p. 94 (late 6th century).

³⁷ Vinokur 1997, ris. 23.

³⁸ Sheglova 2002, ris. 2/16.

³⁹ Barnea 1979, p. 191, no. 10.14, fig. 169.

⁴⁰ Székely 1971, p. 357, fig. 1/3-3a.

⁴¹ Mărghită 1985, p. 54, fig. 6/4.

⁴² Garam 2001, p. 119.

⁴³ Teodorescu 1972, fig. 7/3.

⁴⁴ Andronic 1997, p. 64-65, fig. VII/3.

⁴⁵ Boghian 1999, p. 115-124, fig. 3.

⁴⁶ Teodorescu 1972, fig. 7 / 1.

⁴⁷ Bobi 1981, p. 107, fig. 27/5.

⁴⁸ Mitrea 1980, p. 108, fig. XLVI/2.

⁴⁹ Teodor 1997, p. 147, nr. 637.

⁵⁰ Andronic 1997, p. 64-65, fig. VII/3. The author estimates the mould belongs to the Middle Ages, the 16th – 18th centuries.

widespread in particular in the Central and Western Europe (as fibulas and pendants)⁵¹ and are dated especially back to the 7th century⁵². Similar shapes may be encountered in Crimea as well where they are decorations on various items of clothing and jewelry⁵³. The dating in this last case is as early as the first half of the 7th century.

A later dating is suggested by Bartołomiej Szmoniewski: late 7th century and early 8th century⁵⁴ in his study regarding the moulds from Cucuteni, Poienița, Răcoasa, Rădeni and Soveja.

We can notice the following aspects: none of the moulds, which shape f appears on, has either geat or fastening elements for the second valve. This cannot be a coincidence if we consider the large number of discoveries. All f. shapes seem rather deep sunken in the mould. With some shapes one may even notice that they do not start off the very active surface of the mould, but form a rectangular, initially sunken shape, due to which the cast product seems to stand on a rectangular platform⁵⁵, aspect which is common for a series of patrices discovered in the Byzantine Empire: Adalia⁵⁶, Carthago⁵⁷, Krim⁵⁸, Constantinople⁵⁹, Syria⁶⁰, or in the intra-Carpathian area: Dumbrăveni⁶¹.

All the above mentioned lead us to believe that we deal with moulds for casting patrices⁶² dated back to the 7th century.

We suggest our hypothesis in connection with form f. of mould no. 1 for the other shapes on the B-side of the mould as well. Another argument in this respect is the similarity of shape d. with the moulds discovered in Northern Europe in Lummelunda or Salem, dated back to the 7th century as well⁶³. Similarly, for shapes d., e., g. and i. we can indicate a series of patrices like the ones in Biskupin⁶⁴, Felnac⁶⁵, Gátér⁶⁶, Kunszentmárton⁶⁷, Ringelsdorf⁶⁸ or Břeclav⁶⁹.

Analogies with various finished items

If, for the Budureasca moulds, we can quote, as shown above, a series of similar or identical moulds, things are different when we try to find out if there are items that were possibly manufactured with these very moulds. Unfortunately, for the item shapes considered „whole” such as the ones on mould catalogue no. 1 (items a. and b.), mould catalogue no. 3 or mould catalogue no. 6, we have not succeeded in identifying any items in the area close to Budureasca. On the other hand, discoveries in the closest

⁵¹ Lorren 2001, p. 163 – 164.

⁵² Vida 1995, 252, Abb. 23; Riemer 1997, p. 448, Abb. 512, 513; Lorren 2001, p. 163.

⁵³ Aibabin, Khrapounov 1997, p. 51-52, 71, no. 63.

⁵⁴ Szmoniewski 2002, p. 127.

⁵⁵ See the casted gypsum model of the mould in Aldeni: Teodorescu 1972, fig. 7/3b.

⁵⁶ Werner 1970, Taf. 7.

⁵⁷ Roth 1980, p. 330, fig. 7/2.

⁵⁸ Aibabin 1993, p. 167, fig. 8/1, 4.

⁵⁹ Ross 1965, p. 57, no. 66.

⁶⁰ Coche de la Ferté, 1958, p. 100, no. 31, fig. 38.

⁶¹ Horedt 1958, fig. 13/8.

⁶² Supposition made, with no arguments, by Victor Teodorescu based on the discoveries of Poienița and Aldeni: Teodorescu 1972, p. 91.

⁶³ Capelle, Vierck 1971, p. 47-49, fig. 3/1-2.

⁶⁴ Csallány 1933, Taf. III.

⁶⁵ Mărghită 1985, fig. 4/4.

⁶⁶ Garam 2001, Taf. 139/6.

⁶⁷ Csallány 1933, Taf. II.

⁶⁸ Garam 2001, Taf. 139/5.

⁶⁹ Szmoniewski 2002, p. 124, fig. 7/6.

vicinity cannot be quoted for the other shapes either, that are considered elements of various clothing and jewelry items⁷⁰.

Mould catalogue no. 1

Item a. does not have any analogies so far. The item of Dietersheim can be considered the closest similarity. It is an applique datable 7th century⁷¹. Also, there is an almost identical decoration of the lower part of Nagyarsáni⁷² type of buckles, dated back to 7th century.

For item b. an almost identical analogy was discovered in Maglavit⁷³. It is a cast silver pendant, discovered by chance and dated back to mid 7th century.

Item c. has similar analogies in many discoveries in the Avar area. We would like to refer only to the items found in riders' graves from Kunszentmárton (patrices)⁷⁴ or Kunágota and Hajdudorog (if the mould was intended for punched appliques for harness)⁷⁵, Szentendre and Sânpetru Gherman (if the mould was meant for making earrings)⁷⁶. The above-mentioned items are dated 7th century⁷⁷.

Items d., e. and g. are a series of moulds either for appliques, ring *chaton* or pendants for earrings. Among the analogies, we would like to mention only the rosette appliques made by punching, found in the Band cemetery⁷⁸, the rings from Kunágota graves⁷⁹ and the earrings from Câmpia Turzii graves⁸⁰.

Items from cemeteries of Band and Kölked-Feketekapu A are dated in the early 7th century⁸¹, but in the horse graves from Tiszafüred are datable in the early 8th century⁸².

Item f. does not have analogies so far. The most similar item is considered an belt ornament in Tiszafüred, tomb 488, dated back to late 7th century and early 8th century⁸³.

There are no identical discoveries for item h. However, we can notice a similarity with the belt decoration discovered in a rider's tomb in Szegvár – Sápoldal⁸⁴. The discovery of a Mauricius Tiberius coin in this tomb dates it back to early 7th century⁸⁵.

The item i. has its best analogies in the tear-like pendants from Felnac⁸⁶ (patrice), or from Mali Idjos, Jutas and Kiskörös – Városalatt⁸⁷, all from the 7th century⁸⁸.

Mould catalogue no. 2

Only for the item d. we can find analogies. Such pendants or appliques, of horse-shoes form, are typically for the cast Avarian belts with "gryphon" ornamentation. We can

⁷⁰ The most similar discoveries are the star-shaped pendant earrings in the tombs of Sărata Monteoru or Ceptura.

⁷¹ Roth 1986, p. 123, fig. 29.

⁷² Ibler 1992, p. 140, 142, fig. 6/9-11, 13.

⁷³ Toropu 1976, p. 126, 138, Pl. 17/5.

⁷⁴ Csallány 1933, p. 54, Fig. 5, 7-10; Garam 2001, Taf. 138.

⁷⁵ Garam 1992, p. 138, 143, Taf. 8/1-10, 13/1,2; 47/1-20.

⁷⁶ Garam 1992, 139, 144, Taf. 53/1.

⁷⁷ Garam 1992, p. 148-150, 160-161; Teodor 1995, p. 194.

⁷⁸ Horedt 1958, p. 87-88.

⁷⁹ Garam 1993, Taf. 55/5-12.

⁸⁰ Teodor 1995, p. 191, fig. 4/3.

⁸¹ Kiss 1996, p. 244.

⁸² Garam 1995, p. 425.

⁸³ Szmoniewski 2002, p. 127, fig. 7/2.

⁸⁴ Garam 1992, p. 139, Taf. 15/11-16.

⁸⁵ Garam 1992, p. 140, 154.

⁸⁶ Garam 2001, p. 37, fig. 3.

⁸⁷ Garam 1993, Taf. 47/20.

⁸⁸ Garam 1993, p. 87.

quote the appliques find in graves from Tiszafüred⁸⁹, Orosháza⁹⁰ Kölked-Feketekapu B⁹¹. All the items can be dated in the early 8th century⁹².

Mould catalogue no. 3

For the file manufactured with this mould we can mention an item belonging to the inventory of the Poysdorf tomb⁹³, dated early 6th century⁹⁴.

Mould catalogue no. 4

The shape on this mould could be an element of earrings like the items found in the early Avarian graves from Lopadea Nouă⁹⁵, Teiuş⁹⁶ or Chişinău-Criş⁹⁷. These earrings come from areas considered Avar and are dated back to the 7th century.

Mould catalogue no. 6

Triangle-shaped pendants of this kind have not appeared so far in the territories outside the Carpathians. They are not known in the Avar area, but appear quite often north of the Black Sea⁹⁸.

Mould catalogue no. 9

Item d. could be for production of granulated column pendants. At Kölked-Feketekapu A (grave 230) was discovered a pendant similar like this. It is considering being a Byzantine type⁹⁹ and is datable at the end of 6th century and early 7th century¹⁰⁰.

The other items on the moulds represent shapes that are too simple and are encountered as elements of a great variety of items, not relevant from a chronological point of view. We can only say that they can be an indicative of a Byzantine influence, as they are granulated decorations. As regards the shape on mould catalogue no. 7, we cannot suppose what it was used for.

The dates

As a summary, following the dating proposed for analogies (be them moulds or items), we notice that we are in possession of moulds of three chronological levels.

- a. The 6th – 7th centuries: moulds catalogue no. 3, 5, 6, 7 and 8.
- b. The 7th century (the second half of the century?): mould catalogue no. 1;
- c. The 8th century (late 7th century?): moulds catalogue no. 2, 4, 9 and 10.

If we are to arrange the discoveries by sites and complexes, we would get the following situation:

- a. The 6th – 7th centuries: Budureasca 5 – house 5 (catalogue no. 3); Budureasca 4 – cultural layer? (catalogue no. 5); Budureasca 3 – house 6 (catalogue no. 6-8);

⁸⁹ Garam 1995, fig. 101/17, 18, 20.

⁹⁰ Juhász 1995, Taf. III/2 (Orosháza-Bónum téglagyár: M 33), Taf. XXIII/2 (Orosháza-Béke Tsz-homokbánya: M 150).

⁹¹ Kiss 2001, p. 256, Taf. 79/2-3 (M 419).

⁹² Garam 1995, p. 128, 425, fig. 101/17-20.

⁹³ Kiss 1966, Taf. 6/2.

⁹⁴ Articus 1988, p. 230, no. 69.

⁹⁵ Horedt 1958, p. 101, fig. 13/11-12.

⁹⁶ Horedt 1958, p. 83.

⁹⁷ Dumitraşcu 1983, p. 61, no. 1, pl. 29.

⁹⁸ Sheglova 2002, ris. 2/16.

⁹⁹ Kiss 1996, p. 203, Taf. 52/3 (M. 230).

¹⁰⁰ Kiss 1996, p. 285, "the beginning of the last third of VIth century and the beginning of the last quarters of the VIIth century AD."

- b. The 7th century (the second half of the century?): Vadu Săpat – accidental discovery (catalogue no. 1);
- c. The 8th century (late 7th century?): Budureasca 4 – G.T. / 1967 (catalogue no. 2, 4, 9 and 10).

According to these data, we can deduce that the crafts-related activity in Valea Budureasca is diminished towards the end of the 7th century, and ceases to exist in the 8th century¹⁰¹.

We shall render a complete image of the metallurgical activity in Valea Budureasca by briefly listing what has been published and dated in the period we are dealing with¹⁰²:

Site	Ovens for iron ore reduction	Melting pots	Spoons for metal casting	Carvings	Stamps	Punch	Miniature anvil	Tongs	Hammer	Bronze ingots
Budureasca 3				*	*					
Budureasca 4	*	*	*	*	*	*	*	*		*
Budureasca 5				*	*					
Budureasca 9	*	*							*	

One can easily notice that, in all sites where moulds have been discovered, elements of the metallurgical activity have appeared as well, and this is in particular the case of Budureasca 4. This is owed to the uneven level of research of the said sites, Budureasca 4 being by far the best excavated.

Conclusions

The provided analogies highlight an interesting situation in the archaeological context of the 6th – 8th centuries period of time.

Eight of the discoveries are part of complexes, one for each excavated site. We know in connection with two of them (L6 – Budureasca 3; L5 – Budureasca 5) that they are constructions deep in the ground, and one of them could be a pit (G.T. – Budureasca 4). It is difficult to say, for lack of information, but it is most likely that we are dealing with the vestiges of crafts workshops. On the other hand, in the entire area outside the Carpathians, and even in the extraordinary complex of Bernashivka, all the discoveries considered to be workshops are mainly but mould fragments if we are to speak of their inventories. Seldom there appear other vestiges such as debris, refuse, tools and instruments.

We believe that the mould found at Vadu Săpat belongs to an itinerant craftsman. We can state this also on the basis of the fact that none of the moulds in the series they belong to has been discovered in an archaeological complex. The argument

¹⁰¹ So far, in Budureasca, there are no discoveries that attest metallurgical activity dated after the 8th century.

¹⁰² Teodorescu, Peneş 1985, p. 46; Teodorescu et alii 1993, p. 372.

could be fragile, but we think that the situation (discovery outside a complex) repeats in the case of these moulds too many times to be able to take this as a coincidence or related to the stage of the research.

On the other hand, we think that we can identify the relations of the discoveries in the Valea Budureasca with two completely different cultural horizons in terms of expression and area of spreading.

Among the moulds discovered in Budureasca 3, item catalogue no. 6 seems to be indicative of a strong link with the mould in Bernashivka, but, for lack of information concerning the complex where it was discovered, we cannot think further than that. Based on the analogies provided for the triangle-shaped pendant, we can suggest a relation to eastern communities as far as the Baltic Sea.

There is also a horizon of the relations with the Avar fashion, by the moulds of Vadu Săpat and Budureasca 4. As to the latter we can also sense a strong Byzantine influence, in particular by the shapes meant for casting granulated ornaments.

To highlight this relation, the discovery of punched appliques in Budureasca 4 has its contribution in this respect, with certain analogies in the Avar area. However, so far, the discovered pottery has nothing to do with the Avar pottery¹⁰³ either in terms of shape or decorations.

The image of a community having relations with the eastern area and that of another with western areas is contoured. In other words, it seems we are dealing with two moments in time. First, the Budureasca 3 metallurgical centre had interests and relations with the circle of power represented by the populations that Byzantine historians named „Slavic”. Second, the Budureasca 4 metallurgical center seems to orientate its attention towards another circle of power, that of the Avars in the Pannonian Plain.

It is premature to draw further conclusions for lack of detailed information concerning the two communities. We hope that the excavations in Budureasca 3, 4 and 5 will, one day, be published and thus, we will be able to study further the above hypothesis based on the study of one single category of items: the moulds.

The Catalogue of the Budureasca Moulds

L – length

l – width

t – thickness

d – depth

1. Inv. No. 6.4.-23788 (MJIAPh).

location: the commune of Vadu Săpat.

complex: accidental finding, 1981.

description: two-sided mould ¹⁰⁴ (Fig. 3, 9).

The mould is made of a dark brown – grey rock, very hard, probably a grit stone, of a slightly trapezoidal shape (one of the short sides is shorter). The item is very well finished, the pieces for the casting of which the mould was used are highly accurately made.

Sizes: L = 12.5 cm; l = 4.6 cm; t = 2.1 cm.

On one side three items are incised, two are opposite one another, with different geats, starting off the short sides of the item. The third is placed centrally, of the other two items, and has no contact with them or the geats. There are no orifices for fastening the second valve.

¹⁰³ For the Avarian pottery see Vida 1999.

¹⁰⁴ Two-sided mould = mould that has negatives incised on both sides.

a. The first item on this side of the mould consists of a bunch of three ovoid buttons that have a round termination (granule) on its lower part. The three buttons are decorated with vertical lines. The buttons are gathered in a bunch by way of three-legged rings (?) that unite in a circular area, decorated with radial lines (sizes: $L = 2.8$ cm; $l = 2.2$ cm; $d = 0.2-0.4$ cm).

b. The second item displays three decorative areas. At the side near the geat, there is an area of approximately trapezoidal shape, with indented edges, whereas in the centre of a frame there is a six-corner star. The central area of the piece is made up of a stylized vegetal decoration from inside out. Opposite the geat it is semi-round, with a pearl-like decoration, and geometrical decorations inside. At its end, the piece has a protuberance similar to those of the buttons of the above-mentioned piece. ($L = 3.8$ cm; $l = 2.2$ cm; $d = 0.2-0.4$ cm).

c. Simple piece consisting of a semispherical alveolate (diameter = 1.4 cm; $d = 0.3$ cm).

On the other side there are six incised items of various shapes and decorations (round, rectangular, flower- or heart-shaped). This side does not have a casting geat or an orifice for (possibly) fastening a second valve.

d. Round item, with a pearl-like decoration on the edge (diameter = 1 cm; $d = 0.2$ cm).

e. Round piece, with a pearl-like decoration on the edge, similar to the one on the previous piece; centrally there are six round "petals" placed in a circle around the seventh. The two decorations are separated by a circular groove (diameter = 1 cm; $d = 0.3$ cm).

f. Rectangular piece, with a pearl-like decoration on the edge, separated by a circular groove from the rest. On the inside, the piece is decorated with geometrical shapes arranged as follows: centrally there are three squares set in a line, around them there are lines that separate the surface in small trapezes ($L = 1.8$ cm; $l = 1.1$ cm; $d = 0.2$ cm).

g. Round item, similar to the above-mentioned one. It shows the same pearl-like decoration on the edge, separated by a circular groove from the rest. Centrally, there are eight lines arranged in a radial fashion (diameter = 1 cm; $d = 0.2$ cm).

h. The flower-shaped item, made up of two rows of eight "petals" each of various sizes, arranged around a central protuberance (diameter = 1.8 cm; $d = 0.5$ cm).

i. Heart-shaped piece, decorated with two areas of pearl-like decoration. Centrally, there is a small heart-shaped triangle, crossed by three radial lines ($L = 1.3$ cm; $l = 1$ cm; $d = 0.2$ cm).

2. Inv. No. 6.4.-19387 (MJIAPh).

location: Budureasca 4 "Puțul Tătarului".

complex: pit A/1965.

description: single side mould¹⁰⁵ (Fig. 5, 10).

The mould is made of limestone, fine, yellowish and grey rock, approximately rectangular in shape. The side showing the incisions is smooth, the others are rather irregular. The item has one single geat that shows burning traces. On the side where the items are, there are three hollows, set symmetrically at one side and the other of the items, that could be the supporting elements for the second valve.

Sizes: $L = 6.5$ cm; $l = 4.4$ cm; $t = 2-2.3$ cm.

Five grooves 1.5-2 cm long start from the geat; through them the metal would flow out; the items are at the end of the grooves.

¹⁰⁵ Single-side mould = mould that has negatives incised on one single side.

- a. A flower-shaped item consisting of five petals around a protuberance round in shape, the central part is a little raised. (diameter = 0,7 cm; ad = 0,1 cm).
- b. Item identical to the one above in terms of shape and sizes.
- c. Item identical to the one above in terms of shape and sizes. A groove descends from one of the petals placed on the lower part; at its end there is a tear-shaped "petal". (L = 1.3 cm; l = 0.04 cm; d = 0.1 cm).
- d. Item consisting of a link which a horse-shoe decoration is connected to, ending in two granules. Diameter of the link = 0.6 cm; L of the horse-shoe decoration = 0,8 cm; width of the horse-shoe = 0,7 cm; d = 0,2 cm.
- e. Item identical to the items a. and b. above in terms of shape and sizes.
- f. Opposite the geat, four small incisions are visible, round in shape, symmetrically arranged in a square.

3. Inv. No. 6.4.- 23789 (MJIAPh).

location: Budureasca 5 "La Oncești".

complex: B5/1973 (S. VII, □ 4, -1,29 m).

description: single-sided mould (Fig. 8, 9).

The mould is made of soft, grey-yellowish, well smoothed rock; it is rectangular in shape, possibly the second valve is made of clay. The geat is wide and darkened probably because it was used. Under the geat, opposite the item, there is crack along part of the length of the item.

Sizes: L = 9.9 cm; l = 3-3.2 cm; t = 1.7-2 cm.

On one of the sides a single rectangular item is carved; on its surface there are horizontal parallel grooves. A 0.7 cm groove starts from the geat. At its end lies the item. In this case it may be a file for finishing clothing or jewels, and the above-mentioned groove may be a peduncle for fastening the tool in a wooden (?) handle. (L = 5.5 cm; l = 0.7 cm; d = 0.1-0.2 cm).

4. Inv. No. 6.4.- 19342 (MJIAPh).

location: Budureasca 4 "Puțul Tătarului".

complex: G.T./1967.

description: double-sided mould (Fig. 4, 10).

Three fragments were recovered from the broken mould that could be glued together. It is made of soft, whitish rock, probably limestone. At the corner next to the geat, there is a hollow probably meant for fastening one of the valves. Because of its state of fragmentation, we do not have all the elements to provide a full image of this item.

Sizes: L = 6.1 cm; l = 6.2 cm; t = 2.1-2.2 cm.

On one of the sides there are four hollows (pieces a-d), arranged in a line, that do not communicate one with the other or with the geat (diameter = 0.5 cm; d = 0.2 cm). They are decorated with three horizontal lines each. On this side there is also a hollow probably meant for fastening a second valve.

On the other side there is an geat that leads to a groove of approx. 1.7 cm long; there is no item at its end. Also, on the same side of the mould there is a possible geat, with no piece or burning trace.

5. Inv. No.: 6.4.-20118 (MJIAPh).

location: Budureasca 4.

complex: ?

description: single side mould (Fig. 8, 9).

Mould made of clay, brown color, with burning traces. Two pieces that have been glued together were recovered from the fragmented piece.

Size: L = 4.9 cm; l = 2.1 cm; t = 0.9 cm.

The geat probably communicates (precisely in this area, the mould was restored and its status is no longer clear) with a circle in the midst of which there is a conical protuberance, raised by approx. 0.04 cm higher than the surface of the mould. It is the only item in Budureasca that is in relief. The surface of the circle projects 0.2 cm deeper. Opposite the geat, there are three rather irregular hollows arranged in a line that do not communicate with the above-mentioned piece. These hollows have diameters between 0.2-0.4 cm and ds of approx. 0.2 cm.

6. Inv. No. 6.4.-19365 (MJIAPh).

location: Budureasca 3 "La Greci".

complex: B6/1964 (C. 7, □ 3, -1,40 m).

description: single-sided mould (Fig. 7, 9).

The mould is made of soft, grey-yellowish, fragmented rock; it was probably rectangular in shape.

Sizes: L = 4.2 cm; l = 2.2 cm; d = 1.1 cm.

On one side there is a part of an geat that goes on with a spindle-shaped slightly sinusoidal hollow sharpened at the end next to the geat and straight at the lower end where it is crossed by a short groove arranged perpendicularly on the piece.

7. Inv. No. 6.4.-19364 (MJIAPh).

location: Budureasca 3 "La Greci".

complex: B6/1964 (C. 7, □ 3, -1,40 m).

description: single-sided mould (Fig. 7, 9).

The mould is made of soft, grey-yellowish rock, rectangular in shape, irregular.

Size: L = 2.5 cm; l = 2.3 cm; t = 0.7 cm.

The mould has a wide, trapezoidal geat that communicates with a semi-spherical hollow (diameter = 1.2 cm; d = 0.5 cm).

8. Inv. No. 106660 (MNIR).

location: Budureasca 3.

complex: B6/1964 (C. 7, □ 3, -1,40 m).

description: single-sided mould (Fig. 7, 9).

The mould is made of fine, limestone rock, rectangular in shape. On either side of the groove uniting the geat and the piece there are two round perforations. In them two iron "dowels" were set with the purpose of fastening the second valve of the mould.

Sizes: L = 5.0 cm; l = 2.2 cm; t = 1.4 cm.

On one of the sides a single piece is incised that lies at the end of a groove starting off the geat. The piece consists of a triangle that has a circle at each of its ends. Inside the circle there are three granules also arranged in a triangle.

9. Inv. No. 106661 (MNIR).

location: Budureasca 4.

complex: pit A / 1965¹⁰⁶.

description: single-sided mould (Fig. 5, 10).

Mould made of yellowish-grey grit stone, rectangular in shape, with two broken corners. There are three perforations meant for fastening the second valve.

Sizes: L = 9.4 cm; l = 5.9 cm; t = 2.8 cm.

¹⁰⁶ Also according to Teodorescu in Miclea, Florescu 1980, p. 212, no. 820-822, where only the indication "pit" appears.

On the side where the items are there are two opposed geats, arranged on the shorter sides. There are several grooves that start off the geats, five from one of them, and six from the other; at their end, there are small pieces that seem to represent the components of earrings.

The following pieces start off the first geat:

- a. a piece consisting of a groove (located next the one starting off the geat) at the end of which there are two protuberances of a round shape (granules);
- b. a piece consisting of a link which a triangle is connected to that has granulated decorations on its edges and that ends in a second link that is smaller than the first;
- c. a piece similar in shape and decoration with the above one;
- d. a piece consisting of a link from which a line made up of six small granules starts off, the last one is somewhat larger;
- e. the fifth piece that starts off from the first geat consists of a link that a triangle is connected to, that has granulated decorations on its edges

The following pieces start off the first geat:

- f. a semi-round link with a granulated decoration at its ends. On one of the ends there are three granules arranged in a vertical line; on the other arm there are six granules, arranged along two vertical parallel rows;
- g. a piece similar to the one above;
- h. a piece similar to the one above.

10. Inv. No.: 106689 (MNIR).

location: Budureasca 4.

complex: pit T / 1967.

description: double-sided mould (Fig. 6, 10).

Mould made of soft rock, rectangular in shape; on one side it shows two geats arranged along the shorter sides and one single geat on the second side. The latter has no piece incised. Still on the first side there are ten hollows that supposedly were meant for fastening the second valve. Because of their number, we could even suppose that a set of valves was used, depending on the desired piece.

Sizes: L = 7.7 cm; l = 5.0 cm; t = 2.2 cm.

Seven grooves start off the first geat:

- a. a piece made up of two granules. Approximately in the area between the two granules, the mould is crossed horizontally by a groove narrower than the small channels meant for the metal flow;

- b. a piece similar to the first one;
- c. a piece similar to the first one;
- d. a piece similar to the first one;
- e. a piece similar to the first one;
- f. a piece similar to the first one;

Six grooves start off the second geat, that are meant for the flow into two pieces:

- g. semi-round link, i.e. with granulated decoration at the ends. On one of the ends there are three granules arranged in a vertical line, and on the other one there are five granules, on two parallel vertical rows (the interior one consists of two granules);
- h. a piece similar to the first one.

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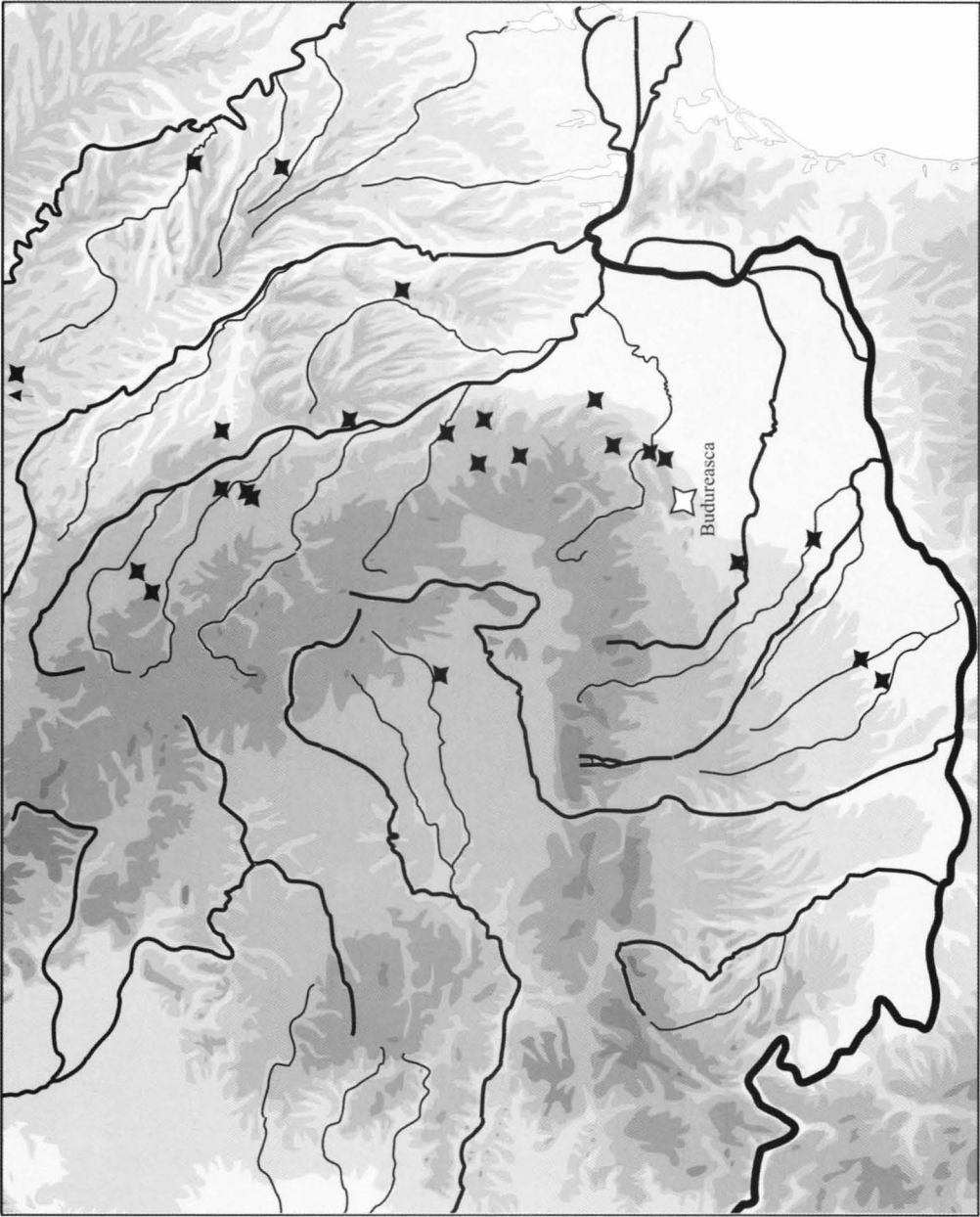


Fig. 1. Distribution of the casting moulds.

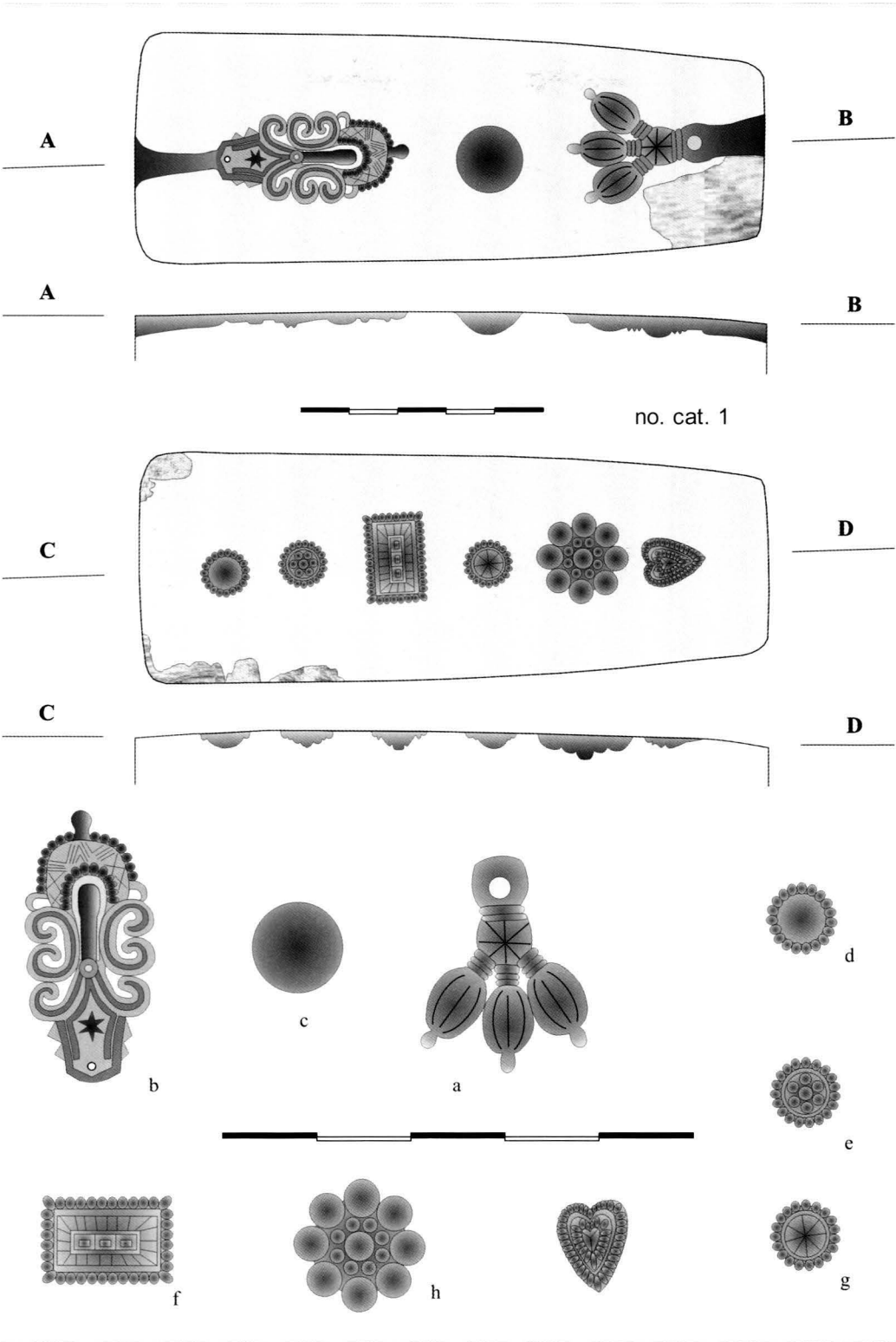


Fig. 3. Vadu Săpat.

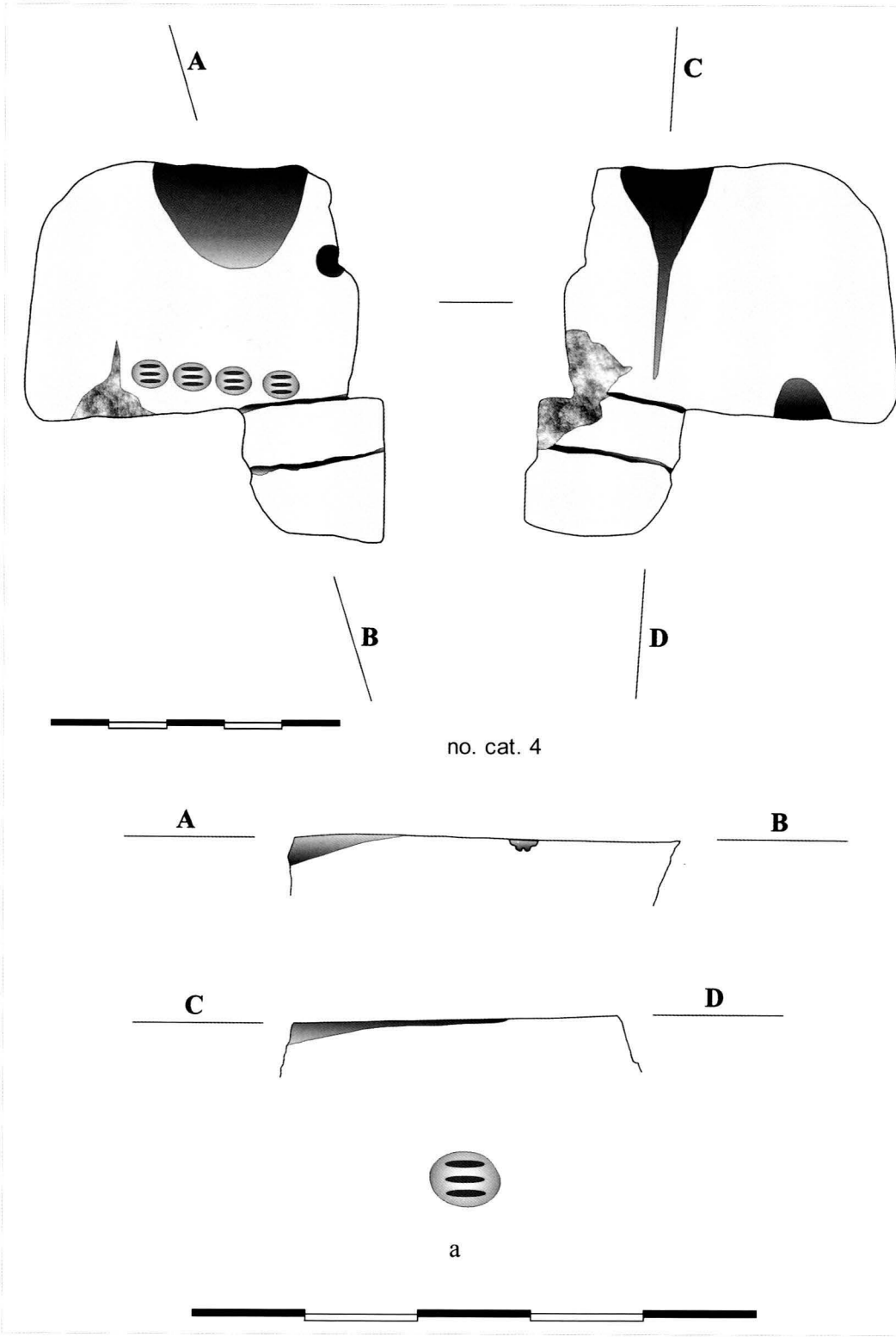


Fig. 4. Budureasca 4, G.T./1967.

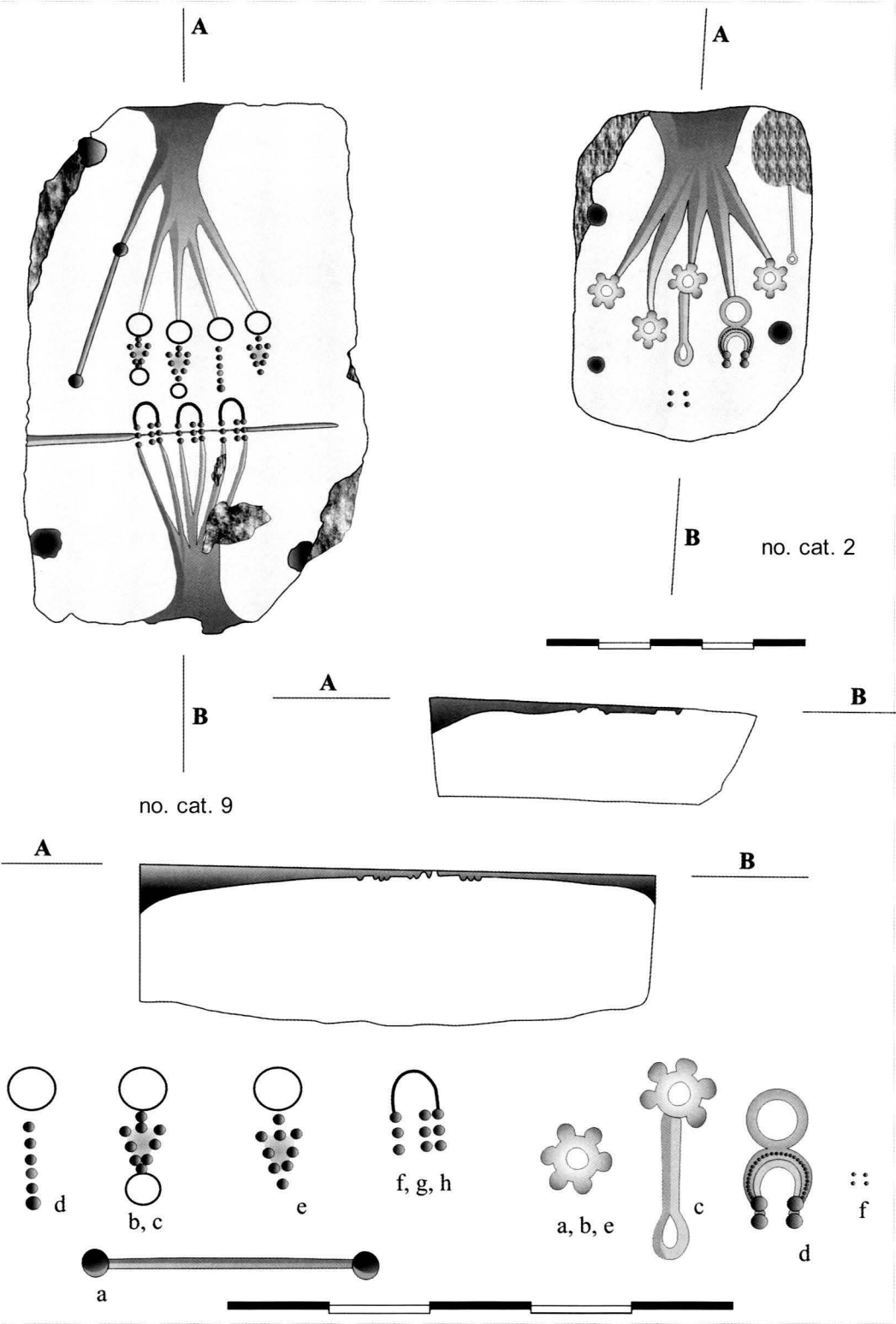


Fig. 5. Budureasca 4, G.T./1967.

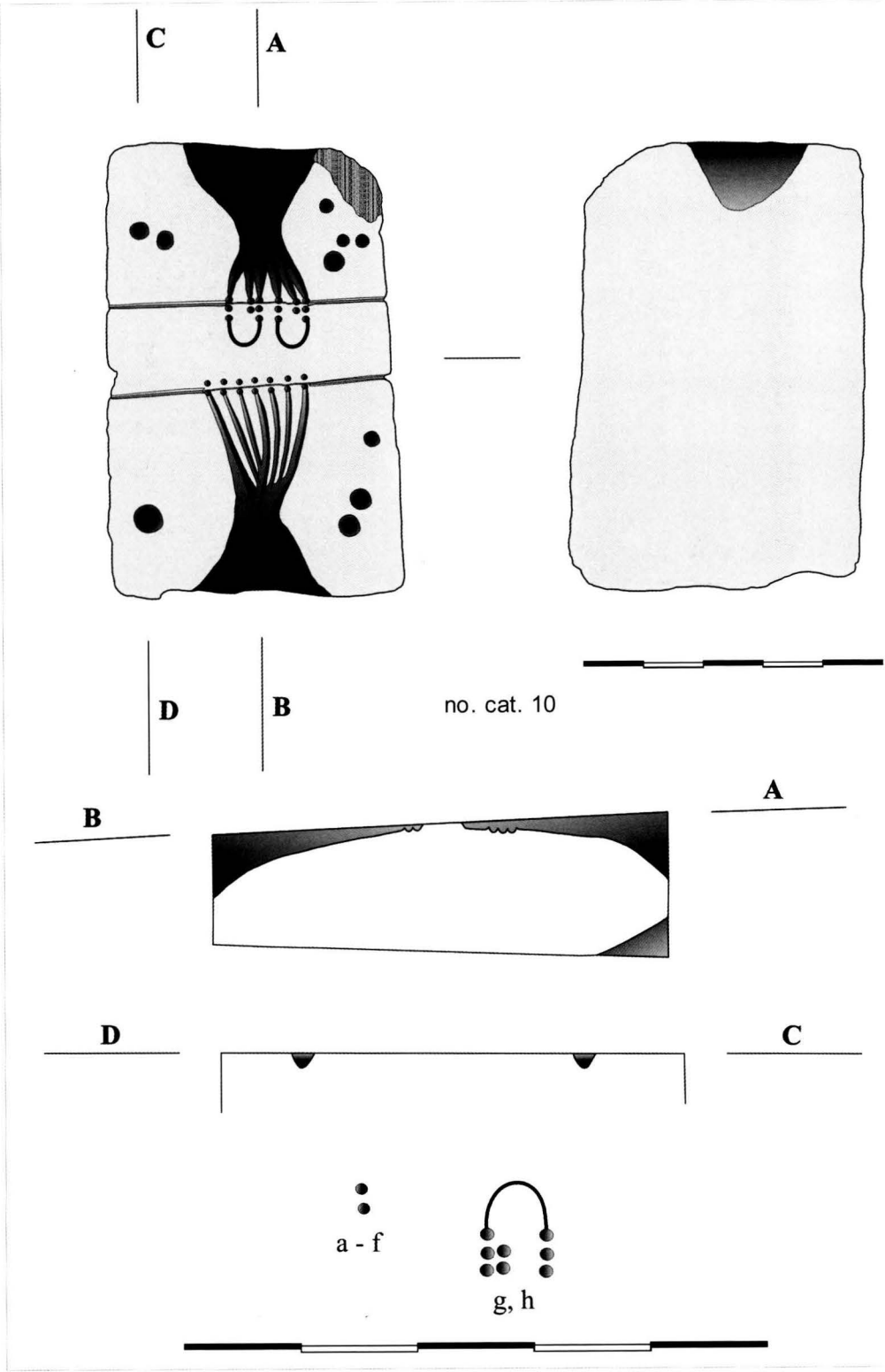


Fig. 6. Budureasca 4, G.T./1967.

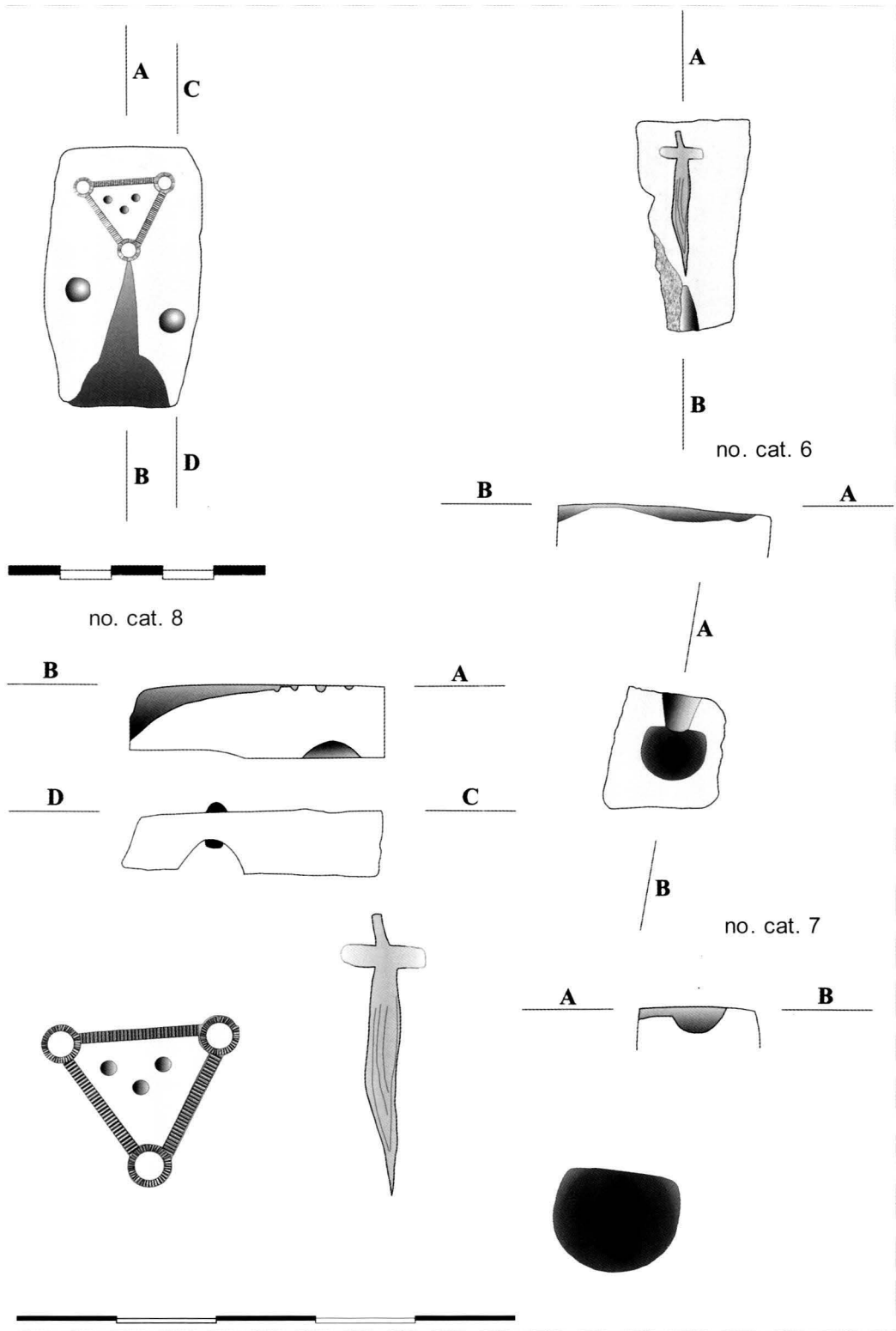


Fig. 7. Budureasca 3, B. 6.

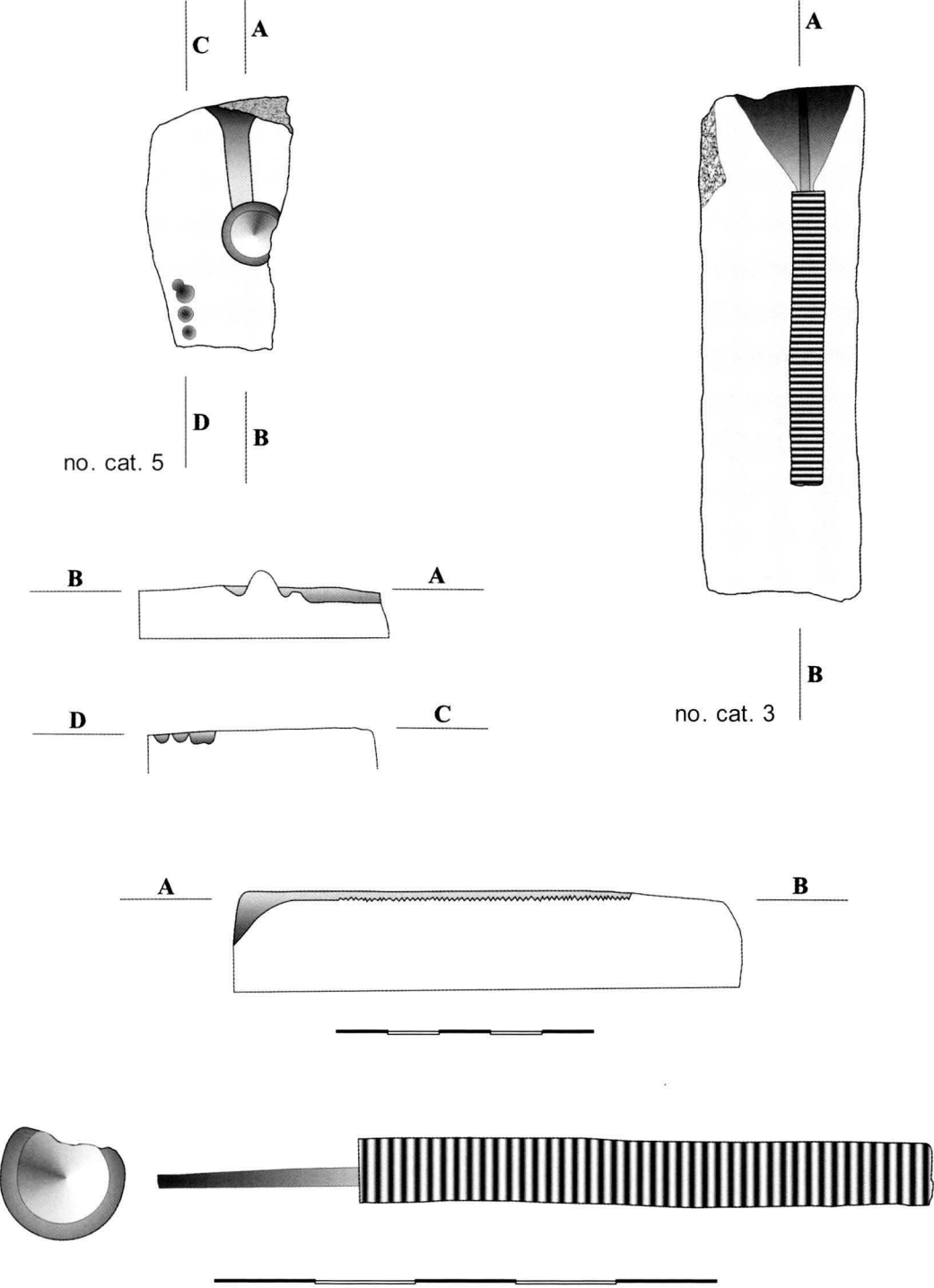
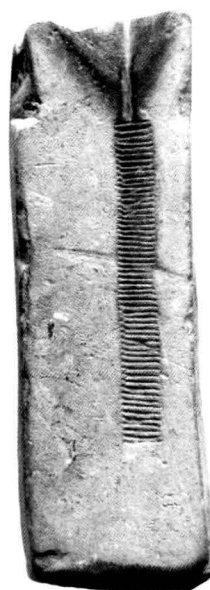
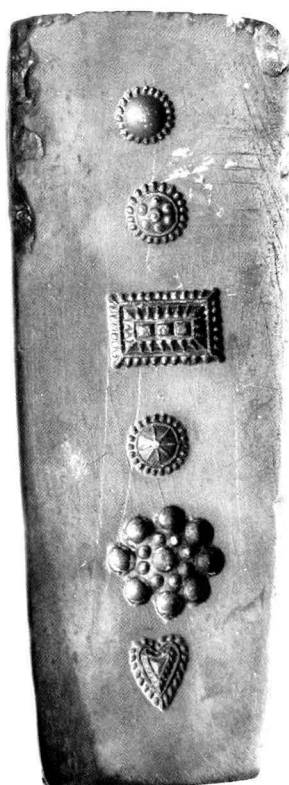


Fig. 8. Budureasca 4, no. cat. 5; Budureasca 5, B 5.



no. cat. 1



no. cat. 3



no. cat. 6



no. cat. 7



no. cat. 8

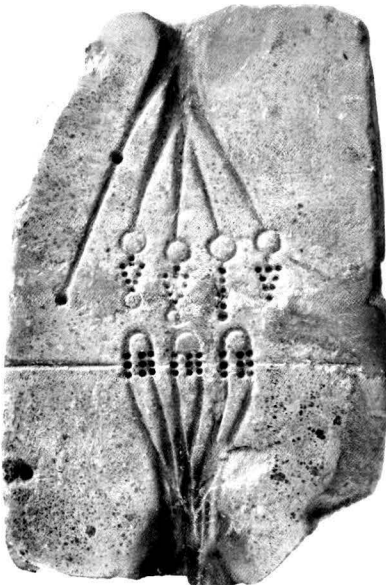


no. cat. 5

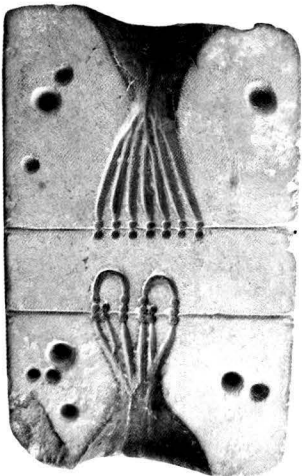


L 15

Fig. 9. Moulds from Vadu Săpat (no. cat. 1); Budureasca 5 (no. cat. 3); Budureasca 3 (no. cat. 6-8); Budureasca 4 (no. cat. 5); polished stone from Budureasca 4, L 15.



no. cat. 9



no. cat. 10



no. cat. 2



no. cat. 4

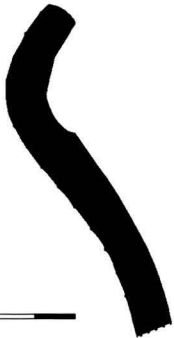


Fig. 10. Moulds and ceramic from pit G.T./1967.