AN ARCHAEOLOGICAL-ANTHROPOLOGICAL-ARCHAEOZOOLOGICAL STUDY REGARDING THE SKELETON IN BURIAL NO. 3 FROM RADOVANU-*GORGANA ÎNTÂI*, BELONGING TO THE EARLY BRONZE AGE

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Keywords: Early Bronze Age, Radovanu-*Gorgana întâi*, burial, anthropology, archaeozoology.

Abstract: the paper refers to the excavations from Radovanu. In the Eneolithic *tell*, beneath the Getic defensive wall, it was found the Burial no. 3, containing a skeleton assigned to the Yamnaya culture, which belonged to a man, aged about 25-30 years. The individual was buried together with nine animal bones, which, according to the archaeozoological study, have been assigned to the following taxa: pig, sheep, goat, dog, hen and a freshwater fish species, most probably carp. Of these, just the sheep tibia seems to have been used as an offering, the remaining bones being without food value.

Cuvinte cheie: Bronz Timpuriu, Radovanu-*Gorgana întâi*, mormânt, antropologie, arheozoologie.

Rezumat: lucrarea se referă la săpăturile arheologice de la Radovanu. În *tell*-ul eneolitic, sub valul de apărare getic, a fost descoperit Mormântul nr. 3, ce conţinea un schelet atribuit culturii Yamnaya, aparţinând unui bărbat, cu vârsta între 25-30 de ani. Individul a fost înmormântat împreună cu nouă oase de animale care, conform studiului arheozoologic, au fost atribuite următorilor taxoni: porc, oaie, capră, câine, găină şi o specie de peşte de apă dulce, probabil crap. Dintre acestea, doar tibia de oaie pare să fi servit drept ofrandă, restul fiind fără valoare nutritivă.

General aspects

Initiated in 2007[1], the excavations in the Eneolithic *tell* from Radovanu have been continued in 2011[2]. Subsequently the *tell* it was used by the Getae for raising a *dava* (fig. 1). Beneath the Getic defensive wall[3], ***Burial no. 1*** has been excavated in 2008 and published by us[4]. ***Burial no. 3,*** discovered in this campaign, was found in the same place[5]. The complex was detected 4.30 m east from ***Burial no. 1***, on the southern profile of the magistral trench (S.1). ***Burial no. 3*** was found on a depth of 0.90 m inside the cross-section, cutting through the layer of the Cernavodă I and that of the Gumelniţa cultures. For the investigation of this funerary find, a square of 1.50 x 1.50 m has been opened and crossed the Getic defensive earthen wall.

Stratigrafically, the pit (of a rectangular shape) has been dug beneath the northern base of the wall. The legs of the deceased have been destroyed by the Getic complex (***Pit no. 19/Burial no. 4***)[6]. The skeleton, with a south-north orientation was supine, with the head fallen aside on the right, to the east (figs. 2, 3).

Description of the Burial no. 3 made during the field research

The skeleton is supine, with the head to the south and legs to the north. The right side was lower than the left one, the body being inclined towards that part.

In our opinion the bottom of the pit was not flat, or the body had been wrapped into a textile which was decomposed.

[1] Şerbănescu *et alii* 2012a, 105 ff.

[2] Şerbănescu *et alii* 2012b, 112 ff.

[3] Şerbănescu *et alii* 2012a, figs. 15-16.

[4] Comşa *et alii* 2012.

[5] The investigations carried out in 2012 have resulted in the discovery of other funerary monuments, but these belong to other epochs. See Şerbănescu *et alii* 2013, 112.

[6] Şerbănescu *et alii* 2012b, 112.

Fig. 1. Radovanu-*Gorgana întâi* – general view of the site.

Fig. 2. Burial no. 3 – general view.

The skull

- Fallen aside, on the right side;

- The mandible fallen down, just as if the deceased would have had the mouth opened.

We assumed that the movement of the skull was determined either by the existence of an opened space, or placed on something which has been decomposed in time.

The post-cranial skeleton

Clavicles

– the left one is missing.

The rib cage

- is not symmetrical;

- the ribs on the right side are detached from the spine, while those on the left have moved to the right from the spine;

- the volume of the rib cage was not maintained, the ribs being flattened and in oblique position.

The hip bone

- widely opened, its parts being displaced. The epiphyses of the femora remained in their sockets.

The arms

- the left one was bent from the elbow, with the fingers on the right hip. Two phalanges have been found on the lower right side of the coxal bones;

- the right arm was along the body.

Near the right scapula it was found a miniature vessel of truncated shape. The vessel was atypical, rudimentary modelled and could not be culturally assigned by its typology.

Anthropological analysis

Material and methods

For the measurements and indices of the bones have been used the criteria established by R. Martin and improved by K. Saller[7]. For assigning the individual to a specific sex have been used the "*Recommendations...*" advanced by D. Ferembach, I. Schwidetzky and M. Stloukal[8], while the age has been established by using also the dental schemes of Brothwell[9], Lovejoy[10] and Zubov[11].

Fig. 3. Closer view of the Burial no. 3.

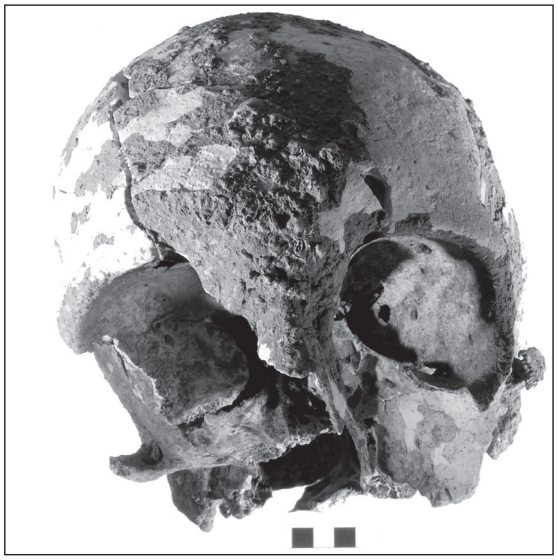

Fig. 4. *Norma frontalis* of the skull belonging to the skeleton in Burial no. 3.

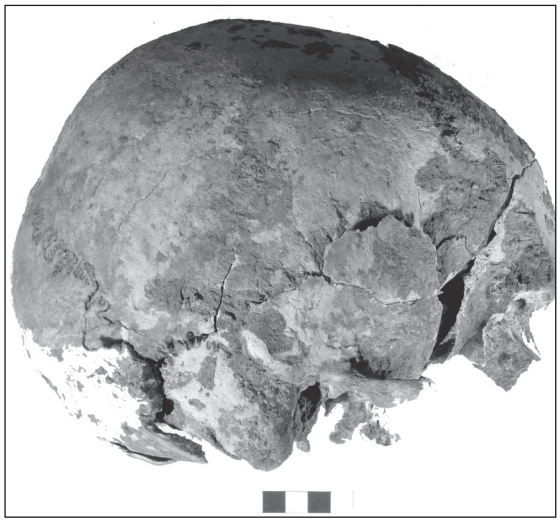

Fig. 5. *Norma lateralis* of the skull belonging to the skeleton in Burial no. 3.

[7] Martin, Saller 1957, 429-597.

[8] Ferembach *et alii* 1980, 517-549.

[9] Brothwell 1981.

[10] Piontek 1996.

[11] Kislyi, Kapritsyn 1994, 49.

Fig. 6. *Norma verticalis* of the skull belonging to the skeleton in Burial no. 3.

Fig. 7. Palate of the skeleton in Burial no. 3.

Fig. 8. Frontal view of the fragmentary mandible belonging to the skeleton in Burial no. 3.

Cranial skeleton

The skull is almost complete (figs. 4-6). It belongs to the dolichocranian, hypsicranian and acrocranian categories and it has missing parts on the right side of the facial massif, which is eurimetop. It underwent a slight deformation due to the pressure of the soil, which resulted in the slight movement of the facial massif to the left. The forehead is an intermediary one, the occipital being large and very bulging. The orbits are chamaeconch.

The palate is complete (fig. 7), has an ellipsoid shape, a medium depth and the central incisor on the left side is missing. It belongs to the brachystaphilin category.

The mandible is represented by a fragment between the P.2 on the right and M.3 on the left demiarch (figs. 8-10). The mandibular body is rather high, with a prominent mental protuberance, pyramid-shaped and well outlined. Also, the digastric muscle insertions are well defined.

Post-cranial skeleton

Few vertebral bodies of the dorsal and lumbar regions, but also small fragments of ribs and scapula have been recovered. The right clavicle is almost entirely preserved, excepting the end for articulating with the sternum, which is damaged. Two complete phalanges of the hand have been also found.

The coxal bones and the *sacrum* are in a fragmentary condition. On the coxal bones it could be observed the narrow opening of the sciatic notch, feature specific to the male sex (fig. 12).

The long bones of the limbs are either incomplete, or have their ends damaged (figs. 11, 13).

The right upper limb

All the long bones of this limb have been found. The humerus has its ends deteriorated, while the radius and ulna are represented just by parts of diaphyses. The deltoid muscle insertion on the humerus is well outlined.

The left upper limb

It is represented by all three long bones, but the humerus and ulna have deteriorated ends. The only complete bone is the radius. Together with the long bones, five metacarpals and two phalanges have been also found.

On the humerus it could be observed the well defined insertion of the deltoid muscle. Both humeri belong to the euribrach category.

The right lower limb

These bones have been found some distance away from the rest of the skeleton. The femur has its ends broken, the tibia has the region of the metaphyses damaged on its surface and the fibula is represented by a fragment of the diaphysis.

The left lower limb

It is represented by the femur and tibia. The first bone has its proximal end partly destroyed. The tibia has its distal end “eroded”. Given this deterioration on the antero-inferior surface of the bone, it could not be established if the squatting facets existed there. Both femora are eurimeric and have a high pilastric index.

Sex and age diagnosis

Considering the development of the cranial relief, together with the characters of the coxal bones, we could say that the skeleton has belonged to a man.

Based on dentition, it could be concluded that the respective individual had the age of 25-30 years by Brothwell, 24-30 years by Lovejoy and 25-35 by Zubov. The most probable age was of 25-30 years.

Stature

Given that just the radius has been preserved in one piece, it was the only bone that could serve to the height calculation. Based on the methods we used for doing this, by Manouvrier the individual has 1696 cm, by Trotter and Gleser 1750 cm and by Breitinger 1720 cm. The average height has reached 1722 cm, which enabled us to place the individual in the category of high statures by using the dimorphic scale of Alexseev and Debetz[12].

Typology

The mandible has a rather high horizontal ramus, and this character, together with the high stature of the individual enabled us to assign the skeleton to the nordic type. Still, its great robustness as well as the chamaeconch orbits plead to the protoeuropoid one. In fact, this is a mixture of those two types and this is why we could consider the individual as being of a protonordic type.

Other depositions

Together with the human bones from the burial could be also found some animal ones, some of them bearing traces of burning.

Taphonomic aspects

On the human bones there were thick mineral concretions determined by the long stay of the

[12] Alexeev, Debetz 1964.

Fig. 9. Lateral view of the fragmentary mandible belonging to the skeleton in Burial no. 3.

Fig. 10. Upper view of the fragmentary mandible belonging to the skeleton in Burial no. 3.

Fig. 11. Long bones of the upper limbs belonging to the skeleton in Burial no. 3.

Fig. 12. Coxal bones of the skeleton in Burial no. 3.

Fig. 13. Long bones of the lower limbs belonging to the skeleton in Burial no. 3.

skeleton in a wet and rich in limestone environment. There were no traces of ochre on the bones.

Conclusions of the anthropological analysis

This skeleton surely belongs to the steppic populations, which had the custom of interring their dead in older tumuli. In fact, other individuals could be also found in this Eneolithic *tell*. Such an example would be the skeleton in ***Burial no. 1***. In fact, the comparison made between these two individuals has shown that when just the measurements considered, these two skeletons have nothing in common. On the other hand, when we look at the indices, they belong to the same categories, which means that they are not very remote from each other[13].

Archaeozoological study

The filling of the ***Burial no. 3*** provided nine animal bones, of which one could not be exactly assigned to species, being a splinter from a large mammal.

[13] See table no. 1 in the present paper and table with the measurements of the skull from Radovanu (M.1/2008), in Comşa *et alii* 2012, 36.

Table no. 1. Measurements and indices of the skull (Skeleton no. 3/2011)

No. Martin	Measurements / Cranial indices	
1	g-op	191
2	g-l	185
3	g-i	180
8	eu-eu	134
9	ft-ft	94
10	co-co	109
11	au-au	102
12	ast-ast	110
13	ms-ms	86
20	po-b	125
23	Horizontal circumference of the skull	544
24	po-po	340
25	n-o	402
26	n-b	144
27	b-l	136
28	l-o	122
28.1	l-i	73
28.2	i-o	50
29	n-b	131
30	b-l	119
31	l-o	100
31.1	l-i	69
31.2	i-o	38
	l-op	41
	op-o	67
43	fmt-fmt	107
43.1	fmo-fmo	96
44	ek-ek	98
50	mf-mf	15
51	mf-ek	45
52	Orbit height	34
62	ol-st	47
63	enm2-enm2	44
63.3	Width of the palate	64
69	id-gn	34
69.1	Height at the level of the mental foramen	35
69.3	Thickness at the level of the mental foramen	11
70	Height of the vertical ramus	72
70.3	Height of the mandible notch	11
71	Width of the mandible vertical ramus	34
79.4	Basal angle	110
79.3	Vertical ramus angle	112
79.4	Mental protuberance angle	73
Indices		
	8/1 cephalic index	70.2
	17/1 vertico-longitudinal index	0.0
	17/8 vertico-transversal index	0.0
	20/1 porio-longitudinal index	65.4
	20/8 porio transversal index	93.3
	9/10 fronto-transversal index	86.2
	9/8 fronto-parietal index	70.1
	12/8 parieto occipital transversal index	82.1
	27/26	94.4
	29/26 fronto-sagital index	91.0
	30/27 parietal curvature index	87.5
	31/28 occipital curvature index	82.0
	31.1/28.1	94.5
	l-op/l-i	56.2
	52/51 orbitar index	75.6
	50/44	15.3
	63/62 palate index	93.6
	45/8 zygo-parietal index	145.5
	9/43	87.9
	31.2/31.1	55.1
	28.2/28.1	68.5
	71/70	47.2
	69.3/69.1	31.4

Table no. 2. Measurements and indices of the humeri Skeleton no. 3/2011)

No. Martin	Right upper limb	
5	Average maximal diameter.	23
6	Average minimal diameter.	20
	Cross-section index	86.96

Table no. 2 (continued)

	Left upper limb	
5	Average maximal diameter.	23
6	Average minimal diameter	20
7	Minimal perimeter	81
	Cross-section index	86.96

Table no. 3. Measurements and indices of the radiuses (Skeleton no. 3/2011)

No. Martin	Right upper limb	
3	Minimal perimeter	53
4	Transversal diameter	16
5	Antero-posterior diameter	12
	Cross-section index	75.00
	Left upper limb	
1	Maximal length	253
3	Minimal perimeter	53
4	Transversal diameter	16
5	Antero-posterior diameter	12
	Robustness index	20.95
	Cross-section index	75.00

Table no. 4. Measurements and indices of the ulna (Skeleton no. 3/2011)

No. Martin	Right upper limb	
11	Antero-posterior diameter	14
12	Transversaldiameter	18
	Cross-section index	77.78
	Left upper limb	
11	Antero-posterior diameter	15
12	Transversal diameter	18
	Cross-section index	83.33

Table no. 5. Measurements and indices of the femora (Skeleton no. 3/2011)

No. Martin	Right lower limb	
6	Average antero-posterior diameter	32
7	Average transversal diameter	27
8	Average perimeter	100
9	Upper transversal diameter	31
10	Upper.ant.-post.sup. diameter	27
	Pilastric index	118.52
	Platimeric index	87.10
	Left lower limb	
1	Maximal length	462
2	Morphological length	461
6	Average antero-posterior diameter	29
7	Average transversal diameter	26
8	Average perimeter	93
9	Upper transversal diameter	31
10	Upper anero-posterior diameter	27
	Massiveness index	11.93
	Robustness index	20.17
	Pilastric index	111.54
	Platimeric index	87.10

Table no. 6. Measurements and indices of the tibiae (Skeleton no. 3/2011)

No. Martin	Right upper limb	
1	Maximal length	
3	Minimal perimeter	53
4	Transversal diameter	16
5	Antero-posterior diameter	12
	Cross-section index	75.00
	Left upper limb	
1	Maximal length	253
3	Minimal perimeter	53
4	Transversal diameter	16
5	Antero-posterior diameter	12
	Robustness index	20.95
	Cross-section index	75.00

The identification of the other eight fragments (marked by NISP in Tab. 1) is given below: portion from a right pig mandible, originating in a specimen 13-18 months old (cf. M3 in crypt, M2 wear stage- b), length of M2 is 20.5 mm (fig. 14/d); a pig proximal phalanx (fig. 14/e) from the second digit (front limb); the proximal end apart from a cattle phalanx I (fig. 14/a), originating in a sub-adult specimen (less than two years); phalanx I from a goat, proximally not fused (fig. 14/g), from a juvenile (less than 7-10 months); an incomplete right zygomatic bone from a dog (fig. 14/f); an incomplete left tibia (proximal end is missing) from a sheep, with Bd/Dd 26/20 mm (fig. 14/h). The fragments originate in an individual older than 1-2 years; a fragment from pelvic girdle of a hen (fig. 14/c) and an opercular broken in three parts from freshwater fish, perhaps carp (fig. 14/b).

The tibia from *Ovis* is whitish on the front side and yellow-reddish on the back one, rather suggesting contact with fire. Due to a slight burning on the front, the periosteum is exfoliated on a small area. A

Table 1. Distribution of bones to taxa

Taxon	NISP	MNI
Ovicaprids	2	2
Sus s. domesticus	2	1(2)
Bos taurus	1	1
Canis familiaris	1	1
Gallus domestica	1	1
Pisces	1	1
Unidentified	1	
Total	9	7 (8)

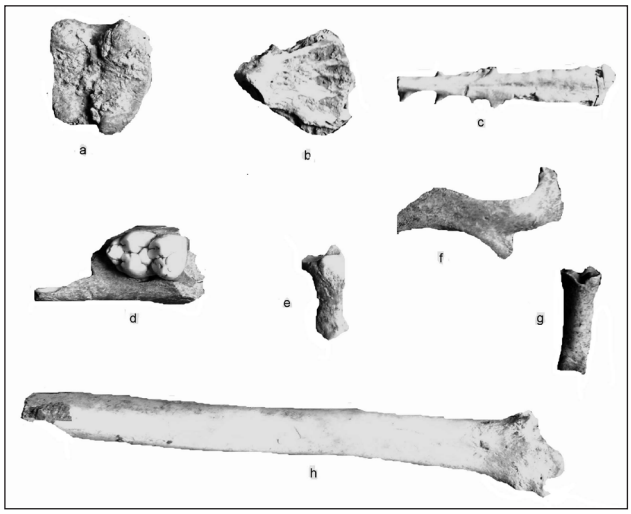

Fig. 14. Animal bones discovered in Burial no. 3.

slight reddish pigmentation was found on the fish opercular, as well. The bone from hen differs from the others by its light colour and no calcifications. Probably it was fossilized in another environment, something dry. On a careful observation, two parallel incisions on the lumbosacral bone are visible, probably done to disjoint it. The piece might have come from the Dacian level, knowing that the taxon is common in the La Tène habitation from Radovanu. The remaining sample is darker in colour, with deposits of calcium, due to the wet conditions of fossilization. According to the anthropologist's information, they look alike the human bones from the grave.

Conclusions of the archaeozoological study

None of the bones seems to indicate a special function, that of being a meat offering, for several reasons: the waste come from several skeletal parts without any food value (dog zygomatic, pig mandible, phalanges). The sample suggests at least seven individuals, too many for an offering. There are no articulated bones. Hypothetically, only the sheep tibia could have come from a meat offering. Unfortunately, we do not think that our analysis would shed any light on the presence of the animal bones in the mentioned context. The identified taxa are common both to Eneolithic, Bronze Age and Dacian habitations and the few metric data cannot distinguish among them.

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If after the discovery of Burial no. 1 on the *Gorgana întâi* from Radovanu we were tempted to consider the funerary monument as belonging to a steppic population of the Early Bronze Age, that is an interesting aspect but with lesser significant implications, the find of a second such interment (*Burial no. 3*) belonging to the same time and cultural sequence imposed further exploitation of the data.

Those two interments, with the characteristics of the Yamnaya burials in its early phase have their skeletons supine with upraised knees[14]. During the anthropological analysis of the Burial no. 1 some comparisons and analogies with similar discoveries have been done[15]. To all these some others discoveries could be added, like those from Sultana, Călăraşi County, recently published[16].

In a comparison with the skeleton series from Smeeni, for instance, we could find a close value of the cranial index for the individual in Burial no. 3 from Radovanu with the one in Burial no. 16 from the first mentioned site (70,2 and 70,9). Still, if we take a look at the measurements for both skeletons we could observe that the skull of the individual in Burial no. 3 from Radovanu has much smaller dimensions compared with the one in Burial no. 16 from Smeeni. On the other hand, both of them preserve protonordoid features, in the case of the last mentioned skeleton series being possibly a mixture between the protoeuropoid and the nordoid types, or simply an evolution from the former to the latter one, as shown by the anthropologists who studied the individuals from Smeeni[17].

We have also compared this skeleton (in Burial no. 3 from Radovanu) with the series from Glăvăneştii Vechi, Stoicani-*Cetăţuie* and Corlăteni, also belonging to the bearers of the tumular ochre burials. We have found just some resemblances concerning part of the cranial measurements with the individual in Burial no. 13 from Stoicani-*Cetăţuie*, which was assigned to a male *senilis* (over 60 years) individual[18].

The comparison with the skeleton series from Sultana-*Movila Mare* has provided no analogies. In fact, a drawback of this enterprise was the bad preservation of the skeletons. Out of the five individuals, just for the one in Burial no. 3 some measurements could be done and some indices on the skull could be calculated[19].

The same lack of analogies we could observe when we compared the individual in Burial no. 3

[14] A synthetic introduction in this sense see at Schuster *et alii,* 2011, 78 f. and Schuster 2012. An extended discussion has been recently done by I. Motzoi-Chicideanu (2011, 225 ff.).

[15] Comşa *et alii* 2012, 31-38.

[16] Şerbănescu, Comşa 2012.

[17] Necrasov *et alii*, 1964, 18 and 27 with table no. 1.

[18] Haas, Maximilian 1958, with tables of the measurements and indices.

[19] Comşa 2008, 45-56.

from Radovanu with the Holboca skeleton series[20]. In fact, this was the result that we expected, as it is obvious that many skeletons from Holboca manifested more archaic features than those from Radovanu.

In the human osteological materials dated back in the Middle Bronze Age, discovered in the tumulus from Vânători and comprising ochre burials, we could notice the very similar measurements between skeleton in Burial no. 2 and the one under discussion here, even if the cranial index is slightly different (71,8). This difference is given by the *eu-eu* dimension, which is bigger than the same measurement of the skeleton in Burial no. 3 from Radovanu (138 and 134). This means that the first mentioned individual has a slightly larger skull than the latter and it belonged to an attenuated protoeuropoid.

The Yamnaya burials have been usually discovered in tumuli. These formations have been initially raised for one, or several main interments, being subsequently used by the Yamnaya or other groups, but also by some recent populations, for secondary interments. At Radovanu-*Gorgana întâi*, instead of the tumuli specific to this cultural phenomenon[21], the Yamnaya community has used a substitute, the Gumelniţa *tell* on that spot being utilized as a funerary mound. By digging the burial pits it was firstly cut the Cernavodă I[22] layer (with a thickness between 0.7-0.15 m), and then slightly penetrated the Gumelniţa one. It was a hazard that upon those two burials the Getic people had subsequently raised the defending wall of the *dava*.

The Yamnaya discoveries from Radovanu give us the confirmation that groups of this manifestation have followed the Danube course and afterwards went upstream on the Argeş, the same as they did on other interior waters of Muntenia and Oltenia, which flow into the mentioned river. Until now, other clear vestiges of this phenomenon have not been signaled in the basin of the Argeş river[23].

[20] Necrasov, Cristescu 1957, 75-146.

[21] In the region of the Radovanu village some tumuli have been identified, but they seem to have belonged to the Getic period, as shown by the materials published by Alexandru Vulpe (1976, 209).

[22] The Cernavodă I complexes (dwellings and pits) are concentrated on the terrace south of the *tell*, being separated by it through defending ditches of different epochs (prehistoric and Getic ones). The Gumelniţa constructions and several pits could be detected both on the *tell* and on the terrace.

[23] Regarding the archaeological investigations in the Lower Argeş basin, see Schuster, Popa 2008; Schuster, Popa 2010; Schuster, Popa 2012; Schuster, Popa, Barbu 2012.

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