

BIBLIOGRAPHY

- BLUMELL 2007: L. H. Blumell, Beware of Bandits!: Banditry and Land Travel in the Roman Empire, *Journeys* 8, 2007, 1-20.
- BRUSIĆ - GLUŠČEVIĆ 1990: Z. Brusić - S. Gluščević, Zadar: istraživanje antičkog grada mrtvih, Zagreb, 1990.
- BUIKSTRA - UBELAKER 1994: J. E. Buikstra - D. H. Ubelaker, Standards for data collection from human skeletal remains, Fayetteville, 1994.
- BISHOP - COULSTON 2006: M. C. Bishop - J. C. N. Coulston, Roman Military Equipment: From the Punic Wars to the Fall of Rome, Oxford, 2006.
- DJURIĆ - ROBERTS - RAKOČEVIĆ - DJONIĆ - LEŠIĆ 2006: M. P. Djurić - C. A. Roberts - Z. B. Rakočević - D. D. Djonić - A. R. Lešić, Fractures in Late Medieval skeletal populations from Serbia, *American Journal of Physical Anthropology* 130, 2006, 167-178.
- FADIĆ 2007: I. Fadić, Nadgrobni tituli Petronije Urse i Emilija Atacina iz antičkog groba u Zadru, *Opuscula Archaeologica* 31, 2007, 165-182.
- GOLUBOVIĆ - MRDJIĆ - SPEAL 2010: S. Golubović - N. Mrdjić - C. S. Speal, Killed by the arrow: grave No. 152 from Viminacium. In: H. J. SCHALLES - A. BUSCH (eds.), *Waffen in Aktion. Akten der 16. International Roman Military Equipment Conference (ROMEC) 2007*, Xantener Berichte 16, 2010, 55-63.
- GRAOVAC 2004: V. Graovac, Populacijski razvoj Zadra, *Geoadria* 9, 2004, 51-72.
- GRAUER - ROBERTS 1996: A. L. Grauer - C. A. Roberts, Paleoepidemiology, healing and possible treatment of trauma in a medieval cemetery population of St. Helen-on-the-Walls, York, England, *American Journal of Physical Anthropology* 100, 1996, 531-544.
- JUDD 2008: M.A. Judd, The parry problem, *Journal of Archaeological Science* 35, 2008, 1658-1666.
- MACMULLEN 1966: R. MacMullen, *Enemies of the Roman Order: Treason, Unrest, and Alienation in the Empire*, Cambridge, 1966.
- NEDVED 1992: B. Nedved, Stanovništvo Zadra od 1. do 3. stoljeća (1. dio), *Diadora* 14, 1992, 109-264.
- NOVAK - ŠLAUS 2010a: M. Novak - M. Šlaus, Bone traumas in Late Antique populations from Croatia, *Collegium Antropologicum* 34, 2010, 1239-1248.
- NOVAK - ŠLAUS 2010b: M. Novak - M. Šlaus, Health and disease in a Roman walled city: an example of Colonia Iulia Iader, *Journal of Anthropological Sciences* 88, 2010, 189-206.
- PERIČIĆ 1999: Š. Peričić, *Razvitak gospodarstva Zadra i okolice u prošlosti*, Zagreb - Zadar, 1999.
- SCHEIDEL 2007: W. Scheidel, Marriage, families, and survival in the Roman imperial army: demographic aspects. In: P. ERDKAMP (ed.), *Companion to the Roman Army*, Oxford, 2007, 417-434.
- STEPHENSON 2001: I. P. Stephenson, *Roman Infantry Equipment: The Later Empire*, Stroud, 2001.
- SUIĆ 2003: M. Suić, *Antički grad na istočnom Jadranu*, Zagreb, 2003.
- ŠLAUS - NOVAK 2006: M. Šlaus - M. Novak, An analysis of traumas in medieval samples from Kliškovac and Crkvari, *Prilozi Instituta za arheologiju u Zagrebu* 23, 2006, 213-228.
- ŠLAUS - NOVAK - VYROUBAL - BEDIĆ 2010: M. Šlaus - M. Novak - V. Vyroubal - Ž. Bedić, The harsh life on the 15th century Croatia-Ottoman empire military border: Analyzing and identifying the reasons for the massacre in Čepin, *American Journal of Physical Anthropology* 141, 2010, 358-372.

Martin Lemke

STONE PROJECTILES DISCOVERED IN THE *CASTRALLEGIONIS NOVAE* NEAR SVISHTOV (BG)

Martin Lemke

Ośrodek Badań nad Antykiem Europy Południowo-Wschodniej
Uniwersytet Warszawski / University of Warsaw
ul. Krakowskie Przedmieście 26/28
00-927 Warszawa
POLSKA
m.lemke@uw.edu.pl

At the legionary fortress *Novae* on the Lower Danube in modern day Bulgaria, a large number of stone projectiles was found throughout the years of fieldwork. As with most other places, where such were discovered, no remains of the actual machines that might have once hurled these stones have been found in the permanent quarters of the *Legio I Italica*. After all, Roman artillery was essentially made of wood with a just a few metal elements, but another reason for this is the fact that a majority of the stones was intended for throwing, not shooting.

Knowledge in this matter is heavily based on the remaining theoretical works by ancient authors¹, but still the mere stone projectiles do provide us with some useful general information as well as particular hints regarding the defense of *Novae*. Data on many of the mentioned finds is often limited though, and not all potential projectiles made it into the documentation through nearly 50 years of fieldwork.

At *Novae*, concentrations of stone projectiles have been located in two places within the *castra* premises: the *principia* and sector II (Fig. 1). Loose finds occurred practically in all spots where fieldwork was carried out on a wider scale.

¹ BAATZ 1978, 1

SECTOR II

Sector II (Fig. 2) was among the first locations where excavations were undertaken at *Novae*. Fieldwork here was started in 1960-1962 and continued in 1977². It belonged to a number of trenches set up on the western defensive wall and focused on the area around the first bastion to the south of the western gate. In 1961, 13 stone balls (Fig. 3) were found on the inner side of the defensive wall, in squares 159 and 219 (cf. Fig. 2), close to the east wall of the bastion³. 4 more balls were found in 1962⁴. The balls were found at a depth of around 1.6 m, in a layer with significant amounts of ash. Another bastion to the south also on the western defensive wall was discovered in 1977 (Ha. XV, squares 339, 340, 358-360. cf. Fig. 1). There, a stone strengthened pit was found, initially used for the storage of lime and filled with layers of charcoal and ashes. The pit measured 5 x 5m and was 2,50-2,90m deep. At the bottom, 5 stone balls (weighing respectively 4,05, 1,90, 2,18, 1,33, 1,80 kg.) were discovered⁵. The layers around the bastion and the lime pit are dated around the late 3rd - early 4th century.

² DYCZEK 2008, 34

³ ARCHEOLOGIA 13, 75

⁴ ARCHEOLOGIA 14, 164

⁵ ARCHEOLOGIA 30, 204

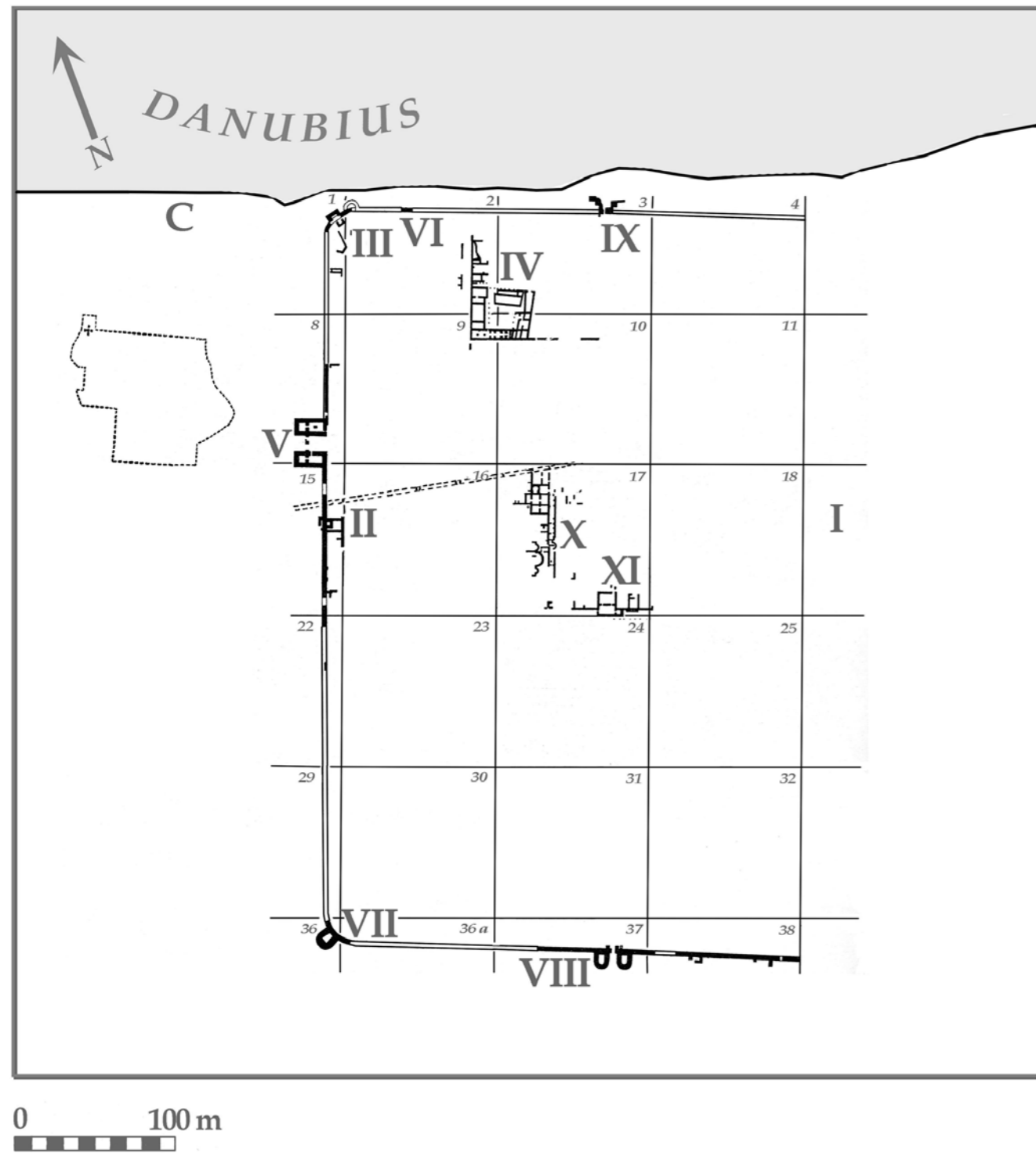


Fig. 1. Early stages of excavation at Novae. Dyczek 2008, 56

Projectiles from sector II

No.	Inv. No. (year)	Diameter in cm	Provenience
1	102/61	12	II, XV, 219
2	103/61	17	II, XV, 159
3	104/61	10	II, XV, 159
4	105/61	11	II, XV, 159
5	106/61	11	II, XV, 159
6	107/61	14	II, XV, 159
7	108/61	10	II, XV, 179
8	148/61	11	II, XV, 219
9	149/61	16	II, XV, 219
10	152/61	15	II, XV, 219
11	153/61	8	II, XV, 139
12	155/61	13	II, XV, 199
13	157/61	11	II, XV, 219
14-18	n/a	n/a	II, XV, 339, 340, 358-360

PRINCIPIA

The largest concentrations of stone projectiles were discovered at various parts of the *principia*, predominantly in layers from its later phases⁶. This is no surprise, since a legion's armory was traditionally located in the headquarters⁷. The existence of such can be assumed as granted, but at Novae it is additionally proven by an inscription dedicated to *Mars* and the *genius armamentarii* by the keeper of the armory (*custos armorum*)⁸ (Fig. 7), *Valerius Crescens*⁹. Apparently, the armory could have had a *genius*, just like many other installations within a fortress¹⁰.

In 1973, 158 balls were found in the *principia* (Ha. XVII, squares 371, 372)¹¹. In 1977, 39 stone balls were found, 1 in the *aerarium*, 3 in the *aedes*, the rest outside

⁶ Sarnowski has argued the *principia* suffered destruction in 316/317 (1979, 119)

⁷ In 1979 Sarnowski suggested the projectiles here came from hostile bombardment, supporting this view with the lack of ashes among the destruction layers of the *principia* pointing at a mechanical destruction. Theoretically, barbarians here could have possessed (captured) artillery; sources confirm the possibility [SARNOWSKI 1979, 123]. In this case the *scholae* would not necessarily have held the armamentarium. However, he has since withdrawn this view, also given the fact that the stone balls were explained to him as being unfit for artillery [128].

⁸ Speidel points out that the abbreviation "c" from the inscription might also stand for *conductor armamentarii* (SPEIDEL 1978, 154). This distinction only concerns the personal weapons of the soldiers and has no importance for the issue at hand.

⁹ KOLENDO 1994, 69, No. 32

¹⁰ SPEIDEL 1978, 360

the *aedes* wall, all in layers of leveled rubble¹². Altogether, a total of 211 balls was found in the *aedes*, its vicinity and the *scholae*¹³. (Fig. 4 shows a selection).

Projectiles from the *principia* 1973-1977, by weight (not all finds were weighed) and diameter:

Weight	1-3 kg	3-4 kg	4-5,5 kg
Amount	42	13	7

Diameter	9-13 cm	14-16 cm	17-18 cm
Amount	42	151	18

In later years, another 169 balls (Fig. 5, selection) were found in the *principia*, in layers of debris dated around 440 AD or later¹⁴.

Principia later years (west tribune & "room Cz")

Diameter	<13 cm	13-16 cm	>16 cm
Amount	74	65	30

A number of isolated stone projectiles was documented, mostly during fieldwork within the *valetudinarium* (sector IV).

¹¹ ARCHEOLOGIA 26, 143

¹² SARNOWSKI 1979, 122

¹³ SARNOWSKI 1979, 124

¹⁴ Prof. Sarnowski kindly provided me with the unpublished documentation, prepared by Wojciech Rybicki.

Documented loose finds

No.	Inv. No. (year)	Diameter, ca.	Provenance
1	162/61	9	V, 25
2	98/87	14	IV, III,
3	68/89	32	XI, XVII, 337
4	2/90	25	XI, XVII, 280
5	2/90	21	XI, XVII, 280
6	148/98	18	IV, III, 287,
7	258/01	10	IV, III, 375
8	25/04	14	IV, III, 393
9	297/01	15	IV, X, 46
10	98/04	16	IV, X, 14
11	49/06	17	IV, III, 354
12	315/77	25	IV, II, 298

This data totals 410 documented stone projectiles discovered at *Novae*.

The projectiles were made of limestone, sometimes sandstone. Some were well rounded and fabricated (Fig. 6) suitable for a *ballista* or *onager*¹⁵ others were made with much less care, sometimes “recycling” architectural elements or objects, such as a *mortarium*¹⁶.

While most of the stones were quite light (another fact that points at these projectiles being intended for throwing, not shooting), some stones of heavy caliber were also found, such as a ball weighing 17 kg found in north part of the Building with Porticoes (315/77).

Regardless of the fact, that a large number of the presented finds was not intended as ammunition for an *onager*, there still is no doubt that heavy, stone throwing artillery was located at *Novae*. Artillery units operating in this area, that is *Moesia Inferior*, but also the nearby detachments beyond the Danube, in *Dacia* are relatively unknown¹⁷. Except for the stone balls, there is little information we have at *Novae*, still one of the best researched sites on the Lower Danube Limes¹⁸.

¹⁵ which were actually designed for a given caliber of missile, CAMPBELL 2003, 17

¹⁶ SARNOWSKI, 124

¹⁷ BONDOC 2002, 641

¹⁸ MARSDEN [1969, 192] points to an inscription on a bronze votive plaque [Fig. 8] from “a vexillum”, found at *Novae* and dated A.D. 300. The first editor Kubitschek proposed to read this inscription as a dedication by Priscinus, a *ballistarius* of *legio I Italica*. If so, Marsden continues, he must have been one of the last *ballistarii* in an ordinary legion. However, the said inscription is far from being indisputable. Rostovzeff and Dessau propose to read the line in question: Βόλη(v)ς τερσ(σεράριος) - *Vale(n)s tes(serarius)*. In this case, an officer by the name of Valens was *tesserarius*, responsible for the transmission of orders. This version is highly preferred by A. Breson and Th. Drew-Bear. Summary: KOLENDO - BOZILOVA 1997, 176, no. 174.

Nevertheless, the presence of stone projectiles seems highly appropriate. For one, *Novae* were the permanent quarters of the *Legio I Italica* and we know that each legion was equipped with a certain amount of artillery. Especially in later times, beginning with the barbarian raids towards the middle of the 3rd century, the thought of the mixed military and civilian inhabitants of *Novae* defending themselves against invading barbarians with stone projectiles seems plausible. The dating of the discovered arsenals supports this view. *Novae* is interesting with regard to the impressive amount of not entirely spherical projectiles. The technique of hurling stones at enemies from the walls seems to have been quite popular and effective¹⁹. These finds are not uncommon, but rarely published. Documented finds have occurred on the Lower Danube at *Abrittus*²⁰, *Sucidava*²¹, *Hinova* and *Bistret*²² and in a somewhat different context at *Maldegem-Vake* in Belgium²³.

¹⁹ And by no means new: cf. CAMPBELL 2005, 14. I wish to thank Dr. Duncan Campbell for his suggestions.

²⁰ IVANOV 1980, 62-63

²¹ BONDOC 2007, 247-256

²² BONDOC 2002, 641f. The existence of artillery at *Hinova* is confirmed by spherical projectiles inside the fortification. Those might have been thrown from war machines which were possibly placed on the towers. At *Bistret* also missiles were found. As for *Dafne* (across *Transmarisca*, probably destroyed by the Danube), the *Notitia Dignitatum* mentions *Constantini Dafnenses* and *Ballistari Dafnenses* regiments.

²³ DHAEEZE - DE PAEPE 2004

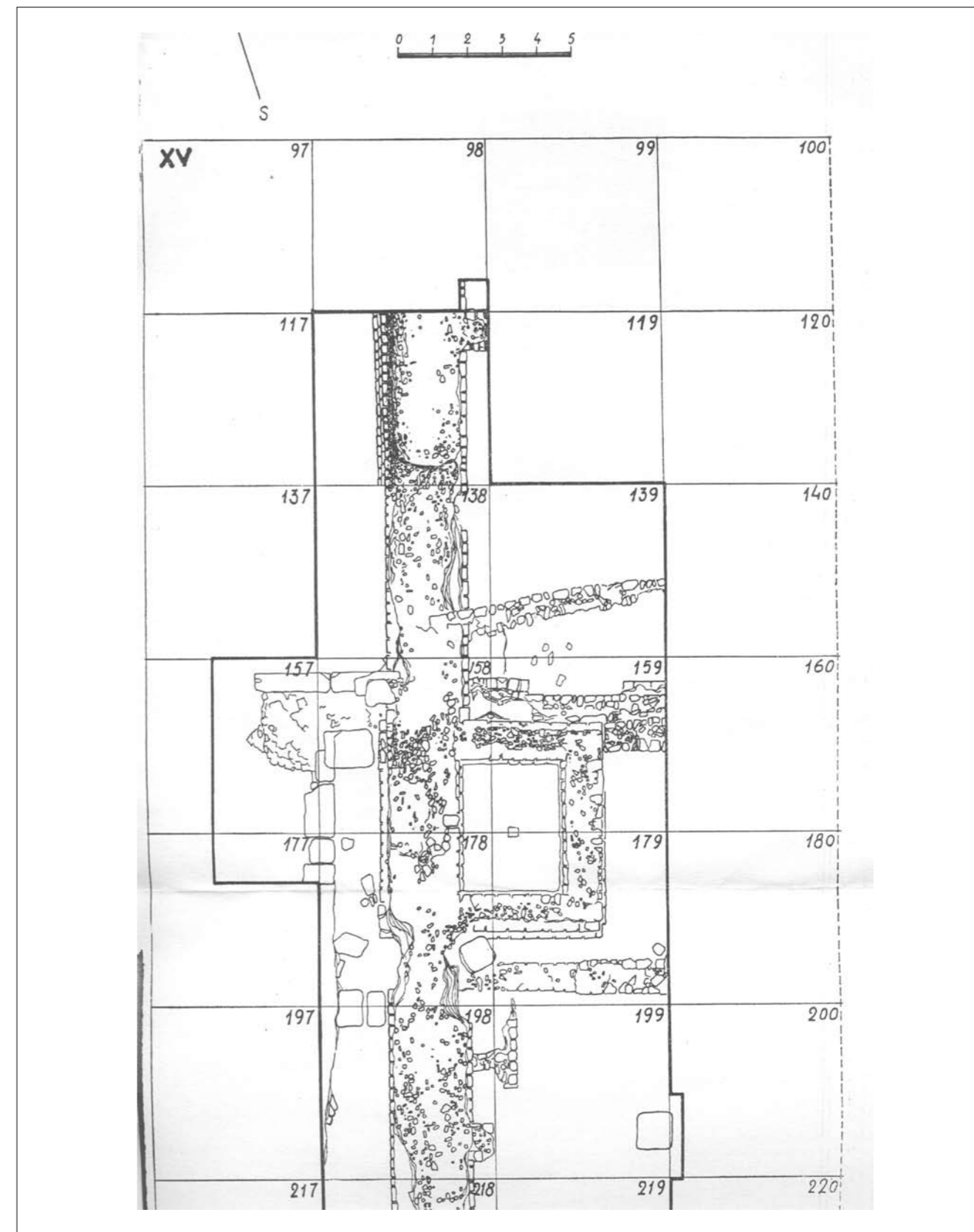


Fig. 2. Sector II in 1962, *Archeologia* 13 (1962), p. 67

Fig. 3. Stone projectiles from sector II, *Archeologia* 13 (1962), p. 73

Fig. 5. Stone projectiles from the principia (Photo T. Sarnowski)

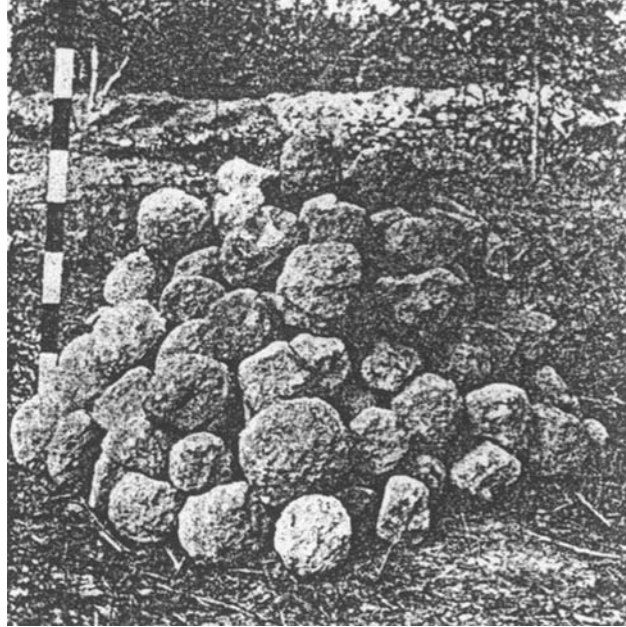
Fig. 4. Stone projectiles from the principia, *Archeologia* 26 (1975), p. 143

Fig. 6. Well rounded projectile (Photo J. Reclaw)

The work required to prepare the stones is smaller compared to the perfect - “caliber-ready” - ballista balls, but still, some time and effort were needed to fill the arsenal. Also, given the danger of out-of-the-blue barbarian attacks, throwing stones at them must have been a standard and successful technique. In the late Roman period, fortifications north of the Danube often used artillery, which could compensate a small number of defenders²⁴. The occurrence of these pro-

²⁴ BONDOC 2002, 645

jectiles is in accordance with the tendency towards defensive warfare on the Danube limes, which included civilian sites as well. During the 3rd century, the larger towns that previously had not been fortified at that time, were equipped with defenses. *Novae* was under attack a number of times, especially during the Goth raid in 240, when Kniva's army besieged the camp and destroyed the *canabae* structures outside the walls, but was unable to overcome its defenders²⁵.

²⁵ KOLENDO 2008, 128-130

In this context, the concentrations of projectiles within *Novae* seem logical, too. The finds at the principia point at the arsenal, while the bastions were the ideal place to store the balls while preparing for battle, no matter if they were intended for an *onager* on top of the tower²⁶ or simply for throwing. Moreover, given the naturally defensive topography of the fortress, with the Danube shielding its north side and the Dermen Dere valley reducing accessibility from the east and south, the relatively flat plain to the west was most open to attacks²⁷.

²⁶ At Drobeta the intermediary towers of square shape between gates and corners were considered to be built for ballistic machines [BONDOC 2002, 644]

²⁷ STANEV 1988, 31; LEMKE 2008, 297

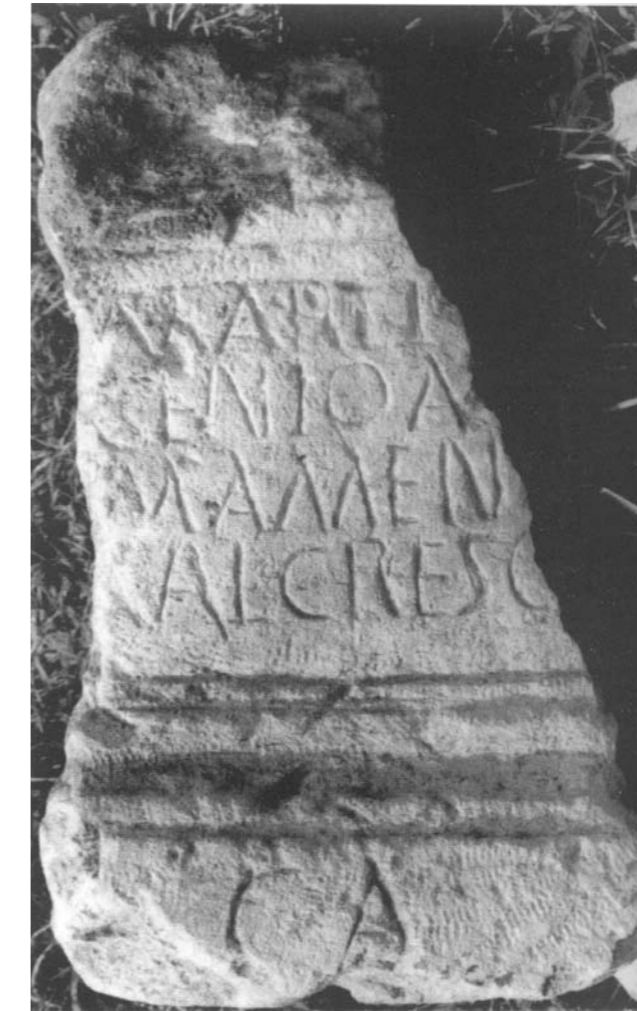


Fig. 7. Altar dedicated to genius armamentarii, Kolendo 1997, No. 32

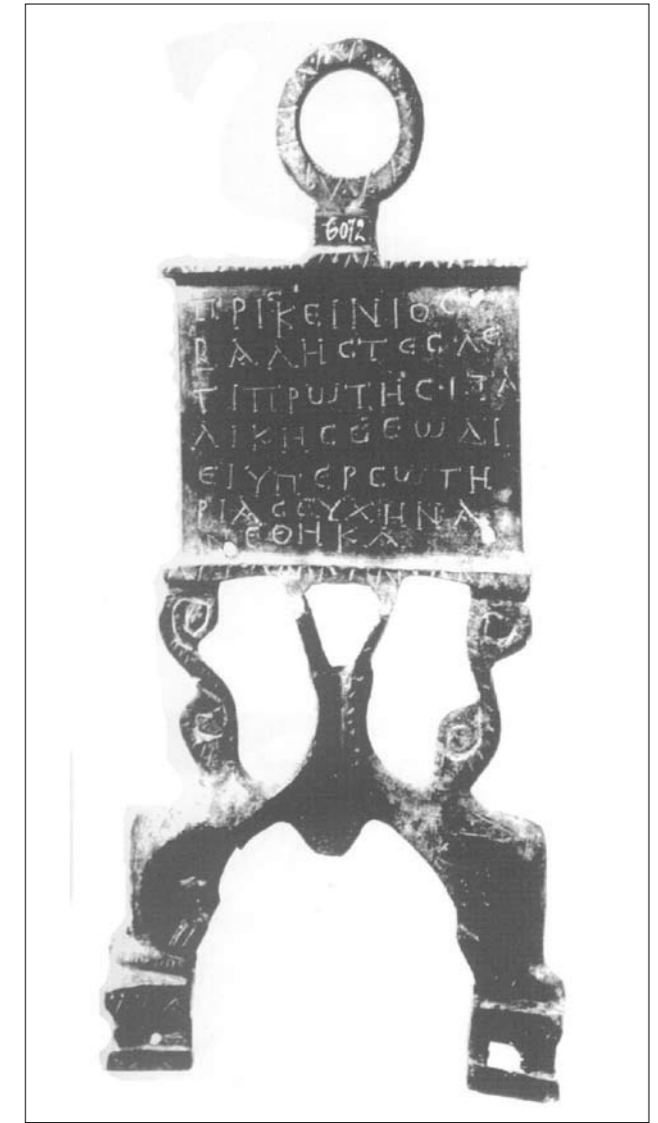


Fig. 8. Bronze vexillum, Kolendo 1997, No. 174

BIBLIOGRAPHY

- BAATZ 1978: D. Baatz, Recent Finds of Ancient Artillery, *Britannia* 9, London, 1978.
- BONDOC 2002: D. Bondoc, Artillery troops detached north of the lower Danube in the late Roman period: in Freeman, P. (et al. eds.), *Limes 18. Proceedings of the 18th international congress of Roman frontier studies held in Amman, Jordan (September 2000)*. Vol.2 (BAR International Series 1084(II), Oxford, 2002, 641-648.
- BONDOC 2007: D. Bondoc, Some Stone projectiles from the civil settlement at Sucidava. In: Vagalinski, L. (ed.), *The Lower Danube in Antiquity*, Sofia, 2007, 247-256.
- CAMPBELL 2003: D. Campbel, *Greek and Roman Artillery 399 BC-AD 363*, Osprey Publishing, Oxford, 2003.
- CAMPBELL 2005: D. Campbell, *Ancient Siege Warfare*. Oxford, 2003.
- DHAEZE - DE PAEPE 2004: W. Dhaeze - P. De Paepe, The Hand-thrown Stones from the Roman Fort of Maldegem-Vake (East-Flanders, Belgium). In: *Archaeological Reports Ghent University* 2, Ghent, 2004, 165-180.
- DYCZEK 2008: P. Dyczek, Archaeological Excavations at Novae. In: T., Derda - P. Dyczek - J. Kolendo (eds.), *Novae I. Legionary Fortress and late Antique Town*, Warszawa, 2008, 31-70.
- IVANOV 1980: T. Иванов, *Абритус (Abritus)*, Sofia, 1980.
- MARSDEN 1969: E.W. Marsden, *Greek and Roman Artillery: Historical Development*, Oxford, 1969.
- KOLENDO 2008: J. Kolendo, Novae during the Goth raid of AD 250/1 (Iordanes, *Getica* 101-103). In: T., Derda - P. Dyczek - J. Kolendo (eds.), *Novae I. Legionary Fortress and late Antique Town*, Warszawa, 2008, 117-131.
- KOLENDO - BOZILOVA 1997: J. Kolendo - V. Božilova (eds.), *Inscriptions grecques et latines de Novae (Mésie inférieure)*, Bordeaux 1997.
- KUBITSCHKEK 1934: W. Kubitschek, Aus Sammlung Trau in Wien: ein Vexillum-Aufsatz. *Jahreshefte des Österreichischen archäologischen Instituts in Wien* 29, 1934, 44-48.
- LEMKE 2008: M. Lemke, The Location of Novae and the Crossing of the Danube by Russian Forces in 1877. In: T., Derda - P. Dyczek - J. Kolendo (eds.), *Novae I. Legionary Fortress and late Antique Town*, Warszawa, 2008, 291-297.
- SARNOWSKI 1979: T. Sarnowski, La destruction des principia à Novae vers 316/317 de notre ère. *Révolte militaire ou invasion gothique?*, *Archeologia* 30, 1979, 149-163.
- SPEIDEL 1978: M.P. Speidel - A. Dimitrova-Milceva, The Cult of the Genii In the Roman Army and a New Roman Deity, *ANRW II.16.2*, 1978, 1542-1543.
- STANEV 1988: N. Stanev, *Der Donaulimes (Sektor Novae-Transmarisca) in militärstrategischer Hinsicht während des 3. - 5. Jahrhunderts*, *Thracia* 8, Sofia, 1988.
- Archeologia* 13, Warszawa 1962.
- Archeologia* 14, Warszawa 1963.
- Archeologia* 26, Warszawa 1975.
- Archeologia* 30, Warszawa 1977.

Suzana Matešić

RÖMISCHE HELME AUS DEM THORSBERGER MOOR

Suzana Matešić
 ZBSA - Zentrum für Baltische und Skandinavische Archäologie
 Stiftung Schleswig-Holsteinische Landesmuseen
 Schloss Gottorf
 24837 Schleswig
 GERMANY
 matesic@schloss-gottorf.de

Römische Helme gehören bekanntermaßen im Barbaricum zu seltenen Ausnahmefunden. Daher ist es umso erstaunlicher, dass an dem Waffenopferplatz Thorsberger Moor bei Süderbrarup Zierbeschläge von sogar mehr als einem römischen Helm gefunden wurden. Die Erforschung dieses Fundplatzes reicht bis in die 50er Jahre des 19. Jahrhunderts zurück, als bei Torfsticharbeiten nach und nach immer mehr Funde der römischen Kaiserzeit zu Tage kamen. Eine wissenschaftliche Untersuchung durch Ausgrabung nach Entwässerungsarbeiten erfolgte in den Jahren 1858 bis 1861 unter der Leitung von Conrad Engelhardt¹. Ausgerechnet die meisten Helmfragmente gehören zu den frühen Torfstichfunden, die unbeobachtet geborgen und an den Sammler und Apotheker Mecklenburg in Flensburg veräußert wurden. 1856 konnte Engelhardt einige Funde von Mecklenburg für seine im Aufbau befindliche Sammlung nordischer Altertümer in Flensburg erwerben, womit sein Interesse an dem Fundplatz Thorsberger Moor geweckt wurde und die damit verbundene Forschungsgeschichte ihren Anfang nahm. Einige weitere bislang unpublizierte Helmfragmente konnte Engelhardt 1859 seiner Sammlung hinzufügen, wiederum aus dem Privatbesitz Mecklenburgs.

¹ ENGELHARDT 1863.

Nach einer erneuten Fundaufnahme kann die bisherige Helm-Rekonstruktion in einigen Details korrigiert sowie um weitere Fragmente ergänzt werden². Als Resultat lassen sich die erhaltenen Zierbeschläge von römischen Helmen aus dem Thorsberger Moor in einem Fall sicher und im zweiten mit großer Wahrscheinlichkeit dem Typ Auxiliary Cavalry H nach Robinson zuordnen, für welchen der zentrale Knauf auf der Helmkalotte und die meist aufgelöteten Zierbeschläge charakteristisch sind³. Waurick sieht in dem Typ auch richtig eine Variante von seinem Typ Niederbieber (Var. III: verzierte Helme)⁴. Aufgrund seiner Ähnlichkeit mit einem Helmfund aus Nida-Hedderheim, findet sich auch Typ Hedderheim in der Literatur⁵.

Bei den Thorsberger Fragmenten muss es sich ursprünglich um mindestens zwei römische Helme vom Typ Hedderheim gehandelt haben. Dies belegen die beiden rautenförmigen Knaufplatten, welche in der Regel nur bei diesem Helmtyp nachgewiesen sind. In der heutigen Rekonstruktion des vollständigeren Helmes (Abb. 1 links) findet sich zwar eine von zwei runden Rosetten appliziert anstelle eines Knaufes, dies kann jedoch auf einen Fehler in der Rekonstruktion zurück geführt werden. Auf der Unterseite der rauten-

² Eine genaue Beschreibung der Korrekturen sowie Ergänzungen siehe MATEŠIĆ 2011.

³ ROBINSON 1975, 100-103.

⁴ WAURICK 1988, 338-341.

⁵ JUNKELMANN 1992, 194 Abb. 144 und 172.