Economic role of the Roman army in the province of Lower Moesia (Moesia Inferior)

INSTITUTE OF EUROPEAN CULTURE
ADAM MICKIEWICZ UNIVERSITY IN POZNAŃ

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ECONOMIC ROLE OF THE ROMAN ARMY IN THE PROVINCE OF LOWER MOESIA (MOESIA INFERIOR)

Michał Duch

This books takes a comprehensive look at the Roman army as a factor which prompted substantial changes and economic transformations in the province of Lower Moesia, discussing its impact on the development of particular branches of the economy. The volume comprises five chapters. Chapter One, entitled "Before Lower Moesia: A Political and Economic Outline" constitutes an introduction which presents the economic circumstances in the region prior to Roman conquest. In Chapter Two, entitled "Garrison of the Lower Moesia and the Scale of Militarization", the author estimates the size of the garrison in the province and analyzes the influence that the military presence had on the demography of Lower Moesia. The following chapter – "Monetization" – is concerned with the financial standing of the Roman soldiery and their contribution to the monetization of the province. Chapter Four, "Construction", addresses construction undertakings on which the army embarked and the outcomes it produced, such as urbanization of the province, sustained security and order (as envisaged by the Romans), expansion of the economic market and exploitation of the province's natural resources. In the final chapter, entitled "Military Logistics and the Local Market", the narrative focuses on selected aspects of agriculture, crafts and, to a slightly lesser extent, on trade and services. The book demonstrates how the Roman army, seeking to meet its provisioning needs, participated in and contributed to the functioning of these industries.

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INTRODUCTION

Roman army was not only a splendidly trained military machine, defending the frontiers of the Empire and pushing them further. Above all, it was a tremendous institution which exerted pivotal influence on the functioning of the border provinces. When the occupation of Lower Moesia began, Roman army had unquestionable technological advantage over the conquered peoples, evinced not only in the skill of warfare, but also in production technologies and organization of logistics. The army also had scores of highly competent architects and craftsmen at its disposal. Consequently, Lower Moesia underwent inevitable economic transformation when the Roman model of economy had been introduced. Hence this work aims to present the Roman army as the leading factor in the changes and transformations that took place in the province of Lower Moesia, and discuss its impact on the development of individual sectors of economy[1]. The adopted chronological frame of the work spans the entire period in which the province existed (from 86 to 275), although when such need arises, I frequently refer to earlier and later events. As far as the territorial extent is concerned, I discuss Lower Moesia within the boundaries it had under Septimius Severus.

The incentive to address the issue outlined above stemmed from that fact that no publication to date has explored the economic role of the Roman army in Lower Moesia. My intention was to rectify that evident gap, especially that the body of sources, in particular relics of material culture, is now quite substantial. This study is also very much in line with the tradition of Polish archaeological investigations in Lower Moesia, which have been conducted since 1960, i.e. the year of commencement of research in Novae (Bulgaria).

The body of material I had access to is tremendous, yet it is considerably dispersed in numerous, mostly local journals (though still insufficient in many areas, e.g. logistics). Consequently, I was compelled to focus on selected issues, such as the influence of army on demography, monetization, construction undertakings, agriculture, husbandry and crafts.

[1] The project was financed by the National Science Center in Kraków granted based on the decision number DEC-2011/03/N/HS3/00873.

A number of problems could be addressed only briefly, such as contribution of the army to bronze-working, glass production, or trade and services available around military camps. The participation of veterans in the economic life of the province is not devoted a separated chapter, either[2], despite the fact that their impact on the economy of Lower Moesia is often mentioned throughout the work.

Chapters providing synthetic accounts are in most cases preceded by a concise analysis of sources and literature, therefore this introduction will first of all outline the employed methodology. Studies into antique economy suffer from a shortage of written, narrative sources, especially such accounts which would offer direct information about the economic role of the Roman army in Lower Moesia. However, it would be a mistake to ignore the indirect information on antique economy they do contain, or disregard mentions about momentous political developments in the discussed region. Epigraphical finds play a vital role in this study, including inscriptions on *instrumenta domestica* and military diplomas[3]. Moreover, antique maps are also taken into account as significant testimonies; the most valuable of those is undoubtedly the *Tabula Peutingeriana*, which provides the names of major localities and roads. Papyri are another important source, proving particularly useful in the analysis of finances of the Roman army. They also constitute invaluable material as far as the organization of Roman troops and the functioning of the supply system are concerned. Still, this monograph would not have been written if it had not been for archaeological excavations conducted in the area of northern Bulgaria and Romanian Dobruja, and the source material they have yielded. I am aware of the risks their interpretation involves, especially in historical research. However, the field experience acquired in the course of seven excavation seasons in Novae enabled me to become acquainted with the methodology of archaeology and learn how material finds should be approached and utilized. Most often, I rely on the existing reports concerning various artefacts and on the typologies developed by archaeologists, whose findings cannot be overestimated. The analysed archaeological sources include chiefly movable relics, such as vessel pottery and building ceramics; these are discussed very comprehensively, being

[2] The issue was discussed on the basis of available sources by K. Królczyk: Veteranen in den Donau- provinzen des Römischen Reiches (1.-3. Jh. n. Chr.), Poznań 2009, in the chapter entitled "Die Veteranen im ökonomischen leben der Donauprovinzen", pp. 123-132.

[3] A list of those is found at the end of this work.

an aspect I studied thoroughly while writing my master's thesis and papers concerned with stamped bricks and tiles.

The monograph also devotes due attention to the remnants of military and civilian settlement, infrastructure, sites of production and mining. The area which at present yields the greatest amount of material for research is the archaeological site in Novae. It was mainly thanks to the excavations carried out there that researchers were able to determine the locations from which raw material, half-finished products and finished products used by the soldiers of the legion stationed in Novae originated. It is a unique site, devoid of the encumbrance of contemporary structural development. Consequently, one can examine the influence of the legionary camp on the surrounding area and the nearby settlements, the *canabae* and the *vici*. Furthermore, Novae offers enough evidence to trace the transformation of a legionary camp into a permanent fortress and then into a late Roman and early Byzantine city. It is the best archaeologically explored site of that kind in Lower Moesia. Archaeologists working in Novae, where investigations have continued for 56 years, recover a considerable amount of sources which also prove valuable for those interested in the economic history of the province. It should be noted that most finds date back to the times when Novae was primarily a military encampment. It is not the only currently explored site on the territory of the former Lower Moesia, but discussing all of those would be impossible. Let me only observe that excavations are taking place in the antique Oescus, the seat of *legio V Macedonica*, and Durostorum, where *legio XI Claudia* was stationed. In recent years, intensive archaeological research has been conducted at Troesmis, which for a long time served as a garrison for *legio V Macedonica*. Nicopolis ad Istrum was explored by a British expedition. At the fortlet of Iatrus, excavation works were undertaken by the Römisch-Germanische Kommission from Frankfurt/Mein, in collaboration with the Archaeological Museum in Ruse. Naturally, each expedition studied and published reports on their finds. In spite of those important projects, the state of archaeological research in former Lower Moesia is not particularly advanced, with many other sites awaiting thorough investigation.

Although there are no monographs which would comprehensively discuss the role of the Roman Army in Lower Moesia, the object of my scholarly interest had been noted much earlier. The first to draw attention to the issue was Michael Rostovtzeff who did so in his seminal work on the economy of

the Roman Empire[4]. The isolated publication by Erik Gren[5], or more specifically the chapter entitled "Die römische Armee als Wirtschaftsfaktor in Kleinasien und auf dem Balkan" represents a greatly significant contribution as well. Though written 75 years ago, it has lost little, if anything, of its scientific value. However, since its publication the body of sources has considerably increased, primarily thanks to archaeological excavations in Bulgaria and Romanian Dobruja. Another particularly noteworthy work is Lothar Wierschowski's *Heer und Wirtschaft. Das römische Heer der Prinzipatszeit als Wirtschaftsfaktor*[6] which, despite a very broad discussion of such issues as the finances of the Roman army, supplies of arms and provisions, analysis of the financial standing of soldiers and veterans as well as their economic activities, has one major shortcoming: the author insufficiently highlights the economic differences between provinces. After all, with respect to economy, the Lower Danube region is distinct from Egypt or Britain, where the role of the Roman army was dissimilar, especially in terms of its impact and significance for the local economies.

There is also a number of general, compilation works which address various economic aspects of the functioning of the Roman army, such as *The Roman Army and the Economy*[7] edited by Paul Erdkamp, comprising interesting articles on e.g. the army's supply arrangements[8], communications and transportation[9]. However, the Balkan and the Danubian provinces were left out, as the authors concentrated on Spain, Britain, Germania[10], Africa and

[4] M. Rostovtzeff, Social and Economic History of the Roman Empire, 1, Oxford 1957, p. 223.

[5] E. Gren, Kleinasien und der Ostbalkan in der Wirtschaftlichen Entwicklung der Römischen Kaiserzeit, Uppsala 1941.

[6] Bonn 1984

[7] Amsterdam 2002.

[8] P. Herz, Die Logistik der kaiserzeitlichen Armee. Strukturelle Überlegungen, pp. 19-46; P. Erdkamp, The Corn Supply of the Roman Armies during the Principate (27 BC – 235 AD), pp. 47-69; C. Carreras Monfort, The Roman Military Supply during the Principate. Transportation and Staples, pp. 70-89; L. de Blois, Monetary Policies, the Soldiers' Pay and the Onset of Crisis in the First Half of the Third Century AD, pp. 90-110.

[9] I. Haynes, Britain's First Information Revolution. The Roman Army and the Transformation of Economic Life, pp. 111-126; T. Kissel, Road-Building as a Munus Publicum, pp. 127-160; A. Kolb, Army and Transport, pp. 161-166.

[10] J.L. Davies, Soldiers, Peasants, Industry and Towns. The Roman Army in Britain. A Welsh Perspective, pp. 169-203; C.R. Whittaker, Supplying the Army. Evidence from Vindolanda, pp. 204-234; P.P.A. Funari, The Consumption of Olive Oil in Roman Britain and the Role of the Army, pp. 235-263; L. Wierschowski, Das römische Heer und die ökonomische Entwicklung Germaniens in den ersten Jahrzehnten des 1. Jahrhunderts, pp. 264-292; J.R. Rodriguez, Baetica and Germania. Notes on the Concept of 'Provincial Interdependence' in the Roman Empire, pp. 293-308; H. Konen, Die ökonomische Bedeutung der Provinzialflotten während der Zeit des Prinzipates, pp. 309-342.

the Middle East[11]. Mateusz Żmudziński's *Gospodarka w rzymskiej prowincji Dacji Superior* also deserves attention, in particular the chapter entitled "Gospodarcza rola armii [Economic role of the army]", in which the author analyses its social and economic importance, construction undertakings, as well as the commerce and services offered in the vicinity of camps. These publications prove that the influence of the Roman military on the economy in the provinces is indeed underscored, but a separate, dedicated monograph has so far been lacking.

This shortage is offset in a way by a large number of studies focusing on particular issues[12] which may be linked with economy, such as logistics[13], presence of the army in the provinces[14], finance[15], building activity[16] or legionary territories[17]. Also, general publications concerned with the economy of the Empire enjoy relative popularity as well[18].

The military history of Lower Moesia has been covered in detail by various authors[19], and several works addressing a range of aspects deserve to be mentioned[20].

[11] P. Morizot, Impact de l'armée romaine sur l'économie de l'Afrique, pp. 345-374; J. Roth, The Army and the Economy in Judaea and Palestine, pp. 375-397; R. Alston, Managing the Frontiers. Supplying the Frontier Troops in the Sixth and Seventh Centuries, pp. 398-419.

[12] At this point I would like to note that V. Čist'akova's paper entitled "Development of the rural settlement in Moesia Inferior in the context of frontier area: introduction to the issue", Studia Hercynia 18/1-2, Prague 2014, pp. 89-115, reached me after this monograph had been completed, therefore her findings could not be cited and taken into consideration in this study.

[13] J. Roth, The Logistics of the Roman Army at War, 264 BC to AD 235, Leiden 1999.

[14] E.W.B. Fentress, Numidia and the Roman army. Social, military and economic aspects of the frontier zone, Oxford 1979.

[15] R. Develin, The Army Pay Rises under Severus and Caracalla, and the Question of annona militaris, Latomus 30, 1971, pp. 687-695; R. MacMullen, The Roman Emperors' Army Costs, Latomus43, 1984, pp. 571-580; M.A. Speidel, Roman army pay scales, JRS 82, 1992, pp. 87-106.

[16] R. MacMullen, Roman imperial building in the provinces, Harvard Studies in Classical Philology 64, 1959, pp. 207-235.

[17] A. Mócsy, Zu den Prata Legionis, [in:] Studien zu den Militärgrenzen Roms, 1967, pp. 211-214; D.J.P. Manson, Prata legionis in Britain, Britannia 19, 1988, pp. 163-189.

[18] R. Duncan-Jones, The economy of the Roman Empire: quantitative studies, Cambridge 1974; idem, Structure and Scale in the Roman Economy, Cambridge 1990; idem, Money and government in the Roman Empire, Cambridge 1994; C. Katsari, The Roman Monetary System. The Eastern Provinces from the First to the Third Century AD, Cambridge 2011.

[19] B. Filow, Die Legionen der Provinz Moesia von Augustus bis auf Diokletian, (Klio 6) Leipzig 1906; W. Wagner, Die Dislokation der römischen Auxiliar-formationen in den Provinzen Noricum, Pannonien, Moesien und Dakien von Augustus bis Gallienus, Berlin 1938; J. Beneš, Die römischen Auxiliar-formationen im unteren Donaurum, Brno 1970; A. Aricescu, The Army in Roman Dobruja, Oxford 1980; M.P. Speidel, Regionarii in Lower Moesia, ZPE 57, 1984, pp. 185-188; T. Sarnowski, Wojsko rzymskie w Mezji Dolnej i na północnym wybrzeżu Morza Czarnego, Warszawa 1988; F. Matei-Popescu, The Roman Army in Moesia Inferior, Bucharest 2010.

Numerous issues, chiefly in the context of non-military tasks of the Roman army, were discussed by Tadeusz Sarnowski in his publication on its deployment[21]. Other works by that author occupy a prominent place in this monograph, especially those devoted to building ceramics, which are referred to extensively in the pertinent subchapter[22]. Andrzej Kunisz addressed a substantial number of questions concerning monetization[23], while works by Leszek Mrozewicz[24] and Agnieszka Tomas[25] provide many valuable insights into urbanization processes. The network of Lower Moesian fortifications is the subject studied by Nicolae Gudea, Mihail Zahariade and Martin Lemke[26]. This work also takes advantage of Piotr

[20] B. Gerov, Romanizmăt (I) meždu Dunava i Balkana ot Avgust do Hadrian, [in:] idem (hrsg.), Beiträge zur Geschichte der römischen Provinzen Moesien und Thrakien. Gesammelte Aufsätze II,Amsterdam 1997, pp. 121-209; idem, Landownership in Roman Thracia and Moesia (1st-3rd Century), Amsterdam 1988; B. Sultov, Ancient pottery centres in Moesia Inferior, Sofia 1976; L. Mrozewicz, Arystokracja municypalna w rzymskich prowincjach nad Renem i Dunajem w okresie wczesnego cesarstwa, Poznań 1989; A.G. Poulter, Nicopolis ad Istrum: A Roman, Late Roman and Early Byzan tine City. Excavations 1985-1992, JRS Monograph 8, London 1995.

[21] T. Sarnowski, Wojsko rzymskie; idem, Pozamilitarne funkcje armii rzymskiej ze szczególnym uwzględnieniem jej roli w urbanizacji obszarów cesarstwa, Meander 9-10, 1987, pp. 439-448.

[22] Die Ziegelstempel aus Novae I. Systematik und Typologie, Archeologia 34, 1983, pp. 17-61; Legionsziegel an militärischen und zivilen Bauplätzen der Prinzipatszeit in Niedermoesien, [in:] B.L. van Beek (ed.), Roman Frontier Studies 1995. Proceedings of the XVIth International Congress of Roman Frontier Studies, Kerkade 1995, pp. 497-501; Późnorzymskie stemple legionów dolnodunajskich, Novensia 2, 1991, pp. 9-31; Römische Militärziegel von der Südwestlichen Krim. Probleme der Produktionstätigkeit und Produktionsorte, Archeologia 66, 2005, pp. 91-110.

[23] Obieg monetarny na obszarze Mezji i Tracji w I i II wieku n.e., Katowice 1992.

[24] L. Mrozewicz, Municipium Novae: problem lokalizacji, [in:] S. Parnicki-Pudełko (ed.), Novae-Sektor Zachodni 1976, 1978, pp. 197-200; idem, Rozwój ustroju municypalnego a postępy romanizacji w Mezji Dolnej, Poznań 1982; idem, Ze studiów nad rolą canabae w procesie urbanizowania terenów pogranicza reńsko-dunajskiego w okresie wczesnego cesarstwa, [in:] W. Pająkowski, L. Mrozewicz (ed.), Balcanica Posnaniensia 3. Novae i kultura starożytna, Poznań 1984, pp. 285-297; idem, Miasta rzymskie nad dolnym Dunajem w okresie przełomu (III-IV w.) ze szczególnym uwzględnieniem miasta Novae, StEurGn 1-2, 2010, pp. 261-285.

[25] In particular the monograph Inter Moesos et Thraces. The Rural Hinterland of Novae in Lower Moesia (1st-6th Centuries AD), Oxford 2016 and a similarly titled paper: Inter Moesos et Thraces. A Contribution to the Studies on the Rural Hinterland of Novae in Lower Moesia, Archeologia 58, 2007, pp. 31-47; research carried out by A. Tomas in Ostrite Mogili near Novae is very promising as well, see Municipium Novensium? Report on the Field Survey at Ostrite Mogili, Veliko Turnovo District, Światowit 6 (47), 2004-2005 (2006), pp. 115-128.

[26] M. Zahariade, N. Gudea, The Fortifications of Lower Moesia (A.D. 86-275), Amsterdam 1997; N. Gudea, Der untermoesische Donaulimes und die Verteidigung der moesischen Nord- und West-küste des Schwarzen Meeres Limes et litus Moesia Inferioris (86-275 n. Chr.), JRGZM 52, 2005; M. Lemke, Geografia wojskowa Mezji Dolnej. Czynniki naturalne, kulturowe i logistyczne w organizacji limesu prowincji Moesia Inferior w okresie pryncypatu (I-III w.), typescript of doctoral disseration defended in 2012 at the University of Warsaw.

Dyczek's monograph on the transportation of Roman amphorae[27], which provides their typology and quantitative assessments of the amount of olive oil used by the legions as well as discusses the regions from which wine was brought to Roman camps. The extent of interest of Polish researchers in Lower Moesia is well reflected in the number of autonomous publications relating to investigations in Novae[28] and the tremendous number of other works whose comprehensive list may be found in the compilation of references for the site[29].

This monograph comprises five chapters. Chapter One, entitled "Before Lower Moesia – a political and economic outline" is intended as an introduction, as it presents the economic circumstances on that territory prior to the Roman conquest. The principal aim of the chapter is to show how political events, incursions of various peoples and the Roman conquest itself brought about economic degradation of the already poorly developed regions on the Lower Danube in the declining period of the Republic and in the early years of one-man rule. Over a long term, the Roman army caused Lower Moesia to thrive, but before that was ultimately achieved, its territory had been ravaged and depleted, while its economy was then gradually rebuilt, so as to be able to sustain the garrison consisting of several thousand troops.

In Chapter Two, entitled "The garrison of Lower Moesia and the scale of militarization" I attempt to calculate the size of the garrison. In order to ensure that the results are characterized by the highest degree of probability and entail the least risk of error, I decided to consider the strength of individual units of the Roman army. Subsequently, relying on the sources, mainly military diplomas, I computed the size of the Lower Moesian garrison. The estimations, made for the period of the third century, were based on the existing epigraphical sources in which presence of military units was recorded. The obtained results were then compared with the available estimations of the population of Lower Moesia. At this point, I would like to emphasize that all calculations presented in the chapter are purely illustrative, i.e. they are intended to demonstrate a certain scale but cannot be

[27] Amfory rzymskie z obszaru dolnego Dunaju. Dystrybucja amfor i transportowanych w nich produktów w I-III w. po Chr., Warszawa 1999; idem, Roman amphorae of the 1st-3rd centuries AD found on the Lower Danube. Typology, Warsaw 2001.

[28] Novae-Sektor Zachodni published in Archeologia by AMU; Novensia, wyd. Warszawa, Balcanica Posnaniensia; Novae, Studies and Materials; Studia Moesica.

[29] J. Kolendo, Novae – Bibliography 1726-2008, [in:] T. Derda, P. Dyczek, J. Kolendo (eds.), Novae Legionary Fortress and Late Antique Town I. A Companion to the Study of Novae, Warszawa 2008 [2009], pp. 301-367.

treated as accurate data; nonetheless they give an idea of the extent to which the province had been militarized. The calculations in question were inspired by the observations of Witold Kula, which I cite in the subchapter devoted to demography.

The following chapter, namely "Monetization", is concerned with the financial standing of the Roman soldiers, as well as with their role in the monetization process in Lower Moesia. For this purpose, I drew on the findings to date, literature of the subject and own research to describe the influence of the soldiers' pay and other sources of soldierly income, e.g. the donativa and the praemia on the monetary economy of the province. Consequently, it was possible to calculate the approximate cost of maintaining individual units stationed there. Naturally, the reckoning reflects only the expenditure on the troops, but does not state the amounts which ended up in circulation, as this is impossible to assess. Nevertheless, it suggests a certain minimum which may have been spent outside the camp. Therefore I focus some attention on the scale of deductions from pay and the changes in the fiscal system of the army. Still, the principal objective of that chapter is to demonstrate how the army contributed to monetization of the province, in which I take advantage of the documented discoveries of coin hoards. In view of the premises of this publication, I discuss only a number of selected hoard sites, since a comprehensive analysis would require a separate study. On the other hand, the comparison I draw between Novae and Nicopolis ad Istrum is intended to show that cities which minted their own coin were not as dependent on the army in that respect as it is widely believed.

The chapter entitled "Construction undertakings" outlines the outcomes of building projects that the army embarked on: urbanization of the province, security and order (as envisioned by the Romans), expansion of the market and increased exploitation of the province's natural resources. Here, I decided to include a brief overview of locations where the army built defensive installations, in order to illustrate the scale of its architectural and engineering undertakings. The arrangement of the chapter is not accidental, as I wished to demonstrate how particular types of projects affected the economic life of the province. Therefore the description of fortifications is followed by a subchapter on urbanization, and then another one concerning the infrastructure developed by the army, which spanned the entire territory of Lower Moesia thus enabling the Romans to control it. The numerous economic ramifications to which it all led are discussed here as well.

The last chapter, entitled "Military logistics and the local market", focuses solely on selected aspects of agriculture, crafts and, to a lesser extent, on trade and services. I was interested in the army's contribution in each of those areas, as well as in the influence its presence exerted, mainly in the context of military provisioning. Perforce, my attention centred around those branches of craft-based production which are well attested in archaeological material (as presented in scholarly publications, of course). An important element of the chapter is the subchapter entitled "Building ceramics", given that the army was engaged in large-scale manufacture of bricks and tiles. What is more, direct evidence of that activity is readily available in the form of stamped impressions on their surface. Also, I intended to examine the impact of mass production of bricks and tiles on the economic life in Lower Moesia.

The entirety of my deliberations end with a conclusion with recapitulates the observations made throughout the monograph. Finally, an index of maps, illustrations, as well as the list of sources, including the employed abbreviations and literature of the subject is provided at the end of the volume.

I do hope that this work will contribute to the knowledge of economic and military history of Lower Moesia and provide insights into the functioning of the frontier provinces of the Roman Empire.

This publication is a revised version of the doctoral dissertation defended at the Kazimierz Wielki University in 2013. As I worked on the dissertation and the monograph, the support I received from many kindly disposed persons helped me to complete it. In the first place, I would like to thank the supervisor of the dissertation, Professor Leszek Mrozewicz, whom I owe the opportunity of pursuing my interests in the world of antiquity. The work would not have been written without his advice, guidance and the time he devoted. Expressions of gratitude are also due to dr Monika Kubiaczyk and dr Martin Lemke, whose feedback enabled me to improve the original text. I am also thankful to those who offered a critical assessment of my work: Professors Danuta Okoń, Piotr Dyczek, Dariusz Słapek and Jan Iluk, as their remarks made it possible to enrich and enhance this volume. Nonetheless, the responsibility for any of its shortcomings rests entirely with me.

Finally, I would like to thank my Parents and Siblings for the faith they had in me and the support I was given in the pursuit of my goal.

Chapter I

Before Lower Moesia – a political and economic outline

Prior to the Roman conquest, the territory of Lower Moesia was inhabited by numerous tribes whose degree of economic development varied. The characteristic trait they all shared was underdeveloped agriculture and lack of more advanced urban structures (with the exception of Greek cities on the coast of the Black Sea), which had a major influence on the functioning of those regions in the Roman period. Therefore, in order to grasp the actual role of the Roman army in their transformation, one should provide a general outline of the situation before the coming of the Romans and describe how the latter consolidated the new order they had introduced. Also, the political history surrounding these developments should be delineated.

1. Ethnic composition

In the early first century, the western part of the later Lower Moesia, between the rivers Almus and Yantra, was inhabited by a patchwork of various peoples referred to collectively as the Moesi, and the tribe of the Triballi[1]. According to Ptolemy's account, the population of the central part

[1] Plin. NH IV 1, 3, believed that the Moesi and the Triballi lived on the territory east of the Dardanes; the Getae, who had been resettled to the Roman side of the Danube during the legateship of Aelius Catus were called the Moesi, see Strab. VII 3, 10; App. IXb, 29, who claims that the Moesi (Μυσόί) are to be found in the area extending as far as the Black Sea; meanwhile, it would follow from Cass. Dio 51, 23, 3-4; 51, 27, 2-3 that 'Moesia' is solely a geographical designation referring to a region inhabited by a variety of tribes; the view expressed in the literature of the subject states that the term Moesi was a collective appellation, denoting the Triballi, Dacians and the Getae, see N. Theodossiev, North-Western Thrace, p. 88; however, F. Papazoglu, Balkan Tribes, p. 402, finds that the notion of 'Moesia' is primarily a geographical one; the existence of the tribe of Moesi was negated by D. Boteva, Ancient Literary Tradition on Moesi/Moesia (Mid 1st C. BC – Mid 1st C. AD), [in:] L.F. Vagalinski, N. Sharankov, S. Torbatov (eds.), The Lower Danube Roman Limes (1st-6th C. AD), Sofia 2012, pp. 9-22. These tribes populated the lands in the western part of the later Lower Moesia; Ptol. Geogr. III 10, 10: mentions Oescus as the seat of the Triballi; the name of *praefectura Moesiae et Treballiae* may be found in the inscription ILS 1349; more on the location of the tribe in the light of archaeological and written sources see F. Papazoglu, Balkan Tribes, pp. 58-67; N. Theodossiev, North-Western Thrace, pp. 87-88.

consisted of tribes called the Piarensioi, the Demensioi, the Oboulensioi, and the Oitensioi[2]. Near the Black Sea, there were settlements of e.g. the Crobises, whereas in the east (Dobruja), not far from Callatis and Tomis, there resided a more or less unspecified people that Strabo called the Troglodytes[3]. The area of the Danube delta was home to the Celtic Peucini[4]. Besides the Moesi and the Getae, Pliny the Elder also mentions the tribes of the Aodi, the Scaugae, and the Clariae[5].

Celts, who had invaded the Balkans around 279-277 BCE[6], had a substantial influence on the ethnic make-up of those lands. Their presence is reflected in the names of such localities as Noviodunum, Aliobrix and Arubium in Dobruja, Bononia in western Lower Moesia as well as Vorovum Minus and Nicovosus near Montana[7].

Scythian presence was particularly prominent in Dobruja, hence the late Roman name of the province – Scythia Minor[8].

The Getae were another major ethnic group, inhabiting areas north and south of the Danube, and their dominance became pronounced in the eastern part of the later Lower Moesia[9]. Just as with the Celts, various place names are indicative of their former enclaves: Capidava, Sacidava and Muridava. In 55 BCE, the Getae led by Burebista poured into the territories along the Black Sea, capturing the Greek colonies as they advanced[10].

[2] Ptol. Geogr. III 10, 9; Strab. Geogr. VII 5, 12.

[3] Strab. Geogr. VII 5, 12; Ptol. Geogr. III 10, 9.

[4] Ptol. Geogr. III 10, 9.

[5] Plin. NH IV 11, 41.

[6] Already Alexander III of Macedon met with Celtic envoys on the Danube: Fl. Arrian, Anab., I, 4; Strab. Geogr. VII 3, 8; on the Celtic invasion in 279 BCE see A. Mócsy, Pannonia and Upper Moesia. A History of the Middle Danube Provinces of Roman Empire, London – Boston, 1974, p. 7; Z.Woźniak, Wschodnie pogranicze kultury lateńskiej, Wrocław – Warszawa – Kraków – Gdańsk 1974, pp. 15-16.

[7] A. Falileyev, The Celitc Presence in the Central Balkans: Evidence of Place-Names, Orpheus 16, 2006, pp. 27-32, here: p. 29.

[8] Ovid's accounts corroborate the strong tradition of Scythian ascendancy: Tristia and Epistulae ex Ponto; Plin. NH IV 11, 41.

[9] On the Getae in Dobruja see Ovid., Tristia, V, VII; on the war waged on the tribe by Licinus Crassus: Cass. Dio 51, 24, 6-7; 51, 26, 1; tombs from the Roman period attest to the continued presence of the Getae, especially in southern Dobruja, see S. Torbatov, The Getae in Southern Dobroudja in the Period of Roman Domination: Archaeological Aspects, [in:] Actes. 2e Symposium international des etudes thraciennes „Thrace ancienne", vol. II, Komotini 1997, pp. 507--514, although the author advances a hypothesis that they may have been the population resettled during the legateship of Ti. Plautius Sylvanus.

[10] C. Danov, Trakowie, transl. by L. Owczarek, Warszawa 1987, p. 172; M. Musielak, Społeczeństwo greckich miast zachodnich wybrzeży Morza Czarnego, Poznań 2003, p. 92.

Greeks, victims of that incursion, were an important group in the ethnic jigsaw in that region, along with Thracians, the Getae, Celts and Scythians. They had begun the colonization of the western coast of the Black Sea as early as the seventh century BCE. The first to have its colonies there was Miletus in Asia Minor, which established Histria (at the mouth of the Danube in Dobruja), Tomis (Constanţa), Odessos (Varna), Olbia (mouth of the Southern Bug), Tyras (mouth of the Dniester) and most likely Dionysopolis (Balchik). Subsequently, colonization in the region was undertaken by Megara, which founded Mesambria (Nessebar) and Callatis (Mangalia)[11]. Diodorus of Sicily also mentions Sarmatians[12], who inhabited the area between the Don and Donetsk[13], while in the discussed period their influence on the territory of the later Lower Moesia was evinced in the presence of their craft products. Items of Sarmatian provenance, i.e. a bronze medallion and a silver appliqué were discovered in a tomb near Odessos[14]. Additionally, Sarmatians would often harass the regions on the Lower Danube, which was reported in a somewhat dramatic vein by Ovid[15].

2. Political and economic circumstances

The tribes which are widely considered the least developed were to be found in the western part of the future Lower Moesia, as due to their geographical location their contact with the Hellenic culture was considerably

[11] D.M. Pippidi, D. Berciu, Din istoria Dobrogei I. Geţi şi Greci la Dunârea de Jos. Din cele mai vechi timpuri pîna la cucerirea romanâ, Bucuresti 1965, pp. 149-150; for a critique of sources concerning the beginnings of Greek colonization of the Black Sea coast see G.R. Tsetskhladze, Greek Penetration of the Black Sea, [in:] G.R. Tsetskhladze, R. De Angelis (eds.), The Archeology of Greek Colonisa- tion. Essays dedicated to Sir John Boardman, Oxford 1994, pp. 111-135, here: pp. 117-118; M. Musielak, Społeczeństwo, pp. 13-24; K. Królczyk convinced me that Tyras and Olbia were also part of Lower Moesia, which is why they are cited here, see idem, Propagatio Imperii. Cesarstwo Rzymskie a świat zewnętrzny w okresie rządów Septymiusza Sewera (193-211 r.), Poznań 2014, pp. 146-169.

[12] Diod. Sic. II, 43, 7; Pliny the Elder also believed that Sarmatians inhabited the Lower Danube area (NH IV, 11, 41).

[13] A.V. Simonenko, The Problem of the Sarmatian Penetration in the North Pontic Area According to Archaeological Data, Il Mar Nero 1, 1994, pp. 99-134, here: p. 119.

[14] A. Minčev, Some Aspects of Cultural Exchange during 5th-1st BC in North-Eastern Thrace: Thracian, Scythian and Celtic Bridle Frontlets in the Archaeological Museum of Varna, [in:] L.F. Vagalinski (ed.), The Lower Danube in Antiquity, International Archaeological Conference Bulgaria – Tutrakan, 6-7.10.2005, Sofia 2007, pp. 25-37, here: p. 33.

[15] Ovid., Tristia, V. 7. 9-20.

limited[16]. According to Fanula Papazoglu, the tribes in question, namely the Triballi and the Moesi, had poorly developed agriculture, leading semi-nomadic life which was characterized by frequent changes of sites of cultivation and lacked a more elaborate system of leasehold, as to them land did not represent any particular value in any case. The tribes fought with one another for the crops and a place for the next sowing, but their chief occupation was herding[17]. Still, there was no shortage of settled communities. One of the settlements was discovered in Strymen on the Yantra, where emmer wheat and barley were cultivated. Evidence found in one of the root cellars indicates that pork, beef and mutton was consumed by its inhabitants in the La Tène period[18].

The population of Dobruja was concentrated in Greek cities and villages, whose economy relied on herding and inefficient agriculture. Ovid suggests two causes of such a state of affairs. The first is the presence of semi-nomadic and nomadic peoples on that territory (the Getae and Scythians), while the climate and the infertile soil constitute the second[19]. Also, Dobruja in itself is not an extensive region which in addition suffered the plundering raids of tribes inhabiting the area north of the Danube; this certainly had an adverse effect on economic development[20].

The territory of the later Lower Moesia represented a stark contrast to the lands south of the Haemus mountains, inhabited by the Thracian tribes (the later province of Thrace). Their agriculture was well-developed as they had already been selling the surplus during the Hellenic period[21]. The land was held mostly by royal families, tribal aristocracy and temples. Private ownership of land existed as well[22]. Following the Roman conquest, the array of agricultural tools and cultivation methods did not undergo any

[16] N. Theodossiev, North-Western Thrace, p. 92.

[17] F. Papazoglu, Balkan Tribes, p. 477; Papazoglu is of the opinion that civilisational development of the Triballi placed them above the Moesi and the Getae.

[18] W. Hensel (ed.), Strymen nad Jantrą (Bułgaria) badania archeologiczne w latach 1961-1964 i 1967-1968, Wrocław 1980, p. 34: traces of such plants were recorded in one of the cellars discovered there; also, impressions of barley were found on the surface of recovered pottery.

[19] R.M. Batty, On Getic and Sarmatian Shores: Ovid's Account of the Danube Lands, Historia 43, 1, 1994, pp. 88-111, here: pp. 92-96: the author analysed excerpts from Ovid in terms of the economic life of Tomis and the region.

[20] Ovid., Tristia III 10, 50-79: Ovid states that the trepidation among the people of Tomis has a greatly negative impact on the economy; inhabitants of the city are afraid to farm land, because the arrows of plunderers may pierce them at any moment.

[21] B. Gerov, Landownership, p. 5.

[22] Ibidem, p. 11.

substantial changes[23]. The low level of agricultural development among the tribes north of the Haemus mountains resulted in scarcity of developed urban structures (apart from the Greek centres)[24]. There is no archaeological evidence to confirm the existence of cities (except the Greek ones) in that area in the first century BCE. The only organized places of habitation were fortified hamlets and relatively inaccessible locations, provided with some form of defences, where people stayed only in the moments of impending threat[25]. In this respect, the economic weakness of the future western Lower Moesia is manifested yet again: of the total of 24 such sites, only two were discovered on its territory[26]. The disproportion is additionally underscored by the fact that only the eastern part saw the development of an urban centre which functioned in the Hellenic period. It was most likely a Getic city whose remnants were discovered by archaeologists in the contemporary Sborjanovo (Helis?). It existed from the 330s to 250 BCE, when it was destroyed by an earthquake, never to be rebuilt. Its size is estimated at 3,000 to 4,000 inhabitants and, given local circumstances, it was well developed economically. The city minted its own coins, there were workshops of craftsmen outside its walls, while the discovered amphorae suggest trade with such centres as Tazos, Synopa, Akanthos, Kos, Heraclea, Chersonese and Rhodes. Such contacts are also corroborated by Greek coins found at the site, most of which originated from the Greek cities on the western coast of the Black Sea[27]. Tirisis (Kaliakra) near Dionysopolis is considered to have been another well-developed defensive settlement[28]. One should also

[23] I. Cholakov, Ancient Economy South of the Lower Danube Limes (The Territory of Present-Day North Bulgaria) Based on Finds of Tools from the Period of the 1st – the Beginning of the 7th C. AD, [in:] L.F. Vagalinski, N. Sharankov, S. Torbatov (eds.), The Lower Danube Roman Limes (1st-6th C. AD), Sofia 2012, pp. 63-81, here: pp. 64-65.

[24] F. Papazoglu, Balkan Tribes, p. 478.

[25] N. Theodossiev, North-Western Thrace, p. 14.

[26] Ibidem.

[27] T. Stojanov, Spatial Pattern and Economic Development of the Northeastern Thrace – 7th-2nd Centuries BC, [in:] M. Domaradzki (éd.), Pistiros et Thasos. Structures Économiques dans la Péninsule Balkanique aux VIIe-IIe siécles avant J.-C, Opole 2000, pp. 55-65, here: pp. 60-65; idem, The Getic Capital at Sporyanovo: New Excavation Issues & Research Developments, Thracia 15, 2003, pp. 413-423; T. Stojanov, Z. Mihaylova, Metal Working in the Celtic City in "Sboryanovo" Locality Near Isperih NE Bulgaria (Preliminary Report), Ephemeris Napocensis 6, 1996, pp. 55-77; A. Bozkova, Centres politiques et commerciaux de la Thrace du Nord-Est à l'époque hellénistique avancée, [in:] L.F Vagalinski (ed.), The Lower Danube in Antiquity, International Archaeological Conference Bulgaria – Tutrakan, 6-7.10.2005, Sofia 2007, pp. 91-94, here: p. 91.

[28] On the findings of archaeological excavations in Tirisis see A. Balkanska, Die thrakische Siedlung Tirisis nach der Ausgrabungen auf dem Kap Kaliakra in den Jahren 1969-1970, Thracia 3, 1974, pp. 315-319.

mention the Thracian stronghold of Shumen, which in addition to defensive functions was also a centre of commerce and crafts[29]. There is no data suggesting that any settlements with a comparable economic profile had existed there prior to the Roman conquest[30]. This is not particularly surprising, given that in the first century BCE the Getae were still a semi-nomadic people. This is distinctly at variance with the lands south of Stara Planina (Haemus), where cities in the strict sense were to be found[31]: entities with an organized network of streets, urban building development, social structure and self-government, such as Kabyle, Seuthopolis, or Philippopolis[32].

However, it should be emphasized that the notions about the "backwardness" of tribes on the Lower Danube have recently been revised to some extent thanks to studies conducted by Nikola Theodossiev, who used the example of the Triballi to demonstrate that Hellenic influence in the region was much stronger than previously assumed. Also, from a certain period onwards, one sees evident attempts at emulating the patterns of La Téne culture[33]. Celtic impact on the economy of the territories north of the Haemus is clearly noticeable, especially in craft products, such as weapons, jewellery, fibulae[34] and vessel pottery[35].

[29] H. Popov, Urbanizacija văv vătrešnite rajoni na Trakija i Ilirija: prez VI-I vek predi Hrista, Sofia 2002, p. 153.

[30] Other minor defensive structures existed in the location of today's Malak Preslavets, Gura Canliei, and Tsarevets in Veliko Turnovo, see M. Domaradzki, Trakijskata kultura prez Kăsnoželjaznata epoha v severiz- točna Trakija. Selishtni i etničeski oblik, Helis 1, 1992, pp. 97-108.

[31] F. Papazoglu, Balkan Tribes, p. 449.

[32] H. Popov, Urbanizacija, p. 59; J. Bouzek, Urbanisation in Thrace, [in:] J. Bouzek, L. Domaradzka (eds.), The Culture of Thracians and Their Neighbours. Proceedings of the International Symposium in Memory of Prof. Mieczysław Domaradzki, with a Round Table "Archeological Map of Bulgaria, Oxford 2005, pp. 1-8; M. Żyromski, Some Important Features of Towns Development in Thrace (the Examples of Seuthopolis, Kabyle and Philippopolis), [in:] I. Niculiţă, A. Zanoci, M. Băţ (eds.), Thracians and Circumpontic World. Proceedings of the Ninth International Congress of Thracology, Chisinau – Vadul lui Voda, 6-11 September 2004, Chisinau 2004, pp. 241-245; J. Hatłas, Urbanizacja Tracji w przededniu oraz w epoce hellenistycznej, [in:] L. Mrozewicz, K. Balbuza (ed.), Miasto w starożytności. Materiały ogólnopolskiej konferencji naukowej Poznań, 19-21 września 2002 r., Poznań 2004, pp. 69-87, here: p. 74.

[33] N. Theodossiev, North-Western Thrace, pp. 98-99.

[34] Ibidem; E. Mircheva, La Téne C Fibulae Kept in Varna Archaeological Museum, [in:] L.F. Vagalinski (ed.), The Lower Danube in Antiquity, International Archaeological Conference Bulgaria – Tutrakan, 6-7.10.2005, Sofia 2007, pp. 65-72, here: p. 71.

[35] L.F. Vagalinski, Burnished Pottery from the First Century to the Beginning of the Seventh Century AD from the Region South of Lower Danube (Bulgaria), Sofia 2002, p. 81, idem, Celtic Pottery in Northern Bulgaria, [in:] idem (ed.), The Lower Danube in Antiquity, International Archaeological Conference Bulgaria – Tutrakan, 6-7.10.2005, Sofia 2007, pp. 73-82.

In addition, imports from Asia Minor, Greece proper and Italy did reach the regions on the Lower Danube. The majority of such artefacts were discovered in wealthy necropolises of the local elites, who must have been the main recipients of such goods[36].

There are serious indications suggesting that items of Celtic provenance arrived in the area in question as political gifts[37]. The Dobruja region in particular was a place were imports from various, culturally distinct environments competed[38]. Here, one notices the conspicuous influence of the Hellenic culture, which is reflected in the products of the local craft, but also in the very propagation of goods turned out by Greek craftsmen[39]. During the Hellenic period, tribes living in the proximity of Greek cities had their own coin struck there. This was practiced by Scythian kings – Atheios (ca 339 BCE), Kanites (early second cent.), Sariakes (ca 179/167) and Celtic ones, such as Kavar (ca 240-218 BCE) and Ailis (late third cent.)[40]. The coins minted in Sborjanovo were small denominations devoid of iconography, which confirms that they served to supply the local market with money[41].

Coin distribution on the territories north of the Haemus changed significantly after Rome had seized Macedonia and transformed it into a province. Research carried out by Evgenij I. Paunov and Ilja. S. Prokopov demonstrates that after that period and before Roman expansion on the Lower Danube, Republican denarii and drachmas from Dyrrhachium and Apollonia would appear in the western part of the future Lower Moesia. Farther east, their numbers dwindled. This does not mean, however, that the denarii were in regular use; the majority were deposited immediately after they had been delivered. It was only later, i.e. after Lucullus' campaigns, when Roman expansion was gaining greater momentum, that they became

[36] N. Theodossiev, North-Western Thrace, p. 96.

[37] A. Rustoiu, Celții Din Transilvania și comunitățile indigene Nord-Balcanice. Schmburi culturali mobilitate individuala, Ephemeris Napocensis 18, 2008, pp. 25-44.

[38] E. Redina, Scytho-Thracian Cultural Contacts in the Northwestern Black Sea Littoral, [in:] J. Bouzek, L. Domaradzka (eds.), The Culture of Thracians and Their Neighbours. Proceedings of the International Symposium in Memory of Prof. Mieczysław Domaradzki, with a Round Table "Archeological Map of Bulgaria", Oxford 2005, pp. 231-238, here: p. 231.

[39] H. Archibald, Greek Imports: Some Aspects of the Hellenic Impact on Thrace, [in:] A.G. Poulter (ed.), Ancient Bulgaria. Papers Presented to the International Symposium on the Ancient History and Archaeology of Bulgaria, p. 1, Nottingham 1983, pp. 304-321.

[40] I. Lazarenko, Bronzovi vladetelski moneti, otsečeni prez IV-III v. pr. Hr. v Dionisopolis i Odesos, INMV 40 (55), 2004, pp. 132-173, here: pp. 132-147; M. Tačeva, About the So-Called Scythian Kings and Their Coinage in the Greek Cities of Thracia Pontica (the End of 3rd-2nd Century B.C.), Sbornik Dobroudja 12, 1995, pp. 7-17, here: p. 15.

[41] T. Stojanov, Spatial Pattern, p. 64.

a means of exchange[42]. A large number of coins discovered between the rivers Timok and Iskăr, dated to the period before the campaign led by Lucullus, may be explained by the fact that the neighbouring Macedonia often suffered plundering raids of peoples inhabiting the area of the aforesaid interfluve[43]. Naturally, those were not the only tribes to do so. People south of the Danube were heavily engaged in pillage and warfare, as armed raids constituted an important branch of the economy[44]. Economically, those regions were so backward that the disparities persisted as long as the second century because local products were inferior to imports. It suffices to compare the pottery from the area of Nicopolis ad Istrum (Butovo, Pavlikeni, Hotnica) with the ceramics from Italy or even areas on the Rhine[45]. Much the same applied to bronze items[46] or other products. This was due to the absence of large manufacturing centres of supraregional scope, i.e. distributing their products beyond the territories neighbouring with Lower Moesia[47].

Polybius provides information on what may have been imported from those areas through the agency and by the cities of Pontus themselves:

> For as regards necessities it is an undisputed fact that most plentiful supplies and best qualities of cattle and slaves reach us from the countries lying round the Pontus, while among luxuries the same countries furnish us with abundance of honey, wax, and preserved fish, while of the superfluous produce of our countries they take olive-oil and every kind of wine. As for corn there is a give-and-take, they sometimes supplying us when we require it and sometimes importing it from us.[48]

The above fragment refers in general to regions on the Black Sea, but a part of products from the list may have equally well been sold by the local tribes to the Greek centres, whence they were transferred further. Such goods possibly included honey, wax, cattle and slaves. Also, timber could be added to Polybius' list. In ancient times, oak forests grew in the area south of Popov, Razgrad, Samuil and the plateau of Stano; in the east, they extended to the rivers Provadijska and Kamčia[49].

[42] E.I. Paunov, I.S. Prokopov, An Inventory of Roman Republican Coin Hoards and Coins from Bulgaria, Milano 2000, pp. 87-92.

[43] Flor., I 39.

[44] F. Papazoglu, Balkan Tribes, p. 450.

[45] B. Sultov, Ceramic Production on the Territory of Nicopolis ad Istrum (IInd – IVth Century), Terra Antiqua Balcanica 1, GSUFF 76/2, 1983 (1985).

[46] R. Nenova-Merdjanova, Production and consumption of bronzework in Roman Thrace, [in:] I.P. Haynes (ed.), Early Roman Thrace. New Evidence from Bulgaria, Portsmouth 2011, pp. 115--134, here: p. 132.

[47] Ibidem.

[48] Polybius, The Histories, transl. by W.R. Paton.

[49] T. Stojanov, Spatial Pattern, p. 57; presence of oak forests in ancient Bulgaria is confirmed by palaeobotanical analyses, see S. Tonkov et. al, Palaeoecological studies at the Kaliakra area,

Oak wood, thanks to the high calorific value, offered an excellent source of fuel for ceramic workshops. The Greek cities on the western coast of the Black Sea, which possessed seafaring fleet, acted as intermediaries in the trade. Importation of olive oil and wine to those west-Pontic cities was its important component. A decrease in the volume of imports reflected poorer efficiency, especially in the production of grain, as well as honey and other commodities mentioned by Polybius. The smaller revenue of Greek cities from foreign trade automatically affected the economic circumstances.

The studies of stamped amphorae discovered in Histria, Callatis, Tomis and those dispersed in smaller numbers across Dobruja demonstrate that the Greek cities on the western coast of the Black Sea experienced peak prosperity in the fourth – third century BCE, when the other cities of Pontus were their main suppliers. The most popular commodities included olive oil and wine from Rhodes, Kos, Kindos, Chios, Pontic Heraclea and Synopa. In the first century BCE, importation from those locations ceased. The only supplier left, though on a much reduced scale, was Rhodes. Wine and olive oil from the island was shipped to Histria and Odessos. However, no stamps were determined on the Callatis amphorae dated to the first century BCE, which might mean a hiatus in importation[50]. It should be noted that stamps on amphorae, despite being a phenomenal source in the study of export and import activities, do not offer a comprehensive picture of the economy in the discussed cities. Nor does cessation of oil and wine import imply that a strong, local production market production emerged. Olives were not

northeastern Bulgarian Black Sea coast: 6000 years of natural and anthropogenic change, Vegetation History and Archaeobotany 20, 1, 2011, pp. 29-40, here: 38.

[50] Literature: V. Canarache, Importul amforelor stampilate la Istria, Bucuresti 1957; the author drew on an old typology of stamps on the amphorae from Synopa Grakov (p. 181), therefore the description of wine and oil importation in the first century BCE is out of date. The typology would be revised later; discussion and revision in: N. Conovici, Problèmes de la chronologie des timbres sinopéens, Pontica 30, 1997, pp. 117-154; importation to particular centres is discussed in M. Lazarov, Antični amfori ot Bălgarskoto černomorie, INMV 9 (24), 1973, pp. 3-52; idem, Amfornite pečati ot Odesos, INMV 10 (25), 1974, pp. 19-56; idem, Tărgovskite vrăzki na Rodos săs zapadnopontiskite gradove prez elinisticheskata epoka, INWV 13 (28), 1977, pp. 1-47; idem, Sinope i zapadnopontijskij pazar, INMV 14 (24), 1978, pp. 11-65; idem, Razprostranenieto na Heraklejskite amfori i Pečati v Trakija, INMV 16 (31), 1980, pp. 5-19; idem, Tărgovijatana Chios săs zapadopontijskite gradove, INMV 18 (33), 1982, pp. 5-15; A. Avram, Les timbres amphoriques. 1. Thasos. Corpus international des timbres amphoriques 1, Bucharest – Paris 1996; A. Minčev, Odessos, [in:] D.V. Grammenos, E.K. Petropoulos (eds.), Ancient Greek Colonies in the Black Sea, vol. 1, Thessaloniki 2003, pp. 209-278, here: p. 248; N. Conovici, The Dynamics of Trade in Transport Amphoras from Sinope, Thasos and Rhodos on the Western Black Sea Coast: a Comparative Approach, [in:] V.F. Stolba, L. Hannestad (eds.), Chronologies of the Black Sea Area in the Period c. 400-100 BC, Black Sea Studies 3, 2005, pp. 97-117.

cultivated in Dobruja due to unfavourable climate, while large-scale production of wine entailed a major risk given the hostility of tribes neighbouring with the Greek centres[51].

Greek cities imported not only oil and wine, but also craft products. Significantly enough, no jewellery dated to the first century BCE was discovered in Odessos; oil lamps and glass vessels are the main evidence of importation of such commodities in that period[52]. Also, only very small quantities of glassware were found[53], therefore drawing any conclusions on such grounds involves a considerable risk.

The picture offered by the stamps on amphorae should be supplemented with data from studies on monetary circulation, from which it follows that the Greek cities on the western coast of the Black Sea issued a large volume of mintage, with the greatest number of coins minted in 88-89 and 75-74 BCE[54]. This does not mean an increased trade activity, as might be expected, but indicates that the coin was struck for Mithridates VI's war with Rome[55]. However, the Greek cities which allied themselves with Mithridates VI were motivated not only by undoubted fear of the latter, but also took economic considerations into account, because the king of Pontus guaranteed stability in the region, while Pontic garrisons in Greek cities protected them from aggressive neighbours. In order to understand it, one should consider the last words of the above excerpt from Polybius, which indirectly attest to the strained relations between the Greek cities and the local tribes. Another, much later account which possibly describes the position in which the farmers of Tomis found themselves is the aforesaid text by Ovid, in which the author refers to bands of raiders plundering the farmlands of the city[56]. Epigraphic material offers further proof to the difficult situation of the cities, most likely indicating its onset. Third-century BCE inscriptions from Histria

[51] On the Greek cities in the Hellenic period see D.M. Pippidi, D. Berciu, Din istoria Dobrogei, pp.129-136, 219.

[52] A. Minčev, Odessos, p. 249.

[53] Idem, Antično stăklo (V-I v. pr. n. e) văv Varnenskija muzej, INMV 14 (29), 1978, pp. 103--111.

[54] G. Talmaţchi, The Mints' Issues from the Black Sea Coast and Other Areas of Dobruja. The Pre-Roman and Early Roman Periods (6th Century BC – 1st Century AD), Cluj-Napoca 2007, p. 41.

[55] M.J. Price, Mithradates VI and Coinages of Black Sea, The Numismatic Chronicle, 1968, pp. 1-12, here: pp. 4-5; M. Musielak, Społeczeństwo, p. 87; apart from issuing coin for the war, G. Talmaţchi (The Mints' Issues, p. 41) sees it as a testimony to trade, but such a role should rather be attributed to earlier emissions.

[56] Ovid., Tristia III, 10. 50-79.

mention the following persons: Diogenes, son of Diogenes, who lent the city the total of 2,000 staters for the purchase of grain and Dionysios, son of Strouthion who gave 1,000 for the same purpose. This confirms that at the time Histria experienced problems with adequate economic exploitation of the areas surrounding the city[57]. The economic position of the western Pontic cities was exacerbated by the Egyptian competition on the grain market in Attica[58]. Therefore any setbacks in cultivation and further exportation of crops resulted in negative economic aftermath. Histria was definitely facing financial trouble, as evinced by the inscription dated to 90/89 BCE, which refers to the city's failure to pay back a loan taken out with Menon of Byzantium. As a result, Histria's envoys fell into captivity, only to be rescued form Byzantine hands by the soldiers of Mithridates VI[59]. Thus, as previously observed, those were the economic factors which compelled Greek cities on the western coast of the Black Sea to enter into an alliance with Mithridates VI. A garrison of his troops was stationed in Histria[60], which ensured safety to the city and enabled further cultivation of cereal in the adjacent land. The obligation to maintain the military units was offset by the benefits of security.

The period of stability did not last long. The alliances did not protect Greek cities from the calamities which befell them when Lucullus' (Marcus Terentius Varro Lucullus) troops arrived in 72/71 BCE[61]. Narrative sources indirectly report that the campaign was waged with considerable brutality, not only with regard to the Danubian tribes but the Pontic cities as well. The governor of Macedonia seized the Thracian cities on his way before he crossed the Haemus (there were no Thracian cities north of the mountains, hence no mentions). The first Greek polis which fell into his hands was Apollonia Pontica, from which he looted the statue of Apollo[62]. Subsequently,

[57] ISM 1-3, 19; M. Musielak, Społeczeństwo, p. 75; M. Rostovtzeff, The Social and Economic History of the Hellenistic World, vol. II, ed. 2, Oxford 1998, p. 765.

[58] G. Talmaţchi, The Mints' Issues, p. 40.

[59] M. Musielak, Społeczeństwo, p. 87; A. Avram, O. Bounegru, Mithridates al VI-lea Eupator şi coasta de vest a Pontului Euxini. În jurul unui decret inedita de la Histria, Pontica 30, 1997, pp. 155-165, here: p. 163.

[60] M. Musielak, Społeczeństwo, p. 90.

[61] Before Lucullus, the territories of the Lower Danube were penetrated by the troops of Gaius Scribonius Curio and Appius Claudius Pulcher, see S.E. Stout, The Governors of Moesia, Princeton 1911 (introduction); A. Stein, Die Legaten von Moesien, Budapest 1940, p. 10.

[62] Strab., VII 6; App. IXb, 30; the actions of the Roman army in a hostile territory are described directly by Tac., Hist. II 87; admittedly, the fragment refers to the civil war after Nero's death, but certain behaviours and actions are universal regardless of the period.

he captured and possibly destroyed Callatis, Parthenopolis, Tomis, Histria and Bizone[63], as well as established garrisons in Mesambria and Dionysopolis[64]. However, the dependence of the cities from Rome lasted only a decade, until 61 BCE, when the troops of Gaius Antonius Hybrida were defeated at Histria by the Bastarnae[65]. It should be noted at this point that Hybrida's expedition, originally directed against the Dardanes, led to adverse aftermath in Greek cities and the neighbouring areas. The forces of the governor wintered in 62/61 BCE in the vicinity of Dionysopolis[66] and economic ramifications must have been negative given the Republican system of provisioning the army, whereby all expense was to be borne by nearby urban centres[67] while enemy's land was to be plundered[68]. According to Cassius Dio[69], Hybrida inflicted harm not only on the Dardanes but also on the neighbouring tribes. The location of his defeat (Histria), suggests that Hybrida ravaged and pillaged the tribal territories on the Lower Danube[70]. Soon after Hybrida's marauding expedition, the regions south of the Danube had to face the greatest disaster so far: the invasion of the Getae under king Burebista, who in 55 BCE brought destruction to the territories south of the Danube, down to the frontier with Macedonia and Illyria, including Greek cities on the Black Sea coast with the exception of Mesambria[71]. The rule of Burebista over that area proved – especially for the Greeks – catastrophic in terms of demography and economy. Fearing the Getic army, many

[63] Eutropius VI 10; Lucullus' occupation of Greek cities is mentioned in: Fest., IX.

[64] A. Avram, Histria, [in:] D.V. Grammenos, E.K. Petropoulos (eds.), Ancient Greek Colonies in the Black Sea, vol. 1, Thessaloniki 2003, pp. 279-340, here: p. 316.

[65] The legionary emblems lost at the time (see Cass. Dio 50, 38, 10) were recaptured several decades later (Cass. Dio 51, 26, 5).

[66] M. Musielak, Społeczeństwo, p. 91.

[67] J.P. Roth, The Logistics, p. 117.

[68] P. Erdkamp, The Corn Supply, p. 49.

[69] Cass. Dio 50, 38, 10.

[70] Cassius Dios' account provides no information which could imply any rebellion taking place in the Greek cities and their contribution to the success of the Bastarnae.

[71] Dio Chrys. 36, 4; Ior. Get. 67; M. Musielak (Społeczeństwo, p. 92) refers to inscription IGBR I 323, which proves that Burebista did not capture Mesambria; In The Military-Political and Diplomatic Activities of Burebista in the Lower Danube Region, Thracia 17, 2007, pp. 159-172, here: p. 159, S. Dimitrova advanced the hypothesis that of all cities of western Pontus, the only ones to sustain harm during Burebista's assault were Histria and Odessos, whereas Tomis and Callatis "did not suffer incursions"; the drawback of the hypothesis is that it does not tally with narrative sources, while contemporary development hampers archaeological research both in Tomis (Constana) and in Callatis (Mangalia), therefore the conjecture will not be verified archaeologically in the nearest future.

inhabitants of the cities fled[72]. It was only after the death of Burebista and the collapse of his kingdom that the centres recovered economically.

The demographic structure changed: the local Geto-Thracian element began to predominate[73]. Still, the death of Burebista had its negative consequences for the Getic population living near Sborjanov, as the settlements dated to that period were destroyed[74].

3. Roman conquest of the Lower Danube – the aftermath

After the campaigns of Marcus Licinius Crassus in 28-27 BCE, Greek cities acknowledged Roman protection, thus entering a new stage in their history. The actions of the governor of Macedonia in the regions on the Lower Danube had broader consequences. Using both cruel methods and diplomacy, he managed to subdue almost all tribes north of the Stara Planina mountains[75]. This placed the populations living on the Lower Danube in an unenviable situation, which worsened even more due to aggressive forays of neighbours from beyond the Danube and further military interventions of Rome, for instance in 16 BCE, when Sarmatians were repulsed by the troops commanded by Lucius Tarius Rufus[76]. The incursion of Dacians, Sarmatians and the Getae, which took place after the suppression of the Thracian revolt (13-10 BCE) was probably countered in 9-6 BCD by Cornelius Lentulus[77]. In 9 BCE, Ovid wrote about trans-Danubian tribes which pillaged the areas adjacent to the river, having crossed it easily over its frozen surface[78]. It was certainly an upshot of the Pannonian-Dalmatian rebellion (6-9 CE), which

[72] M. Musielak, Społeczeństwo, pp. 92-95; A. Avram, Histria, p. 317; A. Minčev, Greek traditions and Roman taste: continuity and change in Odessos/Odessus (3rd c. B. C. – 3rd c. A. D.), [in:] I.P. Haynes (ed.), Early Roman Thrace. New Evidence from Bulgaria, Portsmouth 2011, pp. 15-39, here: p. 22.

[73] A. Minčev, Greek traditions, p. 22.

[74] K. Dimitrov, The Getic Territory of Sboryanovo, Northeast Bulgaria in the Late Hellenistic Age (2nd Century BC – 1st Century AD), Thracia 17, 2007, pp. 369-390, here: p. 373.

[75] A. Stein, Die Legaten, p. 12; Cass. Dio 51, 25, 1.

[76] A. Stein, Die Legaten, p. 13; T. Sarnowski, Wojsko rzymskie, p. 17.

[77] Cass. Dio. 54, 36, 2-3; Tac., Ann. IV 44; T. Sarnowski, Wojsko rzymskie, p. 17; L. Mrozewicz, Prosopographia Moesiaca VIII: Cn. Cornelius Lentulus (10-6 przed Chr.), [in:] P. Berdowski, B. Blahaczek (ed.), Haec Mihi In Animis Vestris Templa. Studia Classica in Memory of Professor Lesław Morawiecki, Rzeszów 2007 [2008], pp. 213-219, here: p. 218.

[78] Ovid., Tristia III 10. 52-54; Dacians easily crossed the ice-bound Danube, see Cass. Dio. 54, 36, 2-3.

the Dacians exploited to carry out an attack south of the Danube[79]. All those events in the first century BCE and the early years of the new era contributed to an even deeper economic retardation of the already sparsely populated lands north of the Haemus, and created no conditions stimulating the growth of urban centres. The already highlighted disparities with the territories south of the Stara Planina must have become particularly pronounced at the time. The contrasts are unequivocally depicted by Tacitus who remarked on the division of Thrace during the reign of Augustus. The southern part, bordering on Greece, which fell to Cotys, was a fertile and urbanized land, whereas the territory granted to Rhescuporis, situated between the mountains and the Danube, was wild, barren, and had hostile tribes as its neighbours[80]. This is also confirmed by archaeological research, at least in the case of southern Dobruja. Exploration of the Getic tumuli demonstrated that in the second – first century BCE the population dwindled systematically. Additionally, funerary equipment was much poorer than in the previous periods, which may be seen as representative for the entire Dobruja[81]. Until the reign of Claudius, the territories on the Lower Danube were of marginal importance among political and military concerns of Rome[82]. From its establishment in 12 or 15 CE[83] to Claudius' assumption of the throne, Moesia was not a separate entity but constituted a part of an extensive administrative-military bloc, along with Macedonia and Achaia[84]. Dimum was the easternmost military post on the Danube line; the land which extended from that point to the very estuary of the river was called *ripa Thraciae*. It was controlled, at least in the formal sense, by the Kingdom of Thrace which at the time was fully dependent from Rome[85].

The achievements of Claudius in restoring stability to the Lower Danube regions are undeniable. The emperor abolished the client kingdom of Thrace

[79] L. Mrozewicz, Prosopographia Moesiaca VIII, p. 215.

[80] Tac., Ann. II 65.

[81] S. Torbatov, The Getae, p. 512.

[82] R. Syme, Lentulus and the Origin of Moesia, JRS 24, 1934, pp. 113-137, here: p. 133.

[83] The date when Moesia was established is highly disputable, with the entire debate relying on two sources: Tac., Ann. I 80 and Cass. Dio 58, 25, 4; various suggestions of the date are compiled in R. Ivanov, Das römische Verteidigungssystem an der unteren Donau zwischen Dorticum und Durostorum (Bulgarien) von Augustus bis Maurikios, Bericht der Römisch-Germanischen Kommission 78, 1997, pp. 467-640, here: p. 477.

[84] Tac., Ann. I 80; Cass. Dio 58, 25; A. Stein, Legaten, p. 18; R. Syme, The Early History of Moesia, [in:] idem, The Provincial at Rome and Rome and the Balkans 80 BC–AD 14, ed. A. Birley, Exeter 1999, pp. 193-220, here: p. 208.

[85] Researchers estimate the extent of *ripa Thraciae* on the basis of the *horothesii* of Laberius Maximus: ISM I 67-68.

and brought the entire stretch of the Danube under direct Roman control. The amalgam of three Balkan provinces (Moesia – Achaia – Macedonia) was dissolved, while *Legio VIII Augusta* was deployed to Novae. Also, by means of military intervention north of the Black Sea, Claudius secured communication routes between Moesia, Asia Minor and Syria[86]. Naturally, that was just the first step on the way to creating the province of Lower Moesia and incorporation of the entire Lower Danube into the economic structures of Imperium Romanum. The area east of Novae was not encompassed by the system of Roman fortifications, but it was controlled by the river fleet[87], which had a bearing on the further development of those lands. The area between the Timok and the Yantra, hitherto lagging very much behind in social and economic terms, was relatively soon exposed to Roman civilisation.

For a certain period of time, Claudius' Danubian policy ensured stability in the region[88]. The peaceful spell was interrupted by the Sarmatian Roxoloni, who regularly raided the territory in 67-70 CE. On top of that, Dacians became more active from 69 CE onwards. The situation deteriorated further following the outbreak of civil war after Nero's death, as a substantial contingent of troops left the Danubian regions to fight on Vespasian's side. The fact that *legio V Alaudae*, sent to the Lower Danube area after those events simply vanished, most likely slaughtered to the last man by the Dacians, attests to the gravity of the situation. The reign of the new dynasty – the Flavians – brought about qualitative changes in the discussed regions. In the first place, army was deployed to the area east of Novae, this securing the frontier of the empire. The last of the Flavian house, Domitian, was particularly active there, compelled to direct intervention by the impending threat from the Dacians. Although Roman historiography paints him black,

[86] On Claudius' policy for the Danube area see L. Mrozewicz, Kaiser Claudius und die Donaulän- der, EOS 87, 2000, pp. 295-310; on the liquidation of Thrace: J. Kolendo, Aneksja Tracji za cesarza Klaudiusza, [in:] L. Mrozewicz, K. Ilski (ed.), Studia Moesiaca 1, Poznań 1994, pp. 87-100; Moesia as a separate province and the military situation: A. Stein, Die Legaten, p. 17; T. Sarnowski, Wojsko rzymskie, p. 28; an interesting hypothesis has been advanced, namely that Moesia functioned as a standalone province in the operational-military sense already during the governorship of Poppeus Sabinus; "Kriegsoperationen" see M. Mirković, Die Anfänge der Provinz Moesia, [in:] I. Piso (hrsg.), Die römischen Provinzen. Begriff und Gründung (Colloquium Cluj-Napoca, 28. September – 1. Oktober 2006), Cluj-Napoca 2008, pp. 249-270, here: p. 258; Roman military operations in the northern Black Sea: T. Sarnowski, Das römische Heer in Norden des Schwarzen Meeres, Archeologia 38, 1988, pp. 61-98, here: pp. 61-66.

[87] T. Sarnowski, Wojsko rzymskie, p. 28.

[88] L. Mrozewicz, Kaiser Claudius, p. 309.

the rule of emperors should be judged in the light of their legacy. Domitian assured peace on the Lower Danube and made the first step in the strategic scheme to conquer Dacia, dividing the province into Upper (superior) and Lower Moesia (inferior)[89].

4. Lower Moesia – an outline of political history

Emperor Domitian was forced to divide Moesia in the wake of earlier failures in the war with Dacians (the defeats of Gaius Oppius Sabinus in 85 CE and Cornelius Fuscus the following year). Strategic considerations were the critical factor behind the decision. Upper Moesia would serve as a region where the army concentrated while Lower Moesia secured the flanks of the Roman offensive, controlling the area of the Black Sea at the same time[90]. The line dividing both provinces was demarcated along the river Ciabrus (Cibrica). The frontier between Lower Moesia and Thrace is difficult to reconstruct, as it underwent several modifications. In the east, Lower Moesia extended to the coast of the Black Sea, including Mesambria and its territory.

Trajan's Dacian wars in 101-102 and 105-106 CE were the pivotal events as far as the shape and future economic development of Lower Moesia was concerned[91]. A new province, Dacia, came into existence in the north, thanks to which western part of Moesia Inferior ceased to function as a frontier territory. This was evinced in the transfer of the legion from Oescus to Troesmis[92]. The territory of Lower Moesia was systematically expanded (Map 1).

In 136, Montana was incorporated into Lower Moesia, while the western border was moved from the line of the lower Ciabrus to the mouth of the Almus (Lom)[93] but, again, the reconstruction of the southern border is exceedingly difficult[94]. Nicopolis ad Istrum and Marcianopolis, the cities established after the Dacian wars may offer some clue, since they were

[89] T. Sarnowski, Wojsko rzymskie, pp. 30-31; L. Mrozewicz, Flawiusze nad Dunajem, [in:] idem (ed.), Studia Flaviana I, Poznań 2010, pp. 67-79, here: p. 68.

[90] L. Mrozewicz, Strategiczne przesłanki utworzenia rzymskiej prowincji Mezji Dolnej, Meander 30, 7-8, 1975, pp. 281-291; idem, Flawiusze nad Dunajem, pp. 72-73.

[91] K. Strobel, Untersuchungen zu den Dakerkriegen Trajans, Bonn 1984, p. 13.

[92] A. Aricescu, The Army, p. 11.

[93] M. Tačeva, The Northern Border of the Thracia Province to the Severi (2. from Nicopolis ad Istrum to Odessos), Thracia 11, 1995, pp. 427-434, here: p. 434.

[94] This section of the frontier might have remained labile until the final years of Hadrian's reign, see A. Tomas, Inter Moesos et Thraces, Archeologia, p. 39.

integrated into Thrace, not Lower Moesia. On these grounds, it is presumed that at the time Lower Moesia was a narrow strip of land between Thrace and the Danube[95]. Boris Gerov maintains that the contemporary boundary of Lower Moesia ran south of Montana, east of Butovo, north of Nicopolis ad Istrum and Maslarev, and then extended further almost in a straight line above Marcianopolis, reaching the territories of the Greek cities, and subsequently turning south to encompass Mesambria[96].

This course of the province's boundaries changed in 193 CE, when Nicopolis ad Istrum and Marcianopolis along with their adjacent territories were incorporated into Lower Moesia, while Mesambria became a part of Thrace[97]. Also, during the reign of Septimius Severus, Tyras and Olbia were merged into Moesia[98]. From that moment on, the western boundary of the province was delimited by the mouth of the Almus, then the line of the Danube down to the Black Sea, while the range of *Haemus Mons* separated Lower Moesia from Thrace. The frontiers lasted in that shape until 271 (except for Tyras and Olbia, which the Romans lost in 296-270[99]), when following the evacuation of Dacia the western part of Lower Moesia with Oescus was transformed into a separate province called Dacia Ripensis; Scythia Minor was created in Dobruja, while the remaining territory became the Moesia Secunda[100].

In consequence, Lower Moesia consisted of regions which differed in terms of urban and economic development. From the standpoint of these deliberations, the area of greatest interest stretched along the Danube, where the army presence and the associated settlement were the predominant

[95] Ibidem.

[96] B. Gerov, Die Grenzen der römischen Provinz Thracia bis zur Gründung des Aurelianischen Dakien, [in:] idem (hrsg.), Beiträge zur Geschichte der römischen Provinzen Moesien und Thrakien, Gesammelte Aufsätze, Bd. III, Amsterdam 1998, pp. 437-467, here: p. 442, map; a section of that boundary is reconstructed on the basis of stone markers with the formula inter Moesos et Thraces; two such specimens were discovered in Novae, which most likely proves that the boundary separating the Moesi and Thracians ran nearby, see J. Kolendo, Historia odkryć i publikacji inskrypcji w Novae, Novensia 1, 1987, pp. 37-51; it is possible that they show the extent of the territory of Nicopolis ad Istrum, see L.C. Ruscu, On Nicopolis ad Istrum and Her Territory, Historia 56, 2, 2007, pp. 214-229, according to the author, the municipal domain of Nicopolis ad Istrum under Septimius Severus extended as far as the Danube.

[97] D. Boteva, The South Border of Lower Moesia from Hadrian to Septimius Severus, [in:] P. Petrović (ed.), Roman Limes on the Middle and Lower Danube, Belgrade 1996, pp. 173-176, here: p. 174; according to the author, the frontiers of Lower Moesia were changed between January and March 193 by Pertinax.

[98] K. Królczyk in Propagatio Imperii, pp. 146-169.

[99] T. Sarnowski, Wojsko rzymskie, p. 145.

[100] Ibidem, p. 123; Eutropius IX, 15.

features. Nicopolis ad Istrum and Marcianopolis were located further into the province. The Greek cities on the Black Sea, i.e. Olbia, Tyras (seized by the Goths in the third cent.), Histria, Tomis, Callatis, Dionysopolis, Odessos and Mesambria were in most aspects distinct urban entities. One must not overlook Montana in the south-western part of Lower Moesia, a highly militarized mining region with a substantial economic potential[101], or the area of the present-day district of Shumen, which in antiquity was poorly urbanized but possessed high agricultural potential[102].

As a frontier province, Lower Moesia was exposed to aggression from the outside. Its very creation has to be attributed to the war that Domitian waged on the Dacians beyond the Danube in 85-89, a war which was only partially successful. As previously observed, the Dacian threat was ultimately eliminated by Trajan's two campaigns in 101-102 and 105-106. From that moment onwards peace reigned in Lower Moesia – save for minor incidents – offering favourable conditions for economic development. The province found itself in serious danger only in 170, during the raid of the barbarian Costoboci who made it across the Danube near Noviodunum and penetrated as far as Attica[103]. Still, the situation was promptly brought under control, and apart from inconsequential incidents on the frontiers, the army effectively fulfilled its role. However, the year 238 saw the first mass incursions of trans-Danubian peoples[104]. Gothic invasion under chieftain Cniva in 250-251 was a disastrous one, with a substantial territory south of the Danube laid to waste. The invaders captured Philippopolis and, even worse for the empire, not only was the main Roman force crushed at the battle of Abrittus in 251, but the emperor Decius was killed in combat as well[105]. At the time, the territory on the Lower Danube was one of the most volatile hot spots along the frontier of Imperium Romanum. The final major invasions which took place in the third century CE were the plundering

[101] M. Binev, Montana, [in:] R. Ivanov (ed.), Rimski i rannovizantijski selišta v Balgarija, pp. 160-182.

[102] B. Gerov, Landownership, p. 121.

[103] V. Varbanov, Barbarian Invasions in the Provinces of Moesia Inferior and Thracia Between A.D. 138-192 (According to the Numismatic Data), [in:] L.F. Vagalinski (ed.), The Lower Danube in Anitiquity, International Archaeological Conference 6-7.10.2005, Bulgaria – Tutrakan, Sofia 2007, pp. 153-170, here: pp. 162-163.

[104] B. Gerov, Die Einfälle der Nordvölker in den Ostbalkanraum im Lichte der Münzenschatzfunde, I. das II. und III. Jahrhundert (101-284), ANRW 6, 1977, pp. 110-181.

[105] J. Kolendo, Novae during the Goth Raid of 250/1 (Iordanes. Getica, 101-103.), [in:] T. Derda, P. Dyczek, J. Kolendo (eds.), Novae. Legionary Fortress and Late Antique Town. A Companion to the Study of Novae, Warsaw 2008 [2009], pp. 117-131.

expeditions of Goths and Herules in 267-269. Eventually, Claudius II put an end to the massive incursions, winning a victory over the invaders at the battle of Naissus[106]. Dacia, however, could not be held any longer; in 271 CE emperor Aurelian decided to evacuate the province[107].

Apart from protecting the boundaries from outside threat, Lower Moesian soldiers counted as an important factor in the Roman "game of thrones". Septimius Severus, for instance, undoubtedly owed his coming into power largely to the forces stationed along the Danube[108].

During the imperial crisis, the significance of the Danubian troops could not be ignored, as they effectively endorsed many usurper emperors[109]. It was only the reign of Diocletian which restored stability to the Lower Danube. This was the beginning of a new chapter in the history of the Roman Empire, though without Lower Moesia which by then had ceased to exist.

[106] T. Kotula, Kto wygrał bitwę z Gotami pod Naissus: cesarz Galien w 268 r. czy cesarz Klaudiusz II w 269 r.?, Xenia Posnaniensia 6, 1994.

[107] T. Sarnowski, Wojsko rzymskie, p. 121.

[108] During the civil war, the *vexillationes* of the Lower Moesian contingent fought for Septimius Severus, see F. Matei-Popescu, The Roman Army in Moesia Inferior, p. 271.

[109] The army of Lower Moesia hailed Decius and Trebonius Gallus as emperors, see J. Kolendo, Novae during the Goth Raid; and backed the usurpers Ingenuus and Regalinus: L. Mrozewicz, Rozwój ustroju, p. 12.

Chapter II

The garrison of Lower Moesia and the scale of militarization

For a better understanding of the economic role of the army, one should attempt to estimate the number of units stationed in Lower Moesia. It would also be important to calculate the approximate numerical strength of the military contingent in the province. However, in order to arrive at more comprehensive results, the first thing to do is to define the model sizes of particular units of the Roman armed forces. Only then can one endeavour to determine the actual number of soldiers stationed in Lower Moesia. Secondly, if the scale of militarization is to be grasped, the total number of soldiers should be collated with demographic data, and the results converted into percentage values.

1. Strengths of the Roman military units

a) legion

Even the best documented military formation of the ancient time, the legion, represents a major problem when one attempts to determine the number of soldiers serving in it. This is chiefly due to the divergence of source accounts in this matter. For instance, a late second-century author, Sextus Pompeius Festus, stated that a legion numbered 6,200 soldiers[1], while in the fourth century Servius provided the number of 6,000 infantry and 300 cavalry[2]. Isidore of Seville, who lived in the sixth century, offered still different and contradicting information: at one point he mentions 6,600 soldiers, only to state elsewhere that a legion consisted of 6,000 men[3].

[1] Festus, De verb. sign. 453 L: Sex milium et ducentorum hominum legionem primus Gaius Marius conscripsit, cum antea quattuor milium fuisset, unde etiam quadrata appellabatur.

[2] Serv., Aen. VII. 274.1-2.

[3] Isid., Etym. XIX. 33.2: Balteum cingulum militare est, dictum pro quod ex eo signa dependant ad demonstrandam legionis militaris summam, id est sex milium sescentorum, ex quo numero et ipsi consistunt, idem, Legio sex milium armatorum est, ab electo vocata, quasi lecti, id est armis

Jonathan Roth argues that the data applies to the Republican period; later authors quote it without making the effort to verify it[4]. Even the best known antique work on the Roman military, i.e. *Epitoma rei militaris* by Flavius Vegetius Renatus, who lived during the reign of Theodosius the Great, includes numerous inconsistencies which lead to some confusion. For example, Vegetius writes at one point that the Illyrian *mattiobarbuli* legions numbered 6,000 soldiers[5], and somewhat further into the text quotes the number of 6,000 yet again, by way of contrast between the rival armies of Greece and Macedonia which existed in the Republican period[6]. Hence the fragment must refer to the times of the Republic. The last piece of information Vegetius provides regarding the complement of a legion states 6,100 infantry and 730 horsemen[7]. This is preceded by a detailed description of the first cohorts, whose size and significance overshadowed other component units of the legion; the cohort is said to number 1,105 soldiers on foot and 132 cavalry, while the remaining nine cohorts consisted of 555 infantrymen and 66 horsemen. Also, according to the author, there were 55 centuries to a legion in all[8]. This, albeit very briefly, demonstrates the discrepancies encountered in the narrative sources regarding the strength of a Roman legion.

Another problem is both fragmentariness of the surviving sources and their derivative nature, as the data they contain was usually mechanically adopted from earlier writers. This is evinced in *De munitionibus castrorum*

electi. Proprie autem Macedonum phalanx, Gallorum caterva, nostra legio dicitur; Isid., Etym. 47: Legio habet sexaginta centurias, manipulos triginta, cohortes duodecim, turmas ducentas.

[4] J. Roth, The Size and Organization of the Roman Imperial Legion, Historia 43, 3, 1994, pp. 346-362, here: p. 350.

[5] Veg., Epit. I. 17: mattiobarbuli. The name comes from two Illyrian legions, which in total consisted of 6,000 soldiers. Vegetius described two Illyrian legions whose name apparently originated with the hurled projectile, but researchers believe that these are rather *numeri* from Diocletian's times, see J. Roth, The Size, p. 349.

[6] Veg., Epit. II. 2. Denique Macedones Graeci Dardani phalangas habuerunt, ut in una phalange armatorum VIII milia censerentur. Galli atque Celtiberi pluresque barbarae nationes cateruis ute- bantur in proelio, in quibus erant sena milia armatorum. Romani legiones habent, in quibus singulis sena milia, interdum amplius militare consuerunt.

[7] Veg., Epit. II. 6: His decem cohortibus legio plena fundatur, quae habet pedites sex milia centum, equites DCCXXX. As H.M.D. Parker aptly noted in The Antiqua Legio of Vegetius, The Classical Quarterly 26, 3/4, 1932, pp. 137-149, here: p. 147: there should be 726 riders (66 × 9 + 132= 726).

[8] Veg., Epit. VI. 6.: …una legione decem cohortes esse debere. Sed prima cohors reliquas et numero militum et dignitate praecedit…habet pedites mille centum quinque, equites loricatos CXXXII, et appellantur cohors miliaria…Secunda cohors habet pedites DLV, equites LXVI…Tertia cohors similiter habet pedites DLV, equites LXVI…Cohors X habet pedites DLV, equites LXVI.

by Pseudo-Hyginus from the first half of the second century, in which there is no information on the number of soldiers in a legion. Therefore, one has to settle for the otherwise valuable note that there were 80 soldiers to a century, 600 to a cohort, and that the first century was twice as large as the other ones. Thus, if the above is supplemented with data found in Maurus Servius Honoratus, who should be credited with information on the organization of a legion[9], it may be assumed that it had 10 cohorts, nine of which numbered 480 men, and only the first consisted of 960, which yields the total of 5,280 soldiers. The remainder were auxiliary personnel and, possibly, freedmen and slaves; if these are added, the legion's full complement may have amounted to 6,600 people[10]. Besides Hyginus' work, indirect information may be inferred from a late fourth-century collection of biographies of the emperors, known as *Historia Augusta* or *Scriptores Historiae Augustae*, which contains a description of the phalanx created by Severus Alexander (222-235), composed of six legions totalling 30,000 soldiers[11], which means that each legion had 5,000 men.

As previously noted, the first cohort was distinct from the others, which presents another problem in research. That cohort was an exceptional and vital element within the structure of a legion, as both Pseudo-Hyginus and Vegetius observe. The former claimed that *cohors prima* had a double complement[12], while according to the latter it was the most numerous (1,105 infantry and 132 cavalry). Vegetius did more than just provide figures, enhancing his description with a more detailed account of its internal organization, in which the *primus pilus* led four centuries of the first line, i.e. 400 soldiers. *Primus hastatus* commanded two second-line centuries of 200 men. The *princeps* of the first cohort had 150 men under him, which meant a century enlarged by a half. *Secundus hastatus* would also lead 150 men, while *triarius prior* 100.

Thus the *ordinarii* held command over ten centuries of the first cohort[13]. The size of the first cohort as reported by Vegetius, i.e. comprising

[9] Maurus Servius Honoratus, In Vergili Aneidos, 11. 463: legio…habebat decem cohortes, sexaginta centuria…

[10] J. Roth, The Size, p. 361 and G. Cupcea, F. Marcu, Size and Organization of the Roman Army and the Case of Dacia under Trajan, Dacia 50, 2006, pp. 175-194, here: p. 181.

149 J. Roth, The Size, p. 361.

[11] HA, Alex. Sev. 50.5.

[12] Hyg., De mun. castr. 3: Cohors prima…duplum numerum habet.

[13] Veg., Epit. II. 8.: …primi pili…uerum etiam quattuor centurias, hoc est CCCC milites, in prima acie gubernabat…primus hastatus duas centurias, id est CC homines…Princeps autem primae cohortis centuriam semis hoc est CL homines, gubernabat…Triarius prior centum

10 centuries, is questioned in science, on the grounds that it is not supported by other sources. Researchers more readily debate whether the first cohort was as others composed of six centuries[14], or whether it was five, with a twofold number of soldiers in each[15]. Inscriptions suggest that the first cohort was indeed larger in size and that it most likely consisted of five centuries. However, epigraphical sources apply to a strictly defined time frame, i.e. the period from 86 CE to the early third century[16]. Consequently, it is impossible to determine when its complement was increased and, if it did take place, reduced to the original size, equal to the remaining nine units[17]. This is a crucial issue as it concerns a substantial figure of almost 480 legionaries, and thus resolving whether a legion numbered 4,800 or 5,200 men[18].

The legion also included a detachment of cavalry. The numbers of the latter are provided in two surviving sources. The account of Flavius Josephus reveals that a legion had 120 horsemen[19]. Meanwhile the already cited Vegetius mentions the figure of 726 cavalry. It is conjectured that the latter number refers to the state of affairs after the reforms of emperor Gallienus[20]. The notion broadly shared in science is that until the reform took place, there were 120 horsemen to a legion[21]. However, this does not seem so

homines guberna- bat. Sic decem centuriae cohortis primae a quinque ordinariis regebantur… centuriones, qui singulas centurias curabant… Secunda cohors habebat centuriones quinque; similiter tertia quarta usque ad decimam cohortem. In tota autem legione errant centuriones quinquaginta quinque.

[14] According to Roth, The Size, p. 350: the division of the first cohort into five centuries is a myth of contemporary science. The researcher believes that it shared the system with the other nine cohorts, i.e. it relied on the manipular system with six centuries, with the exception that the centuries of the first cohort were twice as large.

[15] Thus G. Webster, The Roman Imperial Army of the First and Second Centuries AD, London 1969, p. 114; and D.J. Breeze, The Organization of the Legion: The First Cohort and the Equites Legionis, JRS 59, 1-2, 1969, pp. 50-55, here: p. 50.

[16] CIL III 6178; the inscription, originating from Troesmis and dated to 134 CE, mentions 40 soldiers in cohors I, 17 in cohors II, 14 in III, 10 in IV, 12 in IX; as regards CIL III 14507, dated to 195, J. Roth (The Size, note 99, p. 358) believes that the inscription cites 47 persons for cohors I, 22 for cohors II and 18 soldiers for cohors III.

[17] S.S. Frere, Hyginus and the First Cohort, Britannia 11, 1980, pp. 51-60.

[18] G. Cupcea, F. Marcu, Size and Organization, p. 179; perhaps the problem may be resolved when Polish archaeological expedition has explored the barracks of the first cohort in Novae, at the camp of the First Italian Legion, whose timber phase coincides with the Flavian period, and the stone phase with Trajan's reign.

[19] Ios., Bell. Iud. III. 4. 2.

[20] Zos., I. 52. 3; H.M.D. Parker, The Antiqua Legio, p. 145; K. Dixon, P. Southern, The Roman Cavalry. From the First to the Third Century, London 1992, p. 30.

[21] K. Dixon, P. Southern, The Roman Cavalry, p. 127.

straightforward, because the number of cavalry in a legion depended on multiple factors, such as ongoing war or peacetime conditions as well as local circumstances[22]. The cavalry served as a security force[23], carried out reconnaissance and were assigned patrol duties or acted as escort and couriers[24]. It is likely that the size of a legion's mounted unit was affected by the availability of horses trained for combat. From the standpoint of studies into the strength of the legion, the size of the cavalry detachment is not that important – apart from economic considerations – because if it is true that cavalry was not a separate formation within the legion, then for administrative reasons each horsemen was attached to individual centuries[25]. Thus, in the estimations of the total complement of a legion, they are included in the overall count instead of being added separately.

The same applies to the personnel operating siege engines. According to Vegetius, one carroballista required a crew of 11 men, while a legion had 55 such machines. Additionally, there was one onager for each cohort[26]. This yields a substantial number of 715 soldiers delegated to the task. However, researchers are of the opinion that there were no more than 150-200, fighting in the battlefield aside from the main force; moreover, each legionary was trained to operate siege engines[27].

Comparisons with the legions of the Republican period do not contribute much to the issue. They are known to have been called up only when a military campaign was undertaken. The situation changed in the imperial times, when legions were formed permanently, and defending the boundaries of the state was their main task. This in no way reduced their combat value, as offensive actions they engaged in at the time clearly demonstrate[28].

It would seem that in the early Empire, the organization and the numerical strength of the legion had become sufficiently well-established to last without much change until the great reforms of the late third and the early fourth century. However, this was not the case. It is certain that the legion never reached a consistent, model complement[29], while its internal organization

[22] The location of deployment is crucial here; e.g. in the area of the limes, there was much greater need for cavalry than in the provinces which were not exposed to outside attack.

[23] H.M.D. Parker, Antiqua Legio, p. 141; G. Webster, Imperial Army, p. 116.

[24] As envoys: D.J. Breeze, The Organization of the Legion, p. 55.

[25] G. Webster, Imperial Army, p. 116; D.J. Breeze, The Organization of the Legion, p. 54.

[26] Veg., Epit. II. XXIV.

[27] J. Roth, The Size, p. 353.

[28] Trajan's Dacian war and the wars with Parthia.

[29] J. Roth, The Size, pp. 347-348: "Some of the literary sources writing about the legion under the Empire are referring to the republican legion".

underwent alterations as well. Each emperor, as the commander-in-chief of the army, was entitled to reform it or introduce minor modifications[30] in its organization and – importantly enough – adjust the sizes of units in response to current military needs[31]. It would follow that both the numbers and the organizational pattern fluctuated quite often. Still, this does not prevent researchers from speculating. Almost throughout the entire twentieth century and in the early twenty first century, authors advanced various suggestions. For instance, Johannes Kromayer and Georg Veith determined the strength of the legion at 5,280 soldiers[32], Lawrence Keppie adopted a figure between 5,000 and 6,000 men[33], while Edward Dąbrowa's estimation puts it at approximately 5,000[34]. In contrast, Jonathan Roth claims that the entire legion numbered 6,600 men, of which 5,280 were soldiers while the rest were auxiliary personnel[35]. This view is shared by George Cupcea and Felix Marcu[36].

In view of the fact that a conclusive determination of legion's strength is impossible, one has to adopt estimated figures, which regrettably will remain uncertain, especially that depending on the period the number in question may have ranged from 4,800 to 6,000 soldiers.

b) auxiliary cohorts

Auxiliary formations were an important component of the Empire's defence system, while their numbers and profile made them a significant element of the provincial economies; Lower Moesia was no exception in that respect.

In the Early Empire, Roman army had six basic types of auxilia at its disposal. These included foot troops: *cohortes peditatae*, mounted ones: *alae*, and mixed ones: *cohortes equitatae.* All these were subdivided into

[30] After Augustus, reforms of the army were instituted by emperor Claudius, see C. Thomas, Claudius and the Roman Army Reforms, Historia 53, 4, 2004, pp. 424-452; Hadrian was a great reformer of the military as well, see: HA, Had, 10-11.

[31] To my knowledge, *cohors XX Palmyrenum* is the only example of substantial increase of the size of a military unit, see RMR 66.

[32] J. Kromayer, G. Veith, Heerwesen und Kriegsführung der Griechen und Römer, München 1928, p. 542.

[33] L.J.F. Keppie, The Making of the Roman Army: from Republic to Empire, Batsford 1984.

[34] E. Dąbrowa, Organizacja armii rzymskiej w okresie wczesnego cesarstwa, [in:] J. Wolski, T. Kotula, A. Kunisz (ed.), Starożytny Rzym we współczesnych badaniach, Kraków 1994, pp. 105--119, here: p. 107.

[35] J. Roth, The Size, pp. 361-362.

[36] Size and Organization, p. 181.

quingenariae and *milliariae*[37]. Next to those, there were the irregular *numeri*, and personal guard of province governor: *equites singulares augusti*. Each of the above will be analysed here in terms of numerical strength.

Hyginus' states that *cohors peditata quingenaria* comprised six centuries[38]. Six barracks were discovered in the fortlet of Gelligaer, where such a cohort resided, which would corroborate the account of that author[39]. However, no certain data is available regarding the number of soldiers in each. Therefore, by analogy to legionary centuries, they are presumed to have consisted of 80 men. Consequently, the model size of an auxiliary cohort would amount to 480 soldiers[40]. *Cohortes peditatae milliariae* were a twin type of formation, but they were more numerous.

According to Flavius Josephus, the units in question numbered 1,000 men on foot[41], while Hyginus goes no further than stating that such a cohort was composed of 10 centuries[42]. Their strength thus remains a problem, though obviously it may be theoretically assumed that there were 80 soldiers in a century. An inscription from a wooden tablet from Vindolanda[43] mentions *cohors I Tungrorum*, whose 752 soldiers were commanded by six centurions. On these grounds, *cohors milliaria peditata* is presumed to have consisted of 800 men. Hyginus' information on its structure is also accepted: it comprised ten centuries[44].

Apart from units of infantry, there were mixed cohorts, combining cavalry and soldiers on foot – *cohortes equitatae quingenariae*. If Flavius Josephus is to be trusted, a cohort of the kind included 600 foot soldiers and 120 horsemen[45]. Hyginus is more general in his description, mentioning six centuries and 120 mounted men[46]185. To a certain extent, this is borne out by archaeological data.

[37] P. Holder, Studies in the Auxilia of the Roman Army from Augustus to Trajan, BAR Oxford 2003, p. 5; the author also discusses the origins of the auxiliary forces.

[38] Hyg., De mun. castr. 28: "…peditata quingenaria habet centuria VI…".

[39] G. Cupcea, F. Marcu, Size and Organization, Dacia, p. 185.

[40] According to P. Holder, Auxillia, p. 7.

[41] Ios., Bell. Iud. III, 4. 2; P. Holder (Auxilia, p. 5) does not take these figures literally, believing them to be slightly overstated.

[42] Hyg., De mun. castr. 28: "Cohors peditata milliaria habet centuria X…".

[43] Tab. Vindol. II, pp. 90-98, inv. no. 88. 84.

[44] Ibidem, pp. 92-93.

[45] Ios., Bell. Iud. III. 4, 2; According to P. Holder, Auxillia, p. 7: the 600 should not be treated literally, as Flavius' figure of 100 men per century was purely theoretical.

[46] Hyg., De mun. castr. 27.

In the forts situated along Hadrian's Wall in Wallsend and South Shields, in which *cohortes equitate quingenariae* were stationed, excavations revealed barracks for six centuries and four turmae of cavalry[47].

Meanwhile, an inscription from Ankara, relating precisely to such a unit, mentions four decurions[48]. This warrants the assumption that turma consisted of 30 horsemen[49]. However, in Vegetius[50] and Arrian[51] such a unit is said to number 32 riders, although their accounts are not concerned with *cohors equitata*. It is nevertheless possible that the number of horsemen in the latter did reach 30-32, but including the *principale*s. Following other researchers, I assume that the standard strength of a century in *cohors equitata quingenaria* was 80 soldiers. It should be underlined, however, that sources are not consistent in that respect, since the figures they provide range from 60 to 80 foot soldiers[52].

Cohortes equitatae milliariae were relatively rare. Hyginus states that such a *cohors* was composed of 760 infantry and 240 cavalry[53], but the figures may have been higher. Ultimately, the assumed strength of *cohors equitata milliaria* adopted for the purposes of this work is 10 centuries with 80 men in each, and 240 horsemen, which amounts to the total of 1,080 soldiers.

[47] *Cohors quingenaria equitata* was quartered in the Wallsend barracks in the late second and early third century, see N. Hodgson, P.T. Bidwell, Auxiliary Barracks in a New Light: Recent Discoveries on Hadrian's Wall, Britannia 35, 2004, pp. 121-157, here: p. 134.

[48] CIL III 6760; G. Cupcea, F. Marcu, Size and Organization, p. 184.

[49] Four times 27 men and horses were billeted in the ordinary quarters, while higher-ranking officers, such as *duplicarius*, *sesquplicarius* and *vexillarius* were accommodated together with the decurion in a larger room at the end of the barrack, see N. Hodgson, P.T. Bidwell, Auxiliary Barracks, p. 134.

[50] Veg., Epit. II. 14. It should be noted that it was a legionary turma.

[51] Arr., Ars Tact. 18. 2.

[52] RMR 63: Pridianum cohors I Hispanorum Veterana quingenaria, dated to between 100 and 105, mentions 546 soldiers, 119 of which were cavalrymen, six were centurions and four were decurions. Barely four months later their number increased to 596 men. Based on the document, P. Holder (Auxilia, p. 7), inferred a foot century consisting of 70 men, yet he noted that the unit might have been being brought up to full strength. If that was the case, then according to the author the infantry numbered around 470 soldiers divided into six centuries, each ca 80 men strong; RMR 64: Pridianum cohors I Augusta Praetoria Lusitanorum Equitata, a document dated to 156, provides different data, as the full complement recorded on January 1st amounted to 505 soldiers, including six centurions, three decurions, 114 horsemen, 19 camel-riders, and 363 infantry: SVMMA M …E KAL DV, IANVARIAS IN IS γ VI, DEC III, EQ CXIV, DROM XVIIII, PEDITES CCCLXIII. Consequently, it would follow that there were 60 soldiers per foot century. However, the number should not be accepted without reservations, because the figure of 363 may have been an error in the papyrus, cf.: RMR 64, p. 229, note 17, it is possible that the unit was at its full complement at the time.

[53] De mun. castr. 26: "…reliqui pedites DCCLX…".

c) the *alae*

The most prestigious of all auxiliary formations were the *alae*, units consisting solely of cavalry[54]. The first type were the *alae quingenariae*, which according to Hyginus comprised 16 turmae[55]. This is corroborated by one of the texts on a wooden tablet from Carlisle[56] and by the inscription from Alexandria, which lists 16 decurions of *alae*[57]. However, other inscriptions mention only five[58] or six decurions[59], which by no means calls Hyginus' version into question. One may equally well assume that a squadron of cavalry (*turma*) in an *ala quingenaria* was 32 men strong[60], including the commanders.

Alae milliariae, on the other hand, were composed of 24 turmae of cavalry[61]. Here, the size of a turma represents yet another dilemma. If an *ala milliaria* numbered 1,000 soldiers, then there would have been 40 soldiers to each turma[62]. However, the view established in science is that there were only 32 horsemen, just as in *ala quingenaria*[63]. As a result, an entire *ala milliaria* consisted of 768 mounted men.

d) other units

The term *numerus* was employed to denote *equites singulares Augusti*, *equites singulares*, *stratores*, *veredarii* and troops composed of barbarians[64].

Numerous researchers have attempted to estimate the strength of the ethnic units, but the results so far have not been convincing. According to Georg

[54] This is attested to by the fact that horsemen serving in those units earned as much as the legionaries, see M.A. Speidel, Roman army pay scales; idem, Rang und Sold im Römischen Heer und die Bezahlung der Vigiles, [in:] Y. Bohec (éd.), La hiérarchie (Rangordnung) de l'Armée Romaine sous la Haut Empire: actes du congrès de Lyon, Paris 1995, pp. 299-309.

[55] Hyg. De mun, castr. 16: De Met. Castr. 16: Ala quingenaria turmas habet XVI.

[56] R.S.O. Tomlin, Roman Manuscripts from Carlisle: The Ink-Written Tablets, Britannia 29, 1998, pp. 31-84, here: p. 42.

[57] CIL III 6581: DECVRIONES ALARES VETERANAE GALLIC…

[58] CIL III 6627: ALARUM III, DEC V, DUPL I, SESQIPLIC IIII, EQUITES CCCCXXIIII.

[59] CIL III 14147.

[60] Veg., Epit. II. 14: in literature, the fragment is very often quoted as universally applicable to all cavalry formations in the Roman army; Arr. Ars Tact. 18.2: mentions 512 horsemen; dividing by 16, one obtains 32.

[61] Hyg., De Mun. castr. 16: …alam miliariam. Turmas habet XXIV…

[62] P. Holder, Auxilia, p. 9.

[63] D.J. Breeze, Cavalry on Frontiers, [in:] D.J. Breeze, B. Dobson, Roman Officers and Frontiers, Stuttgart 1993, pp. 288-297, here: 291.

[64] G. Cupcea, F. Marcu, Size and Organization, p. 12.

L. Cheesman, the detachments numbered 200 soldiers[65]. Henry T. Rowell argues that *numerus quingenaria* was commanded by a prefect, while a tribune led the *milliaria*[66]. As may be inferred, Michael P. Speidel subscribed to the latter view, finding that the *numerus Syrorum* in Mauretania must have been 1,000-men strong, since it had a tribune as the commander[67]. In contrast, Walter Wagner stated that in terms of numbers *numeri* did not differ from *auxilia*, but possessed a distinct legal status[68]. The *numerus* stationed at the fort discovered in Hesselbach consisted of 30 to 140 men, but the fort itself was exceptionally small, and cannot be treated as representative for the rest of the empire[69]. It is most likely that *numeri* had the strength which was required in a given location, ranging from 100-150 to around 1,000 soldiers[70].

Equites singulares and *pedites singulares* of the province governor were units composed of auxiliary forces stationed in the province. The number of soldiers serving in such detachments is unknown. Michael P. Speidel maintains that a province governor had 500 *pedites singulares* and 500 *equites singulares* at his disposal[71]. Their number cannot have exceeded 5% of the entire Roman military force in a province[72]. Units of *singulares* were also attached to the legionary legate[73].

Numerus exploratorum was a special, separate troop composed of auxiliaries[74]. It is possible that they operated independently, to which the camp discovered in Feldberg may attest; it had its own command quarters and covered an area of 0.7 ha[75]. The work of Pseudo-Hyginus provides

[65] G.L. Cheesman, The Auxilia of the Roman Imperial, New York 1971, p. 88, likewise: R. MacMullen, How Big was the Roman Imperial Army, Klio 62, 1980, 2, pp. 451-460, here: p. 452.

[66] H.T. Rowell, Numerus, RE XVII, 1936, col. 1337-1338.

[67] M.P. Speidel, Numerus Syrorum Malvensium the Transfer of a Dacian Army Unit to Mauretania and Its Implications, [in:] M. Speidel, Roman Army Studies 1, Amsterdam 1984, pp. 149-160, here: p. 152.

[68] W. Wagner, Dislokation, p. 208.

[69] The dimensions of such forts varied, as in e.g. Kapersburg, Osterburken, Niederbieber, see D. Baatz, Kastell Hesselbach und andere Forschungen am Odenwaldlimes, Limesforschungen 12, Berlin 1973, pp. 76-77; P. Southern, The Numeri of the Roman Imperial Army, Britannia 20, 1989, pp. 81-140, here: p. 104.

[70] As asserted by P. Southern, Numeri, p. 104.

[71] M.P. Speidel, Guards of the Roman Armies. An essay on the singularis of the provinces, Bonn 1978, pp. 11-14.

[72] G. Cupcea, F. Marcu, Size and Organization, p. 188.

[73] Ibidem, with discussion.

[74] P. Southern, Numeri, p. 111.

[75] Ibidem, p. 112.

information to the effect that the *exploratores* numbered 200 soldiers[76]. It would be difficult to accept that number as a nominal strength of the outfit without reservations, as there is evidence that the *exploratores* units stationed with other *numeri* did not exceed 20-30 soldiers[77].

There is very little information concerning the organization of the *frumentarii* and their activities in the province. We know that they were responsible for providing supplies to other military units, gathered intelligence[78], and acted as couriers[79]. They were a part of the *officium consularis*, but their headquarters was the *castra peregrina* in Rome[80]. However, no data suggesting their numerical strength has survived. They were recruited in the provinces where they operated[81], and served in the units in which they were enlisted[82].

The fleet (*classis Flavia Moesica*) was most probably formed during the reign of Claudius as *classis Moesica*[83]. This may be concluded from a military diploma issued in 73. Given that its recipient served in the fleet for 26 years, he must have been recruited in 45/46, which might be considered a date of "birth" of the *classis Moesica*[84]. The fleet was reorganized under Vespasian, though when it received the appellation *Flavia*[85], recorded in a military diploma dated July 92[86], is unknown. It is certain however, that it

[76] Hyg., De. Mun. castr. 30: "Datos itaque numeros, qui infra scripts sunt, sic computabimus… exploratores CC…".

[77] G. Cupcea, F. Marcu, Size and Organization, p. 187.

[78] J.C. Mann, The Organization of the Frumentarii, ZPE 74, 1988, p. 149.

[79] W.G. Sinnigen, The Origins of the Frumentarii, Memoirs of the American Academy in Rome 27, 1962, pp. 211-224, here: p. 215.

[80] Ibidem, p. 213.

[81] B. Rankov, Frumentarii, the Castra Peregrina and the Provincial Officia, ZPE 80, 1990, pp. 176-182, here: p. 178.

[82] One of such soldiers in Lower Moesia is attested in a second-century inscription from Horia (near Tulcea) in Dobruja, see ISM V 239: "Annaeus Pulche (centurio) leg(ionis) V Mac(edonicae) fr(umentarius)…".

[83] F. Matei-Popescu, Roman Army, p. 246.

[84] Ibidem, pp. 245-246. Dyplom, see W. Eck, A. Pangerl, Neue Diplome für die Auxiliartruppen in den Mösischen Provinzen von Vespasian bis Hadrian, Dacia 50, 2006, pp. 93-97, note 1: "qui mili]tant in classe, quae e[st in Moesie sub] … vete]ranis dimissis hon[esta missione] ex eadem classe eme[ritis stipendiis.]".

[85] E. Condurachi, Classis Flavia Moesica au I siècle de n. e., [in:] Actes du IX Congrès International. D'Ètudes sur les Frontières Romaines, București – Köln 1974, pp. 83-88, here: p. 84; A. Aricescu, The Army, p. 30; O. Bounegru, M. Zahariade, Les forces navales du Bas Danube et de la Mer Noire aux Iet-VIe siècles (Colloquia Pontica 2), Oxford 1996, p. 10.

[86] CIL XVI 37.

continued to be used until the province was dissolved[87]. The fleet was stationed mainly on the territory of Dobruja[88]. Its size is difficult to determine[89]. Liviu Petculescu estimated that the Moesian fleet consisted of approximately 2,000 sailors and soldiers[90], and the figure he suggested is thus quoted in this work.

e) the model and the actual strength

The units of the Roman army did not reach their nominal strength, as the papyri (*pridiana*) documenting their personnel assets confirm. One of those (RMR 63 dated to 100-105) mentions *cohors equitata quingenaria*, which was about 10% short of the full combat complement for such a unit. Further on, the papyrus states that at a later date the shortage was filled up, with only 2% under the required figure, which was associated with the preparations for war carried out by the *cohors* referred to in the papyrus. This demonstrates that in such circumstances[91], adequate combat value of military units was attempted to be restored as promptly as possible, whereas in peacetime there was no such need. The latter is evident in papyrus ChLA XI 501 from 48-52, relating to the *pridianum alae Commagenorum*: the total of all soldiers listed in the document indicates that there were 15 % fewer soldiers than the target complement[92]. Papyrus RMR 64 of 159[93] illustrates a similar situation. The document concerns *cohors I Augusta Praetoria Lusitanorum equitata*, which lacked around 17 % of its personnel. Also, the strength of the *cohors peditata milliaria* recorded in a wooden tablet from Vindolanda[94] shows 6% below the nominal figure (full complement). Meanwhile, the Carlisle tablet shows evident disproportions in the amounts of barley and wheat allotted to the

[87] F. Bérard, La cohorte I a Cilicum, la classis Flavia Moesica et les vexillations de l'armée de Mésie, ZPE 79, 1989, pp. 129-138, here: pp. 133-134.

[88] A. Aricescu, The Army, p. 31.

[89] Cf: D.B. Saddington, Classes. The Evolution of the Roman Imperial Fleets, [in:] Companion to the Roman Army, Oxford 2007, pp. 201-218; authors of a monograph about the Moesian fleet (see O. Bounegru, M. Zahariade, Forces navales), D. Kienast (Untersuchungen zu den Kriegsflotten der römischen Kaiserzeit, Bonn 1996) did not attempt such estimations either.

[90] L. Petculescu, The Roman Army as a Factor of Romanisation in the North-Eastern Part of Moesia Inferior, [in:] T. Bekker-Nielsen (ed.), Rome and the Black Sea Region. Domination, Romanisation, Resistance, Aarhus 2006, pp. 31-41, here: p. 32.

[91] Dating of the papyrus is unknown.

[92] "…pr]idianum detulit alae Co[mmagenorum…summ]a utraque dec(uriones) XII [eq(uites) C]CCCXXXIV".

[93] PRIDIANVM COH I AVG PR LVS EQ … EQ CXIV…PEDITES CCCLXIII.

[94] Tab. Vindol. II. 154.

particular turmae of an *ala quingenaria*, which suggests their unequal sizes; the unit which was to receive the provisions must have been below its full strength as well[95].

The above sources demonstrate that military formations tended not to reach their expected, nominal capacity. Based on those sources, it may be deduced that average personnel shortages ranged from 2% to 17%.

The surviving sources indicate that auxiliary units failed to attain model strength (Tab. 1). On the other hand, personnel deficits did not depart substantially from the nominal figures, at least in the first and second century[96]. It is also probable that the internal organization of individual detachments varied from unit to unit[97].

Table 1. Strengths of military units

Troop type	Nominal strength	Cavalry	Strengths based on papyri and inscriptions	Strength of cavalry as per sources
cohors peditata	480	–	no data available (NDA)	not applicable
cohors equitata	608	128	546/596/505	119, 114
cohors peditata milliaria	800	–	788, 752	not applicable
cohors equitata milliaria	1024	240	NDA	
ala quingenaria	512		434	
ala milliaria	768		–	–
numeri	from 100 to 1,000		NDA	–
equites singularis augusti	1000	500	NDA	–

2. The garrison of Lower Moesia

In order to demonstrate the influence of the Roman army on the monetary economy of Lower Moesia, it is necessary to provide at least an estimate of the strength of its garrison. The available sources make such estimations possible with respect to several selected periods which appear to be best documented. These assessments will serve as a reference point in the deliberations on the place and role of the army in the economic life of the province.

[95] R.S.O. Tomlin, Manuscripts from Carlisle, p. 48.

[96] Ibidem, p. 47.

[97] D.J. Breeze, Demand and Supply on the Northern Frontier, [in:] D.J. Breeze, B. Dobson, Roman Officers and Frontiers, Stuttgart 1993, pp. 526-552, here: p. 527.

The presence of legions and auxilia in Lower Moesia has been studied since the early 20th century[98]. To a considerable extent, the researchers were concerned with the size of the Roman contingent[99]. It is thus certain that until 167 CE three legions were stationed in Lower Moesia; other attested units include 10 *alae*, 32 *cohortes*, and 2 to 4 *numeri*. The largest Roman force stayed in the province during the reign of Trajan, with as many as 31,500 soldiers: 15,000 legionaries, 4,500 horsemen in the *alae* as well as 12,000 infantry and cavalry of the *cohortes*[100]. This imposing number of troops was due to the grave threat on the empire's frontiers, i.e. Roman wars with the Dacian state of Decebalus. There are also Liviu Petculescu's estimations for Dobruja; the researcher established that in the period from Trajan to M. Aurelius some 12,000-13,000 soldiers were stationed there, but the number decreased to 8,000 men after the Marcomannic wars[101].

Six years after the establishment of Lower Moesia and three years from the end of Domitian's war with Dacians, Lower Moesia was home to 7 *alae* and 15 *cohortes*[102] (Tab. 2).

[98] The first monograph on the Roman army in Lower Moesia is B. Filov's work (Die Legionen); E. Ritterling's text on *legio I Italica* is an important contribution in that respect: RE XII, 1925, col. 1572-1586, col. 1407-1417, col. 1690-1705; one should also mention the following publications: J. Beneš, Auxilia Romana in Moesia atque in Dacia, Praga 1978; A. Aricescu, The Army; T. Sarnowski, Wojsko rzymskie. A recently published study discusses the latest discoveries of military diplomas: F. Matei-Popescu, Roman Army; the First Italian Legion had in fact been discussed more broadly at a very early stage: E. Beuchel, De legione Romanorum I Italica, Leipzig 1903; W. Wagner addressed the deployment of troops in Dislokation. There are many other publications which could be cited, but at this point I provide the most important ones.

[99] The figure of 24,000-30,000 was suggested by L. Mrozewicz in: Roman Military Settlements in Lower Moesia (1st-3rd. c.), Archeologia 33, 1982 (1985), pp. 79-85, here: p. 80.

[100] Ibidem. F. Matei-Popescu, Armata Romană în Moesia Inferior, SCIVA 52-53, 2001-2002 (2004), pp. 173-242.

[101] L. Petculescu, Roman Army, p. 32.

[102] C.C. Petolescu, A.T. Popescu, Ein neues Militärdiplom für die Provinz Moesia Inferior, ZPE 148, 2004, pp. 269-276, here: p. 269; ibidem, pp. 272-273; the authors of the article argue that *ala I Claudia Gallorum*, *I Hispanorum*, *cohors I Bracaraugustanorum*, *I Flavia Commagenorum*, *II Flavia Bessorum*, *II Gallorum*, *III Gallorum*, *cohors I Ubiorum* were transferred to Dacia shortly after the province had been established. During the reign of Antoninus Pius, *alaes Gallorum Flaviana* was posted to Upper Moesia, *cohors I Raetorum* to Rhaetia, while *cohors II Bracaraugustanorum* and *IIII Gallorum* are attested in 114 in Thrace. References to *ala II Flavia Gaetulorum* may be found in a Lower Moesian diploma dating from 99 and 112/113; it was deployed briefly to Panonia Inferior, where its stay is borne out by a diploma dated September 1st, 114, after which it must have returned to Lower Moesia; its presence there is source-attested for the reign of Hadrian and Antoninus Pius.

Table 2. The garrison of Lower Moesia in 92

alae:	cohortes
1. *I Vespasiana Dardanorum*	1. *I Raetorum*
2. *I Flavia Gaetulorum*	2. *I Bracaraugustanorum*
3. *I Pannoniorum*	3. *I Lusitanorum Cyrenaica*
4. *II Claudia Gallorum*	4. *I Flavia Commagenorum*
5. *Gallorum Flaviana*	5. *I Sugambrorum tironum*
6. *Gallorum Atectorigiana*	6. *I Sugambrorum veterana*
7. *I Hispanorum*	7. *II Chalcidenorum*
	8. *II Lucensium*
	9. *II Bracaraugustanorum*
	10. *II Flavia Bessorum*
	11. *II Gallorum*
	12. *III Gallorum*
	13. *IIII Gallorum*
	14. *VII Gallorum*
	15. *Ubiorum*

This should yield the nominal figure of 10,000 legionaries, 3,584 horsemen from the *alae*, 8,352 men in the *cohortes* (7,200 footed and 1,152 mounted), 21,936 soldiers in total. As demonstrated in the preceding subchapters, units of the Roman army did not reach their full complement; it may therefore be assumed that in 92 there were between 19,700[103] to 21,900 soldiers in Lower Moesia.

The strength of the Lower Moesian garrison changed five years later (Tab. 3). Diplomas RMD V 337 and RMD V 338 from September 9th, 97, enumerate 28 units. However, the partly destroyed text of RMD V 337 does not permit accurate determination of seven of those[104]. The original publisher of the diploma identified *cohors I Lusitanorum Cyrenaica*[105] among them. In turn, Paul Holder[106] observed that the missing units may include *cohors I Bracaraugustanorum*, *cohors I Sugambrorum* and, in all likelihood, *cohors II*

[103] This figure was obtained by subtracting 10% from the nominal strength, and rounding the result.

[104] RMD V 337; D. MacDonald, A. Mihaylovich, A New Moesia Inferior Diploma of 97, ZPE 138, 2002, pp. 225-228; W. Eck, A. Pangerl, Zwei Konstitutionen, pp. 185-192; eosdem, Moesia und seine Truppen II. Neue Diplome für Moesia, Moesia inferior und Moesia superior, Auron 39, 2009, pp. 509-589, here: pp. 510-512; RMD V 338: a fragment of the diploma was also published by P. Weiß, Neue Militärdiplome, ZPE 117, 1987, pp. 233-238.

[105] D. MacDonald, A. Mihaylovich, A New Moesia, p. 226: "…[appellantur I Asturum et] I Flavia Gaetuloru[m et] Vespasiana Dardanoru]m et Atectorigiana[et I Lusitanorum Cyrenaica et I T]yriorum et I Lepi[diana c(ivium) R(omanorum)…".

[106] RMD V 337, note 3.

Flavia Brittonum, *cohors II Mattiacorum*[107], *cohors II Gallorum*, *cohors III Gallorum*, *cohors VII Gallorum*. The presence of Gallic cohorts in Lower Moesia is attested in an earlier diploma and a number of later ones[108]. *Cohors II Flavia Brittonum* and *cohors II Mattiacorum* appear in the province for the first time in a diploma dating to 99[109]. *Cohors II Bracaraugustanorum*[110] should also be taken into consideration, since in 97 it may still have been stationed on the territory of Lower Moesia, before it was sent to Thrace[111]. Thus, in 97, the garrison of Lower Moesia comprised 9 *alae* (4608 horsemen), 19 *cohortes* (most probably 11 *cohortes equitatae* and 8 *cohortes peditatae* = 9,120 infantry + 1,408 cavalry = 10,528 soldiers) as well as two legions whose combined strengths amounted to approximately 10,000 men. In total, this yields the nominal figure of 25,136 soldiers, it is therefore highly possible that the Roman force in Lower Moesia in 97 numbered from ca 22,600 to 25,100 soldiers.

Tab. 3

alae	cohortes
1. *I Pannoniorum* 2. *I Claudia Gallorum* 3. *II Aravacorum* 4. *Gallorum Flaviana* 5. *Hispanorum* 6. *I Asturum* 7. *I Flavia Gaetulorum* 8. *I Vespasiana Dardanorum* 9. *Atectorigiana*	1. *I Sugambrorum veterana* 2. *I Hispanorum veterana* 3. *I Sugambrorum tironum* 4. *I Flavia Numidarum* 5. *I Flavia Commagenrum* 6. *II Flavia Bessorum* 7. *II Lucensium* 8. *IIII Gallorum* 9. *Ubiorum* 10. *I Tyriorum* 11. *I Lepidiana c. R* 12. *II Chalcidenorum* + 7 unidentified units (six of which were probably: *cohors I Bracaraugustanorum*, *cohors II Flavia Brittonum*, *cohors II Matiacorum*, *cohors II Gallorum*, *cohors III Gallorum*, *cohors VII Gallorum*)

[107] Also in a diploma from 99; the strength of the cohort was increased to 1,000 men in the period between 144 and 198; see E. Birley, Alae and Cohortes Milliariae, [in:] Carolla Memoriae Erich Swoboda Dedicata, Graz – Köln 1966, pp. 54-67, here: p. 65.

[108] CIL XVI 44-45; CIL XVI 50.

[109] CIL XVI 44-45.

[110] This unit appears in a diploma from 92 (C.C. Petolescu, A.T. Popescu, Militärdiplome, p. 269).

[111] A 114 diploma from Thrace was published by: E.I. Paunov, M. Roxan, The Earliest Extant Diploma of Thrace, A.D. 114 (= RMD I 14), ZPE 119, 1997, pp. 269-279, here: p. 275.

The following units were stationed in Lower Moesia in 99 (Tab. 4), just before the outbreak of the Dacian wars:

Table 4. Garrison of Lower Moesia in 99

alae: 1. *I Asturum* 2. *I Flavia Gaetulorum* 3. *I Vespasiana Dardanorum* 4. *Gallorum* 5. *I Pannoniorum* 6. *II Hispanorum et Aravacorum*	cohortes: 1. *I Lepidiana c. R.* 2. *I Tyriorum* 3. *I Lusitanorum Cyrenaica* 4. *II Flavia Brittonum* 5. *II Chalcidenorum* 6. *VII Gallorum* 7. *I Sugambrorum veterana* 8. *I Bracaraugustanorum* 9. *I Hispanorum veterana* 10. *II Mattiacorum* 11. *II Gallorum* 12. *Ubiorum*
classis Flavia Moesica	

Altogether, the capacity of the garrison at that point amounted to 6 *alae* (3,072 horsemen), 9 *cohortes equitatae* (4,320 infantry + 1,152 cavalry = 4,863 soldiers), 3 *cohortes peditatae* (1,440 infantry) and two legions with 10,000 men. Thus we arrive at the nominal total of 19,984 soldiers. However, it should be remembered that it was the time of preparations for the war with Dacians.

As observed previously, the most fitting total of Roman soldiers involved in Trajan's wars against Dacia seems to have been suggested by Florian Matei-Popescu. The period was characterized by numerous movements of the Roman forces as well as substantial unrest on the frontiers, therefore it should be disregarded here. Instead, one should focus on the following period, when the military situation became stable yet again, creating opportune circumstances for the economic consolidation of Lower Moesia with the Roman Empire.

When war had come to an end, Lower Moesia was still a frontier province, but a part of its territory was now within the empire. This was reflected in the military presence in that area, as a proportion of the Lower Moesian garrison had been deployed to the newly acquired, occupied territories of the now non-existent Dacian state[112]. The situation is best illustrated in a military diploma dating from September/December 107 (Tab. 5).

[112] The contingent included *alae* and nine *cohortes*; see F. Matei-Popescu, Roman Army, p. 242.

Table 5. Garrison of Lower Moesia in 107

alae	cohortes
1. *Hispanorum*	1. *I Sugambrorum veterana* (?)
2. *I Pannoniorum*	2. *I Lepidiana*
3. *Gallorum Flaviana*	3. *I Tyriorum sagittariorum*
	4. *II Chalcidenorum*
	5. *II Flavia Numidarum* (?)
	6. *IIII Gallorum*
	7. *VII Gallorum**

* W. Eck, A. Pangerl, Neue Diplome, pp. 514-522; the unit is also referred to in a diploma of May/August 109. (P. Weiß, Weitere Diplomfragmente von Moesia inferior, ZPE 124, 1999, pp. 287-291, here: pp. 289-290; RMD IV 119).

Scrutiny of the diploma yields the following figures: 1,536 horsemen in the *alae*, 4,000 soldiers in the *cohortes* (3,360 infantry, 640 cavalry) and three legions with the approximate strength of 15,000 men, meaning 20,536 soldiers in total. Consequently, I presume that the Lower Moesian garrison after the Dacian wars numbered from 19,000 to 20,500 soldiers. In that particular period, the figure should come as no surprise; although the number of auxiliary detachments decreased since some had been posted to the new territories captured by Rome, the number of legionaries had grown with the arrival of *legio XI Claudia.*

A diploma dated September 25th, 111[113] (Tab. 6) still enumerates three *alae* and seven *cohortes*:

Table 6. The garrison of Lower Moesia in 111

alae	cohortes
1. *I Pannoniorum*	1. *I Flavia Numidarum*
2. *I Claudia Gallorum*	2. *I Sugambrorum veterana*
3. *II Hispanorum et Aravacorum*	3. *I Brittonum*
	4. *I Claudia Sugambrorum tironum*
	5. *I Flavia Commagenorum*
	6. *II Mattiacorum*
	7. *II Flavia Brittonum* oraz *classici*

These units constituted a garrison of 20,856 soldiers: 1,536 in the *alae*, 4,000 in the cohorts, including 640 horsemen, and 15,000 legionaries.

A diploma of 116 presents a different composition of troops (Tab. 7)[114].

[113] RMD IV 222.
[114] W. Eck, A. Pangerl, Neue Diplome, p. 529.

Table 7. The garrison of Lower Moesia in 116

alae	cohortes
1. *II Hispanorum et Aravacorum*	1. *I Tyriorum sagittariorum*
2. *Atectorigiana Gallorum*	2. *I milliaria Brittonum*
	3. *I Sugambrorum tironum*
	4. *II Flavia Bessorum*
	5. *II Flavia Numidarum*

Naturally, the three legions stationed in the province (*Italica*, *XI Claudia*, *V Macedonica*) should be added to the units listed in the table. Thus the model strength of Roman forces in Lower Moesia should comprise 1,024 mounted men of the *alae*, 2,848 men in the cohorts, including 128 horsemen) as well as the three legions with ca 15,000 soldiers, which means 18,872 armed men. It may therefore be assumed that at the time the garrison of Lower Moesia was made up of 17,000 to 18,800 soldiers. Several years later this state of affairs changed yet again, as the Roman forces in the province were augmented with new troops (Tab. 8). Two diplomas testify to that increase: one originates from 119[115], the other from December 19th, 120[116]. Based on the information they contain, the following units can be enumerated:

Table 8. The garrison of Lower Moesia in 119-120

alae	cohortes
1. *I Vespasiana Dardanorum*	1. *I Sugambrorum veterana*
2. *I Gallorum et Pannoniorum*	2. *I Bracarorum c. R.*
3. *I Flavia Gaetulorum*	3. *I Lepidiana c. R.*
4. *Gallorum Atectorigiana*	4. *I Flavia Numidarum*
5. *II Hispanorum et Aravacorum*	5. *II Chalcidenorum sagittariorum*
	6. *II Lucensium*
	7. *II Flavia Brittonum*
	8. *II Mattiacorum*

Thus, the model strength of the Roman army in that period included 2,560 horsemen in the *alae*, 4,736 soldiers in the cohorts (with 896 cavalrymen) and three legions, i.e. 22,296 soldiers altogether. Hence the capacity of the Roman force at the time should be estimated at 20,000 to 22,200 soldiers. In the following year[117] the figures changed slightly, as the number of *alae* was

[115] Ibidem, pp. 530-533.

[116] Ibidem, pp. 533-538.

[117] Based on a diploma from 121, published in: P. Weiß, Militärdiplome für Moesia (Moesia, Moesia superior, Moesia inferior), Chiron 38, 2008, pp. 267-316, here: pp. 296-300.

reduced to three: *ala I Gallorum et Pannoniorum*, *ala I Flavia Gaetulorum*, *ala I Hispanorum et Aravacorum*, but one cohort was added to the contingent; the diploma mentions: *cohors I Claudia Sugambrorum veterana* (?), *cohors I Lusitanorum Cyrenaica*, *cohors…* (?), *cohors I Germanorum*, *cohors…* (?), *cohors I Lepidiana c. R.*, *cohors II Chalcidenorum sagittaria*, *cohors II Lucensium*, *cohors II Flavia Brittonum*. Names of two cohorts are missing from the diploma: one whose designation is 13 characters long, while the other has 26 or 27 characters. The units in question are *cohors II Mattiacorum* and *cohors I Bracarorum c. R.*, whose names would match in this case; in addition, the two detachments are found in diplomas of December 19th, 120 and July 1st, 125. It is very likely that in 121 the cohorts were in Lower Moesia. The reduced number of units did not significantly affect the overall strength of the garrison. The model capacity for that period was 1,536 horsemen in the *alae*, 5,088 soldiers in the cohorts (including 768 cavalry) and around 15,000 legionaries, amounting to the total of 21,624 soldiers. Thus the garrison in Lower Moesia in 121 numbered from 19,500 to 21,600 soldiers.

A diploma dated June 1st, 125[118] records the following units: ala I Gallorum et Pannoniorum, ala I Flavia Gaetulorum, cohors I Thracum Syriaca, cohors Lepidiana c.R., cohors Bracarorum c. R., cohors II Mattiacorum, cohors II Flavia Brittonum, which means that nominally the garrison comprised 1,024 horsemen in the alae, 2,912 soldiers in the cohorts (including 512 cavalry) and 15,000 legionaries, yielding the total of 18,936 men. In that period, the Lower Moesian garrison was less numerous than the force documented in the earlier diploma and numbered from ca 17,000 to 18,900 soldiers. Two years later the situation changes yet again; a diploma of August 20th [119], 127 (Tab. 9) shows that the garrison was evidently enlarged, as it enumerates the following units:

[118] RMD IV 235, V 364; M.M. Roxan, W. Eck, A Diploma of Moesia Inferior: 125 Iun. 1, ZPE 116, 1997, pp. 193-203; W. Eck, A. Pangrel, Neue Diplome, pp. 538-541.

[119] RMD IV 241; M.M. Roxan, An Auxiliary/Fleet Diploma of Moesia Inferior: 127 August 20, ZPE 118, 1997, pp. 287-299, here: p. 288; W. Eck, A. Pangrel, Ein Diplom für einen Soldaten der classis Moesica vom 20. August 127 n. Chr., ZPE 165, 2008, pp. 232-236, here: p. 236.

Table 9. The garrison of Lower Moesia in 127

alae	cohortes
1. *I Pannoniorum et Gallorum*	1. *I Lusitanorum*
2. *Gallorum Atectorigiana*	2. *I Flavia Numidarum*
3. *I Vespasiana Dardanorum*	3. *I Thracum Syriaca*
4. *I Flavia Gaetulorum*	4. *I Germanorum*
5. *II Hispanorum Aravacorum*	5. *I Bracaraugustanorum*
	6. *I Lepidiana*
	7. *II Flavia Brittonum*
	8. *II Lucensium*
	9. *II Chalcidenorum*
	10. *II Mattiacorum*
classis Flavia Moesica	

The nominal strength of the garrison thus amounted to 2,560 horsemen in the *alae*, 5,696 soldiers in the cohorts (including 896 cavalry) and 15,000 legionaries: 23,256 soldiers in all. Consequently, it may be conjectured that the number of troops stationed in Lower Moesia ranged from ca 20,900 to 23,200 soldiers.

In 134, a part of the forces were redeployed, as evidenced by a diploma of April 2nd that year[120]. It mentions only seven units, two *alae*: *ala I Gallorum et Pannoniorum*, *ala I Vespasiana Dardanorum* and five cohorts: *cohors I Cilicum*, *cohors I Bracarorum*, *cohors II Mattiacorum*, *cohors I Claudia Sugambrorum tironum* (?), *cohors II Chalcidenorum*. The garrison thus consisted of 1,024 horsemen in the *alae*, 3,328 soldiers in the cohorts (including 624 cavalry) and around 15,000 legionaries: 19,224 men in total, so the number of soldiers in Lower Moesia at that time was between 17,300 and 19,200. A diploma from 135[121] yields a slightly higher figure, since it enumerates *ala I Vespasiana Dardanorum*, *ala Flavia Gaetulorum*, *cohors…* (?), *cohors I Sugambrorum veterana*, *cohors I Germanorum*, *cohors…* (?), *cohors I Flavia Numidarum*. There is also a diploma dated February 28th, 138[122], which mentions three *alae*, of which only *ala II Hispanorum et Aravacorum* is identifiable, as well as the fleet and five cohorts, three of which are legible: *cohors II Chalcidenorum*[123], *cohors I Lusitanorum Cyrenaica*, *cohors II Mattiacorum*.

[120] CIL XVI 78.

[121] W. Eck, A. Pangerl, Neue Diplome, pp. 541-543.

[122] CIL XVI 83.

[123] W. Eck, A. Pangerl, Neue Diplome, pp. 541-543: the publishers omitted the ordinal "I" when providing the name of *Chalcidenorum*, because only one cohort with that designation was stationed in Lower Moesia (which, however, bore the number "II").

Four diplomas originating from the reign of Antoninus Pius indicate increased military activity in Lower Moesia, and suggest that the number of soldiers and the strength of the garrison had become fairly stable. The first two diplomas (Tab. 10), dating from April 7th, 145[124] and from 146[125], list the following units (provided as itemized in the 145 diploma)[126]:

Table 10. The garrison of Lower Moesia in 145-146

alae	cohortes
1. *Gallorum et Pannoniorum*	1. *I Bracarorum c. R.*
2. *I Gallorum Atectorigiana*	2. *II Mattiacorum*
3. *I Vespasiana Dardanorum*	3. *I Flavia Numidarum*
4. *I Flavia Gaetulorum*	4. *Claudia Sugambrum veterana*
5. *II Hispanorum et Aravacorum*	5. *II Chalcidenorum sagittariorum*
	6. *I Cilicum sagittariorum*
	7. *I Thracum Syriaca*
	8. *I Germanorum*
	9. *II Bracaraugustanorum*
	10. *Lusitanorum Cyrenaica*
	11. *II Flavia Brittonum*

The nominal strength of the garrison amounted to 2,560 horsemen, 7,136 soldiers in the cohorts (including 1,248 cavalry) and approximately 15,000 legionaries: 24,696 soldiers in total. The capacity of the Roman forces in Lower Moesia should thus be estimated at 22,200 to 24,600 soldiers. A diploma dated September 27th, 154[127] provides the same number of *alae* and *cohortes* as RMD IV 270 and RMD III 165 (with the exception that it does not feature *cohors II Mattiacorum milliaria*, but *cohors I Cispadensium quingenaria*). Absence of the former unit reduced the strength of the Lower Moesian contingent, which numbered from ca 21,700 to 24,100 soldiers (the number of the mounted men in the cohorts decreased to 1,008). This composition of the garrison remained unchanged for several years, which is confirmed by a diploma of 156/158[128], in which the very same units are listed.

[124] RMD III 165; RMD V 399; initially, S. Torbatov suggested a different sequence of Roman units in the diploma (Rimska voenna diploma ot 145 r. ot Nigrinianis, Dolna Mizija, Arheolo- gija 4, 1, 1991, pp. 23-27); cf. W. Eck, A. Pangerl, Neue Diplome, pp. 548-550.

[125] RMD IV 270.

[126] This number of units is also corroborated in a diploma of 147, published in: P. Weiß, Militärdiplome, pp. 307-309.

[127] RMD V 414.

[128] RMD I 50.

From this moment onward, reliable data on the strength of the Roman army, such as those found in Lower Moesian diplomas, is no longer available. Still, as it has been demonstrated on the basis of the four last diplomas (RMD IV 270, RMD V 399, RMD V 414, RMD I 50), the military situation in Lower Moesia had become stable, and many of the units those documents mention are found in epigraphic material from the late second and third century. The units in question are listed in Table 11[129].

Table 11. Units stationed in Lower Moesia in the late second century – first half of the third century, as attested in epigraphical sources

alae	cohortes
1. *I Vespasian Dardanorum* a)	1. *II Flavia Brittonum* e)
2. *I Flavia Gaetulorum* b)	2. *I Cilicum* f)
3. *I Gallorum Atectorigiana* c)	3. *I Cisipadensium* g)
4. *ala II Hispanorum et Aravacorum* d)	4. *Gemina Dacorum* h)
	5. *III collecta c. R.* i)
	6. *II reducum* j)
	7. *II Mattiacorum*
	8. *cohors I Bracarorum c.R.* k

a) ILS 2189: soldiers who in 241 dedicated an inscription to *deo Sabadio* refer to themselves as *ex ala prima Darda. prov. Moesiae*.; W. Wagner, Dislokation, p. 33; A. Aricescu, The Army, p. 21: "…we can assume that the unit continues to belong to the army of Moesia Inferior in the first of the third century, there is no evidence for a later movement of this unit…" see also: F. Matei-Popescu, Roman Army, p. 170.
b) A. Aricescu, The Army, p. 21; F. Matei-Popescu, Roman Army, p. 172.
c) Presence of the unit in Lower Moesia is attested in CIL III 6154, which mentions the cognomen Severiana, and CIL III 12452 = Kalinka 373; literature: W. Wagner, Dislokation, pp. 12-13; J. Beneŝ, Auxilia Romana, p. 8; A. Aricescu, The Army, p. 21; F. Matei-Popescu, Roman Army, pp. 178-181.
d) The unit was based in Carsium, which is corroborated by an inscription from Trajan's times: ISM V 94. It was also there in 200 CE, as evidenced by inscription ISM V 95. Presence of the unit at the turn of the third century is also attested in ISM V 102 and ISM V 117. F. Matei-Popescu, Roman Army, p. 189.
e) CIL III 6152, CIL III 7478 and CIL III 7473 of the year 230. According to T. Sarnowski, Wojsko rzymskie, p. 122, some of the infantry detachments of the cohort remained on the Danube during the reign of Aurelian; F. Matei-Popescu, Roman Army, p. 199, asserts that the auxiliary cohort was stationed in Lower Moesia as long as the province existed.
f) W. Wagner, Dislokation, pp. 119-120; J. Beneŝ, Auxilia Romana, pp. 24-25; A. Aricescu, The Army, p. 24; list of inscriptions:C. Scorpan, Cohors I Cilicum at Sacidava and Scythia Minor, JRS 71, 1981, pp. 98-102; V. Velkov, G. Aleksandrov, Eine Inschrift aus Montana (Untermoesien) mit venation Caesariana, [in:] Acta Centri Historiae Terra Antiqua Balcanica II, Trinovi 1987, pp. 279-283; F. Bérard, La cohorte I, pp. 130--132; F. Matei- Popescu, Roman Army, p. 203.
g) CIL III 14429 and CIL III 14430 attest its presence in Moesia during the respective reigns of Maximinus Thrax and Gordian III; W. Wagner, Dislokation, p. 121; J. Beneŝ, Auxilia Romana, pp. 25-26; A. Aricescu, The Army, p. 19; F. Matei-Popescu, Roman Army, p. 205.
h) An inscription from Montana, CIL III 14211 (9) = Kalinka 62, confirms that the cohort stayed in Lower Moesia in 241-244; W. Wagner, Dislokation, p. 130; J. Beneŝ, Auxilia Romana, p. 30; F. Matei-Popescu, Roman Army, pp. 205-206.
i) Evidence for the presence of the unit in Lower Moesia in 253 and 258 is found in inscriptions AE 1957, 340, and CIL III 7450, respectively; W. Wagner, Dislokation, p. 122; J. Beneŝ, Auxilia Romana, p. 26; V. Velkov, Montana (The Present-Day Mihailovgrad), [in:] idem, Roman Cities in Bulgaria. Collected Studies, Amsterdam 1980, pp. 85-101, here: p. 97; F. Matei-Popescu, Roman Army, p. 206.
j) F. Matei-Popescu, Roman Army, p. 228: the author argues that the unit was formed in mid-third century due to Gothic incursions; W. Eck, R. Ivanov, C. Iulius Victor, senatorischer Legat von Moesia inferior unter Valerianus und Gallienus und das Kastell Sostra-Siosta, ZPE 170, 2009, pp. 191-200.
k) J. Beneŝ, Auxilia Romana, pp. 19-20; F. Matei-Popescu, Roman Army, p. 195; S. Torbatov, Pečatite CORTISI- BRA I CIB ot Kastela Trimamium, Archeologija 52, 1, 2011, pp. 78-97.

[129] The list of units was compiled by F. Matei-Popescu, Roman Army, p. 244.

Cohortes: *Gemina Dacorum*, *III collecta c. R.*, *II reducum* were formed in the third century[130], while c*ohors II Mattiacorum* may have returned from Thrace to Lower Moesia during the reign of Gallienus[131]. Irregular troops, such as *numerus civium Romanorum*[132] would also be formed at the time; it is highly likely that in the third century *numerus scutariorum*, *numerus singularium*, and *numefrus Surorum sagittariorum*[133] operated in Lower Moesia as well. Consequently, it may be hypothetically assumed that in the late second and in the third century, Roman forces in Lower Moesia consisted on average from 5 *alae* (2,560 horsemen), 9 *cohortes*[134] (5,856 soldiers, including 608 cavalry) and 2 legions (10,000 men), which would give the nominal figure of 18,416 soldiers. However, the actual number may have been smaller, i.e. from 16,500 to 18,400 soldiers.

The Lower Moesian garrison was substantially diminished when *legio V Macedonica* was deployed in late 166 – early 167 to the Parthian front and then posted to Potaissa in Dacia once the war was over[135]. This left only two legions stationed in Lower Moesia: *legio I Italica* and *legio XI Claudia*.

Research into the strength of the garrison in Lower Moesia should also take into account that forces from the province were tasked with defending the frontier on the Danube as well as protecting Greek cities on the Black Sea coast. Even before Lower Moesia was created, the Black Sea region found itself within the sphere of imperial influence, as its territory was occupied by Roman forces consisting of 3,000 heavily armed troops and 40 ships of war[136]. The

[130] Ibidem.

[131] Ibidem, p. 223.

[132] Existence of this unit is attested in third-century inscriptions from Montana; AE 1975, 750 and 1743=AE 1979, 548, 550; W. Wagner, Dislokation, pp. 205-206, did not identify the name of the unit; it has been correctly deciphered by J. Beneŝ: Auxilia Romana, pp. 57-58. A different interpretation and name of the unit was advanced by M.P. Speidel, Regionarii in Lower Moesia, p. 188, who suggested “numerus collectus regionariorum”; I share the opinion that the name in question is in fact "numerus civium Romanorum”, as demonstrated by F. Matei-Popescu, Roman Army, p. 237.

[133] Source material is too scarce to assume the existence of the last two *numeri* with any degree of certainty. As regards *numerus scutariorum,* the unit may have functioned on the Danube in the late third or in the early fourth century; for commentary and a list of sources see F. Matei-Popescu, Roman Army, pp. 238-239.

[134] Ibidem, p. 243.

[135] Inscriptions confirm that legio V Macedonica took part in Verus’ Parthian expedition in 161-166: CIL III 6189 = ISM V 185, 7505 = ISM V 160; B. Filow, Die Legionen, p. 75; T. Sarnowski, Wojsko rzymskie, p. 76; F. Matei-Popescu, Roman Army, p. 52.

[136] Ios., Bell. Iud. II, 16. 4, 367-368; the dating of the military situation described by Flavius Josephus is discussed in T. Sarnowski, Wojsko rzymskie, pp. 138-139, who believes that the fragment refers to the Flavian period.

army included a Moesian contingent which held Crimea; researchers estimate its strength at 1,000 to 2,000 soldiers[137].

Military presence in Crimea diminished under Hadrian, but then increased again during the reign of Antoninus Pius[138]. At the time, presence of Moesian soldiers was recorded in Olbia (which was incorporated into Lower Moesia under Septimius Severus); Chersonesus also received military support from the empire. In the second century, the following units were stationed on the northern coast of the Black Sea: *vexillatio* from Troesmis in Tyras (also a Lower Moesian city from Septimius Severus onwards), another *vexillatio* in Olbia, commanded by a centurion from Durostorum, and *vexillatio legio I Italica*, which held Crimea with Chersonesus and Charax. When *legio V Macedonica* had been deployed to Dacia, the task of protecting Dobruja and the city of Tyras fell to *legio I Italica*, which also controlled Crimea. Towards the end of the joint rule of M. Aurelius and Commodus, the command of *vexillationes Ponticae aput Scythia et Tauricam* was consolidated. According to Tadeusz Sarnowski, the above designation denotes the entirety of Roman troops Tadeusz Sarnowski stationed in Olbia, Chersonesus and the fort of Charax, which remained under unified command in 175-179. It may have been a temporary measure, dictated by the necessity to carry out joint military operations[139]. In the third century, the entire burden of defending Crimea had to be borne by the *vexillatio* composed of *legio XI Claudia* and its auxilia[140]. Lower Moesian forces lost Tyras and Olbia in 269-270, following Gothic invasions. However, epigraphical sources demonstrate that units from Lower Moesia were present in Chersonesus in Diocletian's times; whether they had been there all along or had been recently deployed there is unknown[141]. As regards the second and the third century, judging by the sizes of forts and citadels on the northern coast of the Black Sea, the strength of the Lower Moesian forces there is estimated at 500 to 1,500 soldiers[142]. Therefore the involvement of the Lower Moesian *vexillationes* should be seen as substantial as on average it constituted from 2.3 to 6.9% of the nominal strength of the Roman army in Lower Moesia (see table above).

[137] R. Saxer, Untersuchungen zu den Vexillationen des römischen Kaiserheeres von Augustus bis Diokletian, Köln 1967, p. 91; T. Sarnowski, Wojsko rzymskie, p. 139.
[138] R. Saxer, Untersuchungen, p. 91; T. Sarnowski, Wojsko rzymskie, pp. 141-142.
[139] T. Sarnowski, Wojsko rzymskie, pp. 143-144.
[140] Ibidem, p. 144.
[141] Ibidem, p. 145.
[142] Ibidem, p. 149.

Table 12. Strength of the Lower Moesian garrison on the basis of diplomas of auxiliary units (including figures for legions)

Year	Nominal/ model strength	Less 10%	Calculated strength estimate	Nominal strength of cavalry in auxiliary units		classis
				alae	cohortes	
92	21,936	19,742	19,700-21,900	3,584	1,152	2,000
97	25,136	22,622	22,600-25,100	4,608	1,408	2,000
99	19,984	17,985	18,000-19,900	3,072	1,152	2,000
107	20,536	18,482	19,500-20,500	1,536	640	2,000
111	20,536	18,482	19,500-20,500	1,536	640	2,000
116	18,872	16,984	17,000-18,800	1,024	128	2,000
119-120	22,296	20,066	20,000-22,200	2,560	896	2,000
121	21,624	19,461	19,500-21,600	1,536	768	2,000
125	18,936	17,042	17,000-18,900	1,024	512	2,000
127	23,256	20,930	20,900-23,200	2,560	896	2,000
134	19,224	17,301	17,300-19,200	1,024	624	2,000
145-146	24,696	22,226	22,200-24,600	2,560	1,248	2,000
154	24,152	21,736	21,700-24,100	2,560	1,008	2,000
156/158	24,152	21,736	21,700-24,100	2,560	1,008	2,000
In total: arithm. average*	21,809	19,628	19,600-21,800 a)	2,267 (2,000) b)	862 (780) b)	2,000

* arithmetical averages are rounded.

a) The figure is rounded as well; once added up, the difference between the lowest and the highest value is approximately 9.7% (9.67411…).

b) After deducing ca 10%.

The situation described above demonstrates the degree to which Lower Moesian units were engaged in long-term deployments outside the province. However, one should consider not only their continuous presence on the northern coast of the Black Sea, but also participation in campaigns taking place far away from their home bases[143]. For instance, in 175-177 a *vexillatio* composed of units of the Lower Moesian army operated on the Thracian--Macedonian border[144]; then, in 193, it fought against the army of Pescennius Niger in the eastern part of the empire, taking part in e.g. the siege of

[143] These were listed in detail by F. Matei-Popescu, Roman Army, pp. 271-274.

[144] This is corroborated by the famed inscription of Marcus Valerius Maximinus from Diana Veteranorum in Numidia: AE 1956, 124: "Moesiae inferioris/ eodem in tempore praeposito uexillationibus et at detrahen/ dam/ briseorum latronum manum in confinio Macedon(iae) et Thrac(iae); R. Saxer, Unter- suchungen, pp. 37-39, no. 68 (p. 39); F. Matei-Popescu, Roman Army, p. 271.

Byzantium. Four years later, Lower Moesian troops marched into Gaul, to fight for Septimius Severus against Clodius Albinus[145].

In 238, *vexillationes* from Lower Moesia were temporarily stationed in Pannonia, in the camp of Viminacium[146]; their combined strength is estimated at 2,000-3,000 soldiers[147]. Most likely in 233[148], the presence of *vexillationes* composed of *legio I Italica* and *legio XI Claudia* was recorded in Germania[149]. A prefect of *cohors I Bracaraugustanorum*, who led a *vexillatio* consisting of Lower Moesian units is attested in Gallia Narbonensis[150].

Given the number of legions stationed in Lower Moesia and the data contained in the surviving military diplomas, it may be assumed that on average the capacity of land forces in the Lower Moesian garrison ranged from 19,600[151] to 21,700[152] soldiers (Tab. 12). When one adds the maximum of 2,000 *classiarii*, then its overall strength should be estimated at 21,600 to 23,800 soldiers.

The computations of arithmetical average do not take into account the substantial concentration of Roman forces in Lower Moesia during Trajan's Dacian wars, because in view of the scale of military operations that period should be approached as exceptional. This also applies to the military action directed against Goths in the third century. Furthermore, two diplomas dating from the 130s were omitted in the calculations, as the considerably damaged text cannot be read and reliably interpreted. Since more detailed information for the late second century and the first half of the third century is unavailable either, it has been assumed – relying on the material discussed above – that in that period the army of Lower Moesia numbered from 18,400 to 20,500 soldiers (including the fleet). Likewise, there is no data with respect to the reign of Aurelian (270-275). If Vegetius' account stating there were 730 horsemen serving in a legion is accepted as credible, then it may be assumed that the number of mounted men increased, but at the expense of

[145] ILS 2935: "duci exerciti (sic) Mysiaci aput Byzantium et aput Lugudunum".

[146] R. Saxer, Untersuchungen, p. 51.

[147] Such suggestion was advanced by F. Matei-Popescu, Roman Army, p. 272.

[148] The date is debatable, see ibidem.

[149] R. Saxer, Untersuchungen, pp. 58-59, n. 11: "duci vex[illationum legionum I It(alicae) ? et]/ XI Claud[iae p. f. ---)".

[150] Ibidem, pp. 59-60: "[…equo pu]lico, de V dec(uriis), pra[ef(ecto) coh(ortis) I Brac]arum Augu- stanorum, praeposito vexillationi(bus?) exercitus M(oesie inferioris…]".

[151] The total makes allowances for the fact that the army did not reach its full capacity (as determined on the basis of papyri) and takes into account that a number of Lower Moesian forces had been sent to secure the northern Black Sea coast.

[152] This is the highest, model figure.

infantry[153]. Without doubt, this added to the expenditure, because a horseman received larger pay to offset the expense involved in maintaining horses. Necessarily, this led to a reduction in the number of foot soldiers. The economic ramifications of that change will be discussed in the subsequent chapter.

3. Impact of the army on demography

Studies on the communities in the provinces underscore the particular role of the Roman army in the process of Romanization[154]. However, there is an evident shortage of research concerned with the demography of Lower Moesia[155], which would thus offer an insight into the scale of economic development of the province. Lack of sources is a serious obstacle here, as there are no antique censuses of population in that area. Naturally, this does not mean that one should give up and abandon further investigations. The sociological-evolutionary method allows researchers of antique demography to determine a presumed population density[156]. Although the method is a risky one, one has to concur with the words of Witold Kula, who observed that "historians, whatever period they may study, cannot relinquish having a grasp of the then demography, and must strive to attain such knowledge, even if it were to be only an approximation"[157]. For this reason, one resorts to theoretical models developed by economists, demographers and historians of antiquity. All that suffices to attempt to determine an approximate percentage ratio of the Roman army to the population of Lower Moesia and, more importantly, demonstrate the influence of the army on the fluctuations in population density. The first stage of a highly negative impact was presented in chapter one, which discussed the conquest of the territories on the Lower Danube. Here, the assessments are concerned with the role of the army in

[153] See subchapter 1.

[154] B. Gerov, Romanizmăt I; L. Mrozewicz, Rozwój ustroju; idem, Romanizacja Mezji Dolnej – zarys problemu, Balcanica Posnaniensia I, Poznań 1984, pp. 109-124; T. Zawadzki, Rzym w krajach naddunajskich, [in:] idem, Na peryferiach świata rzymskiego, Poznań 2009, pp. 42-50.

[155] On the issue of demography and future research perspectives see L. Mihăilescu-Bîrliba, R.G. Curcă, New Perspectives on the Demography of the Roman Province Moesia Inferior, The Mankind Quarterly 52, 2, 2010, pp. 139-153.

[156] For a critique of the sociological-evolutionary method see W. Kula, Problemy i metody historii gospodarczej, Warszawa 1983, pp. 424-426.

[157] Ibidem, p. 435.

times when the region had been permanently incorporated into the structures of the Roman Empire.

a) demography

The region on the Lower Danube was sparsely populated[158]. According to Boris Gerov, in the first century CE the Thracian population in Lower Moesia, inhabiting relatively minor centres and villages, did not exceed 200,000 people[159]. The conjecture of the Bulgarian scholar is based on a pioneering work from the late nineteenth century by Karl J. Beloch, who asserted that during the reign of Augustus the Danubian territories were inhabited by an average of five persons per square kilometre[160]. Gerov's estimations seem correct yet incomplete, as he failed to take the area of Dobruja into account[161]. Still, as underlined in chapter one, Lower Moesia was largely populated by nomadic or semi-nomadic peoples, as well as a community engaged in rather inefficient agriculture which, in order to produce any surplus needed extensive areas to settle in and cultivate[162]. Besides, in order to lend those estimates greater credibility, one should consider the processes taking place in Lower Moesia. First, most of its territories were subject to Roman colonization under the Flavians but it was just the beginning; this was accompanied by slow urbanization which started during Hadrian's rule, since truly propitious conditions arose only after the Dacian wars had ended[163]. The low numbers of the local population have certainly been noticed by the province authorities, seeing that they undertook resettlement action to bring people from areas on the Danube to the Roman side. Following one of those, carried out by T. Plautius Silvanus Aelianus, the population density was to increase to as many as 10 persons per square kilometre, according to Tadeusz Zawadzki. Thus, at the time the region had approximately 100,000 inhabitants[164] (the aftermath of the action is discussed below).

[158] Some of the findings in this subchapter were presented in English in M. Duch, The Impact of Roman Army on Trade and Production in Lower Moesia (Moesia Inferior), StEurGn 11, 2015, pp. 235-260.

[159] B. Gerov, Romanizmăt I, pp. 51-52.

[160] K.J. Beloch, Die Bevölkerung der Griechisch-Römischen Welt, Lepzig 1886, p. 463.

[161] B. Gerov, Romanizmăt I, p. 52, note 1. It seems that B. Gerov considers only the territory of Bulgarian Lower Moesia, i.e. without Romanian Dobruja, given that with a population density of 5 persons per square kilometre he estimated the population at 200,000.

[162] See W. Kula, Problemy, p. 427.

[163] L. Mrozewicz, Rozwój ustroju, pp. 20-21.

[164] B. Gerov (Landownership, p. 24) drew attention to the inscriptions: CIL III 14437 (Adamklissi), CIL III 7437 (near Novae), CIL III 7477 (Butovo-Nedan), suggesting that the persons

Contemporary demographic studies assess the population density in the Danubian provinces in 165 CE (shortly before the great plague) at an average of 8-9 persons per square kilometre[165]. Bold attempts were also made with respect to Dobruja: apart from the aforementioned estimations of Tadeusz Zawadzki for the first century CE, there are also calculations which Alexandru Suceveanu made on the basis of sizes of cities and villages, arriving at an estimate of 190,000-262,000 people[166]. For this area, the figure would correspond to a density of 12-17 persons per square kilometre. However, these results are contradicted by later studies by the same researcher, who determined the maximum performance of systems supplying water to selected cities in Dobruja. Consequently, the population figures have to be reduced, given that in his opinion the waterworks of Callatis were able to supply water to no more than 13,000 inhabitants, while the water supply arrangements in Histria and Tomis were only sufficient for a population of 10,000-15,000 people. This suggests a lower number of inhabitants in the largest urban centres of Lower Moesia. Nevertheless, Suceveanu did not revise his position, maintaining that the population of Tomis increased twofold in the second and third century CE[167]. At this point one cannot but recall the remark made by demographers-historians, who observe that in their estimations researchers tend to adopt figures which meet their expectations[168]. In a critical follow-up to the above studies, Lucreţiu Mihăilescu-Bîrliba and Roxana-Gabriela Curcă argued that Histria would not have had more than

they mention may have been descendants of the people resettled in 62. However, in such a case a few inscriptions are not sufficient evidence.

[165] W. Scheidel, Demography, [in:] W. Scheidel, I. Morris, R. Saller (eds.), The Cambridge Economic History of the Greco-Roman World, Cambridge 2007, pp. 38-86, here: p. 48, tab. 3.1.

[166] A. Suceveanu, Viaţa economica în Dobrogea romană (secolele I-III e.n.), Bucureşti 1977: Histria 15,000-25,000 (p. 47), Tomis 20,000-30,000 (p. 49), Callatis 10,000-15,000 (p. 53), north--eastern Dobruja 20,000-30,000 (p. 57), Aegyssus 10,000-15,000 (p. 59), Noviadunum 10,000-15,000 (p. 61), Arrubium 10,000 (p. 61), Troesmis 8,000-12,000 (p. 65), Beroe Cius 12,000-15,000 (p. 65), Carsium 10,000 (p. 66), Capidava 15,000-20,000 (p. 68), Axiopolis 10,000-15,000 (p. 69), south-western Dobruja 15,000-20,000 (p. 70), Libida 10,000-15,000 (p. 72), Tropaeum Traiani 15,000 (p. 74).

[167] A. Suceveanu, Thermes et Aqueducs en Scythie Mineure, [in:] C. Muşeţeanu, M. Bărbulescu, D. Benea (ed.), Corona Laurea. Studii în Onoarea Luciei Ţeposu Marinescu, Bucureşti 2005, pp. 489-500, here: pp. 490-492.

[168] E. Fentress, Peopling the countryside: Roman demography in Albegna valley and Jerba, [in:] A. Bowman, A. Wilson (eds.), Quantifying the Roman Economy: Methods and Problems, Oxford 2009, pp. 127-161. This view is often cited by N. Morley in: Cities and Economic Development in the Roman Empire, [in:] A. Bowman, A. Wilson (eds.), Settlement, Urbanization, and Population, Oxford 2011, pp. 143-160.

10,000 inhabitants[169]. It follows that population density of Romanian Dobruja in the latter half of the second century CE did not exceed 190,000 people, i.e. around 12 persons per square kilometre, increasing in the later periods. Mihail Zahariade undertook to make estimations for the fourth century CE, relying on the assessment of the size of cities and rural settlements, the method employed previously by Alexandru Suceveanu. As a result, Zahariade argued that the population of Dobruja (Scythia Minor) was between 650,000 to 800,000 people[170]. This is decidedly too much[171], because it would mean that since the second century CE the region saw a sudden demographic leap on a hitherto unprecedented scale[172]. In this context, the figures estimated by Suceveanu appear reasonable, although the population density he opts for exceeds the calculations of contemporary demographers[173]. On the other hand, the latter apparently fail to appreciate the specificity of the Dobruja region, where the concentration of cities and villages was greater than elsewhere on the Lower Danube. This was due to the colonization policies which the Romans pursued in that area[174]. For this reason, Dobruja should be approached differently.

Given the above estimates, one may attempt to collate them with the findings relating to the strength of Lower Moesian garrison from the previous part of the chapter.

In the first century, population density in Lower Moesia (Tab. 13) was approximately five persons per square kilometre, while the army constituted up to 8% of the population. With such a high number of soldiers in the province it is certain that local inhabitants, given their insufficiently developed agriculture based on the Roman model, was not able to supply the military with adequate provisions. As Roman settlement and urbanization progressed, the population increased correspondingly. I assume that in the

[169] Perspectives on the Demography, p. 144.

[170] M. Zahariade, Scythia Minor. A History of a Later Roman Province (284-681), Amsterdam 2006, p. 140.

[171] This would mean that population density reached 39-48 persons per square kilometre, see S. Turlej, Rec: M. Zahariade, Scythia Minor. A History of a Later Roman Province (284-681), Gnomon 82, 3, 2010, pp. 243-252, here: p. 246.

[172] If Zahariade's estimates are considered accurate, then the density of population in Dobruja at the time would equal the density in the first half of the 20th century. Even today, the region is inhabited by a little more than one million people.

[173] W. Scheidel, Demography, p. 48.

[174] A.G. Poulter, Rural Communities (vici and komai) and their role in the organization of the limes of Moesia Inferior, [in:] W.S. Hanson, L.J.F. Keppie (eds.), Roman frontier studies 1979: papers presented to the 12th International Congress of Roman Frontier Studies, Oxford 1980, pp. 729-744.

second century CE, the territory of Lower Moesia to the boundaries of the present-day Romanian Dobruja had a population density of eight persons per square kilometre, but in the area of Romanian Dobruja, i.e. eastern part of Lower Moesia, it reached ca twelve persons per square kilometre. In all, there were 550,000 people living in Lower Moesia in 165, yielding an average density of nine persons per square kilometre. By the mid-third century, the army's share in the population had gradually decreased to 3.5%. Then, in the latter half of the third century, raids of barbarian tribes wreaked havoc to Lower Moesia[175] and brought about a demographic slump, but their aftermath is difficult to assess.

Table 13. The army as percentage of the population

Period	Minimal population density per km^2	Overall population	Estimated size of garrison	The military as percentage of the population
first cent.	5 persons	ca 300,000	21,600-23,800	7-8%
second cent.	9 persons	ca 550,000	21,600-23,800	4-4.5%
third cent.	12 persons	ca 750,000	ca 20,000	3-3.5%

The above estimates overlap with other calculations made with respect to the entirety of territories in the Danube, where the total population in Roman times amounted to 1,000,000-2,000,000 people; here, according to Christopher R. Whittaker, the 120,000-strong Roman garrison constituted from 5 to 10 % of the population[176]. In contrast, Bruce W. Frier claims that in 164 the population inhabiting the regions on the Danube reached approximately four million people[177]. Hence, as David Cherry' observes, the army represented 3% of the population[178].

b) the actions and contribution of the army

The role of the army in boosting demographic indicators is not limited merely to being stationed in the province. The latter fact was associated

[175] B. Gerov, Die Einfälle.

[176] C.R. Whittaker, Roman Empire. A Social and Economic Study, London 1994, pp. 99, 291, note 3.

[177] B.W. Frier, Demography, [in:] A.K. Bowman, P. Garnsey, D. Rathbone (eds.), The Cambridge Ancient History 11 (2ed.), The High Empire, A.D. 70-192, Cambridge 2000, pp. 787--816, here: p. 814.

[178] D. Cherry, The Frontier Zones, [in:] W. Scheidel, I. Morris, R. Saller (eds.), The Cambridge Economic History of Greco-Roman World, Cambridge 2007, pp. 720-740, here: p. 729.

with another crucial element, namely the resettlement of population from Barbaricum to the Roman side of the Danube[179]. The goal of the undertaking was to remedy settlement shortages in areas depopulated due to events which had taken place in Lower Moesia in the first century CE[180].

According to Strabo's account, in the early years of the new era Roman governor Aelius Catus resettled 50,000 Getae to Lower Moesia[181]. Several decades later, during the reign of Nero, Tiberius Plautius Silvanus Aelianus, the then legate of Moesia, permitted over 100,000 'Transdanubians' (*Transdanuviani*) to settle in his province[182]. Tadeusz Zawadzki observed that the latter figure should not be taken literally, because the author of the *elogium* only sought to demonstrate that Silvanus's operation surpassed the one conducted by Aelius Catus at the beginning of the century[183]. In his opinion, the undertaking was so extensive that afterwards the population density in Dobruja rose to ten persons per square kilometre. His hypothesis is supported by the fact that in the second and third century one observes evident increase in the number of Getic burials in southern Dobruja, while earlier in the second century their number had been declining[184]. The conjectures of Tadeusz Zawadzki and Sergey Torbatov are substantiated further by the fertility of soil in southern Dobruja, which was ideally suited for efficient agriculture. Resettlements of people living south of the Stara Planina range (tribes of the Bessi and the Lai[185]) added to the population of Dobruja as well. Source material attests only to the movement of those two tribes, therefore a larger number of indigenous communities may be expected to have been involved.

Compared with other territories of the empire, such as Egypt or Asia Minor, Lower Moesia appears to have been a heavily militarised province, not only due to the presence of the soldiers themselves but also other groups which were directly associated with the army. In the first place, there were

[179] Ibidem, p. 192.

[180] See Chapter I.

[181] Strab. Geogr. VII, 3, 10; cf. L. Mrozewicz, Przesiedlenia ludnościowe na rzymską stronę Renu i Dunaju w okresie Wczesnego Cesarstwa (do wojen markomańskich), Eos 75, 1987, pp. 107--128; idem, Prosopographia Moesiaca II: Sex. Aelius Catus, Eos 86, 1999, pp. 103-105.

[182] T. Zawadzki, Namiestnictwo Tyberiusza Plaucjusza Sylwanusa Elianusa w Mezji na tle polityki zbożowej cesarza Nerona, [in:] idem, Na peryferiach świata rzymskiego, Poznań 2009, pp. 50-69.

[183] Ibidem, p. 67.

[184] S. Torbatov, The Getae, p. 513.

[185] Bessi in *vicus* Quintionis: ISM 324; 326-328, 330-332; Lai in *vicus* Secundini: ISM I 343-347, 349.

the veterans. Using Richard Duncan-Jones's method, it may be determined that one legion would discharge no more than 110 veterans annually[186]. Thus, in the period when Lower Moesia was home to three legions (102-166/167), there would be up to 330 veterans leaving the legions each year. In the other periods (86-102 and 167-275) their number amounted to 220 ex-legionaries per year (naturally, these calculations should be treated as estimates). Regular termination of service was severely disrupted during wars, in view of much higher mortality rates of active personnel. Also, in addition to legionaries, soldiers of the auxiliary units were discharged upon completion of service, but in this case the estimations are fraught with serious risk. Obviously, it cannot be expected that all veterans settled in Lower Moesia, but a substantial group must have remained. Studies on military settlement, relying on epigraphical material, demonstrated that 56% of the veterans mentioned in the inscriptions decided to stay in the province where they had served. In that group, as many as 83% chose the immediate vicinity of the military camps as their place of residence[187]. Moreover, given that in the first century 31% of the veterans referred to in the inscriptions established families, while in the second century the corresponding rate was 51%[188], former soldiers should be approached as a significant factor in demographic growth. It should also be noted that as of the reign of Septimius Severus, active legionaries were able to marry legally, which had its impact on demography as well[189].

Another major factor affecting population growth in Lower Moesia were the civilians who followed units to where they were stationed, expecting to gain wealth through trade and services. Local population would settle near the legionary *canabae* and *vici* surrounding the forts of the auxiliary forces[190]. The safety that the military presence ensured drew considerable

[186] R. Duncan-Jones, Money and government, p. 35: the researcher estimates the number at 120, having determined that a legion had 5,500 soldiers. I have used his formula with minor modifications (reducing the number of legionaries to 5,000), which enabled me to calculate the approximate number of soldiers 'retiring' annually from one Lower Moesian legion (5,000/25,5=196, 100/90 x 196=245, 245 – 55% = 110). B. Shaw (Soldiers and Society: The Army in Numidia, Opus 2, 1983, pp. 133-157, here: p. 140) and thus D. Cherry, The Frontier Zones, p. 725, asserts that a maximum of 100 veterans would leave one legion each year.

[187] S. Ferjančić, Settlement of Legionary Veterans in Balkan Provinces I-III Century A.D., Belgrade 2002, p. 224; L.J.F. Keppie, From Legionary Fortress to Military Colony: Veterans on the Roman Frontiers, [in:] Legions and Veterans. Roman Army Papers 1971-2000, Stuttgart 2000, pp. 301-310, here: p. 310.

[188] S. Ferjančić, Settlement, p. 231; L. Mrozewicz, Rozwój ustroju, p. 35.

[189] Herodian III. 8.

[190] The issue was discussed by L. Mrozewicz, Rozwój ustroju, pp. 30-60.

numbers of settlers (colonists). This tendency is very pronounced following Trajan's wars with Dacia, when the Dacian threat had been eliminated. This phenomenon will be discussed more broadly in the chapter concerned with urbanization.

According to researchers, units of the Roman army also included non-military personnel, the majority of whom were slaves[191]. Jonathan Roth estimates that there were around 1,200[192]. Consequently, it should be presumed that 15,000 legionaries stationed in Lower Moesia were accompanied by 3,600 slaves (*colones*)[193]. Other calculations estimate the number of slaves staying in one legionary camp at 2,000 people[194]. However, unless sources are found in which their number is directly stated, these results should be treated as purely hypothetical. Nevertheless, slave personnel in a legion must have been quite numerous, as dispersed information in sources suggests[195]. Soldiers of the auxilia also had their own slaves, though these were fewer given that such soldiers earned less and enjoyed a somewhat inferior rank than legionaries[196]. In any case, presence of a substantial number of slaves in the Roman army camps is another reason to see the army as an important factor promoting demographic growth, especially in the early decades of Lower Moesia.

Studies concerned with recruitment to legions, auxiliary units and praetorian guard in Lower Moesia confirm demographic trends, at least with regard to the increase in the number of Roman citizens and the population under Rome's cultural influence. In the first century recruitment was low, in the second century the volume of enlistments grew, while the greatest number was recorded in the third century[197], unlike in Thrace, which had been a source of new men even before it was transformed into a province. On the other hand, in the first century the territory of Lower Moesia had little to

[191] Presence of slaves in a fort of auxiliary forces is attested in tablets from Vindolanda, see Tab. Vindol. II. 302.

[192] J. Roth (The Size, p. 354) substantiates his calculations as follows: "They can be found by carefully noting Pseudo-Hyginus' terminology: he gives the number of 'soldiers' (*milites*) in a century as 80, but says that the cohort has 600 'men' (*homines*)", therefore the outstanding 120 persons are slaves (*colones*).

[193] Ibidem.

[194] L. Wierschowski, Heer und Wirtschaft, p. 66.

[195] Ios., Bell. Iud. III, 69, 125, V. 49; Tac., Hist., II, 87; M.P. Speidel, The Soldiers' Servants, Ancient Society 20, 1989, pp. 239-247 , here: pp. 239-240, with a list of sources and commentary (p. 249).

[196] M.P. Spiedel, The Soldiers' Servants, p. 242.

[197] M. Zahariade, The Thracians in the Roman Imperial Army. From the First to the Third Centuries A.D., Cluj-Napoca 2009, pp. 81-84.

offer due to the scarce population. In the following century, the situation in the province changed, as an aftermath of resettlements, Roman colonization and other aforementioned factors. In the second-third century, the largest areas yielding recruits originating from the Thracian population in Lower Moesia included Oescus, Nicopolis ad Istrum, Marcianopolis, Durostorum as well as Tomis, Histria, Callatis, Abrittus, Troesmis and Noviodunum[198]. Additionally, among those who enlisted in that period there were descendants of legionaries and soldiers of the auxiliary units[199]. Low recruitment on the territory of later Lower Moesia prior to 46 should not be associated with lack of direct control over its eastern areas (*ripa Thraciae*), which were held by the kingdom of Thrace, although it should be remembered that the latter was a client kingdom, and as such was obliged to provide a quota of new soldiers.

c) economic impact

Did population growth occasioned by the very presence of the army and its indirect influence on demography result in economic progress? In order to answer that question, one should determine at the outset whether demographic gain in pre-industrial economies translated into economic growth or conversely, hindered the latter. Thomas Malthus believed that overpopulation combined with shortage of land results in decreased efficiency of agriculture, which in consequence leads to famine[200]. Naturally, with time the theory has been challenged, but even if it is accepted as true, Lower Moesia never reached such a density of population. Theses advanced by Ester Boserup carry greater conviction, in that she argues that demographic pressure prompts changes and yields progress as a result, i.e. greater efficiency of cultivation[201]. Obviously, that proposition has been subject to critique as well. The following question arises here: if demographic growth spurred economic development, how did particular groups of people share in the profits (expressed in income *per capita*)[202]? This, however, is a secondary issue from

[198] Ibidem, p. 82.

[199] Ibidem.

[200] T. Malthus, An Essay on the Principle of Population, Oxford 1798, I. 17-20 (http://www.econlib.org/library/Malthus/malPop1.html, 26.06.2014).

[201] E. Boserup, The Conditions of Agricultural Growth: The Economics of Agrarian Change under Population Pressure, New York 1965, pp. 63-64, 73: "concentration of population, accompanied by the change to intensive systems of cultivation, will take place only under the pressure of increasing populations or…".

[202] W. Jongman, Archaeology, Demography, and Roman Economic Growth, [in:] A. Bowman, A. Wilson (eds.), Quantifying the Roman Economy. Methods and Problems, Oxford 2009, pp. 115-

the standpoint of these deliberations. Without doubt, the Roman army was a powerful stimulus of demographic growth in Lower Moesia, especially that the population living on the territory under its control had been substantially depleted due to political events discussed in chapter one.

In this case, new settlement in un- or depopulated areas proved to yield favourable results from the economic point of view. Also, the growing population compelled farmers to be more efficient[203], introduce new species of plants and adopt different technologies[204]. Higher population rates also meant a greater number of consumers[205], which boosted the economy, even in pre-industrial systems based chiefly on agriculture; after all, according to the widely accepted estimate this was the sector where 80-90% of the entire population of the Roman Empire was employed[206]. The percentage is certain to have been even higher for Lower Moesia. Given poorly advanced urbanization (particularly prior to Hadrian's reign) and absence of large manufacturing centres, large-scale mining developed only in western Lower Moesia (Montana)[207]. Agriculture was the fundamental source of revenue for the Greek cities on the western coast of the Black Sea[208]. A higher level of economic development is evident when one observes an increase of urban population who are not involved in agriculture[209]. Thus, the presence of Roman soldiers, a homogeneous consumer group who, depending on the period, represented 3-8% of the entire Lower Moesian population, fostered economic development of the province to a significant degree.

It would therefore be erroneous to evaluate the scale of economic impact of the Roman army with respect to the entire population. What should be

-126; B.F. Frier, More is Worse: Some Observations on the Population of the Roman Empire, [in:] W. Scheidel (ed.), Debating Roman Demography, Leiden – Boston – Köln 2001, pp. 139-159.

[203] E. Boserup, The Conditions, pp. 63-64, 73.

[204] The issue is discussed in detail in Chapter V.

[205] P. Erdkamp, Urbanism, [in:] W. Scheidel (ed.), The Cambridge Companion to the Roman Economy, Cambridge 2012, pp. 241-265, here: p. 256.

[206] Ibidem, p. 246.

[207] N.B. Rankov, A Contribution to the Military and Administrative History of Montana, [in:] A.G. Poulter (ed.), Ancient Bulgaria. Papers Presented to the International Symposium on the Ancient History and Archaeology of Bulgaria, 2, Nottingham 1983, pp. 40-73.

[208] A. Suceveanu, Viaţa economică.

[209] It was already A. Smith who observed that division of labour is one of the sources of wealth of nations, see An Inquiry into the Nature and Causes of the Wealth of Nations, 1776 (Polish edition: Badania nad naturą i przyczynami bogactwa narodów, vol. 1-2, 2nd Ed., transl. by O. Einfeld, Z. Sadowski, A. Prejbisz, B. Jasińska, Warszawa 2007); R. Saller, Human Capital and Economic Growth, [in:] W. Scheidel (ed.), The Cambridge Companion to the Roman Economy, Cambridge 2012, pp. 71-86, here: p. 80.

taken into account here are the characteristics of pre-industrial economies, notably the low level of employment outside agriculture. In such an approach, the Roman army becomes a major factor exerting substantial influence on the economy of the occupied frontier territories (Tab. 14).

Table 14. Impact of the army on the non-agricultural sector

Population	Estimated number of people employed outside agriculture (adopted as 5% of the population for the first cent., 10% for the second-third cent.)	Size of garrison	Increase in employment outside agriculture in Lower Moesia
(first cent.) 300,000	15,000	21,600--23,800	130-140%
(second cent.) 550,000	55,000	as above	ca 40%
(third cent.) 750,000	75,000	ca 20,000	ca 18%

The above, merely estimated figures are not intended to provide accurate data but serve as an illustration, showing the extent to which the army contributed to the advancement of Lower Moesian economy.

In the first century, with the population of Lower Moesia at 300,000, the arrival of the army caused a surge in the number of people employed outside agriculture reaching 130-140%. This high rate owes to the circumstances in Lower Moesia at the time: low population, lack of urban centres apart from a few cities on the Black Sea coast, and scarcity of craft production centres. In contrast, when the population of Lower Moesia had increased to approximately 550,000 in the second century, the army contributed to a 40% growth of non-agricultural employment (and 18% in the third century). Thus, throughout the existence of the province, the army was a mainstay of its economy.

Chapter III

Monetization

The army[1] was a major driving force of change in Rome's monetary system[2], though its role diminshed[3] as urbanization progressed and cities became more active in the field of trade and commerce. However, this does not alter the fact that it was the pillar of monetary economy in Lower Moesia, propagating coin in the province and making it a universal tender in commercial exchange.

Studies on the contribution of the military to the monetization of Lower Moesian economy rely chiefly on the body of sources in the shape of coinage (hoards, loose finds). In order to appreciate their significance, one should characterize the locations of discovery, as well as take the size of the Roman garrison and the amount of soldiers' salaries into consideration, remembering that the latter were characterised by substantial disparities. Additionally, the pay that a soldier received did not end up in the immediate vicinity of the camps in its entirety, mainly due to a system of deductions for clothing, food, weapons etc. that the soldier was provided. Gratuities and bonuses funded to the soldiers by their formal superior, the emperor, were an important source of coin in the local market.

One of the crucial steps to be made in order to grasp the role of the army in monetization is estimating probable amounts of money which entered circulation in Lower Moesia via soldiers' pay. Their remuneration was one of the greatest financial burdens to the budget of the Roman Empire[4].

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[1] I would like to express my gratitude to Professor Renata Ciołek, University of Warsaw, for the valuable remarks on the monetary circulation in the Roman Empire.

[2] M.H. Crawford, Money and Exchange in the Roman World, JRS 60, 1970, pp. 40-48, here: pp. 47-48.

[3] C. Katsari, The Monetization of Rome's Frontier Provinces, [in:] W.V. Harris (ed.), The Monetary Systems of the Greeks and Romans, Oxford 2008, pp. 242-266. There is not much point in comparing the fort of Iatrus, which housed only a detachment of *legio I Italica*, with Histria, an important and large city in Dobruja, with an estimated population of 10,000. Still, the author drew attention to a crucial issue, namely the scale of monetization, which deserves to be analysed more extensively.

[4] K. Hopkins, Taxes and Trade in the Roman Empire (200 B.C.-A.D. 400), JRS 70, 1980, pp. 101-125, here: p. 117.

Numerous authors have attempted to assess its overall annual scale. According to Tenney Frank, the yearly upkeep of the army under Augustus cost around 220m sesterces[5]. Thomas Pekáry claimed that during the reign of Commodus it was 120m sesterces[6], while Keith Hopkins suggested the figure of 445m sesterces (±50m)[7]. Brian Campbell estimated the expenditure on soldiers' pay in Domitian's times at approximately 600m sesterces, while under Caracalla (counting only the legions and the municipal units in Rome) the sum might have gone up to 800m sesterces[8]. Ramsay MacMullen advanced still another view, claiming that while the base pay of the legionaries amounted to 225 denarii annually, the overall cost of maintaining the army (excluding the navy) was 315m sesterces, increasing to as much as 420m sesterces per year from Domitian to Septimius Severus[9]. In his turn, German researcher Lothar Wierschowski suggested three figures for that period, the most likely of which is the sum of 368,152,100 sesterces (92,038,025 denarii)[10].

Regardless of which of the above scholars is right, the total expenditure on the army, be it in times of peace or during military campaigns, was substantial and consumed much of the empire's financial resources.

A part of that tremendous pool of money coming from the *aerarium militare*[11] was consigned to Lower Moesia[12], a heavily militarized province on the Roman *limes*. In the approximation, or rather attempted approximation of the amount of stipendium paid to the legionaries, i.e. money that arrived in the province, one can take advantage of a method utilized by the aforesaid researchers, also taking into account the more recent findings, notably those of Michael A. Speidel's[13].

[5] T. Frank, On Augustus and the Aerarium, JRS 23, 1933, pp. 142-148, here: p. 144, the expenditure on auxiliary units was not taken into consideration in the work.

[6] T. Pekáry, Studien zur römischen Währungs- und Finanzgeschichte von 161 bis 235 n. Chr., Historia: Zeitschrift für Alte Geschichte 8, 4, 1959, pp. 443-489, here: p. 444.

[7] K. Hopkins, Taxes and Trade, p. 125. Unlike T. Frank (On Augustus) Hopkins did take the costs of discharge bounties for legionaries into account.

[8] J.B. Campbell, The Emperor and the Roman Army 31BC-AD235, Oxford 1984, p. 164.

[9] R. MacMullen, The Roman Emperors', p. 580.

[10] L. Wierschowski, Heer und Wirtschaft, p. 213.

[11] On the creation of the military treasury: Cass. Dio 55, 23-25.

[12] Moesia was one of those provinces which devoured more funds than it yielded profit, see T. Frank, On Augustus, p. 145. The situation could have been similar when Lower Moesia was established; Hadrian's reign was the turning point, after which the autonomy of the province increased to a degree.

[13] Die römischen Schreibtafeln von Vindonissa. Lateinische Texte des militärischen Alltags und ihre geschichtliche Bedeutung, Baden – Dätwill 2001, pp. 73-77.

1. Remuneration in the Roman military

a) the *stipendium*

The amount of the annual *stipendium* in the Roman army has been an object of scientific investigations since the early twentieth century[14], but knowledge in that respect is still incomplete and uncertain.

This is due to a very limited number of surviving papyri[15], epigraphical[16] and literary sources[17], on the basis of which the amounts of pay are studied.

[14] A. von Domaszewski, Der Truppensold der Kaiserzeit, Neue Heidelberger Jahrbücher X, 1900, pp. 225-241; P.A. Brunt, Pay and Superannuation in the Roman Army, PBSR 18, 1950, pp. 50-71; G.R. Watson, The Pay of the Roman Army: Suetonius, Dio and the quartum stipendium, ZPE 5, 6, 1956, pp. 332-340; idem, The Pay of the Roman Army, The Auxiliary Forces, Historia 8/3, 1959, pp. 372-378; D.J. Breeze, Pay Grades and Rang Below the Centurionate, JRS 61, 1971, pp. 129-135; idem, The Organization of Career Structure of the Immunes and Principales of the Roman Army, BJR, pp. 50-55; R. Develin, The Army Pay Rises, pp. 687-698; B. Dobson, Legionary Centurion or Equestrian Officer. A Comparison of Pay and Prospects, AncSoc 3, 1972, pp. 193-207; M.P. Speidel, The Pay of the Auxilia, JRS 63, 1973, pp. 141-147; L. Wierschowski, Heer und Wirtschaft, pp. 2-15; J. Jahn, Der Sold römischer Soldaten im 3. Jh. n. Chr.: Bemerkungen zu ChLA 446, 473 und 495, ZPE 53, 1983, pp. 217-227; idem, Zur Entwicklung römischer Soldzahlungen von Augustus bis auf Diocletian, [in:] M. Radnoti-Alföldi (hrsg.), Studien zu Fundmünzen der Antike, II, Berlin 1984, pp. 53-74; M.A. Speidel, Roman army pay scales; idem, Rang und Sold; idem, Sold und Wirtschaftslage der römischen Soldaten, [in:] G. Alföldy, B. Dobson, W. Eck (hrsg.), Kaiser, Heer und Gesellschaft in der Römischen Kaiserzeit, Stuttgart 200, pp. 407-437; R. Alston, Roman Military Pay from Caesar to Diocletian, JRS 84, 1994, pp. 113-123; idem, Soldier and Society in Roman Egypt. A Social History, London 2003, p. 105; G. Wesch-Klein, Soziale Aspekte des römischen Heerwesens in der Kaiserzeit, Stuttgart 1998, pp. 48-54; R. Wolters, Bronze, silver or gold? Coin finds and the pay of the Roman army, Zephyrus 53-54, 2000-2001, pp. 579-588. Numismatic studies are greatly useful in research into soldiers' pay: W. Kubitschek, Antoninianus, [in:] Paulys Real-encyclopädie der Classischen Altertumswissenschaft, vol. I.2. 1, 1893, col. 2568-2571; A.G. Carson, Mattishall (Norfolk) treasure trove of Roman imperial silver coins, NC, 9(1969), pp. 129-142, here: p. 129; RIC IV.1, pp. 248-251, no. 256-265. L. Lind, The Monetary Reform of Nero, Domitian and Septimius Severus and the Finds of Roman Denarii in Eastern and Northern Europe, Proceedings of the XIth International Numismatic Congress Organized for the 150th Anniversary of the Société Royale de Numismatique de Belgique Brussels, September 8th-13th 1991, vol. 1, Louvain-la-Neuve 1993, pp. 289-295; R. Bland, The development of gold and silver coin denominations, A.D. 193-253, [in:] C.E. King, D.G. Wigg (eds.), Coin Finds and Coin Use in the Roman World, The Thirteenth Oxford Symposium on Coinage and Monetary History 25-27.03.1993, Berlin 1996, pp. 63-100, here: pp. 67-68. The debate on pay was sparked by a discussion concerning the inscription dedicated by Ti. Claudius Maximus, see M.P. Speidel, The Captor of Decebalus. A New Inscription from Philippi, JRS 60, 1970, pp. 142-153; M.F. Pavkovič, Singulares Legati Legionis: Guards of a Legionary Legate or a Provincial Governor?, ZPE 103, 1994, pp. 223-228; B. Rankov, Singulares Legati Legionis: A Problem in the Interpretation of Ti. Claudius Maximus Inscription from Philippi, ZPE 80, 1990, pp. 165-175.

[15] ChLA 446, 473, 495; RMR 68-72; there is also papyrus P. Panop. Beatty 2, which I have not seen, having only read its descriptions in: L. Wierschowski, Heer und Wirtschaft, p. 6, note 33; M.A. Speidel, Roman army pay scales, pp. 89, 99, 100-101, 104.

The results of these inquiries are presented in Tables 15-17, but the data they contain has not been conclusively validated, which applies in particular to soldiers from irregular formations, the navy and "officers" in the legions and the auxilia. In spite of the findings at which Joachim Jahn and Michael A. Speidel have arrived, the amount of pay increment under Septimius Severus is still doubtful. The tables are intended to support the principal premises of the work and are necessary in order to develop the paradigm of the army's economic role.

Table 15. Pay in legions and auxiliary cohorts composed of Roman citizens (in denarii)

Rank	Domitian (83/84)	Septimius Severus (197)	Caracalla (212)	Maximinus Thrax (235)
miles legionis et miles cohortis c. r.	300	600	900	1,800
sesquiplicarius	450	900	1,350	2,700
duplicarius	600	1,200	1,800	3,600
eques legionis et eques cohortis c. r.	350	700	1,050	2,100
sesquipliacrius	525	1,050	1,575	3,150
duplicarius	700	1,400	2,100	4,200
centurio legionis et centurio cohortes c. r. (?) *	4,500	9,000	13,500	27,000
prim. ord	9,000	18,000	27,000	54,000
prim. pil	18,000	36,000	54,000	108,000
praef. castr.	18,000-24,000 (?)	36,000-48,000 (?)	54,000-72,000 (?)	108,000-144,000 (?)
tribunus	8,333-9,000 (?)	16,666-18,000 (?)	25,000-27,000 (?)	50,000-54,000 (?)
leg. leg.	25,000 (?)	50,000 (?)	75,000 (?)	150,000 (?)

Sources: M.A. Speidel, Sold und Wirtschaftslage, p. 84; G. Wesch-Klein, Soziale Aspekte, note 53, p. 53.

[16] ILS 2487; ILatBulg 351; ILatBulg 67; AE 1976, 495; CIL XIV 191; AE 1962, 312; CIL XIII 3126; CIL VI 41190 n.; ILS 1329.

[17] Tac., Ann. I 17; Suet., Dom. 7.3; Cass. Dio 67, 3, 5; 78, 36, 3; Herodian III, 8, 5. IV, 4; VI, 8, 8; HA, Sev. I2; Veg., Epit., II, 7, II, 11.

Table 16. Pay in the auxiliary units

Rank	Domitian (83/84)	Septimius Severus (197)	Caracalla (212)	Maximinus Thrax (235)
miles coh.	250	500	750	1,500
sesquiplicarius	375	750	1,125	2,250
duplicarius	500	1,000	1,500	3,000
eques coh.	300	600	900	1,800
sesquiplicarius	450	900	1,350	2,700
duplicarius	600	1,200	1,800	3,600
eques alae	350	700	1,050	2,100
sesquiplicarius	525	1,050	1,575	3,150
duplicarius	700	1,400	2,100	4,200
centurio coh.	1,250	2,500	3,750	7,500
decurio coh.	1,500	3,000	4,500	9,000
decurio alae	1,750	3,500	5,250	10,500
prefect coh.	4,500	9,000	13,500	27,000
prefect alae	15,000 (?)	30,000 (?)	45,000 (?)	90,000 (?)

Sources: M.A. Speidel, Roman Army Pay, p. 106; idem, Sold und Wirtschaftslage, p. 84.

Table 17. Pay in irregular units and the navy

Rank	Domitian (83/84)	Septimius Severus (197)	Caracalla (212)	Maximinus Thrax (235)
Classis, nationes Numeri	150-250 (?)	300-500 (?)	450-750 (?)	900-1,500 (?)

Following R. Develin, The Army Pay Rises, p. 692.

b) the *donativa*

In the first and second century, the *donativa*[18] were gifts of cash that the emperor presented to legionaries and praetorians with a view to winning their loyalty and favour[19]. They were paid on exceptional occasions, such as the assumption of power, adoptions and marriages in the ruling house[20]. The

[18] Tac., Hist 1,5; Suet., Cal. 46, 2.

[19] J.B. Campbell, The Emperor and the Roman Army, p. 187; S.E. Phang, Roman Military Service. Ideologies of Discipline in the Late Republic and Early Principate, Cambridge 2008, pp. 179-182.

[20] J. Jahn, Zur Entwicklung, p. 54.

amount of the *donativum* was determined by the rank of the unit; those stationed in Rome received the largest sums, but the rate per soldier was equal, regardless of rank[21]. It is likely that as of the second century, the *donativa* were also given to the soldiers of the auxiliary forces[22], in the amounts corresponding to the *congiaria* granted to Roman citizens[23]. In the third century, the *donativa* were standardized and became a regular, additional benefit[24], which under Diocletian exceeded base pay[25]. Also, in that period the amount was adjusted to reflect the military hierarchy[26].

There are few mentions in written sources concerning the value of donatives. After the establishment of Lower Moesia, the first *donativum* was awarded to the soldiers in 89, following the end of Domitian's war with Dacia, a fact reported by Cassius Dio[27]. The historian limited himself to a brief remark, providing no detail. The location where the money was distributed suggests that its recipients were most certainly soldiers stationed on the Lower Danube.

The subsequent *donativa* which are attested in written sources were paid out during the reign of Trajan, but again the amounts remain unknown[28]; it is most likely that the gifts went to the soldiers who had taken part in the Dacian wars.

On assuming power, Hadrian bestowed "double largesse"[29] on the soldiers, as well as dispensed 400m sesterces among the Roman people and soldiers on the occasion of adoption[30]. According to Joachim Jahn, from that moment on, the *donativa* become an established and regular occurrence[31].

[21] Ibidem; G. Wesch-Klein, Soziale Aspekte, p. 56: "Die Donativzahlungen erfolgten offensichtlich in der Kaiserzeit niemals proportional, sondern stets unabhängig von der Höhe des Soldes der Empfänger".

[22] J. Jahn, Zur Entwicklung, p. 55, see note 8; G. Wesch-Klein, Soziale Aspekte, p. 57; R. Duncan-Jones (Money and government, p. 40), argues that this had been taking place since Hadrian.

[23] G. Wesch-Klein, Soziale Aspekte, p. 57. On the amounts of the*congiaria see* R. Duncan--Jones, Money and government, pp. 249-250.

[24] G. Wesch-Klein, Soziale Aspekte, p. 58.

[25] J. Jahn, Zur Entwicklung, p. 58: the annual income of an infantry soldier under Diocletian was 8,050 denarii, and only 1,800 of that sum constituted his regular pay.

[26] Ibidem: "Offiziere erhielten das Doppelte".

[27] Cass. Dio, 67, 7, 3; K. Strobel, Die Donaukriege Domitians, Bonn 1989, p. 93: the author estimated that peace with Decebalus was concluded in late July 89.

[28] Plin., Pan. XXV 2; XLI 1.

[29] HA, Hadrianus, 5: "Militibus ob auspicia imperii duplicem largitionem dedit".

[30] HA, Hadrianus, 23: "in caducum parietem nos inclinavimus et perdidimusque ter milies sestertium, quod populo et militibus pro adoptione Commodi dedimus".

[31] J. Jahn, Zur Entwicklung, p. 54: "Wie sich aus SHA v. Hadr. 5,7 militibus ob auspicia imperii duplicem largitionem dedit ergibt, scheinen sich für Donativzahlungeg gewisse Festsätze entwickelt zu haben".

Another instance of such rewards given to the subjects is recorded in the sources during the reign of Antoninus Pius, when his daughter Faustina was wed to M. Aurelius[32], though the amount of the *donativum* is unknown. Marcus Aurelius took a completely different approach, refusing to give *donativa* to the soldiers after the victorious battle against the Marcomanni[33]. Publius Helvius Pertinax paid out bounties to soldiers twice, even when he was struggling with financial difficulties[34]. Emperor Septimius Severus was very generous to his fighting men, awarding them with *donativa* on several occasions. The first time, a sum of 1,000 sesterces extorted by legionaries was paid in 193 to all blackmailers[35]; then, in 197, he gave an unknown sum (in connection with the expedition against Albinus[36], in which *vexillatio legio I Italica* and *XI Claudia* took part). In 198, premiums went to the soldiers for the third time, when the emperor conferred the title of Caesar on his sons[37]. Caracalla was no less generous than his father, giving out numerous *donativa* on the Istrus (Danube)[38]. Legionaries from Lower Moesia got their share as well.

Despite initial plans to cut expenditure on the army, Macrinus (Marcus Opellius Macrinus) awarded 3,000 sesterces to each soldier after coming to power and promised them another 12,000, of which 4,000 were paid forthwith[39]. Additionally, soldiers received three aurei each when his son Diadumenian received the name *Antoninus*. It is not certain, however, whether any cash gifts went to *legio I Italica* and *XI Claudia*.

As his predecessors, Elagabalus granted the legionaries 2,000 sesterces each upon assuming the throne. His successor, Severus Alexander gave *donativa* in unknown amounts four times (the last one having been awarded in 231, in connection with the campaign in the East[40]). Maximinus Thrax (Caius Iulius Verus Maximinus), as others before him, distributed tremendous sums of money among his soldiers and set out for Italy[41]. Gordian III

[32] HA., Pius, X. 2:"Nuptias filiae suae Faustinae, cum Marco Antonino eam coniungeret, usque ad donativum militum celeberrimas fecit".

[33] Cass. Dio 61, 3, 3.

[34] HA, Pertinax, 8.

[35] HA, Severus 7, 6: "Sed cum in senatu esset, milites per seditionem dena milia poposcerunt a senatu exemplo eorum, qui Augustum Octavianum Romam deduxerant tantumque acceperant".

[36] Herodian, III, 6, 8 and 8, 4.

[37] HA, Severus, XVI, 5: "Harum appellationum causa donativum militibus largissimum dedit concessa omni praeda oppidi Parthici".

[38] Herodian, IV, 7, 4.

[39] Cass. Dio 79, 19, 2 and 34, 2; Macrinus was compelled to do so by the political situation, especially Elagabalus' revolt.

[40] HA, Severus Alexander, XXVI, 1; Herodian, VI, 6, 4.

[41] Herodian, VII, 8, 9.

promised large bounties to the legionaries[42], and his promises were fulfilled by Philip the Arab[43]. This is the last mention about the *donativa* in written sources while Lower Moesia still existed as a province.

The above sources do not permit conclusive determination when soldiers stationed in Lower Moesia received *donativa* and how big they were. It is an established fact, however, that they were standardized in the third century, and ceased to be only a premium obtained on special occasions. Joachim Jahn's studies demonstrated that under Domitian, the *milites* would be awarded *donativa* on the *dies imperii*, the *dies natalis* of the emperor and on January 1st, in the total amount of 500 folles[44], which suggests that fairly substantial sums were involved. Also, Michael A. Speidel believes that a military commander could grant a *donativum*, e.g. upon assuming his post, though occasionally ordinary soldiers could count on minor cash bonuses as well[45].

c) the *praemia*

Since the reign of Augustus, legionaries received a *praemium* of 12,000 sesterces on becoming veterans, i.e. conclusion of service[46]. The amount was increased to 20,000 sesterces only during the rule of Caracalla[47]. There are no sources however, indicating when the auxiliaries began to receive discharge bounties. In the later system of gratuities, the amount of the *commoda missionum* was adjusted for rank. Additionally, a soldier could be individually rewarded by the emperor[48].

Given that each year 110 legionaries became veterans[49], the annual cost of pensions for one Lower Moesian legion was around 330,000 denarii (1.32m sesterces). From 86 to approximately 106, when two legions were stationed in the province permanently (except for the Dacian war) the cost of gratuities (86-104) amounted to 11,880,000 denarii (47,520,000 sesterces). Subsequently, with three legions based in Lower Moesia (from 104 to 166), the cost of pensions increased to 61,380,000 denarii (245,520,000 sesterces). Then, as the number of legions was reduced to two (before the *praemia* were

[42] Herodian, VII, 6, 4.
[43] Zos., I, 19.
[44] J. Jahn, Zur Entwicklung, p. 58.
[45] M.A. Speidel, Sold und Wirtschaftslage, p. 74.
[46] Cass. Dio 55, 23, 1; R. Duncan-Jones, Money and government, p. 35.
[47] Cass. Dio 78, 24, 1.
[48] M.A. Speidel, Sold und Wirtschaftslage, p. 73.
[49] See Chapter II. 3.

raised under Caracalla), discharge payments amounted to 30,360,000 denarii (121,440,000 sesterces). Following the increase introduced by Caracalla until the reign of Maximinus Thrax (235 r.), approximately 25,300,000 denarii (101,200,000 sesterces) were paid out to discharged soldiers. In total, all the above estimated payments (from 86 to 235) yield the sum of 128,920,000 denarii (515,680,000 sesterces).

Finally, one should also mention the *viaticum*, a one-off sum of 75 denarii which never varied and was paid to all recruits, irrespective of the rank of the unit (*legio*, *auxilia*, *classis*)[50].

d) coinage types

Soldiers never received their regular pay in gold coin[51]. The aureus circulated among a very narrow circle, i.e. high-ranking representatives of the military hierarchy and provincial administration; it would also reach affluent landowners and merchants[52]. This may be confirmed by the discovery of mere four lost aurei in Moesia, compared with seven found in Thrace[53], although the fewer number of gold coin finds may be due to the activities of treasure hunters.

Besides, golden coins were much less often lost because their value was too great. It may also be noted that the empire used gold coins (including medallions) to pay tributes and, since the third century, the *annua munera* which the barbarian tribes received in return for peace on the *limes*[54]. A part of the *donativa* could be paid in gold coin as well[55].

Silver coins are a different matter, which additionally explains their numerous discoveries in the province compared with other denominations

[50] RMR 70 = CPL 122: in viatico (denarios) LXXV; R.W. Davies, Service in the Roman Army, Edinburgh 1989, pp. 20-21.

[51] A.H.M. Jones, The Roman Economy: Studies in Ancient Economic and Administrative History, Oxford 1974, p. 192; D.G. Wigg, Coin Supply and the Roman Army, [in:] W. Groenman-van Waateringe, B.L. van Beek, W.J.H. Willems, S.L. Wynia (eds.), Proceedings of the 16th International Congress of Roman Frontier Studies, (16th : 1995: Kerkrade, Netherlands), Oxford 1997, pp. 281-288, here: p. 281; C. Howgego, The Supply and Use of Money, in the Roman World 200 B. C. to A. D. 300, JRS 82, 1992, pp. 1-31, here: pp. 11-12.

[52] A. Kunisz, Obieg monetarny, p. 98. Low share of aurei in monetary circulation in Lower Moesia is also confirmed by the most recent studies, see E. Paunov, Roman Aurei in Moesia and Thrace from Augustus to Trajan, Novensia 23, 2013, pp. 145-158.

[53] E. Paunov, Roman Aurei, p. 152.

[54] A. Bursche, Later Roman-Barbarian Contacts in Central Europe Numismatic Evidence, SFMA 11, Berlin 1996, p. 86.

[55] R. Wolters, Bronze, silver or gold?, p. 586.

(chiefly in hoards). The denarius fully catered for the needs of an ordinary soldier, who spent his pay on essential commodities and pleasures. Unlike the aureus, silver coin was suited for everyday exchange, in combination with bronze denominations[56]. This is particularly evident in the tablets from the auxiliary fort in Vindolanda, where most of the recorded transactions involved payment in denarii, although even smaller denominations are encountered as well[57]. The latter could not have been used to pay the entire *stipendium*[58], since the amount in bronze coins was several times heavier than its equivalent in silver coins. Taking into account the weight and the number of recipients (ca 20,000 soldiers), as well as deficits in transportation in antiquity, bronze coinage was not suited to serve as means of paying the military *stipendia*[59], at least until the moment when the duty to produce coins was imposed on mints in the provinces, which took place e.g. under Septimius Severus. The fact is corroborated by a large number of autonomous coins discovered in legionary camps[60]. Such a phenomenon was nothing out of the ordinary in the monetary system of the Roman Empire. When central mints were unable to produce the requisite volume of coinage, Rome would consent to the opening of new mints in the provinces to meet the demand for tender[61], which also reduced transportation costs.

[56] A. Kunisz, Wojny a pieniądz. Z badań nad obiegiem srebrnej monety na wschodnim pograniczu Imperium Rzymskiego w epoce Sewerów (193-235), Katowice 1998, p. 16; this was also noted by A.H.M. Jones, Inflation under the Roman Empire, Economic History Review 5, 1953, pp. 293-318, here: p. 294.

[57] K. Grønlund Evers, The Vindolanda Tablets and the Ancient Economy, BAR British Series 544, 2011, p. 21.

[58] Although Tacitus suggests that soldiers received their pay in asses, see Tac., Ann. I 17. 6.

[59] A. Kunisz, Wojny a pieniądz, p. 23: 300 denarii weigh a kilogram, while the same amount in asses is as much as 50 kg. Studies conducted by D.G. Wigg (Coin Supply, pp. 281-288) suggest otherwise; the author analysed monetary circulation in Germania (p. 282) and found that in the early Julian-Claudian period bronze coin travelled quite fast. Using the example of the fort in Kalkriese, Wigg determined that 90% of the coins soldiers owned were new, having been minted relatively recently. One should also consider the observations made by R. Wolters (Bronze, silver or gold?, p. 581), who noted that due to deductions soldiers would be paid out only ⅓ of the nominal pay, therefore the volume and tonnage of bronze coins that had to be transported to the garrisons was smaller.

[60] Cf. R. Ciołek, P. Dyczek, Coins from Sector IV. Novae. Legionary Fortress and Late Antique Town II, Warsaw 2011, pp. 250-253.

[61] Cf. A. Kunisz, Rola pieniądza proweniencji prowincjonalnej w systemie monetarnym Cesarstwa Rzymskiego, [in:] M. Jaczynowska, J. Wolski (ed.), Prowincje rzymskie i ich znaczenie w ramach Imperium, Wrocław 1976, pp. 87-103.

e) deductions from pay

In the first and second century, all Roman soldiers, regardless of location, received clothing, equipment and food from state distributor, for which they had to pay out of their own *stipendium*[62]. Just as in the case of soldiers' pay, there is no data from Lower Moesia which would provide details of such deductions; one can only draw conclusions from comparisons with other provinces. In this respect, the specificity of the province is not that significant, since much like the pay, deductions were standardised and were maintained at the same level for all soldiers, wherever they may have been based.

The amounts of dockage are well illustrated in first-century papyri from Egypt. The most complete of those is RMR 68, a document dating from 81, i.e. before the division of Moesia. The papyrus refers to a *miles cohortis*[63], while a Q. Iulius Proculus it mentions received three *stipendia* in the amount of 247.5 drachmas each (Egyptian drachma = denarius). 182 drachmas were docked from the first *stipendium*[64], 106 were taken from the second to cover the cost of supplies[65], while the third went towards provisions in its entirety[66]. Thus the annual pay of Q. Iulius Proculus, less 1%, totalled 742.5 drachmas[67]. Once the supplies have been paid for, he was left with 207 drachmas, or 28% of the yearly earnings.

C. Valerius Germanus, mentioned in the same papyrus, received similar pay, but due to higher expenses, the amount he was left with was only 167 drachmas, or 22% of his annual earnings. As regards legionaries, the costs of provisions they had to bear were the same as in the case of soldiers in auxiliary units, which is easily seen when one compares the papyri P. Yadin 722 and RMR 68[68].

The next example corresponds even better with the circumstances in Lower Moesia. The papyrus in question is RMR 69 which, albeit dating from 84, documents the situation after the pay rise instituted by Domitian. The soldier mentioned in the papyrus, a Quadratus, may have received four

[62] M.A. Speidel, Sold und Wirtschaftslage, p. 74.

[63] Idem, Roman army pay scales, p. 92.

[64] 10 drachmas for hay, 80 drachmas for food, 12 drachmas for sandals and socks (?) (fascias?: socks or puttees), 20 drachmas for saturnalia, 60 drachmas for unknown purpose.

[65] 10 drachmas for hay, 80 drachmas for food, 12 drachmas for sandals and socks, 4 drachmas for banners.

[66] Apart from regular deductions, 147.5 were docked for clothing /gear (*vestimentis*?).

[67] Denarius = Egyptian drachma, $3 \times 250 - 1\% = 742.5$.

[68] M.A. Speidel, Sold und Wirtschaftslage, p. 75, believes that there was a uniform system of deductions applicable to all units, while differences stemmed from varied needs for military gear and footwear.

stipendia, but due to the state of preservation the information is not thoroughly certain. However, it demonstrates that following the aforesaid pay increase, the deductions were still[69] very high, and most of the soldiers' salaries went to essential expenses. Because the papyrus is damaged, it is unclear how much had been deducted from the fourth *stipendium*; only the amount of the latter is provided.

Based on RMR 69, one can readily conclude that a Roman soldier had to foot a high bill for the provisions. Quadratus had as much as 328 drachmas docked from three *stipendia*, while Proculus and Germanus were deducted 240 drachmas each. In the first and in the early second century, ordinary foot soldiers lost 40% to 70% of their salaries, which went towards dues[70] for *viaticum*, *saturnalicum castrense*, *ad signas*, *caligas fascias*. No sources provide information on the deductions from pay of the higher tiers of the military, i.e. ranks such as *centurio*, *primus pilus* etc.

In the second century, the high dockage was withdrawn. Information to that effect can be derived from the surviving papyri[71], notably RMR 70 from 192 (before the pay rise under Severus), as at that time the method of keeping soldiers' books and accounts underwent a major change. Substantial deductions from pay were no more, replaced by the *collatio* in the amount of 4 drachmas and 22.5 oboli[72]; subsequently, the *contulit publico*[73] or *sublatio*[74] (also in minor amounts) were added in the third century. Individuals mentioned in the papyrus, Polion and Pathermuthis, received 79 drachmas and 21¾ oboli from the entire *stipendium* of 84 drachmas and 15¾ oboli, walking away with 94% of their pay.

It is unclear when exactly the manner of keeping payroll records changed and the high deductions were waived. Michael A. Speidel suggested that it took place in 121, in Hadrian's times[75]. Although probable, it cannot be verified. Admittedly, during his reign Lower Moesia experienced profound

[69] As evidenced by the amount he had to pay: 13 drachmas for hay, 128 drachmas for food, 16 drachmas for footwear and 57 drachmas, 2 oboli for an unknown purpose. In total 214 drachmas and 2 oboli were deducted from his first pay to cover basic expenses. Deductions from the second salary amounted to 149 drachmas.

[70] S.E. Phang, Military Service, p. 172; ⅔ were suggested by P. Herz, Finances and Costs of the Roman Army, [in:] P. Erdkamp (ed.), A Companion to the Roman Army, Oxford 2007, pp. 306--322, here: p. 311.

[71] The changes were discussed by M.A. Speidel: Roman army pay scales, p. 97.

[72] "ex eo collation (denarios) IIII ob(olos) XXII semis".

[73] ChLA XI 495: "ex iis contulit pu[b]l(ica) (denarios) I[V] ob(olos) IV".

[74] ChLA X 446: "ex eis subl(atio) (denarios) VIII ob(olos) IV (dodrantem); ChLA XI 473: d[e] bet subl(ationem) stip(endi)…(denarios) IIII".

[75] M.A. Speidel, Sold und Wirtschaftslage, p. 76.

changes, economic ones in particular, which were manifested in population growth, advancing urbanization and emergence of numerous centres of production with highly skilled craftsmen (Butovo, Pavlikeni) on which the legions relied as a logistical resource. Already Erik Gren underlined the significance of Hadrian's rule for the development of Lower Moesia, although in his opinion the principal cause lay in the fact that legions had built their permanent bases there, which caused the civilian population to concentrate around the military garrisons[76]. The data is too scarce to state conclusively that pay deductions were abolished under Hadrian. It cannot be ruled out that beginning with his reign, individual soldiers had to fend for themselves in terms of provisions. It is likely that a twofold provisioning system operated in Lower Moesia: the central supply and the deductions continued to function, but to a large extent the soldier had to acquire the indispensable products himself[77].

2. Expenditure on the Roman army in Lower Moesia and monetization

In the model developed by Keith Hopkins, rich areas of the Empire such as Spain, Syria, Greece, Gaul and Asia Minor, yielded the greatest volumes of tax, and a part of that revenue was spent on pay for soldiers stationed along the frontiers of Rome, as well as expended in Italy itself[78]. The model was challenged by Eric Birley, who observed that it could not have functioned with respect to the Danubian provinces, as the region received imports from Italy, which paid no taxes[79]. Still, provinces on the *limes* required substantial outlays in any case, in view of the army stationed there. For this reason, large amounts of money were sent to Lower Moesia, which to a considerable extent contributed to the monetization of the economy. It should be noted that in the case of incomplete or uncertain data, a number of variables has to be adopted in order to minimize potential error: 1. amounts without deductions, 2. amounts after deductions, 3. amounts after deductions

[76] E. Gren, Kleinasien und der Ostbalkan, p. 98.
[77] T. Sarnowski, Pozamilitarne funkcje, pp. 439-448.
[78] K. Hopkins, Taxes and Trade, p. 101.
[79] E. Birley, The Economic Effects of Roman Frontier Policy, [in:] A. King, M. Henig (eds.), The Roman West in the Third Century. Contributions from Archaeology and History, Oxford 1981, pp. 39-53, here: p. 47.

less 10%[80]. Later, when deductions had been abrogated, 60% is subtracted from the said amounts, given that a soldier had to spend 40% of his pay outside the garrison to purchase other basic commodities as well as spend some of his money on services and entertainments.

Table 18 shows that the estimated expenditure on maintaining one legion in the period from Domitian to Hadrian/Antoninus Pius may have cost Rome around 1.9m denarii. With deductions from pay in the amount of 1m denarii, 900,000 denarii was paid out annually in soldiers' salaries. As regards auxiliary units, the annual upkeep of a *cohors peditata* after deductions was approximately 50,000 denarii (Tab. 19), 67,000 denarii for *cohors equitata* (Tab. 19), 80,000 denarii for *cohors peditata milliaria* (Tab. 20), 115,000 denarii for *cohors equitata milliaria* (Tab. 20) and 100,000 denarii for *ala quingenaria* (Tab. 21). The annual costs of maintaining *classis Moesica* after deductions may have ranged from 90,000 (300,000 without deductions) to 150,000 denarii (500,000 without deductions).

Table 18. Costs of maintaining one Lower Moesian legion

Soldiers per rank	Number in the legion	*Stipendium* (in denarii)	Total	Reduced total (less 70%)
miles et immunes	4,453	300 (90[a)])	1,335,900	400,770
sesquiplicarii	300[b)]	450 (240[c)])	135,000	72,000
duplicarius	60[b)]	600 (290[c)])	36,000	17,400
eques legionis	112	350 (105[a)])	39,200	11,760[d)]
eques sesquiplicarius	4	525 (280[e)])	2,100	1,120
eques duplicarius	4	700 (455[g)])	2,800	1,820
centurio legionis	55 (?)	4,500	247,500	NDA[f)]
prim. ord.	4 (?)	9,000	36,000	NDA
prim. pil.	1	18,000	18,000	NDA
tribunus aug.	5	9,000 (?)	45,000	NDA
praef. castr.	1	24,000 (?)	24,000 (?)	NDA
tribunus lat.	NDA	NDA	NDA	NDA
leg. leg.	1	25,000 (?)	25,000 (?)	NDA
Total	**5,000**	–	**1,946,500**	**900,370**

[a)] after 70% deduction b) R. Develin, The Army Pay Rises, p. 689. c) after 70% deduction from base pay: approx. 210 denarii. d) the adopted rate of reduction is 70% . e) Less 245 denarii, i.e. 70% of base pay f) due to lack of data the sums are adopted as for the entire legion.

[80] 10 % is a variable adopted on the basis of analyses of the strength of Lower Moesian army, see Chapter II.

Table19. Costs of maintaining *cohors peditata* and *equitata* in Lower Moesia

Rank	Annual pay	Number of soldiers	Total costs	Reduced total
miles coh.	250 (75) *	443	110,750	33,225
sesquiplicarius	375 (175)	24	9,000	4,200
duplicarius	500 (325)	6	3,000	1,950
centurio coh.	1,250	6	7,500	NDA, min. 6,450
prefect coh.	4,500	1	4,500	NDA, 4,500
Total for cohors peditata	–	**480**	**134,750**	**50,325**
eques coh.	300 (90)	108	32,400	9,720
sesquiplicarius	450 (240)	4	1,800	960
duplicarius	600 (390)	4	2,400	1,560
decurio coh.	1,500	4	6,000	NDA, min: 5,160
Total for cohors equitata	–	**608**	**177,350**	**67,725**

* Parentheses provide the amount less basic reduction (70% deducted from pay of miles coh.).

Table 20. Costs of maintaining *cohors milliaria peditata* and *equitata* in Lower Moesia

Rank	Annual pay	Number of soldiers	Total costs	Reduced total
miles coh.	250 (75) *	739	184,750	55,425
sesquiplicarius	375 (175)	40	15,000	7,000
duplicarius	500 (325)	10	5,000	3,250
centurio coh.	1,250 (1075)	10	12,500	10,750
prefect coh.	4,500	1	4,500	4,500
Total for cohors peditata milliaria	–	**800**	**221,750**	**80,925**
eques coh.	300 (90)	216	64,800	19,440
sesquiplicarius	450 (240)	8	3,600	1,920
duplicarius	600 (390)	8	4,800	3,120
decurio coh.	1,500	8	12,000	NDA, min. 10,320
Total for cohors equitata milliaria	**250 (75) ***	**240**	**306,950**	**115,725**

* Parentheses provide the amount less basic reduction (70% deducted from pay of miles coh.).

Table 21. Costs of maintaining an *ala* in Lower Moesia

Rank	Annual pay	Number of soldiers	Total costs	Reduced total
eques	350 (105)	447	156,450	46,935
sesquiplicarius	525 (280)	32	16,800	8,960
duplicarius	700 (455)	16	11,200	7,280
decurio	1,750 (1,505)	16	28,000	24,080
prefectus	15,000 (?)	1	15,000	15,000
Total	–	**512**	**227,450**	**102,255**

* Parentheses provide the amount less basic reduction (70% deducted from pay of eques).

Using figures which describe the strength of the Roman army, calculated on the basis of military diplomas issued from 86 to 158 (Tab. 12) (assuming a 90% complement of the Moesian garrison but excluding its increased numbers during the Dacian wars and the Moesian fleet), it may be surmised that approximately 7m denarii reached Lower Moesia each year (see Tab. 22). Over 72 years, this yields the total of 504m denarii. Thus, per year, soldiers in Lower Moesia were able to spend around 3m denarii of their pay outside their garrison, and 216m denarii in total throughout that period. Subsequently, one should add the remainder, i.e. sums corresponding to the 35 years (158--194) before the pay rise under Septimius Severus; in that period the army in Lower Moesia could have received 245m denarii, of which 105m denarii may have entered circulation as they were spent by soldiers. As a result, in the first 107 years of Lower Moesia, the influx of money into the province could have amounted to 321m denarii, after deduction of provisions- and equipment-related sums as well as excluding other potential earnings of soldiers (the potential total amount of pay was 749m denarii).

When soldiers' salaries were increased by 100% in 194, the expenditure on the army in Lower Moesia grew accordingly (Tab. 15-17, 23), but the fact contributed to a greater volume of coins in circulation, which was also boosted by the abolition of high deductions for supplies. Excluding *classis Flavia Moesica*, but including the estimated number of soldiers in Lower Moesia at that time (see calculations in Chapter II) this yields approximately 11.8m denarii per year (212,400,000 in 194-212). Caracalla did listen to his father's counsel, who advised him to make soldiers rich and care little about the rest[81], and proceeded to increase pay by another 50%. In consequence, the

[81] Cass. Dio 66, 15, 2.

Table 22. Estimated costs of maintaining the Roman army in Lower Moesia before 158

Year	Composition of the army	Amount without deductions	Amount after deductions	Amount without deductions less 10%[a)]	Amount after deductions less 10%
92	2 legions, 9 coh. eq., 6 coh. ped., 7 alae,	7,889,800	3,42,8000	7,100,820	3,085,200
97	2 leg., 11 coh. eq., 8 coh. ped., 9 alae	8,968,900	3,868,610	8,072,010	3,481,749
99	2 leg., 9 coh. eq., 3 coh. ped., 6 alae	7,258,100	3,174,770	6,532,290	2,857,293
107	3 leg., 5 coh. eq., 2 coh. ped., 3 alae	7,678,100	3,646,575	6,910,290	3,281,917
111	3 leg., 5 coh. eq., 2 coh. ped., 3 alae	7,678,100	3,646,575	6,910,290	3,281,917
116	3 leg., 1 coh. eq., 1 coh. m. ped., 3 coh. ped., 2 alae	7,097,750	3,205,245	6,387,975	2,884,720
119-120	3 leg., 7 coh. eq., 1 coh. ped., 5 alae	7,898,050	3,736,785	7,108,245	3,363,106
121	3 leg., 6 coh. eq., 1 coh. ped., 3 alae	7,720,700	3,464,550	6,948,630	3,118,095
125	3 leg., 4 coh. eq., 1 coh. ped., 2 alae	7,138,550	3,226,845	6,424,695	2,904,160
127	3 leg., 7 coh. eq., 3 coh. ped., 5 alae	8,622,450	3,837,435	7,760,205	3,453,691
134	3 leg., 2 coh. eq., 2 coh. ped., 1 coh. m. eq., 2 alae	6,956,050	3,257,445[b)]	6,260,445	2,931,700
145-146	3 leg., 6 coh. eq., 3 coh. ped., 2 coh. m. eq., 5 alae	9,059,000	4,001,160	8,153,100	3,601,044
154	3 leg., 6 coh. eq., 4 coh. ped., 2 coh. m. eq., 5 alae	9,193,750	4,051,485	8,274,375	3,646,336
156/158	3 leg., 6 coh. eq., 4 coh. ped., 1 coh. m. eq., 5 alae	8,886,800	3,935,760	7,998,120	3,542,184
Total arithm. average	–	**8,003,282**	**3,521,388[c)] or 3,605,802**	**7,202,963**	**3,169,249[c)] or 3.245222**

[a)] 10 % is a variable adopted on the basis of analyses of the strength of Lower Moesian army, see Chapter II.

[b)] Figures in bold mean that in the given period deductions from pay might have been waived c) arithmetical average for the period until 125

annual outlay on land army increased to around 17.7m denarii[82] (Tab. 23). The expenditure on the Lower Moesian force continued to grow, as exemplified by the increment in salaries under Maximinus Thrax. During his reign, the Lower Moesian army cost 35.5m denarii per year (see Tab. 23). Thus, in the period from 212 to 235 the estimated total cost of soldiers' remuneration amounted to 407,100,000 denarii. Further estimations would be pointless in view of the deteriorating military, political and economic situation on the Lower Danube.

Table 23. Estimated costs of maintaining the Roman army in Lower Moesia

Period	Forces (averaged)	Annual expenditure	Annual expenditure less 10%
193-212	2 leg., 1 coh. eq., 4 coh. ped., 2 coh. m. eq., 1 coh. m. ped., 5 alae	13,164,500	11,848,050
212-235 Thrax		19,746,750	17,772,075
235-280		39,493,500	35,544,150

Therefore, from 86, the year when Lower Moesia was created, to the reign of Maximinus Thrax, the empire might have spent 1,368,500,000 denarii on the pay of soldiers stationed there alone.

After deductions on salaries and other costs, the sum which was effectively spent in Lower Moesia amounted to at least 950m denarii. This is not a particularly high figure, based on conservative estimates of the number of soldiers stationed in Lower Moesia, while the *donativa*, the *stipendia* of the fleet and other additional sources of income are not counted in here. Also, in view of the very scant sources, an analysis of the costs of maintaining the Lower Moesian army during the frequent incursions in the mid-third century is beyond the reach of any researcher.

An interpretation of the above figure must take multiple factors into account. For instance, in the first century a substantial amount must have been expended outside Lower Moesia, which at the time lacked sufficiently developed villa farms, therefore soldiers did not have much of the local product to purchase. As the supply base of the army developed more dynamically in the second century, larger sums would stay in the province and fuel the local market[83]. A veritable economic boom came during the reign of Septimius Severus, and though it debased the coin (denarius

[82] Soldiers' pay, see Chapter III.1.
[83] This issue is addressed more broadly in Chapter V.

weighed less)[84], sudden inflation did not ensue[85]. Not all money returned with taxes to the province's treasury, which is evinced by the hoarding of coins[86]. Also, most likely from the times of Septimius Severus, a portion of salary was paid out in commodities[87]. As a result, the volume of coinage supplied to Lower Moesia would have been smaller than calculations based on the amount of pay suggest[88]. Furthermore, a part of the salary was paid out in bronze coin struck in the province's mints[89], while Roman soldiers did not necessarily spend all their pay[90], even though they were notorious for prodigal lifestyle[91]. This is well illustrated by the papyrus RMR 73; each of the soldiers it mentions had a different amount deposited[92].

For example, Saturninus saved away only 38 drachmas, while Argotius at least 2,000[93]. Robert O. Fink calculated the average for the funds deposited by the last 12 soldiers listed in fragment no. iii in RMR 73 at 387 drachmas[94]. Dionysius represents an interesting case: on conclusion of his service the soldier made a *recessa depositorum*[95], withdrawing 1,458 drachmas and received 103 drachmas on returning his weapons[96]. Another papyrus – RMR 70 – is a source showing soldiers as debtors paying their dues as they receive the next *stipendium*, which attests to ad hoc spending. While the deductions still functioned, 40 to 70% of the pay was taken away; the remainder could be spent or deposited.

At this point, one can draw the following conclusion based on the above observations: notwithstanding the difficulties in determining precise amounts of money involved, the army did play the leading role in the monetization of

[84] On the weight and silver content in denarii, see H.J. Kellner, W. Specht, Feingehalt und Gewicht des römischen Denars, Jahrbuch für Numismatik und Geldgeschichte, X, 1959-1960, pp. 43-51, here: p. 44.

[85] T. Kotula, Kryzys III wieku w zachodnich prowincjach Cesarstwa Rzymskiego, Wrocław 1992, p. 84.

[86] Coin hoards are discussed below.

[87] Y. Le Bohec, The Imperial Roman Army, London 2000, p. 191.

[88] The issue was brought up by V. Mihăilescu-Bîrliba: Geld und Heer in einer Kaiserlichen römischen Grenzprovinz. Der fall von Dacia Prorlissensis, [in:] Roman Frontier Studies. Proceedings of XVIIth International Congress of Roman Frontier Studies, Zalău 1999, pp. 808-811, here: p. 809.

[89] R. Ciołek, P. Dyczek, Coins, p. 244.

[90] RMR 68, 69, 70.

[91] Soldiers were not particularly frugal, see Veg. 2. 20.

[92] Individual deposits, see RMR 73, fragment iii.

[93] RMR 73, fragment iii, 24; fragment iii. 14.

[94] RMR, p. 270.

[95] Fragment ii. 1.

[96] Fragment ii. 18.

Lower Moesia. This is particularly noticeable when the province is compared with more urbanized regions of the Roman Empire, such as Egypt, where the army was not a decisive factor in economic development, while the number of soldiers was a very modest component of the local demography[97].

3. Monetary circulation in Lower Moesia

For a better understanding of the analysed material one should collate two categories of coin finds. The first of those are hoards, deposited underground due too sudden threat, most often associated with wars and barbarians raids which were not an infrequent occurrence in the history of the Roman Lower Danube[98], or to securely cache one's savings[99]. Afterwards, the coins remained hidden for several reasons, the most obvious of which is that their owners died, taking the knowledge of their location to the grave. Another possible cause was destabilization of the economy or introduction of major monetary reforms by the state, which reduced the purchasing value of the cached coins so much that it would have been pointless to recover them[100]. An example of the latter circumstances is the widespread monetary crisis in the Roman Empire in the second half of the third century.

Minor loose finds constitute the second category of sources. Useful specimens of that kind include those discovered in Novae, the best explored military camp in Lower Moesia, and the coinage from central mints in urban and rural settlements, as they attest to the role of the army in the monetization process. Naturally, analyses of such material do involve a certain risk, as coins found at such sites were mislaid or lost (while valuables do not usually tend to be lost in large numbers)[101].

As regards monetary circulation in Lower Moesia, and thus hoards and minor finds, much can be glimpsed from an important study by Andrzej Kunisz, in which the author discussed both Moesia and Thrace. The work

[97] R. Alston, Soldier and Society, p. 112-115.

[98] This is splendidly illustrated in B. Gerov's studies: Die Einfälle der Nordvölker.

[99] P.J. Casey, Understanding Ancient Coins. An Introduction for Archaeologists and Historians, London 1986, pp. 56-57; the types of coin hoards and the related scientific debate are addressed more broadly in C. Katsari, The Roman Monetary System, p. 15.

[100] C. Katsari, Roman Monetary System, p. 16. A comprehensive appraisal of hoards in the discussed area can be found in A. Kunisz, Obieg monetarny, pp. 32-37.

[101] For a broader assessment of loose finds see A. Kunisz, Obieg monetarny, pp. 38-46; C. Howgego, The Supply and Use of Money, p. 4.

provides an extensive catalogue of coinage from the entire territory of Lower Moesia, including Greek cities on the coast of the Black Sea. Also, Boris Gerov's monograph offers a valuable inventory of coins, especially with respect to the third century[102]. Another significant publication is Jenö Fitz's *Der Geldumlauf der römischen Provinzen im Donaugebiet Mitte des 3. Jahrhunderts*" (Budapest – Bonn 1978), while the most recent findings from research on monetary circulation in Danubian provinces have been published by Cristian Găzdac[103]. Minor publications concerning particular archaeological sites also need to be taken into account. One of those is a paper by Kevin Butcher[104], concerning coins discovered in Nicopolis ad Istrum, as well as the recently published catalogue of coins from sector IV in Novae, compiled by Renata Ciołek and Piotr Dyczek[105]. Furthermore, one must not ignore the work by Behrendt Pick[106] which, albeit somewhat outdated, still provides a number of valuable observations[107].

When Lower Moesia was created, Roman coins had been in use in that area since the early first century[108]. However, the Roman monetary system was adopted only when legions and auxiliary forces had established their permanent bases there[109], which took place towards the end of the first century. It is only from that moment onwards that one can speak of consolidation of Lower Moesian territory with the economic system of the Roman Empire. Naturally, this was not a precipitous process, but continued in stages, advancing with the integration of the entire Lower Danube area into the structures of the empire. This is splendidly illustrated in coin hoards.

[102] B. Gerov, Die Einfälle der Nordvölker, pp. 148-151.

[103] C. Găzdac, Monetary Circulation in Dacia and the Provinces from the Middle and Lower Danube from Trajan to Constantine I (AD 106-337), Cluj-Napoca 2002.

[104] K. Butcher, The Coins, [in:] Nicopolis ad Istrum: A Roman, Late Roman, and Early Byzantine City. Excavations 1985-1992 by Andrew Poulter, London 1995, pp. 269-314.

[105] Novae. Legionary Fortress and Late Antique Town II, R. Ciołek, P. Dyczek (eds.), Warsaw 2011.

[106] Die antiken Münzen Nord-Griechenlands: Dacien und Moesien, I, Berlin 1898.

[107] As demonstrated by D. Boteva' paper: The Coinage of Dionysopolis and Callatis for Septimius Severus and His Family, [in:] Numismatic and Sphagistic Contributions to Ancient and Medieval History of Dobroudja, Dobrich 1993, pp. 73-75.

[108] A. Kunisz, Obieg monetarny, pp. 54-91. Roman coins would reach Moesia during late Republic, as evidenced by e.g. a hoard of 83 republican denarii and three Dyrrachion drachmas discovered in Medkovec, see G. Alexandrov, I. Belitov, Nahodka ot Rimski republikanski moneti ot p. Medkovec Mihajlovgradska oblast, Arheologija 4, pp. 35-37. Territorial distribution of Republican denarii in northern Bulgaria is discussed in E.I. Paunov, I.S. Prokopov, An Inventory, pp. 90-91; A. Trzeciecka, Hoards of Roman Republican Coins from Western Part of Danubian Plain, Novensia 15, 2004, pp. 147-155.

[109] Cf. R. Ciołek, P. Dyczek, Coins, pp. 247-250.

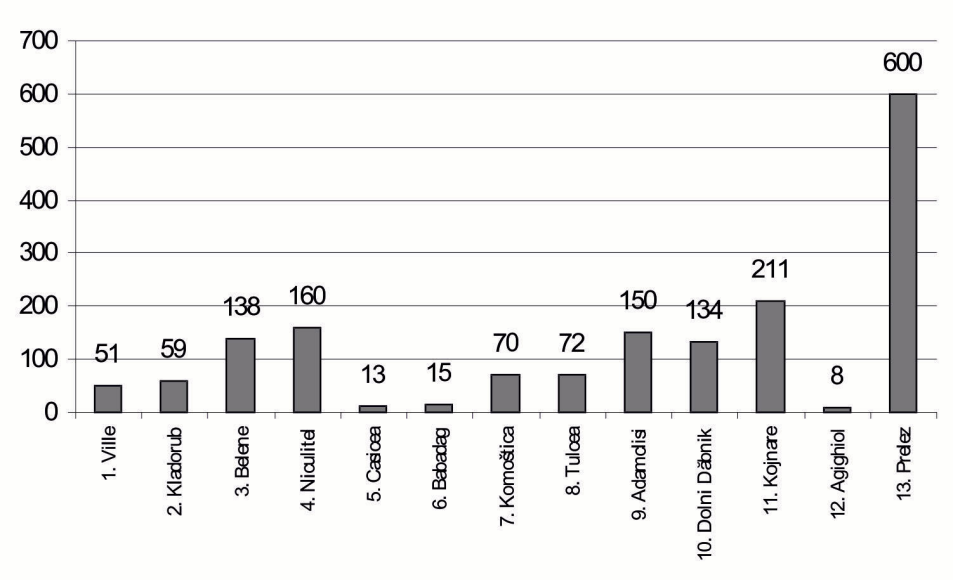

Fig. 1. Hoards of denarii from the first century CE

Based on E.I. Paunov, I.S. Prokopov, An Inventory; A. Kunisz (Obieg monetarny)

Legend:
1. Ville (hoard of 51 denarii, most recent coin dates to 4 CE, see A. Kunisz, Obieg monetarny, p. 127),
2. Kladorub (hoard of 59 denarii, deposited under Tiberius, see ibidem),
3. Belene (hoard of 138 denarii, after E.I. Paunov, I.S. Prokopov, An Inventory, p. 47; A. Kunisz (Obieg monetarny, p. 128) cites the number of 134 denarii),
4. Niculitel (160 denarii, dated to 50-51, see A. Kunisz, Obieg monetarny, p. 69, 128),
5. Casicea (13 denarii, deposited during the reign of Vespasian, see ibidem),
6. Babadag (15 denarii, buried during the reign of Domitian, see ibidem, p. 130),
7. Komoštica (70 denarii, buried during the reign of Domitian, see ibidem),
8. Tulcea (72 denarii, buried during the reign of Domitian, see ibidem, p. 131),
9. Adamclisi (150 denarii deposited under Domitian, see ibidem, p. 130),
10. Dolni Dăbnik (134 denarii, see ibidem, p. 128; E.I. Paunov and I.S. Prokopov (An Inventory, p. 50) date the hoard to 69-70; I adopt a later dating, namely 85-86, after M. Dotkova, Kolektivna nahodka od rimski denari ot Dolni Dăbnik, Plevensko, Arheologija 47, 2006, p. 187),
11. Kojnare (211 denarii, deposited 85-86, see E.I. Paunov, I.S. Prokopov, An Inventory, p. 55),
12. Agighiol (A. Kunisz, Obieg monetarny, p. 130: the author notes that only eight denarii were recovered from a hoard buried in 88-89),
13. Prelez (hoard of 600 denarii, see ibidem,p. 129; E.I. Paunov, I.S. Prokopov, An Inventory, p. 55, date the deposition of the hoard to 97/98).

The data in Fig. 1 demonstrates that denarius was the principal type of coin hoarded in Lower Moesia[110], which reflected the general monetary

[110] A. Kunisz, Obieg monetarny, p. 68.

circumstances in the empire, though one should emphasize the substantial share of Republican mintage[111], which reached the areas of the later Lower Moesia prior to the Roman conquest as well, chiefly as a result of plundering forays of local tribes into the territories of the Republic. After the conquest, the Roman army became the prime supplier of silver coin in the Lower Moesian market, followed by the state administration[112]. This is corroborated by geographical distribution and chronology of first-century hoards (Map 2), which can be seen concentrated mainly in western Lower Moesia, where the legions and the auxilia were stationed, and in Dobruja, whose Greek cities had been under Roman influence already during the early reign of Augustus. Based on loose finds, Andrzej Kunisz demonstrated that the Roman army was the principal source of coinage. In his opinion, Roman money began to play a role as tender in Lower Moesia in the first century[113], becoming the major factor which expedited economic development in the province in the second century[114]. Initially, the penetration of the Roman coins was relatively limited, especially in the rural areas, mainly due to the fact that Roman settlement began to spread only when Flavians had assumed the rule of Rome[115].

When comparing first- and second-century hoards (Fig. 1 and 2), one sees that the denarii predominate[116]$_4$, while finds of small amounts of bronze coins are few and far between. Among other things, this may be attributed to their being less often "recorded and reported", given that plenty of unpublished bronze coins may be found in museums across Bulgaria[117]. Furthermore, second-century hoards are more numerous and contain larger amounts of money (Map 3), especially those deposited during the reign of Trajan and Marcus Aurelius. Naturally, this was associated with the Dacian wars and the incursion of the Costoboci in 170[118]. It may thus be inferred that the number of coinage issues in the second century exceeded that of the first

[111] E.I. Paunov, I.S. Prokopov, An Inventory, pp. 47-55; A. Kunisz (Obieg monetarny, pp. 71--72), argue that the high share of Republican denarii which remained in circulation was due to their low weight standard and the limited issue of denarii under Augustus' successors from the Julio-Claudian dynasty, as they were hardly profitable for the imperial treasury.

[112] A. Kunisz, Obieg monetarny, pp. 91, 119.

[113] Ibidem, pp. 90-91.

[114] Ibidem, with an inventory of loose finds, pp. 131-137.

[115] L. Mrozewicz, Rozwój ustroju, pp. 13-15.

[116] A similar situation can be observed in the entire Lower Danube area, see C. Găzdac, Monetary Circulation, p. 49.

[117] Information obtained from Professor Renata Ciołek.

[118] W. Scheidel, Probleme der Datierung des Costoboceneinfalls im Balkanraum unter Marcus Aurelius, Historia 39, 4, 1990, pp. 493-498.

century, as reflected by the greater quantity of hoards and a more substantial volume of coins deposited there[119].

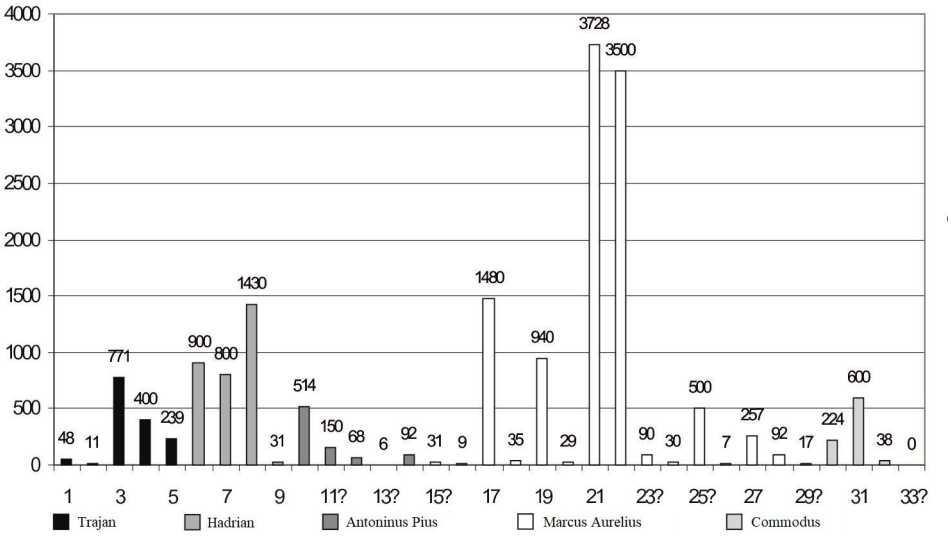

Fig. 2. Hoards of denarii from the second century CE

* Question marks denote that the hoards have not been catalogued in their entirety; the figure provided states only the number of studied specimens while the total quantity remains unspecified.

Legend: 1. Oescus VIII, 2. Altimir II, 3. GradeŠnica III, 4. Oescus I, 5. Popovo, 6. Tčervena Voda, 7. Nikolovo, 8. Žitnitsa, 9. Lesičeri, 10. Razvigorovo, 11. Svishtov, 12. Medgidia, 13. Oescus II, 14. Oescus IV, 15. Golešt, 16. Zamfirovo, 17. Smirnenski, 18. Durostorum IV, 19. Durostorum II, 20. Mokreš, 21. Pavlikeni, 22. Storgosia II, 23. Makreš, 24. Oescus VII, 25. Bežanovo, 26. Oescus V, 27. Medhovec, 28. Molorad, 29. Bregare, 30. Vraca I, 31. Grunčarovo, 32. Vraca II, 33. Nedoklan

This diagram has been compiled based on T. Gerasimov, Kolektivni nahodki na moneti prez 1937 i 1938 god, IAI 12, 1938, pp. 450-451; idem, Kolektivni nahodki na moneti prez 1940 g., IAI 14, 1943, pp. 282-285; idem, Kolektivni nahodki na moneti prez poslednite godini, IAI 18, 1952, pp. 400-404; idem, Kolektivni nahodki na moneti prez 1951, 1952, 1953 i 1954, IAI 20, 1955, pp. 602-611; idem, Kolektivni nahodki na moneti ot 1955, IAI 21, 1957, pp. 323-327; idem, Monetni săkrovišta, namereni v Bălgarija prez 1958 i 1959 g., IAI 25, 1961, pp. 225-233; idem, Monetni săkrovišta, namereni v Bălgarija prez 1960 i 1961 g., IAI 26, 1963, pp. 257-270; idem, Monetni săkrovišta, namereni v Bălgarija prez 1962 i 1963 g., IAI 27, 1964, pp. 237-244; idem, Monetni săkrovišta, namereni v Bălgarija prez 1966 g., IAI 30, 1967, pp. 187-192; B. Gerov, Die Einfälle der Nordvölker, pp. 148-181; A. Kunisz, Obieg monetarny, p. 105, Tab. 8; E.I. Paunov, I.S. Prokopov, An Inventory, pp. 47-55; C. Găzdac, Monetary Circulation, p. 153, Tab. A.5.

[119] Cf. RIC II.

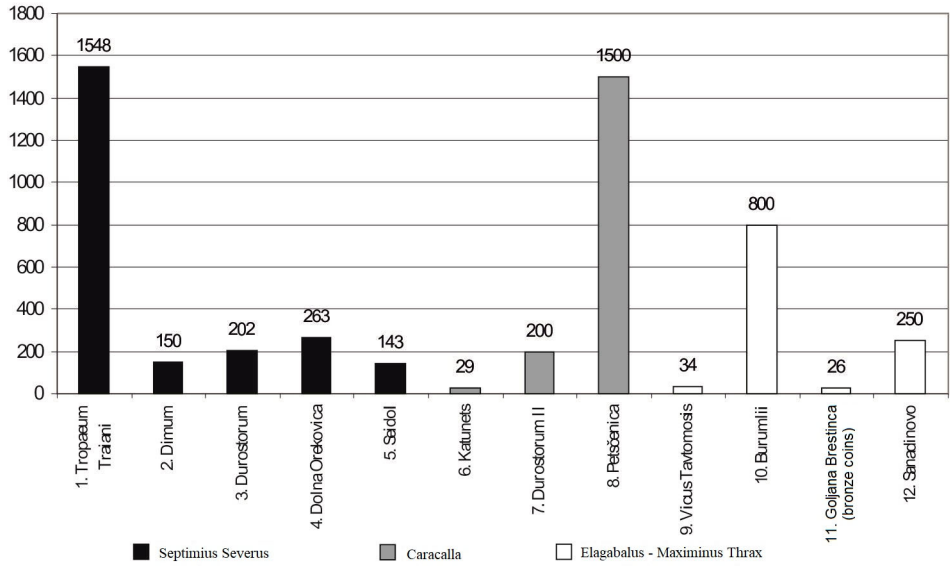

Fig. 3. Coin hoards from Severus to Maximinus Thrax

Based on B. Gerov, Ostbalkanraum, pp. 151-154; C. Găzdac, Monetary Circulation, p. 153, Tab. A.5.

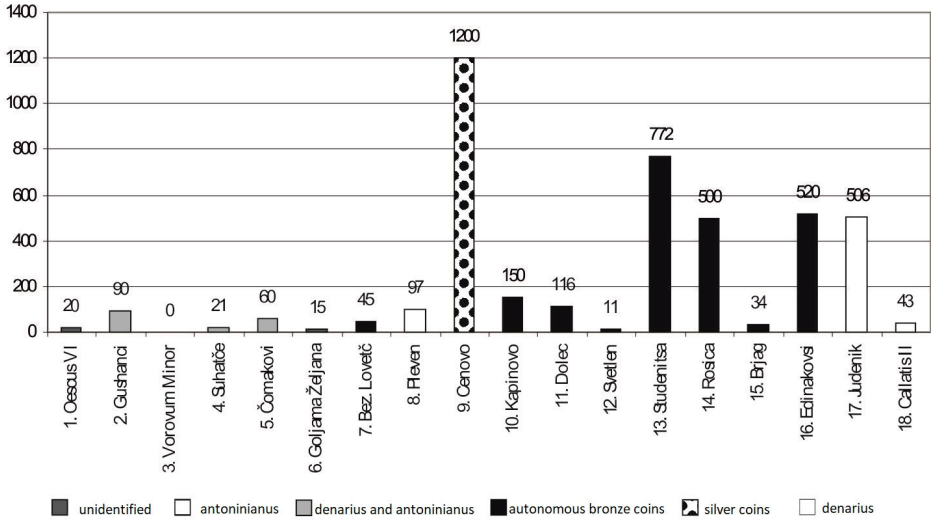

Fig 4. Discoveries of larger volumes of coinage dating to the reign of Gordian III

Based on B. Gerov, Ostbalkanraum, pp. 154-156; C. Găzdac, Monetary Circulation, p. 154, Tab. A.5.

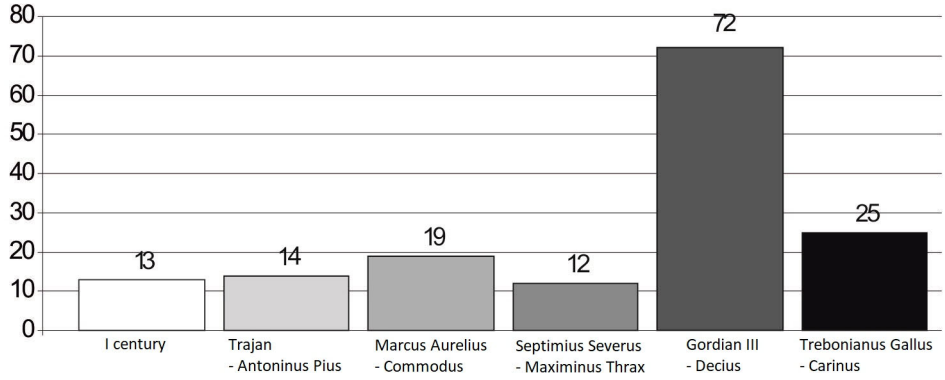

Fig. 5. Coin hoards from the first to the third century

Compiled based on sources cited for Fig. 2.

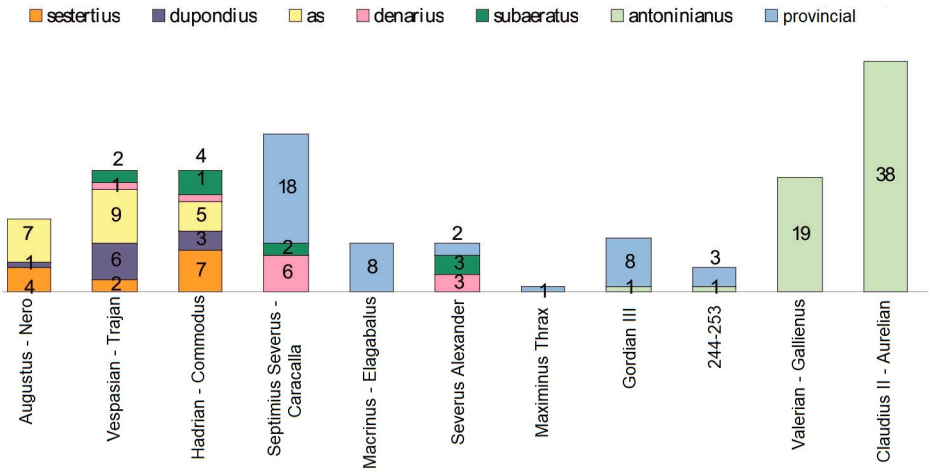

Fig. 6. Coins from sector IV in the legionary camp of Novae

Based on P. Dyczek, R. Ciołek, The Coins, p. 239.

Bearing in mind the considerable methodological risks that an analysis of such sources may involve, one can nevertheless hazard a claim that the volume of silver coins in circulation in Lower Moesia during the second century was quite considerable, while Roman money became ever more widespread among the local population[120]. There can be very little doubt once

[120] A. Kunisz, Obieg monetarny, p. 105.

the locations of hoard discoveries have been plotted on a map: the coins appear to be used throughout Lower Moesia, as opposed to merely its western part and Dobruja, which was the case in the first century (Map 3). Additionally, one should remember about such factors as the higher remunerations in the army instituted under Domitian and, even more importantly, the reduction of deductions from pay, which might have taken place during Hadrian's reign. Thus, with the increase of Roman denominations on the local market Lower Moesian economy would rely largely on monetary transactions.

Numerous hoards date to the period from Severus to Maximinus Thrax, and yet again the denarius is the predominant coin type; however, this changes during the reign of Gordian III (Fig. 4), when the inhabitants begin to deposit large amounts of local coins and substantial quantities of silver mintage, including antoninians. The practice reflected the monetary circumstances at the time: the denarius was hardly minted anymore, while the antoninians were issued on a large scale[121]. The majority of hoards is dated to 245 and 249-251, which coincides with the disastrous Gothic incursions[122]. The total of hoards deposited between Gordian III and Decius is conspicuously higher than the number of those dating to the period from the first century to Maximinus Thrax (Fig. 5). In all certainty, the situation owes to the aforesaid incursions, reflecting both the extent of consequent devastation and the spread of the coin in the province, which prior to the raids reached its peak. Many hoards appear to be nothing short of imposing, as the one discovered in Marcianopolis which consisted of around 100,000 silver coins[123].

The deficiencies of Rome's monetary system in the mid-third century have to be attributed to the adverse circumstances in which the empire found itself in the wake of barbarian invasions and destabilization of the central power, with several usurpers attempting to seize and hold the imperial

[121] A. Bursche, Later Roman-Barbarian, p. 72.

[122] B. Gerov, Die gotische Invasion in Mösien und Thrakien unter Decius im Lichte der Hort funde, [in:] idem, Beiträge zur römischen Provinz Mösien und Thrakien. Gesammelte Aufsätze, Amsterdam 1980, pp. 93-112.

[123] The hoard was discovered in a cellar, in the vicinity of monumental structures; see B. Gerov, Marcianopolis im Lichte der historischen Angaben und der archäologischen, epigraphischen und numismatischen Materialien und Forschungen, [in:] idem (hrsg.), Beiträge zur Geschichte der römischen Provinzen Moesien und Thrakien, Gesammelte Aufsätze, Bd. I, Amsterdam 1980, pp. 289-312, here: p. 289: the author claims that its deposition was associated with the Gothic invasion during the reign of Decius, to which traces of fire in the building where the hoard was found apparently attest, see p. 300.

throne[124]. Additionally, in order to win favour of the army, emperors had to procure funds to pay the soldiers, and the easiest way to do so was to reduce the content of precious metal in antoninians. One of those was Gallienus (253-268), who was responsible for extreme depreciation of the coin as its silver content was now at 3%, compared with the 10% it had had at the beginning. In practice, it became a bronze coin although it functioned as a silver one[125]. Only the gold coin retained its bullion value, but its weight was reduced instead[126].

Surprisingly enough, neither the deteriorating monetary system nor the advancing devaluation of money happened to fuel inflation[127]. According to Stanisław Mrozek, the actual value of the denarius decreased at a slower pace than its nominal value[128]. Furthermore, Michael Crawford observes that the stable ratio of denarius to aureus continuing until the reign of Severus Alexander and fact that soldiers at the time were not paid in denarii and antoninians resulted in a minor impact on inflation[129]. Such state of affairs may have persisted until the reign of Valerian and his son Gallienus. Hence the hoards deposited in the mid-third century are a token of affluence of the inhabitants and testify to a high degree of monetization of the economy[130]. In that period, inhabitants of Lower Moesia would hide their entire assets fearing the invaders and sudden devaluation[131], a fact reflected in the diversity of hoards which contained both silver and bronze coinage. It was only the total collapse of the monetary system created by Augustus which led to a disaster which occurred under Gallienus. The rate of aureus to denarius escalated to

[124] For a general account of the third-century crisis see C. Howgego, The circulation of silver coins, models of the Roman economy and crisis in the third century A.D. some numismatic evidence, SFMA 10, 1996, pp. 219-236; T. Kotula, Kryzys III wieku.

[125] S. Mrozek, Dewaluacje pieniądza w starożytności grecko-rzymskiej, Gdańsk 1978, pp. 72-28; L.H. Cope, The nadir of the Imperial Antoninianus in the reign of Claudius II Gothicus, A.D. 268--270, NC t. IX, 1969, pp. 145-161; D.R. Walker, The Metrology of the Roman Silver Coinage, p. III: from Petrinax to Uranius Antoninus, 1978, pp. 8-9, 38-39.

[126] S. Mrozek, Dewaluacje, p. 77.

[127] M.H. Crawford, Finance, Coinage and Money from the Severans to Constantine, ANRW II 1975, pp. 560-593, here: p. 563.

[128] S. Mrozek, Dewaluacje, p. 84: the author also argues that modern models of monetary systems cannot be applied to account for the functioning of the monetary economy in ancient Rome.

[129] M. Crawford, Finance, Coinage and Money, p. 589.

[130] C. Katsari, Roman Monetary System, p. 11: the author is of the opinion that the value of a coin hoard reflects the wealth of its erstwhile owner.

[131] Devaluation and monetary chaos were among the chief reasons why inhabitants of the Roman Empire cached their money away, see T. Kotula, Kryzys III wieku, p. 90.

1 : 40[132], with the prices soaring as a result[133]. The crisis evidently affected the autonomous mints in Lower Moesia as well, causing the share of bronze coinage in the circulation to drop. Bronze coins would cease to be minted as their production was unprofitable, given that silver coin was silver only by name, being in fact a piece of silver-plated bronze[134]. Taxes stopped to be exacted in coin and commodities began to be levied instead[135]. This caused the economy to rely more and more on a mixed system, i.e. combining cash-based commercial exchange and barter. The former continued as the leading arrangement only in the *limes* regions, where the army was stationed[136]. This reveals a certain paradox: on the one hand, the state outlay on the army grew and in order to find that money, Rome's central authority regularly resorted to debasement. Consequently, the army might be blamed for the crisis. On the other hand, it was the army which during the crisis remained the mainstay of the monetary economy. The need to ensure pay to the soldiers necessitated fiscal reforms to rescue the monetary system of the empire during the so-called Crisis of the Third Century. Such reforms were undertaken by emperor Aurelian in 274[137]; later on, Diocletian effected substantial changes in 294, but these did not prove to last long[138].

Archaeological research in sector IV in Novae clearly demonstrates (Fig. 6) that as much as 83% of the coins discovered there are bronze ones[139]. Naturally, given methodological considerations this is not fully indicative of the denominations that soldiers had and used. It is certain that they were in possession of bronze coins from central mints and no doubt used them in minor everyday transactions. However, it has to be stressed that bronze and silver coins from the first century were the fewest among the coinage discovered in that sector. Most often, researchers account for the fact by noting that until Nero's reign bronze coins were minted irregularly and for

[132] M. Crawford, Finance, Coinage and Money, p. 569.

[133] S. Mrozek, Dewaluacje, p. 89: the author observed a sharp rise in prices in Egypt around 269, see p. 88.

[134] T.V. Buttrey, A Hoard of Sestertii from Bordeaux and Problem of Bronze Circulation in the Third Century, The American Numismatic Society Museum Notes 18, 1972, pp. 33-58, cf. RIC V.,1-2.

[135] M. Crawford, Finance, Coinage and Money, p. 570.

[136] T. Kotula, Kryzys III wieku, p. 87.

[137] D. Kienast, Die Münzreform Aurelians, Chiron 4, 1974, pp. 547-565.

[138] H. Böhnke, Ist Diocletians Geldpolitik gescheitert?, ZPE 100, 1994, pp. 473-483.

[139] R. Ciołek, P. Dyczek, Coins, p. 235.

limited periods of time[140]. Still, there is another potential explanation. As it follows from previous chapters, a Roman soldier lost very large sums from his pay due to deductions for supplies and victuals, which meant that all his basic needs were met. He would only be left with small amounts for everyday or occasional expenses, and there was little he could spend it on, especially that the local market was still underdeveloped. Most products were brought at the time from other provinces whose economy was more advanced[141]. Beginning with the rule of Hadrian, one observes a greater variety of coins used; these are not mainly asses anymore, and a higher quantity of sesterces is seen[142]. The situation changes with the reign of Septimius Severus, as in that period a large volume of denarii was in everyday circulation in Novae; nevertheless, local coinage predominated, being encountered in numerous finds from the period lasting until the reign of Gordian III (the coins in question originate from mints in Moesia (Nicopolis ad Istrum, Tomis, Dionysopolis, Viminacium, Marcianopolis), Thrace (Hadrianopolis, Anchialos, Perint) and Asia Minor (Pergamon, Nicea and Amastris[143]). The situation tends to be attributed to the fact that Septimius Severus relied on bronze coins from the provinces to cover the military *stipendia*. As soon as the rule of Gordian III ended, antoninianus became the prevalent denomination used in everyday circulation in the province[144], in line with the then monetary system of the empire[145], and continued to be the main type of coin until the end of Lower Moesia.

a) the Roman army and monetization in the rural areas

Coin hoards offer evidence that the Roman army also contributed to the spread of coinage in the rural areas, at least those which were important for the economy. One of those was the Montana region (the antique *regio Montanesium*), where numerous such hoards were discovered: 2 dating to the first century, 12 from the second cent., and 10 from the third cent. The hoards were found is such localities as Kladorub, Komoštica, Altimir II, Gradešnitsa III, Zamfirovo, Smirnenski, Makreš, Medhovec, Malorad, Vraca

[140] Despite limited issue of coins under Cladius, cf. RIC I, London 1923–1994, quite a number of coins in Novae date back to his reign. However, this is hardly surprising, since *legio VIII Augusta* came to Novae during that very period, see R. Ciołek, P. Dyczek, Coins, p. 236.

[141] The issue is discussed in P. Dyczek, Amfory rzymskie.

[142] R. Ciołek, P. Dyczek, Coins, p. 239.

[143] Ibidem.

[144] Ibidem, pp. 239-240, Tab. I.

[145] Ibidem, p. 237.

I, Vraca II, Brednica, Mizija, Popica, Gušanci, Varshec, Kravoder, Lopušna, Berkovica, Černi Vrak, Dolna Gnojnica, Sotočino, Krivodol and others[146]. The disparity between the number of first- and second-century hoards is most likely associated with the lower issue of coins in the former period[147], as well as with the history of Roman occupation of *regio Montanesium*[148], which transformed into permanent presence in view of its economic significance. The region lay on the junction of major routes and, most importantly, mines of valuable ores were to be found there. Economic importance of Montana is also reflected in the substantial involvement of the military, and the fact that centurions were entrusted with policing duties (*centurio regionarius*), which means that the authorities of the province wanted to ensure security in the region[149]. Furthermore, it was an area of veteran settlement[150]. A military diploma from 78 CE was discovered in Berkovica[151], as well as a coin hoard from Decius' times. The finds from the *vicus* of Vorvorum include an inscription of Valerius Rufus[152] and a hoard of coins from the reign of Gordian III[153]. Research at another *vicus*, namely Tautiomosiceus, yielded 300 denarii from the first-second century[154], 3 kg of silver coins from the times of Elagabalus[155] and as many as 86 aurei buried during the reign of Aurelian[156]. There was also an inscription mentioning an individual titled *princeps vici* who, as Gerov believes, was professionally affiliated with the army or originated from a veteran's family[157]. Several *villae rusticae* were discovered in Montana itself[158], and another one was found in the vicinity of Makreš[159]; a hoard was discovered in the latter as well, but so far it has not been comprehensively studied[160]. Due to economic significance and early

[146] On the boudaries of regio Montanensis see B. Gerov, Landownership, pp. 104-105.
[147] Cf. RIC I; RIC II.
[148] See Chapter IV. 1.2 for a brief military history of Montana.
[149] Further on Montana see V. Velkov, Montana; N.B. Rankov, A Contribution; B. Gerov, Landownership, pp. 102-107.
[150] CIL III 12378; CIL XVI 22; L. Mrozewicz, Rozwój ustroju, p. 18; B. Gerov, Landownership, p. 44; K. Królczyk, Veteranen, p. 93.
[151] RMD IV 208.
[152] AE 1969/1970, 568.
[153] C. Găzdac, Monetary Circulation, p. 154, Tab. A5.
[154] B. Gerov, Die Einfälle der Nordvölker, p. 172.
[155] Hoard sizes are discussed in C. Găzdac, Monetary Circulation, p. 153, Tab. A5.
[156] B. Gerov, Die Einfälle der Nordvölker, p. 172.
[157] Idem, Landownership, p. 107.
[158] L. Mulvin, Late Roman Villas in the Danube-Balkan Region, Oxford 2002, pp. 95-97.
[159] Ibidem p. 92.
[160] A. Kunisz, Obieg monetarny, p. 105, Tab. 8.

military settlement, numerous coin hoards were deposited in the Montana region, providing a splendid example of how the Roman army was instrumental in the monetization of the local economy.

Another example of local links with the army is the road watchtower in Storgosia (Kajlăka near Pleven) near which a number colonists from Oescus settled[161] and in whose vicinity a large hoard was discovered (Fig. 2). In Altimir, research revealed an inscription dedicated by Valerius Antoninus (*speculator legionis I Italicae Severianae*) who had *votum libens solvit*[162] and a hoard dated to a century later[163]. The presence of a speculator and a minor hoard of coins in that area are greatly meaningful. Numerous hoards were also discovered in those areas which had been a site of agricultural production, such as Popov (Fig. 2). The regions of Târgovi'te and Shumen are some of the prime examples in that respect[164], with an exceptionally high number of hoards, particularly those dating from the third century. Needless to say, the regions were among the important areas from which the army on the Danube sourced their provisions[165]. *Vicus* Novus[166] represents yet another instance illustrating monetization in the rural areas, as sources discovered there attest to the presence of the corporation "cives Romani, veterani et Viconovenses"[167]. Also, Novus proved to be a site of a hoard dated to the reign of Domitian (Fig. 1). A considerable number of hoards were found in those rural regions of antiquity where veterans settled and where later their descendants ran their own *villae*.

Moreover, the ruins of such cities as Oescus are indicative of the wealth of the elites, which by and large derived their profits from land estates where rural population and slaves were employed[168]. It may be expected that the situation in other cities of Lower Moesia was no different[169], e.g. in the

[161] B. Gerov, Landownership, p. 109.

[162] CIL III 13719 = Kalinka 217.

[163] The hoard is either a small one or only 11 coins have been studied, see A. Kunisz, Obieg monetarny, p. 105; the most recent coin is dated to 105, see E.I. Paunov, I.S. Prokopov, An Inventory, p. 47, as well as B. Gerov, Die Einfälle der Nordvölker, p. 148; C. Găzdac, Monetary Circulation, p. 153, tab. A5.

[164] B. Gerov, Landownership, p. 121.

[165] Ibidem, pp. 74-75; T. Sarnowski, Pozamilitarne funkcje, pp. 442-442; A. Tomas, Inter Moesos et Thraces (Oxford), p. 3.

[166] A. Kunisz, Obieg monetarny, p. 130.

[167] CIL III 14448 = ISM V 233; L. Mrozewicz, Rozwój ustroju, p. 68. The inscription is dated to 178.

[168] B. Gerov, Landownership, p. 95.

[169] Inscriptions associated with members of the urban elites were discovered in the rural demesne of Nicopolis ad Istrum, see ibidem, pp. 119-120.

aforementioned Montana, which may have become a municipium under Marcus Aurelius (see subchapter on urbanization), while people from Italy and later from Asia Minor sought an opportunity for a better life in its vicinity[170]. Consequently, it could be surmised that apart from veterans and their inheritors, the owners of many of those coin hoards included individuals whose relation with the army consisted only in doing business with the military[171]. It is therefore possible that the coin hoards from e.g. Combustica and the aforementioned Makreš are associated with the local non-military elite whose representatives are mentioned in the inscriptions[172]. One of those was an inhabitant of Tomis who, in the area of today's Shumen, held the office of the *magister vici*[173] (a local-level official) and owned land in one of the villages located there[174].

The catalogues of minor coin finds leave no doubt that Roman coin reached all kinds of settlements in Lower Moesia, including rural communities[175]. However, they cannot suffice to determine the scale of monetization in such areas of the province, as the original owners of the isolated, lost pieces remain unknown. One can be certain that considering local conditions, the proprietors of land estates had large amounts of money at their disposal, as evinced by the numerous hoards. Coin money would then pass from their hands to the much less affluent but free inhabitants of villages, considerable numbers of whom were to be found in Lower Moesia. This is confirmed by the military recruitment of people from the Oescus region[176], southern Montana area[177] or the rural area belonging to Nicopolis ad Istrum[178]. Boris Gerov's research suggests that the landowning stratum in Lower Moesia consisted chiefly of veterans and civilian elites residing in the cities and the countryside. To a fair extent, both groups owed their wealth and property to the army; the former obtained their *honesta missio* and the associated

[170] V. Velkov, Montana, p. 91.

[171] Ibidem, p. 92.

[172] Studies conducted by B. Gerov (Landownership, pp. 95-96) demonstrated that land was owned by urban elites, including freedmen and the *peregrini*.

[173] CIL III 7466.

[174] B. Gerov, Landownership, p. 124; in addition, the author mentions a *duumviralis* from the colony of Napoca in Dacia, who dedicated the inscription discovered in Varbak, and an inscription from Velino, whose dedicator describes himself as "Traianensis".

[175] M. Munteanu, R. Ocheseanu, Descoperiri Monetare in satele Din Dobrogea Romana (sec. I-III e.n), Pontica 8, 1975, pp. 175-213; A. Kunisz, Obieg monetarny, pp. 154-163.

[176] B. Gerov, Landownership, p. 101, note 87; in the footnote, the author lists a number of inscriptions attesting to recruitment taking place in the demesne of Oescus.

[177] Ibidem, p. 109.

[178] Ibidem, p. 118; idem, Romanizmăt II, p. 49.

praemium, while the latter did business with the local garrisons[179]. As Lothar Wierschowski demonstrated, those were the holders of medium and large farms who became the main beneficiaries of commercial dealings with the army[180]. Also, they were the intermediaries who enabled the money to circulate further, reaching the lower strata of the province's society, for whom contact with the army could mean additional burdens, especially in the third century.

The question concerning the extent to which the indigenous population took advantage of coin as a means of exchange remains open. It was doubtlessly a process to which the Roman army contributed quite significantly, being present throughout the province. The degree of coin usage was definitely higher among the communities living near the garrisons, which is corroborated in Tacitus, who mentions that coin money was used by the Germans inhabiting areas on the frontier with Rome[181].

b) the Roman army and monetization in the cities

Nine Lower Moesian cities minted their own coin in the imperial period[182]: Histria, Tomis, Callatis, Dionysopolis, Odessos, Nicopolis ad Istrum, Marcianopolis[183], Tyras and Olbia[184]. Peak development of the provincial mints coincided with the reign of Septimius Severus[185]. From that period onward, Lower Moesian mints struck coin regularly and in large volumes[186]; locally minted bronze coins were found in many hoards, with the most substantial quantities recorded for the period from Gordian III to Decius (Fig. 5). Gerov identified 35 specimens of such coinage[187].

The reciprocal relationships between the garrison in Novae and the city of Nicopolis ad Istrum (Figs. 6-8), offer a perfect illustration of the impact that the Roman army had on the monetary economy of cities, despite the fact that when the city was founded, i.e. most probably between 106 and 110[188], it lay

[179] B. Gerov, Landownership.
[180] L. Wierschowski, Heer und Wirtschaft, pp. 161-173.
[181] Tac., Ger. 5.
[182] A. Bursche, Emisje autonomiczne Mezji i Tracji oraz ich rozpowszechnienie w Europie środkowo-Wschodniej, Balcanica Posnaniensia I, 1984, pp. 235-244, here: p. 237.
[183] B. Pick, Die Antiken Münzen, pp. 61-62.
[184] K. Królczyk, Propagatio Imperii, pp. 158, 164.
[185] A. Kunisz, Rola pieniądza, p. 98.
[186] Ibidem, p. 99.
[187] B. Gerov, Die Einfälle der Nordvölker, pp. 168-174.
[188] L. Slokoska et al., Nicopolis ad Istrum, [in:] Rimski i Rannovizantijski gradove v Bălgarija. Studies in Memory of Prof. Teofil Ivanov, 1.1, R. Ivanov (ed.), Sofia 2002, pp. 83-104, here: p. 83.

beyond the territory of Lower Moesia. It was incorporated into the latter only under Septimius Severus. The city was built from scratch, while its rural demesne became the logistical hinterland for the legion in Novae. Local coin had been struck there since the reign of Antoninus Pius (Fig. 7), so unlike the Greek cities on the coast of the Black Sea it had not had a considerable tradition of either urban development or minting, which underscores the role of the army even more[189].

There is another aspect which needs to be taken into account. Fig. 7 has been compiled on the basis of a chronological inventory of coins, which nevertheless does not indicate how long they remained in circulation or show the stratigraphy of the discovered specimens. Indeed, such information would have illustrated their usage in particular periods much better, but the employed method has one fundamental advantage, namely that it offers a depiction of the minting activity of Nicopolis ad Istrum.

Initially, the coinage in Nicopolis ad Istrum originated from central mints, which can clearly be seen in Figs. 7-8. When the minting of the local coin had begun, the disproportion between autonomous bronze coin and the state-minted one becomes conspicuous. The development of mints in Nicopolis ad Istrum reached its apogee during the reign of Septimius Severus, lasting well into the reign of Elagabalus. Under the first ruler of the Severan dynasty the amount of coin struck in central mints decreased heavily, and shortages in circulation must have become apparent[190]. On the other hand, the intensity of minting in Nicopolis as Istrum in the times of Elagabalus may be linked to his visit to Lower Moesia in 218[191]. The production of coins declines distinctly during the reign of Severus Alexander and Maximinus Thrax[192], although it is certain that a large volume of coinage minted under Severans still continued to circulate. Then, during the reign of Gordian III, the mint in Nicopolis issued bronze coins in substantial quantities, which the researchers associate with the march of the Roman troops across the Balkans in 242[193],

[189] C. Katsarii, The Monetization, pp. 242-266, esp. p. 251; the researcher argues that the army had limited influence on monetization in the Greek cities. However, Katsarii took only bronze coin finds into account while overlooking silver coinage and thus her descriptions of the minting system in the third century cannot be considered complete.

[190] A. Bursche, Emisje autonomiczne, p. 238.

[191] Ibidem.

[192] This phenomenon was widespread in Lower Moesia. Just as Nicopolis ad Istrum, Marcianopolis did not mint its own coin either, cf. B. Gerov, Marcianopolis, p. 299.

[193] Ibidem; E. Schönert-Geiss, Das Ende der Provinzialprägung in Thrakien und Mösien, Klio 50, 1968, pp. 251-256, here: p. 254; E. Gren, Kleinasien und der Ostbalkan, p. 127. Medallions to

and the Roman victory over the tribes of the Iazyges and the Carpi[194]. As the mint in the city continued its production, the share of state-minted coins, especially low denominations, was relatively small, suggesting that Nicopolis was self-sufficient with respect to bronze coinage[195] prior to the reign of Gordian III. Continued presence of denarii struck in the period from Hadrian to Maximinus Thrax indicates that the city traded with the Roman soldiers, most likely those stationed in Novae. As the reign of Gordian III came to an end, the antoninianus gained a major place in everyday monetary circulation in Nicopolis ad Istrum[196].

Coins from other urban centres were also used in the city, which can in part be accounted for by supralocal trade taking place until the reign of Severus Alexander. Coins from Asia Minor may also attest to the movement of people, given that Lower Moesia drew numerous settlers from that region[197]. The decline of the mint in Nicopolis ad Istrum, as well as other Lower Moesian mints should be attributed to the financial crisis of the Roman state which became increasingly acute since the 240s, the unprofitability of striking bronze coin and above all to the barbarian invasions[198]. The boom was over for good.

One should underline the strong relationship between Nicopolis ad Istrum and Novae. As much as 40% of the local coins discovered in sector IV[199] originates precisely from Nicopolis ad Istrum[200]. A part of those is a testimony to the particular role the city played in trade relations with the garrison in Novae. The coins found in the latter site date to the period between the reign of Septimius Severus and Elagabalus, i.e. the times of peak minting activity of Nicopolis ad Istrum. This is also related to the increased affluence of the soldiers, whose pay was raised by Severus by 100% and then by 50% by his son Caracalla. The denarii struck under Septimius Severus

commemorate the occasion were struck in Odessos, see I. Youroukova, Contribution to Odessus Coinage – A New Medalion from the Age of Gordian III (238-244), AB 2, IV, 2000, pp. 30-32.

[194] On the deployment of Gordian's forces in Moesia see HA, Gordian, 27; A. Bursche, Emisje autonomiczne, p. 238; incursions in the context of coin hoards: see B. Gerov, Die Einfälle, p. 126.

[195] K. Butcher, The Coins, p. 309.

[196] Ibidem.

[197] On the influx of people from Asia Minor see L. Ruscu, On the Elites of Nicopolis ad Istrum, AB 11, 2, 2007, pp. 1-8, here: pp. 1-2.

[198] E. Schönert-Geiss, Das Ende, p. 251.

[199] Sector IV may not be representative for the entire garrison, but in view of an accurate inventory spanning the entire site I am compelled to use the catalogue compiled for the said sector; in any case, it manages to illustrate certain general phenomena relating to monetary circulation in the province.

[200] R. Ciołek, P. Dyczek, Coins, p. 243.

which appeared in Nicopolis may be yet another piece of evidence suggesting that the city maintained strong trade contacts with the Roman army. It is likely that they reached Nicopolis ad Istrum no later than the reign of the Severan dynasty, because they were quickly going out of circulation, either due to debasement or caching good coin, both of which intensified in the later years.

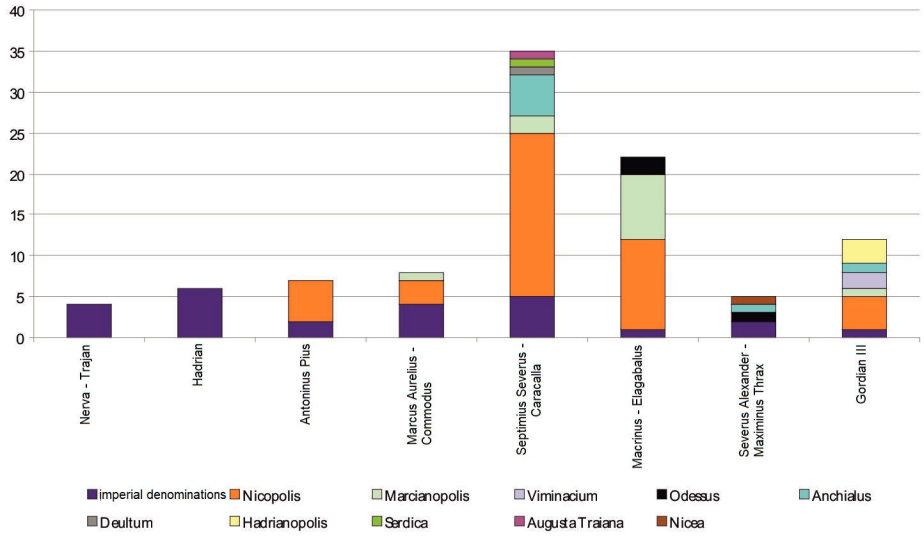

Fig. 7. The ratio of local to state-minted coins in Nicopolis ad Istrum

Based on K. Butcher, The Coins, pp. 269-279.

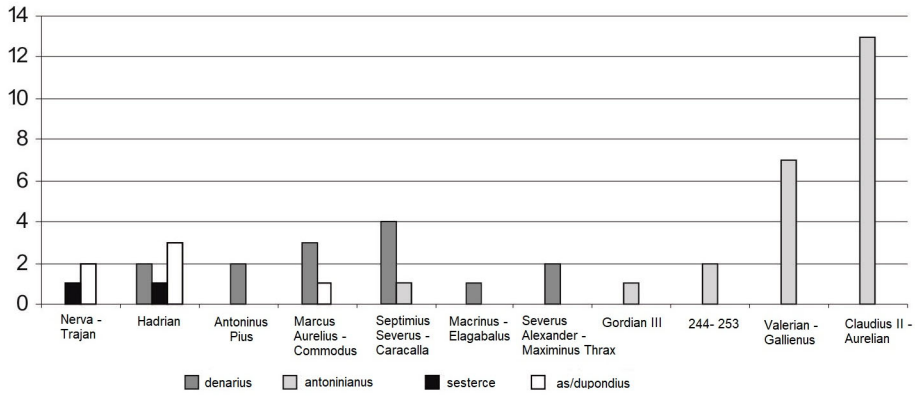

Fig. 8. Types of state-minted coins discovered in Nicopolis ad Istrum in 1985-1992

Based on K. Butcher, The Coins, pp. 279-283.

Apart from coins from commercial transactions, most local coins from Nicopolis ad Istrum minted under Septimius Severus and Caracalla found its way to Novae as pay for the soldiers. The practice was employed in those periods when numerous military operations were taking place, and the state was unable to supply sufficient amounts of silver coin[201]. Most probably, this is reflected in the decision taken by the municipal council of Nicopolis ad Istrum, by virtue of which 700,000 sesterces (it is possible that the amount in denarii was in fact meant) were handed over to Septimius Severus[202]. It is equally likely that by this means the inhabitants of Nicopolis ad Istrum showed their gratitude to the emperor for having their territory extended and for the incorporation of their city into Lower Moesia[203]. The latter meant relief from having to pay customs duties between Thrace and Lower Moesia, and in consequence benefited the city. An interesting hypothesis was advanced by Reinhard Walters: Rome bought low denominations from the cities, and thus cities profited from transporting coins to the garrison or, alternatively, the profit was made by some intermediaries[204]. Also, it cannot be ruled out that the costs incurred by Nicopolis ad Istrum while providing pay to the soldiers exceeded the benefits that the city reaped following incorporation into Lower Moesia.

The monetary circulation of Nicopolis ad Istrum also lacked bronze denominations. Fig. 8 shows that research in Nicopolis ad Istrum has not yielded asses, dupondii and sesterces minted during the reign of Septimius Severus and later. Nor have they been found in Novae, where ten coins dated to the reign of Severus were discovered at the site of the erstwhile legionary hospital. The find does not include centrally minted bronze coins either; six coins originated from Nicopolis ad Istrum, while the remainder are denarii[205].

Nicopolis ad Istrum was a city founded fairly close to the militarized zone, and one may surmise that the situation was different in those cities which had struck their coin longer, but such supposition would be completely wrong. For instance, research conducted by Jenö Fitz in Histria demonstrated

[201] Ibidem, p. 244.

[202] SEG XLVIII 976: it may have been an accolade for Severus with which the city of Nicopolis ad Istrum wanted to recognize his act; the inscription was mentioned by B. Gerov in the context of wealth of Nicopolis ad Istrum, Romanizmăt II, p. 300; L. Slokoska et al., Nicopolis, p. 86.

[203] D. Boteva, The South Border, p. 175.

[204] R. Walters, Bronze, silver or gold?, p. 585: the author suggested that perhaps Rome purchased low denominations from the city, while the latter was thus able to profit from transporting the money to the garrison. Some intermediaries might have made a gain from it as well. However, what intermediaries would those have been, and how did the arrangement work?

[205] R. Ciołek, P. Dyczek, Coins, p. 242, 252.

that from 14 to 193 the circulation was dominated by bronze coins from the central mints (68%), followed by provincial coinage (23%) and denarii (9%) (Fig. 9). In this case there is no doubt that the Roman coins were the prevalent means of payment. The situation in Histria and Nicopolis ad Istrum changed when Septimius Severus had become emperor: the circulation was dominated by local mintage (70%); denarii were fewer (20%) while bronze pieces struck by the central mints were the least numerous. From 238 to 253, the circulation in Histria relied solely on local issues which subsequently disappeared from use in 253-268, replaced by the antoninianus (80%) and, to a lesser extent, bronze coins (20%)[206].

The arrival of the Roman army in Lower Moesia prompted the spread of monetary economy, as the troops were the chief source of coins in the local market, a fact to which hoards and loose finds in rural, semi-urban and urban settlements palpably attest. Thanks to the presence of the army, all kinds of commercial transactions could be conducted using money, which directly influenced the growth of fortunes of the elites involved in trade with the military. As the economy developed, the role of the army in monetization gradually diminished, while coins struck in the local mints gained increasing significance.

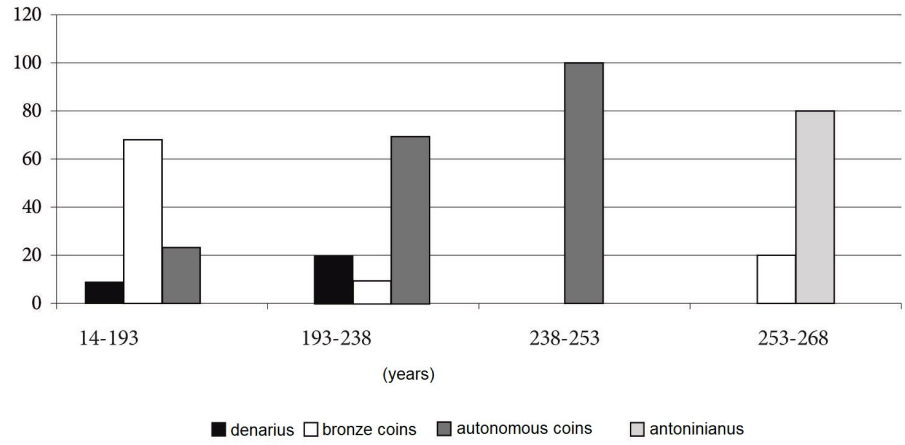

Fig 9. Monetary circulation in Histria (in per cents)

Source: J. Fitz, Der Geldumlauf, pp. 69-82.

[206] J. Fitz, Der Geldumlauf der römischen Provinzen im Donaugebiet Mitte des 3. Jahrhunderts, I, Budapest – Bonn 1978, pp. 69-82.

The example of Nicopolis ad Istrum shows that cities which had their own mints were the source of coin for the neighbouring rural areas, though it has to be remembered that the Roman army remained a major recipient of the locally struck coin. The true heyday of local mintage began with the reign of Septimius Severus and lasted until the times of Gordian III, only to decline quite soon while the army introduced a low-value silver coin into everyday circulation, the antoninianus. In the third quarter of the third century, Lower Moesia was flooded with the inferior antoninianii which, compounded by the cessation of local production led to deplorable outcomes. It may be presumed that the situation brought about the return to barter, thus destabilizing the money market. Poor quality coin could not have satisfied those who supplied goods for the army. There was also greater insistence on paying taxes in commodities, an onerous obligation to be complied with by the local population, and a considerable step backwards for the economy.

Chapter IV

Construction undertakings

Construction was an important element of antique economies. The arrival of the Roman soldiers in Lower Moesia brought about a sudden change in the natural landscape. Pollen studies[1] confirm that an extensive area was deforested, not only to reclaim land for more intense farming but also to accommodate dynamic development of infrastructure which would serve the army stationed on that territory[2].

Roman construction activity in Lower Moesia should be approached in its four major phases. The first stage lasted from the reign of Augustus until the end of the first century; in that period the line of Roman strongholds and road infrastructure gradually moved eastwards, along with the civilian settlements which were built near military facilities (such as *canabae* and *vici*). The process quickened its pace particularly under Claudius, when the kingdom of Thrace was abolished[3], enabling Romans to exercise direct control of the entire territory south of the Lower Danube. The first forts east of Yantra went up during the reign of Vespasian, but the times of Trajan, Hadrian and Antoninus Pius proved a veritable watershed in construction undertakings (second phase), when the wooden fortifications of legionary camps were replaced with stone ones, and numerous further forts were built for the auxiliary units[4]. This period also marks the beginnings of cities in Thrace,

[1] Cf. E. Bozilova, S. Tonkov, Towards the vegetation and settlement history of southern Dobrudza coastal region, north-eastern Bulgaria: a pollen diagram from Lake Durakulak, Vegetation History and Archaeobotany 7, 1998, pp. 141-148, esp. Fig. 2, p. 148; S. Tonkov et al., Palaeoecological studies, esp. Fig. 3, p. 34. The research covers a limited area, but nevertheless managed to demonstrate a general trend, at least with respect to the period under consideration in this study.

[2] Scenes XV and XXIII on Trajan's Column unmistakably show soldiers clearing a forest, while in the scenes LXIX and XCII other soldiers do the same to make way for a road, see R. Vulpe, Columna lui Traian/Trajan's Column, Bucureşti 2002, pp. 123, 126, 160, 176. The reliefs obviously illustrate the events in Dacia, but can be treated as universal in that they depict the actions of the Roman army in occupied territories.

[3] J. Kolendo, Aneksja Tracji, pp. 87-100.

[4] R. Ivanov, The Roman Limes in Bulgaria (1st-6th C. AD), [in:] L. Vagalinski, N. Sharankov, S. Torbatov (eds.), The Lower Danube Limes (1st-6th C. AD), pp. 23-42, here: p. 23.

such as Nicopolis ad Istrum and Marcianopolis, whose economies became profoundly linked with the limes regions. The third phase (late second century) saw evident consolidation of civilian settlement. The two aforementioned cities were incorporated into Lower Moesia, while the development of settlements adjacent to the Roman camps (*vici* and *canabae*) advanced far enough to enable them to obtain municipal rights. That third stage was characterised by increasing significance of civilians in the domain of construction, while the participation of the army in the social and economic life of the province gradually diminished. The fourth phase (from mid-third century) is a period when the development of cities and fortifications was affected by Gothic incursions, as the population of the province sought refuge and safety in the vicinity of military installations and fortified structures[5].

1. Fortifications

The principal sources which indicate the location of fortifications is Ptolemy's map from the second century, *Tabula Peutingeriana* (TP), and *Itinerarium Antonini* (a registry of roads)[6]. Also, archaeological remnants of walls or their traces are of paramount importance. Researchers studying the network of fortifications often determine the chronology of a site relying on stamped building ceramics, vessel pottery and coins[7]. Such dating method is very risky, especially when there is no precise information on the stratigraphic context of such finds[8].

Once Romans had conquered a certain territory, their prime task was to create a network of fortifications (*castra*, *castellum*, *praesidium*, *quadriburgium*, *burgus* and *turris*[9]). The construction of larger installations may be divided into two stages, the first of which is designated as earthen-wooden phase (the initial fortifications were built using earth and timber). The second stage followed when units became permanently stationed in an

[5] In general terms, this overlaps with the history of settlement, cf. L. Mrozewicz, Miasta rzymskie.

[6] K. Miller, Itineraria romana: Römische Reisewege an der Hand der Tabula Peutingeriana, Stuttgart 1916; idem, Die Peutingersche Tafel, Stuttgart 1962.

[7] This is particularly noticeable in such works as M. Zahariade, N. Gudea, The Fortifications; N. Gudea, Der untermoesische.

[8] For an appraisal and description of sources see M. Biernacka-Lubańska, The Roman and Early-Byzantine Fortifications of Lower Moesia and Northern Thrace, Wrocław 1982, pp. 28-50.

[9] S. Torbatov, Ukrepitelna sistema na provincija Skitija (kraja na III–VII v.), Veliko Tărnovo 2002, pp. 74-83.

area, and their encampments were surrounded with stone walls. The system of Lower Moesian fortifications spanned 670 km (to the Danube delta), while south of the limes it stretched over no more than 30 to 70 km[10] (Map 4).

a) legionary camps

Oescus was the earliest legionary camp in Lower Moesia. It was built most probably in the first decade of the first century[11] by *legio V Macedonica*, which stayed there until 62[12] and later from 71 to 102[13]. During the nine-year hiatus the camp was manned by *cohors IIII Gallorum*[14]. Moreover, *ala Pansiana* is likely to have been stationed there (or in its vicinity) during the reign of Tiberius, but the fact has not been conclusively verified[15]. Following the Roman war with Dacia in 101-102, *legio Macedonica* was posted to Troesmis[16] and the camp was abandoned. A Roman colony was erected in its place in 102-106[17]. The initial period (from Augustus to 71 CE) saw the construction of earthen-wooden defences, which under Vespasian were replaced with stone structures; the phase ended

[10] After A.G. Poulter, Town and Country in Moesia Inferior, [in:] idem (ed.), Ancient Bulgaria. Papers presented to the International Symposium on the Ancient History and Archaeology of Bulgaria, pp. 74-118, here: p. 85.

[11] Such view was advanced by B. Gerov, Epigraphische Beiträge zur Geschichte des Moesischen Limes in vorclaudischer Zeit, [in:] idem (hrsg.), Beiträge zur Geschichte der römischen Provinzen Moesien und Thrakien, Gesammelte Aufsätze. Bd. I, Amsterdam 1980, pp. 147-167, here: p. 150, 152, on the basis of inscription: AE 1927, 51= ILatBulg. 47. Gerov's thesis continues to be treated as valid, see T. Ivanov, Das Befestigungssystem der Colonia Ulpia Oescensium, [in:] Akten des 14 Internationalen Limeskongresses 1986 in Carnuntum, Vienna 1990, pp. 913-924, here: p. 913; I. Bojanov, Oescus – from castra to colonia, AB 12, 3, 2008, pp. 69-76, here: p. 69; the site of the legionary camp was discovered under the remnants of a civilian municipality, see G. Kabakčieva, Frührömisches Militärlager in Oescus (Nordbulgarien). Ergebnisse der Ausgrabungen 1989-1993, Germania 74, 1, 1996, pp. 95-117. It is assumed that the Fifth Macedonian Legion came to Oescus during the reign of Tiberius, see A. Aricescu, The Army, p. 11; but archaeological finds suggest that the beginnings of Roman military presence in Oescus date back to the rule of Augustus, see G. Kabakčieva, Oescus. Castra oescensia. Rannorimski voenen lager pri ustieto na Iskăr, Sofia 2000, pp. 31-62.

[12] The legion took part in the Parthian expedition, see Tac., Ann. IV 6; B. Filow, Die Legionen, p. 7.

[13] B. Filow, Die Legionen, p. 35; R. Ivanov, Roman Limes, p. 31.

[14] Presence of the cohort in Oescus is attested in CIL III 14417 = ILatBulg. 61; I. Bojanov, Oescus, p. 69; F. Matei-Popescu, Roman Army, p. 210.

[15] This would follow from inscription ILatBulg 50 = AE 1960, 127; B. Gerov, Epigraphische Beiträge, p. 155; I. Bojanov, Oescus, p. 69.

[16] K. Strobel, Untersuchungen, pp. 90-91.

[17] I. Bojanov, Oescus, p. 69; the western gate of colonia Ulpia Oescensium was built between 106 and 112, see R. Ivanov, Roman Limes, p. 28.

in the early second century[18] when the camp, whose area covered 18 ha[19], was finally liquidated.

Farther east, near the city of Svishtov, one finds the ruins of **Novae**, the camp of *legio VIII Augusta*, which was stationed there from the mid-40s CE to 69[20]. In the year 70 at the earliest, the legion was replaced by *legio I Italica*, which remained in Novae until Late Antiquity[21]. The defensive features and most buildings in the fortress erected by the early second century relied on timber and earth[22], while the conversion to stone structures was carried out prior to the Dacian wars or after they ended[23]. The interior of the stronghold covered an area of 17.99 ha[24]. At present, Novae is the most comprehensively studied military camp, given that since 1960[25] Bulgarian-Polish expeditions have been conducting intensive archaeological research at the site[26]. To date, researchers have explored the walls, baths, hospital, the

[18] G. Kabakčieva, Oescus, p. 120.

[19] M. Zahariade, N. Gudea, The Fortifications, p. 45.

[20] Researchers studying Novae are in agreement as to the dating of the first structures built there, see E. Genčeva, Părvijat voenen lager v Novae provincija Mizija (Severna Bălgarija), Sofia – Warsaw 2002, p. 118; L. Mrozewicz, Prowincje naddunajskie w polityce cesarza Klaudiusza, Res Historica 14, 2002, pp. 145-161, here: p. 148; T. Sarnowski, Novae Italicae im 1. Jh. n. Chr., Études et Travaux 15, 1991, pp. 348-355, here: p. 348.

[21] The principia were demolished in the 440s, see T. Sarnowski, Die Principia von Novae im späten 4. und frühen 5. Jh., [in:] G. von Bülow, A. Milčeva (hrsg.), Der Limes an der unteren Donau von Diokletian bis Heraklios. Vorträge der Internationalen Konferenz Svištov, Sofia 1999, pp. 57-63. It is possible that the legion in Novae continued to be stationed there until 432 r., see T. Sarnowski, Drei spätkaiserzeitliche Statuenbasen aus Novae in Niedermoesien, [in:] M. Mirković (hrsg.), Römische Städte und Festungen an der Donau, Beograd 2005, pp. 223-230.

[22] L. Press, T. Sarnowski, Novae, rzymska twierdza legionowa i miasto wczesnobizantyjskie nad dolnym Dunajem, Novensia 1, 1987, pp. 289-322, here: p. 294.

[23] S. Parnicki-Pudełko, The Fortifications in the Western Sector of Novae, Poznań 1990, p. 65, argues that Romans began erecting stone walls in Novae during the reign of Trajan or even earlier, under Nerva. Stone structures in Novae appear in 68-75, see E. Genčeva, Părvijat voenen lager, p. 122, as evidenced by discoveries in the legionary baths and the building of the legion's headquarters, see P. Dyczek, Novae – Western Sector (Section IV), 2007-2010. Preliminary Report on the Excavations of the Center for Research on the Antiquity of Southeastern Europe, University of Warsaw, Archeologia 60, 2009 (2011), pp. 103-116; T. Sarnowski, Headquarters building (principia) of legio I Italica at Novae, [in:] P. Dyczek (ed.), Novae – 40 years of excavations, Warsaw 2001 (2002), pp. 31-37.

[24] T. Sarnowski, L. Kovalevskaja, J. Kaniszewski, Novae – castra legionis, 2003-2005. Preliminary Report on the Excavations of the Warsaw University Archaeological Expedition, Archeologia 56, 2005, pp. 141-162, here: p. 141. A.B. Biernacki suggests slightly smaller dimensions, i.e. 17,75 ha; see The thirty years of exploration of Novae (Moesia inferior) by the international interdisciplinary archaeological expedition of the Adam Mickiewicz University in Poznań, Novensia 14, 2003, pp. 39-58, here: p. 41.

[25] K. Majewski, Kultura rzymska w Bułgarii, Kraków 1969, p. 66.

[26] On the history of excavations and discoveries made in Novae see P. Dyczek, Archaeological Excavations at Novae. A History of Research with Special Consideration of Sector IV (Legionary

prinicipia and a small area of the barracks, in short – the most important structures of the fortress[27].

Durostorum was another legionary camp besides Novae. However, before it became one, it served in the Flavian times as a base for *cohors II Flavia Brittonum equitata*[28] and probably *cohors II Gallorum*[29]. A customs station functioned there as well[30]. In 115-117, Durostorum was garrisoned by *legio XI Claudia*[31], whose soldiers built a camp covering 22 ha in the site where earlier fortifications had stood[32].

The last legionary camp was **Troesmis**, built by *legio V Macedonica*, which remained stationed there until 167[33]. It also provided quarters for *ala I Pannoniorum*[34], and when *legio V Macedonica* was deployed to Dacia, Troesmis was manned by *vexillatio legionis I Italicae*[35]. Apart from land units, Troesmis was also a base of the *classis Flavia Moesica*[36].

Baths, Valetudinarium, Late Architecture), [in:] T. Derda, P. Dyczek, J. Kolendo (eds.), Novae. Legionary Fortress and Late Antique Town I, Warsaw 2008, pp. 31-70.

[27] Ibidem.

[28] W. Wagner, Dislokation, p. 110.

[29] R. Ivanov, Strukturata na provintciite Mizija i Dolna Mizija, [in:] Istorija na Silistra. Antičnijat Durostorum, Sofia 2006, pp. 59-76, here: p. 62.

[30] R. Ivanov, G. Atanasov, P. Donevski, Antičnijat Durostorm, Sofia 2006, p. 123.

[31] The fact is attested in epigraphic material, see AE 1933, 14; A. Aricescu, The Army, p. 13; F. Matei-Popescu, Roman Army, p. 134.

[32] On the findings of archaeological research at Durostorum see P. Donevski, Durostorum. Lager und Canabae der Legio XI Claudia, [in:] H. Vetters, M. Kandler (hrsg.), Akten des 14. Internationalen Limeskongresses 1986 in Carnuntum, Wien 1990, pp. 931-938; idem, Durostorum und das Lager der Legio XI Claudia, [in:] V.A. Maxfield, M.J. Dobson (eds.), Roman Frontier Studies 1989. Proceedings of the XVth International Congress of Roman Frontier Studies, Exeter 1991, pp. 277-280; idem, Die Canabae der Legio XI Claudia von Durostorum (Silistra, Bulgarien), [in:] G.C. Susini (cur.), Limes, Bologna 1994, pp. 153-158; idem, Zur Topographie von Durostorum, Germania 68, 1, 1990, pp. 236-245; idem, Some notes about the legionary fortress at Durostorum (Lower Moesia), Novensia 15, 2004, pp. 15-21; idem, O lagere XI-ogo legiona klavdiya v Durostorum, Balcanica Posnaniensia VII 1995, pp. 259-270; G. Miloševic, P. Donevski, The Late Antique Tombs at Silistra (Durostorum), [in:] G. von Bülow, A. Milčeva (hrsg.), Der Limes an der unteren Donau von Diokletian bis Heraklios. Vorträge der Internationalen Konferenz Svištov, Sofia 1999, pp. 245-258, here: p. 245.

[33] A.G. Poulter, Town and Country, p. 82.

[34] A. Aricesu, The Army, p. 11.

[35] E. Doruțiu-Boilă, Troesmis und die Organisierung des Skythischen Limes in der frühen Kaiserzeit, [in:] J. Fitz (hrsg.), Limes. Akten des XI. Internationalen Limeskongresses (Székesfehérvár, 30.8-6.09.1976), Budapest 1977, pp. 89-94.

[36] ISM V 217.

b) minor installations

Almus, present-day Lom[37], covered an area of 4.1 ha[38] and since the early second century[39] functioned as a fortlet, with a customs station attached[40]. Inscriptions provide information on the unit stationed in Almus: it was *vexillatio legionis I Italicae*[41]. Further down the Danube, there was the fort of **Cebrum** (Dolni Cibăr)[42], whose remnants should most probably be dated to the fourth century, yet it is also possible that a fortified post had existed there already during the Principate[43]. The number of sources relating to **Regianum** (Kozloduj)[44] is higher, though in this case as well the existence of fortifications in the first or second century cannot be stated with certainty[45]. Much more data is available with respect to the fortlet built by Romans on the left bank of the Ogosta, known in antiquity as **Augustae** (Harlec)[46]. It the first half of the first century the *castellum* was the base of *ala Augusta*[47]. Its early structures were built of earth and timber (Augustae I)[48]. The stone walls

[37] On the location of the fort see V. Stoičkov, Almus: localizzazione, stato attuale delle ricerche, Ratiariensia 3-4, Vidin 1985, pp. 135-141; Lom is discussed in greater detail in M. Lemke, Geografia, p. 151.

[38] V. Stoičkov, Razkopki na kastela Almus, AOR 1987, p. 112; previously, D. Marinov determined the dimensions of the fort (whose each side measured 200 m), see V. Stoičkov, Nouvelles données sur le développement du Castel Almus et son territoire, Balcanica Posnaniensia 7, 1995, pp. 251-258, here: pp. 253-254; in another study (Almus, p. 136) V. Stoičkov wrote that the castellum in Almus covered the area of 46,000 m^2.

[39] M. Ivanov, Almus, [in:] R. Ivanov (ed.), Rimski i rannovizantijski selišta v Bălgarija, t. 2, vol. 2, Sofia 2003, pp. 23-26, here: p. 23.

[40] As it follows from CIL III 6124 = ILS 1464: Genio…c(onductor) p(ortorii) p(ublici?), see B. Gerov, Zur epigraphischen Dokumentation des publicum portorii Illyrici et ripae Thraciae, [in:] idem (hrsg.), Beiträge zur Geschichte der römischen Provinzen Moesien und Thrakien, Gesammelte Aufsätze, Bd. III, Amsterdam 1998, pp. 479-490, here: p. 481.

[41] CIL III 6125; CIL III 7420: inscription of a centurion: L. Maesius [P]rimus (centurio) leg(ionis) I Ital(icae) [f]r(umentarius) or(centurio) leg(ionis) I Ital(icae) r(egionarius).

[42] M. Lemke, Geografia, p. 155.

[43] According to M. Zahariade and N. Gudea (The Fortifications, p. 71) this may suggest their strategic location.

[44] M. Lemke, Geografia, p. 157.

[45] M. Zahariade, N. Gudea, The Fortifications, p. 71.

[46] V. Beševliev, Zur Deutung der Kastellnamen in Prokops Werk De Aedificiis, Amsterdam 1970, p. 120.

[47] S. Maschov, Das spätantike Kastell und die frühbyzantinische Stadt Augustae beim Dorf Harletz, Nord-West Bulgarien, [in:] G. Susini (cur.), Limes. Studi di storia 5, Bologna 1994, pp. 21--36, here: p. 30; M. Zahariade, N. Gudea, The Fortifications, p. 71; also, R. Ivanov surmises that *ala I Claudia Gallorum Captioniana* could have been temporarily stationed there, before the reign of Claudius, see Avguste (Augustae), [in:] idem (ed.), Rimski i rannovizantijski selisča v Bălgarija, t. 2, vol. 2, Sofia 2003, p. 30; M. Lemke, Geografia, p. 161.

[48] R. Ivanov, Roman Limes, p. 23.

surrounding the perimeter of ca 2.5 ha[49] were put in place during Hadrian's rule[50]. Another cavalry fort built by Romans was **Variana** (Orjahovo)[51], mentioned in *Itinerarium Augusti*[52]. Ruins of the fortification date to the late Roman times[53]. Bricks discovered at the site suggest that units stationed there included *ala Pansiana* and *legio I Italica*. Regrettably, they cannot be taken as proof that a fortlet had stood there during the Principate[54]. Much less information is available regarding **Pedoniana** (Ostrov), which can only be found in *Tabula Peutingeriana*[55]; a little more is known about **Valeriana** (Dolni Vadin)[56], a site where *ala Scubulorum*[57] resided in a fortlet with a 150-metre-long wall. Usually, Valeriana is dated to the late Roman or early Byzantine period[58]. **Utus** (Milkovica), a fortlet built in the first century by *ala I Hispanorum*[59] represents a similar case.

Ad Lucenarium burgus (Somovit)[60] was most likely a small fort[61], which served either as a fortified beacon site[62], or a centre of lamp production[63]. In the early second century or in the latter half of the third century *vexillatio legionis V Macedonicae*[64] was stationed there. Farther east from the burgus of Ad Lucenarium, Romans built **Asamus** (Čerkovica)[65], which was home to

[49] Idem, Avguste (Augustae), p. 30.
[50] S. Maschov, Das spätantike Kastell, p. 36.
[51] M. Lemke, Geografia, p. 163.
[52] IA. Moesia. 220,3.
[53] M. Zahariade, N. Gudea, The Fortifications, p. 71.
[54] N. Gudea, Der untermoesische, p. 412.
[55] TP VII 1; M. Zahariade, N. Gudea, The Fortifications, p. 72.
[56] V. Beševliev, Zur Deutung der Kastellnamen, p. 120.
[57] N. Gudea, Der untermoesische, p. 413. Możliwe, że także stacja drogowa.
[58] J.J. Wilkes, The Roman Danube: an Archaeological Survey, JRS 95, 2005, pp. 124-225, here: p. 212: the author suggests sixth century.
[59] Ibidem, p. 213; which would follow from an inscription of a veteran of the unit, see ILatBulg 122 = CIL III12361 = Kalinka 404 = AE 1895, 42; gravestones of other veterans were also discovered there; these had served in e.g. *ala II Aravacorum* CIL III 12359 = ILatBulg 122, *legio V Macedonica* ILatBulg 128 = AE 1935, 74, *legio I Italica* ILatBulg 130 = CIL III 12354.
[60] V. Beševliev, Zur Deutung der Kastellnamen, p. 122.
[61] T. Kovačeva, Ostanki ot rimskata epoha kraj p. Somovit i mestonahoždenieto na Lucenaria burgus, InMSB 1, 1977, pp. 249-266, here: p. 251.
[62] Ibidem, p. 262; J.J. Wilkes, The Roman Danube, p. 213.
[63] J. Kolendo, Niezidentyfikowane centrum produkcji lampek rzymskich nad Dolnym Dunajem. Lucenaria burgus u Prokopiusza z Cezarei, KHKM 1, 1981, pp. 55-57: "the name Lucenaria burgus would indicate a workshop producing lamps – note the difference between lucenaria and officina".
[64] ILatBulg 134 = AE 2001, 1732; R. Ivanov dates the inscription to the reign of Diocletian: La Datation de l'inscription au relief d'Iuppiter de Somovit, Thracia 13, 2000, pp. 171-174.
[65] Regarding the debate on the location of Asamus see A. Tomas, Inter Moesos et Thraces, Archeologia, p. 42, esp. notes 101-102.

ala Bosporanorum[66]. Other fortifications built by the Roman army include **Securisca/Curisca** (Bjala Voda)[67], but their location is still uncertain[68]. Subsequently, one should mention **Dimum** (Belene), a Roman stronghold built in the mid-first century, most probably by *vexillatio legionis VIII Augustae*[69]. During the reign of Vespasian, the soldiers of *vexillatio legionis I Italicae* replaced the earthen-wooden structures with stone ones[70]. It is generally presumed that the unit stationed there in the second and third centuries was *ala Solensium*[71], and due to convenient lay of the land at that location on the Danube, forces of the river fleet were based there as well[72]. The installation, measuring 240 × 180 m, covered an area of 4.2 ha[73].

Several kilometres outside Novae one encounters the ruins of a late Roman fortlet of **Iatrus**. Despite long-running excavations, researchers have not discovered any traces of previous structures, while remnants of earlier vessel pottery, coins, stamped building ceramics or inscriptions in stone do not offer sufficient evidence that any fortified installation existed there in the second or third century[74]; the aforesaid finds cannot be treated as proof[75].

[66] AE 1925, 70 = ILatBulg 136; B. Gerov dated the inscription to the mid-first century. See also B. Gerov, Epigraphische Beiträge, p. 163; M. Lemke, Geografia, p. 179.

[67] D. Mitova-Džonova, Stationen und Stützpunkte der römischen Kriegs- und Handelsflotte am Unterdonaulimes, Studien zu den Militärgrenzen Roms III, Stuttgart 1986, pp. 504-509, here: p. 505: the author situates Securisca in Bjala Voda. J.J. Wilkes, The Roman Danube, p. 213: "possibly two forts in the same area".

[68] A. Tomas, Inter Moesos et Thraces, Archeologia, p. 42.

[69] D. Mitova-Džonova, Dimum i bliskata okolnost, [in:] R. Ivanov (ed.), Rimski i rannovizantijski selišta v Balgarija, vol. 2, Sofia 2003, pp. 39-55, here: p. 55.

[70] Ibidem.

[71] Ibidem. T. Sarnowski, Wojsko rzymskie, pp. 74-75. Curiously enough, *ala Solensium* is not attested in any military diploma, see Chapter II. 2; the only trace suggesting its existence are bricks stamped ALSOL, which might be read as: Alex(ander) Sol(…), see T. Sarnowski, Aurelius Statianus z Novae, actor. Próba uściślenia jego zajęć, Studia Moesiaca II, Poznań 1994, pp. 19-23, here: p. 22, note 11.

[72] D. Mitova-Džonova, Stationen und Stützpunkte, p. 506.

[73] D. Mitova-Džonova, Dimum, p. 55; J.J. Wilkes, The Roman Danube, p. 213.

[74] The first phase of construction in Iatrus is dated to 320, see B. Döhle, Die Siedlungs-periode A in Iatrus, [in:] Iatrus-Krivina. Spätantike Befestigung und frühmittelalterliche Siedlung an der unteren Donau, V, pp. 9-28, here: p. 9.

[75] Evidence of this kind is employed by M. Zahariade and N. Gudea (The Fortifications of Lower Moesia, p. 73); Gudea perseveres in his theses, completely disregarding the stratigraphy of the site, which is well known thanks to a publication by German archaeologists, see N. Gudea, Contribuţii la cunoaşterea Limesului provinciei Moesia Inferior. 1. Cazul Iatrus, Revista Bistriţei 20, 2006, pp. 177-186; inaccuracy of Gudea's notions was also demonstrated by K. Watchel, Epigraphische Beziehungen zwischen Novae, dem Lager der Legio I Italica und dem Kastell Iatrus, [in:] Phosphorion. Studia in Honorem Mariae Čičikova, Sofia 2008, pp. 421-424; in my opinion, building ceramics is not a reliable source, in spite of the fact that the artefacts in question originate from the first half of the third century, cf. H. Krummey, Inschriften, Klio 47, 1966, pp. 358-396,

Until traces of any other development near the ruins of late Roman Iatrus are found, any theories concerning earlier fortifications there will remain mere hypotheses[76].

Farther away from Iatrus, a stone fort whose walls measured 100 × 300 m bore the name of **Sacidava** (Batin)[77]. It may have provided quarters for a detachment of the legion in Novae[78], as was the case with nearby **Trimammium** (Mečka)[79], a 1.7 ha[80] fort where a detail of *legio I Italica* was posted. *Cohors I Bracorum* was stationed there in the third century, and in all likelihood remained at the fort until the province ceased to exist[81].

Greater military role is attributed to **Sexaginta Prista** (Ruse)[82], built during the reign of the Flavian dynasty[83], initially as a fortress and a base of

here: p. 393, Figs 2, 3, 4, 5, 7; T. Sarnowski, Die Ziegelstempel; M. Duch, Polish Studies of Impressed Building Ceramics from Novae. An Attempt to Determine the Chronology of Occurrence of the 1st Italian Legion Stamps, [in:] S. Ruciński, K. Balbuza, K. Królczyk (ed.), Studia Lesco Mrozewicz Dedicata, Poznań 2011, pp. 73-85; however, as noted by K. Watchel, Inschriften, [in:] Iatrus-Krivina IV. Ergebnisse der Ausgrabungen 1975-1981, pp. 207-212, here: p. 208, roof tiles with the formula LEG I ITAL were re-used. Instances of the practice are found in Novae, dating to the turn of the fourth century, when the camp transformed into a city (see L. Mrozewicz, Miasta rzymskie), the garrison was reduced and the military buildings were dismantled (see P. Dyczek, The Site of the Valetudinarium in Novae in the Third Century AD: Remodeling the Architecture, [in:] M. Mirković (hrsg.), Römische Städte und Festtungen and der Donau. Akten der Regionalen Konferenz, Beograd 2003, pp. 231-238. Hence it would be perfectly legitimate to presume that building material from Novae was put to use in Iatrus.

[76] An argument against the existence of earlier fortifications in Iatrus may be found in S. Conrad, D. Stanchev, Archaeological survey on the Roman frontier on the Lower Danube between Novae and Sexaginta Prista. Preliminary report (1997-2000), Proceedings of the 17th International Congress of Roman Frontier Studies. Zalău 1999, Limes 18, 2002, pp. 673-684, here: p. 675.

[77] M. Zahariade, N. Gudea, The Fortifications, p. 74.

[78] S. Conrad, D. Stanchev, Archaeological survey, p. 676.

[79] For a detailed description of the site see M. Lemke, Geografia, pp. 197-198.

[80] S. Torbatov, Trimammium – a Roman castellum and civitas on the Lower Danube, [in:] The Lower Danube Roman Limes, Sofia 2012, pp. 429-460, here: p. 445.

[81] Ibidem, p. 449, the author concludes thus based on ceramics stamped with CORTISIBRA and CIB. The latter type had been formerly attributed to *cohors I Bracaraugustanorum*, see L.F. Vagalinski, New Epigraphical Data on Auxilia in Moesia Inferior during 1st Century AD, Novensia 15, 2004, pp. 39-45, here: p. 43.

[82] D. Stanchev, Sexaginta Prista Investigations and Problems, Ratiariensia 3-4, 1987, pp. 231--237, here: pp. 231-232; the author believes that the name derives from 60 ships or a city which offered harbour to 60 ships. Another theory states that the name originated with the arrival of the legion, which disembarked from 60 riverborne craft (each carrying one century) during Domitian's Dacian war, see V. Varbanov, Sexaginta Prista i dakijskite vojni (85-89 g.) na imperator Domician, IRIMR 9, pp. 66-72; previously, such an alternative was advanced by T. Sarnowski, Wojsko rzymskie, p. 44, with exception that the latter saw it as a place where ships and boats were built to ferry the legion to the other bank of the river.

[83] T. Sarnowski, Wojsko rzymskie, p. 43; the bases of columns found in Sexaginta Prista are dated to the early second century. Such dating is supported by their similarity to columns discovered in the *valetudinarium* in Novae, see Z. Dimitrov, Arhitekturni detajli ot rimskata epoha v Seksaginta Prista, IRIMR 10, pp. 192-220, esp. p. 207, note 2.

the Danube fleet; later on, it served *cohors III Gallorum*, then *cohors II Mattiacorum* and, in the late second and early third century, *cohors II Flavia Brittonum*. It remains undetermined how the fort transformed as its garrison changed; the only feature discovered so far are defensive walls surrounding an area of 4-5 ha[84]. Farther towards Dobruja, Romans built the fort of **Tegra** (Marten)[85], in which a detachment of *legio I Italica* was stationed in the second and third century[86]. Another important undertaking east of Yantra, carried out in the late first century, was the construction of *castellum* **Appiaria**[87], where *ala I Gallorum Atectorigiana* came to reside[88]. Little is known about the early architecture of that facility[89]. Situated nearer Durostorum, there was the fortlet of **Transmarisca** (Tutrakan), since the second century a permanent station of *cohors I Thracum Syriaca*[90], with a temporary presence of a detachment from *legio I Italica* and, as of the second half of the second century, another detachment from *legio XI Claudia*[91]. During the reign of Domitian, Romans built the fort of **Nigrinianis**[92] (Malak Preslavec), named after the legate of Lower Moesia who distinguished himself in the Dacian wars[93]. Epigraphic sources attest that *cohors I Lusitanorum* stayed in that very fort in the early third century[94].

[84] D. Stanchev, Sexaginta Prista, [in:] R. Ivanov (ed.), Rimski i rannovizantijski selište v Bălgarja, 2.2, pp. 56-62.

[85] V. Beševliev, Zur Deutung der Kastellnamen, p. 124.

[86] M. Zahariade, N. Gudea, The Fortifications, p. 75.

[87] L.F. Vagalinski, Die spätrömische nördliche Festungsmauer von Transmarisca, [in:] G. von Bülow, G. Milčeva (hrsg.), Der Limes an der unteren Donau von Diokletian bis Heraklios. Vorträge der Internationalen Konferenz Svištov, Sofia 1999, pp. 229-236, here: p. 232; E. Paunov, History of Transmarisca, [in:] L.F. Vagalinski (ed.), The Lower Danube in Antiquity. International Archeological Conference Bulgaria – Tutrakan, 6-7.10.2005, Sofia 2007, pp. 141-146, here: p. 141.

[88] As it follows from inscription AE 1895, 50 = CIL III 12452, see W. Wagner, Dislokation, pp. 12-13; J. Beneš, Auxilia Romana, p. 163; F. Matei-Popescu, Roman Army, p. 180.

[89] R. Ivanov, Apiarija (Appiaria), [in:] idem (ed.), Rimski i rannovizantijski selište v Bălgarja, vol. 2, pp. 63-69.

[90] V. Christescu, Quelques monuments inédits de Turtucaia (Transmarisca), Dacia 5-6, 1935--1936, pp. 451-452, here: p. 451; W. Wagner, Dislokation, pp. 191-192; J. Beneš, Auxilia Romana, p. 186, note 96; V. Velkov, Die Stadt Transmarisca (Moesia Inferior), Archaeologia Polona 14, 1973, pp. 263-268, here: p. 263; F. Matei-Popescu, Roman Army, p. 233.

[91] E. Paunov, History of Transmarisca, p. 141; M. Zahariade, N. Gudea, The Fortifications, p. 75 – authors arrive at such a conclusion based on a brick discovered there, which bore the stamp of LEG XI CL PF; M. Lemke, Geografia, pp. 205-206.

[92] The location is also known as Candidiana, see V. Velkov, Zur Geschichte eines Donaukastells in Bulgarien (Der untermösische Statthalter Domitius Antigonus), [in:] idem, Roman Cities in Bulgaria. Collected Studies, Amsterdam 1980, p. 103.

[93] T. Sarnowski, Wojsko rzymskie, p. 43.

[94] AE 1964, 180; M. Zahariade, N. Gudea, The Fortifications, p. 75; M. Lemke, Geografia, pp. 201-211.

On the bank of the Danube, in **Garvan**, research at a fort whose walls measured 100 × 100 m yielded bricks of *legio I Italica* and *XI Claudia*[95]. In the nearby locality of **Popina,** there functioned a larger stronghold whose area was enclosed by defences measuring 400 × 200 m[96]. Small-sized fortifications were also built by Romans south of Popina, in **Orešak**[97]. The last fort before Durostorum was **Tegulicum** (Vetren), erected in the early second century by a unit of *legio XI Claudia*, as may be inferred from stamped building ceramics[98]. Its layout followed a trapezoidal outline whose sides measured 200 × 130 × 80 × 58 m[99]. The name may indicate that a brickyard existed in the vicinity, supplying Durostorum with its product[100]. Beyond Durostorum, Roman soldiers built the relatively small **Cimbrianae** (Constanta), which in the written sources is referred to as late Roman. However, bricks of *legio XI Claudia*, pottery[101], as well as an inscription from the times of Gordian III suggest a pre-existing military facility[102].

Sucidava (Izvoarele) is a site of a defensive installation measuring 100 × 100 m, but the dimensions of the earliest structures remain unknown. The units stationed there included *cohors I Claudia Sugambrorum* and, if "bricks are to be trusted", a detachment of *legio XI Pontica* and another one from *legio V Macedonica*[103]. **Altinum** (Oltina) is yet another fort in Dobruja. There is no convincing evidence that it was built in the era of the Principate[104]. Some researchers suggest that its origins are to be dated to the second century[105]. Much the same is the case with **Viile**, a rectangular fort whose walls measured 140 × 80 m[106]. There is no doubt, however, that the fortifications in **Sacidava** (Dunăreni) were constructed in the early second century[107], first by *cohors II Gallorum*, and then by *cohors I Cilicum*[108].

[95] M. Zahariade, N. Gudea, The Fortifications, p. 76.
[96] Ibidem; M. Lemke, Geografia, pp. 212-213.
[97] M. Zahariade, N. Gudea, The Fortifications, p. 76.
[98] Ibidem.
[99] Ibidem.
[100] T. Sarnowski, Legionsziegel, p. 498.
[101] M. Irima, Observaţii privind aşezarea antică de la gura Canliei, Pontica 14, 1981, pp. 98-115.
[102] M. Zahariade, N. Gudea, The Fortifications, p. 77; M. Lemke, Geografia, p. 218.
[103] M. Zahariade, N. Gudea, The Fortifications, p. 77; M. Lemke, Geografia, p. 219.
[104] The location is featured neither in *Tabula Peutingeriana* nor in *Itinenarium Antonini.*
[105] N. Gudea, Der untermoesische, p. 442; M. Lemke, Geografia, p. 220.
[106] J.J. Wilkes, The Roman Danube, p. 216; M. Zahariade, N. Gudea, The Fortifications, p. 78.
[107] The earliest phase is dated to that period, see S. Scorpan, Sacidava şi unele probleme stratigrafice şi cronologice ale limes-ului şi Dobrogei romane (secolul V e. n. în arheologia Dobrogeană), Pontica 5, 1972, pp. 301-327, here: 315; idem, Rezultate ale săpăturilor arheologice de la Sacidava 1974-1976, Pontica 10, 1977, pp. 229-251, here: p. 230.

Again, if stamped bricks found at the site are any indication, units of *legio V Macedonica*, *legio XI Claudia* and *legio I Italica* were stationed there as well[109]. It may be surmised that **Flaviana** (Rasova) was built in the second century too, as the bricks discovered there bore stamps of legions stationed at the time in Lower Moesia, i.e. *legio V Macedonica*, *legio XI Claudia* and *I Italica*[110]. **Axiopolis** (Cernavoda)[111] was an important military site, with a station of *classis Flavia Moesica*[112] and, probably, the quarters of *cohors II Commagenorum*. Another significant fort in Scythia Minor was **Capidava,** built in the Trajanic period and garrisoned by a detachment of *legio XI Claudia*, then *cohors I Germanorum* and, in the third century, a unit of *legio I Italica*[113]. The dimensions of the *castellum* amounted to 127 × 105 m[114]. In **Carsium** (Hârşova), the first, earthen phase of fortifications overlapped with the reign of Vespasian, the second – stone one – began in 103, when *ala Gallorum Flaviana* had arrived there[115]. The fort covered an area of 1.5 ha[116].

Itinerarium Antonini mentions **Cius** (Gîrliciu)[117], therefore it may be expected that fortifications existed there in the second and third century. The fort measured 120 × 120 m, and the unit residing there was *cohors I Lusitanorum Cyrenaica*[118]. Similarly, fortifications are presumed to have existed in the same period in **Beroe** (Frecăței), even though archaeological corroboration has not been found[119].

Farther along the Danube, at some distance from **Troesmis** (Igliţa), Romans built fortifications in **Arrubium** (Măcin)[120]. Just as with the two previous forts, their existence may be inferred from itineraries, remnants of

[108] C. Scorpan, Limes Scythiae. Topographical and stratigraphical research on the late Roman fortifications on the Lower Danube, Oxford 1980, p. 51; idem, Sacidava – A New Roman Fortress on the Map of the Danube Limes, [in:] Actes du IXe Congrès international, Köln 1974, p. 113; idem, Cohors.

[109] C. Scorpan, Limes Scythiae, p. 210.

[110] N. Gudea, Der untermoesiche, p. 446; M. Lemke, Geografia, p. 221-222.

[111] H. Gajewska, Topographie des fortifications romaines en Dobroudja, Wrocław 1974, p. 147.

[112] A. Aricescu, The Army, p. 37; the Danube merchant navy was also based there (universi nautae Danuvii: CIL III 7485).

[113] G. Florescu, R. Florescu, P. Diaconu, Capidava, Bucureşti 1958, p. 15.

[114] H. Gajewska, Topographie, p. 150; M. Lemke, Geografia, p. 227.

[115] C. Nicolae, D. Bănoiu, V. Nicolae, Aspecte noi privind topografia cetății de la Hârşova (jud. Constanţa), Pontica 41, 2008, pp. 313-343, here: p. 313.

[116] Ibidem, p. 319; M. Lemke, Geografia, pp. 228-229.

[117] IA. Moesia. 224, 5.

[118] M. Zahariade, N. Gudea, The Fortifications, p. 79.

[119] Ibidem, p. 80.

[120] M. Lemke, Geografia, p. 235.

building ceramics and inscriptions[121], while reliable archaeological evidence is lacking.

Based on epigraphic sources, it may be determined that Arrubium was home to a detachment of *legio V Macedonica* and *ala I Vespasiana Dardanorum*[122]. Likewise, researchers suspect that fortifications originating from the first to third century existed in **Dinogetia** (Garvan), while their conjectures rely on the same kinds of sources as in the case of Arrubium[123]; the only difference is that Dinogetia has been explored archaeologically. Excavations revealed late Roman phase of the fort, but given that its structures contained bricks with the stamps of *legio V Macedonica*[124], *cohors II Mattiacorum*[125], *legio I Italica*[126], *cohors I Cilicum*[127] and *classis Flavia Moesica*[128], the potential functioning of an early Roman fort cannot be ruled out[129].

In the early second century, soldiers of *legio V Macedonica* put up earthen-wooden defences in **Barboşi** (Galaţi)[130], which were replaced with stone fortifications already during Trajan's times. Barboşi must have thriven during the reign of Antoninus Pius or Marcus Aurelius, as in that period the fortifications were extended. Ultimately, they enclosed an area of 5.25 ha (measuring 150-350 m)[131]. The composition of its garrison may be reconstructed on the basis of building ceramics, stamped by *legio V Macedonica*[132], *cohors II Mattiacorum*[133] and *legio I Italica*[134]. The latter half

[121] IA. Moesia. 225, 4; TP VII 4, ISM V 251-255; M. Zahariade, N. Gudea, The Fortifications, p. 80; M. Lemke, Geografia, pp. 234-235.

[122] CIL III 7512 = ISM V 251; ISM V 218; W. Wagner, Dislokation, p. 33; M. Zahariade, N. Gudea, The Fortifications, p. 80 (CIL III 7512 = ISM V 251); H. Gajewska (Topographie, p. 147) distinguishes as many as four military units; the interpretation of A. Ariscescu (The Army, p. 23), who identified *ala II Hispanorum et Aravacorum* in CIL III 6218 = ISM V 253, is also incorrect.

[123] I.e. pottery, *tegulae*, and inscriptions; see G. Stefan, Shiţa geografică-istorică, [in:] G. Stefan, I. Barnea, M. Comşa, E. Comşa, Dinogetia I. Aşezarea feudal timpurie de la Bisericuţa-Garvăn, Bucureşti 1967, p. 14. A. Aricescu, The Army, p. 21: the author seems to suggest that *ala I Vespasiana Dardanorum* was stationed in Arrubium already under Vespasian.

[124] ISM V 261

[125] ISM V 260.

[126] ISM V 262.

[127] ISM V 264.

[128] ISM V 263.

[129] M. Zahariade, N. Gudea, The Fortifications, p. 80.

[130] According to M. Lemke, Geografia, p. 236: Barboşi should be identified with Dinogetia.

[131] N. Gudea, Untermoesische, p. 454; M. Lemke, Geografia, p. 237.

[132] ISM V 305.

[133] ISM V 306.

[134] ISM V 307; N. Gostar, Aliobrix, Latomus 26, 4, 1967, pp. 987-996, here: p. 991; an inventory of all stamps is provided in N. Gudea, Untermoesische, p. 454.

of the third century saw the construction of the fort in **Luncavița**, with the dimensions of 69/75 × 220 m[135].

In north-eastern Lower Moesia[136], the fort of **Noviodunum** (Isaccea) played a vital role in the Roman defences, as the main base of the *classis Flavia Moesica* in the second century[137]. The fortifications there have not been fully explored. Loose relics, such as stamped bricks, warrant the conjecture that *legio V Macedonica* may have also been stationed there in 106-167, followed by *legio I Italica* later[138]. The fortlet of **Aliobrix** (Orlovka) is dated to much the same time; traces dating from the early second century to 167, indicate the presence of legionaries from *V Macedonica*, and subsequently *classis Flavia Moesica*[139]. Although archaeological excavations revealed no remnants of fortifications, building ceramics with stamps of the Moesian fleet (second- third cent.) as well as bricks of *cohors II Flavia Brittonum* may point to the existence of a fort where the cohort was based. In **Aegyssus** (Tulcea)[140], research yielded building ceramics of the Moesian fleet, originating from the second and third centuries, as well as bricks of *cohors II Flavia Brittonum*. Consequently, it is assumed that a part of the cohort could have been stationed there[141].

Closer to the Danube delta, Roman soldiers built the fortlet in **Ismail**. Little is known about the latter, though it has to be noted that an inscription erected by a centurion from *legio I Italica* was discovered at the site[142]. Another castellum was built in **Salsovia** (Mahmudia), 50 km from Aegyssus[143]. The only fact ascertained so far is that in the later phase its defences enclosed a space measuring 300 × 150 m[144]. One of the finds,

[135] N. Gudea, Untermoesische, p. 457; J.J. Wilkes, The Roman Danube, p. 217; M. Lemke: Geografia, pp. 238-239 provides the most extensive details concerning the architecture of the fort.

[136] A region where the threat of attack was the highest, see C. Scorpan, Limes Scythiae, p. 17.

[137] T. Sarnowski, Zur Geschichte der moesischen Provinzialflotte im 1. Jh. n. Chr., Ratiariensia 3-4, 1987, pp. 261-266, here: p. 264.

[138] J.J. Wilkes, The Roman Danube, p. 217; M. Zahariade, N. Gudea, The Fortifications, p. 81; N. Gudea, Untermoesische, p. 457.

[139] N. Gostar, Aliobrix, p. 992; J.J. Wilkes, The Roman Danube, p. 217; N. Gudea, Untermoesische, p. 457.

[140] A. Opaiţ, Aegyssus 76. Raport Preliminar, Pontica 10, 1977, pp. 307-312, here: p. 307.

[141] Idem, O nouă unitate militară atestată la Aegyssus, SCIVA 32, 1981, pp. 297-298; N. Gudea, Untermoesische, p. 460.

[142] M. Zahariade, N. Gudea, The Fortifications, p. 82; N. Gudea, Untermoesische, p. 461.

[143] I. Haynes. D. Bogdan, F. Topoleanu, Salsovia: A Roman Fort and Town on the Lower Danube, [in:] L.F. Vagalinski (ed.), The Lower Danube in Antiquity, International Archaeological Conference Bulgaria – Tutrakan, 6-7.10.2005, Sofia 2007, pp. 131-140, here: p. 131; M. Lemke, Geografia, p. 243.

[144] I. Haynes. D. Bogdan, F. Topoleanu, Salsovia, p. 132.

a diploma of *cohors III Gallorum* or *IIII Gallorum* is quoted as proof that the unit was stationed there[145]. The penultimate fort of the Danubian *limes* was **Halmyris** (Murighiol), erected in the second century by *vexillatio legionis I Italicae et legionis XI Claudiae P*(*iae*) *F*(*idelis*), and covering an area of 2.58 ha[146].

Finally, **Ad Stoma** (Dunăvățu) marked the end of the limes route[147]. Researchers envision a early fort in that location[148], but evidence to that effect is lacking.

c) defences within the province

Although the Roman army in Lower Moesia necessarily built fortifications along the line of the Danube, a number of installations were created in the interior of the province. For instance, **Montana** was an important military site in the valley of the Ogosta. An inscription found in Išekli attests that in 134 *cohors I Sugambrorum veterana* built a *praesidium* there[149]. On these grounds, as well as thanks to military diplomas, it may be determined that the cohort was stationed in that location from the first century to 134[150]. Also, *vexillatio legionis XI Claudiae piae fidelis* operated in the area in the mid-second century[151]. A detail of legionaries from the First Italian Legion is attested in the later period, until the early third century[152], only to be replaced by *numerus civium Romanorum*[153]. *Cohors III collecta* is another unit whose presence there in the mid-third century can be inferred from the sources[154]. Yet another force present in the Montana region towards the middle of the second century was a *vexillatio* composed of *legio I Italica*, *legio XI Claudia*, and *classis Flavia Moesica* under the command of the tribune of *cohors I*

[145] Ibidem

[146] M. Zahariade, N. Gudea, The Fortifications, p. 82; A. Suceveanu, L'organisation administratived'une ville romaine au Bas-Danube: Halmyris (Murighiol), [in:] Roman Frontier Studies. Proceedings of the XVIIth International Congress of Roman Frontier Studies, Zalău 1999, pp. 501-506, here: p. 502.

[147] TP VIII 4.

[148] M. Zahariade, N. Gudea, The Fortifications, p. 82; alternative locations for exploration have been suggested by M. Lemke, Geografia, p. 246

[149] AE 1927, 95; B. Rankov, A Contribution, p. 42.

[150] F. Matei-Popescu, Roman Army, p. 230.

[151] CIL III 7449.

[152] CIL III 7447 = Kalinka 171.

[153] V. Velkov, Nowe inskrypcje łacińskie z Montany (Moesia Inferior), Archeologia 7, 1955, pp. 91-99, here: p. 93.

[154] CIL III 7450, AE 1957, 340 = Velkov, Nowe inskrypcje, p. 94.

Cilicum[155], while during the reign of Gordian III *cohors Gemina Dacorum* stayed in the area as well[156]. A surviving inscription[157] reveals that in the middle of the third century a *castrum* was constructed in Montana[158]. Such a substantial concentration of Roman troops was reflected in the numerous fortified facilities which the army built in *regio Montanensium*. They were to be found in the following present-day localities[159]: Goliamo (Gradište), Smolianovci (*burgus*), Prevala, Belimel, Martinovo (*burgus*), Dolno Linevo (*burgus*), Kopilovci, Diva Slatina, Govežda, Markovo Kale, Bistrilica, Petrohan, Zamfirovo, Portitovci (*burgus*) and Lehčevo[160].

Abrittus was an important point in the province's inner defensive system, being a fortified town where detachments of *legio XI Claudia* and *cohors II Lucensium* are likely to have been stationed[161]. Here, the troops led by Decius suffered a devastating defeat in 251 at the hands of barbarians[162]. A second-century fort was also identified in Shumen. Other fortifications within the province included those in Debrene, Hrabrovo, Bălgarevo (*burgus*), Sirakovo (*burgus*), Srednie, Vasilievo, Plačidol, Kamen, Ogražden, Koriten, Gaber and Cărkva (*burgus*).

Another series of fortifications is found in the contemporary Vraca district: Gradešnica, Čiren (*burgus*), Milni Kamak, Liliače (fortlet), Gabare, Vratcata, Veselets (*burgus*), Čomakovci (fortlet) and Markova Mogila (*burgus*), as well as Devenci and Karaguj near the city of Pleven. One should also mention the fortifications in Monte Hemno (fortlet), Selišteto, Discoduratera, Drianovo, Vrabitse, Gradinica, Gradište, Uzunkuš (*praesidium*?), Zdravkovec (*praesidium*), Červen, Biala, Kostel, Dičin (*burgus*), Braknica and Dralfa (*praesidium*).

Naturally, one must not forget about the network of defensive structures along the western coast of the Black Sea, with Vallis Domitiana, Ad Salices, Laicus Pyrgos, Vicus Turris Muca (watchtower), Timum, Carum Portus, Tirizis, Templum Jovis and Erite. Additionally, Roman units were stationed near large cities (at least in Lower Moesia): Histria, Tomis, Callatis,

[155] V. Velkov, G. Alexandrov, Venatio Caesariana. Eine Inschrift aus Montana (Moesia Inferior), Chiron 18, 1988, pp. 271-277.
[156] M. Binev, Montana, p. 165.
[157] CIL III 12376.
[158] M. Zahariade, N. Gudea, The Fortifications, p. 90.
[159] Some of the military installations may have been built in the fourth century.
[160] M. Biernacka-Lubańska, The Roman and Early-Byzantine Fortifications, pp. 231-242; M. Zahariade, N. Gudea, The Fortifications, pp. 83-60.
[161] M. Zahariade, N. Gudea, The Fortifications, p. 94.
[162] Ior., Get. 101-102; J. Kolendo, Novae during the Goth Raid, p. 118.

Dionysopolis and Tropaeum Traiani[163], or within their precincts, as in Tyras and Olbia[164]. Such a density of troop disposition testifies to a significant role of the army in the social and economic life of the province.

The army in Lower Moesia would moreover build fortifications beyond the province, for instance in the region on the northern coast of the Black Sea. The most important of those was the fort in Tauric Chersonesus (Sevastopol), measuring 75 × 100 m and covering the area of 0.7 ha[165]. Another fort was built in Charax, and further defensive installations were put up in Kerkinitis and Kalos Limen[166].

2. Urbanization

The role that the army played in urban development in Lower Moesia cannot be underestimated. As I construe it, the role consisted in creating and fostering the civilian market as well as laying foundations for the logistical base capable of supporting an army of many thousand soldiers[167]. Consequently, the impact of the military on urbanization was twofold. First and foremost, civilian settlement concentrated in the vicinity of military facilities; it was also where the veterans settled upon completion of service and where other people, associated with the army by virtue of their profession, came to live. Moreover, Roman administration took deliberate action to swell the population of Lower Moesia, in order to ensure logistical support for the army[168].

The sense of security that Roman colonists must have felt thanks to the presence of Roman soldiers, especially in those areas which had not been completely subdued and pacified, as well as the stable income assured by soldiers' pay, were sufficient reasons to attract civilian settlers from across

[163] Fortifications inside the provice and on the Black Sea coast are listed after: M. Biernacka-Lubańska, The Roman and Early-Byzantine Fortifications, pp. 231-240; M. Zahariade, N. Gudea, The Fortifications, pp. 88-90.

[164] See Chapter II.2.

[165] N. Gudea, Untermoesische, p. 469.

[166] Ibidem, p. 465.

[167] T. Sarnowski was one of those who drew attention to urban development in the context of the army's logistics: Pozamilitarne funkcje; a correlation between the military and urbanization is also noted by P. Ørsted: Roman Imperial Economy and Romanization. A Study in Roman Imperial Administration and Public Lease System in the Danubian Provinces from the First to the Third Century A.D, Copenhagen 1985, p. 357.

[168] The notion that Roman administration promoted and supported settlement is endorsed by T. Sarnowski, Pozamilitarne funkcje and A.G. Poulter, Rural Communities, pp. 729-744.

the Roman Empire[169]. Very often, those were enterprising individuals for whom the army was a splendid business partner[170]. When the troops and the administration moved to take over newly incorporated territories where new infrastructure was being developed as well, civilians would follow[171], settling in the vicinity of legionary camps and building adjacent *canabae* and the slightly more remote *vici*[172]. These existed near Oescus[173], Novae[174], Durostorum[175] and Troesmis[176]. At first, the population inhabited makeshift dwellings, but as pacification of the nearby areas progressed and the wooden camp became a stone one, the conditions improved considerably[177]. Inhabitants of such localities strove to emulate Roman municipia or coloniae, establishing their own self-government in the form of councils (*ordo*) and magistracies[178].

In the case of *canabae*, such actions could only be limited, since formally they were administered by the legate of the legion encamped nearby, yet still its dwellers formed their own administration[179]. However, the jurisdiction of

[169] L. Mrozewicz, Społeczeństwo a armia w rzymskich prowincjach nad Dunajem (od I do III wieku), Nasze Historie 5, 2000, pp. 7-18, here: pp. 10-11. Numerous gravestones known from Lower Moesia belonged to individuals from various parts of the empire, in particular its eastern provinces, see S. Conrad, Die Grabstelen aus Moesia inferior, Leipzig 2004, p. 108. Persons of Italic descent who settled in *canabae* in the first and in the early second century were representatives of workshops from northern Italy, see B. Gerov, Die Reschtsstellung der unterrmösischen Stadt Novae, [in:] idem (hrsg.), Beiträge zur Geschichte der römischen Provinzen Moesien und Thrakien, Gesammelte Aufsätze, Bd. I, Amsterdam 1980, pp. 113-118, here: p. 117.

[170] In the case of Novae, this is suggested by CIL III 7442 = AE 1966, 350 = ILatBulg. 320: Iulius / Iero neg/[o]tiat[o]r… In Oescus, sources attest the presence of the *lixae* towards the end of the first cent., see R. Ivanov, Lixa Legionis V Macedonicae aus Oescus, ZPE 80, 1990, pp. 131-136: the author notes that *lixae* appear in sources as people holding various functions, but inhabiting *canabae*; J. Roth, The Logistic, p. 99: sees them as sutlers. The scant knowledge about the *lixae* and the many related theories are addressed in R.F. Vishnia, The Shadow Army: the Lixae and the Roman Legions, ZPE 139, 2002, pp. 265-272.

[171] L. Mrozewicz, Rozwój ustroju, p. 13.

[172] B. Gerov, Zum Problem der Entstehung der römischen Städte am Unteren Donaulimes, [in:] idem (hrsg.), Beiträge zur Geschichte der römischen Provinzen Moesien und Thrakien, Gesammelte Aufsätze, Bd. I, Amsterdam 1980, pp. 349-359, here: p. 349; I. Piso, Die Inschriften vom Pfaffenberg und der Bereich der canabae legionis, Tyche 6, 1991, pp. 131-169.

[173] To date, no *canabae* have been identified in Oescus, which necessitates the conclusion that it existed *intra leugam*, see I. Bojanov, Oescus, p. 71.

[174] S. Parnicki-Pudełko, Canabae Novae: problem lokalizacji, [in:] Novae-Sektor Zachodni 1976, 1978, Poznań 1981, pp. 201-204.

[175] CIL III 7474; corroborated by archaeological research P. Donevski, Zur Topograpie, p. 236.

[176] ISM V 141, 154, 158; that duality of settlement near camps was a widespread phenomenon in the regions along the Roman *limes*, B. Gerov, Zum Problem, p. 349.

[177] E. Gren, Kleinasien und der Ostbalkan, p. 104.

[178] L. Mrozewicz, Rozwój ustroju, p. 63.

[179] Legate directly administered the area within the radius of 2.2 km (*leuga*) around the camp, see I. Piso, Die Inschriften, p. 35; A. Tomas, Inter Moesos et Thraces (Oxford), p. 104.

a legate did not encompass the second type of civilian settlement – the *vicus* would be located at least 2.2 km away from the camp – therefore it could be elevated to the rank of *municipium*[180]. Some of the settlements in Lower Moesia where the Roman framework of local administration was emulated are referred to as *quasi-municipium*[181].

Thus civilian settlement gravitated towards legionary camps, but settlers were also drawn to the forts of auxiliary units, with v*ici*[182] emerging in their vicinity, as in e.g. Abrittus[183] (the exception here is Dimum, around which *canabae* developed, as evidenced by epigraphic sources[184]). Settlements adjoining the forts (*vici*) also existed in Ravna (Timacum Minus), Ruse (Sexaginta Prista), Taliata and Murighiol (Vicus Classicorum)[185], as well as near Noviodunum[186], Capidava[187] and Transmarisca[188]. There is no doubt that their location, i.e. in the proximity of forts, was no accident but a conscious choice of the settlers who wanted to do business with the soldiers[189]. Archaeological research clearly demonstrates that an overwhelming majority of civilian settlement concentrated near military installations[190]. Given the extent of fortifications outlined in the preceding subchapter, the emerging picture does speak to the imagination.

The settlements located outside the camps became a permanent element of the army's supply system[191]. It was there that Roman soldiers bought

[180] A. Tomas, Inter Moesos et Thraces (Oxford), p. 140; L. Mrozewicz, Ze studiów nad rolą canabae w procesie urbanizowania terenów pogranicza reńsko-dunajskiego w okresie wczesnego cesarstwa, [in:] W. Pająkowski, L. Mrozewicz (ed.), Balcanica Posnaniensia 3. Novae i kultura starożytna, Poznań 1984, pp. 285-297, here: p. 288, the author also shows departures from the rule.

[181] L. Mrozewicz, Ze studiów nad rolą canabae, p. 288.

[182] Idem, Arystokracja municypalna, p. 23.

[183] B. Gerov, Zum Problem, pp. 350, 357.

[184] ISM I 68.

[185] T. Sarnowski, Pochodzenie vici, www2.rgzm,de/Transformation/Poland/StrPln02Pl.htm [last access: 13.02.2013]; A. Suceveanu, M. Zahariade, Un nouveau 'vicus' sur le Territoire de la Dobroudja romaine, Dacia 30, 1986, pp. 109-120, A. Suceveanu, M. Zahariade, Du nom Antique de la cité romaine et romaine tardive d'Indepedenţa (dep. de Tulcea), Dacia 31, 1987, pp. 87-96, here: p. 94: an inscription dated to 136-200 attests the existence of the *vicus classicorum*.

[186] ISM V 268.

[187] ISM V 77.

[188] J. Kolendo, Miasta i terytoria, plemienne w prowincji Mezji Dolnej w okresie wczesnego cesarstwa, [in:] M. Jaczynowska, J. Wolski (ed.), Prowincje rzymskie i ich znaczenie w ramach Imperium, Wrocław 1976, pp. 45-67, here: p. 50.

[189] Soldiers of the auxiliary troops were poorer than legionaries – see Chapter III – but they remained attractive partners for business nonetheless.

[190] S. Conrad, Archaeological Survey, on the Lower Danube: Results and Perspectives, Black Sea Studies 4, 2006, pp. 309-331, here: p. 319.

[191] T. Sarnowski, Pozamilitarne funkcje, p. 443.

various goods and services from merchants and craftsmen, prompting growth of the local market. One of compelling examples is Oescus where, in the first half of the first century, there were local, private workshops whose pottery was purchased by *legio V Macedonica*[192], even though a central system of supply operated at the time. The transactions between the military and civilians made the settlements steadily wealthier; subsequently, the latter developed their own internal market, began to establish commercial exchange with others, thus becoming partly independent from the army stationed nearby. Such a situation is best illustrated in the *canabae* of Durostorum, where an area of 30 ha was archaeologically explored (it is estimated that its total area reached 60 ha). The *canabae* boasted some public buildings (baths) and a number of small *villae*[193]. In turn, archaeological material is densely scattered over 80 ha around Novae, which may indicate the farthest extent of the canabae surrounding the fortress, but it does not mean that the entire area was inhabited. That being said, it needs to be noted that to date no comprehensive excavations have been carried out there.[194], but to date comprehensive excavations have not been carried out there[195]. Some of the features discovered include a *villa extra muros*[196] dated to the period of the Principate, a late Roman brickyard[197], a temple of Mithra and cemeteries[198]. In the *vicus* near Novae (Ostrite Mogili), 80% of the pottery finds dated to the second-third century originated from Lower Moesian workshops located in the vicinity of Nicopolis ad Istrum[199]. This demonstrates that such settlements not only traded commodities with the camps but were themselves recipients of local products.

Despite fragmentary data relating to the *canabae* of Novae, one can observe their growing economic significance, which manifested itself in new

[192] G. Kabakčieva, Oescus, pp. 79-80.

[193] P. Donevski, Kanabi na XI Klavdiev Legion, [in:] R. Ivanov, G. Atanasov, P. Donevski (red), Istorija na Silistra. Antičnijat Durostorum, Sofia 2006, p. 227.

[194] Information obtained courtesy of A. Tomas; S. Conrad, D. Stanchev, Archaeological survey, p. 674.

[195] Studies of the *canabae* are hampered by contemporary development.

[196] M. Čičkova (Chichkova), La basilique et la nécropole paléochretiennes extra muros (Mésie Inférieure), [in:] A. Biernacki, P. Pawlak (eds.), Late Roman and Early Byzantine Cities on the Lower Danube from the 4th to the 6th cent. AD. International Conference. Poznań, Poland, 15-17 November 1995, Poznań, pp. 57-69.

[197] V. Valov, Pešt za stroitelna keramika ot Nove, Arheologija 1, 1966, pp. 46-51.

[198] L. Press, T. Sarnowski, Novae, rzymska twierdza, p. 304.

[199] A. Tomas, Municipium Novensium?, pp. 117-118.

structures built using more durable material[200]. Consequently, building materials such as timber, stone and ceramics must have been in high demand. It is therefore no surprise that military brickyards practiced stamping their products, in order to prevent illegal trade in such supplies outside the walls of the fortress, i.e. sale to civilians via illicit routes[201]. The process was an aftermath of advancing urbanization, which in its turn owed to the presence of a garrison comprising several thousand men. The aforementioned reforms of Septimius Severus, which legalized marriages and permitted legionaries to dwell outside the camp, enabled civilians to penetrate into the *castra*; as a result, civilians took over buildings inside the camp, conducted deconstruction or adapted them to their needs. Without doubt, the period of prosperity of the *canabae* and the *vicus* near Novae, as well as elsewhere across Lower Moesia, was disrupted by the Gothic invasion in the mid-third century[202]. In the wake of the incursion, the *canabae* in Novae was surrounded with defensive walls, albeit only in part, and the inhabitants of the *vicus*/*municipium* (?) of Ostrite Mogili settled there[203]. The fact that only half of the area of the *canabae* was provided with defences suggests that the significance of the settlement around the fortress diminished and its population decreased. Similar processes were taking place in other locations in the empire exposed to direct threat of foreign raids. According to some estimations, the area of the cities in Gaul was reduced in the third century by as much as 10%[204]. Many researchers hold that the mid-third century witnessed a radical drop in urban populations; not only did they dwindle in size, but the population density noticeably declined[205]. The pressure of tribes from beyond the Danube on the frontiers of the Roman Empire forced people living near legionary camps either to flee or seek refuge inside the strongholds. Consequently, in the latter half of the third century, the

[200] The *canabae* would adapt to the construction technologies employed by the army, see T. Sarnowski, Pozamilitarne funkcje, p. 443. The well-explored *canabae* in Chester illustrate that process quite clearly, see D.J.P. Manson, Chester: The Canabae Legionis, Britannia 18, 1987, pp. 143-168.

[201] M. Duch, Flawijskie stemple na cegłach i dachówkach łaźni legionowej w Novae (Moesia Inferior), [in:] L. Mrozewicz (ed.), Studia Flaviana II, Poznań 2012, pp. 259-282.

[202] On the Gothic incursion and siege of Novae see J. Kolendo, Novae during the Goth Raid.

[203] L. Mrozewicz, Ze studiów nad rolą canabae, p. 296, idem, Miasta rzymskie, p. 280; L. Press, T. Sarnowski, Novae, rzymska twierdza, pp. 307-308; P. Dyczek, The Site, pp. 231-238.

[204] P. Erdkamp, Urbanism, p. 245.

[205] Concerning the radical decrease in urban population in the third century see A.H.M. Jones, A false start? The Roman urbanization of Western Europe, World Archaeology 19, 1987, pp. 47-57.

legionary fortresses in Lower Moesia transformed into garrison cities[206]. Also, with the advancing urbanization, the significance of soldiers in the economic life of Lower Moesia took a downturn.

Apart from Novae (*municipium* Novaensium) the status of *municipium*[207] was granted to Montana (?)[208], Durostorum (*municipium* Aurelium Durostorum)[209], Troesmis (*municipium* Troesmensium)[210], Tropaeum Traiani (*municipium* Traianensium Tropaeensium)[211] and Noviodunum (*municipium* Noviodunum)[212]. Only Oescus (Colonia Ulpia Oescensium) was raised to the rank of colony, which followed the withdrawal of the legion and creation of the province Dacia in the early second century[213]. Oescus went on to become one of the most important cities of Lower Moesia[214]. New urban

[206] P. Dyczek, The Site, pp. 233-236.

[207] The municipal status of Novae has so far been corroborated solely by one inscription which mentions an augustalis m(unicipii) N(ovensium); it was found in the ruins of the eastern part of the camp: AE 1964, 224 = ILatBulg 281 = IGrLatNovae 39; see also B. Gerov, Die Rechtsstellung, p. 115 (reprint from 1984); a number of authors admitted the possibility that *municipium* Novensium developed from the *canabae*, see L. Mrozewicz, Municipium Novae. However, the recently prevailing hypothesis states that core of the later *municipium* was the *vicus*, which tends to be located approx. 2.5 km east of Novae, in the present-day Ostrite Mogili, see L. Mrozewicz, Ze studiów nad rolą *canabae*, p. 295; on archaeological research in Ostrite Mogili see A. Tomas, Municipium Novensium?. The theory that *municipium* grew out of the *canabae*, which supposedly took place during the reign of Septimius Severus, is supported by S. Conrad, Archaeological Survey, p. 323; as a proof, the author quotes the *villa suburbana* located within the *leuga*, though he notes that more evidence is needed to accept or dismiss that proposition. Hence the location of *municipium* Novae remains an open issue; I am inclined to subscribe to the view that the *municipium* of Novae emerged from the *vicus*.

[208] The existence of that *municipium* has not been fully confirmed to date, see M. Tačeva, Die munizipalisierung in den Provinzen Moesia Superior und Moesia Inferior (Mitte des 2. – Mitte des 3. Jhs.),[in:] M. Mirkovič (hrsg.), Römische Städte und Festungen an der Donau, Beograd 2005, pp. 211-217, here: pp. 215-216.

[209] AE 1925, 110 = ISM I 302: "Ael(ius) Se[veri]anus d(ecurio) m(unicipi) Durosteri"; the debate concerning the location of *municipium* is as lively as in the case of Novae, see I. Bojanov, Munici- pium Aurelium Durostorum or vicus Gavidina, AB 14, 2, 2010, pp. 53-59; the author suggests the *canabae*. However, in my opinion it may eqally well be presumed that it was the *vicus* near Durostorum which rose to the rank of *municipium*, although it was smaller than the *canabae*, and most certainly less populous, yet it remained outside direct control of the legate. It has been established that the large and prosperous late antique city grew out of the *canabae*, but this may have owed to the Gothic raids in the mid-third century, which caused the *vicus* to decline.

[210] ISM V 148, 149, 150, 152, 153, 163, 164, 165, 166, 180, 183.

[211] CIL III 7484, 12465, 14437. The emergence of municipia in Lower Moesia is discussed more broadly in L. Mrozewicz, Rozwój ustroju, pp. 78-88; E. Doruţiu-Boilă, Über den Zeitpunkt der Verleihung des Municipalrechts in Scythia Minor, Dacia 22, 1978, pp. 245-247; a critical view on the matter: M. Tačeva, Die munizipalisierung, pp. 215-216.

[212] A. Barnea, Municipium Noviodunum, Peuce X, 1, pp. 81-84.

[213] I. Bojanov, Oescus, p. 69.

[214] Ruins of temples found across Oescus testify to the significance of the city.

centres constituted large trade markets, major outlets and sites of manufacture. The impulse which stimulated their development originated with the Roman army[215].

A number of Lower Moesian *vici* gained the status of *quasi-municipium*, including *vicus* I Urb… (Aegyssus), *vicus* Quintionis (Histria), Secundii (Histria), V… (Histria), *vicus* Ulmetum, *vicus* Novus (Libida), *vicus* Petra (Libida), *vicus* Turris Muca… (Tomis), *vicus* Trullensium (Montana), *vicus* Tautiomosis (Montana), *vicus* Vorovum Minus (?) (Montana), *vicus* Siamus (?) (Oescus)[216]. Those settlements adopted the Roman pattern of administration and consisted to a large extent of Roman settlers, who particularly favoured the region of Dobruja[217].

Veterans would very often settle in the *canabae* or at some, albeit small distance from their home unit[218]. The aforesaid reforms of Septimius Severus, which allowed legionaries to enter into matrimony legally[219], are certain to have boosted that process. At the time, recruits increasingly often indicated the *castra* as places of their origin[220]. This was facilitated by division of land into plots, which had been taking place since the middle of the second century, and leasing them to legionaries and their families[221]. The phenomenon is confirmed by epigraphic studies, which demonstrate that veterans and their families constituted as much as one-third of the entire population of Novae[222]. Around 63% of the veterans chose to settle near the camps in the lands on the Danube[223], while their share in the total number of Roman settlers amounted to 25%[224]. These figures are more than indicative of the fact that former soldiers were a substantial factor in demographic growth and urbanization in the province, adding to the population of the *canabae* and enlarging the internal trade market. Hence this is no surprise that the belt of

[215] All these cities developed from military camps, by way of endogenous urbanization, see L. Mrozewicz, Arystokracja municypalna, pp. 18-21.

[216] Idem, Rozwój ustroju, pp. 64-69; L. Petculescu, Roman Army, p. 37; A. Bălţăc, Lumea rurală în provinciile Moesia Inferior şi Thracia (secolele I-III p. Chr.), Bucureşti 2011, Tab. I. 3: the author enumerates only eight such centres.

[217] L. Mrozewicz, Rozwój ustroju, p. 69.

[218] The settling of veterans in the *canabae* had already been noted by E. Gren, Kleinasien und der Ostbalkan, p. 105.

[219] R.E. Smith, The Army Reforms of Septimius Severus, Historia 21, 3, 1972, pp. 481-500, here: p. 493.

[220] A. Mócsy, Die Origio Castris und die Canabae, AAntHung 13, 1965, pp. 425-431, here: p. 427.

[221] L. Mrozewicz, Ze studiów nad rolą canabae, p. 292.

[222] Idem, Rozwój ustroju, p. 27.

[223] Idem, Roman Military Settlements, p. 83.

[224] Idem, Romanizacja Mezji Dolnej, p. 115.

land on the Danube in Lower Moesia saw the most intensive development of Roman settlement in view of substantial concentration of troops and the existence of road infrastructure[225], which is discussed in the following subchapter.

In Lower Moesia, the development of cities under Roman law was not all too dynamic, since they competed with the Greek urban centres on the Black Sea coast. In that respect, the success of urbanization in Lower Moesia is quite modest compared with other provinces of the empire: the neighbouring Upper Moesia had ten large urban centres, Dacia eleven[226]. However, such comparisons should take into account the specificity of the province, its poorer resources and weaker demographic potential. According to Peter Ørsted, the process of municipalization could begin only when there were "chances of a reasonable profit and smooth cooperation". Apparently, chances of the kind arose in Lower Moesia to a smaller degree than in the neighbouring provinces[227]. Jerzy Kolendo sees the causes behind such a state of affairs in the strong tribal structures, especially in the period until the mid-second century[228]. Still, in these very circumstances it was the army which played the paramount role, because cities developed in the vicinity of the largest garrisons. At the same time, their nature was not exclusively legal. The c*anabae* in Lower Moesia were quite extensive, which is why they could have been quite densely inhabited by a skilled population uninvolved in agriculture, consisting of soldiers, craftspeople, merchants, prostitutes and others[229].

As already underlined, the villages situated near legionary camps and forts of auxiliary units emulated the Roman municipal system. The process was manifested in its full extent in the sixth century, when such settlements proved to have transformed into the largest cities on the Lower Danube: Durostorum, Abrittus, Appiaria[230] and Novae; the latter soon rose to the rank of a bishopric[231].

[225] Idem, Rozwój ustroju, p. 13.

[226] Idem, Arystokracja municypalna, p. 25.

[227] P. Ørsted, Roman Imperial Economy, p. 357.

[228] J. Kolendo, Miasta i terytoria, p. 66.

[229] Since Adam Smith published the already mentioned An Inquiry into the Nature and Causes of the Wealth of Nations, whose first edition came out in London in 1776, scholars have tended to link economic development with e.g. the degree of urbanization and division of labour into professional specialties. A similar approach is employed in Marx's Capital, as well as in the works of contemporary researchers, such as E. LoCasio or A. Wilson.

[230] V. Velkov, Cities in Thrace and Dacia in Late Antiquity. Studies and Materials, Amsterdam 1976, pp. 99-106.

[231] K. Ilski, Sources Concerning Christianity in Novae, [in:] T. Derda, P. Dyczek, J. Kolendo (eds.), Novae. Legionary Fortress and Late Antique Town I, Warsaw 2008, pp. 213-224, here: p. 213.

There is another noteworthy aspect here, namely that the massive movements of the Roman armies eastward had a very negative impact on the cities in Asia Minor which, having to bear the costs of the marches, were subsequently impoverished[232]. This sparked serious discontent among their inhabitants, which expressed itself most acutely in e.g. the revolt in Jerusalem in 66 (naturally, that was not the only cause). In all certainty, the soldiers must have committed numerous acts of abuse and violence in which the local population suffered[233].

However, it needs to be remembered that the chief task of the Roman soldiers was protecting the provinces and the empire against attacks of the barbarian tribes, as well as exercise control of the population inhabiting a province, while the protection came at a cost[234]. Still, the almost mafia-like picture of the Roman army conceived by Benjamin Isaac does not explain why civilians preferred to settle near military camps nor accounts for the influence of the Roman army on urbanization in the provinces.

It may be that all those actions of the army resulted from a deliberate design of the Roman administration, because such an extensive network of fortifications required an efficient system of supply. Researchers studying Lower Moesia discern (or wish to see) a range of measures applied by the Romans to support local urbanization and population growth, which in fact served to develop the logistical base of the army[235]. Evidence to that effect may be seen in the resettlements carried out by Aelius Catus (50,000)[236] and Plautius Silvanus (100,000)[237]. They were intended to populate empty areas, increase fiscal revenue and ensure an underpinning for the army's logistics[238]. The administration supported Roman settlement by conferring status under Roman law – which has been underscored as well – on settlements which had developed in the neighbourhood of military encampments (e.g. Durostorum) or in their place (e.g. Oescus). The process of granting municipal rights in Lower Moesia proved successful, although only five or six localities received such rights. Assessments of that process

[232] S. Mitchell, The Balkans, Anatolia, and Roman Armies Across Asia Minor, [in:] S. Mitchell (ed.), Armies and Frontiers in Roman and Byzantine Anatolia. Proceedings of a colloquium held at University College, Swansea in April 1981, Oxford 1983, pp. 131-150.

[233] Ibidem.

[234] B. Isaac, Army and Power In the Roman World: A Response to Brian Campbell, [in:] A. Chaniotis, P. Ducrey (eds.), Army and Power in the Ancient World, Stuttgart 2002, pp. 181-191.

[235] T. Sarnowski, Pozamilitarne funkcje, p. 443.

[236] Strab., Geogr. VII 3,10.

[237] L. Mrozewicz, Przesiedlenia, pp. 107-128; T. Zawadzki, Namiestnictwo.

[238] T. Zawadzki, Namiestnictwo.

should take into account that prior to the arrival of Romans, Greeks had been noticeably present in the Lower Danube region, establishing cities (see Chapter I) which also experienced stable development under Roman rule[239]. It is worth noting that of all municipia in Lower Moesia only one is not evidently linked to the military, namely the *municipium* of Traianensium Tropaeensium[240]. Another instance of Rome's administrative intervention in urbanization in the province was establishing cities "from scratch", with a limited involvement of the military factor or entirely without the army's contribution. Two such cities were created in Lower Moesia: Nicopolis ad Istrum and Marcianopolis, both of which were founded during the reign of Trajan. Their rural demesnes became a logistical base for the Roman army stationed along the *limes*[241]. Given the current state of research, the fact is illustrated best by Nicopolis ad Istrum, as ceramic products produced near that city (Butovo, Pavlikeni) reached Novae[242]. Much less is known about Marcianopolis and its connection with e.g. Durostorum. This is mainly due to the degree of archaeological exploration, since Novae and Nicopolis ad Istrum have been investigated much more thoroughly than Marcianopolis and Durostorum.

One must not forget about the well-entrenched tribal structures which resisted Romanization and remained under control of the army[243]. Nonetheless, Lower Moesia as such succumbed to Romanization although it proceeded slower than in the neighbouring provinces. In the latter half of the second century, Romanization was becoming a *fait accompli*, while local settlements began to resemble Roman towns[244]. The area of today's Dobruja was the most receptive to new forms of rural organization, outstripping other provinces in that respect. According to Andrew G. Poulter, Rome knowingly supported rural settlement in Dobruja precisely in order to create a solid base capable of supplying an army of several thousand men. Hence the researcher asserts that Rome was directly involved in establishing and organizing *vici*,

[239] L. Mrozewicz, Romanizacja Mezji Dolnej, pp. 111-112; idem, Arystokracja municypalna, p. 14.

[240] Idem, Arystokracja municypalna, p. 102.

[241] The size of the territory attached to Nicopolis ad Istrum is discussed in A. Tomas, Inter Moesos et Thraces (Oxford), pp. 113-115.

[242] The notion that the territory of Nicopolis ad Istrum was a logistical hinterland of Novae is strongly emphasized by A. Tomas: Inter Moesos et Thraces (Oxford); I subscribe to that view.

[243] For a critical appraisal concerning Romanization in Lower Moesia in the first half of the second century see S. Mrozek, Ludność miejska prowincji bałkańskich w terminologii epigraficznej, Eos 75, 1987, pp. 381-387.

[244] J. Kolendo, Miasta i terytoria, p. 47.

which would explain why particular *vici* were designated to be inhabited by particular tribes; also, attention should be drawn to the role that the *peregrini* played in their administration[245]. One of the representative examples is *vicus Quintionis* and *Secundini*, whose population comprised veterans and other Roman citizens as well as Lai and Bessi resettled from Thrace[246]. Traces of settlement in Dobruja offer evidence that it was more densely populated than the areas between Dimum and Durostorum, with approximately 45 sites in the countryside identified so far[247]. The considerable concentration of such localities warrants the presumption that settlement in that region was supported by the Roman authorities, reifying targeted urbanization policy which consisted in building logistical base for the numerous units of the Roman army. Consequently, local economy was to a great extent geared towards supplying the army.

The construction of fortifications was without doubt one of the decisive factors stimulating urbanization, especially in the sparsely inhabited land belt on the Danube. The rise in population and the arrival of representatives of various professions led to the development of the local market. In its essence, the system was therefore oriented towards the Roman soldier, the main recipient of goods and services. This is particularly evident in the case of Novae, but applies in equal measure to Montana, Oescus, Durostorum, Tropaeum Traiani and Troesmis, not to mention the many *vici* located near the smaller forts. If the resulting picture is compared with the situation in other regions of the empire, especially the highly urbanized eastern provinces, the conclusion one arrives at is that the Roman army truly played a key role in urbanization and the emergence of local market in Lower Moesia.

3. Infrastructure

In order to reconstruct the infrastructure in Lower Moesia, one has to employ a vast range of sources, including narrative ones, inscriptions, and numismatic relics (coin hoards and loose coin finds). Archaeological sources in the shape of remnants of ancient roads and fortifications are tremendously valuable. Besides these, researchers also take advantage of local toponymy and notes of modern travellers, who happened to see what remained of the

[245] A.G. Poulter, Rural Communities, p. 736.
[246] L. Mrozewicz, Rozwój ustroju, p. 65.
[247] A.G. Poulter, Rural Communities, p. 729.

Roman roads[248]. Milestones represent the greatest value among epigraphic sources; to date, 109 such relics were discovered on the erstwhile territory of Lower Moesia, with the earliest one originating from Sacidava and dated to the reign of emperor Trajan[249]. Only few have been found *in situ* or near their original location[250]. Also, one should not overlook the inscriptions of *beneficiares consularis*, imperial edicts and local inscriptions which may contain indirect information[251]. However, in this broad array of sources those which still count the most are Roman itineraries, such as *Itinerarium Antonini*, *Tabula Peutingeriana* and *Itinerarium Burdigalense*[252].

a) roads

Roman roads in Lower Moesia have been an object of scholarly interest since the late nineteenth century[253]. Such a long period of studies has made it possible to reconstruct a broad outline of the road network and determine the approximate dates when the most important communication routes in the province were created. In Lower Moesia, they were constructed chiefly due to military considerations[254], expediting movement of troops and ensuring

[248] The sources are listed in detail in S. Torbatov, Pătna mreža v Trakija i Mizija, [in:] R. Ivanov (ed.), Arheologija na bulgarskite zemi, 1, 1, Sofia 2004, pp. 76-95, here: p. 84; H. Gajewska, Z badań nad zagadnieniem dróg rzymskich łączących Dolną Mezję z Dacją (Durostorum – Angustia), KHKM 1, 1970, pp. 27-35, here: p. 28; representations on coins and iconographic relics also constitute an important source in the studies of roads and bridges, see L. Rossi, The Representation on Trajan's Column of Trajan's Rock-Cut Road in Upper Moesia: The Emperor's Road to Glory, The Antiquaries Journal 48, 1968, pp. 41-46.

[249] A. Panaite, Roman Roads in Moesia Inferior. Epigraphical Evidence, Novensia 23, 2013, pp. 131-143, here: p. 131.

[250] Ibidem, p. 132.

[251] Ibidem; AE 1981, 745.

[252] S. Torbatov, Pătna mreža, p. 84. More on the sources for studies of Roman roads in R. Chevallier, Roman Roads, London 1989, pp. 19-64; J. Wielowiejski, Na drogach i szlakach Rzymian, Warsaw 1984, pp. 11-29. Rzymskie itineraria, see K. Miller, Itineraria romana; idem, Die Peutingersche Tafel.

[253] The history of research concerned with Roman roads in the Balkans is discussed in S. Torbatov: Pătna mreža, pp. 83-84. J. Wielowiejski provides a succinct summary of studies on Roman roads, including those in Lower Moesia, see Badania nad drogami w rzymskich prowincjach naddunajskich w ostanim dziesięcioleciu (1962-1972), KHKM 2, 1974, pp. 243-253; idem, Badania nad drogami w rzymskich prowincjach naddunajskich w ciągu ostatnich dwunastu lat (1973-1984), KHKM 4, 1985, pp. 437-463.

[254] *Viae militares* served the army primarily as communication and supply routes, see M.A. Speidel, Heer und Strassen – militares viae, [in:] idem, Heer und Herrschaft im Römischen Reich der Hohen Kaiserzeit, Stuttgart 2009, pp. 501-513, here: p. 512. The expansion and repairs of roads were also associated with the travels of the emperors, as it happened in Gaul, when war caused Claudius to set off for Britain, see G. Walser, Die Strassenbau-Tätigkeit von Kaiser Claudius, Historia 29, 4, 1980, pp. 438-462, here: p. 459.

access to the supply network. Apart from facilitating all kinds of army-related tasks, they also performed a number of functions in the economy[255].

Roman law distinguished two major types of roads[256]: *viae publicae* and *viae privatae* (*viae vicinales*)[257]. The former also included *viae militares*[258], built by the army or for the army, though they would lose their unequivocally military nature as time went by. At first, they were the most important category of roads in Lower Moesia. Studies conducted by Adriana Panaite show that as late as the reign of Marcus Aurelius the names of roadside military installations are attested in epigraphic sources[259], which leads to the conclusion that in the second half of the second century many causeways in Lower Moesia still functioned strictly as *viae militares*. The suggestion is further supported by a limited number of *viae publicae*, whose existence in Lower Moesia is known only from two inscriptions[260]. Perhaps the best exemplification of this type is the *limes* road running along the Danube.

When Lower Moesia was established, it reached only as far as the Yantra[261]. The beginnings of its construction most likely coincided with the reign of emperor Tiberius[262]. The *limes* was completed only under Trajan, connecting Singidunum – Viminacium – Ratiaria – Oescus – Novae – Durostorum – Troesmis – Noviodunum with the Danube delta[263]. Its Bulgarian

[255] One of the first researchers to draw attention to the economic role of roads was G. Radke: Die Erschliessung Italiens durch die römischen Strassen, Gymnasium 16, 1967, pp. 204-235; their significance for the economy is recognized by contemporary researchers as well, see T. Kissel, Road-Building, p. 129.

[256] Legal aspects of roads were discussed by T. Pekáry, Untersuchungen zu den römischen Reichsstrassen, Bonn 1968, pp. 1-7.

[257] Antique sources discern three types of roads, see Ulpian. Dig. 43, 8, 2, 22.

[258] The types in Lower Moesia have been distinguished by S.Torbatov, The Roman Road Durostorum – Marcianopolis, AB 4, 2000, pp. 59-72, here: p. 59; *Via publica* appears only in inscriptions from Dobruja: ISM V 60, ISM I 378; sources indicate that *viae militares* were also seen as *viae publicae*, see Hyg. Grom., De limitibus const. 169, 3: "velut hii qui sunt per viam publicam militarem acti: habent enim latitudinem viae publicae". Contrarily in Ulpian. Dig. 43, 7, 3, 1-3: "Sed inter eas et ceteras vias militares hoc interest, quod viae militares exitum ad mare aut in urbes aut in flumina publica aut ad aliam viam militarem habent, harum autem vicinalium viarum dissimilis condicio est: nam pars earum in militares vias exitum habent, pars sine ullo exitu inter moriuntur". Here, one has the impression as if *viae militares* were treated as a category of *viae vicinales*.

[259] A. Panaite, Written and archaeological sources for the reconstruction of Roman road network in the province of Lower Moesia, Caiete Ara 3, 2012, p. 75.

[260] The first is a complaint concerning the provision *cursum publicum*, originating from Chora Dagei: ISM I 378; the second comes from Ulmetum: ISM V 60.

[261] S. Torbatov, Pătna mreža, p. 87.

[262] Ibidem, p. 86; A. Panaite, Roman roads, p. 132. As the authors observe, epigraphic sources attest the existence of the road in 33-34.

[263] K. Miller, Die Peutingersche Tafel, p. 10, map VII; A. Panaite, Roman roads, p. 132.

section stretched over 471 km[264]. Surviving inscriptions indicate that the limes road, at least in the initial phase, was built by legionaries from *IIII Scythica* and *V Macedonica*[265], while the latter also repaired it later, under Trajan or in the latter half of the third century[266]. The second major route was the west-Pontic road which ran from the mouth of the Danube to Byzantion, passing through main Greek cities on the Black Sea Coast: Histria, Callatis, Dionysopolis and Odessos[267]. The mouth of the Danube was also the start of a road which was a continuation of the west-Pontic road, as it follows from a shield belonging to a auxiliary soldier from Dura Europos, connecting the area with Tyras, Borysthenes, Chersones Taurica, Trapesus and Theodosie[268].

The *via militaris* linking Oescus with Phillippopolis[269] was a strategically crucial road which at present remains the best explored Roman thoroughfare in northern Bulgaria[270]. Its construction began with the dissolution of the client kingdom of Thrace[271]. The military nature of the road is evinced in the fact that a number of Roman units were stationed along its course. One of such sites was a large roadside complex with an adjacent village (Sostra), where *cohors II Mattiacorum* was stationed, and *Monte Haemo*, the base of *cohors II Mattiacorum* and *cohors I Cisipadensium*[272]. *Tabula Peutingeriana* also provides information on the way stations along that road[273], four of which were to be found in Lower Moesia: Melta, Doriones, Storgosia and

[264] S. Torbatov, Pătna mreža, p. 87.

[265] CIL III 1698.

[266] *Vexillatio legionis I Macedonicae* carried out the repairs of the road, which is commemorated in the inscription from Somovit: LEGI(io) V MACED(onica) VEXILLARII SUB IVLIVM VIB(ium) VOT(tum), see T. Gerasimov, Prinos kam antičnata arheologija na Bălgarija, IAI 24, 1961, pp. 235-237. T. Sarnowski (Wojsko rzymskie, p. 53) believes that the works took place in Trajan's times and dates the inscription to that period. B. Gerov advanced a different interpretation (ILatBulg 134), dating it to the latter half of the third century.

[267] TP VI 84.

[268] F. Cumont, Fragment de bouclier portant une liste d'étapes, Syria 6, 1, pp. 1-15, here: p. 9; R. Uhden, Bemerkungen zu dem römischen Kartenfragment von Dura Europos, Hermes 67, 1, 1932, pp. 117-125.

[269] CIL III 6123 = Kalinka 19: TABERNAS' ET' PRAETORIA PER • VIAS • MILITARES FIERI IVSSIT' PER TI·iVLlVM· iVSTVM • PROC PROVINCIAE THRAC.

[270] M. Madžarov, Pătjat Eskus – Filipopol (I-IV v.), Arheologija 32, 1990, pp. 18-29.

[271] S. Torbatov, Pătna mreža, p. 88.

[272] There was a fortlet in Sostra, see AE 2001, 1747, 1748; and another one in Monte Haemo, where *cohors II Mattiacorum* and *cohors I Cisipadensium* were stationed; S. Torbatov, Pătna mreža, p. 89; J.J. Wilkes, The Roman Danube, p. 192.

[273] TP VI 86. Archaeological research revealed the existence of two additional stations in via Mata and Černozem, see M. Madžarov, Pătjat, p. 20.

Ad Putea[274]. Yet another road ran from Serdica to Oescus, via the *vicus* of Trullensium[275].

The camp in Novae was connected with Nicopolis ad Istrum by a road which passed through Augusta Traiana to Castra Pubra[276]. A separate route led from Novae to Melta[277]. Farther east, Sexaginta Prista, a fort of auxiliary forces was connected by a road with Abrittus. It subsequently ran south-east joining the route Marcianopolis – Nicopolis ad Istrum[278].

The legionary camp of Durostorum had a road connection linking it with Marcianopolis and later with Anchialus[279]. That vital stretch was most probably built after the *castra legionis* was established in 106, which was where the road took its beginning. *Tabula Peutingeriana* preserves names of five way stations along the route, though recent field research suggests that two further *mansiones* which the itinerary does not mention existed between Durostorum and Marcianopolis[280]. Capidava had a road connection with Tropaeum Traiani, and subsequently with Tomis[281], while Carsium could communicate with Ulmetum and then with Histria[282].

Another important element of the Lower Moesian road network included causeways which started and terminated within the province. These what might be called local roads varied in length, direction and purpose. One of such roads led from Odessos, via Marcianopolis and Nicopolis ad Istrum[283] to Melta, though contemporary researchers trace it as far as Montana[284].

Roads of that type would then merge with the largest trans-Balkan military routes[285]. A similar thoroughfare ran along the north-south axis from Marcianopolis, through Tropaeum Traiani to Ibida where it bisected to reach Noviodunum and Aegyssos. However it is not shown on any of the currently known Roman itineraries; its course has been reconstructed on the basis of

[274] M. Madžarov, Pătjat, p. 20.
[275] TP VI 82a; A.G. Poulter, Nicopolis ad Istrum p. 9.
[276] M. Madžarov, Pătjat, p. 20.
[277] A. Panaite, Written and archaeological sources, p. 73.
[278] A.G. Poulter, Nicopolis ad Istrum, p. 9.
[279] TP VI 87.
[280] S. Torbatov, The Roman Road, p. 60, 70.
[281] A.G. Poulter, Nicopolis ad Instrum, p. 9.
[282] A. Panaite, Written and archaeological sources, p. 73.
[283] TP VI 86a.
[284] M. Madžarov, Pătjat, p. 20; A. Panaite, Written and archaeological sources, p. 73.
[285] S. Torbatov, Pătna mreža, p. 94.

archaeological and epigraphic evidence[286]. Its construction began in Hadrian's times, and it was later modernised under Septimius Severus[287].

Naturally, there were numerous minor roads which usually branched off the main military routes and connected particular cities[288].

b) bridges

The road network could not do without bridges: they were an absolutely indispensable element, facilitating troop movement, migrations of people and merchant traffic[289]. Structures such as the Drobeta bridge[290] represented the achievement of Roman architectural concepts and the work of military engineers. Although it was not on the territory of Lower Moesia, the bridge still played an important economic role in the Lower Danube region, as for several decades it served to link Dacia with the other provinces. It was engineered on Trajan's orders in 103-105[291] by Apollodorus of Damascus[292], while the construction was carried out by soldiers, as evidenced by stamps on bricks used in the piers: *legio VII Claudia* (LGVIICLF), *cohors III Brittonum* (COHIIIBRIT), *cohors I Cretum* (COHICRET), *cohors II Hispanorum* (COHIIHISP)[293]. The structure was a little over 1.1 km long, supported by 20 stone piers resting on foundations in the bottom of the river[294]. Still, in times of war Romans preferred pontoon bridges, as demonstrated by Cornelius Fuscus in Orlea (Dolni Vadin) near Oescus (the length of the structure spanning the banks ranged from 1,000 to 1,100 m)[295]. During the war with Dacians, Trajan's troops made the crossing thanks to a floating bridge as well[296]. Such a method combined two vital advantages: speed of construction and the ability of connecting the banks of rivers as broad as the

[286] A. Panaite, Written and archaeological sources, p. 72.
[287] Ibidem, p. 73.
[288] A.G. Poulter, Nicopolis ad Istrum, p. 9.
[289] A. Gajewska, Mosty i porty rzymskie na dolnym Dunaju, Archeologia 20, 1969, pp. 204-215, here: p. 204. Soldiers crossing bridges may be seen in scene LVIII on Trajan's Column, see R. Vulpe, Columna, p. 152.
[290] W.W. Hyde, Trajan's Danube Road and Bridge, The Classical Weekly 18, 8, 1924, pp. 59-64, tu: p. 61; The Drobeta bridge is depicted in scenes XCVIII-XCIX on Trajan's Column, see R. Vulpe, Columna, p. 178.
[291] D. Tudor, Podurile romane de la Dunărea de Jos, Bucureşti 1971, p. 85.
[292] Ibidem, p. 62.
[293] Ibidem, pp. 140-141.
[294] Ibidem, pp. 96-98; the author provides the length of 1,071 - 1,134.90 m.
[295] Ibidem, pp. 17, 26.
[296] Scenes IV-V on Trajan's Column, see R. Vulpe, Columna, p. 117.

Danube[297]. A greater amount of information is available on the bridges built in the fourth century, but that period is beyond the scope of this work. It may be noted that smaller bridges are certain to have spanned minor rivers and passes within the province; the projects could have been undertaken by veterans as part of public duties. Although there are no such examples known from Lower Moesia, the neighbouring Dacia offers a few. For instance, Caius Iulius Frontonianus, *ex beneficiarius consularis legio V Macedonica* and decurion funded the bridge in Apulum (colonia Apulensis)[298]. Also, during the reign of Tiberius, Caius Iulius Aetor funded a 55 m long and 2.95 m wide bridge in the city of Aelen in the more remote Dalmatia[299].

c) ports

The scant number of archaeological traces does not permit the locations of ports to be accurately determined. They must have existed so as to expedite provisioning of the Roman forces. A harbour is clearly represented in one of the scenes on Trajan's Column, which shows the unloading of a ship near fortifications[300]. Halina Gajewska demonstrated that efficient delivery of supplies did not require large port facilities, though such are certain to have existed in Lower Moesia. Being definitely more numerous, smaller harbours sufficed[301]. Quite often, the existence of port facilities[302] in a given location is inferred on the basis of terrain surveys, as in Dimum[303]. Tegular material is suggestive in that respect, e.g. in Novae[304] (the existence of a port is also supported by traces of a timber-and-stone structure in the bottom of the Danube)[305]. Bricks of the *classis Flavia Moesica* may be treated as evidence of ports in Aliobrix (outside the province)[306], Troesmis, Dinogetia, Barboşia

[297] J. Wielowiejski, Badania nad drogami, p. 460.

[298] AE 1980, 735; K. Królczyk, Veteranem, p. 128.

[299] Quoted after K. Królczyk, Veteranem, p. 128.

[300] R. Vulpe, Columna, p. 137, scene XXXV. A number of researchers believe that scene XXXV depicts Novae, see T. Sarnowski, J. Trynkowski, Stemple „okrętowe" legionu I Italskiego na cegłach i dachówkach z Novae, Balcanica Posnaniensia 5, 1990, pp. 251-263, here: p. 254; M. Żmudziński, Badania nad gospodarką i relacjami ekonomicznymi Novae (I-III w. n.e.), Antiquitas XXIV, 1999, pp. 101-132, here: p. 120.

[301] H. Gajewska, Mosty i porty; a critical review in J. Trynkowski, Starożytne drogi i mosty, pp. 330-331.

[302] In order to determine the locations of harbours I followed the suggestions and the method employed by J. Trynkowski, ibidem, pp. 330-331.

[303] D. Mitova-Džonova, Stationen und Stützpunkte, p. 506.

[304] T. Sarnowski, J. Trynkowski, Stemple, p. 262.

[305] Ibidem, przyp. 55.

[306] N. Gostar, Aliobrix, pp. 987-995.

and Noviodunum[307]. The latter was also a place where the prefecture of the river fleet was to be found, which can be ascertained thanks to stamped bricks[308]. Inscriptions, another important body of sources, attest to the existence of ports in Axiopolis[309], Halmyris[310] and, possibly, in Sucidava[311]. The presence of harbour facilities in Altinum is suggested in *Notitia Dignitatum*[312], admittedly a late Roman source, yet it is suspected that the fort in Altinum had existed already in the second century[313]. The list of ports should also include Sexaginta Prista, Durostorum[314], and Greek cities on the Black Sea coast, especially when they specialized in fishing, as e.g. Histria[315]. Besides, it is hard to imagine that other localities situated near waterways did not have at least makeshift landings or jetties.

4. Infrastructure and the economy

Massive shipments of olive oil, wine, grain or building materials were transported by rivers, which had its economic rationale, since the total cost of ferrying goods that way was several-fold lower than transporting them by land[316]. Nonetheless roads served to carry commodities over shorter distances within the province. The goods in question were perishables, such as eggs, meat, fruit, vegetables and others produced near the location of subsequent sale[317]. Due to their proximity, Novae could have received deliveries of goods carried by road from the villa in Vardim. It is certain that *villae rusticae* situated near roads but without access to navigable rivers took advantage of land routes to transport their products. Limestone quarried in

[307] ISM V 217, 263, 308, 283.

[308] ISM V 285.

[309] CIL III 7485: "naute universi Danubii".

[310] As it would follow from inscriptions from the "village of sailors", see A. Suceveanu, M. Zahariade, Un nouveau 'vicus', pp. 110-114.

[311] CIL III 8042, if a customs stations existed there.

[312] Not. Dign. LX 28.

[313] N. Gudea, Der untermoesische, p. 442.

[314] H. Gajewska, Mosty i porty, pp. 204-215; the location of the port in Durostorum has not been identified as yet, but its existence is beyond doubt, see P. Donevski, A Comparison between Novae and Durostorum in Lower Moesia: Topography, Defensive System and Legal Status, [in:] L. Vagalinski, N. Sharankov (eds.), Limes XXII, pp. 163-168, here: p. 163.

[315] A. Suceveanu, Viaţa economică, p. 87.

[316] The costs of overland and river transport are discussed in R. Laurence, The Roman Roads of Italy. Mobility and Cultural Change, London 1999, pp. 95-105.

[317] C. van Tilburg, Traffic and Congestion in the Roman Empire, New York 2007, p. 69.

Hotnica was most likely also carted to Novae, Pavlikeni and Nicopolis ad Istrum[318], because Roman roads were built to withstand haulage of heavy cargo.

Iconographic depictions on Trajan's Column[319] suggest that the Roman army used mules and oxen to transport goods[320]. Weapons and barrels with provisions were carried on light, two-wheeled carts[321]. Horses served to travel fast from one place to another, while oxen pulled heavy loads. Mules performed well over longer distances[322]. Transport on the Danube relied on two-wheel carts and four-wheel wagons, whose usage is corroborated in iconography[323]. The army had the necessary pool of equipment and draught animals, which were requisitioned in cooperation with the administrative authorities[324]. *Cursus publicus* was not used to haul supplies for the army, being available only to provincial procurators, senators, equestrians, centurions and all persons with applicable permits, confirmed by *diplomata* or *evectiones*[325]. Also, the army had its own courier service – the *equites dispositi* – who conveyed messages to the camps and forts, but it operated only in the militarized zone[326].

In Lower Moesia, all roads were built on emperor's orders and it was the emperor who directed that they should be repaired[327]. The fact is reflected in milestones, which in the first place provide imperial titulature[328]. The responsibility for carrying emperor's orders through rested with the province governor (often attested on milestones in the second place)[329]. There is no

[318] J. Skoczylas, Das Gestein aus dem Steinbruch von Hotnica und die architektonischen Elemente in den römischen Bauwerken von Niedermösien, [in:] G. von Bülow, A. Milčeva (hrsg.), Der Limes an der unteren Donau von Diokletian bis Heraklios. Vorträge der Internationalen Konferenz Svištov, Sofia 1999, pp. 127-130, here: p. 130.

[319] R. Vulpe, Columna, pp. 203-295.

[320] J. Coulson, Transport and Travel on the Column of Trajan, [in:] C. Adams, R. Laurence (eds.), Travel and Geography in the Roman Empire, New York 2001, pp. 106-137, here: p. 110.

[321] Scenes: XL, XLIX, LXII, LXVI, LXXXVIII, CVI, CVII, CXXIX; for an interpretation of those, see J. Coulston, Transport and Travel, p. 112.

[322] Ibidem, p. 113.

[323] Ibidem.

[324] A. Kolb, Army and Transport, p. 162.

[325] A. Kolb, Transport and Communications in the Roman State. The cursus publicus, [in:] C. Adams, R. Laurence (eds.), Travel and Geography in the Roman Empire, New York 2001, pp. 95-105, here: pp. 97, 102.

[326] Ibidem, p. 101.

[327] The role of the emperor in road construction is addressed by T. Pekáry (Untersuchungen, p. 19).

[328] For instance CIL III 14459; ISM V 223 = CIL III 7612; ISM V 100.

[329] E.g. ISM V: 1, 256, 257, 258, ISM V 95 = CIL III 7603, ISM V 96 = CIL III 76042, ISM V 5a; CIL III 12514, 12515, ISM V 97 = CIL III 7605; ISM V 98a, ISM V 99 = CIL III 7607; CIL III 7602.

doubt that the formula was not random – the ruler was presented as the builder of roads[330]. Beyond the propagandistic[331] overtones, the construction was in fact administered by province governor, naturally under exclusive patronage of the emperor. This may be observed in the letters of Pliny the Younger to Trajan, in which he requests that the emperor sent engineers to work on a canal linking Nicomedia with a lake, whose construction Pliny had undertaken[332].

The most important roads leading to military camps as well as those connecting the provinces were built by Roman soldiers to serve military purposes, so that troops could use them when they were deployed[333]. The substantial army presence in Lower Moesia (see Chapter II), considerable rotation of units and their frequent movements, dispersion in various forts which at times lay remotely from the home base, as well as changes of garrisons which manned fortified installations over time, caused the army to be constantly on the move. Still, the task was easier thanks to the infrastructure, although the latter did not serve the army exclusively, being used by administration, merchants or civilians who travelled from one place to another[334]. Also, Lower Moesia had the advantage of being a province on a chief route which connected south-eastern Europe with Asia Minor[335]. In winter, roads became even more important when rivers, including the Danube, froze over[336]. With guard posts along their course, they were also safe[337],

[330] For the propagandistic aspect of milestones see G. Alföldy, Augustus und die Inschriften: Tradition und Innovation, Gymnasium 98, 4, 1991, pp. 299-301 [Polish translation: August i inskrypcje: tradycja i innowacje. Narodziny epigrafiki imperialnej, transl. by B. Mrozewicz, Poznań 1994 (Xenia Posnaniensia III)]. Road construction was one of the instruments of restitutio rei publicae, see L. Mrozewicz, Via et imperium. Strassenbau und Herrschaft in römischer Welt, [in:] R. Frei-Stolba (hrsg.), Siedlung und Verkehr im römischen Reich. Akten des Kolloquiums zu Ehren von Prof. H.E. Herzig, Bern 2004, pp. 345-359, here: p. 347.

[331] The notion of propaganda did not exist in antiquity, yet some of the official actions in ancient Rome would qualify today as propaganda, see P. Zanker, August i potęga obrazów, transl. by L. Olszewski, Poznań 1999.

[332] Plin., Ep. X 41-42, 61-62.

[333] J. Šašel, Viae militares, [in:] Studien zu den Militärgrenzen Roms, II. Vorträge des 10. internationalen Limeskongresses in der Germania Inferior, Bonn 1977, pp. 235-244; L. Petculescu, Roman Army, p. 38. Scene LVI on Trajan's Column shows legionaries building a road, see R. Vulpe, Columna, p. 150.

[334] M. Kamińska, Ochrona dróg i rzek publicznych w prawie rzymskim w okresie republiki i pryncypatu, Warsaw 2010, p. 29.

[335] K. Majewski, Kultura rzymska, p. 102.

[336] Plin., Pan. XII 5-6.

[337] P. Ørsted, Roman Imperial Economy, p. 288.

because travellers were protected from bandits[338]. The extensive network of forts also served that purpose. Maintaining security was entrusted to soldiers in the rank of *beneficiarii consularis*, who kept public order, as well as had the task of ensuring the levy of taxes[339]. Thus, in a sense, the army became a guarantor of fiscal revenue in the province. In Lower Moesia, there were epigraphically attested *beneficiarii consularis* in *vicus* V…, Novae, Sveštari, Abrittus, Preslav, Montana and Salomorus-Halmyris[340], near the present-day Butovo and Pavlikeni[341], as well as in almost all Greek cities on the coast of the Black Sea where, according to Sarnowski, military officials performed policing duties[342]. No doubt, there were many more such posts and stations. Other soldiers who were also tasked with ensuring security were the *stationarii*[343]. It may be noted that under Roman law, imperial estates fell within the purview of their duties as well[344]. Roman soldiers as such would also be responsible for enforcing order on the area under their jurisdiction. *Centurio legionis* was responsible for division and demarcation of land[345]. Sources provide that a *praefectus classis* resolved the dispute between Messia Pudentilla and the *vicani* Buteridavenses[346], whereas *tribunus cohortis I Cilicium* contributed to the resolution of a territorial dispute of *civitas Ausdecensium adversus Dacos*[347]. As Livio Petculescu observes, it follows quite clearly that the army was heavily involved in settling territorial contention between civilians and performed policing functions[348].

In Pliny's letters to Trajan, it is reported that the legate of Lower Moesia sent a centurion to Byzantion, to protect the laws of that city[349]. The duties of soldiers included providing escort to the legate of the province or important

[338] B. Campbell, Power without Limit: 'The Romans Always Win', [in:] A. Chaniotis, P. Ducrey (eds.), Army and Power in the Ancient World, Stuttgart 2002, pp. 167-180, here: p. 175.

[339] On the roles of the *beneficiarii* in administrating the empire see J. Nelis-Clèment, Les Beneficiarii: militaries et administrateurs au service de l'empire (I er. p.a.C. –VIe p.p.C.), Bordeaux 2000.

[340] Ibidem, pp. 353-354; R. Ivanov, Zwei Inschriften der beneficiarii consularis aus dem Kastell Abritus in Moesia Inferior, ZPE 100, 1994, pp. 484-486.

[341] A. Tomas, Inter Moesos et Thraces (Oxford), p. 81.

[342] T. Sarnowski, Wojsko rzymskie, pp. 89-90.

[343] F. Lammert, Stationarius, [RE III, A2, 1929, col. 2213].

[344] Ulpian. Dig. 11.4.1.2: "milites stationarios dominum adiuvare debere in inquirendis fugitivis".

[345] ISM V 8, 58: "terminos fixit"; ISM V 59: "Fines pertinentes ad Tib(erium) Cl(audium) Firminum".

[346] ISM I 359-360.

[347] CIL III 14437; J. Kolendo, Miasta i terrytoria, p. 57.

[348] L. Petculescu, Roman Army, p. 40.

[349] Plin., Ep. X 77-78.

state dignitaries, and guarding prisoners[350]. The safety that the army ensured promoted the emergence of small towns and villages near those sites where troops were stationed or posted on duty[351]. In Lower Moesia, this is particularly noticeable in Dobruja, where in the second century new villages bearing Roman names developed primarily in the vicinity of roads[352]: Vicus Novus, Vicus Petrus, V…(Neatirnarea), Vicus Urb…, Vicus Secundini, Vicus Hi…, Vicus…(Gălbior), Vicus Clementianensis, Vicus Ulmetum, Vicus Parsal…, Laicos Purgos, Vicus Celeris[353]. Apart from the roads, the settlers attached not the least importance to the rivers[354], which considerably sped up transport. Settlement in the proximity of land routes took place in the area between Almus and Durostorum; archaeological excavations demonstrate that people would also set up dwellings all along the road from Durostorum to Marcianopolis[355] and erect shrines there, located in the present-day villages of Černevo, Štipsko, Medovo and Kolartsi[356]. Some of the *mansiones* proved to be the root of later cities, as e.g. Storgosia, a station appearing in *Tabula Peutingeriana*[357], near which a village was established (*vicus*)[358].

Such way stations along the roads were very numerous; the preferred establishments included those associated with *cursus publicus*, namely *mutatio* or *mansio*[359]. According to the available calculations, there were up to 24 animals (horses and mules) per one *satio*[360]. Perhaps the horses were replaced every four years, as was the custom in the Roman army[361]. At the way stations, travellers were able to water and feed the animals, wash themselves, eat, stay the night and conduct repairs[362]. One of such places was Viamata, discovered by the military road from Phillippopolis to Oescus. Although it lay in Thrace, the thorough archaeological exploration yields

[350] Plin., Ep. X 19-20.
[351] R. Chevallier, Roman Roads, p. 116.
[352] A.G. Poulter, Rural Communities, p. 734.
[353] Ibidem, p. 731.
[354] L. Mrozewicz, Rozwój ustroju, p. 131, mapa I (1).
[355] S. Torbatov, The Roman Road, p. 70.
[356] Ibidem, przyp. 10.
[357] TP VIII 2.
[358] B. Gerov, Landownership, p. 109.
[359] J. Wielowiejski, Na drogach, p. 242.
[360] C. van Tilburg, Traffic, p. 62.
[361] P. Herz, Finances and Costs, p. 316; A. Hyland, Equus: The Horse in the Roman World, London 1990, p. 89.
[362] G. Seitz, Strassenstationen. Infrastruktur für die Weltherrschaft, [in:] S. Schmidt (hrsg.), Imperium Romanum. Roms Provinzen an Neckar, Rhein und Donau, Darmstadt 2005, pp. 420--425, here: pp. 420-421.

a splendid picture of how *mansiones* could have looked like in Lower Moesia. The station in question offered travellers a space of 792 m^2, including nine rooms where guests could put up and dine, as well as stables. The walls were built of stone and the roof covered with tiles (*tegulae* and *imbrices*). Excavations revealed numerous remnants of amphorae, vessel pottery (including *barbotino*), and fragments of oil lamps and ornaments[363].

The construction and maintenance of infrastructure ate up vast amounts of money and required substantial workforce[364]. Several estimations of the involved outlay are available. According to Jerzy Wielowiejski[365], repairing one mile of a road cost around 100,000 sesterces, while Thomas Pekáry estimates the cost of building a *via publica* with attached infrastructure such as bridges, *praetoria*, *mansiones*, *mutationes*, and *miliaria* at the imposing sum of up to 500,000 sesterces per mile[366]. Other researchers argue that the amount is severely overstated and the actual expenditure should be assessed at 100,000 sesterces[367]. Calculations aside[368], the fact remains that construction of roads was tremendously expensive[369]. Thomas Pekáry suggests that a part of the costs of maintenance was borne by the *municipia* and people who owned the adjacent land[370], but the situation in Lower Moesia must have been different[371]. In the first century, land ownership there was only incipient, while Roman settlement was not strong enough to take on such a financial burden. The maintenance and improvement of the road network could be shifted onto local communities only in the second century, as evidenced by inscriptions in which much of the information about repairs dates to the reign of Marcus Aurelius[372] and Septimius Severus[373]. At the time, the circumstances were opportune enough to make the local population carry

[363] The station was discovered and described by M. Madžarov, Rimskata stantsja Viamata na pătja Filipopol-Eskus, Arheologija 2, 1985, pp. 36-45.

[364] Findings to date are recapitulated in T. Kissel, Road-Building, p. 130.

[365] Na drogach, p. 73.

[366] T. Pekáry, Untersuchungen, p. 93.

[367] T. Kissel, Road-Building, p. 130.

[368] 100,000 × 453 miles = 45.3m sesterces or 500,000 × 453 miles = 226.5m sesterces.

[369] T. Kissel, Road-Building, p. 130.

[370] T. Pekáry, Untersuchungen, pp. 113-117.

[371] Analyses of financing and maintenance of roads should proceed with circumspection; the situation in each province should be examined separately, without resorting to generalizations, cf.: H.E. Herzig, Probleme des römischen Straßenwesens. Untersuchungen zu Geschichte und Recht, ANRW II 1974, pp. 593-648, here: p. 641, who observed that the general model presented by Pekáry for Italy should be approached with caution.

[372] ISM V 1, ISM V 256-257, CIL III 7615-7616, CIL III 12513-12514.

[373] CIL III 7602, CIL III 7603 = ISM V 95, ISM V 96 = CIL III 7604, ISM V 2, AE 1993, 1374.

the costs of renovation[374]. A question arises here, namely whether civilians were put to construction and improvement works every year or sporadically. For the time being, it must remain unanswered[375], though epigraphic material warrants the conjecture that road overhauls in Lower Moesia were carried out only occasionally, whereas minor repairs were certainly more frequent. In outlining that phenomenon, one cannot follow the example of researchers studying the situation in Egypt, where local population did take regular care of the correct operation of the canals[376], but it was a concern of a completely different magnitude[377]. Theodor Kissel also points to *lex Irnitana* as a potentially universal example[378]. Still, it cannot be utilized in the case of Lower Moesia due to several reasons: the location of discovery (Baetica), the dating (45 BCE) and the fact that the law applied to a colony[379], of which there were none in the discussed province (with the exception of Oescus). Hence, as far as Lower Moesia is concerned, the issue remains unresolved. One can only state that as of the second century, landowners and holders residing near roads bore the expense of their later maintenance. This leads to another question, namely if proprietors of land did have to meet the road-related costs, then what criteria were adopted to determine the amount of contribution? An inscription from Thrace offered a partial answer; on its basis, Thomas Pekáry conceived a theory that milestones divided successive stretches of roads, while a landowner or a group of landowners were responsible for their maintenance. The length of such sections of the road is determined depending on fiscal capacity ("Steuerkraft")[380]. The theory was expanded by Theodor Kissel, who offered a range of convincing evidence demonstrating that repairs (*munitio viarum*) could occasionally encompass a larger area than just particular sections of roads[381]. Thus, when convenient conditions arose in the second century, the army – building a great many roads – gradually shifted the burden of paying for their construction, maintenance and repairs onto local communities.

[374] According to A. Kamińska (Ochrona dróg, pp. 101, 104, 106) individuals who owned land estates in the vicinity of public roads were obligated to bear the costs of their repairs and cleaning, while local authorities had the duty to enforce it.

[375] T. Kissel, Road-Building, p. 133.

[376] T. Pekáry, Untersuchungen, p. 121.

[377] T. Kissel, Road-Building, p. 133. The author advises particular caution in looking for such analogies.

[378] Ibidem.

[379] Text of *lex Irnitana*: CIL II 5439 = ILS 6087.

[380] T. Pekáry, Zu den römischen Reichsstraßen, AArchHung 41, 1989, pp. 490-492.

[381] T. Kissel, Road-Building, p. 142.

The development of numerous villages in the vicinity of the roads cannot be accidental; it was a deliberate policy of Rome, aimed at ensuring that the network remained in good repair, while the expense was borne by the inhabitants of adjacent hamlets. That the routes were traced near indigenous settlements was no accident either. Rome also looked for sources of financing in the shape of levies imposed as part of *cursus publicus*. This must have been a source of grievances, which was evinced for instance in the complaints submitted in 137-141 and 160 by the inhabitants of Chora Dagei and Laikos Pyrgos who objected to the multiple duties (*munera*) arising from *cursus publicus*[382]. Abuse must have occurred quite often since Rome sought to reduce the burden of such tributes[383], though as the above example shows they were upheld nevertheless. The people of both villages should have been protected from abuse on the part of state and provincial administration by the *beneficiarii consularis*[384], whose stations existed in *vicus* V…[385], Enice[386], and Pavlikeni[387]. Also, the extent of abuse might have been quite substantial during the rule of the Severan dynasty, considering that in that period soldiers and veterans were exempted from paying the costs of travel (*exceptis militibus et veteranis*)[388]. The unrest on the frontier on the Danube and the resulting increased movement of troops were also conducive to greater exploitation of the local population. The events in Chersonesus (Crimea) are an apt illustration of the wrongful conduct of Lower Moesian soldiers who, being responsible for tax collection, committed abuse by levying money from an area outside military jurisdiction[389]. This caused a conflict to break out in the city, and the governor of Lower Moesia was compelled to attempt to settle the dispute; subsequently, Septimius Severus himself intervened, ordering the soldiers to respect the law and observe military discipline[390].

One must not forget that the Roman state offloaded a part of the costs of road maintenance onto tradesmen whose merchandise was subject to control

[382] ISM I 378 = SEG XIX 476; L. Petculescu, Roman Army, p. 39.
[383] CIL III 7251 = ILS 214.
[384] On the *beneficarii*: J. Nelis-Clèment, Beneficiarii.
[385] A. Aricescu, The Army, p. 207, no. 40.
[386] ILatBulg. 152 = CIL III 13723.
[387] ILatBulg 425 = AE 1935, 79.
[388] Arcadius Dig. 50.4.18.29; C. van Tilburg, Traffic, p. 60.
[389] I. Makarov, A Dossier about the Tax on Prostitution from Chersonensus Taurica (On the Internation of IOSPE 12.404, Vestnik Drevnej Istroii 4, 2003, pp. 123-136 (I have only seen the abstract).
[390] K. Królczyk, Propagatio Imperii, p. 176.

and duties at the stations of customs districts[391]. The existence of such stations is associated with conquest and incorporation of the subdued areas into the structures of the empire. Consequently, during the reign of Augustus or Tiberius, Moesia was included into the customs district of *publicum portorii Illyrici*[392], while after the annexation of the dependent kingdom of Thrace, Romans established the customs district of *ripa Thraciae*[393]. The former extended as far as Dimum, while the latter spanned the area from Novae to the delta of the Danube. As Tadeusz Sarnowski observed, customs districts should not be identified with any administrative and military boundaries[394].

Customs stations in Lower Moesia to the Olt line operated until the creation of Dacia, after which they were abolished[395]. Octavian Bounegru argues that they functioned in such cities as Durostorum, Dimum, Dierna and possibly Troesmis, Novae, Nicopolis ad Istrum and Almus[396]. The list should also include Capidava[397], Histria[398] and Montana[399]. There are tentative indications that customs stations also existed in Butovo, Nicopolis[400], and Sucidava[401], but this still has to be validated by the sources. The *portorium* was charged when goods entered an area with a different legal status. In practice, this meant fees for crossing into the province from Barbaricum or passage from province into Italy, as well as duties charged on the boundary of *colonia* or *prata legionis*[402]. The amount depended on the legal status of the territory where the customs station functioned. Following the suggestion

[391] J. Wielowiejski, Na drogach, p. 223.

[392] H. Nesselhauf, Publicum Portorii Illyrici utriusque et Ripae Thraciae, Epigraphica 1, 1939, pp. 331-338, here: p. 332; F. Vittinghoff, Portorium, RE XXII, 1, 1953, col. 346-397, here: col. 358; O. Bounegru, Les bureaux du district douanier sur le Bas Danube à l'époque romaine: données épigraphiques, Istros 14, 2007, pp. 45-52, here: p. 45.

[393] D.M. Pippidi, Das Stadtgebiet von Histria in römischer Zeit auf Grund der ΟΡΟΘΗΣΊΑ des Laberius Maximus (SEG I 329), Dacia 2, 1958, pp. 227-247, here: p. 241.

[394] T. Sarnowski, Wojsko rzymskie, p. 27; idem, Ti. Plautius Silvanus, Tauric Chersonesos and Classis Moesica, Dacia 50, 2006, pp. 85-90, here: p. 90.

[395] P. Ørsted, Roman Imperial Economy, pp. 264-265.

[396] O. Bounegru, Les bureaux, p. 50.

[397] H. Nesselhauf, Publicum Portorii Illyrici, p. 332.

[398] SEG I 329

[399] M. Tačeva, Neues über Publicum Portorii Illyrici et Ripae Thracie, [in:] P. Petrovič (ed.), Roman Limes on the Middle and Lower Danube, Belgrade 1996, pp. 177-182.

[400] A. Tomas (Inter Moesos et Thraces, Archeologia, p. 35) observes that those two locations require more adequate source material to be confirmed.

[401] CIL III 8042.

[402] P. Ørsted, Roman Imperial Economy, p. 251. It was already Friedrich Vittinghoff who noted that the *portorium* did not only denote customs duties on foreign goods but also internal and passage tariffs, see RE XXII, 1, 1953, col. 348.

of Peter Ørsted, it may be adopted that goods brought from Barbaricum were subject to a 5% tax, while 2.5% duty was imposed on commodities produced in the province. Cities maintained a high rate of customs duties at 4,5%[403]. The efficient and extensive infrastructure of roads and attached customs stations became a vital element of the economy[404] in the discussed province, and contributed to the rising wealth of a narrow group[405] (*publicani*), who until the reign of Septimius Severus were tasked with enforcing customs duties. Later on, the collectors would be appointed by the provincial *procurator*[406]. One of the eminent examples was Titus Lilius Saturninus, who administered the collection of duties having a wide apparatus and his own staff − freedmen and slaves – at his disposal[407]. Such activity was not all too favourably received, especially when it was carried out improperly, leading to misunderstandings and disputes with respect to how the duties were exacted. This is perfectly conveyed in *Horotesia* by Laberius Maximus, whose text accurately described the territory of the city of Histria as well as the cause of contention, namely the tariffs on goods brought from the island of Peuce in the Danube delta[408].

One can only guess that the presence of a road network in Lower Moesia fostered associated enterprise, for instance production and sale of vehicles. An edict of Diocletian's (Edictum de pretiis rerum venalium) is the only source of information on the prices of carriages, which ranged from 3,000 to 7,000 denarii[409], while carts and wagons cost from 800 to 1,500 denarii[410]. A comparison of these figures with the sizes of coin hoards shows how expensive they must have been to a buyer, though it has to be remembered that inflation during Diocletian's reign was very high; the edict was intended to arrest it.

Such purchase would have therefore exceeded anything that most inhabitants could afford. The poorest, if they did not have to travel a substantial distance, were able to hire a carriage, each person paying 2 denarii per Roman mile and 12 denarii a mile for the portage of goods. Apart from that, private roadside inns offered a place where travellers could rest. The roads also

[403] P. Ørsted, Roman Imperial Economy, p. 287.
[404] Ibidem, p. 288.
[405] Ibidem, pp. 307-339.
[406] M. Egri, The Role of Local Elites in Economic Exploitation of the Danube Provinces, [in:] L.F. Vagalinski (ed.), The Lower Danube in Antiquity International Archaeological Conference Bulgaria – Tutrakan, 6-7.10.2005, Sofia 2007, pp. 103-112, here: p. 108.
[407] M. Tačeva, Neues, p. 178; M. Egri, The Role of Local Elites, p. 108.
[408] D.M. Pippidi, Stadtgebiet, p. 227.
[409] Edict. Diocl. 31a-36.
[410] Edict. Diocl. 38a-40.

became points of sale for local products, e.g. from nearby *villae rusticae*, but there were other possibilities: the ceramics manufacturing centre in Butovo was located near communication routes as were imperial latifundia. One of those lay in the vicinity of the way station Palmatis by the Durostorum – Marcianopolis route, which is attested in an inscription from Kolarci mentioning a *strator consularis*[411].

Emporia, or settlements which served trade functions, were established in the neighbourhood of Roman roads as well, usually on the boundaries of various political communities[412]. Names of two such localities are known to have existed in Lower Moesia: Emporium Piretensium and Emporium Discoduraterae on the border with Thrace. The former is referred to in three inscriptions, two of which have been discovered in Gorsko Kosovo[413], and one in Slomer[414]; this makes its location rather difficult to determine. According to Tadeusz Zawadzki it was located near Butovo, by the road connecting Nicopolis ad Istrum with Melta[415]. The hypothesis is endorsed by Agnieszka Tomas, who asserts that the *vicus* in Butovo should be associated precisely with Emporium Piretensium[416]. A different view has been expressed by Ivan Tsarov, who argues that the *emporium* stood near Gorsko Kosovo, where the two first inscriptions had been discovered. Another argument which speaks in favour of the latter location is the fertility of soil in that area and the fact that the elites of Nicopolis ad Istrum had their estates there[417]. For the present, the exact location of Emporium Piretensium can only be conjectured until more convincing evidence is found. It seems, however, that if Emporium Piretensium had been established in the second century, then it could have developed only where the territories of Thrace and Lower Moesia adjoined, therefore Gorsko Kosovo should be dismissed. The second *emporium* − Emporium Discoduraterae – lay on the border of Thrace and Lower Moesia; established in the late second or early third century, it was administratively subordinated to Augusta Traiana, and later, in the times of Aurelian, it came under the control of Nicopolis ad Istrum[418].

[411] S. Torbatov, Latinski posvetitelen nadpis od Dolna Mizija, Arheologija 1989, 1, pp. 34-37.
[412] S. von Reden, Emporion, Der Neue Pauly 3, 1997, 1019.
[413] CIL III 12415, CIL III 12417 = Kalinka 201.
[414] ILatBulg 443.
[415] T. Zawadzki, Emporium Piretensium, [in:] idem, Na peryferiach świata rzymskiego, Poznań 2009, pp. 71-82.
[416] A. Tomas, Inter Moesos et Thraces, Archeologia, p. 40.
[417] I. Tsarov, The Location of Emperium Piretensium, AB 1, 2005, pp. 47-52.
[418] I. Bojanov, Diskoduratere i emporiite v rimska Trakija, Sofia 2014, p. 183 (summary).

5. Water supply systems

Soon after the arrival of the soldiers in Lower Moesia, Romans launched the construction of water supply systems on an unprecedented scale[419]. Although the first such facilities had been built by the Greek cities on the Black Sea coast prior to the Roman conquest[420], they supplied water to a limited area in their vicinity[421]. In the early period, the army was the only entity which had the material and the manpower to embark on the construction of extensive and technologically advanced waterworks[422] (aqueducts and underground conduits)[423], which they built simultaneously with the fortifications[424]. In the phase when the defences of Novae were still timber-earthen structures, and most buildings within were wooden, the sizeable baths which functioned from the 70s to the end of the first century were pure masonry. The water for the facility was carried through clay pipes[425].

Archaeological excavations revealed numerous remnants of artificial water conduits in the province[426], the best explored of which is the arrangement which brought water to the legionary camp in Novae[427]. It converged in the camp running from several sites located a few kilometres away from the fortress; the farthest was to be found in Belianovec[428]. A similar solution was employed in Oescus, where water was supplied by a 25-kilometre-long aqueduct[429]. Although no precise findings have been made with respect to Durostorum and Troesmis[430], the examples of Novae and Oescus demonstrate how advanced the army's engineering was. It should therefore be no surprise

[419] M. Biernacka-Lubańska, Wodociągi rzymskie i wczesnobizantyjskie z obszaru Mezji Dolnej i północnej Tracji, Wrocław 1973, p. 194.

[420] A. Tomas, Connecting to Public Water: The Rural Landscape and Water Supply in Lower Moesia, AB 15, 2, 2011, pp. 59-72, here: p. 61.

[421] The cities are located along the coast of the Black Sea.

[422] A. Tomas, Connecting to Public Water, p. 59.

[423] Ibidem; M. Biernacka-Lubańska, Wodociągi, p. 194.

[424] M. Biernacka-Lubańska, Wodociągi, p. 194.

[425] P. Dyczek, Archaeological Research, p. 69.

[426] A list of those is provided ibidem, pp. 223-255.

[427] The findings of archaeological investigations have been published in Archeologia (Warsaw) (from 1960 until the present).

[428] M. Biernacka-Lubańska, System wodociągowy w Novae, Novensia 9, 1997, pp. 5-79, here: pp. 14-15.

[429] I. Tsarov, Water Supply in the Legionary Camps Oescus, Novae and Durostorum (Moesia Inferior), [in:] L.F. Vagalinski (ed.), The Lower Danube in Antiquity, International Archaeological Conference Bulgaria – Tutrakan, 6-7.10.2005, Sofia 2007, pp. 217-226, here: p. 217.

[430] Ibidem, p. 225.

that Trajan, responding to the previously cited letter from Pliny, instructed him to turn to Publius Calpurnius Macer, governor of Lower Moesia[431], and request an able engineer to work on the canal linking Nicomedia with a lake. Another letter reveals that the expert in question was a legionary centurion[432].

Besides legionary strongholds, minor defensive installations were provided with water supply systems, for instance in Dimum, as well as in other forts[433]. It goes without saying that all permanent sites manned by the Roman army had to have an adequate water-supplying arrangement[434].

Water management fell within the scope of competence of the legions and auxilia stationed in Lower Moesia, which in the first place constructed waterworks to meet their own logistical needs[435]. Local population inhabiting the area near encampments naturally benefited from the army's water supply. In Novae, one main ran to the *canabae*[436], and in Durostorum to the nearby *vicus*. The large aqueduct supplying water to Oescus passed through a number of localities, and may have provided water to its inhabitants. Agnieszka Tomas observes that in the light of Roman law, military aqueducts were public property, therefore there were no constraints on their being used by any local community[437]. Moreover, the amounts of water carried through military conduits exceeded the needs of the soldiers. This is confirmed by Ivan Tsarov's calculations, according to which 350 litres were available overnight for each person in the estimated 5,000-strong garrison in Novae. Even if much of it was used by the baths, a considerable surplus remained nevertheless[438].

The prefect of the camp was responsible for efficient and reliable functioning of the supply of potable water[439]. Maintenance works are certain to have been entrusted to specialist soldiers described as *immunes*[440], who are mentioned in Lower Moesian inscriptions[441].

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[431] A. Stein, Die Legaten, p. 63.

[432] Plin., Ep. X 41-42, 61-62, 77. "Providentissime, domine, fecisti, quod praecepisti Calpurnio Macro clarissimo viro, ut legionarium centurionem Byzantium mitteret" (Plin., Ep. X 77).

[433] M. Biernacka-Lubańska, Wodociągi, pp. 244-245, 223-255.

[434] K. Majewski, Kultura rzymska, p. 105.

[435] M. Biernacka-Lubańska, Wodociągi, p. 198.

[436] M. Biernacka-Lubańska, System, p. 18. The author admits the possibility that the system might have supplied another settlement located several kilometres south-west from Novae.

[437] A. Tomas, Connecting to Public Water, pp. 61-63.

[438] I. Tsarov, Water Supply, pp. 224-225.

[439] Veg., Epit. II 10.

[440] Dig. Tarr. 50. 6.7.

[441] Architect from legio V Macedonica: ILatBulg 49 = AE 1977, 742; for a discussion of dating see M.A. Vianu, Sur la chronologie de la stele de Quintus Philippicus, Epigraphica. Travaux dédiés

The Roman army brought a new, Roman lifestyle to the regions on the Danube. Public baths and latrines began to be built in the cities. In Troesmis, Aegyssus and Noviodunum[442], as well as in Greek cities of Tomis, Callatis, and Histria[443] research identified large *thermae,* whose sizes are quite impressive given the circumstances in Lower Moesia. The Roman fondness for ablutions also reached the countryside, especially the *villae rusticae*. As an example, one could quote the bathhouse in Madara, which functioned from the second to the fifth century[444]. Interestingly enough, a channel going out of one of the rooms was lined with tiles produced by *legio XI Claudia*[445]. The villa in Makreš, classified as relatively small[446], offers another example, as it had a small bath fitted with the hypocaust[447]. Three bathhouses, each built in a different period, were discovered in the villa no. 2 in Montana[448]. Bathing facilities are attested in epigraphic sources in *vicus* Petra[449], and in *vicus/municipium* (?) Durostorum (Ostrov), where a Roman bathhouse functioned in three different periods[450]. The opulent tomb of a Romanized Thracian dated to the second century which has been found in Marcianopolis, contained equipment including items one used when attending baths[451]. This proves that already in the second century the indigenous population had acquired some of the Roman "penchant for baths", despite the strong tribal ethos which persisted in Lower Moesia.

Further evidence demonstrating that baths functioned in private villas and non-military villages originates from the late Roman period[452], which is beyond the scope of this study. Still, they confirm that Roman baths have become a standard in urban and rural areas.

au VIIe Congrés d'épigraphie grecque et latine, București 1977, pp. 65-68, suggestion of the author on p. 68.

[442] A. Suceveanu, Thermes et Aqueducs, p. 489.

[443] Ibidem, pp. 490-493.

[444] V. Antonova, Novootkriti obekti ot rimskata epoha v Madara, INMK, Book I, Varna 1960, pp. 19-54.

[445] Ibidem, p. 37.

[446] V. Dinčev, Rimskite vili v dnešnata bălgarska teritorija, Sofia 1997, p. 26.

[447] J. Valeva, Villae in the Roman Provinces Thracia, Moesia Inferior and Dacia, [in:] M. Aoyagi, S. Steingräber (éd.), Le ville romane dell'Italia e del Mediterraneo antico, Tokyo 1999, pp. 115-132, here: p. 119.

[448] Ibidem, p. 122.

[449] ISM V 222, cf. A. Suceveanu, Thermes et Aqueducs, p. 494.

[450] P. Damian, A. Bălтăc, The Civil Roman Settlement at Ostrov-Durostorum, Istros 14, 2007, pp. 61-70, here: p. 66.

[451] R. Nenova, A. Angelov, A Rich Thracian's Grave from Marcianopolis, AB 3, 1999, pp. 49--59, here: p. 57.

[452] The examples are listed in A. Tomas, Connecting to Public Water, p. 68.

Lower Moesian centres of production were situated chiefly near rivers, therefore they relied on their own water supply system in the form of wells and cisterns[453]. Also, each city is certain to have had their own waterworks as well[454]. This should be credited to the army, whose indirect agency facilitated the transfer of technologies which in those times qualified as considerably advanced. Furthermore, the army guarded the crucial transmission and distribution sections of the system; for instance, military posts were put up near aqueducts[455]. One of those was located on the Kaleto hill in Svishtov, from which the soldiers were most likely watching over the supply of water to the *castra* of Novae[456]. Such watch-posts were created to protect conduits carrying water to military sites and civilian localities as well. The fort in Gradište may have performed a similar function, as it stood near the aqueduct which conveyed water to Nicopolis ad Istrum[457]. Here, lack of sufficient archaeological evidence does not allow the hypothesis to be accepted without reservations[458]. The task of the *quadriburgium* built not far away from the aqueduct ensuring the supply of water to Tomis is less doubtful[459]. If this was the case, the army turns out to have played a positive and vital role from the economic standpoint, as it safeguarded the access to the most fundamental resource, namely water, consumed by people and animals, used for the purposes of hygiene and needed in all domains of industry and enterprise. Numerous sources dispersed throughout the Roman Empire provide information about expert military engineers engaged to construct water supply systems for cities[460], e.g. legionaries from Mogontiacum (Mainz)[461] or soldiers stationed in Lambaesis[462]. As many as 241 men of *cohors I Septima Belgarum* were involved in building the aqueduct which carried water to the baths in *vicus* Aurelianus (Öhringen)[463]. It is certain that the soldiers of *legio X Fretensis*, *legio VI Ferrata* and *legio II Traiana* took part in constructing the aqueducts in Israel. Veterans would also participate in undertakings associated with water facilities; as Krzysztof Królczyk notes,

[453] Ibidem, p. 4.
[454] K. Majewski, Kultura rzymska, p. 105.
[455] A. Tomas, Connecting to Public Water, p. 7.
[456] Ibidem.
[457] Ibidem.
[458] Ibidem.
[459] Ibidem.
[460] Enumerated in I. Tsarov: Water Supply, p. 225.
[461] CIL XIII 7576.
[462] CIL VIII 2658.
[463] CIL XIII 11759.

in Singidunum (Upper Moesia) an Aelius Tertius paid for the building of stone baths (*lapide perfecta balneae*) and digging a pond (*lacus*), whereas in Aquincum a veteran and decurion named Antonius (*decurio Aquinci*) financed an aqueduct which supplied the city with water (*aquam induxit*)[464]. Such direct testimonies to the involvement of veterans and official actions of the army have not been found in Lower Moesia, though the aforementioned letters of Pliny the Younger to Trajan warrant the conclusion[465] that military engineers from that province lend their hand in projects which required expert knowledge. Their correspondence also reveals that specialists were in very short supply in the senatorial provinces, in other words those where no legions were stationed[466]. Moreover, it follows from Pliny's epistles that legionary architects remained at the disposal of the province governor, who could direct them to carry out special assignments, in this case to work on civil engineering projects. Military architects in Lower Moesia must have had tremendous experience, because the reign of Trajan witnessed massive construction undertakings. It is also possible that military experts contributed to the establishment of new cities, such as Nicopolis ad Istrum and Marcianopolis. According to Andrew G. Poulter, the structural similarities between the walls of Thracian and Lower Moesian cities built in 170-175, and military fortifications, demonstrate that army architects were employed in the civilian programme of building urban defences in both provinces[467]. Teofil Ivanov and Rumen Ivanov argue that men of *legio I Italica* and *XI Claudia* partook in the designs and construction of defensive structures around colonia Oescus I[468]. It is also likely that a troop of 1,500 soldiers from *legio I Italica* and *XI Claudia* were sent to assist in building Tropaeum Traiani[469].

6. Exploitation of deposits

The very numerous and wide-ranging construction undertakings of the Roman Army in Lower Moesia (networks of fortifications built of wood and then stone, roads, bridges, ports, aqueducts, and water supply systems)

[464] AE 1987, 852; CIL III 6452; K. Królczyk, Veteranen, p. 128.
[465] Plin., Epist. X 41-42, 61-62, 77.
[466] E. Evans, Military Architects and Building Design in Roman Britain, Britannia 25, 1994, pp. 143-164, here: p. 145.
[467] A.G. Poulter, Nicopolis ad Istrum, p. 12.
[468] T. Ivanov, R. Ivanov, Ulpia Eskus. Rimski i rannovizantijski grad, vol. 1, Sofia 1998, p. 64.
[469] L. Petculescu, Roman Army, p. 37.

required broad access to and availability of building materials, timber and stone in the first place. The demand for the latter peaked in the course of the Dacian wars, then during Hadrian's reign, when many of the legionary camps were surrounded with stone walls (like Novae) or erected from the ground up in stone (Durostorum and Troesmis), not to mention other fortifications described above. New cities must not be forgotten either: Nicopolis ad Istrum, Marcianopolis and Tropaeum Traiani[470], built when the Roman army had successfully subdued the neighbouring Dacia. Also, at that time, i.e. in the early second century, Romans completed the limes road which now reached to the Danube delta and built the thoroughfare from Durostorum to Anchialis[471]. The scale of works was immense and utterly unprecedented in that region. Admittedly, the stone Greek cities on the Black Sea coast had existed previously, and Thracians did use stone as a building material, but compared with Roman undertakings their achievements were negligible[472].

Romanian researcher Adrian Rădulescu identified numerous quarries in Dobruja where stone had been mined by the Greek cities and later by Romans as well. These include Dolojman-Argamum and Dervent-Păcuiul where Histria obtained the stone it needed. Material used in *civitas* Ausdecensium was quarried in Dobromir, Callatis acquired theirs in Albeşti--Limanu, while Tomis relied on the pits in Tekirghiol and Ovidiu (Canara). Also, there was the newly established city which constituted a monument to Trajan's victory over Dacia - Tropaeum Traiani, which required substantial amounts of stone, mined for that purpose in Ienige-Deleni and Ienige-Tal[473]. Another quarry is likely to have existed in Černavoda, although the only traces found there indicate that it had been mined in the Middle Ages[474]. The city of Marcianopolis obtained stone on the Kairaci hill as well as in Tepeler[475] and the village of Mramor[476]. A large quarry operated in Berkovica, supplying blocks of stone to Ratiaria and Montana. In the locality

[470] L. Mrozewicz, Miasta rzymskie, pp. 264, 272.

[471] See Chapter IV. 2.

[472] A. Dworakowska, Quarries in Roman Provinces, Wrocław 1983, p. 20. Numerous detailed studies have been written on the mining of stone, but a synthetic work is lacking, particularly with respect to the entire Lower Moesia. Bulgarian researchers focus mainly on the territory of their own country, while Romanian ones address Dobruja exclusively.

[473] A.V. Rădulescu, Aspecte privind exploatarea pietrei in Dobrogea Romana, Ponitca 5, 1972, pp. 177-203, here: p. 203.

[474] A. Dworakowska, Quarries, p. 21.

[475] Ibidem.

[476] A list of those quarries was compiled by I. Cholakov, Ancient Economy, p. 71.

known as Kreta, Kunino (Vraca) and near Berkovica the legionaries from Oescus availed themselves of building material in the first century, while in the second-third century inhabitants of the colony did the same[477]. As regards Abrittus, stone was brought there from the present-day Topčii. For logistical reasons, stone was mined in quarries located not far away from the construction site. This is evident in Novae, where the predominant type of material is sandstone, which could be obtained fairly close – no more than 25 km away – and then transported by roads[478]. On the other hand, limestone was probably brought from areas on the Danube, between the Yantra and Ruse (Sexaginta Prista), as the most convenient solution was to ship it by river to Novae, via the Yantra and the Danube[479]. As for high-quality stones that Novae, Nicopolis ad Istrum and Pavlikeni required, they were mined in Hotnica. Material of that kind was used mainly for architectural detail[480].

The quarries in Lower Moesia were owned by the state, cities and private entrepreneurs. Naturally, the situation fluctuated as time went by[481]. The quarries located on the territory of the legions belonged to the army, which mined the deposits and administered the sites. Working there was nothing out of the ordinary for the Roman soldiers, be it legionaries, auxiliaries or men of the *classis*[482]. A number of source accounts refer to the fact that soldiers were employed there both for the purposes of military and civilian construction undertakings[483].

There is no doubt that many stone mining sites began to operate when the army came to Lower Moesia. Once the army had no more use for them, civilian stonemasons took over[484]. This was the case in *vicus* Trullensium

[477] Z. Dimitrov, Stone Cutting in Moesia Superior and Inferior during the Roman Age, www2.rgzm.de/Tranformation/Bulgaria/Steinbearbeitung/PhfEnV2_03.htm (last access: 2.02.2013).

[478] Z. Walkiewicz, J. Skoczylas, Badania geologiczne, [in:] S. Parnicki-Pudełko (ed.), Novae – Sektor Zachodni 1972, Poznań 1975, pp. 243-273, here: pp. 261, 273; J. Skoczylas, Z. Walkiewicz, Wstępne badania geologiczne w Novae na odcinkach IV i XI, Archeologia 26, 1975, pp. 155-162, here: p. 155; J. Skoczylas, N. Čolakov, Z. Walkiewicz, Uwagi o pochodzeniu surowców skalnych stosowanych w budowlach Novae, [in:] S. Parnicki-Pudełko (ed.), Novae – Sektor Zachodni 1974, Poznań 1979, pp. 131-135, here: p. 132; J. Skoczylas, Differentiation of the rock material at Novae in the light of petrographic investigation, [in:] A.B. Biernacki (ed.), Novae. Studies and Materials I, Poznań 1995, pp. 91-99, here: p. 99.

[479] J. Skoczylas, N. Čolakov, Z. Walkiewicz, Uwagi, pp. 134-135.

[480] J. Skoczylas, Das Gestein.

[481] A. Dworakowska, Quarries, p. 26.

[482] Ibidem, p. 17.

[483] For examples see A.M. Hirt, Imperial Mines and Quarries in the Roman World. Organisation Aspects 27 BC – AD 235, Oxford 2010, pp. 175-179.

[484] Z. Dimitrov, Stone Cutting.

(Kunino), located in the vicinity of quarries, where a votive (Iovi Optimo Maximo) was dedicated by Zoilus Corci, a *lapidarius* by profession. Pottery finds indicate that people in that line of work mined stone there in the second and third century[485]. Earlier, i.e. in the first century, soldiers had been working there, supplying stone to the legionary camp in Oescus[486]. When they had left the quarry, a *vicus* developed in its neighbourhood, just as it did in the locality known today as Kreta[487].

The quarries located in urban demesnes were administerd by respective cities. Thus Nicopolis ad Istrum had charge of the aforementioned Hotnica, as well Samovodene, Kornitsa, Mogilite and Sevlievo, all of which were to be found on its territory. The same applied to quarries in the Marcianopolis area[488].

Construction also relied on raw materials other than stone, particularly timber, metals and clay. Wood was easiest to obtain as soldiers cleared the nearby forests on a tremendous scale, especially in the first century when most fortifications were built of wood. Macroscopic and microscopic analyses of charcoal recovered in Novae from layers dated to the first century, demonstrate that these were remains of oak timber, most likely pedunculate oak[489], while pollen studies conducted in Dobruja confirm that Lower Moesia was densely covered by oak forests[490].

Access to clay deposits was greatly important, as they yielded raw material for bricks, roof tiles and piping which were used extensively in construction. It would usually be extracted in the immediate vicinity of encampments, within the area of *prata legionis*, which remained under military jurisdiction. Both clay and timber were widely available therefore procuring them presented no difficulty (production of bricks and tiles is discussed more broadly in the next chapter).

One of the technologies which Romans introduced in Lower Moesia was that of burning limestone in order to obtain structural binder. Such a production site, consisting of ten kilns, was discovered 20 km away from

[485] I. Velkov, Vicus Trullensium, [in:] Izsledvanija v čest na akad. Dimităr Dečev po slučaj 80-godišninata mu, Sofia 1958, pp. 557-566.

[486] Z. Dimitrov, Stone Cutting.

[487] Ibidem.

[488] Ibidem.

[489] A. Jankowska, P. Kozakiewicz, Identyfikacja węgli drzewnych i odcisku drewna w opus caementicium z Novae (Moesia Inferior), Novensia 22, 2011, pp. 119-125.

[490] E. Bozilova, S. Tonkov, Towards the vegetation, fig. 2, p. 148; S. Tonkov et al., Palaeoecological studies.

the camp in Novae. Judging by specimens of stamped building ceramics and items of military gear, it belonged most likely to *legio I Italica*. The facility was able to produce 200 tons of lime daily, definitely exceeding the amount Novae might have required, which suggests that could have been consigned to other fortified installations on the Danube[491].

When Roman rule had been established on that territory, the empire took over the ore mines, which were confiscated from their previous owners[492]. Slobodan Dušanić maintains that during the Principate all mines belonged to the *fiscus*[493]. In the first century, Romans began intensive exploitation of the deposits in Montana, whose mines experienced peak prosperity in the second and third century. They were most likely managed in a manner similar to the administrative model adopted in the neighbouring Upper Moesia, where metal deposits were particularly abundant.

There, each ore mine was superintended by a *procurator*, usually a slave or a freedman. In some regions, the sites were administered directly by legionaries[494]. An inscription erected by a member of procuratorial staff − *dispensatoris vicarius*[495] – indicates that similar mechanism operated in the mining district in Lower Moesia. A substantial role in the administration of places where metals were mined belonged to the Roman army, which in regio Montanensium (Montana region) guarded the ample deposits of copper, iron, lead, gold and silver[496]. The army's contribution to the efficient functioning of mines in that area is reflected in the inscriptions discovered there, which mention such specialized positions as *beneficiarius consularis legionis I Italicae agens territorii Montanensium*[497]. This proves that legionaries operating in the region were answerable to the governor of the province who, apart from tasks relating to ensuring security, could assign additional administrative duties. The fact is corroborated by numerous

[491] L.F. Vagalinski, Light industry in Roman Thrace: the case of lime production, JRA 2011, pp. 41-58.

[492] S. Mrozek, Stosunki społeczne w rzymskich kopalniach złota w Dacji w II wieku naszej ery, Toruń 1966, p. 28.

[493] S. Dušanić, The Economy of Imperial Domains and the Provincial Organization of Roman Illyricum, Godišnjak (Sarajevo) 29, 1991, pp. 45-52, here: p. 47.

[494] Ibidem, p. 48.

[495] CIL III 12379; N.B. Rankov, A Contribution, p. 47.

[496] Diana and Apollo were particularly revered in Montana; S. Dušanić expressed the view that silver coins represent the moon goddess Diana, while gold ones represent Apollo (Sol) see idem, Aspects of Roman mining in Noricum, Pannonia, Dalmatia and Moesia Superior, ANRW II 6, 1977, pp. 52-94, here: p. 58; the theory is also supported by N.B. Rankov, A Contribution, p. 46.

[497] Montana II, 57.

inscriptions[498]. The presence of *centurio regionarius*[499] indicates that the army was also entrusted with various policing functions in the region. Mounted troops were employed there as well, seeing to the transports of precious metals and conducting patrols[500]. The fact that a *conductor publici portorii Illyrici* resided in Montana cannot have been a random occurrence either; as Slobodan Dušani suggested, Illyrian customs stations were closely associated with areas where precious metals were mined[501].

Ore mines and quarries required a substantial workforce to function. No sources from Lower Moesia offer details as to the arrangements in that province, but they may be inferred by analogy. A number of surviving wax tablets from Alburnus Maior in the neighbouring Dacia contain employment contracts between workers at a mine and their employer (*locatio-conductio operarum*). On the basis of those documents, it may be freely assumed that average remuneration in a a gold mine amounted to 140 denarii, while if a worker waived the board to which he was entitled, the annual wages increased to 210 denarii[502]. In comparison, in the period from Domitian to Septimius Severus, Roman legionary earned 300 denarii per year, but the sum was reduced to 140-160 denarii after deductions for provisions[503]. Thus, in financial terms, a legionary fared better than a free, unskilled employee. Studies conducted by Stanisław Mrozek[504] demonstrated that mixed methods of payment were used: workers received remuneration in kind and in coin. Such a solution is certain to have been applied in the mines of Montana as well. The exampled from Dacia proves that a market based on cash transactions did exist[505] and that in the Lower Danube region coin was a widespread means of payment.

[498] Montana II 1, 19, 35, 49, 56, 57, 95.
[499] Montana II, 39, 134. N.B. Rankov, A Contribution, p. 59.
[500] N.B. Rankov, A Contribution, p. 46.
[501] S. Dušanić, The Economy, p. 50.
[502] S. Mrozek, Stosunki społeczne, p. 73.
[503] On the finances of the Roman army see Chapter II. 1.
[504] Ibidem, p. 77.
[505] P. Temin, A Market Economy in the Early Roman Empire, JRA 91, 2001, pp. 169-181.

Chapter V

Military logistics and the local market

The presence of a several-thousand-strong garrison and numerous forts dispersed throughout a province stretching 670 km along the Danube (down to its delta) and merely 30-70 km wide[1], had a considerable influence on the development of basic sectors of the economy, such as agriculture, husbandry, crafts, trade and services. The 20,000 men stationed on its territory would play an immense role in the economic life of the province, especially considering the army's great demand for provisions of all kinds.

Paradoxically enough, studies concerned with other provinces demonstrate that supplying the army did not have to stimulate local markets. For instance, the presence of Roman soldiers and veterans in North Africa failed to contribute to agricultural development in the region. There is no evidence suggesting any major innovations in cultivation or irrigation, while the share of veterans in agricultural occupations and thus in the development of North African economy was insignificant[2]. An opposing view is expressed by Christopher R. Whittaker, for whom the decisive factor of economic boom in the frontier provinces was forcing farmers to achieve surplus output in order to meet the needs of Roman soldiers[3].

There is little information relating to the functioning of logistics of the Roman army, in particular its impact on the civilian sphere. The role of the local communities in provisioning the army is an interesting one, though it remains unclear[4].

[1] The figures are quoted after A.G. Poulter, Rural Communities, p. 85.

[2] D. Cherry, The Frontier Zones, p. 722. Such a picture of circumstances in Numidia emerges from B. Shaw's studies of the legionary camp in Lambaesis (Soldiers and society).

[3] C.R. Whittaker, Rural Labour in Three Roman Provinces, [in:] P. Garnsey (ed.), Non-Slave Labour in the Greco-Roman World, Cambridge 1980, pp. 73-99, here: p. 91.

[4] C.E.P. Adams, Supplying the Roman Army: O. Petr. 245, ZPE 109, 1995, pp. 119-124, here: p. 119.

1. Agriculture

The basic diet of the Roman soldier relied on wheat, barley, bitter wine, salt cheese, lard (*laridum*), olive oil and vegetables[5]. Daily grain ration amounted to ca 1,000 g[6], therefore the Lower Moesian army of 20,000 men may have required approximately 7,000 tons of cereal annually for the soldiers alone. Also, each consumed most likely 60 g of meat daily[7], which for a 20,000-strong army means the annual volume of 430 tons of meat. It should be noted that it was the minimal fare ensured by the central supply system. Besides soldiers, care had to be taken to provide fodder for the army's animals.

A daily minimum for a horse comprised 7 kg of hay and 2.5 kg of barley. A mule required around 1.5 kg of barley and 5.6 kg of hay while an ox consumed 7 kg of barley and 11 kg of hay[8]. With 600 horses to an *ala quingenaria*[9], further *cohortes equitatae* and *milliariae* stationed in the province as well as 120 *equites* in each legion, one can appreciate the immense scale of the necessary provisions.

Army presence in Lower Moesia brought forth a new category of land owners – veterans and Roman settlers – though the local aristocracy with their estates continued to exist[10]. The arrival of the Roman army also meant the introduction of Italic *villae* and a change in the diet of the local population. One should expect that production of various crops, such as cereals and vine, as well as animal husbandry, horticulture and fruit farming became much more intensive. Saying that Lower Moesian economy in the Roman period relied chiefly on agriculture would be stating the obvious. This is particularly evident in the area between Almus and Durostorum, where 65.8% of the discovered tools were farm implements[11]. Archaeo-

[5] C. Carreras Monfort, The Roman Military Supply, p. 72; R.W. Davies, The Roman Military Diet, Britannia 2, 1971, pp. 122-142, here: p. 124.

[6] W. Groenman-von Waateringe, Classical Authors and the Diet of Roman Soldiers: True or False?, [in:] W. Groenman van Waateringe, B.L. van Beek, W.J.H. Willems, S.L. Wynia (eds.), Roman Frontier Studies. Proceedings of the 16th International Congress of Roman Frontier Studies, (16th: 1995: Kerkrade, Netherlands), Oxford 1997, pp. 261-265, here: p. 264.

[7] Ibidem.

[8] P. Kehne, War- and Peacetime Logistics: Supplying Imperial Armies in East and West, [in:] P. Erdkamp (ed.), Companion to the Roman Army, Oxford 2007, pp. 323-328, here: p. 325.

[9] R.W. Davies, The Supply of Animals to the Roman Army and Remount System, Latomus 28, 2, 1969, pp. 429-459, here: p. 429.

[10] This was the case in the neighbouring provinces, see M. Egri, The Role of Local Elites, p. 104.

[11] I. Cholakov, Ancient Economy, p. 63.

botanical research conducted at the Roman and late Roman fortlet of Abrittus demonstrated that the most frequently cultivated species were rye and wheat, which accounted for 67% of all crops, followed by barley with 27%[12]. Dobruja was also a farming region; discoveries show that *villae rusticae* there were several times more numerous than elsewhere in Lower Moesia, including Thrace (93 to 33)[13]. Barley, millet, wheat, flax and hemp were grown near the cities[14]. As regards the Greek cities, the highest level of agricultural production was achieved by Tomis and Callatis[15]. The area of Dobruja is much smaller than the remaining territory of Lower Moesia and Thrace, which says even more about the exceptional role of farming in its economy.

Numerous researchers have attempted to assess the significance of the Roman army for agriculture by estimating the acreage required to be able to provide for the army stationed in a given area[16]. Two examples are worth citing here. The first applies to Britain, in whose case such estimations were attempted by Albert L.F. Rivet, who found that in order to supply adequate amounts of grain for the army (i.e. legions and auxilia) in the first century, the area which had to be cultivated amounted to ca 42,915 ha[17]. The second example comes from Conrad Rüger, who calculated that in Lower and Upper Germania, whose garrison consisted of 39,000 soldiers, the annual requirement for grain was around 8,000 tons. In his opinion, such volume could be produced by 300 medium-sized farms whose aggregate lands under cultivation amounted to 10,700 ha[18]. Using the latter formula and considering that the garrison of Lower Moesia was almost twofold smaller, feeding its garrison could have theoretically required 150-160 medium-sized farms totalling 5,400 to 6,000 ha[19]. These estimations in no way aspire to reflect the actual figures with respect to such different provinces, but they demonstrate the scale of the army's demand for agricultural produce. One the other hand,

[12] T. Popova, E. Marinova, Archaeobotanical and Anthracalogical Analysis of the Roman and Early Byzantine Castle Abritus in North-Eastern Bulgaria: Some Palaeoethnobotanical and Environmental Aspects, AB 4, 2, 2000, pp. 49-58, here: p. 51.

[13] Cf. V.H. Baumann, Ferma Romană din Dobrogea, Tulcea 1983, p. 148; V. Dinčev, Rimskite vili, pp. 115-119; P. Dyczek, Amfory rzymskie, p. 266.

[14] A. Suceveanu, Viaţa economică, p. 77.

[15] Ibidem, pp. 92, 95.

[16] D. Cherry, The Frontier Zones, p. 728.

[17] A.L.F. Rivet, Social and Economic Aspects, [in:] idem (ed.), The Roman Villa in Britain, pp. 173-216, here: p. 196-197.

[18] C. Rüger, Roman Germany, [in:] K. Bowman, P. Garnsey, D, Rathbone (eds.), The Cambridge Ancient History, vol. XI. The High Empire (2ed), Cambridge 2000, pp. 456-513, here: p. 507.

[19] On the strength of the Lower Moesian garrison see Chapter II. 2. in this monograph.

it should be taken into account that those 150-160 farms would have had to hand over all of their crops to meet the needs of the army, therefore it was necessary to diversify grain supplies (deliveries from Pontus, local resources).

In the first century, the forces occupying the then eastern Moesia (the later western Lower Moesia), a region too underdeveloped to ensure sufficient provisions, could have obtained their grain from territories on the northern coast of the Black Sea, i.e. Tyras and Olbia as well as, in the main, from Bithynia and Pontus[20]. Thanks to the inscription of Ti. Plautius Silvanus Aelianus[21] it may be surmised that already when Lower Moesia was being established, a substantial part of grain supplies came from the area of the present-day Dobruja, which owed greatly to the efforts of that legate[22]. However, suitable conditions in which the Roman form of agricultural economy could be adopted developed in the early second century[23], even though the first villas began to appear in the mid-first century. Initially, of course, they were geared towards agriculture, like the later centre of ceramic production in Pavlikeni[24]. Roman settlement in Lower Moesia advanced more dynamically under the Flavians, but it truly flourished following Trajan's wars with Dacia, expanding simultaneously with the urbanization of the province[25], which in its turn contributed to the increase of efficiency of farming on that territory.

a) types of villas

Three types of villas evolved in Lower Moesia. Vencislav Dinčev classified them with respect to the size of the dwelling of the owner as residential, medium-sized and small villas[26]. They specialized mainly

[20] The suggestion that grain had been supplied to Lower Moesia from Asia Minor was advanced already by E. Gren in Kleinasien und der Ostbalkan, and by M.I. Rostovtzeff, The Social and Economic History of the Roman Empire, p. 645, note 87; the hypothesis is supported byP. Herz, Die Logistik, p. 23.

[21] CIL XIV 3608 = ILS 986.

[22] T. Zawadzki, Namiestnictwo, pp. 66-67.

[23] G. von Bülow, Bemerkungen zur Villenwirtschaft in der Provinz Moesia Inferior, [in:] Studia Aegaea et Balcanica in honorem Lodovicae Press, Warsaw 1992, pp. 207-211, here: p. 207.

[24] P. Vladkova, Antičen proizvodstven centăr pri Pavlikeni (Dolna Mizija): plan na kompleksa, periodizacija i vidove keramični izdelija, Veliko Tărnovo 2012, p. 143.

[25] L. Mrozewicz, Rozwój ustroju, pp. 13-14; idem, Miasta rzymskie, pp. 264-266; V.H. Baumann, Ferma Romană, pp. 38-41.

[26] The author of the classification considered the size and the wealth of the owner, see V. Dinčev, Rimskite vili, pp. 15-20. In another classification, three types of villas are distinguished depending on the acreage of the cultivated land see V.H. Baumann, Ferma Romană, p. 15.

in agricultural production which generated the most revenue for their owners[27].

One of the so-called large residential villas in Dinčev's classification is the imperial domain in Madara[28], established in the second century[29] and most likely supplying the troops stationed along the Danube[30]. Its size suggests that it was a site of efficient cultivation of cereal[31] (though wine was produced there as well)[32]. The three villas in Montana qualify as medium-sized in Dinčev's typology[33]. The one designated with number '1' was the largest producer of the three[34]. Still, the problem with villas where both craft and agricultural production were taking place is that it is impossible to determine whether land cultivation and husbandry were their principal source of profit. This is due to the fact that the presence of buildings for livestock and granaries is no proof of highly efficient agricultural production. This may be seen for instance in Pavlikeni, where farming served to feed the workers at the pottery workshops[35]. Therefore the share of villas which combined crafts and farming in providing agricultural produce to the army cannot be determined. It is certain that farms in Dobruja yielded much of the army's provisions, as in the early second century the region saw intensive development of rustic villas oriented largely towards agricultural production[36], but those were the numerous emerging villages (*vici*) on which the provisioning system of the army relied[37].

An important agricultural centre whose crops were able to satisfy the needs of the military was located in today's district of Shumen. Apart from the imperial demesne, as the stamped building ceramics from Madara suggests (Fig. 4), the estates of leaseholders and independent producers were also to be found there[38]. Furthermore, this is the area of the greatest concentration of farm tool finds in northern Bulgaria[39].

[27] V. Dinčev, Rimskite vili, p. 143; V.H. Baumann, Ferma Romană, pp. 27-29.
[28] B. Gerov, Landownership, pp. 74-77.
[29] V. Dinčev, Rimskite vili, p. 77.
[30] T. Sarnowski, Wojsko rzymskie, p. 65.
[31] J. Valeva, Villae, p. 130.
[32] Ibidem, p. 146.
[33] V. Dinčev, Rimskite vili, p. 146.
[34] G. Alexandrov, Antična vila no. 1, kraj Mihajlovgrad, InMSB 8, 1983, pp. 39-79.
[35] P. Vladkova, Antičen proizvodstven centăr, p. 143.
[36] V.H. Baumann, Ferma Romană, pp. 27-29.
[37] A.G. Poulter, Rural Communities, pp. 729-744.
[38] See Chapter V. 6.
[39] I. Cholakov, Ancient Economy, p. 64, Fig. 1.

The existence of imperial domains indicates that – as previously observed – it was a region of considerable importance for the army's logistics.

The associations between particular villas and the military are difficult to ascertain; it remains unknown whether a given villa was involved in trade with the army or perhaps sold its products to the nearest urban centre. Such relations can be traced in Dobruja, where probably 50% of the rustic villas discovered there were owned by veterans[40]. Furthermore, many veterans are attested epigraphically in the Dobrujan countryside (e.g. in *vicus* Quintionis and *vicus* Novus)[41]. This fully reveals their economic potential, as following their *honesta missio* a number of veterans were not only able to live off their gratuities but also undertake business activity with those funds at hand[42]. Only few names of the enterprising veterans are known, having survived in brief mentions. One of such individuals was *beneficiarius consularis* M. Pompeios Lukios (most probably a veteran of *legio I Italica*), who owned a farm (*praedium*) near Dionysopolis[43] and M. Ulpius Longinus, who held a similar estate near Tomis[44] (the figure of Aureulius Statianus will be addressed later). The presence of veterans may also be expected in the areas which drew numerous Roman settlers. As Boris Gerov demonstrated, the first traces of veterans in Lower Moesia include inscriptions quoting their names discovered in Oescus, Augustae[45], Utus[46] and Novae[47]. During the reign of the Flavian dynasty, veterans would settle in the highly fertile valleys of the Iskâr, Vit, Osăm and Yantra[48]. Further signs of their presence are found in the area between the Ogosta and the Timok[49]. As regards the second and third century, veterans are attested along the *limes*, in the Greek cities and in many locations within the province[50]. Most often, veterans were granted lots measuring 400 iugera (100 hectares), which were not included in the rural demesnes of cities[51]. However, a large number of veterans would

[40] P. Dyczek, Amfory rzymskie, p. 266.
[41] L. Mrozewicz, Rozwój ustroju, p. 52.
[42] L. Wierschowski, Heer und Wirtschaft, pp. 89-111.
[43] IGBR I 24 = AE 1972, 55; L. Mrozewicz, Rozwój ustroju, p. 54; K. Królczyk, Veteranen, p. 26.
[44] CIL III 770; A. Aricescu, The Army, p. 210, no. 88; K. Królczyk, Veteranen, p. 126: the author cites many other examples from the Danubian provinces.
[45] B. Gerov, Landownership, p. 44; ILatBulg, 32, 51-56, 58-60, 63.
[46] ILatBulg 128.
[47] ILatBulg 277, 302, 304-307, 309.
[48] B. Gerov, Landownership, p. 45; K. Królczyk, Veteranen, p. 124.
[49] B. Gerov, Landownership, p. 47.
[50] For a detailed listing of such locations see K. Królczyk, Veteranen, pp. 91-106.
[51] Ibidem, p. 125.

settle with their families near the legionary *canabae* where, as underlined in previous chapters, they constituted the most numerous group of inhabitants[52].

b) farming areas in the vicinity of military installations

One must not forget that the Roman army exploited the areas adjacent to the fortresses (*territorium/prata legionis*)[53] and contributed to their economic development. That was where they could have obtained a considerable proportion of necessary goods, by means of requisitions, levy of taxes or purchase of commodities[54]. The land itself was cultivated[55] and served to graze animals.

Thus the army made use of the area near the camps or leased it to civilians[56]. These issues have been studied by Sven Conrad, who identified 32 plots south-east of Novae, ranging in size from 5 to 30 ha in most cases. Only six were between 30 and 50 ha, which suggests minor scale of agricultural production. In that vicinity, Conrad also found remnants of workshops and surmised that it was populated largely by veterans from Novae[57]. Clearly, the area in question could not have yielded adequate provisions for *legio I Italica*, yet it represented an important element of the camp's economy. Moreover, that land perimeter included the *canabae*, civilian settlements where goods were sold and produced and where various services were available[58].

South of the *canabae*, outside direct jurisdiction of the legionary legate from Novae, there were further areas engaged in agricultural activity which Sven Conrad managed to reconstruct as well. He identified 38 estates, including 10 medium-sized ones, i.e. from 200 to 300 ha, 24 relatively small

[52] Ibidem.

[53] C.R. Whittaker, Frontiers of Roman Empire. A Social and Economic Study, London 1994, p. 101.

[54] A. Mócsy, Das Lustrum Primipili und die Annona Militaris, Germania 44, 1966, pp. 312-326; C. Carreras Monfort, The Roman Military Supply, p. 72.

[55] Scene CX on Trajan's Columns shows legionaries at harvest near a fortified encampment, see R. Vulpe, Columna, p. 184.

[56] A. Mócsy, Zu den Prata Legionis; idem, Das Problem der militärischen Territorien im Donauraum, AAntHung 20, 1972, pp. 125-168, here: p. 157. Still, one cannot agree with the author as to the bricks and tiles being traded, cf. B. Lörincz, Pannonische Ziegelstempel und die militärischen Territorien, [in:] V.A. Maxfield, M.J. Dobson (eds.), Roman Frontier Studies 1989. Proceedings of the XVth International Congress of Roman Frontier Studies, Exeter 1991, pp. 244--247.

[57] S. Conrad, Archaeological Survey, p. 322.

[58] See Chapter IV. 2.

ones, ranging from 50 to 200 ha, and 4 measuring less than 50 ha. Sven Conrad holds that a number of veterans may have settled there as part of the *honesta missio*[59]. His findings are quite important for investigations into agricultural economy in Lower Moesia. If estimations made by Conrad are correct, then the farmland area near one of the most important Lower Moesian fortresses should be assessed at 3,400 to 8,000 ha. Naturally, there is no evidence confirming whether the land was cultivated or what and when was grown there. Nonetheless, it may be readily assumed that the legion in Novae had quite an extensive logistical hinterland at its disposal. If Rüger's calculations were to be applied, this would theoretically mean that the farmlands around the camp were capable of feeding the legionaries stationed there, while similar areas of cultivation may be expected to have existed in the vicinity of other strongholds.

c) means of procuring grain by the army

In the period from the first to the third century the army employed various means to obtain grain, including requisitions, levy of taxes in kind or receiving deliveries upon payment in coin.

Each of these methods has its adherents and adversaries among researchers. Jonathan Roth believes that in the early empire the army paid for provisions in cash, while payment of duties in commodity money was exacted less often[60]. Paul Erdkamp claims the opposite, arguing that taxation in kind had existed since the beginning of the Principate and constituted the army's main source of provisions[61].

Jonathan Roth's assertion is borne out by coin hoards discovered in the rural areas[62], as well as by the fact that the army had its *conductores* and *pecuarii*, who were responsible for the purchase of comestibles from independent civilian suppliers[63]. Also, thanks to information in Pliny the Younger, we know that the *fiscus* paid for grain, but did not conduct its requisitions[64]. These arguments failed to convince Erdkamp, who maintains that even if Rome paid for grain, it paid much below the market price. Above all however, Pliny's statement was intended only as a piece of propaganda,

[59] S. Conrad, Archaeological Survey, p. 321.
[60] J. Roth, The Logistics, p. 238.
[61] P. Erdkamp, The Corn Supply, p. 48.
[62] See Chapter III. 3.
[63] D. Cherry, The Frontier Zones, p. 730.
[64] Plin., Pan. XXIX 5; L. Wierschowski, Heer und Wirtschaft, p. 153.

suggesting that the *Optimus Princeps*, as Trajan tended to be called, did not ordain requisitions[65].

The number of sources confirming official purchase of grain from civilians is extremely scant. One of such sources is an Egyptian papyrus from 185 (P. Amherst), referring to a Roman auxiliary unit (*ala*) which bought barley from inhabitants of several villages, while the whole transaction was financed from state funds ("bank")[66]. The tablets from Vindolanda offer a splendid proof that soldiers made purchases of wheat[67]. However, the problem is that one can hardly determine whether transactions mentioned in the tablets took place as part of official procurement of supplies, or whether the grain was privately acquired by higher-ranking soldiers[68]. It is quite certain that Lower Moesian soldiers received their rations of wheat and barley from the official military sources and at the same time could obtain those on their own, possibly in the same manner as the soldiers from Vindolanda[69].

Another mode of procuring grain by the army was the so-called *hospitum*, whereby Roman units stationed in a city were supplied provisions and garments by the latter[70]. The practice must have been rather marginal in Lower Moesia, given that apart from rare instances no troops were stationed in cities (with the exception of small detachments in the Greek cities on the Black Sea coast, particularly in Olbia, Tyras, Tomis and Callatis)[71]. The second possibility was taxing local municipal elites with a different type of provisioning duty which Paul Erdkamp defines as *prosecutio*[72]. It is likely that this method was not employed in Lower Moesia either, because cities began to obtain Roman rights most probably towards the end of the second century or in the early third century[73], when the *annona militaris* had already been in operation. The *prosecutio* can therefore be dismissed.

[65] P. Erdkamp, The Corn Supply, p. 65; D.J. Breeze, Demand and supply, p. 539.

[66] Ibidem, p. 66.

[67] For example Tab. Vindol. II. 343.

[68] C.R. Whittaker, Supplying the Army, p. 230; in my opinion those were private transactions.

[69] Tab. Vindol. II. 180; C.R. Whittaker, Supplying the Army, p. 228; K. Grønlund Evers, The Vindolanda Tablets, p. 32.

[70] C. Carreras Monfort, Roman Military Supply, p. 73.

[71] A. Aricescu, The Army, pp. 33-34.

[72] This particular form of supplying the army is reflected chiefly in epigraphic sources from the eastern provinces: AE 1939, 132; AE 1921, 1; AE 1913, 170; for a discussion of these sources see S. Mitchell, The Balkans, p. 141; J. Roth, The Logistic, p. 239; P. Erdkamp, The Corn Supply, pp. 61-62.

[73] See Chapter IV. 2.

A large proportion of the required produce was obtained from the state domains[74]. As observed previously, such estates existed in the district of Shumen, near Madara[75]. A similar domain is surmised to have existed in Butovo as well[76]. The imperial *saltus* may also have been located near the Greek cities on the Black Sea coast, in Laikos Pyrgos, Hora Dagei[77] and in the vicinity of Oescus[78]. Lands belonging to the *fiscus* were also to be found near Abrittus, as it follows from the brick stamped FISC(us)[79]. Thus the imperial estates could have provided a certain proportion of supplies. The system would have been profitable for the treasury, because the province's *procurator* could rig the prices of grain from such estates and sell them above market price. However, details of such operations are unknown[80].

Yet another method was exacting taxes in commodity money. It was certainly employed in those areas where coin was less widespread, and its inhabitants paid their land tax in grain. As Lothar Wierschowski estimates, it amounted to 10-12% of the crops[81] and accounted for a substantial part of the army's provisions. Also, the army may have occasionally requisitioned what it needed in order to accumulate reserves for winter or in preparation for war[82]. It is very likely that in the first and second century Roman troops were supplied with grain from duties in kind and sporadic requisitions[83]. Such a practice is corroborated by ostracon O. Petr. 245 originating from Mons Claudianus in Egypt, according to which grain was most probably obtained as tax paid in kind, while its delivery to the unit was to be effected by e.g. private carriers[84].

However, following the general model of the supply framework of the Roman army, devised by César C. Monfort, it may be presumed that the matter of supplying grain to Lower Moesia was delegated – just as in other

[74] L. Pons Pujol, The annona militaris in the Tinigitana: Observations on the Organization and Provisioning of Roman Troops, [in:] P.P.A. Funari, R.S. Garraffoni, B. Letalien (eds.), New Perspectives on the Ancient World. Modern Perceptions, Ancient Representations, Oxford 2008, pp. 143-153, here: p. 146.

[75] B. Gerov, Landownership, pp. 74-78.

[76] A. Tomas, Inter Moesos et Thraces, Archeologia, p. 41.

[77] A. Suceveanu, Viaţa economică, p. 45.

[78] As corroborated by the following inscription: "M(arco) Titio M(arci) fil(io) Pap(iria)… praef(ecto) saltus", discovered in the ruins of Oescus, see CIL III 14211 = ILatBulg 16; B. Gerov, Landownership, p. 72; A. Tomas, Inter Moesos et Thraces, Archeologia, p. 41.

[79] T. Sarnowski, Wojsko rzymskie, p. 65.

[80] P. Herz, Finances and Costs, p. 312.

[81] L. Wierschowski, Heer und Wirtschaft, p. 152.

[82] P. Erdkamp, The Corn Supply, p. 68.

[83] Ibidem.

[84] C.E.P. Adams, Supplying, pp. 119-124.

provinces – to *procurator augusti*, who could commission the purchase of a greater quantity to *negotiatores* or *mercatores*, civilian merchants[85]. When provisions were obtained from more remote areas, a *procurator* would supervise the actions of responsible agents, mainly *frummentarii* and ordinary *milies*[86]. The so-called Hunt's papyrus (RMR 63) offers a splendid example of long-range supply operations: the source mentions soldiers of *cohors I Hispanorum*, stationed in Lower Moesia in 100-105[87], who had been dispatched to Gaul to procure garments and probably grain, as well as had to journey beyond the river Erar (unidentified) to fetch horses. They guarded the crops on the other side of the Danube and protected a transport of grain; the soldiers were also tasked with bringing cattle from the Haemus mountains (Stara Planina). The papyrus thus demonstrates that the military were highly active in their efforts to ensure supplies, while shortages were dealt with by sending quartermasters to remote regions (Gaul). Interestingly enough, a certain Valentinus was sent from Vindolanda (Britain) to acquire clothing in Gaul as well[88]. The manner in which grain was procured depended on the situation and current needs.

A major change occurred in the third century with the introduction of the *annona militaris*[89], by virtue of which the burden of supplying the Roman army was imposed on the local communities; henceforth, the Lower Moesian legions would satisfy their needs for basic provisions in that manner. At first, the *annona* was not too onerous, but certain groups incurred losses thereby, for instance hauliers of all kinds who had to meet the costs of military transports as part of the *munera*[90]. However, no details are available regarding the functioning of the *annona militaris* in Lower Moesia in the third century due to absence of written sources. Also, archaeological finds offer little insight in that respect. By reference to studies concerned with Egypt (though it is obvious that their findings cannot be applied directly to Lower Moesia[91]), one may assume that in the early third century the *annona*

[85] C. Carreras Monfort, The Roman Military Supply, pp. 74-75. The responsibility for keeping the army adequately supplied fell to high-ranking Roman officials, as one finds out in The Life of Cnæus Julius Agricola by Tacitus; see Tac., Agr. 19.

[86] C. Carreras Monfort, The Roman Military Supply, p. 76.

[87] RMR 63, p. 217.

[88] Tab. Vindol. II. 255; C.R. Whittaker, Supplying the Army, p. 212.

[89] D. van Berchem, L'annone militaire, dans l'empire Romain au IIIe siècle, Paris 1937, p. 148.

[90] A. Kolb, Army and Transport, p. 165.

[91] Analogies are possible with respect to internal organization of the army, weapons etc., but the issue of logistics necessitates a cautious approach. The economic and social potentials of Egypt and Lower Moesia differed quite substantially.

was not all too burdensome and served chiefly to ensure provisions to military contingents on the move. *Annona militaris* transformed into a standard mode of procuring supplies only in the late third century[92] The operation of the system in Novae is attested in lead seals; one of those bore the imprint […] ONA […], while another one was inscribed with AANM[93], which is interpreted as (ad) [ann]onam and (ad)ann- (ona)m[94]. A similar find, consisting of three seals marked K(astra) leg(ionis) XI tended to be recognized as proof of trade between the garrison and a private supplier[95], but Tadeusz Sarnowski sees it rather as a token of the activities of the military supply services[96]. Perhaps similarities between the seals from Durostorum and late Roman brick stamps reading LEG XI CL FIG KAS[97] suggest that the former also originated from that period and therefore may be associated with the *annona militari.*

The development of villa-type farms in Lower Moesia was initiated thanks to the army, which continued to be a consistent consumer of crops it was unable to produce on its own in the required amounts. Although provisions such as grain were often obtained through taxes or requisition, the tablets from Vindolanda clearly show that wheat and barley were the object of trade transactions between soldiers and civilians, because the official system of supply was only able to satisfy the basic needs. It should also be remembered that the development of the villa economy was fostered by advancing urbanization. The inhabitants of Oescus, Nicopolis ad Istrum, Marcianopolis, Tropaeum Traiani and the Greek cities represented a substantial group of consumers, though their role was second to the army's, given that 80-90% of their dwellers were farmers who, being self-sufficient, were excluded from the system.

Although many areas of the army's logistics became privatized in the second century[98], grain was delivered within the central system. On the other hand, it has to be taken into account that the emergence of farms in Lower Moesia was no accident, and even if the army happened to requisition crops,

[92] F. Mitthof, Annona militaris. Die Heeresversorgung im spätantiken Ägypten. Ein Beitrag zur Verwaltungs- und Heeresgeschichte des Römischen Reiches im 3. bis 6. Jh. n. Chr. Darstellung, Firenze 2001, pp. 79-81.

[93] L. Mrozewicz, Les Plombs de Novae, Archeologia 32, 1981, pp. 79-83, here: p. 81, no. 13, 17.

[94] T. Sarnowski, Wojsko rzymskie, p. 110, note 253.

[95] V. Culică, Cu privire la lagărul legiunii a XI-a Claudia la Dunărea de Jos, Pontica 11, 1978, pp. 113-118, here: pp. 116-117, Fig. 3.

[96] T. Sarnowski, Wojsko rzymskie, p. 67.

[97] AE 1972, 525; T. Sarnowski, Późnorzymskie stemple.

[98] S.E. Phang, Military Service, p. 173.

it cannot have been that oppressive considering that the heyday of *villae rusticae* in Lower Moesia is observed in the second century[99]. Besides, it is unlikely that the central provisioning was able to satisfy all needs of the soldiers. After all, they had certain amounts of money at their disposal, which could be kept in deposit or put to use as soldiers became involved in various kinds of mercantile activity. Also, the army required more than just grain; the soldiers in fact purchased all products they were not provided with the central supplies[100].

2. Animal husbandry

The arrival of the Roman soldiers in Lower Moesia significantly expanded its livestock consumer market, in particular where pigs were concerned. The consumption of pork in legionary camps was higher than in the forts of auxiliary units and, curiously enough, the meat was considered greater luxury than the more often eaten beef[101]. Furthermore, swine, unlike cattle, goats and sheep, may only be reared in one place, in confined pens, and cannot be driven in large herds to any new location. Therefore pigs were more popular in legionary fortresses.

Species analysis of bone remains discovered in Novae demonstrated that the most frequently consumed was beef (Tab. 24), followed by pork then mutton and goat meat[102]. In the second and third century fish was not particularly favoured, but this changed in the late Roman and early Byzantine period[103].

It appears that the Roman army did not look too far to find supplies of meat, but tried to obtain it in the area near the camps, as it was within the *prata legionis* that soldiers bred animals. Hence, tools used in animal husbandry are most often found in the vicinity of military encampments[104]. It

[99] Cf. V.H. Baumann, Ferma Romană; A.G. Poulter, Rural Communities; V. Dinčev, Rimskite vili.

[100] M. Żmudziński, Gospodarka w rzymskiej prowincji Dacji Superior, Wrocław 2007, p. 272.

[101] A. King, Meat Diet in the Roman World: a Regional Inter-Site Comparison, JRA 12, 1999, pp. 168-202, here: pp. 183, 189; pigs are depicted on Trajan's Column, in scenes LIII, CIII; R. Vulpe, Columna, illustrations: pp. 149, 182.

[102] Husbandry-based economy in Novae is discussed more broadly in D. Makowiecki, Animal Economy in the Microregion of Novae in the Light of Its Archaezoloological Data, [in:] G. von Bülow, A. Milčeva (hrsg.), Der Limes na der unteren Donau von Diokletian bis Heraklios. Vorträge der Internationalen Konferenz Svištov, Sofia 1999, pp. 131-139.

[103] D. Makowiecki, M. Iwaszkiewicz, Fish Skeletal Remains from Excavations at Novae (1988, 1990, 1993 Seasons), Archeologia 46, 1995, pp. 52-53.

[104] I. Cholakov, Ancient Economy, p. 79.

is worth noting that a number or fairly large villas were engaged in herding. One of such farmsteads was discovered near Noviodunum[105] and in Capaclia in Dobruja, where researchers found considerable quantities of remains of animals reared in that manner[106]. As regards livestock, the army also made provisional or consistent requisitions, but these targeted draught animals in the first place[107].

Table 24. Meat consumption in Novae compared with Nicopolis ad Istrum

Provenance of remnants	Cattle	pig	Sheep, goat	Horse	Game	Fish
Novae, first cent. (*principia*)[a)]	55.09%	28.24%	9.72%	6.48%	?%	?%
Novae, sector X turn of the third cent.[b)]	46.11%	22.38%	13.99%	12.43%	1.04%	–
Novae, first cent./ third-sixth cent.[c)]	61%	7%		8.9%	2,5%	n/d
principia in Novae, fourth cent.[d)]	23.47%	35.65%	40.65%	0.21%	5.21%	n/d
Nicopolis ad Istrum, from 100 to 175[e)]	25.7%	35.5%	34.7%	–	–	–
Nicopolis ad Istrum, from 175 to 250[e)]	16.1%	50.1%	28.9%	–	–	–

a) A. Gręzak, A. Lasota-Moskalewska, Szczątki zwierzęce z principia w Novae z I w. n.e., Novensia 11, 1998, pp. 203-209.
b) Z. Shramm, Zwierzęce szczątki kostne, Archeologia 37, 1986, pp. 149-156.
c) K. Laszczak, Analysis of DNA Contained in Skeletal Material Discovered in Novae in Sector IV, Novensia 14, 2003, pp. 101-110. This is a very broad temporal bracket, and should not be taken as representative of the second and third centuries; in part, they overlap with the trends in meat consumption observed in the first century.
d) A. Gręzak, A. Łasota-Moskalewska, Szczątki zwierzęce z principia w Novae z IV wieku, Novensia 12, 2000, pp. 99-106.
e) M. Beech, Economy and Environment, p. 623.

A wax tablet discovered in the Netherlands bears the signatures of two centurions who receipted for a purchase of cattle from the owner of an unidentified rural holding. The presence of two centurions in the document indicates that it was an official transaction intended to procure supplies for the army[108], although it is also possible that the purchase was made privately

[105] H.V. Baumann, Ferma Romană, p. 75; such villas are identified on the basis of reliefs depicting the tutelary deity of shepherds, ibidem, p. 73.
[106] Ibidem, pp. 94-95.
[107] R.W. Davies, The Supply of Animals, p. 433.
[108] C.R. Whittaker, Frontiers, p. 113; P. Erdkamp, The Corn Supply, p. 67.

by two high-ranking soldiers, since similar examples of trade are attestted in the wooden tablets from Vindolanda. On the other hand, it has been established that on official holidays soldiers received additional rations of beef, pork and mutton[109]. It should be noted that the army was not the sole consumer of meat in Lower Moesia. The second, if not greater consumer were the cities, such as Nicopolis ad Istrum (Tab. 24), where until 175 the consumption of pork, beef, mutton and goat meat reached substantial levels. That year was a landmark date, as afterwards the rate of pork consumption rose considerably, which most probably reflected the increasing affluence of the inhabitants of Nicopolis ad Istrum[110], coinciding in time with the establishment of the city's mint[111], and its incorporation into the administrative structures of Lower Moesia[112].

3. Imports (olive oil, *salsamenta*)

Piotr Dyczek calculated that one legion could have used no less than 900,000 of olive oil per year, which meant 150 litres per soldier over the period of 12 months. Thus, annual consumption for the entire Lower Moesian army would have amounted to at least 3m litres of the product in Dyczek type 25 amphorae[113].

Oil had to be brought from outside the province, because its climate made the cultivation of olive trees impossible[114]. Oil imports from Spain reached Lower Moesia in Dyczek 8 amphorae, a type which is particularly numerous in Novae[115]. In the first century, Spanish products were brought to Lower Moesia chiefly from Istria. The largest consumers of oil were military camps on the Lower Danube, as evidenced by discoveries of amphorae Dyczek 6 in Dimum and Novae[116]. The situation changed after the Dacian wars, when oil

[109] P. Kehne, War- and Peacetime Logistics, p. 325.

[110] M. Beech, Economy and Environment of a Roman, Later Roman and Early Byzantine Town in North-Central Bulgaria: the Mammalian Fauna from Nicopolis ad Istrum, Anthropozoologica 25-26, 1997, pp. 619-630, here: p. 623.

[111] See Chapter III. 2-3.

[112] Regarding changes of the boundaries of the province see B. Gerov, Die Grenzen.

[113] P. Dyczek, Amfory rzymskie, p. 260.

[114] M. Żmudziński, Cities and Army Camps Supplies on the Middle and Lower Danube in the Principate Period in the Light of Archaeological Sources, Eos XCI 2004, p. 122.

[115] P. Dyczek, Amfory rzymskie, p. 79, fig. 62.

[116] P. Dyczek, Amfory rzymskie, pp. 68-70; D. Paraschiv, Amfore occidental Romane în zona Dunării de Jos, Pontica 35-36, 2002-2003, pp. 177-207, here: pp. 189-190.

began to be massively imported from the regions on the Aegean, the southern coast of the Black Sea[117] and, towards the end of the second century, from Ionia,which is evident in the presence of Dyczek type 25 amphorae. In the third century, Lower Moesia also received minor imports of olive oil from Northern Africa[118], whose largest consumer was Scythia Minor[119].

However, the greatest quantities of oil came from Asia Minor, because the production centres there were able to dispatch sizeable transports to the Lower Danube area without encountering any major difficulties in shipping[120].

Another product brought to Lower Moesia to be consumed by the Roman garrisons were the *salsamenta*, fish preserves imported from Spain[121], whose provenance is corroborated by multiple specimens of Spanish amphorae (Dyczek types 2-3, 11-12, 15) discovered in Novae[122].These finds illustrate the scale of importation of such products, which comprised a wide range of fish-based pickles. Details aside (i.e. which amphora type was used for which product) the chief imports were *garum muria*, *liquamen*, *halec*, as well as fish sauces/drinkable brine – *laccatum* and *lympha*[123].

It is probable that the Roman army in Lower Moesia also received consignments of dates or other palm fruits transported in Dyczek type 7 amphorae. The latter, discovered in Dimum, Novae[124]and Carsium[125], have been dated to the turn of the third century[126].Conserved fruits were shipped in Dyczek 9 amphorae to e.g. the fortress in Novae and cities such as Histria[127]

Based on archaeological finds, it may be assumed that the Zeest 90/ Dyczek 25 amphorae played much the same role in Lower Moesia as Dressel 20 did in Britain[128]. They were widespread in the discussed province and

[117] P. Dyczek, Remarks on the Roman Amphorae at Novae from First to the Third Century A.D, Novensia 9, 1997, pp. 81-94, here: p. 86; A. Rădulescu, Amfore Romane şi Romano-Bizantine din ScythiaMinor, Pontica 9, 1976, pp. 99-114, here: p. 112.

[118] P. Dyczek, Amfory rzymskie, p. 257.

[119] A. Opaiţ, North African and Spanish Amphorae in Scythia Minor, Il Mar Nero 3, 1997--1998, pp. 47-95.

[120] E. Gren, Kleinasien und der Ostbalkan, pp. 63-64; P. Dyczek, O genezie i rozwoju amfor typu Zeest 90 i LR 2, Novensia 13, 2002, pp. 7-23, here: p. 21.

[121] P. Dyczek, Amfory rzymskie, p. 258.

[122] Ibidem.

[123] Ibidem; D. Paraschiv, Amfore, p. 186.

[124] P. Dyczek, Amfory rzymskie, p. 76.

[125] D. Paraschiv, Amfore, pp. 190-191.

[126] P. Dyczek, Amfory rzymskie, p. 76.

[127] Ibidem, p. 82.

[128] P.P.A. Funari, The Consumption of Olive, p. 262.

have been discovered at the sites of military facilities, such as Sucidava, Novae, Sexaginta Prista, Durostorum, Sacidava, or Dinogetia, as well as in the *villae rusticae* in Capaclia, Murighial, Horia and the Greek cities of Histria and Tomis. That type of amphorae was utilized mainly to transport oil, though in several cases they were determined to have contained *salsamenta*, wine, resin and nuts[129].

A number of amphorae bear painted inscriptions (*dipinti*) stating the names of legions. According to Piotr Dyczek, such markings denote that the products they contained were consigned to particular legions, including units stationed in Lower Moesia. As an example, one could quote amphorae from Novae, found on the premises of the legionary hospital, whose walls are inscribed with abbreviations LEG I ITAL, G I IT[130]. Given their close resemblance to stamps on building ceramics, it may be surmised that they should be read in the genitive, as LEG(ionis) I ITAL(icae)[131]. Similar *dipinti*, which refer to *legio V Macedonica*, have been found in Buridava in Dacia[132], while analogous specimens have also been discovered in Pannonia and Britain[133].

The Zeest 90/Dyczek 25 amphorae and the goods they contained originated from Ionian Erythraia. Transported by sea to the Greek cities on the Black Sea coast, they travelled further to the units[134]; those which arrived in the province in the second century may have been brought under the central procurement system[135]. Subsequently, soldiers had specific amounts deducted from their stipendia for the rations of oil they received[136]. The financial aspect of the operation was overseen by a *procurator Augusti*, who in his turn was answerable to the imperial administration (*a rationibus*)[137]. These officials could also commission the *negotiatores* to purchase goods

[129] P. Dyczek, Amfory rzymskie, pp. 136-152.

[130] Idem, O genezie, pp. 17-18.

[131] T. Sarnowski, Die Ziegelstempel, p. 43.

[132] G. Bichir, Centrul militar roman de la Buridava, Thraco-Dacica 6, 1-2, 1985, pp. 93-104, here: p. 102, Fig. 11; M. Egri, Inscriptions on Amphorae and the Military Supply, [in:] D. Bondoc (ed.), In Honorem Gheorghe Popilian, Craiova 2006, pp. 191-195.

[133] T. Bezeczky, Amphora Inscriptions – Legionary Supply?, Britannia 27, 1996, pp. 329-336, here:p. 336.

[134] P. Dyczek, On the Origins of Amphora Zeest 90/Dyczek 25 – Ultimate Solution?, RCRF 40, 2008, pp. 515-521, here: p. 518.

[135] M. Egri, Inscriptions on Amphorae, p. 193. Much the same applies to the Dressel 20 amphorae, see P.P.A, Funari, Dressel 20 Inscriptions from Britain and the Consumption of Spanish Olive Oil: with a Catalogue of Stamps, Oxford 1996, p. 128.

[136] See Chapter III. 1.

[137] C. Carreras Monfort, The Roman Military Supply, p. 80.

transported in amphorae, which were then delivered to garrisons stationed along the Lower Danube[138] In addition, the legion itself was empowered to commission such purchases as well, to which the amphorae discovered at the site of the legionary hospital attest. It is quite certain that many of those featured *dipinti* with the names of particular legions, as on the amphorae found in Pannonia[139], though it needs to be noted that in the case of Novae only fragmentary *dipinti* are available. If a consignment of Dyczek 25 amphorae was directed specifically to the hospital, and the goods had been ordered by the legion, than the operation must have been seen to by the *praefectus castrorum* who, as Vegetius relates, was also in charge of the costs of soldiers' treatment[140]. The stamps of private producers on the walls of the vessels in question may indicate purchases made by the soldiers themselves, but given the large capacity of amphorae it is unlikely that they used to be ordered by individual legionaries. Piotr Dyczek suggested yet another alternative, namely that the product transported in the amphorae with *dipinti* of a particular legion may have come from the military oil mills[141]. It is also conceivable that a proportion of the supplies imported in Dyczek 25 amphorae had been dispatched as a duty exacted in kind. As can be seen, there are multiple possible interpretations, and further studies on amphorae of that type are certain to yield much more knowledge about the functioning of the army's supply system in Lower Moesia.

4. Wine importation and viniculture

Wine took an important place on the soldier's table. Thus, Greek wine was imported to Lower Moesia in Dyczek types 17, 19, 22, 28 amphorae, and Italian product in Dyczek types 1 and 18[142]. The fill of the pits discovered at the erstwhile military hospital in Novae is a telling testimony to the supplies of wine that the army received. The amphorae sherds found there indicate that in the late first century and the early second century wine from Rhodes and Italy was brought to Novae[143]. Later in the second century

[138] P. Dyczek, On the Origins, p. 518.
[139] T. Bezeczky, Amphora Inscriptions, pp. 329-331.
[140] Veg., Epit. II, 10.
[141] P. Dyczek, Amfory rzymskie, p. 149.
[142] Ibidem, pp. 260-261.
[143] T. Kowal, Skupisko amfor odkryte w sondażu 2/2007 na odcinku IV, Novensia 20, 2009, pp. 109-124, here: p. 114.

the imports of wine from the western provinces noticeably decreased. Greek wine predominated among imported alcoholic beverages, especially Rhodesian wine which gained great popularity in Lower Moesia, being consumed in Aegyssus, Callatis, Dimum, Dinogetia, Histria, Kaliarka, Novae, Noviodunum, Odessos, Tomis, Troesmis and Tropaeum Traiani[144], in other words sites where the army was stationed and in large cities.

In all likelihood, local wine featured quite substantially in the supplies of wine for the army in the second and third century. This was due to the fact that long before the Roman conquest vinification had been fairly well developed in Thrace[145]. This resulted from the influence of the Greek colonies on the Black Sea, which had been established in that region as early as the 7th century BCE. However, prior wine production in that region was limited to satisfying local demand[146]. It began to flourish only after Trajan's victory over Dacia, coinciding with the progress in other areas of production in Lower Moesia[147]. The advances in viniculture manifested themselves in a more efficient organization of labour and utilization of tools made from better, higher-quality materials[148].

The significance of vine-growing in Lower Moesia was reflected in a special law promulgated between 138 and 169, concerned with the protection of the local vineyards and its crops[149]. It is worth noting that Bulgarian researchers find the most viticultural tools on the Danubian Plain, while the sites of discovery overlap with the military installations on the *limes*[150].

The traces suggesting consumption of local wine in the Lower Danube area prove more difficult to identify, because the product was in most cases transported in wooden barrels[151]; the material quickly undergoes degradation when exposed to environmental factors, unlike pottery.

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[144] P. Dyczek, Wine in Lower Moesia, Historia Antiqua 15, 2007, pp. 237-250, here: p. 243; A. Opaiţ, Consderaţii preliminare asupra amforelor, p. 310.

[145] I. Cholakov, Ancient Economy, p. 65.

[146] P. Dyczek, Wine, p. 238.

[147] Cf. V. Dinčev, Rimskite vili.

[148] I. Cholakov, Ancient Economy, p. 65.

[149] B. Gerov, Kăm vaprosa za lozarstvoto v Dolna Mizija prez rimsko vreme, [in:] Sbornik Gavril Kacarov, Sofia 1955, pp. 187-193. The author analysed an excerpt from Dig. XLVIII, 19, 16 and concluded that the name Mysia should be interpreted to mean Moesia, which denotes the province on the Lower Danube as opposed to the region in Asia Minor.

[150] I. Cholakov, Ancient Economy, p. 65.

[151] J. Kolendo, Études sur les inscriptions de Novae, Archeologia 16, 1965, pp. 124-148, here: pp. 132-138; P. Dyczek, Wine, p. 240.

Still, iconographic representations suggest that barrels were extremely popular as containers used in transport. This is particularly noticeable in the depictions on the columns of Trajan and Marcus Aurelius[152], as well as in the reliefs on tombstones commemorating private producers from *vicus* Trullensium, Kamenno Pole and Teteven[153]. The stele discovered in Teteven is exceedingly interesting as the engraving features a soldier (veteran?), a female bust and a wagon loaded with barrels. Regrettably, the state of preservation of the inscription precludes its reconstruction[154]. It may be presumed that the persons represented in the relief were engaged in wine production. Undoubtedly, barrels offered considerable advantages: they were lighter than amphorae and could hold a greater volume of liquid, which made them perfectly suited for local transportation over short distances[155]. However, with the meagre amount of available data, the extent to which the presence of the army influenced the consumption of local wine cannot be assessed nor can it be collated with the consumption of imported wine. There is no convincing evidence attesting to trade in local wine in the military camps of Lower Moesia, though it must have taken place. There is only one inscription mentioning a merchant (*negotiator*): Iulius Iero, commemorated in a stele erected between 70 and 120[156]. The barrels depicted on the sarcophagus led researchers to assume that the individual was a wine dealer, who might have stocked and sold alcohol brought from the eastern parts of the empire, specifically from Greece as his eastern Roman name would suggest, but he may have equally well sold locally made wines[157]. The stele which Marcus Atronius Valens erected to commemorate his parents represents a much more distinct indication that wine was produced in the vicinity of military encampments by private manufacturers who did business with the army[158]. The monument is an interesting one, because it has been discovered near Novae, while its face features representations of a bunch of

[152] Scenes: II, III, LXI, CXXIX; R. Vulpe, Columna, illustrations on pp. 116, 153, 193. Barrels can also be seen on the column of Marcus Aurelius, see G. Becatti, Colonna di Marco Aurelio, Milano 1957, pl. 15.

[153] Conrad 519, taf. 86, 2; Conrad 525, taf. 86, 4; Conrad 517, taf. 85, 3; J. Kolendo, Symboles des fonctions militaires et des métiers sur les monuments funéraires de Novae, camp de la legio I Italica (Moesia Inferior), Novensia 22, 2011, pp. 21-37, here: pp. 30-31.

[154] Conrad 517, Taf. 85, 3.

[155] P. Dyczek, Wine, p. 240.

[156] J. Kolendo, Études, pp. 132-138, idem, Symboles, pp. 28-31.

[157] P. Dyczek, Wine, p. 239.

[158] ILatNovae 53; J. Kolendo, Inskrypcje wyzwoleńców i niewolników z Novae, Novensia 6, 1993, pp. 131-145, here: p. 136.

grapes, a hoe and a pruning knife, the typical tools of a viticulturist. It is therefore believed that vine-growing was the chief occupation of the family mentioned in the inscription. The tombstone is dated to the early second century[159].

Villas specializing in wine production developed in Lower Moesia as well (Map 5). One of those existed in the second and third century in the imperial estates in Madara[160].Others were to be found in Vardim[161], Varna, Niculițel and Troesmis[162]. Sepulchral reliefs indicate that winemaking was also taking place in *vicus* Trullensium, Kamenno Pole and Teteven[163]. Local products were conveyed in Dyczek type 30 amphorae, which have been discovered in Butovo, Hotnica, Pavlikeni and Horia, as well as in the legionary fortresses of Novae and Troesmis[164]. Piotr Dyczek estimates that annual consumption of wine in Lower Moesia reached 20m litres, of which 8m litres were imported while the remainder was produced locally[165], but the figures cannot be easily verified. It is equally difficult to assess the volume that made up the military supplies of wine. One can only surmise that the army was the main and permanent consumer of both imported and local product.

5. Pottery manufacture (vessels, lamps)

In the first century, Lower Moesia witnessed massive imports of the *terra sigillata* vessels from the western provinces; certain, albeit much smaller quantities, were also imported from Asia Minor[166].The situation is well reflected in the findings of research in the pit no. 4 in Novae, located in the area of the headquarters and dated to the period when *legio VIII Augusta* was stationed there (first cent.). Investigations revealed fragments of pottery from Italy (Arretium), Gaul (Millau – La Graufesenque) and Asia Minor

[159] Conrad 388; J. Kolendo, Symboles, pp. 31-32.

[160] V. Dinčev, Rimskite vili, p. 132.

[161] Ibidem, p. 26; J. Recław, Wykorzystanie ołowiu w Novae, Novensia 16, 2005, pp. 31-50, here:p. 47: according to the author, the lead sheets discovered at the villa had been elements of a wine press.

[162] P. Dyczek, Wine, p. 241.

[163] S. Conrad, Die Grabstelen, pp. 86-87.

[164] P. Dyczek, Wine, p. 243.

[165] Ibidem, p. 244.

[166] I. Kuleff, R. Djingova, G. Kabakčieva, On the Origin of the Roman Pottery from Moesia Inferior (North Bulgaria, AB 3, 3/1999, pp. 29-38, here: p. 29; A. Dimitrova-Milcheva, Terra Sigillataund dünnwandige keramik aus Moesia Inferior (Nordbulgarien), Sofia 2000, p. 27; V.H. Baumann,Ceramica terra sigillata de la Noviodunum, Peuce 6, 2008, pp. 207-250, here: p. 215.

(Tralles)[167]. Broadly speaking, this is representative for other strongholds, especially that the army deployed along the Danube was the chief consumer of such merchandise[168]. Despite numerous, well-developed centres where ceramic vessels had been manufactured before the Roman conquest, as in e.g. Hotnica[169] or in the Greek cities on the coast of the Black Sea[170](whose wares had a considerable influence on the Thracian ones)[171], it was only the arrival of the Roman army which prompted the rise of local production of pottery, particularly in the vicinity of fortresses. Initially, i.e. in the first century, the imported tableware was supplemented with handcrafted vessels, such as those discovered in Oescus[172]and Novae[173]. These artefacts attest to the first contacts between soldiers and civilian population. Other items turned out by local shops which sought to emulate the quality of Roman imports, gradually improved as well[174]. This may be observed in Oescus, where already in the first century domestic production was good enough to meet the standards of soldiers of *legio V Macedonica*[175]. Regional craft production took off in the first decades of the second century; *terrae sigillatae* began to be manufactured in Melta (Loveč), where a richly ornamented mould was discovered, and in Montana[176]. As many as 14 sites of ceramic production

[167] K. Domżalski, Terra Sigillata z komendantury w Novae. Wypełnisko jamy nr 4, Novensia 11, 1998, pp. 127-140, here: p. 128.

[168] A. Dimitrova-Milcheva, Produktion von Terra Sigillata in Untermoesien, RCRF 25-26, 1987, pp. 515-526, here: p. 515.

[169] R.K. Falkner, The Pottery, [in:] A.G. Poulter (ed.), Nicopolis ad Istrum: A Roman to Early Byzantine City. The Pottery and Glass, London 1999, pp. 55-296, here: p. 108.

[170] S.Y. Vnukov, Pan-Roman Amphora Types Produces in the Black Sea Region, [in:] J. Eiring, J. Lund (eds.), Transport Amphorae and Trade in the Eastern Mediterranean. Acts of the InternationalColloquium at the Danish Institut at Athens September 26-29, 2002, Aarhus 2004, pp. 407-415, here: p. 407; K. Nedyalkov, Local Pottery from Apollonia Pontica 6th-5th Century BC, AB 12, 1/2008, pp. 1-28.

[171] J. Bouzek, Les vases Grecs et ta poterie des Thraces, Il Mar Nero 6, 2004/2006, pp. 37-45, here:p. 37; J. Bouzek, L. Domaradzka, Thracian Grey Pottery in Bulgaria: Pistros and Other Sites, Pontica62, supl. 1, 2009, pp. 202-204. Greek patterns are particularly noticeable in the tombs of Thracian royalty, see G. Kitov, The Valley of the Thracian Kings, Il Mar Nero 3, 1997/1998, pp. 9-46, here: p. 11. The introduction of double-chamber kilns in Thrace owes directly to Greek influence; as A. Harizanov asserts in Peŝti za keramika v dhešnite bŭlgarski zemi prez I-VI vek, Avtoreferat na disertacija za prisŭždane na obrazovatelnata i naučna stepen „Doktor", Sofia 2015, p. 13) most such kilns were discovered near Greek colonies or areas which remained under a powerful influence of Greek culture, such as Sozopol or Sborjanovo.

[172] G. Kabakčieva, Castra Oescensia, p. 119.

[173] K. Domżalski, Ceramika stołowa z principia w Novae. Wypełnisko jamy nr 4, Novensia 11, 1998, pp. 148-149.

[174] A. Dimitrova-Milceva, Produktion von Terra Sigillata, p. 515.

[175] G. Kabakčieva, Oescus, p. 119.

[176] A. Dimitrova-Milcheva, Produktion von Terra Sigillata, p. 519.

have been identified in the area between the Yantra and the Osăm alone, including Butovo, Pavlikeni, Gradište (I), Nikjup, Lesičeri (II), four centres near Hotnica, Ovča Mogila, Bjala Čerkva, Kamen, Suhindol, and Dobri Dol[177].

Alexander Harizanov divided the manufacture of pottery in Lower Moesia into three phases.The first began with the construction of the earliest pottery centre in that area, in Pavlikeni (reign of the Flavian dynasty), and ended in the 170s, by which time other major sites of production had been established as well (Madara, Montana, Butovo, Pavlikeni). That period is inextricably associated with the presence of the Roman army, the primary catalyst of the development. The 170s also mark the onset of the second phase, which would end in the middle of the third century. That stage saw the emergence of numerous small workshops, e.g. in Altimir, Sostra, or Antimovo, which operated alongside the large ones[178].The demand for pottery must have been high, otherwise the small shops would not have come into existence; the fact also reflects strong, ongoing economic development. The third phase, which began after the Gothic incursions and lasted until the end of the third century, is characterized by stagnation, with no new production workshops being established[179].

It would be worthwhile to devote some attention to the large and well-investigated sites of earthenware production, which counted among centres of supraregional importance: the complexes located near Nicopolis ad Istrum, or in the vicinity of the present-day Butovo and Pavlikeni. All of those sites were in fact conglomerates of several workshops,[180] while each specialized in particular types of wares. The craftsmen in Pavlikeni manufactured high-quality items with a red and grey-black coating,[181] which in the main comprised bowls, cups, censers, lids, pots and smaller quantities of oil lamps[182].The products from Butovo included high-quality, richly ornamented tableware[183], as well as oil lamps, especially in the early third century[184].These locations had not been chosen at random, because the

[177] A. Tomas, Inter Moesos et Thraces (Oxford), p. 70.

[178] A. Harizanov, Peŝti za keramika, p. 43.

[179] Ibidem, p. 44.

[180] B. Sultov, Ceramic Production on the Territory of Nicopolis ad Istrum (II-nd-IV-th Century), Terra Antiqua Balcanica 1, GSUFF 76/2, 1983 (1985), p. 11.

[181] Ibidem, p. 25.

[182] P. Vladkova, Antičen proizvodstven centăr, pp. 145, 147.

[183] B. Sultov, Proizvodstvo na relefna keramika v Dolna Mizija, IOIMVT 5, 1972, pp. 21-29.

[184] S. Sultova, Glineni lampi tip "Butovo", IIMVT 6, 1991, pp. 116-128; eadem, La production delampes de terre Cite dans les centres ceramiques pres de Pavlikeni et a Boutovo, RCRF 29-30, 1991, pp. 295-305.

surroundings of Pavlikeni and Butovo were an area where deposits of superior clay could be found. What is more, both centres were situated in the proximity of the road which led from Nicopolis ad Istrum to Melta and to Novae as well,[185] near Emporium Piretensium (provided that its location has been accurately determined)[186]. Large-scale manufacture of pottery was also taking place in Marcianopolis, where workshops turned out amphorae, kitchen- and tableware and, as of the third century, substantial quantities of oil lamps[187]. It cannot be just coincidence that pottery production centres functioned near Novae, Pet Mogili (Shumen)[188], Noviodunum[189] and Durostorum[190]. The production site in the vicinity of the latter was only 3 km away from the camp and functioned already in the second century; its owner might have originated from Pannonia or Upper Moesia[191]. One must not overlook the sites in Dobruja, with its two major centres of production, Hogea and Mamia near Telița[192]; moreover, oil lamps were manufactured in Halmyris[193].

The majority of the above workshops were privately owned, while their output was intended chiefly for the civilian market[194] which boomed in the second and in the first half of the third century. For instance, the workers at the quarry in Hotnica bought wares produced there[195]. Meanwhile the workshops in Pavlikeni were the exclusive suppliers of pottery products for the newly founded Nicopolis ad Istrum, but in the second half of the second century they were forced out of that market by Butovo[196]. As regards the

[185] B. Sultov, Ceramic Production, pp. 25, 29.

[186] Cf. T. Zawadzki, Emporium Piretensium; I. Tsarov, The Location.

[187] A. Minčev, P. Georgiev, Marcianopolis – ein neues Zentrum der Keramikproduktion im 2-6 Jahrhundert, RCRF 29-30, 1991, pp. 223-244.

[188] P. Dyczek, Ceramic Production on the Lower Danube from the 2nd to the 4th Century AD, [in:] D. Bondoc (ed.), In Honorem Gheorghe Popilian, Craiova 2006, pp. 176-190, here: p. 177.

[189] V.H. Baumann, Ceramica, p. 216.

[190] C. Muşeţeanu, Imitations locales des sigillés décorés de Durostorum, Cercetări Arheologice 10, 1997, pp. 343-356.

[191] C. Muşeţeanu, D. Elefterescu, Contribuţii privind ceramic romană de la Durostorum (IV), Peuce 2, 15, 2004, pp. 95-127.

[192] P. Dyczek, Ceramic Production, p. 177.

[193] F. Topoleanu, Halmyris – un nouveau centre de production de lampes dans le nord de la Dobroudja (IIe-VIIe p. ap. J.-C.), RCRF 33, 1996, pp. 91-93.

[194] P. Dyczek, Ceramic Production, p. 177; idem, Lamps of the 3rd – 6th Century AD from the Civil Architecture in Sector IV at Novae, [in:] C.A. Roman, N. Gudea (eds.), Lychnological Acts 2. Acts of 2nd International Congress on Ancient and Middle Age Lighting Devices (Zalău – Cluj-Napoca, 13th-18th of May 2006). Trade and Local Production of Lamps from the Prehistory Until the Middle Age, Cluj-Napoca 2008, pp. 73-78.

[195] B. Sultov, Ceramic Production, p. 21.

[196] R.K. Falkner, The Pottery, pp. 108-109.

latter, it is suggested that its surrounding land, and perhaps even the site itself, were an imperial domain[197]. If the hypothesis is corroborated by the sources, the current view of the functioning of the economic hinterland of the Lower Moesian army will have to be substantially revised. For the present, however, this is only a conjecture.

As already observed, the above centres of ceramic production belonged to civilians and were geared to supply the civilian markets, yet it does not mean that their products did not reach Moesian garrisons.

The fortress in Novae yielded particular abundance of ceramics from Butovo, Pavlikeni and Hotnica. The finds include jugs, bowls, plates, other kitchenware and lamps from those workshops[198]. Perhaps soldiers purchased such products on their own, e.g. from merchant stalls such as those discovered in the Inchtuthil fortress (Britain)[199]. Official trade between the army and producers of household ceramics is reflected in the sherds of vessels manufactured in the Nicopolis ad Istrum area, which have been found at the *valetudinarium* in Novae; that sort of purchase was most likely effected through an official transaction using a civilian intermediary or directly at the site of manufacture[200]. Pottery workshops located near Durostorum are another example of the kind, having provided vessel ceramics and oil lamps both to legionaries of *legio XI Claudia* and the inhabitants of the *canabae*[201].

Lamps (Tab. 25) were also produced by what could be seen as local branches, of manufactories from northern Italy and other provinces, run by their representatives[202]. A number of researchers argue that a site where such imitations of Italian products were made existed in Oescus[203]. Original wares from northern Italy are discovered in the Lower Danube region as well; most

[197] A. Tomas, Inter Moesos et Thraces, Archeologia, p. 41; the author supports her theories by drawing on the fact that similar imperial workshops existed in Rhaetia.

[198] P. Dyczek, Z wstępnych badań nad ceramiką z wypełniska latryny szpitalnej w Novae, Novensia 4, 1992, pp. 67-79; E.J. Klenina, Stołowa i kuchenna ceramika III-VI wieku z Novae (północna Bułgaria), Poznań – Sevastopol 2006, p. 157.

[199] P. Dyczek, Remarks on Supply of the Roman Army from the Point of View of the Valetudinarium at Novae, [in:] P. Freeman, J. Benett, Z.T. Fiema, B. Haffman (eds.), Limes XVIII. Procedings of the XVIIIth International Congress of Roman Frontier Studies Held in Amman, Jordan (September2000), Oxford 2002, pp. 685-694, here: p. 685.

[200] Ibidem, p. 687.

[201] C. Mușețeanu, Un prototype de lampe de Durostorum, [in:] C. Mușețeanu, M. Bărbulescu, D. Benea (ed.), Corona Laurea. Studii în Onoarea Luciei Țeposu Marinescu, București 2005, pp. 343-347.

[202] M. Żmudziński, Badania, p. 123.

[203] Ibidem, p. 124.

of the lamps bear the stamps of the Fortis, Octavi, Strobili, Vetti, though imitations tend to be found in considerable quantities, too. The remainder, i.e. the Armeni, Atimeni, Cassi, Flavi, Ianuari, Sexti, Restutus, Retuto are all local producers[204].

Table 25. Producers of oil lamps

Producer	Location of discovery
Armeni	Novae, Appiaria, Durostorum, Troesmis
Atimeti	Oescus, Novae, Durostorum
Campili	Durostorum
Cassius	Novae, Sexaginta Prista, Durostorum, Troesmis
C. Dessi	Durostorum
Cresces	Novae
Decimi	Durostorum
Favor	Oescus, Durostorum
Festi	Novae, Durostorum
Flavi	Oescus, Novae, Durostorum
Fortis	Almus, Oescus, Novae, Durostorum
Fronto	Appiaria
Ianuari	Oescus, Novae, Sexaginta Prista, Durostorum
Lucius	Oescus, Durostorum
Lupati	Durostorum
Octavi	Novae, Sexaginta Prista, Durostorum
Procli	Novae
Prude	Durostorum
Respecti	Novae
Restutus	Durostorum
Retuto	Durostorum
Sexti	Novae, Durostorum
Strobili	Almus, Oescus, Novae, Durostorum, Troesmis
Vetti	Novae, Durostorum
Vibius	Novae

Source: R. Ivanov, Vsekidnevnijat život, pp. 132-133; supplemented with data for Troesmis – see note 207.

[204] R. Ivanov, Vsekidnevnijat život, [in:] R. Ivanov, G. Atanasov, P. Donevski (ed.), Istorija na Silistra 1, Sofia 2006, pp. 113-152, here: p. 151 (summary).

That being said, one has to be aware that until the late second century, local manufacture did not completely supplant the imported wares in the Lower Moesian market. Second-century items which happen to be found quite often in Lower Moesia include wares from Reinzabern (Gaul) and Westerndorf (Germania)[205], numerous fragments of which were discovered in Noviodunum[206]; lamps from Novae and Durostorum also attest to imports from those sites. The two latter camps also acquired original products brought from northern Italy, whose provenance is confirmed by the stamps of the Fortis, Octavi, Strobili, Vetti, Decimi, Favor and Lucius[207]. Such items are encountered much less often in Dobruja, whose geographical location favoured trade with the eastern provinces of the empire. Lamps discovered in Noviodunum constitute a particular example, comprising chiefly local types (22 out of 27 identified). Nevertheless, northern Italian lamps did reach those regions, albeit in much lower quantities; the same applied to the Fortis lamps and wares from Reinzabern and Westerndorf[208].

The discovery of a mould used in production of *terrae sigillatae* at the camp in Novae demonstrates that legionaries also produced their own wares[209]. Military manufacture was practiced on a large scale in Dobruja, where the army's workshops, operated by the legionaries of *legio V Macedonica* and *XI Claudia* were identified in Axiopolis, Sacidava and Troesmis. The workshops in question produced the so-called LDKW ceramics, chiefly kitchenware, which then spread to all military facilities of the Lower Moesian *limes*. Interestingly enough, it was also used by the civilian population, although to a much lesser extent[210].

The conclusion is as follows: the soldiers in Lower Moesia were by and large self-sufficient in terms of moderate-quality ceramic wares, such as

[205] A. Dimitrova-Milcheva, Terra Sigillata, p. 27.

[206] V.H. Baumann, Ceramica, p. 215.

[207] C. Muşeţeanu, V. Culică, D. Elefterescu, Lampes à estampille de Durostorum, Dacia 24, 1980, pp. 283-305; R. Ivanov, Vsekidnevnijat život, p. 130; M. Čičkova, Pottery Lamps from Novae (Lower Moesia) (1st-3rd Century), Recherches sur la Culture en Mesie et en Thrace Bulgaria Ie-Ive Siècle, IAI37, 1987, pp. 153-172, here: p. 165; A. Opaiţ, Consideraţii preliminare asupra ceramicii romane timpurii de la Troesmis, Peuce 7, 1977-1978, pp. 328-366, here: p. 342. The FLAVI have been recently suggested to have been producers from Upper Moesia, see S. Regep-Vlascici, Aspects of the Stamped-Lamp Trade From Upper Moesia, [in:] C. Muşeţeanu, M. Bărbulescu, D. Benea (ed.), Corona Laurea. Studii în Onoarea Luciei Ţeposu Marinescu, Bucureşti 2005, pp. 459-461.

[208] V.H. Baumann, Lucernele de la Noviodunum, Peuce 7, 2009, pp. 217-310.

[209] A. Dimitrova, Forma do produkcji terra sigillata znaleziona w Novae (Moesia Inferior), Balcanica Posnaniensia 3, Poznań 1984, pp. 243-249, here: p.243.

[210] P. Dyczek, Ceramika typu Lower Danube Kaolin Wares (LDKW). Dystrybucja, datowanie, funkcja, typologia, geneza, miejsca produkcji, Novensia 20, 2009, pp. 154-171.

vessels of everyday use which could be produced near the camps. The army's units stationed in Dobruja ran their own workshops. Better products, such as *terra sigillata*, was obtained from other provinces, but the local market which developed in the early second century was capable of supplying satisfactory imitations of high-quality imports. Domestic production also accounted for a substantial proportion of wares used by the local garrisons, mainly due to the fact that costs of transport were reduced if the merchandise was procured locally. A great bulk of the local output, especially from the supraregional centres in Pavlikeni and Butovo, was intended for the Lower Moesian cities.

Here, the crucial contribution of the army was that it gave a stimulus to the local producers to imitate the goods it received via importation, and thus to cater to the taste and expectations of legionaries. Manufacturers in the region were compelled to modify their product range and offer higher-quality wares. This is particularly evident in the oil lamps originating from local workshops which clearly attempt to copy the north Italian patterns and models.

6. Building ceramics

In the pre-Roman period, the inhabitants of the territories on the Lower Danube did not produce building ceramics. Besides wood, the only material used in construction was stone, but it served only to build defensive structures[211]. It was the Romans, especially the Roman army, who should be credited with the propagation of state-of-the-art building technologies throughout the Lower Danube region. Their arrival resulted in numerous innovations being introduced in civil engineering (arches, the hypocaust, waterworks etc.); the manufacture of ceramic vessels saw many improvements as well, because Romans brought the technology of constructing kilns using bricks, ceramic plates and pipes: materials which had not been utilized previously[212]. Structural ceramics was a major novelty, as kilns built with such components were larger, more stable and durable, offering higher heat resistance as well[213]. The rectangular layout of the kilns constructed henceforth in Lower Moesia clearly reflected Roman influence[214].

[211] K. Vačeva, Za terminologijata na stroitelnite tehniki prez antičnostta, Arheologija 21, 1, 1979, pp. 1-10, here: pp. 1-2.
[212] A. Harizanov, Peŝti, p. 16.
[213] Ibidem.
[214] Ibidem, p. 26.

Stamped building ceramics represents the type of artefacts which are most often discovered within legionary strongholds. During a single excavation campaign in Novae, the number of marked bricks and tiles alone can reach 150 specimens, while the material originates from just one sector of one of the four archaeological teams. The only finds which are more numerous are the small sherds of broken vessels. Such a state of affairs has yielded a considerable amount of valuable studies, focusing on particular sections of the site[215]. Further sections have yet to be explored before a synthetic account can be compiled, but already at this point the volume of available material is immense, having been recovered during rescue excavations or examinations of the late Roman and early Byzantine development, in which military bricks and tiles were re-used.

The following subchapter aims to demonstrate how the trade in military and civilian building ceramics functioned in the military context; in other words, it addresses the extent to which the army developed its production and how it impacted the civilian sector. The issues discussed here include the role of the Roman army in the manufacture, distribution and utilization of structural pottery in the province. The emphasis on Novae is quite justified given that the site yielded the most material which enables one to draw conclusions and devise a universal model, which may then be applied to other fortresses.

a) production and distribution of bricks and tiles

Any attempts to find detailed information relating to the production of fired building ceramics in antique narrative sources would be futile. Even Vitruvius, the first-century author of *De Architectura*, refers only to the production of adobe[216]. The fact that the famed "teacher of architecture" does not mention fired bricks is no surprise, as the technology was far from widespread at the time; it would change only in the first century CE. Tiles on the other hand, had been manufactured by firing in kilns already in the Republican period[217]. In Novae, fired bricks began to be made during the reign of the Flavians[218]. The first unit to be stationed there, *legio VIII*

[215] R. Ivanov, Bricks and Tiles from the Lower Danube (Oescus – Novae – Durostorum), Sofia 2002.

[216] Vitruv. De archit. II. 3.

[217] T. Helen, Organization of Roman brick production in the first and second centuries A. D. An interpretation of Roman Brick Stamps, Helsinki 1975, pp. 16-18.

[218] T. Sarnowski, Die Ziegelstempel, p. 19.

Augusta[219] used only adobe and thus far no tile produced by that legion has been found[220]. It was its successor, *legio I Italica*, which efficiently organized manufacture of building ceramics in Novae, and used it to construct the sizeable baths[221]. The demand for building ceramics surged in the early second century, as the camp was undergoing conversion which called for massive amounts of material. As Piotr Dyczek calculated, the roof of the hospital alone required no less than 13,900 *tegulae* and 1,300 *imbrices*, 260 tons of material in total[222]. Dyczek also notes that a safe surplus had to be produced, because a certain proportion of the material would be damaged or broken, defectively fired etc. Consequently, some 17,000 tiles had to be moulded, meaning a minimum of 1,400 cubic metres of clay[223]. Further 300,000 to 350,000 tiles were used to cover other roofs in Novae[224], though it has to be noted that there was quite a lot of material left over after demolition of the baths, which was subsequently used to build the legionary hospital[225]; discoveries of "Flavian" tiles in the later structures demonstrate that this was indeed the case. Still, the demand remained at a high level. As regards the military hospital, one has to remember that Dyczek's estimations (illustrating how immense the needs were) pertain only to roof tiles (*tegulae*, *imbrices*), while the army's construction technologies took advantage of many other types of structural ceramics, such as bricks, piping, components of the hypocaust system (*tegulae mammatae*, *tubuli*) etc.[226] When the figures calculated for Novae are multiplied once other legionary strongholds are taken into account, one becomes aware of the utterly massive scale of production of such materials. Besides the camps, structural ceramics was needed at the *castella*, *praesidia*, *burgi* – in fact, all military facilities, water

[219] Idem, Fortress of the Legio I Italica at Novae, [in:] Akten des XI. Internationalen Limeskongresses, Budapest 1977, pp. 409-426.

[220] The information obtained courtesy of Professor Tadeusz Sarnowski suggests that the recently published communication concerning the discovery of a brick bearing a stamp of *legio VIII Augusta* in Orjahovo is an error on the part of the author, because the relic in question does not exist, see K. Karadimitrova, Pečati vărnustroitelna keramika ot provincija Mizija v kolekcijata na Nacionalnija Arheologičeski muzej, Godišnikna departamenta po sredizemnomorski izsledvania 2, 2004, pp. 103-128, here: p. 115, no. 26 (Nov Balgarski Universitet) = AE 2005, 1322.

[221] R. Ciołek, P. Dyczek, Coins, p. 11

[222] P. Dyczek, Observations on Marks on Rooftiles Bricks and Ceramic Tiles from Sector IV in Novae (Moesia Inferior), Novensia 22, 2011, pp. 85-108, p. 89.

[223] Ibidem.

[224] Ibidem.

[225] R. Ciołek, P. Dyczek, Coins, p. 15.

[226] P. Dyczek, Observations on Marks, p. 89.

supply and sanitation systems. Therefore the army's construction undertakings required tremendous quantities of ceramic products.

The bricks and tiles which have survived until the present include those manufactured by *legio I Italica*, *legio XI Claudia*, *legio V Macedonica*, *legio I Minervia*[227], *cohors III*, *cohors Sugambrorum*, *cohors II Chalcidenorum*, *cohors Claudia veterana Sugambrorum*, *cohors I Cilicum*, *ala Flavia Gallorum*, *cohors Lusitanorum*, *ala Pannoniorum*, *cohors IV*, *cohors II Mattiacorum*, *cohors II Flavia Brittonum*[228] and *classis Flavia Moesica*[229]. The bricks and tiles made by *legio I Italica* were the most widespread in Lower Moesia; outside Novae, they were discovered in Dimum, Oescus, Variana, Augustae, Troesmis, Barboşia, Dinogetia, Noviodunum, Orlovka, Callatis, Trimammium, Durostorum, Sexaginta Prista, Sucidava, Sacidava, Carsium, Flaviana and Aliobrix[230]. Stamped ceramic material produced by *legio XI Claudia* is also widely found in the province, including Sexaginta Prista, Nigrinianis, Tegulicum, Cimbrianis, Sucidava Sacidava, Flaviana, Capidava and Troesmis[231]. *Legio V Macedonica* is no exception here: building ceramics manufactured by that legion was discovered – as may be expected – in Oescus and Troesmis, as well as in Sacidava, Flaviana, Arrubium, Dinogetia, Noviodunum and Aliobrix[232]. Bricks made by *classis Flavia Moesica* were recovered in Aliobrix[233], Troesmis, Dinogetia, Barboşia and Noviodunum[234]. The share of legions from outside Lower Moesia in the distribution of building ceramics is a minor one: *legio I Minervia* was involved in production to meet the local requirement in Novae[235], while only one single brick of *legio VII Claudia* was discovered in Durostorum[236].

[227] T. Sarnowski, Zur Truppengeschichte Dakerkriege Traians. Die Bonner Legio I Minervia und das Legionslager Novae, Germania 65, 1987, pp. 107-122.

[228] N. Gudea, Der untermoesische, p. 381.

[229] ISM V 217, 263, 283, 308.

[230] N. Gudea, Der untermoesische, p. 381.

[231] Ibidem.

[232] Ibidem, pp. 411-464.

[233] N. Gostar, Aliobrix.

[234] ISM V 217, 263, 308, 283.

[235] T. Sarnowski, Zur Truppengeschichte, pp. 107-122; K. Strobel, Ammerkungen zur Truppengeschichte des Donauraumes in der hohen Kaiserzeit I: Die neuen Ziegelstempel der Legio I Minerviaaus dem Lager der Legio I Italica in Novae in Moesia Inferior, Klio 70, 2, pp. 501-511. The author argues that the tiles of *legio I Minervia* in Novae prove that the entire legion was stationed there until 105. I do not share that view, believing that T. Sarnowski – whose position is supported by investigations in the area of the hospital – is correct in that respect. see R. Ciołek, P. Dyczek, Coins, p. 16.

[236] CIL III 14597, 2; T. Sarnowski, Legionsziegel, p. 497.

All the above units produced bricks and tiles in the vicinity of the construction sites for which they were intended. This was dictated by economic considerations since transport generated additional costs. An important factor here was the proximity of large deposits of clay and availability of wood used as fuel for the kilns. Imprints on building ceramics dated to the third-fourth century confirm that brickyards were located in the neighbourhood of fortresses and forts, as attested by bricks and tiles from Oescus which had been stamped with: *Pr*(*aefectus*) (?) *L*(*egionis*) *V* (*Macedoniae*) *Oes*(*co*)[237]. A brickyard of *Legio V Macedonica* may have functioned near the fort of Utus where stamped material reads: *pr*(*aefectus*) (?) *l*(*egionis*) *V M*(*acedonicae*) *Uto*[238]. In Novae, research revealed a brick kiln dated to the fourth century, which had been constructed east of the fortress, above the high embankment on the Danube[239]. The brickyards attached to the legionary stronghold in Durostorum were most likely situated in the present-day Ostrov, where bricks stamped with LEGXIFIGKASTR were discovered[240].

Locations offering rich deposits of clay and easy access to wood were ideally suited for sites where the army could manufacture building ceramics; these could be operated by several units, either simultaneously or in different periods[241]. The suggestive name led Tadeusz Sarnowski to locate one such centre in the antique Tegulicum, 20 km distant from Durostorum[242]. Joint labour in brickyards is attested by bricks and styles bearing stamps of two different units[243]. Evidence of such a practice was discovered in Buridava (Dacia), where the finds feature the imprints of *I Italica* and *V Macedonica*[244]. Remnants of military kilns were identified in the following locations: Vrav (near Vidin), some 3 km away from the fort in Dorticum, Novae (Svishtov), *vicus* Gavidina (Ostrov), 2.5 km away from the legionary camp in Durostorum, in Lešnica near the antique Sostra[245], as well as in Gigen, Arčar and Harlec[246].

[237] Z. Morfova, Briques et tuilles à estampilles d'Ulpia Oescus, Latomus 18, 3, 1959, pp. 640--648, here: p. 643.
[238] Ibidem, p. 645.
[239] V. Valov, Pešt, pp. 46-51.
[240] T. Sarnowski, Legionsziegel, p. 498.
[241] Ibidem.
[242] Ibidem.
[243] Ibidem.
[244] G. Bichir, Centrul militar roman, pp. 99-100, Figs. 6-9.
[245] A. Harizanov, Peŝti za keramika, p. 34.
[246] Ibidem, p. 35.

Production complexes and single brickyard facilities near the encampments lay in the area adjacent to the camps, which remained under direct control of the legionary legate[247]. It was the property of the *fiscus*[248] and, as Ioan Piso argues, extended within a 2.2 km radius from the camp's centre[249], therefore the legion was able to exploit the land within that perimeter (e.g. pastures) and set up workshops there. If the need arose, brickyards were established beyond that territory, in places where both clay and wood were available in large amounts.

The production of bricks and tiles in Lower Moesia could run only over the season lasting from March/April to October; climatic conditions during the rest of the year made it impracticable[250]. Throughout the existence of Lower Moesia, the army never produced adobe, all bricks it manufactured were fired[251]. Such a method ensured greater durability and offered a broader range of applications[252]. They were used to construct hypocaust systems in baths and private, heated interiors, build outer walls and walls of buildings, arches, piers, sepulchral chambers, causeways, as well as line floors and pavements[253]. However, in the military facilities dated to the period of the Principate, bricks seldom served as the only material, since most walls were erected using stone. Broken pieces of building ceramics were not wasted, either, as they were added to mortar to harden it and used to fill gaps between blocks of stone[254]. Bricks produced in Lower Moesia came in different shapes and sizes. Those from Novae were analyzed by Tadeusz Sarnowski[255] and Andrzej B. Biernacki[256]. All known formats produced by Romans were used, including *bessalis*, *pedalis*, *lydion*, *sesqupedalis*, *bipedalis*, and *cuneatus* types[257], though it may be seen as oversimplification; in fact the formats were more numerous and the range of possible uses was even

[247] I. Piso, Die Inschriften.

[248] H. von Petrikovits, Militärisches Nutzland in den Grenzprovinzen des römischen Reiches, [in:] Actès du VIIe Congrés d'épigraphique grecque et latine, Constantza, 9-15 septembre 1977, Bucharest 1979, pp. 229-242, here: 242.

[249] I. Piso, Die Inschriften, pp. 131-169.

[250] P. Dyczek, Observations on Marks, p. 88.

[251] Cf. T. Sarnowski, Die Ziegelstempel, p. 19.

[252] On the uses of bricks and tiles see G. Brodribb, Roman Brick and Tile, Gloucester 1987; P. Warry, Tegulae. Manufacture, typology and use in Roman Britain, Oxford 2006.

[253] T. Sarnowski, Die Ziegelstempel, p. 19.

[254] Ibidem.

[255] Ibidem, pp. 18-26.

[256] A.B. Biernacki, The Ceramic Building Material of the 1st Italian Legion in Novae (Moesia Inferior). The Relationship Between form and Function, AB 7, 3, 2003, pp. 9-21.

[257] Brick types and formats are discussed in G. Brodribb, Roman Brick, pp. 34-43.

broader. For instance, rectangular bricks were used in combinations such as 1 × 0.5 *pedalis*, 2 × 1.5 *pedalis* etc. The roofs of Roman buildings were covered by the *tegula*-type tiles, rectangular in shape with raised edges, and semi-cylindrical *imbrices*. Those were the sole types of roof tiles produced in Novae since the early 70s to the mid-third century[258]. The dimensions of bricks were affected by the firing process, and depending on the moisture content they could shrink by up to10%[259]. Uniform conditions of firing could not be maintained, because bricks were distributed in different places inside the kiln, some closer to the source of heat, some farther away from it[260], which is why two identical bricks are difficult to find.

It is assumed that labour and workflow in the brickyard was well organized. Each group had their own stamp to mark the product. The Flavian baths in Novae are a good example as the material from which they were built was produced by at least seven teams, each with a distinct stamp. The groups did not have to be large, as it would follow from the inscription carved in a brick (*sesquipedalis*) from the *frigidarium* of a bathhouse in Drobeta (Dacia), according to which *in figlinis magister Aurelius Mercurius* commanded 60 soldiers working in the brickyard[261]. Assuming that the standard daily output per person was around 220 tiles[262], one team were able to turn out a substantial amount. Interestingly enough, *lex Irnitana* contains a prescript prohibiting private persons from owning brickyards producing more than 300 tiles, probably referring to a daily limit[263].

The advanced techniques and methods of producing building ceramics were evinced in the diversity of stamps, which varied in their shape, size, contents or style of the border. Those were sufficient grounds to develop a typology. Two such typologies have been devised for the legion in Novae in the Principate era: one by Tadeusz Sarnowski, comprising 14 types and subdivided into variants[264], and one by Marta Matuszewska, who also

[258] T. Sarnowski, Die Ziegelstempel, pp. 22-23.

[259] G. Brodribb, Roman Brick, p. 4.

[260] S. Medeksza, Ceramika budowlana, [in:] S. Parnicki-Pudełko (ed.), Novae-Sektor Zachodni 1974, Poznań 1979, pp. 29-52, here: pp. 49-50.

[261] IDR II. 1, 107: "Aurelius Mercurius milis c(ohor)tis I Sagitt(ariorum) in figlinis magister super milites LX". Authors of IDR II admit that LX might also be read as IX, which would leave 9 persons instead of sixty.

[262] CIL III 11381, 11383; M. Duch, Flawijskie stemple, p. 278.

[263] CIL II 5439: "figlinas teg(u)larias maiores tegularum CCC tegu/lariumq(ue) in oppido colon(ia) Iul(ia) ne quis habeto qui / habuerit it{a} aedificium isque locus publicus /".

[264] T. Sarnowski, Die Ziegelstempel pp. 17-61, esp. p. 41.

distinguished 14 types with variants and subvariants[265]. Ten types have been determined for *legio XI Claudia*[266], and 8 for *legio V Macedonica* (until 167)[267].

The studies into the distribution of building ceramics manufactured by the army face numerous interpretive difficulties[268]. For instance, bricks of *legio I Italica* were discovered in Garvan, which might suggest a location where its detachment was stationed or point to the fact that the bricks were transported downriver[269]. A similar problem is encountered in the camp in Flaviana, where finds include bricks of three legions: *V Macedonica*, *I Italica* and *XI Claudia*[270]. It would be difficult to state conclusively whether detachments of those legions were stationed there, or whether the units supplied the bricks or if its legionaries were ordered there to undertake production for the purposes of construction works at the fortlet[271], as it happened in Novae, where tiles for the roof of the hospital were manufactured by specially assigned troops from *legio XI Claudia* and *legio I Minervia*[272]. Similarly, during the reign of the Severan dynasty a detachment of *legio I Italica* produced the building ceramics needed at the fortlet of Trimammium, most likely at its location[273]. Sexaginta Prista represents a different case; the bricks and tiles of *legio I Italica* and *legio XI Claudia* are often found there in civilian context, having been re-used, possibly brought from outside[274], e.g. from Novae, not necessarily in the period of the Principate at that. The late Roman fortlet of Iatrus is an instance of such a practice. Building material from dismantled legionary structures in Novae was recycled there, i.e. used yet again[275]. It is quite conceivable that much the same happened with other units. The reforms

[265] M. Matuszewska, Bemerkungen zur Typologie der Ziegelstempel aus Novae (Moesia Inferior), AB, X, Sofia 2006, pp. 45-63.

[266] V. Culiça, Éstampilles de la XI Legion Claudia de Durostorum, Dacia 22, 1978, pp. 225-236.

[267] T. Sarnowski, Legionsziegel, p. 497.

[268] The issue is comprehensively discussed in R. Kurzmann, Roman Military Brick Stamps. A Comparison of Methodology, Oxford 2006, pp. 4-6.

[269] M. Zahariade, N. Gudea, The Fortifications, p. 76.

[270] N. Gudea, Der untermoesische, p. 446.

[271] The situation is clearer when the fact that a unit was stationed in a particular location is corroborated elsewhere (e.g. in inscriptions).

[272] T. Sarnowski, Zur Truppengeschichte.

[273] S. Torbatov, Stroitelna keramika s pečati na I Italijski legion ot kastela Trimamium, Arheologija 2, 3-4, 2010, pp. 41-57.

[274] Idem, Stroitelnata keramika s pečati ot Sexaginta Prista, Izvestija. Rousse Regional Museum of History, 15, 2012, pp. 162-197.

[275] The fortlet of Iatrus was built by *legio I Italica*, who re-used material from Novae, see K. Watchel, Epigraphische Beziehungen.

of the fourth century brought about significant reductions of unit sizes[276], the units themselves were dispersed throughout the province[277], but since new fortifications were built as well[278], every type of building material was much in demand[279]. Moreover, the supply of building ceramics in the fourth century was probably centrally administered, as it may be inferred on the basis of late Roman bricks from Novae[280] and bricks stamped with the name RUMORID(us)[281]. Furthermore, ferrying building material down the Danube presented no difficulty. Doubts can only be resolved by archaeological research in those late Roman forts, where the existence of earlier fortified installations are suspected. The possibility that bricks produced by particular forts were transported by river directly to their destination cannot be ruled out[282]. This may have taken place when clay deposits in the vicinity of the construction site were insufficient, the quality of the raw material was poor, wood was in short supply or local brickyards failed to deliver adequate quantities on time[283].

Lower Moesian legions also produced building ceramics in southern Crimea, which owed to the presence of Lower Moesian troops in that region[284]. Here, the military clearly outclassed civilian manufacturers[285], to

[276] E.C. Nischer, The Army Reforms of Diocletian and Constantine and Their Modifications up to the Time of the Notitia Dignitatum, JRS 13, 1923, pp. 1-55, here: p. 12.

[277] The distribution of military units in the late Roman period see R. Ivanov, Der Limes von Dorticum bis Durostorum (1.-6. Jh.) – Bauperioden des Befestigungssystems und archäologische Ergebnisse 1980-1995, [in:] P. Petrovič (ed.), Roman Limes on the Middle and Lower Danube,Belgrade 1996, pp. 161-171.

[278] These changes were discussed on the example of Scythia Minor by S. Torbatov: Ukrepitelna sistema,pp. 408-412.

[279] T. Sarnowski, Późnorzymskie stemple, p. 15: the author analyzed the changes in the contents of stamps, and his findings, along with other data, led him to conclude that the garrison in Novae was considerably reduced, especially under Valens. Maintaining a large fortress was pointless, cf. L. Press, T. Sarnowski, Novae. Romisches Legionslager und fruhbyzantinische Stadt an der unteren Donau, Antike Welt21, 4, 1990, pp. 225-243, here: p. 240.

[280] T. Sarnowski, Późnorzymskie stemple, p. 13.

[281] The stamps refer to Rumoridus (*dux Moesia Secunda*); bricks bearing such stamps were widespread along the Danube and inside the province, which indicates that the production was centralized, see S. Torbatov, Stroitelnata ceramika, p. 166, cf. T. Sarnowski, Die legio I Italica und der untere Donauabschnitt der Notitia Dignitatum, Germania 63, 1985, pp. 107-127.

[282] T. Sarnowski, Legionsziegel, p. 498.

[283] *Legio I Italica* fell behind with the production, which was why help of *legio I Minervia* was required, see T. Sarnowski, Zur Truppengeschichte, p. 117. Sarnowski observes that it was easier to dispatch a team with their own stamps to work near the construction site than to send whole transports from a more remote location.

[284] For a military history of the region see T. Sarnowski, Das römische Heer.

[285] Idem, Römische Militärziegel, p. 92.

which the typology comprising 16 stamps tellingly attests[286]. In addition, the same types of brick stamps reading LEGVMAC from Chersonesus were discovered in Dobruja (Barboşia, Horia) as well as in Orlovka, Capidava and Troesmis. However, these are few and random specimens which might have found their way to Crimea by being used as ship's ballast[287]. Still, it needs to be noted that apart from the cost, there were no practical obstacles to transporting bricks over large distances[288]. Building ceramics of the Lower Moesian legions is also encountered north of the Danube, but most such finds are dated to Trajan's Dacian wars[289]. One of the notable examples is Drajana de Sus, the site of an erstwhile fort, where research revealed numerous specimens of bricks and tiles produced by *legio I Italica*, *XI Claudia* and *V Macedonica*, as well as *cohors I Flavia Commagenorum*[290]. The Danubian *limes* was not the only area where military buildings ceramics happens to be found; it is also discovered within Lower Moesia, beyond the limes zone, as in e.g. Butovo and Carevec, where stamped bricks of *legio I Italica* have been encountered[291]. This might mean that they had been sent from legionary bases dozens of kilometres into the province, as in Britain, where bricks and tiles would be transported from production centres to locations as remote as 60 to 100 km away[292]. This most likely owed to the hydrological circumstances in that territory, where navigable rivers are hard to come by. Army-produced ceramics is also discovered on the area of the former imperial estates, where *legio I Italica* and *XI Claudia* used to send their products[293]. Tadeusz Sarnowski demonstrated that this took place in Pliska. The stamps on artefacts discovered there include [L]EG I ITA[LI], LEG XI CPF, LEG XI CL PF, LEGIONIS XI CL, LEG XI, while the presence of stamps such as LEG XI PF[294]and LEG XI CL FTRM[295] was

[286] Ibidem, pp. 92-98.
[287] Ibidem, p. 95.
[288] Ibidem, p. 99.
[289] M. Zahariade, T. Dvorski, The Lower Moesian Army in Northern Wallachia (A.D. 101-118). An epigraphical and history study on the brick and tile stamps found in the Drajna de Sus Roman fort, Bucharest 1997, p. 19; T. Dvorski, E1 Building in the Roman Fort at Drajna de Sus the Garrison Troops and Their Building, Brickwork Production (A Preliminary Report), Novensia 10, 1998, pp. 171-188, here: p. 172.
[290] M. Zahariade, T. Dvorski, Lower Moesian Army, pp. 19-23.
[291] T. Sarnowski, Legionsziegel, p. 490.
[292] P. Warry, Tegulae, p. 123
[293] P. Dyczek, Observations on Marks, p. 88.
[294] T. Sarnowski, Legionsziegel, p. 498; D. Dečev, Tuhli sa latinski pečati ota Madara, [in:] Madara. Razkopki i proučvanija, Sofia 1936, pp. 18-19.
[295] D. Dečev, Tuhli, p. 19, note 12; Kalinka 458.

determined in Madara. Lack of nearby fortlets dating to the Principate era offers further evidence: the material for repeated use was nowhere to be obtained. The nearest defensive installation existed in Voivoda, but it was built in the late Roman period[296]. The land around Madara and Pliska is very fertile, and in the Roman times the produce harvested there became provisions for the units stationed along the *limes*[297]. Military building ceramics was also found at the villa in Dobrujan Horia[298]: 42 bricks with the stamps of *legio V Macedonica*[299] and several tiles of the *classis Flavia Moesica*[300]. This may be attributed to the fact that the villa's proprietor was a veteran of *legio V Macedonica*, who had served in the rank of a centurion[301] All seems to indicate that he maintained contact with the camp in Troesmis.

b) bricks and stamps from military manufactories at civilian construction sites

There is little evidence suggesting that military building ceramics was supplied to civilian construction sites. Bulgarian researcher Zlatka Morfova suggested that bricks made by *legio XI Claudia* and *legio I Italica*, which had been discovered in the walls at the Oescus colony, prove that both legions sent consignments of building material there[302]. The hypothesis has been endorsed by Rumen Ivanov[303]. Zlatka Morfova's surmise relies on the finds of bricks marked *legio I Italica*, which Sarnowski classifies as type IV-3[304]. The problem is that such a stamp was widely used in Novae in the Flavian period[305], therefore tiles bearing such stamp could not have been manufactured for Oescus in the Trajanic period. On the other hand, stamps reading LEG XI CL PF and LEG I ITAL discovered at the colony[306] were also to be found in the legionary hospital[307], whose construction was completed in 101, before the start of the Dacian wars or at their very outset,

[296] B. Gerov, Landownership, pp. 122-123; T. Sarnowski, Wojsko rzymskie, p. 65.
[297] T. Sarnowski, Legionsziegel, p. 448.
[298] Ibidem.
[299] ISM V 240; V.H. Baumann, Ferma Romană, note 359, p. 145.
[300] ISM 241; V.H. Baumann, Consideraţii istorice în lumina săpăturilor arheologice de la Horia (Jud. Tulcea) 1971, Peuce 4, 1973-1975, pp. 61-74, here: p. 65
[301]V.H. Baumann, Ferma Romană, p. 123.
[302] Z. Morfova, Briques et tuiles.
[303] R. Ivanov, Teguli i tuhli s pečti na I italijski i XI Klavdiev legion ot Ulpija Eskus, Arheologija 3, 1981, pp. 42-48.
[304] T. Sarnowski, Die Ziegelstempel, p. 34; cf. Z. Morfova, Briques et tuiles, p. 641, Fig. 1.
[305] M. Duch, Flawijskie stemple, p. 264.
[306] R. Ivanov, Teguli i tuhli, p. 45.
[307] T. Sarnowski, Zur Truppengeschichte, p. 112.

when the colony of Oescus did not yet exist[308]. Hence it cannot be seen as proof that the legion supplied structural ceramics to Oescus. The bricks in question are likely to have been reused. The walls of the colony in Oescus also contain bricks imprinted with LEG I ITAL; the latter stamp was popular in Novae during the reign of the Flavian dynasty, under Trajan or in the early third century, and the abbreviation did occur in the second half of the third century[309]. Likewise, there is no convincing evidence that the Greek cities on the Black Sea received any deliveries of building materials produced by the legions, while scant finds such as the fragment of brick from Histria featuring the partial LEG, which tends to be interpreted as LEG[V Macedonica], may equally well be read as LEG[XI Claudia], considering that several specimens of *legio XI Claudiae* bricks were discovered in the city[310]. Again, they cannot serve as proof that military products were supplied to civilian cities[311]. The same applies to Tomis and Callatis, where bricks with the stamps of *legio XI Claudia* and *I Italica* were found as well[312]. After all, material of that kind is absent in the newly established Nicopolis ad Istrum, Marcianopolis and Tropaeum Traiani[313]. In short, no sources in Lower Moesia attest to the purchase of military bricks by the cities or to the fact that such products were ever provided under any arrangement. One can hardly assume that the army would go as far in supporting local communities as to supply them with building ceramics whose manufacture was by no means cheap, at least in the late Roman period[314]. There are no grounds to believe that the reverse took place either, i.e. that bricks and tiles manufactured by private enterprises were delivered to military constructions sites[315]. However,

[308] Ulpia Oescus was established after the end of the Dacian wars, see L. Mrozewicz, Miasta rzymskie, p. 262.

[309] M. Duch, Polish Studies, pp. 82-83.

[310] D. Tudor, Comunicări epigrafice X, Pontica 13, 1980, p. 245, note 22: only LEG and a fragment of the following letter can be discerned; the author interprets it as Legio V[Macedonica]. The brick was also commented on by T. Sarnowski, Legionsziegel, p. 448. Bricks from Histria: A.V. Rădulescu, Ateliers de products en Terre Cite Au Bas-Danube, [in:] Actes du IXe congrés international d'études sur les frontiers romaines Mamaia 1972, Bucharest 1972, pp. 123-129, here: p. 127.

[311] T. Sarnowski, Wojsko rzymskie, p. 68. The deliveries A. Aricescu, TheArmy, p. 11.

[312] A.V. Rădulescu, Ateliers, p. 127.

[313] T. Sarnowski, Wojsko rzymskie, p. 68.

[314] J. DeLaine, Bricks and Mortae. Exploring the Economics of Building Techniques at Rome and Ostia, [in:] D.J. Mattingly, J. Salmon (eds.), Economies Beyond Agriculture in the Classical World, London 2001, pp. 230-268.

[315] For a concise recapitulation of studies in the entire Roman Empire see R. Kurzmann, Roman Military Brick Stamps, pp. 215-232.

in the case of Lower Moesia there are certain indications which need to be verified in accordance with the suggestion advanced by Renate Kurzmann: markings on bricks in which a unit is not mentioned should not be all too hastily attributed to the private sector[316]. Tadeusz Sarnowski drew attention to that aspect, noting that the names in stamps on material from Oescus: FIR(mus), MAX(imus), PROC(lus) oraz VETIA(nus) are the *nomina* of soldiers who supervised work at the brickyards[317], since the names appear alongside stamps denoting a particular legion[318]. Other examples include nominal stamps from Crimea, such as Opus Nov, Novii, Public, DI[319]. A newly discovered stamp from Novae, reading ALBV (Fig. 3) records the *nomen* of a soldier which may be interpreted as a name of Celtic provenance – ALB(an)V(s); in Lower Moesia, a centurion of *legio V Macedonica* is known to have borne that name[320]. Most probably, it is the abbreviated name of a soldier who oversaw production of building ceramics, and should be counted among the body of evidence which encompasses the aforesaid VETIA(nus) and MAX(imus) stamps.

c) military transfer of technology and emergence of the civilian market of building ceramics

Even if building materials were not officially supplied by the army to the cities and cities supplied none to the fortresses, an indirect impact of the military workshops on the civilian sector of economy in Lower Moesia is quite probable. The "military" production of building ceramics in the province was taking place on an extensive scale and the brickyards of legions and other units saw the emergence of their civilian equivalents. Thus the army contributed to the development of an independent sector dedicated to the production of ceramic building materials.

It may be assumed that in the early second century, when *legio V Macedonica* had left Oescus, private producers took over their manufacturing sites and began supplying material for the city. Two such producers are

[316] Ibidem.

[317] T. Sarnowski, Die Ziegelstempel, p. 33. With respect to Vetianus, Marta Matuszewska argues that ceramics stamped with the name originated from a private workshop, see eadem, Bemerkungen, p. 46; M. Matuszewska has not seen the tegulae from Oescus, in which names FIR, MAX, PROCV and VETIA are found above the unit stamp, see R. Ivanov, Teguli i tuhli, p. 42, Fig. 1.

[318] R. Ivanov, Teguli i tuhli, p. 42, Fig. 1.

[319] T. Sarnowski, Römische Militärziegel, p. 94.

[320] ILatBulg 47.

known: P FABI IVLIANI and GTZ[321] (Fig. 1). The neighbourhood of the fortress of the First Italian Legion saw a duplex arrangement, which developed in the latter half of the third century, where civilian brickyards functioned next to the military ones. One of the civilian undertakings there was run by a manufacturer who stamped his bricks with PCP (Fig. 2). Such relics were found in sector IV and in sector XII, where they were had been used in a glass furnace[322]. The stratigraphy of sector IV indicates that the brick-maker was active from 271 to 285. It should be noted that from the mid-third century, civilian inhabitants would gradually take over the area belonging to the *castra*[323], which generated a demand for building ceramics. Secondary use of material from former military structures could not have sufficed since the owner of the brickyard which used the PCP stamp did find buyers for his products, in this case the owner of a glass-making workshop, as the find from sector XII indicates. Interestingly enough, a brick stamped with PCP was also found in Ostrite Mogili (a *vicus* near Novae), though it was a surface find. The bricks are certain to have been used in later structures, as it would follow from the history of that place[324]. It may be expected that the customers of the PCP workshop were craftsmen, with the aforesaid owner of the glass-making workshop among them. Despite the competition in the shape of military material available for re-use, which could have been traded under partial control of the army, as evinced by the recycled material sent to the fortlet of Iatrus[325], sustained demand for bricks did exist. The example of the legionary hospital clearly shows that it fell into disrepair, and its dilapidated premises became later inhabited by civilians[326]. Thus, if military building ceramics is seen in civilian structures, then it may be expected that civilians acquired it somehow, either by purchase or by collecting the discarded or abandoned material. The banner announcing sale of tiles from demolished buildings in Pompeii is a convincing indication that

[321] Z. Morfova, Briques et tuiles, p. 648; K. Karadimitrova, Pečati, p. 117, no. 33.

[322] Cat. no. 30/12c; cat. no. 29/12c: the distinct layer of burnt material and semi-finished glass product adhering to the bricks of the furnace indicate what kind of structure it was.

[323] This is splendidly reflected in the architectural phases, cf.: R. Ciołek, P. Dyczek, Coins, pp. 42-43.

[324] Gothic invasion is highly likely to have forced the people of the *vicus* to move to Novae, see L. Mrozewicz, Ze studiów nad rolą canabae, p. 296. Relics indicate that continuity of settlement was disrupted at that time. Later artefacts date only from the Middle Ages, see A. Tomas, Municipium Novensium, p. 120.

[325] See Chapter IV. 2.

[326] R. Ciołek, P. Dyczek, Coins, p. 25.

trade in recycled material was in fact taking place in antiquity[327]. It would follow that a private producer from Novae must have asked a bargain price if he managed to compete with recycled military bricks, while the situation suggests that the demand for building material in Novae in the latter half of the third and at the turn of the fourth century was quite considerable. Another likely local producer was L. COEL. PRIMI[328]. In addition, archaeologists working at sector IV in Novae identified a workshop which, apart from producing ceramic vessels also manufactured flat tiles (without raised edges), a type characteristic of civilian manufacture[329].

A number of civilian producers have been determined to have operated in Sexaginta Prista between the mid-second century and the early third century, a period of its prosperity. Their traces have been preserved in stamps such as LAECTITIA = Laec(anius/ania) Titia(nus/na), LAETITIA = Lae(canius/cania) Titia(nus/na) and M. AVREL STVTIANVS,discussed later on in the text. Fragments of other stamps have been discovered as well: KAV, COL, PO[…] and […]S., which as Sergey Torbatov argues stand for the names of local producers. However, considering the examples from Novae and Oescus, one has to be very careful with such interpretations, because the above could have been names of soldiers employed at a brickyard. On the other hand, it is almost certain that these stamps were to be found exclusively in Sexaginta Prista[330](with the exception of Statianus).

Lower Moesia had its local producers of building ceramics; in the Novae camp, one encounters products of three large manufacturers, namely G. Anton(ius) Mag(nus), Alex(andros) Sol(…) and the aforementioned Aurelius Statianus[331]. Let us consider the first of these figures and examine his connections with the army. Antonius was a local manufacturer whose range of product distribution was quite extensive. Bricks stamped with his name have been discovered in Novae, Svishtov, Dimum[332], and in Ostrite Mogili

[327] CIL IV 7124.
[328] T. Sarnowski, Die Ziegelstempel, p. 61.
[329] P. Dyczek, A New Pottery Manufacturing Center at Novae, RCRF 39, 2005, pp. 301-306.
[330] S. Torbatov, Stroitelna keramika, pp. 163-164.
[331] T. Sarnowski, Aurelius Statianus, p. 22.
[332] Ibidem, p. 22, note 10; Z. Rakeva-Morfova, Rimskite častni i imperatorski tuhli s pečati ot dunavskoto i černomorskoto krajbrežije, Arheologija 3, 1970, pp. 33-43, here: p. 39; Sprawozdanie tymczasowe z wykopalisk archeologicznych w Novae w 1960, K. Majewski (ed.), Archeologia, XII, 1961, Fig. 15, p. 83; W. Pająkowski, Stemplowane cegły i dachówki, [in:] S. Parnicki-Pudełko (ed.), Novae – Sektor Zachodni 1970. Wyniki badań wykopaliskowych Ekspedycji Archeologicznej UAM, Poznań 1973, pp. 105-124, here: p. 124; K. Karadimitrova, Pečati, p. 119, no. 40-41

near Novae[333]. The business operated in the latter half of the second and in the early third century[334]. At first, however, stamps reading C ANTON MAG were assumed to have been military ones and interpreted as C(ai) ANTON(i) MAG(istri)[335]. A different interpretation was advanced by Boris Gerov, who deciphered the abbreviation as C. Antonius Magnus[336], noting his association with the Antonii family[337], who were the lessees of the *portori publici Illyrici et ripae Thraciae*[338]. The hypothesis is extremely compelling, but though it should be approached with caution, it may be presumed that the individual in question was indeed a producer of building ceramics. Only four bricks from Antonius's yard have been found in sector IV in Novae, deposited in late stratigraphic layers. This suggests first of all that only minor quantities were delivered to Novae and, secondly, that he was a private producer who did not necessarily supply the army[339]. Most likely, Antonius represented somebody's concern (*actor*) and leased land which belonged to the state, the emperor or a private individual[340]. Recently, yet another interpretation of C ANTON MAG was put forward by Jerzy Żelazowski, who deduces that it was a name of a soldier working in a brickyard rather than a private producer, just as in the case of building material stamped by Aurelius Hegenianus[341]. That interpretation is not all too persuasive, since the range of occurrence of tiles stamped by Antonius is quite large; besides, there are analogous stamps from the colony in Ratiari and Oescus which also featured almost full *tria nomina* of the local producers, such as L COEL PRIMI, P FABI IVLIAN or L. COEL ING, L. COEL GR[342].

[333] R. Ivanov, Stroitelna keramika s pečati iztočno ot Nove pri Svištov, [in:] Phosphorion. Studia in Honorem Mariae Čičkova, Sofia 2008, pp. 425-427.

[334] A. Tomas, Inter Moesos et Thraces, Archeologia, p. 36: "C ANTON MAG (the second half of the 2nd-3rd cent)".

[335] Z. Rakeva-Morfova, Rimskite častni, p. 39; W. Pająkowski, Stemplowane cegły i dachówki, p. 124.

[336] B. Gerov, Zur epigraphischen Dokumentation, pp. 482-483, note 23.

[337] Ibidem, p. 123.

[338] A link noted also by T. Sarnowski: Aurelius Statianus, p. 22, note 10. On that particular family of leaseholders see P. Ørsted, Roman Imperial Economy, pp. 316-317.

[339] Cat. no. 25/70c, 41/77c, 37/06c, 155/06c: the two first are surface relics of unknown provenance.

[340] T. Sarnowski, Aurelius Statianus, p. 21.

[341] J. Żelazowski, New Examples of the Name Stamp (Sarnowski type XXV) from the Legionary Fortress at Novae (Lower Moesia), [in:] A. Tomas (ed.), Ad fines imperii Romani. Studia Thaddaeo Sarnowski ab amicis, collegis discipulisque dedicate, Warsaw 2015, pp. 249-256, here: p. 253.

[342] Regarding stamps from those locations see Z. Morfova, Briques et tuiles, p. 648; K. Karadimitrova, Pečati, pp. 112-113.

Building ceramics was also manufactured by Alex(andros) Sol(…), known from Greek stamps[343]. It is also possible that bricks marked ALSOL should not be attributed to *ala Solensium* but to that very producer[344], especially that to date the existence of the above cavalry unit has not been attested in any other source[345]. There is no data which would allow to link those stamps with supplies for the legions; they have mostly been found west of Novae[346]. It is worth noting that material marked ALSOL was discovered in the nearby Pliska[347], where imperial estates existed in antiquity, therefore Alexandros Sol(…) might have been one of the leaseholders in the imperial *dominium*[348].

Two dedications to *Deus Aeternus* discovered in Novae mention Aurelius Statianus *actor* jointly with Aelius Alexander[349]. The publishers date both to the turn of the third century[350]. According to Tadeusz Sarnowski, they must have been wealthy individuals if they could afford to finance the rebuilding of a temple[351]. Based on a military diploma[352], Agnieszka Tomas and Tadeusz Sarnowski conclude that M. Aurelius Statianus was a veteran, born near Nicopolis ad Istrum, who completed 28 years of service and following his honourable discharge returned to the native locality, funded the refurbishment of the temple and started producing building ceramics[353]. The researchers rely in their hypothesis on the stamps with his *nomen* and *cognomen* impressed on tiles, one of which was discovered in Novae[354]. Having taken his origin into account, Tomas and Sarnowski believe that

[343] A.B. Biernacki, Stamps on Ceramic Building Elements from Novae, Archeologia XLIII, 1992, pp. 107-112, here: p. 107.

[344] Ibidem. The notion that stamps ALSOL should be associated with *ala Solensium* originated with B. Gerov: Zum Problem, p. 358; the view was accepted by T. Sarnowski (Wojsko rzymskie, p. 75), who nevertheless observed later that it may have been a mark of a private producer of building ceramics, see idem, Aurelius Statianus, p. 22.

[345] The unit is not mentioned in any of the available third-century inscriptions.

[346] T. Sarnowski, Wojsko rzymskie, p. 74.

[347] Ibidem, p. 75.

[348] Idem, Aurelius Statianus, p. 23.

[349] ILatNovae 4-5; in total, four inscriptions dedicated to Deus Aeternus have been found in Novae, see: J. Bartels, A. Kolb, Ein angeblisacher Meilenstein in Novae (Moesia Inferior) und der Kult des Deus Aeternus, Klio 93, 2, 2011, pp. 411-428.

[350] V. Božilova, L. Mrozewicz, Deus Aeternus in Novae, ZPE 78, 1989, pp. 178-185, here: p. 179.

[351] T. Sarnowski, Aurelius Statianus, p. 20.

[352] RMD IV 311.

[353] A. Tomas, T. Sarnowski, M. Aurelius Statianus from Lower Moesia. A Note on his Origin, Status and Business, [in:] L.F. Vagalinski (ed.), The Lower Danube in Antiquity, International Archaeological Conference Bulgaria – Tutrakan, 6-7.10.2005, Sofia 2007, pp. 231-233.

[354] W. Pająkowski, Stemplowane cegły i dachówki, p. 124

M. Aurelius Statianus leased land in the vicinity of Novae[355]. There is no cogent evidence that Statianus delivered building ceramics to the legionaries there. The limited amount of bricks bearing his *nomen* and *cognomen* suggests that production ran only for a short time, although the finds are spread over a fairly large geographical area, in Dimum, Novae and Sexaginta Prista. Admittedly, those were locations of military facilities, but he may have found customers among civilians living nearby. The example of Statianus is an interesting one, as it shows a veteran who decided to put the experience gained in the army to use in civilian life.

The next noteworthy artefact is dated to a much later period, most likely to the fourth century. This is a ceramic slab with N stamped on it (Fig. 1), which according to Andrzej B. Biernacki was made by a private producer on commission from the legion in Novae. The researcher supports his conjecture with the fact that this was a quality, well-fired product, while similar items had been discovered in Iatrus[356]. The first analogy which comes to mind is a stamp reading Novas from Sexaginta Prista, where it was found in the rubble which had once been the roof of the temple of standards (*aedes principiorum*)[357]. The publisher does not connect the stamp with civilian manufacture, suggesting that tiles marked Novas originate from Novae and were produced in 303-392 by *legio I Italica*[358]. This puts the N stamp from Novae in a new light, since its possible interpretation is N(ovas), which would mean that N was not used by any civilian brick-maker but the legionaries stationed there.

Thanks to the army and the Roman colonizers, the technologies of producing building ceramics penetrated into the rural areas as well, where archaeologists have excavated ruins of ancient rustic villas. Some of those did produce building ceramics, though it would be difficult to state whether it was intended for sale or own use. Such villas have been discovered not only in the Roman Dobruja[359], but also in northern Bulgaria, in such localities as Bjala Čerkva[360], Montana, Varbovski Livadi (Pavlikeni), Madara, or Beli Lom[361]. Most were established in the early second century, except for Pavlikeni, which had functioned already in the Flavian period, Montana,

[355] A. Tomas, T. Sarnowski, M. Aurelius Statianus, p. 232.
[356] A.B. Biernacki, Stamps, Archeologia XLV, 1994, p. 46.
[357] D. Dragoev, A Late Roman Tile-Stamp from Sexaginta Prista, Archeologia 68, 2007, p. 23.
[358] Ibidem.
[359] V.H. Baumann, Ferma Romană, p. 28.
[360] V. Dinčev, Rimskie vili, p. 73.
[361] A. Harizanov, Peŝti za keramika, p. 28.

which began operating after 170, and the workshops in Bjala Čerkva, dated to the third century[362].

In the countryside, tiles were not only manufactured in specialized, multicraft rustic villas but elsewhere as well. One of such locations is Gorsko Ablanovo, where archaeologists identified tile kilns dated to the early third century[363]. Workshops producing building ceramics were also discovered in Antimovo; the status it had in antiquity is difficult to determine – an unfortified village is the most probable alternative[364].

Bricks and tiles were also produced in the immediate vicinity of cities, such as Marcianopolis[365]. Brick finds from Madara (Fig. 4) are highly interesting items: in Boris Gerov's opinion[366], they are an indication that imperial demesnes had existed there. The bricks bear such stamps as AVG(ustorum) (duorum) PRA(edium) or PRA(ta) and AVG(ustorum) (duorum) MAR(cianum)[367]. Apart from military ones, the relics discovered there include materials manufactured by private producers, including MARCIA, ANNIA, DVLES, AVXAN, SARM, and PRAELI, which has been interpreted as PR(aedis) AELI or PR(aetore) AEL(io)[368]. As for the stamp with the inscription AVXAN, Gerov reads it as AVXAN(ium), while SARM is supposed to denote SARM(atianum); according to the researcher they attest to the existence of estates thus named[369].

Another interesting stamped inscription, namely OFFTRI[N] is interpreted as OFF(cina) T(ibe)RI(ana) or OFF(icina) TRIN(ia); the second reading may be associated with [T]RINIA[370]. The studies of stamps from Rome demonstrated that *officina* meant a workshop producing building ceramics[371], hence *officina Tiberiana* or *Trinia* would point to a person who managed/supervised a brick-making facility. On the other hand, in the case of PRAELI, which could be read as PR(aedium, -ia) AELI[372], the stamp does not denote the owner of the brickyard but the proprietor of the land, *ex praedis Aeli* ("from the Aeli estate"); Gerov argues that much the same

[362] Ibidem.
[363] Ibidem, p. 31.
[364] Ibidem.
[365] A. Minčev, P. Georgiev, Marcianopolis, p. 226.
[366] B. Gerov, Landownership, p. 75.
[367] Ibidem.
[368] D. Dečev, Tuhli, p. 12
[369] B. Gerov, Landownership, p. 12.
[370] D. Dečev, Tuhli, p. 15.
[371] T. Helen, Organization, p. 37.
[372] D. Dečev, Tuhli, p. 14; B. Gerov, Landownership, p. 123.

applies to the third-century stamp reading DVLES[373]. Stamps discovered in Pliska, i.e. OFF(icina) TRI- N(ia), OFF(icinia) APII, and OFF(icina) PRIM(i) resemble those from Madara. The manufacturers they refer to were, according to Gerov, the owners of brickyards located outside the *dominia* and cities[374]. However, it is more likely that those were the names of overseers of brick-making workshops, whose place of employment was located in someone's *dominium*. A relic stamped with the letters FISC was found near Abrittus, leading Tadeusz Sarnowski to hypothesize that the lands nearby may have belonged to the *fiscus*[375].

d) ceramic piping

Traces of civilian deliveries of building ceramics include clay pipes recovered in the course of 2009 excavations in Novae[376]. In the stratigraphic layers associated with the Flavian baths, researchers found two pipes with a *planta pedis*-shaped imprint. One of the pipes was inscribed with ARRIVS, which is surmised to indicate a private manufacturer of conduits who supplied *legio I Italica*. The other pipe, also marked with a *planta pedis*-like impression bears the inscription TRA'EX. Jerzy Kolendo and Tomasz Kowal believe it to be a sign of a private producer as well. In their opinion, both stamped elements had been made in Butovo and, if this is true, the beginnings of that manufacturing centre should be sought in the Flavian rather than the Trajanic period. A trait which may – though certainly does not have to – substantiate that hypothesis is high quality of clay whose deposits are to be found precisely in the Butovo area. Still, no analyses have been conducted to date to verify it. The researchers also quote a number of other pieces of evidence. For instance, a 227 inscription enumerates the worshippers of Bacchus in the area between Butovo and Nedan; the list mentions five Arrii. Moreover, the villa in Pavlikeni (established by a veteran, initially geared towards agriculture and then, as of the second century, switching to manufacture of pottery and ceramics) operated in the Butovo area. Kolendo and Kowal underline that chemical analyses will ultimately decide whether the hypothesis presuming the existence of a Butovo workshop in the Flavian era is viable or whether it should be dismissed.

[373] B. Gerov, Landowership, p. 123.
[374] Ibidem.
[375] T. Sarnowski, Wojsko rzymskie, p. 65.
[376] J. Kolendo, T. Kowal, Stamps on ceramic pipes from Novae (Moesia Inferior), Novensia 22, 2011, pp. 67-76.

It may be noted that Arrius was an Italic name, just as *legio I Italica* itself[377]. On the other hand, epigraphically attested Arrius Varus, the *primipilus legionis III Gallica*, who stayed in 68-69 in Oescus was a native of Lower Moesia[378]. The *gentilicium* is therefore documented among soldiers in Lower Moesia. Other bricks and tiles demonstrate that stamps containing the name of a soldier working at a brickyard[379] or a supervising officer, such as VETIA, MAX, FIR, or PROCVL[380] are by no means exceptional. Consequently, a name impressed on a piece of building material does not automatically mean that a private producer was involved[381]. At the same time, the army might have called upon external suppliers when their own manufacture of ceramic piping failed to provide enough for the military construction undertakings in the periods of more intense activity.

7. Stone-masonry

The arrival of Roman soldiers in Lower Moesia spurred the development of stonemasons' workshops specializing in inscriptions. Their economic significance was far from negligible given the immense amount of engraved stones. The greatest concentrations of those are found in the proximity of military facilities.

CIL III (Fig. 10) provides a resource based on which the ratio of civilian to military inscription can be determined. Here, civilian inscriptions are assumed to encompass those erected by the inhabitants of the countryside and the cities in the form of gravestones, votives, as well as inscriptions pertaining to legal and administrative status. In contrast, military inscriptions include those which had been erected by soldiers in active service, veterans and units as a whole. Milestones, texts indicating territorial boundaries and unreadable inscriptions are omitted. The analysis was concerned exclusively with inscriptions in Latin, as this was the language used most often in the

[377] J. Kolendo, Le recrutement de legions au temps de Néron et la création de la Legio I Italica, [in:] J. Fitz (hrsg.), Limes. Akten des XI Internationalen Limeskongress, Budapest 1977, pp. 399--408

[378] L. Mrozewicz, Legioniści mezyjscy w I wieku po Chrystusie, Poznań 1995, pp. 16, 32, 78.

[379] R. Kurzmann, Roman Military Brick Stamps, pp. 215-255; J. Żelazowski, A New Stamp from the Army Camp at Novae, Novensia 23, 2012, pp. 158-166.

[380] T. Sarnowski, Die Ziegelstempel, p. 33, Fig. 22.

[381] In order to answer that question, one not only needs to carry out laboratory tests of samples from the pipes in question and compare them with material from Butovo, but also conduct comparative investigations using specimens of pipes which unquestionably bear military stamps.

military monuments. The obtained result illustrates the quantitative disparity between military inscriptions and those erected by the Romanized community, as people who had the inscriptions engraved in Latin are most often classified[382].

Numerous stonemasons' workshops functioned throughout Lower Moesia. Sven Conrad[383] located 46 establishments which had specialized in tomb steles. Half of them operated near military sites, but they were also to be found in all *polis*, colonies and municipia, and a fair number functioned not far away from rural settlements and villas. High quality stones were delivered by *negotiatores marmorarii*[384], which would account for the presence of a sarcophagus made of stone from Proconnesos (today an island in the Sea of Marmara) in Novae[385]. In fact, it did not have to be more costly than a locally made one, transported to its destination by land[386], especially when it originated from a site of mass production[387], which Proconnesos[388] undoubtedly was. This epitomizes a major trend in the entire province, where very many of the discovered sarcophagi had been fashioned from stone quarried in Asia Minor; a sarcophagus found in Odessos was most likely made in Attica[389]. Another example of this kind is marble which was brought to Novae from the quarry in Dokimeion in Asia Minor[390]. The presence of *negotiatores* who dealt in stone products in the vicinity of fortresses and forts in Lower Moesia may only be conjectured[391], but such merchants are certain to have been there. The number of customers that the Lower Moesian workshops had is difficult to assess, but the fact that grave steles could be

[382] L. Mrozewicz, Romanizacja Mezji Dolnej, p. 110.

[383] S. Conrad, Die Grabstelen, the map is provided in the appendix.

[384] The example of Italy shows that inscriptions were transported over distances of several dozen kilometres, see S. Mrozek, Einige wirtschaftliche Aspekte der Herstellung von Inschriftenin der frühen römischen Kaiserzeit, [in:] H. Solin, O. Salomies, U.M. Liertz (eds.), Acta Colloquii Epigraphici Latini. Helsingiae 3.-6. sept. 1991 habiti, Commentationes Humanarum Litteratum 104,

1995, pp. 303-312, here: pp. 304-305.

[385] J. Skoczylas, K. Grala, The Ancient Marble of Proconnesos, Novensia 14, 2003, pp. 197-220, here: p. 217.

[386] On the economic advantage of maritime over land transportation, see R. Duncan-Jones, The economy, pp. 366-369.

[387] S. Mrozek, Einige wirtschaftliche Aspekte, p. 312.

[388] J. Skoczylas, K. Grala, The Ancient Marble, p. 219.

[389] S. Conrad, Die Grabstelen, p. 21.

[390] A.B. Biernacki, J. Skoczylas, The Classification of Rock Material in Juxtaposition with the Typology of Capitals in Novae, Novensia 14, 2003, pp. 197-203, here: p. 202.

[391] The only known *negotiator* operating near Lower Moesian camps was Iulius Iero, who traded in wine: CIL III 7442; J. Kolendo, Symboles, pp. 28-31.

ordered at as many as 23 establishments near military sites is highly suggestive. Another benefit of setting up a workshop near an army encampment was associated with the fact that a small amount of *ad signa* was deducted from a soldier's *stipendium* to cover the expenses of a funeral if he died while on duty[392].

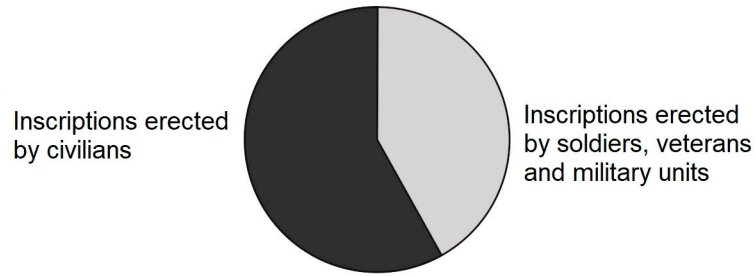


Fig. 10. Ratio of civilian to military inscriptions in Latin

Source: analysis by the author, based on CIL III; percentage diagram

Papyrus RMR 68 shows that a sum of 4 denarii was deducted from the second pay of Quintus Iulius Proculus and C. Valerius Germanus on account of *ad signa*. Walter Scheidel's studies determined that mortality in the army was high, with most deaths occurring among soldiers aged 30-40, though substantial mortality was also noted at 25 and 45 years of age[393]. Also, at least 110 legionaries were discharged from a 5,000-strong legion each year[394]. If the army had gravestones made by the civilian workshops, then given the mortality rates the business must have been quite profitable[395].

The prices of tombstones varied; at present no pertinent data is available with respect to Lower Moesia, and unfortunately there are no analogies which would be applicable in this case. Nonetheless, it may be worthwhile to cite the prices charged in Egypt, where the cheapest funeral inscriptions costing around 400 sesterces were ordered by ordinary soldiers. The most expensive ones were commissioned by centurions; one of those spent the

[392] G.R. Watson, The Roman Soldier, Bristol 1969, p. 103.

[393] W. Scheidel, The demography of the Roman army, [in:] idem (ed.), Measuring Sex, Age and Death in the Roman Empire. Explorations in Ancient Demography, JRA Supl. Series 21, 1996, pp. 93-138, here: p. 121.

[394] See Chapter III. 1.4.

[395] The excellence of epigraphic skill is splendidly exemplified by an inscription from Novae, found in the area of the legionary hospital. see J. Kolendo, Stèles funéraired réemployées dans la construction d'une rue a Novae, Archeologia 40, 1999, pp. 19-38, here: pp. 29-31.

imposing amount of 26,000 sesterces[396]. In another recorded case, a *primus pilus* expended 100,000 sesterces on a gravestone[397]. As can be seen, the outlay vastly differed, depending of the funds that soldiers had; those higher-ranking were obviously able to afford a more expensive product. An interesting inscription was found in Pannonia: a tombstone which cost 8,000 sesterces to erect[398].

Research in Novae yielded inscriptions which state the weight of silver used to mould the statues of Hygiea and Asclepius, which were placed on stone bases with inscriptions. The statue of Hygeia weighed 4 pounds and 7 or 8 ounces of silver, which means that it cost 444-456 denarii (1,776--1,824 sesterces)[399], while the statue of Asclepius amounted to 5 pounds and 5 ounces of silver, thus costing 540 denarii (2,160 sesterces)[400]. The legionary legates saw to it that the statues were put up (*faciendum curaverunt*), but the expense was borne by all soldiers (*ex donis*)[401].

8. Other crafts

a) glass-making

Thracian tribes had learned the technology of glass-making long before Romans came to the Lower Danube region[402], but again, it was only under Roman rule that the craft began to develop on an unprecedented scale[403]. Military units stationed along the Danube became major purchasers of such merchandise. Glass artefacts tend to be found in particularly high quantities in Oescus and in Novae[404]. In the latter, items produced in northern Italy and Dalmatia predominate among the imported vessels[405]. Glass is also found there in many forms of jewellery, such as bracelets, which testify to the presence of women in the camp in the third century (following the reforms of

[396] R. Duncan-Jones, The economy, p. 79.
[397] Ibidem, p. 130.
[398] CIL III 3558; S. Mrozek, Einige wirtschaftliche Aspekte, p. 309.
[399] J. Kolendo, Le culte des divinités guérisseuses à Novae à la lumière des inscriptions nouvellement découvertes, Archeologia 33, 1982, pp. 65-78, here: p. 68.
[400] J. Kolendo, Inscriptions en l'honneur d'esculape et d'hygie de valetudinarium de Novae, Archeologia 49, 1998, pp. 55-71, here: p. 58.
[401] Ibidem; ILatNovae 7.
[402] A. Minčev, Antično stăklo.
[403] I. Kuleff, R. Djingova, Glass Production during Roman and Medieval Times on the Territory of Bulgaria, AB 6, 3/2002, pp. 101-108.
[404] A. Belivanova, Early Roman Glass from Bulgaria (1st – the first half of the 2nd century), AB 3, 1/1999, pp. 35-49, here: p. 46.
[405] M. Żmudziński, Badania, p. 125.

Septimius Severus)[406], or beads – somewhat shoddily made – which the legionaries used as ornaments. Furthermore, excavations in the area reveal numerous remnants of lamps, window panes and glasses (often high-quality ones, fashioned with considerable attention to detail), though the majority of these date to the late Roman period[407]. This was due to the fact that by the fourth century the glass-making sector had been dominated by civilian inhabitants of the city. The scale of glass manufacture is well reflected in the moniker *steklen* (glass) which the local community used in the 20th century to refer to the ruins of Novae[408].

b) lead

The range of items and tools utilized in Novae also included those made of lead; the chief among them were weights, water pipes, elements used to mount statues or coffins, as well as less frequent pieces of jewellery and keys. Lead mirrors discovered in Durostorum represent an interesting type of finds as well[409]. Novae and the other fortresses on the Lower Danube obtained the lead they needed from the mining regions in Upper Moesia[410]. A lead ingot found in Novae offers evidence to that effect: it bears the inscription (metalla) TR(icorniensia) O(fficina) P(rima) or P(lumbaria)[411], which indicates that it originated from metalla Tricorniensia, a well-known mining centre in Upper Moesia.

One can also be certain that both lead and other metals were shipped to Novae and other strongholds down the Danube, which was the least complicated mode of transportation[412].

c) bronze

Bronze-working, known in the Lower Danube area prior to the arrival of the Romans, benefited from the conquest just as many other crafts. The

[406] A. Mróz, Bransolety i paciorki szklane z odcinka IV w Novae (od I do VI wieku), Novensia 16, 2005, pp. 17-50. On the presence of women in the Novae camp see A. Tomas, Reading Gender and Social Life in Military Spaces, Światowit 8 (49/A), 2009-2010, pp. 139-152.

[407] J. Olczak, Szkło rzymskie z terenu komendantury w Novae, Novensia 8, 1995, pp. 15-85.

[408] K. Majewski, Kultura rzymska, p. 23

[409] C. Mușețeanu, D. Elefterescu, Oglinzi romane din plumb de la Durostrum, Pontica 11, 1978, pp. 105-111.

[410] J. Recław, Wykorzystanie ołowiu, pp. 41-50.

[411] J. Kolendo, Suite sur le lingot de plomb portant des inscriptions mis au jour á Novae, Archeologia 45, 1994, pp. 91-93, here: p. 92; alternatively, TROP may have referred to the overseer of the smelter, see J. Kolendo, Ciekawe znalezisko z Novae. Sztaba ołowiu z czternastoma inskrypcjami, Filomata 376, 1986, pp. 299-310, here: p. 306.

[412] J. Recław, Wykorzystanie ołowiu, p. 42.

techniques and technologies were improved as a result, with the aesthetic quality of the produced items being enhanced at the same time. In the second and third century, bronze workshops were established in the centres of Roman cities and in the vicinity of fortresses and temples[413]. Their presence near military facilities owed to the fact that, as already underlined on many occasions, it was the army which became one of the major purchasers of bronze goods. A depository of such products was discovered in the area of the *principia* in Novae; a soldier in the rank of *signifer* was responsible for their safekeeping, which illustrates how valuable they were[414]. Bronze artefacts from Novae are characterized by superior quality, and comprise statuettes of Jupiter, Mars, Mercury, Apollo, Cupid, Minerva, Diana, Venus, as well as Serapis, the Lares, Hercules and figurines of animals, e.g. a leopard[415]. Naturally, there were numerous other items: weights, trims and fittings, bells, medical instruments, vessels, lamps, matrices, shin guards, hair pins, taps, or *strigiles*[416]. The list does not end there, which shows that the alloy had a great variety of uses, while bronze production and bronze-working was not an insignificant component in the economic life of the province. It seems, however, that the expensive items were not made locally but brought to the Lower Danube region from the western provinces and Asia Minor, to be purchased largely by Roman soldiers[417].

d) metal-working

Metals were worked in the legionary *fabricae*[418]; the investigations at such sites across Lower Moesia have not been completed as yet, and it is surmised that a workshop of that kind was to be found in sector II in Novae,

[413] A. Dimitrova-Milcheva, Die Bronzefunde aus Novae (Moesia Inferior), Warsaw 2006, p. 7.

[414] T. Sarnowski, Bronzefunde aus dem Stabsgebäude in Novae und Altmetalldepots in den römischen Kastellen und Legionslagern, Germania 63, 2, 1985, pp. 521-540.

[415] A. Dimitrova-Milcheva, Die Bronzefunde, p. 9.

[416] Ibidem, catalogue, pp. 25-99; P. Dyczek, Bronze Finds from the Site of the Valetudianrium at Novae (Moesia Inferior), [in:] S.T.A.M. Mols, A.M. Gerhartl-Witteveen, H. Kars, A. Koster, W.J.T. Peters, W.J.H. Willems (eds.), Acta of the 12th International Congress on Ancient Bronze, Nijmegen 1995, pp. 365-372; L.F. Vagalinski, Roman Bronze Strigils and Rings for them from Thrace (1st-3rd century AD), [in:] S.T.A.M. Mols, A.M. Gerhartl-Witteveen, H. Kars, A. Koster, W.J.T. Peters,W.J.H. Willems (eds.), Acta of the 12th International Congress on Ancient Bronze, Nijmegen 1995, pp. 435-443.

[417] A. Dimitrova-Milcheva, Die Bronzefunde, p. 10.

[418] The extent of preservation of the legionary *fabricae* in Britain offers numerous insights, see M.C. Bishop, The Military Fabrica and the Production of Arms in the Early Principate, [in:] idem (ed.), The Production and Distribution of Roman Military Equipment. Proceedings of the Second Roman Military Equipment Research Seminar, Oxford 1985, pp. 1-42, here: p. 5.

near the *porta principalis sinistra*[419]. Finds from that location did not contribute much, as the relics recovered from the building which may have served as a *fabrica* included a limited amount of earthenware, fragments of glass vessels, nails, a head of a bronze pin, sherds of lamps and *terra sigillata*, pieces of amphorae[420] and a bronze fibula[421]. Therefore the existence of legionary metal-working shops in Novae can only be inferred on the basis of tools discovered within the perimeter of the fortress (cold chisels, punches, files and hammers)[422]. However, it needs to be noted that most of those are associated with the late Roman civilian enterprise. By analogy, it may be deduced that objects made by the legionaries in the *fabricae*, just as bone and horn items, should be dated to the second-third century[423]. Vegetius' account confirms that military camps had their repair shops, and even smithies where weapons were made[424]. Sites of the kind, dating to the early imperial period, have not been found in Lower Moesia though some have been discovered in Dacia, in Moigrad-Pomet and Samum, where metal foundries were to be found[425]. Workshops identified in the Lower Moesian fortresses belonged mainly to glass-makers and jewellers[426]. As regards labour in the military workshops (*fabricae*), the tablets from Vindolanda[427] shed some light on the matter, as they directly mention that 343 soldiers were employed there (*fabricis homines cccxxxxiii*)[428]. The publishers of the Vindolanda corpus maintain that at the time the complement of *cohors Tungrorum* was 265 soldiers, which would suggests that there were men of

[419] T. Sarnowski, L. Kovalevskaja, J. Kaniszewski, Novae, p. 143, fig. 2; J. Ziomecki, Odcinek II, [in:] L. Press (ed.), Novae-Sektor Zachodni, 1983. Sprawozdanie tymczasowe z wykopalisk ekspedycji archeologicznej Uniwersytetu Warszawskiego, Archeologia 36, 1985, pp. 105-111, here: p. 109.

[420] J. Ziomecki, Odcinek II, [in:] K. Majewski (ed.), Novae-Sektor Zachodni, 1979. Sprawozdanie tymczasowe z wykopalisk ekspedycji archeologicznej Uniwersytetu Warszawskiego, Archeologia 32, 1981, pp. 127-132, here: p. 127.

[421] J. Ziomecki, Odcinek II, [in:] L. Press (ed.), Novae-Sektor Zachodni, 1981. Sprawozdanie tymczasowe z wykopalisk ekspedycji archeologicznej Uniwersytetu Warszawskiego, Archeologia 34, 1983, pp. 160-164, here: p. 163.

[422] W. Gacuta, Przedmioty metalowe z Novae – kampanie wykopaliskowe z lat 1960-1969, 1971, 1973, 1975 i 1977, Novensia 1, 1987, pp. 75-175, p. 134.

[423] P. Vladkova, On the Working of Bone and Horn in Novae, [in:] L.F. Vagalinski, N. Sharankov, S. Torbatov (eds.), The Lower Danube Roman Limes (1st-6th C. AD), Sofia 2012, pp. 211-249, here: p. 241.

[424] Veg., II, 11.

[425] M. Żmudziński, Gospodarka, p. 274.

[426] Ibidem.

[427] Tab. Vindol. I. 1 and II. 155.

[428] According to C.R. Whittaker there were 340, see idem, Supplying the Army, p. 207; the 343 figure is cited after A.K. Bowman and J.D. Thomas (Tab. Vindol. I. 1; Tab. Vindol. II. 155).

several units working at the workshop in Vindolanda. Still, it needs to be underlined that besides soldiers, the workforce at such sites also included women, children and slaves[429]. That the latter were engaged in the army's workshops in attested in the papyrus ChLA X 409, which refers to the legionary *immunes* as well as slaves (their precise number is difficult to ascertain)[430]. Thus military workshops represented an important element of the economic life, but they catered almost exclusively to the current needs of the soldiers. It may be noted that under urgent circumstances, the army was empowered to buy weapons and gear from civilian manufacturers. Also, the duty to produce arms could be imposed on the cities, as Vespasian did during his conflict with Vitellius[431], although it was not a standard practice; instead, efforts were made to ensure that military camps were thoroughly self-sufficient. However, Jürgen Oldenstein is of the opinion that in the newly established provinces the army was incapable of producing adequate amounts of weaponry, therefore it was imported from Gaul and Italy[432]. The situation changed once the defensive network had been built and the situation in the province had become stable in the second century, around the time when the system of deductions from pay was abolished. On the other hand, special and custom-made items were obtained by means of private purchases. It was probably how a shin guard with the depiction of Mars found its way to Novae, as it could by no means have been locally produced[433].

e) weaving and tailoring

The spindle whorls found in Novae[434] indicate that garments were produced in the camps and in their neighbourhood. The scale of fabrication was not substantial, because when pay deductions were still in effect, soldiers are certain to have been issued new tunics, warm cloaks and blankets at specific intervals[435]. A unit could also procure garments responding to a need which arose at one point or another, as it follows from Hunt's papyrus

[429] A. Tomas, Reading Gender, p. 148

[430] C.R. Whittaker, Supplying the Army, p. 208.

[431] Tac., Hist. II, 12.

[432] J. Oldenstein, Manufacture and Supply of the Roman Army with Bronze Fittings, [in:] M.C. Bishop (ed.), The Production and Distribution of Roman Military Equipment. Proceedings of the Second Roman Military Equipment Research Seminar, Oxford 1985, pp. 82-94, here: p. 89.

[433] A. Dimitrova-Milcheva, Die Bronzefunde, p. 94, note 186.

[434] J. Okrzesik, Przęśliki z Novae odkryte przez ekspedycję archeologiczną Uniwersytetu Warszawskiego, Novensia 5, 1993, pp. 179-196. The author observes that dating spindle whorls is problematic, and it is likely that a majority is actually associated with the civilian city.

[435] P. Herz, Finances and Costs, p. 311.

which mentions the soldiers of *cohors Hispanorum*, stationed at the time in Lower Moesia, who were dispatched to the remote Gaul to acquire apparel[436]. There is another example from Cappadocia, where a military unit commissioned the purchase of blankets for a legionary hospital in Egypt. Naturally, if a soldier wished for a better quality clothing, they had to obtain it on their own and at their sole expense[437]. Therefore the contribution of the Roman army to the development of the textiles sector in Lower Moesia was quite limited. For instance, when one considers the villas in the province, it turns out that the degree to which they were involved in the production of fabrics and garments was negligible, and any activity in that respect was aimed to meet their own needs[438]. It cannot be determined whether tailoring workshops existed in the legionary *canabae* across Lower Moesia. In the *canabae* near the Caerleon fortress in Britain, researchers identified what might have been a weaving workshop in one of the streets, but it had no greater economic significance[439].

9. Trade and services in the vicinity of encampments

The assertion that the coming of the Roman soldiers created new customer markets in Lower Moesia which functioned near the camps of the legions and auxilia does no more than state the obvious. Probably, civilian merchants were also allowed into the camp, albeit mainly, if not exclusively, during peacetime[440]. This is highly likely as there are written sources attesting to the fact that soldiers engaged in mercantile activities on their own[441], while the Roman state did not object[442]. Such practices are evinced in the Vindolanda tablets (Britain), especially Tab. Vindol. II. 343, which most probably records a private transaction between a higher-ranking soldier (Candidus, recipient of the letter) and a civilian merchant (Octavius, who sent the letter)[443]. Another eloquent proof is Tab. Vindol. II. 302, containing

[436] RMR 63, II, 18-20.
[437] P. Herz, Finances and Costs, p. 311.
[438] V. Dinčev, Rimskite vili, p. 130.
[439] The Caerleon Canabae. Excavations in the Civil Settlement 1984-90, E. Evans (ed.), London 2000, p. 487.
[440] J. Roth, The Logistic, p. 100; A. Tomas, Reading Gender, p. 149.
[441] L. Wierschowski, Heer und Wirtschaft, pp. 17-30, 112; J. Roth, The Logistics, p. 100.
[442] B. Campbell, The Emperor and the Roman Army, p. 280; S.E. Phang, Military Service, p. 176.
[443] Nevertheless, one should take into account that the entirely preserved letter of Octavius may have described an official logistical operation, see Tab. Vindol. II. 343; C.R. Whittaker, Supplying

a "shopping list" of the prefect of a cohort, which documents the purchase of beans, 20 chickens, 100 apples and 100-200 eggs (depending on the price) etc.[444] Yet another instance of such trade is found in Tab. Vindol. I. 5, which enumerates commodities bought by a unit stationed in Vindolanda. The tablets of Vindolanda are indeed an invaluable source, showing how soldiers engaged in commercial exchange with the local population, even though they had the benefit of the central system of military supplies. However, it should be emphasized that the location where the tablets were discovered, i.e. the quarters of the centurions, suggests that most transactions had been done by officers of higher ranks. Also, the products mentioned in the transaction documents should be considered luxury goods, or at any rate less easily available and not included in the inventory of official provisions, such as malt for brewing beer[445]. Without doubt, the example the tablets offer is a universal one and can be applied to Lower Moesia as well.

The research conducted to date has not yielded similar written sources concerned with Lower Moesia, while the investigations of the *canabae* in the province have not progressed to an advanced stage[446]. Still, as observed above, the example of Vindolanda is universally applicable: if higher-ranking soldiers of auxiliary units could be involved in such extensive trade activities, then much the same if not more may be expected of the legionaries on the Lower Danube, whose earnings were higher. The army undoubtedly took advantage of all services that may have been offered. Mateusz Żmudziński argues that they patronized prostitutes, doctors, soothsayers, barbers, shopkeepers, innkeepers, tailors etc.[447] Nor can there be any doubt that the settlements near the camps saw lively commercial activity, which manifested itself in their increasing prosperity[448]. These trade centres, which developed so dynamically in the vicinity of the fortresses, became major hubs of civilian life as their affluence grew. In all likelihood, among their inhabitants there were representatives of the leading merchant families. According to Mateusz Żmudziński, one of those was Sextus Caeserninus Epitychanus, affiliated with wealthy family from Aquileia, who most likely sold metal goods, possibly including weapons and gear produced by his

the Army, p. 218; K. Grønlund Evers, The Vindolanda Tablets, p. 18. The latter author is in favour of it being a private transaction between an officer and a civilian merchant.

[444] C.R. Whittaker, Supplying the Army, p. 219.

[445] Ibidem.

[446] The *canabae* of Durostorum seem to be the best explored among them, see Chapter IV. 1.1.

[447] M. Żmudziński, Gospodarka, pp. 267-268.

[448] On urbanization see Chapter IV.

patrons[449]. Further instances of the kind are known from other provinces, e.g. Dacia, where Turranius Marcellinus and Antonius Senekio supplied weapons to *legio XIII Gemina* stationed in Apulum[450]. Similarly, Caius Popillius Onesiphorus is likely to have represented the interests of a rich merchant family from Italy in Novae[451]. The latter was also home to other figures associated with prosperous families from Aquileia, Puteoli, Ostia and Delos, bearing the *gentilicia* of "the Granii, the Caesernii, the Popilii, the Pullii and the Vincili"[452]. If those persons delivered supplies under official contracts with the state, they were exempt from taxes[453]. Such an arrangement enabled elites in the province and beyond it to amass immense fortunes. And this, too, is an irrefutable proof of the substantial economic role of the Roman army in Lower Moesia.

[449] M. Żmudziński, Badania, p. 110.
[450] CIL III 1121; M. Egri, The Role of Local Elites, p. 109.
[451] M. Egri, The Role of Local Elites, p. 109.
[452] Ibidem, p. 121; B. Gerov, Die Rechsstellung, p. 117.
[453] M. Egri, The Role of Local Elites, p. 109.

CONCLUSIONS

The Roman army was the critical factor in the transformation of economic life in Lower Moesia. Its arrival in the province marked the beginning of many momentous changes, although from the standpoint of economy the initial, short-term outcomes were hugely unfavourable. In the first place, the territories of the Roman Lower Moesia were sparsely populated while the indigenous tribes practiced highly inefficient agriculture and livestock herding; the conquest also proved highly detrimental to the Greek cities on the coast of the Black Sea. For the latter, the first century BCE was a period of dire political straits (alliance with Mithridates, the incursion of Burebista, the Roman conquest), which caused an economic downturn. The Romans promptly set about transforming the province in a manner they saw fit. Soon after the conquest, the first colonizers arrived in the province from various parts of the Roman Empire (most often from Italy, and subsequently from Asia Minor). At the behest of the administration, the army undertook resettlements of people from Barbaricum and Thrace, which certainly improved the demography of the province, as empty areas were thus populated. According to my calculations, the garrison in Lower Moesia in 92-158 ranged on average from 21,600 to 23,800 soldiers. From the late second to the mid-third century, with the exception of periods of intense military operations, the strength of the Lower Moesian garrison fluctuated between 16,400 and 18,500 men (without the *classiarii*). In the first century, soldiers accounted for 7-8% of the entire population of Lower Moesia, but as the urbanization progressed and the population increased the proportion dropped to around 4-4.5%, only to decline further to 3-3.5% in the third century. These figures correspond with the nature of a frontier province where the concentration of troops was quite substantial. Considering that among the soldiers of the Roman army there were many able specialists (architects, craftsmen) whereas at least 90% of the inhabitants of Lower Moesia lived off agriculture, one clearly sees that the Roman military had a key part to play in modernizing the economy of the province. In the first century, Roman soldiers contributed to the increase of employment rates outside agriculture by some 130-140%; these numbers naturally decreased as the urbanization advanced, down to 40% in the second century and then further to 18% in the third century.

The above study also discusses other undertakings of the Roman military which boosted the province's demographic indicators, leading in consequence to a radical improvement of the efficacy of agricultural production, now relying on numerous technological and organisational innovations (*villae rusticae*). Another aftermath of the presence of a large garrison in Lower Moesia was surge in the number of potential customers, which in its turn fostered economic boom and stimulated internal market, especially that considerable amounts of money were regularly injected into circulation in Lower Moesia by the soldiers. From the reign of Domitian to Maximinus Thrax, the economy of the province benefited from 950m to 1bn 368.5m denarii on account of military remuneration alone (i.e. excluding the *donativa*, the *praemiae* and other sources of soldiers' income). The estimations made by this author show how much money the legionaries and the soldiers of the auxilia were able to spend on the local market after deductions for victuals and gear. One has to remember that soldiers had a limited pool of funds at their disposal which were spent outside the garrison, fuelling the development of commodity and monetary economy, therefore care has to be taken not to overestimate the phenomenon, particularly in the first and second century, since a substantial part of military *stipendia* was docked while the remainder was kept in deposit. This might have changed towards the end of the second century, when deductions had been abolished. The centralized system of supply which provided the soldiers with the necessary products continued to operate, but soldiers would not infrequently receive their pay in autonomous, local coin because the central budget often struggled (e.g. due to costly wars waged by Septimius Severus). Then, during the so-called Crisis of the Third Century, the domestic market of Lower Moesia suffered to some degree when the soldiers began to pay with the severely devalued antoninians. Yet, despite the deductions which reduced their spending power and the later presence of debased coin, the army was a veritable mainstay of the monetary economy. It was thanks to the army that coin became a widespread tender in Lower Moesia. Particularly large numbers of coins are discovered in areas which were vital for the economy, i.e. where sizeable garrisons were stationed, for instance in the Montana region. The increased concentration of coin hoards in the vicinity of that antique locality demonstrates that contacts with the army meant profit for the farmers and craftsmen living there. Also, the coinage discovered in Novae indicates that the fortress maintained strong economic relations with its hinterland in the Nicopolis ad Istrum area. The steady military income was

one of the driving forces behind the urbanization of the province, attracting colonizers who looked forward to doing business with the army and encouraging them to settle near military facilities. Indirectly, thanks to the permanent presence of the army which both needed various goods and paid for those, a singular logistical base of the Roman forces on the Danube developed within the province. State and private craft workshops as well as farms were established to supply Roman units with provisions. The period following the Dacian wars in particular saw the economy pick up quite markedly, which was accompanied by a substantial growth of manufacture. This was the aftermath of a highly advantageous political situation on the Lower Danube; the most serious rival in the region, the hostile state of Dacians had been crushed, which brought about a little over a century of peace and stability to the frontier land in Lower Moesia.

However, it would be a mistake to attribute a crucial economic role to the Roman army solely on the basis of numismatic relics, which might in effect suggest that the army owed the development of its logistical hinterland only to the fact that soldiers were regularly remunerated in coin they subsequently used to pay local suppliers. Such an economic model would be incomplete and falsely imply that the regional market was thoroughly monetized. From the very outset, the economy of Lower Moesia was shaped in a way that would ensure the army the provisions it required, provisions which relied on local resources. Still, the army did strive to be as self-sufficient in that respect as possible. This can be clearly seen in the efforts undertaken to secure sustained access to water, provender and ores of precious metals. Therefore the first steps the army took on the conquered area was to build a network of fortifications, sites thanks to which the subdued population could be held in check and pacified.

This monograph lists places in which Romans built their legionary fortresses, forts and watchtowers. From the standpoint of the economy, the most consequential upshot of their construction was stimulating urbanization processes, because civilian settlement gravitated strongly towards such facilities, especially in the uninhabited belt of land along the Danube. Apart from the stable pay of the soldiers, one of the reasons behind that trend was the sense of security which the presence of the military afforded to the Roman colonizers coming to live near fortified installations. Then, as the line of the fortifications moved, the civilians followed. Thus, this work also addresses areas in which civilian population and veterans tended to settle, bringing the Roman urban patterns with them, thanks to which the settle-

ments adjacent to the camps became a permanent component of the army's supply system. It was in such places that the Roman soldiers purchased goods and services from merchants and craftsmen, forging the local commercial market. The reciprocal relation between soldiers and civilians made the settlements increasingly richer; this promoted the development of a local market, which gradually became less and less dependent on the nearby unit. Considering the limited demographic resources in Lower Moesia, the process of urbanization in the province was highly successful, with new cities emerging mainly in the vicinity of the major garrisons. It is thus evident that the Roman army was the foremost stimulus behind the formation of cities in Lower Moesia. The efficiency of the process also resulted from numerous measures implemented by the Roman authorities to support local urbanization and the associated demographic growth, which had been intended to advance the development of the army's logistical base. One of such measures was founding cities from scratch, with a limited participation of the military or entirely without it. The rural areas of these cities subsequently catered to the provisioning needs of the Roman forces stationed along the *limes*. Another equally important element in the development of the army's local logistical framework was the introduction of a new organisational model in the countryside: the *vici*. Their formation is unlikely to have been random, given that individual tribes had been assigned particular *vici* they were supposed to inhabit, not to mention the role that the *peregrini* played in their administration. Thus, the local economy became to a great extent geared towards the needs of the army, which is also reflected in the infrastructure the latter built and developed. The major roads in Lower Moesia were indeed constructed for military purposes, though they did not serve the army exclusively, being used by the administration, the merchants or the civilians travelling from one place to another. Military watchposts and forts along the roads protected the travellers from banditry. Soldiers in the rank of *beneficiarii consularis* were responsible for ensuring safety on the Roman thoroughfares, maintained public order in the cities and enforced the collection of taxes. Hence the army was also a guarantor of fiscal revenue from the province, all the more so that a proportion of the exacted duties was allotted for army pay. In addition, the military were involved in a number of administrative tasks; the monograph quotes examples of soldiers arbitrating territorial disputes between cities or assisting in the construction of public utility buildings. On the other hand, they were also often accused of abuse committed against local population. Just as the fortifications, the roads built

by the army attracted civilian settlement. It remains open to debate whether living near the roads was burdensome to the civilians, who had to bear the costs of their maintenance and proper functioning. The expenditure involved must have been high, because the outlay associated with the construction was tremendous. According to my calculations, the cost of the *limes* road on its Bulgarian stretch alone may be estimated at 45.3m to 226.5m sesterces. However, I argue that it was only in the second century, after the Dacian wars, that the circumstances were right to shift the costs of maintenance and repairs onto local communities. Hence the many villages which went up near the roads were not an accidental occurrence: it was a deliberate strategy of Rome, aimed at ensuring that the communication network remained in good order and having the local inhabitants pay for it while it continued to serve the army. The road infrastructure enabled Rome to profit from commercial activity when the *portorium* was imposed on merchants going through customs stations. The first *portorium* districts in the Lower Danube area were created under Augustus and Tiberius, when the western part of what was to become Lower Moesia had been incorporated in the *publicum portorii Illyrici*. Then, when the client kingdom of Thrace ceased to exist, the customs district *ripa Thraciae* was established in the region. The roads built by the army fostered the growth of enterprise associated directly with their functioning, such as the roadside inns. Moreover, Lower Moesian *villae rusticae* would be established not only near rivers but in the land adjacent to the roads as well, thus enabling their owners to sell their products easily to any travelling party. For instance, one of the largest Lower Moesian centres manufacturing ceramics operated in Butovo, near the route connecting Nicopolis ad Istrum with the Danube line. Much the same applied to the imperial estates. Furthermore, there were the *emporia*, a distinct type of commercial establishment which owed its functioning to the road infrastructure. One of those, named Emporium Piretensium, was presumably located near Butovo, by the road from Nicopolis ad Istrum to Melta. Considerable attention has been devoted to the economic impact of water supply systems which the Roman soldiers built in Lower Moesia. The scale of that undertaking was enormous, and only the army had the material and manpower resources to embark on the construction of extensive and technically advanced waterworks (aqueducts, underground conduits), from which people inhabiting civilian settlements outside the camps – the *canabae* – benefited as well. In Durostorum, one main branched off the camp supply, delivering water to the nearby *vicus*. The massive aqueduct which supplied

Oescus passed through several localities which also might have used it as a source of water. In time, the infrastructure built by the army brought about a change of attitudes and lifestyle, as latrines and baths were built in Lower Moesian cities and villages. The army also protected the access to water and watched over the associated facilities.

The multiple, large scale construction undertakings of the Roman army in Lower Moesia (networks of wooden and subsequently stone fortifications, roads, bridges, ports, aqueducts and water conduits) required building material which the natural resources of the province were capable of providing. The army supervised and, to a large extent, managed the mining facilities and latifundia owned by the state, and the monograph cites locations where it obtained raw materials. There is no doubt that numerous mines and quarries began to function when the Roman army had arrived in Lower Moesia, and it was only when it ceased to exploit a site that the civilians took over. One of the pertinent examples in this respect is *vicus* Trullensium, present-day Kunino, where in the first century stone was quarried by the units stationed in Oescus, and subsequently in the second and third century by the inhabitants of the *vicus*. In addition to novel ways of exploiting local resources which Romans employed in Lower Moesia, the army also introduced the technology of burning limestone to obtain structural binder. When Rome took the territory over and established its power there, ore mines were confiscated from their former owners, i.e. local tribes, and became property of the empire. Numerous inscriptions discovered in Montana, the largest mining district in Lower Moesia, indicate that soldiers did not work there; instead, the task of the army was to manage and protect them.

The presence of a several-thousand-strong garrison and numerous forts dispersed throughout a province, whose 30-70 km wide land belt stretched over a distance of 670 km along the Danube (excluding Olbia and Tyras), had a considerable influence on the development of fundamental sectors of the economy, such as agriculture, husbandry, crafts, trade and services. As regards the first of those, its impact was absolutely paramount, which owed to the tremendous requirement for provisions: the 20,000-strong garrison of the province needed around 7,300 tons of grain for soldiers' rations alone (other calculations are also provided). This massively increased demand for produce led to the establishment of Roman villa farms, which in their turn brought about a change in the local diet and significantly improved the efficiency of cultivation of grain, vine, animal husbandry, horticulture and fruit farming. The work thus addresses various probable methods the army

utilized to procure supplies, as well as lists sites where agricultural and craft production was taking place. I am of the opinion that depending on the circumstances, the army obtained a proportion of its provisions by means of requisitions and exacting taxes in commodity money, or made purchases on the local market, paying the suppliers in cash. Apart from that, the army imported immense quantities of olive oil and wine.

Viniculture is a splendid example of the army's contribution to Lower Moesian economy, as local wine became greatly popular with the Roman consumers in the second and third century, while near the camps there was no shortage of specialized dealers. Significantly enough, the Danubian Plain is where Bulgarian archaeologists find the greatest quantities of tools associated with cultivation of vine; the places of discovery overlap with the locations of military facilities on the *limes*. Obviously, a number of villas in Lower Moesia are known to have produced wine, and these are listed in this work as well. As previously observed, the army should be approached as a largely self-sufficient organization, manufacturing its own building materials which were then stamped to prevent them from being illegally traded. For this purpose, the Romans took advantage of the land under their jurisdiction, i.e. the *prata legionis*. The army even produced their own vessel pottery (e.g. LDKW), as evidenced by the products of military workshops in Dobruja. The legionary *fabricae* were capable of manufacturing certain pieces of military gear, weapons and garments, not to mention repairs of such items. I also believe that the output of the areas surrounding legionary fortresses was sufficient to meet the considerable needs of the troops, at least with regard to grain and wine.

A sizeable proportion of produce was supplied by the imperial estates as part of the central provisioning system, but the details of how it functioned are unknown, therefore the monograph offers a short review of such sites and suggests what may have been farmed there. Still, the provisions and goods obtained via the central system could not satisfy all needs of the soldiers, who thus had access only to the basic products; anything beyond that had to be acquired on the local market. The army was also a major customer of stonemasons' workshops and master craftsmen who manufactured luxury items. Consequently, I have discussed several examples of how local craft products improved in terms of quality in response to the military demand. The soldiers themselves were involved in trade between one another inside the fortresses as well as conducted transactions with civilian merchants who were allowed into the camps during peacetime. These trade activities of the

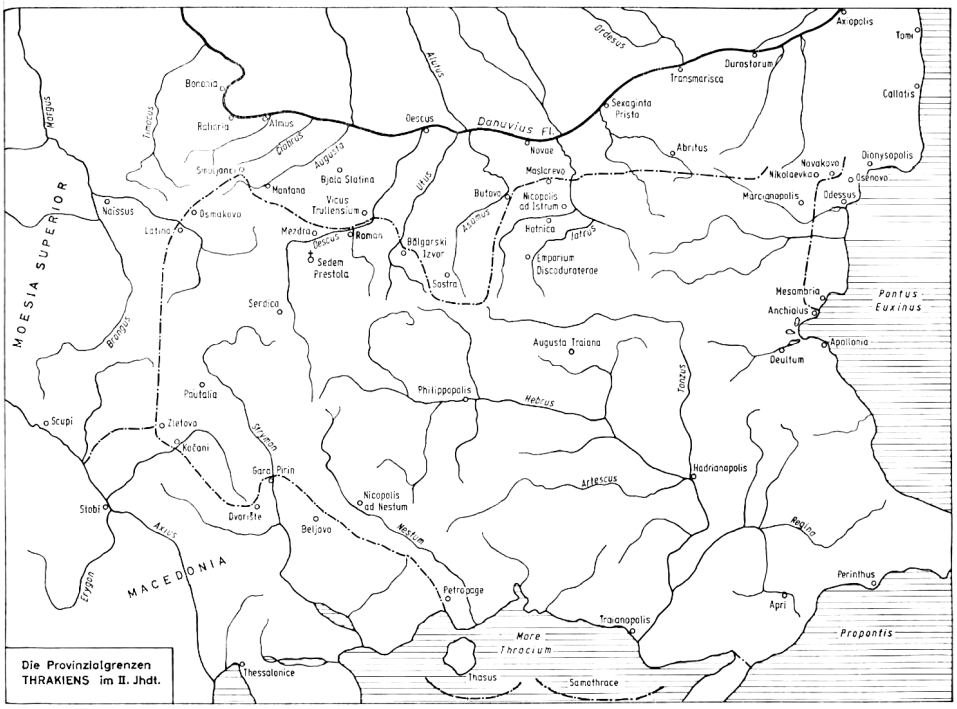
military are well reflected in the official dealings documented in the wooden tablets from Vindolanda.

There cannot be any doubt that every aspect of the economic life in Lower Moesia was associated with the army in one way or another. The province developed economically because the needs of the army had to be provided for, but it was thanks to its presence that the share of the civilian market grew steadily, only to surpass the army as the main driving force of the economy in the Antonine era; evidence dating from the reign of the Severan dynasty indicates that this had indeed taken place. In the mid-third century, the presence of the army proves to have a hampering effect on the economy, but this has to be attributed to the overall crisis in the empire.

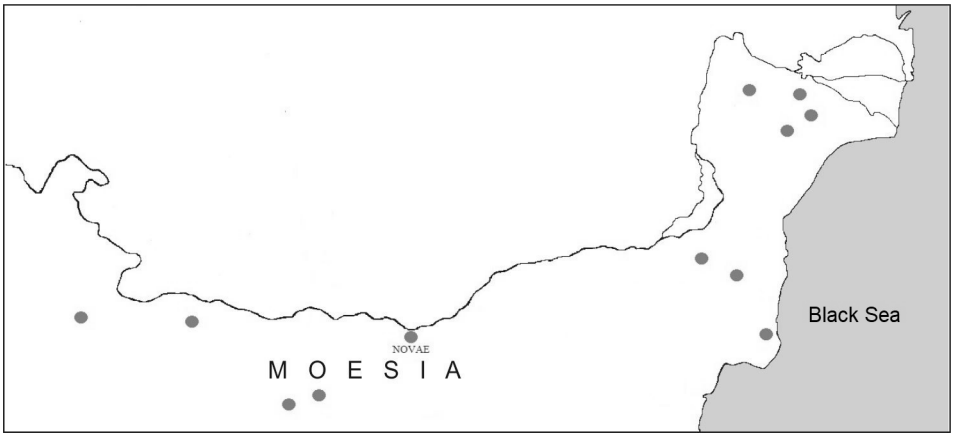
Future research should focus on demographic investigations; separate studies in that area would be greatly useful. Also, the supply system of the army should be examined further, as many issues in that area are still unclear. Another major question is the role of the army in the difficult period of Gothic invasions. The future of studies on the economic role of the Roman army lies in investigations into economic relationships of legionary fortresses with its rural surroundings, especially in the context of provisioning. The degree to which the army exploited the adjacent land to provide for its needs is also still undetermined.

Summing up, the presence of contribution of the Roman military can be traced in virtually all aspects of the economic life in the province, owing to the large number of soldiers stationed there. On the one hand, a garrison of that size required massive amount of supplies, while on the other Lower Moesia extended over a considerable distance along the Danube, it was poorly populated and lay on the frontier, and therefore it was heavily militarized. In any case, since its establishment in 86, the province saw steady economic development and growth, in which the army actively participated. That fairly long period came to an end with the Gothic invasions in the middle of the third century.

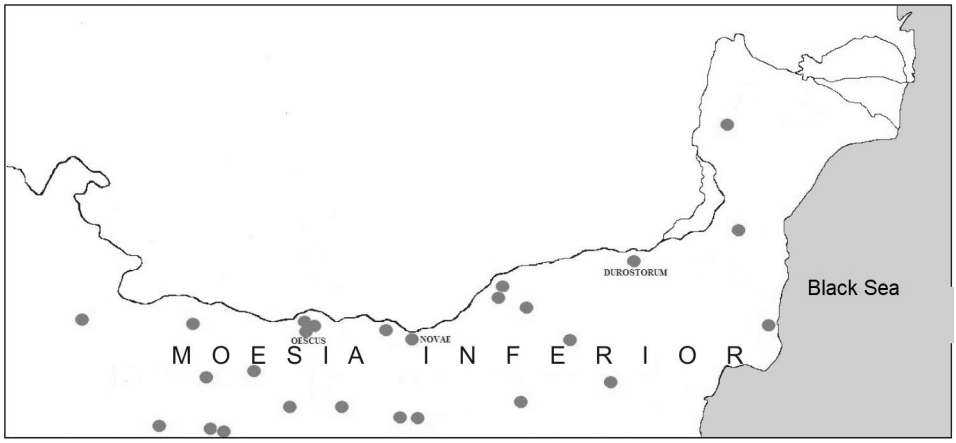
MAPS



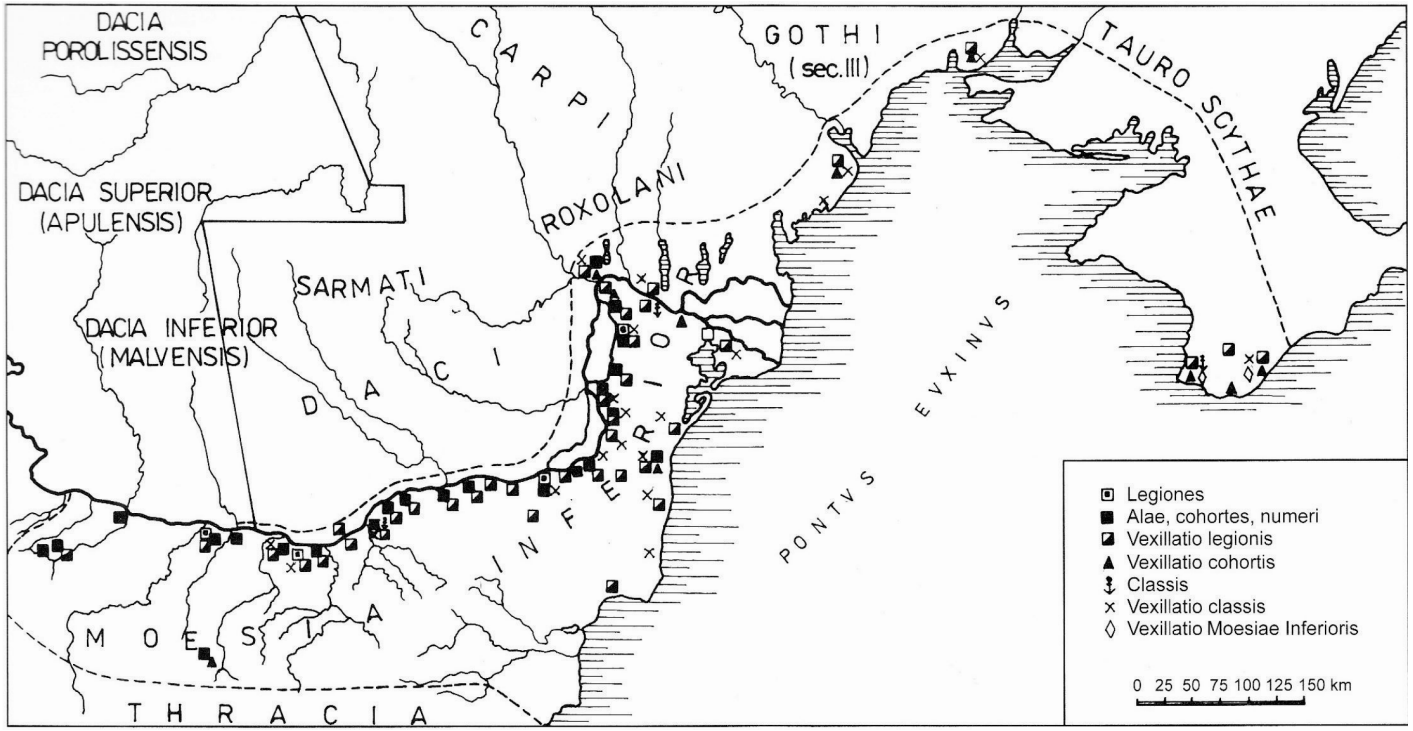
Map 1. Boundaries of Lower Moesia in the early second century (after B. Gerov, Die Grenzen, p. 442)



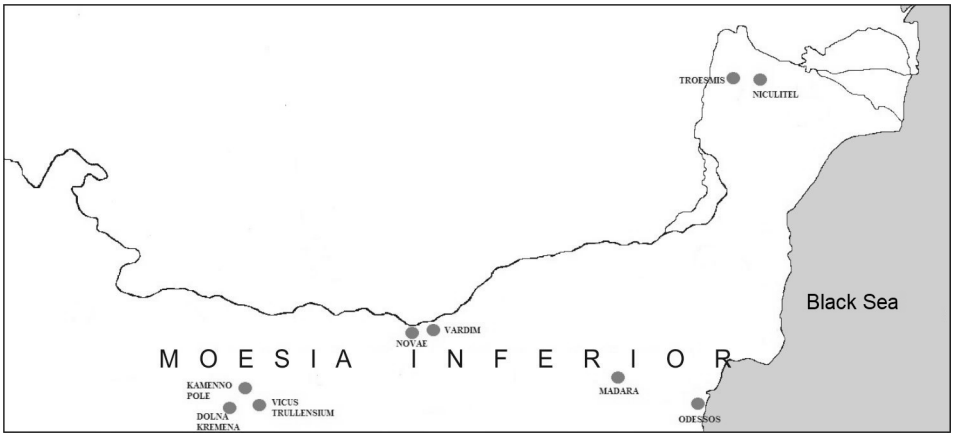
Map 2. Distribution of first-century coin hoards
(based on A. Kunisz, Obieg mone- tarny, pp. 127-129)



Map 3. Distribution of second-century coin hoards
(based on C. Găzdac, Monetary Circulation, p. 153, Tab. A.5)



Map 4. Fortifications on the Lower Moesian limes (after N. Gudea, Der untermoesische, p. 378, Fig. 27. (It would follow from the above map that Crimea was a part of Lower Moesia; I do not concur with N. Gudea in that respect).



Map 5. Sites of wine production (based on P. Dyczek, Wine, pp. 237-250)

ILLUSTRATIONS

Fig. 1. Private stamps from Oescus (source: Z. Morfova, Briques et tuiles, p. 641, Fig. 1)

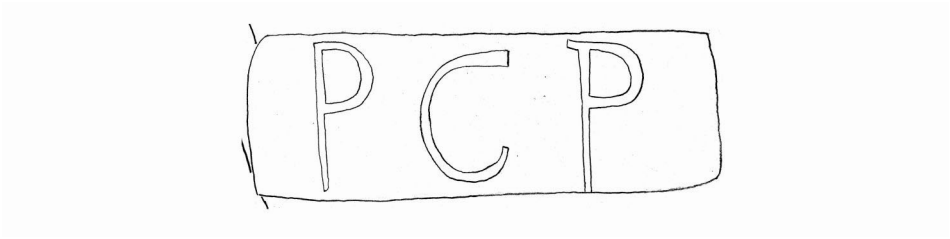


Fig. 2. PCP (by author)

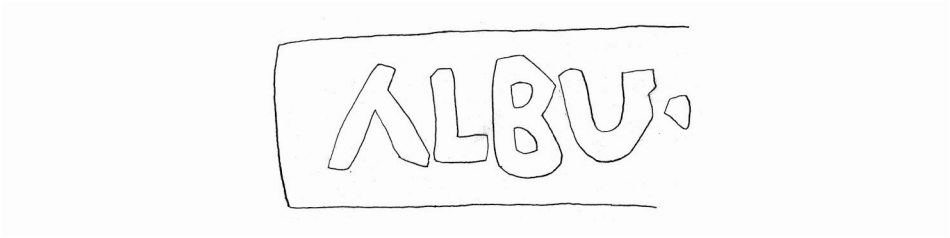


Fig. 3. The ALBV(NVS) stamp (by author)

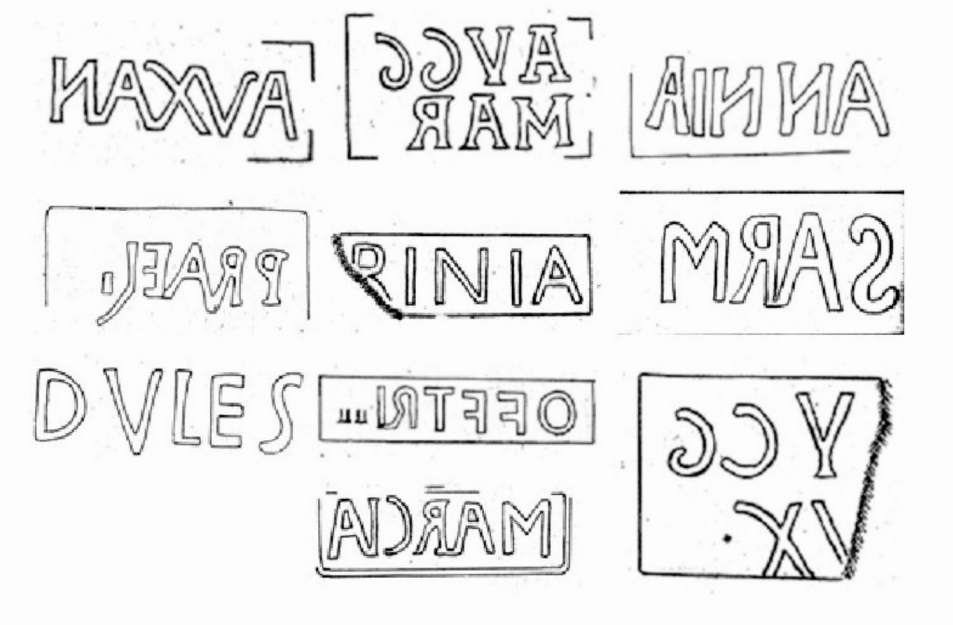


Fig. 4. Stamps from Madara (source D. Dečev, Tuhli, pp. 11-20)

TRANSLITERATION OF CYRYLLIC

Bulgarian alphabet	Transliteration
А а	A a
Б б	B b
В в	V v
Г г	G g
Д д	D d
Е е	E e
Ж ж	Ž ž
З з	Z z
И и	I i
Й й	J i
К к	K k
Л л	L l
М м	M m
Н н	N n
О о	O o
П п	P p
Р р	R r
С с	S s
Т т	T t
У у	U u
Ф ф	F f
Х х	H h
Ц ц	C c
Ч ч	Č č
Ш ш	Š š
Щ щ	Ŝ ŝ
Ъ ъ	″ ″
Ь ь	Ă ă
Ю ю	Ju ju
Я я	Ja ja

LIST OF ABBREVIATIONS

Journals

AAntHung = Acta Antiqua Academiae Scientiarum Hungaricae, Akadémia i Kiadó, Budapest
AArchHung = Acta Archaeologica Academiae Scientiarum Hungaricae, Akadémia i Kiadó, Budapest
AB = Archaeologia Bulgarica, Sofia
AncSoc = Ancient Society, Leuven
ANS = The American Numismatic Society Museum Notes, New York
AOR = Arheologičeski otkrytija i razkopki, Sofia
Archeologia: rocznik Państwowego Muzeum Archeologicznego w Warszawie i Polskiego Towarzystwa Archeologicznego we Wrocławiu
Archeologia Polona = Archeologia Polona. Instytut Archeologii i Etnologii Polskiej Akademii Nauk, Warsaw
Archeologija = Archeologija. Académie des Sciences, Institut et Musées archéologiques, Sofia
Balcanica Posnaniensia = Balcanica Posnaniensia. Acta et studia, Poznań
BJR = Bonner Jahrbücher, Bonn
Britannia = Britannia. A Journal of Romano-British and Kindred Studies, London
Caiete Ara = Caiete Ara. (Arhitectură. Restaurare. Arheologie), Bucharest
Cercetări Arheologice = Cercetări Arheologice. Muzeul National, Bucharest
Chiron= Chiron.Mitteilungen der Kommission für Alte Geschichteund Epigraphik des Deutschen Archäologischen Instituts, Munich
Dacia = Revue d'Archéologie et d'Histoire ancienne, Bucharest
EOS = Eos. Commentarii Societatis Philologae Polonorum, Bratislava – Varsovia
Germania = Germania. Anzeigerderrömisch-germanischen Kommission des deutschen Archäologischen Instituts, Berlin
Godišnjak = Godišnjak. Akademija Naukai Umjetnosti Bosne i Hercegovine, Sarajevo
GSUFF = Godišnik na Sofijskija Universitet "Kliment Ohridski" Istoričeski Fakultet, Sofia
Gymnasium = Gymnasium. Zeitschrift für Kultur der Antikeundhumanistische Bil dung, Heidelberg
Historia Antiqua = Historia Antiqua, Vol. 10, Journal of the International Research Centre for Archaeology, Pula
Historia = Historia. Zeitschriftfür Alte Geschichte, Stuttgart

IAI = Izvestija na Arheologičeskija institut = Bulletin de l'Institut d'archéologie, Sofia
IIMVT = Izvestija. Istoričeski Muzej, Veliko Tărnovo
Il Mar Nero = Annali di archeologia e storia, Rome – Paris
INMK = Izvestija na Narodnija Muzej, Kolarovgrad
InMSB = Izvestija na Muzeite v Severozapadna Bălgarija, Vratca
INMV = Izvestija na Narodnija Muzej, Varna
IOIMVT = Izvestija na Okrazhnija Istoričeski Muzej, Veliko Tărnovo
IRIMR = Izvestija Regionalne Istoričeski Muzej, Ruse
Istros = Istros. Revue roumaine d'archéologie et d'histoire ancienne, Bucharest
JRA = Journal of Roman Archaeology, Ann Arbor
JRGZM= Jahrbuch der Römisch-Germanischen Zentralmuseums, Mainz
JRS = TheJournal of Roman Studies, London
KHKM = Kwartalnik Historii Kultury Materialnej, Warsaw
Klio = Klio, Beiträge zur alten Geschichte, Berlin
Latomus = Latomus. Revue d'études latines, Brussels
Meander = Meander. Revue de civilisation du monde antique, Warsaw
NC = Numismatic Chronicle, London
Novensia = Novensia. Badania ekspedycji archeologicznej Uniwersytetu Warszawskiego w Novae, later: Novensia. Ośrodek Badań Archeologicznych w Novae Uniwersytetu Warszawskiego, Warsaw
Opus = Opus. Rivista internazionale per lastoria economicae sociale dell' antichità, Rome
Orpheus = Orpheus. Journal of Indo-European and Thracian Studies, Sofia
PBSR = Papers of the British School at Rome, London
Peuce = Peuce, Serie Nouă, Studii si cercetari de istorie si arheologie,Tulcea, et Peuce (serie de vechi), Studii si cercetari de istorie si arheologie, Bucharest
Pontica = Pontica. Studii si materiale de istorie, arheologie si muzeografie,Constanza
RCRF = Rei Cretariae Romanae Favtores, Abingdon
SCIVA = Studii si cercetari de istorie veche (si arheologie), Bucharest
SFMA =Studien zu Fundmünzen der Antike, Berlin
StEurGn = Studia Europaea Gnesnensia, Gniezno
światowit = światowit. Rocznik Instytutu Archeologii Uniwersytetu Warszawskiego, Warsaw
Thracia = Thracia.Institute of Thracology (Bulgarian Academy of Sciences), Sofia
Thraco-Dacica = Thraco-Dacica. Institutul Roman de Tracologie, Bucharest
Tyche = Tyche. Beiträge zur alten Geschichte, Papyrologie und Epigraphik, Vienna
Zephyrus = Zephyrus. Universidad de Salamanca. Seminario de Arqueología, Sala manca
ZPE = Zeitschriftfür Papyrologie und Epigraphik, Cologne

Encyclopaedic resources

ANRW = Aufstieg und Niedergang der römischen Welt, Berlin – New York

Der Neue Pauly = Enzyklopädie zur Antikeherauszugeben: Der Neue Pauly. Enzyklopädie der Antike

RE = Paulys Realencyclopädie der classischen Altertumswissenschaft. Neue Bearbeitung, unter Mitwirkungzahlreicher Fachgenossenherausgegeben von G. Wissowa, W. Kroll, K. Ziegler, Stuttgart 1893-1978

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Dig. Tarr. = Tarruntenus Peternus, Digestia Iustiniani
Ulpian. Dig. = Ulpian, Digesta Iustiniani
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