

# СТУДИИ ЗА СТАРИНИТЕ НА СТОБИ

## ТОМ V

ЗБОРНИК НА ТРУДОВИ ОД МЕЃУНАРОДНА АРХЕОЛОШКА КОНФЕРЕНЦИЈА

МЕЃУ ИСТОКОТ И ЗАПАДОТ.

СТОБИ И ГРАДОВИТЕ ВО РИМСКИТЕ ПРОВИНЦИИ НА БАЛКАНОТ

Уредници: Силвана Блажевска, Каролин С. Снајвли, Елизабет Р. Гебхард

СТОБИ, 2024



# STUDIES IN THE ANTIQUITIES OF STOBI

## VOLUME V

PROCEEDINGS OF THE INTERNATIONAL ARCHAEOLOGICAL CONFERENCE

BETWEEN EAST AND WEST.

STOBI AND THE CITIES OF THE ROMAN PROVINCES IN THE BALKANS

Editors: Silvana Blaževska, Carolyn S. Snively, Elizabeth R. Gebhard

STOBI, 2024



**Издавач:**

Национална установа за управување со археолошкиот локалитет Стоби

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Фотодокументација: од архивата на НУ Стоби и Проект Стоби 1970-1981 г., освен во случаите кога не припаѓаат на овие две архиви, за што авторите се должни да обезбедат согласност за публикување.

Печати: Дата Понс, Скопје

Тираж: 200 примероци

Печатењето на периодиката Студии за старините на Стоби том V е финансиски помогнато од Каролин С. Снајвли, Елизабет Р. Гебхард, Рут Е. Коларик, Силвана Блажевска, и Националната установа Стоби



Publisher:  
National Institution for Management of the Archaeological Site Stobi

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Corrections: Dimitar Nikolovski  
Computer layout and design: Branko Gašteovski  
Photo documentation: From the archives of NI Stobi and Stobi Project 1970-1981, unless otherwise stated, in which cases the authors are obliged to obtain permit for their publication.

Printed by: Data Pons, Skopje  
Copies: 200

The printing of the volume V of the periodical Studies in the Antiquities of Stobi was funded by  
Carolyn S. Snively, Elizabeth R. Gebhard, Ruth E. Kolarik, Silvana Blaževska,  
and the National Instituton Stobi

CIP - Каталогизација во публикација  
Национална и универзитетска библиотека "Св. Климент Охридски", Скопје

904(497.713)"652"(082)  
902.2(497.713)(082)

МЕЃУНАРОДНА археолошка конференција меѓу истокот и западот. Стоби и градовите во римските провинции на Балканот (2018 ; [Стоби]) Студии за старините на Стоби. Т. 5 : зборник на трудови од меѓународна археолошка конференција Меѓу истокот и западот. Стоби и градовите во римските провинции на Балканот / уредници Силвана Блајевска, Каролин С. Снајвли, Елизабет Р. Гебхард ; [превод на одделни трудови од македонски на английски јазик Каролин С. Снајвли] = Studies in the antiquities of Stobi. Vol. 5 : proceedings of the international archaeological conference between east and west. Stobi and the cities of the roman provinces in the Balkans / editors Silvana Blaževska, Carolyn S. Snively, Elizabeth R. Gebhard ; [translation from Macedonian into English Carolyn S. Snively for selected papers]. - Стоби : НУ Стоби, 2024. - 730 стр. ; 24 см

Текст на мак. и англ. јазик. - Фусноти кон текстот. - Библиографија кон трудовите

ISBN 978-608-4688-10-5

1. Блајевска, Силвана [уредник]  
а) Стоби (археолошки локалитет) -- Археолошки наоди -- Велешко -- Антички период -- Зборници 6) Стоби (археолошки локалитет) -- Археолошки истражувања -- Велешко -- Зборници

COBISS.MK-ID 65006597

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Participants, colleagues and guests at the International Archaeological Conference  
“Between East and West. Stobi and the Cities of the Roman Provinces in the Balkans”  
Stobi Winery, September 30th, 2018.

## FOREWORD

The International Archaeological Conference “Between East and West. Stobi and the Cities of the Roman Provinces in the Balkans” was held at the Stobi Winery from September 27th to 30th, 2018. This was a significant year for the ancient city of Stobi, as we celebrated a double jubilee: 100 years since the first systematic excavations at the site and 10 years since the foundation of the National Institution for Management of the Archaeological Site Stobi.

One hundred and six years ago, German archaeologist and architect Friedrich Krischen, a member of the Mazedonischen landeskundlichen Kommission, initiated the first systematic excavations at the Cemetery and Episcopal Basilicas, which had been partially uncovered earlier by German soldiers camping at the site. Since then, many researchers and scholars affiliated with various universities, museums, and heritage institutions have excavated the ancient city, greatly contributing to a better understanding of its complex stratigraphy and history. Numerous archaeologists, historians, art historians, classicists, conservators, and technical staff have made significant contributions, and helped Stobi to be recognized as a center where influences from the East and West met for many centuries. The best way to celebrate the double jubilee was through a scientific meeting where we shared our discoveries, achievements, and new findings, and honored all former and current investigators who deserve credit for their work and for making Stobi one of the most famous archaeological sites in the region.

The title of the conference, “Between East and West. Stobi and the Cities of the Roman Provinces in the Balkans”, aimed to foster broader discussions on various aspects of life in the cities of the Balkan provinces. These cities, located on major roads and crossroads, were exposed to influences from large centers in the East and West during the Roman period and Late Antiquity. The presented papers covered topics related to urbanism, public and residential architecture, temples and churches, rituals and cults, cemeteries, everyday and artistic objects (ceramics, glass, jewelry, statues, inscriptions, etc.) in Stobi, Argos and Dion in the province of Macedonia, Dyrrachium in Epirus, Heraclea Sintica, Parthicopolis, Odessos and Marcianopolis in Thrace, Scupi and Viminacium in Moesia Superior, and Mursa in Pannonia.

The volume begins with three essays honoring past and present explorers and major projects conducted at Stobi over the past 100 years. The remaining contributions are organized by topic as they were presented at the conference. The volume concludes with an important study of the so-called Casino or the real Episcopal residence as proposed by our colleague Zoran Georgiev from the National Conservation Center, who spent many years excavating and analyzing the building. Although this paper was not presented at the conference, we considered it an important study to include in this volume. It is the only paper published in both Macedonian and English.

The Proceedings of the conference are published as the fifth volume of the Studies in the Antiquities of Stobi. Due to various technical and financial obstacles, as well as Covid, the volume was published much later than planned, and we apologize to the authors for the delay. We are immensely grateful to Branko Gašteovski, who worked *pro bono* on the design and computer layout of the volume. The proceedings are published thanks to the generous contributions of the volume's editors and Ruth E. Kolarik.

Stobi, June 2024

Editors,  
Silvana Blaževska  
Carolyn S. Snively  
Elizabeth R. Gebhard

## ПРЕДГОВОР

Меѓународната археолошка конференција „Меѓу истокот и западот. Стоби и градовите во римските провинции на Балканот“ се одржа во Винаријата Стоби од 27-ми до 30-ти септември 2018 г. Тоа беше значајна година за стариот град Стоби, бидејќи тогаш славевме двоен јубилеј: сто години од првите систематски истражувања на локалитетот и десет години од основањето на Националната установа за управување со археолошкиот локалитет Стоби.

Пред сто и шест години, германскиот археолог и архитект Фридрих Кришен, член на Комисијата за регионални проучувања на Македонија ги започнал првите систематски истражувања на Гробјанска базилика и Епископската базилика, кои биле претходно делумно откриени од страна на германската војска стационирана на локалитетот. Оттогаш до денес, многу истражувачи и научници од разни универзитети, музеи и институции од областа на заштитата на културното наследство вршеле истражувања на античкиот град придонесувајќи кон подобро разбирање на неговата комплексна стратиграфија и историја. Голем број археолози, историчари, историчари на уметност, класичари, конзерватори и технички лица го дале својот значаен допринос и помогнале Стоби да биде препознаен како центар во кој повеќе векови се судирале влијанијата од истокот и западот. Најдобар начин да го прославиме двојниот јубилеј беше организирање на научна конференција, на која ги споделивме нашите откритија, достигнувања и новите наоди, ги споменавме сите поранешни и сегашни истражувачи кои ја заслужиле нашата почит и кои преку својата работа допринеле Стоби да прерасне во еден од најпознатите археолошки локалитети во регионот.

Насловот на конференцијата „Меѓу истокот и западот. Стоби и градовите во римските провинции на Балканот“ имаше за цел да поттикне широка дискусија за различните аспекти на животот во градовите во балканските провинции. Овие градови, лоцирани на главните патишта и крстопати биле изложени на влијанија од големите источни и западни центри во текот на римскиот и доцноантичкиот период. Презентираните трудови разработуваа теми поврзани со урбанизмот, јавните и приватните градби, храмови и цркви, ритуалите и култовите, некрополите, секојдневните и уметнички предмети (керамички и стаклени предмети, накит, скулптура, натписи и др.) откриени во Стоби, Аргос и Дион во провинцијата Македонија, Дирахион во Епир, Хераклеја Синтика, Партикополис, Одеса и Маркијанополис во Тракија, Скупи и Виминакиум во Горна Мезија и Мурса во Панонија.

Зборникот започнува со три есеи во кои се оддава почит на поранешните и сегашните истражувачи и поголемите проекти на Стоби во изминатите сто години. Останатите трудови се тематски организирани како што беа презентирани на конференцијата. Изданието завршува со важна студија за т.н. Казино, односно вистинската Епископска резиденција, како што предлага нашиот колега Зоран Георгиев од Националниот конзерваторски центар, кој поминал долгите години во ископување и проучување на оваа градба. Иако овој труд не беше презентиран на конференцијата, сметавме дека е значајна студија кој треба да се вклучи во ова издание. Тоа е единствениот труд кој е публикуван на два јазика, македонски и англиски.

Зборникот на трудови од конференцијата се објавува како петти том на „Студиите за старините на Стоби“. Заради повеќе технички и финансиски пречки, како и заради пандемијата на Ковид, зборникот се печати многу подоцна од планираното, за што упатуваме извинување до авторите. Изразуваме огромна благодарност до Бранко Гаштеовски, кој pro bono работеше на дизајнот и компјутерската подготовка на ова издание. Зборникот е публикуван благодарение на донацији од уредниците, и Рут Е. Коларик.

Стоби, јуни 2024 г.

Уредници,  
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Каролин С. Снајвли  
Елизабет Р. Гебхард

Trajče Nacev  
Goce Delčev University, Štip  
Darko Stojanovski  
Austrian Archaeological Institute

UDK 904:33(497.73)"652"  
UDK 904:622(497.73)"652"

## THE ECONOMY IN THE BREGALNICA VALLEY DURING THE ROMAN PERIOD AND LATE ANTIQUITY

**Abstract:** The favourable climate, the abundance of natural resources, and the vast area of arable land, all these factors contributed to the rapid economic development of the communities living in the Bregalnica basin. The most developed economic branches during the Antiquity are agriculture, pastoralism, hunting and fishing. Other branches, like mining, construction, pottery-making, woodworking and metalworking held a special place in the economy. Here, we focus on mining and metalworking, which were especially developed in the Middle and Upper Bregalnica valley; agriculture is represented through wine making evidence from the Middle Bregalnica; glass-working is presented through the glass workshop discovered in Bargala.

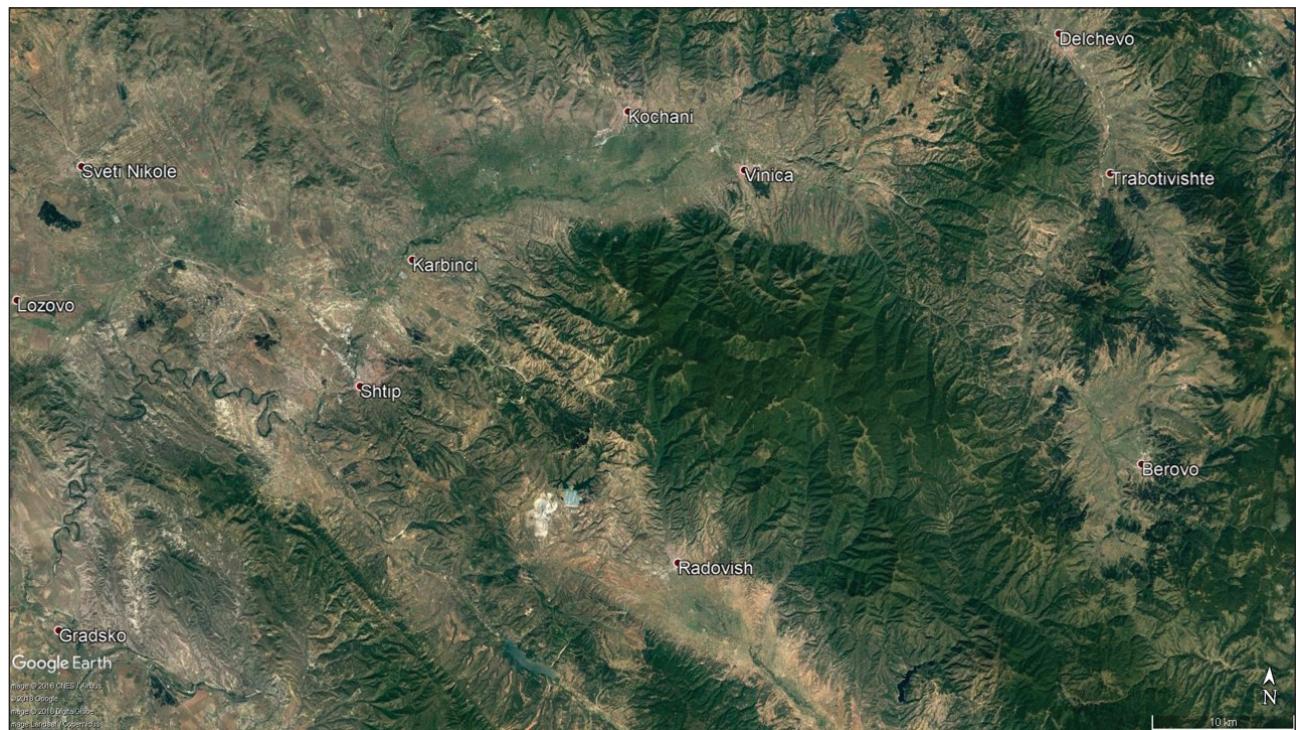
**Key words:** economy, mining, metalwork, glass workshop, Bregalnica valley, Roman period

**Лисцраки:** Поволната клима, изобилството на природни ресурси и големата површина обработливо земјиште, се фактори кои придонеле за брз економски развој на заедниците кои живееле во регионот на Брегалница. Најразвиени стопански гранки во антиката се земјоделството, сточарството, ловот и риболовот. Другите гранки, како рударството, градежништвото, грнчарството, обработката на дрвото и металот имале посебно место во економијата. Овде се фокусираме на рударството и обработката на метали, кои биле особено развиени во средниот и горниот тек на Брегалница; земјоделството е претставено преку докази за производство на вино од средниот тек на Брегалница; стакларството е претставено преку работилницата за стакло откриена во Баргала.

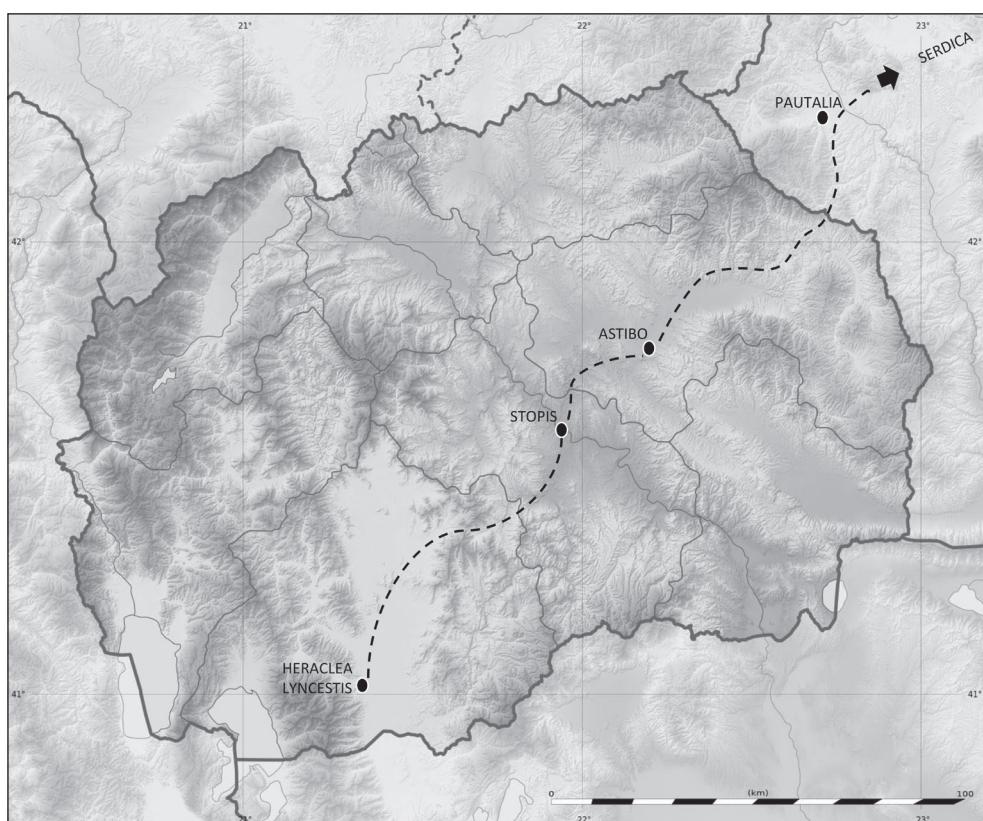
**Клучни зборови:** економија, рударство, металургија, работилница за стакло, долината на Брегалница, римски период

The Bregalnica Valley is located in the eastern part of the Republic of Macedonia. From the river's source to its convergence with the Vardar River near Ulanci, the valley includes the municipalities of Berovo, Pehčevo, Delčevo, Kamenica, Vinica, Kočani, Štip and Sveti Nikole (Map 1).

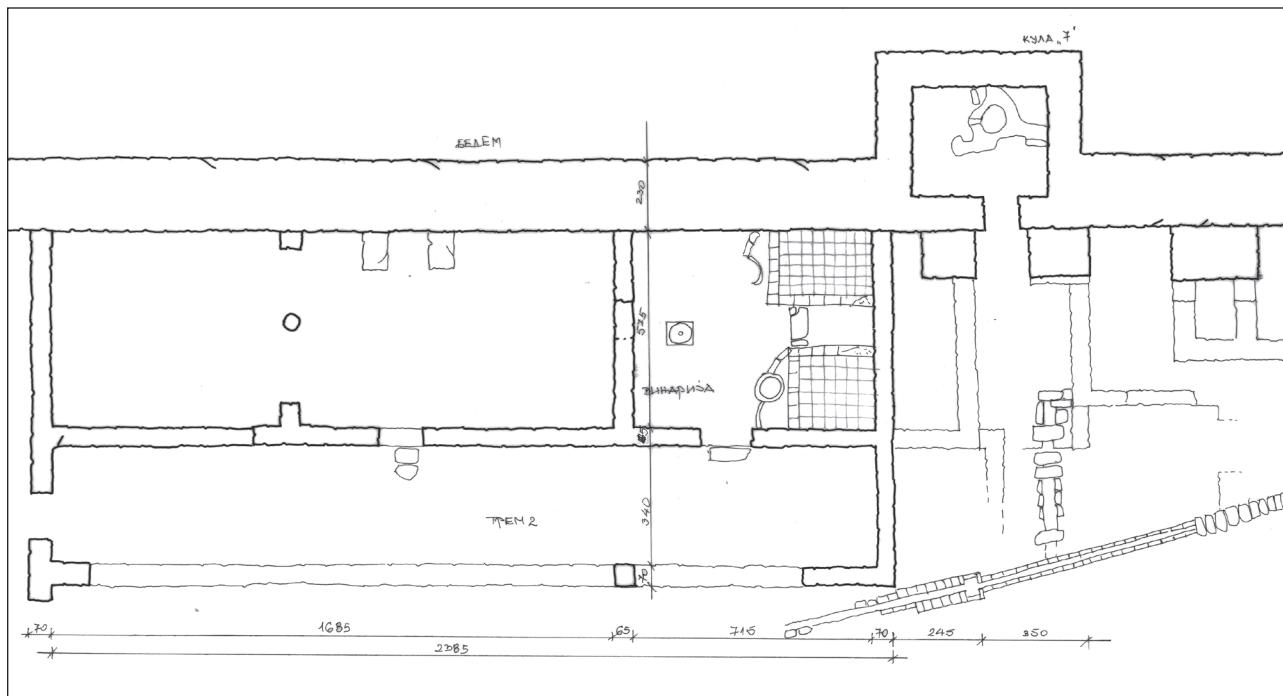
One of the Roman roads, connecting Stobi with Pautalia, crosses the Bregalnica basin passing by Astibo, Bargala, Viničko Kale, and Gradište near Delčevo (Map 2). The road and its strategic and economic significance, together with the favourable climate, natural resources, and vast areas of arable land provided swift economic development for the people living in the Bregalnica basin.



Map 1. The Bregalnica valley with associated modern urban settlements



Map 2. The diagonal Roman road and associated Roman settlements



Plan 1. Plan of the winery at Bargala

During prehistory, Early Antiquity, and later periods, the basic economic activities, i.e., stock herding and agriculture, were the most developed. During the Roman period and Late Antiquity other economic branches began to develop, especially mining, pottery production, wood-working, architecture, metallurgy, leather crafts, and glass-working.

The most widespread economic activity throughout the Bregalnica basin was stock herding.<sup>1</sup> The territory has plenty of pastures providing the base for herd development since the early days of farming. The animal remains discovered during archaeological excavations confirm that during the Roman period and Late Antiquity larger bovines were most abundant, and of the *Caprinae* the sheep was dominant.

Cereals and grapevines had a special place among the farming cultures in the Bregalnica basin.<sup>2</sup> Of the former, the most abundant were wheat and millet. The increase in population and urban centres during the Roman period and Late Antiquity saw also an increase in their production. So far, the cultivation of grapes during the Roman period in this region has not been confirmed archaeologically. During Late Antiquity viticulture was present only in the middle Bregalnica basin, a region where it is still practiced today. Vineyards and wine making were confirmed with the discovery of the winery at Bargala, near Goren Kozjak.<sup>3</sup>

The winery was discovered in the *Episcopium* at Bargala, more precisely in the northeast wing of the Episcopal Residence. It consists of a series of three connected rooms with a total area of 152 m<sup>2</sup> (Plan 1). The first room was intended for the deposition and preparation of grapes for the following process. In the second, central room, two pressing basins were built on an elevated platform (Fig. 1). On a lower level, two stone vessels, of which only one is preserved, were flanked by walls and attached to the basins' outer side (Fig. 2). The grapes from the first room were poured into the basins through openings in the wall between the two rooms directly above the basins. After the wine was collected in the stone vessels (the one preserved has a capacity of 96 litres), it was taken to the third room (Fig. 3), which at 97 m<sup>2</sup> is also the largest, where it was stored until further use. The winery is dated in the second half of the 6th century.

<sup>1</sup> Нацев 2013, 75–76. Нацев 2009, 22.

<sup>2</sup> Нацев 2013, 75. Нацев 2009, 22.

<sup>3</sup> Nacev 2012, 75–79. Нацев 2013, 76. Нацев 2016, 406–412.



Fig. 1. The two pressing basins from the Bargala winery



Fig. 2. The stone vessel from the Bargala winery

After the Roman conquest of Macedonia in 167 BCE, an intensive development of metallurgy began on the entire territory. The written sources about Roman mining and metallurgy contain very little information about the territory of Macedonia.<sup>4</sup> The results from archaeological excavations, and especially archaeological surveys from past and current centuries, as well as laboratory analyses of samples from the mine-shafts, galleries, and

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<sup>4</sup> Dušanić 1989, 148–156.



Fig. 3. The room for storing wine at Bargala

archaeological contexts, confirm that the exploitation of ores was most intensive during the Roman period,<sup>5</sup> a practice that continued into Late Antiquity as well.<sup>6</sup>

The highest concentration of remains from metallurgical activities, as well as mines and smelting facilities, in eastern Macedonia is found in the Zletovo - Kratovo region.<sup>7</sup> In addition to those in the larger Ovče Pole and Kočani valleys, many mines and smelting structures were also found in the Bregalnica basin, especially in the Malešovo<sup>8</sup> and Pijanec<sup>9</sup> regions and in the urban centres of the middle Bregalnica valley – Pekljani-Vinica,<sup>10</sup> Bargala,<sup>11</sup> Astibo<sup>12</sup> and Astraion (Pilav Tepe), where, in addition to the mining shafts, in the nearby site of Vrčva a mining settlement existed between the 2nd and 6th centuries.<sup>13</sup> In the lower part of the valley, until now the only iron-ore exploitation site known from the Roman period is Hisar-Crešče (Map 3).

In the Malešovo region six locations were discovered, which were associated with iron ore exploitation (Map 3: 1-6).

<sup>5</sup> Керамитчиев 1974, 119–133.

<sup>6</sup> Нацев 2013, 76–77. Нацев 2009, 23. Николовски 2013, 39–43.

<sup>7</sup> Насевски 2015, 20–30. Керамитчиев 1974, 119–133. Микулчиќ 1999, 285–290.

<sup>8</sup> Нацев 2013, 76–77. Керамитчиев 1974, 119–133.

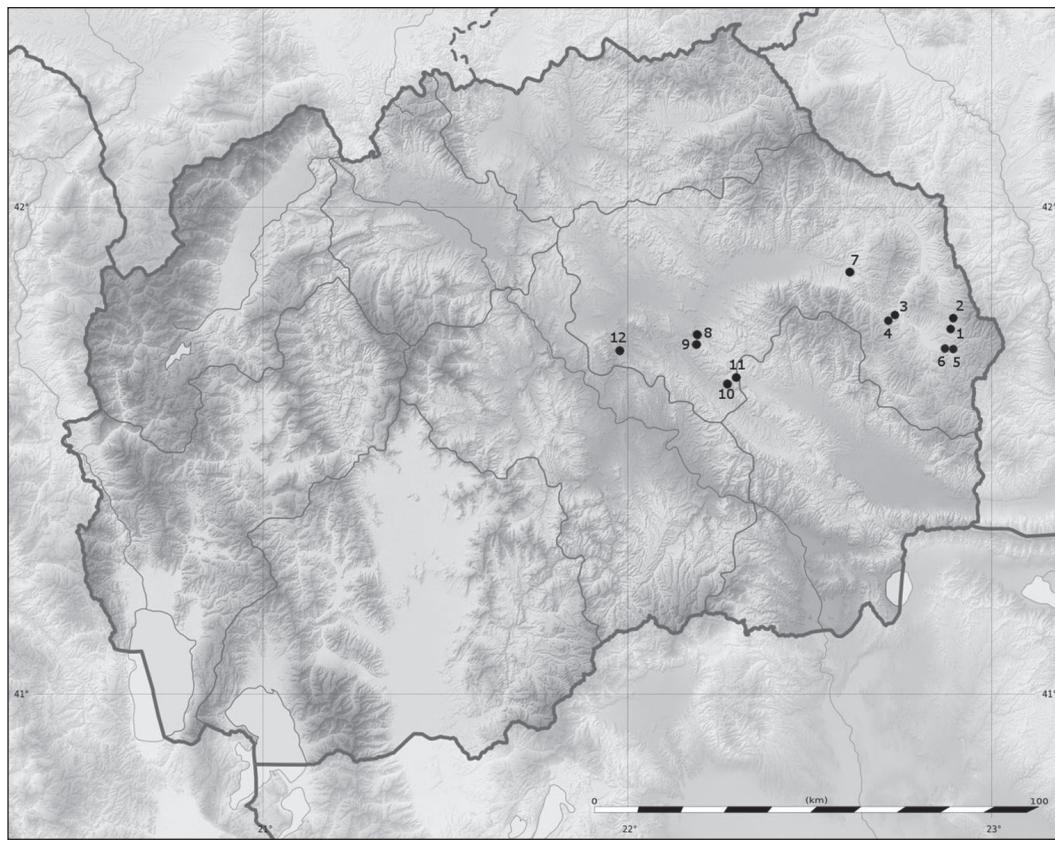
<sup>9</sup> Нацев 2013, 76–77. Керамитчиев 1974, 119–113.

<sup>10</sup> Керамитчиев 1977, 109–110.

<sup>11</sup> Нацев 2009, 23.

<sup>12</sup> Белдедовски 1990, 9–23.

<sup>13</sup> Two rescue excavation campaigns were carried out at this site in 2011 and 2018, during which a mining settlement was confirmed, located at the edge of the mining area at Borov Dol.



Map 3. Metallurgy associated sites in the Bregalnica valley (1. Vo Rekata; 2. Rakovec; 3. Žguri; 4. Šumutnica; 5. Gradište; 6. Kovačilnica; 7. Raška-Pekljani; 8. Štip; 9. Novo Selo; 10. Vrčva; 11. Damjan; 12. Hisar-Crešće)

Vo Rekata, a site 3.5 km east of Pehčevo on the Pehčevska River, is a mining shaft for the exploitation of iron ore.<sup>14</sup>

Rakovec is a site 3 km east of Pehčevo, where a mining settlement and several mining pits (today completely backfilled) were discovered.<sup>15</sup> A shaft with a high trapeze entrance was discovered on the site itself. In it several mining tools made of iron (hammers, picks, and chisels) were found. Today this shaft is used as a water reservoir for the town of Pehčevo.

Another site is Žguri, located 1 km east of the village of Mitrašinci. Here much iron slag was found, from which the site received its name<sup>16</sup> (žgura, means slag).

Chemical analyses performed by Apostol Keramitčiev on samples of slag from both sites showed the following results: the samples from Rakovec contain 44.66 % Fe, 0.91 % Pb, 0.2 % Zn, 0.09 % Cu; the samples from Žguri contain 32.12 % Fe, only traces of Pb, 0.39 % Zn and 0.02 % Cu. Keeping in mind the percentage of magnetite ( $Fe_3O_4$ ) and hematite ( $Fe_2O_3$ ), 72.41 % and 42 % accordingly, we can conclude that at Žguri there was a more efficient exploitation of iron (40 %) compared to Rakovec (only 28 %). This is an interesting observation, that two sites from the same region had different approaches to or levels of iron ore exploitation.

Another site is Šumutnica, near Mitrašinci village, where during archaeological excavations large quantities of iron ore slag were discovered.<sup>17</sup> Based on the material culture, the site is dated vaguely in the Roman/Late Antique period.

<sup>14</sup> Микулчиќ 1999, 99. Археолошка карта на Р. Македонија [Д. Голубовска], Т. 2, 1995, 13. Нацев 2013, 13.

<sup>15</sup> Гарашанин – Гарашанин 1959, 92. Нацев 2013, 113.

<sup>16</sup> Керамитчев 1977, 109–110.

<sup>17</sup> Керамитчев 1979, 157. Нацев 2013, 109.



Fig 4. Panoramic view of the Gradište site near Berovo



Fig. 5. Panoramic view of the Kovačilnica locality

Gradište is a site located on a high hill 7 km east of Berovo, on the left bank of the Bregalnica River (Fig. 4).<sup>18</sup> In the foothills of the fortified settlement was its industrial area, known as Kovačilnica (Fig. 5).<sup>19</sup> Here, the entire area is covered with iron ore slag and broken stones. This indicates that this location was used as a forge, and by the looks of it, one of the largest in Maleševo. This is also supported by mining tools discovered at the Gradište fortress above the site. The two sites communicate through two roads on the eastern and the western slopes of the hill. On the foothills, especially on the western and southwestern side, pottery fragments can be seen on the surface, dating from the Iron Age until Late Antiquity. It is possible that this location served as a regional centre for ore smelting, supplying all the urban centres in Maleševo. We cannot exclude the existence of mining shafts in the vicinity, but it is more probable that the ore was carried here from Vo Rekata and Rakovec near Pehčevo.

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<sup>18</sup> Керамитчиев 1979, 156. Нацев 2013, 91.

<sup>19</sup> Керамитчиев 1979, 156. Нацев 2013, 91.



Fig 6. Panoramic view of the Novo Selo gorge in Štip, where seven mining shafts were discovered

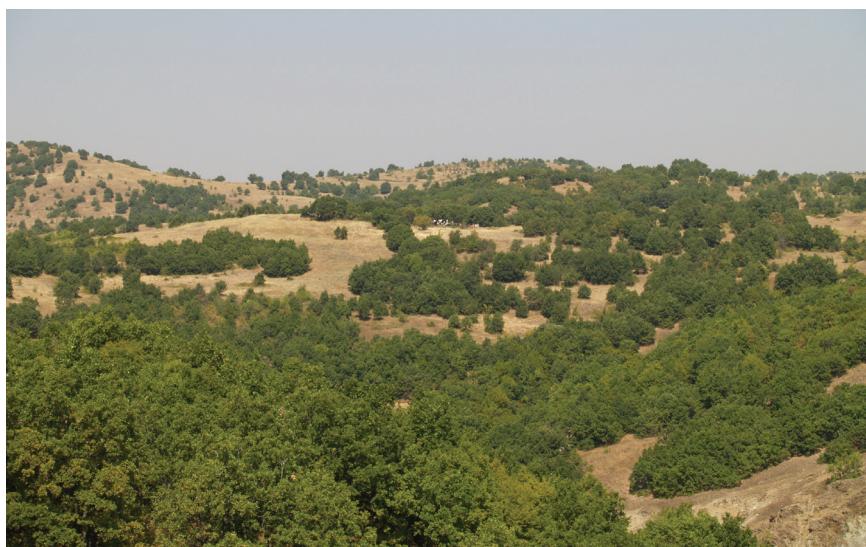


Fig. 7. Panoramic view of the Vrčva site near Brest

The middle Bregalnica valley is an important area for the study of the Roman mining in Macedonia (Map 3: 7–11). Here, gold-bearing mine shafts were discovered in Pekljani–Vinica, and large mining galleries were discovered in the centre of modern day Štip, which helped in locating the ancient city of Astibo.

At the site of Raška near Pekljani gold mining shafts were discovered and explored for a length of 80 m by Zvonko Beldedovski. The galleries were created by excavating the alluvium. The gold was extracted by washing the sand in the nearby river. Based on the retrieved archaeological artifacts, the mine was active between the 1st and 3rd centuries.

In the centre of Štip, behind the modern-day shopping centre, during the construction of a residential building in 1992, a mining gallery was discovered.<sup>20</sup> The gallery is 1.8–2 m high, 1.4–2.8 m wide. Due to

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<sup>20</sup> Белдедовски 1990, 9–23.



Fig 8. Panoramic view of the Damjan mine

wall collapse, only 40 m were explored, but this is not the total length of the mine. The gallery also had three circular air vents. The gallery was created as a result of the extraction of conglomerate of gravel and red soil. The entrance would have been closer to the Otinja River, where the washing of the extract would have taken place. This is supported by the discovery near the gallery of large fragmentary stone vessels, which were used for washing the sediment. Some material was retrieved during archaeological investigation, and laboratory analyses confirmed the presence of copper, gold and silver. According to the discovered pottery and marble artifacts, this mine was also active between the 1st and 3rd centuries.

On the outskirts of Štip toward Radoviš, in the Novo Selo locality where the Bregalnica passes through a small ravine, seven shafts were discovered, of which only two were accessible (Fig. 6).<sup>21</sup> From the discovered remains, it was concluded that the shafts were used for the extraction of iron ore. They are 9.3 and 8 m long, 1.1–1.3 m high and 1.15–1.4 m wide.

Apostol Keramitčiev during the 1970s registered two new sites, Vrčva near Brest (Fig. 7) and Kremen near Gorna Vraštica, which he considered to be locations for the extraction of iron ore.<sup>22</sup> Test excavations in 2011 did not confirm mining activities in Kremen, but in Vrčva a mining settlement, with residential and economic facilities, was discovered. Here, mining tools were found, as well as coins and pottery vessels that date the settlement between the 2nd and 6th centuries. Laboratory analyses show a relatively high level of smelting technology, with 30 % of the iron extracted from the ore. On the southern edge of the settlement there is a deep ravine, where three mining shafts for copper exploitation were discovered. This site, known as Borov Dol, has been recently appropriated by the Bučim mining company for the extraction of gold, silver and copper.

Northeast from here near the village of Damjan, on the same location where the ancient shafts were located, an iron ore mine has operated since the 1970s (Fig. 8). During modern excavations, ancient shafts were discovered together with an old mining toolkit (hammers, picks, chisels, pliers, an arrow, and a stone shovel).<sup>23</sup> Two Roman lamps were discovered as well.

Keramitčiev noted three other locations around Damjan, where iron ore was exploited: Kirizlak (where three shafts were discovered), Čurlovo Lozje, and on the right bank of Madenska River in the foothills of the Ploča hill.

<sup>21</sup> Белдедовски 1990, 9–23.

<sup>22</sup> Керамитчиев 1974, 119–133.

<sup>23</sup> Керамитчиев 1977, 111.

Slag was discovered near the Late Antique site of Hisar-Crešće in the lower Bregalnica valley (Map 3: 12), which indicates possible iron ore extraction and smelting. No excavations have been conducted so far.

### Crafts

Thanks to archaeological excavations, material remains confirming the existence of several crafts in the Bregalnica basin during the Roman period and Late Antiquity were confirmed. Some of the most developed were masonry, ceramic production, wood-working, metal-working, leather-working, and glass-working.

#### *Masonry*

During Early Antiquity masonry advanced rapidly, as is evident in the public buildings, streets, and fortification walls as well as residential structures, in the developing urban centres. In the Bregalnica basin the only known urban centre from this period is Gradište near Knežje, where the excavations of 2008 and 2009 revealed a street made of large monolithic slabs and a fortification wall built in *opus quadratum*, using large stone blocks for both internal and external façades.<sup>24</sup> The stones were attached with yellowish clay, and the gap between the two faces was filled with small stones and soil.

During the Roman Empire the number of urban centres increased, where public buildings had an important role (e.g., the gymnasium at Hanče, near Karbinci). They were built from carefully prepared, pre-shaped stone blocks. New types of structures appear, like the *villae rusticae* (near the urban centres), as well as the aqueducts that transported water from the source to the cities (Kemer near Štip is what remains of the aqueduct of ancient Astibo).

In Late Antiquity, many Roman military camps were transformed into towns, the best known of which in the Bregalnica basin is Bargala near Goren Kozjak. Masonry development reaches its peak, especially in the construction of fortification walls and monumental gates (e.g., the *Porta Principalis* in Bargala), as a result of perilous times. Novelty is the appearance of the *Episcopium*, a quarter in the town dedicated to the new Christian cult. The towns of the period included basilicas, residential and economic areas, baths, atria, water cisterns, and were usually surrounded by walls with gates and corridors leading toward the main squares and buildings. *Opus incertum* without emphasized horizontal rows was employed as a building technique, using local stones and mortar.

The basic building material (stone) was almost always abundant in the vicinity of the settlements, so no special quarrying activities were necessary. The only confirmed stone quarry, for the extraction of slate slabs used to cover the floors of the buildings in Bargala, is an ancient quarry between the villages of Mal Gaber and Golem Gaber.

#### *Pottery production*

The manufacture of pottery was practiced and relatively developed, producing not only utilitarian assemblages, but also luxurious vessels used for special occasions and rituals, large storage vessels (pithoi), ceramic water pipes, bricks and a range of household objects. Usually the raw material was obtained from nearby sources.

#### *Woodworking*

The proximity of rich sources of wood, in the Malešovo, Osogovo and Plačkovica mountains, allowed development of the manufacture of wooden objects. Because of its organic nature, these objects are rarely preserved. In two occasions however, the archaeologists were lucky enough to discover beautiful examples of wooden objects: one is the woodcarving from Bargala, and the other consists of the three *pixidae* from mound 1 at Gajnov Dol near Konče. Indirect indications of the practice of carpentry are the numerous metal objects usually associated with wooden ones: nails, locks, keys, etc.<sup>25</sup>

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<sup>24</sup> Matthews – Neidinger 2013. Mitrevski 2016.

<sup>25</sup> Nacev – Sekulov 2014, 94.

### *Metallurgy*

The large number of metal tools and weapons discovered during archaeological excavations, as well as the metallurgy-associated sites presented above, directly confirms the practice of metallurgy.

### *Leather working*

As already mentioned, stock herding was a developed branch of the economy. Aside from primary and other secondary products, the domestic animals were also exploited for their hides, from which clothes and shoes were produced, presumably in specialized workshops.

### *Production of glass*

As a specific and not very common craft, glass production appears in the Bregalnica basin during Late Antiquity. So far, the only glass workshop discovered in the Bregalnica basin, and one of the best preserved in Macedonia, is the glass workshop at Bargala.<sup>26</sup> It was operating on the ground floor of tower 7 of the fortification wall, near the winery. The winery and the glass workshop existed at the same time and both were part of the *Episcopium*.



Fig 9. The glass furnace at Bargala



Fig 10. Openings for ash removal and air vents on the glass furnace at Bargala



Fig 11. Additional workspace next to the glass furnace at Bargala



Fig 12. Glass object fragments found next to the glass furnace at Bargala

<sup>26</sup> Атанасова – Нацев 2017, 107–118. For the glass production see: Antonaras 2016a, 365–390. Antonaras 2016b.



Fig. 13. Ceramic pipes found next to the glass furnace at Bargala



Fig. 14. Two glass blowing metal pipes, found next to the glass furnace at Bargala

The glass kiln, seen in vertical cross-section, consists of two parts (Fig. 9). The lower part served as a fireplace, while the upper part was a dome-shaped brick chamber, found partially collapsed. The kiln was built on a 40 cm thick foundation layer of large pottery fragments and alternating layers of yellow and red clay. The interior of the lower part was lined with regular-shaped bricks, which, due to the high temperatures, became deformed over time.

The upper part of the kiln has a circular plan 1.25 m in diameter, gradually constricting towards the top. In the northeast part there is an elliptic basin with glass glaze residue, which was probably used as a working surface during glass smelting. Glass residues are also visible on the side walls. The lower part, the fireplace, is somewhat smaller (0.8 x 0.65 m) and layers of pure lime are visible. On the front is an opening for ash removal and on the west side is an air vent (Fig. 10).

In addition to those in the ash layer, an increased concentration of glass fragments was found in the northern and the western corners of the tower, but no remains of a structure were evident there. A large amount of quartz sand was stored in the western corner. A structure made of clay tiles (70 x 70 cm), founded on a layer of compact red clay, was discovered in the corner south of the kiln. It is possible that this structure was used as a working surface during some of the later stages of glass production, when a technique other than glassblowing was used (Fig. 11). Perović, in his study of opaque glass objects, considers that the production of some glass parts, like the glass mosaic tesserae or vessel handles, involves lower temperatures and the use of a spinning core on a flat surface.<sup>27</sup> We cannot exclude the possibility that the gilded mosaic tesserae found in the nave of the Early Christian City Basilica in Bargala were produced in this glass workshop.

Apart from the large quantity of glass fragments and glass (Fig. 12), some other interesting artifacts were discovered inside the tower/glass workshop as well: five ceramic smoking pipes, ranging from 7 to 14 cm in length were found preserved or fragmented (Fig. 13); two metal pipes for glass-blowing, one partially preserved (40 cm; Fig. 14) and the other curved at the end (23 cm) were found in a highly corroded state; together with the metal pipes, a marble mould for bowl making was also found; but probably the most important finds were the coins, dating from Justinian I (527–565, 16 *nummi*) to Mauritius Tiberius (582–602, half-follis).

From the material presented so far, we can conclude that the rapid expansion of the urban centres in the Bregalnica basin during the Roman period and Late Antiquity was largely due to economic development, resulting from the advancement of mining, metallurgy, farming, and craftsmanship, and the two new economic branches, wine and glass production.

Trajce Nacev  
Goce Delčev University, Štip  
trajcenacev@yahoo.com

Darko Stojanovski  
Austrian Archaeological Institute,  
Austrian Academy of Sciences  
darko.stojanovski@oeaw.ac.at

<sup>27</sup> Perović 2011, 389–395.

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## ABBREVIATIONS

Abbreviated journals and series used the combined DAI and AIA system for abbreviations. Those which do not appear in both systems are using general abbreviation form.

<i>AA</i>	Archäologischer Anzeiger
<i>ABulg</i>	Archaeologia Bulgarica
<i>ACIAC</i>	Acta Congressus Internationalis Archaeologiae Christianae
<i>ActaInstRomFin</i>	Acta Instituti Romani Finlandiae
<i>ActaMusNapoca</i>	Acta Musei Napocensis
<i>ADelt A/B</i>	Αρχαιολογικόν Δελτίον (Α = Μελέτες, Β = Χρονικά)
<i>AdI</i>	Annali dell’Instituto di corrispondenza archeologica
<i>AE</i>	L’Année épigraphique: Revue des publications épigraphiques relatives a l’antiquité romaine (Paris 1888– )
<i>AEAM</i>	To Αρχαιολογικό Έργο στην Άνω Μακεδονία
<i>Aegaeum</i>	Aegaeum. Annales d’archéologie égéenne de l’Université de Liège
<i>AEphem</i>	Αρχαιολογική Εφημερίς
<i>AErgoMak</i>	To Αρχαιολογικό Έργο στη Μακεδονία και στη Θράκη
<i>AJA</i>	American Journal of Archaeology, The Journal of the Archaeological Institute of America, (Boston 1897–)
<i>AJN Second Series</i>	American Journal of Numismatics
<i>AJPh</i>	American Journal of Philology
<i>AJug</i>	Archaeologia Jugoslavica
<i>AM/AthMitt</i>	Mitteilungen des Deutschen Archäologischen Instituts, Athenische Abteilung, Athens
<i>ANews</i>	Archaeological News
<i>ANRW</i>	Aufstieg und Niedergang der römischen Welt. Geschichte und Kultur Roms im Spiegel der neueren Forschung, (Temporini H., Haase W. eds.), Berlin/New York 1972–
<i>ANSMN</i>	American Numismatic Society Museum Notes
<i>AntTard</i>	Antiquité tardive. Revue internationale d’histoire et d’archéologie
<i>AquilNost</i>	Aquileia nostra. Bollettino dell’Associazione nazionale per Aquileia
<i>ArchCl</i>	Archeologia classica
<i>Archaeology</i>	Archaeology Magazine
<i>AncSoc</i>	Ancient Society
<i>ArcheologijaSof</i>	Archeologija. Organ na Archeologičeski institut i muzej (pri Bălgarskata akademii nauk)
<i>APregl</i>	Arheološki pregled. Arheološko društvo Jugoslavije
<i>ArtB</i>	The Art Bulletin
<i>AVes</i>	Arheološki vestnik, Ljubljana
<i>Balcanica</i>	Annual of the Institute for Balkan Studies, Belgrade
<i>Balakanoslavica</i>	Institute for Old Slavic Culture, Prilep
<i>BAcSerbe</i>	Bulletin de l’Académie des lettres royales Serbe
<i>BAmSocP</i>	The Bulletin of the American Society of Papyrologists
<i>BARIntSer</i>	British Archaeological Reports. International Series
<i>BayVgBl</i>	Bayerische Vorgeschichtsblätter
<i>BCH</i>	Bulletin de correspondance hellénique, Athènes
<i>BCH Suppl</i>	Bulletin de correspondance hellénique: Supplément, Athènes
<i>BdA</i>	Bollettino d’Arte

<i>BEFAR</i>	Bibliothèque des Écoles françaises d'Athènes et de Rome
<i>BIABulg</i>	Izvestija na Arheologiceskija institut/Bulletin de l'Institut archéologique bulgare
<i>BMQ</i>	The British Museum Quarterly
<i>Boreas</i>	Boreas. Münstersche Beiträge zur Archäologie
<i>BSA</i>	The Annual of the British School at Athens
<i>CarnuntumJb</i>	Carnuntum-Jahrbuch. Zeitschrift für Archäologie und Kulturgeschichte des Donauraumes
<i>CArch</i>	Cahiers archéologiques
<i>CCET V</i>	Cermanović-Kuzmanović, A. 1982: <i>Monumenta intra fines Iugoslaviae reperta. Corpus cultis Equitis Thracii V.</i> - EPRO/74/5, RGRW, Leiden.
<i>CCCHBulg VI</i>	Filipova, Sv., Petkov, Vl., Ivanov, S., Andonova, M., Prokopov Il., Coin Collections and Coin Hoards from Bulgaria, Vol. 6. Numismatic Collection Of The Museums at Sandanski (ancient Medius-Particopolis), Petrich (ancient Heraclea Sintica/Strimonica) and Gotse Delcev (ancient Nikopolis ad Nestum). Greek, Thracian, Macedonian, Roman Republican, Imperial and Roman Provincial Coins from the 6 <sup>th</sup> century BC to 5 <sup>th</sup> century AD, Sofia, 2016.
<i>CEFR</i>	Collection de l'École française de Rome
<i>CercNum</i>	Cercetări numismatice. Muzeul național de istorie
<i>CIJ</i>	J.-B. Frey, <i>Corpus inscriptionum iudaicarum, I-II</i> (Rome - Paris 1936-1952)
<i>CII</i>	J.B. Frey, <i>Corpus inscriptionum iudaicarum</i> (New York 1975)
<i>CIL</i>	Corpus inscriptionum latinarum, Königlich Preussische Akademie der Wissenschaften zu Berlin, vols. I – XVII, (Berlin, 1893 – )
<i>Chiron</i>	Chiron. Mitteilungen der Kommission für Alte Geschichte und Epigraphik des Deutschen Archäologischen Instituts
<i>ClJ</i>	The Classical Journal
<i>ClQ</i>	The Classical Quarterly
<i>CMRED II</i>	D. Tudor, <i>Corpus monumentorum religionis equitum danuviorum</i> , Vol. II The analysis and interpretation of the monuments, Leiden 1976
<i>CRAI</i>	Académie des inscriptions et belles-lettres. Comptes rendus des séances de l'Académie
<i>Corinth</i>	Corinth. Results of Excavations Conducted by the American School of Classical Studies at Athens
<i>Dacia</i>	Dacia. Revue d'archéologie et d'histoire ancienne
<i>DeltChrA</i>	Δελτίον της Χριστιανικής Αρχαιολογικής Εταιρείας
<i>Dodone</i>	Δωδώνη, Ιστορία και αρχαιολογία, Πανεπιστήμιο Ιωαννίνων Φιλοσοφική Σχολή, Ιωαννίνα
<i>DOP</i>	Dumbarton Oaks Papers
<i>DossAParis</i>	<i>Les dossiers d'archéologie</i>
<i>EAM I</i>	Epigraphes Ano Makedonias, (Elimeia, Eordaia, Notia Lygestis, Oresrtis), Volume 1, (Ritzakis Th., Touratsoglou Y. eds.), Athens, 1985
<i>EKM I</i>	Epigraphes Kato Makedonias (Inscriptions from Lower Macedonia): Inscriptions from Beroea Vol. I, Beroia (Gounaropoulou L. and Hatzopoulos M.B. eds.), Athens, 1998
<i>EpSt</i>	Epigraphische Studien
<i>ÉPRO</i>	Études préliminaires aux religions orientales dans l'empire romain, Brill/ Leiden
<i>ÉtCelt</i>	Études celtiques
<i>Ευλιμένη</i>	Eulimene (Μεσογειακή Αρχαιολογική Εταιρεία)

<i>FAB</i>	Folia Archaeologica Balkanica, Faculty of Philosophy, Institute for History of Art and Archaeology, (Skopje, 2006– )
<i>FiE</i>	Forschungen in Ephesos
<i>GlasBeograd</i>	Glasnik Srpskog arheološkog društva
<i>Gerión</i>	Gerión. Revista de Historia Antigua
<i>Gnomon</i>	Gnomon. Kritische Zeitschrift für die gesamte klassische Altertumswissenschaft
<i>GodZborSkopje</i>	Godišen zbornik na Filozofskiot fakultet na Universitetot vo Skopje
<i>Gymnasium</i>	Zeitschrift für Kultur der Antike und humanistische Bildung
<i>Haemus Journal</i>	Center for scientific research and promotion of culture, Skopje
<i>HarvTheolR</i>	The Harvard Theological Review
<i>HellenikaJb</i>	Hellenika. Jahrbuch für die Freunde Griechenlands
<i>Hesperia</i>	Hesperia. Journal of the American School of Classical Studies at Athens
<i>Hermes</i>	Hermes. Zeitschrift für klassische Philologie
<i>Historia</i>	Historia. Zeitschrift für Alte Geschichte
<i>HistriaA</i>	Histria archaeologica
<i>HTS</i>	Harvard Theological Studies
<i>IG</i>	M. Fraenkel, <i>Inscriptiones Graecae</i> (Beril 1985 – )
<i>IG X, 2, 1</i>	<i>Inscriptiones Graecae X, 2, 1 – Northern Greece</i> (ed. Edson Ch.), Berolini, 1972
<i>IG X, 2, 2</i>	<i>Inscriptiones Graecae X, 2, 2 – Northern Greece</i> (eds. Papazoglou F, Milin M., Ricl M., adiuvante Haloff K.), Berolini 1999
<i>IG X 2, 2</i>	<i>Inscriptiones Graecae X 2, 2, 2</i> (edidit S. Babamova), Berlin, 2023.
<i>I. Aeg. Thrace</i>	Epigraphes tēs Thrakēs tou Aigaiou: metaxy tōn potamōn Nestou kai Hevrou (nomoi Xanthēs, Rhodopēs kai Hevrou), eds. Louisa D. Loukopoulos, Maria Gabriella Parissaki, Selene Psoma, and Antigone Zournatzi, with the assistance of Diamanti Triantaphyllo and others. Athens 2005.
<i>IGBulg I<sup>2</sup></i>	<i>Inscriptiones graecae in Bulgaria repertae</i> , ed. Georgi Mihailov. 5 vols. Sofia 1958–1970, 1997. Vol. 1, 2nd edn. <i>Inscriptiones orae Ponti Euxini</i> (1970).
<i>IGBulg II</i>	<i>Inscriptiones graecae in Bulgaria repertae</i> , ed. Georgi Mihailov. 5 vols. Sofia 1958–1970, 1997. Vol. 2. <i>Inscriptiones inter Danubium et Haemum repertae</i> (1958).
<i>IJO</i>	<i>Inscriptiones Judaicae Orientis</i> , Vol. 1: Eastern Europe (Noy – Panayotov – Bloedhorn (eds.), Tübingen 2004
<i>ILBulg</i>	Gerov B., <i>Inscriptiones Latinae in Bulgaria repertae</i> (inter fluvios Oescum et Iatrum), Sofia 1989
<i>Iliria</i>	Iliria. Revistë arkeologjike
<i>IGUR</i>	<i>Inscriptiones Graecae Urbis Romae.</i>
<i>IMS VI</i>	Dragojević-Josifovska, B. 1982, <i>Scupi et la region de Kumanovo</i> . – <i>Inscriptions de la Mesie Supérieure</i> , vol. VI, Centre D’Études Épigraphiques et Numismatiques de la Faculté de l’Université de Beograd, 1982.
<i>IsrMusJ</i>	The Israel Museum Journal
<i>Stob.</i>	Babamova S., 2012, <i>Inscriptiones Stoborum</i> , Studies in the Antiquities of Stobi, Monograph Series Book I, Stobi 2012
<i>IzvVarna</i>	Izvestija na Narodnija muzej Varna Известия на Народния музей – Варна
<i>JbRGZM</i>	Jahrbuch des Römisch-Germanischen Zentralmuseums Mainz
<i>JDAI /Jdl</i>	Jahrbuch des Deutschen Archäologischen Instituts
<i>JEA</i>	The Journal of Egyptian Archaeology

<i>JFieldA</i>	Journal of Field Archaeology, Boston 1974–2011
<i>JGS</i>	Journal of Glass Studies
<i>JHS</i>	Journal of Hellenistic Studies, Cambridge
<i>JÖAI</i>	Jahreshefte des Österreichischen Archäologischen Institutes in Wien
<i>JRA</i>	Journal of Roman Archaeology
<i>JRS</i>	Journal of Roman Studies
<i>JQR</i>	Jewish Quarterly Review
<i>Kernos</i>	Kernos. Revue internationale et pluridisciplinaire de religion grecque antique
<i>Ktema</i>	Civilisations de l'Orient, de la Grèce et de Rome antiques
<i>Latomus</i>	Latomus. Revue d'études latines
<i>LibyaAnt</i>	Libya Antiqua
<i>LIMC</i>	Lexicon iconographicum mythologiae classicae, Zurich 1981 -2009
<i>LTUR</i>	Lexikon topographicum urbis Romae
<i>MacActaA</i>	Macedoniae acta archaeologica, Macedonian Archaeological Scientific Association, Prilep/Skopje, 1975 –
<i>MakedNasl</i>	Makedonsko nasledstvo. Spisanie za arheologija, istorija, istorija na umetnosta i etnologija
<i>Makedonika</i>	Μακεδονικά. Σύγγραμμα Περιοδικόν της Εταιρείας Μακεδονικών Σπουδών
<i>MAMA</i>	Monumenta Asiae Minoris Antiqua I–X, London 1928–1993.
<i>MdI</i>	Mitteilungen des Deutschen Archäologischen Instituts
<i>MÉFRA</i>	Mélanges de l'École française de Rome. Antiquité
<i>Μελετήματα</i>	Research Centre for Greek and Roman Antiquity, National Hellenic Research Foundation, Athens
<i>MemAmAc</i>	Memoirs of the American Academy in Rome
<i>MetrMusJ</i>	Metropolitan Museum Journal
<i>MIBE</i>	Hahn W. – Metlich M.A., Money of the Incipient Byzantine Empire (Anastasius I- Justinian I, 491–565), Wien 2000.
<i>MIBEC</i>	Hahn W.-Metlich M.A., Money of the Incipient Byzantine Empire Continued (Justin II – Revolt of the Heraclii, 565–610), Wien 2009.
<i>MitChrA</i>	Mitteilungen zur christlichen Archäologie
<i>Mnemosyne</i>	Mnemosyne. A Journal of Classical Studies
<i>Monumenta Asiae minoris antiqua I–X</i>	Publications of the American Society for Archaeological Research in Asia Minor, London 1928–1993
<i>Monumenta</i>	Annual of the Research Center for Cultural Heritage “Cvetan Grozdanov”, Macedonian Academy of Sciences and Arts
<i>NumChro</i>	The Numismatic Chronicle. The Journal of the Royal Society
<i>Numizmatičar</i>	Numizmatičar. Casopis za anticki i stari jugoslavenski novac
<i>Öjh</i>	Jahreshefte des Österreichischen Archäologischen Institutes in Wien
<i>OlForsch</i>	Olympische Forschungen
<i>OpArch</i>	Opuscula archaeologica
<i>OxfJA</i>	Oxford Journal of Archaeology
<i>PAPS</i>	Proceedings of the American Philosophical Society
<i>Patrimonium</i>	Periodical for Cultural Heritage - Monuments, Restoration, Museums, Calamus, Skopje
<i>PAS</i>	Prähistorische Archäologie in Südosteuropa
<i>PBF</i>	Prähistorische Bronzefunde
<i>PBSR</i>	Papers of the British School at Rome

<i>PIR</i>	Prosopographia Imperii Romani saec. I, II, III (1897–81, 1933–2) (ed.1 E. Klebs and H. Dessau, ed.2 E. Groag and A. Stein), Berolini
<i>PIR</i> <sup>2</sup>	Prosopographia Imperii Romani. 2nd ed. (Berlin and Leipzig 1933–2015)
<i>PJZ</i>	Praistorija Jugoslavenskih Zemalja 1–5, Benac A. (ed.), Sarajevo
<i>ProcBritAc</i>	Proceedings of the British Academy
<i>PZ</i>	Praehistorische Zeitschrift
<i>RA</i>	Revue archéologique
<i>RACr</i>	Rivista di archeologia cristiana
<i>Radiocarbon</i>	Radiocarbon. An International Journal of Cosmogenic Isotope Research
<i>RANarb</i>	Revue archéologique de Narbonnaise
<i>RBelgNum</i>	Revue belge de numismatique et de sigillographie
<i>RE</i>	A. Pauly and G. Wissowa, <i>Real-Encyclopädie der Classischen Altertumswissenschaft</i> (1893–1978)
<i>REG</i>	Revue des études grecques
<i>ReiCretActa</i>	Rei Cretariae Romanae Fautorum acta
<i>REJ</i>	Revue des études juives
<i>RGRW</i>	Religions in the Graeco-Roman World, Brill/Leiden
<i>RIC</i>	H. Mattingly E. A. Sydenham <i>The Roman Imperial Coinage</i> (London 1923– )
<i>RIC</i> <sup>2</sup>	H. Mattingly et al., <i>The Roman Imperial Coinage</i> 2nd rev. ed. (London 2007– )
<i>RSO</i>	Rivista degli studi orientali
<i>RM</i>	Mitteilungen des Deutschen Archäologischen Instituts, Römische Abteilung
<i>RPC</i>	Roman Provincial Coinage
<i>SNG ANS.</i>	Sylloge Nummorum Graecorum, American Numismatic Society, New York 1969–.
<i>SEG</i>	Supplementum epigraphicum Graecum, Amsterdam, (Leiden 1922 –)
<i>Situla</i>	<i>Annual of the national Museum of Slovenia</i>
<i>SNR</i>	Schweizerische numismatische Rundschau: Revue suisse de numismatique
<i>SoSchrÖAI</i>	Sonderschriften des Österreichischen Archäologischen Instituts
<i>SovA</i>	Sovetskaja archeologija
<i>Starinar/Старинар</i>	Starinar. Arheološki institut Beograd
<i>StClOr</i>	Studi Classici e Orientali
<i>StHist</i>	Studia historica. Historia antigua
<i>Stobi I</i>	Anderson-Stojanović V. R., Stobi. The Hellenistic and Roman Pottery, Results of the Joint American-Yugoslav Archaeological Investigations, 1970–1981, Princeton 1992.
<i>Studies I</i>	Wiseman J. (ed.) <i>Studies in the Antiquities of Stobi</i> , Beograd 1973.
<i>Studies II</i>	Wiseman J. (ed.) <i>Studies in the Antiquities of Stobi</i> , Beograd, 1975.
<i>Studies III</i>	Aleksova B. – Wiseman J., (eds.) <i>Studies in the Antiquities of Stobi</i> , Titov Veles, 1981.
<i>Studies IV</i>	Blaževska S. (ed.) <i>Studies in the Antiquities of Stobi</i> , Stobi 2018.
<i>TAM</i>	Tituli Asiae Minoris, I; II 1–3; III 1; IV 1; V 1–2 (Vienna 1901–1989).
<i>Thiasos</i>	Journal of Archaeology and Ancient Architecture
<i>Thracia</i>	Journal of the Institute for Balkan Studies with Center of Thracology, Bulgarian Academy of Sciences
<i>TransactAmPhilAss</i>	Transactions and Proceedings of the American Philological Association
<i>ZborMuzBeograd</i>	Zbornik Narodnog muzeja u Beogradu
<i>ZNTW</i>	Zeitschrift für die neutestamentliche Wissenschaft
<i>ZPE</i>	Zeitschrift für Papyrologie und Epigraphik, Köln

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*Глас СКА / Glas SKA*

*Гласник Српске краљевске академије, Београд / Glasnik Srpske kraljevske akademije, Beograd*

*ГСНД/GSND*

*Гласник Скопског Научног Друштва / Glasnik Skopskog Naučnog Društva*

*ГИНИ / GINI*

*Гласник на Институтот на национална историја, Скопје / Glasnik na Institut za nacionalna istorija, Skopje*

*Хераклеја / Herakeja*

*Зборник на статии за Хераклеја, Битола / Zbornik na trudovi za Herakleja, Bitola*

*Лихнид / Lihnid*

*Зборник на Заводот за заштита на спомениците и Народен музеј Охрид / Zbornik na Zavodot za zaštita na spomenicite na kulturata i Naroden muzej Ohrid*

*Maced. Num. Jour. / Макед. нум. глас.*

*Macedonian Numismatic Journal, Museum of Macedonia / Македонски*

*нумизматички гласник, Музеј на Македонија, Скопје*

*Nova Antička Duklja / New Antique Doclea*

*Zbornik radova Muzeji i galerije Podgorice / Collection of the Museums and Galleries of Podgorica*

*Споменик СКА / Spomenik SKA*

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