



Ottoman gunpowder artillery in Bulgaria: archaeological and textual evidence

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ABSTRACT

The paper examines specific artifacts – stone balls of various sizes – that constitute significant material remnants of Ottoman military history in Bulgaria. While historical records confirm the existence of Ottoman gunpowder artillery in the region, archaeological research has contributed little to its study. This is largely due to the misdating and misinterpretation of these stone balls.

Through careful analysis of publicly available archaeological data and historical sources, this study presents a new perspective on using gunpowder artillery and stone projectiles in Ottoman Bulgaria. It contends that most of these artefacts were integral to the Ottoman military arsenal, challenging previous assumptions that limited them to medieval ammunition.

The study provides compelling evidence for the existence of Ottoman-era stone projectiles at several sites, including Cherven, Shumen, Nikopol, Silistra, Kaliakra, and Svishtov. This evidence is corroborated by historical records, which underscore the undeniable presence of Ottoman artillery in the region, particularly in the areas between the Danube and the Balkan Mountains, which remained a vulnerable frontier zone in contrast to the land south of the mountains.

Crucially, this research underscores the need for more precise archaeological documentation, comprehensive artefact descriptions, thorough contextual information, and multidisciplinary research to understand the complex history of these stone projectiles fully.

KEYWORDS

Ottoman Balkans, Ottoman archaeology, military history, gunpowder artillery, cannonballs, hand firearms, Ottoman fortifications, Evliya Çelebi

Introduction

Ottoman archaeology remains a relatively underdeveloped field of study, not least in Bulgaria (e.g. Petersen 2017; Kolovos, Vionis 2018; Todorović 2021; Körpe 2022). This can be attributed to several factors, one of which is the temporal proximity of the Ottoman period to our own. Compared to earlier epochs, the Ottoman period is considerably well documented, thanks to a wealth of both Ottoman and foreign written sources, including official administrative documents. As a result, the study of this period has traditionally been considered the domain of historians and ethnographers rather than archaeologists. This has led to a lack of academic courses in Ottoman archaeology, and consequently to a shortage of trained specialists with in-depth knowledge of the archaeological heritage of the Ottoman period. In Bulgaria, for example, it has been a challenge over the past century to find more than a handful of researchers in each archaeological generation who have extensively studied the material culture and issues of this period.

The lack of interest in the archaeological heritage of the Ottoman period has often resulted in poor excavation practices and inadequate documentation of Ottoman sites and features. This problem is widespread not only in Bulgarian archaeology but also in other countries. At numerous archaeological sites throughout the former Ottoman Empire, Ottoman layers have been, and sometimes still are, removed indiscriminately (e.g. Baram, Carroll 2002, VIII; Vroom 2013, 79–80; Dikkaya 2017, 306). This practice has also led to significant destruction of the Byzantine cultural heritage, especially in the Eastern Mediterranean.

Even when excavations are meticulously conducted and the material remains of the Ottoman period are well documented during fieldwork, the results of the excavations are rarely published due to a general lack of interest, even among the excavators themselves.

If we were to categorize the ways in which we become aware of these studies, four categories would emerge. The most common is that when the results of excavations at a particular site are published, it is merely mentioned that structures and materials from the Ottoman period have been unearthed, with no further details given. Less common are cases in which specific find categories, such as coins or tobacco pipes, are mentioned. More extensive preliminary reports, which provide a more detailed but generally summarized account of the material found, are extremely rare. Complete publications prepared according to scholarly standards are generally lacking and rare examples of the opposite (e.g. Harrison et al. 1986; Hayes 1992; Popović, Bikić 2004) only serve as exceptions that prove the rule. As a result, the de facto unpublished materials and documentation from the excavations are stored in the archives of dozens of museums across the country, awaiting rediscovery by future scholars (cf. Mileusnić, Bikić 2018, 434 for a similar situation elsewhere).

As a result, our understanding of the archaeological heritage of the Ottoman period in Bulgaria is extremely limited and fragmented. We have a broad understanding of the material culture of the period (see, e.g., Stancheva 1990; Pletnyov 2004; Todorov 2010), but many details remain elusive, and we are far from being able to paint a comprehensive picture of the period. In the past, poor quality fieldwork at complex sites has led to the misdating and misinterpretation of many diagnostic Ottoman finds that have long been considered representative of medieval material culture. Typical examples include certain belt buckles (“*pafta*”) and heel irons, which have only recently been recognized as uniquely Ottoman objects (Atanasov, Dimov 2019; Kirilov 2021). In addition, it is common practice to classify Ottoman sgraffito pottery as medieval. It is mainly finds that cannot be dated earlier, such as Ottoman coins, tobacco pipes, coffee cups, porcelain wares, etc., that are traditionally considered to be unambiguously Ottoman.

This conflation of Ottoman and medieval materials has had a profoundly negative impact on medieval studies. The resulting distorted perspective on the material culture of the Middle and Late Byzantine period underscores the need for accurate excavation of Ottoman structures and a thorough understanding of the material culture of this period.

In this article, I aim to contribute to this endeavor. My focus is on a specific category of finds – stone objects of various sizes, mostly spherical, that have been unearthed during excavations of sites in Bulgaria. These sites were undoubtedly medieval towns and/or fortresses, but they continued to flourish well into the Ottoman era. Traditionally, these objects have been interpreted as ammunition for medieval trebuchets and slingers, and thus as part of the armament of Bulgarian armies in the centuries before the Ottoman conquest. However, a careful analysis of the available archaeological data, coupled with information from written sources, calls for a revision of this long-held view. This provides an opportunity for a new understanding of the role and function of at least some of these objects.

Material and methods

I have undertaken a comprehensive collection and analysis of published reports – many of which, unfortunately, lack detailed information – on the discovery of stone balls during archaeological excavations of multi-layered sites in Bulgaria. These sites were inhabited during both the medieval and Ottoman periods. I have excluded from my study other stone balls, interpreted as ammunition, found during excavations of prehistoric (Nikolov, Karastoyanova 2004; Nikolov et al. 2006; Grebska-Kulova 2007; Leshtakov 2011), Hellenistic (Minchev, Kuzov 2007; Stoyanov et al. 2008; Hristov, Pantov 2017; Devlova, Krumova 2021), and Late Antique sites (Staykova-Aleksandrova et al. 2006; Bozhinova 2009; Bozhinova, Tsoneva 2015; Marinov, Marchovski 2015; Radoslavova, Dzanev 2011; Klenina, Biernatski 2020; Vagalinski 2022, 76), as well as during underwater excavations (Prahov, Hristov 2021).

I have meticulously examined the contexts in which these objects were discovered, sometimes having to read between the lines, and collected data on their physical parameters (size, weight, raw material), where such details were reported. At the same time, I collected and analysed information from primary sources (mainly Ottoman tax records and excerpts from Evliya Çelebi's travelogues) and secondary written sources. These sources provide insight into the use of Ottoman artillery in Bulgarian territories, the different types of Ottoman guns, and the ammunition they used. I then collated the archaeological and textual data to sketch a preliminary, albeit general, picture. The spatial visualization and analysis of the mapped data raised new questions and set the course for future research.

It is necessary to clarify the temporal terminology used in this study. Since the text deals mainly with the present Bulgarian lands, the term “Ottoman” or “Ottoman Era” here characterizes the period beginning with the last decade of the 14th c. when the Ottomans finally conquered the entire territory within the present political borders of Bulgaria. The upper chronological limit is the third quarter of the 19th c., beyond which a significant portion of this territory ceased to be under the direct authority of the Sultan in Istanbul. Within this period, I distinguish two phases – the early Ottoman period (until about the middle of the 17th c.) and the late Ottoman period. The rationale for this periodization, which deviates from the established historical temporal terminology and initially refers only to present-day Bulgarian lands, lies primarily in the development of the archaeological material and certain shifts in material culture (including jewellery and clothing) in the 17th c. This was the time when the Christian subjects of the Ottoman Empire, at least in the Balkans, definitively broke ties with their “medieval” past, and their appearance took on a more or less “oriental” aesthetic.

The terms “Middle Ages” and “medieval” refer to the several centuries before the beginning of the Ottoman era, contrary to the established Bulgarian terminology which often refers to the period from the 15th to the (mid) 18th century as to the “Late Middle Ages”, preceding the period of the “Bulgarian National Revival”, i.e. the “Bulgarian Renaissance”. Although I generally adhere to Byzantine temporal terminology (e.g., Middle Byzantine and Late Byzantine periods) in my work, I have chosen to use local chronological terms such as “Second Bulgarian Kingdom” from time to time in this study as well. The reason for this is that most of the archaeological sites discussed in the text are located between the Danube and the Balkan Mountains and can be considered “Bulgarian” for at least the 13th–14th c. The period of the “Second Bulgarian Kingdom” roughly coincides with the end of the Middle Byzantine and most of the Late Byzantine, i.e., Palaeologan, period.

Archaeological evidence

In the so-called citadel of the fortified hilltop settlement near the village of Cherven in northern Bulgaria, there is a large architectural complex with a courtyard and a church, covering an area

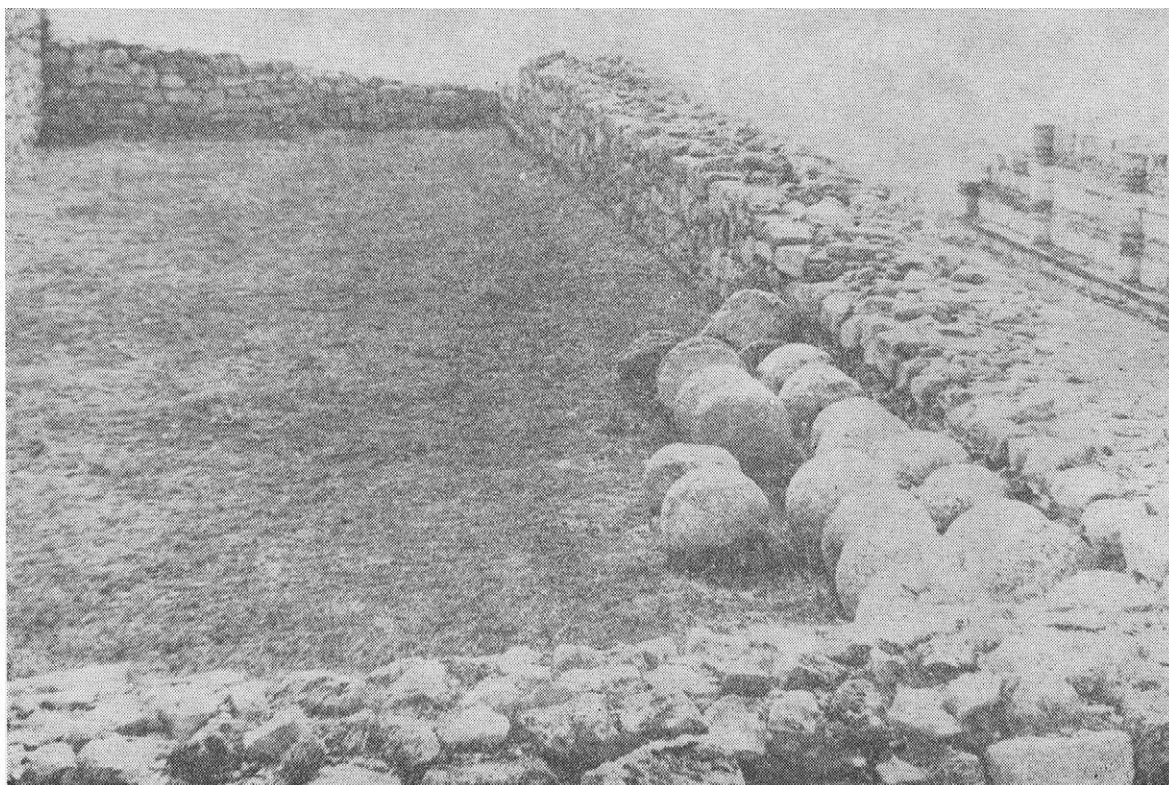


*Fig. 1. Stone balls from the so-called “feudal castle” at Cherven (after Dimova 1985, 85, fig. 46)
Обр. 1. Каменни топки от т. нар. „феодален замък“ в Червен (по Dimova 1985, 85, fig. 46)*

of about 2000 sq. m. During excavations conducted in the first half of the 1960s, more than thirty stone balls (fig. 1), each about 50 cm in diameter and of “perfectly round shape”, were discovered (Georgieva, Dimova 1967, 10; Dimova 1985, 85–86; see also Nesheva 1985, 185). The exact location of these balls has controversial accounts. According to the first report, 31 of them were “piled in one place” in front of the northwest entrance of Room 1 (Georgieva, Dimova 1967, 10). However, later reports suggested that they were found “in the inner northwest corner” of the complex (Dimova 1985, 85), and the number increased with the discovery of two identical balls “in front of the entrance” to the architectural complex, as well as three others “in front of Room 2” (Nesheva 1985, 185; Yordanov 2019, 160).

The complex is dated to the 13th–14th c. and is interpreted as the residence of the feudal lord who ruled over the medieval town and metropolitan centre of Cherven (Georgieva, Dimova 1967, 16). The researchers believe that the residence was destroyed and burnt down when the Ottomans conquered the town in 1388 (Kiel 1994, 180–181), a fate that also befell the entire “citadel”, which was “not renewed and used by the Turks” (Georgieva, Dimova 1967, 17). They suggest that the stone balls were used for the defence of the medieval Bulgarian castle and are evidence that the inhabitants possessed “stone-throwing machines” (Georgieva, Dimova 1967, 10). In addition to these stone balls, several much smaller specimens (diameter between 2.5 and 5.5 cm) were found and interpreted as sling-bullets (Georgieva, Dimova 1967, 23). These were much more numerous and were found “in various places – in the castle, along the fortress walls, and in some houses” (Nesheva 1985, 185). Most were “spherical” but some “resembled a flattened ball”. There were also “larger” balls, although their size was not specified.

Subsequent publication of Ottoman documents indicating that Cherven continued to serve as an administrative centre for several centuries after the Ottoman conquest (e.g., Tsvetkova 1972b,

441, 449, 462, 472, no. 1) led the excavators to reconsider some of their views on the chronology of the site. In a later text (Dimova 1985, 122–125), they argued that the complex continued to be used after the end of the 14th c. In support of this new thesis, they point to the presence of Ottoman coins from the first half of the 15th c., found in the backfill on the floors of the rooms of the complex and under thick debris from the destruction of its walls and upper parts (Dimova 1985, 80, 86). These coins have been known since the first publication (Georgieva, Dimova 1967, 10) but were not initially considered significant enough to contradict the idea of the irrevocable destruction of the complex in the late 14th c.

In this later work, they also wrote: “The excavation of the castle did not reveal any cultural layers from the different periods, since the level of the floors in the rooms and the courtyard remained unchanged throughout its existence. Therefore, with few exceptions, we attribute the finds to the most recent period, regardless of the part in which they were found” (Dimova 1985, 79). These “few exceptions” seem to include (among others) the large stone balls, which the researchers continue to consider as objects from the Second Bulgarian Kingdom, even though the “most recent period” of the complex’s functioning undoubtedly refers to the Ottoman period.

The idea that the (large) stone balls of Cherven are of medieval origin and represent ammunition for throwing machines is fully accepted in a later work devoted to them (Rabovyanov 2003; cf. Madgearu 2016, 278). However, its author does not agree that they were intended for the defence of the architectural complex of Cherven. He interprets them as ammunition made in the area and stored in Cherven to be at the disposal of the Bulgarian rulers when they went on campaign with their army and their wall-breaking machines, which he believes were trebuchets.

I have previously argued (Kirilov 2010) that this architectural complex was originally the residence of the bishops of the medieval town of Cherven, a belief I still hold. Consequently, I argue that it could not have housed defensive siege machinery or served as an ammunition depot for siege engines. However, my personal opinion and belief are not the primary focus here. What is more important is that the available archaeological evidence suggests that the stone balls found there belong to a later period, specifically to the time after the Ottoman conquest, when a military garrison was undoubtedly stationed in Cherven (Stoykov 1966, 325–327).

It is worth mentioning that both the two towers of the northeastern fortification wall and the imposing tower of the southwestern wall bear traces of the so-called talus or glacis (Dimova 1985, 47, 49, 57), a characteristic feature of fortifications at the beginning of the artillery age. In addition, a hoard of silver coins belonging to Sultan Murad I (1362–1389) was discovered in the complex of buildings along the wall in the southwestern corner of the fortress, south of the western gate. Researchers have interpreted this as the (main) headquarters of the city’s garrison, where several “stone war balls” were found (Dimova 1985, 67), along with diagnostic finds for the Ottoman period, such as heel irons and certain types of spurs (Nesheva 1985, 181–182; Rabovyanov 2022a). The fact that life in the Cherven fortress continued for at least three centuries after 1388 is now beyond doubt, thanks not only to written evidence but also to numerous archaeological finds and features (e.g., Yordanov 2006; 2019, 49–54).

Stone balls have also been found during excavations at other sites. One of them is the fortress on the plateau above Shumen. At its western end, there is a distinct architectural complex, which the explorer called the “Small Inner Fortification” or “Citadel”. Above its ruins was a “Turkish earthen fortification – a redoubt made of earth, stones and thick horizontal beams” (Antonova 1995, 48). In one of the towers of the complex, “several stone war balls” were found (Antonova 1995, 51). “Many” others, “probably prepared for the defence of the fortress” were also found “in all the rooms” of the largest building of the complex (no. 166), where, along with coins from the 14th c., “later Turkish” specimens were discovered (Antonova 1995, 53). Although Antonova believes that the “citadel” was



Fig. 2. Stone balls from the Silistra fortress (photo archive of Stefka Angelova)
 Обр. 2. Каменни топки от Силистренската крепост (фотоархив Стефка Ангелова)

built during the Second Bulgarian Kingdom, she could not ignore the evidence of its functioning during the Ottoman period. Her reported observations of “the double floor levels of the rooms of building 166 and the exclusively late medieval (i.e. Ottoman) materials found in the intermediate layer between the floors” indicate its relatively long use after the early 15th c. It is even possible that it was built after the Ottomans captured Shumen. A stone inscription with the name of Tsar Ivan Shishman, which was used as a *spolium* in the construction of the complex (Antonova 1995, 110–111), lends credence to such an assumption.

There are 72 stone balls found in Shumen, but nothing is known about them except that they are “of different diameters” (Antonova 1995, 104). A poor quality photograph (lacking scale) of only two of them (Antonova 1995, fig. 107) provides no further information. In any case, there is no reason to consider these finds as pre-Ottoman since they were found in contexts that undoubtedly date to the Ottoman period.

Stefka Angelova’s extensive research at Silistra, most of which remains unpublished, has led to the discovery of numerous stone balls of various sizes. These findings are recorded in the excavation field documentation. Two observations are particularly noteworthy. First, these objects were found predominantly in the northern part of the study area, specifically along the southern riverbank and around the northern wall of the local Danube fortress. Second, the contexts or layers in which these objects were found are consistently Ottoman in date. This fact is either explicitly stated in field diaries and inventory books, often with phrases such as “from the backfill of a Turkish house”, or it can be easily deduced from the recorded locations of the finds. For example, the field inventory book for the “Fortress Wall” site notes that in July 1971, a collection of fourteen limestone balls (Inventory nos 8–21), ranging in size from 5.6 to 16 cm, was discovered in the debris above the northwest corner

tower no. 1 (fig. 2). These were found at a depth of 2.37 m below the contemporary walking level in this area (16.13 m above sea level), indicating that they were undoubtedly within the Ottoman strata of the site. The likelihood that they are artefacts redeposited from an earlier period is minimal.

In addition, further excavations at Silistra have unearthed both intact and fragmented round shots, probably made of metal, along with materials dating back to the 19th c. The excavators have linked these findings to the bombardment of the city during the Crimean War (Atanasov et al. 2018).

In 1973, 97 stone balls were discovered in a room adjacent to the fortress wall of Nikopol. It is noteworthy that Nikopol was not only the final residence of Ivan Shishman, the last medieval Bulgarian ruler but also an important administrative centre during the Ottoman period (Manova, Sterkov 1982, 11–33). The balls, probably small in size, were described as “sling bullets” (Manova, Sterkov 1982, 22). This discovery is briefly mentioned in a later text discussing a coat of plates found next to them (Rabovyanov, Naydenov 2014). The authors have had the opportunity to thoroughly study the sparse excavation documentation, which, in their opinion, has greatly complicated the study of the finds due to lack of details (Rabovyanov, Naydenov 2014, 619). The context of the find is uncertain at best. The excavation report from that year indicates that the armour and stone balls were found in a “recess” in the fortress wall, a term the authors interpret as a niche (Rabovyanov, Naydenov 2014, 620), although it could refer to any form of depression. Despite the ambiguous context and the possibility of a later depression, the authors claim that the layer in which the plates and accompanying finds were discovered must be attributed to the period of the Second Bulgarian Kingdom. They argue that the description of the location of the finds precludes their association with either the Late Antique or Ottoman periods (Rabovyanov, Naydenov 2014, 619). However, this assertion lacks conviction, especially since they do not present or comment on other materials from the mentioned structure. The authors focus primarily on the armour itself and the search for its analogies. They admit that it, like other similar items, could have been in use over a long period of time, and they again concede that its context is highly uncertain: “The data on the archaeological environment that might eventually indicate the time of deposition are irretrievably lost” (Rabovyanov, Naydenov 2014, 624), that it “could have been made within a broad period (between the mid-13th and mid-14th c.)”, and that it “could have been used and preserved after 1350”. Their assertion that the *terminus ante quem* for its deposition was “the fall of the fortress into the hands of the Ottoman Turks” is more a product of personal belief rather than rigorous archaeological analysis. In fact, they are well aware that such plate armours have been used long after the end of the 14th c. (Rabovyanov, Naydenov 2014, 624).

The Svishtov fortress is known for its intensive occupation not only in the Middle Ages but also in the Ottoman period (Valov 1962). A few years ago, renewed archaeological excavations led to the discovery of iron cannon balls – two with a diameter of 5.4 cm and another with a diameter of 14.5 cm (Ovcharov et al. 2020, 1186), as well as stone balls. Although the published report on the 2019 excavations does not mention the stone balls, their discovery was publicized through electronic media reports in the spring of that year, where they were described as “stone war balls for throwing machines” (Anon 2019; see also Angelova 2021). Like the iron cannonballs, they were found in layers containing materials from the Ottoman period.

In the Baba Vida fortress in Vidin, whose present form dates to the Ottoman period and was modified for defence with gunpowder artillery (Kuzev 1981), several stone balls are on display. These may have been discovered during archaeological excavations here, although to my knowledge there is no officially published information about the circumstances of their discovery. However, it is known that cast-iron cannonballs have been found in layers containing numerous materials from the Ottoman period (Valov 1979, 188).

An unspecified number of stone balls were found during the excavations of the Lovech fortress, which was intensively occupied both in the Middle Ages and in the Ottoman period. Their di-

ameters range from 7 to 11 cm (Changova 2006, 155), but there is no information about the contexts in which they were found.

Smaller examples were found during the excavation of the largest architectural complex on Tsarevets Hill in Veliko Tarnovo, commonly referred to in Bulgarian scientific literature (and public consciousness) as the “Palace of the Bulgarian Tsars”. These specimens are 2 to 3 cm in diameter (Nikolova 1974, 372, nos 47–63). Even though the excavations of the complex have revealed many materials from the Ottoman period, these objects are typically dated to the Middle Ages by default and have been interpreted as sling bullets (Nikolova 1974, 296).

A stone ball was discovered on the floor of Room 2, located near the northern entrance of the so-called Northern Tower on Trapezitsa Hill. The ball is approximately circular, with reported diameters ranging from 23 to 28 cm (Dermendzhiev 2011, 37, 52), and it weighs 20 kg. It is made of sandstone. The researcher proposed two possible explanations for its presence. One hypothesis suggests that there was a platform with a stone-throwing machine (trebuchet) above the room where the ball was found. Alternatively, it might have been used by the Ottomans during their bombardment of the tower in 1393 and then left in its ruins. The last coins found in the building, which provide a *terminus post quem* for its abandonment and backfilling, date from the end of the 14th c. (Dermendzhiev 2011, 69–72). The researcher tends to date the final destruction of the tower to the early 15th c. (Dermendzhiev 2009, 62; 2011, 31), although this is not necessarily accurate.

Further excavations in the northern part of the hill uncovered four additional unstratified stone balls of unknown characteristics (Totev et al. 2012, 418; Totev et al. 2015a, 641). A fragment of another ball was found in the “room to the west of the alley leading to the walled postern” in the so-called Southern Sector of Trapezitsa Hill, “dated to the second half of the 14th c.” (Rabovyanov 2015, 226). This ball has a diameter of 17.5 cm and is roughly shaped from local grey-yellow sandstone. The dating of the room is influenced by the general dating of the “quarter” in this part of Trapezitsa, which was supposedly abandoned immediately after the Ottoman invasion (Rabovyanov 2015, 294). This thesis, first proposed in 2015, seemed problematic given the apparent presence of Ottoman-era materials in the backfill of many pits and buildings in this sector. More recently, this view has been revised due to the increasing number of finds and structures from this period (Rabovyanov 2022b; 2023).

An unspecified number of stone balls, with unknown characteristics, were discovered at the foot of the “Momina Krepost” hill in Veliko Tarnovo. Interestingly, the researcher linked their presence at the site to a hypothetical encampment of the Ottoman army, which was supposedly there during the siege of Tarnovo in 1393 (Nikolova 1968, 63) – a claim that lacks supporting evidence.

Two unstratified stone balls, also of unknown characteristics, were found near the Monastery of the Holy 40 Martyrs at the western foot of Tsarevets Hill (Totev et al. 2015b, 653) in an area abundant with materials and structures from various periods, including the Ottoman era. Two other balls were found at Frenkhisar, southeast of the same hill (Dermendzhiev 2011, 42).

The number and characteristics of the stone balls found at the so-called “Old Kilifarevo Monastery”, located to the south of Veliko Tarnovo, remain unknown (Nikolova 1978, 34). This site is, in fact, a fortified hilltop settlement with evidence of occupation during Late Antiquity, the Middle Ages, and the Ottoman period. The circumstances of the discovery of these artifacts are not known.

Excavations of the so-called outer wall of Kaliakra revealed a tower, built later than the original structures, with “massive walls sloping at an angle of 60°” (Dzhingov et al. 1998, 33), indicating the presence of a talus or glacis. The debris found inside the tower included fragments of bricks and roof tiles, pottery shards from various periods (including faience), a coin from the second half of the 14th c., “small stone sling balls” with a diameter of 6–7 cm, and sixteen “large stone balls” with a diameter of 15–25 cm. Some of these are depicted in a photograph (Dzhingov et al. 1998, 45, fig.

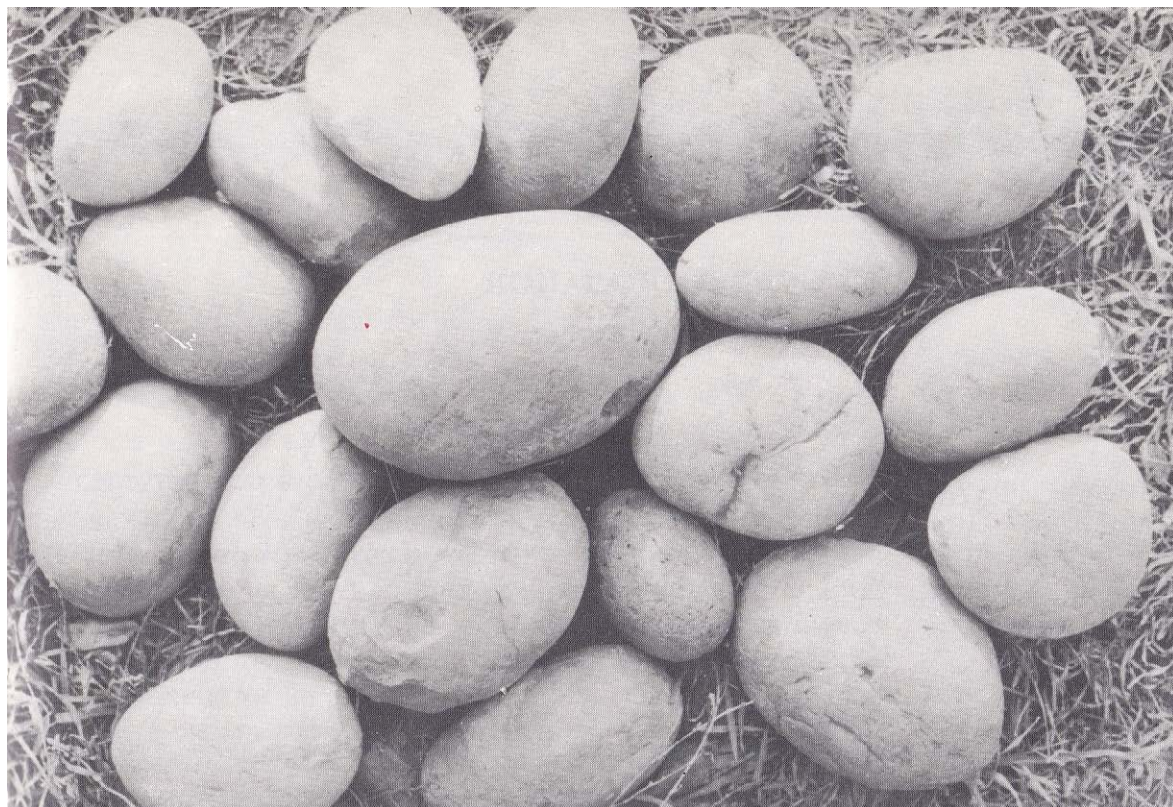


Fig. 3. Oval-shaped concretions from the Bozhenishki Urvich fortress, mistakenly identified as man-made stone balls (after Dishev 1979, 37)

Обр. 3. Конкреции с овална форма от крепостта Боженишки Урвич, погрешно приети за каменни топки, дело на човешка ръка (no Dishev 1979, 37)

43), showing objects with surfaces that are not perfectly smooth and shapes that are not necessarily spherical. Additional stone balls, with diameters between 6 and 16 cm, were found outside the tower.

During archaeological excavations in Varna, two unstratified stone balls of unknown characteristics were discovered at a site where materials from the Late Antique period were predominantly found, along with a coin of Sultan Murad II (Minchev, Kuzov 2007).

During the excavation of the multi-layered hilltop settlement “Bozhenishki Urvich”, artefacts and features dating from prehistory to the early Ottoman period were unearthed. In 1976, a room adjacent to the fortress wall yielded “280 pieces of war balls of various sizes and weights” (Vasilev 1977, 137), leading to the assumption that the room was used for ammunition storage. A decade later, a similar report was published: once again, in a room next to the fortress wall, “230 stone war balls and 170 stone sling bullets” were discovered (Vasilev et al. 1987, 209). Elsewhere, the discovery of “thousands of stone war balls, sling bullets” is reported (Dishev 1979, 27). The dating of these finds remains unclear. Accompanying photograph (fig. 3) show twenty stone objects with ovoid shapes and smoothed surfaces, but their dimensions are unknown. Another photograph (Dishev 1979, 33) depicts a similar object with surface damage, labelled as a “war ball with a human face”. Dr. Metodi Zlatkov, the director of the renewed excavations of the fortress, who kindly shared his observations, postulates that these objects are natural geological formations (concretions), which is probably correct.

Several unstratified “sling bullets made of stone, marble, and clay”, described as “not very large and rare for Oescus”, were found during archaeological excavations outside the ancient fortress wall of the Roman city of Oescus, located on the right bank of the Danube near the village of Gigen

(Kabakchieva 2008). These excavations also revealed, among other artifacts, a pierced Ottoman coin.

Textual evidence

Evidence of the presence of artillery units in Bulgarian fortresses can be traced back to the earliest series of Ottoman documents from the mid to late 15th c. For example, the synoptic tax register (*icmal defteri*) of the Sanjak of Vidin from 1454–1455 provides details about the *timar* owned by the gunner (*topçu*) Karagöz, a member of the garrison stationed at the Vidin fortress (Boyanich-Lukach 1975, 76; İnalçık et al. 2018, 143). The tax register of the Sanjak of Nikopol from the late 1470s provides insights into the composition of the regiments in several fortresses, including Nikopol, Turnu (Holavnik) and Giurgiu. In particular, this document reveals that Nikopol had 11 cannoneers, while Holavnik had an additional eight (Stoykov 1966, 313–315; İnalçık et al. 2018, 100). The same register mentions a group of ten *topçular* serving in the fortress of Giurgiu (Stoykov 1966, 331; İnalçık et al. 2018, 108).

A register, probably from the third quarter of the 15th c., which provides information about the *timars* in the Sofia and Samokov regions, contains details about the *timar* held by a *topçu* named Yako (Todorov 1966, 101–103).

After the conquest of the fortress on Tsarevets Hill in Tarnovo, a military garrison was indeed stationed there (Stoykov 1966, 323–325; Tsvetkova 1972a, 143–144). However, there is no explicit mention of whether this garrison was equipped with artillery. A similar lack of official information about the presence of gunners exists for the fortresses of Svishtov, Tutrakan, Ruse, Provadia, and Cherven (Stoykov 1966, 321–331; İnalçık et al. 2018, 104–109).

The absence of official documentation does not necessarily mean that these fortresses lacked artillery. Ottoman and European sources describing the so-called “Crusade of Varna” report the use of cannons and firearms by Ottoman garrisons not only in the fortresses of Vidin, Nikopol, and Giurgiu (Imber 2006, 79, 82, 152, 158), but also in Shumen, Provadia, and Silistra, where the presence of artillery units is not attested in the official Ottoman records published to date (Imber 2006, 88, 90, 142–144). Moreover, Jehan de Wavrin stated explicitly that the besiegers of the fortress of Giurgiu fired “balls of light, soft Brabant stone” (Imber 2006, 152).

Evliya Çelebi’s travelogue is another valuable source of information. During his extensive travels through present-day Bulgaria in the 1650s and 1660s, he noted the presence of artillerymen and cannons in several places. A significant number of these artillery units were located along the banks of the Danube.

According to Evliya Çelebi’s account, the Vidin fortress was equipped with a considerable number of cannons (*toplari çoktur*), which were positioned facing the Danube (Kahraman 2010b, 212). Inside the inner fortress, there were various facilities, including the fortress commander’s residence (*dizdar ağa hanesi*), warehouses for grain (*tahıl ambarları*) and ammunition (*cebehane hazineleri*), a stable for horses (*at ahır*), and a well for water supply (*su kuyusu*).

Evliya Çelebi’s travelogue does not mention any gunners or cannons in Nikopol. However, when he visited the fortress of Svishtov, he observed a mosque, the residences of the fortress commander and the garrison soldiers, a considerable stock of ammunition and several *şâhî* cannons (Kahraman, Dağlı 2006, 414).

Various structures and personnel are described in the fortress of Ruse. There were residences for the *dizdar*, the *imam*, the *müezzin* and the *kethüda*. There was also the tower for military musicians (*mehterhane kulesi*), storehouses for ammunition (*cebehane*) and grain (*tahıl anbarı*), and skilled artillerymen (*usta topçuları*). These gunners were equipped with *balyemez* cannons and *şayka* cannons (Kahraman, Dağlı 2006, 410).

Across the Danube in the fortress of Giurgiu, which housed a garrison of 300 soldiers, Evliya Çelebi observed several significant structures. These included a mosque, a building for military musicians (*mehterânî*), and an ammunition depot (*cebehane*). Most importantly, the fortress boasted an impressive armament of 50 small and large cannons (*küçük ve büyük şahane 50 adet topları*) (Kahraman, Dağlı 2006, 412).

The fortress of Silistra housed a diverse and rich array of cannons. Evliya Çelebi observed 40 “large and small” *şâhî*, *darbzen*, *kolomborna*, *şayka*, and *saçma* cannons there. He explicitly emphasized the absence of *balyemez* cannons (*balyemez topları yoktur*). Most of the cannons were positioned on the fortress walls along the banks of the Danube. Only a few *şâhî* guns were directed towards the south, where the Pasha’s palace was located just outside the walls. Upon his arrival in the city, Melek Ahmed Pasha was welcomed with a ceremonial cannon salute (Kahraman, Dağlı 2006, 431, 434).

The same governor renovated the dilapidated Hârşova Fortress in Romania (Kahraman 2010a, 311) and equipped it with eight cannons (*8 adet topları*), ammunition, and one hundred rifles (*100 adet silâhiyla tufengler*). The Tulcea fortress (Kahraman 2010a, 152–153) had a mosque, warehouses for wheat (*buğday ambarı*) and ammunition (*cebehanesi*), and “long guns” (*uzun topları*) aimed at the Danube.

At that time, it seems that at least some of the fortresses located to the south, along the northern edge of the Balkan Mountains, were abandoned or no longer sheltered military units. The fortress of Lovech had neither a commander nor a garrison (Kahraman 2010b, 204). The situation was similar at the dilapidated (*yer yer yıkılmış, içi ve dışı harabeye*) fortress of Shumen (Kahraman, Dağlı 2006, 406). Only the fortress in Provadia, with a garrison of 10 soldiers, had a small functioning mosque, a granary (*tahıl anbarı*), residences for the higher-ranking inhabitants (*dızdar*, *imam*, and *müezzin*), and “enough” *şâhî* cannons (Kahraman, Dağlı 2006, 400).

The Black Sea fortress of Varna was in good condition, with a “wonderful” ammunition depot and numerous cannons (*mükemmel cebehanesi ve topları çoktur*) (Kahraman 2010a, 132). Another fortress on the Black Sea coast, Karaharman (near the village of Vadu in Romanian Dobrudzha), had seven *balyemez* guns (Kahraman, Dağlı 2006, 466–467). The Kaliakra fortress appeared to be completely abandoned, with no houses, mosques, watchtowers, bazaar, guards, ammunition stores, or cannons (Dağlı, Kahraman 2005, 164). However, its operation during certain periods of the Ottoman era, the presence of numerous buildings from that time, including public buildings, as well as cannons, is beyond doubt. This is confirmed by years of archaeological research (Yosifova 1978, 45–46: numerous houses and a *hammam*; 1993: churches and cemeteries around them; 1998: a mosque; Dzhangov et al. 1998, 164–183: fortification), Ottoman documents from the second half of the 18th c. (Mihaylova-Mravkarova 1980), and descriptions by foreign travelers (Yosifova 1978, 41).

Results and discussion

The examination of the available archaeological data reveals that most contexts containing stone balls can be confidently dated to the Ottoman period (Cherven, Shumen, Silistra, Kaliakra), while in other cases, such as Nikopol and Vidin, this is highly probable. The dating of finds from other discussed sites remains generally unclear, with their attribution to the Ottoman period uncertain, as is their supposedly undisputed dating to the Middle Ages.

Significant collections of stone balls in Bulgaria predominantly originate from sites where intensive occupation is documented even after the late 14th c. Such finds are extremely rare in sites that ceased to exist before or at the beginning of the Ottoman period. The few known examples to the contrary seem to be exceptions that confirm the rule. Most of these are unstratified finds, and their

designation as medieval ammunition was often made by force of habit. In Pliska, unstratified finds of stone balls are occasionally reported (Dimitrov, Stoyanova 2006, 325; Grigorov et al. 2017, 534). Two were found in the fortress near Kiten (Panayotova 2007, 363), and another, embedded in the wall of a presumably medieval Byzantine church, near the village of Iskra (Dzhambov et al. 2007, 470). A specimen found in Ottoman layers in Plovdiv has been interpreted as a “redeposited” medieval find (Stanev, Bozhinova 2015, 746). Three specimens “as big as a fist” were found “near the entrance to Tower no. 3” in the Anevsko Kale fortress near Sopot, without clarifying whether they were outside or inside the tower (Dzhambov 1991, 87, 93, fig. 60r).

The seemingly largest “medieval” collection comes from the multi-layered fortified hilltop settlement of Krasen near Panagyurishte, which saw intensive occupation both in Late Antiquity and the Middle Ages. However, excavations at this site have yielded a few coins from the Ottoman period (Grigorov 2010, 196–197), as well as other diagnostic finds from that time, such as heel irons and clay tobacco pipes (Grigorov 2010, 143–144, 154). The thirteen stone balls found here vary in shape, size, weight, surface texture, and raw materials, and were “found throughout the study area and in all strata” (Grigorov 2010, 65, 318, Pl. 16). According to the catalogue, they date from either Late Antiquity or the Middle Ages. Overall, the proposed dating of many finds from this site is controversial. For example, medieval glass bracelets have been attributed to Late Antiquity, vertical loom weights to the Middle Ages, and rowel spurs to the 12th c. Given all this, it is difficult to accept without reservation that the stone balls found at the site are medieval ammunition. However, it is worth noting that the publication of the results of the excavations at the Krasen fortress is one of the few texts in which we can find information about their weight, which ranges from 250 to 800 grams.

In summary, the archaeological analysis suggests that a significant portion of the stone balls with an unclear archaeological context probably date from the Ottoman period and represent Ottoman cannonballs. A comparison with data from written sources reveals that most of the sites in Bulgaria, where archaeological collections of such objects originate, were home to Ottoman garrisons. Some of them (Vidin, Nikopol, Svishtov, Silistra) undoubtedly included artillery units. Of course, the absence of direct data of the same nature for other sites does not necessarily imply that guns were never stationed there.

Stone cannonballs have been found during archaeological excavations not only in Bulgaria but also in Serbia. According to official documents, there were producers of stone artillery ammunition in Serbia in the second half of the 15th and 16th c. (Petrović 1966, 167; Zirojević 1974, 203–204). Collections of such objects have been found at various sites that were intensively occupied during the Ottoman period. As in Bulgaria, they are either unstratified finds or found in Ottoman contexts. Such finds were made in the fortresses of Maglić (Popović 2012, 174), Stalać (Minić, Vukadin 2007, 121–122), Golubac, Novo Brdo, Smederevo, Beograd (Katanić 1981, 203–205, see also Bajalović-Hadži-Pešić 1984, 75, and Popović, Bikić 2004, 65, 84, 100), etc. The size of the stone balls varies, mostly ranging from seven to twenty cm, but some are comparable to those from Cherven, and occasionally even larger ones have been found. Balls from Maglić and Stalać are made of sandstone, with the former being “rough and imprecise”.

The numerous stone balls from Novigrad in Croatia (Aralica et al. 2021), most of which are unstratified finds, are divided into two categories – large (18 to 58 cm), supposedly intended for stone-throwing machines, and small (with a diameter equal to or less than 17 cm), characterized as cannonballs. Without an additional criterion, this classification would have seemed highly questionable, but the researchers explicitly note that the large balls are “irregularly shaped” and therefore consider it “quite certain that they were not used as cannonballs”. There are indeed (large) examples in the accompanying photographs where a partially flat surface is visible, and these could indeed be interpreted as ammunition for stone-throwing machines. For others, however, this assumption is not

entirely certain.

Numerous stone projectiles from Chembalo (located on the Crimean Peninsula) exhibit flat areas on their surfaces, suggesting that they may have served as ammunition for stone-throwing machines (Dyachkov 2017). However, within the same fortress and throughout Crimea, many such specimens have been found in contexts dating from the late 14th c. onwards, which are most plausibly interpreted as cannonballs (Kuz' 2010; Ruev 2014).

The variation in size of these stone cannonballs provides archaeological evidence for a fact known from written records: the Ottoman Empire possessed and used a range of cannons with different calibres (Ágoston 2005, 61–95; 2016, 32–43). The substantial stone cannonballs from Cherven, which appear to weigh about 160 kg each (given an average specific weight for stone of 2500 kg/m³), were probably ammunition for some of the largest cannons of their time – mortars (or bombards) capable of firing projectiles of this size, if not larger. This collection inevitably raises several unanswered questions, one of the most important being the rationale for housing this collection in this particular location. It is noteworthy that stone projectiles of comparable size have also been found in the “palaces” of Maglić and Golubac, similar to the “castle” in Cherven (Katanić 1981, 205; Popović 2012, 174).

Stone ammunition was used not only for large cannons but also for the smallest cannons and hand-held firearms (*tüfenk*). The barrel diameter of these weapons was usually between 2 and 3 cm (Ágoston 2005, 90), and the lighter ones used ammunition weighing 12 to 15 grams. This leads to the question of the function of stone balls of similar size and weight, which are often interpreted as sling-bullets or children's toys (Rabovyanov 2009; 2015, 246), especially when discovered in Ottoman structures and layers.

The current state of research does not allow a more precise chronology of the archaeological evidence for the use of gunpowder artillery in Bulgaria during the Ottoman period. It can be postulated, albeit for general considerations, that the large projectiles from Cherven should be dated relatively early, specifically no later than the beginning of the 16th c. This is because the use of ammunition of this size almost completely ceased in the following centuries (but see Cipolla 1965, 96–99, 102, no. 1). The increased use of metal projectiles in later periods does not inherently justify dating stone ammunition exclusively to the early Ottoman period, since their use did not cease in the subsequent centuries.

It is essential to consider the possibility that the stone ammunition for gunpowder artillery discovered in Bulgaria was not exclusively “Ottoman” but also “Bulgarian”. This implies that at least some of it predates, even if only marginally, the Ottoman conquest of the last medieval Bulgarian states. In fact, there is evidence of the use of cannons in Balkan armies as early as the 14th c. Some researchers suggest that the Ottomans were introduced to this novel type of weapon during their conquest campaigns in Southeastern Europe (Ágoston 2005, 17–18). However, to the best of my knowledge, there is no evidence indicating that the armies of the rulers of Tarnovo, Vidin, Silistra, or Kaliakra owned and operated cannons.

Conclusion and future perspectives

The existence of previously unrecognized archaeological evidence of Ottoman gunpowder artillery in Bulgaria is, in my view, indisputable. My proposed understanding of the function of stone projectiles from sites such as Cherven, Shumen, Nikopol, Silistra, Svishtov, and others does not imply a denial of the use of trebuchets, mangonels, or spherical stone projectiles by medieval armies in Bulgaria and the Balkans. The use of stone-throwing machines is confirmed by written sources (Madgearu 2016, 157–159, 164–165, 169). However, for archaeology to make a meaningful contri-



Fig. 4. Map showing all places mentioned in the text (author Ch. Kirilov. Basemap: <https://maps-for-free.com/> with modifications by the author. Hydrology layer: <https://www.hydrosheds.org/products/hydrorivers> with modifications by the author).

1. Anevsko kale; 2. Beograd; 3. Bozhenishki Urvich; 4. Chembalo; 5. Cherven; 6. Gigen; 7. Giurgiu;
8. Golubac; 9. Hârşova; 10. Iskra; 11. Kaliakra; 12. Kavala; 13. Kilifarevo; 14. Kiten; 15. Komotini;
16. Krasen; 17. Lovech; 18. Maglič; 19. Nikopol; 20. Novigrad; 21. Novo Brdo; 22. Pliska; 23. Plovdiv;
24. Provadia; 25. Ruse; 26. Serres; 27. Schumen; 28. Silistra; 29. Skopje; 30. Smederevo; 31. Sofia;
32. Stalać; 33. Svishtov; 34. Thessaloniki; 35. Tulcea; 36. Turnu (Holavnik); 37. Tutrakan; 38. Vadu;
39. Varna; 40. Veliko Tarnovo; 41. Vidin

Обр. 4: Карта на местата, споменати в текста (автор Ч. Кирилов. Картна подложка: <https://maps-for-free.com/> с модификации на автора. Хидроложки слой: <https://www.hydrosheds.org/products/hydrorivers> с модификации на автора).

1. Аневско кале; 2. Белград; 3. Боженишки Урвич; 4. Чембало; 5. Червен; 6. Гиген; 7. Гюргево;
8. Голубац; 9. Хършова; 10. Искра; 11. Калиакра; 12. Кавала; 13. Килифарево; 14. Китен;
15. Гюмюрджина; 16. Красен; 17. Ловеч; 18. Маглич; 19. Никопол; 20. Новиград; 21. Ново Бърдо;
22. Плиска; 23. Пловдив; 24. Провадия; 25. Русе; 26. Сяр; 27. Шумен; 28. Силистра; 29. Скопие;
30. Смедерево; 31. София; 32. Сталач; 33. Свищов; 34. Солун; 35. Тулча; 36. Турну (Холъвник);
37. Тутракан; 38. Ваду; 39. Варна; 40. Велико Търново; 41. Видин

bution to this issue, it is crucial that the contexts in which these artifacts are found are meticulously investigated and documented, and the results of excavations are disseminated with care.

In addition, the artifacts themselves must be described more precisely, taking into account not only their dimensions but also their weights, which play a crucial role in their classification by their makers and users. Equally important is the precise determination of the raw material from which they were made.

The shape of the object and the condition of its surface are also critical characteristics that

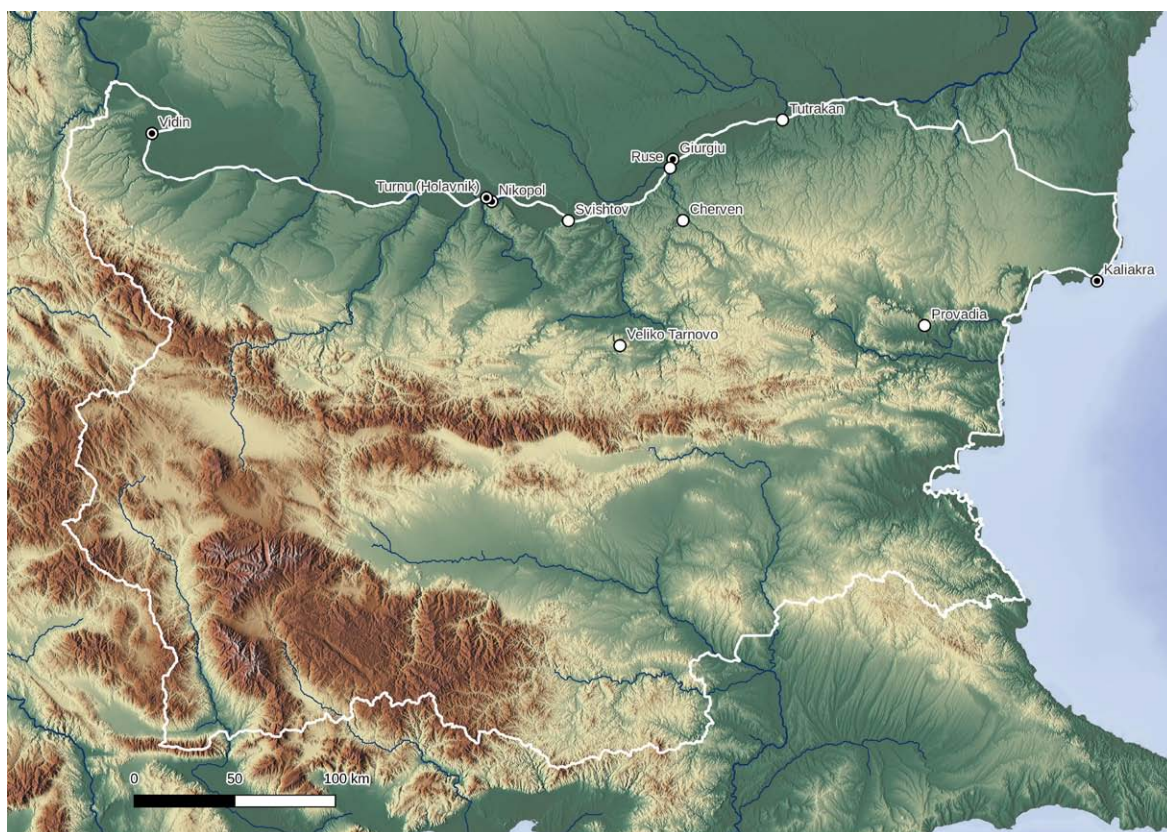


Fig. 5. Map showing fortifications housing military units in Bulgaria as documented in Ottoman registers (author Ch. Kirilov. Basemap: <https://maps-for-free.com/> with modifications by the author. Hydrology layer: <https://www.hydrosheds.org/products/hydrorivers> with modifications by the author). White circle: Attested military garrisons. Black dot: Attested artillery units

Обр. 5. Карта на укрепления с военни гарнизони в България според данни от османски регистри (автор Ч. Кирилов. Картна подложка: <https://maps-for-free.com/> с модификации на автора. Хидроложки слой: <https://www.hydrosheds.org/products/hydrorivers> с модификации на автора). Бял кръг: Засвидетелствани военни гарнизони. Черна точка: Засвидетелствани артилерийски части

must be thoroughly documented. Unlike projectiles for stone-throwing machines, the shapes of cannonballs should generally approximate a ball as closely as possible, and the surfaces must be relatively well smoothed (Rogers 2019, 43), although we should not expect them to resemble billiard or bowling balls.

Indeed, stone balls may have served purposes beyond ammunition in the past, so the discussion should not be limited to the dichotomy of “(ammunition for) catapults or cannons”. Once again, the careful documentation and publication of contexts play a key role.

Finally, I would like to highlight an important observation. The fact that the archaeological and written evidence of Ottoman artillery predominantly pertains to locations between the Danube and the Balkan Mountains (figs 5–6), often representing medieval fortresses captured by the Ottomans, is probably not a coincidence. These lands, although effectively conquered and pacified from the first quarter of the 15th c. onward, seem to have constituted a frontier zone that was not only potentially threatened but also frequently attacked by political entities north of the Danube. Conversely, in the regions south of the mountains, which had remained untouched by foreign armies for nearly four centuries until the early 19th c., the maintenance of fortifications and stationed artillery units would have been considered unnecessary from the perspective of the Ottoman authorities, except for cer-



Fig. 6. Lower Danube fortifications with artillery units, as reported in Evliya Celebi's travelogues (author Ch. Kirilov. Basemap: <https://maps-for-free.com/> with modifications by the author. Hydrology layer: <https://www.hydrosheds.org/products/hydrorivers> with modifications by the author)

Обр. 6. Укрепления по Долен Дунав с артилерийски подразделения в тях според сведения от пътеписите на Евлия Челеби (автор Ч. Кирилов. Картна подложка: <https://maps-for-free.com/> с модификации на автора. Хидроложки слой: <https://www.hydrosheds.org/products/hydrorivers> с модификации на автора)

tain coastal points such as Kavala (Kahraman 2011, 114), Thessaloniki (Kahraman 2011, 141–142, 145–146), Varna, and others.

In his description of the fortress of Komotini, Evliya Çelebi states: “In places, the walls and fortified towers have been destroyed. Weapons and ammunition are missing. Therefore, because it is in the interior, there is no ammunition, no *dizdar*, and no fortress garrison, but only many Jews” (Dimitrov 1972, 112; Kahraman 2011, 83). The situation was similar in Serres (Kahraman 2011, 125). In Plovdiv, there was neither a garrison nor weapons since the city was in an inland province (*iç il*). However, it had two *şâhî* cannons, which were used to signal the population on religious holidays (Kahraman, Dağlı 2006, 498). There is no record of cannons in Sofia (Kahraman, Dağlı 2006, 508–541). I remain unconvinced that the mentioned gunner Yako can or should be interpreted as a hypothetical member of an artillery garrison in that city. There is no evidence to support such a claim. It is plausible that he was just an artilleryman who participated in military campaigns. Skopje, also an inland fortress, had few weapons and cannons (Kahraman 2010a, 767).

All this leads subtly to the broader question of the fate of the medieval settlement network, including in present-day Bulgarian territories, during the Ottoman era. While the discussion of these questions is beyond the scope of this work, finding the right answers also requires a thorough analysis of the available archaeological material, including seemingly uninformative finds such as stone balls.

Acknowledgements

This research is partially supported by the Bulgarian NSF, through project No КП-06-H70/5 (Settlement network, road infrastructure and population in Bulgaria during the Ottoman period – historical and archaeological spatial analysis), and partially by the European Union-NextGenerationEU, through the National Recovery and Resilience Plan of the Republic of Bulgaria, project No BG-RRP-2.004-0008 (SUMMIT: Sofia University Marking Momentum for Innovation and Technological Transfer).

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Османска огнестрелна артилерия в България: археологически и исторически свидетелства

Чавдар Кирилов

(резюме)

Предмет на това изследване са каменните топки с различни размери, които се откриват при разкопките на редица, по правило укрепени, обекти в България, които са обитавани през Средновековието. На определени места тези предмети се откриват под формата на колективни находки, съставени от по няколко десетки екземпляра. Другаде представляват единични находки, които обаче се срещат достатъчно често, така че да формират (при продължителни проучвания) значителни колекции. Традиционно те се датират в Средновековието и се означават като „бойни топки“. В зависимост от размерите си едни от тях се разглеждат като снаряди за каменометни (стенобойни) машини, а други – като топчета, изстрелвани с помощта на прашки.

Устойчивите възгледи относно тези предмети се дължат най-вече на силата на навика. Тяхната датировка и функция се приемат за дотолкова подразбиращи се, че те нито се обнародват съгласно всички правила на науката, нито са били предмет на по-задълбочено изследване. Подобно на много други археологически находки, те се считат за безинтересни, тъй като видимо няма с какво да обогатят културно-историческия дебат, който традиционно е главната (а понякога и единствената) цел на едно археологическо проучване, независимо дали то е теренно или кабинетно.

Подобно схващане е, разбира се, дълбоко погрешно. Каменните сфери, като всяка друга археологическа находка, са носители на разнообразна информация, която чака да бъде извлечена. Немалка част от нея действително не би заинтригувала оногова, който се вълнува само от отговорите на въпроси като „Кой?“ и „Кога?“. Дори тези отговори обаче би следвало да бъдат дадени след направата на задълбочен анализ, какъвто в случая липсва. Поставянето на каруцата пред коня не е добра практика (не само) в науката и това ме накара да обърна по-сериозно внимание на проблема. Наличните данни не са твърде обилни, но в крайна сметка се оказва, че са достатъчни, за да може традиционните възгледи да бъдат проблематизирани и да се очертае доста по-различна от обичайната картина.

Бърз поглед към известното към момента показва, че големите сбирки от каменни топки произхождат не от какви да е средновековни обекти, а все от такива, които продължават да функционират пълноценно и след установяването на османската власт в днешните български земи. На места, които прекратяват съществуването си преди или най-късно по време на османското завоевание, такива предмети или не се откриват, или представляват изключително редки находки. От друга страна е добре известно, че векове наред османските огнестрелни оръжия – както оръдията, така и пушките – масово използват боеприпаси, изработени от камък. Всичко това ме накара да застана нащрек и да се вгледам внимателно в сведенията относно контекстите и средата, в която се намират каменните топки.

На някои места те без съмнение са открити в контексти и среда от османско време. Примери за това са Червен, Шумен, Силистра, Калиакра и Свищов. Значимата сбирка от каменни топки от Червен, произхождаща най-вече от т. нар. „замък“ и от комплекса от сгради покрай западната крепостна стена в югозападната част на вътрешния град, с основание е отнесена от проучвателите към последния период от съществуването на града, т. е. към времето след

1388 г. Същевременно „силата на навика“ ги кара да твърдят, че въпросните находки са средновековни. Дълбокото противоречие между двете им твърдения, изглежда, не поражда особени притеснения (не само у тях). Огромната част от десетките каменни топки от Шуменската крепост са открити в помещенията на т. нар. „малко укрепление“ или „цитадела“ в западната част на крепостта, в среда, изобилстваща с материали от османската епоха. Напълно вероятно е въпросният архитектурен комплекс не просто да е използван по османско време, а дори да е построен едва тогава. Все пак не бива да се забравя, че като сполия в градежа му е използван надпис с името на цар Иван Шишман. Все в пластове и структури от османско време са откривани многобройните каменни топки в Силистра. Нещо повече, те са намирани най-вече в района на крайдунавската крепостна стена, т. е. точно там, където според писмени данни са били разположени повечето от оръдията на османския гарнизон. В Калиакра такива находки вероятно са намирани на не едно и две места, но обнародваните предмети произхождат най-вече от рушевините на самотната противоартилерийска кула в северната периферия на обекта, които изобилстват с керамика от османската епоха. От османски пластове произхождат и каменните сфери от Свищов.

Другаде, например в Никопол и Търново, ситуацията е по-неясна, но постулираната средновековна дата на тамошните екземпляри е несигурна, а вероятността те да датират от османско време съвсем не е малка. При всички положения е ясно едно – налице са редица сигурни контексти с бойни топки от османско време, както и няколко спорни, но няма нито един сигурен средновековен контекст, предлагащ колекция от каменни „бойни топки“, съпоставим с тези от османско време.

Съпоставката с данните от писмените извори е многозначителна. Започвайки още от средата на XV в., османски регистри засвидетелстват разполагането на артилерийски гарнизони на редица места в днешните български земи, немалка част от които съвпадат с археологическите обекти, от които произхождат значителни сбирки от „каменни бойни топки“. Списъкът е разширен благодарение на пътеписите на Евлия Челеби от средата на XVII в. Сведенията от писмените извори кореспондират отлично с археологическия запис и правят наложително преосмислянето на функцията на каменните топки. Значителна част от тях всъщност са каменни гюлета за османски оръдия. Малките екземпляри с диаметри от по само няколко сантиметра и тегло 10–15 грама, които се тълкуват било като топчета за прашка, било като детски играчки, преспокойно биха могли да представляват боеприпаси за ръчни огнестрелни оръжия.

Пространственият анализ на археологическите и историческите свидетелства за османска огнестрелна артилерия рисува интересна картина и дава повод за по-нататъшен размисъл. Оръдия и артилерийски гарнизони са разположени в заварени, поддържани и най-често преустройвани крепости в земите между Дунав и Стара планина. На по-късен етап, изглежда, част от тях, най-вече в Предбалкана, губят военното си значение си, за разлика от повечето укрепления по бреговете на Дунав и на Черно море. В земите южно от Стара планина, които в течение на векове не виждат чужди армии, няма нито археологически, нито исторически свидетелства за стационарни артилерийски части. Трябва да се отиде много по-на юг, към бреговете на Егейско море, за да се открият крепости, подслоняващи такива гарнизони. Всичко това повдига редица въпроси за съдбата на средновековната укрепителна система през османската епоха и проблематизира традиционната теза за безогледното разрушаване на средновековните крепости в хода на османското завоевание. Това обаче е друга тема която излиза далеч извън рамките на настоящото изследване.