The Danube Limes in Hungary

ARCHAEOLOGICAL RESEARCH
CONDUCTED IN 2015–2020

PÉCS 2020

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The Danube bend at *Lugio* (Dunaszekcső, Baranya county)

Table of Contents

Foreword	11
----------------	----

Articles concerning the Danubian limes

Máté STIBRÁNYI – László NAGY

Ditches along the road. Archaeological geophysical surveys along the Pannonian Limes between 2015–2017	13
---	----

János Attila TÓTH

Underwater and “islandological” data and observations related to the Ripa Pannonica	39
--	----

István A. VIDA

Thoughts on the numismatic history of the Pannonian limes	47
---	----

1 – Brigetio (Komárom)

Máté SZABÓ – Boglárka FÁBIÁN – Fanni FODOR

Research on Roman temporary camps near Brigetio (Komárom-Szőny). Results of the excavations conducted on the BRI V, VI(–VII), X–XI, XIII–XIV, XIX, XXII–XXIII, XXX and XXII archaeological sites	77
--	----

Csanád KISS

Research on Roman temporary camps around Brigetio (Komárom-Szőny) in 2019	113
--	-----

2 – Crumerum (Nyergesújfalu)

László SCHILLING – Zsófia Franciska SÖRÖS

– Dávid JABLONKAI – Kristóf NOVÁK

Crumerum (Nyergesújfalu) im Licht der neueren Forschungen	127
---	-----

3 – Tokod

Anita KOCSIS

GPR survey in the Late Roman fort of Tokod	187
--	-----

Table of Contents

4 – Visegrád

Péter GRÓF

Roman watchtower Visegrád-Szentgyörgypuszta 1.

Preliminary excavation report 201

5 – Intercisa (Dunaújváros)

Zsolt VISY

New research conducted in the castellum of Intercisa (Dunaújváros)

and watchtower INT-5 211

6 – Altinum (Kölked)

Róbert LÓKI

Altinum (Kölked). Ground-Penetrating Radar survey 2017–2020 239

Gergő István FARKAS

New Roman stamped tiles from Altinum (Kölked) 255

Shadow marks highlight the remains of *Crumerum* (Nyergesújfalu, Komárom-Esztergom county)

Foreword

The study of Roman frontiers has been a pivotal subject of the academic hub at Pécs for long decades. Its researchers were pioneers of Hungarian aerial archaeology (*Aerial Archaeological Archive of Pécs*), and have been conducting archaeological excavations and complex non-invasive surveys throughout the Ripa Pannonica. Associate researchers provided the scientific background for the UNESCO World Heritage Nomination of the Hungarian section of the Danube Limes. The Archaeology Department at the University of Pécs has been a prominent agent of Roman provincial archaeology in Hungarian higher education.

This volume is a continuation of the work long begun. We strive to promote Roman frontier studies by organizing workshops, hosting public venues and providing channels to publish recent findings concerning the limes. This publication, available both as a hardcover book and a digital issue, offers insight into exciting and valuable research novities previously unpublished. In the future we aim to continue this tradition and regularly publish recent research results on the Roman limes.

We also aspire to complement traditional publications with flexible and up-to-date online data collection. The Frontiers of the Roman Empire is a unique academic subject. It is a vast historic complex encompassing a multitude of monuments and sites of varying complexities and features, over different social and geological landscapes spanning three continents and more than five centuries. This inherent complexity of Roman frontiers is coupled by a divergent research history, resulting in inevitable bias. These difficulties have been recognized by previous research, but only the digital era brought about a set of solutions to overcome them.

To address and resolve these preexisting conditions, one must treat Roman monuments and sites in an adaptable, complex yet manageable framework, which promotes future redefinitions, meeting the needs of continuously expanding knowledge on its subject of study. Such criteria were kept in mind when creating the CLIR database (<https://clir.hu>), an online data collection and analytics tool tailored to meet the needs of scholars and professionals working with Roman frontiers. This year, the bulk of the work done at CLIR Research Center revolved around creating and fine-tuning the framework of this online platform.

Apart from creating the scientific framework, we also pursue furthering knowledge by conducting research of our own (visit <http://clir-research.hu> to see more of our projects and works).

We kindly thank all authors for their contributions, we look forward to continuing work on the limes as a joint venture.

Pécs, 21 November 2020

Gergő István Farkas
director

Research on Roman temporary camps near Brigetio (Komárom-Szőny)

Results of the excavations conducted on the BRI V, VI(–VII), X–XI, XIII–XIV, XIX, XXII–XXIII, XXX and XXXII archaeological sites*

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Abstract

In the Central Danube region, the largest number of Roman temporary camps is known from the surroundings of Brigetio (Komárom-Szőny). In the southern foreground of the legionary fortress, aerial reconnaissance has revealed traces since the 1990s, and in parallel, their growing numbers on the northern side, in Slovakia, have become known. The camps are basically related to the Marcomannic Wars, but this could only be stated on the basis of analogies, since, unlike our northern neighbour, their verification took place only in 2015–2016 by geophysical survey and trial trenching in some cases in Hungary. In parallel with the excavations, small-scale metal detecting survey helped in their dating. Our investigations mostly confirmed the Roman origin of the phenomena, and we were also able to obtain data on the structure and stratigraphy of the V-shaped ditches. The small number of finds from metal detecting partly coincides with the observations on the other side of the Danube, however, a broader spectrum beyond the Marcomannic Wars could be identified, which may be partly related to Roman land use.

Keywords

Brigetio (Komárom-Szőny), Roman temporary camps, Marcomannic Wars, non-invasive archaeology, trial trenching

Introduction

During the nomination process of Danube Limes (the Roman frontier along the Danube river) for World Heritage Site status, several sites were put into the spotlight of the research as they – either because of their origin or their state – were subjected to further examinations. These sites cover a large number of temporary camps, which had been discovered by aerial archaeology located south from Komárom, surrounding the former legionary fortress of Brigetio (Komárom-Szöny, Komárom-Esztergom county).¹

From the aerial perspective, the square-shaped ditches with rounded edges outline a smaller, while in other places a somewhat larger area. Because of their size and layout, and also for the established relations, the camps are considered to be Roman. This notion is also supported by the fact that along the ditches there are certain breaks, suggesting a gate, while in other parts, a *clavicula* or *titulum* can be observed. However, elsewhere the sectional line of the ditches and the lack of adequate information about the camp area makes it rather difficult and questionable to indentify and determine the age of the camps.

Roman temporary camps were also found in Slovakia, on the northern side of the Danube river – last time, their number were increased by archive aerial photographs.² Research on these sites has been more advanced, as field walks, metal detecting surveys, geophysical surveys and also trial trenching have been made.

In 2015 and 2016, the aerial survey were followed by geophysical surveys³ in Hungary, which – for the most part – corresponded to the aerial photographs. However, at that time, the research could only differentiate findspots based on their layout, but not on their condition. Without excavations, the real size, the circumstances of the establishment and abundance of the ditches were unknown, and from the temporarily used camp area, there were not any findings either. In order to collect more information about the area, in 2016 trial excavations took place on some of the sites, which was followed by a non-invasive survey (metal detecting and drone archaeology) in 2019 at BRI VIII–XI sites.⁴

* Hereby we would like to thank Zoltán Fullár (Castle Headquarters Integrated Regional Development Centre Nonprofit Private Limited Company, Budapest), János László (Kuny Domonkos Museum, Tata) and Emese Számadó (Klapka György Museum, Komárom) for their help, and also Prof. Zsolt Visy (University of Pécs) for allowing to publish the results of the excavations of BRI V, BRI X–XI, BRI XIII–XIV and BRI XXXII to Boglárka Fábián and Fanni Fodor.

1 BRAASCH 2003, 52–53; VISY 2003, 34–38; SZABÓ – VISY 2011; SZABÓ 2016a, 90–97.

2 SZABÓ 2016a, 12–13; RAJTÁR 2019

3 The research was carried out by the team of Castle Headquarters Integrated Regional Development Centre Nonprofit Private Limited Company and the Ecthelion LP. For further references, see NAGY – STIBRÁNYI 2020 in this volume.

4 KISS 2020a; KISS 2020b in this volume.

Fig. 1. The research area near Brigetio. Red: legionary fortress | auxiliary fort; Orange: temporary camp; dashed red line: excavated sites (map: Máté Szabó)

Location and geographical environment of the temporary camps⁵

The archaeological sites excavated in April, June and August of 2016 are located in Komárom-Esztergom County (Hungary), in the Győr-Tata Terrace hills, in the vicinity of Komárom, Mocsá and Naszály. Some of them, similarly to the legionary fortress and cities of Brigetio, are located on the paleo-island of the Danube, surrounded by the abandoned river channels, nowadays between the river and the Szőny-Füzítő canal, while others are in the southern forecourt of Komárom, on terrace levels protruding from the floodplain. The area is generally characterized by sandy soils, from which only the lower floodplains differ.

Among the related sites, BRI V, BRI X–XI and the adjacent BRI XXXII, as well as the BRI XXX belong to the administrative area of Komárom, BRI XIX lays on the border of Komárom and Mocsá, BRI VI(–VII) and BRI XXII–XXIII belongs to Mocsá, while the BRI XIII–XIV camps are located in the Naszály area. (**Fig. 1.**)

Research conditions and applied methods

Excavations were carried out between 21 April and 6 May 2016 (BRI X–XI, XXXII), 13–18 June 2016 (BRI VI–VII, XIX, XXII–XXIII and XXX) and 1–3 August 2016 (BRI V, XIII–XIV).⁶ These sites are located on plots under agricultural cultivation. For this reason, excavations were only possible at places agreed with the owners and tenants (e.g. at BRI XIX we could only conduct research on the edge of the agricultural road separating the plots).

The sites become known by aerial photographs of Otto Braasch and Máté Szabó. The mapped images also aided the geophysical research, the results of which together provide the basis for the designation of excavation sites. The location and size of the trial trenches were designed in such a way that they could provide as accurate data as possible on the surface and about the stratigraphy and condition of the sites. In addition to drawing, image-based 3D modelling was also used in documentation.

In parallel with the excavation, we used metal detectors at most sites in order to obtain dating information by the minimal, but therefore extremely important small finds of the temporary usage.⁷

⁵ For the results of natural environmental researches related to Brigetio and Azaum, see. VICZIÁN et al. 2013; SZABÓ 2016b.

⁶ Alexandra Kiss, Gábor Molnár, Dávid Nagy, Réka Neményi and Szilárd Fajka and Ádám Lisztes (University of Pécs) helped us in the research, which we would like to thank here.

⁷ Hereby we would like to thank to Miklós Molnár, Tibor Nagy and Lajos Sándor for their help in metal detecting surveys, and also to Alexandra Kiss (SZIKM), Mónika Merczi (HNM-BBM), Zsolt Mráv (HNM), Réka Neményi (CLIR) and Tamás Szabadváry (HNM), who helped our work in identifying the small finds.

Fig. 2. The map of temporary camps excavated in 2016. Grey area: magnetometric survey; red: excavation trenches (map: Máté Szabó)

Observations and results of the research (Fig. 2.)

Camp BRI V (Fig. 2; Plate I.)

To the south of Komárom-Szőny, in the Tatai-útra-dűlő, Otto Braasch's aerial photographs captured traces of ditches of a Roman temporary camp.⁸ The camp lies perpendicular to today's road in a slightly north-west-southeast direction. Its dimensions are 150×200 m (1.8 ha). On the side of today's road, at the axis of the camp the ditch breaks, referring to an entrance, but there are no other phenomena indicating the gate defence-system (*titulum* or *clavicula*).

In 2015 and 2016, a magnetometer-survey was carried out to detect the southeastern and northwestern corners of the camp. Confirming the earlier aerial observations, the remains of the ditches were outlined on both corners, in addition to several minor patchy, low-intensity anomalies.⁹

The area is under systematic agricultural cultivation, therefore – considering the schedule of seasonal agricultural works – it was possible to examine the ditches of the camp with two trial trenches in the summer of 2016. The aim of the research was to identify the size and the structure of the *fossae*. One of our trenches was dug perpendicular to the southeast side of the camp, slightly south of the assumed gate. At the depth of about 40 cm from the surface, below the cultivated layer we could identify the *fossa* with its dark-brown filling, vigorously separated from the loess soil. Due to the rapid inrush of groundwater, its actual depth could only be estimated. Based on its steep, splayed slopes we can assume a regular V-shaped ditch, so its actual depth could be approx. 240 cm. The initial width of the ditch on the surface, based on the steepness of the sidewalls could be ~280 cm.

The other trial trench was set up perpendicular to the northeast side of the camp, near to the rounded northeastern corner. Similarly to the previous section, the remains of the ditch were revealed at the depth of about 40 cm from the surface. Its maximum width was 230 cm at this level (its plausible width on the surface could be ~280 cm initially). Through the inrush of groundwater, the V-shaped ditch could be excavated only to a depth of 125 cm from the surface; however, based on the sidewalls of the ditch, its former depth could be 230-240 cm.

The filling of the excavated upper parts of the *fossae* proved to be a homogeneous, dark-brown, pebbly layer. Based on this, it seems – at least in the last phase of the filling of the ditch – that a natural filling might have taken place. No small finds were found during the excavation.

Camp BRI VI(–VII) (Fig. 2; Plate II.)

The sites are located south of Komárom, between the roads to Mocsá and Tata, south of the vineyards of Öreg-hegy (Boldogasszonypusztai-szőlő, former Ó Szőnyi Szőlők, Boldogasszony-Szőlőshegy) and became known by aerial photographs of Otto Braasch in 1994.¹⁰ Temporary camp BRI VI has an area of 140×95 meters (1.3

8 VISY 1995, 216–218; BRAASCH 2003, 44; SZABÓ – VISY 2011, Fig. 107; SZABÓ 2016a, Fig. 100.

9 BERTÓK 2016, 6.

10 VISY 1995, 216–218; BRAASCH 2003, 44; SZABÓ – VISY 2011, Fig. 108.

ha) with rounded edges and a rectangular layout. Its orientation is northwest-southeast. On the northwestern side, the ditch line intersects and in the foreground a ditch section (*titulum*) can be identified. In parallel with this camp, to the north-east of it, a similar ditch could be observed in the aerial photographs, which was identified as BRI VII.¹¹ However, the determination of the phenomena can be considered uncertain, because the traces could only be followed to the edges of the parcel, and only two “sides” of the archaeological phenomena was identifiable.

The magnetometer survey could not confirm the archaeological remains, so the aim of the excavation was also to resolve this contradiction too.

The sites lie on sandy soil. We examined the remains in two trial trenches. One of these was to explore the northwestern ditch of camp BRI VI and possibly the line of the gate defence (*titulum*). The main ditch found below the heavily cultivated topsoil. From the today's surface, up to a depth of approx. 55 cm, the traces of deep ploughing could be seen and at the depth of about 70-80 cm, the filling of the ditch could be separated from the sandy subsoil. At this level, it appeared about 1 meter wide, and the steep V-shaped ditch deepened another 60 cm, so from today's surface it was about 140 cm deep. Based on its slope, its plausible surface width was approx. 180 cm. The stratigraphy of the fossa can be considered to be basically homogeneous; at the bottom of the ditch, a sandy trace barely separated from the subsoil and a slightly sandy, sand-spotted filling of the ditch could be identified. The line of the *titulum* was not found in the northern part of the section.

With the other trial trench, we planned to examine the northeastern ditch of the camp BRI VI and the southwestern ditch of the presumed camp BRI VII. In the trench we could observe the traces of deep ploughing up to a depth of almost 1 meter, and only one definite phenomenon emerged. Based on its location, size and direction, it could have been the ditch of BRI VII, but its structure (rectangular shape and definite, dark soil at its edges) with the Second World War hand-grenade found in it warned us to review our former observations.

Re-analysing the aerial photographs from 1994 with the position of the excavated ditch-section of BRI VI revealed that there was some meter inaccuracy in the mapping. Based on this discrepancy, we have guessed the camp's phenomena so far east of their real location.¹² The magnetometer survey could not draw our attention to the error either, as the result was negative. In the end, we not only – erroneously – expanded the trial trench of BRI VI in the opposite direction to the *titulum*, but because of this, the line of the northeastern ditch neither was found in our second trial trench, which was too short. The line of the ditch observed in the latter, which was certainly still open during the Second World War, however, completely overlapped with the supposed ditch of the presumed BRI VII ditch after the correction. (Fig. 3.)

According to our observations, the ditch identified in the northern part of BRI VI can also be clearly dated to the Roman era on the bases of its size and structure. The rest of

¹¹ VÍSY 2003, 35.

¹² This caused that we missed the *titulum*, and the northeastern ditch of BRI VI also did not fall into the line of the trial trench.

Fig. 3. The area of BRI VI temporary camp in 1960 (upper left), combined with aerial photo-mosaic from 1994 (upper right) and their interpretation (centre). The brown lines and points show the traces of modern features (e.g. military trenches, explosion craters, ditches), which partly was identified as BRI VII temporary camp

(Sources: 1960_0706_1486, 14-September-1960, Fentrol.hu, Lechner Nonprofit Ltd; oblique aerial photos by Otto Braasch, 9 June 1994; mapped by Máté Szabó)

the temporary camp is well identifiable in aerial photographs, while excavation draws attention to the danger of erosion of sandy soils.

The uncertainty of the presumed BRI VII site is also confirmed by the archive aerial topographical photographs that have since become available. According to them, even in the 1960s and 1970s, the area was partly used as pasture, with a ditch on the parcel border lined with trees and bushes. The trench can be followed to the northwestern and western direction, and thus it is clearly not dated to the Roman era.¹³

Thanks to the archive images, it can also be seen, that the northeastern half of camp BRI VI was also pasture even after the Second World War, so it is conceivable that the traces of its ditch were visible to some extent until Modern times and only the cultivation related to viticulture and agriculture destroyed the earthworks.

In parallel with the excavation, metal detector survey was carried out in the area of the sites. Despite its very limited extent, several finds were found. (**Fig. 4.**)

A copper-alloy, elongated rectangular stud with rounded edges was found in the area. (**Fig. 4/1.**) Its upper part is enamelled, squared fields alternate on it. The stud could be fastened with two rivets. This artefact could be part of personal military equipment (strap fitting / belt bar mount) of the Antonine period.¹⁴

A fragment of a copper-alloy zoomorphic brooch came to light in the area of the previously presumed camp BRI VII. (**Fig. 4/2.**) It forms a static horse with ribbed mane and a simple catchplate. Similar zoomorphic types are known from the Danube region¹⁵ and they were popular in the 2nd century AD.¹⁶

Knee brooches are typical small finds of these temporary camps in the Central Danube region,¹⁷ and fit well into the period of the Marcomannic Wars. One similar copper-alloy brooch was also found in the camp BRI VI area, which represents a mixture of knee and strongly profiled/Aucissa/trumpet brooch types. (**Fig. 4/3.**) It is mainly a hinged type knee brooch.¹⁸ It has an internal chord, bilateral spring with 3 and 4 loops on either side. The *fibula* has a damaged, incomplete semi-circular head, which was decorated with two zig-zag lines. A collar is attached to the head. The bow widens in the bending point and followed with a normal D section until a triple knobbed centre ornament. Its central, semi-circular knob-part is higher than the others are, and the last one transforms to a triangular sectioned shape, which has good analogies with trumpet brooches (e.g. Cociş Type 21b2b1¹⁹). The foot is very similar to some strongly profiled or Aucissa type brooches, it is short and has a triangular section and ends with

13 1960_0660_1079 (23 March 1960) and 1960_0706_1486 (14 September 1960), archive aerial topographical photographs. Source: fentrol.hu, aerial image repository of Lechner Nonprofit Ltd.

14 ALLASON-JONES 1984, 237–238, 3.878; BISHOP – COULSTON 2006, 144, Fig. 88/9; similar artefact is known from Britannia, ID: GLO-92051A, <https://finds.org.uk/database/artefacts/record/id/931691> (visited: 26 November 2020).

15 PATEK 1942, 51, Tafel XIX/4, 7; Cociş 2004, 115–116, Plate C/1407, 1414.

16 PATEK 1942, 51; Cociş 2004, 118–119.

17 KISS 2020b, Fig. 4/3. KOMORÓCZY et al. 2020.

18 MERCI 2011, Tafel 6.

19 Cociş 2004, 113. Plate XCVII/1363.

a conical, circular sectioned knob.²⁰ The catchplate is quite strait and simple and most similar to knee brooches' catchplates.

We can suppose that the period of maximum use of strongly profiled brooches extends until the 3rd quarter of the 2nd century AD.²¹ The mentioned Aucissa type brooches emerge when strongly profiled brooches begin to go out of use, respectively during the 2nd half of the 2nd century AD and extends to the first two decades of the 3rd century AD.²² The knee brooches are the most varied type of these, and they were used until the 3rd quarter of the 2nd century AD or the turn of the 2nd and 3rd centuries AD.²³ All of these *fibulae* were popular among soldiers²⁴ and our new type, which is a mixture, could basically relate to the period of Marcomannic Wars in the Danube region.

In addition, two Late Roman coins were unearthed in the environs of the camp BRI VI. Both of them (Fig. 4/4–5.) are AE3 types from the reign of Emperor Constans and were minted in Rome²⁵ and Siscia (Sisak, HRV)²⁶ in the second quarter of the 4th century AD.

In connection with the collected finds, it is clear that although they cover a longer period, the personal equipment can typically be dated to the 2nd century AD.

Fig. 4. Small finds from the area of BRI VI and its environs
(Photo and graphic: Máté Szabó)

²⁰ Cociş 2004, different versions of Type 8b, 67–68, Plate XXXV/532, XXXVI/544, 553, 556, XXXVIII/587, and Type 14d, 82, LI/741.

²¹ Cociş 2004, 66.

²² Cociş 2004, 82–83.

²³ Cociş 2004, 90; MERCZI 2011, 7.

²⁴ Cociş 2004, 82–83, 90; MERCZI 2011, 7.

²⁵ Fig. 4/4: Av: DN FL CONSTANS AVG, laureate and rosette-diademed, draped, cuirassed bust right; Rev: GLOR-IA EXERC-ITVS, two soldiers holding spears and shields with one standard between them; Mintmark: R-star-S (Rome). RIC VIII, 26.

²⁶ Fig. 4/5: Av: CONSTAN-S PF AVG, diademed draped bust right; Rev: VICTORIAE DD AVGG Q NN, two Victories standing facing each other, each holding wreath and palm, upright palm branch in the lower centre; Mintmark: ΔSIS. RIC VIII, 195a.

Camps BRI X–XI and XXXII (Fig. 2; Plate II and Plate IV)

In 1994, Otto Braasch captured several traces of ditches referring to temporary camps on the terrace-island (Sziget-járó) to the southeast of Komárom, surrounded by the Szöny-Füzitő canal and the Kocs-Mocsa rill for the first time.²⁷

On the aerial photographs two larger (BRI VIII and X) and two smaller camps (BRI IX and XI) can be seen lying next to each other. Several years later three sides of another camp (BRI XXXII) were discovered from the air laying about 100 m north from the previous camps. The camps BRI VIII–IX and BRI X–XI were established into each other, but while camps BRI VIII–IX placed roughly with the same east-west orientation and their ditches are parallel, camp BRI XI is situated diagonally in a northeast-southwest direction, intersecting camp BRI X.

The camp BRI VIII is large, its dimensions are 315×255 m (8 ha); camp BRI IX in the interior of the camp VIII is 200×160 m (3.2 ha). The dimensions of the camp BRI X are 170×255 m (4.3 ha), while the camp XI lies on a 130×90 (1.2 ha) area. For now, only the shorter, 135-meter long side of the camp BRI XXXII can be measured.

Only in the case of the camp BRI XI can we observe breaks on all four sides of the ditch that clearly suggests entrances, which were defended by protruding curved ditches (*clavicula*).

Although the dimensions of the camps BRI VIII–XI were verified in 2015 by a magnetometer survey, the ditches were not fully detectable, as they had been from the aerial photographs. The camp BRI XXXII was not affected by the magnetometer-survey in 2015, only one year later, in 2016, however, the ditch that had been identified by the aerial photographs earlier, could not be verified by this magnetometer survey either.²⁸

In April 2016, an extended excavation was carried out in the site of camps BRI X–XI and XXXII, during which four trial trenches were established to examine the ditches of the temporary camps. In the case of camps BRI X–XI, which are overlap one another, our main objective was to determine the timetable for the establishment of the temporary camps in relation to each other by using the cross-sections of the *fossae* appearing in the trenches. One of the excavation trenches was located at the intersection of the northwest corners of camps BRI X–XI and had a north-south orientation (trial trench No. 3). The other trench stretched to a southern direction from the previous one and was at the intersection of the shorter, eastern side of the camp BRI X and the longer, north-west *fossa* of the camp BRI XI (trial trench No. 2). (Figs. 5–6.)

The trial trench No. 1. had a northwest orientation and was determined to cut through the *clavicula* of the camp BRI XI. After the demolition of a humus layer and the underlying clay layer, at the depth of 50 cm from the surface, the homogenous, 60 cm wide brown fill-in of the *clavicula* was revealed in the loess subsoil. The full depth of

²⁷ VISY 1995, 216–218; BRAASCH 2003, 44, Abb. 1; SZABÓ – VISY 2011, Fig. 109; SZABÓ 2016a, Fig. 103–105.

²⁸ BERTÓK 2016, 12.

Fig. 5. The visible traces of the ditch-intersection of BRI X and XI below the cultivated layer
(Photo: Boglárka Fábián)

Fig. 6. Cross-sections of BRI X–XI (Photo: Boglárka Fábián)

the *clavicula* was about 100 cm, therefore it was shallower than the ditch of the camp itself. In the fill-in of the regular V-shaped ditch, we could observe striped sand and brown layers. No finds could be collected from this ditch.

In the trial trench No. 2, at the depth of 40–45 cm, just below the humus layer the intersection of ditches of the camps BRI X–XI appeared, while in trial trench No. 3, the ditches were discovered slightly deeper in the loess subsoil, at the depth of 50 cm, below the humus and the underlying clay layer. Both excavation trenches were expanded with probes to southwest direction, so that the X-shaped intersections of the ditches could be more visible on the extended surface. The widths of the ditches were 115 cm in the loess subsoil. We established several cross-sections to the intersection points of the ditches to clarify the chronology. The ditches had a typical V-shape and their fillings were quite similar and difficult to distinguish from each other. However, while the filling of the ditch of camp BRI X seemed more homogenous, the filling of the other ditch showed a slightly grainy and more heterogeneous picture. The depth of the biggest camp's ditches was 150 cm, counted from the surface and its plausible width on the surface could be initially approx. 200 cm. The depth of the smaller camp (BRI XI) was only 120 cm and its width on the surface could be 200 cm, similarly to the previous one. Not only their depth, but – as the measurements of their width data showed – their cross-sections were slightly different: the *fossa* of the camp BRI XI was wider and the angle between the stems of the ditches is smaller, while the sidewalls of the camp BRI X were steeper. According to the *fossae* outlined on the surface and with the evidence of the profiles, we could determine that the smaller camp (BRI XI) had been established earlier and its ditch was cut through by camp BRI X, which was built later. No finds were found from the filling of the ditches.

The temporary camp BRI XXXII is located just about 100 m north from the camps BRI X–XI. Its western ditch was examined with a 15 m long trial trench (No. 4.). In this case, the homogeneous, dark brown filling of the ditch also appeared below the humus layer, at a depth of 40–42 cm from the surface, with a width of 100–105 cm. The ditch had a regular V-shape form, its depth was 115 cm. At the bottom of the ditch were two thin loess-layers, otherwise, the filling of the ditch was quite homogenous. No finds from this ditch were found either.

During the excavation we also carried out field-walks and metal detecting in the area of the camps, enabling us to collect several small-finds. (Fig. 7.)

From these finds a fragment of a simple copper-alloy knee brooch should be highlighted, which was found in the inside of the area BRI XXXII (Fig. 7/1.). This is a general semi-circular headed type with an attached collar on it, which is known from the Central Danube region as well as from the researches of the temporary camps.²⁹

Field walks also highlighted some finds and the most important of which is a rim/side fragment of a Drag. 37 type samian ware bowl with stylised scroll of leaves in relief,

manufactured in Rheinzabern in the late Antonine – early Severan period (Ri-Fi E40).³⁰ (Fig. 7/2.)

In the area of camp BRI XXXII a Late Roman AE3 type coin was also found and could be dated to the period of Crispus Caesar and was minted in Siscia³¹ between 321-324 AD. (Fig. 7/3.)

Four years later, in 2019 a complex non-invasive archaeological investigation was completed at the sites. The results provided important information on both the significance of the methodology and the chronology of the camps too.³²

Fig. 7. Small-finds collected in the area of BRI X–XI and XXXII. (Photo and graphic: Máté Szabó)

Camps BRI XIII–XIV (Fig. 2; Plate III.)

In 1994, Otto Braasch discovered two temporary camps built into each other via aerial reconnaissance to the southeast of the *castra legionis* of Brigetio, south of the Szöny-Füzítő canal, near Naszály (Naszály-Agyagos).³³ The site has been photographed several times since then. On the aerial photographs, near the gas receiving station, two camps can be seen with a northeast-southwest orientation. The southeast corner of the larger camp (BRI XIII) extends below the today's main road, but its layout can still be outlined based on crop-marks. Its dimensions are 325×200 meters (6.5 ha) and the ditches outline a parallelogram shape. In the interior of the camp, a smaller camp appears with a regular rectangular ground-plan, close to the southern side of the previous camp and almost completely parallel to it. The smaller camp (BRI XIV) is approx. 215×145 meters (3.2 ha). On the line of the ditches there is no break that would clearly indicate an entrance, nor is there any other traces of the gate-defence system that could be identified.

³⁰ RICKEN – FISCHER 1963, E40

³¹ Fig. 7/3: Av: IVL CRIS-PVS NOB C, laureate head right; Rev: CAESARVM NOSTRORVM, around VOT X in wreath; Mintmark: ASIS sunburst. RIC VII, 181a.

³² KISS 2020a; KISS 2020b in this volume.

³³ VISY 1995, 216–218; BRAASCH 2003, 44.

The geophysical survey, which was carried out in 2016 on the area of the camps could only detect the ditches of camp BRI XIV. In addition, part of the geophysical survey proved to be completely uninterpretable due to the disturbing signs of gas lines crossing the area.³⁴

In the summer of 2016, we had the opportunity to examine the *fossae* of the camps in two trial trenches that were extended out, based on the results of the aerial photographs. The two collinear excavation trenches were established on the northwest side of the camp with a northwest-southeast orientation.

In both cases, the dark brown filling of the ditches appeared below the relatively thin humus layer at the depth of 40 cm from the surface, in the loess subsoil. The measurable width of the BRI XIII camp's *fossa* was 140 cm below the humus layer (plausible width on the surface could be approx. 200 cm). The ditch had a regular V-shape, its depth was 135 cm. In the filling, multiple layers were observed. At the bottom of the ditch there was a dark-grey, massive clay layer covered by a yellow, patchy clay layer, which was covered by a mixed layer sloping from the direction of the *vallum* to the ditch (i.e. south to north) up to 60 cm. In this regard, the yellow patches refer to the building material of the *vallum*. However, a more homogeneous, dark brown filling over the layer could be the result of a natural, consistent back-filling. As the camp was established in a lower area than camp BRI XIV, the ground-water appeared soon at the bottom of the ditch.

Our other trial trench cut through the ditch of the smaller camp (BRI XIV) inside the camp BRI XIII. Its biggest measurable width was 135 cm below the humus layer (plausible width on the surface could be approx. 180 cm) and its depth was about 120 cm from the surface. However, the section of the ditch did not have a regular, steep V-shape, but it had a curved bottom. Some layers in its filling could be separated, too. Above the homogeneous, massive dark-grey layer at the bottom, the slipped, mixed layer with the yellow clay-marks also appeared. However, according to the section, in this case the back-filling came not from the direction of the *vallum*. Based on this layer it is hard to decide whether it is an intentional back-fill or a natural erosion.

Since the two camps do not intersect, we are unable to determine their chronology, but it is certain, that the camp which was built later followed the earlier camp's location and orientation. We could not collect any finds during the excavation.

Camps BRI XIX (Fig. 2; Plate III.)

Next to the main road between Komárom and Mocsá, on the administrative border of the two settlement, in the Mocsai-útra-dűlő, Otto Braasch discovered the temporary camp during aerial survey in 1998. In the last decades, in addition to traditional aerial reconnaissance, traces of the rectangular, rounded-edged camp ditch have also been identified in archive aerial topographical verticals.³⁵ The site is crossed in an east-west direction by the agricultural road bordering Komárom and Mocsá, and interestingly,

³⁴ BERTÓK 2016, 10.

³⁵ BRAASCH 2003, 44; VISY 2003, 112, Fig. 8; SZABÓ – VISY 2011, Fig. 106; SZABÓ 2016a, Fig. 108.

the remnants of the camp are visible typically only south of this line. Since most parts of the camp can still be observed, it was possible to map its outlines. The camp's ditch enclosing an area approximately 180×125 meters (2.3 ha) and oriented northeast-southwest. The line of the ditch breaks on all four sides, indicating the gates with their defensive structure in the foreground (*tituli*).

In 2015, it was possible to verify the phenomena seen from the air by magnetometry. In both cases, the designated areas on the south-west and south sides of the camp indicated the line of the defensive ditch and its gates. So far, the north corner, which can only be identified in small details in aerial photographs, has also been fully surveyed with magnetometer, so that all four gate locations and their defensive ditches (*tituli*) can also be verified.

In the summer of 2016, due to the cultivation method, the excavation could only be carried out on the southern edge of the agricultural road, near the north-eastern gate of the camp. Positive anomalies of crop-marks on the maze field also indicated the line of the defensive ditch at that time.

The defensive ditch of the camp BRI XIX appeared in accordance with the aerial photo map and the geophysical data in our excavation trench. Below the topsoil (~50-70 cm), its width was about 250 cm, and the regular V-shaped, multi-layered ditch was deepened to approx. 220 cm from today's surface. Its plausible surface width could have been 330-370 cm.³⁶ Below the humus layer, sandy-humus mixed with brown soil filled the section. At the bottom of this, at a depth about 120-125 cm, a lenticular, brown-sandy patch could be observed. Beneath it, layers of yellowish-brown layers with small river pebbles of different thicknesses stretched for approx. up to 190 cm deep. The bottom of the ditch was filled with a denser, greyish-brown layer, mixed with 1-5 cm large river pebbles approx. 30 cm thick.

Based on the stratigraphy, after the lowest layer, the lower half of the ditch was filled successively, washed in by different layers from both directions. According to the light, sandy strips and the darker layers in between, the alluvial material came alternately from the sidewalls of the ditch and from the upper part. Thin lines assume a longer period of filling, maybe interrupted with some cleanings, while a more compact layer above them can mean the abandonment of the ditch and also the whole system. Without any finds and natural scientific studies, the dating of the layers was not possible.

According to its size, the camp BRI XIX had a significant defensive ditch. Its multi-layered stratigraphy suggests that it may have filled over a longer period of time, or even it has been renewed (e.g. the different angle of its upper part may indicate this). No dating evidence has been found in the excavation area, but the layout of the camp with the gate-defence system (*tituli*), and the steep V-shaped ditch all confirm the Roman dating of the site.

³⁶ It should be noted that also in the aerial photographs, the vegetation showed a wider anomaly than the average camp ditches, which was confirmed by the excavation.

Camps BRI XXII–XXIII (Fig. 2; Plate IV.)

In 2009, south from the administrative border of Komárom and Mocsá, in the Komáromi-úti-dűlő, Máté Szabó identified these two camps, built into each other. In 2016, the entire area of the camps was surveyed with magnetometer,³⁷ so – supplementing the aerial photos – we can form an accurate picture of their layout. The larger (BRI XXII) of the northeast-southwest facing encampment covers an area of 165×115 meters (1.9 ha), while the smaller one is only 100×55 meters (0.5 ha). The camps are not just the same in orientation:³⁸ the smaller camp is located in the longitudinal axis of the other and, although in the southwestern foreground leaving more space, the entrances are in the same position. The gates are located in the eastern third of the longer sides and in the axis of the shorter sides. *Tituli* can be identified on all four sides of the larger camp (BRI XXII), while in the case of the smaller one (BRI XXIII), such defensive ditch can be observed only at the southwest gate. On the east side, the line of none of the camp ditches is broken, although in the case of the larger one the *titulum* can be identified here as well.

We opened two excavation trenches in the northeastern part of the camps. According to the aerial and geophysical surveys, the defensive ditches become observable in both trenches.

Of the two trial trenches, in the northwest-southeast orientation, only the outer ditch (BRI XXII) was excavated. Below the humus, there was a darker, brownish layer at the top of its filling. On the outer (northern / further from the *vallum*) side of the ditch, a more humic filling could be documented, which was well separated in the cross-section from that, seen on the southern side (next to the *vallum*). Below this, a small pebbly layer of yellowish, fine sandy composition, dotted with brown patches laid, which showed a sloping washout from the direction of the former rampart. The bottom of the steep V-shaped ditch was excavated at a depth of 1.7 meters from today's surface, while its width was calculated to approx. 220 cm.

The ditches excavated in the other trial trench showed a similar picture and stratigraphy, typically traces of filling from the inside of the camp could be identified on them. The material of their loading was much more gravelly than that observed in the northern ditch of camp BRI XXII. These ditches were also steep V-shaped, reaching depths of 150 cm (BRI XXII) and 130 cm (BRI XXIII) from today's surface. In both cases, they plausible with on the ground level could be approx. 200 cm.

Traces of washed layers from the direction of the rampart (*vallum*), with the material, similar to the subsoil, were typically observed in their stratification. It was followed by a mixed, more humus layer, which was replaced by a humus layer and trace of agricultural cultivation. Their stratigraphy, in our opinion, suggest that the material of the ditches built into the rampart was partly suddenly slipped into the ditch (e.g. heavy rain) and filled them after their abandonment. Thereafter,

³⁷ See NAGY – STIBRÁNYI 2020, Fig. 3. in this volume.

³⁸ It should be noted that the southwestern ditch of the smaller camp (BRI XXIII) shows minimal irregularities compared to the rest.

the ditches were no longer cleaned and certainly filled naturally.

In parallel with the excavation, metal detector survey was carried out in the area of the sites. Despite its very limited extent, several finds were found. (**Fig. 8.**)

Our first piece presented is an extremely worn Marcus Antonius' legionary *denarius* minted in 32–31 BC (**Fig. 8/1.**), but in our case a more important coin, which most likely belonged to the Roman military operation around Brigetio, is also a *denarius*. It could be dated to the reign of the Emperor Antoninus Pius between 151–152 AD.³⁹ (**Fig. 8/2.**)

A copper-alloy circular fitting was unearthed by metal detecting. (**Fig. 8/3.**) Its upper face is decorated with raised concentric ribs around the central boss, while projecting but broken shanks are on its back. By analogies it can be dated mainly to the 2nd century AD.⁴⁰

Our last find is a propeller stiffener that belonged to a belt sets. (**Fig. 8/4.**) This type of belt-stiffener was very popular in the Late Roman period, but our artefact represents a rarer version of the known pieces. Although its loops form a simple triangular shape with rectangular edges with one-and-one mounting holes on each sides,⁴¹ but the middle part consists of three semi-circular knobs. Propeller belt-stiffeners can be dated between the 4th and early 5th centuries⁴² and a good analogy to this artefact was found in Serbia⁴³.

Similarly to the other temporary camps, metal detecting survey mostly resulted finds related to military activity. Although the finds partly cover a longer period, their increasing number still confirms the dating of the sites to the period of the Marcomannic Wars.

Fig. 8. Small-finds collected in the area of camps BRI XXII–XXIII (Photo and graphic: Máté Szabó)

³⁹ Fig. 8/2: Av: ANTONINVS AVG PIVS P P TR P XV, laureate head right; Rev: COS IIII, Fortuna standing right, holding rudder on globe and cornucopiae; Minted in Rome. RIC III, 205.

⁴⁰ OLDENSTEIN 1976, 173, Tafel 49/542–543; REDŽIĆ 2014, 231–232.

⁴¹ BULLINGER 1969, Tafel XXVIII/3; SOMMER 1984, Tafel 33/2–5, Tafel 55/3–4.

⁴² BULLINGER 1969, 36–37; BISHOP – COULSTON 2006, 220; RADMAN-LIVAJA 2008, 302.

⁴³ REDŽIĆ 2014, 269, Fig. 69/678.

Camp BRI XXX

The area belonging to Komárom is located southwest of the city, near the bypass road, south of the line of the Szőny-Füzitő canal. Otto Braasch took aerial photographs of the site in 1994. These images show ditch sections with straight lines and rounded edges, characteristic of Roman temporary camps. Due to the small numbers of recordings and identifiable terrain features, it was only possible to delimit the archaeologically significant area, which was identified by the research as the camp BRI XXX. Nearby, to the northeast of it, a similar remain can be seen on aerial photographs from different years, a line with a rounded edge also showing the characteristics of a Roman temporary camp. On the basis of these aerial photographs this latter was registered as BRI XXXI.

Magnetometer survey was conducted in the area in 2015. In addition to the many interfering anomalies, some ditch-sections, which can be seen in the aerial images, also appeared, but it was still not possible to outline an exact camp layout from the data. (Fig. 9.)

In 2016, we had to open the trial trenches in accordance with the agricultural cultivation in the area, on which, after consulting with the owner, we even modified on the site. Finally, we examined the archaeological phenomena in four trenches.

Unlike other sites, clay soils dominated here. Below the topsoil, ditches were found in all excavation trenches, but most of them were clearly not related to a Roman temporary camp. This was confirmed by the fact that in the No. 1. trench, in addition to an uncertain object, Árpadian Age kilns and pits were also found.

Fig. 9. Red dots indicate the presumable ditch-section and black lines show the area of the geophysical survey at BRI XXX and BRI XXXI sites (Photo: Otto Braasch, PLT 1684)

In addition to the excavation of these objects, we also made some cross-sections on the ditches that best fit the presumably Roman system. Investigations have shown that the ditches were typically shallow in depth (approx. 70 cm) and had rounded shapes that reached the waterproofing clay layer in all cases.⁴⁴ According to their shape, structure and the flow-direction, they may be more connected to the objects of the Árpáadian period and are could be interpreted more likely a drainage or parcel-boundary system. Their extensive examination was not made possible by the small size of our trenches. Some ditch-sections coincided with the presumed “Roman camp” that could be identified by both aerial and magnetometer surveys, but the excavation did not prove their Roman origin. (Fig. 10.)

In addition to the mostly recent fragments, the metal detector survey revealed only a Late Roman coin and a belt buckle that can be dated to later times.

In the light of the excavation data and the finds, the site revealed mainly traces of later periods, so the identification of the Roman temporary camp can be expected primarily from a more extensive geophysical and aerial survey.

Fig. 10. The area of magnetometer survey and trial trenching at BRI XXX. No. 1. indicates the location of the Árpáadian age kilns (Source of magnetometry data: Castle Headquarters Integrated Regional Development Centre Nonprofit Private Limited Company; Map: Máté Szabó)

⁴⁴ Hereby we would like to thank to the colleagues of Castle Headquarters Integrated Regional Development Centre Nonprofit Private Limited Company, for their help in the excavation of Árpáadian age objects.

Discussion

The Roman temporary camps in the southern foreground of Brigetio have so far only been known from aerial photographs. During 2015-2016, in connection with the preparation of the World Heritage Nomination of the Ripa Pannonica, new researches were started in the area. Magnetometer surveys were carried out at several sites, and in some cases these investigations could cover the entire area of the camps.

The results of the geophysical survey could only partially support the information of aerial reconnaissance. It should be noted, however, that the identification of archaeological features was also made difficult by the small size of the survey areas, since while the camps with their environs can often be examined from the air, the bands of the magnetometer surveys alone are insufficient for proper evaluation. Another important observation is that while, with some exceptions, it was not possible to identify the gate defences from the air, the geophysical surveys proved more suitable for this, and in most cases, a ditch-section (*titulum*) could be recorded. (**Table 1.**)

Non-invasive archaeological survey was followed by trial trenching in 2016. Uncertainties of aerial and geophysical surveys were also taken into account in designation of the research areas, so finally excavation was held at BRI V, BRI VI(–VII),

Site Name	Defensive ditch (fossa)				
	AS	MS	approx. width (cm)	depth (cm)	shape
BRI V	visible	partly visible	280	230-240	V
BRI VI	visible	non-visible	180	140	V
BRI X	visible	visible	200	150	V
BRI XI	visible	partly visible	200	120	V
BRI XIII	visible	non-visible	200	135	V
BRI XIV	visible	visible	200	120 (?)	~V
BRI XIX	visible	visible	330-370	220	V
BRI XXII	partly visible	visible	200-220	150-170	V
BRI XXIII	partly visible	visible	200	130	V
BRI XXXII	visible	non-visible	160	105	V

Site Name	Gate Defense				
	AS	MS	approx. width (cm)	depth (cm)	shape
BRI V	non-visible	non-visible			
BRI VI	<i>titulum</i>	non-visible			
BRI X	non-visible	not surveyed			
BRI XI	<i>clavicula</i>	non-visible	120	100	V
BRI XIII	non-visible	not surveyed			
BRI XIV	non-visible	not surveyed			
BRI XIX	non-visible	<i>titulum</i>			
BRI XXII	partly visible	<i>titulum</i>			
BRI XXIII	partly visible	<i>titulum</i>			
BRI XXXII	non-visible	not surveyed			

Table 1. Results of different non-invasive survey methods in the research of the temporary camps around Brigetio (AS: aerial survey ; MS magnetometry survey). The graph also shows the main characteristics of the excavated ditches (Máté Szabó)

Table 2. The graph shows the main data of the investigated temporary camps (Máté Szabó)

Site Name	Length (m)	Width (m)	Aspect ratio	Area (ha)
BRI V	150	120	1.3	1.8
BRI VI	140	95	1.5	1.3
BRI X	255	170	1.5	4.3
BRI XI	130	90	1.4	1.2
BRI XIII	325	200	1.6	6.5
BRI XIV	215	145	1.5	3.2
BRI XIX	180	125	1.4	2.3
BRI XXII	165	115	1.4	1.9
BRI XXIII	100	55	1.8	0.5
BRI XXXII	unknown	135	unknown	unknown

Graph 1. The graph shows the relation between size and aspect-ratio of the investigated temporary camps (Máté Szabó)

BRI X–XI, BRI XIII–XIV, BRI XIX, BRI XXII–XXIII, BRI XXX and BRI XXXII camps. Contrary to previous data, the Roman dating of camp BRI VII could not be verified and the trace of a recent trench was found in the line of the supposed ditch. It was also identifiable in archive topographic aerial images from the second half of the 20th century, and thanks to the square shape and a World War 2 hand-grenade recovered from the trench, it was clearly proven that the phenomenon did not belong to the Roman era.

Remains of various ditches were found in the BRI XXX camp area, but none of these could be defined as Roman and Árpadian age archaeological features also became known and decreased the chance of Roman dating. Nevertheless, fragmentary traces of ditch-lines with rounded edges appear on aerial photographs can be considered as parts of Roman temporary camp(s), but further researches would be needed to verify them.

Archaeological sites that can certainly be identified as Roman can be divided into different groups according to their size and layout. (**Table 2. / Graph 1.**) The layout of the temporary camps – similarly to the other sites in the area⁴⁵ – is approximately rectangular, but smaller irregularities can also be observed (e.g. BRI XIII is parallelogram). Taking into account their side lengths (aspect-ratio), in line with the average,⁴⁶ their longer side is typically one and a half times the shorter side, from which the most square BRI V (1.3) and the elongated BRI XXIII (1.8) differ most spectacularly. Their size is mainly between 1 and 3 hectares, but the smallest camp (BRI XXIII) is 0.5 and the largest (BRI XIII) is about 6.5 hectares and they also fit well into the range of sites identified in the area.⁴⁷ Mainly the ditches of the temporary camps are identifiable on the fields, so these data are larger than the original camp size within the rampart (*vallum*), and in terms of hosted military units, we can expect a large standard deviation and a number of uncertainties.⁴⁸

We can see several intersected camps among the sites included in the study. Of these, BRI X–XI overlapped at an angle, but in the case of BRI XIII–XIV and BRI XXII–XXII, a clear parallel of location selection can be discovered. Considering the health precautions, in these cases we have to assume that more time may have elapsed between the uses of the camps.⁴⁹

Only the remains of the ditches are observable from the defence system of these temporary camps, as all surface traces were destroyed by field cultivation. Among the examined sites, in the case of BRI VI, it should be noted that the sandy soil area was partially grazed on the basis of archive topographical aerial photographs until the 1960s and 1970s,⁵⁰ so it can be assumed that there were still visible remnants of the temporary camp. Thanks to the non-invasive archaeological data, it was possible to identify the location and the defence systems of gates in several cases. In the research area, protruding *clavicula* was visible only in the case of BRI XI, while other observations suggest the more common existence of *titulum*, which is also a typical gate-type on the northern side of the Danube.⁵¹ According to the excavation of the BRI X–XI camps, the smaller camp (BRI XI) with *clavicula* system was built earlier. Temporary camps made with such defences can be dated to a narrower period, until the first half of the 2nd century AD,⁵² thus, in our case, we must consider this remarkable, and it would be important to examine the temporary camp in more detail at the site. However, we must keep in mind that the fortifications of the gates, and especially the *clavicula*, could be made even without a ditch, merely as an embankment, which in our

45 SZABÓ – VISY 2011, 108–109; RAJTÁR 1995, 474; RAJTÁR 2019, 449.

46 RICHARDSON 2004, 21, 23.

47 RAJTÁR 1995, 474; RAJTÁR 2019, 449, 453.

48 JONES 2012, 47–58; COSTA-GARCIA et al. 2019, Table 2.

49 JONES 2012, 42.

50 1960_0706_1486, 14. September 1960; Fentrol.hu (<https://www.fentrol.hu/hu/legifoto/166534?r=1&c=2023604.616327:6057995.6598775:8>)

51 RAJTÁR et al. 2018, Abb. 9.

52 JONES 2012, 121–123.

case is not identifiable due to ploughing.⁵³

The defensive ditches found during the excavations typically indicated a steep V-shape. Their sizes vary, but can be basically divided into two groups: (**Table 1.**)

- smaller ditches with a surface width of ~200 cm and a depth of ~120-170 cm,
- larger ditches with a surface width of ~300 cm or more and a depth of more than 200 cm.

The smallest observable ditch size could be recorded at the *clavicula* of camp BRI XI, which was only 120 cm wide, with a depth of 100 cm.

No clear relationship can be established between the ditch and camp sizes, but all that can be stated is the two camps with larger ditches (BRI V and BRI XIX) had roughly 2 hectares area. Our results fit well with the camps excavated on the north side of the Danube.⁵⁴

The stratigraphy of the ditches is variable, but typically less stratified and mostly show the rapid filling of them. The characteristics of the filling include layers sliding from the direction of the *vallum*, similar to the subsoil, or patches indicating the material of the rampart. An exception to this is the much more stratified ditch of BRI XIX, which would require further investigations to verify the existence of the site. Similarly, it would be important to use such natural scientific researches, which can help in their chronological classification.⁵⁵

At the present state of research, we can only attempt to date them on the basis of the analogies and the small number of finds. In this respect, the research of temporary camps in Hungary, unfortunately lags significantly behind the similar studies of the neighbouring countries.⁵⁶ The field survey and metal detecting carried out in parallel with the excavation in 2016 provided little, but similar finds to those identified on the Slovakian side, and was also confirmed by the observations at the BRI VIII–XI camps in 2019.⁵⁷

In conclusion, it can be stated that the investigated sites – confirming the previous hypothesis⁵⁸ – relate to the Marcomannic Wars, and thus belong to the types of so-called marching camps. However, a more detailed study of these sites is also essential because the spatial relationship between the camps and the relative chronology also needs to be clarified, and it can even be used to prove their relation to the different campaigns of the Marcomannic Wars.⁵⁹ In addition, the question of landscape archaeology concerning these camps raised here is also an important research direction.⁶⁰

⁵³ JONES 2012, 87; STEFAN 2005, 287–313.

⁵⁴ RAJTÁR et al. 2018, 287–293.

⁵⁵ LISÁ et al. 2015; KOMORÓCZY et al. 2018; KOMORÓCZY et al. 2019.

⁵⁶ GROH et al. 2015; RAJTÁR et al. 2018; KOMORÓCZY – VLACH 2019; KOMORÓCZY et al. 2020.

⁵⁷ RAJTÁR 2019, 450–454, KISS 2020a, 58–85, 87; KISS 2020b in this volume.

⁵⁸ VISY 2003, 34–38, 111–112; SZABÓ – VISY 2011, 110–111.

⁵⁹ RAJTÁR 2019, 454; For further references about the Marcomannic Wars, see KOVÁCS 2008; Kovács 2014.

⁶⁰ SZABÓ – VISY 2011, 109–110.

Plate II.

Plate III.

Plate IV.

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Római kori időszakos táborok kutatása Brigetio (Komárom–Szőny) térségében. Jelentés a BRI V, VI(–VII), X–XI, XIII–XIV, XIX, XXII–XXIII, XXX és XXXII számú táborok 2016. évi ásatási eredményeiről

A Közép-Duna-vidéken Brigetio (Komárom–Szőny) környezetéből ismerünk a legnagyobb számban római kori időszakos táborokat. A legiotábor déli előterében légirégészeti kutatások fedték fel nyomaikat az 1990-es évektől, és ezzel párhuzamosan az északi oldalon, Szlovákiában is egyre gyarapodó számuk vált ismertté. A táborokat alapvetően a markomann háborúhoz köti a kutatás, de Magyarországon ezt csupán az analógiák alapján lehetett kijelenteni, hiszen északi szomszédunkkal ellentétben csupán 2015–2016-ban került sor a légi felvételek geofizikai hitelesítésére, amelyeket 2016-ban követtek csak szondázó ásatások. A lelőhelyek keltezését elősegítő leletanyag gyűjtése céljából az ásatásokkal párhuzamosan, illetve később, kisebb mértékben fémkeresős terepbejárásokra is sor került. Az ásatások döntően igazolták a jelenségek római eredetét, és az árkok szerkezetére vonatkozóan is adatokat nyerhettünk. A fémdetektoros kutatás kisszámú lelete részben a Duna túlsó oldalán tett megfigyelésekkel mutat párhuzamot, ugyanakkor a markomann háborúk időszakán túlmutató, szélesebb spektrumú leletszóródást lehetett azonosítani, amely részben nyilván a római kori tájhasználatához is kötődhet.

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List of images

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Shadow marks of *Quadrata castellum* and the limes-road (Lébény, Győr-Moson-Sopron county)

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VISY75 – Out now

At CLIR Research Center, we consider it our important task to publish recent scientific results otherwise unavailable to the community. Our first publication was dedicated to the founder of the CLIR Academic Programme, the renowned researcher of the Roman frontiers, **Prof. Dr. Zsolt Visy**. The 576 page volume contains 35 articles from the disciplines of History and Archaeology in English, German and Italian, penned by 44 authors. Salutations were written by Prof. Dr. David J. Breeze, Dr. Endre Tóth DSC, Katalin Wollák and the editors.

See table of contents on the following pages.

Farkas, I. G. – Neményi, R. – Szabó, M. (eds.), *Visy75, Artificem commendat opus, Studia in honorem Zsolt Visy* (Pécs, CLIR Research Center, 2019), Kontraszt Plusz Ltd., 576 pp, ISBN 978-963-429-481-8.

VISY75 – Table of contents

Nándor Agócs – Ernő Szabó
Notes on the collegial stonemasonry workshops from Aquincum
 pp. 36–51

Mihai Bărbulescu
The legionary fortress from Potaissa (Turda). 45 years of archaeological research
 pp. 52–69

David J. Breeze – Rebecca H. Jones
The creation of a map: depicting the Roman Empire
 pp. 70–77

Alfredo Buonopane
Due mensurae per liquidi da roma nelle collezioni del Museo Archeologico al Teatro Romano di Verona
 pp. 78–85

Sorin Cociş – Cosmin Onofrei
Cohors I Brittonum on a tile stamp found at Sutoru (Sălaj county)
 pp. 86–93

Klara de Decker
Import Bronzegefäße als Beigaben in den Gräberfeldern von Intercisa
 pp. 94–113

Piotr Dyczek
Discovering the history of the VIII Augusta legion in Novae
 pp. 114–127

Werner Eck – Andreas Pangerl
Neue Diplome für die Truppen in den Donauprovinzen
 pp. 128–145

Boglárka Fábián
Seated Hercules statue from the collection of the Hungarian National Museum
 pp. 146–157

Gergő István Farkas
(Notes from the trial of) the CLIR database
 pp. 158–165

Mária Fekete
Einige wichtige Veränderungen in der zukünftigen Pannonien. Region am Ende des 7. Jahrhunderts v. Chr. G.
 pp. 166–181

Fanni Fodor
Another sarcophagus from the western cemetery of the Aquincum military town
 pp. 182–193

Manfred Hainzmann
Schwesterliche Grabfürsorge in Noricum
 pp. 194–207

Orsolya Heinrich-Tamáska – Máté Szabó
Late Antique fortifications in Pannonia: a landscape archaeological approach
 pp. 208–231

Hans Peter Jeschke
The linear historic cultural landscape zone of the "Frontiers of the Roman Empire" and a cultural landscape maintenance system ('Kulturlandschafts-Pflegewerk')
 pp. 232–259

Lola Kálóczi
Secrets of the ancient cemetery
 pp. 260–273

Magdolna Kiss – Szilvia Horváth
Pannonischer Bäderführer – römische Badekultur und Heilbäder in Pannonien
 pp. 274–290

Harald Koschik
Der Anfang in Bayern – Grenzenlos
 pp. 290–299

Péter Kovács
Some notes on the beginning of the epigraphic research in Hungary in the 15th and 16th centuries
 pp. 300–323

Róbert Müller
Gibt es noch eine Keszthely-kultur?
 pp. 324–337

Réka Neményi – Ildikó Talabér
Early Christian jewellery in Pannonia
 pp. 338–369

Eduard Nemeth
Pannonia and Trajan's Dacian wars
 pp. 370–379

Adrian Olivier
The role and significance of archaeology in the integrated Europe of the 21st century
 pp. 380–395

Coriolan Horațiu Opreanu – Vlad-Andrei Lăzărescu
The basilica of the forum at Municipium Septimium Porolissense (Dacia).
An overview
 pp. 396–411

Szilamér-Péter Pánczél – Csongor Lukácsi
Evidence concerning the use and production of composite bows in Călugăreni/Mikháza
 pp. 412–427

René Ployer
„Oppidorum et limitum conditor tempestivus“
 pp. 428–445

Ján Rajtár
Die römischen Feldlager in Iža
 pp. 446–457

Josef Schwing
War auch das östliche Pannonien des 9 Jahrhunderts karolingisch?
 pp. 458–469

Katalin Sidó – Szilamér-Péter Pánczél
A fireplace from the wooden principia of Călugăreni / Mikháza
 pp. 470–479

C Sebastian Sommer
Leaving traces – Spuren hinterlassen
 pp. 480–493

Ádám Szabó
Special ceremonial square in Aquincum
 pp. 494–509

Csaba Szabó
Gods and cities: Roman religion in urban context in the 2nd–3rd centuries AD.
A methodological overview
 pp. 510–533

Antal Szabó
Angaben zu den Totenbetten des römischen Gräberfeldes von Lussonium
 pp. 534–545

Andrea Vaday
Angaben zur Rekonstruktion der Leichenbetten
 pp. 546–557

Lyudmil F. Vagalinski
Late Roman civic basilica in Heraclea Sintica
 pp. 558–567

C ▾ L ▾ I ▾ R
Research Center

The Roman frontier section of Pannonia has been the subject of extensive studies in recent decades, augmented by constant improvements in digital methodology as well as the pending UNESCO World Heritage Nomination of selected sites and their related touristic development.

Significant discoveries from the last five years have been unpublished so far, thus emerged the idea to collect and present these findings in a standalone volume. The present book contains eleven articles on the results of recent research conducted on the Hungarian section of Danube limes. Three writings provide overviews on current geophysical prospections and underwater archaeology concerning several sites of the Roman frontiers as well as novities on the monetary history of Pannonia.

The subsequent eight articles present researches from various sites along the Danube, including temporary camps, auxiliary forts, Late Roman fortifications and watchtowers. Seventeen authors contributed to the volume from archaeological institutions and private firms from all over Hungary.