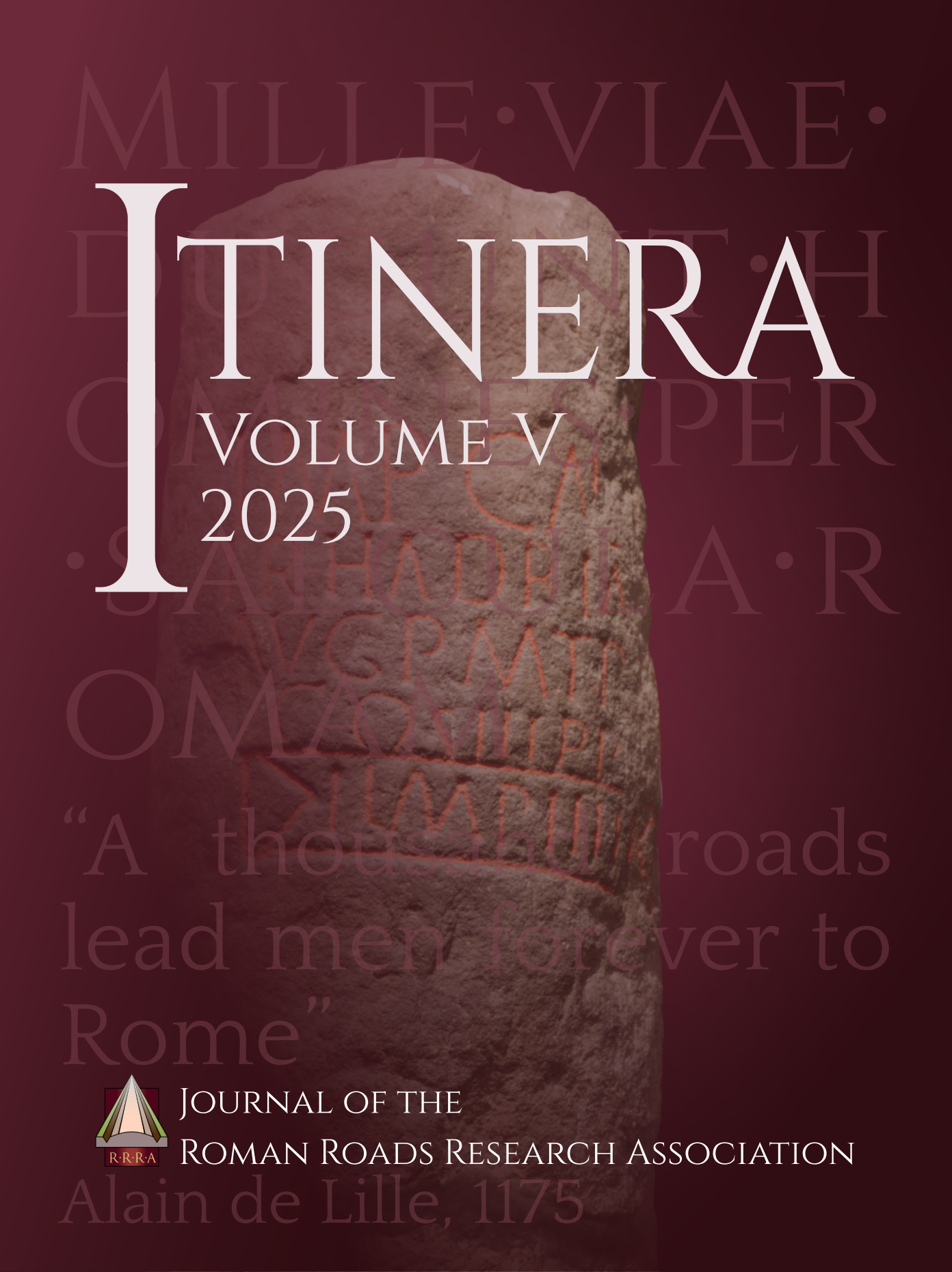


ITINERA

Volume V

2025

"A thousand roads lead men forever to Rome"

Alain de Lille, 1175

Journal of the
Roman Roads Research Association

ITINERA

The Journal of the Roman Roads Research Association

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Editorial

Robert Entwistle



Welcome to the 2025 edition of *Itinera*, Volume V. *Itinera* continues to hold a unique position among academic journals of Roman studies, with roots in both the academic and grassroots communities. We focus upon the study of Roman roads, transport technology and systems of surveying. We welcome reports and contributions from all researchers able to extend knowledge in these areas to professionals and the public alike, through the format of a formal academic paper.

Volume V, if slenderer than the bumper 2024 edition, is typical in its range of papers. Thus, Wayne Kirk extends our knowledge of Roman Northamptonshire in the light of modern findings, through a wide-reaching paper appraising its road network. Mike Luke, well respected for his excavations and publications on Roman Bedfordshire, shows how a developed understanding of the 'small town' of Sandy leads to an improved appreciation of the local roads. The same theme of road networks is explored in a different way by Keith Abbott, who argues that minor roads and trackways are seriously under-represented in our present appreciation of Roman roads.

Neil Godfrey, by contrast, addresses a wholly different issue: the relationship between roads and Romano-Celtic temples, with roads providing not only transport and passing clients, but also planned landscapes within which temples stood. My own paper is different again, examining ancient surveying methods through the features of extant surveyed works, classical literary sources, and modern surveying techniques. This methodological paper ends my series of papers on Long-distance Alignments. We are also pleased to have a paper from an independent researcher, Paul Smith – one of our own members – presenting his thesis of a road formed over time, from the Iron-Age into the Roman period and beyond.

In this volume we further welcome two authoritative papers from leading academics in Romania, demonstrating the growing understanding of Roman roads in a part of the empire that has received limited attention in the UK. In understanding the growth of road networks in a territory newly brought within the empire we see the link between conquest and road construction, and reflect on the impact of recent political change upon research.

As always, I warmly celebrate the work of our academic advisors and our willing team of volunteers who carry out many critical functions: proofreading, creating the Index, reporting updates from across the country, and managing distribution of printed copy. *Itinera* would not be possible without the willing labours of these individuals, and above all without the editorial team who manage the life of our journal across the year. The process moves from gathering papers and archaeological updates, through review, selection, editing and typesetting, through to final publication. Dr Mike Bishop – writer, publisher and archaeologist – was a founder member of our editorial team, guiding us through the formative first four years of our existence. His expert advice on publishing and all matters Roman helped steer us through a period when everything was new. His international contacts extended knowledge of our journal to contributors as far away as Spain (and most recently) Romania. *Itinera* owes him a great debt as he moves on to other things this year.

With Mike leaving, we are delighted to have welcomed to our team Professor James Gerrard of the University of Newcastle. James Gerrard brings great academic distinction, strengthening us with his experience and calm judgements. Already he has inspired the initiative of an annual Prize for the best Dissertation reflecting Roman Transport studies. Details of the prize (readily available on request)

have been distributed through SALON and the RRRA Newsletter and will shortly be available on the RRRA website. We hope to see this prize awarded for the first time in 2025.

I take this opportunity of warmly welcoming submissions, projected or actual, for Volume VI of Itinera, from all corners of Britannia and the wider empire. You will find '*Notes for Contributors*' on the RRRA website.

In the meantime, I invite you to enjoy everything within Volume V.

Robert Entwistle

(Hon Editor, *Itinera)*

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The Roman Imperial Road in Dacia: Lederata / Dierna - Porolissum. A General Overview

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Abstract

This paper examines the most significant road of Roman Dacia, the 'highway' of the province. This road also served as a frontier in the western part of the North-Danubian territories, conquered by Trajan in 106 A.D. We discuss several important categories of sources related to this road: 1. The Peutinger map; 2. Trajan's Column and the main road; 3. The milestones discovered along the route of the Imperial road; 3.1. The milestone from Aiton; 3.2. The milestone from Mera; 4. The topography and archaeology of the Imperial road (4.1. From Lederata to Tibiscum; 4.2. From Dierna to Tibiscum; 4.3. From Tibiscum to Ulpia Traiana Sarmizegetusa; 4.4. From Ulpia Traiana Sarmizegetusa to Porolissum). Discussion of the road includes information about its route, its preserved sections, the main settlements along the way, and the principal forts. The description of the road is, in many instances, based on personal field investigations and photographs.

Introduction

An efficient strategy often adopted by the Romans in conquering new territories was to build roads for the advancing army, and temporary camps along the line of march for the bivouacking of troops. Due to the vast expanse of the Roman Empire, these roads - along with bridges and milestones - became prominent features of the landscape in all regions under Roman control. As a result, scientific interest in topics related to the Roman road network, including the *limes*, has generated a substantial body of literature, beginning in the 19th century and continuing to the present day.

The Peutinger map and the Imperial road of Roman *Dacia*

The Peutinger Map has generated a significant body of literature (illustrative examples include: Miller 1916; Weber 1976; Bosio 1983; Brodersen 2001, 7-21; Salway 2001, 22-66; Allen 2003, 403-415; Brodersen 2003, 289-297; Gautier Dalché 2003, 43-52; Prontera 2003; Gautier Dalché 2004, 71-84; Talbert 2004, 113-141; Albu 2005, 136-148; Salway 2005, 119-135; Talbert 2005, 627-634; Pazarli, Livieratos and Boutoura 2007, 245-260; Talbert 2007, 353-366; Talbert 2007a, 221-230; Albu 2008, 111-

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119; Talbert, Elliott 2008, 199-218; Pazarli 2009, 101-116; Fodorean 2011, 9-19; Rathmann 2013, 203-222; Albu 2014; Rathmann 2016; Diederich 2021, 372-397).

In recent years the author has discussed essential aspects of how *Dacian* Roman roads were depicted on the Peutinger map (Fodorean 2002-2003, 51-58; Fodorean 2013, 37-38; Fodorean 2016, 83-84). In fact, three roads are represented north of the Danube: 1. the *Lederata - Tibiscum* road; 2. the road *Dierna - Tibiscum - Sarmizegetusa - Apulum - Napoca - Porolissum*; 3. the road *Drobeta - Romula - Apulum*. The road sectors *Lederata - Tibiscum* and *Dierna - Tibiscum* actually form part of the same main road

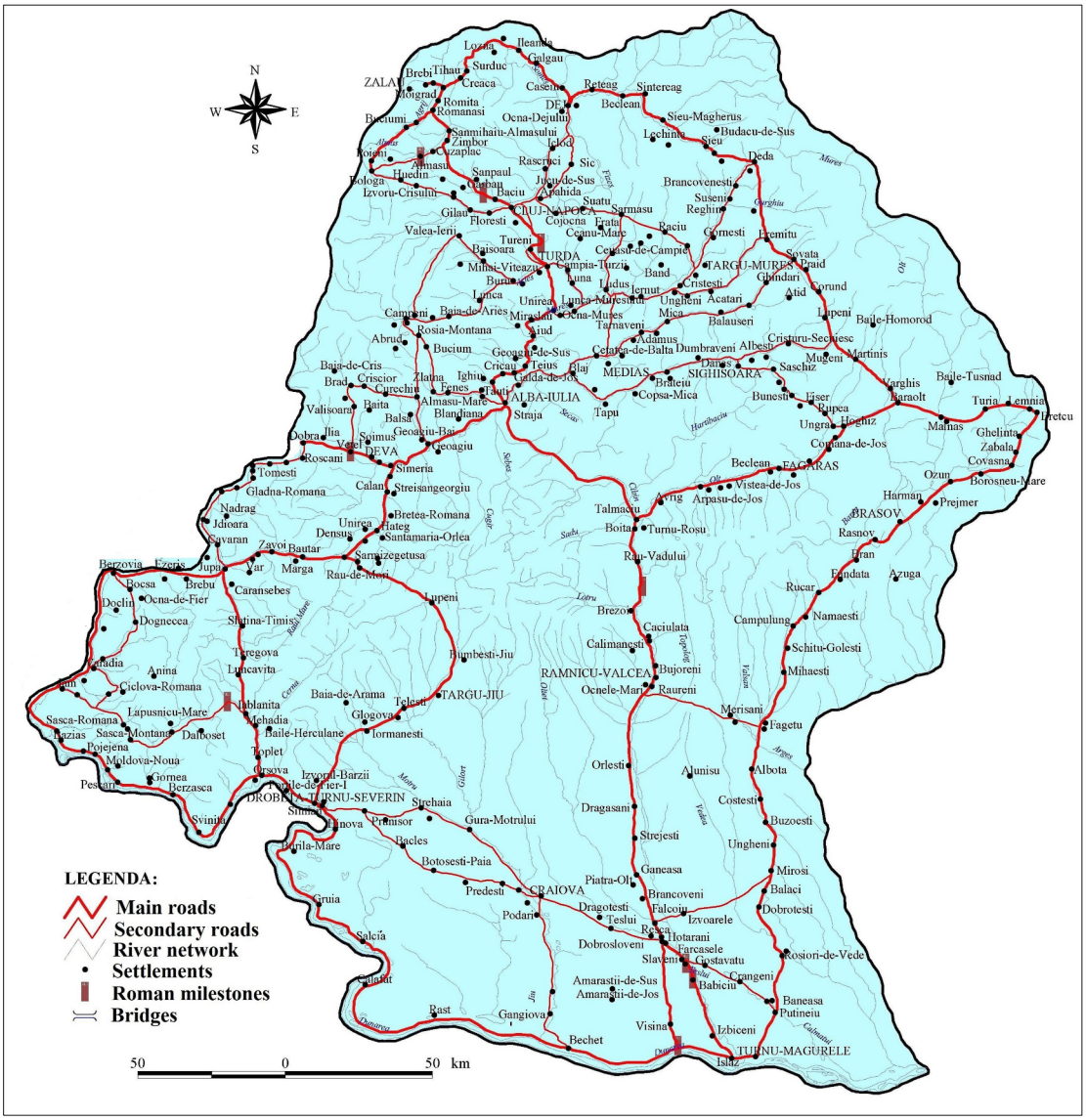


Fig. 1. The main roads of Roman Dacia, with location of the milestones (author F. Fodorean).

which traversed the entire province from south to north, from the Danube River towards the northernmost fort in *Dacia*, *Porolissum* (*Fig. 1*).

The first road is represented in segment VI 2 of the Peutinger Map which depicts eight toponyms and seven distance figures, totalling 73 Roman miles: *Lederata* - XII (Roman miles); *Apus flumen* - XII; *Arcidava* - XII; *Centum Putea* - XII; *Berzobis* - XII; *Aizis* - III; *Caput Bubali* - X; *Tivisco* (represented by a vignette).

The second road begins at *Dierna*, located on the Danube River, and ends at *Porolissum*. The document records twenty-four settlements and a total distance of 270 Roman miles. These are: *Tierva* - XI (Roman miles); *Ad Mediam* - XIIII; *Pretorio* - IX; *Ad Pannonios* - IX; *Gaganis* - XI; *Masclianis* - XIIII; *Tivisco* - XIIII; *Agnavie* - VIII; *Ponte Augusti* - XV; *Sarmategte* - XIIII; *Ad Aquas* - XIII; *Petris* - VIIII; *Germizera* - VIIII; *Blandiana* - VIII; *Apula* - XII; *Brucla* - XII; *Salinis* - XII; *Potavissa* - XIIII; *Napoca* - XVI; *Optatiana* - X; *Largiana* - XVII; *Cersie* - IIII; *Porolisso*.

Along this road, five settlements are depicted with vignettes: 1. *Tibiscum* (Jupa, Caraș-Severin County); 2. *Sarmategte* (sic!) (today Sarmizegetusa, Hunedoara County); 3. *Apulum* (today Alba Iulia, Alba County); 4. *Napoca* (today Cluj-Napoca, Cluj County); 5. *Porolissum* (today Moigrad, Sălaj County).

Regarding the significance of these vignettes in the Peutinger Map, the most comprehensive study to date remains the work of Annalina and Mario Levi (Levi and Levi, 1967). They categorised the 555 vignettes into several distinct groups: a) 429 vignettes of the so-called 'double-tower' vignettes; b) edifices of the 'temple' type; c) edifices of the 'aquae' type; d) edifices featuring parallel elements; e) vignettes encircled by wall structures; f) the three major vignettes representing Rome, Constantinople, and Antioch; g) vignettes depicting ports, lighthouses, and other distinct representations. Italian historians have concluded that the 'double-tower' vignettes, along with those depicting temples and baths, were associated with the needs of travel: "It is precisely through the analysis of the most common types – the 'two towers,' 'temples,' and 'baths' – examined in relation to other figurative representations, particularly depictions of rural structures, that it has been possible to identify them as edifices located along Roman roads which were designed to meet the needs of travellers for provisions and rest" (Levi and Levi, p. 170).

The presence of these vignettes on the Peutinger Map in *Dacia* has sparked various debates. One such debate (Petolescu 2000, 19-21) associates cities depicted with vignettes in *Dacia* with their status. For example, *Porolissum*, at some point designated as *municipium Septimium*, is considered the most significant site along the northern frontier of *Dacia*. *Napoca*, which was granted *municipium* status during Hadrian's reign and later elevated to a *colonia*, also features prominently. *Apulum*, which housed the *legio XIII Gemina* in a 24-hectare fort, and *Sarmizegetusa Ulpia Traiana*, the capital of Roman *Dacia*, are other examples. Lastly, *Tibiscum*, noted as the most important crossroads in the Banat region, is also represented.

Another perspective on these aspects (Benea 1999, 138-154) focuses on the late Roman period, specifically the 4th and 5th centuries A.D. The author of this study suggests that the Peutinger Map reflects *Dacia* in this period, arguing that the region was not entirely abandoned after Aurelian's withdrawal in 271 A.D. Instead, he asserts that the Romans maintained a degree of military and juridical control over the trans-Danubian territories. Consequently, Benea believes that the five settlements depicted with vignettes in *Dacia* indicate that the Imperial road system in *Dacia* remained

in use, primarily for economic reasons: to provide access to the salt resources in *Potaissa*, the iron resources in Banat, and the gold mines in the Apuseni Mountains. Furthermore, the author claims that these cities also served as Christian centres, which explains their representation with vignettes. However, we have previously argued that such a scenario is untenable. Apart from certain areas in present-day Oltenia and Muntenia, which were under Roman control during Constantine's reign, the regions of Banat and Transylvania – through which the former main Imperial road passed – were of no interest to the Romans in the 4th and 5th centuries A.D.

In simple terms, these vignettes represent stopping points along the road.

Another important aspect regarding the Peutinger Map in *Dacia* concerns the distances between settlements. In numerous instances the distance of 12 miles appears, as well as values close to this number. In a study published in 1997, Al. Diaconescu argued that the distance of 12 Roman miles, frequently indicated on the Peutinger Map along the roads in *Dacia*, corresponds to a typical day's march, or *iustum iter* (Diaconescu 1997, 13-52). This value is also commonly found along the roads depicted in Moesia and Pannonia (Fodorean 2016, 146, table 15). Therefore, we conclude that the Peutinger Map was compiled, among other sources, using various military itineraries or 'maps' created by the Roman army during and after the conquest of new territories. These source 'maps' (*formae provinciae*) would have been based upon observations of the terrain by the Roman army. Consequently, as previously argued (Fodorean 2016, 161), the sources for the Peutinger Map were diverse, including settlement lists with the distances between them, road descriptions, *formulae provinciarum*, and military itineraries, both written and illustrated.

Trajan's Column and the main road

There are 11 scenes on Trajan's Column – namely, XV, XIX, XXIII, LVI, LX, LXV, LXIX, XCII, CXVII, CXXVII, and CXXIX – that depict soldiers engaged in the construction of roads or small bridges. Analysing these scenes is crucial not only for the objectives of our current study but also for expanding our understanding of building activities carried out by the Roman army north of the Danube during and immediately following the conquest of *Dacia* in 106 A.D. (Fodorean 2004, 410-423). It is important to note that the scenes on Trajan's Column have been interpreted in various ways over time: some scholars have rightly recognised the Column as a propagandistic monument, while others have exaggerated the historical value of the monument. Certain attempts to correlate specific scenes on the Column with particular *Dacian* landscapes, rivers, or settlements have been unsuccessful.

Scene XV (according to Cichorius, 1896-1900) depicts a Roman fort and a road, illustrated as a zigzag line, connected by a bridge, and accompanied by a group of auxiliary soldiers (referenced as scenes XIII / XIV-XVI in Coarelli, 1999). Clearly, the scene provides a schematic representation of a fortified road; however, it is not possible to determine the exact location of this road in the actual terrain.

Scenes XIX and XX depict legionary soldiers engaged in the construction of a bridge, forts, and roads (Coarelli 1999, pl. 17, scenes XV-XVIII-XX).

In scene XXIII, several legionary soldiers are shown cutting down trees in a forest. This would have been to clear the terrain, making space for the construction of a future road (Coarelli 1999, 64, pl. 20, scenes XVII / XXII-XXIII).

Scene L from Trajan's Column depicts a zigzag road and marching legionary soldiers (Koeppel 1980, 301-306; Stephenson 2013, 79-93, especially 79, particularly emphasises the role and involvement of the Roman army in construction activities, noting: 'Scholars of the reliefs have long noted the striking fact that more scenes of engineering, building and land works appear on this victory monument than actual battle scenes').

Such representations (including those in scenes XV and XCII) would seem to suggest an itinerary representing a Roman army route, linking one fort to another. The style of these depictions is consistent with that found on the Peutinger Map, where roads are portrayed as segments or lines.

Ten legionary soldiers who open a road into a forest are represented in scene LVI (Coarelli 1999, 101, pl. 57, scenes XXXIX-XL / LV-LVI, 102, pl. 58, scenes XL / LVI-LVII). In scene LVIII, a road and a wooden bridge are illustrated (Coarelli 1999, 103, pl. 59, scene XLI / LVII-LVIII, 104, pl. 60, scene XLI / LVIII-LIX; Fodorean 2004, 415-416).

In the back of the scene LII, a group of legionary soldiers is shown building a road through a forested, mountainous area (Coarelli 1999, 98, pl. 54, scenes XXXVII-XXXVIII / LII-LIII; Fodorean 2004, 416). Also, in the scene LXIX, eight legionary soldiers open a road through a forest in a mountainous region (Coarelli 1999, 121, pl. 77, scenes XLIX / LXVIII - LXIX).

Scene XCII depicts several soldiers constructing a road in a mountainous, hilly landscape, illustrated by a zigzag line with seven segments. In the background, a fort is visible (Coarelli 1999, 152, pl. 108, scenes LXVI-LXVII / XCI-XCII; 153, pl. 109, scenes LXVII / XCII; Fodorean 2004, 417).

In scenes CXXIV-CXXVI, several legionary soldiers are shown clearing the forest and constructing a stone wall (Coarelli 1999, 197, pl. 153, scenes XCIII-XCIV / CXXIV-CXXV).

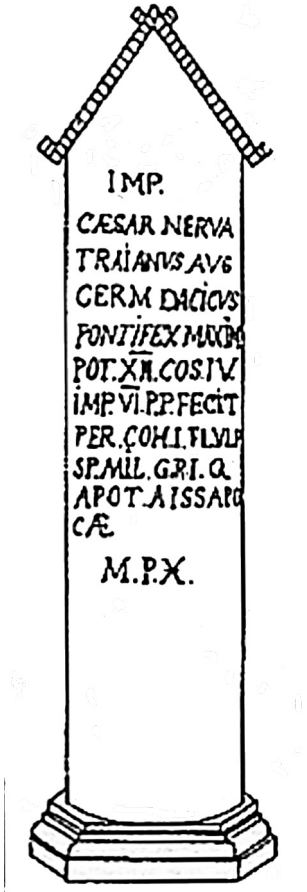
Soldiers engaged in the construction of a road along a river are depicted in scene CXXXI (Coarelli 1999, 200, pl. 156, scenes XCVI / CXXVIII-CXXX, 201, pl. 157, scenes XCVI-XCVII / CXXIX-CXXXI).

To sum up, these scenes, which include a certain level of repetition and are chronologically linked to the first military campaign against the *Dacians* (101-102 A.D.), convey a planned message: that legionary soldiers possessed the skills, logistics, and expertise required to fell trees, traverse mountains, and construct roads and bridges. The message is clear, demonstrating the superiority of the Roman army in overcoming all obstacles, including challenging terrain. Through *labor et disciplina*, these soldiers could effectively surmount any natural or human impediment. Of particular importance to our discussion is the idea that the first roads north of the Danube were constructed during the first and second military campaigns, with road building continuing even after the conquest. These roads were initially constructed in the Banat region and are possibly the same routes depicted on the Peutinger Map, specifically along the routes *Lederata* to *Tibiscum*, and *Dierna* to *Tibiscum*. In the commentaries of his book *De Bello Dacico*, Emperor Trajan recorded: *Inde Berzobim, deinde Aizi processimus* ('From there we advanced to Berzobis, and then to Aizis'). It indicates that Trajan took the western route, the *Lederata* to *Tibiscum* road, to advance into enemy territory during the first military campaign. The so-called eastern road was also constructed in the Banat region, following the valleys of the Cerna and Timiș Rivers. This road connected the settlements of *Dierna* (present-day Orșova, Mehedinți County) with *Tibiscum* (present-day Jupa, Caraș-Severin County).

To conclude, for the reasons outlined above, attempts to pinpoint the exact locations of scenes depicting roads, bridges, and soldiers engaged in construction activities in the terrain are very challenging. It is essential to understand that the repetition of such scenes served a straightforward yet highly effective purpose: to convey the message of the Roman army's superiority, as well as the discipline and labour capabilities of Roman soldiers.

The milestones discovered along the route of the Imperial road

Only nine milestones have survived from the area that once belonged to the former province of *Dacia*. These milestones were discovered in the following locations: in Aiton (Cluj County, dated 108 A.D.) (Winkler 1982, 587-589; Fodorean 2016, 89-90), Mera (Cluj County, dated 169-176 A.D.) (Fodorean 2006, 68-71; Piso 2011, 321-323), Almaşu Mare (Sălaj County, dated 236 A.D.) (Fodorean 2006, 71-73; Piso 2011, 323-324), Veţel (Hunedoara County, the ancient Micia, dated in 251-253 A.D.) (Fodorean 2006, 74-75; Piso 2011, 324-326), Lăpuşnicel (Caraş-Severin County, dated in 251-253 A.D.) (Fodorean 2006, 75-79; Piso 2011, 326-328), Băbiciu de Sus (Olt County, dated to Septimius Severus' reign, possible 205 A.D.) (Fodorean 2006, 80), Gostavăţu (Olt County, also dated to Septimius Severus' reign) (Fodorean 2006, 80), Racoviţa-Copăceni (ancient Praetorium, dated 236 A.D.) (Fodorean 2006, 80-81), and Sucidava (Celei, dated 326-333 A.D.) (Fodorean 2006, 81-82; Piso 2011, 328-329).



Of these nine milestones, two are particularly relevant to our discussion: the milestone from Aiton and the one from Mera.

The milestone from Aiton

Aiton is a small village located precisely 10 miles (14,785 km) north of Turda (Roman *Potaissa*). In 1758, a milestone was discovered within the village's territory, though the exact location of this discovery remains unknown. It has been suggested that it was found in the southern part of the village. The milestone itself has since been lost, with the only remaining evidence being a 19th-century drawing (*Figs. 2 & 3*) (Fodorean 2006, 64-68; Fodorean 2013, 34; Fodorean 2016, 89-90; Fodorean 2019, 224-228, Fodorean 2024, 204-205, and catalogue, 210, no. 12). The text (CIL III 1627) reads:

Imp(erator)
Caesar Nerva Traianus Aug(ustus)
Germ(anicus) Dacicus
pontif(ex) maxim(us)
(tribunicia) pot(estate) XII co(n)s(ul) V (sic)
imp(erator) VI p(ater) p(atriae) fecit
per coh(ortem) I Fl(avia) Vlp(ia)
Hisp(anorum) mil(liaria) c(ivium) R(omanorum) eq(uitata)
a Potaissa Napocae
m(illia) p(assuum) X

Fig. 2. Drawing of the milestone from Aiton (source: Winkler 1982, 81).

Emperor
Caesar Nerva Trajan Augustus,
Germanicus Dacicus.
High Priest (Pontifex Maximus),
in the twelfth year of his tribunician power,
holding the consulship for the fifth time,
acclaimed as imperator for the sixth time,
Father of the Fatherland (Pater Patriae),
constructed this
through the 1st Flavian Ulpian Cohort
of Spaniards, a unit of one thousand soldiers and cavalry, Roman citizens,
from Potaissa to Napoca,
over a distance of ten Roman miles.

Based on Trajan's titles, it is evident that the milestone was erected in 108 A.D. on this road, known as the Imperial road or the 'the highway' of *Dacia*. The importance of this epigraphic monument for the history of *Dacia* cannot be overstated, as it provides us with several key pieces of information: 1. The main road of *Dacia* was constructed during and after the conquest of the province in 106 A.D. If the road extended to this area by 108 A.D., it is reasonable to infer, without excessive optimism, that the entire route, which connected the Danube River to the northernmost settlement in *Dacia*,



Fig. 3. Copy of the milestone discovered in Aiton in 1758 (located in the courtyard of the local school in Aiton, Cluj County).

Porolissum, was likely completed around 110 A.D.; 2. The contribution of Balbus (the chief land surveyor brought into *Dacia* by Trajan to organise and supervise the construction of military installations – roads and forts) was crucial in the first year following the conquest of *Dacia*, when logistical decisions were essential for organising the new province, to plan the new roads, to chose the place of the future forts and the future cities; 3. According to the inscription, this specific road segment was constructed by an auxiliary unit, *cohors I Flavia Ulpia Hispanorum milliaria civium Romanorum*, which is notable because building activities were typically carried out by the legions.

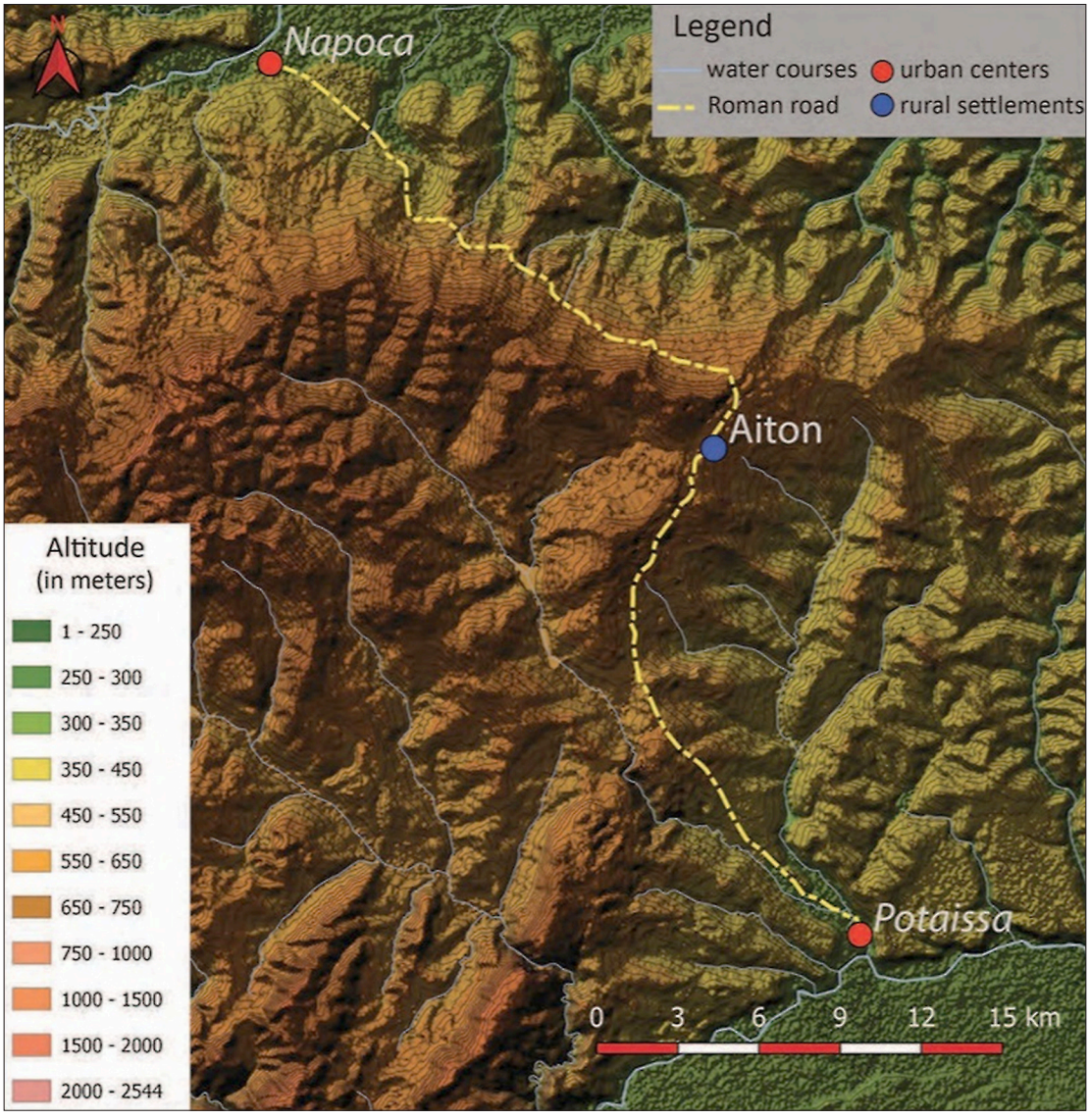


Fig. 4. The route of the Imperial road from Potaissa to Napoca, showing the location of Aiton (source: Dîscă 2020, 260, fig. 1).

Aiton is very rich in archaeological discoveries (Fodorean 2015, 217-232; Dîscă 2020, 259-275). Concentrations of archaeological materials, including ceramic fragments, bricks, tiles, aqueduct pipes, foundation walls, and even coins, were found in two distinct areas of the present-day village: one in the southeastern part and another in the northern part, very close to the route of the Imperial road *(Fig. 4, Fig. 5)*. Based on this evidence, we propose that the archaeological remains uncovered near the Roman road during the excavations of 1913 and 1979-1982 likely represent parts of a former *mansio*, constructed in the vicinity of the Roman road.

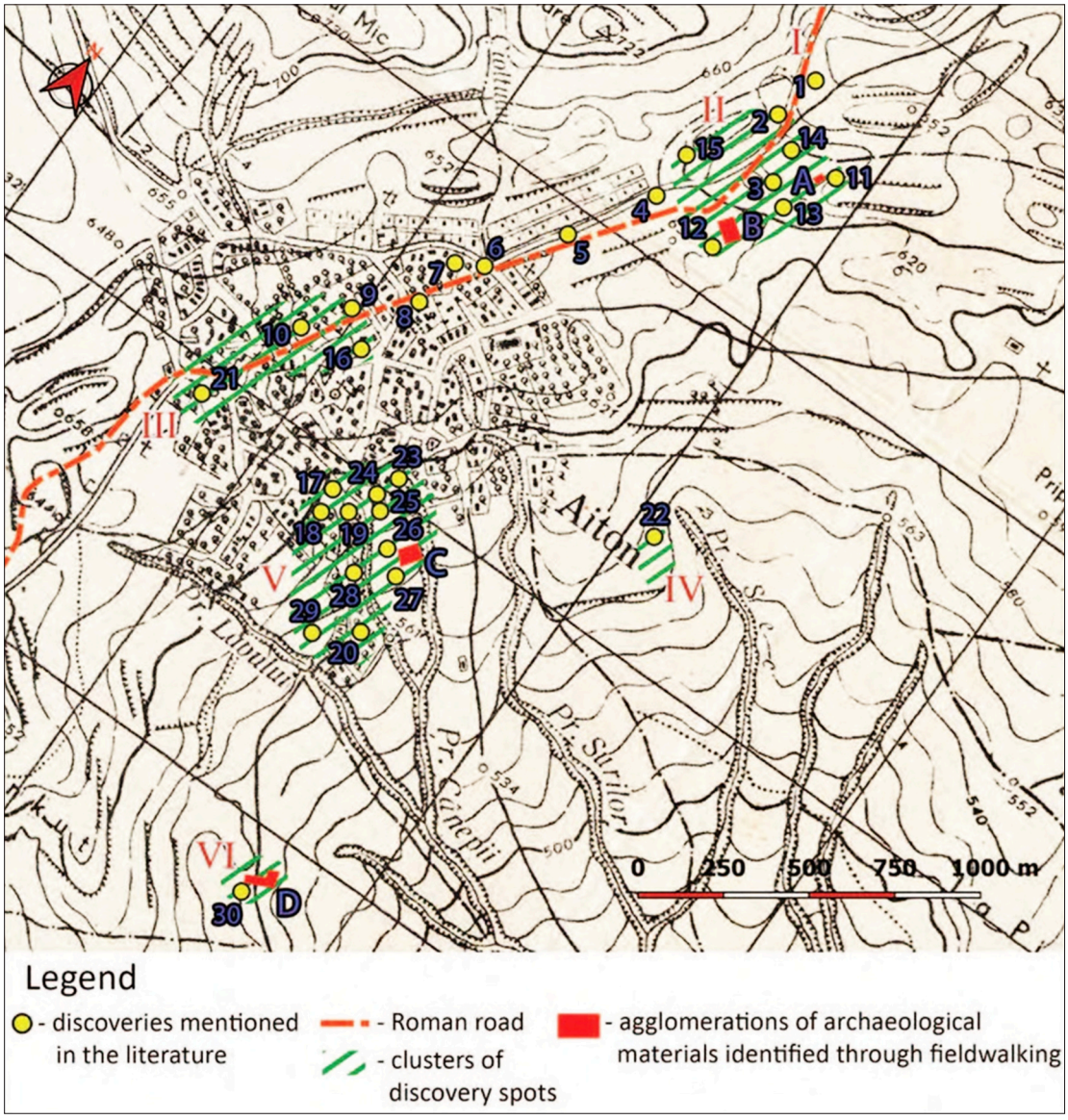


Fig. 5. Archaeological discoveries in Aiton (source: Dîscă 2020, 266, fig. 4).

The milestone from Mera

In 1932 a milestone was discovered in the southern part of the village Mera, close to Napoca, along the route of the former Imperial road. It is currently housed at the National Museum of Transylvanian History. It was first published by C. Daicoviciu (Daicoviciu 1928-1932, 48-53) and has since been reanalysed in various studies (Daicoviciu 1970, 224-230; Fodorean 2002, 64-66; Fodorean 2006, 68-71; Piso 2011, 312-314; Fodorean 2013, 34; Fodorean 2016, 91). It is a cylindrical stone column with a quadrangular base, measuring a total height of 2.25 m (the column itself, excluding the base, is 1.75 m high) and has a diameter of approximately 43 cm (*Fig. 6*). Half of the column has been destroyed.

Based on Daicoviciu's reading, we propose the following interpretation:

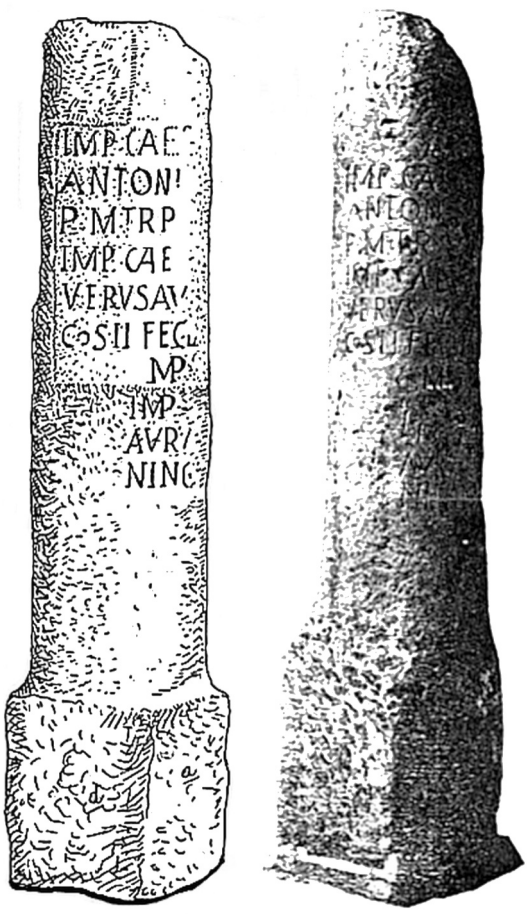


Fig. 6. The milestone from Mera (Cluj County) (source: Daicoviciu 1928-1932, 49).

Imp(erator) Caes(ar) [M(arcus) Aurelius]
Antoni[nus Aug(ustus) Armen(iacus)]
p(ontifex) m(aximus) tr(ibunicia) p(otestate) XIX
imp(erator) III co(n)s(ul) III et]
Imp(erator) Cae[s(ar) L(ucius) Aurelius]
Verus Au[g(ustus) Armen(iacus) tr(ibunicia)
pot(estate) V imp(erator) III]
co(n)S(ul) II fece[runt a Napoca]
mp [X]
Imp(eratore) [Caes(are) M(arco)
Aur(elio) A[nto]
nino [Aug(usto)]

Emperor Caesar Marcus Aurelius Antoninus Augustus Armeniacus, Pontifex Maximus, holding tribunician power for the 19th time, hailed as imperator for the 3rd time, consul for the 3rd time, and
Emperor Caesar Lucius Aurelius Verus Augustus Armeniacus, holding tribunician power for the 5th time, hailed as imperator for the 3rd time, consul for the 2nd time,
built (this) from Napoca at mile X,
under the reign of Emperor Caesar Marcus Aurelius Antoninus Augustus.

The text of the milestone suggests that the road was probably repaired in 164-166 A.D. during the reign of Marcus Aurelius and again between 169-176 A.D. (Piso 2011, 313). I. Piso was right to assume that the road was prepared in 164-166 A.D. in the context of a possible invasion, and then repaired in 169-176 A.D., in the context of the Marcomanic wars.

The key takeaway from the text of this milestone is the strategic importance of this road for the military operations of the province throughout its existence, from 106 to 271 A.D.

The topography and archaeology of the Imperial road

From Lederata to Tibiscum

From *Lederata* to *Tibiscum*, the Peutinger Map records a total distance of 73 miles, eight settlements, and seven distance markers. We assume that the distance from Aizis to Caput Bubali (only III miles on the Peutinger Map) is a copyist's error. If we put XIII miles instead of III, this would align with the current distance between Fârliug and Cornuțel. Consequently, the total distance from *Lederata* to *Tibiscum* would be 83 miles (122.7 kilometers).

The stations recorded on the Peutinger Map are, in some cases, difficult to locate. *Lederata* (present-day Ram, Serbia) is positioned on the right bank of the Danube in Serbia. *Apus flumen* is believed to correspond to the river Caraș or Orešac (Serbia). The following stations could be identified (some only hypothetically) as follows: *Arcidava* (Vărădia or Vršac); *Centum Putea* (Surducu Mare?); *Berzobis* (Berzovia); *Aizis* (Fârliug); *Caput Bubali* (Cornuțel); and *Tivisco* (Jupa). The total distance of 73 miles (approximately 108 km) is accurate if the proposed locations are correct.

Some sectors or crossroads have been archaeologically identified in the field: close to the fort of Vărădia, from Doclin to Biniș and Bocșa Română, near the fort of Surducu Mare, and in the areas of the villages of Ramna, Brebu, and near Jupa (Răuț, Bozu, Petrovsky 1977, 135-159; Bozu 2008, 81-105).

From Dierna to Tibiscum

From Dierna to *Tibiscum*, the Peutinger Map records a total distance of 68 miles, with 6 distance markers and 7 settlements. Again, some stations recorded in the Peutinger map are difficult to locate. *Dierna* corresponds to present-day Orșova (Mehedinți County). *Ad Mediam* has yet to be identified. *Praetorium* is located at Mehadia (Caraș-Severin County), where a Roman fort was built. Another Roman fort was established at *Ad Pannonios* (Teregova?). The locations of *Gaganis* and *Masclianis* remain unknown. The current distance from Orșova to Jupa (97 kilometers) roughly matches the distance indicated on the Peutinger Map from *Dierna* to *Tibiscum*, which is 68 miles (100.5 km).

This road has been identified at only a few points. A recent study examined the Roman forts in the southwestern part of *Dacia*, providing accurate and comprehensive data through geophysical surveys, aerial photography, digital terrain models, and geomagnetic prospection regarding the forts situated along the two Roman roads in Banat (Țentea, Matei-Popescu, Timoc 2023, 763-804).

From Tibiscum to Ulpia Traiana Sarmizegetusa

From *Tibiscum* to *Ulpipa Traiana* the Peutinger map records a total distance of 37 miles: Tivisco-XIIII; Agnavie-VIII; Ponte Augusti-XV; Sarmategte. Recently, its route has been identified at several points in the terrain: east of Obreja, west of Glimboca and west of Oțelul Roșu (Dîscă, Leonti 2023, 49-70) (Fig. 7, Fig. 8, Fig. 9). However, the most significant information regarding the route of the Roman road is provided by the maps produced in the Habsburg Empire, starting in the 18th century. The maps from the First Military Survey depict this road with a thick red line, labelled as “Landstrasse aus Banath

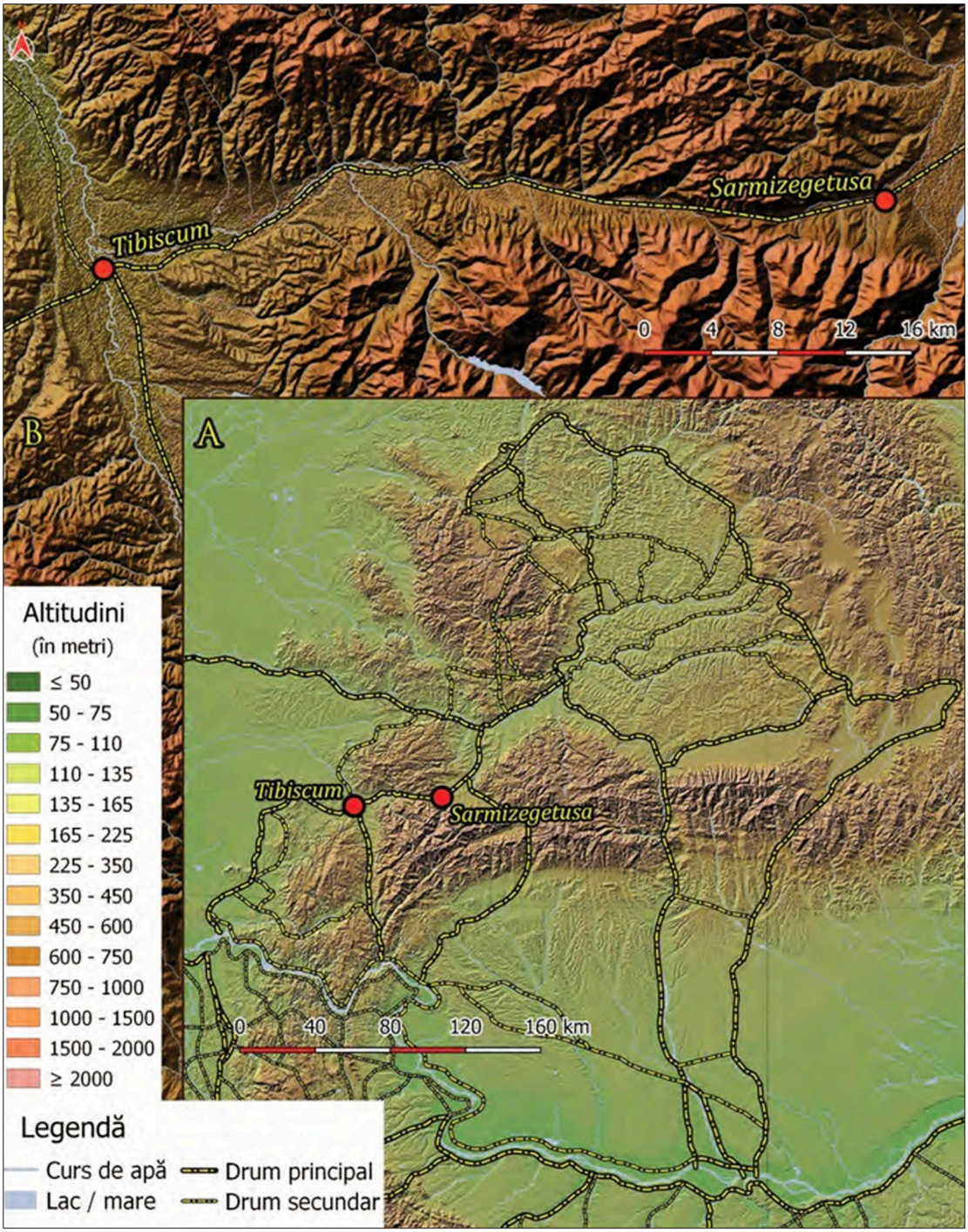


Fig. 7. Digital elevation model showing the main roads of Dacia and the route of the Roman road from Tibiscum to Ulpia Traiana Sarmizegetusa (source: Dîscă, Leonti 2023, 51, fig. 1).

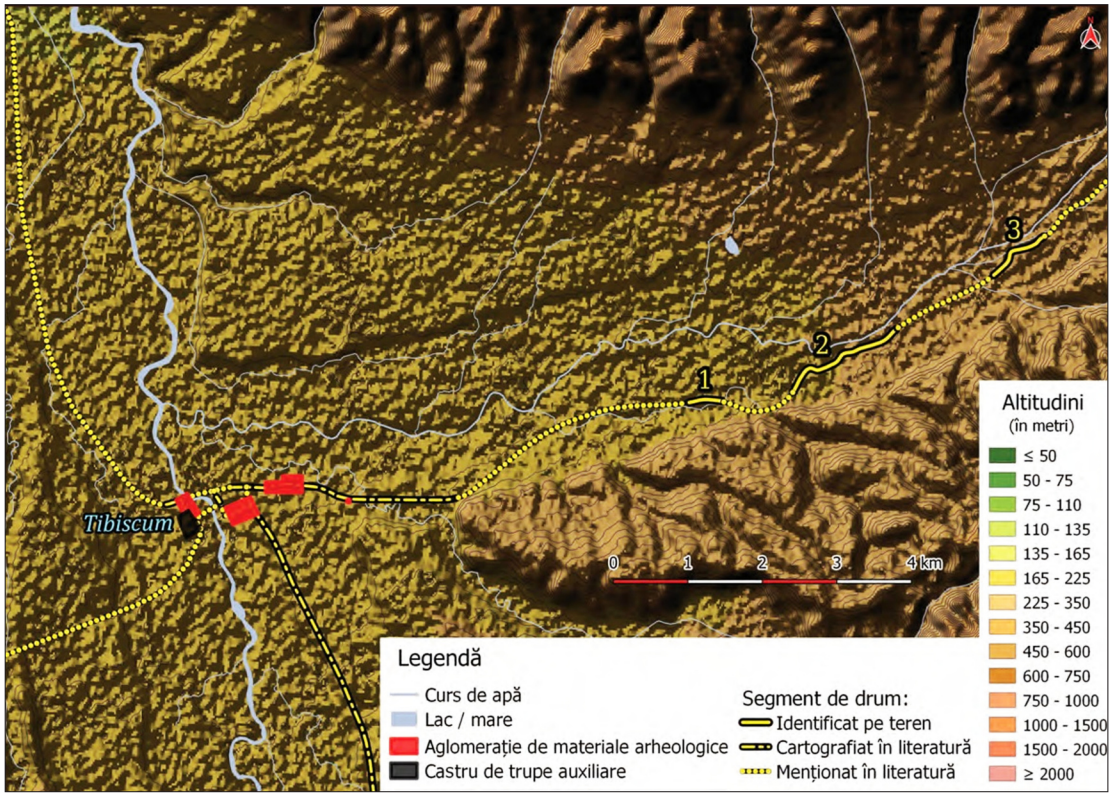


Fig. 8. Digital elevation model depicting road segments identified on the ground in the area of Tibiscum – Ulpia Traiana (source: Dîscă, Leonti 2023, 65, pl. V).

nach Szaszváros", close to the former Roman city. The former Roman city Ulpia Traiana is indicated by the expressions "Römisches Laager der 7: und 13. Legion Ano 103" and "Stäte von Ulpia Trajana alwo die Röm. Colonie gewohnet" (First Military Survey, Siebenbürgen, Ancrum Maps). The Imperial road is depicted with the same red line from Unciuc to Subcetate, spanning approximately 10 kilometres, with two toponyms: "Trajaneer Weg" and "Trajaner Weg" .

On the maps from the Second Military Survey (Europe in the XIX. century ,Arcanum Maps), the same Imperial road, named "Trajans Weg", is marked with a red line from Várhely ("Gradiștie") (Sarmizegetusa, Hunedoara County) to Nagy-Osztro (Ostrov, Hunedoara County). Continuing in the same direction, from Unciuc to Săcel and Bărăștii Hațegului, the road, referred to as "Römische Strasse", is depicted as a straight line .

The same Imperial road from Várhely ("Grădiște") to Nagy-Osztro (Ostrov), drawn as a line and labelled with the toponym "Trajans Weg", is depicted on the maps from the Third Military Survey (1:25000). The term "Römisches Lager" is used to denote the former city, while "R. Amphitheater" indicates the ruins of the amphitheatre . The same road is represented on these maps as a straight line from Baresd (Bărăștii Hațegului, Hunedoara County) to Subcetate. Below this road sector, it is written



Fig. 9. Traces of the Roman road west of the village of Glimboca (source: Dîscă, Leonti 2023, 54, fig. 3).

in capital letters, "Traian" (Habsburg Empire (1869-1887) - Third Military Survey (1:25000) | Arcanum Maps).

The maps from the Third Military Survey (scale 1:75000, 1869-1887) depict this road in the sector from Várhely ("Gradiștie") to Ostrovu Mare (Ostrov) with the usual toponym, "Trajans Weg" (Habsburg Empire (1869-1887) - Third Military Survey (1:75000) | Arcanum Maps).

In the Várhely ("Grădiște") - Nagy Osztro (Ostrov) sector, using the same toponym, "Trajans Weg", the so-called "planuri directoare" indicate the same Imperial Roman road, represented on these maps as a straight line from Baresd (Bărăștii Hațegului, Hunedoara County) to Subcetate. The toponym "Traian" is used to indicate the road.

We conducted terrain investigations several years ago to identify, measure, and map the remains of the former Imperial road over a distance of approximately 16 kilometres (Fodorean 2007, 365-384) in the sector from *Ulpia Traiana* to Sântămăria Orlea. In the area of the northern side of the former Roman city and further on, from Sarmizegetusa to Ostrov, the road remains visible in the field (personal research conducted in 2006, 2007, 2014, 2016, and 2017). The traces of the Roman road are well preserved, as it was constructed as an *agger*. In other words, its structure is elevated compared to the surrounding terrain (Figs. 10, 11, 12).





Fig. 10, above & fig. 11, below. Vestiges of the Imperial Roman road leaving Ulpia Traiana Sarmizegetusa (photos F. Fodorean).



Fig. 12. Vestiges of the Imperial Roman road leaving Ulpia Traiana Sarmizegetusa (photos F. Fodorean).

From Ulpia Traiana Sarmizegetusa to Porolissum

The settlements located along the Imperial road from *Ulpia Traiana* to *Porolissum* are *Ad Aquas* (Călan, Hunedoara County), *Petris* (Uroiu?, Hunedoara County), *Germisara* (Germizera in the Peutinger map, today Geoagiu-Băi, Hunedoara County), *Blandiana* (today Blandiana, Alba County), *Apulum* (Alba Iulia, Alba County), *Brucla* (Aiud?, Alba County), *Salinae* (Războieni-Cetate, Alba County), *Potaissa* (Turda, Cluj County), *Napoca* (Cluj-Napoca, Cluj County), *Optatiana* (Sutor?, Sălaj County), *Largiana* (Românași, Sălaj County), *Certiae* (Romita?, Sălaj County), *Porolissum* (Moigrad, Sălaj County) (*Fig. 13, Fig. 14*). The most significant areas where the Imperial road has been investigated in the terrain are the ones from Războieni-Cetate to Turda, from Turda to Cluj-Napoca, in the area of Nădășelu and Sutor (Cociș, Lăzărescu, Socaciu 2022, 83-130), and at the entrance to the Roman city of *Porolissum*. In the sector from Războieni-Cetate to Turda, at the beginning of the 20th century, Téglás István, a school inspector who lived in Turda, and also an enthusiastic amateur archaeologist, draw a sketch of the road, using the toponym 'Trajanus ut' ('Trajan's road') (*Fig. 15*). Close to the village of Ceanu Mic, the road was identified in the terrain in 2005 (*Fig. 16, Fig. 17*). The road is also visible near the village of Aiton, primarily in ploughed areas, where its infrastructure is gradually being destroyed (*Fig. 18*). The best-preserved section of this road is located at the entrance to the city of *Porolissum*.

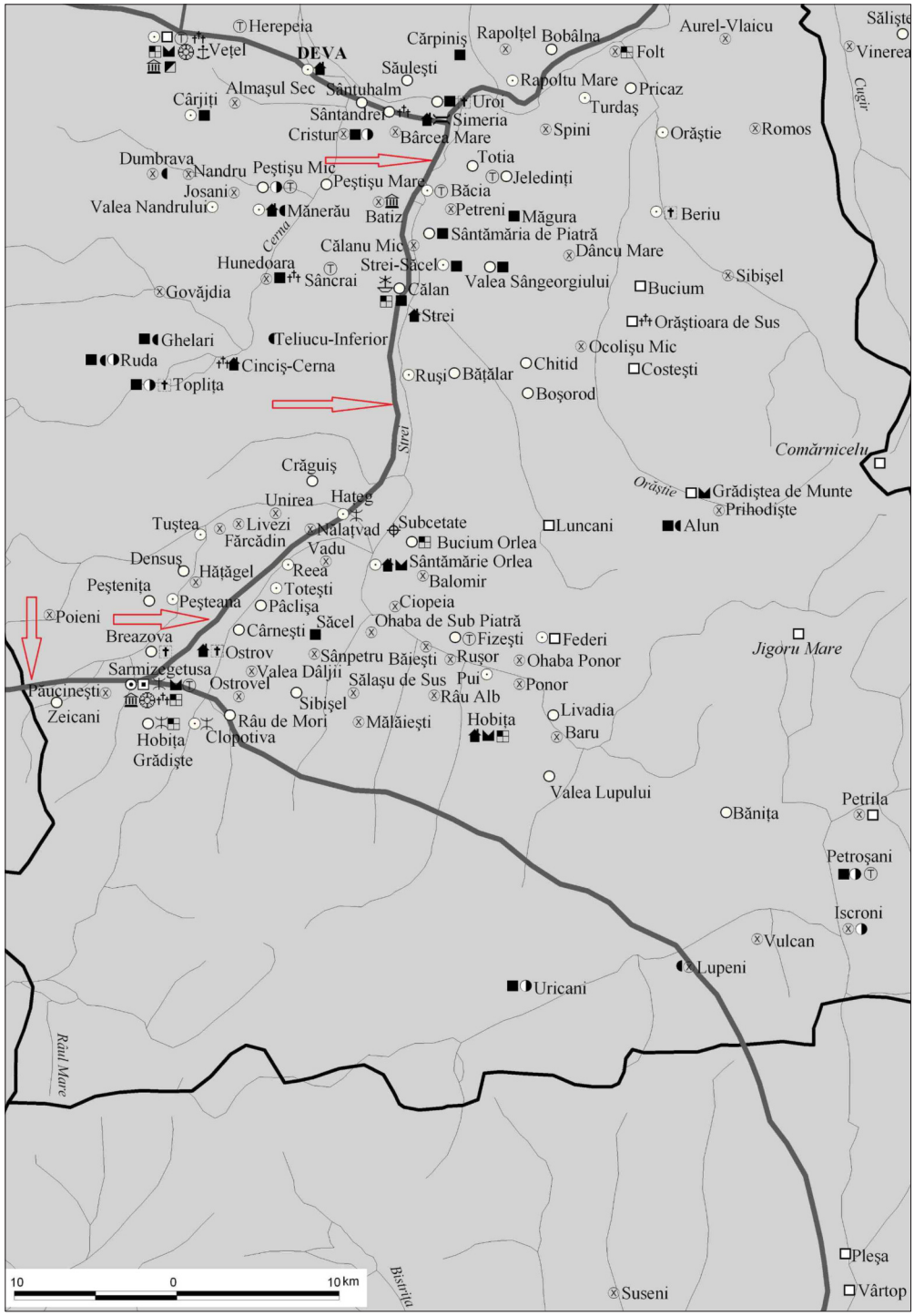


Fig. 13. The route of the Imperial road from Sarmizegetusa to Uroiu (source: Bărbulescu 2005, 121).

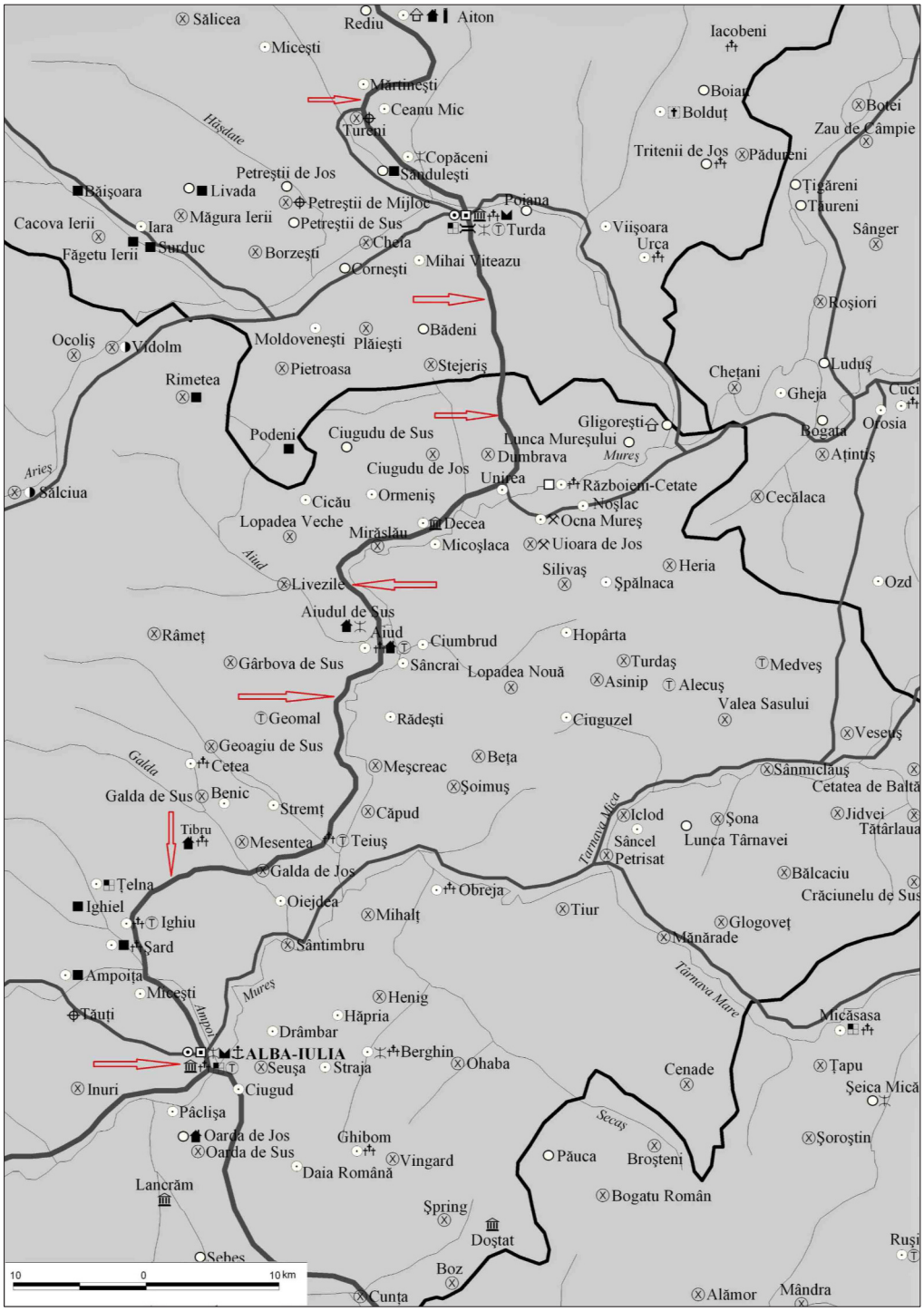


Fig. 14. The route of the Imperial road from Alba Iulia to Turda (source: Bărbulescu 2005, 114).

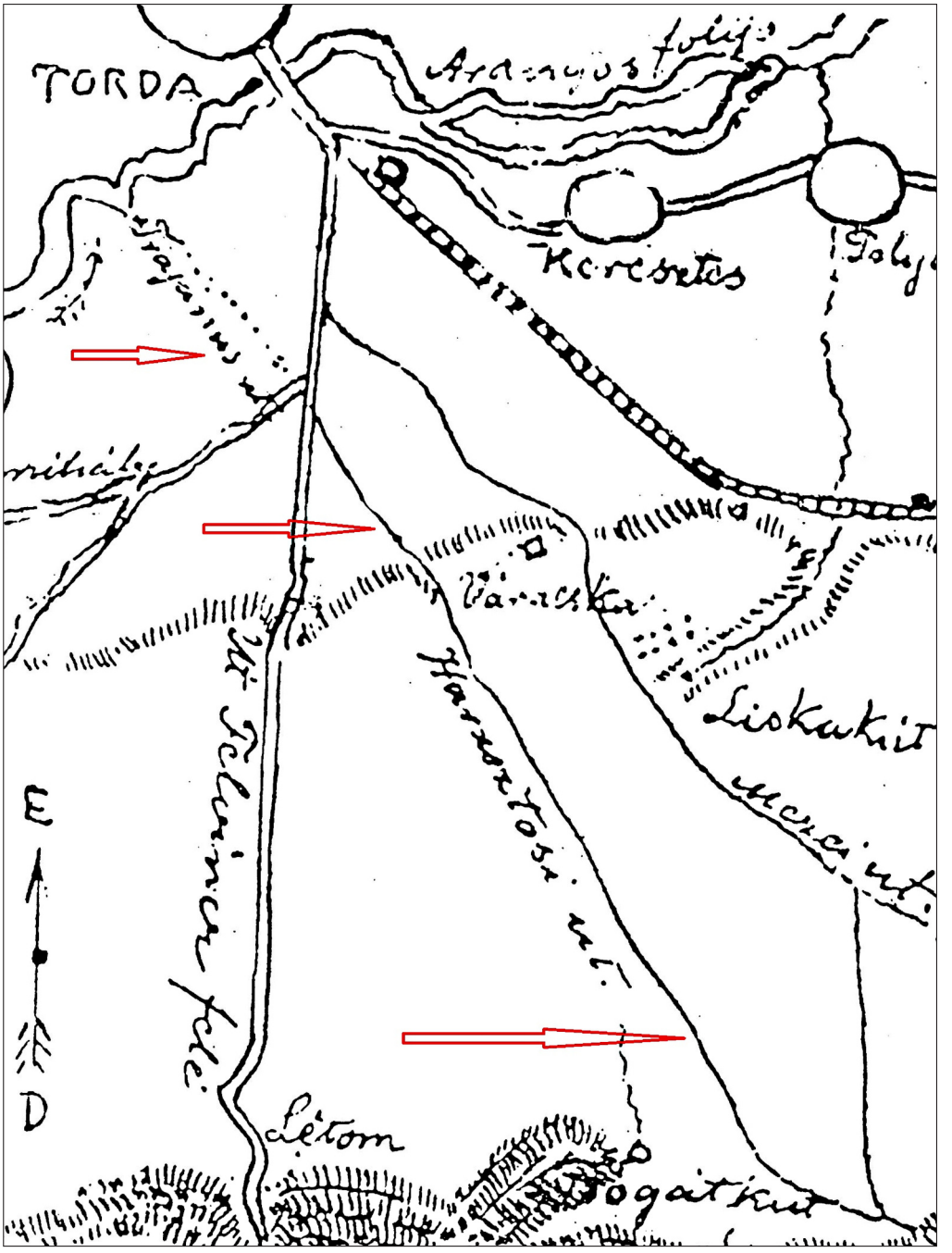


Fig. 15. A sketch depicting the line of the Imperial road in the Războieni - Cetate – Turda area, drawn by Téglás István (source: Téglás 1913, 58).



Fig. 16 above, 17 below. Excavated sections of roadbed in the vicinity of Ceanu Mic village (photos F. Fodorean).





Fig. 18. The line of the Imperial Roman road close to the village of Aiton (photo F. Fodorean).

Conclusions

The Imperial road of Roman *Dacia* functioned as the 'highway' of the province, serving several important roles. To summarise, its significance is connected to the following aspects: 1. For a period of time, it served as a frontier road in the western part of *Dacia*; 2. All the legionary fortresses in *Dacia* were constructed along it: *Berzobis*, *Apulum*, and *Potaissa*; 3. All the major cities of the province were located along this road: *Dierna*, *Tibiscum*, *Ulpia Traiana Sarmizegetusa*, *Apulum I*, *Apulum II*, *Potaissa*, *Napoca* and *Porolissum*. These settlements were strategically positioned along the road. A remarkable example is the location of *Ulpia Traiana:* 72 Roman miles from *Berzobis* (legionary fortress from 106 to 117 A.D.) and 72 miles from *Apulum* (legionary fortress, the garrison of *legio XIII Gemina* from 106 to 271 A.D.).

In our analysis of the organisational pattern of Roman *Dacia* immediately following its conquest (Fodorean 2019, 17-29), we concluded that for organisational purposes the Romans precisely established several strategic points along the main Imperial road, implemented during the military campaigns and immediately after the conquest of *Dacia*. We identified two categories of sites along this road:

A. The so-called primary sites, which are the most significant from a strategic standpoint, positioned approximately 72 to 80 Roman miles apart. In our view, these sites are: 1. Berzovia, the fortress of *legio IIII Flavia Felix*, garrisoned from 106 to 117 A.D.; 2. *Ulpia Traiana Sarmizegetusa*, where a legionary fortress was constructed in the first phase, from 102 to 106 A.D.; 3. *Apulum*, the fortress of *legio XIII Gemina*, garrisoned here from 106 to 271 A.D.; 4. *Napoca*, *municipium* during Hadrian's reign; 5. *Porolissum*, where several troops were garrisoned in a large auxiliary fort positioned on the Pomet Hill.

B. The so-called intermediate or secondary sites are situated between the primary sites, at distances of approximately 36 to 40 miles. These would be: a. Vărădia (*Arcidava*?), where two auxiliary forts were archaeologically identified; b. Jupa (*Tibiscum*), a significant crossroads, where a fort was constructed, and where the two segments of the Imperial road intersect; c. Cigmău (close to Germisara, Hunedoara County), where an auxiliary fort was built; d. Războieni-Cetate, where an auxiliary fort and its associated civilian settlements were established (Cociș, Lăzărescu, Socaciu 2022, 83-130).

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Bibliography.

Albu, E. 2005: ' Imperial Geography and the Medieval Peutinger Map', *Imago Mundi* 57, 136-148.

Albu, E. 2008: 'Rethinking the Peutinger Map'. In R. J. A. Talbert, R. W. Unger (eds), *Cartography in Antiquity and Middle Ages: Fresh Perspectives, New Methods*, Brill, Leiden/Boston, 111-119.

Albu, E. 2014: *The Medieval Peutinger Map: Imperial Roman Revival in a German Empire*, Cambridge University Press, New York.

Allen, T.J. 2003: 'Roman Healing Spas in Italy: The Peutinger Map Revisited', *Athenaeum* 91, 403-415.

Arnaud, P. 1988: 'L'origine, la date de rédaction et la difussion de l'archetype de la Table de Peutinger', *Bulletin de la Société Nationale des Antiquaires de France*, 302-321.

Benea, D., 1999: *Dacia sud-vestică in secolele III-IV. Interferențe spirituale*, Timișoara,

Bozu, O. 2008: 'Öffentlilche und private Gebäude and der römischen Strassen aus dem Banat', *Banatica* 18, 81-105. Available at <https://biblioteca-digitala.ro/reviste/Banatica/18-Banatica-muzeul-banatului-montan-2008-7.pdf>. Accessed 09.10.2024.

Brodersen, K. 2001: 'The presentation of the geographical knowledge for travel and transport in the Roman world: itineraria non tantum adnotata sed etiam picta'. In C. Adams, R. Laurence (eds), *Travel and Geography in the Roman Empire*, Routledge, London-New York, 7-21.

Brodersen, K. 2003: 'Die Tabula Peutingeriana: Gehalt und Gestalt einer 'alten Karte' und ihrer antiken Vorlagen'. In D. Unverhau (ed.), *Geschichtsdeutung auf alten Karten: Archäologie und Geschichte*, Harrassowitz, Wiesbaden, 289-297.

Cichorius, C. 1896-1900: *Die Reliefs der Trajansäule*, G. Reimer, Berlin.

Coarelli, F. 1999: *La Colonna Traiana*, Colombo, Roma.

Cociș, S., Lăzărescu, V.A, Socaciu, S.T., 'Cercetările arheologice din castrul și vicus-ul de la Sutor (2001-2021)', *Cercetări Arheologice* 29.1, 83-130. Available at <https://cercetari-arheologice.ro/wp-content/uploads/2022/07/ca29_1_05_Cocis_compressed.pdf>. Accessed 15.10.2024.

Daicoviciu, C. 1928-1932: 'Un nou miliarium din Dacia', *Anuarul Institutului de Studii Clasice* I, 2, 48-53.

Diaconescu, Al. 1997: 'Dacia under Trajan. Some observations on Roman tactics and strategy', *Acta Musei Napocensis* 34, I, 13-52.

Diederich, S. 2021: 'Empire and Landscape in the Tabula Peutingeriana' . In M. Horster, N. Hächler (eds), *The Impact of the Roman Empire on Landscapes. Proceedings of the Fourteenth Workshop of the International Network Impact of Empire (Mainz, June 12-15, 2019)*, Brill, Leiden, Boston, 2021, 372-397.

Dîscă, A.C., 2020: 'Roman Sites and Discoveries Around Potaissa (III). New Data and Clarifications Regarding the Topography of the Sites in Aiton', *Ziridava* 34, 259-276.

Dîscă, A.C., Leonti, I. 2023: 'Drumul roman Imperial între Tibiscum și Ulpia Traiana Sarmizegetusa. Câteva observații și rezultatele unor cercetări de teren', *Analele Banatului S.N.* 31, 49-70.

Europe in the XIX century,. Also available on-line at <https://maps.arcanum.com/en/map/europe-19century-secondsurvey/?bbox=2533531.1632421054%2C5700874.720664721%2C2547987.3162165396%2C5705919.564531542&map-list=1&layers=158%2C164>. Accessed January 2025.

Fodorean, F. 2002: 'Izvoare epigrafice privind drumurile din Dacia romană', *Revista Bistriței* 16, 55-95.

Fodorean, F. 2002-2003: 'Tabula Peutingeriana and the province of Dacia', *Acta Musei Napocensis* 39-40/1, 51-58.

Fodorean, F. 2006: *Drumurile din Dacia romană*, Napoca Star, Cluj-Napoca.

Fodorean, F. 2007: 'Drumul roman Imperial Sarmizegetusa - Subcetate. Studiu topografic și arheologic'. In S. Nemeti et al. (eds), *Dacia felix. Studia Michaeli Bărbulescu oblata*, Tribuna, Cluj-Napoca, 365-384 . Available at <https://www.academia.edu/5686441/Drumul_roman_imperial_Sarmizegetusa_Subcetate_Studiu_topografic_si_arheologic>. Accessed 02.10.2024.

Fodorean, F. 2011: review to R. J. A. Talbert: Rome's World. The Peutinger map reconsidered. Cambridge: Cambridge University Press 2010. 376 pages, 33 b/w, illus., 1 table. ISBN: 978-0-521-76480-3, *Plekos* 13, 9-19. Available at <http://www.plekos.uni-muenchen.de/2011/r-talbert.pdf>. Accessed 03.10.2024.

Fodorean, F. 2013: *The Topography and the Landscape of Roman Dacia*, BAR International Series 2501, Archaeopress, Oxford.

Fodorean, F. 2015: 'A Potaissa Napocae MP X'. The Roman rural settlement and the mansio from Aiton (Cluj County), *Acta Archaeologica Academiae Scientiarum Hungaricae 66*, 2015, 217-232. Available at <https://real.mtak.hu/36966/1/072.2015.66.1.10.pdf> . Accessed 08.10.2024.

Fodorean, F.-Gh. 2019: 'The Peutinger Map, the Roman Army and the First Military Roads in Dacia'. In A. Kolb (ed.), Roman Roads. New Evidence – New Perspectives, De Gruyter, Berlin / Boston, 215-235.

Fodorean, F.-Gh. 2019a: 'The origin and development of the main road infrastructure and the city network of Roman Dacia', *Journal of Ancient History and Archaeology* 6.4., 17-29 . Available at <https://jaha.org.ro/index.php/JAHA/article/view/460/323>. Accessed 15.10.2024.

Fodorean, F-Gh. 2016: *Pannonia, Dacia and Moesia in the Ancient Geographical Sources*, Franz Steiner, Stuttgart.

Fodorean, F.-Gh. 2024: 'Road building activities during Trajan's reign reflected through milestones'. In S. Nemeti, C. Timoc (eds), *Alfred von Domaszewski, Latin Epigraphy in the Roman Empire. Acts of the colloquium held in Timișoara in December 14th- 17th 2022*, Mega, Cluj-Napoca, 199-220.

Gautier Dalché, P. 2003: 'La trasmissione medievale e rinascimentale della Tabula Peutingeriana.' In F. Prontera (ed.), *Tabula Peutingeriana. Le antiche vie del mondo*, Olschki, Florence 2003, 43-52.

Gautier Dalché, P. 2004: 'Du nouveau sur la transmission et la découverte de la Tabula Peutingeriana: La 'Cosmographia vetustissima' de Pellegrino Prisciani (+ 1518)', *Geographia Antiqua* 13, 71-84.

Hapsberg Empire, 1869-1887, Third Military Survey. Also available on-line at <https://maps.arcanum.com/en/map/thirdsurvey25000/?bbox=2533826.432768242%2C5702235.521654927%2C2548282.585742676%2C5707280.365521749&map-list=1&layers=129>. Accessed January 2025.

Koeppel, G. 1980: 'A military itinerarium on the Column of Trajan: scene L', *Mitteilungen des Deutschen Archaeologisches Institute*, Römische Abteilungen, 87, 301-306.

Levi, A., Levi, M. 1967: *Itineraria Picta: Contributo Allo Studio Della Tabula Peutingeriana*, L'Erma' di Bretschneider, Rome.

Piso, I. 2011: 'Note sur conq bornes milliaires de Dacie'. In I. Piso et al. (eds), *Scripta classica. Radu Ardevan sexagenarii dedicata*, Mega Publishing House, 311-320. Available at <https://hiphi.ubbcluj.ro/written_heritage/I.%20Piso,%20Note%20sur.pdf>. Accessed January 2025

Rathmann, M. 2013: 'The Tabula Peutingeriana in the mirror of ancient cartography. Aspects of a reappraisal'. In K. Geus, M. Rathmann (eds), *Vermessung der Oikumene*, De Gruyter, Berlin/Boston, 203-222.

Rathmann, M. 2016. *Tabula Peutingeriana. Die einzige Weltkarte aus der Antike*, Philipp von Zabern, Darmstadt.

Răuț, O., Bozu, O., Petrovsky, R. 1977: 'Drumurile romane în Banat', *Banatica* 4, 135-159.

Salway, B. 2001: 'Travel, itineraria and tabellaria'. In C. Adams, R. Laurence (eds), *Travel and Geography in the Roman Empire*, Routledge, London - New York, 22-66.

Salway, B. 2005: 'The Nature and Genesis of the Peutinger Map, *Imago Mundi* 57, 2005, 119-135.

Salway, B. 2007: 'The perception and description of space in Roman itineraries'. In M. Rathmann (ed.), *Wahrnehmung und Erfassung geographischer Räume in der Antike*, Philipp von Zabern, Mainz, 181-266.

Siebenbürgen, G., 1769-1773, First Military Survey. Also available at <https://maps.arcanum.com/en/map/firstsurvey-transylvania/?bbox=2531877.599359325%2C5700501.475973295%2C2546333.7523337593%2C5705546.319840116&map-list=1&layers=142>. Accessed January 2025.

Stephenson, J.W. 2013: 'The Column of Trajan in the light of ancient cartography and geography', *Journal of Historical Geography* 40, 79-93. Available at <https://libres.uncg.edu/ir/asu/f/Stephenson_John_2013_trajan_cartography_geography.pdf.X.pdf.X.pdf>. Accessed 06.10.2024.

Talbert, R.J.A. 2004: 'Cartography and Taste in Peutinger's Roman Map'. In R. J. A. Talbert, K. Brodersen (eds), *Space in the Roman World: Its Perception and Presentation*, Lit, Münster 2004, 113-141.

Talbert, R.J.A. 2005: '*Rome's Marble Plan and Peutinger's Map: Continuity in Cartographic Design*'. In F. Beutler, W. Hameter (eds), Eine ganz normale Inschrift. Festschrift zum 65. Geburtstag von Ekkehard Weber (Althistorisch-epigraphische Studien 5), Eigenverlag der Österreichischen Gesellschaft für Archäologie, Wien, 627-634.

Talbert, R.J.A. 2007: 'Konrad Miller, Roman Cartography, and the Lost Western End of the Peutinger Map'. In U. Fellmeth et al. (eds), *Historische Geographie der Alten Welt: Grundlagen, Erträge, Perspektiven: Festgabe für Eckart Olshausen aus Anlass seiner Emeritierung*, Georg Olms, Hildesheim, 353-366.

Talbert, R.J.A. 2007a: 'Peutinger's Roman Map: The Physical Landscape Framework'. In M. Rathmann (ed.), *Wahrnehmung und Erfassung geographischer Räume in der Antike*, Philipp von Zabern, Mainz, 221-230.

Talbert, R.J.A., and Elliot, T. 2008: 'New Windows on the Peutinger Map of the Roman World'. In A. K. Knowles (ed.), *Placing history: how maps, spatial data, and GIS are changing historical scholarship*, Redlands, CA, 2008, 199-218.

Talbert, R.J.A. 2010: *Rome's World: the Peutinger Map Reconsidered*, Cambridge University Press, New York.

Téglás, I. 1913: 'A liskakúti római telepről', *Archaeologiai Értesitö* 33, 57-60.

Țentea, O., Matei-Popescu, F., Timoc, C. 2023: 'Castrele romane din sud-vestul Daciei. O trecere în revistă și o actualizare', *Cercetări arheologice* 30/2, 763-804.

Weber, E. 1976: *Tabula Peutingeriana. Codex Vindobonensis 324 (with separate Kommentar volume)*, Akademische Druck- u. Verlagsanstalt, Graz.

Winkler, I. 1982: 'Date noi despre CIL III, 1627, cea dintâi atestare epigrafică a Potaissei', *Potaissa. Studii şi comunicări 3*, 80-84.