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THE *VIA SILICA STRATA* GEOAGIU-BĂI - CIGMĂU. AN ARCHAEOLOGICAL, GEO-TOPOGRAPHICAL AND TECHNICAL STUDY

1. The purpose of the archaeological research

During the summer of 2001 we investigated a plot of land in the Geoagiu-Băi area[1] (Hunedoara county), in order to identify a Roman road that was never mentioned before in historical literature[2].

The investigation area covered the zone between Geoagiu Valley, in the East, the village of Geoagiu in the South, and the locality Geoagiu-Băi (Pl. 1). This area was known in the Roman era by the name of Germisara. Archaeologically and topographically, the Roman city and the Roman camp extended over the present day territory of villages Geoagiu, in the East, and Cigmău in the West. We can, therefore, distinguish two points situated on the northern right bank of the Mureş, close to the main military road that connected Ulpia Traiana Sarmizegetusa with Apulum (Pl. 2). One of these cities, which had benefited by the thermal waters, were employed for civilian and bathing purposes. This place is situated north of Geoagiu. The other, which emerged later, was military in character and included the Roman camp at Cigmău and the civilian settlement (*vicus militaris*)[3]. We can say that under the name of Germisara there functioned in the Roman era: 1. the Roman camp at Cigmău, situated on the "Turiac" plateau, at "Pogradie" point; 2. the civilian settlement (*vicus militaris*), located between Cigmău and Geoagiu; 3. the watering place, situated 5 km north of the Roman camp.

During the investigation of this geographical space, lying south-west of the bathing place, we have positively identified a section of the Roman road which connected Geoagiu-Băi with Cigmău. This road made the junction, at the last point mentioned, with the main highway Apulum-Micia-Partiscum (Szeged)[4].

For a better understanding of all the motives that determined the construction of the Roman road in this area, we present here the physical and geographical features of the region. We are dealing here with a special situation as accounted for by the importance of thermal waters in the Roman epoch.

2. The main physical and geographical features of the region Cigmău-Geoagiu

The watering place at Geoagiu-Băi is situated at the south-western extremity of the Glodului Depression[5]. This is one of the most interesting areas of the Apuseni

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[1] The investigation was carried out on the 15th of August. Also a participant inthis research was Angela Irimia.

[2] We are grateful to geographer Cornel Pagu for all the useful information he forwarded in assistance of our research, in the form of a small drawing and four pictures of this road, made 20 years ago, in 1981, when he had carried out his own investigation in this area.

[3] IDR III/3, 211-212; Enciclopedia arheologiei şi istoriei vechi a României II (D-L), Bucureşti 1996, 177, *s. v.* Germisara.

[4] I. Ferenczi, *Opinii vechi şi noi în legătură cu drumurile între Dacia, Pannonia şi Moesia Superior prin Barbaricum*, Tibiscus 3, 1974, 111-117; Lajos Balla, István Tóth, *À propos des rapports entre la Pannonie et la Dacie*, Studia Dacica. Collected Papers (Ed. by Edit Szabó), Debrecen 2000, 23-24.

[5] Laviniu Muntean, Constantin Stoicescu, Ludovic Grigore, Ghidul staţiunilor balneoclimaterice din România, IVth Edition, Bucureşti 1986, 222.

Mountains, because of its particular position. It lies in the South-East, between the prolongations of the Săcărâmbului Mountains. North of Geoagiu-Băi, the most important hill is Ceretului Hill (550 m) and in the South-West, Cigmăului Hill (500 m)[6].

Geographically, we are here at the limit of the confluence of two distinctive relief individualities: the Depression of Orăştie and the Metaliferi Mountains. The Depression of Orăştie is very different from the other divisions of the Carpathian Mountains. The close relationship between this depression and the Transylvanian plain gives the the impression of a western prolongation of the Transylvanian plain or even of a contact depression[7]. It is an asymmetric and long depression, quite large, the prevailing landscape being the large river meadow of the Mureş. Its joint genesis and evolution with the depression of Haţeg and the hills of Hunedoara on theonehand, and the influence exercised by the southern mountains and the main role played by the rivers on the other hand, both represent powerful enough reasons to consider this area an interesting zone, in connection with the Transylvanian Alps.

The other geographical zone is represented by the Metaliferi Mountains, the most interesting area south of the Apuseni Mountains[8]. Its northern side is hemmed in by the valley of the Crişul Alb and the valley of the Arieş. The valley of the Mureş represents its southern limit. The profound dislocations, engendering sharp differences of relief, caused changes in the environment[9].

The geological structure of the Geoagiu-Băi area is characterized by a variety and complexity of structures and rocks[10]. This zone is a part of the Apuseni Mountains; geologically, this area is characterized by the complex changes occurring in the geological time, one of the main consequence of these changes is the stratigraphical mosaic encountered here.

The hydrographic network of the Geoagiu area is defined principally by the Mureş River, which collects many watercourses from the Metaliferi Mountains. Close by the village of Geoagiu, the Mureş receives flowing in from the right side the rivulet of Geoagiu, whose reception basin covers over 350 km^2. The water sources and the streams around Geoagiu are numerous and in permanent flow. Among the most important rivulets that supply the Geoagiu stream we can mention here the Boilor Valley, flowing across the thermal area, and also the Chilia Valley, which flows past the village of Renghet. Part of the pluvial waters recedes deep into underground, which cumulates the thermal waters. *Hydrologically*, the deep underground circualtion of the pluvial waters through the fissures at two levels is a characteristic of the Geoagiu area. One of them is superficial and supplies a number of water sources, starting with the Băilor Valley, whereas the other is much more deeper at about 800-1000 m below ground and supplies the deposit of thermal waters. The surface waters penetrate deep down inside, get heated up and mineralized. Part of these water traverses the limestones and surfaces as thermal sources, at a temperature of 29-33°C and a flow of over 20 l/sec.

The climate of the Geoagiu-Băi region is typical of the hillside area and it is a local climate. The local micro-climate of the Săcărâmbului Mountains can be encountered here, as well as the specifics of the Mureş Valley. The atmospheric variations are quite low and the atmospheric pression is uniform. Temperature and moisture fluctuations are low.

[6] Cornel Stoica, *Consideraţii fizico-geografice asupra zonei Geoagiu-Băi*, Sargetia 7, 1970, 307.
[7] Geografia României 3: Carpaţii Româneşti şi Depresiunea Transilvaniei, Bucureşti 1987, 360.
[8] Hunedoara. Monografie, Bucureşti 1980, 18.
[9] Valeria Velcea, Alexandru Savu, Geografia Carpaţilor şi a Subcarpaţilor româneşti, Bucureşti 1982, 216.
[10] Geoagiu. Geological map. Scale 1: 50 000.

Clear skies are predominant and rainfalls are situated below the general average. The geographical position of the depression explains the presence in the area of winters with temperatures higher than in other regions (-2°C) and hot summers (over 20°C). *The temperature*, the main climatic element, varies between annual averages of 9°C to 10.3°C. The average temperature between 1960-1970 was 9.7°C. A look at the average of the extreme months, we can see that the average of January in this period was -5.7°C (1.6°C in 1965 and -8°C in 1969). The average of July was 20.6°C, with minor fluctuations. The local geographical characteristics determine higher temperatures at the end of March and the beginning of April, as the foehn effect precipitates the coming of spring. The frost regime is quite normal. The number of days in a year with temperatures below 0°C varies around 100. Such days are frequent between November and March. Some days with frost are also present at the end of October, when the autumn hoarfrost sets in. The nebulosity presents normal averages, with a maximum in December and January and a minimum in July and August. Clear days are specific in summer, and increase beginning from June to October, when they reach a maximum. The number of days with atmospheric precipitations is minimum in this period and maximum in December. The sun shines 2100 hours in a year. The average of the yearly atmospheric precipitations is below 600 mm (537 mm). The spring rainfalls are quite frequent. A maximum of precipitations is registered in May and June. The most frequent precipitations are in the spring and in the summer, but they are of short duration. The moisture annual average is 70-80%.

3. The current stage of the Roman road research

The cartographic and geographical antique sources mention only the name of the ancient locality of Germisara. *Tabula Peutingeriana* places *Germisera* on the imperial Roman road Sarmizegetusa-Apulum, between Petriş (Uroiu) and Blandiana (Vinţu de Jos), IX *m(illia) p(assuum)* away from both localities. However, nowhere between the military camp of Cigmău and the watering place is there any evidence of a Roman road. Moreover, the ancient locality of Germisara is not represented with the vignette specific for thermal buildings[11], unlike in other cases, for instance Ad Aquas, today Călan (Hunedoara county), on the Roman highway crossing the province of Dacia from South to North. Our explanation is that, although Germisara was well known in the Roman epoch for its thermal waters, as made apparent by the arrangements of the complex pool system, archaeologically researched[12], its position off the imperial road made it unnecessary for it to be represented by the specific symbol for thermal

[11] M. and A. Levi, Itineraria picta. Contributo allo studio della Tabula Peutingeriana, Roma 1967; Ekkehard Weber, Tabula Peutingeriana. Codex Vindobonensis 324, Graz 1976 (I saw the volume thanks to the kindness of Professor Ioan Piso); L. Bosio, La Tabula Peutingeriana. Una descrizione pittorica dell mondo antico, Padova 1983; D. Tudor, Oraşe, târguri şi sate în Dacia romană, Bucureşti 1968, 130; Doina Benea, Dacia sud-vestică în secolele III-IV. Interferenţe spirituale, Timişoara 1999, 141; C. C. Petolescu, Dacia şi Imperiul Roman. De la Burebista până la sfârşitul antichităţii, Bucureşti 2000, 19-21; Peter Hügel, Ultimele decenii ale stăpânirii romane în Dacia (Traianus Decius - Aurelian), Diss. Cluj-Napoca 1999, 79. We agree with the author's opinion that contemporary historians have slightly exaggerated the importance of this Roman road. Yet we must not forget that the navigation on the Mureş can neither eliminate nor minimise the main role played by the Roman road, which ensured the connection between Dacia and Pannonia. Though the two routes of communications (on land and by water) functioned concomittantly, they were complementary. See also Ray Laurence, The Roads of Roman Italy. Mobility and Cultural Change, Routledge Ed., London - New York 1999, Chapter 7: *Transport economics*, 95-109.

[12] Eugen Pescaru, Adriana Rusu-Pescaru, *Faze şi etape de amenajare ale complexului termal de la Germisara*, Sargetia 26, 1, 1995-1996, 325-339.

waters. The absence on *Tabula Peutingeriana* of such Roman road as that between Geoagiu and Cigmău should not come as a surprise, since the antique *itinerarium* doesn't indicate even more important roads in Dacia. One such example is the Apulum-Micia-Partiscum road, alongside the Mureș Valley (a section of this Roman road is epigraphically attested by the Roman milestone discovered at Micia)[13]. It is not our intention to criticize here the utility of *Tabula Peutingeriana*; many a time the importance of this Roman *itinerarium* has been primordial in establishing the road network in Roman Dacia. This section of Roman road, between Cigmău and Geoagiu-Băi, is not present on *TP* because the main highway passes only through Germisara from Cigmău, leaving out the thermal settlement. If the Roman road had traversed thermal Germisara, than the place would have been indicated in the antique *itinerarium* with the specific symbol for thermal places.

In the *Geography* of Ptolemy, Germisara is listed along with the most important cities in Dacia[14]. On the map drawn up by I. B. Cătăniciu, Germisara is situated on the Roman road Tibiscum - Ulpia Traiana Sarmizegetusa - Hidata (Aquae) - Germisara - Apulum - Marcodava - Salinae - Potaissa - Napoca - Porolissum[15].

In his *Cosmographia* (*A description of the world*), the *Anonymus Geographicus* of Ravenna (7th century AD) enumerated the localities within Dacia (mistakenly called Moesia) from North to South. On the Roman road section of Apulum - Sarmizegetusa - Acmonia, Germisara is indicated: "Also, over the Danubium river, there are the cities of Moesia Inferior, such as: "*Porolissos, Certie, Largiana, Optatiana, Macedonica, Napoca, Patabissa, Salinis, Brutia, Apulon, Sacidaba, Cedonia, Caput Stenarum, Betere, Aluti, Romulas*. Also, close by *Cedonia*, there is a city named *Burticum, Blandiana, Germigera, Petris, Aquas, Sarmazege, Augmonia, Augusti* "[16].

So the cartographic and geographical ancient sources offer no information about a Roman road, but rather locate Germisara on the main road crossing Dacia from South to North.

As for the military camp and the Roman settlement at Cigmău, the earliest archaeological literature information is recorded only in mid 19th century. Anyway, direct historiographical reference to the archaeological discoveries around Geoagiu mentions nothing regarding the presence in this area of a Roman road. This is somewhat surprising, since as early as the 19th century the area around Geoagiu has been under constant investigation both by amateurs and by specialists. The last category mentioned here carried out, especially during the 19th century, much archaeological research in the territory of Cigmău, Geoagiu de Jos and Geoagiu-Băi.

The first recording certifying the presence of a military camp at Cigmău dates back to 1844 and belongs to András Fodor; important observations were made by J. F. Neigebaur, who estimated that the Roman civilian settlement was located somewhere between the villages of Cigmău and Geoagiu. M. J. Ackner, A. Ipolyi and C. Gooss assumed Neigebaur's opinion, a little later[17]. Unfortunately, there are no references to the presence of a Roman road here, in this region.

[13] CIL III 8061; IDR III/3, 50; V. Christescu, Istoria militară a Daciei romane, București 1937, 113; Emil Panaitescu, *Le grandi strade romane in Romania*, Quaderni dell'Impero. Le grandi strade del mondo romano, 10, Roma 1938, 7; D. Tudor (n. 11), 121; M. Macrea, Viața în Dacia romană, București 1969, 154; P. Hügel, Ultimele decenii (n. 11), 89, 92-93, 120.

[14] Ptolemy III 9, 4 (*Germizera*), *apud* Izvoare privind Istoria României, I, București 1964, 545.

[15] I. B. Cătăniciu, *Ptolemeu și provincia Dacia*, AMN 24-25, 1987-1988, 151 and pl. 1, 161; eadem, *Dacia și strategia romană*, Civilizația romană în Dacia (coord. by M. Bărbulescu), Cluj-Napoca 1997, 25, pl. 3.

[16] *GeogrRavenn*, IV, 7, *Germigera*, *apud* Izvoare privind Istoria României II, București 1970, 579-581.

[17] N. Gostar, *Inscripții și monumente din Germisara*, Sargetia 3, 1956, 87-88.

Some information on Germisara are made available by the manuscript of doctor Lugosi Fodor András[18], who lived at the beginning of the 19th century (1780-1859). Interested in archaeology, the doctor tried to compile a repertoire of antiquities found in Transylvania. In his geographical presentation of Geoagiu, Lugosi Fodor András notes the presence of numerous Roman relics: "[Geoagiu] is located at the foot of some high mountains straight from East to North, where formerly a Roman colony existed, which can be demonstrated by the walls, the fragments of bricks and the funerary monuments found here"[19]. There was no mention made of any road, either from the Roman or some other period, during the field investigation.

The two synthesis by V. Christescu mention nothing about or even presume the existence of a Roman road between the thermal place at Germisara and the imperial road crossing the entire province. Only the tract is mentioned along the Mureş Valley, together with the localities, enumerated from West to East[20].

Two studies by Emil Panaitescu dedicated to the road network in Roman Dacia are, unfortunately, rather uninformative and general. So it is only logical that a Roman road such as that between Germisara and Cigmău should not appear on the road maps drawn up by the Romanian historian. These so-called "maps" feature on our area of interest only two Roman roads, both starting from Apulum - the main crossroad point of Dacia: the one to Alburnus Maior and the other to Micia[21].

In 1956 Nicolae Gostar published an article dedicated to the inscriptions and monuments of Germisara[22]. This study has two parts: the one is a discussion on some new inscriptions; the other is dedicated to the military camp and the civilian settlement at Germisara. The author debates the problem of locating the ancient settlement; he concludes that the name of Germisara had included in the Roman epoch both the watering and climatic place and the military camp at Cigmău, located 5 km to the South. Anyway, there is no mention about a Roman road between the military camp and the civilian settlement.

In 1968 I. I. Russu published the most important Roman epigraphical discoveries from the archaeological area of the Hunedoara county[23]. The author analyzes a number of inscriptions and presents a map of the area Ulpia Traiana - Aquae - Micia - Germisara - Ampelum; he too does not include the possibility of a presence of a Roman road.

The 1968 study by D. Tudor is no different from the other studies described here so far. In his presentation of the Roman settlement of Germisara[24], the historian doesn't deny the existence of a Roman road between the watering and climatic place and the military camp of Cigmău, yet he makes no supposition concerning the route of this road: "Although at the time ofthe Roman Empire Germisara was one of the most important watering places in Dacia, exceeding by far that of Aquae, *Tabula* doesn't represent it with the characteristic symbol (a house with a large courtyard),

[18] The manuscript was published by Csergö Tibor-András, *Lugosi Fodor András şi fragmente din manuscrisul lui*, Diss. Cluj-Napoca, 1998. The author found the manuscript in the manuscript section of BCU (Biblioteca Centrală Universitară) Cluj-Napoca; it had been kept before among the manuscripts of Muzeul Ardelean, when donated by the daughter of Lugosi Fodor András in 1860.

[19] Csergö Tibor-András, op. cit., 63-64.

[20] V. Christescu, Viaţa economică a Daciei romane, Piteşti 1929, 103 and n. 2; idem, Istoria militară (n. 13), 109.

[21] Emil Panaitescu, *Provincia şi Imperiul*, Volumul omagial pentru fraţii Alexandru şi Ion I. Lapedatu, Bucureşti, 1936, 12, pl. 4; idem (n. 13), 19, pl. 9.

[22] N. Gostar (n. 17), 57-99.

[23] I. I. Russu, *Inscripţii romane din judeţul Hunedoara*, Sargetia 5, 1968, 87-107; idem, *Note epigrafice*, AMN 7, 1970, 517-528.

[24] D. Tudor (n. 11), 130-137.

because *the Roman road did not pass through the watering place; the road only runs past the camp and the settlement of Cigmău.* The watering place was positioned a little more to the interior, at Geoagiu"[25].

M. Macrea's synthesis on life in Roman Dacia, published in 1969, contains information only about the Roman roads of Apulum-Alburnus Maior and Apulum-Micia[26], as do Panaitescu's studies of 1936 and 1937.

The book dedicated to the inscriptions of central zone of Dacia includes nothing concerning the presence of a Roman road, in the chapters that devoted to Germisara (whether about the military camp of Cigmău[27] or the archaeological discoveries on the territory of Geoagiu de Jos[28]).

The archaeological repertory of Hunedoara county speaks of the existence of the military camp, the civilian settlement and the watering place: "The Roman settlement of Germisara stretches down on the river meadow between Geoagiu and Cigmău, but also on the territory of the current village. The thermal baths, used in the Roman period, were placed north of the village, on the territory of the current baths (Geoagiu-Băi)"[29]. There is no mention about the existence of a Roman road in this area; however, the repertory mentions the presence, on the right bank of Geoagiu Valley, of a travertine quarry that was in use in the Roman period.

The archaeological researche in 2000 at Geoagiu didn't solve this problem; the investigations concentrated on the military camp, situated at the spot called "Dealul Urieşilor"[30].

Therefore, although the past few decades witnessed much archaeological research (the watering place at Germisara, the *pagus* by the same name, the civilian settlement, the Roman cemetery and the military camp), there has been no mention of the presence of a Roman road in this archaeological area. central zone

4. The description of the Roman road tract. Observations on the infrastructure, the superstructure and the construction material

The research of the Roman road from Geoagiu-Băi began at the crossing point between the current road leading to the present thermal place, and a gravel road climbingup the leisurely slope of the Geoagiu plateau. In order to facilitate the presentation of the whole road under field research, we will divide the Roman road into four sections. Following the tract of the last road mentioned, after leaving behind a row of houses on the left side of the road, we reached a pine forest. At this point, we discovered the Roman road, outstandingly well preserved. After that section, the tract of the Roman road continues with sections number 2, 3 and 4, on a distance of 400 m (Pl. 3). Unfortunately, we couldn't follow the road all the way, because a steep slope interrupts it. The distance of the Roman road, measured from the entrance in Geoagiu-Băi to the point where it emerges clearly, is of 4.5 km. We have presumed that the current road is actually from its beginning the Roman road, as we were able to identify the *agger* of the Roman road. We observed, also, the presence of some fragments of stone, which composed the superior pavement of the ancient road.

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[25] Ibidem, 130.
[26] M. Macrea (n. 13), 154.
[27] IDR III/3, p. 211-212.
[28] IDR III/3, p. 227-228.
[29] Repertoriul arheologic al judeţului Hunedoara, manuscript, preserved at Institutul de Arheologie şi Istoria Artei Cluj-Napoca, 688 p., *s. v.* Geoagiu (Geoagiu de Jos).
[30] Cronica cercetărilor arheologice din România. Campania 2000, Bucureşti 2001, 88, no. 70.

The width, the infrastructure and the superstructure are ***the main technical features*** of this Roman road. The width of the road, as measured on the field at several points, is 5 m. This observation is important, because we can include our road in the category of the largest roads in Dacia. In this context, the importance of the road at Geoagiu appears as logical if we compare it to the imperial Roman road in the Potaissa-Napoca sector, which has a width of 5 - 5.5 m[31].

The *agger* of the road was clearly visible at the surface. The difference between the axel of the road and the roadsides is of almost 20 centimeters. We didn't have the equipment to perform a cross-section of the road. Even if we had, it would have been an extremely difficult task to do, because of the presence, at the surface, of polygonal stone blocks. Nevertheless, we can presume the presence of two ditches for the drainage of pluvial waters. The slope of the Roman road is not steep; the level difference is under 20 m, so the road can ensure normal traffic. The curbs uniting the four sections have a big radius, offering a most propitious visibility for travellers.

The most interesting observations concern the Roman road superstructure. The technique of building the superior pavement, by fitting many several stone blocks of different sizes to create a good travel surface, was always used in the case of the main roads. So, technically speaking, this road is a *via silica strata* (Pl. 4, 5, 6, 7). The paving of the Roman roads with polygonal blocks was restricted to the important roads. This technique required the particular technology of extracting the stone from the quarries and their transport. In our case, this was not necessary, because in the proximity of the Roman road a quarry of travertine was functional in the Roman period. Paving the major roads of Rome was opearted on a large scale in the second century AD **(Pl. 8)**. Indeed, most of the epigraphic evidence for the paving of roads and its organization comes from the second century AD. The office of *Procurator ad silices* appears alongside a *Procurator silicum viarum sacrum Urbis*[32]. Anyway, we think it is necessary to underline that the pavement of the Roman road at Geoagiu shows the major importance of this route in the road network of Roman Dacia.

The importance, in the Roman epoch, of these paved roads, is demonstrated by the classification made by Ulpianus in the second century AD. Technically, the author distinguishes three types of roads. First come the roads paved with stone blocks (*viae silicae stratae*), followed by the roads paved with gravel (*viae glareae stratae*); last come the roads which have at the surface a simple layer of gravel laid and leveled (*viae terrenae*)[33].

There are in Roman Dacia some analogies for the road at Geoagiu and its superstructure. The most relevant example is the imperial Roman road, examined at Aiton[34] and also at Porolissum[35]. In both cases was noted the presence, at the surface, of the polygonal stone blocks.

We wish to emphasize another interesting problem that concerns the way that the Roman road was preserved. We have already mentioned, at the beginning of our discussion, and it was made evident by the plates, that the preservation of the road

[31] I. Winkler, M. Blăjan, T. Cerghi, *Drumul roman Napoca - Potaissa. I*, Potaissa. Studii şi comunicări 2, 1980, 68-69.

[32] CIL VI 1598; Ray Laurence (n. 11), 1999, 65.

[33] Ulpianus, *Digestae*, 43.2.1.1 and 54.41.27, apud Ray Laurence, op. cit., 67.

[34] I. Winkler, M. Blăjan, T. Cerghi, op. cit., 74 pl. 1, 75 pl. 2, 76 pl. 3, 78 pl. 5.

[35] N. Gudea, Porolissum. Res Publica Municipii Septimii Porolissensium, Bucureşti 1986, 15-16; idem, Porolissum. Un complex arheologic daco-roman la marginea de nord a Imperiului Roman. I. (= AMP 13), Zalău 1989, 128-131; idem, Un complex arheologic daco-roman la marginea de nord a Imperiului Roman. II. Porolissum. Vama romană. Monografie arheologică, Cluj-Napoca 1996, 9, 117-118, 160 pl. 26, 161 pl. 27.

is excellent. Moreover, we also know how this road looked twenty years ago. Basically, during all this time nothing has changed in the superstructure of the Roman road. An explanation can be the fact that the zone is scarcely inhabited now. The sections where this road was preserved are outside the current watering place, at the limit of a forest with no present modern constructions. Also, the whole area is free of farmland. It is necessary to underline that the tracing out of Roman roads on the field is almost everywhere and every time conditioned by the degree of human intervention in the geographic environment. As we can see from Plate 1, the route of the Roman road is not straight. The Roman engineers have chosen this tract by taking into account the local geomorphologic conditions. The zone around Geoagiu-Băi is an area with numerous hills, so the route of the road follows the level curves of the hill situated south of the current locality.

Polygonal travertine blocks form the upper pavement of the Roman road. The stone was exploited from the travertine quarry located by the ancient road. This situation constitutes further proof as to the capacity of the Roman road builders to adapt at times road construction to the geographical features of every zone.

5. The importance of the Roman road Cigmău - Geoagiu-Băi

The role of this Roman road was to connect the Roman military camp of Cigmău, the location of the auxiliary troops *Numerus Singularium Peditum Britannicorum*, with the watering place, situated 5 km north of the camp. It was then an access road (*diverticulum*) to the thermal baths and a ramification from the main road Sarmizegetusa - Apulum.

The thermal place at Germisara was visited very often in the Roman era because of the qualities of the thermal waters. It was part of the auxiliary troops' mission to defend and protect the main road that connected Ulpia Traiana Sarmizegetusa and Micia with Apulum. Generally, the troops provided security for the whole area. The discovery of this new Roman road makes us think that the troops located at Cigmău were assigned the mission of defending and protecting this access road to the thermal baths too. At Cigmău we find also *vexillationes* from *legio VII Claudia*, and the archaeological evidence confirms that[36]. So, the military camp and the civilian settlement were both connected to the main highway Apulum-Ulpia Traiana Sarmizegetusa by the road between Cigmău and Geoagiu-Băi.

The archaeological evidence discovered in the thermal place proves the massive participation of the troops at the construction of the baths. Between these complex arrangements we notice a piscine dug in the rock, 7.59 m in diameter. In this context, we can suppose that the Roman road was built by one and the same military unit of Cigmău. If we accept this hypothesis, then we can suppose that the Roman road was built at the same time with the presence of the auxiliary troops of Brittans in the military camp. The troop is registered in Moesia Superior between 106-107[37]; from here, it participates in the campaign against Dacia. After 106 AD, the troops will be present in the newly created province[38]. In 157 AD the auxiliary troop is present in Dacia Superior[39]. I. I. Russu thinks that in the second half of the second century AD, the troops changed their name, becoming *Numerus Singulariorum Britannicorum*. Although we can't certify if the troops were present from the first year of occupation

[36] IDR III/3, p. 211-212.

[37] Ibidem.

[38] IDR I, DipID II: *Pedites Singulares Britannici*; DipID III: *et Pedites Britannici et sunt in Dacia sub D. Terentio Scauriano.*

[39] IDR I, DipID XV: [*Ped*]*it. Singul. Britannici* [*et sunt in Dacia Supe*]*r. sub Statio Prisco* [*leg*(*ato*)].

at Cigmău, the Roman military camp had already been built in the first half of the second century AD. At this point, we can suppose that the Roman road was built in the same period. In this way, at the beginning of the second century AD, the Roman road from Geoagiu offered the best possible access to the thermal place. It was a ramification from the main highway Ulpia Traiana Sarmisegetusa-Apulum. An access road to the the thermal waters location functioned probably even before the Roman period. This is indicated by the toponymic of Germisara[40]. We can also suppose that this road was effectoive even after 275 AD. So we are talking here about a road which had been functioning before the conquest of Dacia, throughout the period in which Dacia was a Roman province and after the withdrawal of Aurelian.

The road at Geoagiu was intensely used in the Roman epoch, as indicated by the inscriptions discovered on the territory of the current locality of Geoagiu-Băi, in the pool area. Apparently three governors of Dacia visited the thermal place. One of them, Marcus Statius Priscus, governor of Dacia Superior between 157-158 AD[41], erects at Germisara three votive monuments, two of which are devoted to the gods and the protectors of the thermal waters[42]. The thermal place was also visited by *decuriones* and *quaestores* from Sarmizegetusa and Apulum, *augustales* from Sarmizegetusa, soldiers from the auxiliary troops, a representative of a *collegium Galatarum* and another of a *collegium aurariarum*. Indeed, this must have been an important road. Although it connected two settlements off the main imperial highway, it can hardly be regarded as a secondary road. At this point, we think that a re-classification of the Roman roads in Dacia could be made according to their military and economic role.

6. Conclusions

The investigations made along the Roman road at Geoagiu-Băi allow us to highlight, at the end of our discussion, a few final conclusions of technical, archaeological and historical nature.

Technically, the Roman road has the following characteristics: 1. The total length of the road investigated on the field is 4.5 km; 2. The Roman road is positioned on the leisurely summit of the Glodului Depression, which does not exceed 500 m in height; 3. The general orientation of the road is NW-SE; 4. In the researched area, the Roman road has a constant width of 5 m; 5. We have been able to identify the *agger* of the road; 6. The medium slope of the road is of 1° (the difference in level is 20 m); 7. We suppose that the road had two ditches on the roadsides with the role of drainage of pluvial waters; 8. The tract of the road observes the general principles of road construction. From all the elements presented here, one can clearly see that the Roman engineers built the Roman road by taking into account the local geological, geomorphologic and hydrological conditions in order to ensure the best conditions for a high-security road traffic; 9. The road avoids the tricky marshland; 10. The four sections are not long, and the curves with a large radius ensure good visibility along the whole tract of the road; 11. The main observation concerning the modality of construction is that the road was paved with polygonal stone blocks of travertine; 12. The construction material was the travertine exploited from the quarry in the proximity of the Roman road.

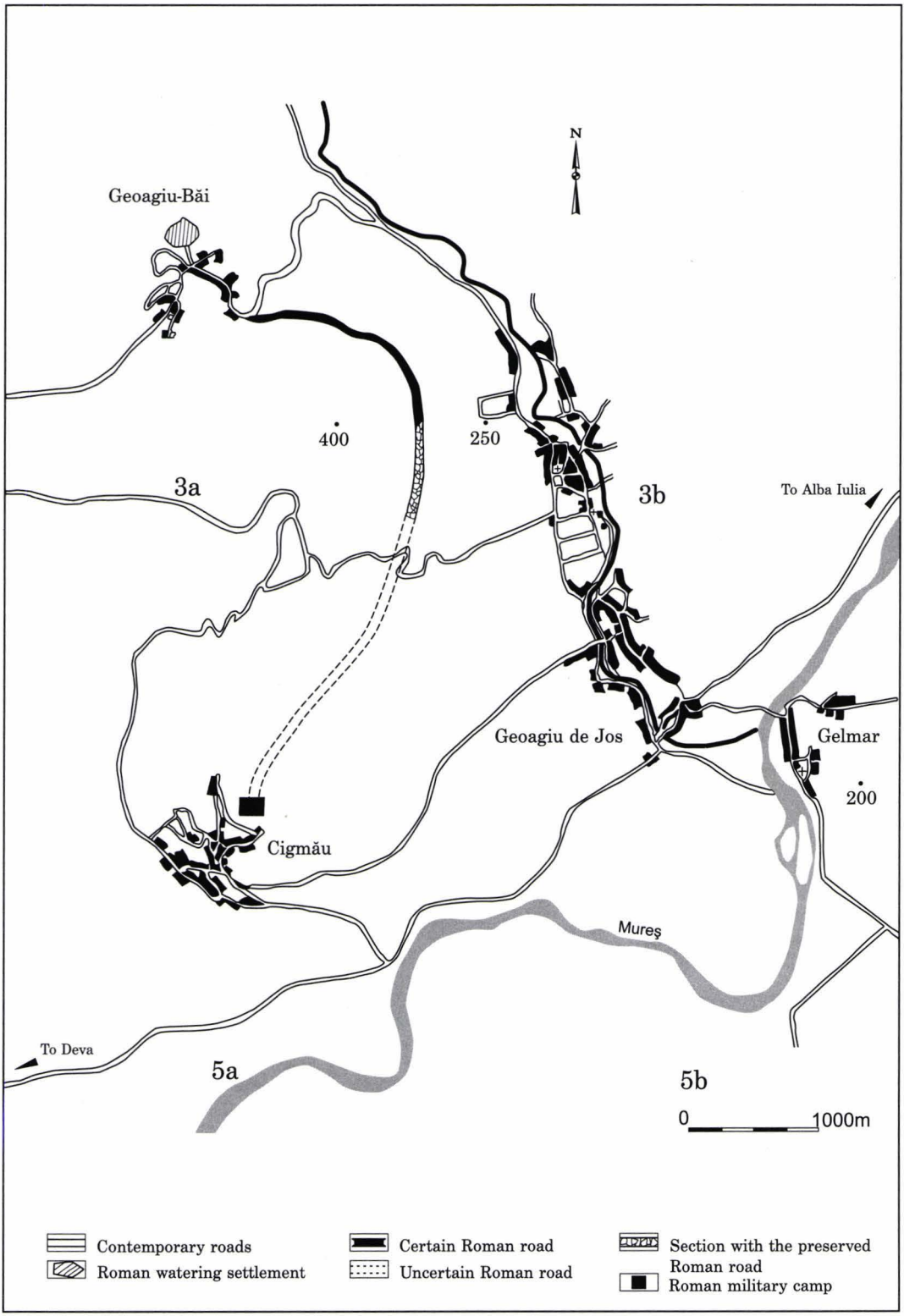
[40] E. Pescaru, A. Rusu Pescaru (n. 12), 325.

[41] Ioan Piso, Fasti Provinciae Daciae. I. Die senatorischen Amtsträger, Bonn 1993, 66; Adriana Rusu, *Marcus Statius Priscus la Germisara*, Sargetia 21-24, 1988-1991, 653.

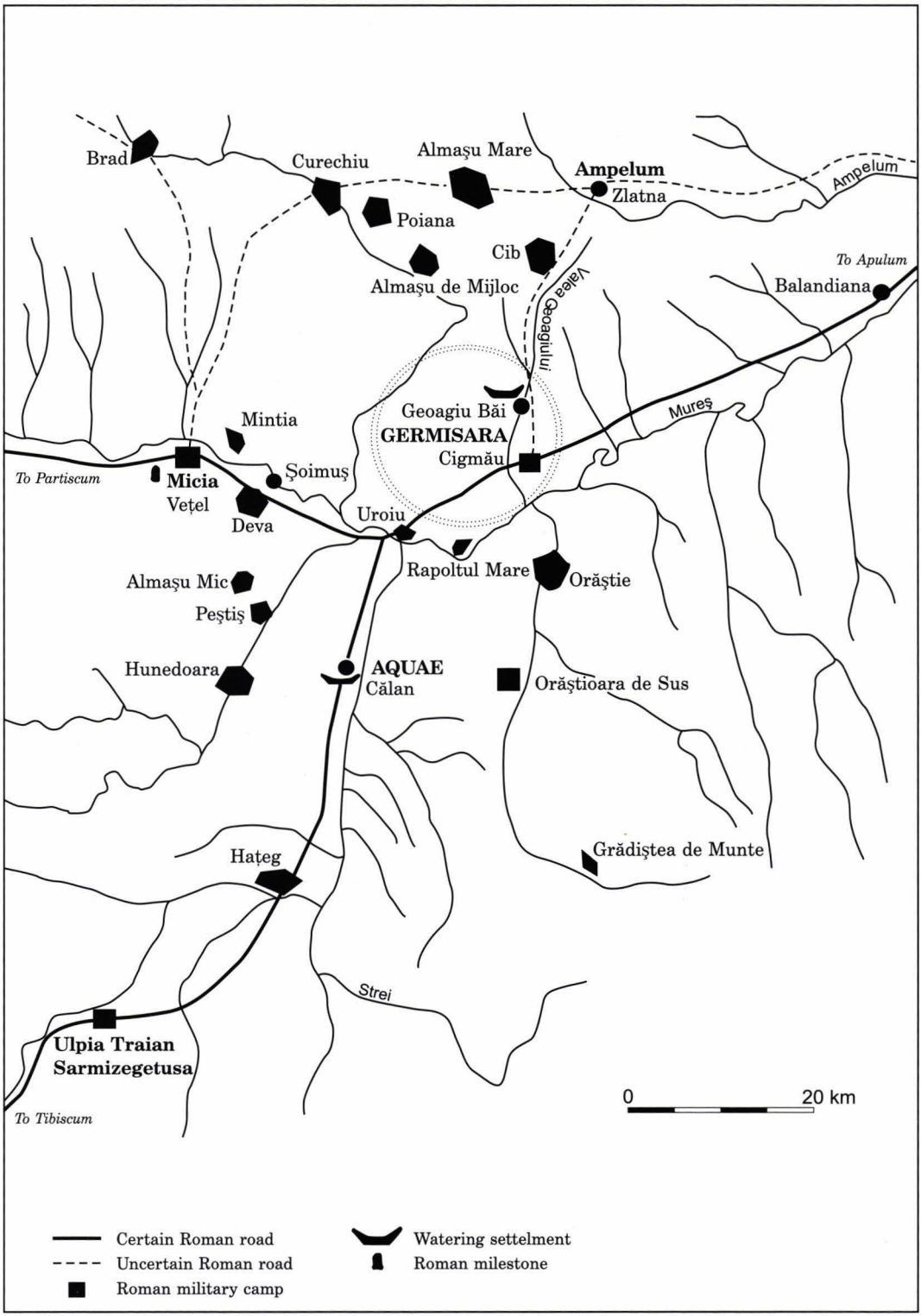
[42] IDR III/3, 240 and 241.

As in other cases, the route of this Roman road was evidently skillfully planned and laid out with a complete grasp of the general features of the zone to traverse. It results that during the construction of this road, as in other cases, the Roman engineers turned to the full account the advantages offered by the configuration of the terrain. This road represents, practically, the ramification (*diverticulum*) from the main road Ulpia Traiana Sarmizegetusa-Apulum to the watering and climatic place at Geoagiu-Băi. So the Roman road is a *via vicinalis*, that is, a road that leads to a settlement. On the other hand, the same Roman road is equally a *via publica*, because it was used by all the travellers in the area. From the technical standpoint, the Roman road is a *via silica strata*. The Roman road functioned throughout the Roman period. The proof is the presence, in the military camp at Cigmău, of the auxiliary troops of Brittans, together with the *vexillationes* from *legio XIII Gemina*, who participated in the construction, the arrangement and the maintenance of the Roman road.

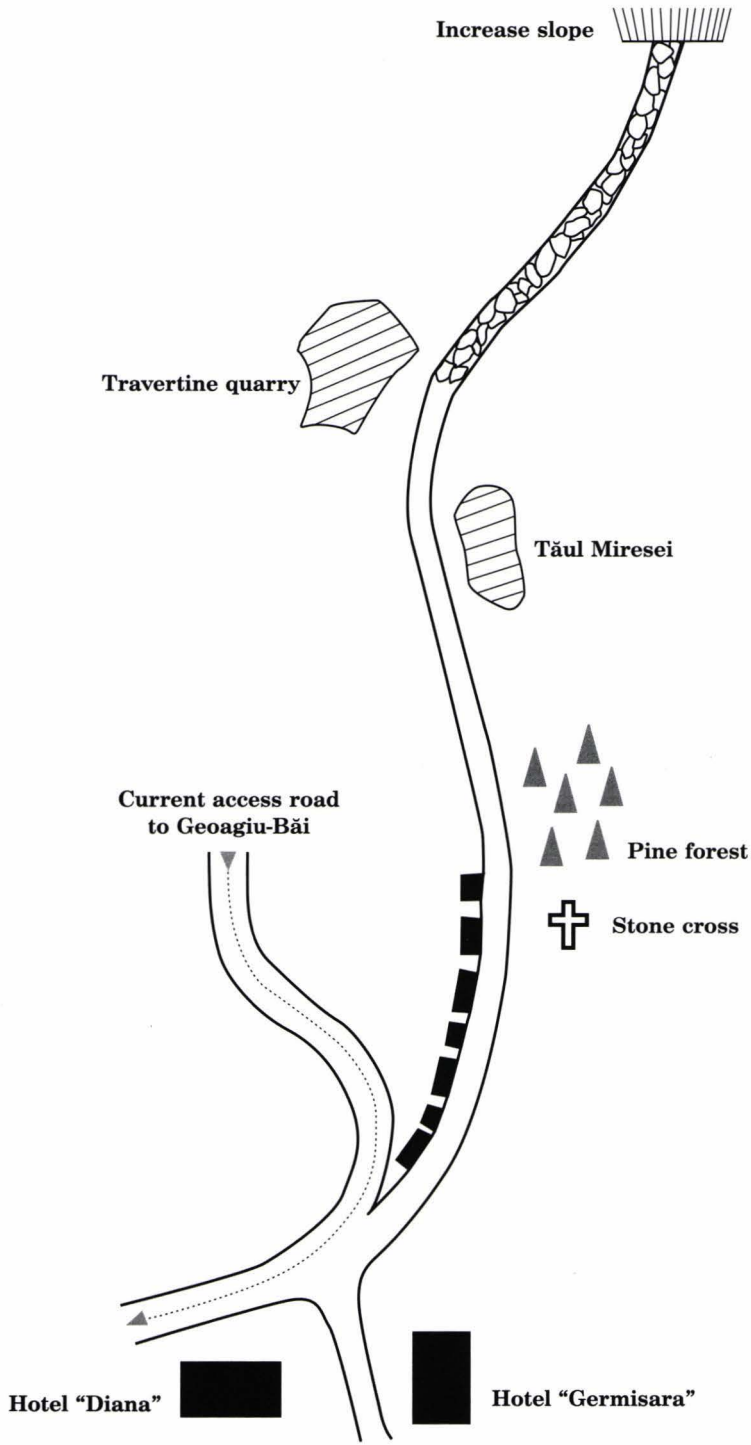
In conclusion, we can say that the research of this ancient road offers us new data regarding the modalities of road construction in Roman Dacia. The fact that such connecting roads were paved with polygonal stone blocks testifies to the special attention paid by Romans to road construction. Once again, it is evident from the remnants described that the Romans followed no hard-and-fast rule, but adapted their roads to the situation and to the materials available, and even that in different manners at different times.



Pl. 1. The Roman road Geoagiu - Băi - Cigmău. Topographical map



Pl. 2. The road network from the central Roman Dacia (the zone *Ulpia Traiana Sarmizegetusa - Aquae - Micia - Germisara - Ampelum*)



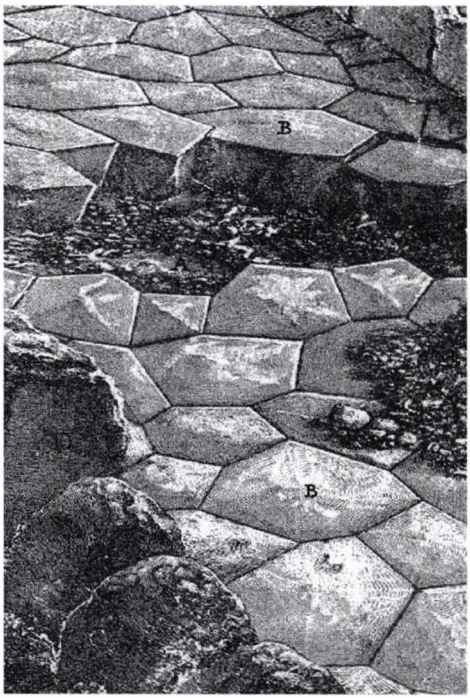
Pl. 3. The exact location of the route of the Roman road Cigmău - Geoagiu-Băi

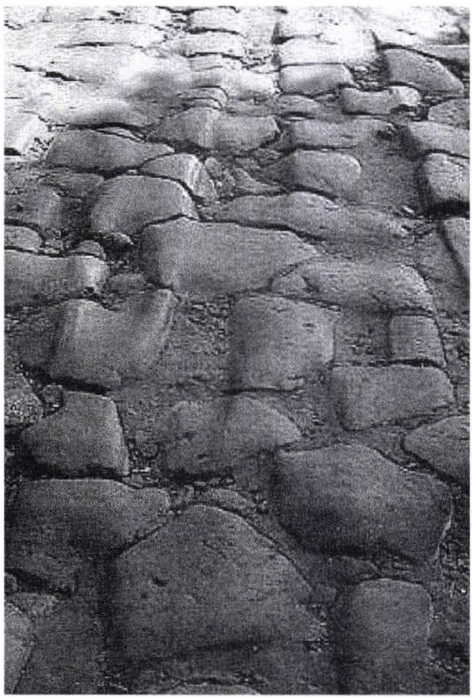
Pl. 4. The Roman road Geoagiu-Băi - Cigmău. Section 1

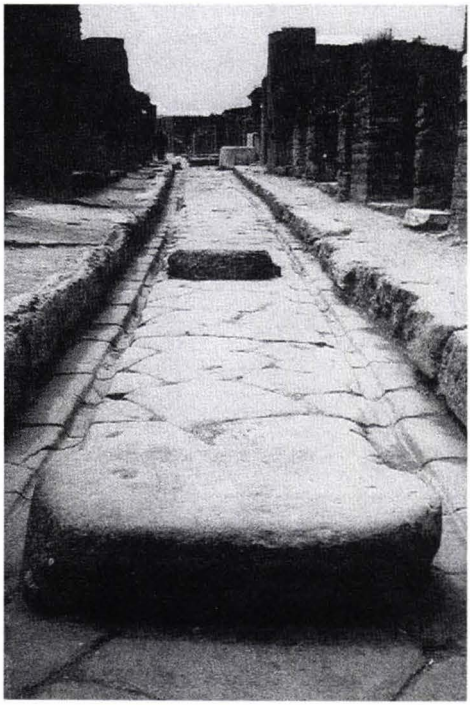
Pl. 5. The Roman road Geoagiu-Băi - Cigmău. Section 2

Pl. 6. The Roman road Geoagiu-Băi - Cigmău. Section 3

Pl. 7. The Roman road Geoagiu-Băi - Cigmău. Section 4







Pl. 8. Examples of Roman roads: 1. The technique of paving roads;
2. Via Appia-superstructure; 3. Roman road in Pompeii; 4. Via Appia