

TRACING NEW DIMENSIONS IN THE ROMAN MILITARY ORGANIZATION OF THE EASTERN LIMES

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ABSTRACT

SYGIS – the Finnish archaeological survey and mapping project of Jebel Bishri - is tracing new dimensions for the Roman eastern frontier or the so-called eastern *limes* in Syria. It has been noted in several Roman frontier studies that the Euphrates region is insufficiently studied to clearly define the development of Roman policy and the extent of the military presence in the east. Jebel Bishri, a mountain between the Euphrates and Palmyra, has largely remained as an empty spot on the maps representing the Roman military presence. This is an illusion due to the fact that the mountain in its central parts has not been earlier practically studied by archaeological means. The surrounding Euphrates Valley and the *Strata Diocletiana* have been studied, e.g., by A. Poidebard in his early aerial prospections. However, new satellite image prospections, field surveys and mapping have traced, documented and identified earlier little known or unknown Roman military installations and networks on the side of the Euphrates and in the central parts of the mountain. Especially the prospections with QuickBird satellite images offering good spatial resolution have made it possible to trace new sites which would have been difficult to recognize on the ground. The information gained from the new prospections and mapping enhances our understanding of the Roman military organization on the Euphrates and the fact that the military installations penetrated deeper in the desert-steppe areas and mountain of Jebel Bishri than earlier thought.

1. THE ROMAN LIMES IN SYRIA

It has been noted in several Roman frontier, or the so-called *limes* studies, that the region of the Euphrates in Syria is still insufficiently studied and known to say anything definite about the Roman military organization there (see, e.g., Parker 2000, 134-135). SYGIS, a Finnish archaeological survey and mapping project, since 2000 (see Lönnqvist and Törmä, 2003) has been tracing new features and dimensions of the Roman military presence in the mountainous region of Jebel Bishri in Central Syria. Jebel Bishri flanks the southern side of the Middle Euphrates Valley and extends deep towards Palmyra and the Syrian desert. The mountain has remained as an almost blank spot on the maps of the Roman military organization demonstrating the Roman eastern *limes*. Prospecting with remote-sensing methods, surveying, recording, documenting and identifying on the ground the little or hither-to-unknown Roman remains brings out new features and information to better understand the Roman border in the Euphrates region.

The city of Palmyra in the middle of the Syrian desert southwest of Jebel Bishri was a Roman ally with changing degrees of autonomy and had the responsibility for controlling the desert after Syria was annexed as a Roman province in 64 B.C. by Pompey's conquest (Plut. Pomp., 39). The eastern limit of the Palmyrene control is described as having extended to the Euphrates (Appian, the Civil Wars 5.1.9.). The so-called *limes interior* passed Palmyra and consisted of areas directly under Rome. However, the 'Desert limes', the *limes exterior*, that lies south and east of the Roman *limes* with its few desert castles was not enough to control the nomads. (Musil 1928, 248; Chapot 1907, 245-249). Later, the struggle for Palmyra's independence from the Roman hegemony and the search for the status of its own empire led to the revolt of Palmyra by queen Zenobia against Rome in AD 272. The limit of Palmyrene power materialized in two fortresses on the Euphrates: those bearing names of Zenobia and Zalabiya (e.g., Stoneman 1992).

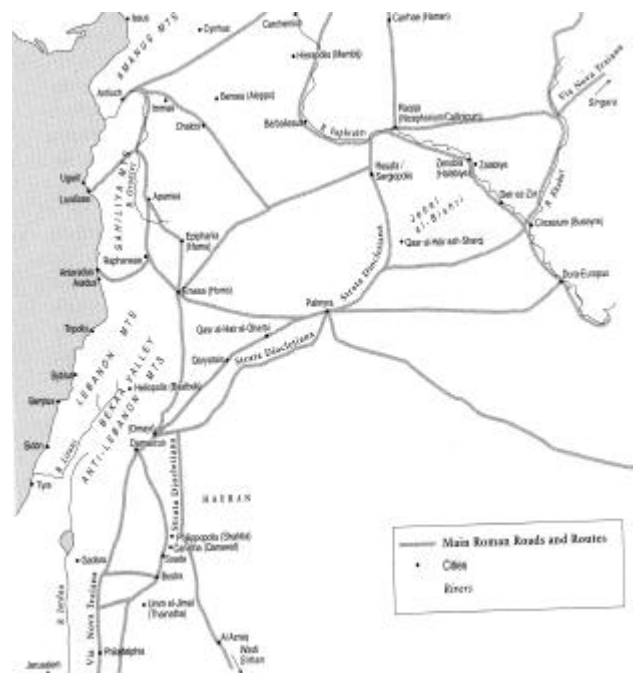


Fig. 1. The Roman *limes* in Syria, including main Roman roads and routes. The mountain of Jebel Bishri is located in the centre to the east from the *Strata Diocletiana* (after Stoneman 1992).

After the struggle by Palmyra for its independence, the securing of the limes by the Romans became a priority. The empire especially started to strengthen its eastern limit towards the nomads of the desert and the Parthian border zone of the Euphrates. The work is particularly associated with the Emperor Diocletian in inscriptions (CIL III, Suppl. 2, 14380) dating to AD 306 and by historical narratives from the Late Roman and

Byzantine periods. Zosimus (2.34) describes Diocletian's vast building operations on different *limes* zones. In 1907, V. Chapot already described differences in the eastern *limes* compared to the differences in the visible line of ramparts and fosses or continuous walls of the imperial *limes* in Europe. (Chapot 1907, 245-247). The *Strata Diocletiana* which was a continuation of the *Via Nova Traiana* extending from Transjordan northwards, is a route characterized by milestones, castra and castella. This fortified line leads from Azraq through Palmyra to the Euphrates. However, John Malalas (Chron. 12.308) mentions that the *Strata Diocletiana* even extended from Egypt to the Euphrates, but the material remains commemorating the operation are attested only approximately from northern Transjordan to the Euphrates.

In the western piedmont area of Jebel Bishri, military installations of the *Strata Diocletiana* have long been known in a line consisting of oases such as Taibe, Al-Kowm, Qdeir, Rasafa and Sura. Oriza, a legionary base mentioned in Ptolemy's Geography and in the *Tabula Peutingeriana*, has been identified with the oasis of Taibe that offers remains from the Roman period. Beside Oriza, Sura is a well-known legionary base of the Late Empire (Parker 2000, 122-126). Near the slopes of Jebel Bishri there also exists Qasr al-Hair ash-Sharqi which has been identified with ancient Adada (cf. A-didi). (See, e.g., Musil, 1928, 233; Chapot, 1907, 329-330). The Finnish project SYGIS surveyed in the region in the year 2000 (See Fig. 2).

During Diocletian's reign the Habur river became the Roman boundary in the east. At the junction of the Euphrates and the Habur, according to Ammianus Marcellinus (23.5.2), Diocletian built the fortress of Circesium. It also became necessary to secure the area from Palmyra and Oriza to Circesium on the right bank of the Euphrates (Musil 1928, 254). This article tries to elucidate, through the collected evidence, how the area between Oriza and Circesium was better secured than generally thought. We concentrate on the areas prospected and surveyed by the Finnish project both on the Euphrates side and the inner regions of the mountain.

2. REMOTE SENSING THE FRONTIER

A. Poidebard made the first aerial surveys and prospections in the area of the *Strata Diocletiana* and the Euphrates in the 1920s and 1930s. He published the studies in his classic work *La Trace de Rome dans le desert de Syrie, Texte and Atlas* (Paris, 1934) and later in R. Mouterde and A. Poidebard in *Le Limes de Chalcis, Texte and Atlas* (Paris, 1945). Sir A. Stein carried out similar kinds of studies in his *Limes Report 1941* (see Kennedy 1982). D. Kennedy and D. Riley have especially complemented Poidebard's remote sensing studies in Syria, e.g., in *Rome's Desert Frontier from the Air* (London, 1990). The General Organization of Remote Sensing (GORS) in Syria has also produced a fine archaeological space atlas (GORS, 2002) of major archaeological sites and periods, including the Roman military bases in Syria.

The Finnish project has used LANDSAT satellite images, CORONA declassified satellite photographs, QuickBird satellite images and the SRTM mission 2000 DEM (Digital Elevation Model) data. The latter DEM data has been partly received thanks to the projects membership in the DLR (the German Aerospace Centre) projects and NASA's world monitoring program.

The spatial resolution of the QuickBird images has been especially suitable for prospecting ancient structures in the desert-steppe environment of Jebel Bishri, but LANDSAT-7

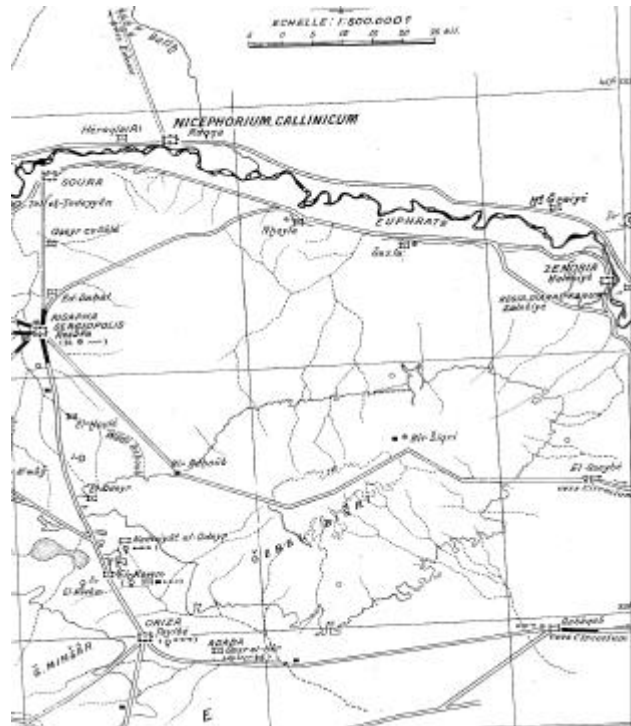


Fig. 2. Jebel Bishri and Roman remains in *Le Limes de Chalcis* by R. Mouterde and A. Poidebard (1945).

ETM images and CORONA satellite photographs (KH-4A mission, the size of the photos being 2.25 x 29.8 inches and the resolution 2.7 m, see <http://edc.usgs.gov/products/satellite/declass1.html>) have been used for general mapping and visualization. The panchromatic channel of the LANDSAT image reaches a resolution of 15 m, whereas the spatial resolution of the QuickBird image is 0.6 m.

In his Atlas, Poidebard (1934) marked the fortresses and forts of Zenobia, Mambri, Tabus and Qreiyeh along the Euphrates and Jebel Bishri on the way from Sura to Circesium and also indicated possible Roman roads linking these ancient fortresses. The fortresses and forts formed a defensive line towards the Parthian and later Persian border on the Euphrates. Archaeological space atlas of Syria (GORS, 2002) mentions the fortress of Zenobia as well as Mambri and Birtha (Qreiyeh) along Jebel Bishri, but not the fort at Tabus which belongs to the current survey area of the Finnish project. The tell at the village of Tibne, which we earlier detected in the CORONA satellite photographs (S FWD 1034-2 28 JUN 66; Lönnqvist and Törmä, 2004), is to be identified with the fort of Mambri. Mambri is mentioned by the ancient historian Procopius (Buildings II, 8.7) as having been built by the Emperor Diocletian and situated c. 8 km from Zenobia. The marble walls of a large compound are still protruding from the tell, but the site has remained unexcavated. Qreiyeh situated in the village of Ayyash, was originally presented in Poidebard's Atlas (1934, Pl. LXXXVII). It is identified with Birtha Arupan in the Parthian version listing the cities and forts conquered in the spring of AD 253. A German archaeological expedition of the DAI (the German Archaeological Institute) led by Dr. Markus Gschwind has been surveying, mapping and excavating the site since 2002. (<http://www.dainst.org/print.php?id=742>). The fort of Qreiyeh is

very visible on the CORONA photographs. The corner towers of the triangular shaped fort of Tabus between Tibne and Qreiyeh can also be detected in the CORONA photographs (S-FWD 1034-2 28 JUN 66), but the remains are hardly recognizable before visiting the area on the ground. (See Fig. 5). We shall here present the results of the field surveys and mapping surrounding Tabus, elucidating the network of the forts on the Euphrates, as well as remote-sensing studies in the inner parts of Jebel Bishri with QuickBird satellite images. A closer field study of the ruins at Tabus (H 19: UTM coordinates 0586948, 3925414; see Lönnqvist and Törmä 2004), situated at the edge of Jebel Bishri looking over the Euphrates Valley 25 km north-west of the city of Deir ez-Zor, is presented elsewhere in this volume (see Lönnqvist et al. 2005b). In *Le Limes de Chalcis* (Mouterde and Poidebard 1945, 130-32), it is mentioned that there was an ancient route crossing over Jebel Bishri from Rasafa-Sergiopolis through the desert wells “birs” such as *Bir Rehub* and *Bir Siqri* to the Roman military post of Qseyibe from which there was a connection to Circesium through the desert. The attached map does not, however, show any forts or fortresses along the route on the mountain (see Fig. 2). This is a cartographic illusion which is due to the fact that the area was earlier largely unexplored.

3. THE STRATEGY AND METHODS OF THE FIELD SURVEY 2004

In the field season 2004 of the Finnish project, two working groups operated in different regions: one on the Euphrates side (situated c. 206-300 m a.s.l.; see Figs. 3 and 4: Plateau 1) on the north-eastern edge and piedmont, the other in the area called Nadra in inner districts on the mountain (situated ca. 490-600 m a.s.l., see Fig. 2), because we wished to see how the remains differed in type and periodically in two different environmental areas.

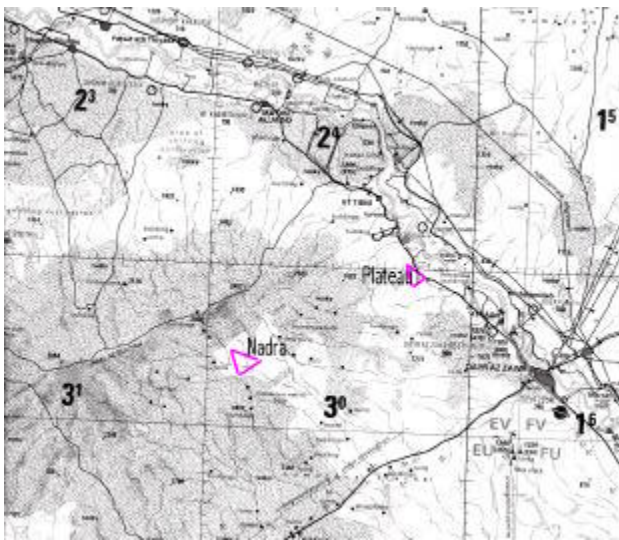


Fig. 3. The field survey areas (Nadra and Plateau 1) of 2004 marked on the TPC G-4C Air Information Map (1:500 000). © Military Survey, Ministry of Defence, United Kingdom, 1998.

After the survey areas were chosen, the survey transects were defined in the terrain according to natural borders such as the edges of the alluvial terraces, the mountain edge, hills or wadis. This approach enabled us to evaluate how the archaeological sites and finds were located in the terrain according to natural and environmental conditions, and how the environmental phenomena may have affected the human activity and settling in

the region over time. Survey transects were studied in both areas by field walking at 15 m intervals wherever the terrain allowed, in groups consisting of 2-3 people. In the survey, all the periods from prehistoric times to modern Bedouin tent bases were taken into account. In this article we, however, limit ourselves to the sites associated with Roman remains.

With a GPS (Global Positioning System, UTM zone 37), each site was provided with UTM coordinates and the mean height, m a.s.l. On the Euphrates side, recording was done with an EDM (Electro-optical Distance Measurer) which was operated by Jari Okkonen, PhD. The EDM was used, for instance, to produce digital maps with ArcView program of the ancient roads, graveyards and for mapping the fort at Tabus. A GPR (Ground Penetrating Radar) was used by topographer Josep Pedret Rodes, MSc., also on the Euphrates side to investigate the geological formation of the main research area called Plateau 1, the construction of an ancient road and tombs around Plateau 1 and the fort at Tabus (see further in this volume Lönnqvist et al., 2005b).

BW photographs, colour slides and digital images were taken. Manual recording and drawing in the computerized field forms were used. Accurate drawings to scale were prepared of the most important archaeological sites and structures on millimetre paper. Geographical directions and lines of archaeological structures were determined by using digital and calibrated international compasses for Near Eastern latitudes and military technology-based compasses. Associated artefacts, such as pottery and flints, were collected and all the artefacts from the survey areas were later photographed, measured and stored at the Palmyra Museum.

4. NETWORKING ON THE EUPHRATES

During the process of the field survey 2004, we identified two ancient roads next to Plateau 1 and the fort at Tabus on the north-eastern edge of Jebel Bishri along the Euphrates. The first identified road (H 13) leads from E (UTM 0588873, 3924616; c. 209 m a.s.l.) to W (UTM 0587800, 3924989; c. 216 m a.s.l.) and is preserved over one kilometre's length on an alluvial terrace (see Figs. 4 and 6).

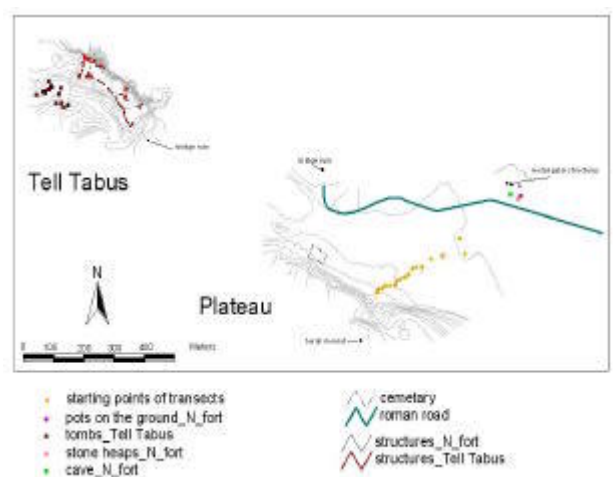


Fig. 4. The Euphratine research area recorded with EDM and mapped with ArcView program. Jari Okkonen 2004.

The alignment of this road can also be detected in a CORONA satellite photograph (S-FWD 1034-2 28 JUN 66, see Fig. 5), which reveals a longer continuation of the road, apparently to

Qreiyeh and to the west over a basalt bridge (H 14) which is now in ruins damaged by fluvial currents and wadi streams. Waypoints were taken with a GPS along the road for the purpose of the mapping on a rectified satellite image from the LANDSAT-7 ETM panchromatic channel (see Fig. 6). The road has been constructed of two layers of angular marble stones varying from 10–30 cm in section and in between which there is a 15 cm thick layer of coarse sand; the overall thickness recognizable from an eastern section being c. 35 cm. The top stone layer forms the smoothed pavement of the road. The stones of both layers consist of white, greenish and greyish marble. The road has once been covered by a layer of asphalt which has eroded away.

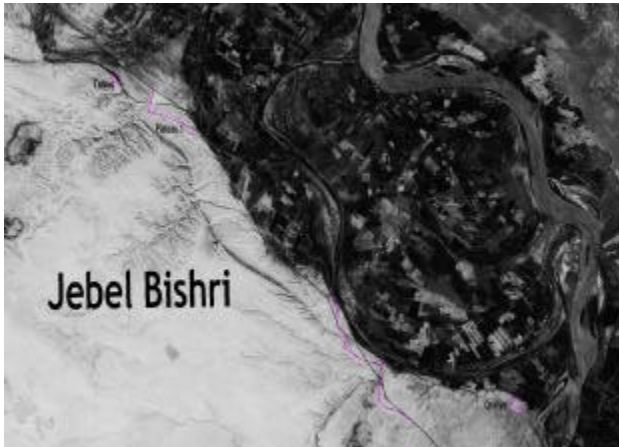
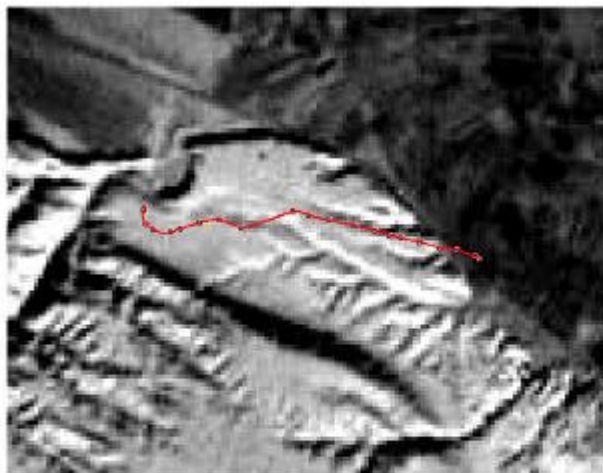


Fig. 5. The forts of Tabus and Qreiyeh along the Euphrates river with a connecting ancient road (H 13) detected on a CORONA satellite photograph intermingling with the modern Deir ez-Zor–Aleppo road. The distance between the forts is c. 16 km.



0 100 200 300 400 500 600 700 800 900 1000 Meters



Fig. 6. GPS points lining the road (H 13) on LANDSAT-7 ETM satellite image (© Eurimage 2000), the road is also seen in the CORONA photograph on Fig. 5. Mapping Jari Okkonen 2004.

In association with the road, a piece of Roman pottery and a fragment of a marble statue (a wrist with a bracelet?) were discovered and recorded. It became clear that the Pleistocene alluvial terrace was chosen for allocating the aligning of the

road because, in that way, the irrigated and often flooded area, could be avoided. The fort of Tabus, especially the eastern tower above the road, may have functioned as a watch tower for the road and its traffic (see Fig. 7).

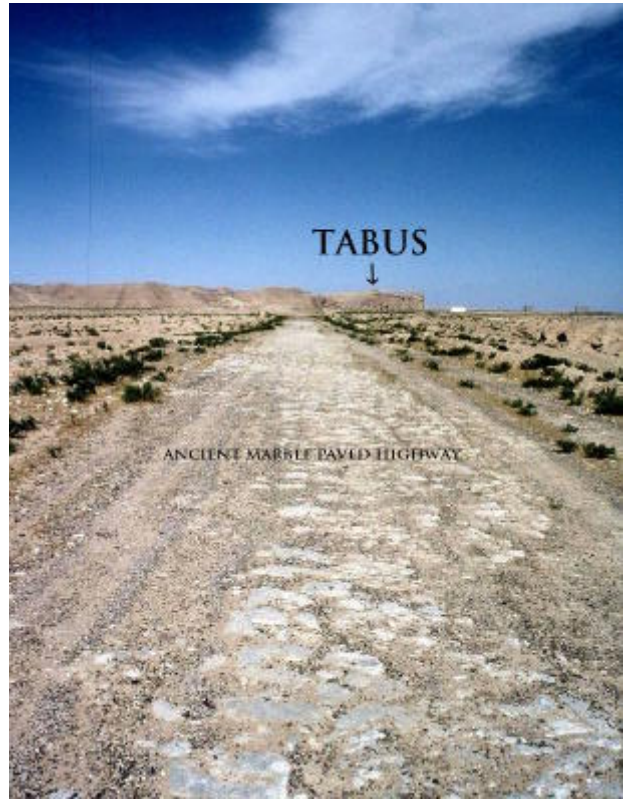


Fig. 7. Straight alignment of the marble paved road (H 13) towards the fort of Tabus taken from SE. Photo: Eivind Seland.

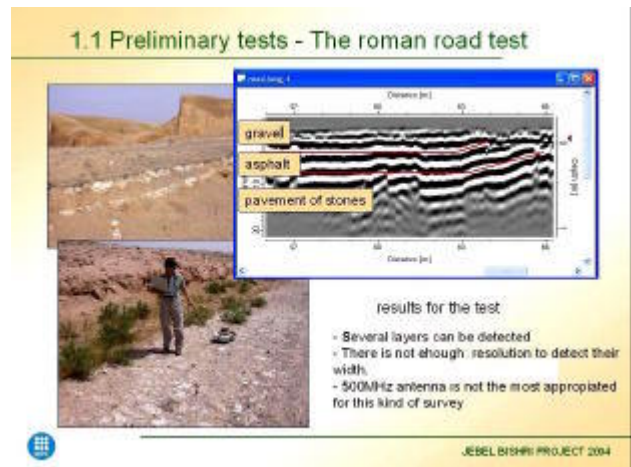


Fig. 8. GPR studies of the marble paved road (H 13) by Josep Pedret Rodés and Elena Garcia-Guixé 2004.

The location, the 5 m width, the structure, the straight alignment of the road and the associated finds are comparable to the information pertaining to the Roman highways (see passim Chevallier 1989) and Poidebard's prospectations (1934). The structure of the section is reminiscent of the Legio–Scythopolis Roman road in northern Judaea (cf. Isaac and Roll 1982, 40, 41, Fig. 5), which was in use during the Late Roman and Byzantine eras. However, the visible thickness and marble as paving material in this road (H 13) are generally differing from the

Roman roads and their foundations. The Roman road foundations are usually 50–65 cm thick - a depth to which our GPR with a 500 MHz antenna could not penetrate in the clayish alluvial terrace (see Fig. 8). The marble also poses another question because of its softness as a paving material. Further studies are thus needed. However, it has to be taken into account that the Romans always used the available local materials. Marble was in plentiful supply on the mountain of Jebel Bishri, just a few dozens meters from the preserved road, where we had earlier identified an ancient marble quarry (see Lönnqvist and Törmä 2004). Quarries are typically connected with Roman roads (Chevallier 1989). The associated finds of the road (H 13) also refer to the Roman period, although the road was covered with asphalt for more recent use, perhaps in the 20th century, and led to a basalt bridge (H 14) apparently built during the Ottoman rule. The location of the bridge, if the road dates to the Roman period, points to the existence of a Roman bridge point at the site.

The other road (H 15) discovered differs from the former one as it is cut higher (ca. 236–250 m a.s.l.) into the natural rock of Jebel Bishri and leads up towards (UTM 0587778, 3925051 to 0587276, 3925041) Tabus situated to the southeast. It does not, however, enter the area of the fort itself but passes it, continuing into the desert from the south-eastern side. This road consists of a c. 3.5 m wide exposed marble bedrock into which rails or wheel marks and transverse grooves to prevent slipping have been carved to ease the climbing of the animals, such as donkeys and horses pulling a cart up a slope. These kinds of surfaces are common among Roman roads, but similar type of roads may also have been in use in earlier periods (Chevallier 1989, 89). Beneath the rock-cut road at Jebel Bishri, there appeared a c. 11 metre wide dam construction (H 22: UTM 0587192, 3925188) in a wadi, which was clearly the water harvesting site for the fort of Tabus (H 19). From the dam, a path led up to the fort at its eastern end.

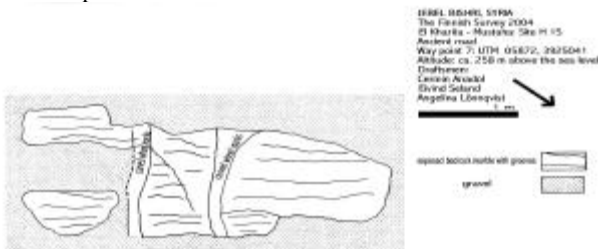


Fig. 9. Hand-drawing of the road (H 15) with carved wheel marks and transverse grooves cut into the marble rock and climbing up to the mountain beneath the fort of Tabus.

After the recording and documentation of Tabus (see the detailed description of Tabus in this volume in Lönnqvist et al., 2005b) we studied and compared the architectural features, surface finds and executed a GIS viewshed analysis between the forts of Mambri, Tabus and Qreiye. It is probable that the site of Tabus, used for guarding and even defence, was already occupied during the heyday of Palmyra, e.g., in the time of Zenobia, when Palmyra had to secure its territory and caravans using the Euphrates road. However, in its present form, the fort may have been rebuilt by the Emperor Diocletian and/or Justinian I. The GIS viewshed analysis indicated good intervisibility of the forts so that they seem to have functioned together as a defensive line with a road (see Lönnqvist et al., 2005). The evidence of the roads and forts with their intervisibility brings new information about the strategic function of the military organization along the Euphrates.

5. FILLING THE STRATEGIC GAP OF JEBEL BISHRI

It was discovered during the field survey that Nadra in the inner regions of Jebel Bishri (see Fig. 3) offered sites with Late Roman and Byzantine pottery showing that the plains had been sparsely inhabited (e.g., site I 7 at Nadra: UTM 0551964, 3910907) during those periods. The people lived there along the water ways. Through our prospections with QuickBird images it has become clearer, how the central parts of Jebel Bishri a few kilometers NW of Nadra and to the south from the Rasafa – Circesium desert track (cf. Fig. 2), seem, in fact, to have been militarily secured by a network of roads and forts that in their extent may have housed several units of Late Roman legion size. We also executed Sobel-analyses for contouring the forts from the QuickBird images.

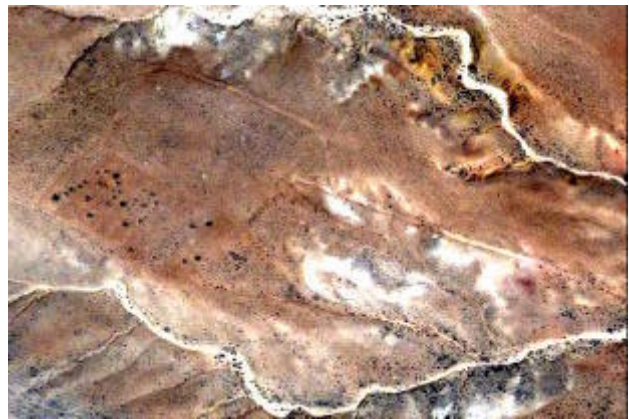


Fig. 10. Fort 1a on Jebel Bishri. QuickBird (© Eurimage 2003).

Fort 1a is a square, NE-SW oriented structure ca. 110 m x 110 m in size (see Fig. 10). The visible 5-7 equal-sized barracks arranged around the inner face of the S parallel long wall fill up the space south of the *via principalis*, which enters the fort from SE through the *porta principalis dextra*. The structure is very similar to the auxiliary fort of Eining on the Danube dating to the Late Empire (cf. Southern and Dixon 2000, 134, Fig. 61). However, this fort on Jebel Bishri with thick walls is larger in size and there exist 5-7 more barracks to the north, so it seems to have comprised altogether up to 14 barracks. The main road of the fort is turning to the north into a second road just before reaching the principal gate leading to another fort. There exists an adjoining Fort 1b that is also NE-SW aligned, but it is almost twice as large as its neighbours, being ca. 120 m x 220 m covering an area of close to 3 ha. The adjoining fort appears to contain 5-6 equal sized large barracks arranged in NW-SE oriented rows. Similar arrangements are known, for instance, from Ain Sinu I in Iraq (Kennedy and Riley 1990, 214) and Tell Brak in Syria (Kennedy and Riley 1990, 215). At Ain Sinu there is even an adjoining fort placed in the same way as Fort 1 on Jebel Bishri. There appears also to be the remains of a third structure (1c), aligned also NE-SW, but without any visible room arrangements and survived towers. The outer walls are visible and they cover c. 150 x 270 m, or about 4 ha.

Fort 2 to the east of Fort 1a-c is a large parallelogram (see Fig. 11). The size of the fort covers c. 90 m x 295 m, or c. 2.5 ha. (The sizes of comparable forts with external towers are Ain Sinu II, 3.7 ha, and Umm er-Resas, 2.2 ha). The *via principalis* enters the centre of the long northern wall. In the centre of the fort there are apparently the remains of the *praetorium* or *principia*, in which the *via principalis* also ends. No remains of barracks are visible. However, the fort has three well-preserved

external towers projecting from each corner. This fort type is typically Late Roman and comparable with, for instance, Ulcisia Castra or Castra Constantia on the Danube (cf. Southern and Dixon 2000, 134). Examples of comparable towers are known, for instance, from Bethorus (el-Lejjūn) in Jordan (Parker 2000, 128-130) and Qasr Khabbaz in Iraq (Kennedy and Riley 1990, 212) and appear to date to the 4th century AD (Diocletian–Constantine?), judging from the architectural style. It is evident that the forts were connected with Diocletian's building programs linking the *Strata Diocletiana* with Circesium through the desert-steppe.



Fig. 11. Fort 2 on Jebel Bishri with visible defence towers on the NE and SE corners. QuickBird (© Eurimage 2003).

The unpaved (surface cleared and marked by lines of stone) roads leading to the forts have been bridged, the remains of which are still visible across the wadi. The direction of the road from Fort 1 appears to connect to the fort of Qebaqeb in the south-eastern piedmont of Jebel Bishri (see Fig. 2). This Roman road system went SE to the stronghold of Circesium. Forts 1-2 are an estimated 40 km from Circesium or equal to a 2-3 days march for a normally equipped Roman infantry soldier.

6. CONCLUSIONS

The most important objective of this paper has been to draw attention that the area of Jebel Bishri was more organized by military installations and road networks in the Late Roman period than most modern studies and encyclopedias of the ancient world indicate. Security and defence works as well as transporting were already begun by the Palmyrenes through the western oases and along the Euphrates. According to the visible remains, the major fortification projects on the way from Sura to Circesium took place in the Late Roman and Byzantine periods from the 4th century AD to the reign of Justinian I in the 6th century AD. According to our remote sensing studies the central area of Jebel Bishri, although generally being referred to as *terra incognita*, is also, in fact, an area offering archaeological structures appearing to date to the 4th century AD. The evidence shows that the way from the *Strata Diocletiana* to Circesium through the desert was more militarily secured by forts than earlier thought. The documentation of the hitherto poorly known or the identification of unknown remains underlines the need for redefining the significance of the remains on Jebel Bishri for the defensive and military history of the Roman eastern *limes* and the Roman army in Late Antiquity.

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