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Survey of the Via Hadriana
by the University of Delaware : the 1996 season

Steven E. SIDEBOTHAM, Ronald E. ZITTERKOPF

THE UNIVERSITY of Delaware conducted the first season of an archaeological survey of the Via Hadriana in June-July 1996 (map figure 1). The goals of this survey, which will continue for several more seasons, are to locate precisely [using the Global Positioning System (GPS)] the route of the Via Hadriana, a Roman thoroughfare built originally in the second century A.D., which extended from Antinoopolis/Antinoë (Sheikh 'Ibada) on the Nile (at 27° 48.2' N / 30° 52.8' E)* in Middle Egypt to Berenike (Baranis/Medinet al-Haras) on the Red Sea coast (at 23° 54.62' N/35° 28.42' E).

As its name implies, the road was built during the reign of the emperor Hadrian (A.D. 117-138) in conjunction with his founding of the city of Antinoopolis/Antinoë on the east bank of the Nile near the spot where his favorite, Antinoos, drowned in A.D. 130.[1] An inscription in Greek dated A.D. 137 and first published in 1870 describes the road as safe, level and supplied with stations/lodgings, watch posts and *hydreumata* (fortified water points).[2] Earlier scholars made only passing references to or cursory examination of the Via Hadriana.[3]

* All GPS coordinates are averages accurate to ± 100 m.

1 On Antinoopolis see A. BERNAND, *Les Portes du Désert*, Paris, 1984, p. 23-107 ; R.S. BAGNALL, *Egypt in Late Antiquity*, Princeton, 1993, p. 46, 47, 69, 71 ; R. ALSTON, *Soldier and Society in Roman Egypt A Social History*, London, New York, 1995, p. 48, 61-62, 80-81, 218, n. 33.

2 E. MILLER, « Sur une inscription grecque découverte à Cheikh Abad l'ancienne Antinoé », *Revue archéologique* 21, 1870, p. 313-318. This inscription can also be found in *IGRRP*^{2} I.1142 = *OGIS* 701. For extensive commentary see A. BERNAND, *Pan du Désert*, Leiden, 1977, p. 216-232, nº 80.

3 J. COUYAT, « Ports gréco-romains de la mer Rouge, et grandes routes du désert Arabique », *CRAIBL* 1910, p. 540 ; J. LESQUIER, *L'armée romaine d'Égypte d'Auguste à Dioclétien, MIFAO* 41, Cairo, 1918, p. 436-437 ; G.W. MURRAY, « The Roman Roads and Stations in the Eastern Desert of Egypt », *JEA* 11, 1925, p. 149-150 ; K. MEISTER, « Zur Datierung der Annalen des Tacitus und zur Geschichte der Provinz Ägypten », *Eranos* 46, 1948, p. 115, postulates that Trajan initiated construction of the road bearing the name of Hadrian who completed it. D. MEREDITH, « The Roman Remains in the Eastern Desert of Egypt (continued) », *JEA* 39, 1953, p. 101 ; L.A. TREGENZA, *The Red Sea Mountains of Egypt*, Oxford, 1955, p. 69, 73, 90 ; D. MEREDITH, *Tabula Imperii Romani N.G. 36 Coptos*, Oxford, 1958, p. 7 and map sheet ; S.E. SIDEBOTHAM, *Roman Economic Policy in the Erythra Thalassa 30 B.C.-A.D. 217*, Leiden, 1986, p. 61-62 ; M. REDDÉ, J.-C. GOLVIN, « Du Nil à la mer Rouge : documents anciens et nouveaux sur les routes du désert Oriental d'Égypte », *Karthago* 21, 1986-1987, p. 53 ; S.E. SIDEBOTHAM, « University of Delaware Fieldwork in the Eastern Desert of Egypt, 1993 », *Dumbarton Oaks Papers* 48, 1994, p. 266-267, briefly describes sections of the Via Hadriana surveyed near the *hydreuma* at Bir Abu Sha'ar el-Qibli, one of the stations on the road.

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The Via Hadriana was the latest and longest of the Roman roads to be constructed across the Eastern Desert which linked emporia on the Nile to their counterparts on the Red Sea coast. While much has been published and continues to appear on these other thoroughfares,[4] the Via Hadriana has never been systematically and accurately plotted or studied.

The northern segment of the Via Hadriana is a trans-desert road between the Nile and the Red Sea which follows a generally west-east course similar to other Roman roads linking the Nile to the Red Sea. Once the Via Hadriana comes close to the coast, however, it veers south paralleling the Red Sea. The Via Hadriana does not follow the coastline or beach and does not appear to come closer than a few kilometers from the Red Sea coast until it passes through Safaga. Farther south, though not adequately studied, it does not seem to come within a kilometer or so of the coast again except at Quseir al-Qadim and, possibly, at Marsa Nakari (Nechesia ?) until it terminates at Berenike.

The route the road took, somewhat removed from the coastline, may be due to several considerations. First, the wadis emptying into the Red Sea are often deep and difficult to traverse close to the coast and it would have been more practical to place the road farther inland where the wadis are shallower and easier to transit. Also, any drinking water supply for travellers and pack animals along the road would have been accessible farther from the sea towards the edge of the mountains and not adjacent to the coast where any wells sunk would have been brackish to salty and unpotable.[5] Furthermore, a route staying in close proximity to the sea would be significantly longer because of the many bays, peninsulas and other irregularities of the coastline which it would traverse.

At least one section of the Via Hadriana made use of an earlier track. The survey discovered large numbers of lithic tools and cores at Makhareg (figures 2 and 3) and at several locations within a few hundred meters west of Makhareg. This suggests that there was prehistoric or early dynastic activity in the area though the lithics from Makhareg have not yet been studied or dated. That the course of the Via Hadriana, at least in part, made use of an earlier track is not unusual. Throughout the Eastern Desert, roads traversed the easiest and most direct passages between the Nile and the Red Sea, routes discovered and utilized by peoples long before the Roman period. This is true for sections of the Berenike-Nile roads, the Quseir-Nile road, the Abu Sha'ar-Nile road and the route between Edfu (Apollinopolis Magna) and the Red Sea coast at Marsa Nakari.[6]

4 The bibliography is large. Examples include : J. COUYAT, « Ports gréco-romains de la mer Rouge, et grandes routes du désert Arabique », *CRAIBL* 1910, p. 525-542 ; LESQUIER (*supra* n. 3), p. 417-458 ; MURRAY (*supra* n. 3), p. 138-150 ; D. MEREDITH, « The Roman Remains in the Eastern Desert of Egypt », *JEA* 38, 1952, p. 94-111 ; MEREDITH, *JEA* 39 (*supra* n. 3), p. 95-106 ; R.E. ZITTERKOPF, S.E. SIDEBOTHAM, « Stations and Towers on the Quseir-Nile Road », *JEA* 75, 1989, p. 155-189 ; S.E. SIDEBOTHAM, R.E. ZITTERKOPF, J.A. RILEY, « Survey of the 'Abu Sha'ar-Nile Road », *AJA* 95/4, 1991, p. 571-622 ; S.E. SIDEBOTHAM, « Römische Straßen in der ägyptischen Wüste », *Antike Welt* 22,3, 1991, p. 177-189 ; S.E. SIDEBOTHAM, R.E. ZITTERKOPF, « Routes Through the Eastern Desert of Egypt », *Expedition* 37/2, 1995, p. 39-52.

5 MURRAY (*supra* n. 3), p. 150 also suggests this.

6 The literature on prehistoric and early dynastic rock graffiti in the Eastern Desert is large. Many of these graffiti occur along routes later used by the Romans, e.g. : F.W. GREEN, « Notes on Some Inscriptions in the Etbai District. I », *PSBA* 31, 1909, p. 247-254 ; F.W. GREEN, « Notes on Some Inscriptions in the Etbai District. II », *PSBA* 31, 1909, p. 319-323 ; F. PETRIE, « Egyptian Shipping Outlines and Notes », *Egypt and the East*, March, June 1933, p. 10-13 ; H.A. WINKLER, *Archaeological Survey of Egypt. Rock Drawings of Southern Upper Egypt I. Sir Robert Mond Desert Expedition Season,*

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In addition to locating the route itself, the University of Delaware survey pinpointed and drew measured plans of stations and settlements along the road and will date activity along it through surface artifact (mainly ceramic) analysis. The ceramics could not be studied this season, but will be analyzed in the future.

Using GPS receivers, the survey accurately recorded approximately 230-240 km of the *ca.* 800 km long Via Hadriana during the 1996 season. Hundreds of GPS readings taken of cleared road segments and cairns lining the thoroughfare permit precise plotting of lengthy portions of the route. The survey also identified the existence of two previously unrecorded secondary road systems – and several stops/stations on them – affiliated with the Via Hadriana. The survey located stations, quarries and possible quarries and a number – two of which were substantial – of ramps/elevated road sections associated with the Via Hadriana. Many of the stations located by the survey were drawn in measured plan. These sites – all affiliated with the Via Hadriana – plus some discovered by the University of Delaware in previous surveys or by other institutional projects are listed below in tabular form.

The survey also partially traced two other secondary road systems south of the west-east (Antinoopolis-Bir Hawashiya) portion of the Via Hadriana. One of these secondary roads bifurcated (at 27° 58.15' N / 31° 27.35' E) from the Via Hadriana towards the southwest at a point just west of Tal'at al-Arta (figure 4) where Wadi Tal'at al-Arta debouches into a broad plain. Another secondary road branched from the Via Hadriana to the east at a point east of Makhareg. One of the road stations on one of these secondary thoroughfares was a well and associated structures at Ujra Zena ; another unnamed station was found at the intersection of these two roads. One Ma'aza bedouin informant mentioned the existence of a stop farther west at Abu 'Uegela investigation of which will be undertaken later. Based upon bedouin descriptions of its location, however, it must also have been affiliated with one of the secondary road systems mentioned above.

In addition, the survey investigated the Roman-Byzantine mining settlement at Umm Howeitat/Hayatat (26° 33.29' N / 33° 54.38' E) which lay west of the Via Hadriana between Wadi Safaga and Quei.

1936-1937 : Preliminary Report, London, 1938, *passim* ; P. Červiček, *Felsbilder des Nord-Etbai, Oberägyptens und Unternubiens*, Wiesbaden, 1974, *passim* ; P. Červiček, *Rock Pictures of Upper Egypt and Nubia*. Istituto universitario orientale supplemento n. 46 agli annali. Vol. 46/1, Naples, passim ; S. Redford, D.B. Redford, « Graffiti and Petroglyphs Old and New from the Eastern Desert », *JARCE* 26, 1989, p. 3-49 ; for Paleolithic and Neolithic sites and tools along the Berenike-Nile roads see H.T. Wright, S. Herbert, « Archaeological Survey in the Eastern Desert of Egypt. Report of the University of Michigan/University of Asiut Project to the Egyptian Antiquities Organization February-March 1993 », unpublished, p. 5-7 ; H.T. Wright, S. Herbert, « Archaeological Survey in the Eastern Desert of Egypt : Report of the University of Michigan/University of Asiut Project to the Egyptian Antiquities Organization, December 1993 », unpublished, p. 3. For the Marsa Nakari-Edfu road see S.E. Sidebotham, « Caravans Across the Eastern Desert of Egypt : Recent Discoveries on the Berenike-Apollinopolis Magna-Coptos Roads, » *in* A. Avanzini (ed.), *Profumi d' Arabia*, forthcoming. In February 1997 the University of Delaware-Leiden University traced the Marsa Nakari-Edfu route from the Red Sea coast to the stop at Bezah West at 25° 04.95' N / 34° 00.48' E.

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Sites

Site name	Type of site	GPS coordinates	Dates
Antinoopolis/Antinoë (Sheikh 'Ibada)	Urban Nile emporium	27° 48.16' N / 30° 52.85' E	Roman-Byzantine
Quarry in Wadi al-'Ibada	3 small limestone quarries	27° 51.07' N / 30° 56.57' E	unknown
Large ramp in Wadi al-'Ibada	part of road	27° 51.41' N / 30° 57.62' E	unknown
Makhareg Gharb •	unidentified structures	27° 53.24' N / 31° 15.39' E	Roman-Byzantine
Makhareg	wells/associated structures	27° 53.10' N / 31° 17.28' E	uncertain
Unnamed station	station on secondary route	27° 53.11' N / 31° 25.07' E	unknown
Ujra Zena	station on secondary route	27° 53.11' N / 31° 31.53' E	unknown
Tal'at al-Arta •	road station	27° 58.75' N / 31° 28.03' E	uncertain
Large ramp east of Tal'at al-Arta	part of road	27° 59.40' N / 31° 28.31' E	uncertain
Mahattit Ziyar Romaniya •	stop on road	28° 03.11' N / 31° 32.52' E	Roman-Byzantine
Umm Suwagi	cistern/associated structures	28° 16.77' N / 31° 53.96' E	Roman-Byzantine
Bir Hawashiya	well/associated structures	28° 12.58' N / 32° 22.28' E	unknown
Abu Sha'ar al-Bahri	hydreuma/wells	27° 58.64' N / 33° 12.90' E	unknown
Milaha al-Nakhl	settlement near road	27° 33.86' N / 33° 25.27' E	unknown
Abu Sha'ar al-Qibli ±	hydreuma/wells	27° 22.14' N / 33° 37.98' E	Roman-Byzantine
Abu Gariya	hydreuma	26° 56.00' N / 33° 43.72' E	Roman-Byzantine
Wadi Safaga	hydreuma	26° 37.05' N / 33° 58.55' E	unknown
Quei ±	hydreuma	26° 20.99' N / 34° 07.10' E	unknown
Quseir al-Qadim ±±	Red Sea port	26° 09.42' N / 34° 14.54' E	1st-2nd, possibly 3rd C. A.D.
Umm Howeitat	gold mining settlement near road	25° 26.58' N / 34° 34.16' E	3rd C. B.C. & Roman ?
Marsa Dabr/Marsa Nabiyah	hydreuma	25° 18.86' N / 34° 44.24' E	unknown
Nechesia (?) ± Marsa Nakari	Red Sea port/hydreuma	24° 55.50' N / 34° 57.74' E	1st-2nd & mid-4th-5th C. A.D. on
Wadi Lahma	hydreuma	24° 09.92' N / 35° 21.81' E	Ptolemaic-1st-2nd & 4th (?) C. A.D.
Berenike ±	Red Sea port	23° 54.62' N / 35° 28.42' E	Ptolemaic-5th/6th C. A.D.

± Studied previously by the University of Delaware and/or Leiden University

±± Excavated and published by the Oriental Institute, University of Chicago

• Site name given by University of Delaware Survey

It is evident that not all the settlements and stations along the Via Hadriana have been identified. For example, the distance between Makhareg/Makhareg Gharb and Antinoopolis would have been too great for the ancient traveler unless there had been an intermediate station. Several Ma'aza bedouin informants indicated the existence of such a station in Wadi Ba'aytharaan, but the survey was unable to locate the position of this installation. Likewise, the distance between Bir Hawashiya and Abu Sha'ar al-Bahri would also have necessitated one or, possibly, two additional stops to accommodate travelers. The survey lacked sufficient time during this first season to investigate adequately this region.

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A University of Delaware-Leiden University survey in February 1997 visited a gold mining settlement, with a fort (*ca.* 25.6 m E-W × *ca.* 21.5 m N-S) (figure 5), at Umm Howeitat in the Wadi Mubarak between Quseir al-Qadim and Marsa Dabr/Marsa Nabiyah (figures 6 and 7).[7] Umm Howeitat appeared to be joined to the Via Hadriana by a trunk road. There should be other stops/settlements/stations on the Via Hadriana between Quseir al-Qadim and Umm Howeitat and between Marsa Nakari and Berenike. The survey will carefully investigate these areas in coming seasons.

Description of the road

This season the survey concentrated on the northern portion of the Via Hadriana and did not venture south of Marsa Dabr/Marsa Nabiyah (*ca.* 30 km north of Marsa 'Alam). All road sections investigated this season were unpaved. The highway was a series of flat surfaces cleared of surface detritus, large stones, etc. which were collected at the edges forming, in many instances, windrows or cairns or both. Some road sections no longer preserved the windrows and cairns and in those areas where they survive they varied considerably in size. Some were barely noticeable piles of sand while others comprised huge boulders lining the route (figure 8).

Cairns of piled stones of varying sizes lined both sides of much of the route. Some were barely noticeable or differentiated from the windrows on which they sat while others were quite substantial in size. The survey located many hundreds of these cairns and measured representative samples. Dimensions ranged from *ca.* 0.55 m × 0.60 m to *ca.* 0.70 m × 1.50 and *ca.* 0.90 m × 1.40 m; the cairns were round, oval, square or rectangular in plan. Most cairns measured by the survey fell into a size range of *ca.* 0.55-0.70 m × 0.60-0.70 m. In some sandy areas without boulders and cobbles on the surface on the northern trans-desert portion of the road, there appeared to be deliberate attempts to import stones to line the roads which were of very different color from the underlying sandy terrain over which the route passed. This effort may have been undertaken to facilitate travelers in route identification.

This method of road construction is typical of the Eastern Desert and can be seen along many extant route sections throughout the region.[8]

It is worthy of note that the other major Roman trans-desert Nile-Red Sea road systems intersect the Via Hadriana near the Red Sea coast. While all the Roman routes in the Eastern Desert cross stark terrain, the northern west-east trans-desert portion of the Via Hadriana traverses an extremely bleak landscape. There is less vegetation along this route than others in the region; even today few if any bedouin or their flocks inhabit the area.

7 MURRAY (*supra* n. 3), p. 149 mentions the small fort at Marsa Dabr. For references to the settlement at Umm Howeitat see C.J. ALFORD, « Gold Mining in Egypt », *Transactions of the Institution of Mining and Metallurgy* eleventh session 10, 1901-1902, p. 12 and WRIGHT, HERBERT, December 1993 (*supra* n. 6), p. 7-8.

8 For published examples from other Eastern Desert routes see J.J. HESTER, P.M. HOBLER, J. RUSSELL, « New Evidence of Early Roads in Nubia », *AJA* 74/4, 1970, p. 385-389, plates 99, 4 and 100, 2 ; SIDEBOTHAM *Antike Welt* (*supra* n. 4), p. 182, abb. 11 ; SIDEBOTHAM, ZITTERKOPF, RILEY *AJA* (*supra*, n. 4), p. 600 ; SIDEBOTHAM, ZITTERKOPF *Expedition* (*supra* n. 4), p. 42.

Given the extremely barren landscape and the great difficulty and depths one had to excavate to obtain water, the question arises as to the reason for building a road across the desert and parallel to the Red Sea coast at this point in the second century A.D. when there were already a number of roads linking Nile emporia to the Red Sea coast. Given its route, the role of the Via Hadriana, unlike that of the other thoroughfares, may have had less to do with commerce, mining and quarrying and may have been constructed placing far more emphasis (than the other Roman roads in the Eastern Desert) on military and administrative requirements.[9] It might be that the north-south coastal route provided a land communication link directly among the Red Sea ports themselves which were otherwise and previously perhaps only connected by ships plying the coastal route. Continued survey work along the Via Hadriana may help answer this question.

Road widths measured along the Via Hadriana varied from *ca.* 9.7 m to *ca.* 30 m. The larger widths tended to appear on the west-east, northern trans-desert (Antinoopolis-Bir Hawashiya) part of the route which seems to contain both the widest and best preserved road segments. This may be due to the route's proximity to Antinoopolis. More likely, however, clear route identification would have been more important on the trans-desert portions of the route where the likelihood of a traveler becoming lost was greater than on the coastal road. On the latter thoroughfare one merely had to travel parallel to the coast ; there was much less likelihood of becoming lost as the Red Sea was generally visible in the distance.

The survey discovered no extant milestones along the Via Hadriana. The absence of milestones appears to be a typical feature of Eastern Desert routes in the Roman period their place being taken, presumably, by numerous cairns and, in some cases, signal towers extant along their courses. While Roman milestones or putative milestones have been recorded from areas east of the Nile in the Delta and immediately west of the Nile in Nubia,[10] none has been found, thus far, along the Berenike-Nile roads, the Marsa Nakari (Nechesia ?) – Nile road, the Quseir – Nile road, or the road between Abu Sha'ar and the Nile.

Sections of the Via Hadriana preserved features not seen on other Roman roads in the Eastern Desert. Along the north-south coastal segment of the Via Hadriana, in the vicinity of Abu Gariya (figure 9)[11] and Bir Abu Sha'ar al-Qibli, cairns were very closely spaced along the edges of the windrows,[12] but in several instances the cairns lay several meters outside of the windrows. This unusual situation, which the survey did not encounter on the northern trans-desert (Antinoopolis-Bir Hawashiya) portion of the route, may be interpreted as follows. These cairns may have originally formed the edge of an earlier road, perhaps the earliest construction of the Via Hadriana. It may be that a subsequent improvement of the thoroughfare created a narrower highway (formed by the extant windrows) inside and along

9 MURRAY (*supra* n. 3), p. 150, however, sees it mainly as a commercial highway.

10 For milestones or possible milestones found in desert areas east and just west of the Nile see U. MONNERET DE VILLARD, *La Nubia romana*, Rome, 1941, p. 34 (= *CIL* III Supplement 14148[2]) ; *CIL* III Supplement 6633 ; HESTER, HOBLER, RUSSELL, *AJA* (*supra* n. 8), p. 385-389 and plates 99,3, 100,5.

11 MURRAY (*supra* n. 3), Plate XI and p. 149 mentions the site as Wâdî Abu Ḳariah.

12 Cf. SIDEBOTHAM, *Dumbarton Oaks Papers* (*supra* n. 3), p. 266-267 for a description of the stretch near Bir Abu Sha'ar el-Qibli. Cf. MURRAY (*supra* n. 3), p. 150.

the course of the earlier route. Alternatively, this might also be evidence that two separate crews constructed this portion of the route. One crew might have collected the larger stones to build the cairns and a second crew then cleared the route of the smaller stones creating a narrower path as defined by the resulting windrows.

There were also other noteworthy features along the coastal portion of the route. There were, for example, two separate roads leading north out of Wadi Quei – one at 26° 21.30' N / 34° 07.26' E, the other at 26° 21. 34' N / 34° 07.91' E – which joined several hundred meters north of the wadi (at 26° 22.01' N / 34° 07.59' E) to form an intersection.

Another distinctive stretch of road exists between Bir Hawashiya and Abu Sha'ar al-Bahri (at 28° 11.1' N / 32° 30.0' E). Here in a rather flat, wide wadi a section of the road had a double set of parallel and abutting windrows. The width of the northern one was 20.2 m and the southern one was 16.5 m. The reason for two parallel, abutting road sections is uncertain; perhaps one represents an earlier segment and the other a later segment.

There were several raised road sections which formed ramps/elevated road segments along the west-east trans-desert portion of the Via Hadriana. These are not unique among the Roman road systems in the Eastern Desert; there is one in the Wadi Umm Huweis on the Mons Claudianus-Barud road *ca.* 10 km south of the station at Barud at 26° 44.29' N / 33° 37.67' E. This impressive structure is *ca.* 54 m long and 2.7 m wide. There is another, which is more of an elevated road section across a small wadi, in the Wadi Dunqash between the stations of Abu Midrik and Samut on the Berenike Nile roads at 24° 51.3' N / 33° 47.4' E. A double elevated road section occurs along the route between Marsa Nakari (Nechesia?) on the Red Sea coast and the gold mines at Sukkari. These unusual features built of cobbles located at 24° 57.28' N / 34° 44.99' E are ca. 6.5 m apart. The upper one has a definite length of 17.1 m and a probable length of 41.1 m; the lower one is 42.8 m long. Other ramps exist in quarry areas at Mons Claudianus and Mons Porphyrites as well as at the emerald mining region of Middle Sikait (24° 39.4' N / 34° 48.5' E).

The two substantial ramps/elevated road segments located by the survey along the Via Hadriana occur along the northern trans-desert portion of the route between Antinoopolis and Bir Hawashiya. One is just east of Tal'at al-Arta at 27° 59.4' N / 31° 28.3' E and measured *ca.* 60-70 m long × *ca.* 4.3-5.1 m wide (figure 10). It connected high ground on the east down to the floor of the wadi to the west. Adjoining the southern edge of the wadi wall, its built-up height varied from *ca.* 0.9-2.2 m. The other ramp/elevated road section, *ca.* 85 m long, was in the Wadi al-'Ibada at 27° 51.41' N / 30° 57.62' E. It abutted the northern side of a wadi wall and directed the road around the northern edge of a very steep portion of the Wadi al-'Ibada.

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Stations, settlements, hydreumata

The survey discovered no *hydreumata* on the west-east trans-desert portion of the route between Antinoopolis and Bir Hawashiya although Ma'aza bedouin informants indicated that there was a *hydreuma* in Wadi Ba'aytharaan (noted above); this was not located by the survey during the 1996 season. The stops on this northern trans-desert portion of the Via Hadriana which the survey investigated [Makhareg Gharb, Makhareg, Tal'at al-Arta, Mahattit Ziyar Romaniya, Umm Suwagi and Bir Hawashiya, plus the two on the secondary road system noted above: Ujra Zena and the unnamed station] all lacked extant fortification walls. They were wells with associated structures. Some, but not all, had huts and cisterns or other hydraulic features. Some, such as Makhareg, had also been used in recent times.

The dearth of fortifications at the stations along this northern trans-desert part of the Via Hadriana contrasts with all other Eastern Desert roads from the Roman period. The lack of fortified water points (*hydreumata*) was clearly not due to the costs entailed in erecting such structures. The very length and careful construction of the route indicates that the resources were available for the task. One must tentatively conclude that the lack of *hydreumata* along this section of the route was deliberate and indicated that the authorities perceived no threats requiring their construction. This was clearly not the case along the coastal portion of the route where there are a series of *hydreumata*. It may be that the dearth of *hydreumata* along the northern portion and their presence along the coastal segment have chronological implications. Perhaps the ones along the coast either pre or postdate construction of the northern trans-desert segment. Future seasons of work along the road may shed light on this dichotomy between the northern trans-desert segment of the Via Hadriana lacking *hydreumata* on the one hand and the coastal route with *hydreumata* on the other.

The well-stops on this northern route had similar features. Evidence indicated very deep wells with huge piles of sand and other detritus excavated from the wells being piled up around them to form huge mounds. Placed invariably in wadi bottoms, a number of these had been badly damaged or destroyed by *seyls* (Tal'at al-Arta and Umm Suwagi) or by bulldozing (Bir Hawashiya). It seems that only the latter and, perhaps, Umm Suwagi had been previously recorded by an earlier scholar as stops on this northern trans-desert portion of the Via Hadriana.[13]

In addition to *hydreumata*, the coastal route may also have preserved unfortified settlements and road stations. Known *hydreumata* on the route paralleling the Red Sea coast include Abu Sha'ar al-Qibli, Abu Gariya, Wadi Safaga (figures 11 and 12)[14] and Marsa Dabr. Measured plans of none of these except for Abu Sha'ar al-Qibli[15] had been previously published. In the summer of 1990 the University of Delaware survey had noted wall lines at the stop at

13 MURRAY (*supra* n. 3), Plate XI and p. 149. Umm Suwagi may be Ghallah on Murray's map.

14 MURRAY (*supra* n. 3), Plate XI, p. 149 mentions the site.

15 Cf. SIDEBOTHAM, *Dumbarton Oaks Papers* (*supra* n. 3), p. 263-267 and relevant figures. See R.S. BAGNALL, J.A. SHERIDAN, "Greek and Latin Documents from 'Abu Sha'ar, 1992-1993", *BASP* 31, 1994, p. 116-119 for ostraca from Abu Sha'ar al-Qibli from the early second century A.D.

Abu Sha'ar al-Bahri. This site, had, according to bedouin informants, been destroyed by bulldozer in the late 1980s and the survey could not determine from the sparse remains the type of road stop located here.[16] The survey was also unable to determine the type of road stop which had existed at Milaha al-Nakhl – an oasis settlement which probably lay off the Via Hadriana a few kilometers to the west – because it, too, had been bulldozed in the early 1990s. Other stations, destroyed by flash floods (*seyls*) over the centuries and no longer extant, such as the *hydreuma* at Quei, were partly visible earlier in this century.[17]

The extant *hydreumata* were typically quadrilateral in plan with exterior defensive walls built of stacked stones. Interior structures and rooms abutted the interior faces of the defensive walls or were free standing. Cisterns and/or wells or other hydraulic installations were prominent features of the interiors of all *hydreumata* except that at Marsa Dabr which was too badly damaged to determine the existence let alone location of such interior hydraulic remains.

Dating the installations proved problematical during the 1996 season for several reasons. First, no pottery specialist was available. Thus, diagnostic sherds collected from Makhareg Gharb, Makhareg, Tal'at al-Arta, Mahattit Ziyar Romaniya, Umm Suwagi and Bir Hawashiya must await study until next season. Second, the survey found little or no diagnostic surface pottery at several of the sites including Abu Sha'ar al-Bahri, Milaha al-Nakhl, Wadi Safaga and Marsa Dabr/Marsa Nabiyah. Dates of sherds gathered previously on other projects at some of the sites (including Antinoopolis, Abu Sha'ar al-Qibli, Abu Gariya, Quseir al-Qadim, Marsa Nakari and Berenike) have been published elsewhere (these appear in the table) or await publication.[18]

16 MURRAY (*supra* n. 3), p. Plate XI and p. 149, mentions the site as Abu Nakhlah.

17 MURRAY (*supra* n. 3), Plate XI, p. 149-150, suggests that other road stops may have existed which have since been washed away.

18 For Antinoë see S. DONADONI *et al.*, *Antinoe (1965-1968). Missione archeologica in Egitto dell' Università di Roma* (*Università di Roma Istituto di Studi del Vicino Oriente, Serie archeologica* 21, Rome, 1974, *passim*; for a description of Antinoopolis/Antinoë and a compilation of the epigraphic evidence see BERNAND (*supra* n. 1), p. 23-107; for Abu Sha'ar el-Qibli see SIDEBOTHAM, *Dumbarton Oaks Papers* (*supra* n. 3), p. 263-266, 272-275; Drs. J.A. Riley and R. Tomber are preparing the pottery report detailing work at Abu Sha'ar el-Qibli for publication; Riley has studied the pottery from Abu Gariya and Marsa Nakari for publication by the University of Delaware Survey; for pottery from Quseir al-Qadim see W.R. JOHNSON, « Roman Pottery », in D.S. WHITCOMB, J.H. JOHNSON (eds.),*Quseir al-Qadim 1978 Preliminary Report*, Cairo, 1979, p. 67-103; D.S. WHITCOMB, « Roman Pottery », *in* D.S. WHITCOMB, J.H. JOHNSON (eds.),*Quseir al-Qadim 1980 Preliminary Report (ARCE Reports* vol. 7), Malibu, 1982, p. 51-115; S.E. SIDEBOTHAM, « Roman Lamps, » and « Terra Sigillata Stamps, » *in* D.S. WHITCOMB, J.H. JOHNSON (eds.),*Quseir al-Qadim 1980 Preliminary Report (ARCE Reports* vol. 7), Malibu, 1982, p. 243-261; for Berenike see J.W. HAYES, « Summary of Pottery and Glass Finds », *in* S.E. SIDEBOTHAM, W.Z. WENDRICH (eds.), *Berenike 1994. Preliminary Report of the 1994 Excavations at Berenike (Egyptian Red Sea Coast) and the Survey of the Eastern Desert*, Leiden, 1995, p. 33-40; J.W. HAYES, « The Pottery », in S.E. SIDEBOTHAM, W.Z. WENDRICH (eds.), *Berenike 1995. Preliminary Report of the 1995 Excavations at Berenike (Egyptian Red Sea Coast) and the Survey of the Eastern Desert*, Leiden, 1996, p. 147-178; R. TOMBER, « The Pottery », *in* S.E. SIDEBOTHAM, W.Z. WENDRICH (eds.), *Berenike 1996. Preliminary Report of the 1996 Excavations at Berenike (Egyptian Red Sea Coast) and Survey of the Eastern Desert*, Leiden, forthcoming.

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Conclusion

Substantial sections of the northern west-east trans-desert portion of the Via Hadriana together with many of the stations along this segment have now been plotted and drawn in measured plan. Sections of the north-south portion of the road paralleling the Red Sea coast plus some of the stations as far south as Marsa Dabr/Marsa Nabiyah have also been plotted and drawn in measured plan. The survey could not record route segments which passed through military areas north and south of Safaga.

The survey will have several more seasons of work to complete the project. The final result should be as accurate a map of the course of the Via Hadriana as possible given current state of its preservation and affordable GPS technology allow. The survey will also publish measured plans, photographs, GPS coordinates and dates (from ceramic analysis) of the extant stops on the road and an analysis of the road's purpose and relationship with other Roman thoroughfares in the Eastern Desert.

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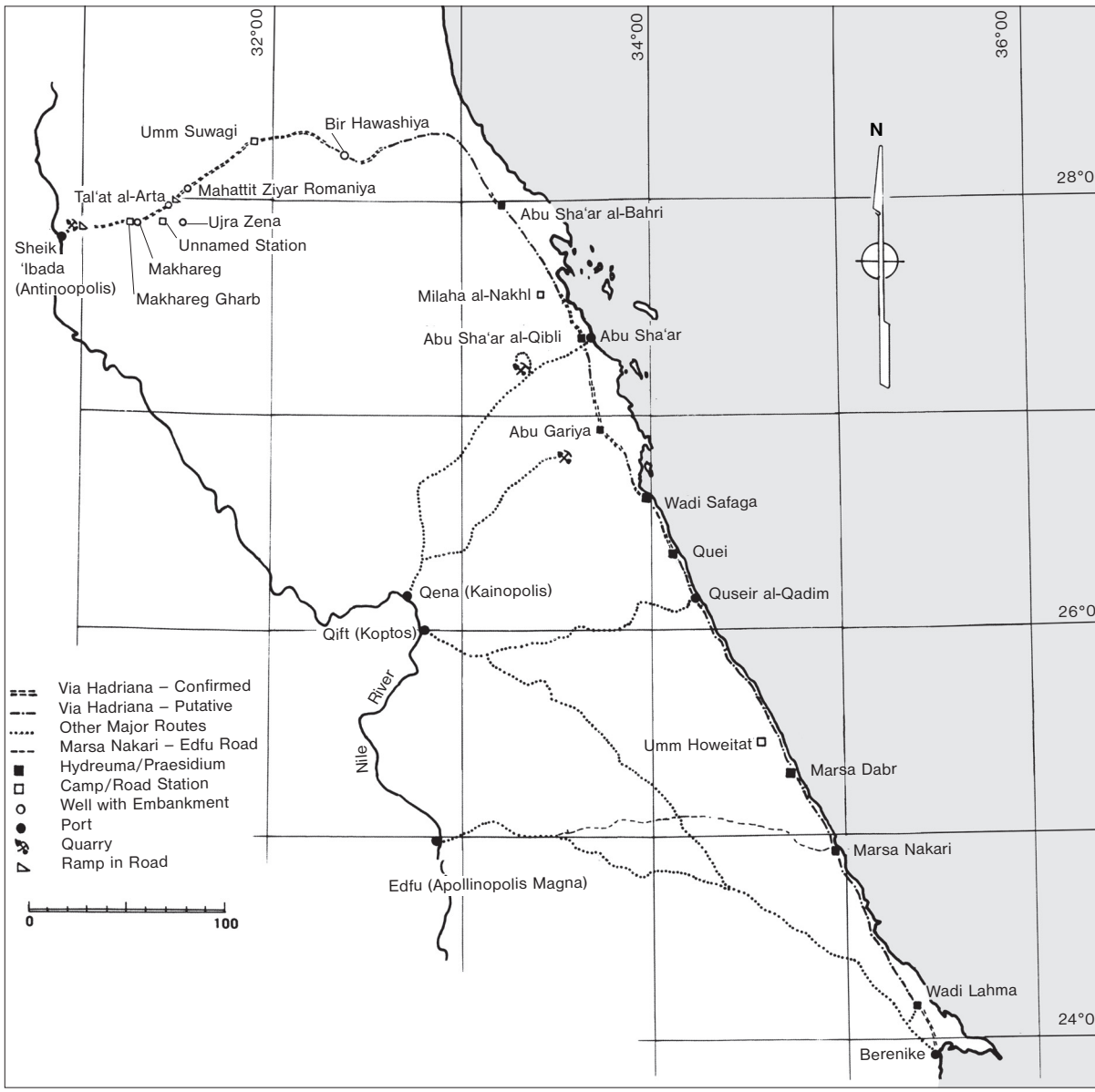


Fig. 1. Map of the Eastern Desert showing the Via Hadriana and associated roads. Drawing by R.E. Zitterkopf, 1997.

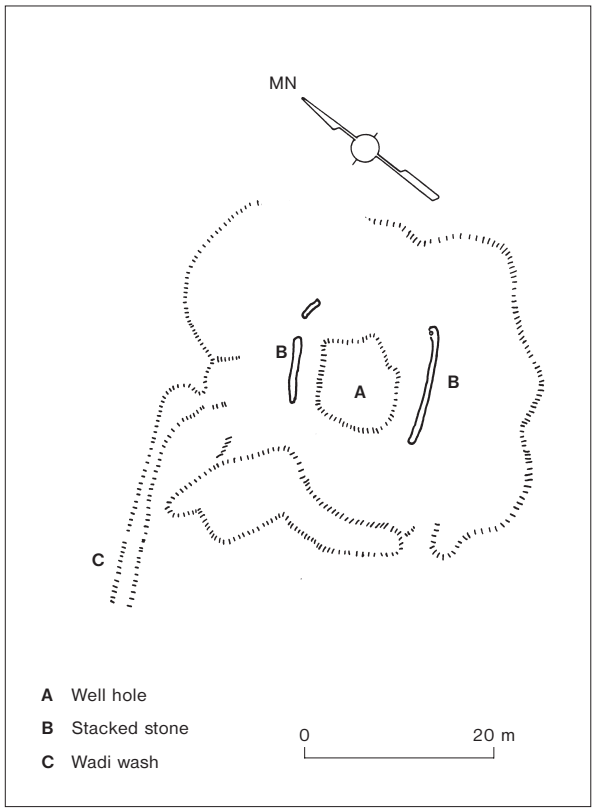


Fig. 2.
Plan of Makhareg. Well with embankments. Drawing by R.E. Zitterkopf.



Fig. 3. Makhareg looking north-northwest. Photo by S.E. Sidebotham.



Fig. 4. Tal'at al-Arta looking south. Photo by S.E. Sidebotham.



Fig. 5. Fort at Umm Howeitat looking southeast. Photo by S.E. Sidebotham.

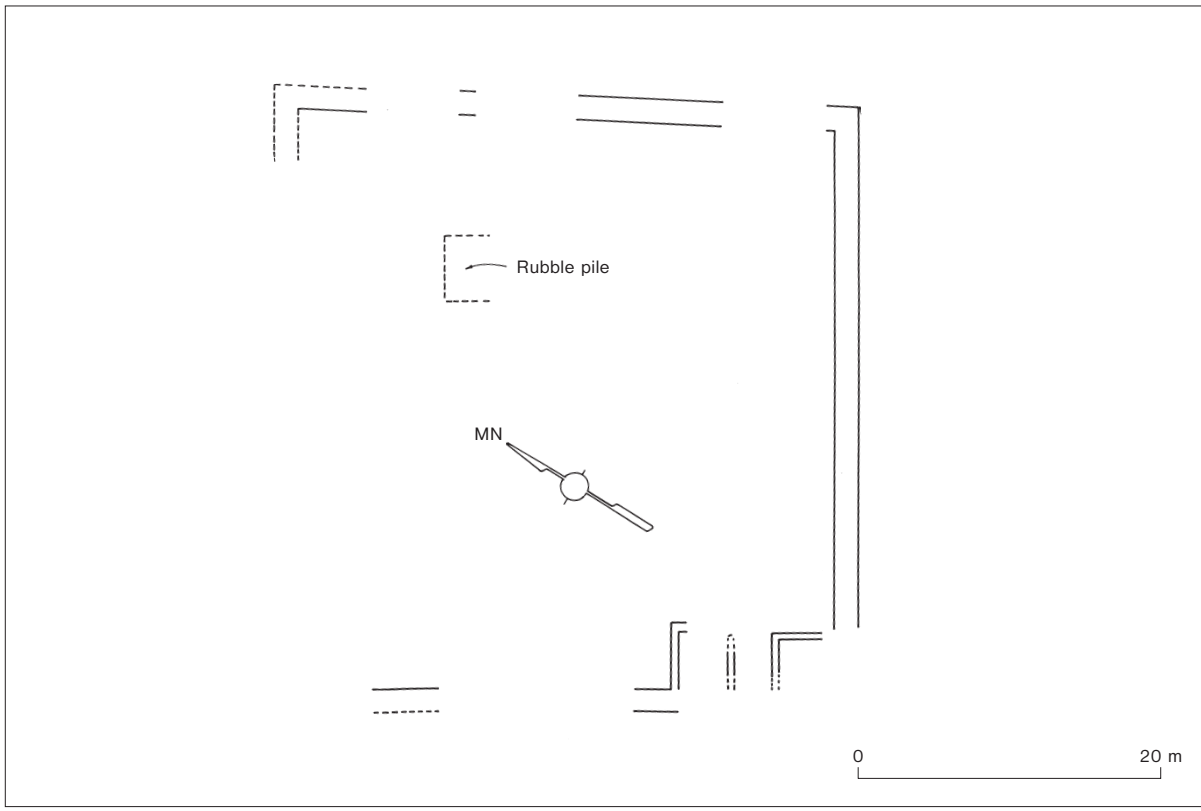


Fig. 6. Plan of *hydreuma* at Marsa Dabr/Marsa Nabiyah. Drawing by R.E. Zitterkopf.



Fig. 7. *Hydreuma* at Marsa Dabr/Marsa Nabiyah looking northeast. Photo by S.E. Sidebotham.

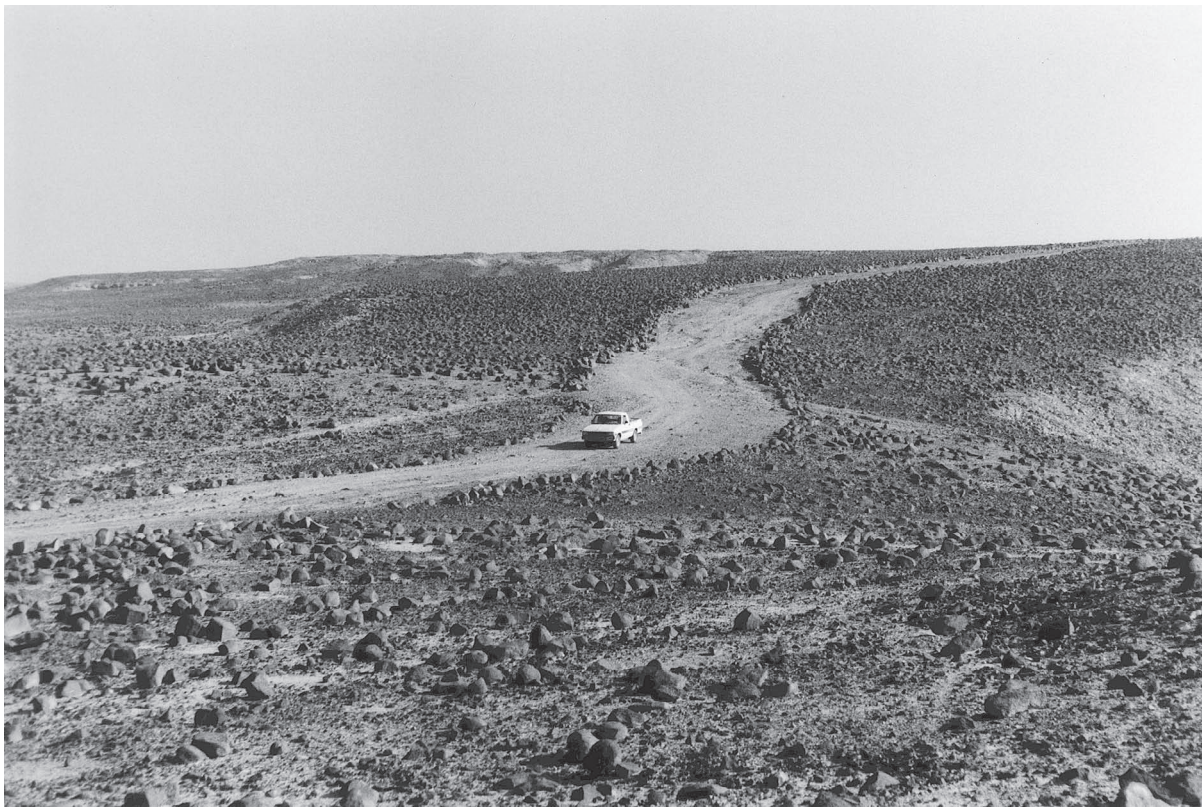


Fig. 8. Cleared section of Via Hadriana on northern trans-desert section just east of Antinoopolis/Antinoë (Sheikh 'Ibada). Photo by S.E. Sidebotham.

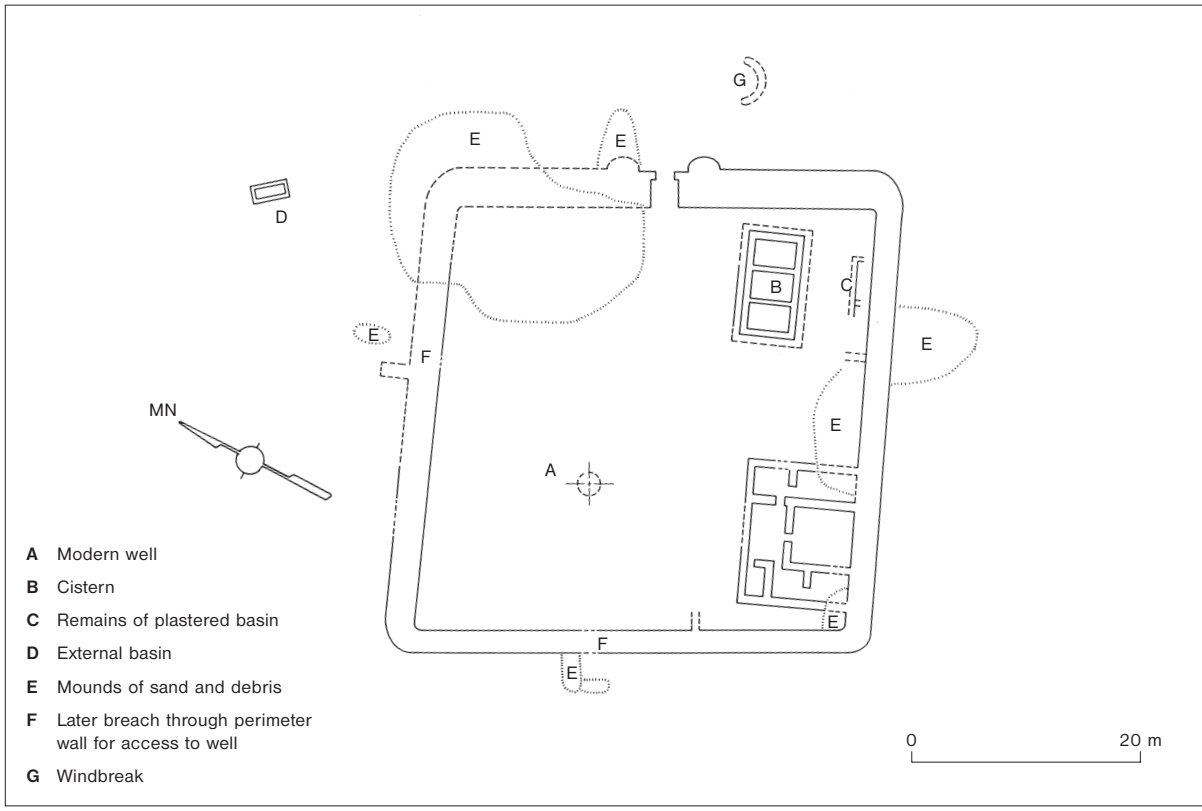


Fig. 9. Plan of the *hydreuma* at Abu Gariya. Drawing by R.E. Zitterkopf.



Fig. 10. Ramp west of Tal'at al-Arta looking south. Photo by S.E. Sidebotham.

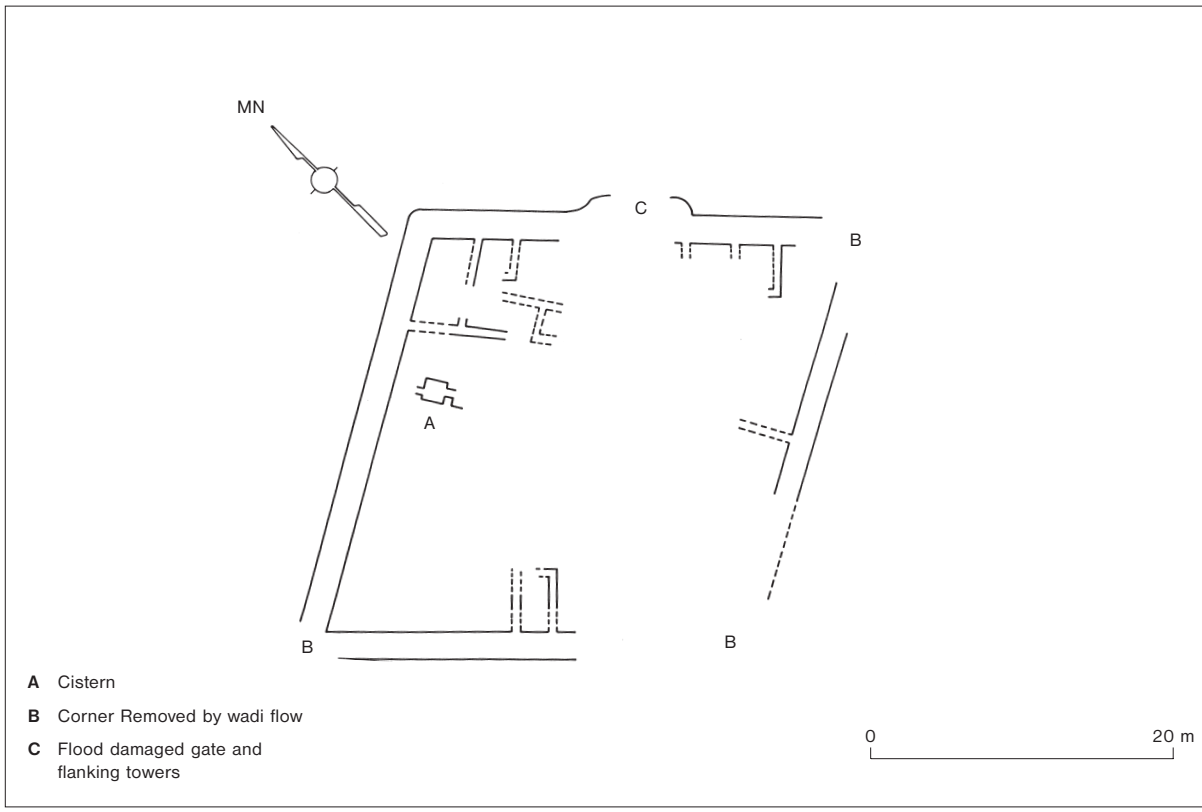


Fig. 11. Plan of *hydreuma* at Wadi Safaga. Drawing by R.E. Zitterkopf.



Fig. 12. *Hydreuma* at Wadi Safaga looking northwest. Photo by S.E. Sidebotham.