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**Umm el-Dabadib, Roman Settlement in the Kharga Oasis:
description of the visible remains
With a note on 'Ayn Amur**

By CORINNA ROSSI

(Plates 35–39)

Introduction

The aim of this article is the description of a large, impressive Roman settlement, which lies quite undisturbed in the Kharga Oasis, in the Egyptian Western Desert. I visited the site very briefly in January 1997 and was able to go back there for a few days in January 1998, thanks to contributions from the Thomas Mulvey Fund, the Worts Travelling Scholars Fund of the University of Cambridge (UK) and the Lady Wallis Budge Fund from Christ's College, Cambridge, to which I am greatly indebted.

I visited the site as a tourist, and therefore this article is based only on superficial observations of the visible remains. Extensive excavations might reveal a great deal of information about the site, and probably a better-trained visitor might gather evidence in several specific fields more precisely than I was able to do. Nevertheless, this trip yielded useful results:

- a first series of sketch maps of the antiquities of the site, including the Fortified Settlement, the Northern Settlement and the necropolis;
- the discovery, in comparison with BEADNELL's 1908 report, of a fifth, westernmost branch of the subterranean aqueduct (no 1 in fig. 2);
- the exploration of the immediate surroundings of Umm el-Dabadib and westward along the ancient Darb 'Ayn Amur;
- a visit to the spring and temple of 'Ayn Amur, where we compared the remains with the account of WINLOCK, who visited the site in 1908.

I would like to thank SARAH CLACKSON for her contribution, MONSUR OSMAN, SERAFINA CUOMO and PENELOPE WILSON for their support and BARRY J. KEMP and PAMELA ROSE for their suggestions.

Finally, I would like to express my gratitude to the two other members of this expedition, MARIO LAZZERINI and ADRIANO MOLINARO, geologists, for their invaluable support in the survey and the exploration of the surroundings. Special thanks to ADRIANO, who originally dragged me along in his desert tours and made this trip and this article possible.

Part I: Ancient Routes, Early Travellers and Modern Studies

Umm el-Dabadib and the Kharga Oasis

Umm el-Dabadib lies at about 38 km north of the village of el-Kharga, close to the scarp of the plateau which represents the north-western boundary of the Kharga Oasis (fig. 1).

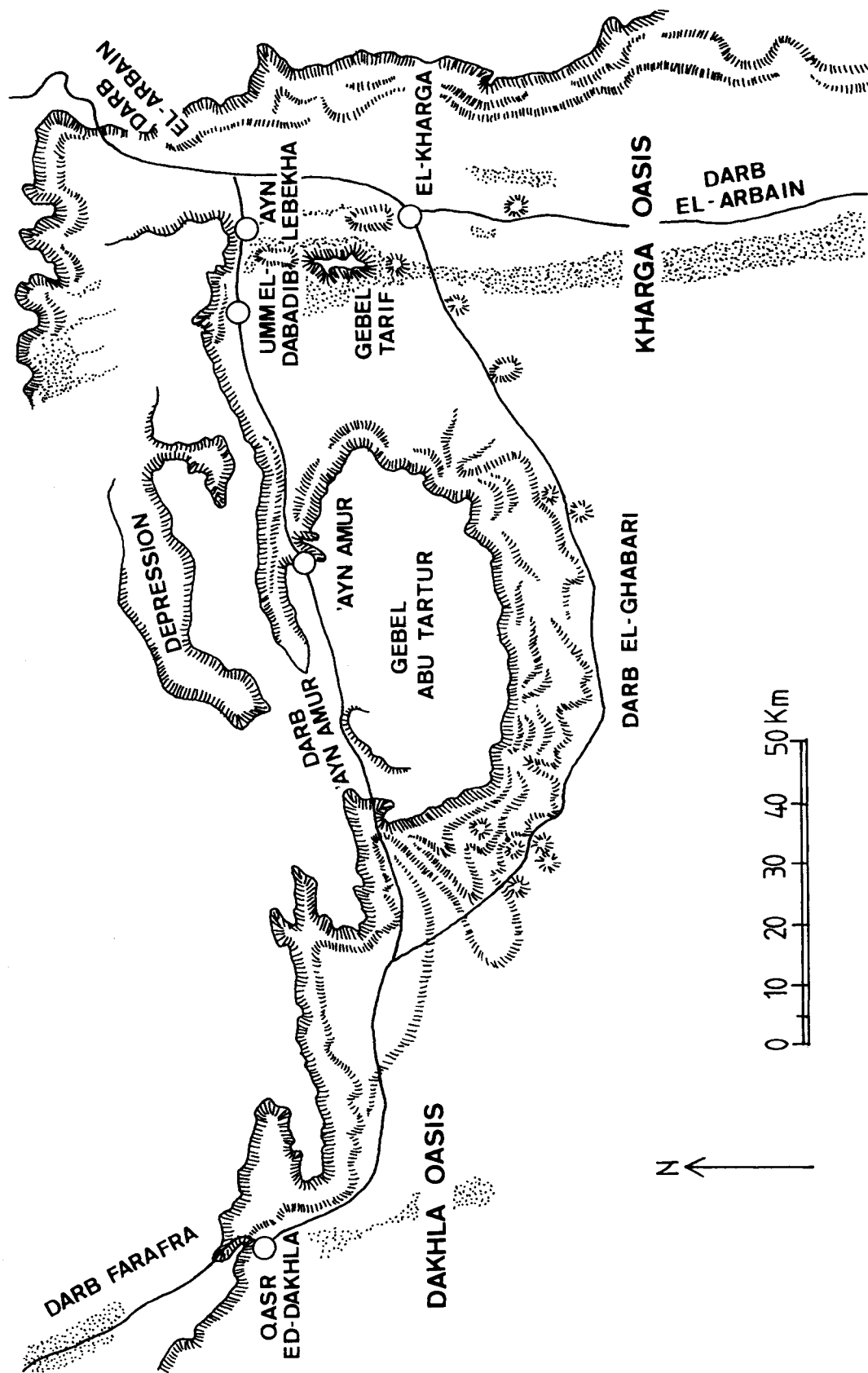


Fig. 1: Sketch map of the Kharga Oasis (scale 1:1,000,000)

According to CATON-THOMPSON¹, the plateau here reaches a height of about 400 m above sea level, while the average at the bottom of the wadi, where the settlement lies, is around 130 m above sea level. The upper part consists of a steep wall of white chalk, while wadis cut the layers of clays, marls and sandstones of the lower part into narrow sandy valleys, divided from one another by 3–4 km long ridges covered with gravel. In these deep valleys, long “rivers” of blown sand and barchan (or crescent) dunes generate and slowly proceed southward with such a power that, instead of being diverted by the obstacle, they literally climb, cross and descend Gebel Tarif, the large, flat-topped, 300 m high isolated massif lying halfway between Umm el-Dabadib and el-Kharga.

The existence of the ancient settlement of Umm el-Dabadib was known to early travellers and scholars, but nobody has published a survey of the archaeological remains yet, which lie in one of the valleys, protected from three sides by the plateau and the ridges, and from the south by a small but impressing fort. One of the most striking features of the site is the subterranean aqueduct: five tunnels cut in the rock along the wadis tapped and conveyed water to the surface for cultivation and daily needs of the population (fig. 2).

Although many monuments of the Oasis still await complete clarification as to their chronology and function², certainly most of the antiquities of the area belong to the Greco-Roman period. Umm el-Dabadib was probably a Roman settlement: the characteristics of fort and aqueduct, in comparison with other examples in Egypt and the Middle East and other archaeological remains in the Oasis, point to the maximum extent of the Roman Empire as the most likely period for the construction of the most visible monuments. The area was probably occupied well into Christian times, but only proper excavation could provide information about earlier settlers.

The Darb ‘Ayn Amur

The Romans built a chain of forts along the main caravan routes crossing the Oasis: from north to south, at least seven forts or fortified settlements guarded the Darb el-Arbain, historically one of the most important trade routes to Egypt. Amongst them are el-Deir, a huge mud brick fortress with twelve round towers, and Dush, one of the southernmost garrisoned town of the Roman Empire, currently being excavated by the IFAO.

Another important route in ancient times was the Darb el-Ghabari, which ran south of the Abu Tartur Plateau and linked Kharga to Dakhla. The modern asphalted road follows the same line but at a few kilometres to the south in the flat desert. Since Darb el-Ghabari was not interrupted by any well, in ancient times travellers preferred the Darb ‘Ayn Amur, which linked the two oases by crossing the northern part of the Abu Tartur Plateau, and had a convenient resting station at the spring of ‘Ayn Amur. Since, however, the ascent to the plateau is quite steep and runs in a narrow wadi, heavily-loaded caravans sometimes preferred the Darb el-Ghabari³.

Along the Darb ‘Ayn Amur, which joined the Darb el-Arbain about 30 km north of the modern village of el-Kharga, two fortresses with large settlements were built: Umm el-Dabadib and ‘Ayn Lebekha, both provided with large water systems for irrigation.

¹ G. CATON-THOMPSON, *Kharga Oasis in Prehistory*, London 1952, p. 12, fig. 2.

² See for example H.J.L. BEADNELL, *An Egyptian oasis. An account of the oasis of Kharga in the Libyan Desert*, London 1909, pp. 98–103.

³ For a list of the caravan routes of the region, see L.L. GIDDY, *Egyptian Oases*, Warminster 1987, Part I-B and Map II.

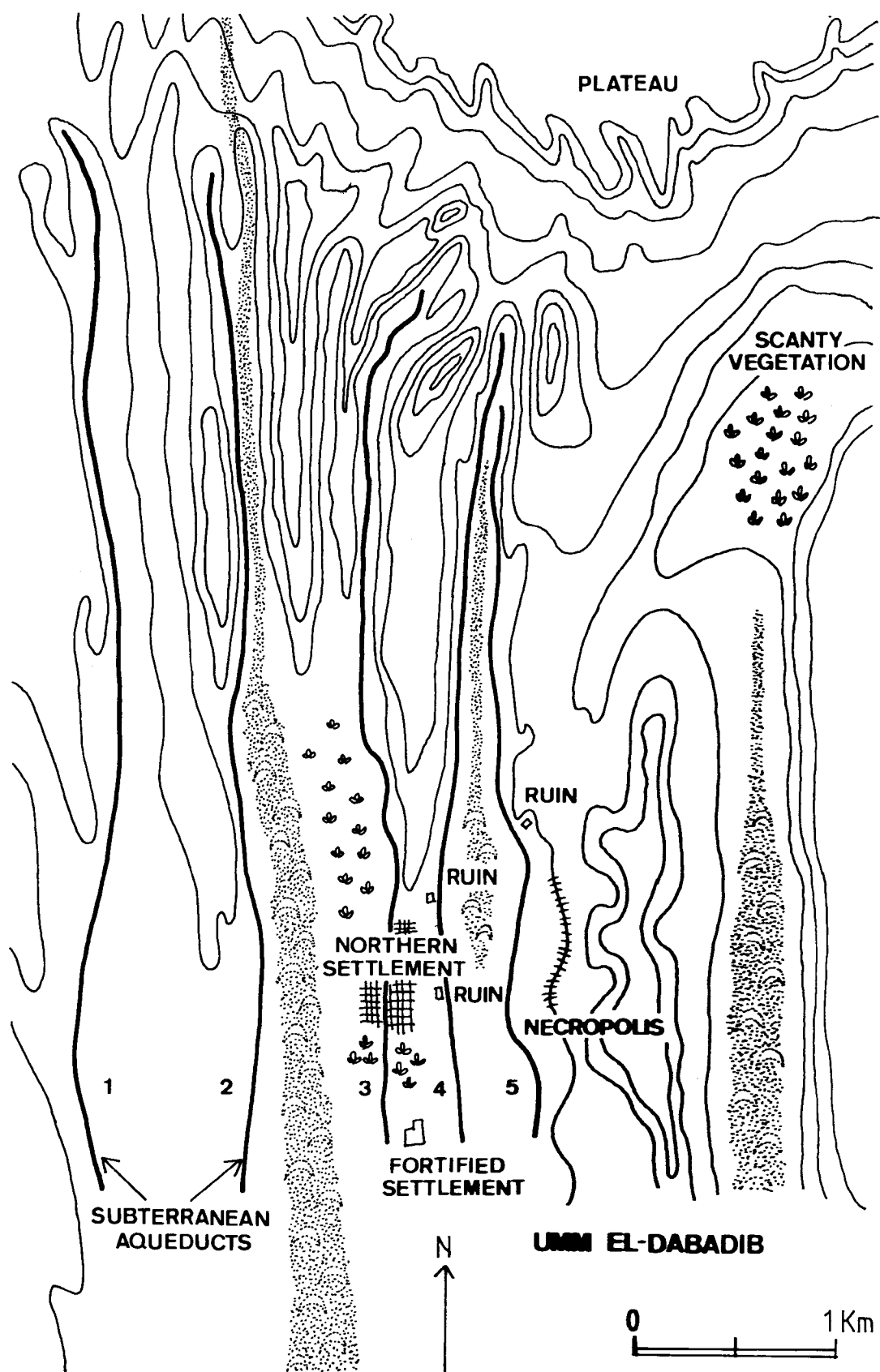


Fig. 2: Sketch map of Umm el-Dabadib (scale 1:30,000)

From the exploration of the immediate surroundings of Umm el-Dabadib, it becomes clear that the original settlers chose the best place among the adjacent wadis: here the narrow valleys open into a large plain, which allows both the passing of barchan dunes and the cultivation. Going east, the first wadi, just behind the necropolis, is narrow and deep, and is completely blocked by large barchans. The following wadi is very large, but the valley is covered with moving dunes, although groups of trees indicate the presence of emerging water. No traces of human activities, other than prehistoric flint implements (fig. 10), are visible.

Going west, the landscape changes suddenly into a harsh rock desert interrupted by impenetrable "rivers" of barchans. Scattered potsherds and traces of circular walls made of small loose slabs of stone indicate that here ran the ancient Darb 'Ayn Amur. Now it is possible to reach the spring by car by crossing the dunes at a point south of Umm el-Dabadib, approaching the track from south-east, while the ancient route followed the north scarp.

The presence in ancient times of these dunes has been challenged, even if there is no reason to suppose that such an important change in the climatic conditions might have happened⁴. The way the vertical shafts of the aqueducts sometimes avoid the trajectory of the dunes (see for example plate 39a), in fact, seems to me to point to the existence of similar conditions in ancient times.

The spring of 'Ayn Amur

The spring of 'Ayn Amur is located in a very peculiar spot. The ancient route, today probably still used for illegal traffic, runs in the depression as far as a narrow wadi which cuts the southern scarp: here, half-way between the bottom of the depression and the top of Gebel Abu Tartur, on a large rock step, lies the little spring. The approach from the depression is spectacular, indeed: this tiny green stretch of palm trees and compact vegetation creates a striking contrast with all the shades of yellow and grey of the surrounding desert and the perfect blue of the sky.

The spring itself consists of a round hole, filled with muddy water and half-hidden by tall grass. A small Late Period stone temple was built at a certain distance from the well, and a large, irregular mud brick enclosure wall, about 80–90 m long, was erected all around⁵. The vegetation, quite thick in the area of the well, rapidly turns into scanty, dark shrubs and then disappears completely.

In comparison with WINLOCK's 1908 pictures⁶, the conditions of the spring and the remains are not exactly the same. The wall on the left of the temple doorway and part of the lintel have collapsed and many loose stones appear to have been moved. The worst damage, however, has been inflicted to the decoration of the west wall, where two lines of hieroglyphs have been recently removed.

Nowadays the vegetation appears to be thicker in comparison with the past: the sole palm tree mentioned by WINLOCK⁷ and described as "scraggy" by HARDING KING⁸ eventually died, and its remains can still be seen on the ground, but two thick groups of younger palm trees are growing where, in 1908, there was only scrub. Since the water that emerges at 'Ayn Amur seems to depend on desert rains⁹, this increase of the vegetation is probably due to a wetter phase in the climatic conditions of the region.

⁴ H.E. WINLOCK, *Ed Dakhleh Oasis. Journal of a camel trip made in 1908*, New York 1936, pp. 55–56.

⁵ *Ibid.*, pl. 34.

⁶ *Ibid.*, pl. 35.

⁷ *Ibid.*, p. 48.

⁸ W.J. HARDING KING, *Mysteries of the Libyan Desert*, London 1925, p. 316.

Previous explorations of the site

The accounts of two travellers who had explored the Oasis, EDMONSTONE¹⁰ and DROVETTI, appeared in 1822. Both visited 'Ayn Amur, the first coming from Dakhla and the second from el-Kharga, but neither explored the eastern part of the Darb 'Ayn Amur. DROVETTI mentioned "Om el Debadeli" (Umm el-Dabadib) and "Ellengeh" ('Ayn Lebekha), but probably did not visit the sites, since he claims to have covered the distance from Qasr el-Tarif to 'Ayn Amur in just five hours and a quarter, which does not leave any time for a diversion¹¹.

Many travellers, therefore, including CAILLIAUD¹² and BRUGSCH¹³, chose to focus their attention on other routes and sites and did not visit this part of the Oasis. In 1895, however, BLUNDELL visited the area and published a short description of the archaeological remains at Umm el-Dabadib, but did not include any drawing or picture¹⁴. It was in 1900 that the first sketch map of the site appeared: the author was BALL, who had surveyed the area for the Public Works Ministry one year before¹⁵. On this occasion, for the first time the region around Umm el-Dabadib was explored and the plateau behind 'Ayn Lebekha ascended. Morphology and geology of the area of Umm el-Dabadib were mapped, including the approximate position of fort and settlement. In 1909 the survey of the four branches of the aqueduct appeared, mapped by BEADNELL, who also gave a fascinating account of his troublesome exploration of this impressive subterranean water system¹⁶.

A partial re-opening of the aqueduct, silted up by sand and gravel, was probably attempted several times: CAILLIAUD, who did not visit the site, was, however, informed that a group of people lived there in 1819¹⁷. BLUNDELL mentioned the cultivation of plants and trees carried out between 1875 and 1895¹⁸. As BEADNELL reports¹⁹, at the end of the century one of the branches, probably the central one, had been cleared and provided water for a small agricultural community. When HARDING KING visited the place in the early '20s, it was inhabited by two men and their families from the village of Kharga²⁰. The same tunnel appears to have been still flowing around 1952, since in the map published in that year by CATON-THOMPSON the channel appears to terminate in a small pool. Today, there is no visible discharge.

Part II: Description of Umm el-Dabadib

Fort and Fortified Settlement

The description of the site has been divided into four paragraphs, each dealing with a distinct group of remains: fort and Fortified Settlement, Northern Settlement and other ruins, necropolis and aqueduct.

⁹ WINLOCK, *op. cit.*, p. 48; HARDING KING, *op. cit.*, p. 316.

¹⁰ A. EDMONSTONE, *A journey to two oases of Upper Egypt*, London 1822.

¹¹ F. DROVETTI, *Itinerary of an Excursion to the Valley of Dakel*, in: *New Voyagers and Travels* II, London 1822, pp. 67–68.

¹² F. CAILLIAUD, *Travels in the Oasis of Thebes and in the Desert situated East and West of the Thebaid in years 1815, 16, 17 and 18*, in: *New Voyagers and Travels* II, London 1822.

¹³ H. BRUGSCH, *Reise nach der Grossen Oase el Khargeh*, Leipzig 1878.

¹⁴ H.W. BLUNDELL, *Notes sur une excursion à Khargueh, Dakhleh, Farafrah et Behariyeh*, in: *Bulletin de la Société Khédiviale de Géographie* 4, 1895, pp. 273–275.

¹⁵ J. BALL, *Kharga Oasis: Its Topography and Geology*, Geological Survey Report, Cairo 1900, pl. III.

¹⁶ BEADNELL, *op. cit.*, pp. 172–185.

¹⁷ BALL, *op. cit.*, p. 72.

¹⁸ BLUNDELL, *op. cit.*, pp. 273–274.

¹⁹ BEADNELL, *op. cit.*, pp. 171–172.

²⁰ HARDING KING, *op. cit.*, p. 137.

The small fort, surrounded by a fortified enclosure packed with constructions, guarded the settlement from the south. The south side of the enclosure is in relatively good condition, and did not seem to me to have been pierced by any entrance. The complex was possibly entered from the north side, more or less from where the visitor can now climb the fallen ruins (fig. 3 and plate 36a).

Fort, Fortified Settlement and Northern Settlement were all built with mud bricks and their walls were aligned towards the four cardinal points. The constructions of the Fortified Settlement were probably houses and magazines, and consisted of at least two storeys of small vaulted rooms. In the south-western corner of the Fortified Settlement, the remains of a construction stand out for their

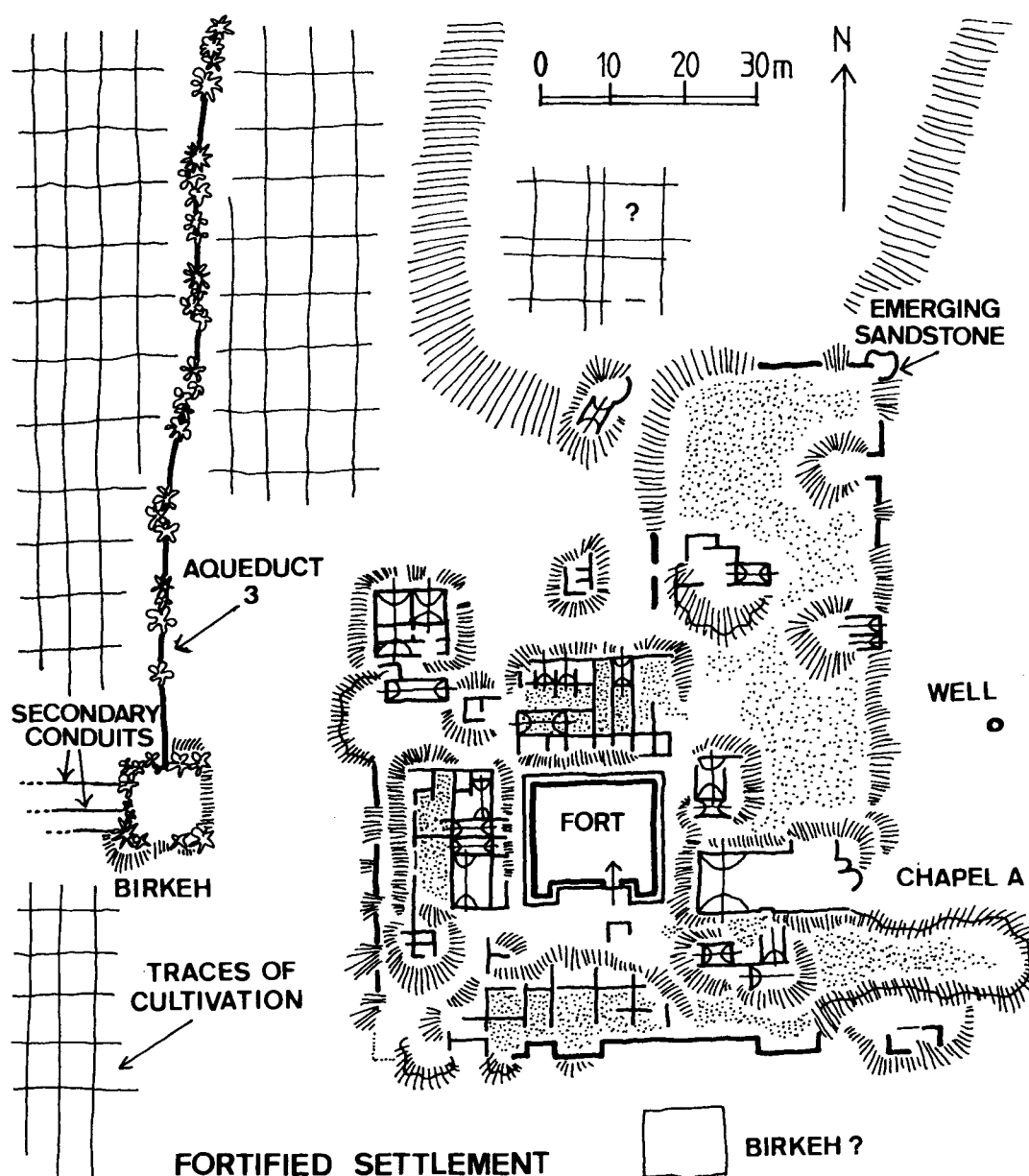


Fig. 3: Sketch map of the Fortified Settlement (scale 1:1,000)

height, but since their basis is completely covered with fallen debris, it is difficult to establish whether it consisted of three storeys or was just built on higher ground. The barrel vaults were built with the same kind of mud bricks as the walls, the gaps on the external face being filled with stone chips, which can be seen *in situ* in more than one case and are to be found almost everywhere among the debris.

The fort (fig. 4 and plate 37a) lies in the middle and reached a height of more than 15 metres. The plan is rectangular, with two projecting rectangular towers on the south side. Close to the right-hand tower, the

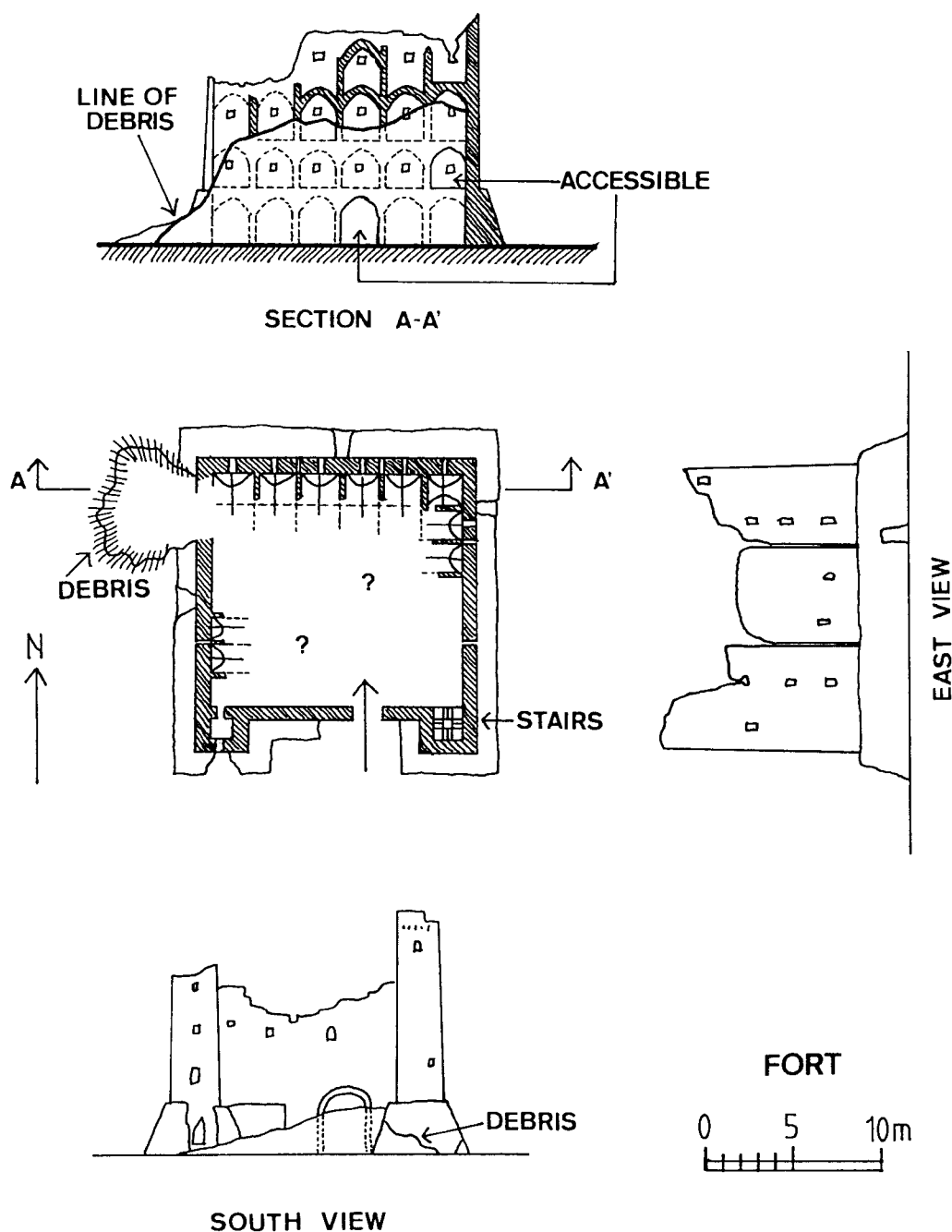


Fig. 4: Sketch plan, section and front views of the Fort (scale 1:400)

wall was pierced by a now hidden entrance, of which only the superimposed arch embedded in the wall can be seen. The external walls of the west, north and east side were built in three different sections, possibly to allow the mud brick to dry without consequences for the whole structure. The left section of the west side did in fact collapse, but the rest of the same side is intact. The lower part of the fort was surrounded by a steep scarp, built separately from the main wall, possibly later.

The interior was probably all filled with vaulted cells, since it does not seem to me that there was space enough for an internal court. If there was one, then it must have been very small and placed in front of the entrance. The fort can be climbed from the fallen portion of the west wall, up to the level of the last floor, which is almost entirely in ruins. The north wall, however, bears clear traces of the original internal arrangement: in the north-east corner, a whole cell survives, and more or less visible remains of the other rooms allow a reliable reconstruction of that side, and possibly of the corresponding lower levels. From the top, it is difficult to establish how many rooms are still intact under the debris: at least three are accessible from the outside, two from the ground floor (east and west side), and one from the first floor (north side). From the one entered from the east side, it is possible to gain access to a subterranean chamber, which might suggest the presence of a further, lower level.

The right tower contained stairs running up to a window on the top floor, from which the whole surrounding plan was visible. The left tower seems to have been filled with small rooms, and now is much shorter than its right counterpart.

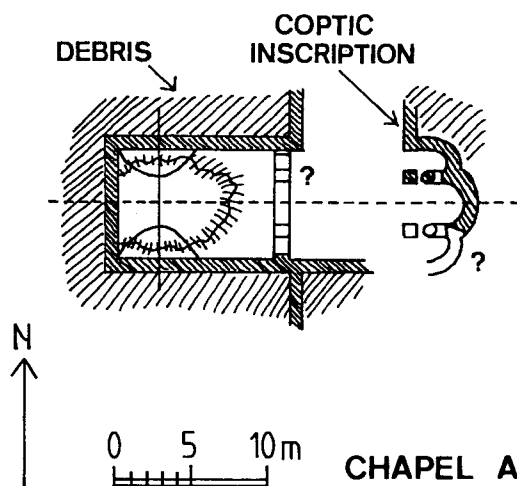


Fig. 5: Sketch plan of Chapel A (scale 1:500)

One of the most interesting constructions of the Fortified Settlement is the chapel (here called "Chapel A"), close to the south-east corner (fig. 5 and plate 37b): it consisted of a rectangular space divided into two parts, the deeper covered with a transversal vault, of which only traces on the walls survive. It seems that the eastern part of the construction was added to an original rectangular space, possibly when the whole was turned into a chapel. To the addition, in fact, belongs the half-ruined apse resting on two large mud brick columns, of which only one survives. Further conclusions about the plan of the chapel and its evolution are difficult to draw, since the space is completely invaded by debris and bears traces of consistent disturbance. Remains of plastered mud brick columns lie far from their original context, and traces of heavy vehicles seem to suggest a recent devastation.

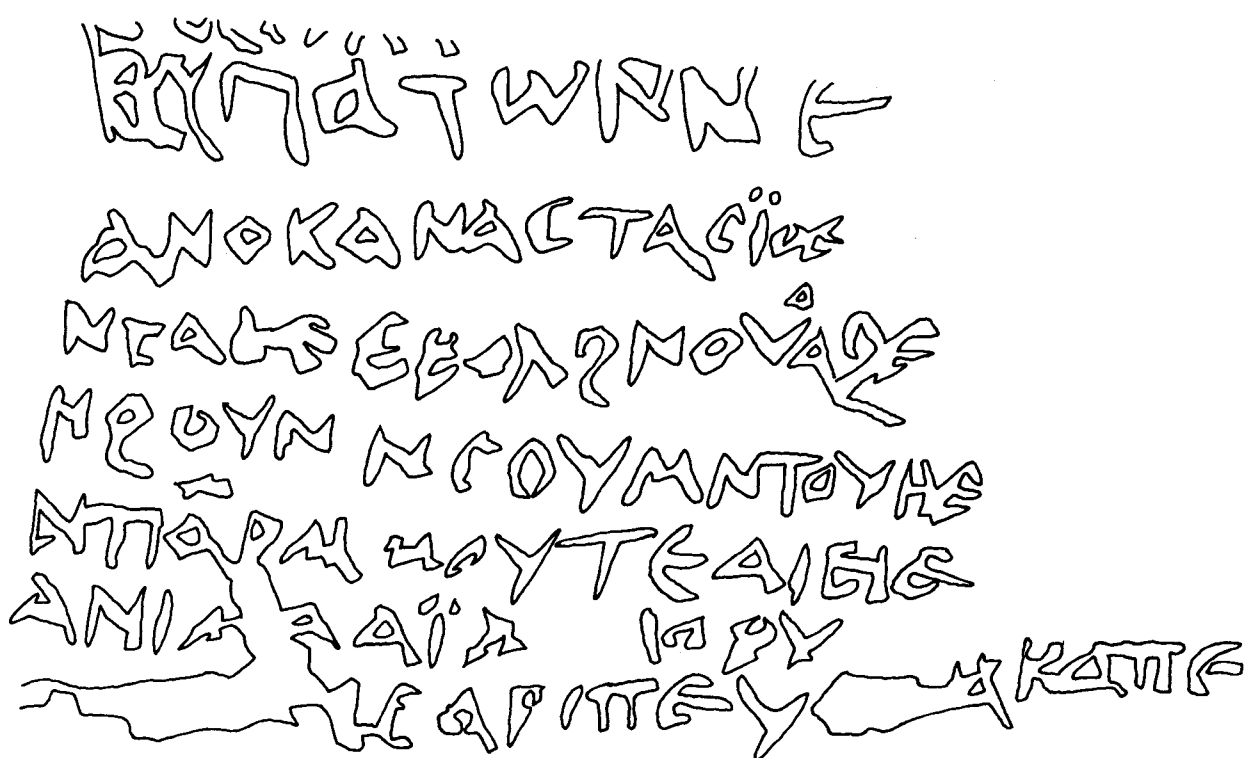


Fig. 6: Coptic inscriptions in Chapel A (scale 1:4)

On the exposed plastered surface of the wall departing northward from the lateral niche of the apse, there are two crudely incised Coptic inscriptions (fig. 6). According to SARAH CLACKSON, the second consists of six lines of a commemorative inscription of an Anastasios, who died on the eleventh day of Parmoute. The remains of the first inscription (lines 1–2) and the second part of the second inscription are incomplete and unclear. Hopefully, further material will come to light and provide a comparative basis.

Northern Settlement and other ruins

The Northern Settlement lies north of the fort, gathered around the third branch of the aqueduct, immediately after the point where it emerges to the surface (fig. 7). It has been virtually impossible to survey the remains, since they are almost completely covered by vegetation and sand (plate 38a). It is evident, however, that the characteristics of the constructions are basically the same as those of the Fortified Settlement: the buildings were at least two storeys high, their walls were aligned with the cardinal points and the rooms were vaulted. Some buildings seem to be quite small, while others, especially in the eastern part, appear to be grouped into a large complex.

Traces of former cultivation can be seen on both sides of the canal, but they may be not so old. At the northern limit of the settlement, there are several dead palm trees, which appear to have suffered from lack of water. Probably the pool formed by the discharge of the re-opened aqueduct, which can be seen in CATON-THOMPSON's 1952 map, was just there, behind the settlement, at the point where the tunnel turned into an open canal. Therefore, the surrounding area at that time was probably cultivated,

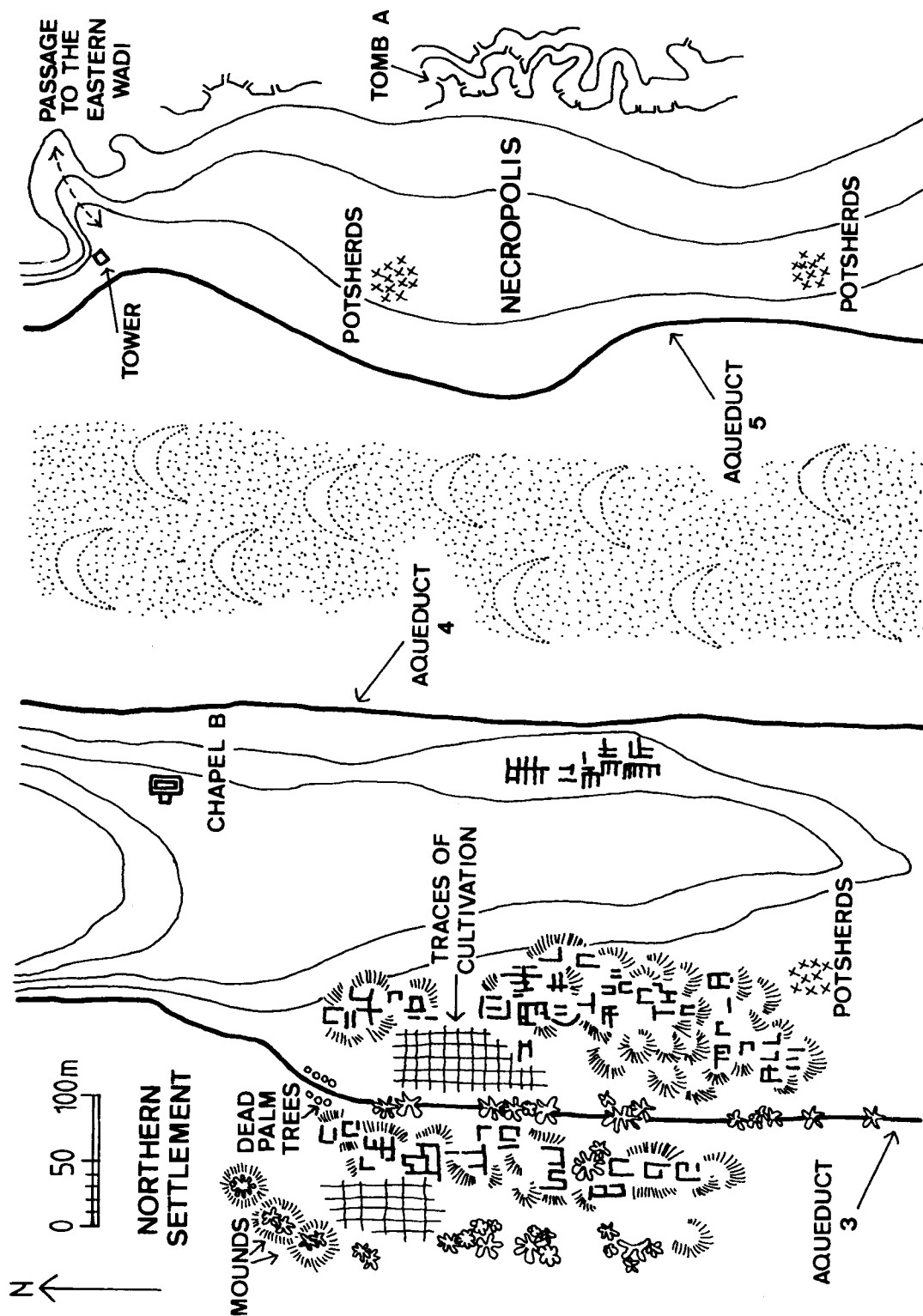


Fig. 7: Sketch map of Northern Settlement and Necropolis (scale 1:5,000)

and the visible traces might date to that period. When the neglected aqueduct silted, the area slowly dried up and the palm trees died.

Both the Northern and the Fortified Settlement are littered with fragments of pottery, which often end up as souvenirs for tourists. In the area between the Northern Settlement and the necropolis, we could see at least five ancient dumps of broken pottery. The fragments shown in figures 11 and 12, however, come from neatly arranged small heaps left in the Northern Settlement by recent visitors. Although they show a close resemblance to the Roman and Christian pottery found in the Dakhla Oasis²¹, the samples here reproduced are too scanty to represent a reliable basis for any conclusion.

Apparently, only a few scattered constructions lie separated from the central settlement, in the close eastern wadi: a large "chapel" (here called "Chapel B") and a compact group of vaulted rooms along the fourth aqueduct, and the remains of a tower (?) close to the fifth aqueduct, on the same side of the necropolis.

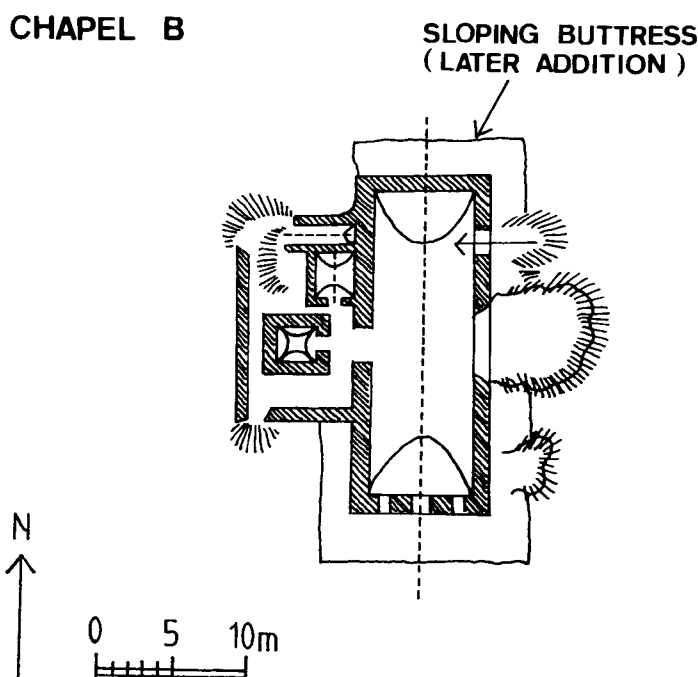


Fig. 8: Sketch plan of Chapel B (scale 1:500)

Chapel B (fig. 8 and plate 38b) consists of a long, rectangular room, once covered with a large vault, now completely ruined: its debris fill the interior up to a height of about two metres. The external walls were plastered and were later half-covered by a thick sloping buttress. On the west side of the chapel, there is a group of small vaulted rooms, partly ruined. The square room aligned with the centre of the chapel is covered with a cap vault, the only one of this kind that I have seen there.

²¹ Cf. W.I. EDWARDS/C.A. HOPE/E.R. SEGNET, *Ceramics from the Dakhleh Oasis, Preliminary Studies*, Victoria College Archaeological Research Unit, Occasional Paper 1, Victoria 1987, pp. 44-46, 63-64, 66-67.

The so-called "Tower" is a much ruined small fortified construction lying only a few metres away from the fifth branch of the aqueduct. Only in this case, the corners, rather than the walls, are aligned toward the four cardinal points.

The purpose of this isolated fortified construction was the control of a crossroad, rather than just of the aqueduct (the first branch lies, in fact, even farther from the settlement and its surroundings seem to lack any fortification). Just east of the tower a narrow winding wadi leads to an easy track heading eastwards, which gives access from the north to the large wadis beyond the necropolis.

The necropolis

The necropolis consists of an undetermined number of rock-cut tombs carved in the eastern hill (fig. 7). Many entrances in the vertical wall have been cleared and can be seen from a certain distance, while others are almost completely filled with sand and are scarcely visible. Shallow circular depressions in the ground, filled with fine sand, suggest the presence of vertical shafts or oblique tunnels.

In the sandy area below the scarp, we saw traces of a rectangular mud brick chamber, surrounded by human bones and fragments of pottery. No other similar constructions are visible.

Obviously, all the accessible tombs on the hill have been devastated and thoroughly robbed: bones, skulls, small and large parts of mummies, loose wrappings, fragments of pottery and wood are scattered all along the sloping side from the level of the entrances down to the bottom of the scarp.

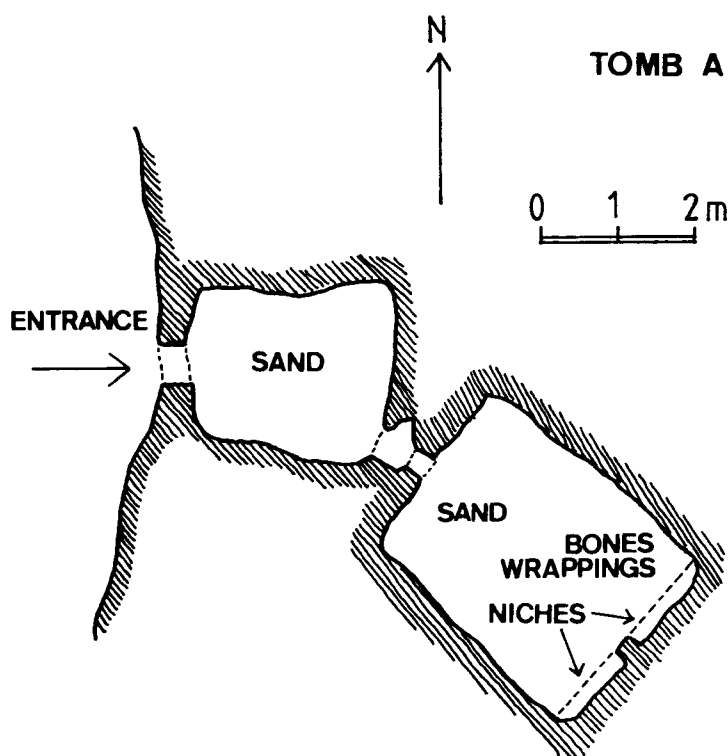


Fig. 9: Sketch plan of Tomb A (scale 1:100)

The majority of the tombs consist of rectangular chambers, apparently lacking in inscriptions and decorations. Since they are filled with sand up to a certain level, nothing certain can be said about their height, although in many cases it is unlikely to exceed one metre. Walls and ceilings are quite irregular and were not smoothed nor plastered. In a few cases, when only a thin layer of rock divided the chamber from the outside, this wall has fallen apart and has exposed the whole vertical section of the tomb.

The tombs appear to have hosted multiple burials, since many skulls, femurs and pelvis bones can be seen emerging from the sand in almost every hole. However, only a few tombs, among those visible, seem to have had a second chamber, such as the tomb labelled A. This tomb lies open and half-filled with sand and consists of two chambers, the second being entered from the right corner of the first (fig. 9). On the bottom wall of the second chamber, two large niches are roughly outlined in the rock. Only a few bones and wrapping emerge from the sand in one corner.

The site suffers from continuous disturbance: a mummy has been recently dragged out from one of the tombs, her wrappings completely removed and her chest smashed. It is the body of a woman, more than 1,65 m tall, with marked cheekbones and thick lips. The feet are missing and the fingers of the hands appear to have been separately wrapped. It presently lies surrounded by the remains of other mummies consumed by exposure at different levels, which means that this havoc is just the last of a long series.

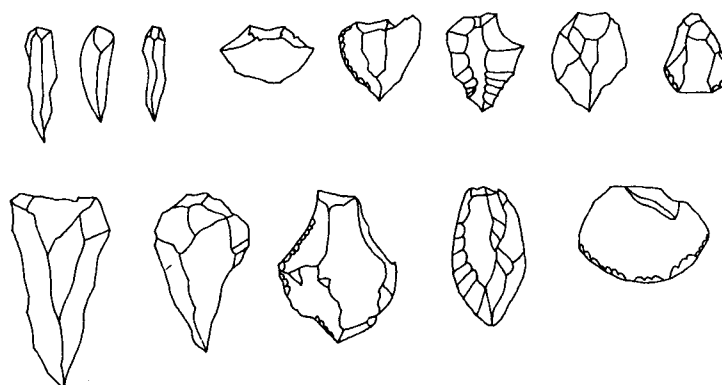


Fig. 10: Samples of flint implements from the area of Umm el-Dabadib (scale 1:2)

The aqueduct

Installation and maintenance of a settlement depended entirely on the possibility of having a reliable and constant provision of water. The Romans were great architects and great engineers, and wherever they settled, a more or less impressive water system is likely to be found.

Along the southern border of the Empire, where the settlements were installed in desert landscapes, the Romans adopted similar solutions: the water was lifted from a deep bore drilled in the ground within the walls, as at Qasr el-Hallabat, in Jordan²², or conveyed from a distant source by

²² D. KENNEDY/D. RILEY, *Rome's desert frontier from the air*, London 1990, p. 201, fig. 148.

means of a canal and stored in a *birkeh* just outside the walls, as at Khan Aneybeh, in Syria²³. Both these examples are associated with small forts of about the same size as the one at Umm el-Dabadib.

Apart from open-air conduits, there is also evidence of subterranean tunnels reached by a series of vertical shafts at regular intervals. These chain wells are also called *qanat* or *foggara*: several examples can be found at Yotbatha, in Israel²⁴, and at least four in the Kharga Oasis, at Dush, Umm el-Dabadib, 'Ayn Lebekha and 'Ayn Gyb²⁵.

At Dush, five *qanats* have been found and tracked for a few hundred metres²⁶. According to the preliminary reports, the system found here seems to have been more elaborate than the one at Umm el-Dabadib, since the *qanats* run in different directions, sometimes at right angle to one another. The aqueduct at Umm el-Dabadib consists instead of five parallel long subterranean tunnels cut in the rock in order to intercept the water circulating freely in small fissures. The tunnel, therefore, did not strike a single source, but ran through a stratum rich in water and gathered together all the small rivulets whose path it crossed. The final yield of any single tunnel, therefore, must have depended mainly on its total length.

The tunnels were cut in one or both sides of the bottom of the wadis, where the rock is more solid and stable. The newly discovered branch, the westernmost, is probably slightly longer than the one immediately close to it, believed by BEADNELL to be the longest with its 4,6 km. The total length of the horizontal excavation exceeds therefore 18 km measured on the surface. The real length of the tunnels is, however, much more, since they do not proceed along a straight line, but follow a very irregular path, turning and sometimes almost doubling back on themselves.

The tunnel explored by BEADNELL has an average section of 1,50 x 0,60 m, being therefore smaller than one of the *qanats* surveyed at Dush, which is about 1,80 x 0,60–1 m²⁷: in the case of Umm el-Dabadib, there was space only for one man to take it in turns to work. Both tunnels had a similar slope, about 2,5–3 mm for each metre. BEADNELL was forced to descend through the ninth vertical shaft, because the last ones were firmly sealed with limestone slabs²⁸, and estimated the last shaft to be about 53,5 m deep. We measured the depth of the last shaft of the third branch, which lies open, and found that it must be at least 54,5 m deep: the bottom is covered by dry sand, but from the top it is impossible to establish the thickness of the layer. Therefore, we decided not to descend the shaft, since we were not sure of reaching the tunnel and gathering any useful information. Moreover, when BEADNELL, after a very uncomfortable journey, reached the bottom of the tunnel, he found nothing: no inscriptions, no vertical shafts, not even water²⁹.

The tunnels at Umm el-Dabadib emerged at the surface in four different points and were used to irrigate a large portion of land. They were cut from south to north, that is in the opposite direction of the stream, as it is also proved by the direction of the tool marks noted by BEADNELL³⁰. The emerging part of the aqueduct consisted of small terracotta channels with a U section (each piece was about 50 cm long, 16 cm wide and 6 cm deep) resting on a thick layer of dark-grey porous mortar. A few pieces can still be seen *in situ* at the end of the first and second branch (plate 39b). Only the third branch seems to

²³ KENNEDY/RILEY, *op. cit.*, p. 205, figs. 155–156.

²⁴ KENNEDY/RILEY, *op. cit.*, p. 76, fig. 22.

²⁵ BEADNELL, *op. cit.*, p. 131.

²⁶ N. GRIMAL, in: *BIFAO* 95, 1995, pp. 572–574.

²⁷ *Ibid.*, p. 573.

²⁸ BEADNELL, *op. cit.*, p. 180.

²⁹ *Ibid.*, p. 183.

³⁰ *Ibid.*, p. 181.

have terminated in a *birkeh* close to fortified settlement. The *birkeh* acted as reservoir for the settlement, but also for the fields, since at least three small canals depart from its west side in the direction of the cultivation (fig. 3 and plate 36b).

The vertical shafts (plate 39a), cut every 5–10 metres, served a double purpose: as a means of ventilation during the works and to check periodically the conditions of the tunnels after completion. The amount of labour required by the vertical passages must have been equal to or greater than the one for the horizontal tunnels, since, as we have seen, their depth exceeds 50 m when approaching the steep scarp below the plateau.

BALL, who visited Umm el-Dabadib in 1898, ascended the plateau at 'Ayn Lebekha only and suggested that the scarp behind Umm el-Dabadib might be only a ridge, hiding a vast depression from which the blown sand came. ADRIANO MOLINARO, however, ascended the scarp at Umm el-Dabadib just north of the central branch of the aqueduct and found a flat plateau, dotted with eroded rocks and small wadis. There is, in fact, a 30 m deep depression in the plateau, but it lies at about 40 km west of Umm el-Dabadib (fig. 1).

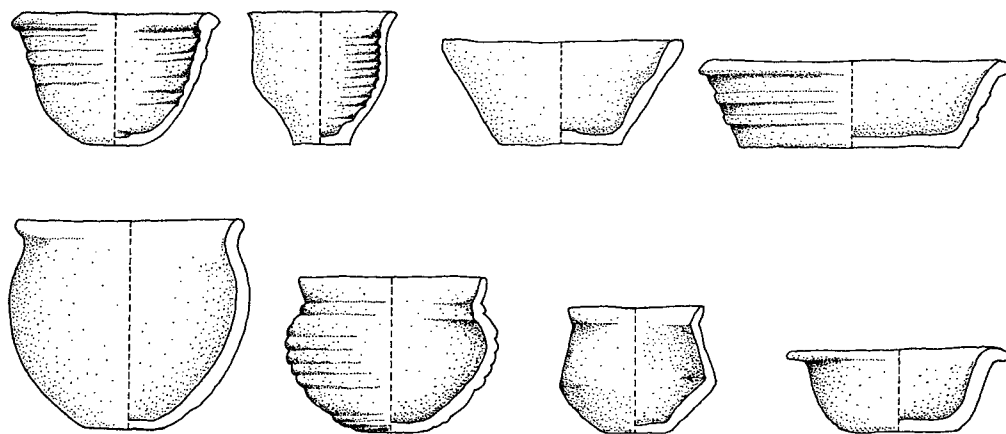


Fig. 11: Samples of pottery from the Northern Settlement (scale 1:2)

Assuming the presence of a depression, BALL thought that the tunnels were passages leading somewhere beyond the ridge, maybe to the mysterious oasis lying in the desert north of Kharga to which a local tradition referred. There must be lost oases cancelled by sand storms or swallowed by the Great Sand Sea, and, in fact, the Arab tradition is full of references to unknown oases, encountered by chance in the middle of the desert by lost travellers, and then never found again³¹. The most famous of them is Zerzura, the lost oasis lying somewhere in the Great Sand Sea which became a legend for the explorers of the '30s, including HARDING KING³², who travelled on behalf of the Royal Geographical Society, and ALMASY, who searched for it in the area of Uweinat and was the first to find his way to the top of Gilf Kebir.

³¹ R. BAGNOLD, *Libyan Sands: Travel in a Dead World*, Bristol 1935, chapter 11.

³² HARDING KING, *op. cit.*, pp. 51–59.

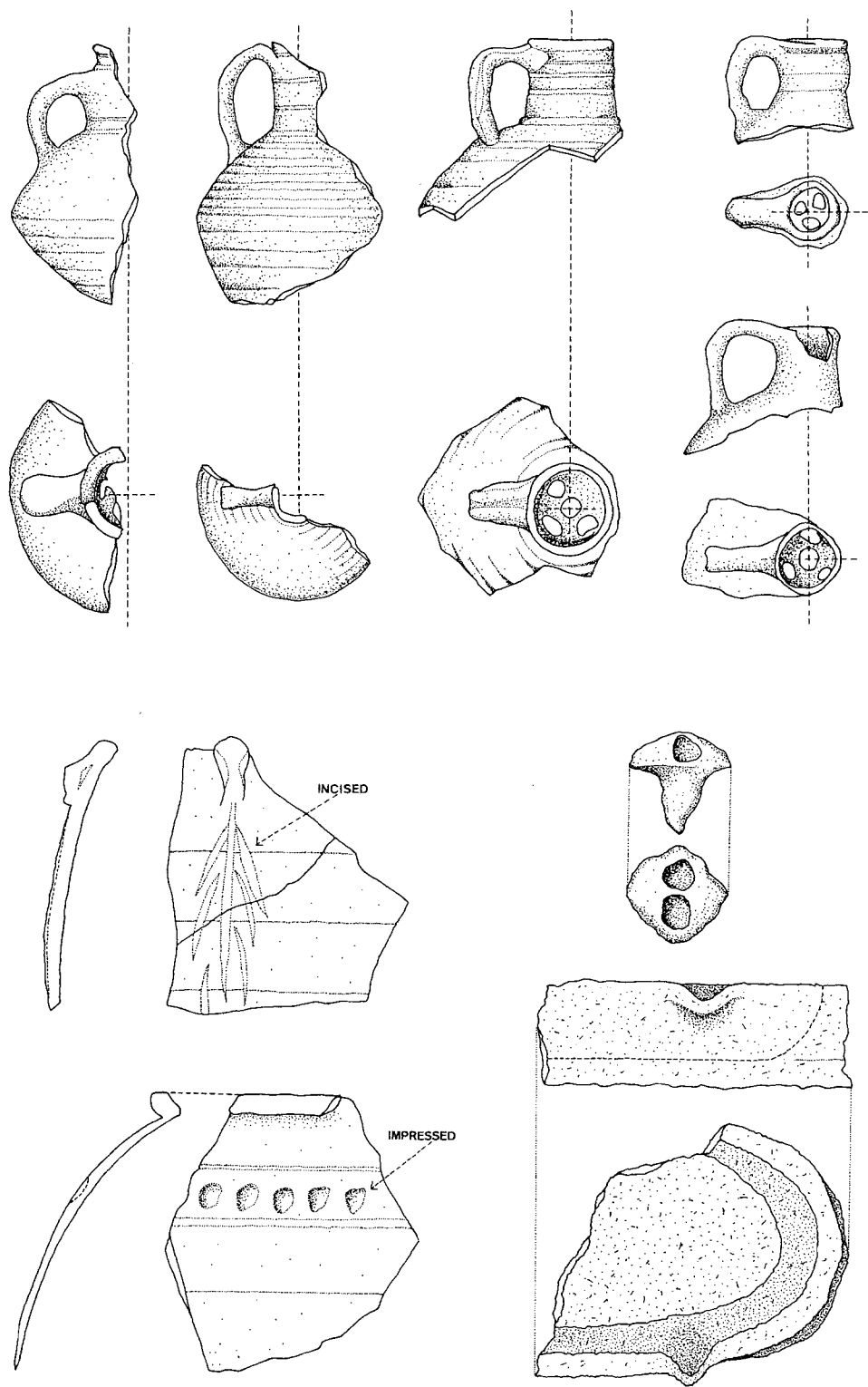


Fig. 12: Samples of pottery from the Northern Settlement (scale 1:2)

Zerzura has never been found, and probably never will be. BAGNOLD³³, however, wrote: "I like to think of Zerzura (...) as an idea for which we have no apt word in English, meaning something waiting to be discovered in some out-of-the-way place. (...) For Zerzura can never be identified. (...) As long as any part of the world remains uninhabited, Zerzura will be there, still to be discovered." And HARDING KING³⁴ concluded: "There are still many problems that remain unsolved as to 'what lies hid behind the ridges' in the vast area that we know as Libyan Desert, and speculation is so full of fascination, that it seems almost a pity that those problems should ever be solved."

Abstract

This article contains a first extensive description of Umm el-Dabadib, a large settlement which lies at the northern border of the Kharga Oasis (Egypt). The visible remains consist of a small but impressive fort surrounded by a Fortified Settlement, a Northern Settlement, scattered ruins, an extensive necropolis of rock-cut tombs and a remarkable subterranean aqueduct. The site, which has never been studied or excavated, seems to provide mainly Roman and Coptic material, although an earlier occupation, at this stage, cannot be excluded. Umm el-Dabadib lay along the ancient caravan route which linked Dakhla and Kharga across the small oasis of 'Ayn Amur, where a little temple was erected. This article also contains a short report on the visit paid to 'Ayn Amur exactly 90 years after WINLOCK, who reached the site by camel and recorded its archaeological remains.

³³ *Ibid.*, pp. 282–284.

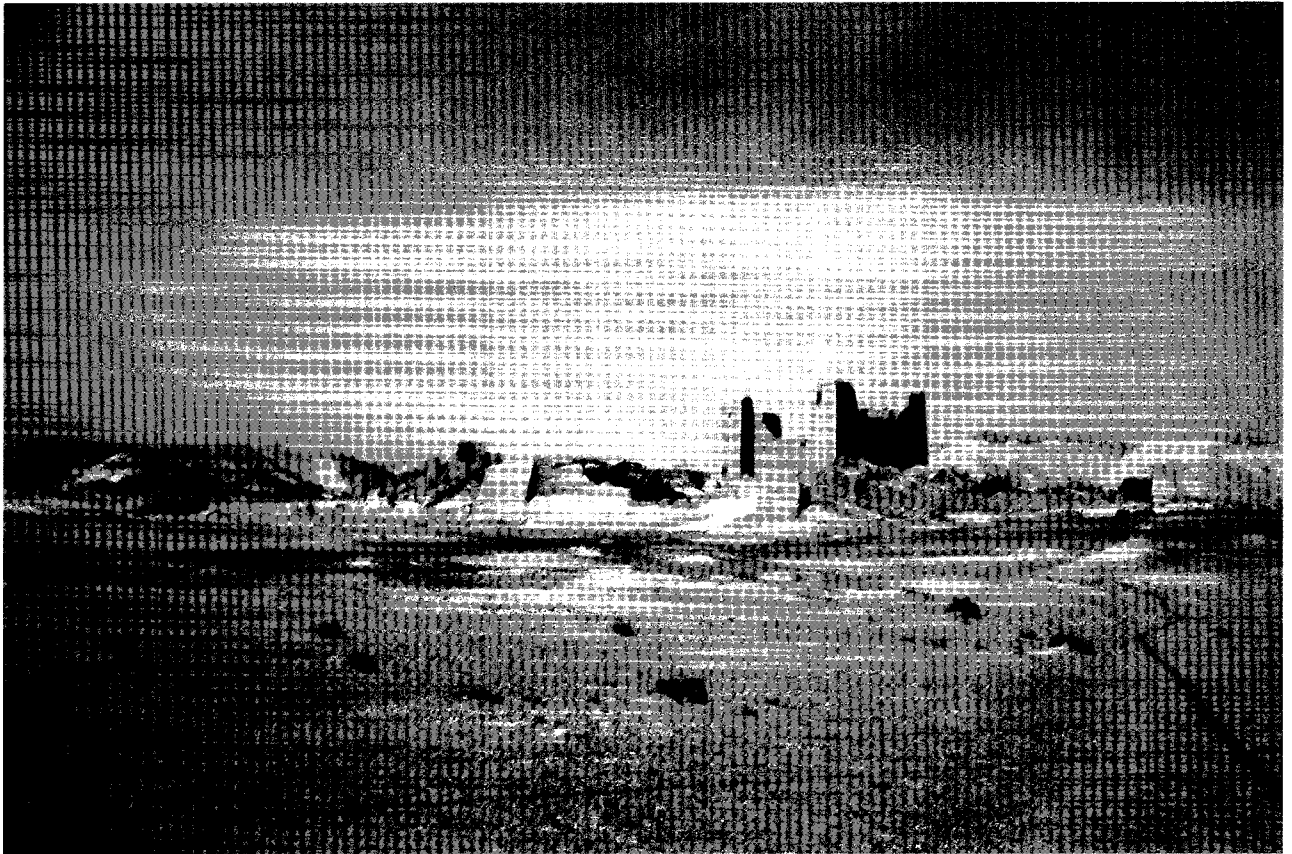
³⁴ *Ibid.*, p. 11.



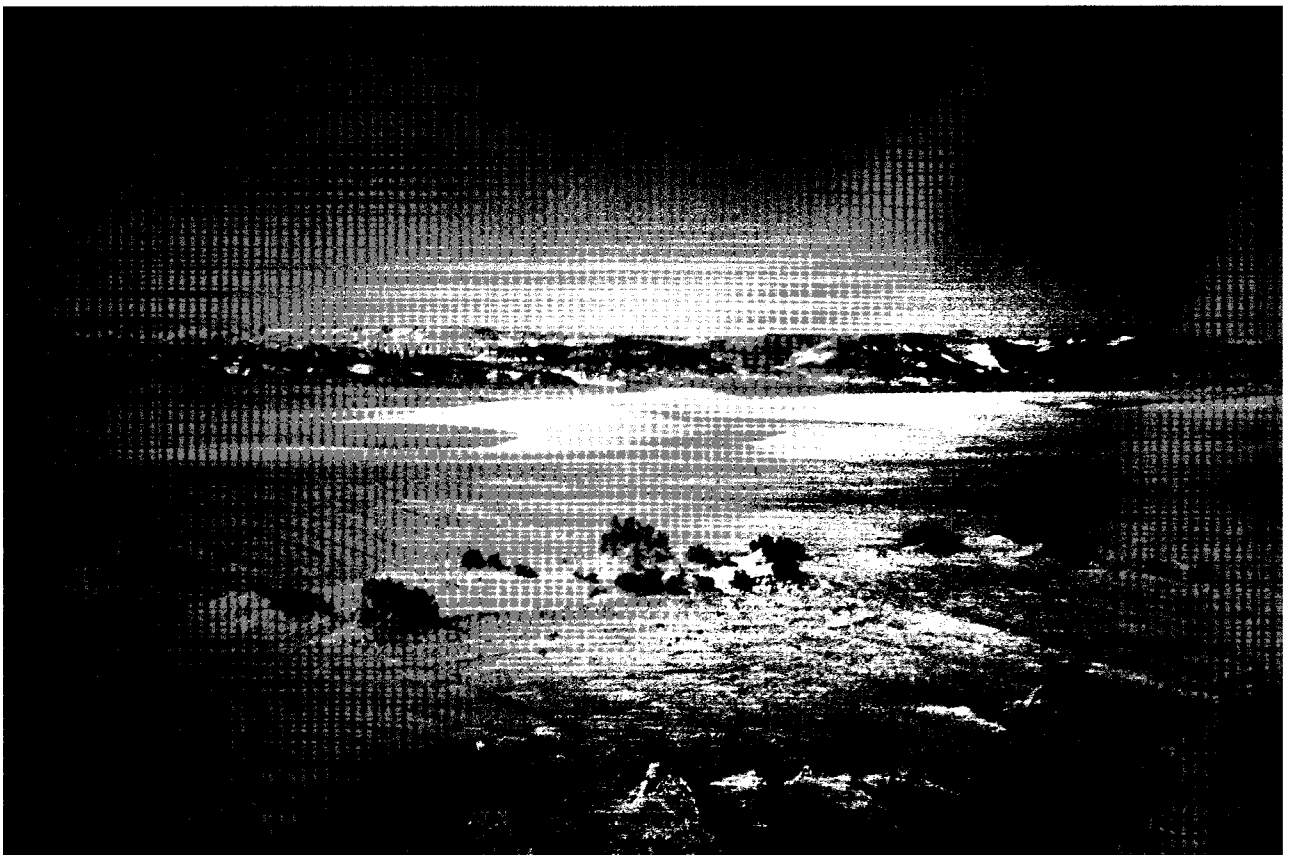
a) South-west view of 'Ayn Amur, photographed in 1998



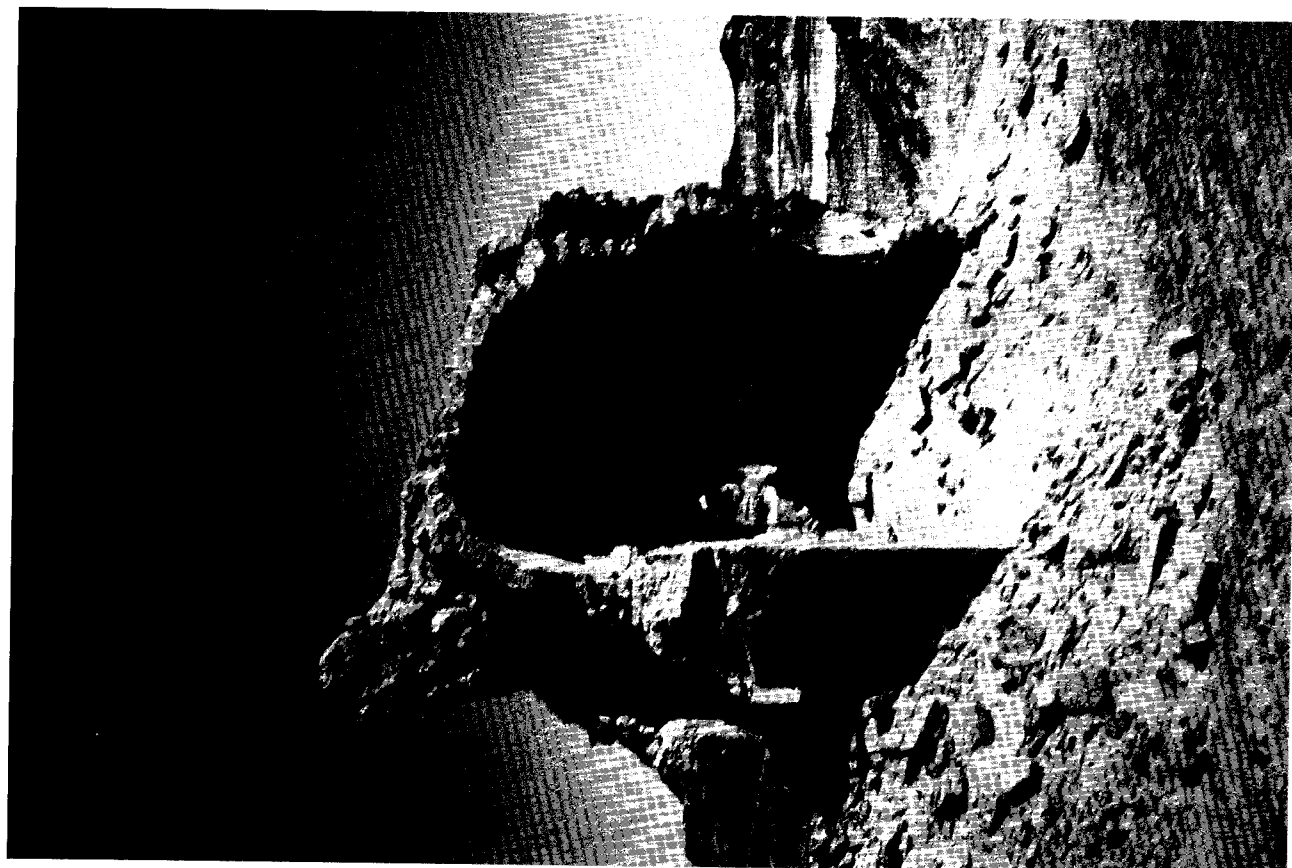
b) South-east view of 'Ayn Amur, photographed in 1998



a) Umm el-Dabadib: south-east view of the Fortified Settlement



b) Umm el-Dabadib: western *birkeh* and cultivations seen from the fort



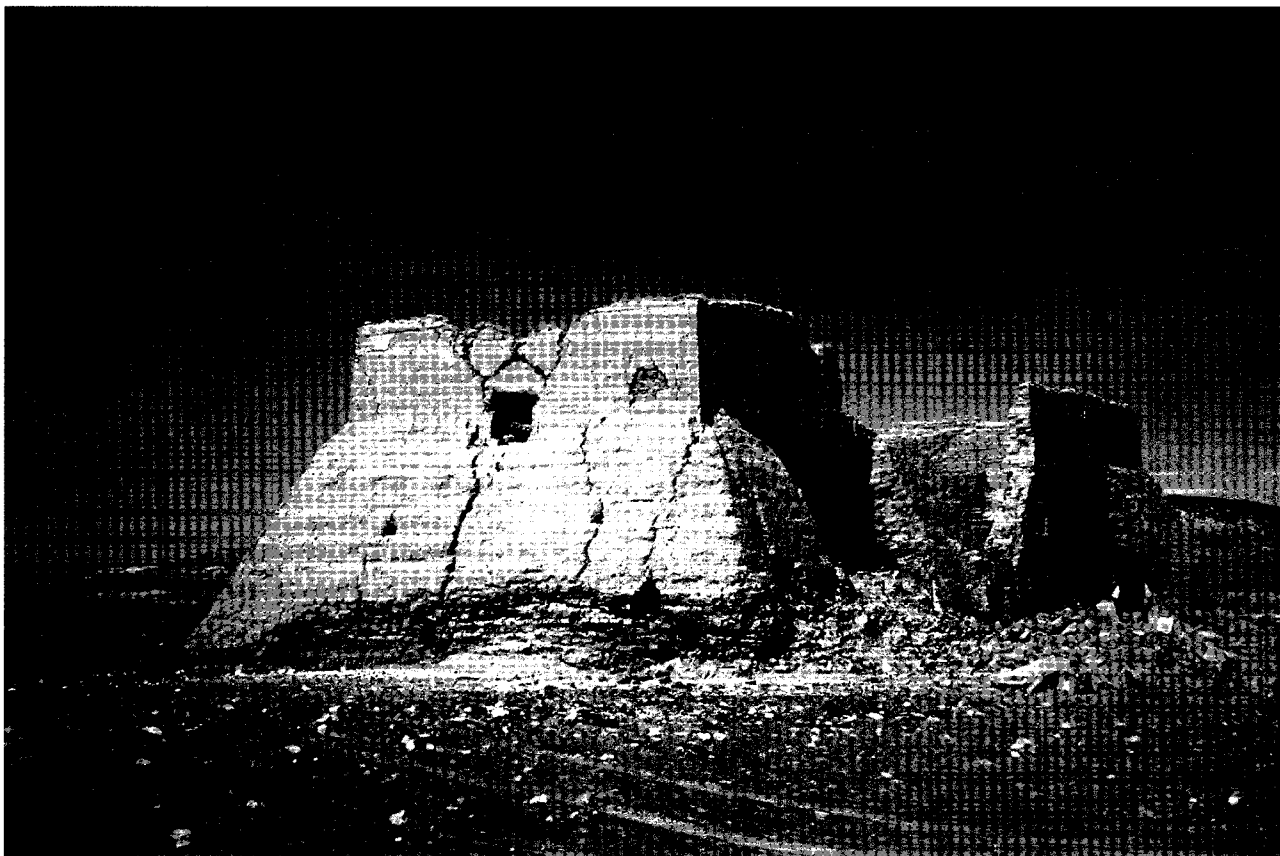
b) Umm el-Dabadib: interior of Chapel A – the Coptic inscription (shown in fig. 6) is visible on the left



a) Umm el-Dabadib: south-east view of the fort



a) Umm el-Dabadib: north-east view of the Northern Settlement



b) Umm el-Dabadib: south-east view of Chapel B



a) Umm el-Dabadib, subterranean aqueduct: vertical shafts at the beginning of the first branch



b) Umm el-Dabadib, subterranean aqueduct: open-air conduits at the end of the first branch

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