

# North Kharga Oasis Survey 2003 Preliminary Report: Umm El-Dabadib

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With contributions by  
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(Plates 53–54)

The third season of the North Kharga Oasis Survey (NKOS) took place in January 2003 and focussed on the late Roman settlement of Umm el-Dabadib. The impressive remains of this site lie along the Darb Ain Amur, one of the two ancient caravan routes that connected Kharga and Dakhla Oases. It is situated about 13 km from Ain Lebekha and 45 km from Ain Amur (Fig. 1).

The primary aim of NKOS is to explore the northern section of the Kharga Oasis and to record its antiquities, moving from north to south. The 2002 season was dedicated to the survey of the northernmost area (Ain Gib, Qasr el-Sumayra, Maghatta), down to the fort of Mohammed Tuleib<sup>1</sup>. The latter, together with Ain Lebekha, probably marked the intersection where one of the branches of the Darb Ain Amur departed towards Dakhla Oasis from the central axis of the oasis, where the Darb el-Arbain (the Forty Days Road) ran along a north-south direction. As the area of Ain Lebekha has been investigated in the past by several European and Egyptian teams<sup>2</sup>, a detailed study of this area would be redundant, and NKOS moved its operations westwards to the site of Umm el-Dabadib for its 2003 season.

This site was briefly described by H. W. BLUNDELL, JOHN BALL, HUGH BEADNELL, GERTRUDE CATON-THOMPSON, AHMED FAKHRY, and then in some detail by CORINNA ROSSI<sup>3</sup>, but the 2003 season of NKOS may be considered the first thorough archaeological study of the remains. This report contains the preliminary results of this investigation, and hopes to provide an initial description of this complex and rich site, that shows similarities but also significant differences in comparison with other contemporary sites in the oasis.

<sup>1</sup> S. IKRAM/C. ROSSI, *North Kharga Oasis Survey 2001–2002 Preliminary Report: Ain Gib and Qasr el-Sumayra*, with contributions by A. J. CLAPHAM, A. DUNSMORE, R. KNISELY-MARPOLE, A. ROWE, I. SCHACHT and N. WARNER, in: *MDAIK* 60, 2004, pp. 69–92 (hereafter cited as IKRAM/ROSSI, in: *MDAIK* 60).

<sup>2</sup> M. REDDÉ, *Sites militaires romains de l'oasis de Kharga*, in: *BIFAO* 99, 1999, pp. 377–96, especially pp. 390–1; N. GRIMAL, *Travaux de l'IFAO*, in: *BIFAO* 92, 1992, p. 237 and in: *BIFAO* 93, 1993, p. 463; Members of the Kharga Inspectorate, personal communication.

<sup>3</sup> H. W. BLUNDELL, *Notes sur une excursion à Khargueh, Dakhleh, Farafrah at Behariyeh*, in: *Bulletin de la Société Khédiviale de Géographie* 4, 1895, pp. 273–5, J. BALL, *Kharga Oasis: its topography and geology*, Geological Survey Report, Cairo 1900, pl. 3; H. J. L. BEADNELL, *An Egyptian Oasis. An Account of the Oasis of Kharga in the Libyan Desert*, London 1909, pp. 171–85 (hereafter cited as H. J. L. BEADNELL, *An Egyptian Oasis*); G. CATON-THOMPSON, *Kharga Oasis in Prehistory*, London 1952, p. 12, fig. 2; C. ROSSI, *Umm el-Dabadib, Roman settlement in the Kharga Oasis: description of the visible remains. With a note on 'Ain Amur*, in: *MDAIK* 56, 2000, pp. 235–52 (hereafter cited as C. ROSSI, in: *MDAIK* 56).

### The methodology

As the combination of GPS (Global Positioning System) and theodolite survey that had been experimented with during the 2002 season proved to be reliable and successful, the same method was also employed in the 2003 season. The area with the most significant concentration of archaeological material was outlined and surveyed by theodolite, whereas distant features and long lines of scattered remains, such as the aqueducts, were recorded with a GPS. A number of points were surveyed with both systems in order to link the two sets of data and to correct the orientation.

Due to their different characters, slightly different strategies were adopted to survey the Northern and 'Fortified' Settlements. Both shared the complication of having the corners of buildings obscured by sand, making an accurate survey of every house within the settlement impossible. The Northern Settlement differs from the 'Fortified' as its houses are separate entities, while those of the 'Fortified' Settlement showed no interruption between the various buildings, as they were possibly connected by narrow covered passages, that were incorporated inside the constructions. Thus, in the Northern Settlement the domestic units that were better preserved and exposed were studied in detail, and classified into models which were then used to identify the more ruined constructions. Whenever it was possible, the exposed corners of the various buildings were included in the theodolite survey. In the solid mass of the 'Fortified' Settlement, it was possible to identify only a few distinct units, which were surveyed in as much detail as was possible, despite their uncertain boundaries. Thus, the theodolite survey was limited to using a minimal number of points as landmarks, such as the corners of the fort and the external corners of the enclosure wall. The remainder was surveyed using a laser Distomat.

Several cemeteries were located and investigated, with special attention to the typology of the graves. Human remains were studied *in situ*, while small finds and pottery collected in the cemeteries were studied, photographed, drawn when appropriate, and then transported to the Kharga Inspectorate. The same method has been adopted for the ceramics and small finds from the settlements and other ruins. Controlled collections of pottery were carried out in the two settlements and near the well, and were integrated by random surface collections. Archaeobotanical samples were collected from several ancient and modern fields and from various buildings. Mud-bricks from the Temple, the Tower, the Church, the 'Fort' and two cemeteries were also analysed. The area surrounding the main archaeological area was explored on foot and by car, and any important feature was recorded by means of a GPS.

### The site

The main results of the 2003 season provide a significant improvement in our knowledge of the site, although much still remains to be discovered here. The area covered by the 2003 survey is about 7 km long and 3 km wide. Its elongated shape, as in the case of the complex Gib-Sumayra-Maghatta, surveyed in 2002<sup>4</sup>, depends on the geology of the terrain and the method used to extract water from the rock<sup>5</sup>.

<sup>4</sup> See IKRAM/ROSSI, in: MDAIK 60, Fig. 1.

<sup>5</sup> For a comparison of the use of this subterranean system, see H. J. L. BEADNELL, *An Egyptian Oasis*, pp. 171–85 and I. SCHACHT, *A Preliminary Survey of the Ancient Qanat System of the Northern Kharga Oasis*, in: MDAIK 59, 2003, pp. 411–23.

The name that is applied to the whole site, Umm el-Dabadib, is sometimes used only for the northernmost shaft of Aqueduct 3, whilst the name of Ain Elwan is used on maps to indicate a spring located more to the south. This may correspond to the Well or, more likely, to a water source lying to the north of the Northern Settlement, possibly corresponding to one of the two groups of palm trees that stand among the bushes. NKOS looked for archaeological evidence in this area, but the nature of the terrain, a combination of thick bushes and tiny sand dunes, obliterated everything.

Umm el-Dabadib can be roughly divided into five different areas: the Northern Settlement, the Eastern Settlement, the 'Fortified' Settlement, the Western Cultivation, and the cemeteries. A major feature that unites these diverse areas is a large underground aqueduct system, also called *qanat*, consisting of horizontal tunnels each about 2.5 to 3.5 km long, served by a series of vertical shafts. These tunnels were quarried in the sides of the wadis and collected the water trapped underground (see ROSSI below).

The main group of archaeological remains is concentrated just south of the mouth of the various aqueducts, and covers an area of about 2 km long and 1 km wide. During the course of this season several new discoveries were made, including a small hermitage located along Aqueduct 4, several cemeteries, and at least five prehistoric sites. Additionally, Chapel A was identified as a Christian church, while Chapel B was identified as a temple decorated in a Romano-Egyptian style (see IKRAM/WARNER below)<sup>6</sup>. A relative chronology between the Northern and the 'Fortified' Settlement was also established, and details of the agricultural aspects of the economy were clarified.

The area that has been surveyed by theodolite includes the three main settlements (Figs. 2, 3). Two are simply designated by their cardinal positions (the Northern and the Eastern Settlement), whilst the third is called 'Fortified' Settlement because of its enclosure wall and buttresses. We decided to respect the intentions of the ancient builders, and retained the adjective 'fortified', but it must be clear that those defences were never really meant to sustain any major attack, and were built just to give an impressive and defensible appearance to the site. For the same reasons, inverted commas will be also used for the 'Fort', that is likely to have been an administrative building rather than a proper military construction (see ROSSI below).

The northernmost feature that NKOS located is a little shelter half-way up on the scarp, perhaps a hermitage or a guard-post (no religious signs were found), where some intact fourth century AD pots were recovered. A hermitage was certainly found along Aqueduct 4, together with some complete pots (see WARNER and GASCOIGNE below). The study of the ceramics from various parts of the site was crucial to the reconstruction of the chronology of the site, and suggested a third century date for the Northern Settlement and a fourth century date for the 'Fortified' and the Eastern Settlements (see DUNSMORE below). The Well near the Temple and some tombs, however, suggest a pre-Roman occupation, possibly dating to the Ptolemaic Period or perhaps earlier (see IKRAM and GASCOIGNE below).

In addition to the five aqueducts already identified, the survey found two more, called 6 and 7 (see ROSSI below). These appear to be undisturbed and are, in fact, nearly invisible. Only a few shafts were found, but many more may be buried under the sand. All the aqueducts were explored first by car and then on foot, and the presence of pottery, spoil heaps and of any other important features were marked on detailed maps. It is more than possible that other *qanats* are spread throughout the area, and will be revealed with the movement of the sand dunes that are scattered over the site.

<sup>6</sup> Chapel A and B were the temporary names given to these ruins in C. Rossi, in: *MDAIK* 56, pp. 343 and 346.

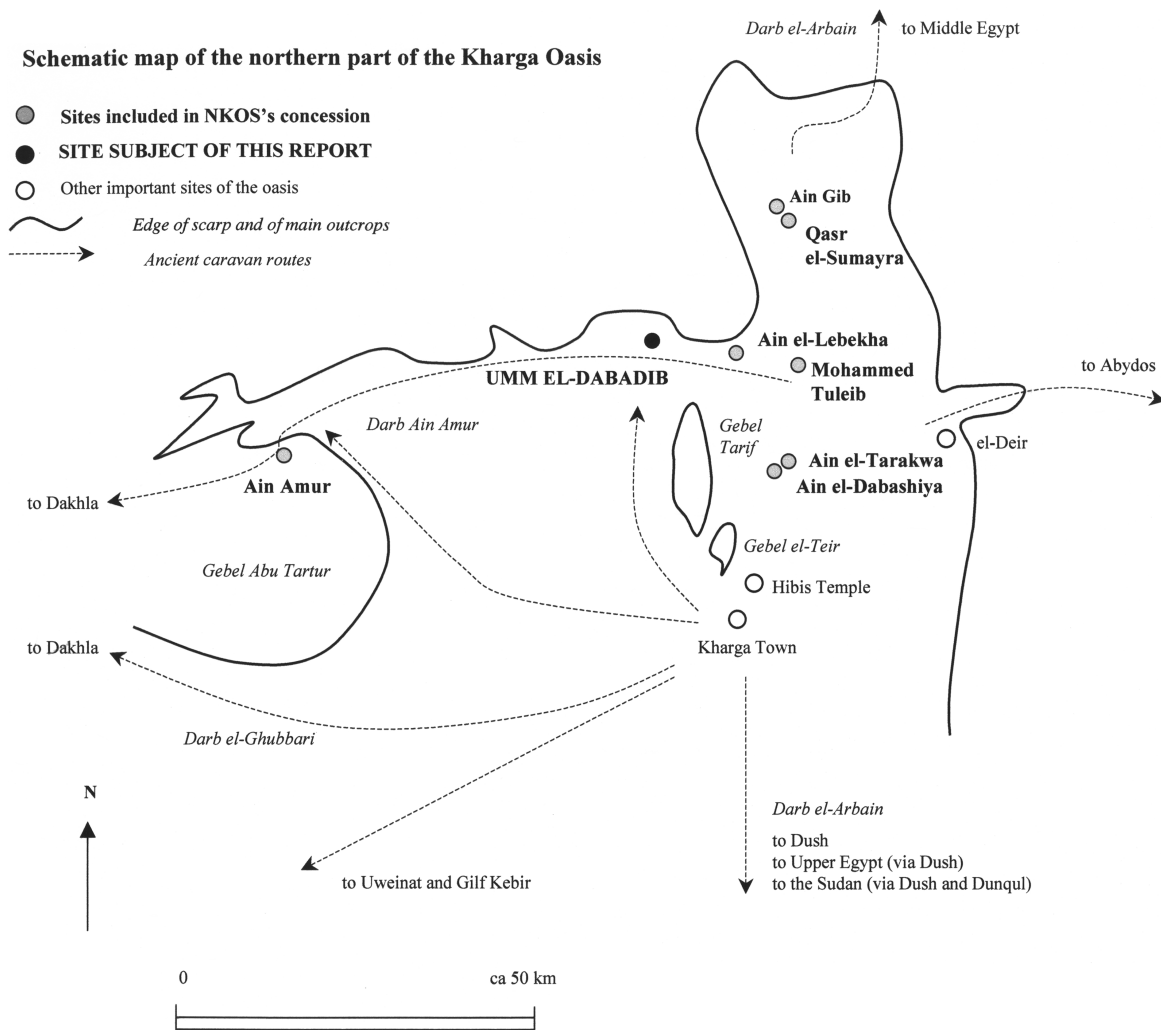


Fig. 1: Schematic map of the northern area of the Kharga Oasis, showing Umm el-Dabadib and other major sites included in NKOS's concession (drawing by C. Rossi, © NKOS)

The area to the west of the 'Fortified' Settlement is particularly interesting as it contains the virtually intact remains of a large cultivation, where the plots are still visible. It is about 1.6 km long, and was fed by Aqueducts 1 and 2. Among the archaeological remains of this area, NKOS located a group of shelters including a round mill, a cemetery (named H, see IKRAM below) and some unique examples of the original terracotta canals that conveyed the water to the fields. About 3 km to the south of the main group of remains, NKOS recorded the existence of a large and well-preserved prehistoric site, that a few years ago was the object of an unpublished study by F. HASSAN<sup>7</sup>.

<sup>7</sup> F. HASSAN, personal communication.

The plain between this site (the southernmost point of the survey) and the main group of ruins of Umm el-Dabadib is relatively empty.

This site and its architecture can be linked to other contemporary sites in the main part of Kharga Oasis, especially that of the complex Gib-Sumayra-Maghatta<sup>8</sup>. Common elements are the time period (the fourth century AD), the architectural techniques, the underground *qanat* water systems and the defensive aspect of the constructions. Traces of a single strategic design involving all these sites can be clearly detected in the repetition of the same domestic unit in Settlement A (south of Qasr el-Sumayra), at Ain-Lebekha and at Umm el-Dabadib (see WARNER below). Amongst the other sites in the area, Ain Lebekha might have been similarly designed with a fortified living area surrounding the fort. The settlement associated with the Lebekha fort is clearly exposed along the east side, but more buildings may be buried on the west, and it is possible that the settlement surrounded the fort completely. It is difficult to establish whether or not the site was provided with an enclosure wall, as no traces are visible on the ground.

### Conclusions

Leaving aside the prehistoric sites, the sequence of occupation at Umm el-Dabadib, as it has been reconstructed so far, starts with the Well (a natural spring?), that may have been a watering point along the Darb Ain Amur at least since the Ptolemaic period, if not earlier, according to the ceramic evidence (see GASCOIGNE below). It is quite possible that a religious foundation may have been established in the vicinity of a naturally occurring water source in the desert, possibly together with a small settlement. The Temple beside the Well appears to be Roman, possibly dating to the second century AD or thereabouts, based on parallels with similar structures found in Dakhla Oasis<sup>9</sup>. However, without excavation it is difficult to establish if it incorporates or covers an older building.

If an earlier settlement existed, it is possibly covered by later habitation, or lies beneath the vegetation and dunes that are north of the Northern Settlement, probably around another water source. Clearly, information concerning it cannot be retrieved without excavation. Concerning the date of this hypothetical earlier installation, the characteristics of an exposed rock-cut tomb of cemetery B, quarried in the area of the Temple, are compatible with an early Ptolemaic date (see IKRAM below).

At any rate, in the third century AD a well-built settlement was installed to the west of the temple. Around the beginning of the fourth century, the area was the focus of a major building project, and the 'Fortified' and the Eastern Settlements came into existence. Establishing a date for the aqueducts is virtually impossible, but it makes sense to conclude that a major effort such as quarrying over 17 km of underground tunnels was made in connection with the foundation of a major settlement (see ROSSI below), with perhaps an initial investment made during an earlier period of occupation.

The suggestion of an early fourth century date for the foundation of the 'Fortified' and the Eastern Settlement and their ancillary structures is based on a comparison with the events that were

<sup>8</sup> See IKRAM/ROSSI, in: *MDAIK* 60, pp. 69–92.

<sup>9</sup> O. KAPER in: S. QUIRKE (ed.) *The Temple in Ancient Egypt*, London 1997, pp. 204–15, and personal communication.

taking place in Egypt within the frame of the Roman empire. Diocletian, an emperor who made of reinforcing the boundaries of the empire one of his main tasks, travelled to Egypt at the very end of the third century. His visit seems to have triggered the construction of several fortresses and forts all over Egypt, including probably el-Deir in the Kharga Oasis. Since the ceramics found at the complex Gib-Sumayra-Maghatta, at Ain Lebekha and at Umm el-Dabadib point to a fourth century date, it is possible to suggest that all these sites own their origins, broadly speaking, to the Diocletianic program of reinforcement of the border of the Roman empire.

Umm el-Dabadib appears to have been occupied at the very least for about a century, and at most for three, though perhaps less intensely in the earlier periods. The reasons to suggest this time-span depend on a combination of data provided by various aspects of the survey. Apart from the Hermitage along Aqueduct 4 (see GASCOIGNE below), there is no clear evidence of fifth century ceramics. Moreover, the 'Fortified' Settlement shows little sign of modification and re-use, thus suggesting a relatively short occupation. On the other hand, that a large community lived at Umm el-Dabadib for at least a century is suggested by the significant extent of the various cemeteries. The settlements do not show any trace of destruction, and it seems that they were abandoned peacefully. One reason may have been the increasing difficulty for the central Roman authorities to sustain remote settlements such as this. Another reason may have been a drop in the water table towards the end of the fourth century that made it impossible to maintain the extensive cultivations that could support a large population. The result may have been a gradual and final abandonment of the site.

### The Settlement and the 'Tower'

This site possesses by far the largest number of standing remains of domestic buildings in the Oasis, perhaps by virtue of its remoteness. The occupation of the site has been dated through surface pottery finds to the third and fourth century AD (see DUNSMORE and GASCOIGNE below). After the site was abandoned, it was resettled in the early twentieth century when part of the ancient system of aqueducts was cleared and put into operation again. This last period of occupation seems to have been short lived, and the inhabitants seem to have merely adapted a few of the surviving structures at the northern end of the site to their own needs, rather than embarking on any new construction. Although a Sheikh's tomb (Sidi Muhammad Abu Barakat) is marked on the 1946 1:500,000 series map of the area, no evidence for this tomb survives on the ground today. The late Roman settlement occurs in three distinct areas of the site (the Northern Settlement, the Eastern Settlement and the 'Fortified' Settlement), with ancillary isolated structures in peripheral areas (Figs. 2, 3).

### Northern Settlement

This settlement lies approximately 750 meters to the north of the fort in an area defined by a low ridge to the east (containing rock cut tombs) and a line of large acacia trees to the west, which follow the course of an ancient aqueduct. The buildings of the settlement are generally aligned north-south, and most of their east-west walls have collapsed due to the prevailing wind, leaving north-south walls standing amid large masses of fallen masonry. Although many of the buildings were originally of two storeys, only a few examples of these structures have survived with internal staircases. The structures that were clearly re-used in the twentieth century are located at the northern end of the settlement, close to areas of re-cultivation associated with Aqueduct number 3.

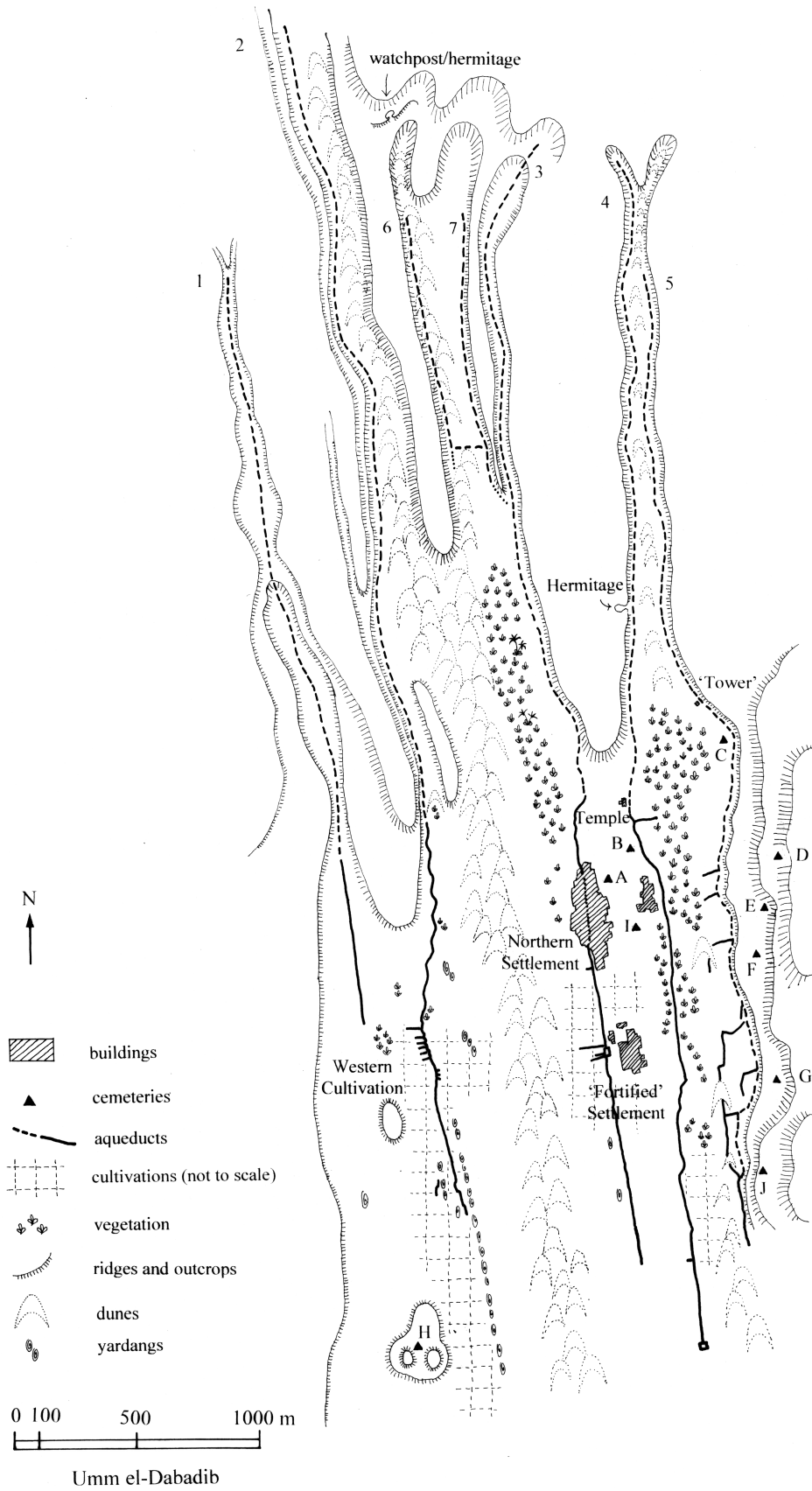


Fig. 2: General sketch map of the archaeological area of Umm el-Dabadib (drawing by C. Rossi, © NKOS)

Of all the settlements at Dabadib, this seems, from pottery analysis, to be the earliest, and the architectural units employed here are of a typology different to that seen in the 'Fortified' Settlement around the fort, though they employ the same mud-brick construction methodology. These units are characterized by a single large vaulted room (oriented north-south or east-west) with one flank wall articulated with two arched doors that lead into rooms with vaults oriented in the opposite direction to the main room. In more elaborate examples, the doors leading to the subsidiary spaces alternate with arched niches. The same unit can be seen used in isolated buildings, as well as in more complex combinations. Another identifiable type of structure more closely resembles a storehouse. This is a linear building with a long row of repetitive barrel-vaulted chambers on two storeys, linked by a central staircase. Evidence of small-scale industry can also be found within the settlement in the form of a number of kilns or ovens.

#### 'Fortified' Settlement

The fort at Umm el-Dabadib is surrounded by a built up area of approximately 100 × 100 meters that in places retains a mud-brick perimeter wall with buttresses standing to a height of 4 meters (Fig. 4, Pl. 53a). This gives the settlement a fortified appearance, but there is little doubt that the wall, being often just one mud-brick thick, could not have withstood any assault. Moreover, there seems to be no enclosure wall at all along the northern edge. The severely damaged remains of a Coptic church (see WARNER below) stand to the east of the fort. The settlement itself is laid out on relatively flat ground, rising to a small hill in the northern section. One piece of the pre-existing topography, a large sandstone rock, was used as the base for the north-east corner of the perimeter wall.

Although the settlement is laid out in an orthogonal manner on a north-south orientation, it is difficult to determine a regular street layout, and it appears that the buildings were constructed as individual blocks following a heterotopic pattern. The streets may have been little more than narrow passageways threading through the buildings, and partially or totally covered by them. Some examples of these vaulted passages leading from outside the perimeter wall into the interior survive. This arrangement would then have been similar to that found in mediaeval towns in the Dakhla Oasis such as Qasr and Balat, where it confers the great advantage of shade.

The function of the buildings in the settlement appears to have been exclusively for domestic or storage purposes, with no public spaces differentiated aside from the Church. Many of the buildings are of two storeys, and some examples of three storey structures also survive. A number of well preserved staircases, built from mud-brick arches with sandstone treads, can be seen occupying separate stairwells leading to the roof level. Kitchen emplacements have also been found at higher levels, though it is unclear whether these spaces were open to the sky or vaulted. A number of ancillary industrial buildings or areas can be found to the north of the settlement. These include kilns, storage bins, grinders (some of Aswan granite), and tanks for the processing of liquids (oil or wine?). The positioning of the kilns is peculiar, as the prevailing wind from the north would have carried smoke directly into the main settlement.

At least five units have been detected which contained the same distinctive design of room (see Fig. 4). This room, which is of cubic proportions, has a tri-partite division. Each flank is vaulted by wide barrel vaults springing in one direction, and a third much narrower vault springing in the opposite direction covers the central axis. Both axes are emphasized by decorative wall niches. The orientation of these rooms does not seem to be critical as the central axis could be either north-



south or east-west. One surviving structure demonstrates that this type of room could also be stacked vertically. Parallel examples of this typology have been detected in the settlement adjacent to the fort of Ain Lebekha and 'Settlement A' to the south of Sumayra, both of which are located in the main depression of the oasis<sup>10</sup>. The formality of the design of this unit, and its replication at other centres in the oasis suggests that a definite architectural model was being followed by the builders.

### Eastern Settlement

At roughly the same distance from the 'Fortified' Settlement as the Northern Settlement, but separated from the latter by a low ridge, stand the Eastern Settlement and the Temple (Fig. 3). The visible built-up area is considerably smaller than that of the Northern Settlement, measuring approximately 75 m east to west and 125 m north to south, but its component structures are also oriented north-south. Here there are two types of structures: not only units with pairs of vaults opening into a larger vault oriented in the opposite direction, but also linear ranges of vaults. The most obvious of these has two storeys, and preserves the remains of storage bins on the upper floor. These bins (also seen at the 'Fortified' Settlement and at Beleida, another late-Roman settlement to the north-west of Kharga Town) were probably for grain and are roughly square compartments, some 80 × 80 cm and 60 cm deep, separated by thin walls of mud or mud-brick.

To the east of the settlement runs a much destroyed water channel (the extension of Aqueduct 4). Between the two is what appears to be an industrial area, which is marked by at least one kiln, areas of slag, and buildings under a large mound of pottery sherds and stone chips. To the west, standing upon the ridge are the remains of a pigeon tower. This had a square core with mud-brick niching for the birds, which was surrounded by a narrow access passage (and staircase), and an outer wall with more internal niches for birds. Similar examples of such a pigeon tower can be seen at Ain el-Dabashiya and below the monastery of Mustafa Kashef in the main oasis. The pigeon tower is founded on sandstone, and the area around it may have also served as a small quarry for the removal of sandstone for lintels and stair treads intended for construction. The tower is also surrounded by a conspicuously large quantity of potsherds. Groups of rock cut tombs are also located in the edge of the sandstone bluff to the north and south of the pigeon tower.

Without excavation it is difficult to establish a chronology for this site and its counterpart settlements to the south and the west, and a sequence for their construction. Architecturally, the 'Fortified' Settlement is distinguished by its dense layout defined in places by a perimeter wall and by the presence of sophisticated cross-vaulted units. The Northern and Eastern Settlements were clearly built to take advantage of water channels, and structures are entirely absent from the ridge between them that seems to have been reserved for burials.

### The 'Tower'

On the east side of the wadi containing Aqueducts 4 and 5, at approximately the same latitude as the Temple, stand the ruins of an enigmatic tower, whose function is unclear (Fig. 2). The orientation of the tower seems to have been determined by having been built upon a natural sandstone slope. It is a two storey structure, approximately 6.5 m square, whose upper floor is ruined. A par-

<sup>10</sup> IKRAM/ROSSI, in: *MDAIK* 60, pp. 80–1.

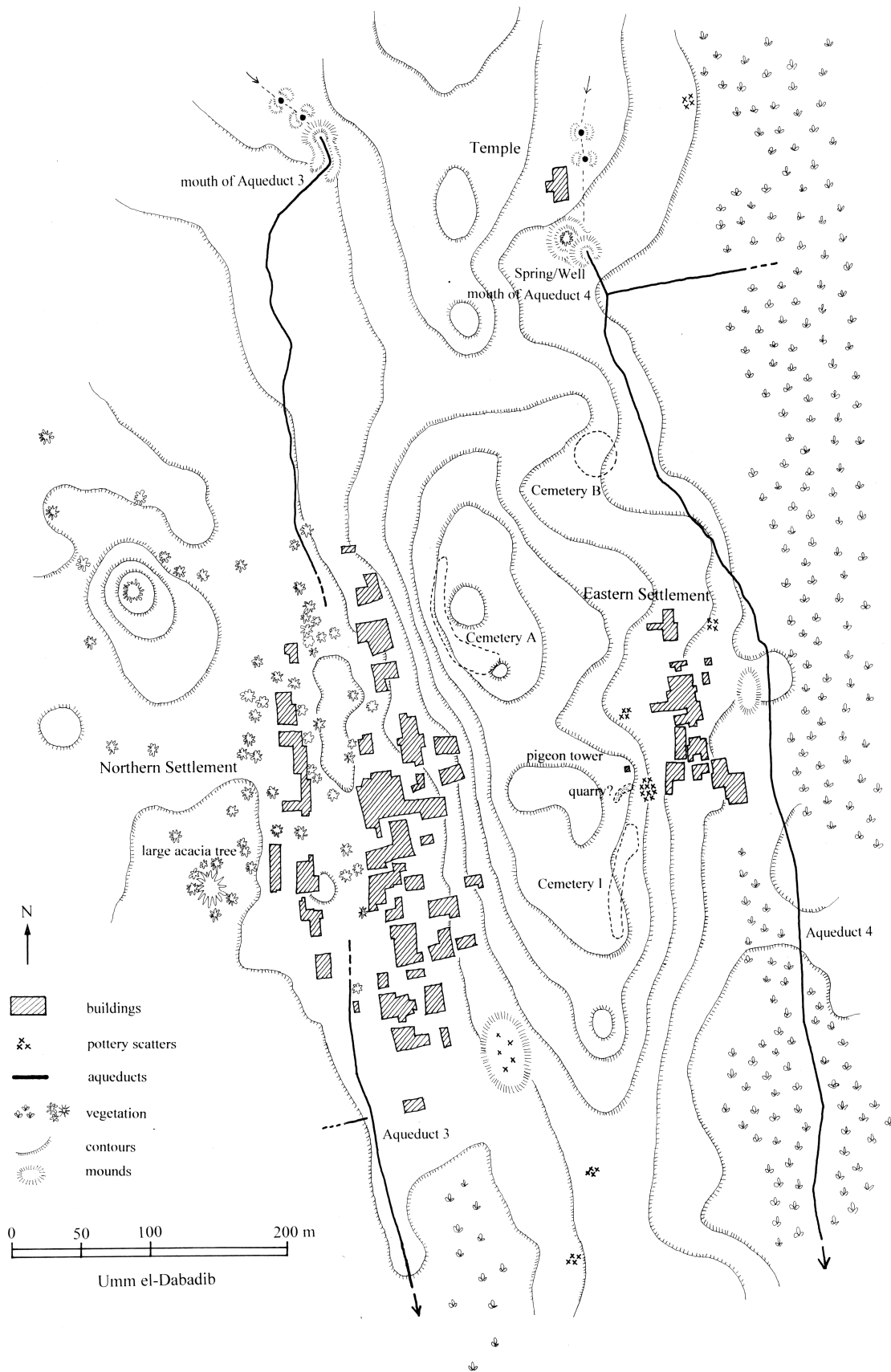


Fig. 3: Sketch plan of the Northern Settlement, the Eastern Settlement and the are of the Temple (drawing by C. Rossi, © NKOS)

tially intact vaulted staircase is located on its south-east corner. A ring of very small, almost cupboard-like spaces runs around the perimeter of the building with traces of burning upon their interior walls. Whether the central court was open or vaulted can only be a matter of speculation at present, although it seems certain from the position of a large fallen sandstone lintel on the south-west side that the original entrance was in this position. The most curious feature of the structure, however, and probably the key to understanding its function is its relationship to the aqueduct (number 5) that it appears to straddle. Both to the north and to the south of the building are rectangular aqueduct shafts cut through the sandstone bedrock. One shaft to the southeast is directly connected to the stairwell of the building by means of a rock-cut channel that is still partially roofed by sandstone slabs. It is difficult to understand the logic of this, as channel implies use as a drain for liquids running out of the building.

N. W.

### The 'Fort'

The centre of the 'Fortified' Settlement is occupied by a well-built building, square in plan with two rectangular towers protruding from the south side (see Fig. 4 and Pl. 53a). Like the other constructions in the area, it consists of a sequence of small vaulted chambers, each provided with at least one niche. It is entirely built of mud-bricks, with the addition of wooden lintels for the doors, and stone slabs for the treads of the staircase. Stone chippings and occasionally pottery sherds (undatable) were used as wedges in the vaults. The construction techniques and the design of some architectural details strongly resemble the remains of Qasr el-Gib and Qasr el-Sumayra<sup>11</sup>.

At some point the original construction appears to have been surrounded by a sloping buttress, reinforced at the corners by large, roughly shaped boulders. Until a few years ago, those of the north-east corner were still *in situ*, but then the central one tumbled down, probably due to an attempt by some visitor to climb the fragile ruins and reach a window of the first floor. In 2003 NKOS re-positioned the heavy stone with the support of the Pan Arab camping crew.

The external wall of the 'Fort' was built in separate sections, divided by vertical junctions that run all the way from the ground to the top floor. Only one of these sections has collapsed, the northernmost along the western side, and the adjoining northern wall is slightly tilted towards the outside. Establishing a date for the collapse is impossible, but it must be said that the upper layer of the debris is smooth and uniform, as if it had been exposed to the weather in its present shape for a long time.

DIETER ARNOLD kindly provided copies of the slides that he took in 1978 when he visited the site, and by comparing these images with the present state of the 'Fort', nothing seems to have changed significantly in the last 25 years. In general, in the entire site, the only differences that are discernible are the collapse of a high arch in the 'Fortified' Settlement (traces of which are, however, still clearly visible) and of the upper level of a wall in the Eastern Settlement. The level of natural erosion of the site appears to be comfortably slow, but unfortunately the same cannot be said for the damage brought by occasional robbers (see the destruction of the Church in WARNER) and also by the increasing number of tourists that visit the area.

Like at Qasr el-Gib and Qasr el-Sumayra, the 'Fort' of Umm el-Dabadib was provided with one entrance only, from the south. The doorway was identical to that of Qasr el-Lebekha and Qasr

<sup>11</sup> IKRAM/ROSSI, in: *MDAIK* 60, pp. 76–79.

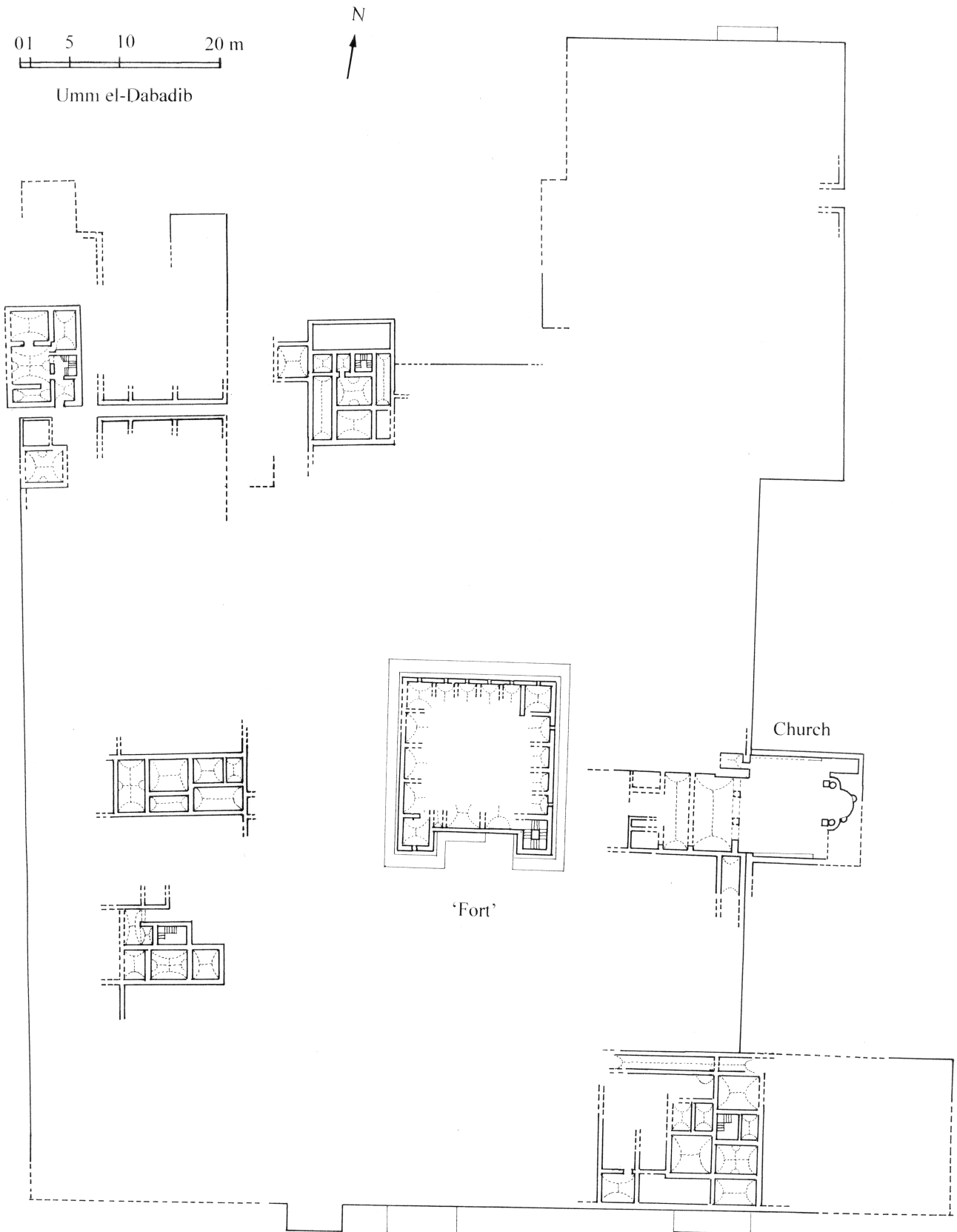


Fig. 4: Plan of the outline of the 'Fortified' Settlement, showing the 'Fort' and some house units (drawing by C. Rossi, ©NKOS)

el-Gib, and consisted of a stone lintel inserted under a mud-brick arch. Differently from Qasr el-Lebekha, where the broken stone is bare, the intact lintel of Umm el-Dabadib bears an incision in the shape of a Christian cross. The ground floor was windowless, and the rooms were probably entered from an internal courtyard. Windows started from the first floor, and in particular all the chambers facing north were provided with a small rectangular opening under the apex of the vault, to catch the cool northern breeze. The first, second and third floors have almost completely collapsed. The external wall, however, survives in some places to the level of the roof, and retains traces of the now vanished internal walls. It is therefore possible to reconstruct, at least in part, the internal arrangement of the building.

The presence of a courtyard is suggested by various elements, including the way in which the collapsed portion slopes down and then flattens in the centre of the structure. The internal open space was surrounded on all sides by a row of vaulted chambers, all slightly different in size and design from one another. This arrangement may have been identical on all floors, with a little difference in the dimensions of the chambers due to the progressive reduction of the thickness of both the internal and the external walls.

All the floors were served by the well-preserved staircase that entirely occupies the eastern tower. The stairs, developed around a central pillar, were provided with many niches and a few windows of differing designs. Especially important must have been the large window that still offers a splendid view of the southern plain from the second landing between the third and fourth floor. This window alone suggests that one of the functions of the 'Fort' was to keep an eye on the surroundings of the settlement. Indeed the external aspect of this construction is that of a little fort, but its internal arrangement and the absence of any real defensive devices suggest that its function may have been more administrative, than strictly military.

The presence of the cross on the lintel raises the question of whether the building may have started its life as a monastery. This hypothesis, however, appears to be in contrast with the established fact that the same domestic units were built at Settlement A (south of Qasr el-Sumayra), Ain Lebekha and Umm el-Dabadib. In two cases out of three (Settlement A and Ain Lebekha), these houses are strictly related with military installations, and it makes sense to conclude that also Umm el-Dabadib, at least at the beginning, was part of the same large-scale building program, evidently carried out for strategic purposes.

The presence of the cross may be explained as a slightly later addition. In fact, not long after the 'Fortified' Settlement had been completed a significant change in the religious beliefs of the community must have taken place, resulting in the addition of a Coptic church to the eastern portion of the settlement (see WARNER below). Considering that the 'Fort' may have been the main administrative building of the site, a cross on its lintel might have simply reflected the religious identity of the authority. The hypothesis that a monastery was then installed in the building remains a possibility, although no evidence has been found so far.

C. R.

## The Church and the Hermitage

### The Church

The presence of a church, the cross carved on the entrance of the fort (see ROSSI above) and the remains of the hermitage along Aqueduct 4 are clear signs that Copts lived at Umm el-Dabadib. The church (or at least a part of it) appears to be a later addition to the eastern range of buildings

in the settlement, and projects out from the mud-brick enclosure wall (a junction clearly visible on the south side of the nave). This church, like the Tempel to the north, has been seriously damaged by a large mechanical digger whose tracks remain visible at the site. A large part of the southern and eastern walls of the church have been destroyed, together with several mud-brick columns. The date of this act is unknown.

Despite its destruction, the church still possesses many noteworthy features. It is built out of mud-bricks laid in mud mortar, and is aligned east-west, as is traditional. At the eastern end of the church, a trefoil apse, slightly off the central axis of the building and covered by a semi-dome, was flanked by composite columns and piers (see Fig. 4). The apse is separated from the nave by a small step and is articulated with pilasters (two surviving, with a dado moulding), a cornice, and two levels of niches. Two mud-brick columns support the springing of the semi-dome, and the small spaces separating the columns from the structure behind it were occupied by small hemispherical niches (see Pl. 53b). On the west side, the columns are masked by two piers, that may have once supported for a double door frame, or wooden screen. There is no surviving evidence for a constructed altar.

A slight shift in the axis of the internal arrangement of the apse itself is a further argument for the portion of the church built beyond the perimeter of the settlement being a later phase of development. The apse is flanked to the north by a small vaulted room, and a second similar unit was clearly placed above this, even if no indication of how this upper level may have been accessed survives. It is on the outside wall of this room that a surviving graffito in Coptic was found and documented<sup>12</sup>. A similar arrangement of slightly larger rooms most likely occupied the area to the south of the apse, which has been destroyed.

Without further documentary or archaeological evidence it is difficult to reconstruct the original appearance of the nave in front of the apse. It was probably roofed by a series of domes on arches supported by circular plastered mud-brick columns, parts of which can be seen on the ground. Two plastered brick benches (mastabas) survive on the northern and southern sides of the nave. The nave of the church is separated from the remainder of the church to the west by a section of wall, which retains the springing of an arch. This leads to the supposition that the remainder of the wall was supported by two further arches resting on a pair of rectangular piers or columns made from mud-brick. This arrangement would have given the entrance to the nave a tri-partite façade. On the western side of this line of structure ran a large mud-brick vault, preceded by a much narrower vault of equivalent length and orientation. A jumble of collapsed smaller vaults and walls obscure the original entrance to the church adjacent to this.

### The Hermitage

A small monastic dwelling was discovered in the western edge of the wadi containing Aqueducts 4 and 5 (Fig. 2). This took the form of a rock cut cave, which was probably developed from an existing fissure in the escarpment edge at an elevation of some 10 metres above the floor of the wadi. The position of the hermitage, immediately next to what was clearly a well-used aqueduct shaft, meant that its inhabitants were adequately supplied with water. The cave today is substantially filled by wind-blown sand and large sections of the rock surface around its entrance have collapsed.

<sup>12</sup> C. Rossi, in: *MDAIK* 56, p. 344.

Despite this, the internal architecture and decoration is still clearly discernible, and the height of the cave can be estimated as a minimum of 2.1 m.

The walls of the cave have been deliberately shaped to provide roughly vertical surfaces into which have been cut a number of niches of varying sizes and emplacements for shelves. At the front of the cave, remains of an infill wall with a door and possibly a window were visible. This wall was constructed out of a mixture of pots embedded in mud, mud-bricks, stones and mud plaster. Traces of mud plaster on the rock face outside the line of this wall suggest that the area in front of the cave was also used in some way by its occupants.

The entire inside surface of the cave was roughly covered in a thin layer of mud plaster, with a coating of white lime plaster in selected areas such as door jambs. The rock surface of the lower part of the cave has a rough textured finish which suggests that this was intended to be a key for a thicker layer of mud plaster (now collapsed). The surviving door jamb retains a Coptic graffito and other minor painted or inscribed inscriptions can be seen within the cave itself. A number of traces of secondary occupation (which seems to have continued until recent times) are also evident. At the extreme rear of the cave, a blackened area on the roof over this later plaster indicates a fire emplacement, and the original end of the cave which was closed with a small mud-brick wall had been broken open to reveal a fissure extending back into the rock.

N. W.

### The Temple

A large mud-brick structure, hitherto referred to as Chapel B<sup>13</sup> has now been clearly identified as a temple on the basis of its painted decoration. The building is located some distance to the north of the Northern and Eastern Settlements, and to one side of a low spur of the northern escarpment, on line with Aqueduct 4. The site is adjacent to a spring, whose water was later channelled to serve cultivation areas in the wadi to the east and on to the south. Examples of pottery collected around the well have been tentatively dated to the Ptolemaic Period (see GASCOIGNE below). The location of Tempels next to water sources, that are a rare phenomenon in the desert, appears to have been a common practice in the oasis, as the northern temple of Ain Lebekha and the temples at Beleida also demonstrate. The association between temple and water may also reflect on the Egyptian idea of a sacred lake, a local example of which can be seen at Hibis Temple.

The temple of Umm el-Dabadib has been severely damaged due to structural failure and natural weathering. The most dramatic (and recent) destruction has been caused by a mechanical digger driven through the eastern side of the structure. It has effectively destroyed the principal entrance to the Tempel, which was made of dressed but undecorated limestone blocks, many of which lie scattered on the ground. The main chamber of the Tempel was decorated externally with a cavetto cornice and a torus moulding made from mud-brick, slight traces of which remain. The entire building was covered with a thick layer of coarse white plaster, which would have given the illusion of a large and impressive limestone building emerging from the sands (Pl. 54a). There is no indication of the plaster's being further painted in any way on the exterior.

The Tempel appears to have been built in at least three phases (all mud-brick), and a tentative sequence for these phases is proposed here (Fig. 5). On the west side of the complex is a square

<sup>13</sup> C. ROSSI, in: *MDAIK* 56, p. 346.

room that is covered by a shallow dome on pendentives, above which is a flat mud roof (A). The use of such domes is rare in the surviving architecture of the oasis. On the east side of this domed chamber is a doorway surmounted by a surviving cavetto cornice and torus mouldings that extends to frame the sides of the door. This firmly establishes the east-west orientation of the structure. Several comparatively modern inscriptions in Arabic, and some bedouin *wasms*, indicate further reuse. Directly to the east of the domed chamber is a narrow rectangular antechamber, covered by a barrel vault. The remaining sides of the room are surrounded by a narrow passage, or group of narrow rooms that once presumably were vaulted.

A clear structural separation can be seen between this western cluster of structures and the largest unit of the complex immediately to the east (B). This is an impressive space that appears to be oriented north-south, measuring 19.0 × 5.4 m. This room was originally spanned by a single large mud-brick vault, that has now entirely collapsed, thus preventing the establishment of a conclusive level for the floor. This entrance was probably flanked by niches that appear in the thickness of the wall (now substantially destroyed). A small secondary entrance, with a niche on one side internally, can be seen at the southern end of the western wall. It is possible that the interior of room B was flanked by low mud-brick plastered mastabas to provide perimeter seating, that is found in the church of the southern settlement as well as at other temples in the oasis. The remains of the main vault prove it to have been the largest self-supporting vault thus far discovered in the oasis.

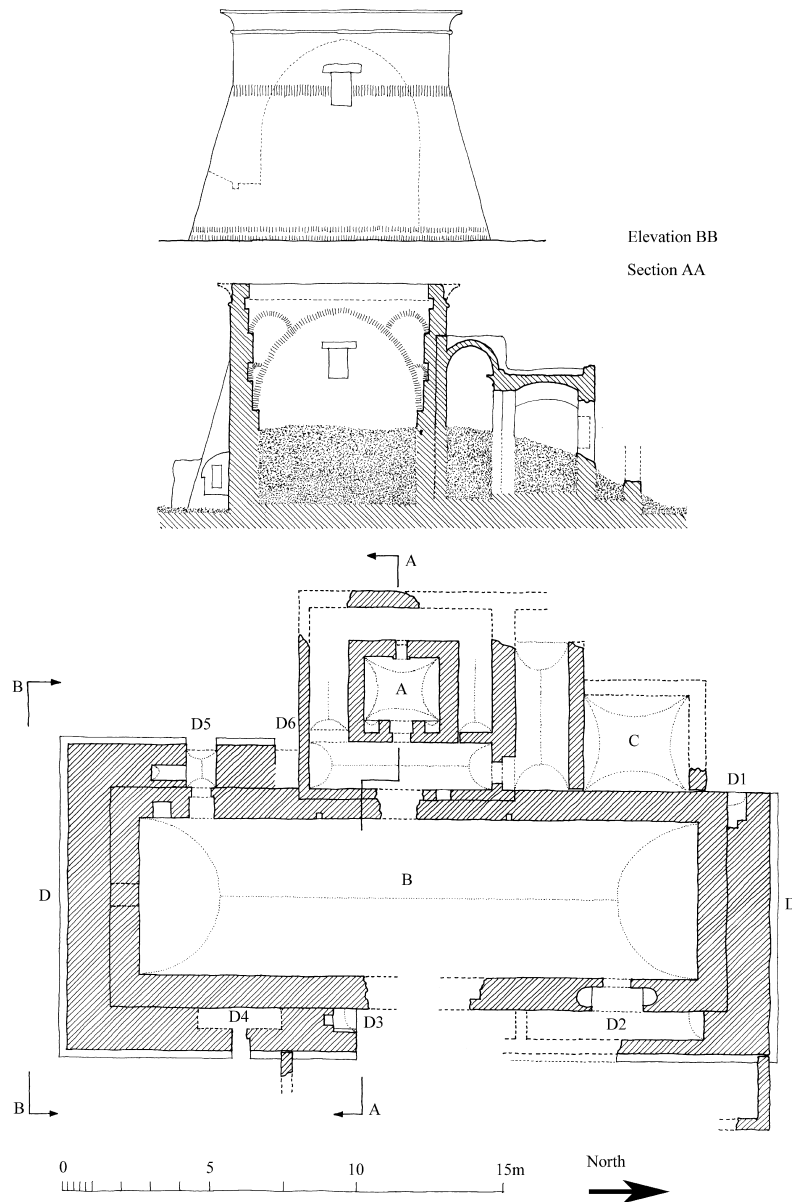
Following the completion of the main north-south vault, two further structures were added to the north of the complex around the domed chamber (A) to the west. These are not bonded into the main perimeter wall, and consist of a narrow barrel-vaulted room running east west and a second square domed space (C), somewhat smaller than its predecessor. At some point after the completion of the main room (B), its ambitious vault must have started to spread, causing cracking in the perimeter wall. The answer to this problem is found in the large buttress (D) that was built against the perimeter wall, covering the earlier white plaster finish. The buttress starts cleanly at the north-west corner of the chamber, and is made in such a way as to include at least six small vaulted spaces within it (D1–D6). Outside the buttress on its east face are fragments of surviving walls; these suggest that further structures were subsequently built next to it.

Without excavation the full extent, sequencing, function and manner of decoration of the complete complex can only be surmised. The north-south orientation of the main chamber (B) is also at variance with what might be expected in plan. If the long vaulted room had been placed in an east-west alignment, however, it would have covered the line of the underground Aqueduct 4, assuming this predated the construction of the Tempel. This may have been anathema to the builders of the Tempel, who might have opted for the present arrangement as a consequence.

The interior of parts of this complex appears to have been adorned with painted decoration. When the building collapsed the plaster shattered into thousands of fragments, and thus only fragments that were near the surface have been examined. It is possible, however, that excavations might reveal some plaster *in situ* on the walls. The majority of painted fragments come from the large vaulted room, and even if their small size makes it difficult to reconstruct the exact schema of decoration, three different types of designs have been tentatively identified. These are fragments of geometric patterns, vegetal motifs (including extensive grape vines), and images of Egyptian divinities arranged in a line, holding staffs and *ankh* signs. Plaster recovered from the area to the west of the square domed chamber also bears the grape vine motif and geometrical patterns. It is not entirely clear if the plaster originated from this part of the construction or migrated here from the main chamber.

This schema of decoration is not unknown from the oases; at Ismant el-Kharab (Kellis) at Dakhla Oasis a similar programme of painting was found in an area tentatively identified as a





SKETCH PLAN, SECTION AND ELEVATION OF TEMPLE

Fig. 5: Plan of the Temple (drawing by N. WARNER, © NKOS)

Mammisi, dedicated to the cult of Tutu, a god particularly revered in the Great Oasis in the Roman Period. The Kellis temple has been provisionally dated to the second century AD based on the style of painting<sup>14</sup>. The decoration of the Kellis shrine is as follows: the dado and the central band leading

<sup>14</sup> O. KAPER in: S. QUIRKE (ed.) *The Temple in Ancient Egypt*, London 1997, p. 205.

up to the vault was painted in Roman style, while the remainder of the vault followed the Egyptian style. The dado consisted of coloured panels (red and orange) set within lighter coloured framing bands, surrounded by a darker coloured exterior (blue)<sup>15</sup>. Fragments from the Umm el-Dabadib shrine seem to follow this pattern, although the colours are badly preserved, no doubt due to exposure. No fragments that can positively be identified as people dressed in Classical garb have been recognized as yet. However, the rows of divinities and fragments of hieroglyphic inscriptions can clearly be identified, together with the vine motif that is so typical of Romano-Egyptian painted decoration. It is possible that, despite the odd alignment, the Umm el-Dabadib complex provides a parallel to the temples found at Ismant el-Kharab<sup>16</sup> as the internal painted decoration, as well as external adornments of torus mouldings and cavetto cornices all support this identification.

S. I./N. W.

### Cemeteries of Umm el-Dabadib

A total of ten cemeteries associated with the site were identified, mapped, and studied (Fig. 2, see also Fig. 3). Some variation in tomb type appears in the different cemeteries; this might be indicative of class differentiation as well as chronological developments.

Based on their location and the orientation of the graves, cemeteries A and B are linked to the population of the Northern Settlement. Cemetery A consists of shallow cut graves, some lined with mud-brick or fronted with what appear to be mud-brick façades, located on a rise directly to the east of the Northern Settlement. Their orientation, by virtue of the location of the rise, is, for the most part, east-west. Cemetery B consists of a group of at least three tombs carved into a sandstone outcrop to the north of the Northern Settlement. These are on a north-south axis. One of these, which had been plundered by robbers some time in the last 15 years, consisted of a rock-cut chamber with a shaft located at its western end. The inclusion of a shaft is more typical of Late Period and early Ptolemaic shaft tombs than those from the later Ptolemaic or Roman Periods.

Cemetery C consists of an isolated tomb carved into a sandstone outcrop to the south of the Northern Tower and north-east of the Northern Settlement. Bedouin graffiti, consisting of *wusum*, and Arabic graffiti (dated to 1939) was found scratched into this outcrop. The tomb itself was simple, with its doorway to the west, and its longest side being north-south. No shaft was discernable.

The most impressive and obvious cemetery at Umm el-Dabadib is Cemetery D, the area of the rock-cut tombs in the eastern escarpment. This area was carefully explored, and the extant visible tombs counted and numbered (1–14), their architecture was studied, and each tomb was drawn (to appear in the final publication). For the most part these tombs are similar to those found in cemeteries B and C, consisting of simply cut approximate rectangles of different sizes. However, there are some variations. A few tombs seem to have had elaborate mud-brick and stone façades, such as those of the tombs that are found at Ain Lebekha. Tomb D-4 boasted the remains of a constructed entryway made of stone and brick, of which sections still stand. No decoration was found in any of the tombs, but this might be the combined result of weathering and the quality of the sandstone, rather than a true indication of the original state of decoration of these tombs.

<sup>15</sup> O. KAPER, *op. cit.*, pl. VII b, c; pl. VIII a.

<sup>16</sup> We are grateful to OLAF KAPER for discussing the various temples of the oases and their architecture and decorative program with us.

The remaining cemeteries do not appear to be as commanding or as wealthy as Cemetery D as they are, with the exception of those found in cemetery I, cut into the *tafla* rather than into stone. Cemeteries E–G are located in the lower areas of the cliff that houses Cemetery D.

Cemetery E lies below and slightly to the south of Cemetery D, and consists of tombs cut into the desert surface. Some of these might have been a combination of gravel dug and mud-brick covered tombs, but this is unclear without excavation. Cemetery F abuts Cemetery E to the south. The tombs here tend to be of two types: a combination of gravel cut and mud-brick lined, and shafts cut deep into the surface with no mud-brick enhancement. They are oriented both north-south and east-west. One ‘combination’ tomb in Cemetery F contained fragments of painted gypsum wall plaster. Perhaps this tomb, as well as others in the cemetery had painted plaster decoration covering the mud plaster. Certainly, this is the case with some of the tombs that have been observed at Ain Lebekha, as well as at the rock-cut chapel at the same site<sup>17</sup>. Cemetery G lies further to the south and consists, for the most part, of several shallow graves that are oriented east-west. The striking majority of bones on the surface belong to young children. Perhaps some sort of disease wiped out the younger part of the population at some point in the history of the site? Cemetery G Annex continues to the south and consists of shallow rock-cut tombs and the gravel cut and mud-brick tomb type that is found elsewhere on the site as well as at several other sites throughout Kharga Oasis, including Douch<sup>18</sup>.

Cemetery H is situated on a hill near Aqueduct 1 and consists of shallow graves cut into the surface, and perhaps some deeper shaft tombs. This area is far removed from all the other cemeteries found at the site and might be of a different date. However, this is impossible to determine without excavation. Cemetery I, located to the east of the pigeon tower, consisted of a few tombs cut into a rise. Some are rock-cut, while others are *tafla* cut. These have been reused by Bedouins (or others) as storage caches for water and other items.

An animal cemetery for donkeys and horses was also found at the site. Several rectangular tombs, cut into the *tafla*, with some being lined with mud-brick were found to the south-east of the ‘Fort’. The animals had not been mummified; they had just been laid into the tombs. It is possible that mules might have been found at the site, but this is still not clear until further investigation.

As the tombs had been thoroughly robbed and NKOS is only surveying, the contents of the tombs cannot be properly determined. Pottery was found throughout all the cemeteries, presumably holding offerings of some sort. Tomb D-13 contained fragments of glass vessels, a blue glass bangle, and two beads, one of glass and the other stone. Tomb D-11 contained a bed-leg (from a bed burial) and a wooden spindle whorl. In Cemetery D, plaster fragments from mummy-masks were also recovered, and suggest that some of the tombs date to the second and third centuries AD (thus associated with the Northern Settlement), while others are of a slightly later period. The re-use of tombs is also possible.

#### Mummification and human remains

The method of mummification of the fragmentary human remains was also studied. Due to the fragmentary nature of the evidence, the analysis of mummification methods is limited. However, it appears that a variety of methods were used throughout the different cemeteries. There are examples

<sup>17</sup> A. HUSSEIN, *Le sanctuaire rupestre de Piyris, Ain al-Labakha*. Cairo 2000.

<sup>18</sup> F. DUNAND/J.-L. HEIM/H. HENEIN/R. LICHTENBERG, *La nécropole de Douch (Oasis de Kharga)*, Cairo 1992.

of excerebration and evisceration, followed by the painting of bodies with pitch/resin, and bandaging them. Other bodies were not excerebrated but were eviscerated, and wrapped. A great many types of linen bandages were used, varying from sack-like to gauze-like bandages. A few tombs contained the remains of bandages dyed a reddish orange, while one tomb, D-13, contained red as well as yellowy-orange bandages.

Not all the bodies found showed evidence of mummification. The exposed bodies of children in Cemetery G did not look as if they had been preserved in any way, but this hypothesis can only be confirmed by excavation. Fragments of cartonnage was found in Cemetery D, some with gilding. The types of tiny fragments found suggest a Roman date due to the schema of decoration. Other mummies had moulded plaster fragments associated with them suggesting masks of some sort. Some bed legs were found, indicative of bed burials.

The majority of the human remains showed a high incidence of dental problems. Several abscesses were found, and in some cases the teeth had vanished completely and large areas of the gum grown over with bone. Osteoporosis was also noted on several skeletons.

S. I.

### Ceramics from the 'Fortified' Settlement

This season, work focussed on completing the recording of material collected in the 2002 season and on further collecting and recording of ceramics from Umm el-Dabadib.

During the previous season a day was spent making surface collections at several sites to the south of Qasr el-Sumayra. All the collections were made where there were remains of structures visible but there was not enough time to make controlled collections at each area. Instead, random surface collections of diagnostics were made simply to provide an indication of date and to give a preliminary indication of the range of vessel shapes present. This season, a selection of the better preserved diagnostics from these sites was recorded and drawn. The sites included the southern standing ruin of Settlement A, the mud-brick structures to the east of the Sumayra tombs that lie to the south of the 'Fort', and the southern Vaulted Tombs, where a considerable amount of pottery was collected<sup>19</sup>.

Of the Vaulted Tombs at least 14 burials were identified. They appeared to consist of a rectangular room or rooms, cut into a rocky outcrop and were mud-brick lined and vaulted. The surface over the tombs and down slope from them was littered with pottery, the material down slope presumably thrown out by tomb robbers at some point. In comparison with the pottery from Qasr el-Sumayra and Ain Gib the range of shapes was very familiar, and included many small bowls, lugged and un-lugged, medium-sized deep bowls, an extremely large deep bowl with ring base, globular cooking jars, neck-handled globular vessels and water kegs. One particularly enigmatic vessel to occur, however, was a small, rectangular basin, roughly hand-modelled with a spout in one corner. Both the interior and exterior had been red slipped originally and the interior base was blackened with traces of burnt encrustations. In the centre was a discoloured firing ring where a central emplacement had once been set. Everything about the vessel suggested a ritual purpose of some kind. The same repertoire of shapes from the Vaulted Tombs was found at the other sites mentioned. The date of the pottery from the Vaulted Tombs and from all of the sites to the south of Sumayra would

<sup>19</sup> For a map of these remains, see IKRAM/ROSSI, in: *MDAIK* 60, Fig. 1.

appear to be contemporary with Qasr el-Sumayra and Ain Gib, that is, from the late third to the fourth century AD.

During the second week, work was carried out at the site of Umm el-Dabadib. During the first season of NKOS in 2001 a brief ceramic survey was undertaken at this large, sprawling site and random surface collections were made at various areas of settlement and activity. Collecting was focussed on the 'Fortified' and Northern Settlements but no controlled collections were made as the surface looked too disturbed. In assessing this material afterwards, however, it began to appear that the pottery from the Northern Settlement might be earlier in date than the 'Fortified' Settlement. This season, after looking over the two areas again, it was decided to do a controlled collection at both settlements to try and highlight this difference, if any difference existed, in a systematic manner. In each case an area was chosen that looked relatively undisturbed and had a good surface scatter with a reasonable number of diagnostics. A onemetre square was laid out and all the diagnostics within it were collected. The squares were surveyed into the general theodolite survey of the site. Further random surface collections were also made at both sites to augment the sample and the rest of the week was spent recording and drawing this material.

After looking over these two areas again, there does appear to be a difference between the ceramic assemblages. Pottery from the 'Fortified' Settlement clearly dates to the fourth century AD, but certain key indicators of fourth century date are lacking at the Northern Settlement. There are no indicators, either, of a fifth century date, as confirmed by ALISON GASCOIGNE, and hence, the assemblage is thought to be earlier, possibly third century AD.

A. D.

#### Ceramics from the Hermitage, the Well and the Northern Settlement

To complement the work of AMANDA DUNSMORE in the 'Fortified' and Northern Settlements, ceramic collection and analysis was undertaken in and around some of the outlying sites and structures of Umm el-Dabadib. The aims of this work were to assess to what extent the ceramic corpus varied across the site, and to look for evidence of site use outside the chronological parameters of the known third- and fourth-century settlements. DUNSMORE's methodology (laid out in the 2002 preliminary report<sup>20</sup>) was broadly followed, with random samples being supplemented by the collection of further diagnostic sherds. The material was then categorised according to her fabric series, the vast majority of pieces being made of local clays. Limited time restricted random ceramic sampling to three locations. These were the Tempel, or more specifically the well or spring situated immediately south of the Tempel; areas within the cemeteries; and a small, rock-cut hermitage. All these sites were the subject of broader architectural or archaeological studies (see IKRAM, ROSSI and WARNER in this report).

#### The Temple Well

A short distance south of the Tempel and slightly west of the line of *qanat* 4 lies an oval depression fringed by mounds of silt, mud-brick rubble and sherds. This was thought to be the remains

<sup>20</sup> See IKRAM/ROSSI, in: *MDAIK* 60, p. 87.

of a well or spring associated with the Tempel complex. The ceramic material, a fairly thin scatter, was sampled within a circle of two-metre diameter towards the bottom of the depression, and supplemented by further, non-random collection. The assemblage from the temple well differed significantly from the corpus recorded in the main settlements, being dominated by a series of jars with a distinctive moulded rim form. Although no parallels for these vessels have yet been identified, they clearly pre-date the third- and fourth-century assemblages from the settlements and may, in fact, be Ptolemaic in date.

### The cemeteries

Along the eastern edge of the site lie a series of cemeteries, including elite rock-cut tombs (Cemetery D), vaulted brick tombs (Cemetery F) and an extensive area of poor burials (Cemetery G). Sampling of the huge sherd heaps in Cemetery G was undertaken by AMANDA DUNSMORE in 2002, but no ceramics were collected from the elite cemeteries. However, during the 2003 season, sherds were collected from inside and around the entrances to various tombs in Cemeteries D, F, A and B, and proved to be an interesting, if enigmatic, assemblage. A number of fragments of vessels decorated with painted geometric patterns in black over a red or white slip may again be Ptolemaic in date, although so far no exact parallels have been identified. Some of the sherds collected from the cemeteries, in particular Cemeteries D and F, are clearly associated with Roman reuse and are comparable to the corpus from the Northern and 'Fortified' Settlements.

The assemblages from the cemeteries and from the temple well apparently provide the first ceramic evidence of activity at Umm el-Dabadib prior to the occupation of the Northern Settlement around the third century. The identification of this material raises questions about the location of an earlier settlement, so far unknown (see ROSSI/IKRAM above).

### The Hermitage

This site was located just west of the line of *qanat* 4 some distance north of the main site. The interior of a natural rock fissure had been enlarged, cut with niches and plastered, and traces of mud-brick walls were preserved against the rock face outside the entrance. The site was identified as a hermitage by the presence of Coptic inscriptions on the walls, and also preserved evidence of more recent use, perhaps as a shelter by nomads. Ceramic material was found inside the hermitage itself, in addition to on the slope directly outside the entrance; many more sherds were scattered on a shallow plateau slightly south-east of the entrance, but the existence of a *qanat* shaft on this shelf makes it difficult to be sure with which of these structures this pottery should be associated.

The most important pieces from the hermitage were those collected from the inside and on the slope immediately outside. Four large vessels, a pot-stand, a basin and two jars, were almost completely reconstructed from sherds found inside the hermitage and on the slope outside the entrance (Pl. 54b). The locations of the pieces indicated that three apparently intact pots had been thrown from the hermitage down the slope in recent times, the fourth being broken inside the shelter. It seems highly probable that this group of vessels dates from the monastic occupation of the site, and was thrown out by later occupants.

Another significant group of sherds also retrieved from in and around the entrance comprised fragments of six distinctive tall-necked jars with black-painted decoration in the form of a repeating

swirl motif over a cream slip. Exact parallels for these vessels were found in the Kharga Museum, having come from the French excavations at Douch (accession numbers not available). The examples from the hermitage were without exception thickly coated in mud, and one was preserved within a section of mud-brick rubble. The vessels had clearly been built into some sort of structure, and their location on the threshold of the hermitage would indicate an association with the now vanished mud-brick wall around the entrance.

A collection of sherds was also made in a circle of two-metre diameter on the plateau near the hermitage, a short distance north of the *qanat* shaft entrance. This assemblage contained a significant number of sherds of the common late Roman amphora types designated M<sub>3</sub> and N<sub>1</sub>, or more commonly LRA 7 and 1<sup>21</sup>. These, and other forms collected from the plateau, suggest that use of the area may have continued into the fifth century.

A. G.

### The Aqueducts

During the 2003 season NKOS explored first by car and then on foot all the aqueducts, recording the presence of artefacts and archaeological remains along their entire length. Two more aqueducts, numbered 6 and 7, have been discovered in the northern area between Aqueducts 2 and 3 (Fig. 2). The extent of this underground water system is truly astonishing. Along a total length of over 14 km, we counted about 640 vertical shafts. In many cases we preferred to be cautious and only recorded the existence of shafts that were clearly visible on the surface, but it is likely that the sequence continued also across the few sandy areas where we lost track of the line.

In order to give an idea of the effort that was made to quarry this aqueduct, it may be worth giving a brief description of how it worked. The landscape of Umm el-Dabadib is very simple to read and is a clear demonstration of how this system was applied. The northern plateau terminates in a steep scarp that reaches the bottom of the depression with long parallel ridges separated by deep wadis. The water trapped in the layers of rock exposed by this huge step in the landscape was reached by means of long underground tunnels, that are generally quarried in the side of the wadi, where the rock is firmer than the loose gravel in the middle. The tunnels did not strike a single source, but collected the water that circulates in fissures and hollows, and therefore their discharge would have been proportional to their length. The water was then distributed to the cultivated area by means of long lines of terracotta canals resting on mortar beds.

A horizontal tunnel was started from a point immediately above the level of the area to be cultivated, and then continued uphill in the direction of the scarp. In order to convey the water to the surface, the tunnel kept a minimal but constant slope, and to increase the amount of water and reduce the labour it followed fissures and crevices of the underground rock. Every 10–15 metres a vertical shaft linked the underground tunnel with the surface of the desert, in order to provide ventilation and access for maintenance. The distance between the shafts increases significantly as the ground rises towards the scarp, and their depth reaches over 50 metres. The total volume of

<sup>21</sup> A. DUNSMORE in: IKRAM/ROSSI, in: *MDAIK* 60, pp. 86–9; J. A. RILEY, *The coarse pottery from Berenice*, in: J. A. LLOYD (ed.), *Excavations at Sidi Kbrebish, Benghazi (Berenice) 2*, Supplement to *Libya Antiqua*, Tripoli: Libyan Department of Antiquities, 1979, pp. 91–67; and J. A. RILEY, *The pottery from the cisterns 1977.1, 1977.2 and 1977.3*, in: J. H. HUMPHREYS (ed.), *Excavations at Carthage 1977 conducted by the University of Michigan* 6, Ann Arbor: Kelsey Museum, University of Michigan, 1981, pp. 85–124.

stone removed to quarry the vertical shafts must have equalled, if not exceeded, the volume of stone removed for the horizontal tunnels.

The central aqueducts, number 3 in our maps, has been cleared and re-used a few times since the Roman Period, and H. BEADNELL had the chance to explore it in 1908, about eight years after it had been cleared for the agricultural needs of a small local community<sup>22</sup>. NKOS explored inside only no. 3 for a few hundred metres, but followed the lines of vertical shafts of all aqueducts on the desert surface. A short report of this exploration is here included.

Aqueduct 1, discovered in 1998, was quarried in the western side of the wadi. A long interruption in the sequence of shafts is likely to depend on the sandy terrain rather than on the absence of openings. In 1998 a wrong GPS reading resulted in an excessive length attributed to this aqueduct in the general map of the area<sup>23</sup>. The correct extent of the underground line is shown in Figure 2. Aqueduct 2 starts on the eastern side of the wadi, then quickly moves to the western side, ignores a side-wadi (that however shows traces of human activity) and continues half-way up the side of the wadi, carefully avoiding the thick chain of barchan dunes that occupies the lower part.

The newly discovered Aqueducts 6 and 7 run along the sides of a large and flat wadi, the western side of which is covered by a chain of dunes. The underground tunnels and vertical shafts are undisturbed and nearly invisible, and it is difficult to understand where they discharged their water. Aqueduct 7 (the eastern) might converge into Aqueduct 3, whilst Aqueduct 6 (the western) either converged into Aqueduct 2 or continued in the direction of the Northern Settlement. Aqueduct 3 is followed by a well-beaten track that leads all the way up to its first shaft, sometimes indicated as the actual Ain Umm el-Dabadib. Its upper section runs in a narrow rocky wadi and in total it rivals in length with Aqueduct 2.

Aqueducts 4 and 5 run in the same wadi, one on either side, sometimes very close to each other. It is interesting that the mouth of Aqueduct 4 seems to correspond to the Well located near the Temple. One possibility is that the already existing well was used as a starting point for the underground section of this aqueduct. This might have happened at the beginning of the fourth century when the construction of the 'Fortified' and Eastern Settlements was started, and when the Temple was still a relatively small building. When the decision was taken to enlarge the Temple with the addition of the large vaulted room, the latter had to be placed along a north-south axis to avoid the underlying Aqueduct 4, that in that area ran just a few metres below the surface (see IKRAM/WARNER above). Whereas the mouths of Aqueducts 1, 2, 3 and 4 are more or less aligned with each other, Aqueduct 5 continues underground for more than one kilometre in the high side of the wadi, before discharging its water in the plain. It runs relatively close to some of the cemeteries, thus implying that not all these features might have been in use at the same time.

C. R.

A preliminary report on the botanical and archaeobotanical potential of the area of Umm el-Dabadib

#### The vegetation

The area surrounding Umm el-Dabadib mainly consists of sandy desert with barchan dunes, these are interspersed with rocky outcrops and clay yardangs. In some areas, where it is assumed

<sup>22</sup> H. J. L. BEADNELL, *An Egyptian Oasis*, pp. 171–85.

<sup>23</sup> C. ROSSI, in: *MDAIK* 56, Fig. 2.



that the water table is higher, there are patches of vegetation dominated by camel thorn (*Alhagi graecorum*). This species is dominant over large areas and in many cases is the only species present. It can be found growing both on the desert floor and on dunes. In some cases the dunes have been stabilised by the growth of *Alhagi Sporobolus spicatus*, Tamarisks, *Tamarix nilotica* is also found. Between these areas of vegetation, there are large expanses of sand and rocky outcrops. The only variation in this landscape of sand and camel thorn, occurs in the vicinity of the ruins, mainly the Northern Settlement. In this area, there are several large Acacia, *Acacia nilotica*, trees standing up to 30 m in height and with a girth of approximately 3 metres. The lower branches are heavy and in several cases limbs have broken off due to the excess weight. The size of the trees suggests that they are of some considerable age.

In association with the acacias there are several other noteworthy species including *Cordia sinensis* and *Prosopis farcta*. A single specimen of *Ziziphus spina-christi* was also recorded, along with three specimens of *Calotropis procera*. *Tamarix nilotica* also forms dense scrub in this area. This vegetation was concentrated on the western edge of the Northern Settlement, close to one of the underground aqueducts. A grove of date palms (*Phoenix dactylifera*) is present suggesting that they were planted in the past, making use of the local water supply, some of these palms are dead.

Associated with the Northern Settlement (Fig. 2) are fields of approximate dimensions of 4 × 4 metres. Within the fields, remains of the last crop are present and on the field banks the tubers of nut-grass (*Cyperus rotundus*) can be seen. This is considered to be a pernicious weed of irrigated crops.

Northwest of the Northern Settlement towards the northern escarpment an area of vegetation is dominated by camel thorn, growing on the highest yardang in the south of the area is a Dom palm (*Hyphaene thebaica*) and to the side, on the desert floor, a low-growing date palm, parts of which have been burnt. In general the palm trees look healthy suggesting that subsurface water is present. Just to the south of this area, a canal begins leading to the Northern Settlement. This is marked by a large dead *Acacia nilotica*. Desiccated remains of halfa grass (*Imperata cylindrica*) and the rhizomes of reeds (*Phragmites australis*) were found on the banks of the canal. This indicates that there was once luxurious growth on the banks of the canal. The presence of halfa grass and reeds cannot be dated accurately but it is most likely that they represent the most recent use of the canal. Within the canal cut, goat and donkey dung were present.

Between the Northern and the 'Fortified' Settlements, fields are clearly recognised. Again, the remains of the last crop can be seen under a thin coating of sand. From the appearance of the rootstocks remaining it can be deduced that the crop was harvested at ground level using a sickle. The age of these deposits is difficult to determine but it is assumed that they represent the last occupation of the area in the 1950's.

#### Archaeobotanical survey

The archaeobotanical survey consisted of two parts. The first considered the potential of different parts of the survey area for future archaeobotanical study and consisted of a series of samples taken from a variety of locations. These are summarised in table 1. The second part was concerned with the analysis of mud-bricks and wall plaster from various features within the area in order to ascertain similarities and differences in the plant remains used in the manufacture of the mud-bricks. These are discussed below.

### The samples

- Sample 1. This was taken from the fields situated between the ‘Fortified’ Settlement and the Northern Settlement. This consists of cereal remains associated with the last occupation of the area.
- Sample 2. This was taken from the upper floor of the ‘Fort’ and consisted of a concentration of wheat (*Triticum* sp.) grains trapped between floor layers.
- Sample 3. This was taken from the Temple. A layer of burning was identified on the northern side of the Temple’s interior under approximately 2 metres of collapse. This on quick inspection contains charcoal, date stones and barley grains. Date unknown.
- Sample 4. Sample 4 was taken from approximately 15 cm above sample 3. It contains large chunks of charcoal. Samples 3 and 4 may be fires from a later occupation as there appears to be sand underneath the charred horizon. They may represent Bedouin camp fires. Another possibility is that this is a destruction level. From further clearing back it appears to stretch the whole length of the main body of the Temple.

At least the two northern buildings of the Eastern Settlement have been used for stabling. The date of this stabling is most likely to be recent. There is straw present along with donkey dung. There appears to be several floors with a mixture of dung and straw. The straw contains bread wheat chaff.

- Samples 5, 6 & 7. Sample 5, was taken from above burnt floor of northern bin (of a pair of bins) above arch 2 (from south) of a row of 5 arches. The floor is burnt and contains a spikelet of emmer. Sample 6 was taken from the burnt floor of the north bin on west side of building. Sample 7 was taken from floor of south bin on west side of building – burning present.
- Samples 8a & 8b. In the ‘Fortified’ Settlement an oven with a 60 cm diameter showing signs of burning. The contents were sieved and the remains collected. After sieving a lot of goat dung and olive (*Olea europaea*) and date stones were identified. This is sample 8a. Sample 8b was taken from the floor of oven and ash deposit at entrance.
- Sample 9. This sample was taken from the Temple. A burnt area on the upper surface located in the north-east corner closest to lintel. This is most likely to be recent. The fire seems to have covered whole of north east corner (1.5 × 1.5 m).
- Sample 10. Sample taken from a field corner situated to the west of the ‘Fortified’ Settlement.

### Mud-brick analyses

Temple: mud-brick here is dominated by mud/sand there is little in the way of plant material – that which is present is chopped straw – no other crop processing waste. The proportion of straw in the mud-brick appears to be no more than 10%. Vaulting brick – especially from the collapsed roof on the south side of the main body of the Temple the brick appears to have a slightly higher concentration of plant material. Both types of brick (wall and vaulting) have chopped straw and some glumes of bread wheat. Vaulting mortar – grey in colour has a little more plant remains but again appears to be chopped straw and glumes, paleas, lemmas of wheat.

The Tower: mud-bricks are very much like the bricks of the Temple. The bricks consist of chopped straw with glumes of bread wheat. Single (not articulated) bread wheat rachii found in brick. The plant remains are about in the same proportion.

‘Fortified’ Settlement: mud-brick from the back of the Church. Straw and bread wheat rachii, glumes also present. Some of the rachii are in some cases articulated. Goat hair also found. There

are more culm nodes and rachis fragments than at the other locations. There is more straw and a higher proportion of cereal chaff than at other sites in the area.

'Fortified' Settlement: mud-brick from the entrance of the 'Fort'. There is a lot of straw, bread wheat glumes are present, along with rachis fragments and culm nodes. Straw fragments seem to be longer than in other mud-brick samples. Paleas and lemmas also present, along with charcoal, wood and wheat grain and culm bases.

Cemetery F: F1 mud-brick vaulted tomb. The mud-brick seems to contain very little in the way of plant remains – impressions of chopped straw present. Percentage of remains is low, approximately 10%.

Cemetery F: F2 tomb. The mud-brick has more chopped straw and other remains but still in low proportions.

Cemetery D: tomb D11. The mud-plaster has much straw with a higher percentage (up to 30%) than the mud-brick. Bread wheat rachis are present along with glume bases and culm nodes. Barley grains are present. Most of rachis fragments are articulated. Part of a barley ear also identified.

Table 1: Samples taken and processed from NKOS 2003, by AJC

Sample no.	Volume of sample (l)	Description
1	1.9	Field sample
2	?	Floor sample from 'Fort'
3	0.4	Layer of burning in Temple
4	1.5	From charcoal layer above sample 3 – from Temple
5	0.7	From north bin on west side of ruins
6	0.4	From north bin on west side of ruins
7	1.1	From south bin on west side of ruins
8a	?	Sieved remains from fill of oven – 'Fortified' Settlement
8b	3.6	Floor and ash from oven – 'Fortified' Settlement
9	2.7	N. E. upper floor of the Temple
10	1.4	Field sample

A. J. C.

## Conclusion

As this is a preliminary report on the 2003 field season there has been no full analysis of the samples taken and therefore no conclusions can be reached at this stage. The proposed work for next season includes the analysis of the samples taken from this season along with further fieldwork. By the end of the 2004 season it should be possible to provide some information on the past land use in the areas studied by the North Kharga Oasis Survey.

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### Post-Scriptum

During a visit to Umm el-Dabadib in November 2004 we discovered that a front-loader had been at work, and had carried out extensive and irreparable damage to the site. The saddest event is the almost complete destruction of the mud-brick Tempel: only the eastern wall remains standing, with the remainder being scraped away to below foundation level in the looter's quest for buried treasure. The two-storey mud-brick watchtower has been reduced to total rubble. Extensive damage has been also carried out along the entire eastern side of the 'Fortified' Settlement, where dozens of cubic metres of the dense mud-brick buildings that bordered the 'Fort' on that side have been removed and flattened. The industrial area on the north of the 'Fortified Settlement' has been also damaged, as well as chunks of the Eastern Settlement. Of the various cemeteries, Cemetery F has been heavily attacked. The tombs that were destroyed had been partially dug into the desert *tafla* and then had vaulted mud-brick structures constructed within these foundations. Several pottery vessels, painted and plain, as well as fragments of mummies and skeletons were found littering the area. The destruction was documented, and any transportable remains were taken to the *taftish* in Kharga. Dr. Z. HAWASS together with the Kharga Inspectorate and police force are hoping to catch the looters and to stop further destruction of sites in the desert.

### Abstract

This article contains a preliminary description of the results of the third season (2003) of the North Kharga Oasis Survey, that focussed on the late-Roman site of Umm el-Dabadib, in the Kharga Oasis. An introductory paragraph on the methodology that has been adopted to survey such a complex site is followed by a description of the archaeological remains, which includes three main settlements, called Northern, Eastern, and 'Fortified', a Coptic church, a Tempel decorated in Egyptian style, ten cemeteries, seven underground aqueducts and large patches of ancient cultivations. The majority of the standing remains date to the third and fourth century AD, but there is evidence that the site had been occupied at least from the Ptolemaic Period.