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North Kharga Oasis Survey 2007
– Preliminary Report: Ain Lebekha and Ain Amur –

By Corinna Rossi and Salima Ikram

Introduction
The seventh season of the North Kharga Oasis Survey (NKOS) took place in October 2007 and was dedicated chiefly to two sites, Ain Lebekha and Ain Amur. The spectacular remains of Ain Lebekha lie along the western edge of the main Kharga depression, at the foot of the escarpment, along the ancient route called Darb Ain Amur that ‘horizontally’ crossed Kharga Oasis. To the east, it led in the direction of el-Deir and eventually Upper Egypt; to the west, it reached the area of Umm el-Dabadib, then the isolated spring of Ain Amur and eventually Dakhla Oasis (Fig. 1).

Whilst the survey carried out at Ain Amur was part of the planned activities of NKOS along the Darb Ain Amur, the survey of Ain Lebekha was not originally planned. The site, in fact, had been partially investigated in the past by several different teams (see below, p. 234 and 237); none of them, however, produced a general survey of the site. A full concession of Ain Lebekha had been recently acquired by NKOS, and the 2007 season was dedicated to carrying out the first comprehensive survey, long overdue, of the archaeological area.

The survey of Ain Lebekha allowed a better understanding of the mutual relationship of the various elements of the archaeological site, as well as the discovery of new important features. The most important is certainly a large mining settlement nested on top of

Fig. 1 Schematic map of northern Kharga (C. Rossi © NKOS 2007)
the rocky hills that rise to the west of the site. An alum working had been referred to by H. J. L. BEADNELL, but with no precise location provided; A. J. SHORTLAND had rediscovered this, but was focussing on the alum rather than the archaeological context of the site. Thanks to the NKOS survey, the work carried out in the past by other teams as well as the recent discoveries, are now set within a wider and more comprehensive picture. The Ain Amur survey was the first large-scale study of the area and served to identify the diverse components of this hitherto little-known site.

The Methodology

Both at Ain Lebekha and Ain Amur, after an extensive walking survey, NKOS used a mixture of total stations and GPS (Global Positioning System) to survey and record the area, the same technique that had been successfully adopted in previous seasons. The ‘core’ of the archaeological area, containing the main concentration of archaeological remains, was recorded by total stations, while the surroundings and some isolated features were mapped in using the GPS. A number of points were surveyed with both systems in order to link the two sets of data and to correct the orientation. Architectural details were recorded and buildings documented using distomats, as well as more traditional tools. Ceramics, small finds, and organic materials were documented, and some taken to the taftish in Kharga for further study.

C. R./S. I.

Ain Lebekha

Previous Archaeological Work

In comparison with other remote archaeological sites of the oasis, Ain Lebekha is relatively easy to reach. A well-known destination of desert tourists, it also hosts a new cultivation, that exploits the ancient water system. The well-beaten track that leads to the site from the village of Ezbet Mohammed Tuleib is currently being substituted by a tarred road that is likely to increase the number of visitors to the site.

In recent years, some of the most prominent buildings of Ain Lebekha have been studied by different archaeological expeditions: the Sanctuary of Pyris was studied, surveyed and published by A. HUSSEIN, the Southern Temple was originally studied by M. A. NUR ED-DIN, the fort was surveyed by an IFAO team, whilst parts of the adjoining settlement were excavated by the SCA (Kharga Inspectorate, personal communication). The necropolis was partly excavated by the SCA with the collaboration of F. DUNAND and her team. Although the IFAO started the exploration of the area, no comprehensive survey of the site existed.

After a first exploration in 2001, NKOS briefly worked at Ain Lebekha in 2004. On this occasion, N. WARNER carried out the survey of the Northern Temple and of two domestic units belonging to the settlement, E. CRUZ-URIBE restudied the Southern Temple and worked on some texts, S. IKRAM worked on the cemeteries, quarry, and rock art, and C. ROSSI discovered the Southern Cultivation and performed a GPS survey of the water system. The activities of the 2007 season, therefore, were meant to integrate the previous work done both by NKOS and by other teams.

The Site

Thanks to the 2007 survey, it is now possible to fully appreciate the extent of the archaeological remains (Fig. 2). There are significant similarities with Umm el-Dabadib: the most substantial and extensive remains date to the Late Roman period, but there is clear evidence that Ain Lebekha, at least, was occupied...
from the early 1st century AD if not earlier. Temples were built in the vicinity of natural springs at both sites, serving as water stations along the Darb Ain Amur. At both sites, the Romans installed large communities around the beginning of the 4th century AD, and both sites appear to have been abandoned about a century later.

As at Umm el-Dabadib, it is possible that the earliest core of the ancient occupation lay in the vicinity of the two springs found at the site, lying at a distance of about 800 m from one another. The northern spring was reused in the 20th century, when a group of houses was also built just to the south of it.

Two temples were built in the northern part of the site, near the larger spring. One, named the Northern Temple, is a tall mud brick structure built on top of a rock outcrop with a commanding view on the plain, just to the north of the spring. The second is a partly rock-cut complex lying at a lower level, most probably dating to the early part of the 2nd century AD. It appears to be dedicated to the local deified individual Pyris11, and is associated with his tomb complex.

The southern spring consisted of a large circular well that is still surrounded by a large, crescent-shaped spoil heap. The area is currently covered by thick vegetation, thus indicating the presence of water there. A mudbrick temple was built on a low ridge just to the west of the spring, out of the reach of the vegetation. It is rectangular in plan, with a central sequence of rooms flanked by smaller chambers on both sides. A low plastered brick bench lines the central chamber. The building has been flattened and is currently engulfed by sand, but was cleared by the SCA, although not published. The remains are tentatively dated to the 1st and 2nd centuries AD in their inception, although they remained active throughout the history of the site and the southern temple might even have been transformed into a church.

Around the beginning of the 4th century, at the southern end of the plain the Romans built a sturdy fort surrounded on three sides by a densely packed settlement. The fort is roughly square, with one single entrance on the eastern face, identical to the gates of the forts of Qasr el-Gib, Qasr el-Sumayra and Umm el-Dabadib12. The outer layer of the external wall protrudes at the four corners, as if the buildings had round towers. A careful examination of the building allowed the addition of a number of elements to the survey carried out under the direction of M. Reddé, as well as the correction of some minor errors. Finally, more information was gained by examining some recent damages to the structure (someone removed some debris and exposed a diagonal passage, then broke into two vaulted rooms from above).

The eastern face of the fort shows traces of later additions; a careful survey of the interior, however, did not find any confirmation for M. Reddé’s theory that the fort started its existence as a tower and was later enlarged13. In particular, the vertical cuts that run across the four faces (and that thus divide the exter-

n Wall into four L-shaped sections) appear to be due to the adoption of the same building technique already seen at the ‘Fort’ at Umm el-Dabadib\textsuperscript{14} and the main building at Mohammed Tuleib, evidently meant to control the natural shrinkage of the mudbrick masonry and to avoid the cracking or disintegration of the walls.

Inside, the plan resembles that of the ‘Fort’ at Umm el-Dabadib, with a central court surrounded by vaulted rooms; the chambers at the four corners were reached by narrow diagonal passages. No clear traces of the staircase survive, but it is likely that the stairs occupied the vertical space immediately to the north of the gate. The building appears to consist of two levels, but the height of the rooms is uneven, and progressively grows in a clockwise direction. This spiral-like organisation is extremely interesting, as it has no parallel in the other forts; however, without excavation no final conclusion can be drawn. At the upper level, a narrow vaulted passage runs in the thickness of the northern wall, and then turns east and stops before the gate\textsuperscript{15}. A nearly identical passage is still visible in the main building at Mohammed Tuleib.

The precise layout and extent of the surrounding settlement is unclear. The portion built along the western side of the fort is relatively well-preserved; in particular, the rooms near the fort are preserved to substantial height, whereas the farthest ones are basically eroded to bedrock. Nevertheless, the straight and continuous line that marked the abrupt end of the settlement on that side is still visible: it was a relatively thin wall, only one and a half mudbricks thick. This arrangement strongly resembles the perimeter of the ‘Fortified Settlement’ at Umm el-Dabadib, surrounded by a continuous wall, solid in appearance but relatively thin. Another element that these two settlements share is the presence of long, narrow vaulted passages that acted as covered paths and served the various houses\textsuperscript{16}. Finally, the domestic units of Ain Lebekha were built by combining the same architectural elements that were used at Umm el-Dabadib, and at Settlement A in the Gib/Sumayra Complex\textsuperscript{17}.

The settlement appears to surround the fort at least on three sides (south, west and north). To the east, traces of partly rock-cut rooms have been found into the outcrop that faces the entrance of the fort, but no substantial remains of buildings have been found. More mudbrick buildings, however, appear to lay deeply buried in the sand in the hollow stretching between the fort and the southern spring. The soft terrain, deeply marked by tyre marks, is littered by tiny potsherds; mudbricks occasionally stick out of the sand, but establishing an outline of the buried structures is currently impossible. Future excavations might clarify extent and characteristics of these remains, as well as their date. These buried remains, in fact, might belong to an earlier settlement associated with the spring and the temple.

In addition to the water derived from the springs, the Late Roman installation depended on an extensive water system, made of four underground aqueducts (\textit{qanat}) that allowed the irrigation of at least three cultivations. As it happens in the case of Umm el-Dabadib and the Gib/Sumayra Complex, dating these \textit{qanat}-systems is difficult without extensive excavation, and then too it might prove impossible. The possibility that the tunnels (or only parts of them) date to the Persian period cannot be ruled out; however, it is logical to suppose that such a complicated and laborious task would be only carried out to support large-scale installations. As no evidence of a large-scale Persian settlement has been discovered, for the moment it is logical to conclude that the \textit{qanat}-systems date to the Roman period.

Aqueduct 1 fed a large cultivation laying in the plain stretching between the two springs; here the survey recorded the presence of several rectangular hollows lying on either side of the open-air canals; faint traces of the junctions with lateral channels also survive. Aqueduct 2 discharged its waters into an area currently covered by sand and small bushes; the presence and the extent of an ancient cultivation can only be guessed at. Aqueducts 3 and 4, instead, fed the extremely large and incredibly well-preserved Southern Cultivation: the ancient open-air canal of Aqueduct 3 proceeded southwards for over 500 m and fed half of the cultivation, the second half depended on Aqueduct 4, which came from the western hills and fed the southernmost portion of land.

Among the various features that have been recorded around the main core of the archaeological remains, it is worth mentioning a quarry, located between the two flat-topped hills to the south of the fort, and a group of large, slightly irregularly rectangular basins,

\textsuperscript{14} Loc. cit., p. 289.
marked by lines of large white stones. These basins lie in the plain near the underground section of Aqueduct 2, in the area from where the shortest track heading to Umm el-Dabadib departed. It is possible, therefore, that they acted as a reservoir for animals departing along or arriving from that track, or just as a general water catchment area. Establishing their date, however, is currently impossible, although the ceramics are mostly of the 4th century in date.

C. R.

The Necropoleis

The main necropolis of Ain Lebekha lies on the long hill which borders the site to the west, with a smaller necropolis occupying the outcrop just to the southwest of the northern temple. The western rock-cut tombs were initially explored by the SCA and the human remains examined by F. DUNAND and her team. NKOS explored some of the tombs and also came upon funerary equipment, most of it dating to the 2nd/3rd century AD. The tombs consisted of one or two crudely cut chambers into the hillside. A few had some sort of built frontage, but this was not the norm. Some of the tombs had shafts in their interior leading to burial chambers. Several waves of burials seem to have taken place here.

Several rock-cut tombs are cut along the ridge that contains the Sanctuary of Pyris, while another series occupies the area on top of this inselberg as well as on its eastern side. The most elaborate of these consist of short, slightly sloping passages leading into a square cut chamber that contains a further shaft for the burial proper. They are similar to the tombs cut in the western escarpment. No traces of decoration were found. In addition to adult skeletons, the remains of one child, under the age of 5, and another, under the age of 12, were identified here.

Human remains were also found in a collapsed shelter in a rock outcrop at a distance of 1 km to the east of the fort, along one of the tracks heading in that direction. The rock is too ruined to establish whether the hollow was originally a rock-cut tomb or whether it is simply a shelter under which tomb robbers have dragged some mummies in order to dismember them without being disturbed. The remains of at least two individuals were identified there.

The Alum Mines and Rock Quarries

A large mining settlement located in the area of the hills southwest of the fort was documented. Presumably, this is the one that H. J. L. BEADNELL alluded to, and perhaps also the same one referred to by A. J. SHORTLAND, although it is possible that these diggings are yet another group in this area. The site was accessed by a sloping path at the foot of the western escarpment, not far from the Western Cemetery. This area was exploited not only for the plentiful supply of alum, used in mummification, medicine, tanning, and dyeing, but also for the good quality sandstone that made up this range of hills.

Several clusters of multi-chambered huts made of sandstone, probably originally rendered more weatherproof with some sort of mud plaster, were scattered along the side of the main route. Probably, the workers went further and further south and west as they exhausted the supply of alum in the area that they were working, adding to their village. One of the huts contained a stone with a crude calendar consisting of a series of vertical notches – the workers were obviously counting the days until their release!

S. I.

Ain Amur

Previous Archaeological Work

The only significant early work at Ain Amur consisted of notes made by F. CAILLAUD and B. DROVETTI, who visited the area in the early 19th century and inscribed their names on the temple there. More thorough work was carried out by H. E. WINLOCK when he visited the site in 1908. Even so, H. E. WINLOCK stopped at Ain Amur only briefly on his journey between Dakhla and Kharga, and thus could only provide a sketch of the temple and the enclosure wall, together with some notes and a few invaluable photographs. A brief note on the site by C. ROSSI appeared in 2000, at the beginning of NKOS’ activities. The 2007 survey, therefore, represented an important starting point for future work on this complex site that still represents the

20 F. CAILLAUD, Voyage à l’Oasis de Thèbes et dans les déserts situés a l’orient et a l’occident de la Thébaïde, fait pendant les années 1815, 1816, 1817 et 1818, London 1822.
only available water source along the desert route linking Kharga and Dakhla.

The Site

The main focus of the season’s work was to execute the total station survey of the temple **enceinte** and its environs and to explore the portion of the Darb Ain Amur route that was closest to the water source. The temple, its enclosure wall, the different gates, and the spring, that gives the site its name, were all plotted and drawn. Due to some disturbance by thieves, parts of the temple that had been hitherto inaccessible were visible, thus its plan could be more accurately drawn (Fig. 3). The Arabic graffiti within the temple were also documented and are a testament to the enduring importance of this site as a way-station along the ancient caravan route. As much of the decoration as possible was recorded. The exterior of the gateway was decorated in paint that was virtually invisible, but the external rear wall of the temple was carved and thus could be more accurately documented. This has suffered considerable damage since the time of H. E. **Winlock**, at the hands of both nature and thieves.

Outside the **enceinte** to the north, the NKOS team identified a series of structures that served either as habitations or administrative buildings. An industrial area characterized by several large ashy deposits, coupled with slag outside the enclosure, was found to the south. The foundations for a building marking the ascent up onto the escarpment as well as the cemetery and its related buildings were also identified, documented and mapped with the total station (Fig. 4).

As it was untenable to map the surrounding areas using the same method, GPS was used. In addition to the main route up onto the escarpment that lay just in front of the temple, at least two others were identified, both to the northwest of the main route. At one of these, in the area just before the top of the escarpment, lay a cluster of crude stone huts, perhaps once occupied by the people who had to police this area.

The main branch of the Darb Ain Amur lies southeast of the temple. Several new sites were found along the route and in the wadis that branched off from it. These included a hermitage with some Coptic inscriptions, a cave with some paintings from different periods that depict men, dogs, cattle, and ducks, an overhang with carved, incised, and painted images of men in short kilts as well as gazelles, and at least three prehistoric sites. A sandstone quarry, which might have produced the blocks of stone used to build the temple, was also identified. Not far from the quarry two Clayton Rings, without their attendant bases, were found. These are the first ones found by NKOS thus far. At least two possible gazelle runs were also identified. They would have been used to trap gazelles; these animals are still found at Ain Amur.

The Darb Ain Amur

NKOS continued its exploration of the Darb Ain Amur between Ain Amur and the mini-oasis of Umm el-Dabadib and points south. Several new sites were discovered along the route and the ones that had been found in previous seasons were documented. The sites range in date from the Neolithic, consisting of scatters of grinding stones, chipped stone tools, and ostrich eggshell beads, to the Islamic period, identified by the pottery and pipe-bowls. Many panels of rock art were also recorded along the way.  

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Several stopping places for travellers were identifiable by intense sherd scatters; the majority of sherds dated to the 3rd through the 5th century AD, although other periods were also attested.

S. I.

NKOS 2007 Team List

Ain Lebekha Team

CORINNA ROSSI (director, Egyptologist, architect, chief surveyor), SAIED YAMANI (SCA inspector), LOUISE BERTINI (zoologist), STEPHANIE BOUCHER (surveyor), MENATALLAH EL-DORRY (archaeobotanist, surveyor), ANN FOSTER (surveyor), JULIE PATENAUTE (surveyor).

Ain Amur Team

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Abstract

This article contains a summary of the results of the 2007 season of the North Kharga Oasis Survey. Two teams worked in parallel at the Late Roman site of Ain Lebekha and at Ain Amur as well as along the Darb Ain Amur, in the Kharga Oasis. At Ain Lebekha, the remains
include three temples, a fort surrounded by a settlement, a large necropolis, a system of underground aqueducts, and substantial remains of ancient cultivations; nearby, a large alum mining settlement was rediscovered. The majority of the standing remains date from the late 1st through the late 4th century AD, although there is evidence for Ptolemaic activity at the site, particularly in the cemetery area. At Ain Amur a temple with its enclosure wall was mapped, together with outlying industrial, administrative, and commercial areas. Parts of the Darb Ain Amur route were also explored and sites along the route mapped.
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