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Research in the Dakhleh Oasis

The Dakhleh Oasis Project, which is jointly sponsored by the Royal Ontario Museum and the Society for the Study of Egyptian Antiquities and largely funded by a grant from the Social Sciences and Humanities Research Council of Canada, has now completed two seasons of field work.[1] The project is designed to come to a detailed understanding of the cultural and environmental history of the Dakhleh Oasis since the beginning of the Neolithic. Initially, we are surveying the floor of the oasis, recording cultural and environmental information on the surface. Following this survey, we will excavate various locales in order to shed light on the many specific problems which are being generated.

The Dakhleh Oasis is located in the Egyptian Sahara, centered on 25°48'N and 29°05'E. The oasis is overlooked by a 400 metre high south-facing limestone escarpment. The floor of the oasis is a flat clay plain, originally lacustrine, which dips slightly northward and lies between 100 m and 135 m above sea level. The oasis is sausage-shaped, about 80 km in length and up to 25 km wide. The local population, estimated to be about 35,000, lives in some 17 settlements scattered over the area. The town of Mut, which is the capital of the region, is the largest, with a population of about 10,000. The local economy is based entirely on agriculture, the major income crop being dates, which is exported to the Nile Valley. Various cereals, including rice, wheat and sorghum are produced for local consumption, as are a few vegetables. Fruit crops of importance, besides the dates, include apricots, oranges, olives and grapes. The climate of the oasis is, of course, hyperarid and relatively hot, maximum temperatures ranging between 21.5°C in winter and 39°C in summer. Through most of the year, the prevailing wind is from the north. The vital water

[1] Preliminary reports of these field seasons are published in *Journal of the Society for the Study of Egyptian Antiquities* IX. 4 (August, 1979) and X. 4 (August, 1980). Various contributing members of the expedition include C. S. Churcher, palaeontologist; W. K. Hodges, geomorphologist; C. A. Hope, ceramicist; M. M. A. McDonald, prehistorian; A. J. Mills, director; and J. C. Ritchie, palaeobotanist.

of the oasis is borne by several aquifers at various depths and it is under sufficient pressure to bring it to the surface without the aid of pumps, even from 500 - 600 m. Basin irrigation systems, similar to those of the Nile Valley, are universally employed, although currently there are attempts to introduce overhead sprinkler systems. The soil is naturally subjected to prolonged periods of fallow because the streets of moving barchan dunes from time to time force the farmers to move from one area to another. There is no naturally occuring surface water at the present, despite the fact that there is a superbundance of water being tapped – the excess is dissipated by evaporation.

Animal husbandry in Dakhleh is on a small scale. Each household has a small flock of sheep and goats and a small flock of mixed fowls – chickens, ducks, geese and turkeys, sometimes pigeons. A cow or two completes the complement. Larger flocks of sheep and goats, as well as small herds of camels, are maintained by Beduin-related nomadic "Arabs" who have settled in the oasis. Dairy, meat and egg production is all on a very limited scale and it is not always possible to find these provisions locally for the expedition because there is no excess.

Currently, approximately 1/5 of the land of the oasis is devoted to agriculture. Although not all the area has arable soil cover, there is still considerable unused land for various reasons. It is this potential which is prompting the development of the "New Valley" agricultural scheme to help feed Egypt's expanding population.

Interest in the beginnings of food production is high, but unfortunately, the evidence we have gathered to date about the Neolithic inhabitants of the Dakhleh Oasis yields only a little information. We have recorded some thirteen individual sites, two of which have provided enough evidence on which we can begin to reconstruct a landscape. Preliminary field identifications of teeth and bones of elephant, aurochs, hartebeeste, two species of gazelle, an equid, ostrich and another bird, were made from remains which appear to be in a butchering context within a Neolithic habitation area at two separate sites. The implications of this faunal complex are that the oasis area more closely resembled present East African savannah zones, with grass cover and a thin forest of shrubs and small trees to accomodate both the grazing and browsing animals. There must also have been some permanent standing surface water, presumably as marshes or ponds and, probably, some seasonal rainfall. One or two Neolithic sites are situated beside playas, a circumstance which reinforces this latter aspect of the landscape. Although the faunal analysis is a preliminary one and the sample is surely incomplete – there are no predators or rodents, for example – it is perhaps significant that no domesticates are identified until possibly Old Kingdom levels. This does not correlate with the domesticated cattle and caprovins found by Wendorf at Nabta Playa and dated to the Terminal Palaeolithic and early Neolithic phases (Wendorf *et al.*, 1977).

One of the problems we encounter in dealing with the Neolithic sites in western Dakhleh is their greatly deflated condition. Despite rich remains of the lithic and

ceramic industries and the faunal complex mentioned above, none of the sites so far examined displays any depth of occupation debris. This, of course, means that unless fossilized and originally well below the ground surface, we are unlikely to encounter floral remains. Certain fossilized root and stem remains have been noted at one Neolithic site, but cannot be definitely associated with the cultural remains at this stage. Pollens have been found preserved in certain sediments and will eventually provide us with some floral information. Indirect evidence for the use of cereals is found in a number of small grindstones, which occur on several sites for Neolithic onwards. These are, however, not plentiful and are nowhere near the size of those, for example, from Wadi Kubbaniya (Wendorf *et al.*, 1979).

Evidence, in the form of material remains, has now been recovered which attests to habitation in Dakhleh by ancient Egyptians from the Archaic Period until just before Dynasty XVIII, *i.e.*, between c. 3,000 and 1,600 B.C. Most parts of this period are represented by small groups of finds and burials. There is, however, one time when the Egyptians are very strongly represented. That is during the latter part of Dynasty VI and into the Frst Intermediate Period. At this time there were major and monumental sites at Ain Aseel and Kila ed-Debba in the Balat area[2], where a large town mound and inscriptional evidence indicate some important activity at a great remove from the usual Egyptian world. In western Dakhleh, there are twelve recorded inhabited locations from this period, the area of some of them as great as 80 hectares. Many of them bear traces of some kind of industrial activity, as yet unidentified, and some have the remains of mud brick architecture. None is very well preserved. The significance of this is that, while a single isolated community might be provisioned from a distance, such a population as that represented in this context would have had to have been locally supplied, either producing its own food or purchasing it from a local agricultural population. This in turn means that a landscape somewhat different from that of the Neolithic would have occurred. The Egyptians had had a sedentary agricultural basis for much too long a period for them to have adopted hunting and gathering subsistence techniques in the oasis. On the contrary, they would have adapted the new area to their accustomed farming patterns. With the end of the pluvial activity of the period preceding the third millennium, there must have been changes in the faunal and floral aspects of the oasis. Probably many of the grasslands and the shallow surface water areas dried up, or were reduced in extent or frequency. With a decreased browsing or grazing pressure created by the disappearance of the megafauna, the increased land available for cultivation and animal husbandry, and the farming techniques already well developed in the Nile Valley, the Egyptians would have had little difficulty in developing agriculture in the oasis. Unfortunately, no evidence speci-

[2] Originally published by Fakhry (1972). The sites are now being excavated by the Institut Français d'Archéologie Orientale and reported in *Bulletin de l'Institut Français d'Archéologie Orientale* 77 (1977) and 78 (1978) by J. Vercoutter and others.

fically supporting this has yet been recovered, nor has evidence, apart from the fact that some Neolithic sites have ceramics on them, been recovered to shed light on the probable Neolithic adaptations to the changing environment.

Another group of evidence comes from the Nile Valley itself. This is the literary and pictorial references to the oasis and its products. Already in the First Intermediate Period, when the land of Egypt had fallen on difficult times, trade in fowls and the agricultural products of the oases continued (Gardiner, 1909). Later references attest to prized commodities such as figs, grapes, and especially wine coming from the oasis (Ebbel, 1937; Breasted, 1906; Gardiner, 1947; Sethe, 1920). Painted and relief scenes in tombs as those of Rekhmire (Davies, 1944) and Puyemre (Davies, 1922) depict oasis trade or tribute items, including wine, fruit, fancy baskets and woven sandals – all agriculturally derived products. What we cannot be absolutely certain of is the precise nature of the Egyptians' participation in all this. So far, no Middle Kingdom remains have been recovered, but there is sufficient Second Intermediate Period material to attest to the Egyptians' presence, although not to give us any real idea of population size or activity. After Dynasty XV there is no archaeological evidence for any Egyptian occupation in the oasis apart from two stelae of post-New Kingdom date which are supposed to have been found at Mut at the end of the last century. One of them (Gardiner, 1933), dating to Dynasty XXII, attests to agriculture and administrative officials and concerns disputes over wells and water rights. The other (Janssen, 1968), from Dynasty XXV, tells us that the region was still occupied, but that it was probably under the control of a "Libyan" tribe. As yet, we are unable to judge whether the oasis and the Nile Valley were trading partners, whether the former was subjugated to the latter, or whether there were many Egyptians living there as in late Old Kingdom times. It may be that what population was in the oasis after the Old Kingdom was gradually forced by changing conditions into the centre of the oasis – an area as yet not investigated.

Whatever activities were conducted during the first millennium B.C. in central and eastern Dakhleh, there is no doubt about the rapid population expansion of western Dakhleh in the first century A.D. Well over half of all the 130 sites are massive, others consist of a single small building. There is a great range of types of sites as well as temples, towns, farmsteads, cemeteries, industrial areas and irrigation systems. In addition, many of them are in a state of excellent preservation. To judge from the number and size of sites and from the general spread or distribution of Roman potsherds over western Dakhleh, land use and perhaps also the population was greater than at any other time, including the present.

There can be little doubt that there was a real agricultural development scheme in Dakhleh in the first century A.D. During this period a community was established there with all the earmarks of such planning. There is a stone temple, rather cheaply and badly built, at Deir el-Haggar[3], which is dedicated to the worship of Theban

[3] The most complete recording of this temple is in Winlock, 1936.

deities in a local guise, and which is inscribed with the names of various first century emperors, including Titus, Nero and Vespasian. Attached to this cult centre is a small complex of buildings. Nearby are several isolated "farmsteads", which are two-roomed brick buildings, each with a large pigeon loft.

There are a couple of dozen of these within a radius of four kilometres of the temple, all bearing that sameness which is the stamp of governmental building projects. The pigeon lofts were probably intended to fulfill the protein needs of the immigrant farmers until their land was properly developed – a breeding pair of pigeons will produce two birds for the pot per month. Also in the Deir el-Haggar vicinity are several large aqueducts which brought water from springs a kilometre or more away to the south. While the dating of these aqueducts is conjectural, it is difficult to associate them with any sites other than the Deir el-Haggar ones. Similarly, undated remnants of field systems can be seen in the vicinity. An interesting coincidence is the occurrance of an agricultural disaster of the mid-first century in the Fayum and the potential source of migrant farm labour that this would be.

Although many of the western sites were apparently only occupied for a relatively short period, the Roman settlement stabilized and continued to thrive in Dakhleh. Major towns, such as Amheida and Smint el-Gharab, grew up and evidence shows them to have been occupied for a considerable span of time. A most interesting tomb scene of the early third century at Muzzawaka depicts some chief products of the oasis. Identifiable in the picture are dates, olives, sorghum, grapes and pigeons. We have also tentatively identified seeds or other gross plant remains of millet, rice, apricot, peach and fig from Roman archaeological contexts. Bones of domesticated cattle, ass, pig, chicken and sheep-goat have also come from test excavations or from *in situ* provenances. That much of this was destined for the Nile Valley and even further afield can be ascertained from continuing references to the produce of the oasis, particularly the wine.

An historical indication of the greater water resources of the Dakhleh than the Kharga Oasis can be seen in the Roman period. Kharga was as much the subject of development as was Dakhleh in the first century. However, it seems that the underground water of Kharga was overtapped and soon began to run dry and many of the wells there were quickly abandoned [4], while the Dakhleh occupation continued for three or four centuries.

Evidence now suggests that the aeolian sand which is the bane of the modern Dakhleh farmer was one of the major contributiong factors to the sharp population decline at the end of the Roman period. The evidence for the decrease is, simply, that while 70 Roman sites have been recorded, only 17 Coptic period sites are known from the same area. The spread of surface artefacts suggests that areas now heavily sanded, once had exposed soil. Another indication that the sand activity is only recent is the absence of fossil or mineralized dunes in areas where Roman mud brick

[4] V. Haynes, personal communication, 1978.

has become strongly mineralized. Undoubtedly, social and political conditions in the Nile Valley have often had a strong effect on life in the oasis, but when the Islamic conversion of Egypt occurred, there was no influx of Copts to Dakhleh similar to that which occurred in Lower Nubia, an equally inhospitable area. It is also quite probable that the clay soil of Dakhleh became impoverished after a few centuries of intensive Roman farming and was unable to provide more than subsistence living for the vastly reduced and declining population.

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