

## Investigating ancient Memphis, Pharaonic Egypt's northern capital

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*Since 1981 the London-based Egypt Exploration Society has been conducting an archaeological survey of the site of Memphis and its surrounding area. The present field director of the project describes some of the aims and results of the most recent phases of the survey.<sup>1</sup>*

**A**ncient Memphis is located about 27 km south of its descendant, the modern capital Cairo, at and around the town of Mit Rahina (Fig. 1).

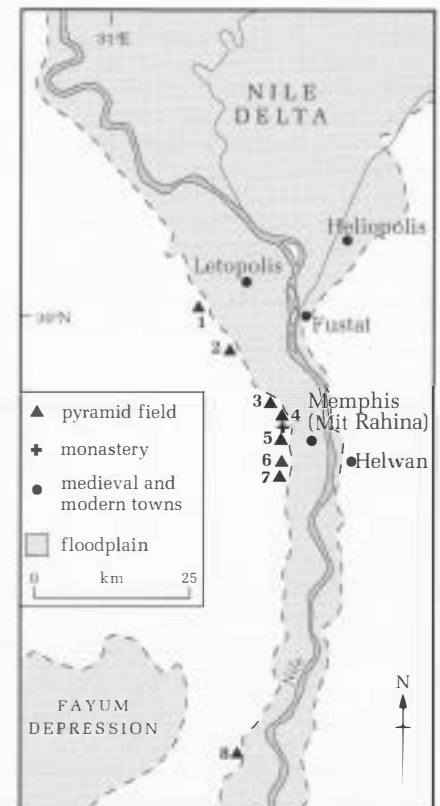
Memphis was recurrently the administrative centre of the politically unified state of Egypt in Pharaonic times: it was founded about 3000 BC to control the trade and travel routes that converged on the Nile

Valley from the delta to the north and from the Red Sea and Saharan oases via caravan routes across the eastern and western deserts respectively. Although there were scattered agricultural and light-industrial sites in this region as early as 3400 BC, there is so far no evidence of any large conurbation before 3000 BC, the beginning of the Dynastic period.

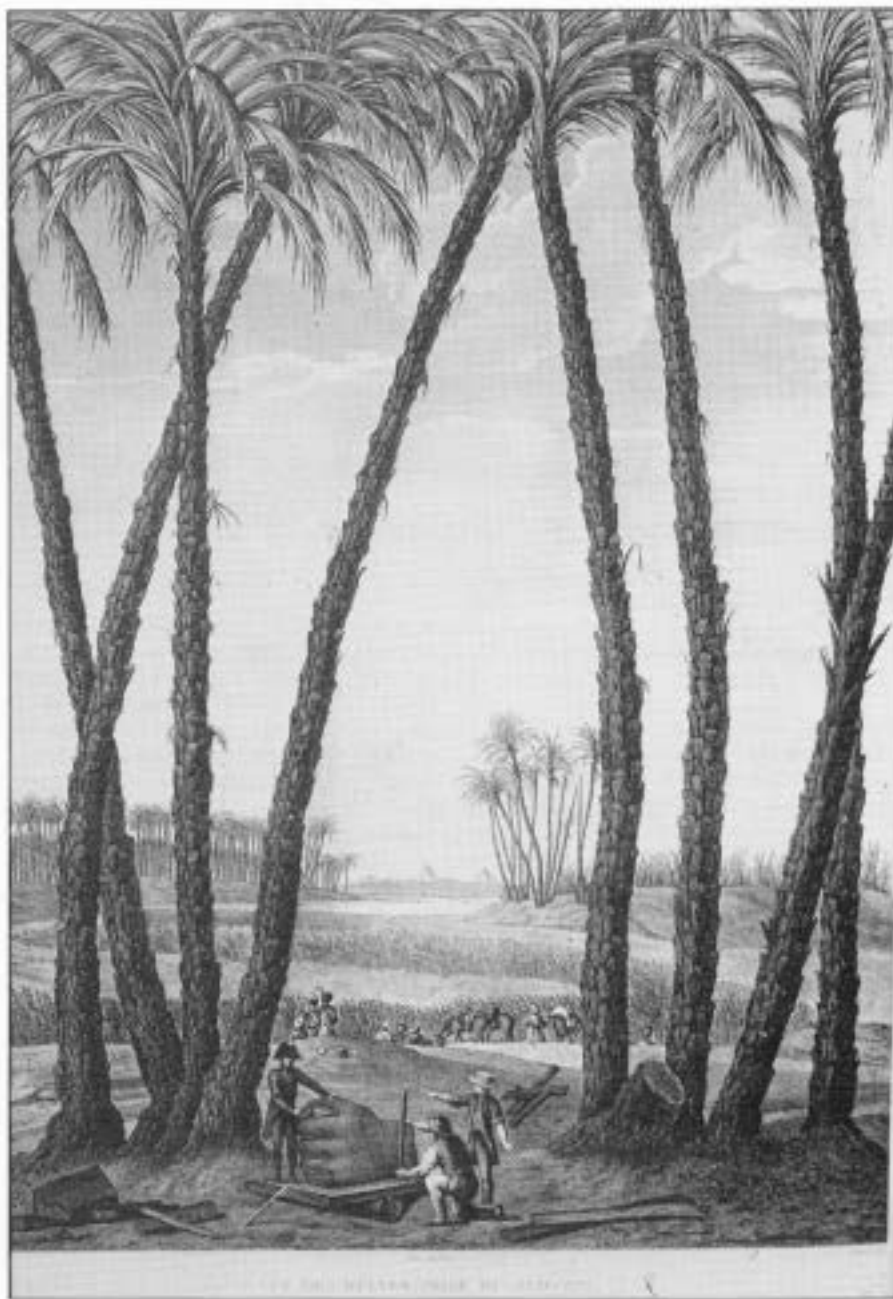
At the height of its political importance Memphis was a vast metropolis that stretched at least 10 km from north to south along the west bank of the Nile. Its necropolis (cemetery area), which is represented by the distribution of pyramid sites, was even longer, bounded in the north by Abu Rawash and extending south through Giza, Abusir, Saqqara, Dahshur and Mazghuna, with a southern outlier far to the south at Meidum (Fig. 2). The central and most intensively used section of the necropolis is the high plateau most commonly known by the name of Saqqara, with the medieval and modern town at its southern end. Here the first pyramid enclosures were laid out and many of the royal and high-status (elite) tombs of the Old Kingdom and later times were built. After the rise to prominence of the Twelfth Dynasty (c. 2000 BC) at Thebes, which became the southern capital, Memphis remained an administrative



**Figure 1** Aerial view of the ancient mounds in the district of Memphis (modern Mit Rahina), 1955; pale areas represent land above floodplain level, dark areas are cultivated land including, within the mound area, former temple enclosures.



**Figure 2** The northern Nile valley, the southern apex of the delta and part of the Fayum depression, showing the location of places mentioned in the text. Pyramid fields: (1) Abu Rawash, (2) Giza, (3) Abusir, (4, 5) North and South Saqqara, (6) Dahshur, (7) Mazghuna, (8) Meidum.



**Figure 3** French surveyors of Napoleon's expedition at Memphis, 1799; they are measuring a fist broken from a colossal statue (from the *Napoleonic Description de l'Égypte*).

centre of national importance and the main shipbuilding and marshalling yard for military campaigns to the Levant and Anatolia. The Pharaohs were crowned here, and during the Eighteenth Dynasty (sixteenth–fifteenth centuries BC) the younger co-regents – the war leaders of the New Kingdom – were often based in the city as a forward line of command against possible invasion from the north. Indeed, occupation ended at Memphis only when the great cliff-top monastery of Apa Jeremias (Fig. 2) was finally abandoned in the tenth century AD. After the foundation of Alexandria in the fourth century BC, and more importantly of the Islamic capital Fustat (Fig. 2) in the seventh century AD, Memphis was depopulated, and even its

location was eventually lost until the sixteenth century AD, when it was correctly identified by the Napoleonic expedition of 1799–1801 (Fig. 3). Its Arabic name, Manf, survived until early in the twentieth century, and has recently been revived to help promote the tourist trade.

Guidebooks frequently describe the physical remains of Memphis as “disappointing”, “sparse” or “almost completely disappeared”, but this creates a false impression: the surviving ruin field covers 6 km<sup>2</sup> and that represents only a small part of the full extent of the ancient city. Seven artificial hills or mounds (in Arabic, *koms* or *tells*) surround a series of depressions (*birkas*), which were once flooded by the Nile and which represent sacred areas

where secular building was prohibited or discouraged: these low-lying areas are now mostly under crops or modern housing. Sediment cores drilled by the Memphis survey team (Fig. 4) indicate a depth over much of the site of up to 6 m of man-made deposits below modern ground level.

### Aims and methods of the Memphis survey

Our broad aims are to clarify and explain the development and topography of the city, and to try to reconstruct its environment through geophysical survey and sampling. Our first priority was to map and record the hundreds of (often illegal) excavations carried out at the site over the past 200 years. This involved research into archive sources, including many early photographic and manuscript collections, and early maps, which are particularly abundant for the Memphis–Cairo area, as well as mapping from air photographs, satellite imagery and ground-based survey, including resistivity survey. Conditions for fieldwork are often difficult because of the heavy cover of palm trees and other high vegetation, the rapid expansion of built-up areas, and a high water table that in parts of the site reaches the surface – problems now drastically affecting many ancient and modern settlement sites in the Nile Valley and Delta (Fig. 5).

### Eastward movement of the Nile

An early breakthrough in our research was the recognition that the Nile has been moving gradually eastwards during the past two millennia. Memphis seems always to have been a riverine site, but it now lies 3 km from the Nile, and we have located, on the east side of the settlement mounds, the massively built river wall that survived until the city was abandoned in the late Roman period. We would like to investigate this area more thoroughly as it might lead to the identification of the celebrated Memphis Nilometer (flood gauge) of Roman times, and would at least give us reliable evidence on river levels in Byzantine times, to relate to the almost continuous series of readings from the early Islamic (seventh century AD) flood gauge at Fustat. However, this part of the site has been occupied by the Egyptian army since 1970 and is out of bounds for research.

The eastward movement of the Nile probably continued throughout the Pharaonic period, no doubt with periodic short-term reversals, and therefore both river and settlement may originally have been quite close to the western desert edge.<sup>2</sup> This interpretation may explain many puzzling features of the site. For example, there is a disparity in levels from west to east across the site, with much higher (although much earlier) ground in the west, perhaps attributable to a rapid build up of occupation debris along an early riverbank. In particular, the total absence so far of any settlement remains of the Early Dynastic and



**Figure 4** *Drilling a sediment core in the floodplain southeast of the Abusir pyramids, 1992.*

Old Kingdom periods (3000–2000 BC) could be explained by the rapid abandonment, erosion and silting up of these earlier parts of the town lying farther west.

Evidence from sediment cores obtained by the survey team over the past seven years suggests that the Early Dynastic town was built away from the officially recognized site, close to the elite cemeteries at Saqqara, with their enormous brick superstructures with elaborate facades, and that, like the cemeteries there and across the river at Helwan (Fig. 2), the Early Dynastic town soon moved elsewhere. The geological conditions also suggest that any settlement here would be covered by sheet sand blown off the plateau by strong westerly winds, a supposition that is supported by cemetery evidence showing that the plateau, and the valleys separating it from the high desert to the west, were bare rock, free of sand cover, until the later Old Kingdom (twenty-first century BC).

### Recent research

Within this broad research framework, several separate but connected field projects have been completed or are in progress.<sup>3</sup> During the 1980s an area excavation was undertaken just south of Mit Rahina to investigate whether the west–east slope of the surface was underlain by natural sediment or consisted of an accumulation of built material. A long but physically very condensed stratigraphy here represents occupation from the seventeenth to the seventh century BC (Thirteenth Dynasty to the Late Period), with an abrupt and fairly long interruption some time in the sixteenth century, perhaps corresponding to a period of foreign rule in northern Egypt (the Hyksos Period). This interruption is also represented in the stratigraphy by much coarse sand, punc-

tuating a sequence otherwise composed almost entirely of ash, silts and clays, which confirms that the west–east slope is partly the result of natural sedimentation.

Our work in the 1990s has focused on the possibility of early settlement to the northwest of Mit Rahina. We have used sediment coring and survey by resistivity meter to record the buried sediments and to try to establish the existence of older river courses and other waterways. We are now trying to integrate information from both city and necropolis, by working along the poorly understood junction between the desert environment of the North Saqqara escarpment and the (presumably) densely packed residential areas on the

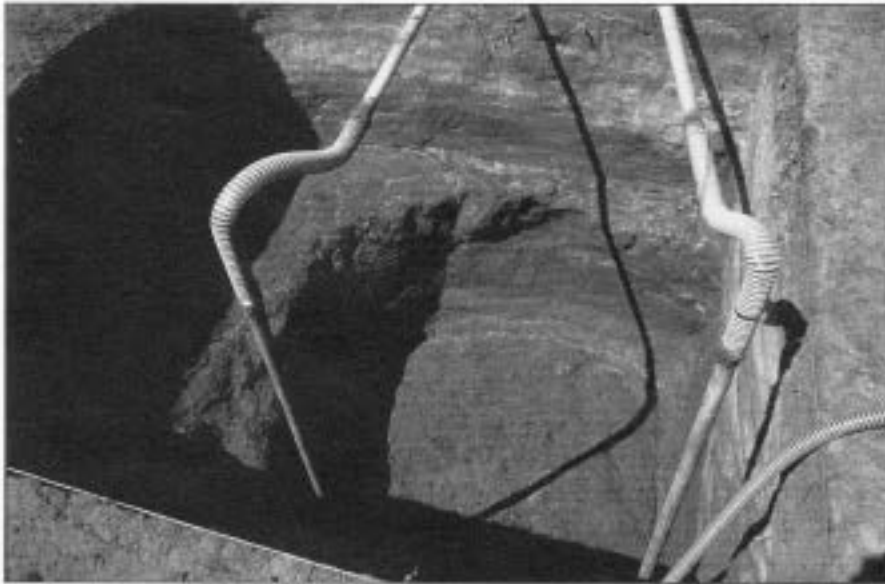
flood plain below. In 1996 and 1997 a small pilot excavation was made in the agricultural land to the east of the Saqqara Early Dynastic cemetery, about 0.5 km from the cliff face. The first season was seriously hampered by high groundwater, but the following year we hired a powerful dewatering system that allowed us to excavate 3–4 m below the water table (Fig. 6). This small exposure of 25 m<sup>2</sup> was, fortunately, located directly over a collapsed well of the Ptolemaic or Roman period, which revealed for the first time a complex sequence of silts and sands representing high and low floods over several millennia; but water seepage frustrated our attempts to examine the much earlier deposits lying only 0.5 m farther down. So near and yet so far . . .

### Towards coordinated local and regional survey

A major problem in our research is that past work in the Memphis area, and the records of it, are piecemeal and very incomplete. From activities as different as the ambitious and destructive pyramid-clearing projects (often carried out using dynamite as a standard excavation tool) of the nineteenth century to more recent smaller-scale excavations, the archaeological record may vary from extensive but unsystematic reports, to very short interim articles, to no reports at all. In particular, the lack of a single accessible system of coordinates for planning and recording sites has meant that dozens of arbitrary local grids have been set up over the years, usually with no permanent or even temporary ground markers, so that much of the information floats in a spatial void. We are now carrying out, over two years, a GPS (Global Positioning System) survey of the Saqqara escarpment and adjacent flood-



**Figure 5** *A limestone temple of Ramesses II (thirteenth century BC), one of the monuments at Memphis threatened by rising groundwater and salt damage.*



**Figure 6** Excavation 3 m below the water table on the floodplain east of the Saqqara escarpment, 1997. The two riser pipes shown, which are connected to a powerful pump, have been inserted into the base of the trench to lower the local water table and allow excavation.



**Figure 7** GPS survey from the top of the Teti pyramid at Saqqara, 1999, with the pyramids of Userkaf and Zoser in the background.

plain (Fig. 7), with the aim of providing a single reference system that can be used to integrate data generated in the past, as well as servicing current and future fieldwork projects. Saqqara alone is currently the scene of at least 25 separate archaeological projects from around the world, all of which desperately need reliable survey data. In the absence of any kind of sites and monuments record for Egypt, the best that can be done is the series of regional surveys that are now being built up for Egypt, notably in the Nile Delta and at sites such as Thebes. We hope to coordinate our efforts with other teams using GPS at Alexandria and Thebes, and eventually to create a long accurate baseline for the Nile Delta and as much of the valley as possible.

We also hope in the future to collaborate more closely with colleagues<sup>4</sup> to achieve a larger regional survey that will bring in the neighbours of Memphis to the north, Letopolis and especially Heliopolis (centre of the Egyptian solar cult), as well as the narrow and important stretch of valley southwards to the Fayum depression (Fig. 2). This will help to address some of the larger questions of landscape archaeology and the relationships between sites and monuments, especially the enigma of Old Kingdom pyramid location and distribution (which has been the subject of some wild speculation over the years) and a better understanding of Predynastic activity in this vital strategic region at the head of the Nile Delta.

#### Notes

1. The EES Memphis Survey Project comprises a cross-disciplinary team working in groups: the epigraphic work is in the hands of Dr Jaromir Malek of the Griffith Institute, University of Oxford, and of Dr

W. Raymond Johnson of the Oriental Institute, University of Chicago and Director of its field house at Luxor; the ceramics team is led by Janine Bourriau of the McDonald Institute, University of Cambridge; resistivity meter, magnetometer and GPS surveys were carried out by Ian Mathieson, who also works at Saqqara for the National Museums of Scotland. Dr David Jeffreys is the present field director of the project, a position previously held or shared by Professor H. S. Smith, formerly of the UCL Department of Egyptology, and Dr Lisa Giddy, formerly of the University of Sydney. The author also acknowledges with gratitude the contribution of a small army of team members over the past 18 years, whose names are far too numerous to mention here.

2. D. G. Jeffreys & A. Tavares, "The historic landscape of early Dynastic Memphis", *Mitteilungen des Deutschen Archäologischen Instituts Abteilung Kairo* 50, 143–73, 1994. For discussion of Nile movement farther south, in the Sohag region, see K. W. Butzer, *Early hydraulic civilization in Egypt: a study in cultural ecology*, 15–36 (Chicago: University of Chicago Press, 1976).
3. Interim reports on this recent fieldwork have appeared in the *Journal of Egyptian archaeology* 76 (1990) to 84 (1998).
4. Current projects with which we are most closely connected are those of Dr Mark Lehner (Yale University) at the Giza plateau and escarpment, and Dr Christiana Koehler (Macquarie University, Sydney) at Helwan. Watching briefs carried out by Michael Jones (American Research Center in Egypt), on trenches dug by the Cairo Waste Water Project, are also directly relevant to our work, as is the recent collaboration at Heliopolis between the Supreme Council for Antiquities in Egypt and the German Archaeological Institute in Cairo.