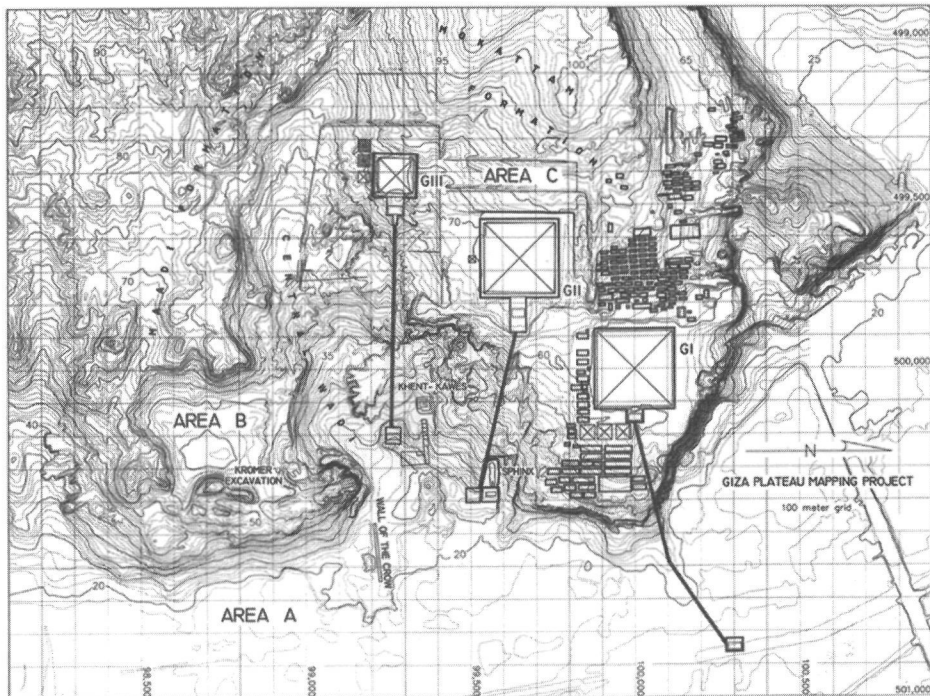


## **GIZA**

**Mark Lehner**

Our most recent excavation season took place from late January through April 1998. From 19 February until 15 April 1999 Mark Lehner, John Nolan, Justine Way, Cordula Werschkun, Teri Tucker, and Noha Abu Lila carried out a study season on



*Figure 1. Map of Giza with Area A on low desert southeast (lower left) of the pyramids*

ceramics, sealings, lithics, and bone in the project storeroom in the Western Cemetery. Here I report results of the 1998 excavations.

### **Summary of the Previous Seasons 1995–1997**

Since 1988 we have been excavating at the foot of the Giza Pyramids Plateau about 300 m south of the Great Sphinx. Our site is a 13 ha tract of low desert stretching 450 m south of a large stone wall called Heit el-Ghurob, “Wall of the Crow,” and 250 m between the urban zone of Kafr Gebel and the high desert (fig. 1). We refer to this site as Area A (fig. 2). In 1991 we discovered two bakeries with intact dough-mixing vats, hearths, and bread pots. The bakeries were attached on the south side of a thick mudbrick wall that turned a corner at the bakeries and extended beyond the limit of our excavations to the north and west. In 1995 we excavated a series of squares inside the corner enclosed by the wall and here we found low troughs and benches. We found fish remains embedded in the floor nearby and fish bone in the soil that filled the troughs. In 1997 we excavated a series of squares farther west and north in order to trace the extent of the wall. I hypothesized that we may be finding an outer enclosure, given over to production activities, around a central institution or household.

We ascertained that the wall extends as far as 65 m to the west (fig. 8a). Other thick mudbrick walls extend to the north and the south. As far as we could tell from our 5 × 5 m excavations, the walls running north from our main wall suggested (modular?) series of chambers in which we found evidence for meat processing and

## ARCHAEOLOGY

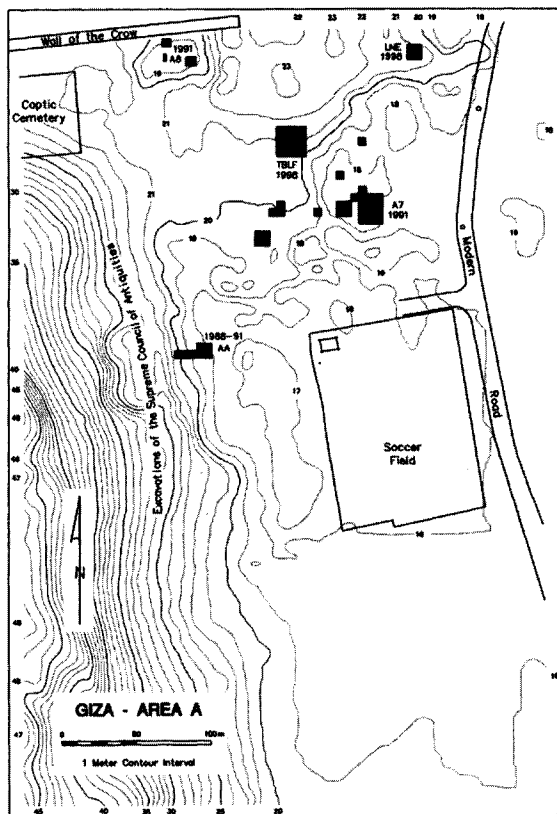


Figure 2. Map of Area A with squares excavated 1998/99

and northwest with our excavations, in the direction of the large stone wall, Heit el-Ghurob. Before we could excavate we needed to move an enormous overburden of modern sand and other deposits nearly 4 m deep including sand dumped from Selim Hassan's 1936 excavations north and east of the Sphinx. We are grateful to Engineer Abd al-Hamid and the Giza Pyramids Inspectorate for helping us move this modern material so that we could eventually survey a broad square, 20 × 20 m, consisting of 16 regular 5 × 5 m squares, 35 to 55 m north of the 1997 squares in the D-row (fig. 2). We named this operation "the big leap forward" (TBLF). While we were moving the modern overburden in TBLF, we began smaller excavations to the south to investigate features that aroused our interest in the 1997 season; these are described first.

### Square A6-7-ZZ6-7

Our first excavation area was 10 m south, and 5 to 10 m west, of squares D8-9 (fig. 2). Here the people who dig sand for cleaning the nearby riding stables had already exposed a series of stony small mounds in a low area with little modern overburden. Fiona Baker supervised a 10 × 10 m excavation square. The mounds that piqued our interest were the result of collapsed stone rubble walls forming small chambers resembling workers or guardhouses found at other sites. The rooms were filled with

other food production, copper work, and pigment grinding. Fifty meters to the north of the 1991 bakeries, in a 5 × 5 m square (M-N20), we uncovered part of an extensive mudbrick structure with small and narrow rooms oriented north-south and two stone pediments. Late in the 1997 season, John Nolan excavated square I17, to the northwest, "inside" the north and west alignments (fig. 8a). John uncovered a simple structure divided into two rooms that, in simplified form, resembles workers divided court houses as found in the New Kingdom at el-Amarna and Deir el-Medineh.

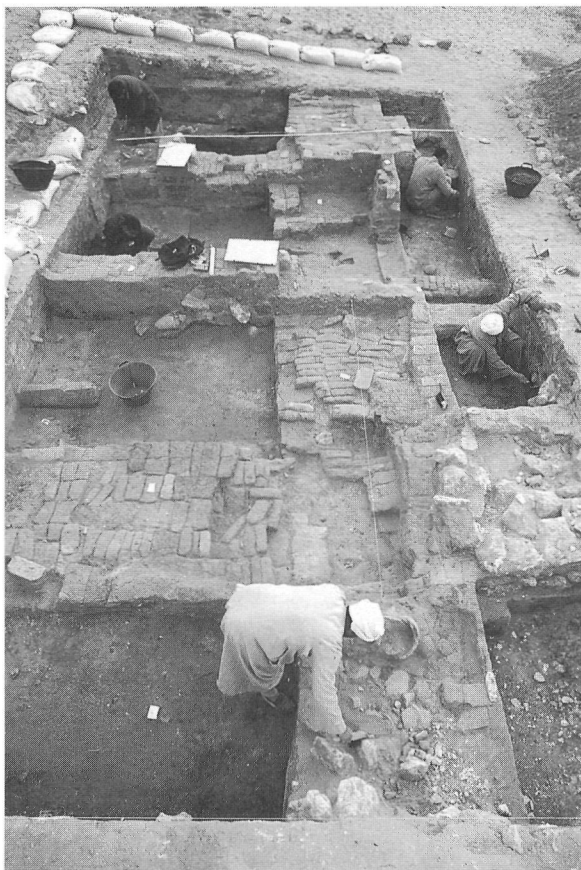
### 1998 Objectives

In 1998 we wanted to test the hypothesis that these production facilities may lie in an enclosure around a large household or core institution, perhaps even a royal residence by moving farther north

ashy soil, large quantities of pottery sherds, and dolerite hammer stones. The east side of this small complex, badly eroded, included a courtyard with a south-eastern entrance flanked by two crude limestone pediments. As we have seen elsewhere on our site, the stone walls were a partial rebuilding of the main phase of mudbrick walls that had fallen into ruin.

### Squares D9 and E9

We expanded the area of Squares D8–9 by excavating square E9 to the north (fig. 8a). Here three walls run north from the main east-west wall excavated in 1997. One of these walls extends through approximate center of combined squares D9–E9. On one side of this wall, along the east side of the excavation squares, the room was filled with marl clay floor levels separated by ashy layers that contained pottery sherds, bone, and charcoal. Later in antiquity someone dug a trench through



*Figure 3. Squares D8 and D9 with main east-west wall traced in 1997, looking east*

the floor layers along the north-running wall to take out bricks for reuse elsewhere. In one of the marl-ash floors, John Nolan, who supervised work in Squares D9 and E9, found a series of small round egg-carton depressions similar to the bread-baking pits that we found in 1991. A half bread mold was still in place in one of the sockets.

The layout on the other side of the north-south wall resembled a simplified rectangular house plan with a central wing wall dividing it into two main chambers. Like the smaller structure that John Nolan cleared in square I17 in 1997, this plan resembles a simple version of New Kingdom workmen's houses such as those at Deir el-Medineh. In 1997 we found several dolerite hammer stones on an ashy floor in the southern of two main chambers and a cooking installation built into the southern wall. The northern chamber had hearths in the southwest and northwest corners.

The rooms were not filled up with superimposed floors like those on the other side of the north-south wall. We did find, however, evidence of an earlier phase with a different arrangement of walls. Under a long rectangular patch of black ash that ran along the east wall and through the doorway between the two rooms we found another set of egg-carton shaped holes or baking sockets. This baking pit was



*Figure 4. John Nolan in square E9 examines traces of the bin and granary(?) in the northern room of the “house”*

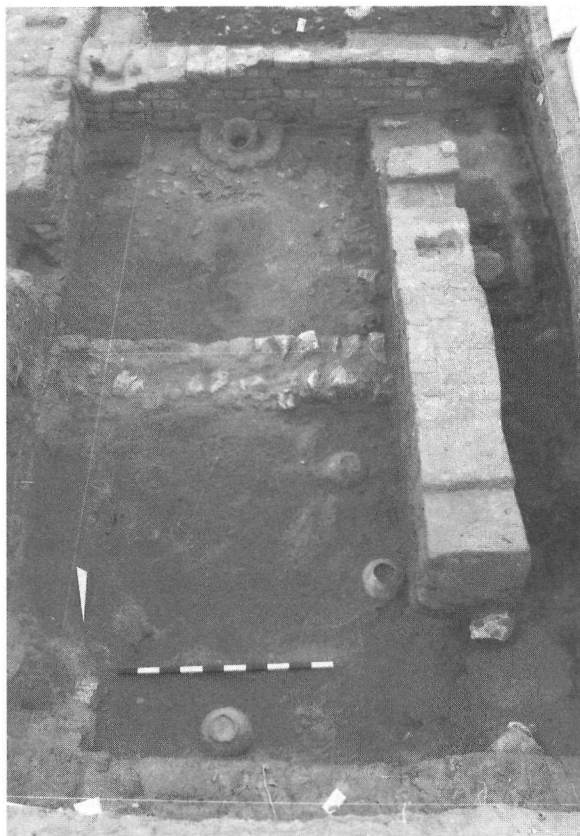
used before the eastern north-south wall was built; the wall’s foundation trench cut through the baking sockets. Traces in the earlier floor revealed that the wall separating the two rooms of the “house” had first been the south wall of a square bin (fig. 4). Only a row of foundation bricks and a plaster line remain of the east wall of the bin that was taken down when the larger east wall of the “house” had been built. The south wall of the bin was saved to divide the “house” into two rooms. The earlier floor inside the bin had been carefully paved with marl clay, except for a round mudbrick feature plastered inside with alluvial mud — probably the remains of a small granary. The purpose of the bin was probably to hold the excess and spilt grain on the clean marl floor.

### **Square D17x: Copper Working**

At the end of the 1997 season, in a narrow space between the ancient walls and the northwest corner of square D17, Justine Way found a hearth that had scorched the walls to a bright orange. Complete and fragmentary bread molds lay nearby. The heavy fraction from the flotation of the soil yielded many fragments of copper slag. To investigate further this evidence of metallurgy Justine expanded in a diagonal 5 m square, D17x (figs. 2, 8a). Here in a chamber measuring 4.20 m north-south and 1.90 m east-west there was much evidence of copper work. Again there were several floor levels. Over time a cross-wall divided the chamber in two similar sized chambers (fig. 5). In each chamber a large bread mold had been plastered in place against the walls, one at the center of the south wall, another in the northeast corner. These had apparently been used as crucibles or for heating copper implements. Each was held in place by a collar of large sherds and mud that had been fired like brick from the heat. The one in the northeast corner was set at an angle, tilted toward the user (fig. 6a). The one at the south wall, less complete, was set vertically. We found bread mold sherds that had been heated to the point where the ceramic was vitrified, embedded with small bits of corroded green copper. Near the bread mold/crucible in the northeast corner, Justine found

three jars upright in the floor. The ashy contents included small bits of copper slag and a flint knife. Justine found more copper slag in the floor deposits as well a thin copper rod and a copper fishhook. Along the east wall of the chamber in the earliest floor there was a deep trench filled with concentrated black ash.

The old idea that bread molds were crucibles for molten copper was discarded when their function in baking was ascertained. The finds in D17x reveal that the bread mold could be used for copper work as well. The hearths with bread molds as centerpieces do not resemble the crucibles shown in the Old Kingdom tomb scenes, which have a kind of double saddle shape. But in the Tomb of Niankh-khnum and Khnum-hotep at Saqqara, next to a scene of men using blow pipes at a typical crucible, is a scene of a man holding a large bread mold at an angle while another man uses a blow pipe to heat the interior (fig. 6b). The installations in D17x were probably not for smelting copper from raw ore, which would have been done closer to the source in the mines. Rather here small implements were made or tools were hardened by tempering or annealing, perhaps by heating them in the bread mold hearth and then quickly cooling them for pounding by dunking them into water in the large jars that we found implanted nearby in the floor.



*Figure 5. Copper-working chamber in square D17x, looking south*

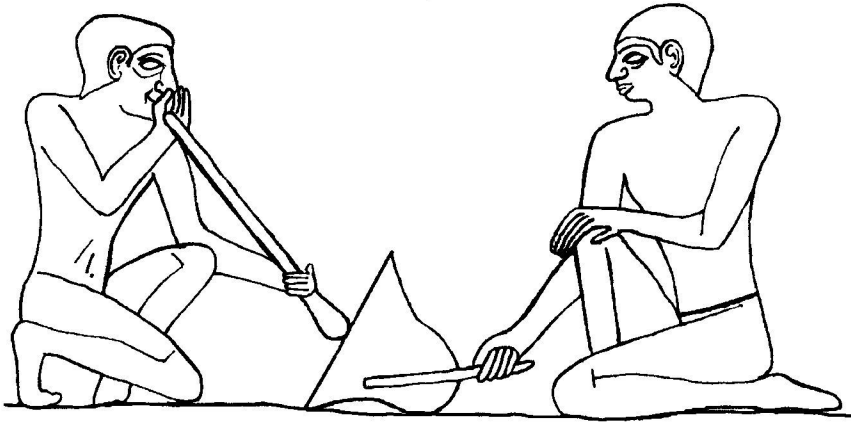
### **“The Big Leap Forward” (TBLF)**

Our 20 × 20 m excavation square, TBLF, comprised sixteen 5 × 5 m squares (figs. 2, 7). Mr. Mohsen Es-Sayyad supervised much of the work in Square TBLF, and especially the excavation in squares L11 and M10. Heba Ragab, Carl Andrews, and Mark Lehner also supervised excavation squares.

We conducted extensive excavation in seven of the 5 × 5 m squares. By scraping about 10 cm of the compact mud surface off the top in all 16 squares we revealed the outlines of a repeating, modular series of long galleries, separated by massive walls about 1.5 m thick, and spaced every 10 cubits (5.25 m; fig. 8b). A



a



b

**Figure 6. (a) Bread mold hearth and jar embedded nearby in floor in northeast corner of chamber in square D17x and (b) Scene of men working copper from Fifth Dynasty Tomb of Niankh-khnum and Khnum-hotep at Saqqara**

common southern wall defines a street, with several layers of plastering and periods of repair, that separates the galleries from the set of buildings we are finding about 35 m to the south in the D-file of squares (fig. 8a).

Each gallery had a doorway onto the street. By the time the galleries were abandoned, the doorways were filled with large bread molds and bread mold sherds and stones. Inside the doorways, the rooms at the southern end of the two western galleries contained thick deposits of concentrated black ash, large numbers of bread mold sherds, and several floor levels pitted by trenches and sockets used as baking pits. Walls subdivided the central part of the two western galleries into small rooms that





**Figure 7. General view of 20 × 20 m excavation square, TBLF, looking northwest**

were paved with marl plaster and kept relatively clean. These could have been for habitation, supervision of the pyro-industry in the back southern rooms, or storage and processing for craft and production. One of the central chambers contained two small rectangular bins built against the thick eastern wall of the gallery (fig. 8b). The northern bin was filled with several floor levels, the lowest of which was stained with yellow, orange, and red pigment, probably from hematite.

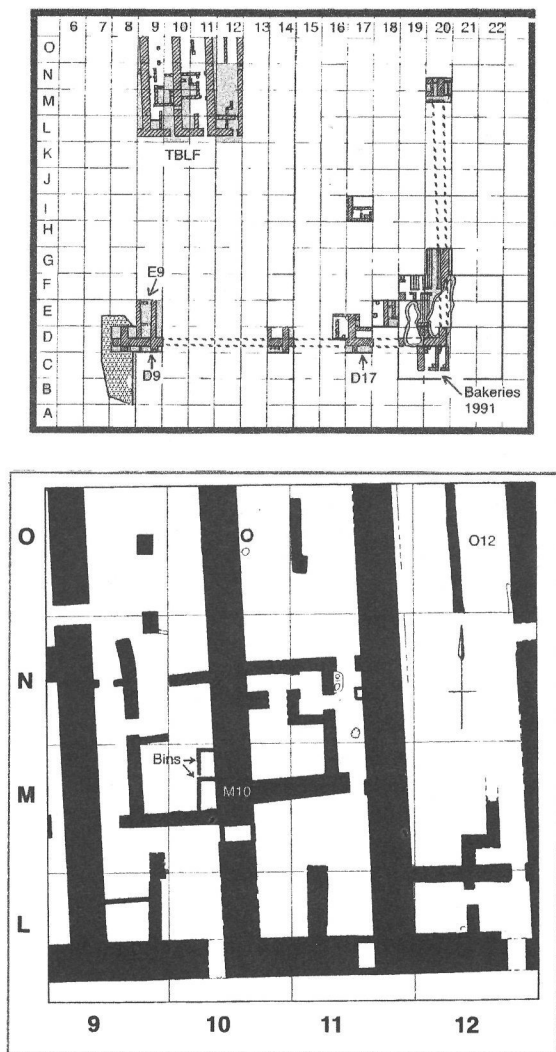
The north end of the galleries were open courts, divided nearly in equal halves by two rectangular pediments in squares 09 and N9, and by thin walls in 011 and 012. In the archaeological record, in models, and in tomb scenes ancient Egyptian workshops have closed areas in the back for storage and interior work, and open areas in front where natural lighting allows craftwork to take place.

### **“Leap to the Northeast” (LNE)**

“Leap to the northeast” (LNE) was our exploratory excavation 65 to 70 m east and 65 m north of TBLF; 110 m north and 20 m east of the bakeries that we found in 1991; and 115 m east-southeast of the end of the large stone wall called Heit el-Ghurob (fig. 2).

We excavated the northwestern and southeastern quadrants of a 10 × 10 m square (fig. 9). In both squares, just under the clean sand, we exposed a layer of dense black mud about 10 to 20 cm thick. The surface is 16.16 m above sea level, about half a meter lower than the top of the Old Kingdom remains in TBLF. It contained no artifacts and very few pottery sherds. As we dug deeper, the mud became sandier for a total thickness of 34–40 cm, thinning slightly to the west. The few sherds included ribbed fragments of Graeco-Roman amphorae. In the northwestern square, a thin layer of clean sand separated the mud from patches of compact brown





**Figure 8.** (a) Excavation grid and squares worked from 1995 to 1998, with sketches of major walls; and (b) Map of long galleries in 20 × 20 m excavation square, TBLF

Valley Temple, found in the AMBRIC sewage trenches; and the Zaghoul Street wall of limestone and basalt, found during construction work in 1993. The level of these features is about 15 m above sea level.

## Summary

In six seasons we have revealed rectilinear architecture, oriented to the cardinal directions, for systematic production, extending from near the Heit el-Ghurob (where we found a badly eroded bakery in 1991), as far as 225 m to the south, where we excavated squares AA1 through AA10 (1988–91), and for nearly 200 m east-west.

clayey sand at an elevation of 15.66 m above sea level, a meter lower than the top of the Old Kingdom layer in TBLF (about 16.64). The patches were surrounded by clean gravelly sand with many small rounded pebbles. In two probes the gravelly sand continued to a depth 1.11 m, although it became coarser with more dark, rounded pebbles.

The patches of Old Kingdom soil represent a trodden surface outside the major occupied area. The upper layers of dark concentrated mud must be alluvium deposited by the annual Nile floods. We know from the borings and trenches of the AMBRIC Waste Water Project in the late 1980s that the annual flood waters deposited 2.5 to 3.0 m of alluvium in the floodplain alongside the Giza Plateau since the Old Kingdom. Eventually the floodplain was high enough so that the silt-laden waters reached far enough west to deposit mud over the sloping desert surface along the limits of Area A. Other major markers of the Fourth Dynasty level that must have remained just above the flood are the bottom of the colossal stone wall, Heit el-Ghurob, which we found in a trench (A8a) during our 1991 season; the basalt pavement blocks from the Khufu

The evidence of the mud seal impressions, as well as our preliminary assessments of the pottery, indicates that the main phase was mid to late Fourth Dynasty.

Soon after the reign of Menkaure most of this complex fell into disuse and its walls were robbed for bricks to be used elsewhere. Some people remained and built stone rubble additions within the earlier walls. Kings Shepseskaf and Userkaf built their tombs at Saqqara where the royal house had probably moved after three generations at Giza. After the entire complex was purposefully leveled and buried, the settlement changed from a major focus of the royal house to the village that George Reisner found in front of the Menkaure Valley Temple in 1904.

We still understand little about the overall social context and organization of our site. What we found in Square TBLF does not confirm the existence of a core residence, or palace in Area A, although there is little doubt that all the facilities we are finding are an extension of the royal house. Some of the structures we found could be simple houses for workers, but we are not sure if the site includes a tightly organized town along the lines of the Khent-kawes pyramid town at Giza, or the Twelfth Dynasty pyramid town of Illahun. The house-like enclosures are closely associated with evidence of production, but it remains unclear whether or not production is separate from household. The TBLF galleries may reflect the systemic production of an economy of scale. Richard Redding, our faunalist, points to the large quantities of young, prime, cattle bone. People must have been eating this meat on, or near, our dig site and presumably living in the vicinity. Bread baking is evidenced in almost every excavation context.

In October 1999 we are beginning two years of intensive fieldwork, our mission for the millennium. Our goal is to clear the overburden and scrape the surface of the third-millennium BC deposits over broad areas in order to see the basic outlines of the architecture. Based upon our results in TBLF, we expect that the pat-

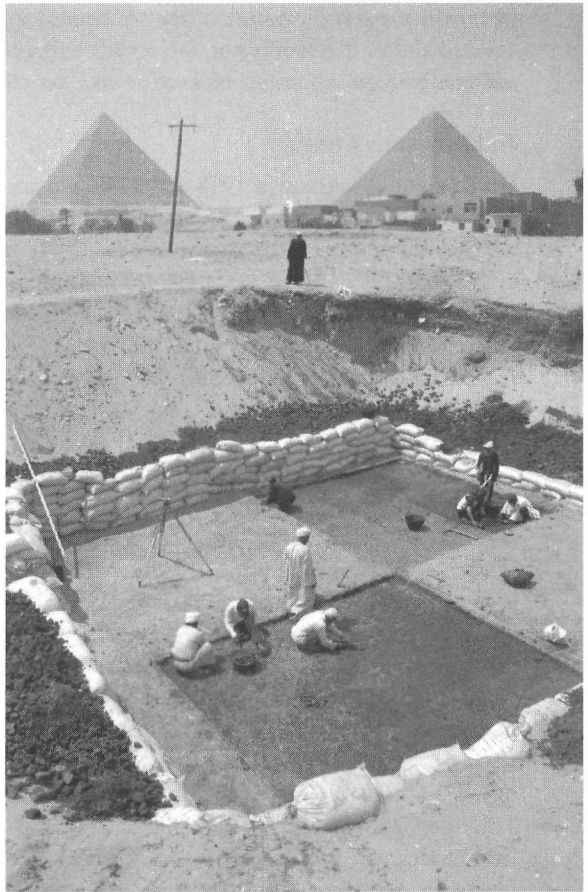


Figure 9. LNE, 10 × 10 m excavation square, looking northwest

## ARCHAEOLOGY

terns will suggest the nature of the settlement and the context for what we have excavated so far. If it works out, the results will guide us in choosing where to expand and continue our intensive excavation and sampling of material.

### Acknowledgments

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The 1998/99 team consisted of Mark Lehner, director; John Nolan, University of Chicago, archaeologist and assistant director; Richard Redding, Michigan Museum of Natural History, faunal analyst; Mary Anne Murray, Institute of Archaeology, University College, London, archaeobotanist; Nicholas Conard, University of Tübingen, lithics analyst; Cordula Werschkun, University of Tübingen, assistant lithics analyst; McGuire Gibson, University of Chicago, archaeologist; Peter Lacovara, Museum of Fine Arts, ceramicist; Selima Ikram, American University in Cairo, assistant ceramicist; David Goodman, surveyor; Carl Andrews, database manager and photographer; Mohsen Es-Sayyad, University of California, Los Angeles, archaeologist; Fiona Baker, Firat Archeological Services, archaeologist; Justine Way, University of Chicago, archaeologist; and Noha Lila, Supreme Council of Antiquities, artist.

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