In mid-January the Koch-Ludwig Giza Plateau Mapping Project returned to Giza for two months of field work. We once again opened Area A7 (see map below), in order to explore a large building complex, enclosed by a wall 1.5 meter thick, where we had found evidence of bakeries and fish-processing in 1991 and 1995. We suspected the structure was the outer enclosure of a royal residence of the pyramid building kings.

The Palace Hypothesis
In ancient Egypt, large-scale food production activities were attached to households of prominent people, palaces or temples. There is evidence for this pattern in the 12th dynasty pyramid town of Senwosret II at Illahun. Here the granaries and possibly bakeries, breweries, and carpenter and weaving shops were attached in modular fashion to a series of large houses tightly fitted with hundreds of smaller houses inside the town wall. We believe that our bakeries and fish processing areas might in similar fashion be attached to a palace.

An Old Kingdom palace has never been found, but we have some understanding of palaces from later periods. They tended to lie on a north-south axis parallel or perpendicular to temples which were oriented east-west. Together palace and temple defined the axes of the world.

(Continued on page 6)
I am happy to report that we had a very successful field season. We accomplished our two primary objectives: sorting out the material from our previous seasons after it had been packed and temporarily moved from our old storeroom to the main government store at Giza, and investigating the extent and nature of the large building complex to which our bakeries and "fish processing" facilities are attached.

Our success is due in part to the cooperation and assistance of the Supreme Council of Antiquities (SCA) for which we thank Dr. Ali Hassan, President of the SCA, and Dr. Zahi Hawass, Director General of Giza and Saqqara. We are grateful to Mr. Sabry Abd al-Aziz, Director of Giza, for his assistance. We thank Mr. Mansour Radwan, Senior Inspector, and Mr. Ashraf Mahmoud, who represented the SCA at the excavation site, and Mr. Hisham Nasser and Ms. Abir Sayed, our SCA inspectors in the storeroom.

The first team members to report for duty were John Nolan, Assistant Director, and square supervisors Justine Way and Jason Ur, from the Department of Near Eastern Languages and Civilizations (NELC) at the University of Chicago. They were joined by Carl Andrews, our photographer and, as he likes to be called, "computer guy." (Carl is creating our database; see page 9.) But Carl did much more, working as a square supervisor and part-time surveyor, mastering (some of) the mysteries of the Lietz-Sokkia Total Station.

By the time John Nolan, Assistant Director, arrived in Cairo on January 10, our Project Manager, Amir Hassan Abdel Hamid of the American Research Center in Egypt, already had our house rented and furnished.

I arrived in mid-January with Thomas Kittredge, NELC undergraduate at Yale and square supervisor. Mohsen Es-Sayed, from California, joined us in February to supervise a square. Ramsi, was with us only a for a couple of weeks in February, but made great advances in the reorganization of our storeroom.

We very much missed project veterans, Wilma Wetterstrom, our Senior paleobotanist, and David Goodman, who had to stay home for medical reasons. David, who, I am happy to

At our open-air laboratory, where we spent most afternoons, Jason Ur classifies a pot sherd using the ring binder with Peter Lacovara’s preliminary ceramic typology. The “sorting bins” for the various types of pottery stand the background.

my son, was with us much of the season assisting in the storeroom and as square supervisor. Our faunal analyst, Richard Redding, of the University of Michigan Museum of Natural History, also came in February. One of our archaeobotanists, Mary Anne Murray from the Institute of Archaeology, University College, London, did not arrive until March, but caught us up on several seasons of backlogged flotation samples. Our registrar, Nina Catubig, from the Boston Museum of Science, report, is doing fine now, arranged for Katrina Olson to come and spend several weeks adjusting our grid stakes and helping with other mapping at Giza. Although our ceramicist, Peter Lacovara, from the Department of Ancient Egyptian and Near Eastern Art at the Boston Museum of Fine Arts, could not be with us in person, he was present in the form of a ring binder that became ever more tattered through the season. It contained his preliminary typology of GPMP-excavated pottery.
Nubie Abd al-Basat came up from Luxor, leaving behind Kent Weeks' excavations in tomb KV5, to assist with surveying. The workmen were led once again by Reis Abd al-Wahab Hamed Mahmoud. I was blessed with the assistance of Mohammed Abd al-Qader Abd al-Sadek, as I have been for twenty years during my work at Giza.

Upcoming Field Work
we will be returning to Giza this fall for a study season in our lab-storeroom where we will be processing and analyzing finds from previous seasons. In January we return for two months of excavations to learn more about the large building complex in Area A.

Excerpts from the Director's Diary
15 Days with the Giza Plateau Mapping Project

For the third season we lived in the quaint three-story villa built by Talaat Harp, founder of the Bank of Egypt, just north of the Mena House Hotel and across the Alexandria-Fayum Road. The house sits within its own walled compound, one of the few remaining members of its species as this neighborhood is inexorably taken over by apartment buildings.

We worked every day except Friday, ideally beginning each day at 7 AM. During Ramadan, the Muslim holy month of fasting, work ended at 1:00 PM. With the conclusion of Ramadan on February 12, work stopped on site at 2:00. After a lunch break in the villa, team members piled into cars driven by Mahmoud al-Karsh and Farag, and headed to the storeroom where we typed, counted, and sorted until close to sundown. A normal day ended with a tired but satisfying walk through the Western Cemetery of great stone mastabas, down the north hill below Khufu, and back to the villa. Sometimes work-related reading, pottery typology-checking, and form-filling continued in the evening. As this was our first season to be connected by e-mail, there was always correspondence to catch up.

Ah, such was an ideal work day. But this schedule was happily broken up by visits of friends, supporters, archaeological colleagues, and interested strangers. Perhaps the social calendar of a dig on the outskirts of Cairo is more crowded than, say, one in Upper Egypt (except at the Valley of the Kings?).

The real texture of a field season may be sensed in the following excerpts (on page 4) from my off-site dig diary, composed daily in the predawn hour over a cup of Nescafé. These entries of the last 15 days of the excavation are only a selection from all the events that filled the days and made up the tapestry of a field season.

(Continued on page 4)
Excerpts from the Director's Diary: 15 Days with the Giza Plateau Mapping Project
(Continued from page 3)

Mar. 13 John Nolan finds small stone wall structure with divided court plan in 117. Workers house?

Mar. 14 Team dinner with Amira Khattab, Assistant Director of ARCE, at the home of Amr Hassan.

Mar. 15 John L. Foster and his Egyptologist daughter Ann, who excavated one of bakeries in 1991, visit the site.

Mar. 16 Justine finds burnt feature with copper slag associated with bread molds in tight space at NW corner of D17. Lisa Giddy visits the site. Mobsen finds dolerite pounders scattered on floor of one of the rooms off north side of the main east-west wall in D8-9.

Mar. 17 In D8-9 Mobsen finds speckled pigment, and larger chunks of yellow and red pigment, embedded in floor of room with dolerite pounders. Mary Anne Murray floating old and recent flotation samples. Climb Great Pyramid with Inspectors and team members.

Mar. 18 Vivian Davies of the British Museum visits site with producer John Guyn, working on BBC film of archaeological projects in Nile Valley.

Mar. 19 Last day on site for Andrew, Way, and Ur. Lecture at the American Research Center in Egypt on our excavation.

Mar. 20 Robert, Rusty, and Jim Lowdermilk arrive from Denver and visit site. Reis Abd al-Wabab and his men begin to pile clean sand next to the excavation squares to prepare for back-filling. Many section and plan drawings of excavation squares still need to be finished.

Mar. 21 Friday off. Visit Giza pyramids with Lowdermills to discuss pyramid building issues. Team lunch with Lowdermills at Mena House.


Mar. 23 I start mapping the many bricks of M-N20 before back-filling must begin. Old friend and TWA pilot Rufus Mosely visits site. Dinner with him and the Lowdermills.

Mar. 24 Vivian Davies and John Guyn production crew on site during the day to film the excavation. Lowdermills for dinner at the villa.

Mar. 25 Vivian Davies and John Guyn production crew back on site in morning for more filming. David Jefferys and Ian Matheson, of the EES Memphis Expedition, visit the site. Lowdermills visit before climbing Khufu. Reis Abd al-Wabab and men must get started on back-filling! They begin with old A7 bakery area, laying down fabric and then clean sand. I am mapping bricks in square M-N20. Must finish before back-filling this, the deepest trench.


Mar. 27 Go to site an hour early to get jump on finishing D19 section drawings. The big yellow Furukawa arrives at 9:30, covers D8-9 within minutes. All covered now but old backhoe pit of D19 at center of site. Loader roaring around about edge of pit like an angry dinosaur! Frantically measure and draw last section. I relay drawing to John Nolan so I can take care of final payday. Men paid. Striking last tent. Loader waiting. Nolan drawing. We call the drawing finished. D19 buried. Excavation sealed and protected for another season.
Who Made It Possible:
Our Thanks and Appreciation

Our 1997 field season would not have been possible without the financial support of David Koch and Bruce Ludwig who have steadfastly helped to make our work possible since our excavations began in 1988.

This season we received a contribution from Ann Lurie and The Ann & Robert H. Lurie Foundation toward a major part of our budget for the 1997 field season.

Robert Lowdermilk and Tectonic, Inc. and Marjorie Fisher Aronow made generous contributions that brought us up to budget and enabled us to continue working for the full season.

We are grateful to Jon Jerde and the Jerde Partnership, Inc. for sustained operating financial support.

Sandy and Betty Sigoloff and Nancy and Victor Moss visited Egypt in the fall of 1996 and contributed generously to AERA. Financial help also came from all members of the 1997 Egypt Invitational Tour, arranged by Bruce and Carolyn Ludwig and Bonnie and Art McClure, including Alan and Cuchie Clark, Fred and Suzanne Rheinstein, Jim and Brooke Young, Bill and Kathryn Dalman, Bill and Jennifer Fain, Rob and Anna Mae Kass, and Coralie Collins.

We are grateful to Craig Smith and the Los Angeles office of Daniel, Mann, Johnson, & Mendenhal for financial and equipment support.

We once again extend our deep appreciation to SOKKIA Corporation of Overland Park, Kansas, for the loan of a total station.

Finally we thank Lisa Truitt of National Geographic and John Gwyn for their contributions toward the workers' pay that helped us back-fill our excavation areas at the end of the season.

Mark Lehner
The 1997 Field Season
(Continued from page 1)

At Giza the long causeways and temples of the pyramids are oriented east-west, while our excavation site lies perpendicular to the right front of the valley temple of the Third Pyramid of Menkaure, beyond the massive Wall of the Crow with its gigantic gate. Our bakeries, which abutted the southeast corner of the large building complex, could well lie at the back end of a palace buried in the intervening 160 to 200 meters to the Wall of the Crow.

Goals of the 1997 Season
The prime objective in our excavation this season, therefore, was to try to get a sense of the larger structure or complex to which these food production facilities were attached and more simply to see how far this very regular building complex extended. This objective required laying out 5 X 5 meter excavation squares to the north and west, following the alignment of the large mud brick wall which turns a southeast corner where the bakeries attach to it. (See map at right.)

Excavations Along the Wall
We explored the east-west portion of the wall by opening five excavation squares. In Square D8, 55 meters west of the bakeries, we may have found the southwest corner of the building. Here the large mud brick wall forms a corner and runs north. If this is indeed the southwest corner of our building the layout is just under 65 meters wide. Other smaller walls, however, show that the whole complex continues further west and south.

Along the south side of the wall there is evidence for an array of activities, some of which were open air, such as our bakeries. In Squares D8 and D9 small enclosures along the wall held caches of complete or nearly complete ceramic vessels. In Square D14 we found evidence for butchering and cooking including a mounded layer of black ashy material in which mammal and fish bones were embedded along with a complete flint knife. On the floor there were a series of depressions which were probably receptacles for pots or large jars. In Square D17 near the wall was a bright orange stain indicating a hearth or other fire installation.

The north side of the main wall appears to have been a workshop area. Here there was a series of modular chambers, defined by thick mud brick walls running north perpendicular to the main wall, which showed evidence of various crafts. In squares D8-9 pigments may have been prepared. A series of dolerite hammer stones were scattered about on a dark ashy layer that covered the floor which was speckled with yellow and red. Larger pieces of red pigment, possibly hematite, were found at the other end of this chamber. The hammer stones might have been used for grinding pigment for paint. A chamber in Square D17 may have been used for copper working as evidenced by scorched walls and copper slag.

Another important insight we gained from the five excavation squares along the main south wall was that the history of this portion of the site was complex with much evidence for remodeling. In all three squares the main wall had been severely robbed of bricks in ancient times. Over the remains of the wall in Square D17 a huge amount of pottery, animal bone, and other material had been dumped and upon it another wall had been built.

Excavations North of the Wall
We also opened a square to the north of the bakeries along the line of the main
I'akeries and fish processing area studied during the 1991 and 1995 field seasons.

Along the west side of the wall, presumably inside the building, we found a narrow gallery and evidence of cooking. Just inside the gallery was a red ware jar standing upright. At the back of the gallery was a hearth, with a crude ceramic cooking tray embedded in the blacked floor and ash. We opened one square well inside the "palace" area, Square I17. Expecting to find signs of the core building we were surprised instead to discover a modest two-room structure, on a divided court plan with stone rubble walls. This was the closest thing we have seen in our excavations to a small modular house like those in workmen's towns at other sites from later periods. In the outer room there was a platform made of mud bricks and debris and in the inner room, much ash, perhaps from a simple hearth. It is also possible that the structure was a workshop rather than a house; many flint tools or parts of tools were found in the deposits. It appears that a similar structure may lie in the unexcavated north half of the square.

Exploring the Older Phase

In our last excavation square, D19, we attempted to probe the earlier phases of (Continued on page 8)
Mohsen Es-Sayed maps the location of a pottery cache in Square D9, recording the information on forms, which will eventually be entered into a computer database that Carl Andrews is designing.

The 1997 Field Season
(Continued from page 7)

the site by examining the hole where a back hoe had bitten deeply into the archaeological deposits. By trimming back the edges of the back hoe cut, which was adjacent to the bakeries, we could get a long vertical section of the site. This confirmed what we had already suspected from the back hoe trench that we trimmed in 1991; there is an entire older phase of the site below the general level of the bakeries and the large mud brick wall.

In this older phase we found evidence of baking activities similar to those of the later phase. We found a nearly complete hearth installation, with two large, round flat trays separated by compact ash—the ancient equivalent of a grill. Just below the spot where we removed a bakery vat in 1991 we found another hearth, this one defined by low mud brick walls. Two large jars, nearly complete except that the back hoe had sheared off their tops, were embedded in the floor in front of this “fireplace.” Among the sherds nearby were several large pieces of enormous vats, like those from the younger bakeries.

This older phase was all buried by the time the younger bakeries were built but we do not know how far they were separated in time. Most likely the lower phase is no more than a generation older, but we will not know without further excavation. We may also find yet older phases in future field seasons; in our vertical section we had not reached sterile sand.

Questions Answered

No single field season can ever resolve all the questions we might have about an ancient community and this season was no exception. There is still a vast world to explore at Giza, but we were able to resolve several issues with this year’s field work. We know for certain that a very large building complex lies below Area A, laid out on a rectilinear pattern, and oriented to the cardinal directions. The complex extends farther than 50 meters to the north and west of the bakeries and probably to the south as well. It probably extends at least 200 meters to the west-southwest to link up with the structures we excavated in area AA in 1988-89 and 1991 (see diagram, page 1), where we found seal impressions of Menkaure’s Mortuary Workshop. We are quite certain that the complex dates from the late Fourth Dynasty, because of these seal impressions and those found elsewhere at the site which are almost exclusively Menkaure’s. We also are quite sure that the structure is associated with royalty. In addition to the seal impressions, the food remains are associated with an elite diet. The animal bones included an abundance of young male cattle, which were used for temple offerings and special occasions.

The palace hypothesis is still very much alive. But more excavation is required to answer the question of whether, in fact, there is an actual royal residence adjacent to the facilities that we have found for preparing bread, fish, copper and craft items. This will entail work to the north, toward the gigantic stone Wall of the Crow, some of which is planned for next winter when we return to Giza for another field season (see page 3).

Mark Lehner and Wilma Wetterstrom
The Paperless Dig
A Computerized Database for the Giza Plateau Mapping Project

After archaeologists dig in the dirt, they end up with thousands of scraps of information—dimensions, typologies, counts, weights, measurements, descriptions, taxonomic identifications; and the list goes on.

Since our first field season in 1988-89, we have recorded all of this data on paper—feature forms, object registries, pottery processing forms, bone data sheets, flotation forms, photo records—and this list goes on. We will soon be drowning in paper. To date we have recorded data from more than 20 excavation squares, mapped in hundreds of square meters of the Giza Plateau, and registered and described thousands of pot sherds, objects, bone, and seeds. This fall when we return to Giza for a study season (see page 3), we will be generating yet more data on paper.

This deluge of information is fast becoming unmanageable and now, we, like many other archaeologists, are beginning to put our records into a computerized database. But the database we will be using is not something you can pull off a store rack. Although there are thousands of commercial databases available—address books, bibliographies, recipe files, doctors' patient files—none is tailor-made for the archaeologist. We usually have to custom-design our own, starting with software for creating databases.

While at Giza for the 1997 field season I began to design our database using a program called 4th Dimension on a Macintosh computer. I was working as a square supervisor, in addition to project photographer, and this proved helpful for understanding what we needed. I also interviewed Mark Lehner and all of the various specialist, such as the faunal analyst and the pottery people, to determine what information was recorded and how each piece of data relates to others. For example, the database not only maintains a record of each item from a feature, such as a hearth, or floor, but it also keeps track of the fact that all of these records are tied to that feature. And the database also "knows" that the feature is, in turn, linked to a particular excavation square.

We will soon be drowning in paper.

The design I devised looks, on first glance, like the old paper method we have been using since 1988. Crew members enter data on screens that are like our paper forms with the familiar blanks to fill in and boxes to check off. But once the information is in the database, the computer will be able to quickly and accurately do things that took us hours, if not days, to do manually. It will be able to put together a complete report of a feature or square in a few seconds and then print it out in a standard format. It will also be able to assemble a list of all the photos and slides of a particular feature or material, such as seal impressions, and show the images on the computer screen in color or black and white.

The database will be especially helpful in analyzing our data and exploring a wide array of questions. For example, the database will calculate and graph the percentages of various pottery types in any particular area or feature. This data along with other information will help us to determine what functions were carried on in various areas of the site.

The database will also be able to determine where any artifact or material is located on the site and compare it with other materials in each feature or square. It will tell us if, say, fish bone and cattle bone are found together. And if they do co-occur the database will be able to calculate their relative proportions.

At this point the database is a vision in the future as I am still refining and developing it. During the field season we began to enter data into and determine if the database was carrying out its functions properly. But much work remains before it is in shape for the fall study season.

On a personal note, the database project has played a role in a career change I started last year. After working as a freelance photographer for ten years I enrolled in a Master of Science degree program in computer science. I expect to design databases for my future employers and am gaining valuable experience while developing the Giza database. I hope my database will prove as helpful to the Giza team as will to me.

Carl Andrews
Newsflashes:  
**Following the 1997 Field Season on the Web**

Usually we wait months, if not years, to hear about the results of an excavation. Not this time with the Koch-Ludwig Giza Plateau Mapping Project. We teamed up with NOVA Online to put news of our project on the Internet. Of course our first duty and priority was to report officially our results to the Giza Inspectorate and the Supreme Council of Antiquities in Cairo. Then we shared our work with the public on the Internet.

With a click of the mouse anyone interested in Giza could follow the plans and hypotheses that guided our 1997 field season. PBS’s NOVA Online posted news updates of our progress along with background information and photos of the Giza Plateau. NOVA also provided an e-mail address which anyone could use to send questions about our work. We answered these from our dig house in Giza via e-mail.

You can still explore the 1997 field season online yourself at “http://www.pbs.org/wgbh/pages/nova/pyramid” and join the throngs who have been visiting the web site. Our page has become one of, if not the, most popular NOVA web sites to date. The page called “Pyramids: the Inside Story” is only one of many active and archived pages, maintained by NOVA Online.

At its peak of popularity, “Pyramids”
received 33,700 “hits” (or requests for information) during one week, and even in the second week of May, long after it had been filed in the NOVA Online Archives, it still received 5,800 hits. As of the middle of May, Pyramids: the Inside Story” had received a total of 170,000 “hits” and generated about 1,000 e-mailed questions and comments. In addition, the site was named as an on-line USA Today Hot Pick and a Yahoo! Pick of the Day.

Web Page Offerings
The front piece, or home page, of “Pyramids; the Inside Story” is a beautifully designed, stylized view of our excavation on the Giza Plateau, with bread vats in the foreground and the three great pyramids in the background. The black and white photo, shown on the left, does not do justice to the rich desert colors used as the background.

At the top of the menu, “Explore the Pyramids,” offers descriptions and cross-section diagrams of the three Giza pyramids, and a discussion of the Sphinx. There is also a history of Giza, and an interview with Dr. Zahi Hawass, the Director of Sakkara and the Giza Plateau.

The highlight of “Explore the Pyramids” is a three dimensional tour of the interior of the Great Pyramid as well as a 360-degree view from the summit. In order to experience these views (as well as others on this site) you may need to download some free software, but the site has easy to follow instructions and automatic links that help you to acquire it.

Clicking on “Follow the Excavation” takes the viewer to the 1997 field season. In addition to the news flashes from the field there is an interview with Mark Lehner and the final report summarizing the season’s findings.

In the “Resources” section in the Table of Contents there are maps of Egypt, diagrams of our excavation squares and a video fly-by of the Giza Plateau. In the “Mail” section you can read questions we received by e-mail along with our replies.

Not everyone can visit our excavation or the monuments at Giza, but we hope through experiments, such as the web site, to keep everyone up to date with our work and the state of the plateau.

John Nolan

The Web Page Staff
John Nolan, assistant director of the excavation, wrote the news updates at Giza and sent them via e-mail to NOVA at WGBH in Boston. Carl Andrews, our photographer, took the color photos that appeared on the web page, using a digital camera on loan from NOVA, and also sent these to Boston using e-mail.

At WGBH the web page was created and produced by Liesl Clark, producer, Kim Ducharme, designer, Brenden Kootsey, production technologist, Lauren Aguirre, senior producer, Paula Apseell, executive producer, Annie Valva, QuickTime VR director of technology, Aaron Strong, QuickTime VR photography, Karen Hartley and Jenny Lisle, Hot Science developers, Brad Puffer, production assistant, and Farah Dastur, intern.

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Inside

The 1997 Field Season:
Walls, Workshops, Workmen's Huts ...................... 1

The Cast of the 1997 Field Season:
A Note of Thanks from the Director ..................... 2

Upcoming Fieldwork ....................................... 3

The Life of a Dig:
Excerpts from the Director's Diary ....................... 4

Who Made It Possible:
Our Thanks and Appreciation ............................ 5

The Paperless Dig: A Computerized Database
for the Giza Plateau Mapping Project ................... 9

Newsflashes: Following the
1997 Field Season on the Web ........................... 10