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A stratified Predynastic sequence from Hierakonpolis (Upper Egypt)

Introduction

This paper presents a preliminary report on the discovery of a stratified archaeological sequence spanning the early Archaic through Predynastic periods (*ca* 2,900 - 4,000 B.C.) at the site of Hierakonpolis (also known as Nekhen or the Kom El-Ahmar) in southern Upper Egypt. The 1984 excavation season lasted from January 22 through March 15 and was designed to complement our long term, regional study of the Hierakonpolis area by providing direct stratigraphic confirmation of the local Predynastic sequence and geological insights into the nature and extent of floodplain settlement and riverine activity at that time.

Objectives

Our objectives for the 1984 season were: 1. To determine the depth and approximate horizontal extent of Predynastic archaeological deposits under the Archaic-Old Kingdom town of Nekhen; 2. To test the feasibility of conducting controlled excavations below the groundwater table in the modern alluvium; 3. To develop a stratigraphically and empirically based regional chronology that would tie together the extensive desert, Predynastic settlements and cemeteries we explored in previous seasons; 4. To link directly the Predynastic and Dynastic archaeological sequences; 5. To determine the sedimentological and environmental factors affecting Predynastic settlement in this portion of the Nile floodplain.

Methods

Archaeological investigations concentrated in a ten meter square, 10N5W, in the early historic town of Nekhen, where my 1969 excavations had located clearly Protodynastic (Naqada III) pottery and architecture (Hoffman 1970; 1972). In

addition to careful stratigraphic excavations in 10N5W, limited cleaning in adjacent squares 9N5W and 9N4W helped clarify architectural problems related to the Predynastic occupation, notably the existence of a large, Naqada II/III town or palace wall.

The archaeological sequence from 10N5W was supplemented by three geological trenches dug along a canal between Nekhen and the desert's edge and a transect of 22 cores as well as 4 special cores taken in each corner of 10N5W. Time does not permit discussion of geological and sedimentological findings, but a detailed report is available in Hoffman, Hamroush and Allen (1987).

Square 10N5W was first cleared of the dense Halfa grass and thick salt encrustations which had accumulated since our 1969 excavations. Next, grid points were re-checked with reference to cement monuments established in 1967 to insure the accuracy of theodolite mapping and leveling. A temporary datum of zero was established on stake 11N5W and later related to absolute elevation ASL (81.90 m). The precision of such levels is especially crucial for our objective of studying the relationship between buried Predynastic archaeological deposits and mid Holocene Nile flood heights. All mapping of features and artifacts within 10N5W was done by reading azimuths with a Nikon Wild-type theodolite placed over stake 10N5W and by chaining distance with a cloth-nylon composition tape and plumb bob.

After cleaning 10N5W, a core was drilled by hand in each corner to determine the approximate depth and sequence of underlying cultural deposits. Depth from the existing archaeological surface (*ca* 1 m below adjacent ground surface) was calculated by measuring the augur handle before and after a new boring was made. All readings were then related to both modern, adjacent ground surface and absolute elevation ASL. Soil and artifact samples from each core were hand sorted on the spot by staff archaeologists and geologists. When collapse of the core hole due to groundwater erosion threatened to contaminate a sample, that sample was discarded and a new one taken after cleaning out the hole. Each augur cut produced a sample between 12 and 20 cm in depth and about 10 cm in diameter. Enough sherds were recovered to indicate a normal chronological sequence extending back, possibly to Badarian times (*ca* 4,000 - 5,000 B.C.?). The four cores in 10N5W indicated that the desired, stratified Predynastic deposits were present, gave us a rough idea of their total thickness (about 4 m) and allowed us to monitor fluctuating groundwater levels. Additional coring from south to north across Nekhen indicated widespread Predynastic occupation buried under the modern floodplain and suggests that our previous estimates of population size for this period were too conservative.

Subsequently, our primary goals at 10N5W were to establish a reliable stratigraphic sequence and obtain a maximum amount of architectural and spatial information before the groundwater forced us to restrict our excavations to a small sondage that could be kept dry by pumping. To accomplish these goals, all walls and floors were carefully cleaned to their 1969 condition (Halfa roots notwithstanding) and architectural units and features re-mapped and then excavated with

attention to detail. Of especial interest were the latest, historic building phase (Archaic) and some minor intrusions (New Kingdom — Ptolemaic) in the southernmost part of the square. Once it was determined that the latest major structures in 10N5W were probably First Dynasty (*ca* 3,100 - 2,900 B.C.) and no later than Second Dynasty (*ca* 2,900 - 2,700 B.C.), it was possible to work back systematically to earlier, prehistoric levels. Significantly, there were no architectural or stratigraphic breaks between early historic and late prehistoric phases (*i.e.*, between Archaic and Protodynastic, Naqada III) or, for that matter, within the Predynastic sequence (from Naqada III through Naqada I or I/II). To facilitate recording, the square was subdivided into a number of excavation units reflecting cultural or pedological features and into four quadrants (adjusted to allow for architectural units). Additional balks were used within the square to complement the stratigraphic information provided by the profiles on the four sides of the larger square.

As in past seasons, all ceramic and stone artifacts and faunal remains were analyzed and quantified according to standardized, multivariate methods (Hoffman *et al.* 1982). Despite the apparent lack of macro-botanical remains comparable to those from our desert sites (El Hadidi 1982), extensive flotation samples were taken but yielded only carbonized wood.

The dirt from most features and every level of the sondage was sifted through 1/4 inch mesh. In the lower levels of the sondage it was possible to water sieve using excess runoff from our pump. In some instances, in the upper, Protodynastic (Naqada III) levels, because of the heavy, moist clay soils, the very large artifact sample and the high degree of attention possible through slow excavation, some units were not screened.

A major aim of this season's research was to conduct controlled excavation below the groundwater table. Given the implications of this technique for future stratigraphic research in the Nile Valley, a brief discussion of our field procedures is in order. It was originally hoped to excavate a large area using heavy duty mud and sludge pumps and either a well point or a stepped moat system designed to slowly lower the water table and provide maximum horizontal and vertical control. It was assumed that this technique could work up to 1.5 m below the groundwater table. Several circumstances forced us to revise this strategy. First, coring showed at least 4 m of Predynastic deposit (3 to 3.5 m of which were under water). Second, water pressure was stronger than anticipated. Third, our pumps, generously donated by Peabody-Barnes, Inc. of Ohio, arrived late in the season. Fourth, because of a shortage of research funds, it was impossible to keep the pumps running all night. Thus, every morning our sondage bore increasing resemblance to a swimming pool.

Despite such problems, the techniques we developed proved successful. By selecting a reduced area for our deep sondage and by placing a deep sump next to it, we were able to dig in arbitrary levels over 1 m below the groundwater table. Initially, to stabilize the sump and prevent collapse of the saturated deposits, a 50 gal. steel drum, open at both ends and with numerous holes punched in its sides,

was driven down almost to the base of ceramic bearing deposits (*i.e.*, nearly to the lowest levels reached by coring). Later, another 50 gal. drum was placed on top of the first, lining the entire sump pit. Because it was impossible to pump after working hours due to a shortage of funds, water rose in our sondage every evening, causing some collapse of our profiles. Consequently, every morning before excavating commenced and after pumping the sondage dry, we removed all collapse to prevent contamination of our stratigraphic samples.

The sondage began inside a triangular shaped Protodynastic room measuring approximately 5.40 m × 4.80 m × 2.50 m. It was subsequently reduced to an area 2.75 m × 2.60 m × 1.60 m to accommodate the sump and finally finished as a rhomboid 1.30 × 1.10 m on its sides and 0.35 m × 0.70 m on its ends. Despite the ever decreasing area forced by the need to buttress against groundwater-induced collapse, the ceramic samples are sufficiently variable and well stratified to trace the principal periods of Predynastic occupation back to the late Amratian or transitional Amratian-Gerzean period (Naqada I or Naqada I/II). To give an idea of the size of the ceramic sample, a total of 10,631 body sherds were recovered from the sondage, 171 of which came from the lowest level. Because of constant soil wetness, it was impossible to recover features or detect minute soil changes in the lowest levels of the sondage. Fortunately, both the stratigraphic profiles and the ceramic sequence indicate no major intrusions or discontinuities. After excavation, the sondage was backfilled to prevent collapse.

In summary, we were successful in using pumps to allow controlled stratigraphic excavation of sub-groundwater archaeological deposits in the modern Nile alluvium at Nekhen. Our only regret is that we were unable to reach the bottom of those deposits. Fortunately, we now know that this objective is feasible and hope to resume deep probings at a future date.

Results

After almost two months of fieldwork, we have achieved the following results during the 1984 season at Hierakonpolis: 1. Through auguring and coring we have established the existence of about 4 m of stratified Predynastic settlement deposits under the Archaic levels at Nekhen and the surprisingly wide extent of those buried deposits under the modern floodplain; 2. The use of special heavy duty mud and sludge pumps has enabled us to excavate over 1 m below the groundwater table and maintain stratigraphic control; 3. We have directly linked Dynastic and Predynastic levels at Nekhen — a site known to have played a major role in the initial political unification of Egypt and the attendant transition from prehistory to history; 4. We have recovered a large and stratified ceramic sequence spanning Protodynastic (Naqada III, *ca* 3,100 - 3,200 B.C.), Gerzean (Naqada II, *ca* 3,200 - 3,500 B.C., Fig. 1) and a portion of the Amratian (Naqada I, *ca* 3,500 - 3,800 B.C.) periods and have preliminary indications of underlying Badarian and Neolithic levels; 5. We have identified and recorded two superimposed Protodynastic (Naqada III)

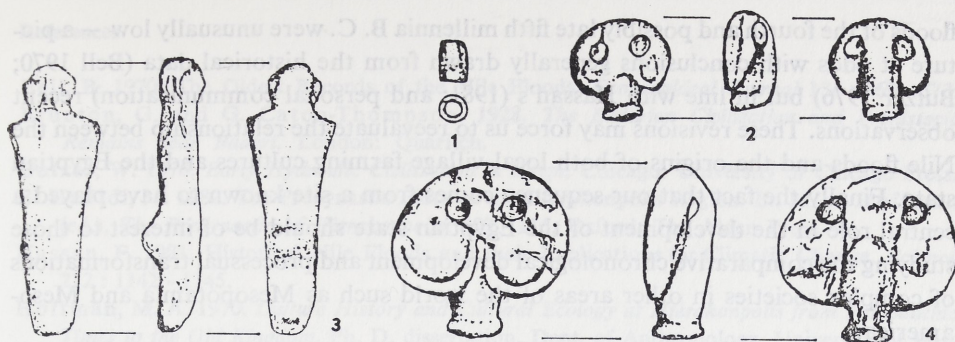


FIG. 1. Hierakonpolis. Special finds from the north-central section, Level 3, 10NSW, Naqada II/III

1: Banded white and gray serpentine barrel bead (find 156 - 5, Reg. 419); 2: Black diorite "bucranium" or elephant amulet (find 156 - 4, Reg. 419); 3: Ceramic figurine (find 156 - 1, Reg. 417); 4: Banded white and gray serpentine "bucranium" or elephant amulet (find 156 - 3, Reg. 419). All objects 1 : 2

house floors and an adjacent large town or palace wall of Protodynastic-Gerzean (Naqada II/III date, *ca* 3,300 - 3,200 B.C.). This information is especially valuable because it complements our earlier research with Predynastic settlement plans and house types in nearby low desert sites and demonstrates, once more, that post molds and wall trenches can be found in Egypt (if only one knows how-to look for them!); 6. We have established the outlines of mid-Holocene erosional and despositional events in the local floodplain after *ca* 5,000 - 4,000 B.C. Specifically, the site of Nekhen was founded on a topographic high created by the deposition of sands and gravels at the mouth of the Wadi Abul Suffian. Concurrently, it seems as if the Predynastic period and hypothesized local Neolithic (*ca* 5,000 - 3,100 B.C.) were characterized by low average annual Nile floods and that the border of the low desert was somewhat closer to the Nile than at present. Finally, it is possible that a branch of the Nile flowed near the site of Nekhen but further fieldwork is required to test this hypothesis.

Significance of the research

This year's findings at Hierakonpolis provide the first direct stratigraphic link between Dynastic and Predynastic periods ever found at a major archaeological site in Egypt. It is also the first time since Caton-Thompson's 1924 excavations at Hemam-mieh (Brunton and Caton-Thompson 1928) that a well-stratified succession of super-imposed Predynastic components have been recovered from a settlement site. Our work demonstrates conclusively that many large Predynastic sites still lie deeply buried in the Nile floodplain and that, with appropriate excavation techniques, these can yield valuable data. Geologically, our research suggests that the Nile

floods of the fourth and possibly late fifth millennia B. C. were unusually low — a picture at odds with conclusions generally drawn from the historical data (Bell 1970; Butzer 1976) but in line with Hassan's (1981; and personal communication) recent observations. These revisions may force us to reevaluate the relationship between the Nile floods and the origins of both local village farming cultures and the Egyptian state. Finally the fact that our sequence comes from a site known to have played a central role in the development of the Egyptian state should be of interest to those studying the comparative chronological development and processual transformations of complex societies in other areas of the world such as Mesopotamia and Mesoamerica.

Acknowledgements

First, our thanks go to the Egyptian Antiquities Organization for sponsoring under its auspices our work at Hierakonpolis. Our research was made possible through a grant from the U.S. National Science Foundation and residual funds from the Smithsonian Institution, PL 480 Foreign Currency Program (Office of Fellowships and Grants) administered by the American Research Center in Egypt. A timely preservation and conservation grant was provided by the Chase National Bank through the American Research Center in Egypt. Our ability to work successfully near and below the water table is due to a generous contribution of two pumps from Peabody Barnes, Inc. of Mansfield, Ohio. Room and board while in the field was kindly provided by the Egyptian Ferrosilicon Co.; this allowed us to stretch our funds beyond all reasonable expectations, and it nearly doubled our budgeted field time. We would like to thank these agencies and companies for their generous and timely assistance and the personnel of the following organizations for numerous personal and professional courtesies; The Egyptian Antiquities Organization (Dr. Ahmed Kadry, Director), the Egyptian Ferrosilicon Co. (Mr. Mamdouh Bayoumi, President), the American Research Center in Egypt, and Chicago House, Luxor.

We dedicate our work this year to the memory of Dr. Labid Habachi, who remained until the very end a steadfast friend of our expedition and a source of aid and encouragement.

The members of our 1984 staff included the following individuals without whose hard work none of our discoveries would have been possible: B. Adams (egyptologist, ceramicist, registrar), H. Barakat (archaeo-botanist), R. Greenlee (photographer, archaeological technician), H. Hamroutch (geochemist, geologist), J. Long (assistant director, archaeologist, lithic analyst), J. McArdle (archaeozoologist, physical anthropologist), G. Quadis (inspector for the Egyptian Antiquities Organization), M. Trad (egyptologist, toponymist, registrar). We were also fortunate in having the temporary services of R. and H. Jaeschke of Chicago House, Luxor, consulting on matters of preservation and conservation.

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