to most jobs, I suppose, is people, and it was a tremendous help to find someone who was not addicted to the delicate euphemisms of contemporary times, but rather spelled out bluntly who was who, what did what, and why—including affairs both overt and covert. For a man raised on a ranch in Montana by a crew of cowboys, it was a fascinating education in a world I never knew.

Fro Rainey was interested in interpreting archaeology and anthropology so that it would be appealing to the non-professional. In his career as teacher, museum director, and field archaeologist, he inspired many students. In the 1950s Fro helped to create the Peabody award-winning television series “What in the World?” utilizing the relatively new and increasingly popular medium to make archaeology accessible to the public.

To the surprise of everyone, the studio was besieged with letters from the Philadelphia audience demanding that the program be restored. The producer called me, agreeing to a modest fee for the panel, and proposed that we get down to a serious production with a director, three cameras, a set man, a producer, and a professionally designed TV program.

A Christmas party at The University Museum with staff members dressed in ethnographic costumes from the collections: left to right, Loren Elsley in Chinese court robe, Friedrich Rainey in Tiangot poutchi costume, and Henry Fisher as Arabian sheik.

Photo courtesy of Friedrich Rainey.

Someone in the studio came up with the idea of calling it “What in the World.” A bright young producer from Hollywood conceived the idea of having such mysterious object materialize out of a cloud of smoke produced by dry ice, and of introducing mood music that set an entirely different tone to the whole affair. Also he was ingenious enough to recognize that if the audience was told, off-stage beforehand, what each object was, they would have the titillating satisfaction of seeing the professors sweat it out when they themselves already knew the answer.

Within six weeks “What in the World” was taken up by the Columbia Broadcasting System and was appearing weekly all over the United States. Soon it received the Peabody Award, and a story about it appeared in Life magazine. Strange objects from strange places made by unknown people suddenly became interesting to millions who had never heard of archaeology and anthropology, or who thought of such subjects as dry as dust and boring.

As moderator of the show, Rainey’s job was not an easy one: his wonderful sense of humor is evident in his description of some of the pitfalls of “live” transmission.

In the early days, when all programs were live, I had a “panic button” to switch the voice off the air in a crisis. It was primarily necessary because of Carl Coon. Half the tension in the studio was the result of our fears as to what he might say. Often his language was unprintable. But at times he had us all laughing so hard that no one remembered the panic button.

There was the occasion when I asked Professor Albright what his personal friends called him. (We always used first names or nicknames on the air). He blushed and said that no one ever called him by his first name. Irrepressible Carl popped up with “What does your wife say, Bull over, Professor Albright?” And there was the time he began to swear at Margo Plais because she insisted that a small ape skull was that of a monkey—and his announcement that a carved figure of the Madonna and Child was a mother with a child with adonoids.

Fro Rainey has always tried to infuse people with his enthusiasm for anthropology and archaeology, for past times and diverse cultures—through his teaching, through his work on television, and by taking the time to talk and share his knowledge. Now, through this book, he has made a further contribution to communicating his philosophy and his joy in the worlds he has explored.

Popularization of archaeology has probably still got a bad name among scholars in the discipline. That is sad because it restricts the impact of one of many fields of learning in the twentieth century that are expanding the concept of world. Literacy and contemporary communications release ideas to great numbers of people who, in turn, generate original thought. Teaching, in an academic sense, is by nature a limited thing. Communications are worldwide. Often the unstated come up with the most original ideas.

Reflections of a Digger is available at the Museum Shop or may be ordered from Museum Publications, 33rd and Spruce Streets, Philadelphia, PA 19104. (215) 689-6090. The retail price is $22.50.

New Discoveries at Abydos, Egypt

DAVID O’CONNOR

The study of ancient Egypt revolves around a number of questions about major aspects of Egyptian culture. In addition to the wonderful images of the pyramids and their associated complexes.

Abydos is located at the junction between the fertile floodplain and the low-lying desert that fronts the steep cliffs of the Nile gorge. The site lies about 11 kilometers (7 miles) from the river, adjacent to a floodplain that is now, as in the past, agriculturally rich. The arid desert over which the site extends (some 7 square kilometers) is much more forbidding. Much of it consists of cemetery fields; the dikes and barrows covering much of the site are plundered or excavated tomb shafts and pits, with the spoil dumped beside them.

Abydos is most famous as the southern cult-center for Osiris, the god of the dead. However, its cult was not manifest at the site until about 2000 B.C. A thousand years earlier, Abydos was already an important site to the Egyptians, for it was here that the earliest historic pharaohs were buried.

In West Abydos are located the tombs of all kings of Dynasty I, two of Dynasty II, and some of their royal predecessors of Dynasty 0, but most of them excavated by Flinders Petrie at the turn of the century. Abydos was, therefore, the "Cizra" of Early Dynastic times, a focus for technological innovations and ideological developments. East Abydos became important in the Middle and New Kingdoms, and contains a number of royal cenotaphs or dummy tombs from these periods.

North Abydos, however, is the ancient core of the site. Here the funerary cults of the early kings were celebrated within massive mud brick enclosures (Fig. 1). To the east of the enclosures a town grew; dating back at least into Early Dynastic times, it became a major settlement in the Old Kingdom. Within the town stood a
Pyramids and Mounds

Pyramid complexes have of course often been excavated, sometimes very well; outstanding in this regard, were the excavations of George Reisner, the American Egyptologist at Giza. Nevertheless, many questions remain to be answered, and interest in the archaeology of pyramids has revived markedly in recent years. For instance, Zahi Hawass, Director of Giza and Saqqara for the Egyptian Antiquities Organisation, and Mark Lehner, of the Oriental Institute in Chicago, have developed a comprehensive approach to the re-exploration of the Giza Plateau; Dieter and Dorothea Arnold of the Metropolitan Museum, New York, have been re-investigating the great Middle Kingdom pyramids; while Rainer Stadelmann, Director of the German Archaeological Institute, Cairo, is studying the Old Kingdom pyramids of Snefru at Dahshur.

Abu-Dahy, however, is particularly important in addressing the question of pyramid origins. The first true pyramids occur relatively late in Egyptian history, in ca. 2550 B.C.; before them, between 2650-2570 B.C., we have the step pyramids of Saqqara, covering Dynasty III. But the earliest historic royal tombs—those at Abu-Dahy—begin in 2500 B.C. What was their connection with the pyramid complex?

Various answers have been prof- fered. A particularly important suggestion has been that the royal tombs of Dynasties I and II at Abu-Dahy had mud brick superstructures, i.e., a sand and gravel mound held in place by mud brick retaining walls, rising perhaps 4 to 5 meters (ca. 8 to 10 feet) in height. From these, the stepped pyramid typical of Dynasty III evolved in some way not yet fully documented. However, recent excavations at the Abu-Dahy tombs by Werner Kaiser and Gunter Dreyer have shown that the evidence Petrie found and interpreted as the remains of superstructures rising above ground level, in fact belonged to mounds set over the burial chamber but buried below ground level. The Abu-Dahy tombs therefore would seem to have had no visible or prominent superstructures. Dreyer believes they did exist, but so far no trace of them has been recovered.

In Dynasties I and II there were also elite tombs at Saqqara, thought by some scholars to be royal, although this is now a minority view. These Saqqara tombs had large rectangular superstructures, hidden within such was a mound placed over the burial pit. In one case the mound was in stepped form. Some suggest that this superstructure became transformed into the stepped enclosure wall of the step pyramids, and the mound evolved into the step pyramid itself—now visible and on a much larger scale.

Our recent work at Abu-Dahy has prompted us to come forward with a new and different theory—at the moment a working hypothesis, but one supported by certain important if fragmentary evidence. This work has focused on the cemetery field of North Abu-Dahy. Here, almost two kilometers away from the royal tombs, archaeologists long ago discovered that large mud brick enclosures had been built for some of the early pharaohs, presumably to house their funerary cults. Two were for Khasekhemwy and Peribsen, at the end of Dynasty II (see time chart). There were at least four of Dynasty I (ca. 2920-2770 B.C.), for pharaohs Djef, Djed, Queen Mother Meretiethet, and another pharaoh. The existence of Djef's enclosure (and hence the probability of one for his successor, Djed) was proven by our excavations in 1988. However, apart from a few interior features recovered by earlier archaeologists, the large interiors of these enclosures remained generally mysterious and unknown.

We decided to investigate these enclosures, including the best preserved, that of Pharao Khasekhemwy of Dynasty I (Fig. 3). This extraordinary feature is built entirely of mud brick, defining an area of more than a hectare. Its walls are 8 meters thick and still stand about 11 meters high, although they were built somewhere between 2700 and 2650 B.C., that is, about 4700 years ago. The interior is heavily inlaid with windblown sand which has discouraged systematic excavation (Fig. 4), although there were large-scale—and very damaging—clearances attempted in the 19th century and later. In addition, the whole interior is pitted with deep holes used for the burial of sacred ibises in the 1st millennium B.C. (Fig. 5).

We were fortunate enough, despite the difficulties, to expose some surviving fragments of the original Dynasty II surface. Of these, one was particularly important. We found a large expanse of the thick Dynasty II mud plaster floor. At one edge a line of brickwork survived (Fig. 6), belonging to a feature which had otherwise been completely removed in antiquity, at least as far as the area covered by our excavation units was concerned. The bricks were laid at an angle, i.e., they were not simply part of a horizontally bedded wall. This point is evident in plan and section (Fig. 7).

We are fairly sure that what once stood here was a large mound made of sand and gravel; it was covered with a brick skin, of which this brickwork is the lowest and only surviving piece. Similar mounds were found at Saqqara, placed over the burial pits of the elite tombs. However, the Abu-Dahy mounds were probably smaller than the Abu-Dahy example, and they were hidden within the rectangular superstructures of the tombs. They were perhaps inspired by the 'hidden' mound of the German expedition which discovered at the royal tombs in West Abu-Dahy. Kha- sekhemwy's mound rose above the

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however, Khasekhemwy's enclosure, like Peribsen's, is closely modeled on the type established as early as Djer's reign, so it is possible that the mound tradition extends back this far as well.

The Boat Graves

The discovery of the Dynasty II mound or proto-pyramid at Abydos occurred in 1988. In October of 1991, we made an equally startling and significant discovery. In 1988 we had found, northeast of the Khasekhemwy enclosure, a bastion-like feature in mud brick which we thought might be the corner of a hitherto unknown enclosure. This past season (1991) we carried out large-scale excavations throughout this area with most surprising results.

The topography of the area excavated was very varied. Sometimes the archaeological remains were virtually coincidental with the modern surface and could be defined initially by scraping with a trowel. In other cases, the remains were buried under several feet of wind-deposited sand, extremely difficult to excavate in. However, it eventually became clear that we were not dealing with an enclosure or the remains of a series of superimposed enclosures. Rather, what emerged was a series of "walls" of a curious shape and all running, in local terms, "east" to "west" (in actuality, northeast to southwest). Each "wall" is in fact an enormous boat grave (Figs. 9, 10). Some twelve, arranged in a more or less continuous row from north to south, were delineated in 1991. It is possible that the series continues on towards the south—a possibility that will be tested in a future season of excavation. They are not likely to run much further to the north, because in that area is the large ground surface of the enclosed area and was visible to any one who entered that enclosure.

Now, we also know from the studies of the archaeologist Quibell, and later Lauer, that the Step Pyramid of Djoser at Saqqara, the first built (ca. 2620 B.C.), was simpler in its original form. It had stone-built enclosure walls, and a large mound feature in stone masonry. This stone mound was located in much the same position as that of the brick-covered mound in the Abydos enclosure. In other words, the first version of Djoser's mound looks like a larger-scale stone copy of the Khasekhemwy complex, but led on to the true step pyramid (Fig. 8) and ultimately the true pyramid. Whether the mound occurs in Abydos enclosures earlier than Khasekhemwy's is something we have yet to determine. How-

Figure 3. The funerary cult enclosure of Pharaoh Khasekhemwy, from the south. The boat graves lie on the far side of the monument.

Figure 4. Excavations within the Khasekhemwy enclosure (1990). Windblown sand and later intrusive pitting hampered excavation efforts.

Figure 5. Workmen carrying an enormous jar filled with mummmified ibises to the excavation house laboratory.

Figure 6. The thick mud plaster flooring within Khasekhemwy's enclosure exposed. Brick debris and a small brick box sit on the surface. On the left is a line of brickwork, clearly contemporary with the flooring, which runs up over the bricks. This brickwork is the bottom edge of a brick skin that covered a substantial mound of sand and gravel. The mound itself has almost completely disappeared.
funerary cult enclosure built for Pharaoh Djor early in Dynasty I. The boat graves are not likely to be earlier than this and may in fact have been built for Djor, but this remains to be proven (Fig. 12).

However, there is no doubt that the boat graves are, like the enclosures which surround them, Early Dynastic in date, i.e., built to Dynasty I or II. The matrix surrounding them was abundant in Early Dynastic pottery sherds, usually unmixed with those of later date (the latter occurred higher up in the overlying deposit). In one case, clusters of Early Dynastic offering jars had been deposited under the "prow" of one of the boat graves.

Why do we call these structures boat graves? The first reason is because of their shape. Each boat grave, when complete, had consisted of a mass of laid brickwork rising up to a height of approximately 50 centimeters above the Early Dynastic ground surface. They were therefore relatively low in height, but enormously long: the shortest was about 18 meters long, the longest 28 meters. The average length of all twelve was about 27.40 meters (89-1/2 feet). Each grave was quite narrow, typically about 3.25 meters at the widest, and in plan curved gently outward, then in again on each side, replicating the outline of a boat. In addition, each boat grave had a strongly defined "prow" and "stern" (Fig. 11).

The final effect must have been quite extraordinary. Each grave had originally been thickly coated with mud plaster and whitewash, so the impression would have been of twelve (or more) huge white "boats" moored out in the desert, gleaming brilliantly in the Egyptian sun. The notion of their being moored was taken so seriously that an irregularly shaped small boulder was found placed near the "prow" or "stern" of several boat graves (Fig. 10). These boulders could not have been there naturally or by accident; their placement seems deliberate, not random. We
can think of them as "anchors," intended to help moor the "boats."

Moreover, these graves are indeed containers—brick-built boxes—for actual wooden boats. Because of the erosion suffered on the top of the graves, we could actually see the outline of the upper edge of each wooden boat showing up as a dark brown line in the surface of the eroded mud plaster. At least in some cases (the situation was not always clear), the boat seemed to fill most of the grave, except for the "prone" and "stem" which were built of solid mud brick. This means that some of these boats are probably up to 52 meters long (72 feet). However, this is an estimate, because we decided not to attempt to excavate any of the actual boats until proper arrangements had been made for conservation and perhaps reconstruction. The excavation, conservation, possible reconstruction and study of selected boats will be carried out in the next season by a multidisciplinary team of archaeologists and other relevant experts. To ensure the stability of the boat graves, they were all reburied under a deep bed of sand; those selected for detailed study will be re-excavated next season.

The exteriors of the boat graves, the surfaces surrounding them, and the stratified matrix in which they lay were all carefully mapped and recorded during the course of excavation. In addition, some of the boat graves had been cut into in ancient times by intrusive pits, probably for secondary graves dating to periods much later than the Early Dynastic Period. We made the most of the opportunity provided by these pits and excavated one (Fig. 14), thereby obtaining a fine profile of one of the boats, or rather of its hull, and a good idea of the internal structure of a boat grave. The particular segment of wooden hull exposed was about 1.47 meters wide at the top, while the flatter bottom was about 41 centimeters wide. The depth of the hull was about 41 centimeters, but it may have originally been deeper, depending on the amount of erosion the top of the grave had experienced. The wooden planks or shell of the hull was about 10 centimeters thick (Fig.

**Figure 13.** The 'stem' of a boat grave. On the right of the stem, some of the original mud plaster and whitewash is still visible. The large rock sitting on the grave may represent an anchor.

**Figure 12.** The twelve boat graves, near the north corner of the Khasekhemwy enclosure or "Shemet et Zebib," as it is called locally. Missing or unexcavated segments of each boat grave have been restored. The graves 3rd and 2nd from the southern end of the row are shown in Figure 11.

**"the impression would have been of twelve... huge white 'boats' moored out in the desert, gleaming brilliantly in the Egyptian sun."**

**Figure 11.** Two of the boat graves (see Fig. 12). The 'prone' (on left, lower boat) can be seen. Both graves had been disturbed extensively by later pits, but the many surviving fragments of the hulls, still in situ, can be seen (marked in color) and define the shape and length of each boat. The lower boat is 35 m long as excavated; its full length was probably about 28 m.
while the rest of the brick walls defining the sides of the grave were built. Their internal profile followed the curve of the hull, indicating the walls were built after the hull was in place. The hull, in this instance at least, was then filled solid with mud brick, and the whole “casting”—top and sides—was covered with mud plaster and whitewashed.

The Significance of the Boat Graves

The discovery of these boat graves further enriches our understanding of the Early Dynastic royal funerary enclosures at Abydos and, like the apparent “proto-pyramid” discussed earlier, indicates these enclosures, their contents, and surrounding features are in the mainstream of pyramid-complex development and evolution in Egypt. Such boat graves of Early Dynastic times are not unique to Abydos. They have been found associated with the elite graves of the First Dynasty at Saqqara, and even with the graves of people of lesser status in the huge Early Dynastic cemeteries at Helwan, across the river from Saqqara, and Memphis, the capital of early Egypt.

The Saqqara and Helwan boat graves are similar to the Abydos ones in that a shallow trench was cut to hold a hull in place, the hull was filled with sand or rubble, and a brick-encased superstructure was built to contain the hull. However, there are also important differences which emphasize the special character of the graves at Abydos.

First, the Abydos boat graves, and the boats they contain, are larger than any of the other known Early Dynastic boat graves. The largest boat grave at Saqqara was 22.15 meters, and none of the Helwan boat graves appears to have exceeded 20 meters; usually they were substantially less than that. Second, the architectural form of the boat graves at Saqqara and Helwan, while trying to convey the impression of a boat, was different from the form employed at Abydos, with its emphatically defined “pros” and “stern.” Finally, at Saqqara and Helwan, each boat grave is an isolated unit associated with a specific tomb, i.e., the boat graves are not found arranged in groups, whereas at Abydos they form a virtual fleet, “moored” up against one of the royal funerary cult enclosures.

Unfortunately, we cannot be sure yet to which of the known (or yet to be discovered!) enclosures the Abydos boat graves belonged. Stratigraphically, they appear to be earlier than the enclosure of Khasekhemwy (end of Dynasty II), in front of which they lie. All the other known enclosures in their immediate vicinity date to Dynasty I. It is to one of these, such as Djer’s (the earliest known), that the boat graves probably belonged.

However that may be, it seems reasonable to see in this fleet of boat graves at Abydos the prototypes of the boat pits—pits containing actual (but sometimes dismantled) boats—that flanked later royal pyramids. The most famous are the five of Khufu (one of his queens also had a boat, Fig. 16), but other boat pits are found with pyramids of Dynasties IV and V, and later (with the boat buried in sand, rather than in a pit), with one of the Dynasty XII pyramids. If this conjecture is correct, then the strong relationship between early Abydos and later pyramid sites is again reaffirmed.

The other important aspect of the Abydos boat graves is that the hulls (and perhaps other components) they contain, while not perfectly preserved, seem generally much better preserved than any of the other boats found at Saqqara and Helwan. At these sites, sufficient traces of the wood remained to sometimes attempt a graphic reconstruction of the boat involved, but the Abydos boats are likely to provide much more material and information. They are therefore significant additions to the tiny list of well-preserved actual boats known from Egypt, specifically the two boats at the Khufu pyramid, and some six probably real boats (i.e., not models) associated with the pyramid of Senwosret II at Dahshur. The Dahshur boats were each about 10 meters (32-3/4 feet) long.

This is an important discovery, then, not only for our understanding of boats and ships in ancient Egypt, but also for the development of boat building and use in general throughout the Mediterranean Bronze Age world.

In future seasons, we shall not only search for additional boat graves. Several royal funerary cult enclosures remain to be discovered, for there are more early pharaohs buried in West Abydos than we have enclosures for in North Abydos. Moreover, we shall try to establish if enclosures earlier than Khasekhemwy’s, the latest at the site, also had mounds—mounds that, we suggest, are proto-pyramids, from which ultimately the awe-inspiring monuments of Giza emerged.