

Le site archéologique de Nabta Playa

□ Nabta Playa During the Early and Middle Holocene

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Résumé : *Les auteurs présentent une synthèse des travaux de fouilles qu'ils ont menés sur le site de Nabta Playa situé dans le Sud de l'Égypte, du côté de la rive ouest du Nil. L'analyse des données géoclimatiques (climat, sols, faune, flore...), celle des vestiges archéologiques (industrie lithique, poterie, ossements, monuments...) mis au jour permettent de préciser notre connaissance sur la période qui a précédé l'émergence de la civilisation égyptienne.*

The Eastern Sahara is today a rainless desert. It receives less than 1 mm. per year, and is almost completely devoid of life. Temperatures during much of the year are extremely high, with an average maximum of more than 20°C from mid-March to November, rising to over 40°C in July. The driest portion of the Eastern Sahara is known as the Nubian Desert, an extensive area of sandsheets, inselbergs and basins in what is now southwestern Egypt and the immediately adjacent portions of Sudan and Libya. Except for a few large oases such as Farafra, Dakhla and Kharga, where artesian water is available, there are no people and the few plants and animals present are confined to the very rare *bir* or well, where groundwater occurs near the surface and can be obtained by digging, and where deep-rooted desert vegetation, such as tamarisk, is able to survive.

The Nubian Desert has not always been a hyperarid desert. There were several intervals during the Pleistocene when permanent lakes existed, people were present and there was a rich fauna, including such large animals as giraffes, buffalo and large antelopes. The most recent major wet periods occurred during the Last Interglacial, between about 130,000 and 70,000 years ago.

The Nubian Desert was hyperarid and unoccupied during most of the Late Pleistocene, from around 70,000 to around 11,000 years ago (WENDORF *et al.* 1993). During this period the water table fell to a level as low as or lower than that of today, and wind erosion scoured out numerous deep basins in the bedrock. Then, shortly before 10,000 years ago, the summer monsoon system of tropical Africa moved northward as far as the southern Sahara, and temporary ponds or playas began to form in those basins. The rainfall at that time was probably no more than 100 to 200 mm. a year, and even this was erratic, with frequent droughts and several brief periods of hyperaridity. Even with these summer rains, the Nubian Desert during the early Holocene was still a dry and unpredictable environment, with no permanent water and few resources. The animals living there were limited to small animals, the largest of which were two varieties of gazelles, together with hares, jackals, lizards, rodents and desert foxes. All of these animals could live on dew or moisture from vegetation. Cattle, regarded as domestic, were also present.

Unlike today, however, there was sufficient moisture during the early Holocene for human groups to make extensive use of the area, and some of these groups eventually developed technologies which enabled them to live in the desert the year-around. The

Nubian Desert also seems to have been an area where several important cultural innovations were developed. It may have been there that the distinctive African pattern of cattle pastoralism evolved, prior to and independent of similar efforts in southeastern Europe and Southwest Asia (GAUTIER 1984 ; WENDORF and SCHILD 1995), and it is the area where there is evidence for the oldest known intensive use of sorghum, millets, and several other grasses and legumes for food (WENDORF *et al.* 1992 ; WASYLIKOWA *et al.* 1993). The Nubian Desert (and west across the southern Sahara) has also yielded some of the earliest known pottery (CLOSE in press), and it seems likely that these early pastoral groups in the Nubian Desert had begun to develop a ranked social system well before there is any evidence for social complexity in the adjacent Nile Valley. This puzzling proximity of cultural innovation and environmental stress deserves serious consideration by those who have interests in the relationship between environment and cultural processes.

Nabta Playa is a large, internally drained deflational basin, located about 100 km. west of Abu Simbel, in southern Egypt, near the eastern edge of the Nubian Desert (WENDORF and SCHILD 1980). Because of the size of the drainage area for the basin, Nabta Playa appears to have been an unusually attractive locality for early Holocene groups. Numerous archaeological sites have been recorded in and around the basin, and many of them have been excavated by our group, the *Combined Prehistoric Expedition*, an informal entity sponsored by *Southern Methodist University*, *The Institute for Archaeology and Ethnology of the Polish Academy of Sciences*, and the *Geological Survey of Egypt*.

The earliest excavated sites at Nabta are dated by radiocarbon to around 9000 years ago, and contain well-made bladelet-based lithic assemblages with straight-backed pointed bladelets, perforators and large endscrapers made on reused Middle Paleolithic artifacts as characteristic tools. The preferred raw material was Egyptian flint, the nearest source for which was along the Eocene Plateau, about 75 km. to the north of Nabta Playa. Chert, agate and chalcedony were also used, but less frequently. A few grinding stones and rare shreds of pottery also occur. The pottery is well-made and decorated over the entire exterior with deep impressions in a nested chevron or similar pattern, made with a comb or wand in what is now sometimes referred to as "Early Khartoum style". The function of this pottery is far from clear, but its rarity suggests that it was not in general use as containers ; they may have been luxury or status items (CLOSE in press).

Except for the pottery and the reuse of Middle Paleolithic artifacts, the lithic artifacts in these early sites are closely similar to those found in the Nile Valley near Wadi Halfa, where they are about the same age or slightly older (SCHILD *et al.* 1968). These assemblages, which elsewhere in the Nubian Desert have been dated between 9800 and 8800 years ago, have been classified as el Adam type of Early Neolithic (WENDORF *et al.* 1984 : 409-411). Almost all of these el Adam sites have yielded a few bones and teeth of large bovids, identified as *Bos*, as well as numerous bones of gazelle and hare, plus a few bones of jackal, turtle, small rodents and birds, which suggests a rather poor environment, comparable to the northernmost Sahel today.

It has been suggested that these early groups were cattle pastoralists who brought their herds into the desert for grazing after the summer rains (WENDORF *et al.* 1984 : 420-422 ; 1987 ; WENDORF and SCHILD 1995). It is presumed these Early Neolithic groups came into the desert from some as yet unidentified area where wild cattle were present and where the initial steps toward domestication first occurred. This may have been the Nile Valley, between the First and Second Cataracts, because wild cattle were present in that area, as were people with lithic industries closely similar to those in the earliest Sahara sites. It seems likely that cattle may have facilitated human use of the Nubian Desert by providing a mobile, dependable and renewable food resource in the form of milk and blood.

That the cattle were used as a renewable resource rather than meat is seen as a possible explanation for the paucity of cattle remains in these Saharan sites. If this is correct, this use of cattle may have been closely similar to that of modern African cattle pastoralists, who use the by-products from their herds, but rarely kill them for meat, and then only at important ceremonial occasions. Among these groups cattle are an important source of wealth and prestige. The African pattern of cattle pastoralism may well have developed in the Eastern Sahara.

The interpretation that these early Saharan cattle were domestic is controversial (SMITH 1984 ; 1992 ; MUZZOLINI 1989), but it is supported by very persuasive paleoecological evidence, including the limited diversity of the other fauna found with the cattle. A faunal assemblage consisting only of small, desert adapted animals and large cows is unusual and does not occur in nature. A normal population would also include intermediate sized animals, such as the hartebeest. Hartebeest and wild cattle were the predominant game in the Nile Valley, and they appear to have overlapping requirements, hartebeest being the "drier" of the two (KINGDON 1982 ; GAUTHIER 1987 ; GAUTHIER and VAN NEER 1989). Their absence from the Holocene fauna of the Nubian Desert is difficult to explain, if the cattle were wild.

That the cattle were domestic is also supported by the absence of permanent water closer than the Nile Valley. Cattle need to drink every day and for them to have been present in an area with no surface water would seem to require that the cattle were under human control and could be moved from basin to basin as the water in those basins dried up, and then as the dry season intensified, returned either to the Nile or farther south where permanent water was present. There is no evidence of dug wells from which water might have been obtained at any of the el Adam sites, and for this reason it seems likely that the desert was abandoned during the driest part of the year, when water was not available, except by digging.

There was a brief period of aridity around 8800 years ago, when the desert appears to have been abandoned. When the rains returned, Nabta Playa and other basins in the Nubian Desert were reoccupied by groups with a lithic tool-kit that emphasized elongated scalene triangles and microburin technology. Other artifacts include grinding stones, perforators, backed bladelets, scrapers (but not made on reused Middle Paleolithic pieces), and a few sherds of pottery similar to that found in the el Adam sites. These materials characterize the el Ghorab type of Early Neolithic, dated between 8600 and 8200 years before the present (WENDORF *et al.* 1984 : 412-413). The associated fauna are again mostly gazelle and hare, but there are a few bones of wildcat, porcupine, desert hedgehog, birds and cattle. All but the cattle are desert adapted and do not require surface water.

No structures are known for this period at Nabta Playa, but in the Dyke area located some 200 km. northwest of Nabta, there are oval, slab-lined houses associated with lithics of the el Ghorab type (SCHILD and WENDORF 1977 : 113-147). Again, there are no known water-wells, so it is believed that the desert continued to be used only after the summer rains and was abandoned during the driest season of the year.

Another brief period of hyperaridity, between 8200 and 8100 years ago, coincides with the end of the el Ghorab Neolithic in the desert (groups with similar lithic assemblages apparently continued to live in the Nile Valley after this date). With the return of greater rainfall around 8100 years ago, a new variety of Early Neolithic, the el Nabta type, appeared in the Nubian Desert.

El Nabta sites are often larger than the previous Early Neolithic sites, and some of them had large, oval huts or houses, bell-shaped storage pits and large, deep wells,

sometimes with adjacent shallow basins that might have been used to water stock (WENDORF and SCHILD 1980 : 128-140 ; WENDORF *et al.* 1984 : 413-414). These el Nabta groups had evidently developed the technology needed to live in the desert throughout the year. The lithic artifacts in these el Nabta sites include numerous perforators, burins, backed bladelets (some of which are straight backed and pointed), retouched pieces, notches and denticulates. Simple bone points also occur, as well as pottery, the later with several varieties of impressed designs, including "dotted wavy line". The designs cover the entire exteriors of the vessels, most of which were small globular jars with simple, constricted rims. Pottery is still rare, but more abundant than in previous phases. The associated fauna is similar to that found in earlier Holocene sites, mostly gazelle and hare, and a few other small desert animals, together with an occasional *Bos*. A large series of radiocarbon dates place the el Nabta type between 8100 and 7900 years ago.

The largest known el Nabta sites (E-75-6) is located on a fossil dune in the lower part of Nabta Playa. It had at least 15 houses or huts, arranged in two, probably three, parallel lines and three water-wells, one of which was 2.5 m. deep (WENDORF and SCHILD 1980 : 131). This arrangement of the houses in straight lines and the presence of a large, deep water-well may indicate the presence of a social system with sufficient authority to control the placement of houses in the village and to organize the excavation of the wells. There are, however, no indications of differences in wealth, or even community storage facilities. Some of the houses were more than 6 m. long and 2.5 m. wide ; others were smaller, from 3 to 4 m. in length and 2 m. wide (WENDORF *et al.* 1991). All of them appear to have been simple brush or mat covered huts, with several shallow, saucer-like floors separated by lenses of silt. There were from one to three hearths or burned areas on these floors, and several (sometimes several dozen) small, hemispherical "potholes" that were filled with ash, charcoal, and charred edible plant remains. Besides each house was one or more bell-shaped storage pits averaging 1.5 m. in diameter and depth.

Since Site E-75-6 is located in the bottom of a large basin that was deeply flooded each year with the summer rains, it is not surprising that the site was abandoned during these rains and then reoccupied when the basin became dry. It is surprising, however, that when the people returned to the site they were able to find the precise position of each house, even though it had been flooded and covered by silt. The answer to this mystery may be the structure of the huts. A few postholes around the periphery of the houses apparently held upright posts that formed the frame that held the mats, skins or brush that presumably formed the walls and roof of the shelter. This frame may have been left in place when the site was abandoned each year, and when the floodwaters in the basin had receded, these still-standing frames would have marked the exact positions of the houses.

Site E-75-6 was obviously occupied during the dry season, the time when many grasses and other plants mature, and the site seems to have been a plant collecting and processing locality (WENDORF *et al.* 1992). Several thousand seeds, tubers, and fruits representing 44 different kinds of edible plants, including sorghum and millets, were recovered from the floors of these houses. All of the plants are morphologically wild, but the sorghum may have been cultivated. Preliminary chemical analyses by infrared spectroscopy of the lipids in the archaeological sorghum show closer resemblance to some modern domestic sorghum than to wild varieties (WASYLIKOWA *et al.* 1992). These chemical studies are still continuing, and they need to be confirmed by a large series of analyses before they can be regarded as definitive. The significance, however, is not in whether or not the sorghum was wild or domestic, but that the sorghum and the other plants were being intensively harvested and that they comprised a significant portion of the food resources of the el Nabta people. The numerous storage facilities associated with the houses are further testimony to the importance of these plants in the el Nabta economy. The stage was set for the emergence of cultivation, if it was not already underway. In this

context it is undoubtedly significant that there are no traces of wheat, barley or any other Southwest Asian domesticate.

Another brief period of aridity coincides with the end of the el Nabta phase and the Early Neolithic. A number of changes in ceramics and lithic technology mark the beginning of the Middle Neolithic (WENDORF *et al.* 1984 : 415-417). Pottery is more abundant in the Middle Neolithic, and it is decorated with closely packed comb- or paddle-impressed designs over the entire exterior surface of the vessel (BANK 1980 : 302-306). Most of the vessels are small globular jars, but some of them are large, and analyses of the clays indicates that the pottery was locally made. Also, the collections often include a few sherds with decorations similar to those found on Early Neolithic pottery. It is not known if these were heirlooms, or if those design styles were still being used.

The lithic artifacts in the Middle Neolithic are often made of local rocks, rather than the Egyptian flint that was preferred during the Early Neolithic, but there is some continuity with the Early Neolithic in the typology. Small scalene triangles, backed bladelets, perforators, scrapers, stemmed points with pointed and retouched bases, notches and denticulates are the characteristic tools. Radiocarbon dates place the Middle Neolithic between 7700 and 6500 years ago. The environment during this period was similar to that in the Early Neolithic, or slightly drier ; the identification of the wood charcoal indicates fewer species of wood (BARAKAT 1995), and in the fauna there is an increase in the frequency of hare relative to gazelle (GAUTIER 1984). On the other hand, the faunal assemblages in the Middle Neolithic sites are larger and richer ; they include all of the species of animals found in the Early Neolithic, including cattle, as well as several kinds of lizards, ground squirrels, field rats, hyena, sand fox, and one example of either oryx or addax. It seems probable that the greater abundance of fauna in these sites is related to presence of more people and the duration of the occupations.

The Middle Neolithic sites occupied after 7000 years ago usually include sheep or goat, the first Southwest Asian domesticate known to be introduced into North Africa. The presence of domestic caprovids in the Eastern Sahara at this time probably indicates that groups with these and other Levantine features were present by this time in the Nile Valley, even though the oldest radiocarbon dates for the Neolithic along the Nile is about 500 years later.

Many of the Middle Neolithic sites at Nabta have houses. They are usually round in outline, some are semi-subterranean, between 30 and 40 cm. deep, often with slab lined-walls and sloping lateral entryways, or circular jacal-like structures with wattle and daub walls. Hearths are usually in the center of the floors.

Middle Neolithic sites occur in a variety of sizes and settings (WENDORF *et al.* 1985). Some of them are small, with only one or two houses, and these are usually located in smaller basins ; there are several somewhat larger sites with half dozen or more houses in larger basins ; other sites are located on dunes overlooking these basins ; while on the sand sheets and plateaus there are numerous small clusters of Middle Neolithic artifacts, often poorly made, with a hearth and not much else ; and finally, there is one very large site with unusually deep trash accumulation (2 m.) on a dune along the high beachline of Nabta Playa (Site E-75-8). This variation in settlement sizes and their positions in the landscape has been interpreted as reflecting a seasonally responsive settlement system in which the population was dispersed into small- and medium-sized villages located in the lower parts of the basins during most of the year, particularly the dry season. During the wet season they apparently gathered into a large community for social and ceremonial purposes along the beach of Nabta Playa, the largest basin in the area. Houses are not known at Site E-75-8, the supposed "aggregation" locality, but there are numerous stone-

filled hearths, and the site has yielded the highest frequency of cattle bones of any locality in the Nubian Desert. In this connection it is useful to note that among many African pastoralists today, cattle are frequently sacrificed and consumed at important ceremonial occasions, to celebrate the birth or death of an important personage, and at betrothals, and marriages.

The sites on the dunes are believed to record brief occupations by Middle Neolithic people after they had left the "aggregation" site and while they waited for their basin to dry sufficiently for them to move down onto the playa floors. The small sites on the sandsheets are seen as temporary camps by herders, possibly young boys who were not yet skilled in stone working. They could have been used at any time of the year, but most usefully after the summer rains when grazing in those areas would have been at its best.

Recent excavations at Nabta have yielded strong evidence of a major period of aridity shortly before 6500 years ago. The onset of this arid phase coincides with the abrupt end of the Middle Neolithic. During this arid episode the water table fell several meters, the basins were reshaped and their floors deflated, in some instances by more than 3 m. In so far as we can tell, the Nubian Desert was not occupied during this dry interval.

When the area was reoccupied a few years later, around 6500 years ago, the sites are larger (except for the many small herding camps on the plateaus), and often reoccupied several times, but evidently not for extended periods. These late Neolithic sites contain numerous shallow, oval, stone-lined and stone-filled hearths, but there are no traces of houses. Bifacially flaked projectile points are common in these sites, which may indicate increased regional instability. There is also a new lithic technology that made extensive use of short, wide ("side-blow") flakes, often used as blanks for scrapers, complex notches and denticulates, and a new kind of sand or fiber tempered pottery with burnished exteriors and smudged interiors. Impressed or incised designs are rare and limited to the rims (BANKS 1980 : 306-307). This new pottery is very similar to that found in the early Baderian and Abkan Neolithic along the Nile, where they are dated between 6500 and 5500 years ago (NORDSTROM 1972 : 250-251 ; HASSAN 1985). The source of the Baderian Neolithic is unknown, but it was probably derived ultimately from Southwest Asia, possibly by way of Sinai, where prepottery and pottery Neolithic sites have been dated between 10,000 and 8000 years ago (BAR-YOSEF 1985). It is interesting to note that Terminal Paleolithic fishing and hunting groups were living in the Nile Valley as recently as 7100 years ago, apparently with very limited contact with the Neolithic groups living in the nearby desert (WENDT 1966 ; Vermersch 1978 ; WENDORF and SCHILD 1976 : 163-182). This changed with the Late Neolithic.

The same Middle Neolithic "aggregation" locality at Nabta (Site E-75-8) was also occupied during the Late Neolithic, presumably during the wet season, and apparently for activities that may be related to those that occurred during the Middle Neolithic. In addition to extensive and repeated occupations along the high beach line of the playa, with numerous bones of both large and small livestock, several ceremonial features were built nearby, some of them out in the playa (WENDORF *et al.* 1993). These consisted of three large megalithic alignments, at least two stone circles which may have served as calendrical devices, another feature which resembles a passage grave, two small stone-covered tumuli covering cattle burials, and 30 larger stone-covered tumuli, clustered into three groups, the purpose of which is unknown. The cattle burials apparently indicate the presence of a cattle cult, and the larger tumuli may cover additional cattle burials, or burials of important individuals. The excavation of several of these large tumuli is planned for the near future.

The age of these ceremonial features is not well established, but most are partially or almost completely buried by the Late Neolithic playa sediments, suggesting that they

were built early in the Late Neolithic wet phase, or even before. One of the small stone-covered tumuli has an AMS radiocarbon date of 6470 BP \pm 270 years (CAMS-17289) on wood that covered the chamber containing the cow. These megaliths and other large ceremonial features are made of locally available sandstone (within 2 to 3 km.), but the stones with the large tumuli are often large and shaped. The construction of these monuments required a degree of organization and commitment not previously seen in Egypt. While not established that they represent a ranked society, this is a reasonable possibility (RENFREW and SHENNAN 1982 ; WASON 1994).

Around 5500 years ago the modern phase of hyperaridity began in the Eastern Sahara. The area was abandoned about this time, and it has been suggested that the movement of these perhaps better organized Late Neolithic cattle pastoralists to the Nile Valley, and the resulting turmoil, was a critical factor in the rise of social complexity and the subsequent emergence of the Egyptian state in Upper Egypt (HOFFMAN 1979 ; HASSAN 1988). If so, Egypt owes a major debt to those early pastoral groups in the Sahara; they may have given Egypt many of those features that still distinguish it from its neighbours to the east.

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Figure 1 : View across Site E-75-6, Nabta Playa, showing shallow, basin-shaped house floors. Site has 20 + ^{14}C dates clustering at 8000 BP.



Figure 2 : House floor at Site E-75-6, dating 8000 BP. The small saucer-shaped depressions contained ash, charcoal and thousands of charred edible plant remains, including sorghum. All of the plants are morphologically wild, but the IR comparisons of the sorghum with modern wild and domestic sorghums show closer resemblances to some domestic varieties.



Figure 3 : View of Late Neolithic site (dating 6500 BP) with cultural material exposed on the surface.

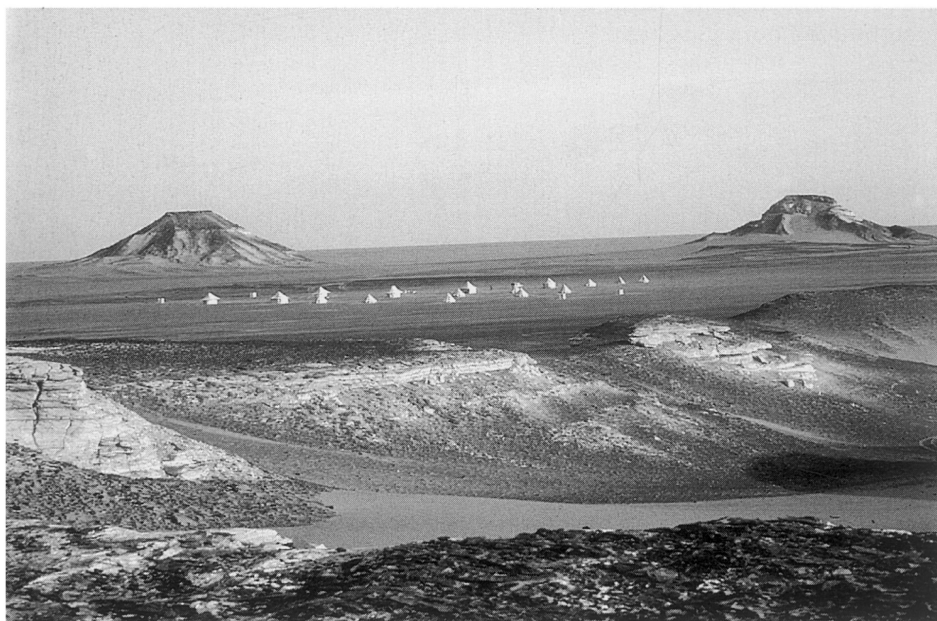
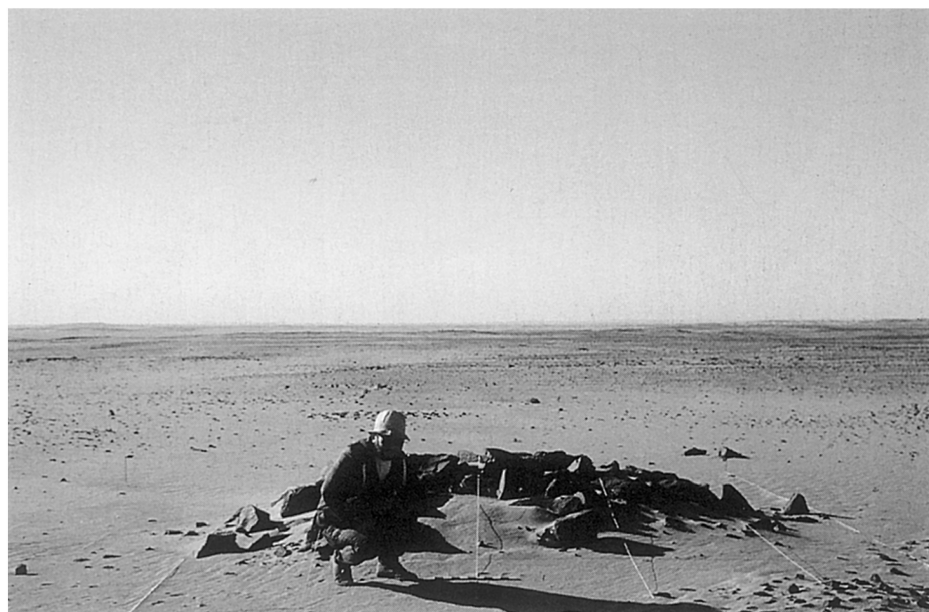


Figure 4 : Combined Prehistoric Expedition (sponsored by Southern Methodist University, the Polish Academy of Sciences and the Geological Survey of Egypt) **camp at Kiseiba Playa, SW Egypt.**



Figures 5 and 6 : View of small, rock-covered tumulus before excavation, while still buried in Late Neolithic playa sediments, located at Nabta Playa, SW Egypt.



Figure 7 : Small, rock-covered tumulus (3 above) partially cleared of surrounding Late Neolithic Playa sediments.



Figure 8 : Burial of a bull in chamber below rock-covered tumulus (3, 4 and 5 above). Bull was a long-horned “african” race.



Figure 9 : View of series of large tumuli partially buried in Late Neolithic playa sediments. It is unknown if these large tumuli (several times larger than those excavated so far which covered cattle burials) also covered cattle burials or if they had some other function. None of these large tumuli have thus far been excavated.

□ L'auteur principal

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Publications de l'auteur

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