

The Neolithic habitation at Kadero (Central Sudan)

The Neolithic site at Kadero is located on a low, eroded mound of sand of about 4 hectares in surface area which rises to ca. 1.8 metre above the expansive and flat bottom of the Valley of the main Nile. Both the mound and the surrounding plain seem to be characteristic features of the Gezira Formation which occupies the area to the south of the confluences of the White and Blue Niles (Butzer and Hansen, 1968). The Kadero site is situated 18 km to the north of this confluence and 6.5 km to the east of the channel of the main Nile.

Eight seasons of excavations at Kadero, carried out until 1980, resulted in the testing of 1,744 square metres of the site¹. As a result, the settlement deposits and burial grounds of the Central Sudanese Neolithic tradition were found and partly investigated. The investigation pursued on their contents yielded a considerable amount of information on the character and organization of cultural life on this site.

In the course of excavations of several pits and trenches, two settlement deposits were found on the mound and their limits were roughly assessed, partly also by surface examination. The deposits are located on the opposite edges of the mound: southern and northern, and are interpreted as the remains of dwelling places. No settlement deposit was found on the flat, central part of the mound (Fig. 1). The sample of the remains of food and artefacts excavated from the southern deposit is, so far, the basic source of information on the subsistence economy (Krzyżaniak, 1978), lithic industry (Nowakowski, this volume) and pottery (Chłodnicki, this volume) of the Kadero social group. Three radiocarbon measurements for this deposit, all made on freshwater shells which, undoubtedly, were brought to the site by its inhabitants,

¹ Basic reports on the first eight seasons at Kadero have been published by L. Krzyżaniak: Kadero (first season, 1972), *Etudes et travaux*, Vol. 8 (1974) : 361 - 366; Kadero (second-third season, 1973 - 1973/74), *EeT*, Vol. 9 (1976) : 283 - 287; Kadero (fourth-sixth season, 1975 - 1976), *EeT*, Vol. 11 (1979) : 246 - 252; Kadero (seventh season, 1978), *EeT*, Vol. 14 in press.

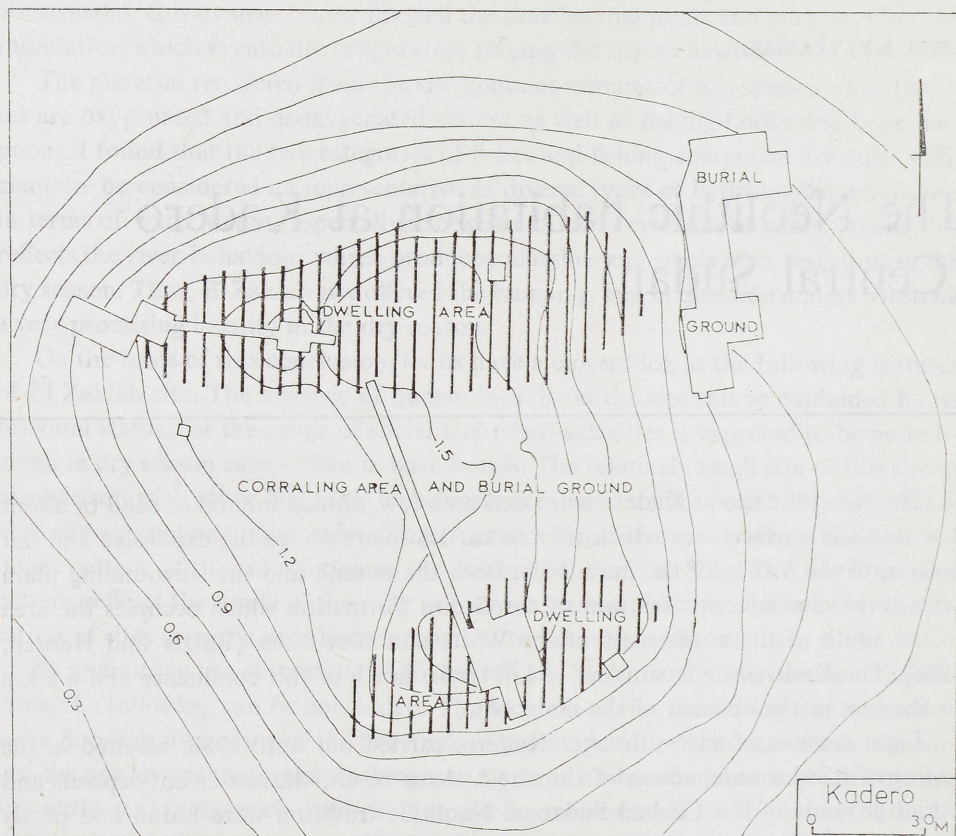


FIG. 1. Kadero. Pits and trenches excavated during the first 8 seasons and a hypothetic interpretation of the Neolithic site (settlement deposits are vertically hatched)

gave dates ranging from ca. 5030 to 5280 B. P.² and, after calibration, date the southern part of the Kadero settlement to the end of the 5th millennium B. C.

The larger pit excavated in the southern settlement deposit yielded direct faunal evidence which points to the more advanced food producing economy practised by the Kaderans as compared to that known from Esh Shaheinab, the type-site of the Central Sudanese Neolithic tradition (Arkekk, 1953). As is reported by the archaeozoologist (Gautier, this volume), the most frequent remains from this deposit are by far those of domestic animals: the most numerous are clearly the skeletal remains of cattle, whereas much less frequent are the remains of sheep and goat; some remains

² The following ¹⁴C dates are available so far for the southern settlement deposit at Kadero:

(T-2188) 5,260 ± 90 B.P.

(T-2189) 5,030 ± 70 B.P.

(SMU-482) 5,280 ± 90 B.P.

of dog are probably also present. It seems that similar evidence derives from the small pit excavated in the northern settlement deposit in 1980 (Gautier, personal communication). The large sample yielded by the southern deposit, consisting of tens of thousand of pieces of skeletal remains, suggests the consumption by the inhabitants of this settlement of meat of the domestic cattle on a considerable scale. There is, so far, no evidence on the consumption of milk and its processed products at Kadero.

The impressions of grains of different plants found on the potsherds excavated from the southern and northern settlement deposits seem to shed some light on the kind of vegetable food which might have been eaten by the Neolithic Kaderans. Contrary to the earlier reports about the presence of two tropical, cultivated cereals (sorghum and finger millet) in this evidence (Klichowska 1978; this volume), most recent investigation reports only wild cereals (including sorghum), grasses and tree fruits at Kadero (A. Stemler, personal communication). The intensive and permanent crushing of grains at Kadero is clearly documented by tens of thousands of fragments of worn-out grindstones found in both settlement deposits (Fig. 2) and this seems to indicate a regular consumption of processed grains on a considerable scale.

The faunal and botanical evidence point, therefore, to the subsistence economy at Kadero composed of animal husbandry, mainly of cattle, and an intensive collecting of grains of wild tropical cereals, other grasses and tree fruits. Among the apparently still flourishing food-gathering activities, the collecting of snails *Pila* and freshwater molluscs whose shells were found in the deposits (Gautier, this volume) should also be mentioned. Similarly to collecting, hunting was also practised, although on a small scale, and seems to have concentrated on smaller forms of antelopes, gazelles and carnivores. Only several fish-bones were found at Kadero so far and this suggests that fishing was of marginal importance at this settlement (Cf. Gautier, this volume).

The evidence obtained so far from the northern settlement deposit seems to confirm the data yielded by its southern counterpart. This deposit is, however, not yet dated by the radiocarbon measurement³ but its contents are clearly of the Central Sudanese Neolithic tradition. Its pottery, the lithic and bone artifacts, are similar to the material excavated from the southern part of this settlement and it would not be surprising to learn as a result of the isotopic dating that it is contemporary to the southern deposit. It is worth adding that its western end contained an exceptionally heavy concentration of grindstones and only very small amounts of potsherds and animal remains as compared to the quantities of these remains recorded in the southern deposit. "Normal" amounts of these artefacts seem, however, to have come from the smaller pit excavated in the centre of the northern deposit last season (cf. Fig. 1). This may point to the existence of areas of special activities within the Kadero settlement.

³ The following radiocarbon measurements were obtained in 1982 for the northern settlement deposit at Kadero:

(KN-2821) 5,500 ± 70 B.P., (KN-2822) 5,610 ± 55 B.P. and (KN-2823) 5,380 ± 65 B.P.

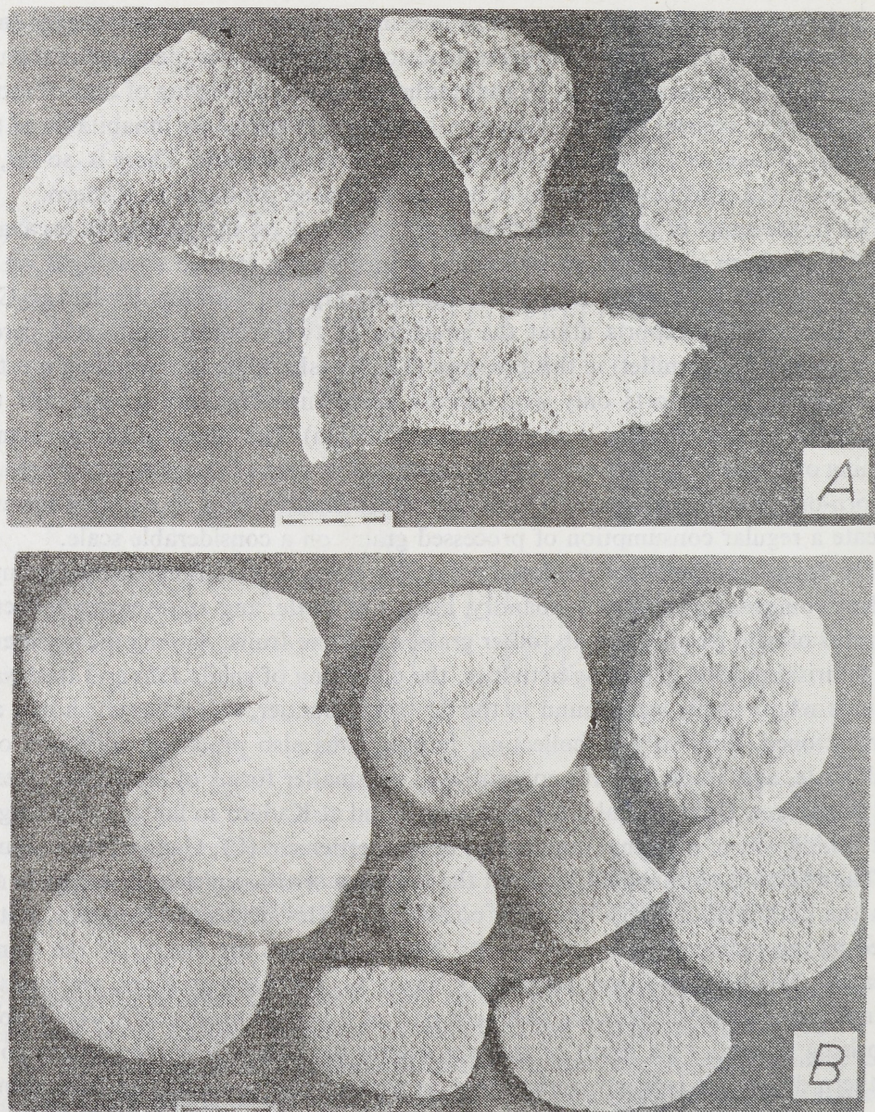


FIG. 2. Kadero. Lower (A) and upper (B) grindstones found in the settlement (scale in centimetres)

It seems that the original level of both parts of the Kadero settlement deposits was elevated somewhat higher than their present surface. This is suggested by the evidence coming from the burial grounds at Kadero and other sites in the area where the Neolithic skeletons lay exposed on the surface; this indicates considerable erosion in the Central Sudan which has taken place since the Neolithic times (cf. Arkell, 1953: 1). As a result, mounds like Kadero may have been eroded to the depth

of, perhaps, as much as 1 metre or more below the original Neolithic surface, which account for the exposition of these burials.

No settlement deposit was found in the central part of the Kadero mound. It seems, however, that this particular part of the site may have played an important role in the economic and social life of the local Neolithic group.

The faunal evidence obtained at Kadero (*e.g.*, shells of semiaquatic molluscs) (cf. Gautier, this volume), seems to confirm the hypothesis formulated earlier by Arkell (1953: 8) that the level of the Nile waters was about 5 m higher in the Neolithic period than in most recent times. Consequently, as can be computed on the basis of his data and the contour map of this area,⁴ the expansive plain which surrounds the Kadero and other mounds on the bottom of the Valley was flooded by the Nile waters in the wet season. It seems that the average depth of this inundation around the Kadero mound may have been of only several tens of centimetres (Krzyżaniak, 1978: 161). The inundation of the expansive pastures, which undoubtedly existed on the bottom of the Valley at this time, had certainly forced the Neolithic herdsmen to evacuate their animals onto higher land; the mounds of the Kadero type seem to have been, therefore, a convenient locality for such a retreat. It was already hypothesized by this author (1978: 172) that the central part of the Kadero mound, where no remains of dwelling activities have been found so far, could have been organized by this Neolithic social group to corral its herds in a somewhat similar way to the present pastoralists living on the Upper White Nile who build kraals for this purpose (Evans-Pritchard, 1940: 16-112).

The excavations of the Kadero mound also yield evidence which shows that it was a location not only of economic activities of the local Neolithic group, but that it was also the place where this population performed its important social activities. This is indicated by the discovery of 39 inhumations of the Neolithic chronology found so far on the mound. Judging by the results of the testing carried out until today, the inhumations occur in two localities: in clusters of graves found on the north-eastern slope of the mound and in the central part of the mound, outside the limits of the settlement deposits. In both these localities, adult individuals and infants of both sexes were buried (Promińska, this volume). In general, human bodies were inhumed in similar, contracted positions (Dzierżykray-Rogalski, this volume).

Two clusters of graves were found on the north-eastern slope of the mound (cf. Fig. 1). They contained 9 and 5 individual inhumations, respectively. The larger cluster was composed of the remains of adults of both sexes and infants, and the smaller one contained the remains of adult males and infants. The furnishing of these graves was exceptionally rich by Kadero standard. In the larger cluster, the top position in this respect was occupied by Grave No. 3 of a male 45 years old, where the discoidal mace-head, 3 high quality pottery vessels (washed with red ochre) and

⁴ Cf. the Khartoum North and Wadi Seidna sheets of the Sudan 1 : 25,000 maps, prepared and printed by the Sudan Survey Department, Khartoum, in 1970.

an impressive necklace of carnelian beads and pendants were found. Most of these graves in both these clusters contained similar high quality pottery vessels, Red Sea shells used as beads, necklaces of carnelian beads and nose- and lip-studs of zeolite.

In contrast to these graves, poor or no furnishing was found with the inhumation excavated in the central part of the mound. As many as 11 such graves were found in the trench unearthed across the central part of the mound (cf. Fig. 1), 5 inhumations were found accidentally in its vicinity and 6 graves were found on the outskirts of the northern settlement deposit. If these two major groupings of inhumations on the Kadero mound are confirmed by future excavations, and if we try to explain their cooccurrence in a way common to prehistoric archaeology, then they would appear to represent inhumations of individuals of different social status. This may lead to the conclusion that the elite of the Kadero social group were buried in separate ground, while the rest of the members of this social group were buried near their dwellings and all over the large, hypothetical corralling area.

The complexity of the cultural evidence obtained in the course of the testing carried out so far at Kadero seems to be of a unique magnitude in Central Sudan. Present evidence encourages us to go on with this project and excavate a much larger part of this site, far beyond the present limits of exploration. In this way it is hoped to obtain not only qualitative but also quantitative data for this site, *e.g.* the amount of animal remains and potsherds left on the site, the number of lithic implements and graves, and spatial distribution of these finds on the mound. It seems that on the basis of such evidence, and parallel to the much needed, intensive field research in the surrounding area, a more comprehensive picture of the cultural life of the early food-producing social groups in the Central Sudan could emerge.

One of the aims of future research in the Central Sudan might be the testing of the hypothesis, in part already presented by the present writer (1978: 171), and based on presently available evidence, which implies a diversified picture of adaptation strategies prevailing in the Central Sudan at the advent of the production of food. The hypothesis suggests the following trends in the development of these strategies which have resulted from the exploitation of different ecological niches in this area:

1. Riverbank Adaptation: subsistence based on fishing, collecting and hunting, supplemented by small-scale animal husbandry (possibly only of the ovicaprids). Type-site: Esh Shaheinab,
2. Valley Plain Adaptation: subsistence based on large-scale animal husbandry (mainly cattle) of pastoral character combined with the intensive, and perhaps already with elements of specialisation, collecting of seeds of wild tropical cereals, other grasses, tree fruits, molluscs, and some hunting. Type-site: Kadero,
3. Wadi Adaptation: subsistence based probably on pastoralism, hunting and collecting. (There is, however, very little evidence so far for this kind of adaptation in Central Sudan developing outside the Nile Valley). Type-site: Sheq ed Dud?

This hypothesis, of working character, rather differs from the more traditional explanation which seem to have suggested a linear mode of economic development

in Central Sudan at this time, and rather simultaneous changes in the adaptation strategy in all ecological niches.

It may be also interesting to point out that in the several millennia later Meroitic times, some parallels to pluralistic trend in the adaptation strategy in the Central Sudan could have been found. It is pointed out that different economic and cultural activities may have been pursued at that time in such niches as the Nile Valley, on the plain comprising the sandstone plateau dissected by numerous valleys and in the sandstone plateau cut by large wadis (Ali, 1972).

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