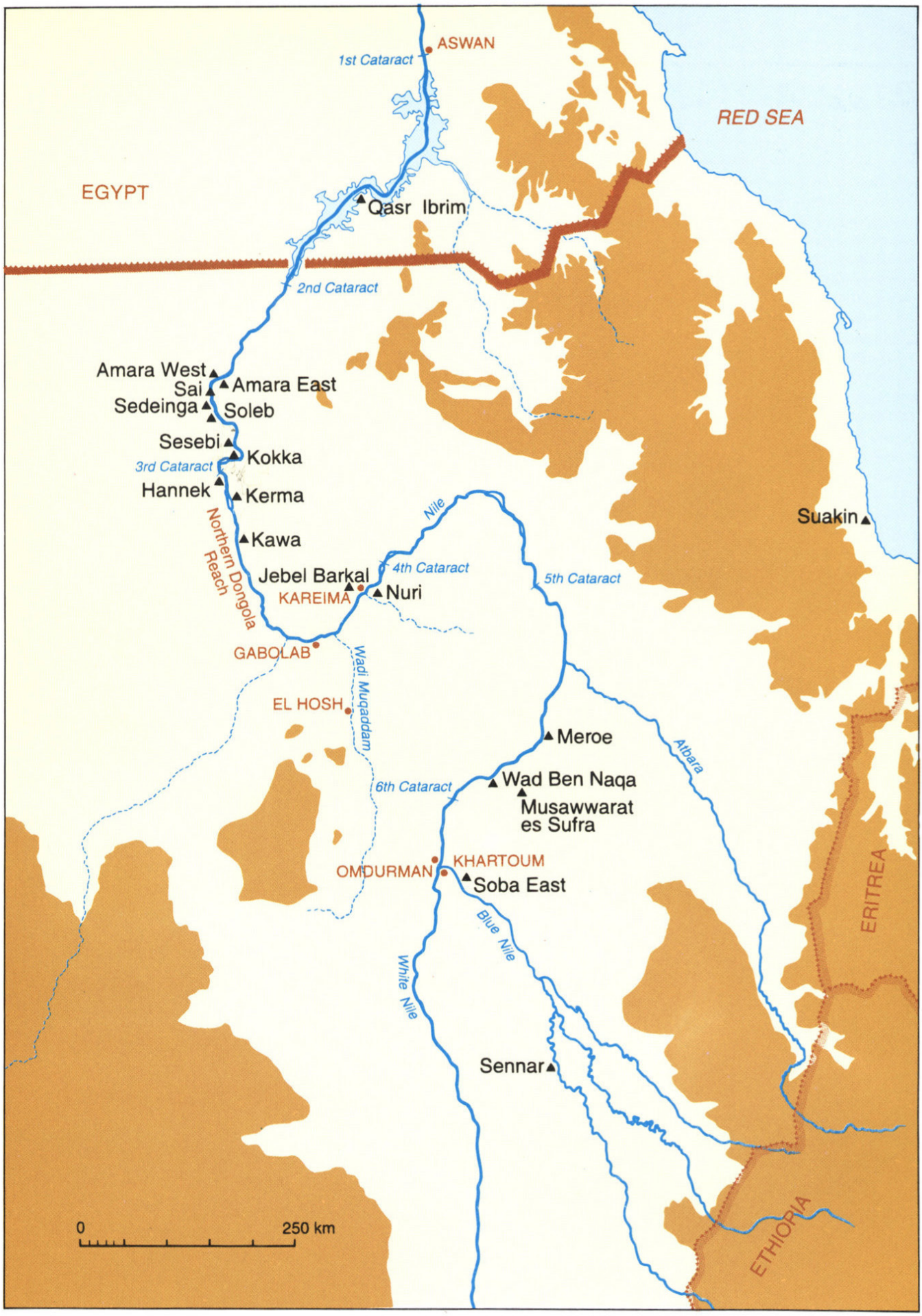
SUDAN & NUBIA

The Sudan Archaeological Research Society *Bulletin No. 1* *1997*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Kokka
3rd Cataract
Hannek
Kerma
Northern Dongola Reach
Kawa
Nile
Suakin
Jebel Barkal
4th Cataract
5th Cataract
KAREIMA
Nuri
GABOLAB
Wadi Muqaddam
EL HOSH
Meroe
Atbara
6th Cataract
Wad Ben Naqa
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OMDURMAN
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Blue Nile
White Nile
Sennar
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Contents

Front Cover: Relief of the Kushite King Taharqo (690–664 BC) in the Temple of Amun, Jebel Barkal. (Peter Hayman)

Introduction

Vivian Davies

The appearance of *Sudan & Nubia* represents an exciting new development for our Society. Replacing the old *Newsletter*, and incorporating colour illustrations, it is designed to be a more substantial and attractive periodical, and of more lasting value. It will continue to publish reports of our own excavations and other scholarly activities but will also include papers dealing with relevant topics and material from other sources. *Sudan & Nubia* will serve, we hope, to promote interest both in the Society and in the field of Sudanese and Nubian archaeology in general, including that of Egyptian Nubia. It will appear, at least initially, once a year, in the Autumn.

This first issue contains an impressively wide range of subject-matter, covering a time-span of nearly five millennia. In the fieldwork section it will be seen that the Society's project in the Dongola Reach directed by Derek Welsby, comprising in this last season the rescue excavation of sites of the Kerma Period and related palaeohydrological research, continues to yield important new data, while a brand new project initiated by Michael Mallinson – a survey of multi-period sites in the Bayuda desert threatened by road-building – looks to be very promising. Pawel Wolf gives an account of the Humboldt University's fascinating and quite unexpected new discoveries at the great Meroitic temple-site of Musawwarat es Sufra. John Alexander reports on his investigation of an Islamic fortress on Sai Island, a military outpost (similar to Qasr Ibrim) which represents the southernmost point of penetration of the Ottoman Empire in Africa. There are two papers on recent research. Patricia Spencer has been reconstructing from old records the unpublished excavations at Amara West undertaken many years ago by the Egypt Exploration Society. She very usefully summarises the results of her work (recently published in full in an EES Memoir), which has shed valuable new light on this important pharaonic town-site. Finally, Michael Cowell provides an up-date on his programme of scientific examination of Nubian metalwork, a subject sorely neglected in the past. The project has now been extended to include Napatan foundation-deposits, source-material of special value for this kind of research in that the deposits are both well dated and richly endowed with metal objects.

Field Reports

The Northern Dongola Reach Survey: the 1996/7 season

Excavations at Sites O16, P1, P4 and P37

Derek A Welsby

In January 1993 SARS began a survey on the east bank of the Nile in the northern Dongola Reach between Eimani and Mulwad, a distance of 80 km, and from the river east to the desert plateau, a maximum of 18km. Prior to this work the only sites known in any detail in the area were the pharaonic and Kushite town at Kawa and its three associated cemeteries. After four seasons of survey there is now a total of 443 ranging in date from the Neolithic period to the Islamic and in character from a few artefacts to a large monastic settlement. The results obtained clearly demand a total re-evaluation of the region, particularly in the Kerma period, from which by far the largest number of the new sites date. As has been reported on several times in the SARS *Newsletter*, one of the most interesting discoveries was that the Nile, at least in the Kerma period, appeared to have flowed in three channels and supported a sedentary lifestyle in areas which, for well over 2000 years until the very recent past, were barren desert. This area is now being utilised for agriculture with the aid of modern water pumps tapping the underground water resources. The preferential areas for agriculture today are the banks of the palaeochannels, the plains between the channels having a thick deposit of sand making them unsuitable for farming activities. The region abounds in palaeochannels, a number of which do not appear to have been significant factors in the location of human settlement. Presumably the combination of lifestyle, population density and climatic conditions which pertained at the time those channels were active did not make their banks particularly favoured areas for human activity. By the Kerma period the distribution of settlements indicates that there had been a fundamental change and all the settlements are located on the banks of river channels or on the edge of the Seleim basin. The most likely explanation for this is a combination of climatic factors and an economy based largely on activities requiring a reliable water source, presumably agricultural activities.

During the 1st millennium BC, if not before, all settlements were relocated to the banks of the present day river, although the continuing utilisation of the areas to the east by transhumers and nomads should not be discounted. The scale of that activity, however, is impossible to determine as whatever artefacts these people may have been using have not been recognised or have not survived in the archaeological record. Occasional finds of later material and of graves of the mediaeval and Islamic periods may be connected with these people and/or with the travellers who passed through the region from north to south along the Wadi el Khowi and from north west to south east along the Sikkat el Maheila from the region of Dongola to Kareima.

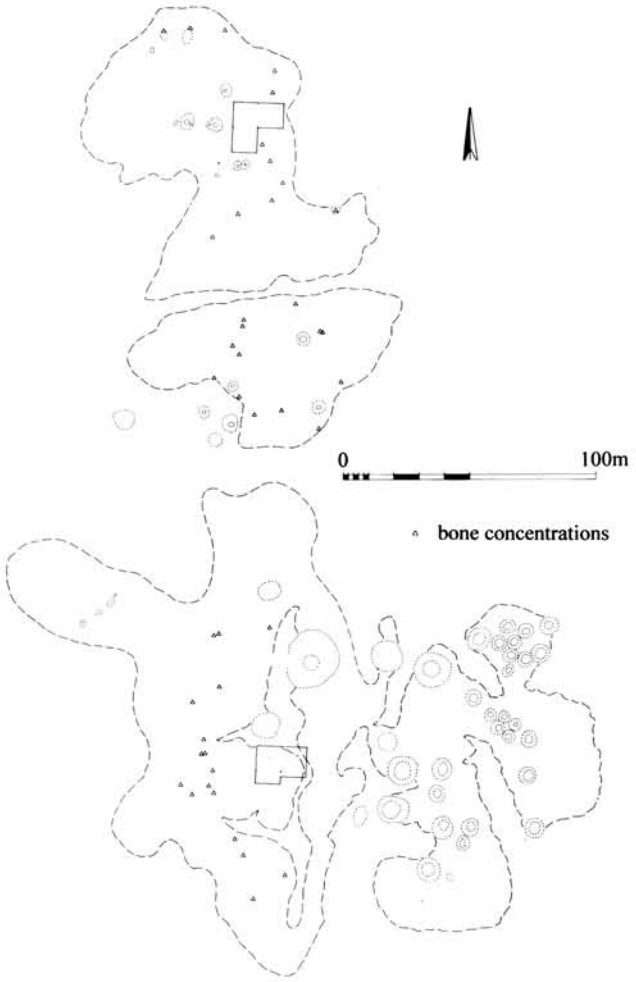

Figure 1. Site P37 – The Kerma period cemetery.

The survey was undertaken both to supply information on the archaeology of a hitherto largely unknown area and to assess the threat to sites from modern development. The threat from the expansion of agriculture is extremely serious and many sites may well already have disappeared. Many others are gradually being ploughed out. The threat to the sites is, however, by no means confined to the results of human activities. Wind erosion is extremely destructive and appears to be responsible, perhaps in conjunction with water erosion, for the total removal of sites over a wide area.

The survey raised a number of interesting questions relating to the date and function of many of the features located. It was, therefore, logical to continue the work of

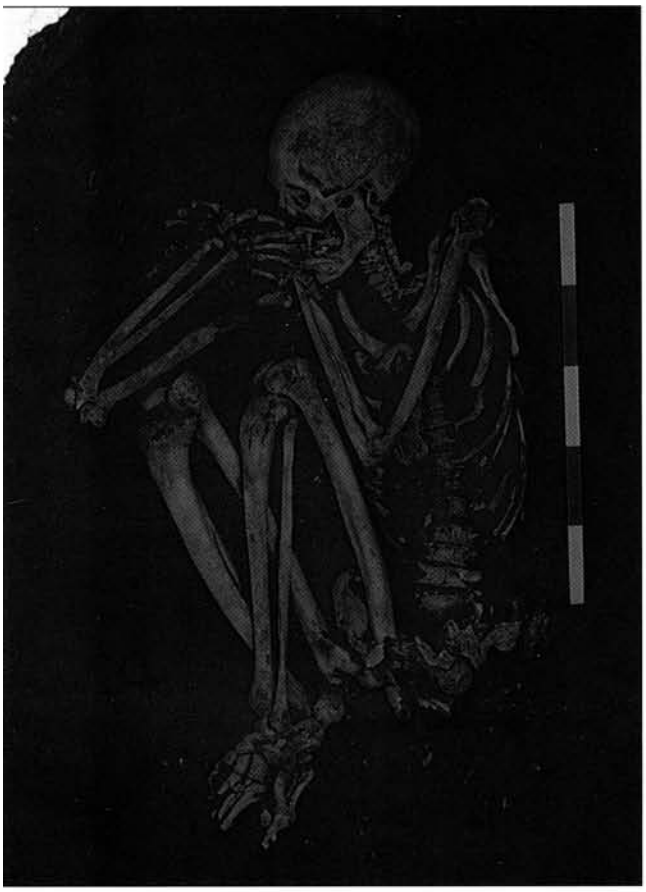

Plate 1. Site P37 - Grave (J3)7, a tightly crouched inhumation.

the survey by undertaking excavation of selected sites and three were chosen for excavation in the winter of 1996/7 from among the hundreds where a similar case could have been made. The sites investigated were O16 and P37; a Kerma cemetery, P4, an isolated building probably of Kerma date, and P1 thought to be a cemetery but of uncertain date.

Site O16

Site O16 was discovered by the survey in 1994. It was suffering from extensive damage from aeolian erosion and a number of articulated human skeletons were visible on the surface. In the 1995 season, with the aid of our physical anthropologist Margaret Judd, those bodies on the surface were excavated as their total destruction was imminent (Welsby 1995, 6). The degree of erosion was such that it was felt imperative to totally excavate the site and this was the aim of the last season's work. Things did not turn out as planned. The cemetery sits on a very low mound. Removal of the surface sand in the central area of the mound uncovered alluvium a few centimetres down. Towards the edges of the mound pure silver sand was located. Initially it was assumed that the alluvium at this point dipped down beneath the sand but it soon became clear that the sand was a natural horizontal stratum running beneath the alluvium on the mound. The graves had been dug down to immediately above the sand/alluvium interface. What we were seeing at O16 were the last stages in the total erosion of the cemetery. Several graves survived but these were the deepest graves and the excavation was completed within three days. As in the excavations of 1995 at least some of the bodies had been laid on a hide. Grave (C3)10 was the best preserved. It was subrectangular in shape with the body laid on its right side, head to the east. Only the pelvis and legs remained *in situ*, the rest of the body having been badly disturbed by robbing activities. Graves (C3)6 and 7 were both badly disturbed. Among the bones were fragments of sandstone stelae.

Site P37

On completion of the excavations of O16 it was decided, after consultation with our antiquities officer, to move our activities to the cemetery at site P37, 3km to the south east. This cemetery occupies two prominent mounds, overall a maximum of 435 x 230m in size (fig. 1), and was surveyed in detail in the 1995/6 season. It attained a maximum height of 3.45m above the surrounding plain. As at O16 the whole surface of the cemetery was covered in black sandstone and basalt fragments and by white quartzite pebbles. Over large areas no tomb monuments could be seen on the undulating mound surface but, particularly in the south-eastern part of the cemetery, there was a number of extremely well preserved tumuli with rings of small upright stones remaining (colour plate I). Away from the summit, on the slope down from the mound, there were many concentrations of bone, both human and animal, and also concentrations of pottery. We had assumed prior to excavation that these had been brought onto the surface as a result of robbing activities. On the northern mound there was a considerable amount of ceramic material of Kerma Ancien date (2500–2050 BC) while on the southern mound the pottery was of the Kerma Moyen period (2050–1750 BC). No pottery of Kerma Classique date was noted although one winged ferruginous axe probably of that date was found immediately beyond the cemetery. Two areas were chosen for excavation. On the north mound 300m^2 were excavated while on the south mound an area of 230m^2 was examined.

The northern mound, excavation areas (J3), (K3) and (K4)

Towards the northern edge of the site 56 graves were revealed of which 34 were completely excavated (fig. 2 and colour plate II). These were all very small, circular or oval pits between 1m diameter and 2.3 x 1.9m in size. There was very clear evidence for extensive erosion as those graves towards the top of the mound were up to 2.2m deep while 10m further down the slope *in situ* skeletons were visible on the surface. Most graves contained a single inhumation without grave goods (fig. 3 and pl. 1) although large quantities of the fine Kerma

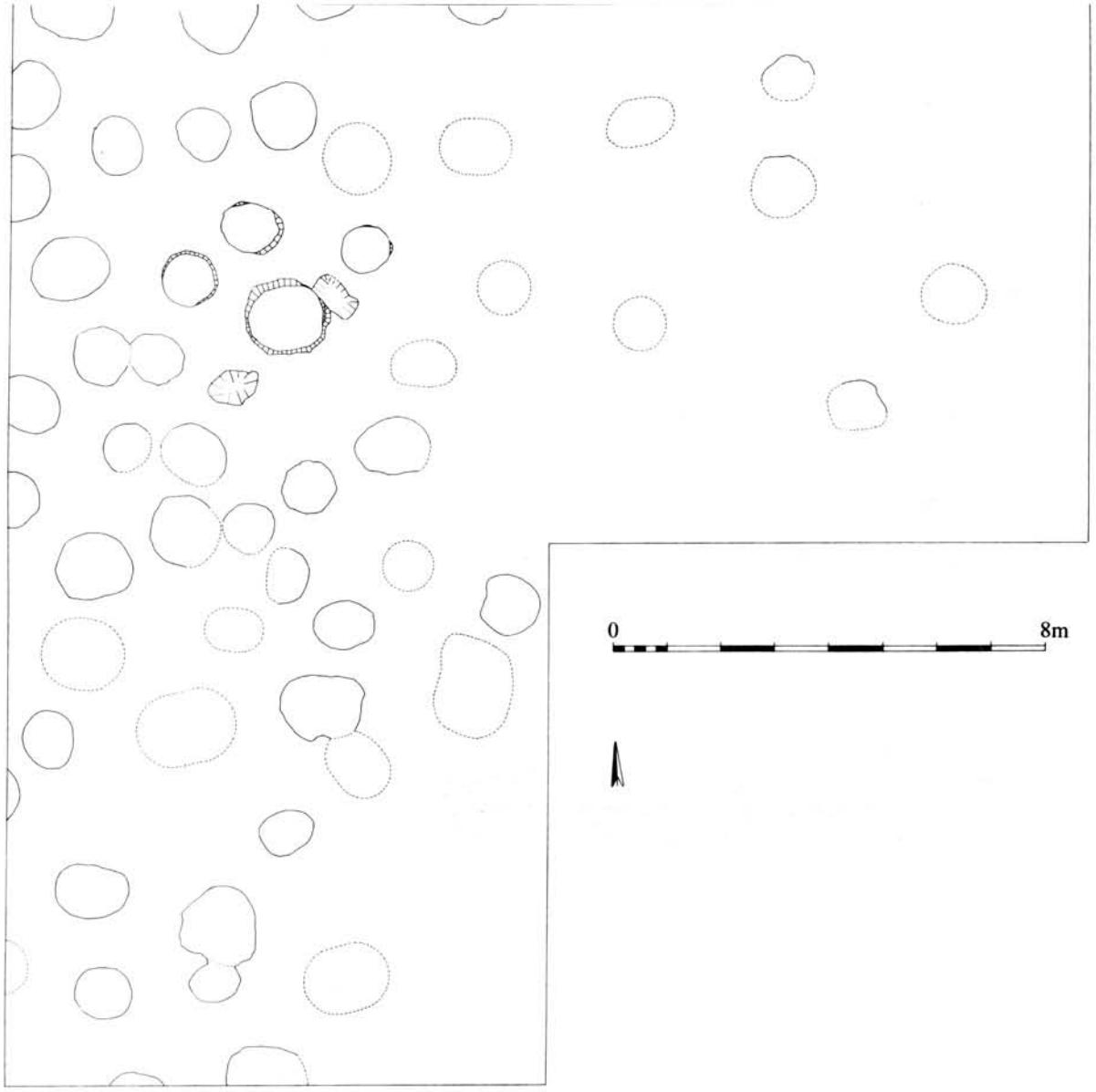

Figure 2. Site P37 – The Kerma Ancien graves in areas (J3), (K3) and (K4).

ncien pottery and sandstone stelae had been dumped ack into the graves by the grave robbers. It was the celetons of infants which were accompanied by grave oods. The richest had four strings of faience beads round the upper arm, a necklace of the same type and vo belts with granite, chalcedony, faience and cowrie ell beads. A small ironstone pendant was also recov-ed. In several graves there were traces of hides on which ie bodies had been laid.

The excavation of these graves proved very difficult wing to the nature of the material through which they had een dug. Some of the deepest graves were cut through luvium, while other adjacent graves went through strata f alluvium and the fine silver sand. During our excava-ons, when the silver sand was reached, it poured into the evidence that the original grave diggers had faced similar problems. On the south side of grave (J3)15 four stone slabs had been placed upright in an arc presumably to stop the sides collapsing in. The fact that, in most cases, it was possible to dig the grave shaft through the silver sand deposits suggested that that material must have been much more stable in the Kerma period than it is now and we must assume that it was damper.

Although there was evidence for robber pits in most graves, which have usually removed all the upper grave fill, in many cases the bodies were not disturbed. However, in some graves the skeleton was totally disarticulated.

The south mound, excavation areas (F3), (G3) and (G4).

Removal of the surface sand to a depth of not more

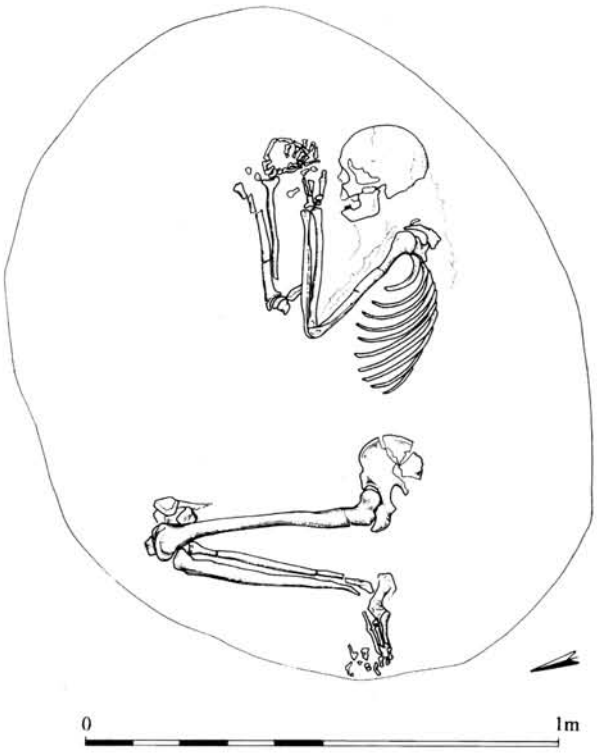

Figure 3. Site P37 – Kerma Ancien grave (K3)2.

superstructures survived. All the graves had been robbed to some extent and the black stones and white quartzite pebbles were found in their fills together with pottery sherds and in some cases bone. As one would expect the robber pits were left open to fill naturally after the robbers had done their work. The fills were formed of lenses of wind-blown sand and fine silt sometimes with water deposited lenses overlying them, the result presumably of rain showers during the gradual filling of the pits. One robber pit was rather unusual as its fill was a homogenous deposit of golden sand suggesting that it was filled at one time presumably during a sandstorm. The grave pits were usually much larger than the robber pits, yet in most cases the robbers unerringly dug down to the upper part of the grave owner's body. The head was then torn off. In a number of cases there must have been a considerable amount of flesh adhering to the bones as the whole torso has been pulled to one side before the head came loose. The arms were also frequently disturbed during these activities. When the graves were robbed the position of the grave pit must have been clearly visible perhaps being closely related to the position of what-ever tomb monument had been provided. The robber's interest in the upper body suggests that the valuable grave goods were to be found in that area. Especially interesting is grave (G3)6 where the robbers had excavated a pit in the usual place to a depth of 380mm, that is to within 320mm of the skull of the burial, but had not proceeded further. The evidence from these graves suggests that the bodies were disturbed soon after burial by people who knew what there was to find that would be of value to them, and where it was located. Did the work in grave (G3)6 stop when the robbers were informed that the individual had nothing worth robbing? Certainly when we cleaned the body there were no precious grave goods by the head, around the neck or on the chest (colour plate III).

Twenty one graves were revealed within the excavation area (fig. 4) and four of these extended partly beyond it. Of those within the area 13 were excavated. All were of the same basic character and consisted of a vertically sided, flat bottomed pit. The pits varied from small and oval measuring 1.73 x 1.5m to circular, from 2m in diameter up to 4.5m. The depth ranged from 780mm to 1.67m and appears to have been determined by the thickness of the alluvium. As at site O16, beneath the alluvium was a thick deposit of silver sand. Only occasionally had the grave pit cut through the alluvium to the sand. Usually the grave diggers stopped immediately above that level. The pits had been dug using a pointed tool and the marks left by it were visible in many places. The arrangement within the graves was standard although the wealth of the burial and the size of the grave pit did bring some variability. All the bodies were buried in a crouched position on their right sides with their heads to the east looking north (pl. 2). The smallest and poorest grave was (F3)6. The body was accompanied by four complete pots and one pot sherd placed to the north. Four small cuts of meat, assumed to be from a sheep or goat, lay partly under and around the pots.

Of the medium-sized graves, (G4)3 was particularly interesting (fig. 5). The grave was oval, 2.95 x 2.4m at the base. The human skeleton lay on the south side of the grave, four caprines were placed immediately to the west of the feet and several meat cuts were to the north. Of the nine pots one lay to the north west against the side of the grave and the other eight were grouped together to the north east along with one large potsherd and a stone bowl containing a graphite pendant and a piece of red ochre. Under the grave goods on the northern side of the grave was a layer of palm fronds and there were extensive traces of hide in the region of the human and caprine skeletons and meat cuts. A large piece of hide by the right knee of the grave owner appeared to be draped over a piece of wood of uncertain form. It is assumed that the rich grave goods from the upper body had been removed by the robbers. However, the occupant of this tomb was buried with an anklet of gold and chalcedony beads, an idiosyncrasy which has preserved them from the activities of the grave robbers.

Plate 2. Site P37 – Grave (G3)5. The human skeleton is accompanied by the skeletons of two sheep/goats

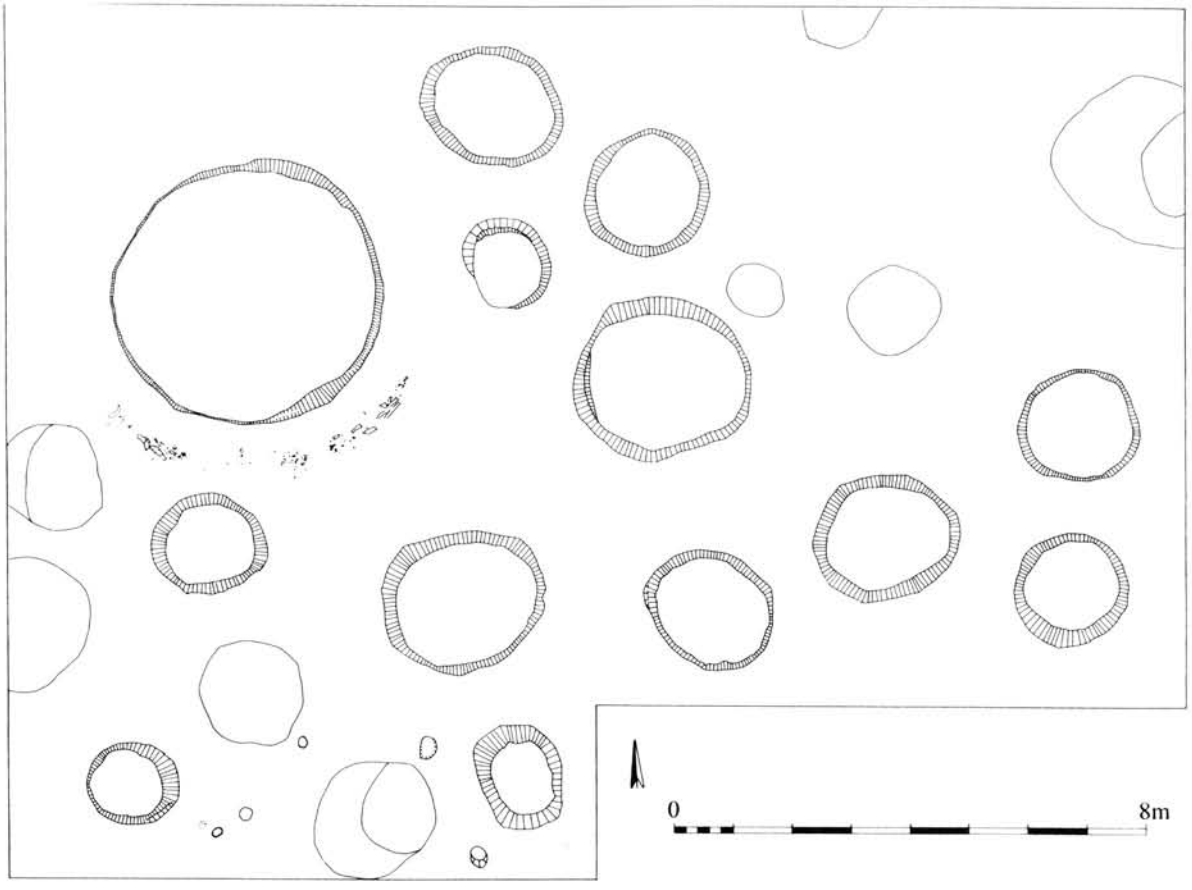

Figure 4. Site P37 – The Kerma Moyen graves in areas (F3), (G3) and (G4).

Figure 5. Site P37 – Kerma Moyen grave (G4)3.

Grave (G3)3 was by far the largest found with a diameter of 4.5m. Like the others no trace of the superstructure survived but very fragmentary remains of at least 19 bucrania were preserved forming an arc around the south side and a little to the south of the grave pit. These may have been set either directly on the Kerma period ground surface or in a shallow trench. However, their survival indicated that there has been relatively little erosion of the surface at this point, although of course the grave superstructure, presumably a low tumulus, has been entirely removed. The basic arrangement of the grave goods was as in the grave just described but there was a total of 18 pots, nine meat cuts and five sacrificed animals. Four caprines were laid to the west of the feet aligned roughly east–west with the heads at the east and the necks bent back towards the west. On one of the

Plate 3. Site P4 – The building after excavation.

skulls between the horn cores may be the remains of a head-dress of some sort. Against the west side of the grave pit, laid on its right side facing south, was the skeleton of a dog, the only one so far recognised from the site. Beneath the human skeleton were clear traces of the hide on which it was laid.

Site P4

Four kilometres to the north of site P37 an isolated building, probably of Kerma Classique date (1750–1550 BC), was excavated. This was a stone-walled building, approximately 11m square, roughly aligned on the cardinal points. It was divided into nine aisles by closely spaced rows of large stones running north to south (pl. 3). These were usually of single stones but occasionally two thinner slabs had been used to bring the support up to the same height as the others. The average height of the top of the stones above the surface on which they were sat without any foundations was 340mm. The presence of so many stones and the close spacing of the north-south rows suggest that these were not designed as post-pads to support uprights for the roof. There was a hint of three rows of larger stones within the rows, which may have performed this function. The interpretation favoured by the excavators is that the rows supported timbers running north-south with the floor timbers laid across them east-west. This would have given a raised floor which would have been apposite in a store building, the intention being to maximise the protection of produce from rodents and from white ants. Whether protection from dampness was another consideration, given the climatic regime pertaining at that time, is unclear. No doorway into the building at ground level was noted.[1] Presumably the doorway was at the level of the raised floor. No occupation deposits were found associated with the building which might have assisted in assigning a function to it.

Site P1

A little to the west of site P4 was what we had considered to be a cemetery of individual, often prominent, circular, brown quartzite pebble-covered tumuli (pl. 4). Many thousands of these had been recorded by the Survey throughout most of the survey area but always closely associated with the palaeochannels south of the Seleim basin. Trial excavations had been attempted at P1 in 1994, tumulus (72), and at P17 in the same season, tumuli (251) and (259). This work was on a small scale and failure to discover the grave beneath them was thought to be the result of a lack of complete excavation. Tumulus (251) had a single robber pit and (259) had two, one in the centre, the other a little to one side.

Four of the 'tumuli' at P1 were totally excavated in the 1996/7 season but again there was no trace of a grave beneath or within them. One 'tumulus' P1(22) was totally removed and the area beneath it trenched to a depth of over 1.5m, yet no features were found. P1(13) contained a well shaft 1.03m in diameter, dug down from the surface (or from above the present-day surface!) through the 'tumulus'. It was excavated to a depth of 6.52m beneath the highest part of the 'tumulus' without reaching the water table. The fill was homogenous throughout except in the upper 1m where there was evidence for some collapse of the sides. In 'tumulus' (24) the well had a similar relationship to the 'tumulus'. It appeared to have been mud-lined and still preserved the notches in the side which had been used to climb in and out during its construction. The fourth 'tumulus' also had a circular shaft cutting through it a little to one side of the mound centre. The pebble covering of several other tumuli was removed and in most cases features were visible. Some of these may have been the mouths

[1] A gap in the north wall, which has previously been interpreted as a doorway, was on excavation seen to be the position of the large block which is now lying a little beyond the building.

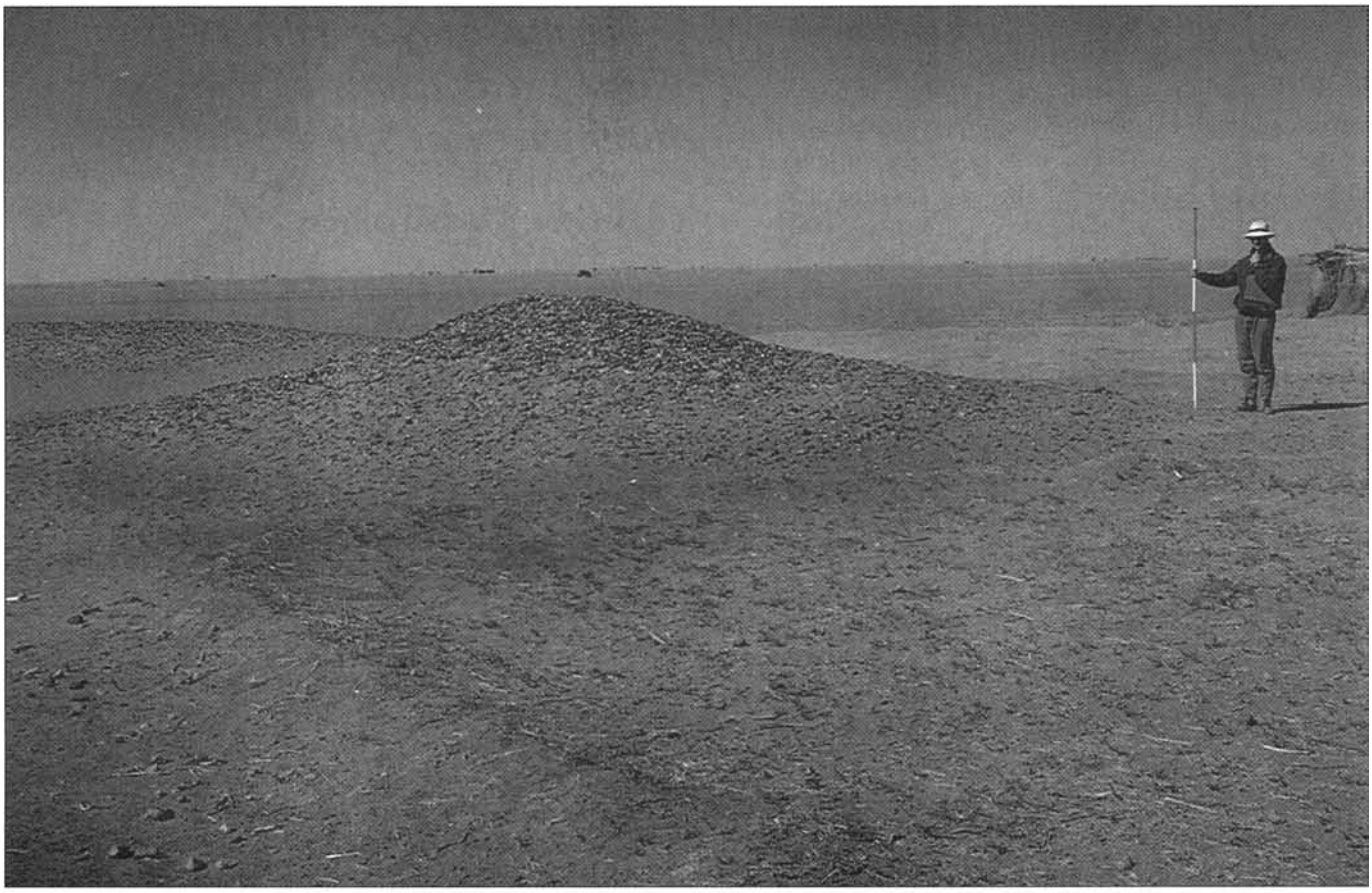

Plate 4. Site P1 – 'Tumulus' 26 with a modern field clearance cairn on its summit.

of wells, others did not appear to be so, and in a few cases there was little to suggest the presence of any feature whatsoever.

The failure to find graves beneath the 'tumuli' excavated and the recognition that several of the 'tumuli' at P1 are associated with wells are problematic. It seems clear that it is extremely hazardous to extrapolate from one 'tumulus' to another within the same site let alone from one site to another. At the southern end of the eastern cemetery at Kawa similar features are certainly tumuli (see Salih 1994). At site H10 four brick-lined well heads within 'tumuli' were recorded in the 1995/6 season while at site E12 there was at least one massive circular kiln within a 'tumulus'. Only excavation of many more structures of this type will begin to allow us to understand their significance. Apart from them all being tumuli, which they are patently not, no other function for all of them can be advanced with any plausibility. It is difficult to understand why there might be several hundred wells, for example, in several concentrations throughout the survey area. Of the wells excavated the nature of their fill, which looks deliberate, is difficult to explain convincingly and presents further problems of interpretation.

Aeolian erosion

It is clear from work undertaken by Jacques Reinold in the region around Kadruka some 30km north of site P1 and by that of the NDRS that there has been extensive erosion in the region. Reinold has noted that within the Neolithic settlements all the contemporary ground surfaces have been lost to erosion. Cemeteries of that period throughout the region have been eroded to such an extent that the bodies are visible on the surface. Within one Kerma cemetery near Kadruka the burials survive on small mounds, the ground around them having been removed. A similar situation has already been noted at site O16 where the deepest graves only survive to a depth of *c.* 200mm at the most. On P37 the area excavated on the northern mound was on the eastern slope. Towards the west, i.e. towards the top of the slope, graves were up to 2.2m deep. Towards the bottom of the slope bodies were visible on the surface. There is no reason to assume that the graves lower down the slope had been originally much shallower and one might suggest that at least 2m of deposit had been lost in that area. The graves at O16 are of the same date and type and were presumably of similar depth. Again there has probably been at least 2m of erosion at that site. In the light of this clear evidence for massive erosion of cemetery sites, how does this affect our understanding of the building at P4 and the 'tumuli' at P1? The 'tumuli', or at least those excavated last season, do not cover graves. However, in several cases they have wells dug through them i.e. the mound is not the upcast from the well. The top edge of the well shaft at

'tumulus' (24) was in perfect condition, suggesting that the actual edge when the well was in use was at a higher level. The well in 'tumulus' (13) at a depth of 5.68m was cutting through a deposit of the brown quartzite pebbles of the same type as those which cover the 'tumuli'. The archaeological excavation of the well revealed that this deposit had a minimum thickness of 840mm.

The very clear evidence for extensive erosion in the region suggests the following model for these sites. During the excavation of the wells through the quartzite pebble layer the pebbles were deposited on the ground surface. Subsequent aeolian erosion removed the ground surface around the wells by over 1.5m (the average height of the surviving 'tumuli') but the pebbles served to protect the area around the well-head which was thus left as a mound. This may be a suitable model for some of the 'tumuli' noted, but why there are concentrations on the others where there is no associated well or deep pit has yet to be explained.

P4 is set on a mound approximately 320mm above the surrounding plain. The east wall, and the west wall to a lesser extent, have been partly undercut and have slipped outwards. The erosion theory would suggest that P4 was not on a mound when constructed but that its stones have served to protect the ground surface beneath it while the ground around has been partly eroded away.

The season did not turn out quite as expected but has been of the greatest interest. It is clear that any study of the Neolithic and Kerma periods in the survey area is severely hampered by the removal of most of the contemporary ground surfaces which are only preserved where protected by well upcast, by the stone covered tumuli in the cemeteries, and by the buildings in the settlements.

Kerma Moyen Pottery from the excavations of the cemetery at site P37

Isabella Welsby Sjöström

Both Kerma Ancien and Moyen graves were excavated at P37, but the pottery from the former was in a very fragmentary state, while the Kerma Moyen assemblages were almost entirely composed of complete, or at least readily repairable vessels, and these have been studied in the first instance. The Kerma Ancien assemblage fell well within the forms and types of decoration that we had hitherto found on the survey as well as being comparable with the pottery found at Kerma itself.

The reason for this clear difference in preservation is most likely to be that suggested by Brigitte Gratien, that the pots were placed on the surface around the grave rather than in it (Gratien 1978, 143), which would account for the number of conjoining sherds now found in different (robbed) graves. The much wider diameter of the Kerma Moyen graves allowed for the grave goods to be placed in the grave. Of the 13 graves excavated in the Kerma Moyen cemetery 11 had well preserved pottery assemblages (colour plate IV) – the other two were broken up and partly lost by the action of the robbers.

The number of pots per grave varied from four in the poorest to 19 in the largest burial (only two pots were found in (G4)5, one of the most heavily disturbed by robbing). The quality of the pots was rather varied within each grave, but the smaller groups were arguably also the least attractive assemblages. Many pots were 'sprung', which testifies to a poor firing technique. It was obvious on closer examination of the pots that they were not new when placed in the graves, as a number of them had been repaired in antiquity, while others had chipped rims. A range of forms and wares were present in the graves, most fully represented in the two larger assemblages. Large storage jars, medium-sized jars, imported Egyptian flasks or flagons, decorated C-Group style bowls, Kerma Moyen fine ware and coarse ware were represented, very much the same kind of range as has been found in the graves on Sai Island, for example. Other interesting features of the pots from the graves included a wheel-made Egyptian jug with a potter's mark (?), and a missing handle. Possibly the pot had been 'customised' to fit into the flask category of grave goods, or it had lost its handle at some time prior to burial.

Illustrated in figures 6 and 7 is the pottery assemblage from grave (G4)3 (pots context 49), including the two C-Group style bowls (nos. 10 and 11) found placed within the original grave fill.

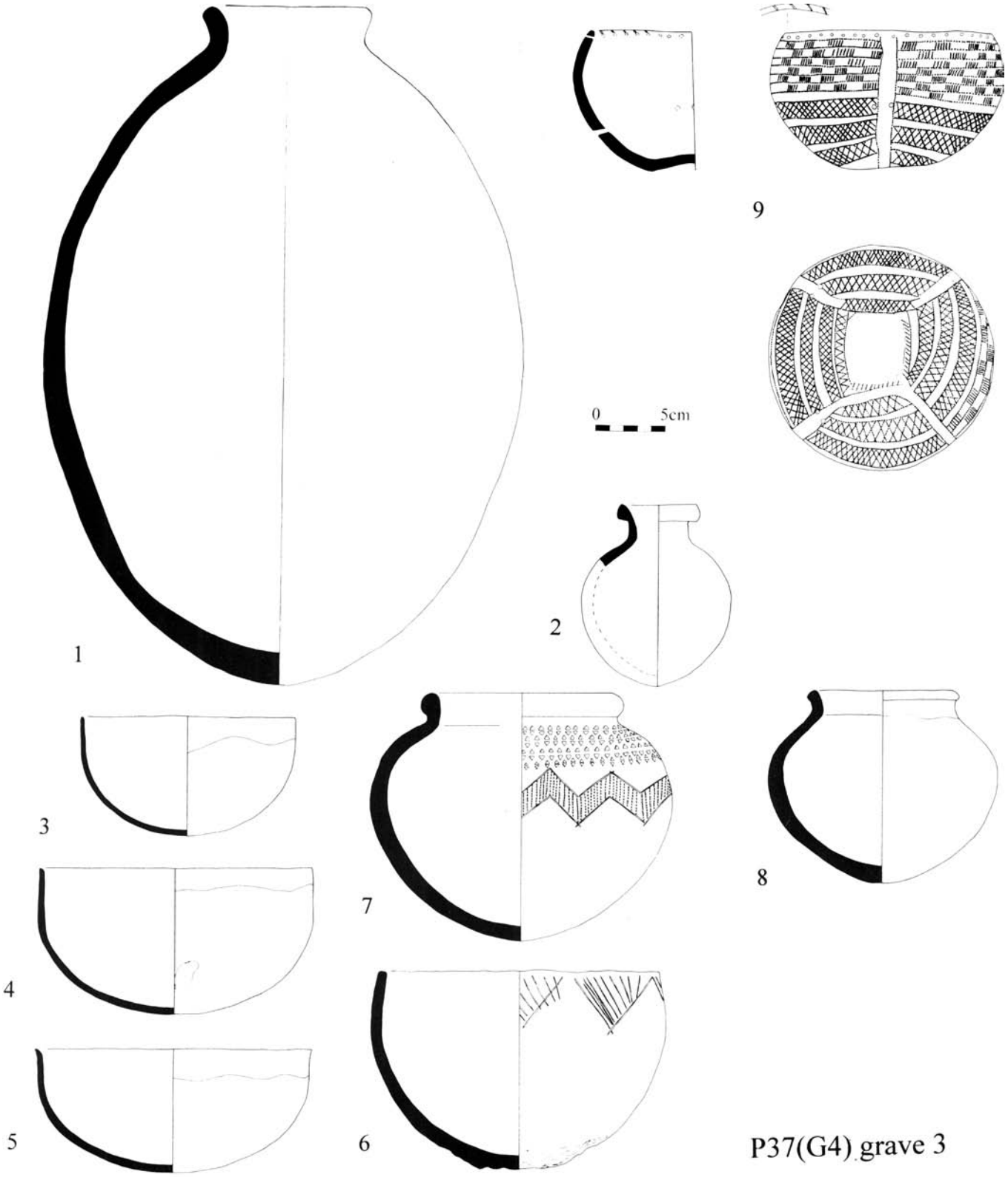

Figure 6. Site P37 – The pottery assemblage from grave (G4)3 placed by the deceased at the bottom of the grave.

Catalogue of the pottery from Grave (G4)3

All the vessels have more or less rounded bases except for nos. 9 and 10.

1. Large jar, 'egg'-shaped. Bears a resemblance to jars from Abu Ballas in Lower Egypt, date uncertain. A yellow tide-mark was noted half way up the interior, and a sample was taken. D 12cm, H 49.2cm
2. Flask with thickened rim. D 5.6cm, H 13cm
3. Kerma Moyen black and red burnished bowl. D 15cm, H 8.5cm
4. Kerma Moyen black and red burnished bowl. D 19.5cm, H 10.4cm
5. Kerma Moyen black and red burnished bowl. D 20cm, H 8.8cm
6. Kerma Moyen coarse-ware bowl with pendant triangles and a rough, thickened base. D 20.4cm, H 14.5cm
7. C-Group style jar with impressed and rouletted decoration, beaded rim. D 13cm, H 18cm
8. Kerma Moyen black topped jar. D 10cm, H 14cm
9. C-Group style bowl, black burnished exterior, with two sets of suspension holes, a register of holes under rim, omphalos base and decoration over all of exterior. Traces of red ochre were noted by the holes punched near the rim. See discussion below. D 15cm, H 10cm
10. C-Group style bowl, black burnished exterior, virtually a smaller copy of no. 9, except for slight variations in the decoration motifs and the absence of red ochre. D 10cm, H 7.2cm
11. C-Group style bowl, apparently not black burnished, with white infill in the incised and impressed decoration. D 11.6cm, H 7.8cm

The Egyptian pottery consisted entirely of wheel-made, closed forms, essentially small jugs and flasks, of which there was only one (if any) in each grave. Some of these had been marked before firing, the marks or symbols including a bird, and a 'pagoda'-like mark on the handled jug.

Three of the vessels had been covered with mud at the time of burial; the two largest vessels, including one with a distinctive potter's mark, a circle inscribed with a rectilinear feature, and one of the larger C-Group style jars. The purpose of this mud covering isn't clear, as it would not have prevented evaporation of liquids, and was found on only a few of the vessels, both decorated and plain, so that its purpose was not to cover unsuitable decoration, as it also disguised plainness.

C-Group

There is some question as to whether the C-Group style pottery is imported or not. The home of the C-Group lies well to the north, near the Egyptian border, and Gratien has suggested that vessels from cemeteries on Sai island decorated in this style may be local copies rather than imports (Gratien 1986, 422, 424-5). At P37 there is no conclusive evidence either way as yet; certainly some of the decoration styles (of a kind that may have dozens of slight variations) are virtually copies of designs found further north (Bietak 1979 *passim*, nb fig. 4.6). The fabric is broadly the same for all such vessels, a permutation of a Nile-silt fabric, and it is therefore unlikely that scientific analysis would reveal a definite link to northern Nubia. Certainly no variation is visible with a x 10 hand lens, apart from a slight texture difference, which is common to the decorated vessels and some coarse wares and differs slightly from the Kerma Moyen coarse and fine wares. This is not in itself enough to suggest a non-local origin, as these vessels are already clearly in a category of their own and may simply have been made with differently prepared clay nearby.

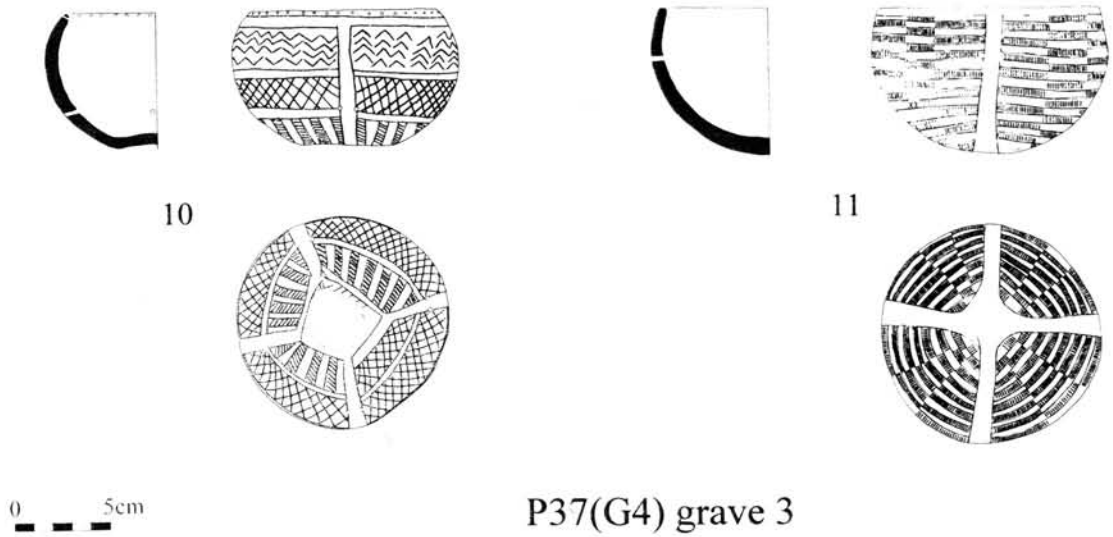

Figure 7. Site P37 – Pots placed within the upper fill of grave (G4)3.

The decoration on the C-Group pots is mostly impressed and rouletted, but also incised, often with white infill, especially when the pot is black burnished. Omphalos bases were noted on two of the black burnished bowls, and matching sets of what presumably were suspension holes, in one case just below the middle of the body. These vessels also had a register of holes just below the rim, punched from the outside when the unfired pot was drying out. On the larger vessel traces of red ochre (?) were found, as if painted on or left as an impression from a leather thong, which may have been woven through the holes. However, no traces of leather fibre could be detected by the conservators, nor was any visible in the holes themselves, suggesting a 'skeuomorphic' representation of the thong by means of paint. In one part of the rim the pattern disappears in a solid block of red, and elsewhere it is missing entirely. It is the only example of such a style of decoration.

The standard types of locally made Kerma Moyen pottery range from very fine red and black burnished bowls to coarser wares. The only graffito of the whole survey campaign was found on one of the red and black burnished fine-ware bowls from P37. The finest of the burnished bowls were of very high quality, with a mirror-like sheen and pleasing, regular form, but there was a range of quality within this category. The fact that a number of the vessels were clearly worn at the time of burial may of course distort this impression somewhat. Another kind of fine ware consisted of bowls with a rough, ochre-coloured exterior, but with finely burnished black interiors (colour plate V). The exterior of the rim was also black burnished, and below this was either a band of incised triangles, their interiors filled with oblique, vertical or horizontal lines, or a swathe of criss-crossing incised lines, sometimes extending as far down as the base of the bowl.

The Kerma Moyen coarse-ware forms are principally black-topped jars and bowls, usually decorated with variants of the incised pendant triangles mentioned above. These latter vessels are often soot blackened on the outside, and have a coarsening of the base, for the greater stability of the pot or to make it more suitable for cooking, in the way that food will not burn so easily in a thick-bottomed metal saucepan. In only one instance was one of the coarse-ware bowls found with incised decoration extending over the whole of the exterior, perhaps an idea suggested by the C-Group bowls.

An extremely unusual bowl had decoration of painted triangles around the rim. The form of the painted vessel is unusual, as is its surface treatment and fabric; it is possibly not a local product.

The contents of all the complete pots were collected for analysis, but we do not yet have the results. It will be interesting to see whether there is a direct connection between vessel type and content, as might be expected, and if the same foodstuffs feature in all the graves.

Holocene Alluvial History in the Northern Dongola Reach of the Nile: the 1996/1997 field season

Mark Macklin and Jamie Woodward

Introduction

Geomorphological fieldwork was carried out by the authors in the Northern Dongola Reach in January and early February 1997. We continued with the programme of field survey and sampling started the previous winter, working towards our overall aim of establishing the nature and timing of Holocene fluvial environmental change and its impact on riparian settlement during the Kerma Period. Our field and laboratory investigations involve the following themes:

- Geomorphological and stratigraphical evaluation of Holocene river development, sedimentation styles, channel change and avulsion history in the Northern Dongola Reach.
- Heavy mineralogical analyses to establish the provenance of the fine-grained alluvium and the changing importance of sediment supply from major headwater basins (Blue and White Nile and Atbara).

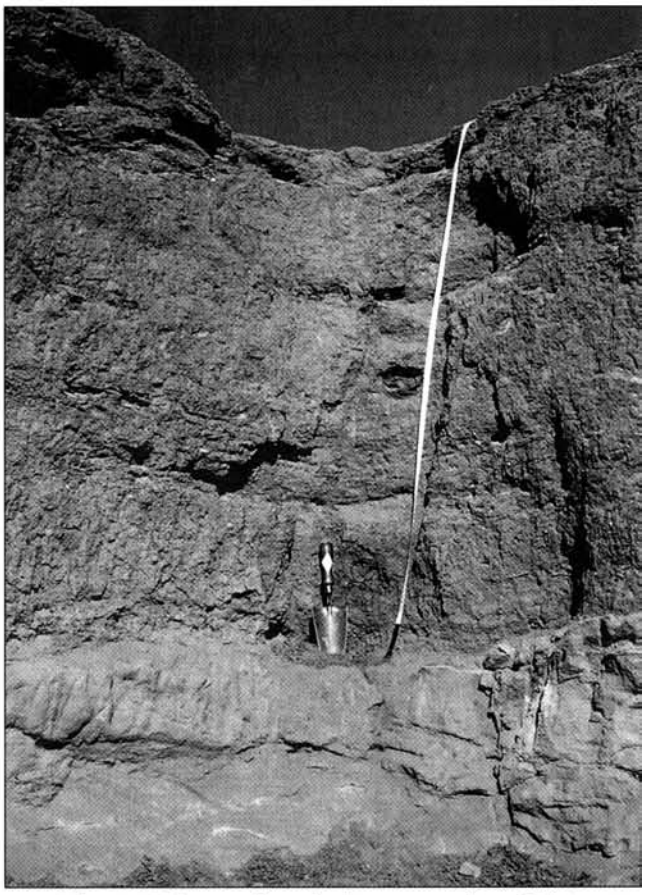

Plate 5. Holocene alluvial sediments overlying Nubian sandstone bedrock in the eastern part of the survey area near the bedrock plateau.

- Establishing a geochronological framework for the record of fluvial environmental change using Optically Stimulated Luminescence (OSL) and 14C dating techniques.

Field Survey Programme

It is rather ironic that the agricultural development that proceeds apace in the area and is the major threat to much of the archaeological resource has provided virtually all of the stratigraphic sections for our geological investigations. The presence of groundwater pump pits (*c.* 4 x 4 x 6m) throughout the survey area provides high resolution 3D sections in the alluvial sediments often down to Nubian Sandstone bedrock (pl. 5). During our field survey we have inspected the alluvial sections in over 250 pump pits.

Our sampling strategy has involved the following (see Table 1):

1) Detailed recording of the sediments exposed in section at a resolution of *c.* 5cm.
2) Measurement of the angles of dip and orientation of the beds
3) Sampling of fine sandy members for subsequent sedimentological and heavy mineral analyses
4) Collection of samples for OSL dating
5) Spatial referencing of all geological and geomorphological data by GPS
6) EDM topographic surveys of palaeochannel belts.

To date we have logged and sampled 31 sections with 18 samples collected for OSL dating and three for radiocarbon dating.

Geochronology

As we stated in our previous report (Macklin and Woodward 1996), establishing a detailed chronological framework for the alluvial sediments and channel features is of major importance. This will enable us to relate the record of fluvial environmental change to both the archaeological sequence and the lake level and pollen records from adjacent areas.

During last winter's fieldwork we collected a further 16 samples for (OSL) dating. This technique has proved to be the most appropriate for establishing the age of alluvial silts and sands exposed in the groundwater pump pits. Six of these samples have been submitted to the dating laboratory at the Sheffield Centre for International Drylands Research. One sample was taken 0.6m below ground level in a well developed palaeochannel (Pump pit no. 23) in alluvial sediments immediately below aeolian material deposited after the channel had been abandoned (pl. 6). We anticipate that this date could be critical in

Pump pit no.	Latitude GPS N	Longitude GPS E	Depth of Section (cm)	Bedrock Exposed	Samples of Sediments	OSL	Dip Direc.	Angle
14	19°2'31.4	30°36'16.5	570	N	6	3	30°	04°
							200°	08°
15	19°2'33.7	30°36'09.0	385	N	3	0	289°	11°
16	19°3'03.4	30°36'51.6	360	Y (195)	3	1	264°	04°
17	19°1'54.1	30°34'58.8	296	N	3	0	292°	08°
18	19°7'26.0	30°33'09.5	610	Y (065)	5	3	230°	05°
19	19°6'55.7	30°33'01.9	700	Y (025)	0	0	060°	08°
20	19°5'11.9	30°34'10.9	485	N	3	0	219°	10°
21	19°4'08.5	30°35'30.4	510	N	4	0	029°	16°
22	19°0'59.2	30°33'29.5	515	Y (040)	5	1	265°	09°
							085°	08°
23	19°4'38.0	30°34'53.2	190	N	2	1	211°	11°
							211°	30°
24	18°48'13.9	30°32'51.9	380	Y (023)	2	1	275°	05°
25	18°48'27.2	30°32'53.0	410	Y (115)	2	1	052°	16°
26	18°52'18.2	30°33'41.8	250	N	2	C-14	120°	06°
27	18°56'42.6	30°33'15.7	290	Y (015)	3	1	264°	17°
28	18°59'21.3	30°34'45.3	490	N	4	1	222°	31°
29	19°11'28.7	30°33'01.0	400	N	3	1	234°	18°
30	18°54'23.2	30°37'0.27	402	N	3	0	116°	08°
31	18°56'58.2	30°36'31.2	375	N	3	0	274°	07°

Table 1. Examples of geological data collected from groundwater pump pits during the 1996/1997 field season. Thickness of exposed bedrock shown in cm.

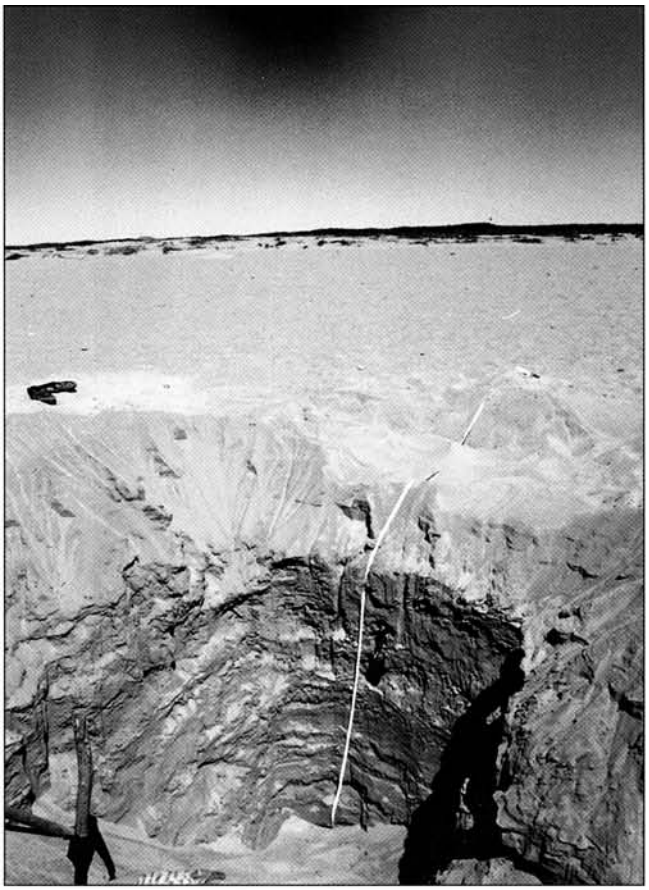

Plate 6. Aeolian and fluvial sediments exposed in a pit dug in the Alfreda Nile palaeochannel.

determining whether the demise of the Kerma Culture was contemporaneous with the drying up of the major palaeochannel systems in the Northern Dongola Reach.

Satellite Remote Sensing of the Northern Dongola Reach Palaeochannels and Future Work

On returning to Khartoum at the beginning of February the authors flew over the central and southern portion of the archaeological survey area and were able to view the palaeochannel belts from the air. The palaeochannel features were very clear and this experience confirmed our belief that remotely sensed (10m pixel resolution) SPOT satellite imagery would provide a very valuable contribution to our work. Indeed this is the only practical way of mapping the morphology and distribution of the ancient channel system across the entire survey area. The authors have recently secured support from the School of Geography at the University of Leeds for a three year PhD studentship which will begin in October 1997. The graduate student will join the geomorphological team and will participate in the next two field seasons.

Acknowledgements

The Northern Dongola Reach Project was funded with the aid of grants from the Society of Antiquaries of London and the University of Newcastle upon Tyne. The team was greatly assisted in Khartoum by the staff of the National Corporation for Antiquities and Museums, by the British Council and by the British Embassy. We would also like to express our thanks to Jacques and Ulla Reinold. The core team consisted of Adam Ishag Ahmed, Tertia Barnett, Fred Heller, Margaret Judd, Natalie Mackay, Simon Mortimer, Isabella Welsby Sjöström and Derek Welsby. We were joined by Pippa Pierce and Barbara Wills for one month and by Mark Macklin and Jamie Woodward for three weeks. We should like to thank Pippa Pierce and Barbara Wills of the British Museum Conservation Department for their painstaking work in reconstructing the ceramic vessels.

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Plate I. Northern Dongola Reach Survey. Site P37 - Tumuli on the south-eastern side of the cemetery. *(see p. 3)*

Plate II. Northern Dongola Reach Survey. Site P37 - Kerma Ancien graves visible after the removal of the surface sand. *(see p. 3)*

Plate III. Northern Dongola Reach Survey. Site P37 – Grave (G3)6 (see p. 5)

Plate IV. Northern Dongola Reach Survey. Site P37 – Pottery and joints of meat accompanying the deceased in grave (G4)2. (see p. 10)

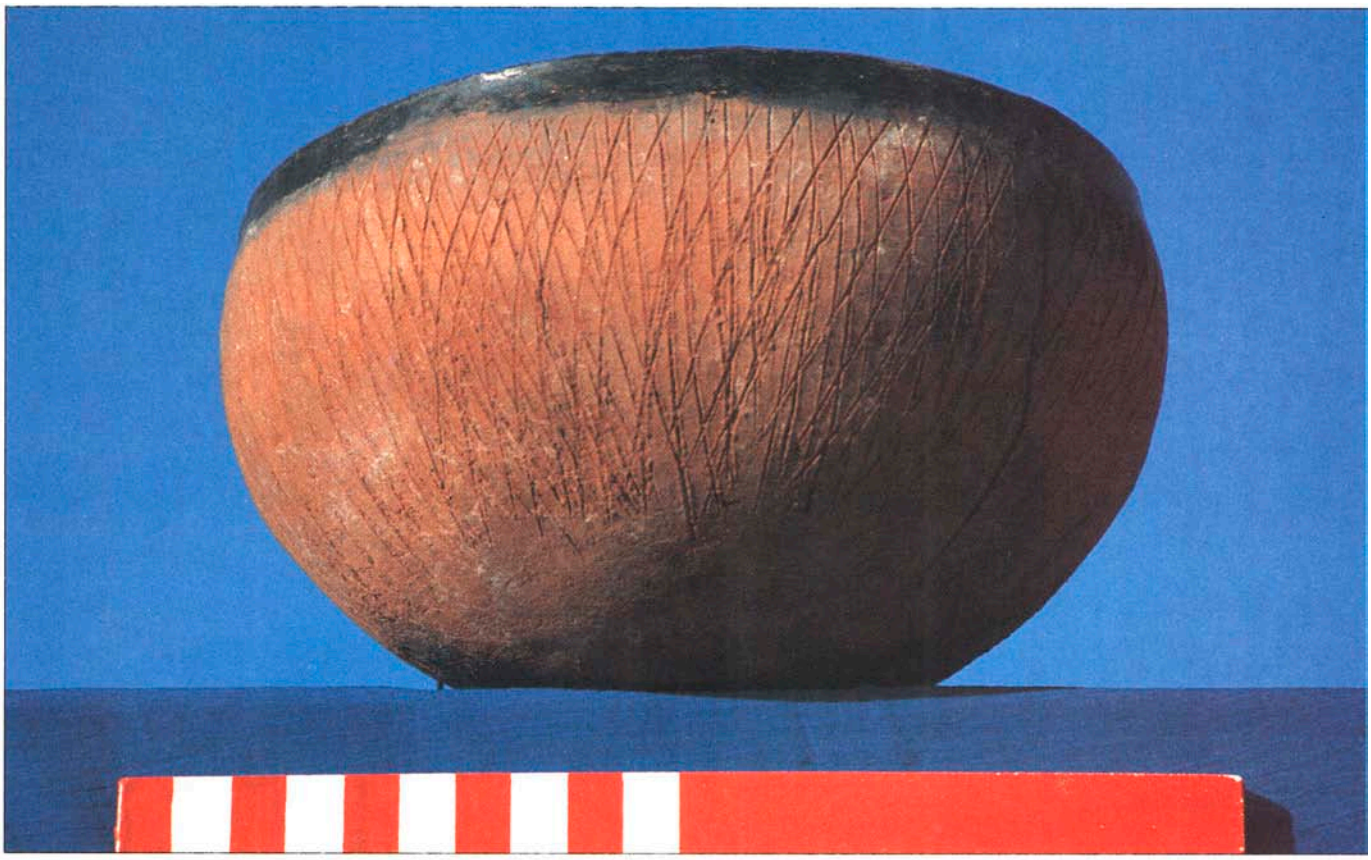

Plate V. Northern Dongola Reach Survey. Site P37 – Fine lattice decorated bowl, covered with red ochre on the exterior. The interior and rim are black burnished. *(see p. 13)*