



## EDITORIAL

I would like to call attention to several entries in the present issue of *NYAME AKUMA*. For one, there is the first appearance of a contribution to the book review section: Andy Smith's comments on Pete Robertshaw's volume on the history of African archaeology. I hope this marks the beginning of a regular feature in the bulletin, since there is now a substantial list of publications available for review—not only the ones appearing in the back of the present volume but also some of the books listed on p. 45 of *Nyame Akuma* 34. If you are interested in reviewing any of the available books, please contact me.

Also noteworthy is the information in the meetings section concerning the 1992 SAfA conference, which will be hosted by UCLA in late March. Since the submission deadlines for symposia and individual papers are rapidly approaching (November 15 and December 15, respectively), readers interested in participating should get in touch with Pete Robertshaw, the SAfA secretary, as soon as possible.

Finally, I would like to call special attention to the index of *Nyame Akuma* contributions beginning on page 46. This is an ad hoc section, included at the suggestion of Robin Derricourt. I would welcome any comments you might care to offer about the index.

In closing, I want to reiterate a few editorial concerns.

The first has to do with the citations that accompany *Nyame Akuma* contributions. Too often, references require an inordinate amount of editorial effort, sometimes because they are incomplete, sometimes because they are submitted in incorrect form, and sometimes because they are, frankly, a rather hopeless mess. In view of the amount of time it takes me to repair faulty citations, I am afraid that, in future, I shall have to return articles with such problems to the authors.

The second concern has to do with the length and nature of submissions, two

characteristics that I mention in the same breath because they are frequently interrelated. In general, contributions to *Nyame Akuma* should be rather brief reports on work in progress. Although exceptions are possible, I urge contributors to consult with me before preparing articles for *Nyame Akuma* that depart markedly from the norm.

The third has to do with manuscripts submitted on computer disks. Please label the disks with your name, the names of the manuscript files on the disk, and the name and version number of the program(s) used to create the files.



## ARTICLES

morbidity and (4) site structure. How are these related to the shift to sedentism?

### ■ BOTSWANA

#### **The Shift to Sedentism as Viewed from a Recently Sedentary Kalahari Village**

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The shift to sedentism was a critically important event in the past. A number of processes are thought to be tied to one degree or another with sedentarization. These include the development of complex societies, high levels of morbidity, and the use of formal storage facilities and other changes in site structure (Carneiro 1967, 1970; Flannery 1972; Hallpike 1986; Hassan 1981; Johnson and Earle 1987; Testart 1982; etc.).

Due to a variety of reasons, a few groups around the world have remained nomadic until as recently as only a few years ago. Perhaps best studied are the Basarwa of the Kalahari Desert, also called "Bushmen" or San in the literature (Cashdan 1980; Hitchcock 1982, 1987; Lee 1979; Silberbauer 1981; Yellen 1977; and others). The study of a group of Basarwa hunter-gatherers who have recently become sedentary permits an evaluation of assumptions concerning the effects of sedentarization.

Since the work described below is still in progress, much is in manuscripts currently under review or in preparation; nevertheless, it is hoped that enough is presented to indicate the major factors affected by sedentarization. Just four are discussed here: (1) inter- and intra-community mobility, (2) political centralization, (3) patterns of

#### **The Kutse Basarwa**

Research conducted at a newly sedentary community located just outside the Kutse Game Reserve in the Kalahari Desert of Botswana (Fig. 1) reveals the role of sedentism in community mobility, morbidity, site structure, and politics. The Kutse village is composed of semi-sedentary and sedentary Basarwa (depending on the year and season around 70–75% of the community) and sedentary Bakgalagadi (Bantu-speakers, about 25–30%). Kutse is an aggregation of individual camps composed of one or more extended families. There are no stores, health clinics, schools, or other Botswana facilities located at the community.

Most Bakgalagadi at Kutse own goats and cultivate small melon gardens; others are economically indistinguishable from the Basarwa who primarily hunt and gather. Similarly, 42% of the Basarwa own goats and 36% planted gardens in 1989, although none of the gardens matured to harvest that year. Whereas the Kutse Basarwa are not pristine Paleolithic hunter-gatherers by any means, they are primarily foragers. Approximately 95–100% of their meat comes from wild animals. Men spend more time hunting than they do in any other subsistence activity (Kent n.d.a). Comparisons of hunting effort and success rates between hunters who own goats and hunters who do not reveal no major differences (Kent n.d.a). Wild plants are still collected, although less frequently when the government distributes mealie meal. Without the government-supplied drought relief food, women spent much more time gathering (every day in contrast to once or twice a week). Men also spent more time foraging after the cessation of government food aid because they brought back at least a few wild plants, regardless of whether or not they were successful in obtaining meat.

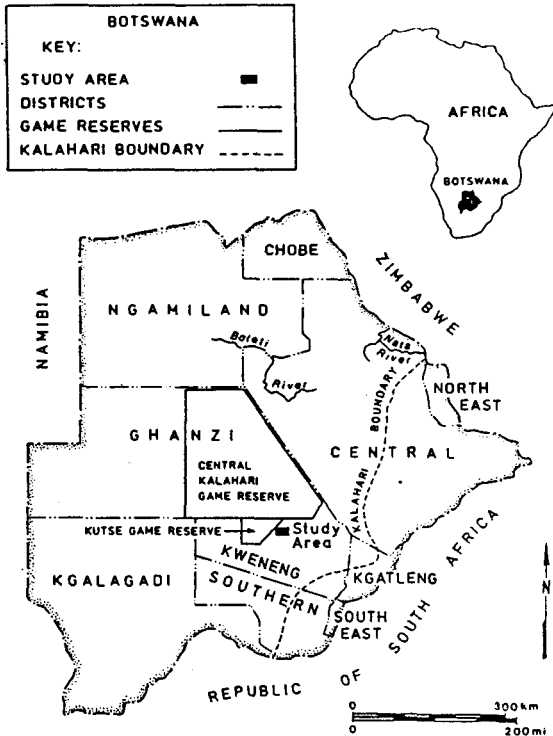


Fig. 1. Map of the Kutse study area.

**Mobility and Aggregation at a Recently Settled Community**

The causes of the transition to sedentariness are important to determine before choosing a particular modern group from which to develop ethnoarchaeological models that are relevant to past societies, since such societies' decision to settle was probably voluntary. I believe forced sedentism results in a very different configuration than does voluntary sedentism—in the former, people do not feel free to move in and out of a community at will, nor will they feel comfortable moving around within the community. While a small proportion of the people at Kutse were forced to relocate their camps outside of the Kutse Game Reserve, none were forced to

reside in any particular community. Thus, settlement at Kutse is strictly voluntary. However, there are government-provided incentives to settle at Kutse, such as a borehole which provides year-round water within easy reach of the community and, prior to 1990, the distribution of mealie meal during periods of drought.

It is obvious that people, regardless of the complexity of their society, will position their camps where there are adequate resources; the interesting question is, Why do they do so at particular locales when others are also available? All adult residents at Kutse (both Basarwa and Bakgalagadi) were asked why they moved to Kutse and why they stayed. Although the availability of water and the free mealie meal were both mentioned, more common explanations were political or social. For example, one of the most common responses referred to being able to live near friends and/or relatives, a factor that is rarely discussed by archaeologists because of the difficulty in recognizing it in the archaeological record.

The practice of intra-village movement within the Kutse community and the reasons for such movement present an interesting challenge to our view of the archaeological record. People with camps at Kutse will live at another camp also located at Kutse for several weeks or even several months at a time. They refer to themselves and are referred to by others as visitors to the camp. Their own camp may be only a ten- or fifteen-minute walk from the camp they are visiting. Camp fluidity at Kutse seems almost as pronounced as that described by Lee (1979) for still nomadic Basarwa in Ngamiland. Occupants at Kutse move between camps for extended periods. Furthermore, actual camps also move a great deal, although not all camps move and a few were in the same position in 1990 as they were in 1987. Only three families have remained in the same camp at the same location for four or more years. Others, however, have moved after much shorter intervals of time. The reason most often given for moving is to be near or far away from people. The second most frequent

reason given for moving a camp was to be closer to trees for firewood in the cold dry season and shade in the hot rainy season.

One may even question the portrayal of Kutse as a sedentary community. However, the site structure, including formal storage facilities, and the endemic social, political, and health problems leave little doubt that it is a sedentary community, one in which the residents have not yet incorporated adaptive mechanisms that permit relatively strife-free, continuous habitation (see below).

Aggregation is difficult to separate from sedentism. There are few known nomadic aggregated societies or completely dispersed sedentary societies. In other words, there appears to be a link between sedentism and aggregation, although at this point it is difficult to know what precisely it is. Kutse is a dispersed village compared to those found in North America, but is aggregated by the standards of Botswana and other African countries.

Currently, the aggregated community core at Kutse is splitting up as people move their camps to the periphery. Most people state that they move their camp because of the fights that frequently erupt in the community core. Several individuals also said they moved to be closer to firewood. When asked why they moved further away from the only water source available, requiring them to carry water a longer distance, all replied that it was more important to be close to firewood, which was collected every day, than water, which was collected every couple of days. This is not what would usually be assumed by archaeologists.

Because Kutse is a voluntarily settled community, inter- and intra-village mobility is common; there are no enforced restrictions. People frequently move their residences in and out of the community, and a number of visitors stay at Kutse for periods which range from a few days to a month or more. Not only are hunting and gathering trips common among Kutse residents, but visits to other communities for months at a time are also common. At any one time, there are a number of unoccupied camps at Kutse which have not been

abandoned; their inhabitants are merely visiting other areas for prolonged periods.

Visitors at Kutse often build windbreaks. As is argued below, archaeologists may inflate population figures for a camp if estimates are based on the number of windbreaks present. Windbreaks are not commonly occupied by visitors, but even those built by residents are relatively ephemeral structures that are primarily used during the dry season. Huts are used mostly for storage during the dry season, but not for sleeping. During the rainy season, huts are used to sleep in, to escape the rain, and for shade during this particularly hot season.

### **Structures at Recently Settled Communities**

Elsewhere in the Kalahari, a study of camps at Ngware showed a significant correlation between the number of huts and site population, but not between the number of huts and the length of time occupants planned to stay or actually did stay in the huts (Kent and Vierich 1989). What we did not examine in that study were the factors influencing the number of windbreaks at camps. Table 1 shows that the relationship between windbreaks and population, or any other variable monitored, is not straightforward. At Ngware, where Vierich collected her data, the number of windbreaks at a camp appears to be related largely to the number of visitors present. At Kutse and Ngamiland, there are significantly more windbreaks (and huts) in camps with larger resident populations ( $p < .05$ ).

Also unlike Ngware, the season of site occupation is significantly correlated with the number of huts at a Kutse camp ( $p < .05$ ), but not significantly correlated with the number of windbreaks ( $p > .05$ ). Table 2 shows that the only camps without huts are dry season camps, whereas all camps have at least one windbreak. That is, huts are negatively correlated with season (dry season camps lack huts); windbreaks are distributed at camps occupied year round or just during the dry season. One difficulty is that there are no rainy season camps in the

Kutse sample—only year round and dry season occupations. Therefore it is not possible to determine if rainy season camps have more windbreaks than dry season camps. Yellen's (1977) Ngamiland data of nomadic !Kung Basarwa camps include rainy season occupations and show that windbreaks are significantly associated with the dry season ( $p=.0029$ ) and huts with the rainy season ( $p=.0004$ ). There are 3.38 more windbreaks at dry season camps and 3.5 more huts at rainy season camps than at multiple season camps.

At Ngware, huts are not significantly associated with a particular season, but windbreaks are, with 3.2 more windbreaks occurring at dry season camps than at rainy season or year-round camps at Ngware ( $p=.0104$ ). The number of huts and windbreaks at multiple season camps does not differ significantly from the number of windbreaks at rainy season camps or huts at dry season camps at Kutse, Ngware, or Ngamiland.

Somewhat unexpectedly, the planned and the actual length of stay are not significantly associated with the number of windbreaks or the number of huts ( $p>.05$ ) at Ngware, Kutse, or Ngamiland.

### **Dispute Mediation at a Recently Settled Community**

With sedentism comes a need for a political arbitrator not necessary in nomadic contexts. Lee (1979) described nomadic Basarwa dispute mediation as one in which people "voted with their feet." In other words, a headman or chief was not necessary because people would simply move away from one another to avoid conflict. Disputes were resolved by mobility. Despite the mobility and the relatively dispersed nature of the Kutse community, frequent strife plagues its inhabitants (Kent 1989).

What happens to conflict resolution when there are no internal mechanisms to adjudicate disputes? Like nomadic Basarwa and unlike sedentary Bakgalagadi, there is no formal chief at Kutse. There is one Mokgalagadi who was designated chief by government officials, but not all residents recognize his position as one of chief or

mediator (see Kent 1989). He was relatively ineffective in preventing the many fights that occurred during my fieldwork.

I have witnessed more physical fights at Kutse within a month or two than other researchers recorded in a year among nomadic Basarwa (Kent 1989; cf. Draper 1973, 1978, or Marshall 1976). Hostilities at Kutse were ultimately resolved by the traditional device of mobility. One offender who started many fights in 1987 was beaten by a large portion of the community, including some women (Kent 1989). The offender and his family left as soon as he recovered from his wounds. In 1988 and 1989, the same individual returned to Kutse, but relocated after each major fight to a camp on the periphery of the Kutse community or left for a prolonged hunting-gathering trip with his extended family. In each case his departure was voluntary.

Judging from Kutse, it seems that, when a group becomes sedentary and aggregated, there is more fighting than while the group was nomadic. I predict the violence at Kutse will continue until the local people establish and incorporate a headman with sufficient community-wide and recognized political sanctions to be able to mediate disputes. Such local arbitrators have, in fact, emerged in parts of Botswana, such as at Nata River (Hitchcock and Holms 1985) and at Ghandzi (Guenther 1975; 1986) where the Basarwa have been sedentary and aggregated for a longer time than at Kutse.

Anthropologists modeling the development of sociopolitical complexity need to include this initial disruptive period as a former nomadic society accommodates to sedentism. Change is accelerated at Kutse because the community is part of a nation state (Botswana) and because a formal chief is located within a one-and-a-half-hours drive. However, in the past there may have been long periods of aggregation and sedentism punctuated by periods of dispersal before dispute mediation was incorporated within a society, which then permitted a permanence of residence not possible before. This might be visible in the archaeological record, if we examine settlement patterns with it in mind (cf. Vickers 1989).

**Table 1. Number of huts and windbreaks at camps at Ngware (Kent and Verich 1989).**

Site	Ethnicity	Population	Anticipated Mobility <sup>1,3</sup>	Actual Mobility <sup>1,3</sup>	Economic Mode <sup>4</sup>	Season	Huts	Windbreaks
1	Basarwa	8	Short	Short	H-G	Late Rainy	4	2
2	Basarwa	31	Short	Long	H-G	Rainy-Dry	6	5
3	Basarwa	4	Long	Medium	Employment	Dry	2	1
4	Basarwa	22	Medium	Long	Mixed	Rainy-Dry	3	4
5	Basarwa	21	Medium	Short	Mixed	Dry	3	3
6	Basarwa	2	Medium	Medium	Mixed	Dry	1	1
7	Bakgalagadi	6	Short	Short/Re	Farming	Early Rainy	1	2
8	Basarwa	14	Long	Short	H-G	Early Rainy	2	6
9	Bakgalagadi	5	Long	Long	Mixed	Rainy Dry	2	2
10	Basarwa	40	Short	Medium	H-G	Dry	4	10
11	Bakgalagadi	7	Long	Long	Farming	Rainy-Dry	3	1
12	Bakgalagadi	25	Long	Long	Farming	Rainy-Dry	11	3
13	Bakgalagadi	7	Long	Long	Farming	Rainy-Dry	2	3
14	Basarwa	6	Long	Long	Employment	Rainy-Dry	4	1
15	Basarwa	7	Medium	Short	Employment	Early Rainy	1	1
16	Basarwa	28	Medium	Short	Mixed	Early Rainy	9	3
17	Basarwa	5	Long	Long	Mixed	Rainy-Dry	2	2
18	Basarwa	16	Long	Long	Mixed	Rainy-Dry	4	0
19	Basarwa	15	Medium	Long	Employment	Rainy-Dry	3	4
22	Basarwa	22	Medium	Medium	Mixed	Rainy-Dry	7	0
23	Basarwa	39	Short	Short	Employment	Rainy-Dry	5	2
24	Basarwa	17	Long	Long	Employment	Rainy-Dry	3	1
25	Basarwa	23	Long	Long	Employment	Rainy-Dry	8	0
26	Basarwa	20	Long	Long	Employment	Rainy-Dry	4	5
27	Basarwa	20	Long	Long	Employment	Rainy-Dry	3	0
28	Basarwa	13	Long	Long	Employment	Rainy-Dry	3	1
29	Basarwa	3	Long	Long	Employment	Rainy-Dry	1	1
30	Basarwa	15	Long	Long	Employment	Rainy-Dry	6	5
31	Basarwa	17	Long	Short	Employment	Dry	3	1

<sup>1</sup>Anticipated Mobility = how long occupants planned to stay at a camp.

<sup>2</sup>Actual Mobility = how long occupants had been at the camp at the time of mapping.

<sup>3</sup>Short = less than 2.9 months; Medium = 3-5.9 months; Long = over 6 months; Re = reoccupied.

<sup>4</sup>H-G = Hunting-Gathering; Mixed = a mixture of hunting-gathering, farming, and/or employment; Employment = working as wage labor; Farming = farming as the major or only economic activity performed at the camp.

**Table 2. Number of huts and windbreaks at camps comparing Ngamiland and Kutse.**

Site	Ethnicity <sup>1</sup>	Population	Anticipated Mobility <sup>2,4</sup>	Actual Mobility <sup>3,4</sup>	Economic Mode <sup>5</sup>	Season	Huts	Windbreaks
Ngamiland Basarwa from Yellen 1977 (for consistency with the other data, some structures Yellen labelled as huts were classified as windbreaks here).								
1	Basarwa	10	Short	Short	H-G	Rainy	2	0
2	Basarwa	11	Short	Short	H-G	Dry	0	2
3	Basarwa	22	Short	Short	H-G	Rainy	5	0
4	Basarwa	14	Short	Short/Re	H-G	Rainy-Dry	4	0
5	Basarwa	11	Short	Short	H-G	Rainy	2	0
6	Basarwa	12	Short	Short	H-G	Rainy	3	0
7	Basarwa	17	Short	Short/Re	H-G	Rainy-Dry	3	2
9	Basarwa	12	Short	Short	H-G	Rainy	3	0
10	Basarwa	24	Short	Short	H-G	Late Rainy	6	1
11	Basarwa	24	Short	Short	H-G	Late Rainy	5	2
12	Basarwa	17	Short	Short	H-G	Dry	0	5
13	Basarwa	17	Short	Short	H-G	Dry	0	5
14	Basarwa	23	Short	Short	H-G	Dry	0	7
15	Basarwa	17	Short	Short	H-G	Dry	0	3
16	Basarwa	19	Short	Short	H-G	Dry	0	5

Kutse Basarwa and Bakgalagadi currently occupied camps in 1987:

1	Basarwa	10	Medium	Short	H-G	Dry	3	3
2	Mixed	7	Long	Long	Mixed	Rainy-Dry	1	2
3	Mixed	9	Long	Short	Mixed	Rainy-Dry	2	2
7	Mixed	8	Long	Short	H-G	Dry	0	2
9	Basarwa	5	Long	Long	Mixed	Rainy-Dry	1	3
12	Basarwa	2	Medium/Re	Medium/Re	H-G	Dry	1	1
13	Mixed	7	Long	Long	Mixed	Rainy-Dry	2	4
15	Basarwa	2	Long	Long	***	Rainy-Dry	1	2
16	Basarwa	3	Long	Medium	H-G	Rainy-Dry	1	1
18	Mixed	6	Long	Short	H-G	Dry	0	3
19	Bakgalagadi	8	Long	Medium	Mixed	Rainy-Dry	1	2
21	Basarwa	5	Long	Long	Mixed	Rainy-Dry	2	2
22	Basarwa	5	Long	Long	H-G	Rainy-Dry	3	3
23	Basarwa	4	Medium	Medium	H-G	Dry	1	2
24	Mixed	5	Long	Long	H-G	Rainy-Dry	2	2
25	Basarwa	2	Short	Short	***	Dry	0	1
26	Basarwa	1	Short	Short	***	Dry	0	1
27	Bakgalagadi	7	Long	Long	H-G	Rainy-Dry	2	1
28	Basarwa	3	Long	Long	Mixed	Rainy-Dry	1	1
30	Bakgalagadi	9	Long	Long	Mixed	Rainy-Dry	4	2
31	Basarwa	7	Long	Long	Mixed	Rainy-Dry	2	2
32	Mixed	10	Long	Long	Mixed	Rainy-Dry	3	4

<sup>1</sup>Mixed ethnicity = both Basarwa and Kakgalagadi live at the camp.

<sup>2</sup>Anticipated Mobility = how long occupants planned to stay at a camp.

<sup>3</sup>Actual Mobility = how long occupants had been at the camp at the time of mapping.

<sup>4</sup>Short = less than 2.9 months; Medium = 3-5.9 months; Long = over 6 months; Re = reoccupied.

<sup>5</sup>H-G = Hunting-Gathering; Mixed = a mixture of hunting-gathering and small-scale gardening; \*\*\* = reliance primarily on relatives for food.

### **Morbidity at a Recently Settled Community**

High morbidity rates are often associated with the adoption of horticulture and resulting dietary changes during the Neolithic period and beyond (Cohen and Armelagos 1984). A study of the health of the recently settled and relatively aggregated hunter-gatherers at Kutse reveals that despite adequate diets there is a high level of morbidity, which suggests that sedentism (rather than diet) may account for the high morbidity rates of the Neolithic period. Hematological studies currently being analyzed indicate a relatively high pathogen load at Kutse. Between 26% and 50% of the resident inhabitants have subnormal iron indices—serum iron and/or transferrin saturation levels—and approximately 50% of the adults have elevated serum ferritin levels (Kent and Dunn n.d.). Anemia can be caused by chronic cycles of infectious diseases (Kent and Weinberg 1989). The anemia of chronic diseases is characterized by the combination of low serum iron and transferrin saturation with high serum ferritin levels (Table 3). There was no hematological evidence of dietary-induced iron deficiency anemia at Kutse, i.e., all serum ferritin levels were normal or elevated (they would be subnormal if the anemia were dietary-induced).

The hematology substantiated what direct observation and interviews had already suggested, namely, that morbidity is high at Kutse. People often complained of feeling ill. Interestingly, this situation and the Kutse hematological results are both quite different than the findings from health research on nomadic Basarwa conducted in 1969 at Dobe in Ngamiland (e.g., Metz, Hart, and Harpending 1971). A comparative study of the same Dobe group in 1987, after they had made a shift to sedentism, revealed a high incidence of anemia of chronic diseases and general high morbidity (Kent and Lee n.d.). Illness then appears to be a common feature of newly sedentary/aggregated life.

There are several reasons for higher morbidity among the sedentary Dobe and Kutse Basarwa. Everyone shares common utensils and dishes and, because people tend

to spend most of their time in close proximity to others, often around a hearth, infectious diseases spread quite readily. Equally important is that new sanitation conducive to a sedentary, aggregated living situation has not yet been adopted, creating breeding grounds for a variety of pathogens.

The anemia of chronic diseases can be discerned in prehistoric skeletal populations by examining crania for the presence of porotic hyperostosis (Kent 1986; Stuart-Macadam 1985). Such anemia is not necessarily caused by deficient diets, but instead may be caused by higher pathogen loads characteristic of settled communities.

### **Conclusions**

I have outlined some of the most important general processes that characterize initial sedentarization and aggregation at Kutse. In my opinion, Kutse fills an important gap in our ethnoarchaeological data between nomadic hunter-gatherers and settled food-producing societies. The Kutse study allows us to examine the role of political centralization, changes in site structure and permanence, and deteriorating health in relationship with aggregation of people and a restriction of mobility.

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**Table 3. Comparison of anemia of dietary iron deficiency and anemia of chronic disease laboratory values (Kent n.d.b).**

Anemia	Hemoglobin	Serum Iron	% Saturation	Serum Ferritin
Iron Deficiency	Decreased	Decreased	Decreased	Decreased
Chronic Disease	Decreased	Decreased	Decreased	High Normal-Raised

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**Fish and Reptiles from the Tsodilo Hills White Paintings Rock-Shelter**

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artifacts which are microlithic and include such diagnostic LSA tools as backed crescents or segments and small "thumbnail" scrapers. The time span thus far documented at WPS ranges from as recently as about fifty years ago, based on oral traditions, back into the period of chronological overlap with the local early Iron Age and into pre-Iron Age times (below about 70 cm). Although the actual base of the deposits has not yet been reached, the deepest unit (square 9) was excavated to a depth of two meters. The oldest radiocarbon date (sq. 6.90-10 cm) is 3,700 ± 100 B.P. (Beta 33053) and the base of the deposits is believed to be 5,000-6,000 years old based on a detailed comparison of the sedimentary sequence with the dated sediments at the Tsodilo Depression site (G. A. Brook, personal communication).

In contrast to the Depression site, fauna was more abundant and better preserved at WPS. Approximately 9,000 bone fragments were recovered from nine square meters.<sup>2</sup> While fifteen different kinds of mammals were identified by R. G. Klein (Robbins 1990b), springhare and small bovids were especially well represented. Such "small game" faunas are common in LSA shelters elsewhere in southern Africa. Although no domesticated animals were found among the identifiable mammal bones, some of the unidentifiable broken bone fragments could have come from domesticated stock.

**Introduction (L. H. Robbins)**

The Tsodilo Hills, located to the west of the Okavango river, is the only area in the Kalahari that has thus far revealed rock-shelters with deep deposits (Robbins 1990a). The White Paintings shelter (WPS) is the second major shelter to be excavated at Tsodilo.<sup>1</sup> Initial excavations were conducted by L. H. Robbins and A. C. Campbell in 1989. While a preliminary report including radiocarbon dates and basic information on artifacts as well as the identification of mammals has appeared, it is useful to summarize a few of the main points here before presenting the analysis of the fish and reptiles (Robbins 1990b). This shelter is basically a Late Stone Age site in terms of the major technical characteristics of the

**Fish (Kathlyn Stewart)**

**Outline of Data**

One hundred and seventy-one fish elements were recovered and identified. The bones were distributed throughout all levels of the excavation. Two taxa were identified—*Clarias* sp. (catfish) and Cichlidae (tilapia); bones were too fragmentary for more specific identification. Interestingly, the nearest fishbearing water source is a seasonally flowing channel at Xeidum, 17 k distant from Tsodilo. This connects with the Okavango River, 70 k from Tsodilo, which contains several species of both *Clarias* and the cichlids. The distance of Tsodilo from the channel almost certainly precludes the bones being accumulated by any agent other than

a human one, particularly given their close association with cultural material.

**Table 1. White Paintings Rock-Shelter. Total minimum numbers of individuals (MNI) by size, expressed in numbers and percentages.**

	<i>Clarias</i>		<i>Cichlidae</i>	
	N	%	N	%
Total Length:				
10-20 cm	1	2.0		
20-30 cm	2	4.0	4	26.7
30-50 cm	8	16.0	11	73.3
50-85 cm	8	16.0		
Indeterminate	31	32.0		
Totals	50 (76.9%)		15 (23.1%)	

Both taxa were present throughout the site, with *Clarias* individuals over three times more numerous (Table 1). Proportions were relatively unchanged throughout the site (Fig. 1). The *Clarias* individuals were estimated to range in size from 17 cm to 75 cm in total length, with the average length being 45.5 cm. The cichlid individuals ranged from 22 to 45 cm in length, with an average length of 32.6 cm.

Skeletal element proportions are skewed for *Clarias* and cichlids, compared to proportions of an average fish skeleton (Table 2). *Clarias* individuals are represented primarily by cranial elements, while cichlids are virtually only represented by axial (vertebral) elements. Epaxial (spine) proportions are similar to average representation.

**Table 2. White Paintings Rock-Shelter. Minimum number of skeletal elements (MNE) as expressed by numbers and percentages.**

	<i>Clarias</i>		<i>Cichlidae</i>		Average Fish
	N	%	N	%	
Cranial	59	73.8	1	6.3	65.0
Axial	12	15.0	13	81.2	25.5
Epaxial	9	11.2	2	12.5	9.5

**Discussion**

The low but consistent numbers of fish represented in the site suggests that fish formed a small but regular part of the inhabitants' diet. While there are no fish-bearing waters at the rock-shelter, local San have reported that until recently fish could be caught in a seasonally flooding channel, about 17 k distance. Both *Clarias* and many cichlids spawn during the floodwater period, and because they spawn in very shallow waters are vulnerable to predation. Many accounts exist of *Clarias* being captured by spearing, clubbing or even bare hands in shallow waters while spawning (e.g., Greenwood 1955). A second method is to construct weirs or earth dams to trap spawning fish when waters recede at the end of the wet season, or in the dry season. Over 80% of the fish at WPS are estimated to be of mature age, lending support to the suggestion that they represent a breeding population.

The biased skeletal proportions may have in part been caused by processing activities and in part by post-depositional processes. Low numbers of *Clarias* axial elements is well-reported in both archaeological and paleontological sites, and may reflect the poor preservation potential of these elements (van Neer 1986). However, the almost complete absence of cichlid cranial elements is unusual, and suggests that the heads were processed or discarded elsewhere, possible having been thrown outside the shelter.

The presence of fish remains throughout the Tsodilo rock-shelter seems to reflect a long-term familiarity by the inhabitants with both the seasonal availability and behavior of these fish. It also implies deliberate utilization of riverine resources as part of a seasonal round of subsistence activities that has continued through the LSA and Iron Age. Seasonal utilization of fish may have been filling a nutritional gap; elsewhere (Stewart in press) I have reported that certain fish, including *Clarias*, provide a source of fat at times when terrestrial animals are fat-depleted. The importance of fish as a seasonal dietary component may explain, in part, its long-term utilization at Tsodilo.

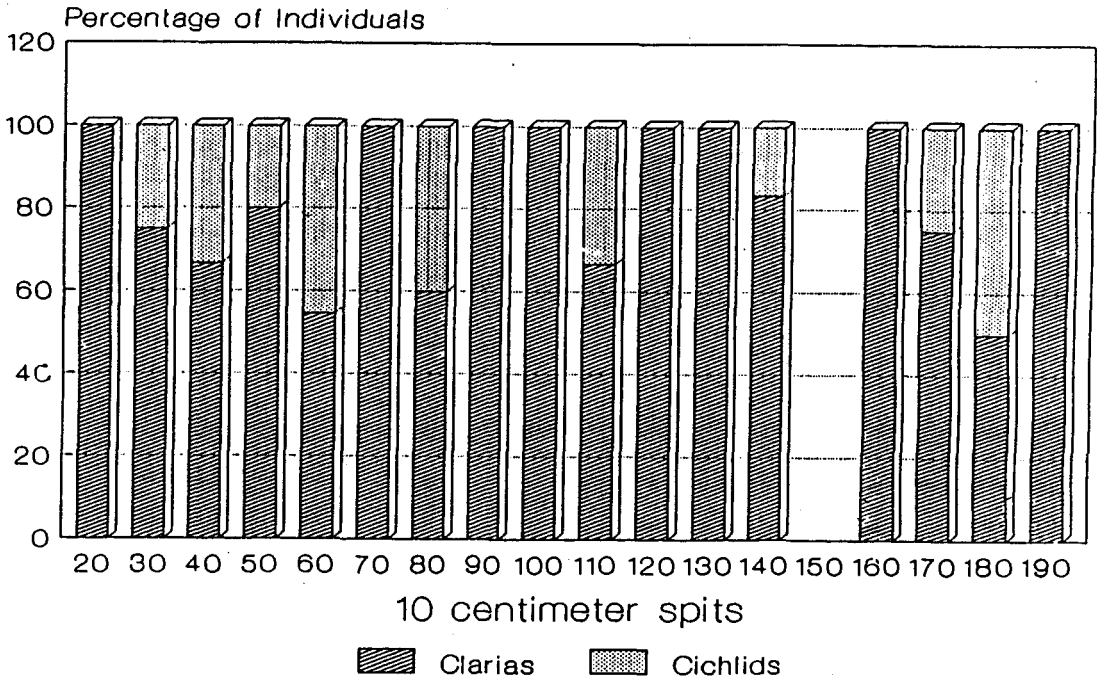


Fig. 1. White Paintings Shelter. Proportions of Clarias and Cichlids by depth.

Reptiles (Nancy-Jeanne Stevens)

Outline of Data

Tortoise, lizard, and snake elements were recovered and identified from the White Paintings Rock-Shelter excavation.<sup>3</sup> Like the fish, they were distributed throughout most of the site (Table 3). The herpetological contents of the site consisted of two species of tortoise (*Geochelone pardalis babcocki* and *Kinixys belliana*), a monitor lizard (*Varanus exanthematicus* and/or *Varanus niloticus*), and a boid snake (*Python sebae natalensis*). At least one species of Colubrid or Elapid snake was distinguished, but the vertebrae were too fragmentary for generic or specific identification.

Table 3. White Paintings Rock-Shelter. Types of reptiles represented in excavation levels. (X = presence of remains)

Depth	Tortoise	Lizard	Snake
0-10	X	X	X
10-20	X	X	X
20-30	X	X	X
30-40	X	X	X
40-50	X	X	
50-60	X		X
60-70	X	X	X
70-90	X	X	
100-115	X		
115-125	X		
125-130	X		
130-140	X		
140-155	X		
155-165	X	X	
165-172	X	X	
172-180	X		

**Systematic Zooarchaeology**

Class Reptilia

Order Testudines

Family Testudinidae

*Geochelone pardalis babcocki* (Loveridge)

Leopard Tortoise

**Material:** One fourth left costal bone, found at 60–70 cm.

**Remarks:** In dorsal view, the fourth costal bone of *Geochelone pardalis babcocki* (Fig. 2A) may be distinguished from that of *Kinixys belliana* (Fig. 2B) on the basis of lacking the tapering hinge structure on the posterior surface of the bone. Moreover, the suture line from the pleural scute is at the center rather than the posterior part of the bone in the former species.

In ventrolateral view, this bone is truncated posteriorally in *Geochelone pardalis* (Fig. 2D) and pointed in *Kinixys belliana* (Fig. 2E).

The archaeological specimen (Fig. 2C, F) is indistinguishable from those of two modern *Geochelone pardalis* skeletons.

*Kinixys belliana*

Hingeback Tortoise

**Material:** One second right peripheral, found at 10–20 cm.

**Remarks:** The second right peripheral bone of *Kinixys belliana* differs from that of *Geochelone pardalis* in that it is shorter and more laterally expanded. It also bears the suture of the pleural scute dorsally, while that of *Geochelone pardalis* does not (Fig. 3A, B).

The archaeological remains (Fig. 3C) were indistinguishable from three modern *Kinixys belliana*.

Order Squamata

Family Varanidae

*Varanus exanthematicus* (Daudin) or

*Varanus niloticus* (Linnaeus)

Monitor Lizard

**Material:** Nine vertebrae and eight metacarpals and/or metatarsals.

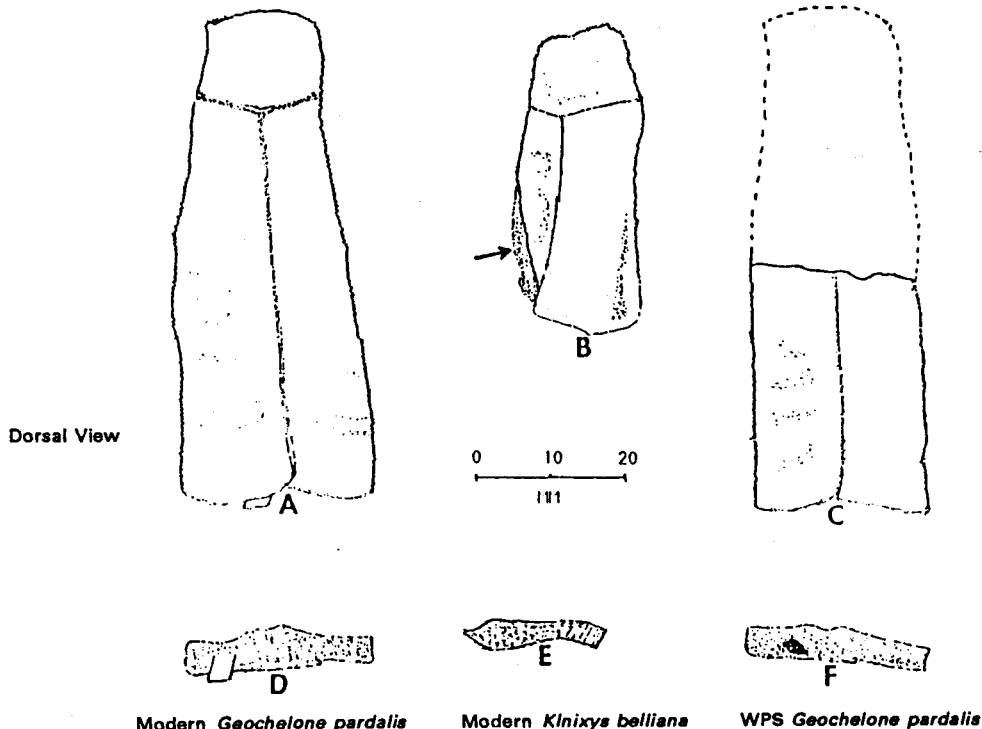
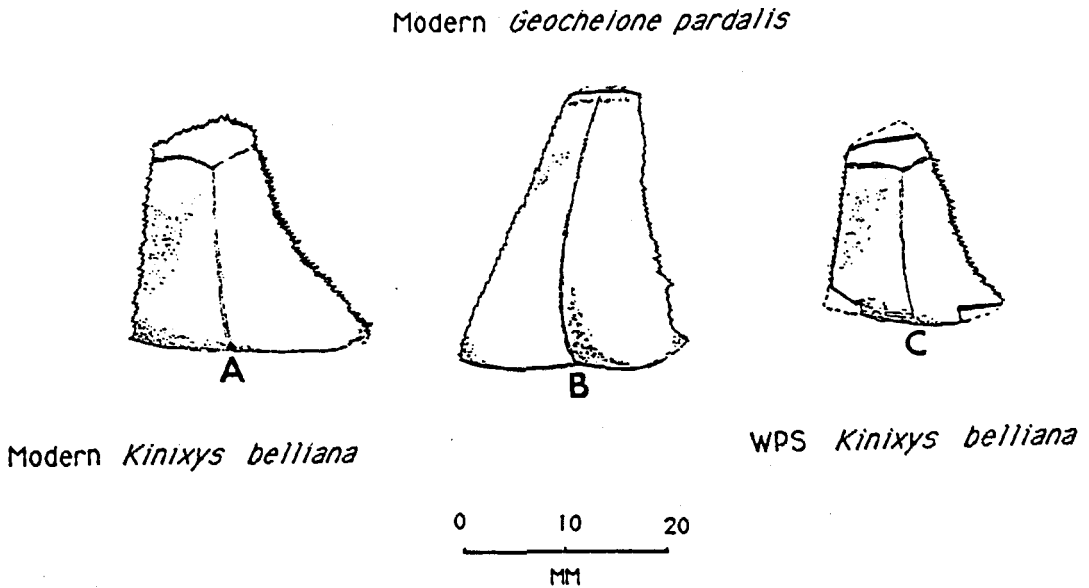


Fig. 2. Fourth left costal bone of tortoises.



**Fig. 3. Second right peripheral of tortoises in dorsal view.**

**Remarks:** Due to the absence of jaws and teeth, it was not possible to distinguish *Varanus exanthematicus* from *Varanus niloticus*. It is possible that the remains were a mixture, although *Varanus exanthematicus* is the more common species in Botswana.

Order Serpentes  
 Family Boidae  
*Python sebae natalensis* (Smith)  
 Water Python

**Material:** Twenty-one trunk vertebrae

**Remarks:** These large boid vertebrae are indistinguishable from *Python sebae natalensis*, the only boid found in the region. This snake ranges over lowlands and is common in southeastern Botswana, however, species have been found north and west of this region. Interestingly, they have not been recorded in the Tsodilo Hills area.

Family Elapidae or Colubridae  
 Sp. indeterminate

**Material:** Nine vertebrae.

**Remarks:** These vertebrae were too fragmentary for specific identification. The colubrids one would expect to find in the Tsodilo hills area are *Natriciteres olivacea*, *Hermirhagerris nototaenia nototaenia*, *Psammophis subtaeniatus subtaeniatus*, *Psammophis phillipsii*, *Psammophis angolensis*, *Xenocalamus mechowii inornatus*, *Atractaspis bibronii*, *Philothamnus angolensis*, *Philothamnus semivariatus semivariatus*, *Telescopus semiannulatus semiannulatus*, and *Thelotornis capensis oatesii*. The elapids commonly found in Botswana are *Dendroaspis polylepis polylepis*, *Aspidelaps scutatus scutatus*, *Elapsoidea semiannulata boulengeri*, *Elapsoidea sundevallii fitzsimansi*, *Naja haje anchietae*, and *Naja nivea*.

**Discussion**

Most of the tortoise bones and shell elements were too fragmentary for specific identification. Two species of land tortoises of the Family Testudines were identified from some of the better preserved material. *Geochelone pardalis babcocki* is the most common tortoise species in Botswana, and has frequently been hunted for food (Lee 1979), the shells later sold as ornaments and containers (Auerbach, 1987). *Kinixys belliana* is a hingebacked tortoise also common in the area. There is evidence that the tortoises were consumed by the inhabitants of the rock shelter, as many of the fragmentary remains showed signs of fire damage.

The monitor lizard is most likely the terrestrial *Varanus exanthematicus*, rather than the more aquatic *Varanus niloticus*. *Varanus exanthematicus* is also more common throughout Botswana than *Varanus niloticus*. It is eaten by the !Kung San in the western Kalahari (Lee 1979) and by local peoples at Tsodilo. If the remains represent *Varanus niloticus*, it is probable that the lizards were brought back from trips into the Okavango area.

There was a significant number of Colubridae or Elapida remains identified from the WPS fauna. However, these were far too fragmentary to identify to species.

Of the species identified at WPS, only one, the boid snake, has not been recorded from the area.

It is noteworthy that in many cultures, the python has special ceremonial significance (Auerbach, 1987).

Thus it is possible that this snake was either hunted for food, or for other ceremonial purposes, and was brought back by the inhabitants when they returned from fishing excursions or other ventures into the Okavango delta. It is also interesting to observe that the rock paintings at WPS include two linear designs that are most likely snakes.

**Conclusion**

It is especially interesting to find fish in a relatively dry area such as Tsodilo. While none were found at the Depression site, they

were recovered in the early Iron Age villages at Tsodilo (Denbow and Wilmsen 1986). Our research clearly extends the use of fish, as well as reptiles, at Tsodilo further back in time, perhaps as much as 6,000 years. While LSA sites with fish are common in East Africa, such as along the early Holocene beaches of the lake Turkana basin, they are comparatively rare in the interior of southern Africa. Moreover, such sites are reported to be relatively recent in southern Africa, dating to within the last 2,000 years (Deacon 1984). Our work has added a new perspective to understanding the variable subsistence activities of Late Stone Age peoples in southern Africa.

**Notes**

<sup>1</sup>We thank A. C. Campbell and the authorities of the Botswana National Museum and Art Gallery for making this research possible. We are especially grateful to J. A. Holman for guidance with the reptiles.

<sup>2</sup>N = 8,890 bone fragments, 88% mammal, 8% reptile, 2% fish, 1.5% bird, 0.5% amphibian (B. A. Smith personal communication, MSU Museum). The birds are under study.

<sup>3</sup>The number of bone fragments include 580 tortoise, 20 lizard, and 30 snake.

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■ CAMEROON

**Reconnaissance Archéologique dans l'Arrondissement de Zoétélé (Province du Sud), Cameroun Méridional**

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Malgré les efforts consentis dans le cadre de la recherche archéologique au Cameroun Méridional, la province du Sud et, en particulier, le Département du Dja et Lobo, est restée pratiquement inconnue du point de vue archéologique. Cette situation justifie la mission que nous avons effectuée du 24 juillet au 4 août 1990 dans l'arrondissement de Zoétélé (Fig. 1), étape préliminaire du long travail de recherche archéologique à mener dans l'ensemble de la province. Cette mission de reconnaissance nous a conduits aux villages du secteur tel que: Nkooveng, Nkolmebong, Fiebot, Nkoumadzap, Otetek, Etoto, et Zoétélé village (Fig. 1).

La mission de recherche a été fondée selon l'étude de la carte au 200.000ème de la région, sur laquelle on a relevé les noms des villages indicateurs par la toponymie. Puis des enquêtes ont été menées auprès de certaines personnes agrées et des autorités traditionnelles sur les sites anciennement habités et les anciens lieux de pratique des

activités techniques traditionnelles, en l'occurrence la production de fer et la forge. En outre, on a procédé à la prospection systématique des champs et des habitations actuels. Deux types de sites ont ainsi été identifiés: les sites préhistoriques et les sites de l'Âge du Fer. Dans ce article, nous nous limitons aux sites de l'Âge du Fer.

**Sites de L'Âge du Fer**

**Les Sites de Zoétélé**

On distingue Zoétélé Village et Zoétélé Brousse. Des enquêtes ont été menées sur l'origine de Zoétélé, auprès de NGANE

OYONO Thomas (né vers 1916), de OYONO Celestin (né vers 1933). Il ressort des ces enquêtes que le nom de Zoétélé avait été donné à OYONO EYAMO Lucien (né vers 1888, et mort en 1933 à 45 ans), par ses parents du groupe Fon à cause de ses nombreuses richesses, de ses capacités et prouesses, puis de ses réalisations matérielles. Toutes ces données expliquent le nom Zoétélé pour OYONO EYAMO (Zok qui veut dire "éléphant"; étélé qui veut dire "il est debout"). Les Fons virent en lui leur éléphant en position. C'est de ce nom que vient celui de la cité.

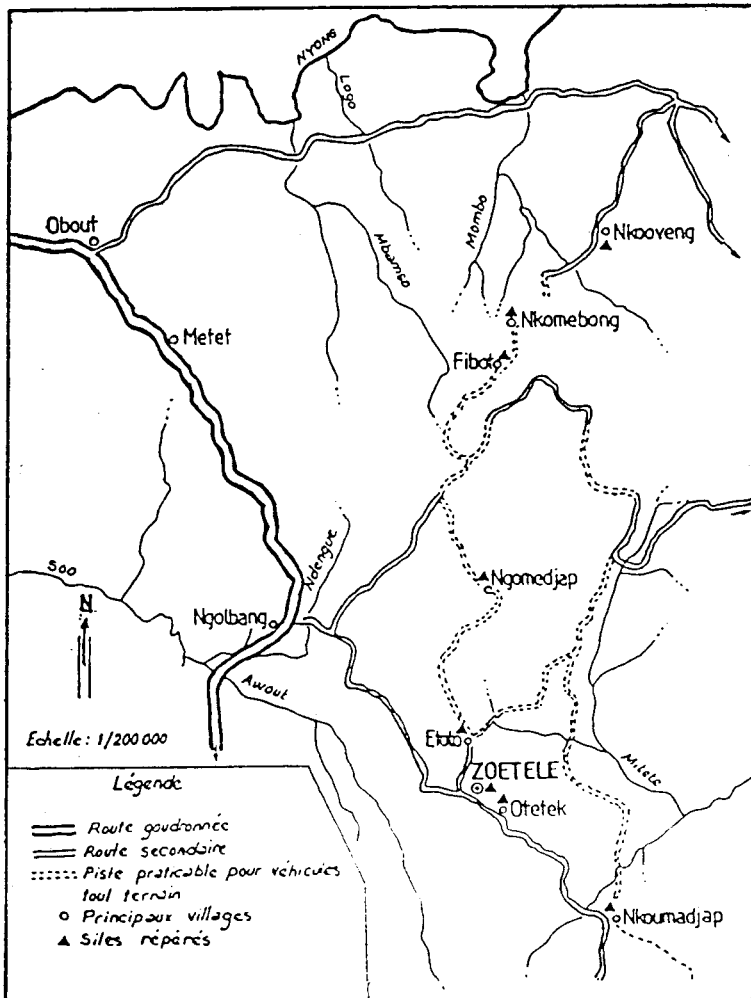


Fig. 1. Arrondissement de Zoétélé: localisation des principaux sites identifiés (août 1990).

Avant l'arrivée des Allemands au Cameroun, les parents d'OYOMO EYAMO, dit Zoétélé, ont d'abord habité la localité aujourd'hui connue sous le nom de Zoétélé Brousse, situé à 10° NE de Zoétélé Ville et à 1.5 km du village Eteok. C'est de Zoétélé Brousse qu'est parti OYONO EYAMO pour fonder Zoétélé Village où s'est implanté Zoétélé Ville. Suivant nos informateurs, on avait travaillé le fer dans ces localités aux temps anciens. Effectivement une visite aux

**Zoétélé Brousse (ZB1-Locus A)**

Il est situé à 30 m à l'Ouest de ZB1, soit à 12° NW de la ville de Zoétélé, dans la plantation cacaoyère de Ebene Mengue. Le site est constitué d'une butte de 52 cm de hauteur et de 43 m de diamètre.

Un sondage d'un m<sup>2</sup> a été effectué sur le site. L'apparition en surface de la terre brûlée et du charbon de bois a orienté le test. La terre brûlée ressemblait à des fragments de briques. Les difficultés de détermination de la nature de la structure, expliquent le sondage effectué jusqu'à 90 cm de profondeur. Le sondage fait observer de petites perturbations, des trous de rats palmistes à la partie supérieure et inférieure de la structure, puis des nids de fourmis et des racines de tiges de cacaoyers. On a noté la présence régulière de gros charbon de bois tout au long de la fouille, qui se concentrent vers l'Ouest. Quelques échantillons ont été prélevés pour la datation au 14 C. Un autre élément important est la trouvaille d'un fragment de tuyère à 90 cm de profondeur, au secteur Ouest. Cet élément permet d'émettre l'hypothèse sur la nature de la structure, à savoir qu'il peut s'agir d'un atelier probable de forge ou de réduction de fer. Cette hypothèse est soutenue par la présence d'une scorie récoltée en ZB1 cidessus décrit. Le site mérite une fouille systématique, objet de la prochaine mission.

**Zoétélé Village (ZV1)**

Ce site se trouve à 1 km de la Sous-Prefecture de Zoétélé Ville sur le côté droit de la route qui mène à Meba, dans la cour de ABA BILOUNGA Joseph mort en 1958 et frère d'OYONO EYAMO Lucien. On a observé en surface uniquement des scories

lieux nous a permis de réperer et de localiser les sites archéologiques à ces deux endroits.

**La Zoétélé Brousse (ZB1)**

Le site est identifié à partir des scories ramassées en surface a 500 m avant le lieu dit "Bilik." Cette trouvaille a amené à faire des prospections dans les environs et permis de trouver le site de ZB1-Locus A (point de fouille A).

dispersées sur 4 m de long sur 1.50 m soit 6 m<sup>2</sup>. Ces scories sont de petites tailles, ce qui suppose qu'on est en présence d'un site de forge. La proximité de la route et des habitations peut indiquer que le site a été remanié, toutefois nous pensons qu'il sera nécessaire d'y effectuer des fouilles.

**Le Site d'Otetek (OT1)**

Le site se localise à 3° 14' 06" de Latitude Nord et 11° 54' 05" de Longitude Est, soit 3 km au Sud-Est de Zoétélé Ville sur la route de Noumadzap. Il se trouve à une centaine de mètres du carrefour Minkoumou-Nkoumadzap, dans la cour de la Mission Chrétienne et est constitué des scories, charbons de bois, fragments de tuyères, et de la poterie non décorée, apparaissant sur plus de 100 m<sup>2</sup>. La petite taille des scories indiqueraient un atelier de forge. Aucun sondage n'y a été effectué, mais cette possibilité reste intéressante. Au cours de nos enquêtes, il nous a été indiqué le nom du Pasteur MEZANG Josué, 68 ans, qui nous a servi d'informateur dans ce village. Suivant ses renseignements, la première appellation de la localité était "VELEMEKON" et les premiers habitants étaient les "Yerchang," qui y ont séjourné avant l'arrivée des Fon. Ces derniers ont baptisé les lieux d'"Otetek" ce qui signifie "doucement."

**Kumu (KM1)**

Dans le village de Nkoumandzap, à 10 km de la Sous-Prefecture de Zoétélé, se trouve le site de Kumu; dans la plantation cacaoyère de Jean-Thomas Akoa. Selon nos informateurs (Député MEKA Lucien de Zoétélé, et AKOA Jena Thomas), ce lieu a été habité anciennement par les ancêtres des

populations de Nkoumadzap. Le site a été remanié par le bulldozer lors de la construction de la route. Il est donc en position secondaire avec des briques brûlées, des scories, des morceaux de tuyères et de la poterie dans un rayon limité. D'autres prospections devront être menées dans cette plantation.

vestiges anciens. Ainsi, M. OYONO nous a présenté une hache polie provenant d'une carrière située à près de 800 m du château d'eau sur la route de Minkoumou. Ramassé en 1988, objet mesuré 6 cm de large, 7 cm de long et 2.5 cm d'épaisseur (Fig. 2).

Par ailleurs M. MEZANG Josué nous a présenté un ancien marteau de fer traditionnel (gondô, en beti) qu'aurait utilisé son grand-père.

**Données Annexes**

L'enquête sur les cultures matérielles nous a conduit à une récolte de quelques

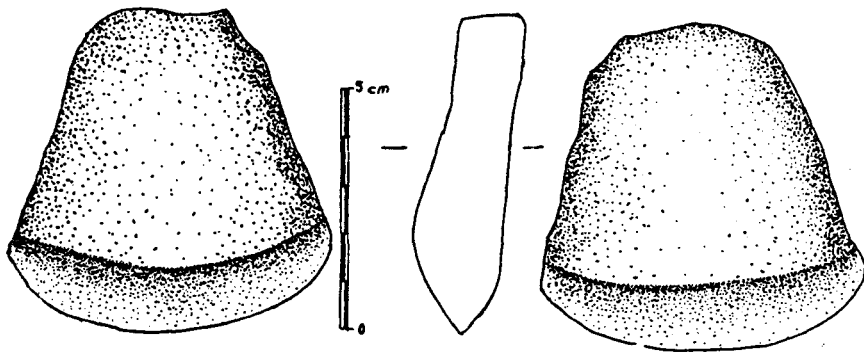


Fig. 2. Village d'Otetek: Hachereau (Ramassage de surface).

**Conclusion**

Les résultats de cette mission de reconnaissance archéologique dans l'arrondissement de Zoétélé s'avèrent intéressants. Huit sites ont été identifiés dont trois sites préhistoriques et cinq de l'Âge du Fer.

La mission a centré particulièrement dans la zone nord et sud-est de l'arrondissement. Cette orientation ressort de la pratique de l'ethnoarchéologie qui a conduit à l'identification des anciens sites dans ces secteurs.

D'une manière générale, les sites anciens se retrouvent en dehors des habitations actuelles. On comprend dès lors les difficultés qui subsistent pour la prospection à grande échelle dans cette zone forestière et

la justification de l'approche ethno-archéologique dans ce milieu.

Par ailleurs, la mission a permis de mettre une fois de plus en évidence le riche patrimoine archéologique du Cameroun méridional tant en sites préhistoriques que de l'Âge du Fer.

Il s'impose donc une urgence, celle de l'exploitation des sites répertoriés dont l'étude devrait sans aucun doute apporter des données dans l'effort de la documentation pour la rédaction d'une histoire ancienne du Cameroun. Cette urgence mérite une intensification des enquêtes dans la région pour identifier les sites en vue de leur cartographie et pour consulter quelques personnes âgées de la région. Une mission de fouilles des sites identifiés est prévue pour 1991.

**Remerciements**

Nous remercions particulièrement les autorités administratives et politiques de Zoétéélé pour les facilités qu'elles nous ont accordées pour le bon déroulement de cette mission, notamment M. le Maire de Zoétéélé.

■ **KENYA**

**Lenderut: A New Acheulian Site in the Southern Kenya Rift**

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The Acheulian site of Lenderut (Hajj1) is nestled along the northwest slopes of Lenderut volcano in the southern Kenya rift. The site, first located in 1987, is situated approximately 15 km south of Lake Magadi and 50 km to the southwest of Olorgesailie. Stone artifacts and faunal material were found to be distributed over an area of approximately 30,000 m<sup>2</sup> and were concentrated within an area of about 2,500 m<sup>2</sup>. Bifaces, especially handaxes, were lying on the surface as well as numerous pieces of débitage. Several handaxes were observed in situ. Well fossilized bone, including carnivore elements and fragmentary bovid horn cores, was observed. Further inspection revealed a well defined layer of abundant faunal material, including nonhuman primates and complete bovid horn cores, within the area of lithic concentration. Two subcircular patches, reddish-orange in color, were also discovered, suggesting that fires may have been ignited by the human occupants of the site.

**Geology**

The Lenderut sediments consist of up to seven meters of interbedded lacustrine silts

and silty clays, fluvial silty sands and cobble layers, and carbonate horizons that were deposited in probable lacustrine, lake margin, and riverine environments. The artifactual and fossiliferous assemblages appear to be situated primarily in a complex cut and fill sequence. The following units of deposition were identified:

**UNIT A.** The lowermost sediments appear to be composed of fine grained silts and silty clays (which may be tuffaceous) that dip 3° to the west. The silts are some 40 cm thick. Their upper surface is heavily eroded by channels containing sands and gravels. These lower layers are low energy deposits and are probably lacustrine and lake margin in origin.

**UNIT B.** Overlying Unit A are 3-6 m of silty sands. This unit contains numerous gravel lenses and occasional large rock fragments. The unit is heavily cemented and CaCO<sub>3</sub> concretions occur throughout. The sediments appear to be fluvial in origin. Acheulian artifacts and faunal remains occur in at least two distinct horizons and may be distributed throughout much of the unit.

**UNIT C.** Overlying the channel sands and gravels is a widespread 5-25 cm layer of calcrete with associated cemented gravels, cobbles, and Middle Stone Age (MSA) artifacts. This layer is probably evaporite in origin. Where erosion has broken up the calcrete blocks, MSA material has mixed on the surface with Acheulian artifacts.

Baker (1963) tentatively correlated these deposits with the High Magadi Beds but the presence of bifaces, other diagnostic Acheulian artifacts, and extinct fauna demonstrates this correlation to be incorrect.

**Excavation**

Two test excavations were completed. The objective of Excavation 1 was to demonstrate that the abundant Acheulian artifacts on the surface were derived from Unit B. Excavation 2 was designed to recover portions of the rich horizon of faunal material and to elucidate its stratigraphic position within Unit B.

For Excavation 1, a four-meter square was laid out in an area where concentrations

of stone débitage were observed. Excavation proceeded in individual two-meter squares by 10 cm spits and proceeded to a depth of 40 cm.

The results from Excavation 1 confirmed our initial hypothesis: the original provenience of the surface artifacts was Unit B. We recovered 27 pieces of débitage from the surface and 94 artifacts were recovered during excavation. While the question of provenience was established, the excavation was too limited to shed light on patterns of lateral or vertical artifact distribution. We hope in the future to undertake larger excavations for such information.

The second excavation (Kimolo's Outcrop) was centered on and below an exposed five-meter-long horizon of faunal remains. The area was first gridded into 20 five-meter squares. All artifacts and faunal material down slope from the exposed bone horizon were collected and each sampling unit was screened. Six handaxes were collected. The remainder of the surface artifacts await analysis. Excavation was undertaken in three one-meter squares along the outcrop's crest to a depth of 50 cm.

The results from Excavation 2 were rewarding. The faunal inventory included at least four tribes of bovids, carnivore, and equid remains, and dental and mandibular evidence of the extinct gelada baboon, *Theropithecus oswaldi*. Importantly, two lava flakes were discovered with the faunal elements. It would appear that this rich horizon of bone is directly associated with Acheulian cultural remains.

**Cultural Materials**

The Acheulian artifacts from Lenderut consisted of heavy duty tools (handaxes), smaller retouched flake tools, and débitage (whole and broken flakes, angular fragments). Table 1 presents the lithic material recovered from both excavations and surface collections. Most of the artifacts were manufactured from lava. Several examples of quartz and green chert were also recovered.

It is important to note that at least two handaxes were collected in situ. These pieces had minimally weathered trimming

scars and sharp edges. The overwhelming majority of the excavated débitage also had sharp flake margins. This suggests that one or more cultural horizons are present in which hydraulic disturbance may have been minimal.

**Table 1. Lenderut Stone Artifacts.**

	Handaxe	Flake Tools	Débitage	Core
Excavation 1				
Surface	—	2	27	
Excavation	—	—	94	1
Excavation 2				
Surface	6	—	—	1
Excavation	—	—	2	
In situ on outcrop	2	—	—	—
Surface collections	5	1	—	—

**Faunal Remains**

The faunal assemblage from Lenderut consists of both surface and excavated specimens (Table 2). The material is significant for several reasons. First, the family Bovidae is well represented. At least four tribes are present, all of which have been identified from well preserved horn cores. Perhaps most importantly, the fauna revealed the presence of *Theropithecus oswaldi*. This cercopithecoid is well known from the Middle Pleistocene Acheulian site of Olorgesailie (Isaac 1977) but is apparently unknown from other Acheulian sites in Africa. Lainyamok, a Middle Pleistocene locality to the northwest of Lake Magadi, has yielded other nonhuman primates but so far no *Theropithecus* remains (Shipman et al. 1983, Potts et al. 1988).

The presence of *Theropithecus* remains at Olorgesailie has led to a spirited exchange concerning whether or not Middle Pleistocene hominids killed, butchered, and ate these extremely large baboons (Shipman et al. 1981, Binford and Todd 1982, see also Koch 1989). We may well be able to shed light on this debate now that *Theropithecus* remains have been identified at Lenderut. In this regard, it may prove to be significant

that Olorgesailie and Lenderut are only 50 km apart.

**Table 2. Lenderut Faunal Assemblage.**

Preliminary species list based on dental sample and horn cores.

Order Primates

*Theropithecus oswaldi*

Order Carnivora

Order Artiodactyla

Family Bovidae

Tribe Alcelaphini  
Hippotragini  
Antilopini  
Tragelaphini

Family Suidae

cf. *Phacochoerus aethiopicus*

Preliminary species list based on dental sample and carpals and tarsals.

Order Perissodactyla

*Equus cf. grevy*  
*Equus cf. burchelli*

fossils is the extinct gelada baboon, *Theropithecus oswaldi*. The site has not yet been radiometrically dated but it is likely to date from the early to middle part of the Middle Pleistocene.

**Acknowledgements**

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**Dating**

Dating of the Lenderut sequence is uncertain as radiometric determinations and faunal comparisons are not yet completed. Based, however, on the dating of the Oloronga Beds (Baker 1958, 1963) and Lainyamok (Potts et al. 1988), a provisional age estimate of early to the middle part of the Middle Pleistocene is likely.

**Conclusion**

Lenderut is a newly discovered Acheulian site located southeast of Lake Magadi in the southern Kenya rift. The site's geology is complex and is represented by a number of sedimentary environments including lacustrine, channel and overbank examples. Artifacts are abundant and are derived from at least two distinct horizons. Bifaces are present on the surface and in sedimentary context. Faunal remains are abundant and well preserved. Among the

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prophetic dream, undertook to regroup and sedentarise his ethnic group, until then eminently nomadic. After much fighting, he set up Massina's Fulani Empire, "the Dina," which followed in all points the rules that governed life in Medina's Muslim community at the time of The Prophet. In 1819-20 Sekou Hamadou founded Hamdallahi. From his capital, he organised the Empire and conquered the whole of Massina, from Djenne to Timbuctoo. The story of Hamdallahi reached its end on May 16, 1862, with its seizure by the "Toucouleur" conqueror El Hadj Omar, who held it for two more years before being obliged to abandon it forever.

In conducting this excavation among the ruins of Hamdallahi, the aim was to collect nineteenth-century Fulani ceramics suitable for use as a reference for the analysis of present-day traditional ceramics. Beyond this limited aim, it seemed useful to show that excavations on this key site of African history were likely to furnish knowledge of great value, insofar as archaeological facts could be confronted with those of history and tradition, as well as with the results of our ethnoarchaeological investigations.

Hamdallahi is located 21 km southeast of Mopti, at 14°19' N and 4°06' W. The site occurs on the western border of the Bandiagara plateau and is limited on its northern and western side by the marshes of the Inland Niger Delta depression.

The city is entirely fortified (Fig. 1, 1). The city walls are constructed on sun-dried bricks, delimiting a pentagonal surface, which can be estimated at 2 km<sup>2</sup> 44 ha 47 a. In the heart of the city, on a slight rise, the grand Mosque and Sekou Mamadou's palace are built side by side. These buildings are also in sun-dried bricks, except for the enclosing walls of the palace, which are stone. At present, one can still distinguish the plan of the main streets as well as the habitation's walls. The latter can still be discerned thanks to small, linear heaps of laterite gravel. These heaps probably represent a residual deposit after the sun-dried bricks have been "melted" by seasonal rains.

For the February/March excavation we chose a compound situated in the northern ward of the town (Fig. 1, 2). Totally

## ■ MALI

### **Preliminary Report on Excavations at Hamdallahi, Inland Niger Delta of Mali (February/March and October/November 1989)**

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This paper describes excavations undertaken in February/March and October/November 1989 on two compounds in the abandoned city of Hamdallahi (Gallay et al. in press). These works were part of a project devoted to the study of traditional ceramics from the Inland Niger Delta, led by the "Swiss Ethnoarchaeological Mission in West Africa" (M.E.S.A.O.), combining on this occasion the Department of Anthropology of the University of Geneva with the Institute of Human Sciences and the National Museum of Banako.

Hamdallahi had never before been the object of archaeological research. Chief town of the Fulani Empire of Massina, this city symbolizes the Islamic revival, an outstanding event in the evolution of the nineteenth-century Sahelian and Sudanese societies.

At the turn of the nineteenth century, Sekou Hamadou, a simple Fulani shepherd, after receiving a revelation through a



surrounded by a sun-dried brick outer wall, except for an entrance facing east, the compound has a roughly pentagonal shape, with an area of 275 m<sup>2</sup> and a large courtyard in its center. Two buildings are situated inside, backed onto the outer wall.

The southern building, because of its large dimensions (39.5 m<sup>2</sup>), its rooms separated into chamber and antechamber, the particular attention paid to its finish (cementlike mud floor, probably wall coating), its water jar supports and small hearths, can be considered to be the main residence. This abode had been carefully emptied of all remains, except for a set of intact, carefully arranged vessels abandoned upside down near the entrance.

The northern building's function is not easy to determine. However, considering its size (16.9 m<sup>2</sup>, smaller than the southern building), the lack of floor covering and the absence of hearths (excluding a kitchen fireplace), it is probably an outhouse or a subsidiary living room.

In the courtyard, facing the entrance, there is apparently a kitchen area, as indicated by a thick ash deposit. On the basis of numerous observations of inhabited compounds in this area, it would seem that the space between the southern building and the western outer wall was used for latrines and washing.

Concerning architectural techniques, the foundations are shallow and walls are made out of rectangular sun-dried bricks, the regular dimensions of which (30 x 20 x 9 cm) could be explained by the utilisation of a mould. They are placed side by side, two by two, their long side following the wall direction, staggered layer by layer, and cemented with clay. The introduction of this type of brick in the Hamdallahi area can be confirmed as being as early as the first half of the nineteenth century, before the arrival of the Europeans. In the eastern part of the southern building, an inner wall has been constructed in banco. Lining the outerbrick wall, this banco wall probably had an insulating function.

Another interesting datum is the use of a cement to cover the floor. It is composed of clay to which was added a sifted load. This

mixture was then poured into the space left by overdigging of the room. After being cemented, the floor surface was compacted and carefully smoothed.

The lack of real foundation trenches, the thinness of the walls (40 cm) and the arrangement of the bricks (parallel to the wall axis) makes it unlikely there was any construction above the ground floor, despite the presence of two central pillars with stone seatings probably used to support a framework of beams. Observations of present-day two-story buildings at Djenne confirm these inferences.

On the other hand, as on all existing buildings, rainwater guttering indicates the presence of a terraced roof and, more generally, a street. Precautions were also taken to combat erosion by the rain: the walls were battered at the base, and a stone positioned to break the fall of the water from the gutter.

The objective of the second excavation in October/November was to dig a compound located in the palace quarter, at some fifty meters from the palace itself. For certain reasons, only the western half could be excavated, and a continuation of the work is scheduled to be carried out in 1991.

The investigations concerned a large quadrilateral compound delimited by an outer wall, with alternating sections of bricks and banco. Access from the north to the large inner courtyard is through a quadrangular vestibule with a staggered entrance. Two buildings were erected in this courtyard, backed on to the outer wall: a main room on the south and an outhouse on the west side. There is a well in the northeastern corner of the compound. The different walls were built with either one or two thicknesses of bricks, or with banco, in this last case sometimes laid on a stone foundation. As in the first compound, a smoothed cement covered the chamber's floor, while the ground of the vestibule had been cut into the lateritic substratum.

In order to equalize and assure the levelling of the courtyard floor, earth had been brought in. Abundant archaeological material was collected in the courtyard and on the chamber floor, but the pottery was

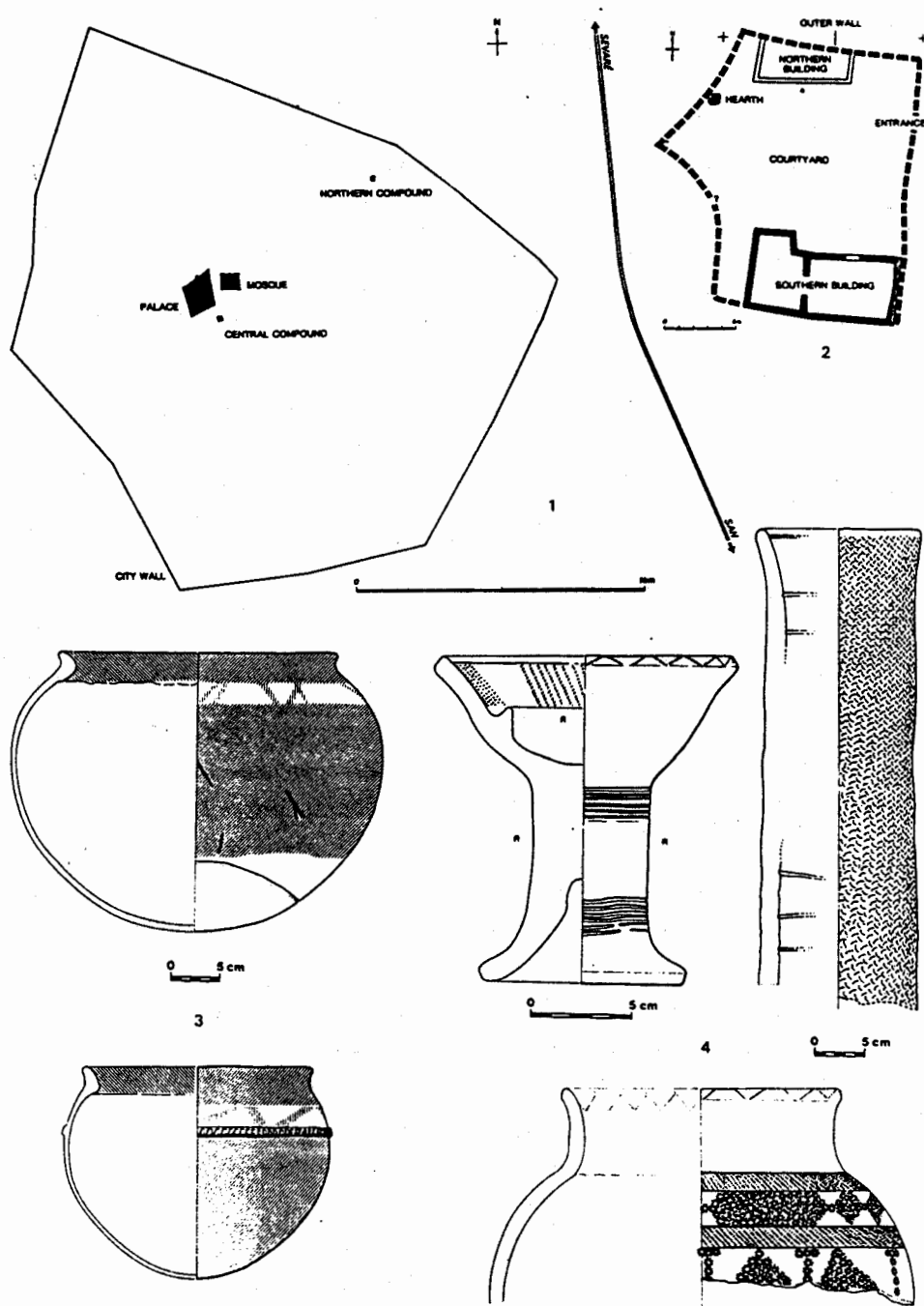


Fig. 1. Hamdallahi: 1. City plan; 2. Northern compound; 3. Group I ceramics; 4. Group II ceramics.

often broken and dispersed. A skeleton was discovered lying on the courtyard floor, against the main habitation wall. Its stratigraphic location and anatomical position (in dorsal extended position oriented to the southeast) allow us to determine that it had not been buried, since all these observations contrast with Muslim burial rites. However the state of abandonment, apparently rather violent, differs totally from the first compound, perhaps because of the proximity of the palace and the long siege that it suffered.

Concerning the archaeological material collected during these two campaigns, four distinct groups of ceramic can be distinguished. Thanks to the observations made during the ethnoarchaeological mission, it is now possible to furnish some interpretations.

The first group (Fig. 1, 3) has the following characteristics: all vessels exhibit a hemispheric form; the main functions were apparently storing water, cooking cereals, and steaming couscous. Some characteristics shed light on the mode of fabrication. The temper's fine and regular granulometry shows a careful preliminary sifting but its unequal diffusion in the ceramic itself reveals inadequate homogenization by kneading the clay. The joints between the necks and the bodies are a proof of a two-step fabrication. The shiny appearance of some vessels reveals a third phase of finishing with burnishing after drying and dampening again. The decoration consists of red-pointed motifs, which are sometimes completed by impressed flanges. Marks in relief indicate that the potters used distinctive signs to identify their own products.

Ethnoarchaeological comparisons allow this first group to be identified with the present-day Fulani traditional production. It seems that there has been very little evolution, except that now strainers and impressed flange decorations are rarely found.

The second group (Fig. 1, 4) of ceramics is distinguished by a diversity of forms and functions: water jars, oil lamps, rainwater guttering, ablution vessels. From a technical point of view, the sifting was less careful,

since the temper shows a rather rough and irregular granulometry. However, its regular distribution reveals a careful kneading and its scarcity, a parsimonious use. The thickness of the potsherds and the compactness of the clay could be the result of a coil assembly, as verified on one specimen. With respect to decoration, the second group of vessels is different from the first: it shows imprints, either with a comb, a stamp, or with twisted or knotted string roulette. These decorations are generally associated with incised lines, while external surfaces are mostly uniformly coated with red paint.

Compared to present-day ceramics, this last group is recognizable as Somono, or Bambara production. Indeed, vessel forms and decorations are similar to those still in use today and only the lamps seem to be no longer fabricated.

The third group is poorly represented. Only some sherds of large jars, with vertical bodies and alternately left- and right-plaited fibre roulette surface decorations could be found. Such vessels are at present characteristic of the Bambara production around San, and they can be used either to store or to cook foodstuffs.

Some sherds exhibit shapes that are unknown in contemporary pottery. They could perhaps be more ancient forms and are provisionally assigned to a fourth group.

In concluding this report it must be said that most of the ceramic material abandoned by the inhabitants of the two compounds belongs to the first group, which allow us to identify the compounds as Fulani. Analysis of the present-day situation suggests that the Somono or Bambara vessels were used only to compensate for the lack of comparable items in the Fulani repertory. For example, the Fulani technology does not allow the fabrication of such complex forms as oil lamps or rainwater gutterings. Apparently these lacunae could already be felt in Hamdallahi.

The compounds' ethnic attribution is confirmed by the fact that during ethnoarchaeological inquiries, the organisation of many Fulani compounds was observed. One of their distinctive

characteristics is the small number of permanent buildings they contain.

We hope in the future to extend our research to other wards of the town to discern its principal characteristics and to expand our knowledge of the Fulani Empire of Massina.

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■ **NIGERIA**

**Contemporary Material Culture in Niger State: An Ethnoarchaeological Study**

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The Niger State Archaeological Research Project, conceived in 1988, was designed as an ethnoarchaeological investigation of the whole of Niger State, and is intended to serve as the beginning of a study of the culture history of the various traditional rural societies in Niger State (Aiyedun 1989a). The project, sponsored by Niger State government in collaboration with the state's Council for Arts and Culture, could not commence until 1989 because of logistical problems. Members of the team include the present writer as the principal investigator, with the assistance of one cultural officer in each Local Government Area, as well as a photographer, Mr. Peter

Inmin, from the Centre for Nigerian Cultural Studies.

Apart from an initial period of four weeks, during which library and archival materials were collected, the research team spent over eight weeks on the project in 1989 (May 17–July 27), during which oral interviews were conducted in about fifty towns and villages in eight of the state's ten Local Government Areas. Information obtained from the eight Local Government Areas, which include Lavum, Gbako, Mariga, Magama, Rafi, Shirro, Agaie and Suleja, covers topics such as subsistence adaptation and economy, i.e., farming, stock raising, hunting and fishing; the manufacture, use and discard of objects made from materials such as wood (carvings), clay (pottery), stone (beads and other domestic utensils made of stone), glass (beads), and metal (smelting and smithing); settlement architecture; active nutritional and medicinal ingredients obtained from plant resources; and the people's funerary practises. Detailed information on each area of study, including its location, size, population, climate, vegetation, fauna, geology, and geomorphology is provided elsewhere (Aiyedun 1989c).

This ethnoarchaeological research offered an opportunity for studying pottery and smelting/smithing among diverse rural societies such as the Nupe, Gwari, Koro, Kambari, Dukkawa, Hausa and Ura. Data concerning pottery includes various aspects of its preparation and use in rural societies. For example, questions were asked concerning the procurement of raw material, pot manufacture, decoration and firing; pot types, names and functions; life expectancy and discard; relationships between family size and sizes of the pots, especially those used for cooking; and the linguistic affinities of the people from whom pots were imported. Special pots, used for smelting local ore, and the large pots, used for brewing beer, cooking shea butter, ground nut, and palm oil and for burial purposes in a number of places, were studied. An effort was also made to collect replicas of tools used for pot decoration and to determine local names of such implements.

The study also enabled us to gain some insight into smelting, a craft which has virtually disappeared from Niger State, and smithing, which is still practised among the Nupe, Kambari, and Hausa. Information on smelting deals with the procurement of local ore and wood for charcoal, construction of furnace, forging methods, marketing and distribution of the wrought iron, fashioning of the wrought iron into finished products, life expectancy of the products, and tools used in the smelting process. Our study of smithing concentrated on various types of materials, including iron and wrought iron (*yan tama*); a comparative study of the strength and durability (life expectancy) of different types of raw material and how these relate to choice of material; the procurement of wood, out of which wooden handles are made; and the marketing and distribution of finished products. Other information obtained on smithing relates to the construction of workshops, furnaces, tuyères, and bellows and other tools, as well as data on the numbers of smiths in a workshop.

In the area of subsistence practises, the present research has greatly increased our knowledge of fishing, hunting, and farming in Niger State, and has shed light on the role of local methods and techniques in subsistence adaptation, confirming the existence of an old, intertwined relationship between human culture and the environment. Among various communities in Lavum, Gbako, Agaie, Rafi, and Magama Local Government Areas of Niger State, fishing stands out as a major subsistence adaptation. Information obtained on fishing include the enculturation process whereby methods and techniques are transmitted from parents to children; tools and their mode of production, as well as techniques used for fishing; number of such tools owned by a fisherman and the number of people involved in the use of each form of tool/technique; species of fish caught, preference among species, and local names of species; treatment and processing of fish prior to marketing, as well as sharing and distribution. The rivers Niger and Kaduna are also a source of transportation heavily used in the olden days, but of diminished

importance today. The use of such transportation led not only to groups of specialists involved in the construction of the canoes and paddles in different parts of the state, but also to the exploitation of local raw material in the form of wood, such as *wuchi*, *denchi*, *iroko bachi*, and *minjinichi*.

Hunting is a major subsistence adaptation among the Nupe, Gwari, Koro, Kambari, and Bassa in Niger State. The research on hunting provided data on aspects such as the status and role of the hunters; techniques and methods of hunting, including associated rituals; equipments and tools used, number and sizes of such tools owned by individuals and number of people involved; species of animals, birds, and snakes hunted and their sizes; butchering techniques and sharing; distribution and marketing; as well as the use, disposal, and discard of by-products of the meat animals (Aiyedun, 1989b). This research forms the beginning of a database concerning the domestic utilization of hides and skins. It also marks the beginning of multi-disciplinary research between archaeologists and specialists in linguistics, biological sciences, leather work industry, food sciences, pharmacology, and pharmaceutical chemistry.

Farming forms the last major subsistence adaptation of the people of Niger State to their environment. In this connection, it is interesting to note that, probably because of the differing types of agricultural systems embraced by different communities, the most important tool used in farming, the hoe, has evolved into a complex typology with several variations in form, size, and shape for various farming practises and crop types. Thus the hoe used by the Kambari of Rijau in Magama Local Government for upland farming differs from the one used by the Nupe at Edozhigi of Gbako Local Government for marshland farming. While the hoe used for upland farming at Agaie and Lapai, who are Nupe and are next door neighbors, differ, those of Rijau and Salka, who are both Kambari in Magama Local Government, but live far away from each other, also differ even though they both practise upland farming. The Gwari hoe, used for upland yam

cultivation, differs from the Nupe hoe used for the same farming system and crop. This probably shows the technical ingenuity of the people of Niger State, who were willing to adapt and introduce more advantageous techniques suitable to local environments (Nadel 1969: 205).

Data related to farming include not only agricultural systems, tools, and crops, but also the role of men and women in farming, labour input, modes of harvesting and processing, storage, crop yield and uses of the crops, as well as their marketing and distribution.

The present research also covered various aspects of settlement architecture. Information obtained on settlement architecture included the types and numbers of houses built by different ethnic groups and the materials used for their construction; organisation of the compound on the basis of sex, age, and activity patterning; permanent and nonpermanent structures and the ownership of such features as well as their life expectancy and abandonment. Information was also obtained concerning the roles of women as custodians of domestic equipment, some made by men, others by women, but all used by the women in the home. In addition, the women's role in construction was found to include the preparation of flooring and interior and exterior decoration of walls of living rooms and yards of compounds.

Detailed analysis of all the data collected from the field has commenced, from which a monograph is to be prepared for publication.

**Acknowledgements**

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**Utilization of Meat Animal By-Products in Niger State: An Ethnoarchaeological Approach**

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The utilization of hides and skins falls into the study of what archaeologists term the use, disposal, and discard of by-products of meat animals and what researchers in the leather industry and biological and animal scientists term the processing and utilization

of meat animal inedible by-products (Aganga and Belino 1983: 9). Such studies contribute in no small measure to our knowledge of subsistence adaptation and economy, providing information relating to aspects such as animal husbandry and hunting. Ethnographic data obtained from the use, disposal, and discard of hides and skins throws light on material culture, since such materials are generally too perishable to have survived in the archaeological record.

### Area of Study

The research on which this paper is based forms part of an ongoing ethnoarchaeological research project in Niger State (see preceding article). Niger State is located in northern Nigeria, where livestock and animal husbandry constitutes a major subsistence focus of the people. Interviews conducted in about fifty villages and towns in the state reveal that the animal proteins obtained from livestock are supplemented largely with wild animal products obtained in large quantities during the dry season in most places but throughout the year in a few places. Most of the villages and towns visited keep livestock, especially chickens, guinea fowl, ducks, sheep, goats, cats, and dogs. Several keep cattle, horses, and donkeys, while a few keep mules, rabbits, and the Gambian oribi. The largest concentrations of cattle, sheep, and goats were observed at Magama and Mariga Local Government Areas and along Kwara/Niger Border around Jebba, while the smallest concentrations were observed in the eastern part of the state (Agaie, Changchaga, Shiroro, Lapai, and Suleja). A census of livestock for Bida Division between 1933 and 1936 is listed in Nadel (1969: 204).

Hunting is a major subsistence adaptation among the Nupe, Gwari, Koro, Kambari, and Bassa of Niger State. Hunting was studied by the present writer in detail in places like Kutigi in Lavum Local Government; Kambari in Gbako Local Government; Kontagora, Miriga, Sahun rami, Ibi-Zurgama, and Kabogi in Mariga Local Government; Yakila in Rafi Local Government Area; Masamagu, Rijau, and

Auna in Magama Local Government; Essangi in Agaie Local Government; Kuta in Shiroro Local Government; and Shako in Suleja Local Government Area. Hunters in some of these places are full-time specialists, while in other places hunting is done on a part-time basis.

According to Aganga and Belino (1983: 10), hides and skins are technically divided into hides, kips, and skins, based on the weight of the clean hide. Hides come from large and mature animals, kips are skins of immature animals, while skins are from small animals such as sheep and goats. Table 1 shows major usages of the inedible by-products of meat animals in the leather industry (Aganga and Belino 1983: 10). The skins of cattle, sheep, and goats are also used for a wide variety of purposes among traditional rural societies in Niger State, as are other by-products of meat animals, including fat, bone, and excreta.

By-products of cattle used among traditional rural societies in Niger State include the hides (skins), fat, bone, and excreta. The skin is eaten as *ganda*, used as shoe material (*takalmi*), as cover for farming drums (*gangu numa*), and for making large bag containers (*salka*) for storing farm crops. The fat (*mai shanu*) is used as oil for cooking and for curing rheumatism by rubbing on the affected part and for colds by rubbing on the chest. The bone is pounded into powder to make chalk (*ale*) used in spinning cotton thread and also as material for decorating the interior walls of living rooms. The excreta from the intestine are rubbed on children suffering from swollen stomach. The excreta are also mixed with grasses (*rauno*) and mud (*kasa*) used as building material or added to water and scrubbed on the floor of living rooms for decoration and beautification. Finally, excreta form a major source of manure for farming. The hides of mules are used as containers (*salka*) for carrying loads.

By-products of sheep and goat used include the skins and the excreta. The skin is eaten as *ganda*, used as sitting mats, as praying mats in the case of sheep, as bellows (*zuga*) for tuyères, as cover for drums, as loin-cloth (*warki*) for farming, as criss-cross for shoes (*suapa*), as hand purses (*burugami*),

and as cover for charms to be worn on the waist (*guru*), neck (*rataya*), or arm (*kanbu*), as well as for sword sheaths in the case of sheep skin. The skin also serves as a platform for spinning thread and by potters for shaping the necks and rims of pottery. The excreta serve as a source of manure.

**Table 1. Inedible By-Products Obtained from Meat Animals and Their Major Usages.**

Raw By-Products	Processed By-Products	Principal Uses
Hide (cattle and calves)	Leather	Numerous leather goods
	Glue	Paper boxes, sandpaper, plywood
	Hair	Felts, upholstery
Pork skins	Leather	Leather goods
Pelts (sheep and goat skins)	Wool	Textiles
	Skin	Leather goods.
	Lanolin	Ointments
Fats (cattle calves, lamb, and sheep)	Inedible tallow	Industrial oils, lubricants, soap glycerin
Bones, horns, hooves	Dry bone	Glue, hardening steel, refining sugar
	Bone meal	Animal feed, fertilizer
Blood	Blood albumen	Leather finishing, textile sizing
	Blood meal	Animal feed
Glands	Pharmaceuticals	Medicines
	Enzyme preparations	Industrial uses

**Conclusion**

It is apparent that the by-products of meat animals, both wild and domestic, are extensively used among traditional rural societies in Niger State. Such materials play a role in diverse areas such as entertainment (drum covers), the production of metal implements, the manufacture of pottery, the spinning of cotton thread, and the manufacture of the bow.

**Acknowledgements**

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## ■ SUDAN

### The Firing Index of Neolithic Pottery from the Central Nile

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This brief note presents results of X-ray diffraction and thermogravimetric analyses carried out on a series of pottery samples from the central Nile (Khabir 1981: 88–89). The selected samples have been collected from four sites: Sarurab-II (15° 56'N 32° 32' E), Shaheinab (16° 03'N 32° 33' E), and Nofalab (15° 53'N 32° 32' E), all in Khartoum Province, and Shabona in the White Nile region (14° 14'N 32° 18' E) about 110 km south of Khartoum. These sites represent sequent stages in ceramic history during the Neolithic period in Sudan. The radiocarbon dates obtained for these sites indicate that they are arranged in sequential order beginning with Sarurab-II (8th millennium B.C.) (Khabir 1987: 377–80) followed by Shabona (sixth millennium B.C.) (Clark 1984: 3), Shaheinab (fifth millennium B.C.) (Arkell 1953: 107; Haaland 1984: 40), and then Nofalab (Late fifth millennium B.C.) (El-Anwar 1981: 42).

The final appearance and serviceability of clay vessels depend on a number of different conditions during firing. This includes the firing temperature, duration of firing, and the atmospheric conditions prevailing during firing. They can be combined into one set of factors termed the "firing index" (Nordstrom 1972: 43).

#### Firing Temperature

The firing temperature of the present samples was determined by X-ray diffraction, standard Geothite Norm

analyses, and thermogravimetric analyses at Wageningen University, Netherlands.

#### X-ray Diffraction

X-Ray diffraction photographs have been made with Co K radiation and Enraf Nomius Guinier Camera FR 552 with a Johansson Monochromator.

The X-ray analysis shows that quartz is a chief mineral component of the samples analyzed and it was detected in appreciable amounts. Relics of mica-type minerals are not present in such quantities that they appear in the analysis. This points to firing temperatures over 550°C (vanishing of kaolinite) and over 600°C (vanishing of poorly crystallized illite and clay-size muscovite). These clay minerals undergo structural changes at different firing temperatures and some of them become amorphous at temperatures exceeding 800°C.

The X-ray diffraction photographs of the potsherds after firing show the development of hematite. The sherds do not contain detectable amounts of well crystallized hematite before firing in the laboratory.

#### Standard Geothite Norm Analyses

The standard Geothite Norm technique was used. It is a technique that provides us with a set of hypothetical mineral assemblages petrologically comparable to those which have been destroyed by high-firing temperature (Plas and Schuylenborgh 1970: 357–85) and hence the thermal behaviour of the mineral can be determined. The results of this technique show that the presence of these normminerals (Table 1) after heating to a temperature in the magnitude of 900°C, under controlled condition, is indicative that temperature ranges of the eight samples are in the magnitude of 800–900°C.

#### Thermogravimetric analyses

Thermogravimetric analyses of the eight potsherds have been made in air and in nitrogen to study the amount of organic material still present in the sherds and to determine the amount of pottery loss in

weight during different temperature ranges. The occurrence of loss in weight during temperatures above 500°C is indicative that hydrated clay minerals still remain in the pottery and hence the original firing temperature could be determined (Tite 1972: 297). The results of this technique further show that the samples are fired up to temperatures of approximately 800–900°C. The firing type and the firing temperature are comparable in the eight samples.

### Firing time

X-ray diffraction and thermogravimetric analyses of the pottery samples show that firing time may have been rather short as witnessed by the development of hematite after refiring the sherds in an electric oven for approximately one hour (Table 1). However, the length of firing depends on the type of fuel used. Though ancient potters have no way of comparing the heat value of different fuels, they can realize whether or not a particular fuel has a clean or sooty flame, burns quietly or snaps, falls to pieces or holds its form and keeps heat after the flame has burnt out (Shepard 1976: 77). It is reasonable to suggest that the short firing time of the samples resulted from the use of fast burning fuel such as chaff or straw. On the other hand, the relatively higher temperature attained makes it highly unlikely that it was obtained during a short period of time without continuous refueling or burning in a simple pit that could allow more control of heat.

### Firing atmosphere

The complete absence of kilns at the Neolithic sites in Sudan raises the possibility that the pottery of this period was either fired directly on the ground or in simple pits. However, in open firing without kiln construction the atmosphere will be continuously changing during different stages of combustion. Even if simple pits are used which permit more control of atmosphere than is possible with open firing, fluctuations in atmospheric conditions occur. The unevenly oxidized surfaces of Sarurab-II, Shaheinab, Nofalab, and Shabona ceramics, which are

considerable in number, reflect fluctuations in firing atmosphere. The pottery of these sites is partially oxidized. This can be deduced from the black and dark brown cores of the pottery fabrics and the thin oxidation zones at the wall surfaces. The duration of firing, which is rather short, and the changing atmospheric conditions of these wares do not permit excess of oxygen over that required to burn the fuel and to bring these wares to the highest state of oxidation.

### Conclusion

In conclusion the following observations can be made:

- ◆ The preceding results indicate that the crystalline structure of these clay minerals has undergone marked changes due to heating. Heating and its effects on the crystalline structure is one of the main problems in the analysis of pottery mineralogy.
- ◆ The X-ray diffraction, standard Geothite Norm, and thermogravimetric analyses show that the pottery of the sites investigated might have been fired at temperatures exceeding 800°C.
- ◆ The length of firing seems to be rather short. If that is the case, then the temperature could not have been held above 800°C without frequent replenishment of fuel or partial control of firing temperature and atmosphere.
- ◆ The short firing time reported seems to suggest the use of fast-burning fuel such as chaff or grass.
- ◆ The atmospheric conditions are neither oxidizing nor reducing. The unevenly oxidized surfaces of the pottery examined are considerable in number and pointing to fluctuation in firing atmosphere.
- ◆ The firing index of the samples is of relatively high-grade (800–900°C) despite the fact that the length of firing is inadequate to bring the clay impurities (particularly iron oxide) to the highest state of oxidation. This relatively high firing index is a characteristic of well-fired wares.

**Table 1. Ceramic Normmineral Composition at 900°C.**

	Shaheinab		Nofalab		Sarurab		Shabona	
	1	2	3	4	5	6	7	8
Quartz	63.2	64.5	62.0	65.1	40.3	39.6	63.7	59.4
K - Feldspar	8.5	8.0	9.7	7.6	30.0	34.0	7.5	8.0
Plagioclase	—	—	1.8	1.4	0.5	—	—	—
Diopside	5.6	5.2	4.5	5.2	8.0	4.4	4.8	6.8
Gehlenite	2.0	3.0	3.1	3.8	—	2.3	3.3	3.0
AL <sub>2</sub> O <sub>3</sub>	13.7	13.1	12.6	10.6	15.2	15.3	13.7	14.8
Hematite	5.8	5.2	6.1	4.4	4.8	3.3	5.9	6.6
Rest	1.2	1.0	1.2	1.9	1.2	1.1	1.1	1.4
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

◆ The homogeneity of firing index of the ceramic groups tested seems to suggest the use of similar firing techniques.

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### **Atbara Research Project: The Field Seasons of 1985, 1987, 1989, and 1990**

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We started archaeological fieldwork in the Atbara region in 1984, when we concentrated on a survey of the area. The last four seasons were spent on excavating three Mesolithic settlement mounds, which we located during our 1984 survey. We had expected to find later Neolithic sites that could give us a better understanding of the transition from food gathering to food production in the area. Unfortunately, we did not find any well-preserved Neolithic sites. The remains that we located were all badly deflated sites, with no cultural deposits. We have thus concentrated on excavating three Mesolithic sites: Abu Darbein, El Damer, and Aneibis (Fig. 1, 2).

The purpose of these excavations was to collect material that could give further insight into the economy of people in a pre-agricultural adaptation. The material indicated that the occupants of these three sites relied heavily on exploitation of aquatic resources. The sites are all located on old riverbanks along the Nile or Atbara.

#### **Abu Darbein**

The Abu Darbein site is located on a gravel ridge that is part of the east bank of the Atbara river. The western edge of the gravel terrace is characterized by its abrupt cut and almost vertical profile (ca. 10 m above the present flow of the river). This seems to be due to a heavy erosive action by the river during its period of high water level.

The excavated material is still undergoing analysis but the following information is available. Six <sup>14</sup>C dates have been obtained, ranging from 8,600 to 7,700 b.p. However, four dates clustering around 8,640 ± 120 to 8,330 ± 210 b.p. indicate that this was the main period of occupation. The site is ca. 1200 m<sup>2</sup> in extent, of which 62.5 m<sup>2</sup> have been excavated so far. The site is quite eroded, and cultural material, including a few polished axes, has been washed down to the surrounding plain. The presence of these indicates that the eroded later part of the settlement was probably inhabited during the Neolithic period. Although the site is deflated, the cultural debris is still in some parts as deep as 60 cm. There was no stratigraphy and the material seemed homogeneous from top to bottom. However, a problem with these settlement mounds is their secondary use as burial grounds. Thus many graves from the Meroitic and Later Moslem period were found.

The pottery recovered was of the Mesolithic Early Khartoum type, decorated with wavy-line motifs and impressed dotted lines, vees, and zig-zags made by using the barbs of catfish. The wavy-line sherds were not numerous. The most common sherds were those decorated with quite large and roughly executed dots. None of the sherds were burnished, and the temper used was mostly mica. The pots were of the open globular form with most of the decoration toward the upper part of the body (Fig. 3). However, most of the rims were not decorated.

Bone artefacts consisted of harpoons, needles, pendants, and a wide variety of notched and grooved tools; these last artefacts were roughly finished (Fig. 4).

Among the lithic artefacts the most common tools were backed pointed blades and lunates; also quite frequent were borers and groovers, as well as different types of irregularly retouched scrapers. The raw material was predominantly chert from Hudi a Wadi a few kilometers away. There were a few small grinders and hammerstones.

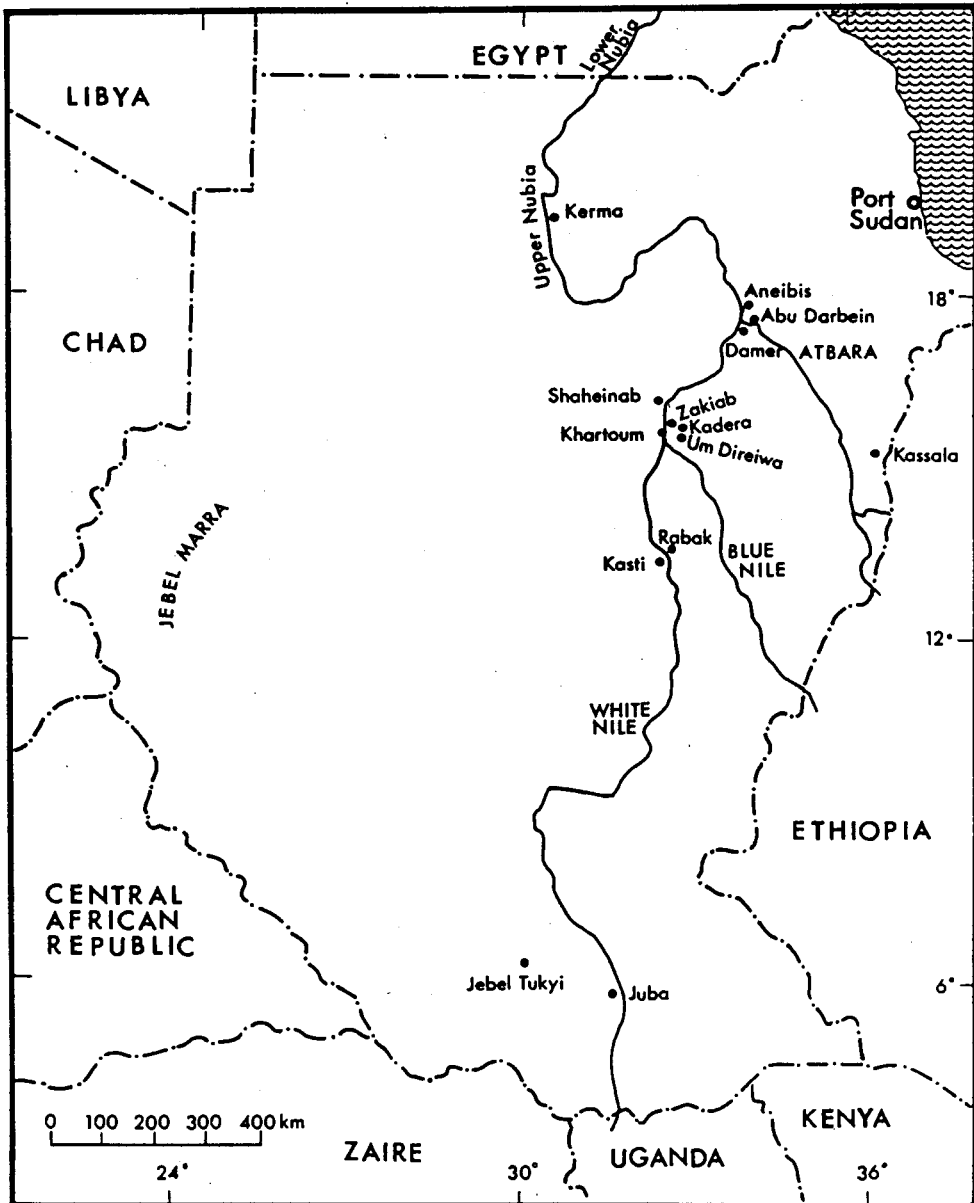


Fig. 1.

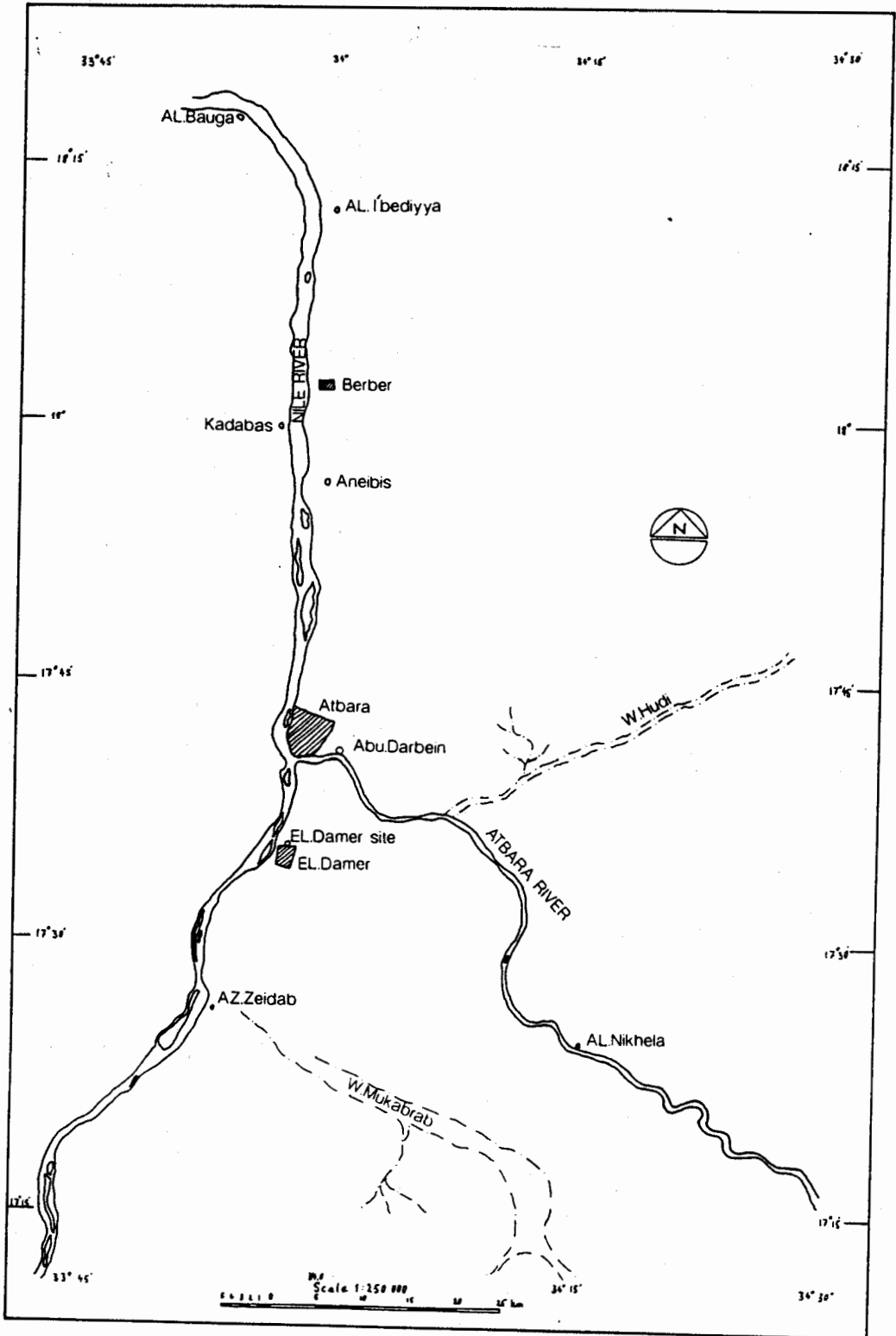


Fig. 2.

**El Damer**

The site is situated on an old gravel ridge ca. 700 m from the present flow of the Nile, at a junction where a seasonal watercourse (wadi) flows into the Nile. During the time of habitation the Nile would have been higher and most likely reached the base of the site during the flood period. The flood probably played a strategic role in the exploitation of aquatic resources (from the river and the swampy backwaters). The extent of the site is ca. 6,000 m<sup>2</sup> with three main areas of settlement intersected by erosional channels flowing towards the Wadi. So far 74 m<sup>2</sup> have been excavated. Eleven C14 dates have been obtained, ranging from 8,390 ± 50 to 7,260 ± 110 b.p. Nine dates cluster around 7,970 ± 90 to 7,580 ± 110 b.p. This seems to be the main period of occupation of the site. An interesting feature on this settlement mound was the presence of graves; so far eight burials have been recovered, all located in the southern part of the mound. We found the body always buried in a tightly contracted position, with hands kept in front of the face. No specific attention was paid to the side on which the body was buried or the orientation. The body was buried in the settlement debris with no marking of the grave, thus making it difficult to detect special grave goods. However, nicely cut and abraded shells were found in association with four burials; we expect these were probably grave goods.

Interestingly, in one of the graves the orientation of the body is east-west with the head to the west and facing north. The head of a gazelle was buried at a distance of 60 cm from the feet of the skeleton. The gazelle was also facing north. It seemed quite clearly to have been part of the grave ritual.

Most of the skeletons are fragmented and badly preserved. In two cases it is not possible to specify the position and orientation of the body.

We have seven C14 dates from the graves, ranging from 8,010 ± 120 to 7,780 ± 110 b.p., and thus associated with the main occupation of the mound.

The cultural deposit was richer than what we found at Abu Darbein and a

considerable number of potsherds were found. However, not a single complete pot was recovered. The pottery is similar to the Abu Darbein type but the decoration is more elaborate, especially when it comes to the rims, of which most show decoration different from the types that occur on the body (Fig. 5). Quite a few of the sherds were abraded and reused. These sherds have a smooth circular perimeter often with a hole; these might have been used as fish line sinkers (Fig. 6). The lithic material consists mostly of backed tools such as lunates or pointed blades. Grinding tools occur, but are not frequent. They seem to occur in different frequency at different parts of the site. The bone tools consist of harpoons, needles, and different types of pendants.

**Aneibis**

The site is located on a gravel ridge elevated ca. 2.5 m above the floodplain. The ridge seems to have been part of an old bank of the Nile. The site is large, ca. 7,000 m<sup>2</sup> in extent and four concentrations of archaeological material are visible on the surface. Test pits have been dug in all four areas, altogether 150 m<sup>2</sup>. We have so far obtained fifteen C14 dates ranging from 8,230 ± 120 to 6,820 ± 170 b.p.

Generally the cultural material recovered at the Aneibis site is similar to the material described from the El Damer site, especially the pottery; the same types of decoration occur, and the rims are carefully decorated. A number of potsherds are also found to show secondary use indicated by grooves and abrasion. Some of these have the shape of a disk often with a perforated hole in the center as we described for the El Damer site. Quite a few artefacts of bone and ostrich eggshell are decorated (Fig. 7).

We have found one grave on the western part of the site. The burial is contracted and the skeleton is quite fragmented. The orientation seems to be north-south with the head to the south.

I initially thought that the four settlement concentrations might have represented chronologically different occupation phases. The eight dates we have from the highest part of the site, area four, are the

most consistent dates, ranging from 8,090 ± 60 to 7,470 ± 110 b.p. The dates from the lower part of the settlement seemed mixed, with nine dates ranging from 8,230 ± 120 to 6,820 ± 170 b.p. The main part of the occupation at Aneibis seems contemporary with the El Damer site. The similarities, especially in terms of pottery, confirm this.

**Summary**

Joris Peters has analysed the osteological material (Peters manuscript). He states that remains of fish and mammals dominate the samples. The fish bones are derived from medium-sized to very large individuals. On all three sites wild bovinds of different sizes were frequently present. Bones from birds seem rare. According to Peters the archaeofaunas do not yield evidence for hunting outside the Nile and the Atbara river valleys.

Seeds of *Celtis integrifolia* and *Ziziphus* were recovered at the Abu Darbein and El Damer sites, but we found no seeds at the Aneibis site. We thus do not know the importance of plant resources here, although the higher frequency of grinders on this site indicates that plant food was used.

The Mesolithic sites from the Atbara region are culturally similar to the "Early Khartoum" tradition (Arkell 1949, Caneva 1983). An earlier statement regarding the absence of wavy-line pottery at the Aneibis site (Haaland 1987) now stands corrected as a few sherds with this motif have since been recovered from the site.

The large settlement mounds and the absence of sites away from the rivers indicate that the riverine sites were permanently occupied. This is further supported by the analysis of the osteological material by Joris Peters (manuscript). The inhabitants exploited a broad spectrum of resources; but they relied quite heavily on aquatic resources.

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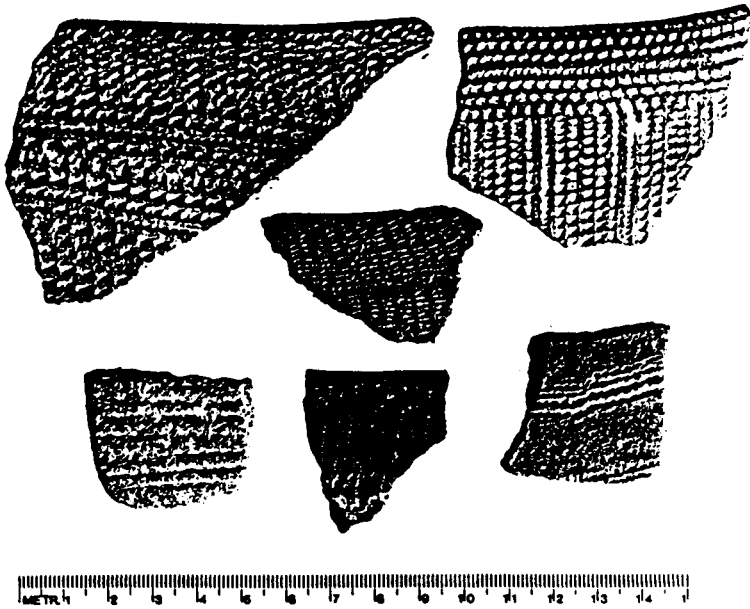


Fig. 3.

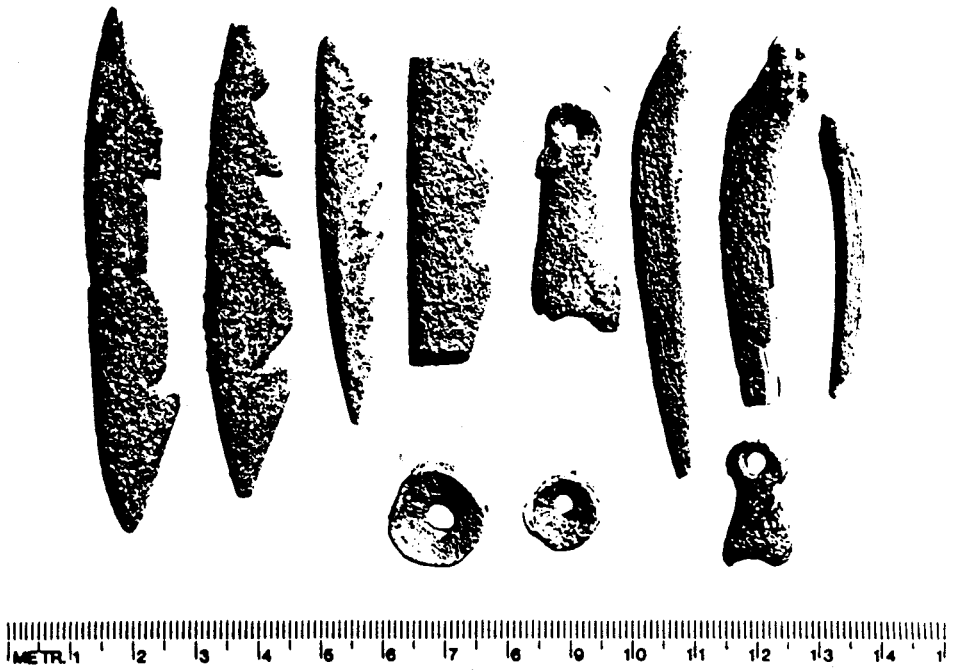


Fig. 4.

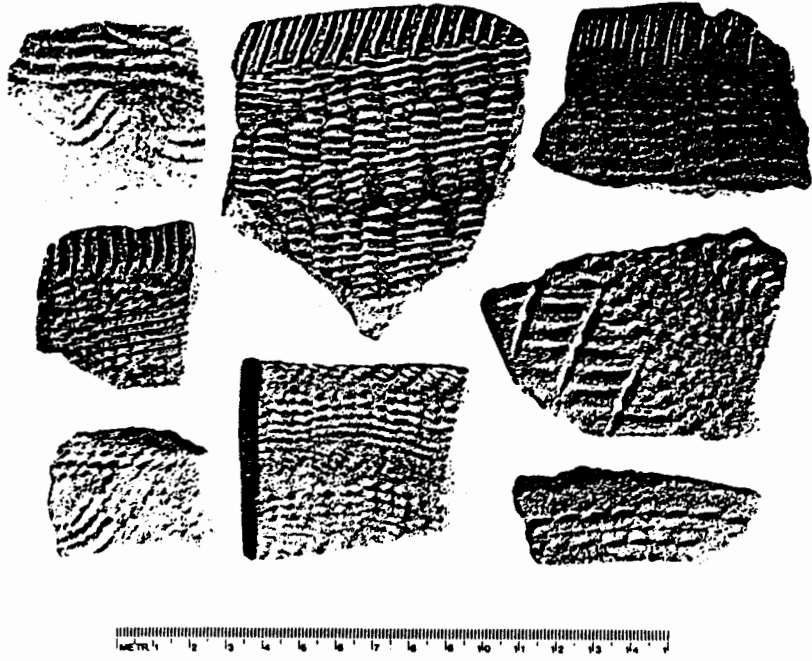


Fig. 5.



Fig. 6.



Fig. 7.



## BOOK REVIEW

**Robertshaw, P. T. (ed). 1990.  
A History of African  
Archaeology. London:  
James Curry. 378 pp. Illus.**

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This book arrived just as I was about to leave for Madagascar. By having it with me I was able to view the ideas presented from the African periphery. In saying this I am making the point, evident from the book, that Madagascar has not been considered in the mainstream of African archaeology (in fact has only marginally been accepted as part of Africa). Thus Madagascar has been cut off from African research; virtually no archaeology has been done on possible contacts with the continent.

With the publication of this book, and the analysis of its colonial origins, African archaeology has come of age, although the diversity of African archaeology is not fully represented in the eighteen chapters. As all the authors are culture historians there is little comment on physical anthropology, except where it impinges on early humans, or on archaeometry. After an introduction by Pete Robertshaw, seven of the chapters follow a chronological framework: Gowlett (human origins), Deacon (Stone Age, Southern Africa), Robertshaw (East Africa), de Maret (Central Africa), de Barros (francophone West Africa), Sheppard (Mahgreb) and O'Connor (Egyptology). Two of the chapters have a more thematic approach: Brandt/Fattovich (Horn of Africa) and Schmidt (oral traditions). A sociopolitical framework is adopted by Hall (Iron Age, Southern Africa), Kense (Anglophone West Africa), and Holl (West

Africa). Davis, in his chapter on rock art development, looks at the range of theories formulated for different parts of the continent. There are memoirs by Clark, Shaw, and Shinie, three of the elder statesmen of African archaeology. Trigger sums up in the final chapter, placing African archaeology in its world context.

The book is interesting reading for all of us working in Africa. It's a bit like going to a play where you are part of the script and know all the actors. The more important point, of course, is that it works not purely as narrative (which has its appropriate place), but as a social discourse. Thus there is a degree of healthy introspection and critique, and an awareness that our discipline is not, and has never been, neutral. For this reason alone it will be a useful text for post-graduate seminars examining not only the use of the past but the implications for us in the post-colonial present and future.

Robertshaw (p. 92) identifies a critique by indigenous archaeologists who see stone age studies as "an occupation for foreigners to throw funds away" and therefore irrelevant to the development of African countries. This calls attention to the need for relevance felt by many who are African nationals (see also Musonda, 1980). While Brandt and Fattovich (p. 108) call for training indigenous archaeologists in traditional Western archaeological method and theory, we must recognise that conflicts may exist. Western concepts of the past have a particular scientific direction but tend to perpetuate the colonial background of archaeology (e.g., elitism and sexism in universities, etc.). The African concepts of the past may discourage a Western scientific approach. As stated by Kense (p. 138): "most [African] societies viewed the past and present as forming an uninterrupted continuum." Thus, an important question that has emerged from the history of our discipline is: Can we envision an indigenous African archaeology with such a continuum as its basic premise, instead of the Western model? This may be like the general intelligence question posed to Australian students: "Devise an alternative universe." If archaeology has to be

European derived, then we can only accept the role of its colonial origins in the development of the discipline and the idea of the university in general, while rejecting the basic paternalistic paradigm.

Inevitably in a book such as this there is a great deal of overlap between authors, which is especially noticeable in Desmond Clark's contribution. I would have preferred to have seen a reprinting of his 1986 *Antiquity* "Archaeological Retrospect" article, rather than the more sketchy presentation in this book. This would have put it more in line with the other two memoirs of Shaw and Shinnie.

The absence of extensive comment on Saharan studies, although recognised by the editor, means that the important contributions of Theodore Monod, Gabriel Camps, H.-J. Hugot, Henri Lhote, Fred Wendorf, Tony Marks, etc. are only mentioned in passing. Thus, such topics as the history of palaeoenvironmental research on Saharan lakes, the study of early ceramic industries, and the debate on the origins of African cattle domestication are all missing.

Other gaps include the work of Eric Higgs in North Africa, important not only in itself but also because of his impact on a number of the Cambridge graduates who came to Africa, e.g., Pat Carter, John Parkington, Martin Hall, and Robin Dennell, who all worked directly under him, and also Rob Foley, Pete Robertshaw, and myself, who were influenced by him.

It is exciting to read the discussion of the transition from colonial to nationalist archaeology, and the implications of this. There is, however, a danger of replacing one polemic orientation with another. As Martin Hall points out in his chapter, there is an awareness in South Africa of the subversion of history for political and social ends. It is gratifying, however, to read that not all archaeologists see South African archaeology as "colonial," and while one accepts the criticism that it has been removed from popular ken by its esoteric language, the last decade has produced probably as much popular teaching material as anywhere else in the continent (Humphreys 1986, Nisbet et al. 1985 [missing from the reference in the book

under review]; Yates et al. 1990) and attempts to correct history for school children (Malherbe 1983a, 1983b; Malherbe and Worden 1986; Malherbe and Hall 1988; Thackery et al. 1990).

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 1983b *Men of Men*. Petermartizburg: Shuter and Shooter. (on the Khoikhoi).
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- Yates, R., Parkington, J. and Manhire, T.  
 1990 *Pictures from the Past*. Petermartizburg: Centaur. (on a southern African rock art)



## PUBLICATIONS

### Items for Review

The following publications have been received by the editor and are available for review:

*Hamdallahi, Capitale de L'Empire Peul du Massina, Mali.* (1990, A. Gallay, et al.). Stuttgart: Franz Steiner Verlag.

*Fanfannyegene I, Un Abri-sous-roche a Occupation Néolithique au Mali.* (1990, E. Huysecom). Stuttgart: Franz Steiner Verlag.

*Early Pastoralists of South-western Kenya.* (1990, P. Robertshaw). Memoir 11, British Institute in Eastern Africa.

If you are interested in reviewing any of these books, please contact the editor.

### New Publications

These publications may interest *Nyame Akuma* readers:

1. *Metallurgy and Metallurgists in African Societies: an International Directory of Researchers* (1990), compiled by David Killick et al. Copies are available from David Killick for \$10.00 U.S. postpaid at the following address:

Peabody Museum  
11 Divinity Avenue  
Cambridge, MA 02138  
U.S.A.

2. *Forest and Conservation History* (special issue on Africa). This issue is available to readers of *Nyame Akuma* at \$5.00 U.S., a 37% reduction from the usual single-copy price, from:

Forest History Society, Inc.  
701 Vickers Avenue  
Durham, NC 27701  
U.S.A.

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**UGANDA:** "The Budongo Forest of Bunyoro, Uganda: An Ecological and Historical Perspective," by James D. Paterson.

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**THE HORN OF AFRICA:** "Preludes to an Ecology of Famine in Africa," by Francis Paine Conant, based on

*From Poverty to Famine in Northeast Ethiopia: A Rural History, 1900-1935*, by James McCann (University of Pennsylvania Press, 1987)

*The Ecology of Survival: Case Studies from Northeast African History*, edited by Douglas H. Johnson and David M. Anderson (Westview Press, 1988)

*The Mbeere in Kenya*, by Bernard W. Riley and David Brokensha (University Press of America, 1988)

*Culture and Context in Sudan: The Process of Market Incorporation in Dar Masdit*, by Dennis Tully (State University of New York Press, 1988)

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Kalb, J.	21	Ethiopia	Artifact and fossil finds in Afar Depression
Karega-Munene	28	Kenya	Subsistence of Elmenteitan populations at Gogo Falls
Katanekwa, N.	8	Zambia	Iron Age research and survey at Sesheke
	9	Zambia	Iron Age excavations and survey in the Upper Zambezi
Kelley, J.	17	Sudan	Brief report on surface lithics from Meroe
Kense, F.	13	Ghana	Field survey in the western Gonja region, northern Ghana
	15	Ghana	Fieldwork at Gonja townsite of Daboya
	17	Ghana	Preliminary report on Kintampo and Daboya materials, C14 dates

Author	No.	Country	Title	
Kense, F.	22	Ghana	Daboya project update	
	23	Ghana	1983 report on Daboya	
	26	Ghana	Western Gonja archaeology project	
Keteku, E.	13	Ghana	Early life in the tropical rain forest	
	24/25	Ghana	Radiocarbon dates from Nyanawase	
Khabir, A. M.	26	Sudan	A Neolithic site in the Sarurab area	
	28	Sudan	Neolithic pottery from Sarurab	
	29	Sudan	Mollusca remains from Sarurab	
Kibunjia, N. M.	29	Kenya	Lewa Downs paleolithic site	
Killick, D.	28	Malawi	Recent iron smelting in central Malawi	
	28	Niger	On the dating of African metallurgical sites	
	3	South Africa	Pleistocene fauna, Melkbos	
Klepe, E.	15	Sudan	Test excavations of habitation mounds in Upper Nile Province	
Klichowska, M.	21	Sudan	Report on excavation at Debbat El Eheima	
	12	Sudan	Plant studies at Kadero	
Koch, C. P.	31	Kenya	Palaeoecology of the Olorgesailie Formation	
Krzyzaniak, L.	4	Sudan	Fieldwork at Kadero	
	5	Sudan	Research at Kadero	
	6	Sudan	Neolithic cattle at Kadero	
	9	Sudan	Fifth season of field research at Kadero completed	
	10	Sudan	Fieldwork at Kadero	
	11	Sudan	Study of faunal remains from Neolithic Kadero	
	15	Sudan	Fieldwork at Kadero	
	17	Sudan	Fieldwork at Kadero, Neolithic burials	
	18	Algeria	Fieldwork in the Tassili-n-Ajjer area, rock art	
	21	Algeria	Sefar	
Larson, P. A., Jr.	21	Sudan	Radiocarbon analysis of Neolithic site at Kadero	
	22	Sudan	Ninth season at Kadero	
	30	Sudan	Excavations at Kadero	
	32	Sudan	Eleventh season of excavations at Kadero	
	11	Ethiopia	Research at Matabaietu, Afar; an Oldowan site.	
	LaViolette, A.	32	Tanzania	Excavations and survey at Pujini fortress, Pemba Island
		32	Tanzania	Coast and hinterland: University of Dar es Salaam field schools 1987-1988
Leakey, M.	7	Kenya	Excavation at Laetoli	
Lebeuf, A. M. D.; Holl, A.	26	Cameroun	Fouilles de Houlouf (nord Cameroun)	
Lebeuf, A.; Lebeuf, J. P.	21	Lake Chad	New research at Lake Chad	
Leclant, J.	13	Sudan	Sedeinga fieldwork	
	16	Sudan	Fieldwork at Sedeinga	
	19	Sudan	Fieldwork in Sudan	
	3	Botswana	Iron Age ceramics	
Lepionka, Mr.	3	Botswana	Iron Age ceramics	
Liesegang, G.	7	Mali	Excavation of iron age mounds and graves	
	8	Tanzania	Research at rock painting sites	



Author	No.	Country	Title
Linares, O.	8	Senegal	Research on rice agriculture
Locko, M.	29	Gabon	Les sources archéologiques de la métallurgie du fer
	29	Gabon	Paléolithique inférieur dans la région de Kango
	30	Gabon	Un campement paléolithique sur les rives du Lac Noir
Lubell, D.	1	Algeria	Teibessa and Ouled Djellal
	4	Algeria	Prehistoric cultural ecology in Tébessa
	10	Algeria	Prehistoric cultural ecology of Capsian Escargotières, 1976 season
	13	Algeria	Prehistoric cultural ecology of the Télidjène Valley, northeast Algeria
Lynch, M.	9	Kenya	Excavations at burial sites in L. Turkana region
Mabulla, A. Z. P.	33	Tanzania	Preliminary Report on an archaeological survey of the Nduku Beds, Olduvai Gorge
Maggs, T.	15	South Africa	Two Early Iron Age sites excavated
Magid, A.	24/25	Sudan	Macrobotanical remains from Shaqadud
Mahachi, G.	28	Zimbabwe	Iron Age Shona mortuary practices
Mahaney, W. C., et al.	26	Kenya	Gorges Valley rockshelters, Mt. Kenya
Mahaney, W. C.; Charsley, S. T.	27	Kenya	Evidence for prehistoric man on Mt. Kenya
Maluma, E.	9	Zambia	Iron smelting sites east of Lusaka
	20	Sudan	Butana grasslands field project in 1981
Marks, A.	24/25	Sudan	Butana project, 1983–1984
	16	Sudan	Survey of northern Butana
	21	Sudan	Butana archaeological project interim note
Marks, A., et al.	22	Sudan	Butana project 1982–1983 season
	14	Cameroon	Archaeological research in Cameroon
Marliac, A.	7	Tanzania	LSA and rock paintings of Central Tanzania
Masao, F.	5	Tanzania	Rock art research project in Singida and Dodoma regions, and Kondoa
	2	South Africa	Iron Age research
Mason, R.	3	South Africa	Fieldwork—Early Iron Age village
	4	South Africa	New work at Early Iron Age site—Broederstroom, Transvaal
	14	South Africa	Survey, excavation of Iron Age sites
Matiyela, Mr.	21	South Africa	Activities of the Archaeology Dept. Natal Museum
Mazel, A.	9	Tanzania	Preliminary survey of three rivers in Mbeya Region
McBrearty, S., et al.	22	Zaire	Artefacts from Ongoliba
McCrossin, M.	33	Egypt	New evidence from the Early to Mid-Holocene in Dakhleh Oasis
McDonald, M. M. A.	10	Mali	Excavation and survey in and near Djénné
McIntosh, R.; McIntosh, S.	20	Mali	1981 field season at Jenne-jeno
	24/25	Mali	Archaeology at Tombouctou
	29	Mali	Prospection archéologique aux alentours de Dia

Author	No.	Country	Title
Mehlman, M.	7	Tanzania	Excavation at Nasera (Apis) rockshelter
	10	Tanzania	Field research at Nasera (Apis) Rock
	14	Tanzania	Fieldwork at Nasera rockshelter, Mumba rockshelter, and Eyasi lakeshore
Milburn, M.	22	Sahara	A quern factory in the southern Sahara
	24/25	Sahara	Rock-splitting in the Sahara?
Miller, S.	14	Kenya	Excavation report for Lukenya Hill, GvJm 46
Mills, A.	12	Egypt	Dakhleh Oasis project
	14	Egypt	Dakhleh Oasis project 1978 field season
	16	Egypt	Dakhleh Oasis project, 1979
	22	Egypt	Dakhleh Oasis project
Misago, K.	8	Zaire	Continued archaeological research in the Shaba region
Mohammed, A.	10	Sudan	Surveys at Wadi Sayidna-Sorourab and Wadi Hawar, neolithic to Iron Age
Morais, J.	12	Mozambique	Plans for cultural heritage research
Mturi, A.	4	Tanzania	Artifacts collected during West Kilimanjaro survey
	4	Tanzania	Excavation of Olduvai Pleistocene deposits—Lake Ndutu
	4	Tanzania	Ngorongoro Crater burial mound research
	7	Tanzania	Mound excavation at Rumbe Hill
	9	Tanzania	Several C14 dates for Wasendo Madukani
	5	Ghana	Excavations of several rockshelters
	17	Zambia	Fieldwork at three rockshelter sites in the Copperbelt Province
Musonda, Mr.	5	Ghana	Excavations of several rockshelters
	17	Zambia	Fieldwork at three rockshelter sites in the Copperbelt Province
	20	Somalia	Archaeological survey in middle Juba Valley, southern Somalia
	24/25	Somalia	Excavations in southern Somalia
	28	Somalia	Buur Medow 1, a LSA site in the middle Juba Valley
Mussi, M.	30	Somalia	Archaeological research in Somalia in the 1930s
	31	Somalia	The LSA industry of Buur Ad (middle Juba Valley)
	22	Sahara	New Tassili finds
	31	Algeria	New finds of late Round Head paintings in northern Tassili
Myles, K.; Debrah, I.	10	Ghana	Survey of Agogo Rockshelter
Nelson, C.	14	Kenya	Continuing work at Lukenya Hill
	15	Kenya	1979 fieldwork at Lukenya Hill; Acheulean; First Intermediate; Neolithic
Newton, L.	16	Ghana	More Kintampo culture finds in the forest zone
Newton, L.; Butler, R.	18	Namibia	Nonarchaeologists report site find
Nicklin, K.	16	Nigeria	Survey locates sites in the Cross River region, southeast Nigeria and west Cameroon
	19	Nigeria	Investigating ethnographic pottery firing temperatures
Nygaard, S.; Talbot, M.	8	Ghana	Archaeology and geology of coastal Ghana

Author	No.	Country	Title
Nygaard, S.; Talbot, M.	11	Ghana	Gao Lagoon shell middens; C14 dates
Nzewunwa, N.	13	Nigeria	Shell midden excavations in the eastern Niger Delta
	14	Nigeria	Fieldwork at Okochiri, Okrika 1976-1977
	18	Nigeria	1980 fieldwork at Agadagbabou, Yenegoa LGA, Rivers State
	26	Nigeria	Archaeology at Port Harcourt
Odak, O.	7	Kenya	Various archaeological resources of Kenya
	9	Kenya	Field survey in Western and Nyanza Provinces
	16	Kenya	Survey of prehistoric rock art
	29	Kenya	Akites: a new rock painting site in west Kenya
Okafor, E.	23	Nigeria	Metallurgy in ancient Igboland
	24/25	Nigeria	Ancient mines in Igboland
	28	Nigeria	Ihiala bronzes: bronze or brass?
	30	Nigeria	More iron-working sites in Nsukka
	31	Nigeria	Ugwuele stone age site
	32	Nigeria	Eguru Amube Amalla Orba: a blacksmithing clan among the Orba
Onyango-Abuje, J. C.	12	Kenya	Reappraisal of term "Neolithic" in East Africa
Opira-Odongo, A.	18	Kenya	Research at Mugurum site, western Kenya
Oslisly, R.	29	Gabon	Découverte des premières gravures rupestres au Gabon
Osman, A.	10	Sudan	Medieval Nubian documents
Ossah-Mvondo, J.-P.	33	Cameroun	Recherches archéologiques dans le nord-ouest: se site métallurgique de BA
Parkington, J.	8	South Africa	Subsistence systems modelling
	13	South Africa	Hunters-herders in the Olifants River Valley
Paulissen, E., et al.	26	Egypt	Late paleolithic sites at Qena
Pender-Cudlip, P.	5	Tanzania	Field research on Iramba culture
Petit-Maire, N.; Riser, J.	22	Mali	Holocene paleoenvironments of the Sahara
Peyrot, B.; Oslisly, R.	26	Gabon	Recherches récentes, 1982-1985
Phillipson, D.	5	Ethiopia	Late Stone Age site on Bobodura Hill, near Aksum
	5	Kenya	Reconnaissance fieldwork in Marsabit and Moyale areas
	6	Kenya	Survey of later prehistory of Wajir and Mander Districts
	7	Kenya	Survey of later prehistoric sites
	8	Kenya	Excavations at Lowasera
	9	Kenya	Excavations in series of rockshelters at Ele Bor
	10	Kenya	Survey for Early Iron Age sites in Tana River and Lamu districts
Pilbeam, Prof.	5	Kenya	Geological and paleontological surveys at Kanam and Kanjera
Pole, L.	3	Ghana	Iron- working sites
Posnansky, M.	1	Ghana	Fieldwork

Author	No.	Country	Title
Posnansky, M.	7	Ghana	Iron furnace excavations at Srede and Dapaa (Debibi)
	8	Ghana	Field studies at Brong Ahafo, Debibi (Dapaa), Ft. Ruychaver, and Hani
	15	Ghana	Fieldwork at Begho
	15	Togo	Archaeological reconnaissance of Togo
	18	Togo	Notse Town wall survey
Price-Williams, D.; Barnham, L.	21	Swaziland	Swaziland Archaeological Research Association
Ramos, M.	23	Portugal	Center for prehistory and archaeology at Lisbon
Reed, H.	7	South Africa	Potsherds recovered from Meroe
Reid, A.	33	Uganda	Ntusi and hinterland: Later Iron Age and pastoral ecology in southern Uganda
Reinhold J.; Lenoble, P.	28	Sudan	El Kadada, 1984-1985
	29	Sudan	Franco-Sudanese excavations in 1985-1987
Reinhold, J.	29	Sudan	Radiocarbon dates for El-Kadada
Revaillain, J.	23	Ivory Coast	Archaeological research
Robbins, L.	9	Kenya	Excavations at Lothagam and several new sites located near L. Turkana
	23	Botswana	Recent research
	29	Botswana	The Depression site, Tsodilo Hills
Robbins, L. H.	34	Botswana	Excavations at the White Paintings Rock-Shelter, Tsodilo Hills
	17	Kenya	Excavation of shell mounds, L. Victoria shores; survey in Narok district
Robertshaw, P.	18	Sudan	Fieldwork in southern Sudan, mounds; Bekjin site; Kat site
	26	Kenya	Excavations at Gogo Falls, S. Nyanza
	30	Uganda	The interlacustrine region
	19	Kenya	Elmenteitan sites, Lemek Valley, southwest Kenya
Robertshaw, P.; Marshall, F.	31	Kenya	Plant remains from Gogo Falls
Robertshaw, P.; Wetterstrom, W. Robertson, J.	2	Sudan	Meroe
	3	Sudan	Meroe ceramics
	12	Zambia	Research in progress
	15	Zambia	Radiocarbon dates and fieldwork for the Muteteshi 1 site
	32	Zambia	A new Early Iron Age pottery tradition from south-central Africa
Roubet, C.	21	Egypt	Ancient environments in Egypt
Sadr, K.	22	Sudan	Prehistoric settlement patterns—Khashm el Girba
	24/25	Sudan	The Gergaf group
	27	Sudan	A Pangrave related culture
Sampson, G.	4	South Africa	Survey of several sites in the Little Caledon valley
Sanseverino, H.	22	Somalia	Reconnaissance in coastal southern Somalia
	28	Somalia	Survey of the southern Somali coast

Author	No.	Country	Title	
Sassoon, H.	2	Uganda	Various antiquities	
	10	Kenya	Mombasa wreck excavation	
	11	Kenya	Mombasa wreck excavation, 1100–1500 A.D.	
Schmidt, P.	4	Tanzania	Iron working at Buhaya	
	10	Tanzania	Iron Age reseach in West Lake region	
	30	Tanzania	Eastern expressions of the "Mwitu" tradition	
Schmidt, P., et al.	26	Gabon	Newly dated Iron Age sites	
Schweitzer, F.	8	South Africa	Field work at the coastal cave of Die Kelders	
	9	South Africa	Analysis of Byeneskranskop sample completed	
Schweitzer, F. R.	11	South Africa	Report of activities of the South African Museum	
Shaw, T.	2	Nigeria	Niger Delta reconnaissance	
	3	Nigeria	Experimental work at Ibadan	
	9	Nigeria	Preliminary work in the Wushishi area	
	27	Nigeria	Fieldwork in the Wushishi area of Nigeria	
	30	Nigeria	Archaeological research in the Wushishi area	
Sheppard, P.	21	Algeria	Research in progress on the Capsian	
Shinnie, P.	1	Sudan	Fieldwork	
	6	Sudan	Research at Meroe	
	11	Ghana	Gonja sites, 16th century A.D.	
	21	Ghana	Excavations at Daboya	
	28	Ghana	Archaeological survey of early Asante sites	
	28	Sudan	Meroe 1984–1985	
	30	Ghana	Excavations at Asantemanso, 1987	
	30	Obituary	Oliver Davies	
Shinnie, P.; Heitzmann, R.	4	Sudan	Iron smelting furnaces fieldwork, Meroe	
Silverman, R.	20	Ghana	14–15th-century Syrio-Egyptian brassware in Brong Ahafo and Ashanti regions	
Singleton, W.	3	South Africa	Middle Stone Age industries	
Smith, A.	4	Ghana	Bosumpra Cave C14 sample	
Smith, A. B.	11	South Africa	Excavation in Tanqua Karoo/Roggeveld region	
	21	South Africa	Pastoralism in the Western Cape	
	26	South Africa	Excavations at Kastelberg, Cape Province	
	Soper, R.	1	Kenya	Fieldwork—Iron Age
		1	Tanzania	Fieldwork—Iron Age
11		Nigeria	Old Oyo excavation; Yoruba capital 17–18th century	
Sordinas, A.	15	East Africa	Cord rouletted pottery	
	5	Algeria	Stone age sites on the Tassili Plateau	
Stahl, A.	22	Ghana	Ghana	
	32	Ghana	Protohistoric archaeology in the Banda area, Ghana	
Stiles, D.	15	Kenya	Ethnoarchaeological study of the Boni	
	17	Kenya	Archaeological, ethnographic studies of pastoral groups of northern Kenya	
	18	Kenya	Diachronic study of demography, human ecology and history of pastoral groups	

Author	No.	Country	Title
Stiles, D.	20	Kenya	Archaeological and paleoenvironmental research in northern Kenya
Strouhal, Dr.	10	Egypt	Physical anthropological work
Sutton, J.	7	Nigeria	Field surveys and research
	18	Ghana	Fieldwork at Dawu, southern Ghana
	22	Zimbabwe	Ancient fields
	24/25		Neville Chittick and the British Institute in eastern Africa
	27	Kenya	The Sirikwa holes and their houses on Hryax Hill
	29	Kenya	Deloraine and the Rift Valley sequence
	29	Uganda	New work on the Later Iron Age
Swartz, B.	18	Togo	Archaeological exploration in northern Togo
	24/25	Togo	Moba ceramic history
	29	Cameroon	An archaeological survey of caves in the Saa region
	29	Cameroon	Archaeological excavations at Ino I
Tagart, C.	28	Zimbabwe	A Zimbabwe period burial site
Talbot, M.	8	Ghana	Research at Lake Bosumtwi
	10	Ghana	C14 dates for shore sediments at L. Bosumtwi
	23	Ghana	Lake Bosumtwi
Tamplin, M.	7	Botswana	Evaluation of archaeological resources of eastern Botswana
	11	Botswana	Survey found LSA and Iron Age sites
	14	Botswana	Prehistoric cultures, environmental change in eastern Botswana
Thilmans, Mr.; Descamps, Mr.	7	Senegal	Boussoura-Tiekene
Thorp, C.	22	Zimbabwe	Late Iron Age faunal remains
Tigani el Mahi, A.; Haaland, R.	24/25	Sudan	Research in Rabak and Atbara areas, 1983-1984
Tobias, P.	6	South Africa	Research at Sterkfontein and Makapansgat
	7	South Africa	Hominid specimens from Sterkfontein and further research at Makapansgat
	11	South Africa	Brief report on Sterkfontein skull discovery
Van Grunderbeek, M.-C.	18	Rwanda/ Burundi	Iron age in Rwanda and Burundi
Van Neer, W.	23		Archaeoichthyological research at Leuven University
Van Noten, F.	5	Rwanda	Royal tombs field research
	5	Zaire	Excavation at Matupi cave
	9	Rwanda	Excavation of iron smelting furnaces at Kabuye
	9	Rwanda	Survey for stone age sites
	20	Kenya	Excavations in the Kapthurin formation
	21	Kenya	New Acheulean sites and hominid from Kapthurin
Van Noten, F., et al.	28	Kenya	The Kapthurin project, 1984 season
	29	Kenya	The Kapthurin project, 1985 season
van der Merwe, N.	1	South Africa	Fieldwork

Author	No.	Country	Title
van der Merwe, N.	12	South Africa	Summary of research in progress
	23	South Africa	News from the University of Cape Town
van Gerven, D.	15	Sudan	Study of human remains from Kulubnarti cemeteries
van Waarden, C.	21	Botswana	Tati archaeological research project
Vansina, J.	5	Zaire	Reconstruction of social life from linguistic and oral traditional data
Vermeersch, P.	22	Egypt	Middle Egypt prehistoric project—1982
	22	Egypt	New research in the Makhadma area
Vermeersch, P., et al.	17	Egypt	Archaeological, geological fieldwork at four Middle Palaeolithic sites
	19	Egypt	Archaeological survey in Middle Egypt
	28	Egypt	Paleolithic sites in the Qena Bend
	12	Egypt	Middle Paleolithic site at Nazlet Khatir
Vermeersch, P.M.; Paulissen, E.	12	Egypt	Middle Paleolithic site at Nazlet Khatir
Vivian, B. C.	34	Ghana	Origins of the Asante Research Project, 1989–1990
Vogel, J.	2	Zambia	Iron Age sites
	3	Zambia	Early Iron Age site, upper Zambezi valley
	5	Zambia	Research at Early Iron Age site at Kabondo Kumbo
	9	Zambia	Survey of Upper Zambesi Valley
	14	Congo	Antique Kongo regalia
Volavka, Z.	17	Congo	Research on Insignia of the Divine Authority
	7	South Africa	Field research at Elephant Shelter, Erongo Mts.
Waibel, A. F.; McDonough, W. F.	11	Kenya	LSA or Pastoral Neolithic
Walker, N.	22	Zimbabwe	Zimbabwe
Wallsmith, D.	33	South Africa	Driekoppen: A Middle Stone Age rockshelter
Wandibba, S.	12	Kenya	Cord Rouletted Pottery, western Kenya
	18	Kenya	Survey of Rigo Cave site
	19	Kenya	Ethnoarchaeological and archaeological survey of Bungoma District
	19	Kenya	Excavation at Rigo Cave
	20	Kenya	Archaeological survey of Bungoma District, preliminary report
Warnier, J. P.; Asombang, R.	24/25	Kenya	Iron Age pottery in Kenya
	21	Cameroon	Archaeological research in Bamenda Grassfield
Welsby, D.	22	Sudan	Soba—fifth report
	24/25	Sudan	Excavations at Soba East, 1983–1984
Wendorf, F. et al.	5	Egypt	Fieldwork at Bir Terfawi and near Gebel Nabta
Willet, F.	1	Nigeria	Fieldwork
Williams, Price	17	Swaziland	Tracing the archaeological record; paleoenvironment and climate
Willoughby, P. R.	34	Tanzania	Stone Age archaeology in Mbeya and Rukwa regions, SW Tanzania
Wilmsen, E.	4	Botswana	Resource procurement of the !Kung
Wynn, T.	17	Tanzania	Stone Age in the Nyakyusa Basin

Author	No.	Country	Title
Yaw, B.-M.	32	Ghana	Preliminary report on excavations at Okai Koi Hill site, western Accra Plains
Zangato, M. E.	34	Central African Republic	New perspectives on megaliths from northwest Central African Republic



## MEETINGS

### Society of Africanist Archaeologists

The next conference of the Society of Africanist Archaeology will be held on March 26-29, 1992, at the University of California, Los Angeles (UCLA) at the invitation of the African Studies Center and the Institute of Archaeology.

There will be three days of meetings (Thursday-Saturday) followed by a one-day excursion to sites, particularly rock art sites, in the Santa Barbara region. In addition, we hope that there will be an all-day symposium on African rock art on Wednesday, March 25, 1992.

For further details, please write to:

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### Arts Council of the African Studies Association

The Arts Council of the African Studies Association (ACASA) is pleased to announce the Ninth Triennial Symposium on African Art. It will be hosted by the University of Iowa's School of Art and Art History and Museum of Art in Iowa City, and will run April 23-25, 1992.

Panel and paper proposals from all disciplines and geographical areas are welcome, and the ACASA especially encourages those that emphasize cross-disciplinary and cross-cultural approaches.

Deadline for panel proposal submissions is Spring 1991; the deadline for paper proposals, October 1, 1991. Send to:  
 Professor Allen F. Roberts, Program Chair  
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 McBride Hall  
 The University of Iowa  
 Iowa City, IA 52242  
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