THE NAMORATUNGA CEMETERY AND ROCK ART SITES OF NW KENYA: A STUDY OF EARLY PASTORALIST SOCIAL ORGANIZATION

By

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ABSTRACT

THE NAMORATUNGA CEMETERY AND ROCK ART SITES OF NW KENYA:
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This study analyzes the three Namoratunga Cemetery and rock art sites west of Lake Turkana in NW Kenya. The three sites were utilized by pastoralists during the first millennium B.C., a time when early pastoralists were first entering East Africa. The goals of this study are: (1) to reconstruct the social organization of these early herders through the use of burial information, (2) to examine the relevance of assumptions made by archaeologists when analyzing mortuary data and finally, (3) to place these sites into the broader framework of East African prehistory.

While the Namoratunga sites display a wide geographical distribution west of Lake Turkana, the analysis concentrated on the two largest sites which were located near the Kerio River. These two sites are located on eroded volcanic outcrops separated by less than one Km. and contained 162 and 11 graves respectively. In addition both sites contained over 1,000 examples of geometric rock art which occurred in the form of engravings.

From the analysis of the burials and rock art at these two sites it appears that the social organization of these early pastoralists was largely egalitarian. In addition individual kin groups had their own areas within each of these cemeteries to bury their dead. The two sites in turn were occupied by different social units, perhaps clans.

The Namoratunga burial program was then compared with a series of ethnographic models drawn from Nilotic and Cushitic speaking peoples to test for best fit. It was found that the Namoratunga burial routine most closely resembles present day Eastern Cushitic burial practices. This apparent connection between the sites and Cushites was supported by the third Namoratunga site located 110 miles further to the north. Here rows of stone columns were found to align with a series of stars and constellations used by present day Eastern Cushites to compute a sophisticated calendar system. The Namoratunga sites thus provide one of the first clear links between Cushitic speaking peoples and early pastoralists in East Africa.

Finally, certain assumptions made by archaeologists when analyzing mortuary data were examined in light of the special problems posed by pastoralists in terms of their disposal of the dead. It was found that due to a number of circumstances any thorough analysis of pastoralists' burial practices would be almost impossible.

ACKNOWLEDGMENTS

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Any errors of analysis or interpretation that might occur are the sole responsibility of the author.

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  The Hell fires to come will be more horrible than
      the first.*

*Turkana song about Namoratunga sites.

CHAPTER I

INTRODUCTION

The origin and development of pastoralism, particularly in East Africa has a long and complicated history. Unfortunately due to the absence of written records or reliable oral traditions it has been difficult if not impossible to link archaeological assemblage bearing on this problem with known peoples. Most of the available archaeological evidence is very general. For example, it has been demonstrated that pastoralists were established in parts of Kenya and Tanzania by the first millennium B.C. At Prospect Farm (960 $\pm$ 110 and 740 $\pm$ 80 B.C.), Narosura (310 $\pm$ 110 B.C.), Tunnel Rock Shelter (100 $\pm$ 60 and 780 $\pm$ 60 B.C.) and Muringa (undated) remains of domestic cattle have been found. At Narosura sheep/goat were also present. On the basis of overall technological similarities and present day distributions of language groups in Southern Ethiopia, Kenya and northern Tanzania some investigators have associated these sites with known pastoralists, especially with ancestral Cushitic and in some cases, Nilotic speaking peoples. However, these linkages are based almost entirely upon indirect evidence. This approach is valid, of course, particularly since it has been impossible thus far to make direct links between the archaeological data and linguistic and ethnographic information.

But, specific fits between known peoples and the archaeological record would lend considerable strength to these arguments.

The Lake Turkana region in NW Kenya figures prominently in the problem of pastoral development in East Africa. It is an area which played a major role in the southward spread out of the Sahara and into East Africa of these early pastoralists since it offered a natural corridor into the Rift Valley and as such is ideally suited to the study of pastoralism. This study attempts to apply burial data from three related cemetery and rock art sites west of Lake Turkana to this historical problem of pastoral movements in East Africa. In particular the study attempts to directly link an excavated archaeological assemblage with the prehistory of a known people. The three mortuary sites display a wide geographical distribution west of Lake Turkana as well as providing a large sample of burials which fall within the time period when pastoralists were first spreading into East Africa, around the first and second millennium B.C.

The second goal of this work is to apply burial data to a study of the social organization of these early pastoralists; a subject of which almost nothing is known. Although burial evidence has been used in East Africa, it has been utilized primarily to show population affinities and racial types (Fagan 1964; Leakey 1931; Galloway 1959; Rightmire 1970). Thus far no one has attempted to apply burial data to the study of social organization (Lynch N.D.). However, burial data can yield information concerning prehistoric social systems which is not readily

extracted from other aspects of the archaeological record (Binford 1971; Tainter 1975).

Using the archaeological data from the three cemetery sites a model will be formulated of past social organization. This model will then be compared with present day East African pastoral societies. Particular emphasis will be placed upon the Cushitic and Nilotic speaking groups. These two linguistic groups are thought to figure prominently in the spread of pastoralism in East Africa. Formal analysis as employed by both Brown (1971) and Saxe (1970) will be used to implement the comparisons between the archaeological and ethnographic models. The models can then be compared in terms of relative complexity and variables which are significant in partitioning each society. In such a way it should be possible to assign the archaeological data to a known group. This will provide one of the first instances where an excavated archaeological assemblage will be linked to a particular people in East Africa. As such, this work will yield the first firm historical framework for the study of pastoral social organization and population movements in East Africa.

Brief History of Pastoralism in East Africa

Although pastoralism is now practiced in much of East Africa its origins are almost completely unknown beyond the admittedly limited time depth provided by oral history. Linguistic data has been used to extend this time depth, but it too is severely limited in the type of information it can yield. What follows is a

brief description of what is known about the development of pastoralism in East Africa. It makes use of archaeological and linguistic data as well as oral traditions of modern African people.

The earliest evidence for animal domestication in Africa occurs in what is now the Sahara desert region on north Africa. By the fourth millennium B.C. at the site of Es Shaheinab near Khartoum (about 3200 B.C.) dwarf domestic goat occur (Clark 1970:191). At Haua Fteah, near the Mediterranean coast by about 5000 B.C. at least 80% of the meat eaten was from domestic sheep or goat. At yet another site, the Uan Muhriggiag rock shelter, at the eastern end of the Tassili Range, a skull of what has been described as a domestic Bos brachyceros has been found. It is dated to the early fourth or fifth millennium B.C. (4000 ± 120 B.C.), (Clark 1970). Domestic cattle may also be present in the lowest layers of the site which date to about 5500 B.C. An additional date of 3810 B.C. was obtained from a Bos skeleton at the site of Adrar Bous also in the Sahara (Carter and Clark 1976). In the Tassili Range rock art also occurs which may depict herds of domestic cattle and sheep. Although the early occurrances of domesticated animals are scarce, it is apparent that by at least the fifth millennium B.C., and likely earlier, pastoralists are present in the Sahara.

After 2500 B.C. the Sahara became increasingly dessicated (Clark 1976). Many of these pastoralists were forced to move out

of the Sahara region. These movements may have taken several directions. Some moved into the Nile Valley and Ethiopia while others likely turned southward into southern Sudan and northern Uganda and into the high grasslands of the Rift Valley in Kenya and northern Tanzania (Clark 1970:202). The Lake Turkana region in northwest Kenya figured prominently in this spread of pastoral peoples into the Rift Valley since it offered a natural geographical corridor into Central Kenya and Tanzania (Figure 1). The area around Lake Turkana constitutes one of the largest low lying gaps in the rugged Rift Valley. To the north of the lake is the Ethiopian Plateau which rises sharply some 1500 meters above the Lake Turkana region. To the south and west of Lake Turkana is the western edge of the Rift Valley and the Elgego escarpment which rises abruptly to some 1500+ m. above the surrounding valley floor.

By the end of the first millennium B.C., pastoral peoples occupied the Eastern Rift Valley of Kenya and Tanzania (Clark 1970). These people are for the most part associated with the "neolithic" stone bowl cultures, an assemblage typified by the occurrence of stone bowls and grindstones. The Prolongs Drift site in the Nakuru Basin provides perhaps the earliest data for domestic cattle in the Rift Valley and is dated at 1500 B.C. (Sutton 1972). However, recent work by Bartholme (1977) has uncovered evidence of domestic stock (sheep/goats) in early lake beds east of Lake Turkana which may prove earlier,

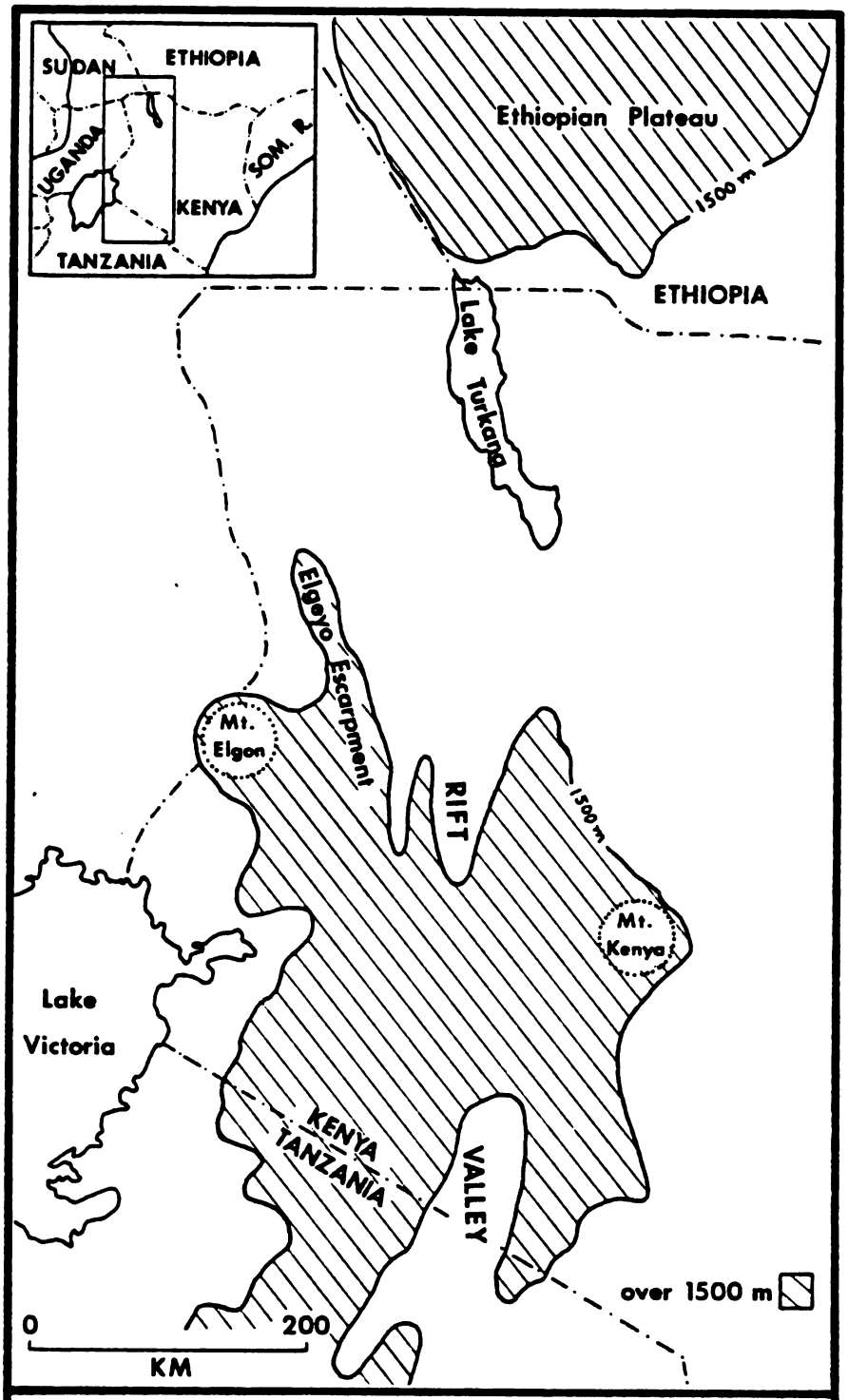


Figure 1

THE HIGHLANDS AND RIFT VALLEY OF KENYA

It is believed that this first southward migration of pastoralists into Eastern Africa can be associated with the southward movement of peoples speaking a Cushitic language (Clark 1970; Sutton 1977).

> "There seems no reason not to identify the early Southern Cushites with those earliest East African food producing societies the material remains of which have been discovered by archaeologists in parts of central Kenya and northern Tanzania" (Ehret 1971:8).

Cushitic language groups belong to the larger Afro-asiatic family which includes Arabic and other Semitic language groups. They are presently centered in the Ethiopian highlands and are divided into four main groups of which only two are of concern here. Only the Eastern and Southern Cushitic peoples seem from present evidence to have played a significant role in the history of East Africa (Sutton 1973). The archaeology of this period is almost completely unknown and so the reconstruction of this period relies almost entirely upon linguistic data.

Based upon linguistic evidence it would seem that the first area of Cushitic establishment was southern Ethiopia near the Kenya border (Ehret 1974). Beginning in the second millennium B.C. and lasting well into the first millennium there was a proliferation of Cushitic communities and spread of Cushitic influence southward. It was during this period that Southern and Eastern Cushitic speaking groups became differentiated with the Southern Cushites spreading over large parts of East Africa. By the first millennium B.C. the original Southern Cushitic

community was spread in a number of scattered groups as far as Lake Victoria and the Indian Ocean (Ehret 1974). The original community by this time had evolved into at least three successor Southern Cushitic speaking groups--one probably in southeastern Kenya, another in northeastern Tanzania, and still another further into the East African interior, perhaps in southwestern Kenya (Ehret 1974).

At the same time the Eastern Cushites differentiated into several communities, one attained particular pre-eminence in the country along the southern fringes of the Ethiopian highlands. They strongly influenced other Afro-asiatic speakers as well as several Eastern Sudanic peoples, most notably the early Nilotes. Like the Cushitic-speaking peoples, though many centuries later, the Nilotes, also pastoralists spread southward from the Ethiopian, East African borders (Ehret 1974). The ancestral Nilotic peoples probably inhabited an area along the southern fringe of the Ethiopian highlands near the Lake Turkana region.

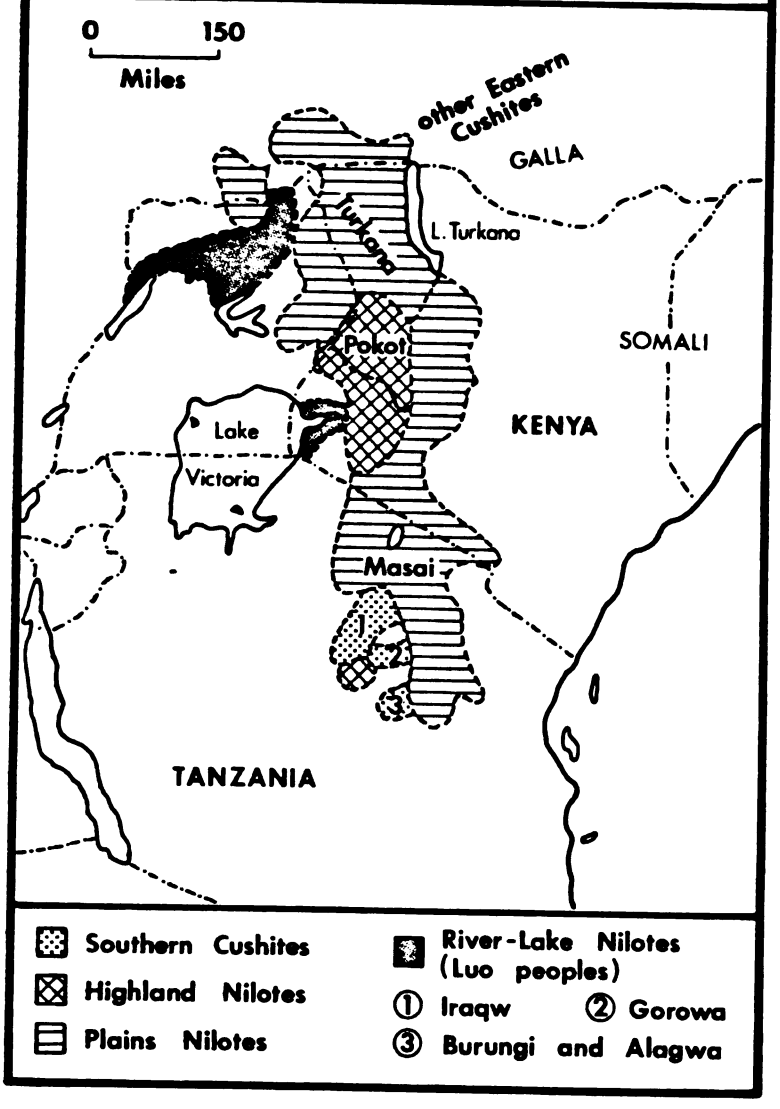
> "The overall distribution of Nilotic languages in earlier times thus suggests the proto-Nilotic homeland as falling in a broad belt of territory running from northern Kenya and the Lake Turkana region west and northwest toward the Nile River" (Ehret 1974:164).

The original Nilotic people later differentiated into several successor communities. These were three in number, speaking dialects ancestral to the modern, (1) River Lake (Western) Nilotes, (2) Plains (Eastern) Nilotes, and (3) the Highland (Southern) Nilotes (Ehret 1971).

The Highland branch of the Nilotes consists of the Kalenjin cluster in the western Kenyan highlands. This group comprises the Nandi, the Kipsigi, the Tugen, the Elgego, the Marakwet, the Pokot, and the Elgon Kalenjin. The Plains Nilotes fall into three main sub-groups: the Masai in Kenya and Tanzania; the Karimojong-Teso cluster of northwestern Kenya and northeast Uganda with extensions into southeastern Sudan; and the Bari cluster, mostly in southern Sudan. The River-Lake Nilotes consist of the Dinka and the Nuer of the Sudan as well as the Luo-speaking peoples, who are divided into a number of tribes extending from the southern Sudan to northern Uganda and the lakeshore of western Kenya (Sutton 1968). (Figure 2).

Both the Highland and Plains Nilotes were influenced by Cushitic-speaking peoples already in these areas; the River-Lake Nilotes to a much lesser degree. The Highland Nilotes were particularly influenced with strong evidence of contact in both cultural practices and vocabulary. The Highland Nilotes probably had contact with Eastern Cushitic speaking groups around the first millennium B.C. probably near the southern fringe of the Ethiopian highlands (Ehret 1974). This contact took place before the spread of the Highland Nilotes southward into Kenya. When they did spread southward sometime in the first millennium B.C., they carried with them a culture incorporating many practices of Cushitic origin and a Nilotic language incorporating many Eastern Cushitic loanwords (Ehret 1974).

Figure 2
MODERN LOCATIONS OF CUSHITES; PLAINS, RIVER-LAKE, AND HIGHLAND NILOTES



The borrowed features indicate that the particular Eastern Cushites who influenced the Highland Nilotes were closer both culturally and linguistically to the Galla and related peoples such as the Konso than to other Eastern Cushites such as the Somali, Afar and Sidamo (Ehret 1974). Once they moved south into the Rift Valley and the western Highlands of Kenya the Highland Nilotes encountered the Southern Cushites, but this group had much less of an effect on the Highland Nilotes.

By 1000 A.D. the River-Lake Nilotes were in the Nile Region. The Highland and Plains Nilotes had spread southward and covered a wide area around the modern borders of Sudan, Ethiopia, Kenya and Uganda.

In more recent times there have been a number of other major population movements in Eastern Africa, also in the Lake Turkana region. By the 12th century or slightly earlier the Somali, Eastern Cushites, moved out of the southern edges of the Ethiopian highlands into the Kenyan, Somalia borderlands. The Galla, also Eastern Cushitic-speaking peoples were already established in this area. The subsequent Somali expansion to the south and west forced the Galla to migrate. This migration took place in the 16th century A.D. when they traveled toward Lake Turkana (Were 1972). The Galla entered Ethiopia from the Lake Turkana region about A.D. 1522-30, an event which can be dated from the evidence of the Ethiopic document of 1593, confirmed by the Ethiopian Chronicles (Huntingford 1955:76).

It is likely that at this time the Galla had contact with the ancestors of the Masai (Huntingford 1955). Masai oral traditions suggest that they originated in the area west of Lake Turkana (Jacobs 1975:411). Their traditions refer to the place of origin as endigirr ee Kerio. This place may be identified with the Turkana escarpment where the Kerio River flows into Lake Turkana (Were 1972). They slowly moved southward into the central Rift Valley beginning perhaps as early as the 14th century A.D. This movement was caused by the increased dessication of the Lake Turkana region (Jacobs 1975). By the 17th century the Masai had reached the Uasin Gishu plateau.

According to oral traditions (Gulliver 1955) the Turkana who were formerly part of the Jie tribe in Uganda moved into the Rift Valley of Kenya in the early 1800s. The Turkana moved into the area west of Lake Turkana pushing back the Samburu to the south and east and other groups to the north.

Throughout this brief discussion of the origin and spread of pastoralism in East Africa, the importance of the Lake Turkana region was apparent. It figured prominently in all of the major migrations of pastoral peoples into East Africa and as such it is an area ideally suited to a study of the prehistory pastoral societies.

CHAPTER II

SETTING AND ARCHAEOLOGY

During parts of 1975-1976 fieldwork was conducted by the author as part of a project from Michigan State University led by Lawrence H. Robbins. This project was a continuation of earlier work by Robbins into the prehistory of the area west of Lake Turkana. The author's role in this project was to excavate and analyze what was thought to be an extensive burial area at the Lothagam Late Stone Age site (Lothagam is situated approximately 16 km. south of the Turkwell delta--see Figure 3). Initial work at the site by Robbins in 1965-1966 identified a large burial area at the site on the basis of human bone scatter. Excavation of these burials was particularly important given the paucity of Late Stone Age skeletal remains in East Africa. However, upon initial sampling of this area it soon became apparent that due to extremely poor skeletal preservation only severely limited kinds of information could be obtained from these burials. As such, it was decided that Lothagam did not warrent extensive excavations. Because of this, the author initiated work at two large rock art and cemetery sites reported to Robbins by R. Soper of the British Institute in Eastern Africa. This work was

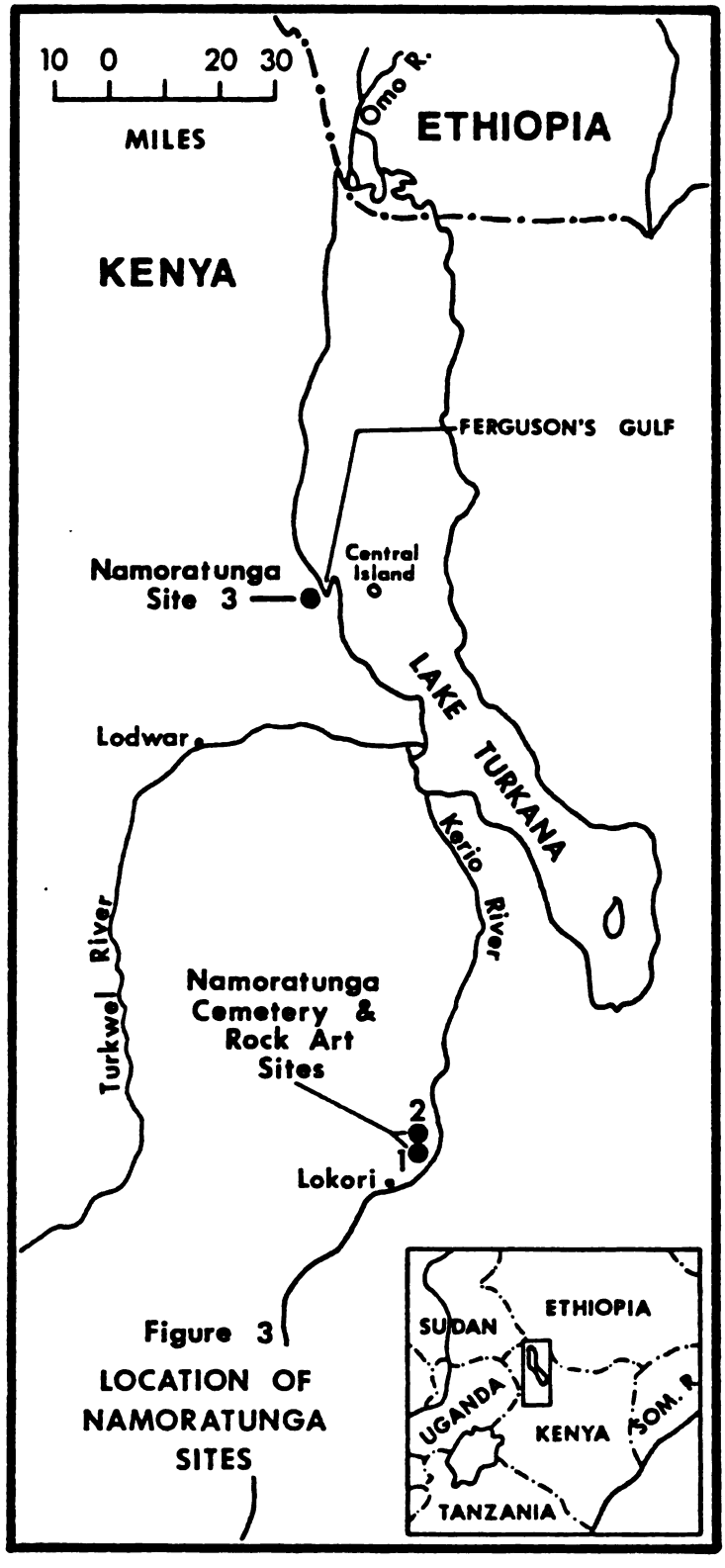


Figure 3
LOCATION OF NAMORATUNGA SITES

generously supported by the National Science Foundation grant #SOC 75-15569.

Location and Discovery

The two sites are situated 11 km. northeast of Lokori, a small and relatively isolated settlement in northwest Kenya (see Figure 3). The sites are located on basalt cones two km. west of the Kerio River and are separated by one kilometer. The southernmost basalt cone is located at 2° 0' 5" N 36° 6' 50" E.

These two sites were initially reported to Robert Soper by Mr. Ben Aldridge of the African Inland Mission at Lokori in 1966. In 1968 Soper made a brief visit to the site and recorded a number of petroglyphs found there (Soper 1968), (see also Gwynne 1969). He later returned and conducted limited excavations at the southernmost cemetery in 1970 (Soper 1977). The present author visited the sites in 1975-1976 and conducted the first large scale excavations at these important sites. While these two sites were being excavated a third site was reported to me by one of my workers. This site was 110 miles further to the north just south of the town of Kalokol near Ferguson's Gulf. It is two miles west of the present shore of Lake Turkana. Unfortunately excavations could not be conducted at this third site (this site is discussed separately on pg. 166 to 180).

Interestingly, all three sites share the same Turkana name of Namoratunga. This means literally "people of stone." Turkana legend, as reported to the author by a number of elders in the

region, has it that a number of people were dancing in circles when an evil spirit dressed as a beggar appeared. When the dancing people laughed at his appearance, he turned them into stone. The Turkana also have a song about these sites.

The Setting

Since both the geography and geology of the area where the Lokori sites occur is discussed in detail by Morgan (1971) and Rhemtulla (1970), only a brief summary will be given here. The area southwest of Lake Turkana lies in the Eastern Rift Valley in an area characterized by, "Divergent faults and marginal monoclinical downwarps" (Rhemtulla 1970:71). This area ranges from desert to semidesert with an average rainfall of less then 10 inches per year at Lokori and slightly less than six inches at Lodwar. This usually falls in a rainy season from March to May, although in more desert regions these seasons are less well defined.

The Kerio River is the main river in the area. It is also one of the two major rivers draining the highlands flowing to Lake Turkana. It flows for the greater part of the year only drying during August to November. This is because most of its water comes from the Elgeyo escarpment to the southwest where rainfall is much higher. The drainage of the river which flows into Lake Turkana is dictated by the overall northward slope of the rift floor which falls from 1830m at Nakuru to about 366m at Lake Turkana.

At Lokori the Kerio River turns eastward before resuming its northerly alignment. North of Lokori the plain of the Kerio is divided by a lava hill called Morulim and by the gravel terraces beyond it. Because of this obstruction the river takes its easterly course for about 10 km. before returning to its north-east course. Formerly the Kerio flowed to the west of Morulim, the change having occurred within the past 30 to 40 years. Just north of Morulim, the river skirts the Loriu Plateau to the east and a broad alluvial plain to the west before draining towards Lake Turkana. This broad alluvial plain is bounded by tertiary volcanics further to the west.

The alluvial plain is of low relief and consists of horizontal sediments ranging in age from Pliocene to recent. Elevation of the plain is about 580m above sea level. Ten soil samples were taken across the alluvial plain at 200m intervals. Samples ranged from 98.7% sand to 83.5% sand; 9% silt to 2% silt and 7.1% clay to 1% clay. A complete listing of soil composition as well as grain size is given in Appendix D.

The Namoratunga sites are situated on weathered basalt cones on these alluvial plains (Figure 4). Both sites are located on what were major tertiary volcanoes and stand at 640m above sea level, 60m above the floor of the plain. The eastern side of the southernmost hill has been weathered to a broad raised platform about 150m x 150m. It is on this raised platform that the mortuary site is located (Figure 5). The west portion of the hill consists

Figure 4

View of the volcanic outcrops near Lokori containing Namoratunga sites

Figure 5

View of southernmost Lokori site. Cemetery is on raised lava platform to the east

of a rocky peak formed by the surviving rim of the cone. Extending from this hill in a north-north-westerly direction is an irregular lava ridge extending for about 400m roughly level with the eastern platform.

The northern hill is marked by a crater like depression at the north and the peak left by the surviving rim to the south. On both hills the exposed rocks are broken into irregular slabs with smooth surfaces.

The vegetation in the area, although scarce can be divided into a number of distinct units based on the distance from the Kerio River and the nature of the surface (Morgan 1971). The area bordering the river itself, two km. east of both hills, contains the most luxuriant vegetation in the area. It consists of a gallery forest with, Acacia Tortiles, Cordia gharaf, and Salvadora persica being the most common trees. Further from the river on the alluvial plain beyond the gallery forest is a zone dominated by Salvadora persica which forms discrete clumps and sometimes including Acacia tortilis. Furthest from the river (about three kms) is a zone of scattered mixed bush varying from moderately dense to very widely scattered. This area is characterized by Acacia nubica but includes Acacia tortiles, Salvadora persica, Boscia coriocia and bushes of Moerva subcordata, M. Crossifolia and M. Oblongifolia. Along the former course of the Kerio the forest is degenerating with much dead wood. This is due to the Kerio changing course and leaving its former gallery forest without a source of water.

Along the Kerio today the Turkana cultivate small fields where they grow millet. These fields are located adjacent to the river on its floodplain. Each year soil is deposited on this floodplain as the river overflows its banks during the height of the rainy season. As such this area contains soils that are more fertile than the surrounding areas. It is doubtful that these surrounding areas could support millet.

On the Namoratunga hills themselves there is generally a sparce vegetation cover. Despite this sparce cover, however, the hills contain a surprisingly diverse number of plants. These include: Salvadora persica L.; Aristida mutabilis Trin. and Rupr; Indigofera spinosa (Forsk.); Acacia nubica Benth; Acacia tortilis (Forsk); Adenuim obesum (Forsk); Maerica crossifolia (Forsk.); Caralluma russelliana (Brogn.); Boswellia sp.; Barleria acanthoides Vahl; and Ruellia patula Jacq. (personal communication J. Kahurananga, East African Herbaruim) (Samples were collected by L. H. Robbins from Hill 1. All of these plants are used by the local Turkana inhabitants.)

Although herds of large game are common in Kenya, the region west of Lake Turkana contains a relatively sparce animal population. Although 25 species have been recorded in the Turkana district (Stewart and Stewart 1963), almost none were actually observed in the Lokori area by the author. However, elephant tracks were observed in the vicinity. It should be noted that local elders claim that in the past the area around Lokori

contained much more game, including zebra, giraffe, and gazelle. (Lokori itself means giraffe crossing in the Turkana language). In all likelihood the depletion of game in this region is fairly recent due both to hunting by the local Turkana and overgrazing of the area by the Turkana herds (Allan 1965). These same elders claimed that the Lokori area was much greener during their boyhood (30 to 40 years ago). (This corresponds to data reported for the Kerio Delta area collected by Robbins 1974). In the past it appears that the Kerio flowed year round. It would appear then that the semidesert conditions now found in the area are fairly recent in origin.

It seems reasonable to assume that in the past the area could have supported a much higher population density. Today the population density of the area is one of the lowest in East Africa, 3.3 persons per square mile (Allan 1965). Given the sparce vegetation and the food requirements of the Turkana herds, the carrying capacity of the area is very low. Naturally this carrying capacity would increase greatly if more plant food was available for the Turkana herds.

Excavation Strategy

The only previous work conducted at the Lokori sites was that done by R. Soper (1968; 1977). His initial report was on a number of the petroglyphys found at the sites (1968). Soper subsequently returned in 1970 (Soper 1977) and excavated four of the cairns near the center of the southernmost of the two sites

(see Figure 6). He reported 110 cairns on the southern outcrop and seven on the other. These figures were based on aerial photographs. However, many graves could only be observed by a closer "on the ground" inspection. This is because many of the graves, particularly in the western portion of the site, were partially obscured by wind blown sand. As a result my research revealed that the southern site contained 162 graves and the other 11; an increase of 52 and four graves respectively.

The individual graves consisted of an outer circle of upright irregularly shaped basalt slabs (Figure 7). The interior of the circles were covered with horizontal slabs and small stones, which sometimes rose to a low mound about 40 cm above the surrounding ground. All of these stone slabs were easily acquired from the outcrops on the hills where the graves were located. Here the basalt has exfoliated into regular slabs 10 to 15 cm thick. The external diameter of the graves ranged from 1.2m to 4.7m with a mean diameter of 2.3. The outer standing slabs ranged in size from 5 cm above the ground surface to as much as 175 cm (grave #49).

Due to the large number of cairns as well as the effort required to excavate them, a sampling strategy was employed. The initial stage of the excavation, consisted of selecting a 15% random sample of all the graves at the two sites (Figure 8, 9) (24 at one site and two at the other). The usefulness of a random sampling design is more than adequately discussed elsewhere (Clarke

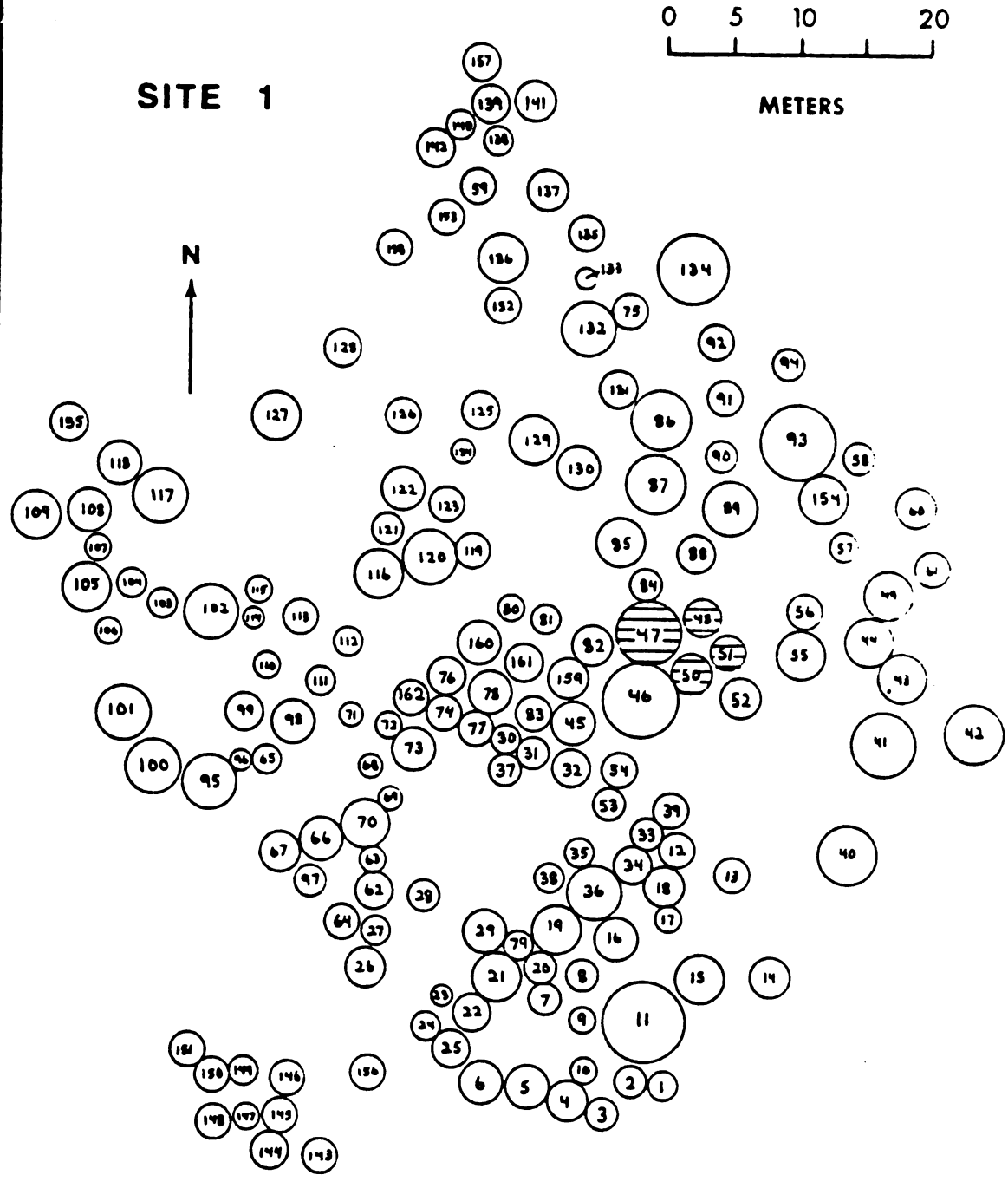


Figure 6

GRAVES INITIALLY EXCAVATED BY R. SOPER

[INDICATED BY HATCHING]

Figure 7
Grave 41 at Namoratunga I

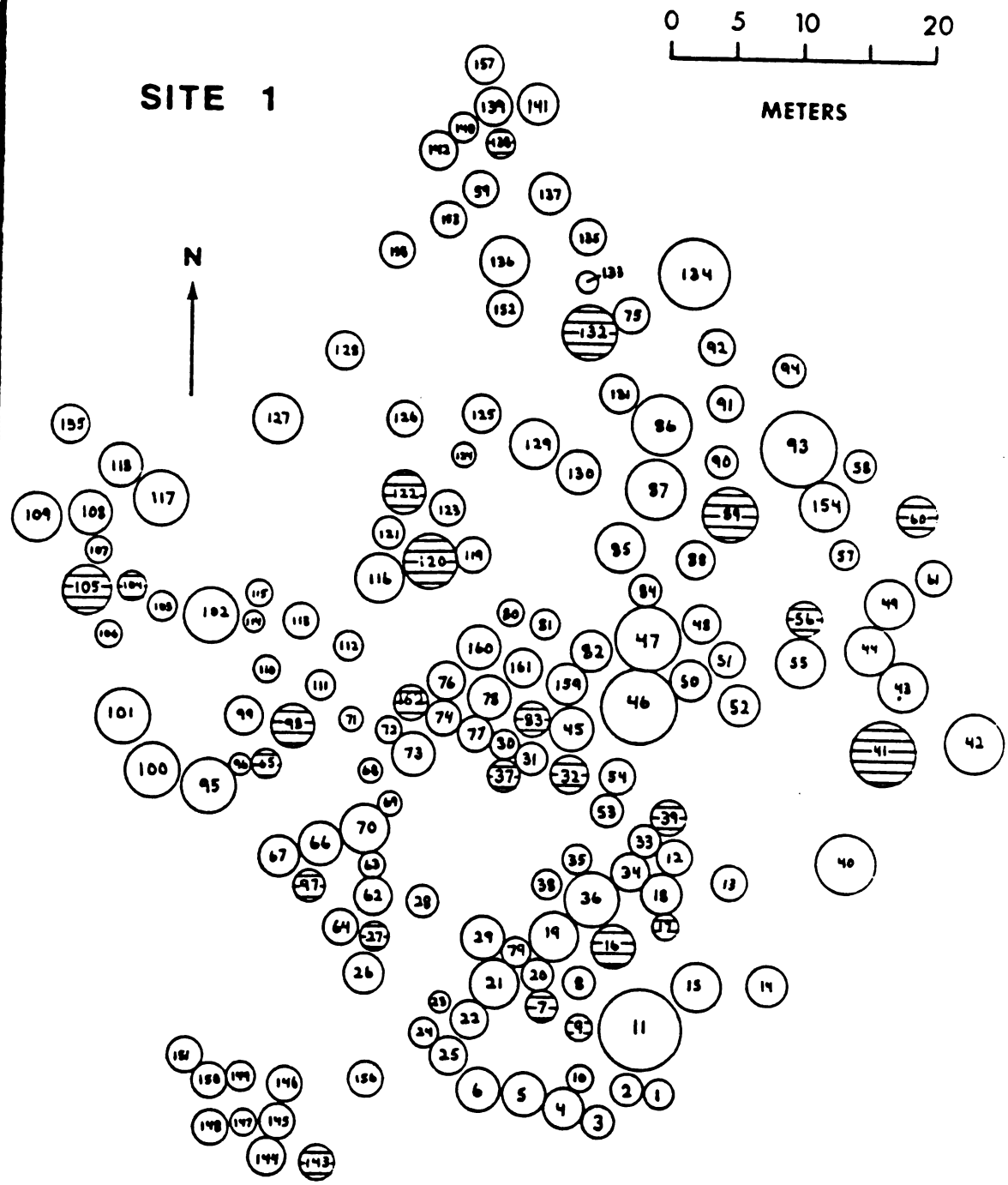


Figure 8

INITIAL 15% EXCAVATION SAMPLE

[INDICATED BY HATCHING]

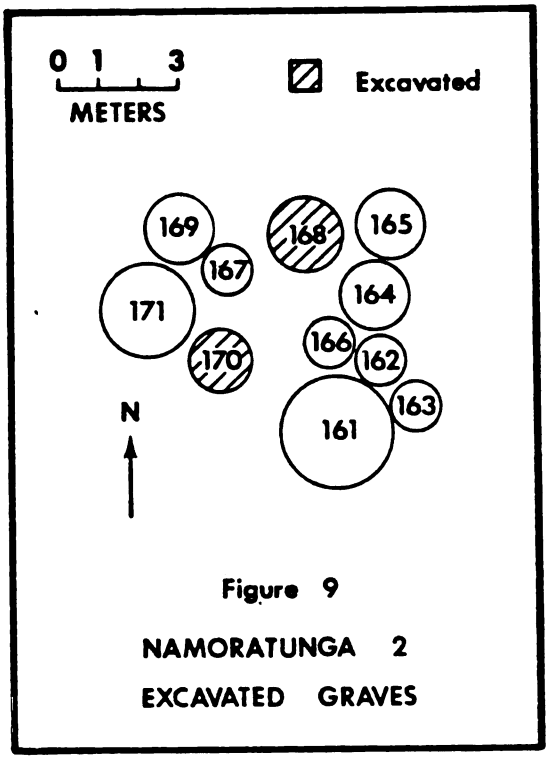


Figure 9

NAMORATUNGA 2

EXCAVATED GRAVES

1968) and so will not be dealt with further here. This 15% sample was found to be significant at the .05 level.

All graves were profiled whenever possible removing only the inner horizontally layered stone slabs (e.g. Figure 10). The outer circle of vertical slabs was left in situ if possible. In doing so it was hoped that the site, upon completion of the excavations, could be returned as closely as possible to its original configuration. The cairns were excavated as a unit, however, any artifacts found were mapped with depths recorded. At the onset of the excavations two graves were excavated with all soil being screened through 1/8" mesh (7 and 9). At the same time two other graves (143 and 16) were excavated but not screened. Since all the graves had to be painstakingly excavated by trowels, it was found that the artifact recovery rates for screened VS non-screened graves were nearly identical. Since screening greatly increased the amount of time necessary to excavate a single grave, it was discontinued.

The graves were initially cleared of a layer of wind blown sand which covered the horizontal slab interior. This deposit of wind blown sand often reached a depth of as much as 30 cm. The graves were then mapped (see Appendix A for drawings of graves excavated). The graves were excavated in two halves to maintain a vertical profile. In profiling these graves it became apparent that the inside of the circle consisted of horizontally layered slabs to a depth of 50 cm or more. These slabs ranged in size

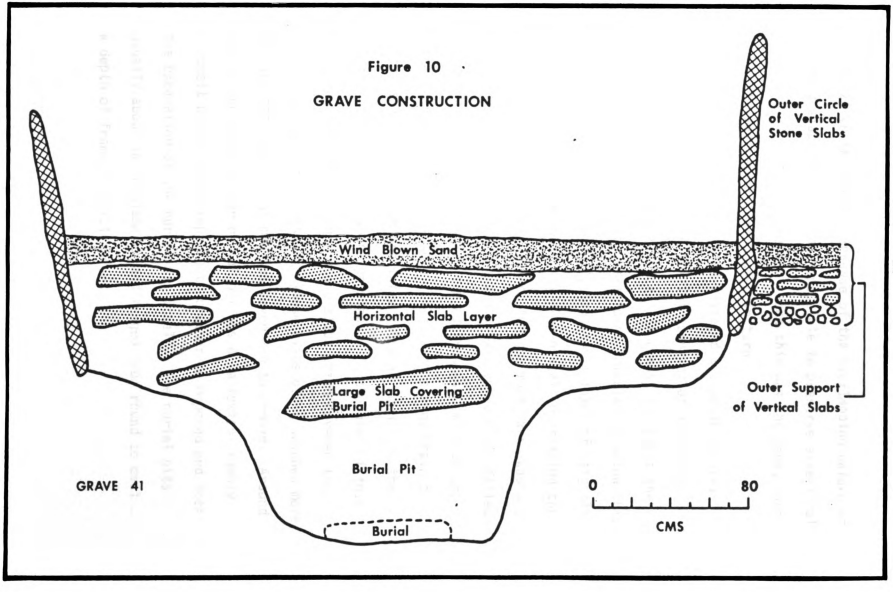


Figure 10
GRAVE CONSTRUCTION
Outer Circle of Vertical Stone Slabs
Wind Blown Sand
Horizontal Slab Layer
Large Slab Covering Burial Pit
Outer Support of Vertical Slabs
Burial Pit
GRAVE 41
Burial
0
80
CMS

from 15 to 120 cm in length. Because of the overlapping nature of some of these slabs it was often impossible to preserve a vertical face in some of the smaller graves. When this was the case, each layer of slabs was removed and mapped in turn.

All of the graves excavated revealed a similar internal structure (see Figure 10). The initial covering of wind blown sand formed a layer 10 to 30 cm thick. In almost all cases the horizontally layered stone slabs were found immediately below this wind blown sand layer. Soper (1977) mentions a layer of "tightly packed stones in a light brown matrix" immediately overlaying the horizontally stone slabs. This layer, for the most part, was not encountered by the author. The horizontally layered slabs filled the entire graves to a depth which ranged from 140 cm to 30 cm. The spaces between these slabs were filled with a fine grained sand. This sand was blown in and later filtered down into the grave filling the spaces between the slabs. At the base of this layer was one or two much larger stone slabs which covered the entrance of the burial pit itself. These slabs often weighed more than 300 lbs and required as many as seven men to remove. Around the edge of the mouth of the burial pit was a yellowish crumbly stone deposit which likely represents crushed decomposed bed rock from the excavation of the burial pit itself. The burial pits were usually about 1m in diameter and ranged from round to oval with a depth of from .2 to 1.1 meters.

In two cases, graves 41 and 122, a section was cut outside the outer circle of standing slabs to help determine overall grave construction. This yielded a deposit 30-50 cm thick, just to the outside of the standing vertical slabs. The lower half of this deposit consisted of small stones in a brown sand matrix. Above these were horizontally layered slabs tightly wedged against the back of the vertical slabs. These slabs were smaller than those placed within the grave. Apparently these small slabs were buried in order to conteract the weight of the internal horizontal slabs which tended to force the vertical slabs outward.

From the excavation of 120 and 122 it is possible to reconstruct the sequence of events in the construction of the Namoratunga graves. This sequence is in general agreement with the sequence proposed by Soper (1977). There are, however, several minor differences:

1. The grave was originally excavated and the burial pit was sealed by a large slab placed over the burial pit.

2. The ring of vertical slabs was propped around the grave. In many cases the grave above the pit and slab was filled with several layers of horizontal slabs before this occurred. In the graves excavated by Soper, apparently this was not the case. In his work he noted that the horizontally layering only took place after the vertical slabs were placed around the grave. Once these vertical slabs were propped around the grave, the interior was filled with horizontal slabs. At the same time, stones were

tightly packed outside the upright slabs to counteract the outward pressure created by the inner slabs.

3. After its final construction, a deposit of wind blown sand covered the grave along with subsequent debris including some undecorated pottery and stone artifacts. The pottery appears to be recent and Turkana in origin. The stone artifacts were not diagnostic. They consisted of small end and side struck flakes made of chert and obsidian. These items were deposited on the grave sometime after its construction. Their deposition on the grave was probably fortuitous.

4. Eventually the weight of the superstructure of the grave caused the grave pit to crumble, allowing the slab layers to subside to some extent. Due to this as well as gravity and water percolation, fine grained sand and certain small artifacts filtered down filling the spaces between the slab layers.

Artifacts in Grave Fill

A large number of teeth of both domesticated cow and sheep/goat were found in the grave fill. These teeth may have been part of a ritual offering during the burial (see Sutton 1966). Other bones were probably included as well but only teeth preserved due to their more durable nature. Such a practice is common among the Turkana, for example. Another explanation is that these teeth were simply accidental inclusions in the graves. Soper felt that the teeth were incorporated after the construction of the grave was completed. They were originally deposited on top of the grave at

a time subsequent to its final completion and eventually filtered down through spaces in the horizontal slab layers. The present author is not convinced that such large numbers of relatively large tooth fragments could have "filtered down" to the depths where many were found. For example, eight teeth were recovered at a depth of one meter beneath a solid fill of horizontal slabs in grave #41. If such a "filtering" action were indeed responsible one might expect much higher frequencies of these teeth closer to the surface; this is not the case. The fragments are fairly evenly distributed throughout the grave. The fact that some fragments were found in the burial pit itself would seem to weigh heavily against any type of filtering action being responsible.

A large number of stone artifacts were also found in the grave fill. Some of them even occurred in the burial pit itself. Artifacts which appeared to be intentional grave offerings as such are described in the next chapter. However, many of these stone artifacts in the burial pit did not appear to be intentional inclusions. Their presence can be explained if the grave was initially excavated through a surface which contained a scatter of stone artifacts. This was obviously the case for the larger Lower Paleolithic tools encountered (see Appendix H for description of all stone artifacts).

Skeletal Remains

In general, the actual preservation of the burials themselves was very poor. In many cases, little more than a faint ghost

like impression remained of the skeleton. It is because of this that such a high frequency of the burials could not be aged or sexed (33%), (see Table 1). In all cases soil Ph samples were taken near each burial. These yielded an average value of 7.6. Given this rather high Ph value it seems unlikely that soil acidity was responsible for the poor preservation. In all likelihood termite activity was the greatest single agent responsible for the poor preservation (Soper 1977).

Despite this poor preservation, it was possible in many instances to age and sex individuals. Individuals were not assigned to any particular sex unless three distinct sex related physical attributes could be observed (siatic notch, subpublic angle, goneal angle, for example). Individuals were assigned to age categories according to the method developed by N. Sauer (1975). Given the poor preservation exact ages could not be assigned. Instead individuals were placed into general age categories.

I Early Infant--Not all the deciduous teeth are fully erupted.

II Late Infant--This period includes the time from the full eruption of all the deciduous teeth to the eruption of M_1.

III Child--This period extends from the eruption of M_1 to the eruption of M_2.

IV Adolescent--This period marks the unification of all epiphysis. If these are unavailable, the eruption of M_3 is used.

V Young Adult--From IV until dentin is exposed on M_2.

VI Middle Adult--More dentin is exposed on M_2 than just the cusps.

VII Late Adult--The cusp pattern of M_2 is completely obscured (Sauer 1975).

Because of the extremely poor preservation all skeletal measurements that were possible (see Appendix C) were taken in the field and all of the burials were subsequently reburied. It was felt that little if any additional information could be obtained by adding preservative to the skeletons.

All individuals were flexed, on their left side. Cranial--caudal orientations displayed a greater degree of variability. They were either N-S, S-N, E-W, W-E. The variation off the four cardinal directions was for the most part less than 10°. Grave 89 was the sole exception here and was oriented 30° east of true north. Burial 82 was the only example of a bundle reburial at the site (Figure 11). The burial, a male, consisted of a skull resting on top of the long bones, vertebrae and innominates. Only the large foot bones were recovered such as the talus and calcaneus from both feet. No hand bones and only a few rib fragments were present. None of the bones recovered were articulated. The absence of certain bones, notably the smaller bones of the hands and feet may be due to preservation, since the preservation of even the larger bones was very poor. Given the lack of any remaining articulations, it would seem that the flesh was entirely decomposed from 82 before its reburial at Namorantunga 1. Ubelacker (1974) has suggested a period of three years for all

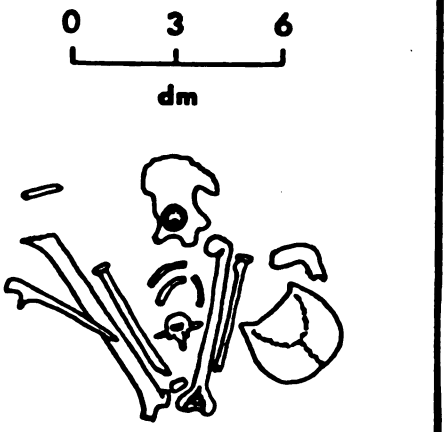


Figure 11

GRAVE 82 - BUNDLE REBURIAL

the flesh to decompose among Virginia tidewater aboriginal burials. Given the more arid conditions which prevailed in the Lake Turkana region, it seems likely that this figure of three years could be used as an upper limit of time between the initial burial of 89 and the subsequent reburial at Namoratunga 1.

Of the 24 burials in the initial 15% random sample, 25% (6 graves) contained what may be considered intentional grave offerings. One retouched lava blade was recovered 5 cm above the skull of burial 97. Burial 104 was found with two chert flakes resting on the skull and one chert and one obsidian flake 4 cm from the face. Burials 122 and 138 were also found with lithic material. Three obsidian flakes were recovered with burial 122; one 3 cm to the east of the right hand, a second 2 cm from the right foot and a third 1 cm from the face. Burial 138 was found with one obsidian bladelet 2 cm from the right foot and one resting on the skull. Finally, the feet of burial 105 were covered with red pigment and a bone point was noted 2 cm from the left foot of burial 143 (see Appendix G for drawings of all grave offerings).

Only one of these individuals was female, 143. It is likely that all of the items contributed as grave furniture are locally available. Given the volcanic nature of the area obsidian is probably fairly common, although exact sources are unknown. Red pigment is available near the Kerio River (M. Robbins personal communication). The possibility exists that in addition to the

grave goods listed above, other perishable organic items may have been contributed as grave furniture. Among the present day Turkana who now inhabit the area, for example, tobacco, milk, blood and grain are common items included with the burials (Gulliver 1955). Although pollen samples were taken from each burial pit, no pollen was preserved (N. Nowak, personal communication). As such, there is no way of determining if organic items were indeed included with these burials.

From this initial 15% sample a number of patterns became apparent.

1. Graves over 2.0m in diameter contained only males. In no case was a female found in a grave over 2.0m in diameter.
2. Decorated graves (graves with petroglyphs on their vertical standing slabs) regardless of their diameter only contained males.
3. Graves less than 2.0m in diameter and undecorated contained both males and females.

Based on this information gained from the first 15% random sample, another 10% of the graves at Namoratunga 1 were excavated. The reasons for this were twofold:

1. The additional sample provided a test of the three patterns observed in the 15% random sample. It was hoped that grave content could be predicted solely on the basis of external grave characteristics, i.e., grave diameter and the presence of

decorations. If the patterns first observed in the 15% sample were confirmed by the test it would allow predictions to be made concerning the entire burial population.

2. It provided the opportunity to see if any regularities could be identified in burial orientations. The initial sample revealed four distinct orientations; the head was either to the north, south, east or west. However, no patterns were apparent in orientation on the basis of age, sex or position within the cemetery.

The graves excavated (14) were in a large relatively isolated cluster (see Figure 12). These graves were not chosen at random since it was hoped that by opening up a wide area of contiguous graves, any patterns which might exist among orientations could be noted. There were several reasons which dictated the excavation of this particular cluster. First, the cluster was relatively isolated and so easily demarcated. Second, it was contiguous to the four graves excavated by Soper in 1970 (Soper 1977). This allowed Soper's work to be easily incorporated with that of the author's. Finally, in excavating the initial 24 graves, it appeared that burial preservation was slightly better in this section of the site.

The second sample confirmed that it was possible to predict grave content based on the external characteristics of particular graves. The burial parameters noted in the original sample were verified in all cases. In addition, only 21% of these burials

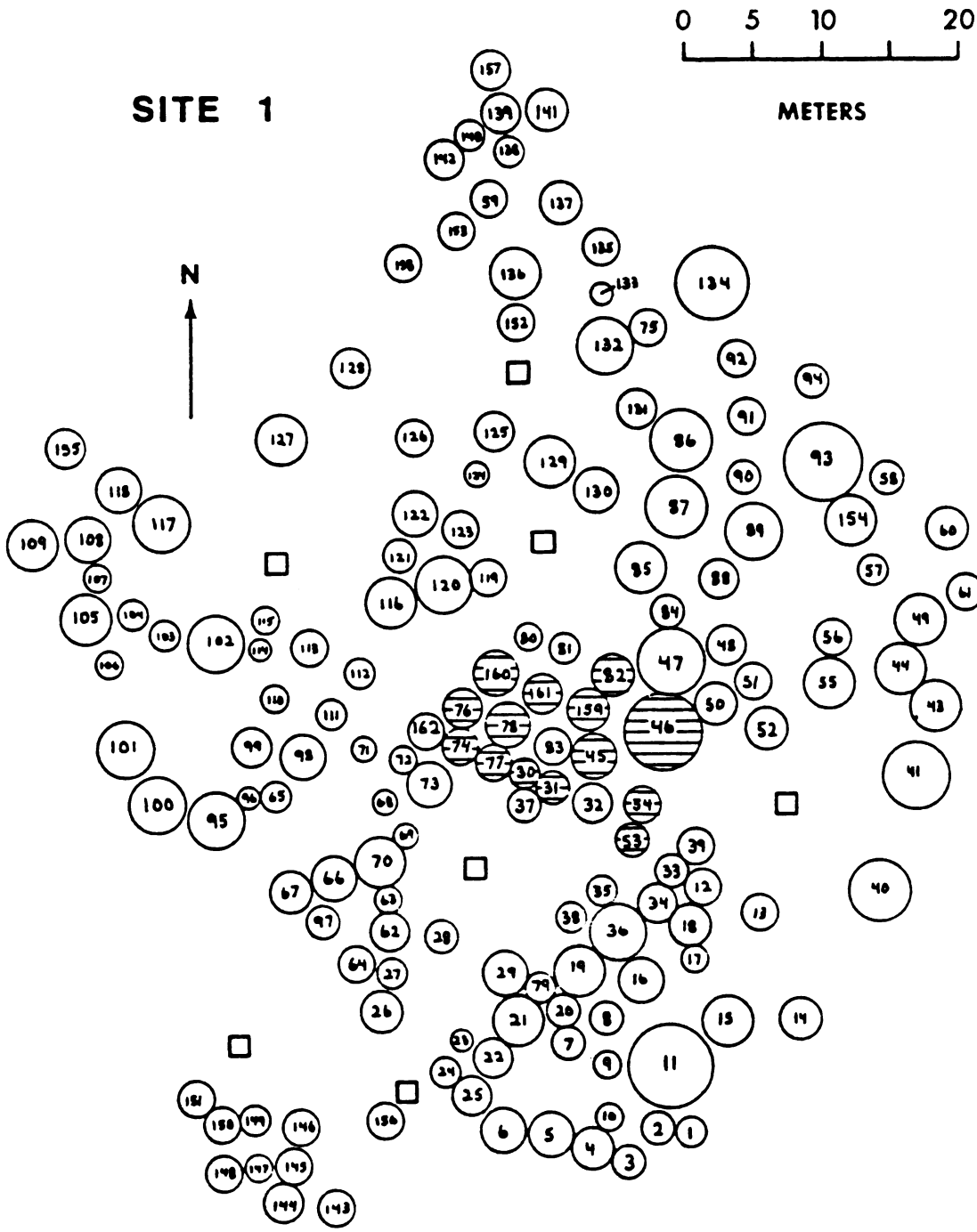


Figure 12

SECOND 10% EXCAVATION SAMPLE

[INDICATED BY HATCHING]

could not be sex identified (33% of the initial sample were unidentifiable). Of the four graves that were decorated, 76, 54, 46 and 32, all contained males. Three graves containing females were found, but in no case did any of these graves exceed 2.0m in diameter.

No pattern in burial orientation emerged from the second sample. Four contiguous graves might have completely different orientations (30, 31, 83, and 45 for example, see Table 1). It seems then that graves in close proximity need not display the same orientation and that a cluster of burials is quite heterogeneous in terms of orientations. Orientations will be discussed further in the next chapter. Individuals in graves 45 and 161 both had red pigment over their feet. In the case of 45 red pigment was also on the skull of the burial.

Table 3 compares the two samples. Both samples agree quite closely in all categories except age. However, given the high total percentages of individuals which could not be assigned to a particular age category (37%) it is difficult to make direct comparisons or to determine if the different percentages represented in each age category are real or simply the result of preservational idiosyncrasies. The nonrandom nature of the second sample may also be partially responsible.

Table 3 also indicates that females (roughly only 12% of total and 25% of the cases of known sex) and subadults, 8%, are greatly under represented. If a normal age and sex ratio is assumed,

TABLE 1.--Initial 15% Random Sample at Site I: (See Figure 8).

Grave #	Diameter	Sex	Age	Orientation	Decoration*
7	2.4m	M	MA	183°	None
9	1.9m	F	YA	185°	None
16	3.2m	M	MA	10°	None
17	1.8m	F	MA	92°	None
27	1.8m	?	?	?	None
39	2.2m	?	?	?	None
41	3.4	M	?	190°	Yes
53	1.8m	M	MA	182°	None
56	2.0m	?	?	260°	None
60	2.2m	?	?	East?	Yes
65	2.0m	?	Child	180°	None
79	2.0m	M	MA	West	Yes
82	2.2m	M	MA	Bundle Reburial	None
83	1.7m	M	YA	182°	None
89	3.6m	M	MA	30°	None
97	1.9m	?	Adult?	187°	None
98	2.4m	M	MA	100°	None
104	1.8m	M	MA	255°	None
105	3.2m	M	MA	180°	Yes
120	2.8m	?	?	West	None
122	2.5m	?	Adult?	184°	None
132	3.2m	?	Adult?	East	Yes
138	2.2m	M	MA	5°	None
143	1.6m	F	Adult?	272°	None
			At Site II		
168	1.25m	F	MA	0°	None
170	1.2m	M	Adult?	90°	Yes

*Decoration refers to the presence of petroglyphs on the standing vertical slabs. This art is discussed in detail in Chapter IV.

TABLE 2.--Second 10% Sample.

Grave #	Diameter	Sex	Age	Orientation	Decoration
30	1.5m	M	YA	0°	None
31	1.6m	?	Child	170°	None
32	2.2m	M	YA	272°	Yes
37	1.8m	F	MA	10°	None
45	2.4m	M	Adult?	85°	None
46	4.4m	M	Adult?	175°	Yes
54	2.0m	M	YA	185°	Yes
76	1.6m	F	YA	180°	None
77	1.7m	M	MA	180°	None
78	2.8m	?	Adult?	270°	None
159	2.4m	?	?	90°?	None
160	2.6m	M	MA	275°	None
161	2.0m	M	MA	105°	None
162	1.9m	F	YA	180°	None
Graves Excavated by R. Soper in 1970.					
47	4.0m	?	?	0°	Yes
50	2.1m	M	?	270°	Yes
51	2.4m	?	?	?	Yes

TABLE 3.--Breakdown of Orientation, Decoration, Sex, Age and Grave Goods by Sample.

Orientation	15% Sample		10% Sample		Total
North	14%	(3)	14%	(2)	14%
South	43%	(9)	43%	(6)	43%
East	19%	(4)	21%	(3)	20%
West	24%	(5)	21%	(3)	23%
Decoration	21%	(5)	28%	(4)	24%
Sex					
Male	52%	(12)	57%	(8)	54%
Female	13%	(3)	21%	(3)	16%
Unknown	35%	(8)	21%	(3)	30%
Age					
Children	8%	(2)	0%	(0)	5%
Adolescent	0%	(0)	0%	(0)	0%
Young Adult	8%	(2)	37%	(5)	18%
Middle Adult	46%	(11)	26%	(4)	39%
Unknown	37%	(9)	37%	(5)	37%
Grave Goods					
Male	50%	(3)	40%	(2)	63%
Female	17%	(1)	0%	(0)	12%
Unknown	32%	(8)	60%	(3)	25%

it becomes obvious that a segment of the population warranted an alternate form of interment or simply were not buried. To test the proposition that non-cairn burials existed at the sites, a series of 1 X 1 meter test squares were excavated. Seven randomly placed 1 X 1 meter squares were excavated between the graves at Namoratunga 1 (see Figure 13). These squares were dug in arbitrary 15 cm.

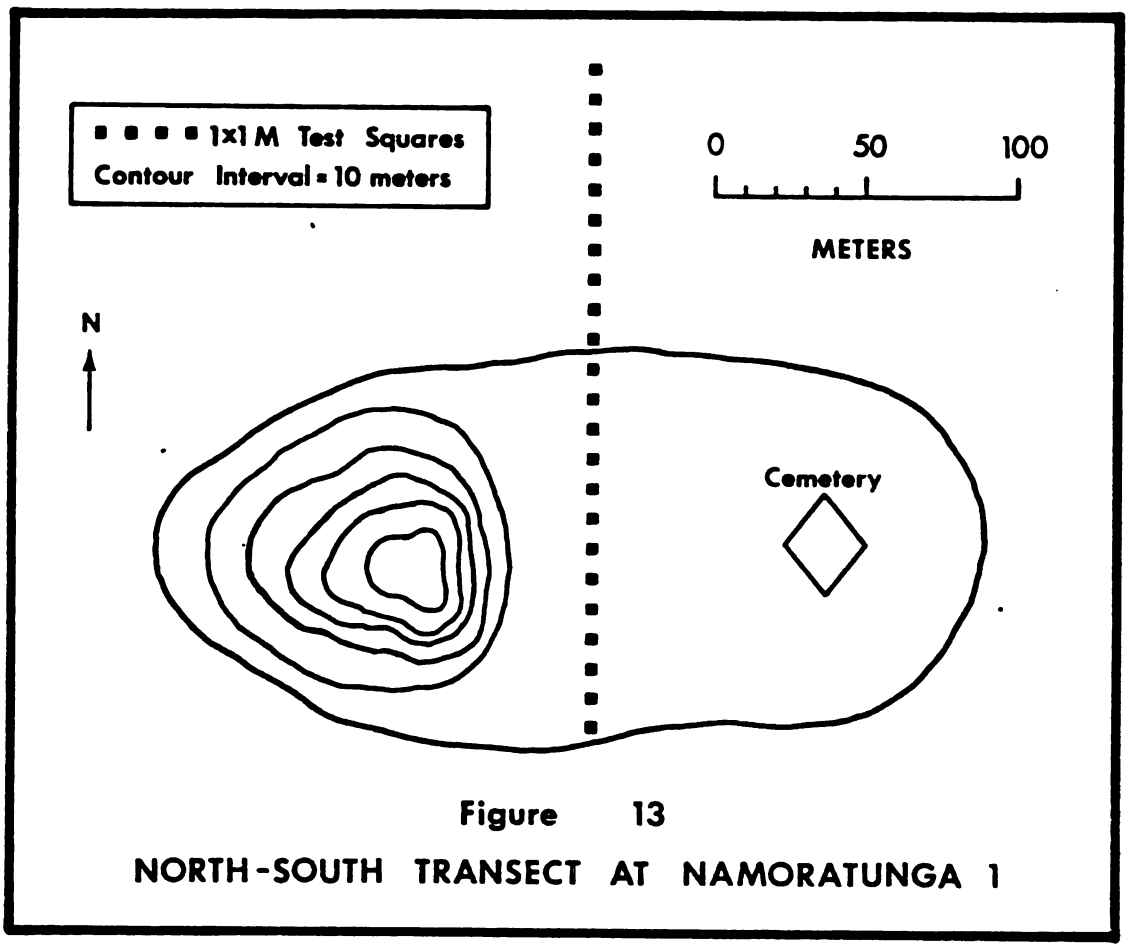


Figure 13

NORTH-SOUTH TRANSECT AT NAMORATUNGA 1

levels and terminated when sterile soil was encountered. All squares were terminated in the second level (at a depth of about 30 cm). These seven squares only yielded two chert flakes and lacked any traces of additional burials.

A second set of 23, 1 X 1 meter squares was excavated just to the west of the cemetery area but still on the same basalt outcrop. Squares were dug every 10 meters in a line running north-south across the outcrop (see Figure 13). These squares were also dug in arbitrary 15 cm levels and were all terminated by 30 cm. No artifacts were recovered in these test squares. From these 30 squares it appears that there were no non-cairn burials at the site and that a large segment of the burial population was interred elsewhere or was not buried.

Site Survey

In addition to the excavations carried out on the mortuary sites, an attempt was made to locate any associated habitation sites. It was thought that habitation sites would reveal aspects of the material culture and subsistence, which could not be determined from the burial data alone. To facilitate this a survey was conducted of 190 square kilometers around the two sites with the two sites located in the approximate middle of this area (see Figure 14). This area was defined largely by geographical features: The Loriu Plateau to the east, the Kerio River to the south, one mile west of the Kangatet River to the west and the Kangatet River to the north where it joins the Kerio. This survey area was

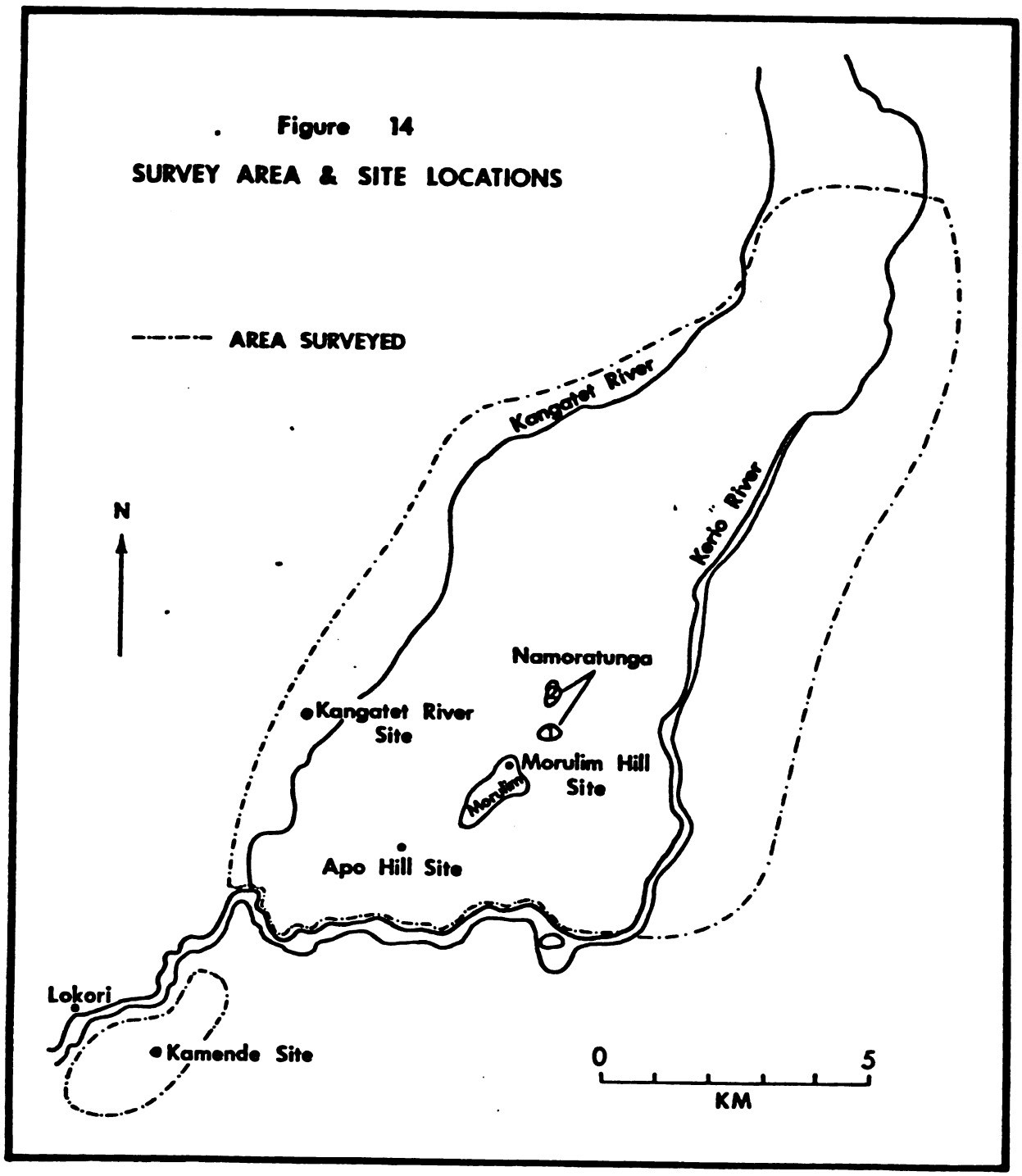


Figure 14
SURVEY AREA & SITE LOCATIONS
AREA SURVEYED
Kangatet River
Kerio River
N
Namoratunga
Kangatet River Site
Morulim Hill Site
Morulim
Apo Hill Site
Lokori
Kamende Site
0
5
KM

in turn stratified for sampling purposes. The 12 square kilometers immediately surrounding the two sites were intensively surveyed, while the remaining 178 square km were surveyed using standard survey procedures. This intensive survey entailed in addition to standard survey on foot, the digging of 50 cm test holes every 200 meters across this area (see Lovis 1976 for rational of this technique) from the Kerio River in the east to the Kangatet River in the west. The depth of 50 cm was chosen arbitrarily as was the spacing of test holes every 200 m. Here it was assumed that much like the present day settlement pattern in the area the presence of water would have dictated site location. In all 325 test holes were dug. They recovered no artifacts or evidence of habitation sites. Appendix D contains the results of a series of soil samples taken across the area. What these indicate is that the Kerio and Kangatet Rivers have in the past meandered extensively in the area around the Namoratunga 1 and 2 sites. In fact, at one time the rivers may have been as close as 100 meters to the two sites. The entire area surveyed was found to be flood plain. To try to get some idea of the depth of these flood plain deposits three additional 2 X 2 meter squares were excavated running due east from Namoratunga 1 extending towards the Kerio River. The first square was dug approximately 200 meters east of the site, the second at 1200 meters and the third, near the present bank of the Kerio, approximately 1800 meters to the east. The first two squares were taken to a depth of 2 m. the third to a depth of 3 meters. All three squares were terminated at those depths. No

artifacts were found, but it does appear that the flood plain deposits extend to a depth of at least 3 meters.

The remainder of the 190 square kilometers in the survey area was surveyed either by foot or by motor vehicle. Because the area lacked any appreciable vegetation, except near the Kerio River survey by motor vehicle was efficient in most areas. Where this was not feasible, survey on foot was conducted. In addition, erosion gulleys near the Kangatet River as much as 4 meters deep revealing extensive profiles were inspected. No sites were found in this enlarged survey area between the Kerio and Kangatet rivers. However, just to the west of the Kangatet River, where low lava ridges begin to replace the horizontal flood plain deposits several sites were noted. Three Lower Paleolithic as well as one Late Stone Age site were recorded (see Figure 14). (Only small representative samples of artifacts were collected from these sites.) (See Appendix E for site descriptions.)

The survey produced only four sites and none of these could be associated with the cemetery sites. There are a number of possible explanations for this. (1) There are no habitation sites of the proper antiquity in the survey area. Individuals lived outside the survey area and traveled some distance to intern the dead at these sites, in this case at least over 4 kilometers. Some support for this may be provided by burial 83, a bundle reburial. (2) Habitation sites were buried under flood plain deposits from the Kerio and Kangatet Rivers at a depth greater than 50 cm. Fifty

centimeters was the arbitrary depth chosen for the test holes in the first survey strata. The three subsequent 2 X 2 meter test squares dug from Namoratunga 1 east to the Kerio River indicated that the flood plain deposits reached a depth of at least 3 meters in the areas tested. (3) The third explanation may have to do with the nature of the habitation site itself. In the area today among the Turkana, settlements are very small and temporary often consisting of little more than 3-5 small thatched huts and an animal kraal made of brush. Given the demands of the local environment, a certain degree of mobility is required and thus a limited material culture. Just west of Namoratunga 1 an abandoned Turkana camp was found. According to the local Turkana the camp had been abandoned for less than two years. In that time all that remained of the camp were small circles of stone marking what used to be the outline of several huts. This is because in addition to normal processes such as wind action, the Turkana often reuse the wood from abandoned settlements. Given several more years, this particular settlement would be completely unrecognizable archaeologically. Robbins (1973) came to similar conclusions and noted that at least 63% of Turkana material culture consists of perishable items. If the assumption of analogous types of settlements for the people responsible for Namoratunga 1 and 2 is valid, then habitation sites would be extremely difficult to locate.

CHAPTER III

MORTUARY ANALYSIS

Mortuary customs and mortuary sites have been the subject of study by archaeologists and social anthropologists throughout most of the history of professional research. However, most of the earlier studies that utilized mortuary data (and many as recently as the 1960's) tended to focus on only one dimension of mortuary practices. Burials were described in great detail (Webb 1946, Lewis and Lewis 1946 to name but a few) but analyzed only in terms of the dimension of time. Similarities or differences between burial populations were explained in terms of different cultures mixing through time and influences from other areas (Kroeber 1927, Dragoo 1963). These early studies display an unsophisticated view of cultural variability in assuming uniformity in burial customs within a society and that sites could be compared on the basis of formal similarities in burial practices. Since the manner in which different social positions are symbolized at death is often quite arbitrary, any comparisons of this nature are bound to be highly misleading. Different cultures may symbolize the same idea in very different ways (Binford 1971).

More recently, studies have viewed (Binford 1971, Goldstein 1976, Saxe 1970, Peebles 1974, Mainfort 1976) mortuary practices as

a critical facet to the understanding of cultures (Brown 1971). These studies have attempted to derive elements of social organization from burial data. However, in doing so many of these studies have concentrated on a single dimension in extracting inferences about extant social organization. Many, for example, have relied almost entirely upon artifactual associations and while examining other dimensions, have treated them as only secondary in importance (Larson 1971, Peebles 1971, 1974, to cite just a few cases). Other researchers have relied largely upon studies of social and political organization (Fried 1967, Service 1962). Several of these studies have achieved a certain degree of success (Stickel 1968, King 1969, Renfrew 1973). Unfortunately such approaches have tended to conceptualize social variables as essentially dichotomous entities--egalitarian or ranked. There is no room for varying degrees of rank differentiation in such an approach.

The recent ethnographic surveys of Saxe (1970) and Binford (1971) have demonstrated the multidimensional nature of mortuary data. They provide empirical support for the proposition that a wide range of social inferences can be drawn from mortuary data. Both the organization and structure of societies as well as the status positions occupied by these members of the societies is encapsulated in the mortuary routine. Hence, these studies suggest that of all data categories available to the archaeologist, mortuary data may offer the most complete picture of the organization of the social system.

Both Saxe and Binford (see references above) rely heavily for their theoretical framework upon the work of Ward Goodenough and his discussion of role theory (Goodenough 1965). Status is viewed as a combination of rights and duties termed social identities. Status involves "(1) what legal theorists call rights, duties, privileges, powers, liabilities and immunities . . . and (2) the ordered ways in which these are distributed in what I shall call identity relationships" (Goodenough 1965:2). The ordered patterns of rights and duties in the interaction between distinct social identities are identity relationships. However, in any given interaction an individual must select from a range of social identities at once. These must combine to make a grammatically possible composite identity, that is, the social identities must not be conflicting with the occasion on which they are used or with other identities. "The composite of several identities selected which is appropriate to an interaction constitutes the selectors social persona in the interaction" (Goodenough 1965:7).

Saxe (1970) has observed that at death the social persona of the deceased involves the possible interaction of the deceased's entire range of social identities and the alternate identities recognizing relationships to the deceased. Thus at death, a composite social persona is symbolized through the mortuary ritual. Expanding upon this, Binford (1971:17, 21) suggested that two components of social significance participate in structuring the form of the mortuary ritual. The first is the social persona of

the deceased. The second is the size and composition of the social group recognizing status responsibility to the deceased. A direct correlation between these two can be inferred. The more important the social persona, the more people recognizing duty-status relationships to him. Hence the number of identity relationships that an individual might have varies with the organizational form of the society in question (Saxe 1970:7).

In egalitarian societies one might expect infants to have few identity relationships while elders would have many by virtue of their having participated more fully in the society. Such a society should exhibit graded increases in the number of identities from infants to elders since statuses are achieved. If on the other hand an infant is found to have a larger social persona than certain adults, some form of hereditary ranking is likely indicated. In this case the death of an infant may have been a matter of concern for the entire community.

The ethnographic sections of the works of Saxe (1970) and Binford (1971) bear directly upon this point. Although Saxe proposed a series of eight hypotheses, only the first two are significant here (see Chapter VI for complete discussion of all 8 hypotheses).

> Hypothesis 1: The Components of a Given Disposal Domain Cooperate in a Partitioning of the Universe, the Resultant Combinations Representing Different Social Personae (Saxe 1970:65).
>
> Hypothesis 2: In a Given Domain, the Principles Organizing the Set of Social Personae (Produced by the

> Cooperative Partitioning of the Universe of Disposal Components) are Congruent with those Organizing Social Relations in the Society at Large (Saxe 1970:66).

Saxe was able to confirm these two propositions using a small sample of three societies. Binford (1971) proposed three further generalizations utilizing a much more extensive ethnographic sample.

> "1. The specific dimensions of the social persona commonly given recognition in the differentiated mortuary ritual vary significantly with the organizational complexity of the society as measured by different forms of subsistence practices.
>
> 2. The number of dimensions of the social persona commonly given recognition in mortuary ritual varies significantly with the organizational complexity of the society, as measured by different forms of subsistence practices.
>
> 3. The forms, which differentiations in mortuary ritual take, vary significantly with the dimensions of the social persona symbolized" (Binford 1970:23).

Given a set of interments, then, it becomes possible to make inferences not only about the social persona of the deceased, but also the level of complexity of the society itself.

Two other recent works that have made significant contributions to the study of mortuary data are those of Tainter (1975) and Goldstein (1976). Both rely heavily upon the works of both Saxe and Binford for their basic framework. Tainter, borrowing extensively from Brown (1971) proposed energy expenditure as a measure of social structure and organization. Tainter uses entrophy measures to quantify this energy expenditure (see Goldstein 1976 for discussion of difficulties inherent in the use of such entrophy

measures). Goldstein (1976) while utilizing a range of distinct burial dimensions relies heavily upon locational variables. She deals specifically with Saxe's hypothesis 8 revising it with a much larger ethnographic sample.

While the works of Saxe and Binford will provide much of the theoretical underpinnings of this work, the author also borrows heavily from the works of both Tainter and Goldstein since their particular approaches are well suited to the author's own data base.

Cluster Analysis

The first stage of the Namoratunga mortuary analysis entailed the grouping of the burials into meaningful culsters. As mentioned previously, very little in the way of grave furniture was recovered. As such, only characteristics of the grave itself and body disposition could be utilized in classifying the burial data. To implement this classification a clustering routine was utilized. This program was drawn from the Statistical Package for the Social Sciences (SPSS 1975) on file at Michigan State University. All analysis was conducted on a CDC 6500 computer. The variables used in this study included: (1) external grave diameter; (2) total grave depth; (3) burial pit depth; (4) range and average size of vertical slabs standing above the surface; (5) age, and (6) sex of the individual; (7) compass orientation as measured in degrees; (8) presence of petroglyphs on the vertical slabs. These represent all of the variables that were recorded

for each grave. All the excavated graves were utilized in the cluster analysis.

The clustering routine used was ISODATA. It is a polythetic agglomerative program (Nie et al. 1975). ISODATA is an average link method which fuses subordinate clusters based upon the average similarities between all cases previously existing in a cluster and the potential new member.

From this routine five burial groups were derived (see Table 4). Although these burial clusters are treated as distinct groups in Table 4 for ease of study, they should be viewed more accurately as forming a continuum with a certain amount of overlap between categories. In examining these groups it is apparent that one burial, 89, was isolated. However, this is understandable when the characteristics of this grave are examined more closely. In addition to being one of the largest graves in diameter, 3.6 m, it was also the deepest (2.3 m--next closest was 1.8 m). As such, the isolation of 89 is both understandable and apparently warranted.

When these individual burial groups are examined it is found that they closely parallel the weight of stone, as expressed in tons, utilized in grave construction (see Table 5). This is true despite the fact that this variable was not utilized in forming the original five groups. This is particularly interesting since Tainter (1975) and to a certain extent Brown (1971) have proposed using energy expenditure as a means of measuring social complexity. Using a sample of 103 ethnographic groups Tainter found that the

TABLE 4.--Five Burial Groups Derived from ISODATA Routine.

Cluster					
I	II	III	IV	V	VI
#89	41	120	98	138	65
	46	132	122	53	39
	78	160	82	37	83
	45	159	32	76	97
	16	7	54	74	27
		105	79	97	17
			60	77	9
				30	143
				56	31

TABLE 5.--Breakdown of Clusters by Weight of Stone in Grave.

Cluster					
I	II	III	IV	V	
10.56	6.59	4.75	4.69	1.57	3.5
	5.78	3.86	3.75	2.11	2.36
	6.38	4.69	3.94	2.11	1.25
	4.69	4.69	3.94	1.88	2.37
	7.33	2.90	2.60	2.65	2.12
		3.20	2.11	2.60	2.64
			2.36	1.88	2.90
				1.28	.62
				1.96	1.28
10.56	6.15	4.01	3.34		2.06 ave. tons

status an individual held in life correlated directly with the amount of energy expended on that individual's interment. To quantify this energy expenditure Tainter employed entrophy measures. Goldstein (1976) while finding no difficulty with Tainter's basic premise that energy expenditure correlates with status, did note a number of problems inherent in the use of entrophy measures. Excluding his use of entrophy, Tainter's hypothesis is useful in terms of the Namoratunga burial data. If we assume the weight of each grave reflects the energy expended in their construction, then at the Namoratunga sites not everyone had similar amounts of energy, as measured by grave weight, expended on their burial. For example, grave 89 contained 10.5 tons of stone whereas grave 143 only contained .62. This variability can be viewed in several ways. As Tainter has suggested this variability may reflect differences in the status of these two individuals, the individual whose grave contained 10.5 tons of rock being of higher status than the individual's who grave only contained .62.

However, this difference may also be due to other considerations. For example, large grave size may reflect the status of that individual's kin group with kin groups differing in their relative statuses. Among the Masai, an East African pastoral group, members of the El Kiboran lineage warrant a distinctive form of burial (see page 196). In addition, grave size might also reflect the size of an individual's kin group. Larger kin groups would have more manpower available for grave construction. In

East Africa it is quite common for relatives to bury the deceased (see Chapter VI).

Finally, grave size may simply correlate with who constructs the grave. If, for example, women construct the graves of other women, then one might expect the graves of women to be smaller in size due to differences in physical strength between the sexes. These alternate hypotheses indicate that differential grave size may reflect other variables besides an individual's social status. These alternate hypotheses will be dealt with later in this chapter.

Returning to the five burial groups, no females are included in clusters I, II, III and IV. Females only occur in cluster V, along with other males. It is apparent that access to the larger graves as reflected in grave weight is limited to males.

A view of the sex distribution for the entire excavated burial sample reveals a skewed distribution. It was observed in the previous section (see Chapter III) that less than 25% of the individuals interred at Namoratunga 1 were female. Given the excavation procedures employed, the possibility of sampling error can be ruled out. Assuming a normal ratio of males to females in the parent population, at least half of the females warranted an alternative form of interment, or they were not interred. It would appear that burial at the Namoratunga sites in itself entailed a certain degree of status that was largely confined to males.

Given the proposition that females were interred elsewhere, it might be hypothesized that the few who were interred at

TABLE 6.--Breakdown of Burial Clusters by Age.

Middle Adult (1)	Middle Adult (1)	Middle Adult (3)	Middle Adult (3)	Middle Adult (5)
	Unknown (4)	Unknown (1)	Young Adult (3)	Young Adult (4)
			Unknown (3)	Child (2)
				Unknown (7)

Namoratunga 1 warranted this treatment by virtue of their special relationship to certain high status males.

An examination of the age distribution between clusters also yields a number of regularities. Clusters I, II, and III contain only middle adults. Cluster IV contains both young and middle adults while the only children recovered at the sites occur in the lowest weight group, V, along with middle and young adults. Access to larger graves, then, in addition to being sex related also appears to be age linked.

In addition, the total age distribution at the site is skewed. Of course it should be noted once again that individuals could only be assigned into very broad age categories. However, comparisons of a general nature can still be made. First, in examining males there were four young adults and 11 middle adults. Age appears to be a factor to some extent in male interments at the site, with older adults more heavily represented. Females have a slightly different age distribution, with three young adults and two middle adults. Of course, the sample of females is much smaller and so less reliable. Only two children were recovered and no adolescents or infants. Much like females, sub-adults are greatly underrepresented at the site. Once again sampling error can be ruled out.

Saxe (1971) found the same age distribution patterns at a Late Stone Age cemetery near Wadi Halfa in Nubia. Women were found to have the greatest number of individuals in the young adult

category. Saxe suggested that the female deaths were likely related to childbirth since it is in the young adult category where most women give birth. Given the very small sample of females at Namoratunga 1, five, it is impossible to be certain that the occurrence of more young adults, three, than middle adults, two, is significant due to the small sample size. However, Saxe's explanation should be considered as a factor.

The males at Wadi Halfa, on the other hand, showed a very low incidence of young adults with older age categories more frequently represented. Saxe concluded that young adult males were probably engaged in raiding expeditions and were often killed elsewhere and so were underrepresented in his mortality profiles. As mentioned earlier, a similar mortality profile is found at Namoratunga 1 among males. Such an explanation may in part explain why so few young adults were found. Today among the Turkana in Northwest Kenya as well as other surrounding pastoralists such as the Samburu, Pokot, and Masai, raiding for livestock is still a common occurrence. This raiding is done almost entirely by young adults. Among the Turkana if an individual is killed on a raid he is left where he died. The practice of such raids among pastoralists may well be of some antiquity.

Burial Orientation

No patterns in orientations emerge within burial clusters. In most cases each cluster contains a near equal distribution of

TABLE 7.--Breakdown of Burial Clusters by Orientation.

	Cluster				
	I	II	III	IV	V
North	1	1	0	0	3
South	0	2	2	3	8
East	0	1	2	2	2
West	0	1	2	2	2

TABLE 8.--Orientation vs. Age and Sex.

	North	South	East	West
Age				
Child	0	2	0	0
Young Adult	1	5	1	1
Middle Adult	4	4	3	4
Sex				
Male	4	8	3	4
Female	1	3	1	1

all four orientations. Orientations were also not found to be correlated with either age or sex.

Upon simple visual inspection of all the excavated burials at the site, it was noted that in many cases individuals were oriented such that their heads were directed away from the center of the site. For example, an individual in the northeast portion of the site would be oriented either to the north or east. In fact, 81% of the burials were oriented in this fashion. This pattern using a simple chi^2 test was found to be significant at the .05 level. Seven graves did not fit the expected pattern. Four of these, 30, 31, 32, and 33, belong to a group of graves which occur at the center of the site. Given their close proximity to the center of the site, their variation can be expected since it is much more difficult to determine the relative position of these graves to the rest of the site than it would be for those graves near the periphery of the cemetery, for example. If any of these graves were moved by 5 meters or less they would be oriented in the expected pattern. This leaves only three graves, 16, 98, and 56, which are not oriented according to the expected pattern if the hypothesis that individuals are oriented away from the center of the site is correct. If this pattern is indeed meaningful, it indicates that the cemetery was organized as a unit. Age, sex and grave size do not account for the variability in burial orientation. Nor was there evidence for small localized areas sharing similar orientations.

Flexure

Another set of variables examined was the degree of flexure of the body. Saxe (1971) in his analysis of burials from the Wadi Halfa area found this variable useful in reconstructing past social organization. Although the available number of individuals with known flexure from Namoratunga 1 was not large enough to permit statistical analysis, simple comparisons were made to see if any patterns might exist (see Appendix A for flexure information for each burial). The degree of flexure was broken down into five categories: (1) less than 45° (tight); (2) 45° (medium); (3) 45° to 90° (loose); (4) 90° to 180° (open); (5) 180° (extended). The areas where flexure was recorded included: (1) between the femur and the back; (2) the flexure at the knees; (3) between the humerus and the back; (4) flexure at the elbows. Other variables examined were the position of the body: (1) on the left side, (2) on the stomach, or (3) on the back; and the position of the hand: (1) on the face and chest area or (2) near the abdomen and legs.

In examining Table 11, which compares males and females for flexure and body positioning, males were found to exhibit a greater degree of variability in four of the six categories, females in one. On the basis of results from a sample of comparable size Saxe concluded that his Wadi Halfa burial population was patrilocal. This was inferred since females displayed a greater degree of variation in flexure and positioning than males, the assumption

TABLE 9.--Flexure vs. Sex.

	Males	Females		Males	Females
	Flexure at Hip*			Flexure at Shoulder*	
Tight	5 (25%)	1 (17%)		11 (58%)	2 (40%)
Medium	3 (15%)	1 (17%)		4 (21%)	2 (40%)
Loose	12 (60%)	3 (50%)		3 (16%)	1 (20%)
Open	0	1 (17%)		1 (5%)	0
Extended	0	0		0	0
	Flexure at Knee*			Flexure at Elbow*	
Tight	18 (100%)	5 (100%)		10 (59%)	2 (40%)
Medium	0	0		1 (6%)	2 (40%)
Loose	0	0		4 (24%)	1 (20%)
Open	0	0		2 (12%)	0
Extended	0	0		0	0
	Position of the Body			Position of the Hand*	
Left side	13 (68%)	5 (83%)	face	14 (88%)	5 (100%)
Back	1 (5%)	0	chest		
Stomach	5 (26%)	1 (17%)	legs	2 (12%)	0
			abdomen		

*Only right side used for all flexure measurements since left side missing in almost all cases.

TABLE 10.--Flexure vs. Orientation.

	Hip	Knee	Shoulder	Elbow	Body Position		Location of Hand	
North (4)								
Tight	0	4 (100%)	3 (75%)	4 (100%)	left side:	3 (75%)	face	4 (100%)
Medium	1 (25%)	0	1 (25%)	0	back:	0	chest	
Loose	3 (75%)	0	0	0	stomach:	1 (25%)	legs	0
Open	0	0	0	0			abdomen	
Extended	0	0	0	0				
South (7)								
Tight	1 (14%)	7 (100%)	3 (43%)	2 (28%)	left side:	6 (87%)	face	5 (72%)
Medium	2 (28%)	0	2 (28%)	1 (14%)	back:	0	chest	
Loose	4 (57%)	0	1 (14%)	2 (28%)	stomach:	1 (14%)		
Open	0	0	1 (14%)	1 (14%)			legs	2 (28%)
Extended	0	0	0	0			abdomen	
East (3)								
Tight	1 (33%)	2 (66%)	1 (33%)	1 (33%)	left side:	3 (100%)	face	2 (66%)
Medium	0	0	1 (33%)	0	back:	0	chest	
Loose	2 (66%)	0	0	1 (33%)	stomach:	0		
Open	0	0	0	0			legs	0
Extended	0	0	0	0			abdomen	

TABLE 10.--Continued.

	Hip	Knee	Shoulder	Elbow	Body Position		Location of Hand	
West (5)								
Tight	2 (40%)	4 (80%)	4 (80%)	3 (60%)	left side:	2 (40%)	face	4 (80%)
Medium	0	0	0	0	back:	1 (20%)	chest	
Loose	3 (60%)	0	1 (20%)	1 (20%)	stomach:	2 (40%)		
Open	0	0	0	1 (20%)			legs	1 (20%)
Extended	0	0	0	0			abdomen	

TABLE 11.--Flexure vs. Age.

	Hip	Knee	Shoulder	Elbow	Body Position		Location of Hand	
Young Adult: male (4)								
Tight	1 (25%)	3 (75%)	1 (25%)	2 (50%)	left side:	4 (100%)	face	3 (75%)
Medium	2 (50%)	1 (25%)	1 (25%)	0	back:	0	chest	
Loose	1 (25%)	0	1 (25%)	1 (25%)	stomach:	0		
Open	0	0	1 (25%)	0			legs	0
Extended	0	0	0	0			abdomen	
Young Adult: female (3)								
Tight	0	2 (66%)	0	0	left side:	3 (100%)	face	2 (66%)
Medium	1 (33%)	0	1 (33%)	1 (33%)	back:	0	chest	
Loose	2 (66%)	0	1 (33%)	1 (33%)	stomach:	0		
Open	0	0	0	0			legs	0
Extended	0	0	0	0			abdomen	
Middle Adult: male (11)								
Tight	2 (18%)	10 (91%)	8 (73%)	9 (82%)	left side:	8 (73%)	face	9 (82%)
Medium	0	0	2 (18%)	0	back:	0	chest	
Loose	9 (82%)	0	0	1 (9%)	stomach:	3 (27%)		
Open	0	0	0	1 (9%)			legs	1 (9%)
Extended	0	0	0	0			abdomen	

TABLE 11.--Continued.

	Hip	Knee	Shoulder	Elbow	Body Position		Location of Hand	
Middle Adult: female (2)								
Tight	0	2 (100%)	2 (100%)	2 (100%)	left side:	2 (100%)	face	2 (100%)
Medium	0	0	0	0	back:	0	chest	
Loose	1 (50%)	0	0	0	stomach:	0		
Open	1 (50%)	0	0	0			legs	0
Extended	0	0	0	0			abdomen	

TABLE 12.--Flexure vs. Burial Cluster.

	Hip	Knee	Shoulder	Elbow	Body Position		Location of Hand	
Cluster I (1)								
Tight	0	1 (100%)	1 (100%)	1 (100%)	left side:	1 (100%)	face	1 (100%)
Medium	0	0	0	0	back:	0	chest	
Loose	1 (100%)	0	0	0	stomach:	0		
Open	0	0	0	0			legs	0
Extended	0	0	0	0			abdomen	
Cluster II (4)								
Tight	1 (25%)	3 (75%)	3 (75%)	2 (50%)	left side:	2 (50%)	face	4 (100%)
Medium	1 (25%)	0	0	0	back:	0	chest	
Loose	2 (50%)	0	1 (25%)	2 (50%)	stomach:	2 (50%)		
Open	0	0	0	0			legs	0
Extended	0	0	0	0			abdomen	
Cluster III (3)								
Tight	1 (33%)	2 (66%)	2 (66%)	2 (66%)	left side:	2 (66%)	face	3 (100%)
Medium	0	0	1 (33%)	1 (33%)	back:	0	chest	
Loose	2 (66%)	0	0	0	stomach:	1 (33%)		
Open	0	0	0	0			legs	0
Extended	0	0	0	0			abdomen	

TABLE 12.--Continued.

	Hip	Knee	Shoulder	Elbow	Body Position		Location of Hand	
Cluster IV (4)								
Tight	1 (25%)	4 (100%)	1 (25%)	2 (50%)	left side:	3 (75%)	face	3 (75%)
Medium	0	0	1 (25%)	0	back:	0	chest	
Loose	3 (75%)	0	1 (25%)	1 (25%)	stomach:	1 (25%)		
Open	0	0	1 (25%)	0			legs	0
Extended	0	0	0				abdomen	
Cluster V (12)								
Tight	3 (25%)	11 (92%)	5 (42%)	6 (50%)	left side:	11 (92%)	face	9 (52%)
Medium	3 (25%)	0	4 (33%)	2 (16%)	back:	0	chest	
Loose	5 (42%)	0	1 (8%)	1 (8%)	stomach:	1 (8%)		
Open	1 (8%)	0	0	1 (8%)			legs	1 (8%)
Extended	0	0	0	0			abdomen	

being that females entering from outside the area would display greater heterogeneity in their burial positioning (Saxe 1971). Using a similar set of assumptions the Namoratunga 1 population is matrilocal, since male burials exhibit a greater degree of variation. However, the author feels that given the sample sizes involved here conclusions of this nature are entirely unwarranted. Furthermore, Saxe's contention has not been supported by ethnographic data. It may well be that the degree of flexure is totally unrelated to social distinctions. For example, the degree of flexure may be related to the time elapsed between death and interment and the amount of rigor mortis which has set in. (See Allan and Richardson, 1971 for discussion of difficulties in the assumptions made by approaches similar to that of Saxe [1971].) The differences found between males and females likely reflect the greater number of males interred at the site, almost three to one.

Similar comparisons were made with flexure and age, flexure and orientation, and flexure and grave size. The only pattern found was that middle adults exhibited greater variability in flexure and body position than any other age category. However, it should be noted that the middle adult age category is twice as large as any other age group. Once again greater variability would be expected solely by virtue of the number of individuals involved. No regularities whatsoever were observed between flexure and orientation and flexure and grave size.

Decorated Graves

As mentioned earlier a large number of the graves at the Namoratunga 1 site were decorated with petroglyphs that had been pecked into the standing vertical slabs of the grave (see Chapter IV for complete discussion of art). There is at least one compelling reason for assuming that this art is directly associated with the graves, despite the fact that the art theoretically could have been placed on the grave any time after its construction. Despite the presence of both males and females, children and adults at the sites, only males are interred in decorated graves. Thirty-seven of the graves at Namoratunga 1 (23%) were decorated, 27% at Namoratunga 2 (3 graves). The number of petroglyphs these graves contained ranges from 1 to 10 with an average of 3.13 petroglyphs per decorated grave. In most cases a single grave contains a number of different designs (see Table 13). Eight of these decorated graves fall into the excavation sample and represent 23% of all the graves excavated. Thus the excavation sample ratio of decorated to non-decorated graves is identical to that found in the total population.

The excavated decorated graves contained only males. In addition only burial clusters II, III and IV contain decorated graves. None occur in Cluster V despite the fact that this cluster contains 45% of all the graves excavated. Cluster I contains no decorated graves, but since this cluster contains only one grave it is impossible to determine if this is indeed a meaningful pattern.

TABLE 13.--Decorated Graves (Excluding Those Excavated).

Grave		Location on Grave	Direction Facing
5		SE	SE
11	 * (2)	N	N
	 *	N	N
	 *	N	N
	 *	N	S
		N	N
12		SW	SW
19		N	N
	*	W	W
	 *	W	W
29		SW	NE
36		N	N
	 (2)***	E	W
		E	E
		N	S
		N	S
42		NNE	SSW
	 *	N	S
	 *	N	S
	 *	N	S
	 *	N	S
	 ***	E	W
	 ***	E	E

TABLE 13.--Continued.

Grave		Location on Grave	Direction Facing
44	 (2)*	E	NEW
	 *	E	NEW
	 (4)*	E	E
	 ***	E	E
	 ***	E	E
47		SW	NE
49	 *	N	S
	 *	N	S
50	 (2)*	N	S
	 *	N	S
51		E	SE
		SE	SE
52		SE	SE
61	 (2)	S	SSE
86	 (2)	NE	NE
88	 (4)*	E	E
	 *	E	E
	 *	E	E
		SE	SE
	 **	N	NE
	 **	N	NE
	 **	N	NE
93		SE	S

TABLE 13.--Continued.

Grave		Location on Grave	Direction Facing
	 *	NE	SW
		NE	SW
		SW	NE
94		N	SE
117	 *	N	S
		N	S
127		S	N
	 (2)*	NE	SW
	 *	NE	SW
128	 *	E	W
	 *	E	W
134		N	N
136		N	SE
137	 (2)	SE	SE
141		E	W
	 (2)	SE	E
144	 *	SW	SW
	 *	SW	SW
	 *	SW	SW
	 *	SW	SW
145		W	E
154		SE	SE

TABLE 13.--Continued.

Grave		Location on Grave	Direction Facing
	Decorated Graves at Namoratunga 2		
164	 *	S	N
	 *	S	N
		SE	SE
		N	N
		E	NE
		N	SW
169	 (3)	W	NE
170		SE	SSE

*On same rock surface.

**On same rock surface.

***On same rock but different surface.

TABLE 14.--Breakdown of Decorated Graves by Cluster.

I	II	III	IV	V
0	2	2	4	0
0%	20%	33%	57%	0%

When the graves were compared on the basis of the designs they contain, no patterns were noted (see Table 15). Graves within the same burial group did not necessarily share the same design motifs. Of the eight different designs found among the Cluster II graves (41 and 46) only one is shared,  . For the Cluster III graves (105 and 136) one of the total of two design elements is shared,  . There are 12 different design elements within the Cluster IV group (4) graves. These four graves have no designs in common. Similarly, no regularities are found between design motif and burial age or orientation.

However, if the average number of designs is compared with grave diameter there is a general trend for larger graves to have more occurrences of art. Table 16 compares grave diameter with the number of occurrences of art. With one exception there is a tendency for larger graves to contain more petroglyphs than smaller graves. The exception is the grave diameter category of 2.5 m to 2.9 m. Here the average number of occurrences of art is 4.25, the highest average found. However, this is due to the fact that this

TABLE 15.--Excavated Decorated Graves.

No.	Decoration	Location On Grave	Direction Facing	Age	Orientation	Burial Cluster
32		SE	NW	YA	272°	IV
	 *	W	SE			
	 (2)*	W	E			
	 *	W	E			
	(2)*	W	E			
	 *	W	E			
41		SE	SE	?	190°	II
		N	S			
	*	N	S			
	*	N	W			
	 **	SE	NW			
	 **	SE	NW			
46		W	W	?	175°	II
	 *	SW	NE			
	 *	SW	NE			
54		N	S	YA	185°	IV
		N	S			
	 (2)*	SE	NW			
	*	SE	NW			
60	*	NNE	SW	?	East?	IV
	 *	NNE	SW			
	 *	NNE	SW			

TABLE 15.--Continued.

No.	Decoration	Location On Grave	Direction Facing	Age	Orientation	Burial Cluster
	 ***	NE	SW			
	 ***	NE	NE			
79		SE	SE	MA	West	IV
105		SW	SW	MA	180°	III
132		N	SE	?	East	III
		SSE	SE			

*On same rock surface.

**On same rock surface.

***On same rock but different surface.

TABLE 16.--Grave Diameter vs. Number of Petroglyphs.

Diameter	1.5-1.9 m.	2.0-2.4 m.	2.5-2.9 m.	3.0-3.4 m.	3.5+
	N=5	N=14	N=4	N=6	N=7
Ave. No. of Petroglyphs	2.2	3.0	4.25	3.1	4.1

category only contains four decorated graves and one of them, #44, contains 9 occurrences of art, the second highest total at the site. If this one idiosyncratic grave is excluded, the average number of petroglyphs per grave would closely parallel grave size.

Spatial Analysis (Placement of the Graves)

The Namoratunga 1 cemetery was also examined to determine if there were any spatial regularities, the assumption here being that if a discernible spatial structure does exist within the organization of the Namoratunga 1 cemetery this structure is a reflection of the organizational complexity of the society it represents. Goldstein (1976) in her examination of Mississippian social organization found a strong correlation between the spatial organization of Mississippian cemeteries and social structure.

The first variable considered in the Namoratunga 1 spatial analysis was the location of decorated graves. Figure 15 indicates the location of decorated graves at the Namoratunga 1 cemetery. To perform the spatial analysis a grid was imposed on the entire cemetery. The roughly square configuration of the cemetery readily

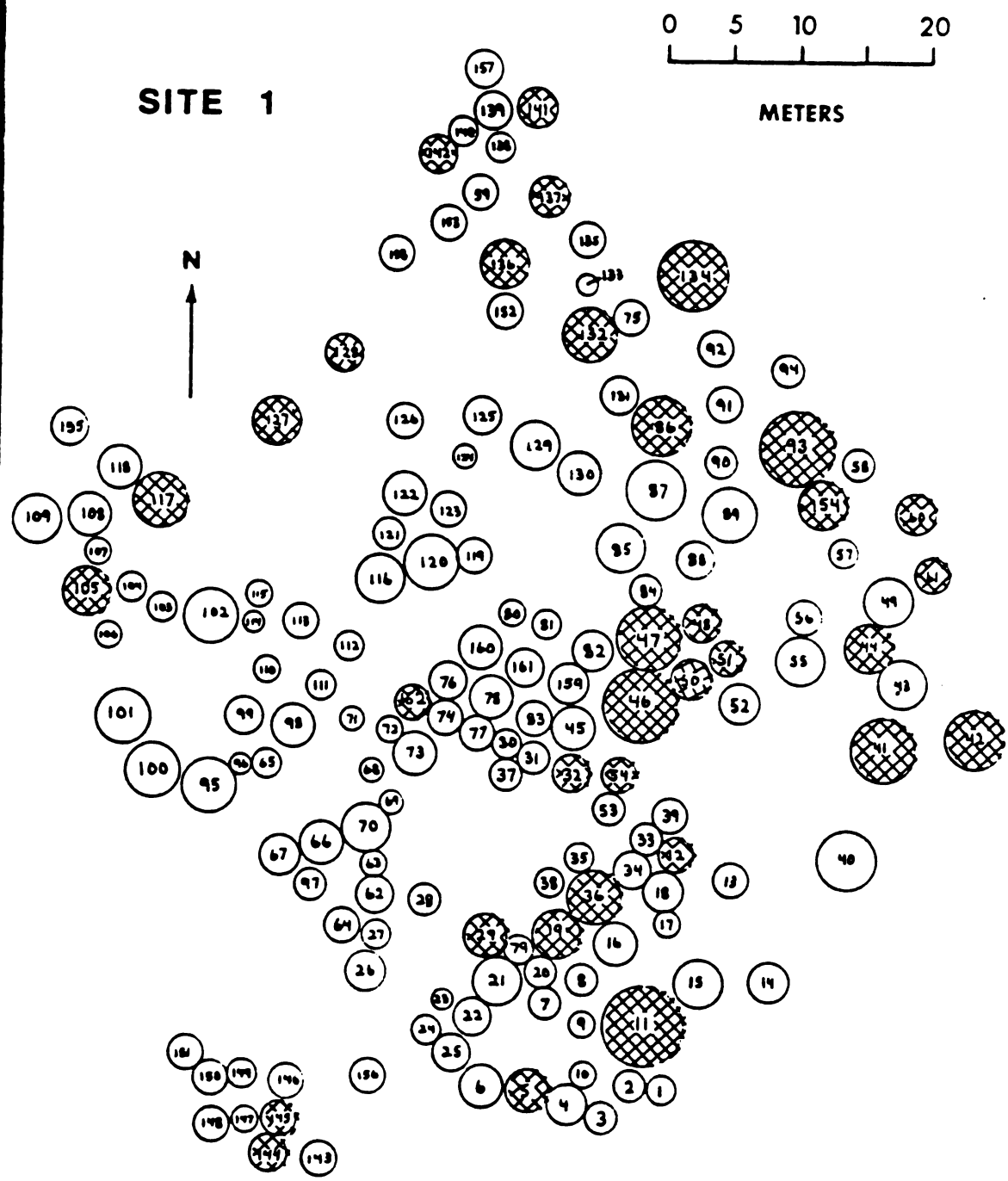


Figure 15

DISTRIBUTION OF DECORATED GRAVES

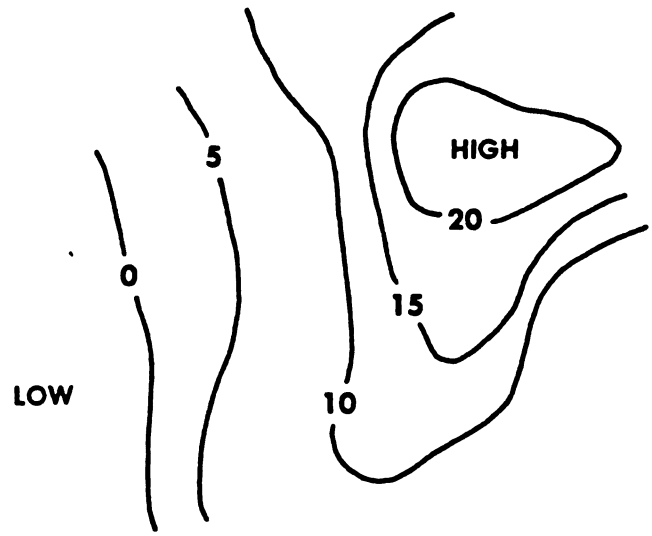
[INDICATED BY HATCHING]

lended itself to such a grid. The grid employed consisted of 12 cells of comparable size. A 12 cell grid was the smallest size that could be utilized, given the necessity of having at least one decorated grave in each cell (a requirement of chi-square statistic is no empty cells). Once the grid was imposed each decorated grave was given an X and Y coordinate which located it within a particular cell. The program CROSSTABS drawn from the Statistical Package for the Social Sciences (Nie, et al. 1975) was then used to compute the chi-square statistic for the distribution of decorated graves within the cemetery. This distribution was found to be non-random and significant at the .03 level. Figure 16 displays this distribution in the form of a contour interval based upon the percent of decorated graves in each cell. A simply visual inspection shows that decorated graves are most frequent along in the eastern periphery of the site, particularly in the northeast and decrease in frequency rather sharply moving to the west and southwest.

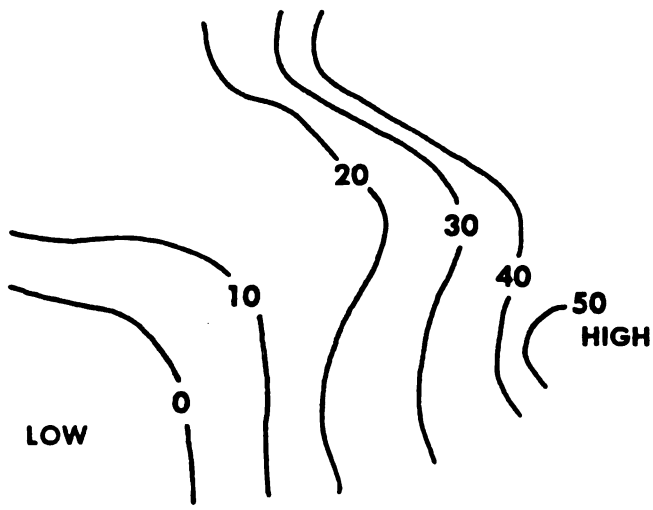
The distribution of certain design motifs found on graves within the cemetery was also tested despite the fact that it does not lend itself to a similar statistical analysis due to the small numbers of graves involved. However, Figures 17 through 29 show the distribution of designs with the cemetery. Certain designs appear to have extensive distributions. Fifty percent contain design,  33% have  , 25% have . But even these designs concentrate in certain areas of the site. The design for example, is concentrated in a broad belt extending from the southeast

Figure 16

CONTOUR DISTRIBUTION OF DECORATED GRAVES AT SITE 1



graves 2 meters or less in diameter



graves over 2 meters in diameter

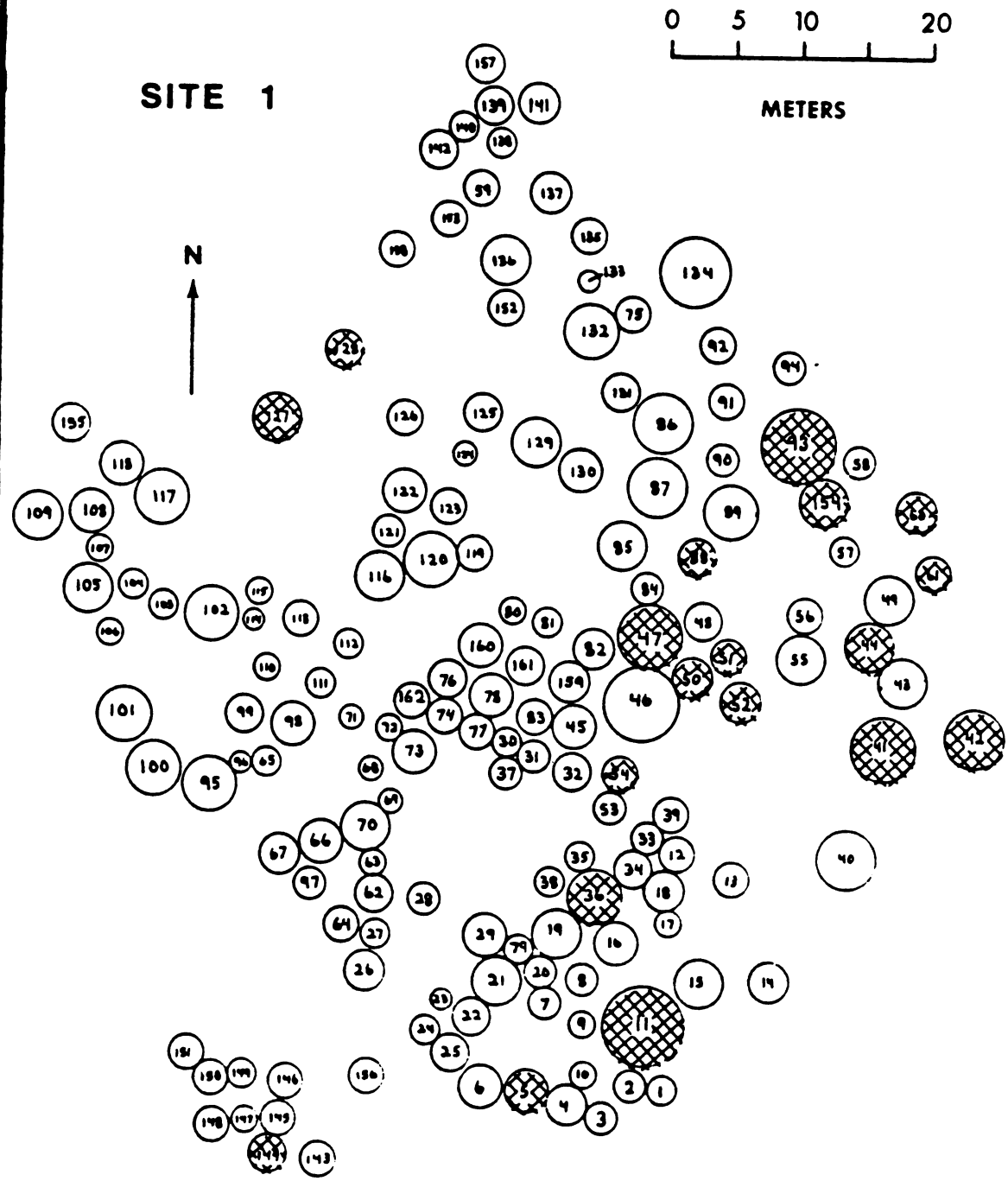


Figure 17

DISTRIBUTION OF ○ DESIGN

[INDICATED BY HATCHING]

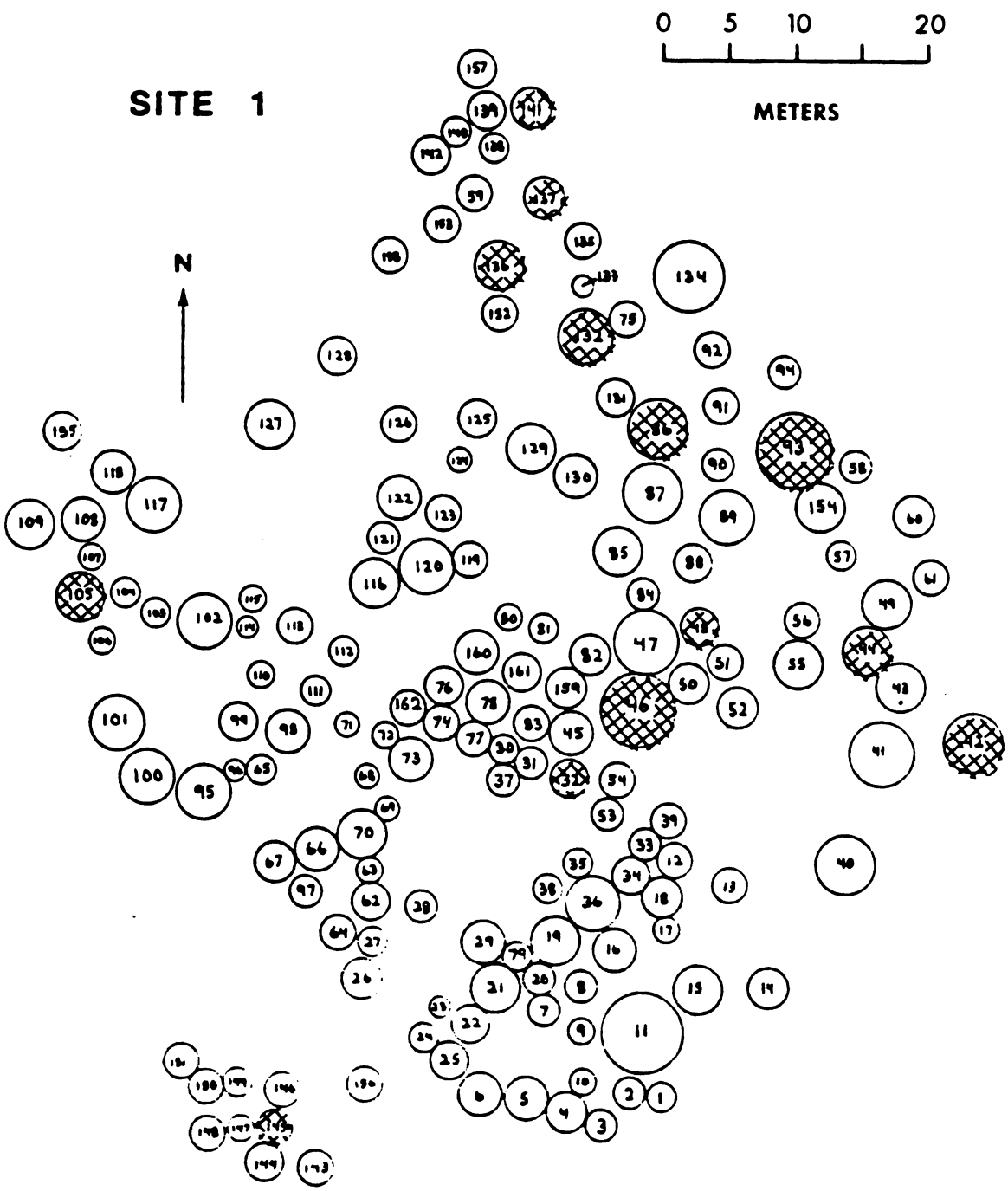


Figure 18

DISTRIBUTION OF ᔓ DESIGN

[INDICATED BY HATCHING]

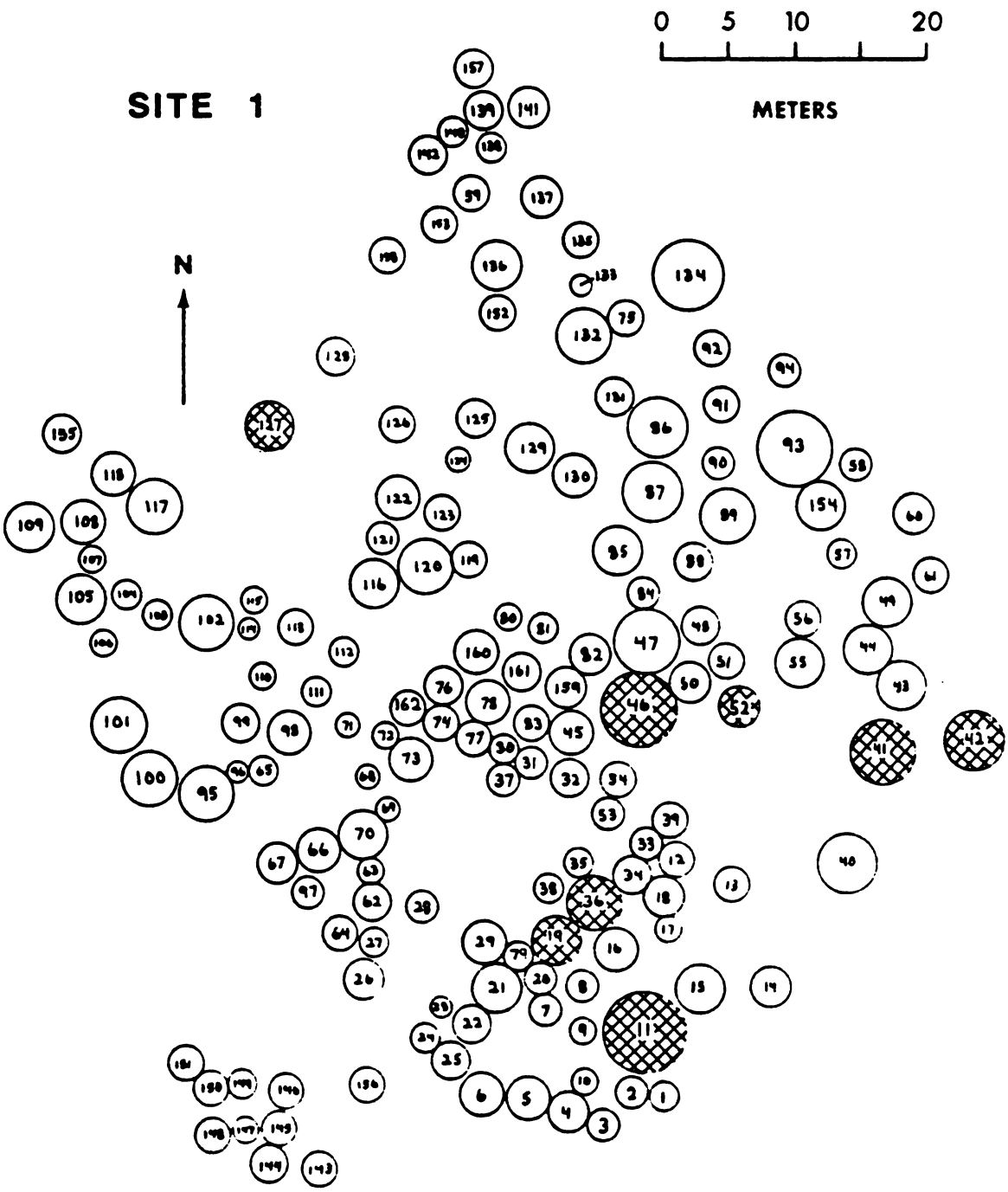


Figure 19

DISTRIBUTION OF ⓘ DESIGN

[INDICATED BY HATCHING]

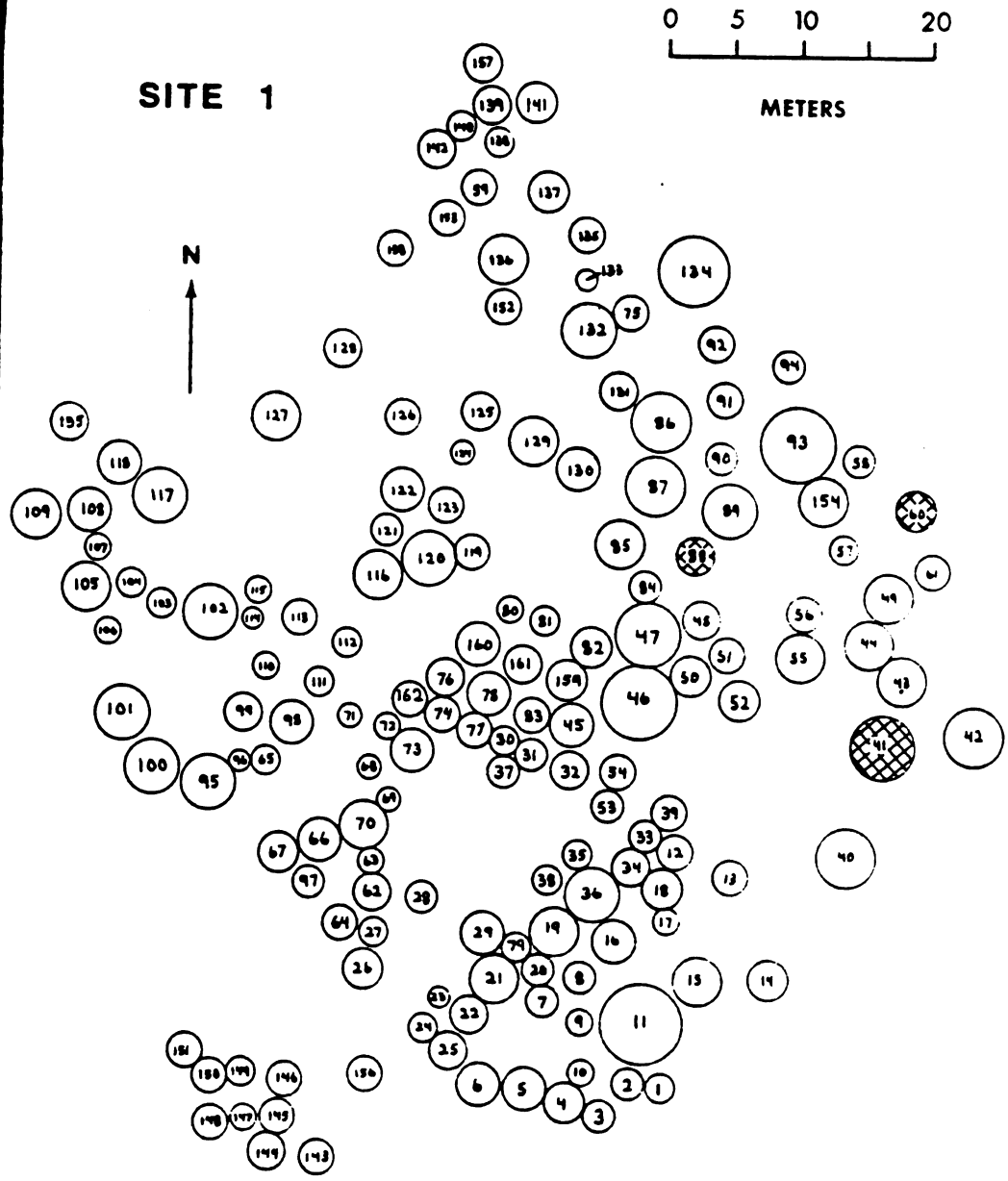


Figure 20

DISTRIBUTION OF ∽ DESIGN

[INDICATED BY HATCHING]

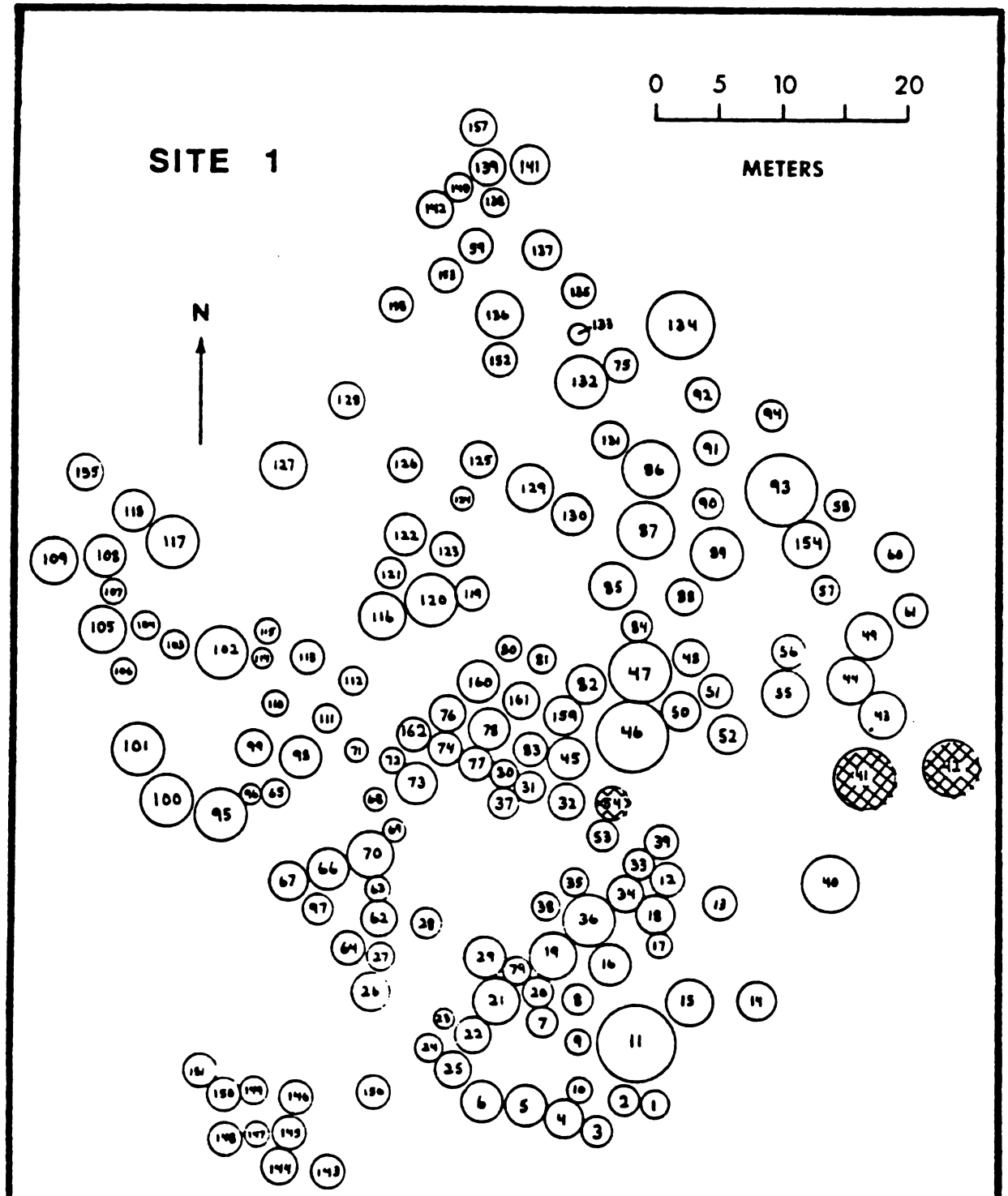


Figure 21

DISTRIBUTION OF ♀ DESIGN

[INDICATED BY HATCHING]

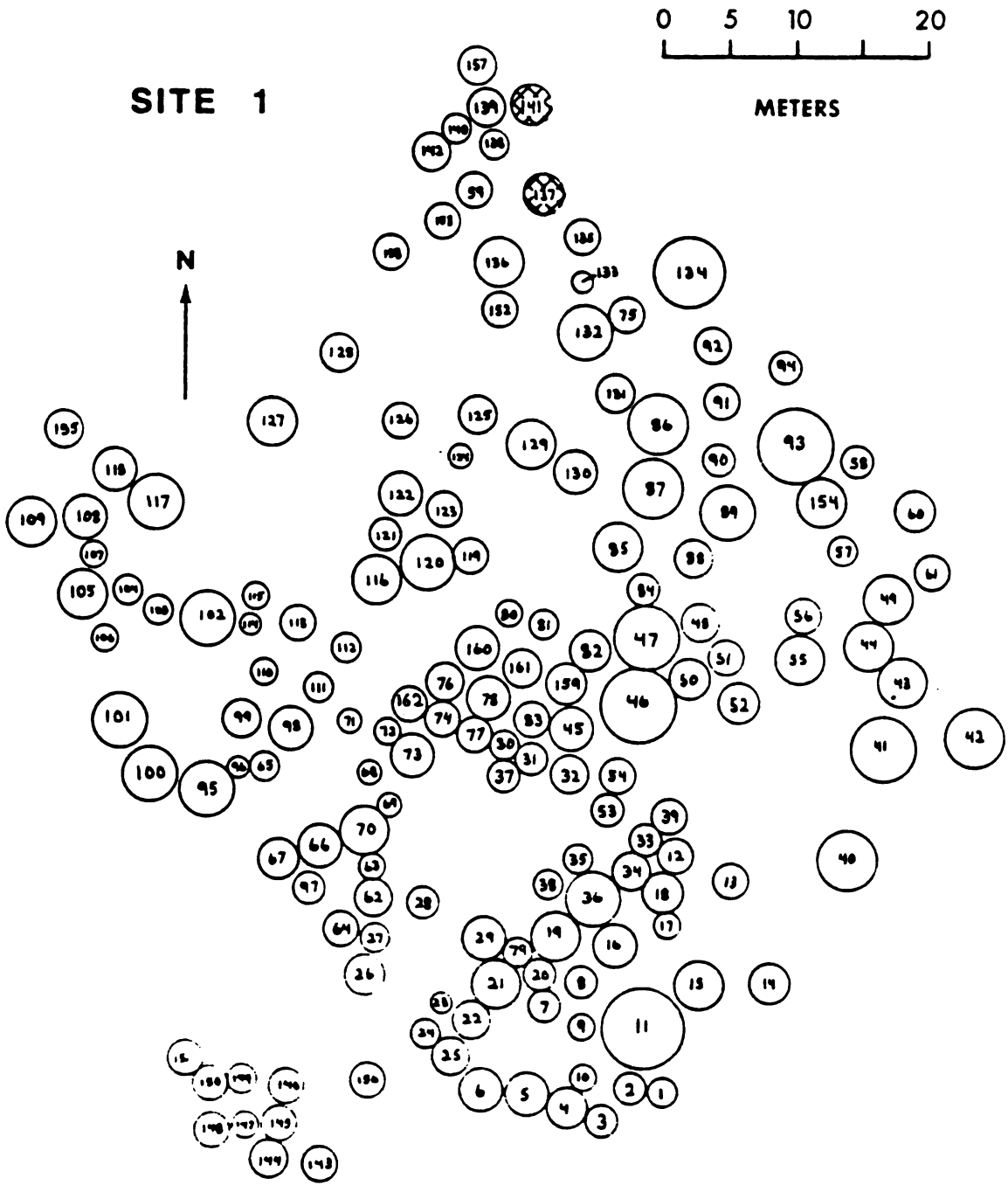


Figure 22

DISTRIBUTION OF ♀ DESIGN

[INDICATED BY HATCHING]

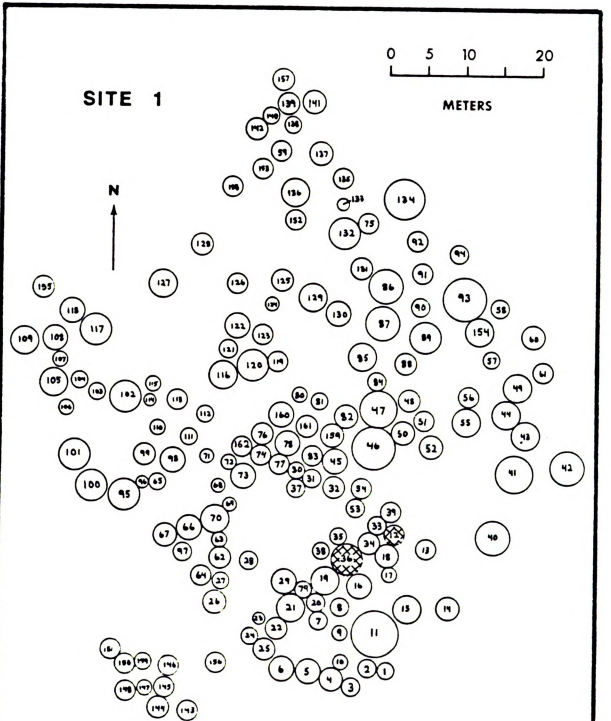


Figure 23

DISTRIBUTION OF DESIGN

[INDICATED BY HATCHING]

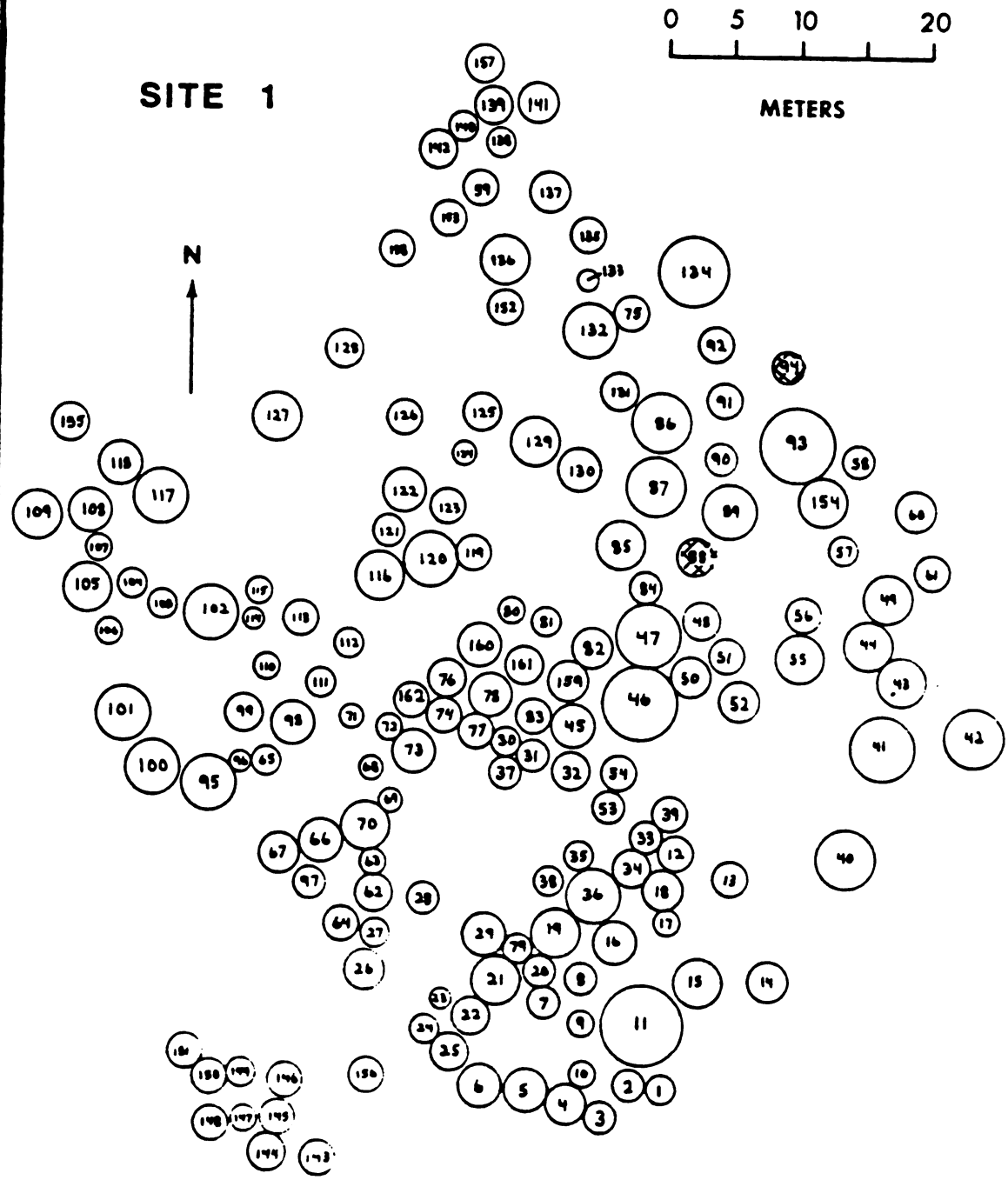


Figure 24

DISTRIBUTION OF ᔓ DESIGN

[INDICATED BY HATCHING]

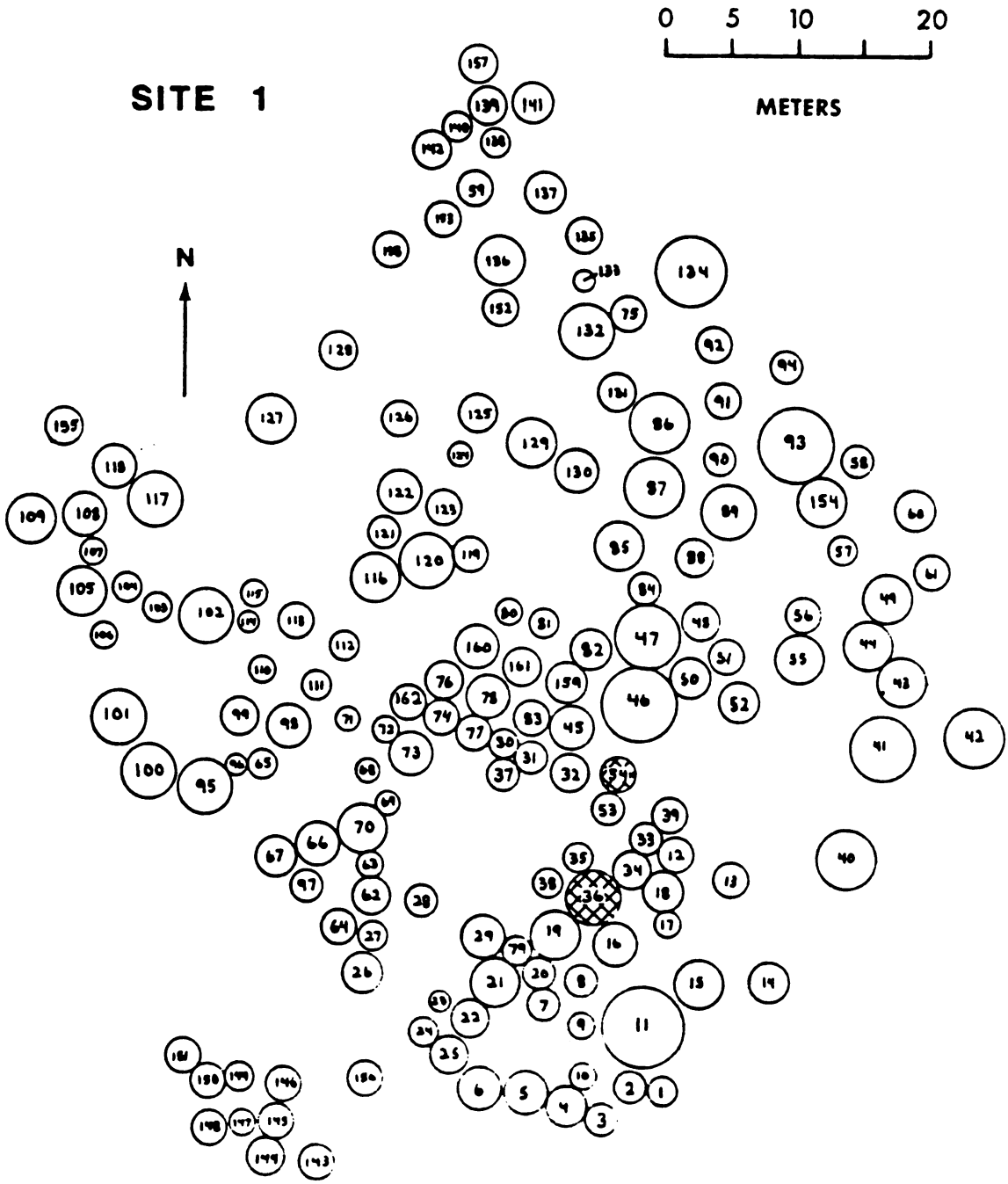


Figure 25

DISTRIBUTION OF DESIGN

(INDICATED BY HATCHING)

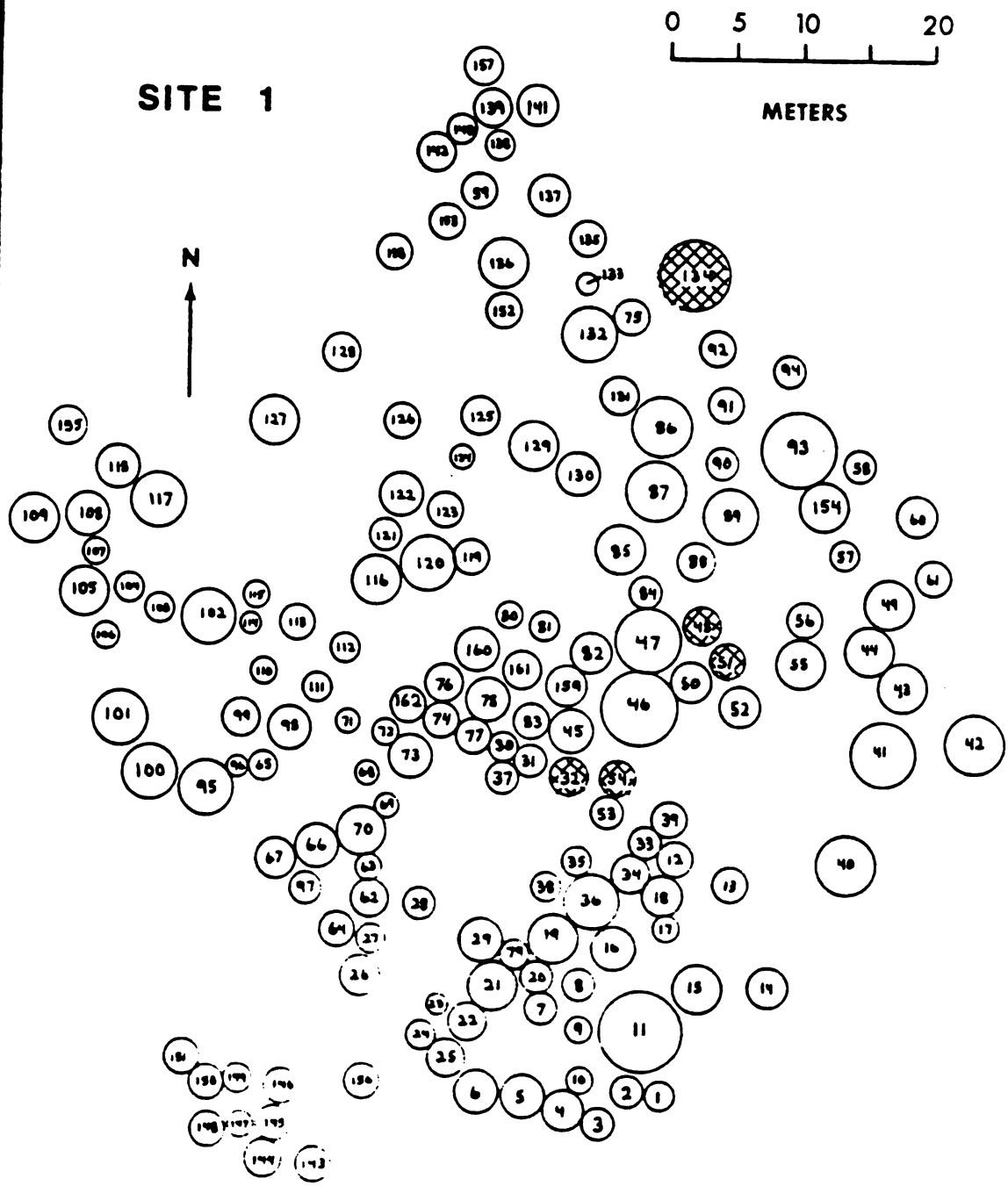


Figure 26

DISTRIBUTION OF ∽ DESIGN

[INDICATED BY HATCHING]

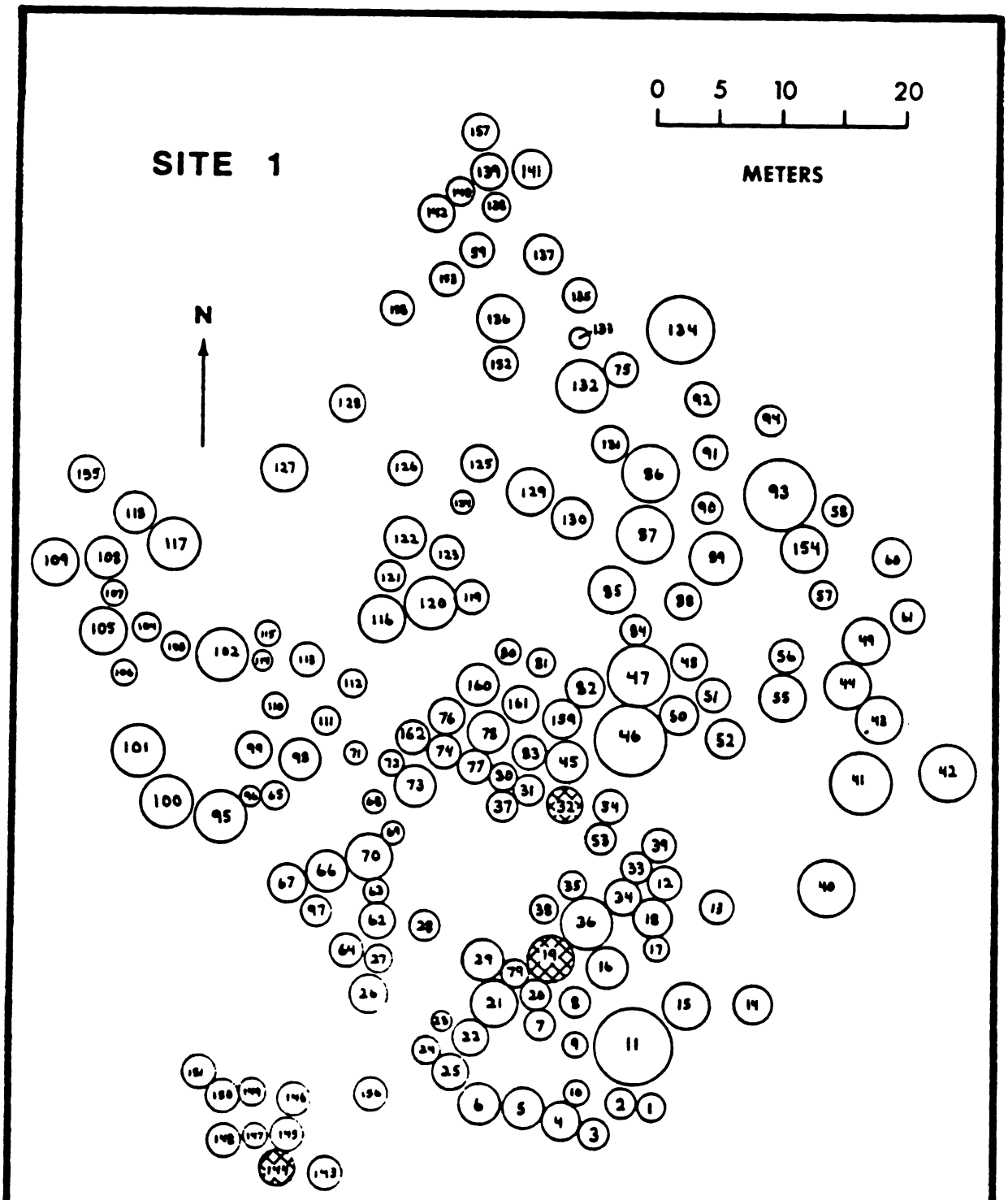


Figure 27

DISTRIBUTION OF || DESIGN

[INDICATED BY HATCHING]

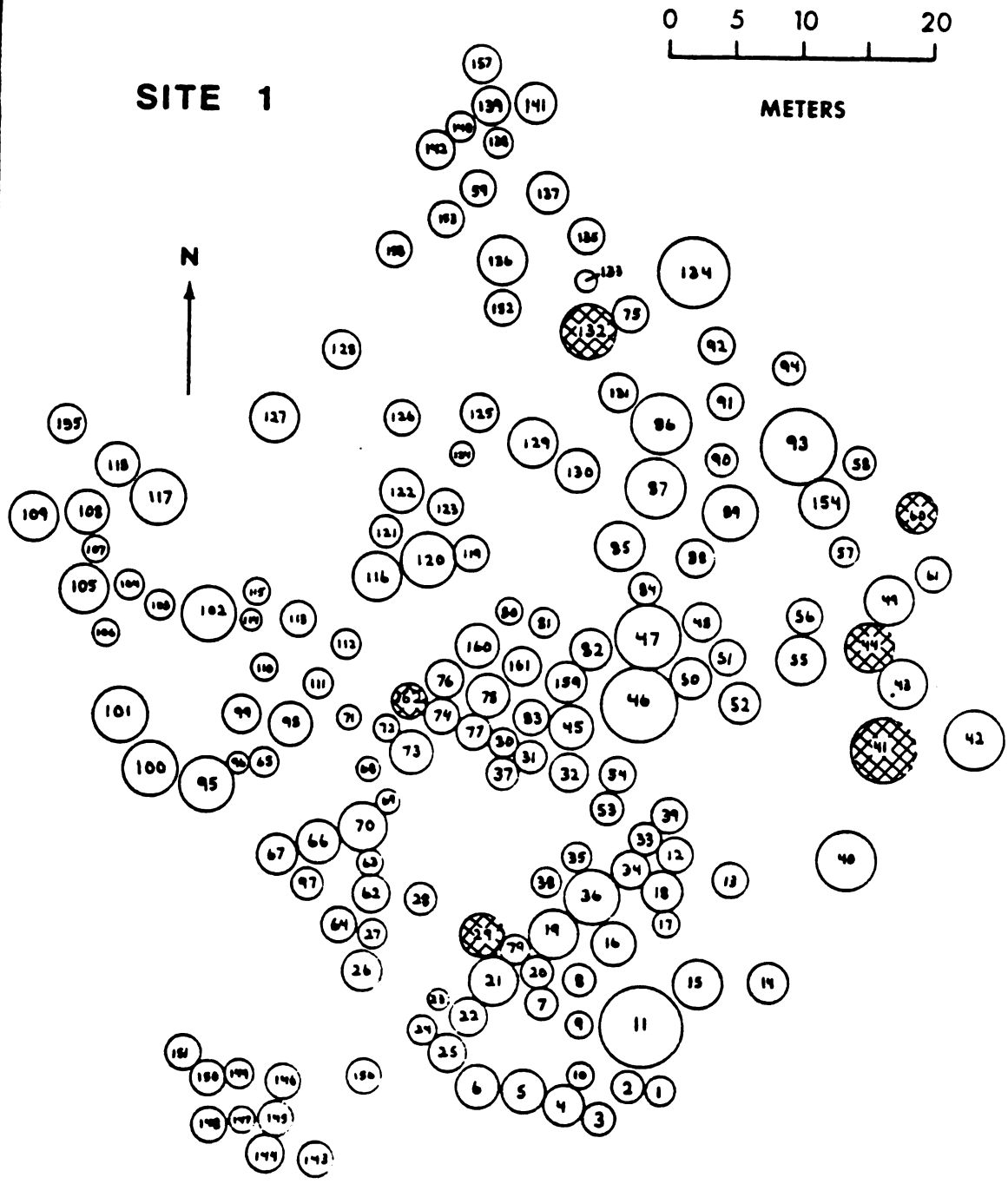


Figure 28

DISTRIBUTION OF ◎ DESIGN

[INDICATED BY HATCHING]

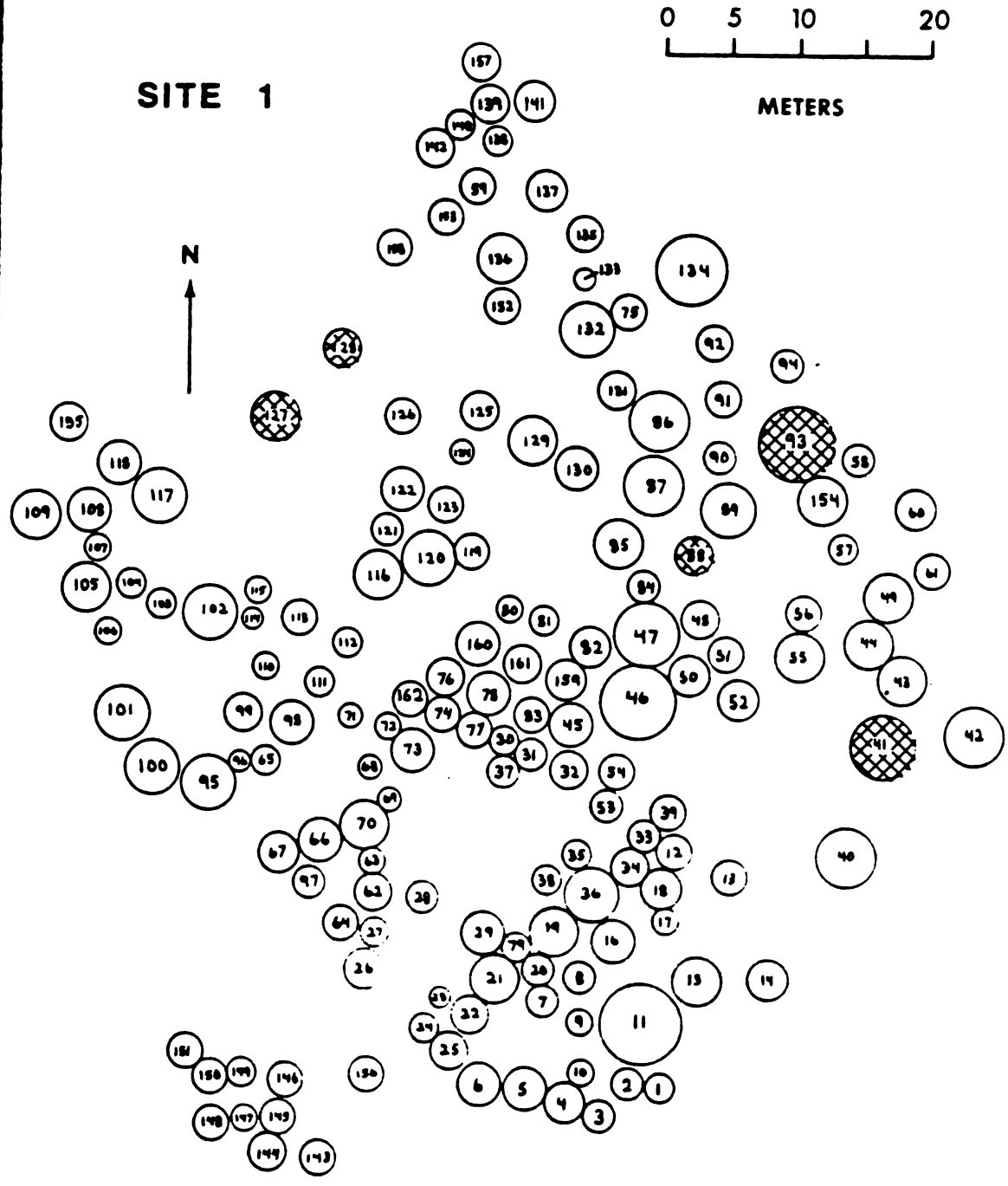


Figure 29

DISTRIBUTION OF @ DESIGN

[INDICATED BY HATCHING]

portion of the site to the east. The  design is concentrated in the northeast, whereas the  is almost exclusively in the southeast. Although there is extensive overlap between these three designs, the area of concentration of each is clearly different.

Designs which occur infrequently appear to be even more strongly centralized. The graves which contain the  design are separated by less than five meters. Four of the five graves with the  design occur within a 10 meter area. The  motif occurs on two graves which are separated by only three meters. Similar concentrations are found for  , ,  , and  designs. Only the  and the  appear not to be strongly associated with any one portion of the site. Although these distributions cannot be tested statistically, due to the small sample size of most of the designs, the fact that 10 of the 12 design distributions tested tend to cluster geographically cannot be overlooked. Rather than being randomly distributed throughout the site, these designs appear to delineate areas of the site which share similar design motifs. However, it should be noted that these areas are in no way clearly defined. Conceptually, these areas sharing similar designs can best be viewed as clines with certain design elements overlapping where their areas meet.

The CROSSTABS procedure was also employed to test the distribution of different size graves at the site. In the initial 15% excavation sample at the site it was observed that only males occurred in graves that were decorated and graves that were over

2.0 meters in diameter. Hence using only external grave diameter and decoration it appeared to be possible to predict grave content. The second 10% sample of graves that was excavated provided empirical support for the proposition that grave content could be predicted. The 2.0 m. figure for external diameter appears to be an important dividing point, above which only males were found and below which either males, females or children might be found. This observation was verified to some extent by the clusters derived from the ISODATA routine. Although more variables were used in this stage of analysis (see page 55 for complete list), the clusters which were derived verified the initial field observations. Clusters I through IV only contained males, were the only decorated graves and were also all over 2.0 meters in diameter. The Cluster V burials contained either males, females or children and with two exceptions were all less than 2.0 meters in diameter (138 at 2.2 m. and 39 at 2.2 m. were the only exceptions).

As a final independent check of the validity of utilizing diameter to divide the burial population into two broad groups, a multiple regression analysis was performed of the excavated graves. All of the same variables used in the clustering routine were employed (see page 55). All variables were run in turn as the independent variable. Of all the variables grave diameter was found to best predict the remaining variables (R = .8) (John Davis, personal communication).

Grave diameter then appears to be a valid criterion for dividing the entire burial population into two broad groups: graves that are greater than 2.0 meters in diameter, and graves that are less than or equal to 2.0 meters in diameter.

Figure 30 shows the distribution of graves over 2.0 meters in diameter. Once again a 12 cell grid was imposed upon the entire cemetery and graves over 2.0 m. were assigned X and Y coordinates. The program CROSSTABS revealed a non-random distribution significant at the .045 level. Figure 31 expresses this distribution in the form of contour intervals. The greatest concentration of graves over 2.0 m. occurs in the northeast portion of the cemetery, the lowest in the southwest with a gradual decrease in grave size as one proceeds from the northeast to the southwest portion of the site.

The same method was used to check the distribution of graves 2.0 m. or less in diameter (Figure 32). Here the distribution was also found to be non-random and significant at the .023 level (see Figure 32 for distribution of these graves). The contour intervals of graves equal to or less than 2.0 m. based on the percentage of these graves in each cell reveals a pattern opposite of that found for the grave over 2.0 m. Here the greatest concentration was found in the southwest portion of the site gradually decreasing toward the northeast (see Figure 31).

The possibility existed that the spatial patterns discussed above were simply a reflection of the availability of the raw

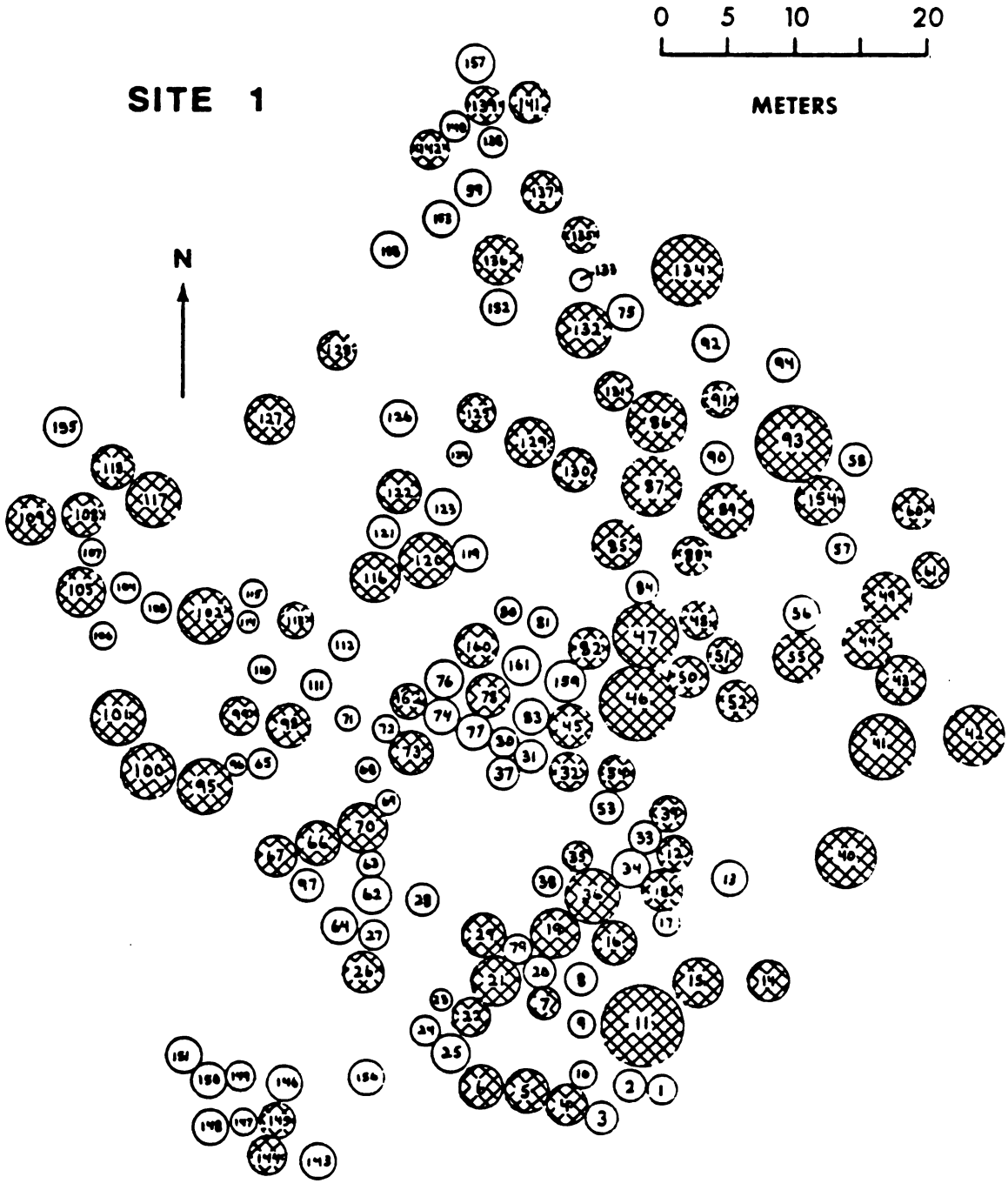
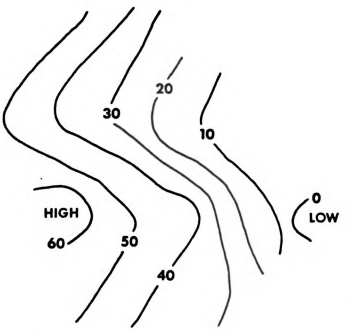


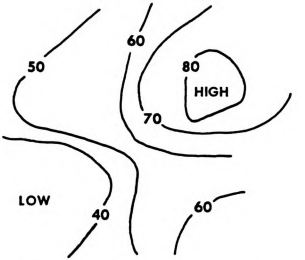
Figure 30

DISTRIBUTION OF GRAVES OVER 2.0 METERS IN DIAMETER
[INDICATED BY HATCHING]

Figure 31
CONTOUR DISTRIBUTION OF GRAVES AT SITE 1



graves 2 meters or less in diameter



graves over 2 meters in diameter

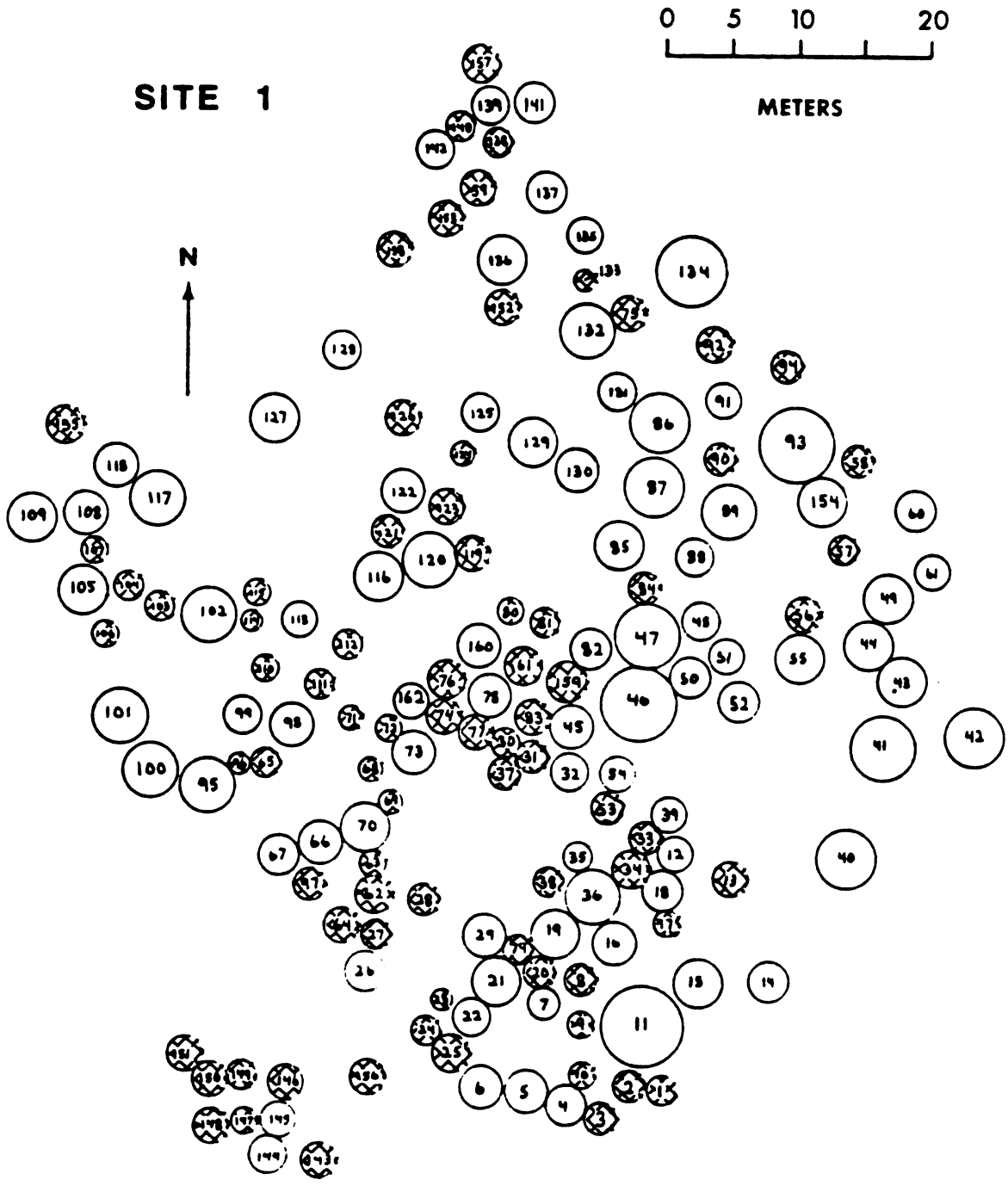


Figure 32

DISTRIBUTION OF GRAVES 2.0 METERS OR LESS IN DIAMETER

[INDICATED BY HATCHING]

material for grave construction. The outcrop on which the cemetery was located contained an abundant supply of lava exfoliating in regular slabs about 10 to 15 cm. thick. These slabs were used in the grave construction both for the vertical perimeter and the horizontal layers. However, not every grave in the cemetery was equidistant from available slabs. For example, graves on the eastern periphery of the cemetery were the closest to the raw material. Those in the west and in the center of the cemetery were further away. If grave size was determined by proximity to available lava slabs there should be a direct correlation between the distance from the raw material and grave size. To test this proposition a simple linear regression was run with the distance from lava slab outcroppings as the independent variable and the weight of rock used in the construction of a particular grave as the dependent variable. The weight of rock used was felt to best represent grave size since it included both diameter and depth variables. All of the excavated graves were used in this linear regression. This analysis showed almost no correlation between grave tonnage and distance from raw material ($R = .4$).

A simple linear regression was also run using the distance from the raw material as the independent variable and average size of slab utilized as the dependent variable. The only data on the size of slab used in the construction of particular graves came from the outer circle of standing slabs. The length of these was measured for each excavated grave. These lengths were then averaged

for each excavated grave and compared with the distance of the grave from the lava outcroppings. Once again the analysis showed no correlation with distance from raw material being of little predictive value in determining the weight of stone in a particular grave or the size of the stone employed (for stone size R = .36). The spatial patterns observed at the site then appear to be independent of resource availability and as such would seem to be culturally significant.

The distribution of graves within the Namoratunga 1 cemetery appears to be markedly non-random (the Namoratunga 2 site was not large enough to apply a similar spatial analysis). Graves over 2.0 m. are strongly associated with the eastern portion of the site and conversely, 2.0 m. or less are more common in the western portion of the site. Decorated graves of all size diameters are significantly associated with the eastern half of the site. The cemetery seems to be divided into at least two broad areas, one in the east and the other in the west. There is no sharp boundary between the two. The differences appear to be more of a gradational nature (see Figure 31).

Simple visual inspection of the location of the cemetery areas on their respective outcrops tends to reinforce this apparent preference for the east. The outcrop which contains the Namoratunga 1 cemetery as discussed earlier is oriented in an east-west direction. The very westernmost portion of the outcrop is unsuitable for the location of graves, with its raised rocky peak. However, the

remaining eastern half of the outcrop consists of a broad raised platform and provides a suitable area for grave construction. It is noteworthy that only the very easternmost portion of this raised platform was used. At Namoratunga 2 the outcrop is oriented north-south with the raised rocky peak in the southern half of the outcrop. Here the north half of the outcrop provides a broad raised platform. At Namoratunga 2 much like Namoratunga 1 the graves are located on the easternmost portion of the raised platform area. In neither case did the physical constraints imposed by the outcrops themselves dictate the placement.

The final visual observation which can be made concerns the Namoratunga I cemetery and its overall configuration. The cemetery is roughly diamond shaped and is oriented with the four cardinal directions. This is particularly interesting when it is recalled that all of the burials were also oriented in one of the four cardinal directions.

Petroglyphs as Cattlebrands: The Ethnographic Evidence

As mentioned earlier, 34 of the Namoratunga 1 graves were decorated. Interestingly, when work was first initiated at the Lokori Namoratunga sites, the author observed a number of the same geometric designs found on Namoratunga graves branded on the livestock of the local Turkana herders. When this apparent connection between the Namoratunga designs and Turkana brands was followed up it was found that the Turkana were able to recognize a large number

of these designs despite the fact that the sites and the art are not related to them (Lynch and Robbins 1977). In addition to claiming that they were not responsible for the art, there is no evidence of the Turkana having a rock art tradition. As such it seems unlikely that the art is the work of the Turkana. Since the art at the two Namoratunga sites was only associated with the graves of males, the art and cemeteries are clearly related and the work of a group other than the Turkana.

A total of twenty Turkana informants from the Lokori area were questioned about the brands through an interpreter. The individuals questioned were all male Turkana elders who owned livestock and lived in isolated homesteads up to 11 kilometers from Lokori itself. The Turkana were interviewed in groups of from three to six individuals at a time. Each of the Namoratunga designs was drawn on the ground and the elders were asked if they recognized the designs as being Turkana. In no case was there a discrepancy in the information obtained from different groups.

Of the 142 different kinds of geometric designs at the site, 99 (70%) were recognized by the Turkana as brand symbols which had individual names in their language. These signs were branded on cattle, camels, donkeys and other small livestock as marks of ownership. However, not all the animals owned by an individual receive the same design. Animals were sometimes differentiated on the basis of sex and species. For example, goats usually received a different design than cattle. Thus an individual can use more than one brand symbol.

Only males possess brand symbols. Among the present day Turkana, one of a male's brand symbols is inherited through the male line. As such, these symbols serve to delineate Turkana lineages. Lineages of the same clan while having different brands would identify them in the same way in terms of clan names. For example, men possessing quite different brands but belonging to the same clan, would still identify their brands by the common clan name of Ngikaleso.

However, this ideal can be obscured by other Turkana practices. For a variety of reasons an animal may bear a number of different brands. One way this can occur is if an animal passes in ownership from one lineage to another, particularly if it is a head of breeding cattle. Animals may be sold, traded, or even given from one person to the next. Some designs may only belong to one individual who is wealthy. These are applied in addition to the lineage brand. Finally, besides ownership marks some animals, especially cattle, may have other designs which are burned in simply for adornment.

A similar pattern was found among other East African tribes such as the Samburu, Pokot and Masai, all pastoralists. The Masai recognized 4% of the Namoratunga designs, the Samburu 9% and the Pokot 11%. However, it should be noted that for these groups it is likely that these percentages may be extremely low in comparison to the number of designs these groups actually have in common with the Namoratunga sites. Only two Masai informants were questioned

while only one individual from the Samburu and Pokot was interviewed. The same interviewing procedures employed with the Turkana were used with these three groups.

> "Cattle, donkeys and small livestock bear ownership marks. These consist of cuts or brand lines on one or both ears and of lines and curves burned on the left side of the body. The marks if put on the body of cattle and donkeys show what lineage or sub-lineage they belong. Those on small livestock the owner chooses for himself. Probably every lineage has its own distinct marks" (Merker 1910:167, on the Masai).

Among the Pokot (L. H. Robbins, personal communication) it was reported that a new brand could be obtained as a result of a cattle raid when the opponent was killed and his cattle were taken. This is one way in which similar brands become incorporated into different groups. This information serves to further support the use of these designs as brand symbols and their association with pastoralists.

To the author's knowledge, none of these pastoralists alter the design already on an animal when they acquire it. They simply apply their own brand in addition to the one already on the animal. Because of this, one might expect there to be a certain amount of difficulty in readily differentiating livestock. However, this does not appear to be the case. Despite the presence on some animals of several brands these herders have no difficulty determining the exact ownership of an animal. It is likely that much like the Nuer, (Evans-Pritchard 1940) pastoralists in general become quite familiar with each individual animal in their herd. In addition, the decorations found on certain animals may also aid in distinguishing livestock with multiple brands.

Some support for the assumption that the art may have been used in a similar fashion at the Namoratunga sites was provided by the fact that much like the ethnographic groups the designs are only associated with males at the Namoratunga sites. These graves also appear to indicate that the people responsible for Namoratunga were also at least in part pastoralists. As indicated in Appendix A, teeth of domesticated cattle and sheep/goat were common occurrances in the grave fill. It appears that the association of brand symbols with pastoralists and males in particular is quite ancient and that at Namoratunga the use of the designs at least in part parallels present day practices. Because of the similarities in the use of the art between the Namoratunga sites and the ethnographic groups, it is possible to make further inferences about the social organization of Namoratunga 1 and 2. As noted above, ethnographically the brands serve to delineate kin groups, in the case of the Turkana, patrilineages. In the previous section it was observed that graves sharing similar designs tended to be clustered within the site. On the basis of the ethnographic evidence it can be suggested that these represent individual kin groups within the larger cemetery. Such an explanation may in part also explain the geographical separation of Namoratunga 1 and 2. As mentioned earlier, these two sites are separated by less than 2 km. Namoratunga 1 contains 162 graves while Namoratunga 2 contains 11. There are no geographical variables to account for this distribution. The Namoratunga 1 site could have easily accommodated another eleven graves. This physical

separation seems to be due to social considerations. Perhaps the two sites represent separate corporate groups. This is verified in part by the designs which are found on the decorated graves at the two sites. Three graves were decorated at Namoratunga 2, 164, 169, and 170. Two of these graves, 164 and 170 contained three symbols which were not found on any of the graves at Namoratunga 1. If the assumption that these symbols represent particular kin groups is a valid one, then obviously there is some social distinction between the two sites.

However, as the ethnographic examples pointed out, the brand system has the potential for a great deal of ambiguity. An individual only inherits one design from his father. Additional designs can be acquired in a number of different ways as alluded to earlier. This may in part explain why some of the Namoratunga 1 graves contained as many as seven different symbols. However, despite the presence of large numbers of different designs on a single grave, underlying regularities still exist at Namoratunga 1.

If the number of different designs per grave is examined in terms of grave size it becomes apparent that certain regularities can be found. The average number of designs on a grave correlates directly with grave size. This again fits the expected ethnographic pattern, since wealthy individuals or persons of high status often have more brand symbols (Merker 1910:167).

The particular groups represented by these designs do not seem to be ranked in any way. All of the symbols found on the

TABLE 17.--Designs Used by Turkana, Pokot, Masai, and Samburu.

Design	Turkana	Pokot	Masai	Samburu	Decorations on Graves
	Eonait				X
	Ngikaleso			X	X
	Ngimeturona				X
	ngikatekok		X(m)		
	ngiduya				
	ngiraraka				
	ngikaruok			X	
	ngikamosorok	X			X
	ngitaparakolong				
	ngipucho			X	X
	ngiduya				
	ngikaleso				X
	ngimacharikota				X
	ngikinom				
	ngikaleso				X
	ngitogor				
	ngigolereto				
	eonait				
	ngikinom				X
	ngidocha			X	
	ngikaleso				
	ngigona				

TABLE 17.--Continued.

Design	Turkana	Pokot	Masai	Samburu	Decorations on Graves
	ngikamosoroko				
	ngikaleso				
	ngimeturona	X	X		
	ngiraraka	X			
	ngitogor		X(m)		
	ngiduya	X	X(m)	X	
	ngimasula				
	ngiraraka				
	ngimacharakwat				
	ngisiger				
	ngikamosoroko				
	ngikaleso				
	ngikaleso				
	ngikatek	X			X
	ngitogor				
	ngikaruwok				
	ngimasula				
	ngikatap				
	ngirarak				
	ngisiger				
	ekinomit				
	epongait				

TABLE 17.--Continued.

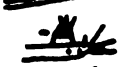
Design	Turkana	Pokot	Masai	Samburu	Decorations on Graves
	ekurerut				
	ngimacharikota	X			X
	ngimeturona			X	
	ngitogor				
	ngithinger				
	ngimacharikota	X			X
	ngikaleso				
	ngirarak			X	
	ngithinger				
	ngimeturona				
	ngikaleso				
	ngimeturona				
	ekurerut				
	edongait				
	ngikuruk				
	ekar				
	ngikureru				
	ngithinger				
	ngirap				
	ngikamosoroko	X			
	ngitaparakolong	X			
	ngikaleso				

TABLE 17.--Continued.

Design	Turkana	Pokot	Masai	Samburu	Decorations on Graves
	ngirarak				
	ngikatap				
	ngikamasorok				
	ngichilla				
	ngimasula				
	ngipunga				X
	ngigorereto	X			
	ngidogiro				X
	ngiponga				X
	ngimeturuna	X			X
	ngigolereto		X(m)	X	X
	ngikureru				X
	ngikaleso				X
	emeturonait				
	ngikamosoroko				
	emedoit				
	ekalesoit				
	ngikatek			X(m)	X
	ngitacha	X			X
	ngikureru				
	ngithinger				
	ngigona				

TABLE 17.--Continued.

Design	Turkana	Pokot	Masai	Samburu	Decorations on Graves
	ngikatap				
	ngiduya	X			
	ngithinger				
	ngikaruwoko				
	ngigona	X			
	ngikaleso				
	ngiduya				
	ngithinger	X			X
	ngirarak				X
	ngikaleso				
Total	99 (77%)	16 (11%)	6 (4%)	13 (9%)	

*For Pokot, Masai and Samburu lineage names were not collected, (M) indicates from Merker, 1910. The remaining designs were collected by the author and L. H. Robbins.

TABLE 18.--Grave Diameter vs. Average Number of Different Designs.

Grave diameter				
3.5+	3.4-3.0	2.9-2.5	2.4-2.0	1.9-1.5
Average number of different designs				
2.9	2.5	2.25	2.1	1.8

larger graves also appear on much smaller graves. If the kin groups represented at the Namoratunga sites were ranked in any way with certain groups as symbolized by these designs being of higher status than others, we would have expected graves of similar size to share the same designs. The  design for example, occurs on a grave over 3.5 m. in diameter but also on one less than 2 m. in diameter. The  ,  , and  , designs occur on all size categories. The symbols  and  occur in four of the five categories and  ,  occur in three. Twelve designs occur in at least two size categories. Nine are found in only one size category and all but two of these are idiosyncratic designs (). The same pattern was found when all of the decorated graves at Namoratunga 1 were examined. Much like what was found for the excavated decorated graves, graves of similar size did not necessarily contain the same designs.

The very fact that cemetery areas exist at all may further support this hypothesis of kin groups. Saxe (1970) had originally proposed this in his hypothesis 8.

TABLE 19.--Grave Size vs. Symbol for Excavated Graves.

1.5 - 1.9	2.0 - 2.4	2.5 - 2.9	3.0 - 3.4	3.5+
				

"To the degree that corporate group rights to use and/or control crucial but restricted resources are attained and/or legitimized by means of lineal descent from the dead (i.e. lineal ties to ancestors) such groups will maintain formal disposal areas for the exclusive disposal of their dead, and conversely (Saxe 1970:119).

Saxe found this hypothesis to be verified by his sample of three ethnographic groups. Goldstein (1976) elaborated upon this hypothesis

with an ethnographic sample of 30 groups. Based on this, Goldstein restated Saxe's hypothesis 8

A. To the degree that corporate group rights to use and/or control crucial but restricted resource(s) are attained and/or legitimized by lineal descent from the dead (i.e. lineal ties to ancestors), such groups will, by the popular religion and its ritualization, regularly reaffirm the lineal corporate group and its rights. One means of ritualization is by the maintenance of a permanent, specialized, bounded disposal area for the exclusive disposal of their dead.

B. If a permanent, specialized bounded disposal area for the exclusive disposal of a group's dead exists, then it is likely that this represents a corporate group who has rights over the use and/or control of crucial but restricted resource(s). This corporate control is most likely attained and/or legitimized by means of lineal descent from the dead, either in terms of an actual lineage or in the form of a strong, established tradition of the crucial resource passing from parent to offspring.

C. The more structured and formal the disposal area, the less number of alternative explanations of social organization apply, and conversely (Goldstein 1975:61).

What she suggests is that if there is a formal bounded disposal area, used exclusively for the dead, then the culture is probably one which has a corporate structure in the form of a lineal descent system. The more organized and formal the disposal area is, the more conclusive this interpretation.

The use of a cemetery is certainly compatible with the hypothesis that kin groups, whether they represent either lineages or sub-lineages are buried within the larger lineage or clan cemetery. The distinction between Namoratunga 1 and 2 would be of the same order, although it is impossible to determine if this distinction is on the moiety, clan, or lineage level.

However, in any case, the most important corporate group would appear to be that represented by the cemetery areas as a whole. The cemetery itself shows a number of organizational principles which have been discussed earlier. The cemetery displays an overall pattern with regard to burial orientations. A significant number of the Namoratunga 1 burials are oriented away from the center of the site. An individual's orientation apparently was determined by his or her location within the cemetery. It does not seem to reflect sub group affiliation. Burials with the same design on their graves do not necessarily share the same orientation. The same appears to be the case with respect to an individual's location within the cemetery. Graves over 2.0 m. tend to occur in the east and graves 2.0 m. or less in the west. The entire cemetery then appears to be roughly divided into two broad areas. On the basis of these spatial considerations it seems reasonable to suggest that this social unit took precedence over the smaller groups represented by graves sharing similar symbols.

It seems that despite the potential for a great deal of ambiguity in the use of these symbols, it does not appear to obscure

the underlying patterning at the Namoratunga 1 site. All of the regularities observed can be explained in terms of present day uses of the designs. As such the ethnographic model appears to account for the variability encountered at the sites. The hypothesis that kin groups are buried within the larger cemetery, and that the two sites represent different corporate groups, cannot be rejected using the available evidence. Unfortunately at the present time it is impossible to fully test this hypothesis. Ideally burials within graves sharing similar designs could have been compared using non metric traits to try and determine genetic affinities as could burials from the two cemeteries (Buikstra 1974, Lane and Sublett 1972). Due to poor skeletal preservation this could not be done.

However, as will be seen in the next chapter, the practices of particular subgroups being buried within the larger cemetery is not without ethnographic analogy. Among certain Eastern Cushitic speaking peoples now inhabiting parts of southern Ethiopia such as the Konso, clans have their own distinct burial area. These areas are further subdivided on the basis of lineage membership (Haberland 1963). (See Chapter VI for further discussion of mortuary practices among Eastern Cushitic speaking peoples.)

Summary and Interpretation

As discussed at the beginning of this chapter, the variability in grave size at the Namoratunga sites can be viewed in a number of alternate ways. Having discussed the Namoratunga burial routine it

is now possible to return to these hypotheses to discern if any fit the available data more closely than Tainter's (1975) suggestion that energy expenditure correlates with status. The first two suggestions can be treated singly since they are to a certain degree linked and would be reflected in a similar fashion archaeologically. One hypothesis was that grave size reflected the status of the deceased kin group. The second was that it reflected the size of that kin group. In either case individuals would warrant larger graves by virtue of their membership in a particular kin group. Given either of these suggestions, one would expect graves of comparable size to share similar designs. It is assumed of course that these designs symbolize particular kin groups. An examination of the decorated graves at Namoratunga 1 revealed that graves of similar size did not contain the same designs. As such there is no support for either of these two related propositions.

The final hypothesis proposed was that differences in grave size reflected who constructed the grave. If women constructed the graves of other women, for example, simply due to differences between the sexes in physical strength we would expect the graves of women to be smaller than those of men. This hypothesis is not supported by present day burial practices among East African pastoralists. Among these groups graves are always constructed by male kindred regardless of the sex of the decreased (see Chapter VI) although women may sometimes aid in the work (Evans-Pritchard 1956). secondly in the case of graves 9, 17, 37, women were interred in

graves considerably larger than those of certain males. There also appears to be no support for this hypothesis archaeologically.

At least for the Namoratunga 1 data there appears to be no reason not to suggest that, as Tainter has shown elsewhere, variation in energy expended, as expressed in grave weight, can best be interpreted as differences in status (see Tainter 1975 for complete derivation of this argument). The five burial groups derived from the cluster analysis should be viewed as forming a continuum in relative status, from group V which would have the lowest relative status to group I with the highest.

As observed in the previous section, burial at the Namoratunga 1 and 2 cemeteries was confined to a segment of the total population. Females (less than 25% of burial population) and subadults (8%) appear to be interred elsewhere or were not buried. Access to the site than appears to entail a certain status; this status being limited for the most part to males. Females and subadults that were buried at the sites occupied the lowest status positions relative to males given energy expenditure as a measure of status. Age also appears to be a determining factor in burial at the Namoratunga sites. The population profile from Namoratunga 1 is heavily weighed with adults. Only two subadults were found in the 38 graves excavated. In addition, the top status positions or largest graves were only occupied by middle adults. Young adults occupied smaller graves and lower status positions. The two children found belonged to the lowest status group at the site (Group V). While

the presence of these children may indicate that at least some status is ascriptive it might also simply reflect idiosyncratic behavior. Burial in decorated graves, while confined to males, contained both middle and young adults. Almost all of the distinctions in the mortuary routine at the Namoratunga 1 site can be explained in terms of age or sex distinctions and so status is apparently achieved. This burial routine, then, would appear to fit an egalitarian social pattern (Service 1962).

One might suggest that the women and children who were interred at Namoratunga 1 warranted this disposal due to their special relationship with one of the males buried at the site. These females appear to accrue the social status of the male partner either through marriage or kinship. All of the female and subadult burials at the site were buried next to much larger male graves. Furthermore, the excavated female graves at the site are in close proximity to a decorated male grave. Graves 9, 76, 143 and 162, all containing females, are actually in direct contact with decorated graves. Graves 17 and 37, also containing females, are less than 2 meters from a decorated grave. Grave 31, that of a child is also in contact with a decorated grave. The grave of 65, a child, is not near a decorated grave but is contiguous to a larger male grave. This may lend some support to the proposition that the status of females and subadults at the site was dependent upon certain males.

The spatial organization of the cemetery also revealed several patterns. It was found that there were significant associations between the east half of the cemetery and graves over 2.0 m. and the west half and graves 2.0 m. or less in diameter. Hence, not only was burial at the site indicative of a certain status, but status was further reflected by an individual's location within the cemetery.

From the available evidence it seems that the Namoratunga cemeteries can best be visualized as being composed of a number of family units with high status males surrounded by their relatives. This is the pattern we see with the graves of women and children being found in association with larger adult male graves. Such a pattern is not incompatible with the spatial patterns found with grave size and decoration since even in egalitarian societies individuals of high status tend to some extent to have high status relatives (Service 1962). Finally, it also agrees with the clustering of graves sharing similar designs, if these do indeed symbolize kin groups. Unfortunately, since skeletal preservation was extremely poor, it was impossible to determine, using either metric or non-metric information, if graves which were in close proximity were more closely related physically.

CHAPTER IV

ART ANALYSIS

Rock art, particularly geometric designs, have a wide distribution in East Africa. In Tanzania, paintings as well as petroglyphs depicting geometric designs have been found (Shorter 1967, Odner 1971, Tanner 1953, Soper and Golden 1969, Chaplin 1974). These Tanzanian sites contained circles, sun figures, concentric circles, spiral designs and beetle like figures (Collinson 1970). Similar designs are also widespread in Uganda, particularly in the Lake Victoria region (Lawrence 1953, 1954, Lanning 1960, Morton 1964). Here, too, both paintings and petroglyphs were recorded. Until recently it was thought that Kenya unlike its neighbors, Uganda and Tanzania, had little rock art. Soper in his research at Namoratunga (1968) noted only a few other sites in Kenya which had art similar to that found at the Namoratunga sites. However, more recent research has uncovered a great deal of rock art in Kenya (Odak 1976)

> "What can be said at this stage is that Kenya, though little known with regard to prehistoric art, is comparable with and perhaps surpasses the neighboring countries about which much has been done in this line of research" (Odak 1976, p. 10).

Art is found in the Eastern Rift Valley, the west side of Lake Turkana, the Uasin Gishu plateau and the plains stretching southward

from Nairobi to the Tanzania border (Gramly 1975). Finally, similar geometric designs have been found as far north as Ethiopia near the Red Sea (Graziosi 1964).

However, at most of these sites the number and range of these designs is limited. In addition, precise interpretations of this geometric art is extremely difficult and usually highly subjective. The work of Gramly (1975) at Lukenya Hill in southern Kenya is the sole exception. Here the geometric symbols that were painted on the rock shelter walls were found to closely resemble Masai cattle brands. The designs were apparently associated with Masai "meat feasting" sites where the designs painted on the walls represent the brands of the particular animals eaten. Chapman (1974) also implies that the art is connected with pastoralists, but does not link the geometric symbols with animal brands. For the most part the art at all of the sites in East Africa has simply been described with no attempt at any form of systematic analysis.

In terms of rock art the Namoratunga sites are relatively unique in East Africa. In addition to providing a very large sample of rock art, over 1,000 different engravings, the sites mark an instance where the meaning of these geometric designs can be inferred. These sites also represent one of the only instances where the art can be linked to an excavated archaeological assemblage, the accompanying cemetery areas.

Since the art on the graves was discussed earlier, this section will only deal with the art on the outcrops which contained

the two cemeteries near Lokori. This constitutes the vast majority of the art (93%). As discussed earlier, these two eroded volcanic cones, 1 km apart, are the only elevated areas on the broad flood plain between the Kerio and Kangatet Rivers. No other occurrences of rock art were found elsewhere in the Lokori area despite the fact that the 190 sq km around the sites were intensively surveyed. As such, the two outcrops appear to be important rock art centers for at least the 190 sq km surrounding the two sites and may prove to be the only art centers in the entire region.

One thousand seventy different engravings were found at these two sites representing 142 distinct geometric designs. The designs consisted largely of circle, spiral and line motifs, however, four examples of naturalistic art did occur; two giraffe figures and two figures which resembled single hump camels.* The petroglyphs were formed by taking a hard pointed lava hammerstone and pecking through the relatively soft exterior "skin" of the basalt slabs to the lighter colored interior. This art ranged from examples that were well patinated and with desert polish to instances where the art looked very "fresh." Because of this wide range in the relative amounts of weathering, the art was broken into three broad categories. These groupings provide a rough relative chronology for the art. The first group consists of all examples which appeared to be

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*If these are indeed camel representations, they mark knowledge of camels by 330 BC. These may well represent the only "dated" evidence of them in East Africa.

"fresh." These designs were much lighter in color than the weathered rock surface they were picked through and were not patinated (see Figure 33). The second category contained rock art that unlike the first category displayed some patination. The second category was darker in color than category one but was still lighter than the parent rock surface. This group exhibited no desert polish (see Figure 34). The third category represents the other extreme and contained art which was patination and had desert polish. These examples, for all intents and purposes, displayed the same color, patinated and desert polish as the original rock surfaces through which they were engraved (see Figure 35). The second group was by far the most difficult to assign of the three, with the first and third categories being readily differentiated. However, since one individual categorized the art, it is felt that judgments about the groups are at least internally consistent and as such are still of value. Viewing these groups chronologically, category one would be the youngest with category three the oldest. Unlike other areas where marked stylistic changes can be traced through time (Newcomb 1976), the Namoratunga art displayed no stylistic variability through these three time periods.

The possibility that these three different categories reflect the fact that certain engraved rock surfaces were simply more exposed to the elements than other surfaces is not likely. In many cases all three stages of weathering were found on the same rock surface (see Figure 36). In addition, well patinated

Figure 33
Example of Light Weathering

Figure 34
Example of Moderate Weathering

Figure 35
Example of heavy weathering

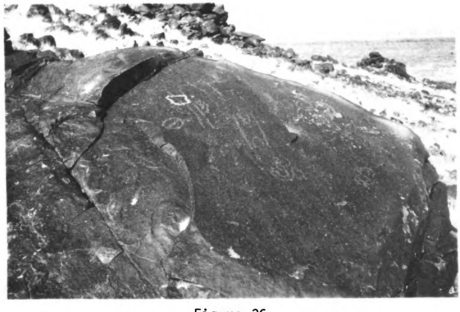


Figure 36
Example of more than one type of weathering on same rock surface

engravings were often found in "protected" areas whereas "fresher" engravings could be found on more exposed surfaces.

Despite the fact that the Turkana were not responsible for any of the art (see page 108), they were still able to recognize 99 out of the 142 different designs found at Namoratunga (70%) as brand symbols (see Chapter III, pages 107 to 110 for complete discussion of the use of brands). Each of the 99 designs were given lineage names in their own language (see Table 17). The Pokot utilized 11% of these designs, the Masai 4% and the Samburu 9%. As mentioned previously all three are also East African herding peoples.

Once again, assuming that this art was used in much the same way at the Namoratunga sites, as lineage markers, it becomes possible to use the art on the two outcrops as a key to further interpreting the past social organization reflected at the Namoratunga sites. As mentioned earlier, the two Lokori sites are separated by approximately 1 km. The two sites contained 162 and 11 graves respectively. Geographical constraints do not appear to account for this distribution, since either of the two volcanic outcrops could have easily accommodated all 173 graves. As such this distribution appears to be determined by cultural practices. If different subgroups within the larger social unit used the two cemetery areas, such as distinct clans, one might hypothesize that the two sites would differ in the designs they contained. The designs could thus be used as an index or rough measure of social distance. The greater the difference in the designs at the two sites, the greater the

TABLE 20.--Key to Design Motifs.

1		25		49		73	
2		26		50		74	
3		27		51		75	
4		28		52		76	
5		29		53		77	
6		30		54		78	
7		31		55		79	
8		32		56		80	
9		33		57		81	
10		34		58		82	
11		35		59		83	
12		36		60		84	
13		37		61		85	
14		38		62		86	
15		39		63		87	
16		40		64		88	
17		41		65		89	
18		42		66		90	
19		43		67		91	
20		44		68		92	
21		45		69		93	
22		46		70		94	
23		47		71		95	
24		48		72		96	

TABLE 20.--Continued.

97		113		129	
98		114		130	
99		115		131	
100		116		132	
101		117		133	
102		118		134	
103		119		135	
104		120		136	
105		121		137	
106		122		138	
107		123		139	
108		124		140	
109		125		141	
110		126		142	
111		127			
112		128			

*Designs 130-142 did not occur on the hills and were unique to graves.

social distance between the people responsible for the sites. The following analytical procedures were employed to examine this problem (see Table 20).

Step 1: Independent Binomial Probability Distribution

The first stage in the analysis was to determine if the two sites differed significantly in the designs they contained. To examine this problem a model was formulated to calculate the probability of all of the occurrances of a particular design occurring at one site only. The Independent Binomial probability distribution was used. It can most simply be expressed by the formula

$$P(Y = N) = .5^{n-1}$$

Where P = probability of success

N = number of trials or sample size

Y = is a random variable describing the number of successes in N trials or in the sample.

So for example, for design 1 which occurred 3 times at site 1 and 3 times at site 2 in the heavy weathered category we would have $.5^{n-1}$ or $.5^{6-1} = .0125$. This procedure is followed for each design motif in each of the three weathering categories. These probabilities are in turn summed for each category of weathering and divided by the number of designs. This gives the mean probability or

TABLE 21.--Distribution of Designs by Weathering Category.

	Hill 1			Hill 2		
Design #	H W	M W	L W	H W	M W	L W
1	3	0	1	3	0	0
2	4	3	0	19	27	4
3	14	1	2	56	21	2
4	1	10	0	29	22	1
5	0	0	1	0	0	0
6	1	0	0	0	0	0
7	1	2	0	8	6	4
8	0	2	0	2	4	4
9	2	2	1	1	3	1
10	16	10	10	61	50	4
11	6	0	0	1	2	0
12	6	4	0	11	4	4
13	1	0	0	2	0	0
14	8	0	1	7	10	0
15	1	0	0	4	5	3
16	2	0	0	3	1	0
17	4	1	6	13	11	2
18	0	0	0	0	1	0
19	1	0	0	1	2	0
20	0	0	0	1	0	0
21	0	0	0	1	0	0
22	0	0	1	0	0	0

TABLE 21.--Continued.

Design #	Hill 1			Hill 2		
	H W	M W	L W	H W	M W	L W
23	0	0	1	0	1	0
24	1	0	0	0	0	0
25	1	0	0	2	2	1
26	0	0	0	1	0	0
27	0	0	0	1	0	0
28	0	0	0	0	1	0
29	0	0	0	0	1	0
30	1	0	0	1	0	0
31	0	0	0	0	1	0
32	0	0	0	0	0	1
33	0	0	0	0	1	0
34	3	0	0	0	0	0
35	2	0	0	0	0	0
36	0	4	6	0	1	0
37	1	0	0	0	0	0
38	0	1	0	0	0	M
39	0	0	0	1	0	0
40	0	1	0	0	0	0
41	0	0	1	0	0	0
42	0	0	0	1	0	0
43	0	0	0	2	2	1
44	0	0	0	1	0	0

TABLE 21.--Continued.

	Hill 1			Hill 2		
Design #	H W	M W	L W	H W	M W	L W
45	0	0	0	1	0	0
46	0	0	0	1	0	0
47	1	0	0	0	1	1
48	3	0	6	1	0	0
49	2	0	0	5	3	1
50	5	0	0	6	7	0
51	0	0	0	1	0	0
52	0	0	0	1	0	0
53	0	0	1	0	0	0
54	0	0	0	0	1	0
55	1	0	0	0	0	0
56	0	0	0	1	0	0
57	0	0	1	0	0	0
58	1	0	0	0	0	0
59	1	0	0	0	0	0
60	0	1	0	2	0	0
61	0	0	0	0	1	0
62	0	0	1	0	0	0
63	3	0	0	3	14	0
64	4	0	0	1	4	0
65	0	0	0	0	1	0
66	0	0	0	0	1	0

TABLE 21.--Continued.

Design #	Hill 1			Hill 2		
	H W	M W	L W	H W	M W	L W
67	0	0	0	1	0	0
68	0	0	0	0	1	0
69	0	0	0	0	2	0
70	0	0	0	0	1	0
71	0	0	0	1	0	0
72	0	0	0	0	2	2
73	0	0	0	0	1	0
74	0	0	0	0	1	0
75	0	0	0	1	0	0
76	0	0	0	1	0	0
77	0	0	0	1	0	0
78	3	1	0	1	1	0
79	1	0	0	0	0	0
80	1	0	0	1	0	0
81	1	0	0	5	0	1
82	8	1	0	7	2	0
83	1	0	0	0	0	0
84	0	0	1	0	0	0
85	0	0	0	0	1	0
86	0	0	0	1	0	0
87	0	0	1	1	2	0
88	0	0	0	1	0	0

TABLE 21.--Continued.

Design #	Hill 1			Hill 2		
	H W	M W	L W	H W	M W	L W
89	0	0	0	0	1	0
90	0	0	0	0	1	0
91	0	0	0	0	1	0
92	0	0	0	0	1	0
93	0	0	0	0	1	0
94	0	0	0	1	0	0
95	0	0	0	1	0	0
96	0	0	0	0	1	1
97	0	0	0	0	1	0
98	0	0	0	0	1	0
99	1	0	0	0	0	0
100	0	0	0	8	1	0
101	1	0	0	0	0	0
102	1	0	0	0	0	0
103	0	1	0	0	0	0
104	0	1	0	0	0	0
105	0	0	0	2	0	0
106	0	0	0	0	1	0
107	0	0	0	0	6	0
108	0	0	0	1	0	0
109	0	0	0	0	1	0
110	0	0	0	1	0	0

TABLE 21.--Continued.

	Hill 1			Hill 2		
Design #	H W	M W	L W	H W	M W	L W
111	0	0	0	0	1	0
112	0	0	0	1	1	0
113	0	0	0	0	0	0
114	2	1	0	2	1	0
115	0	0	0	3	0	0
116	0	0	0	2	0	0
117	0	0	0	0	1	0
118	0	0	0	1	0	0
119	0	0	0	0	0	1
120	0	0	0	0	1	0
121	0	0	0	0	2	0
122	0	0	0	1	0	0
123	1	0	0	0	0	0
124	0	0	0	0	1	0
125	0	0	0	1	0	0
126	0	0	0	0	1	0
127	0	0	0	0	1	0
128	0	0	0	0	1	0
129	0	0	0	0	1	0

Figure 37

Distribution of Designs for Site 1

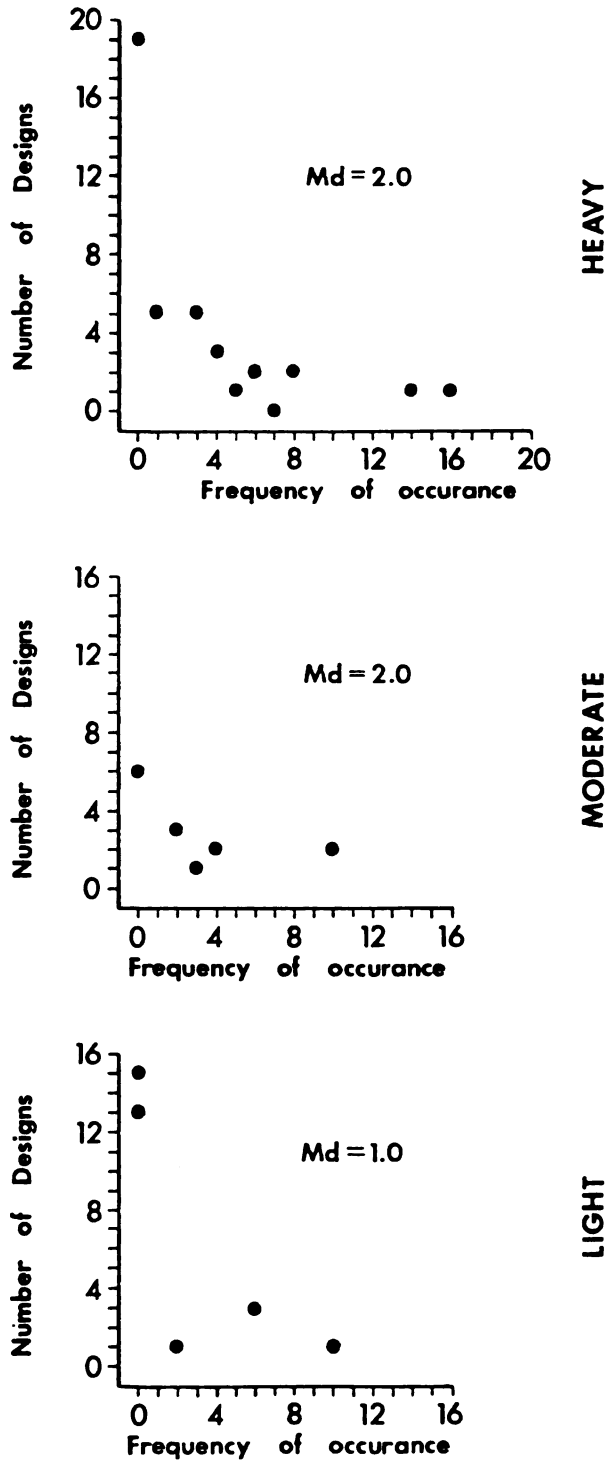
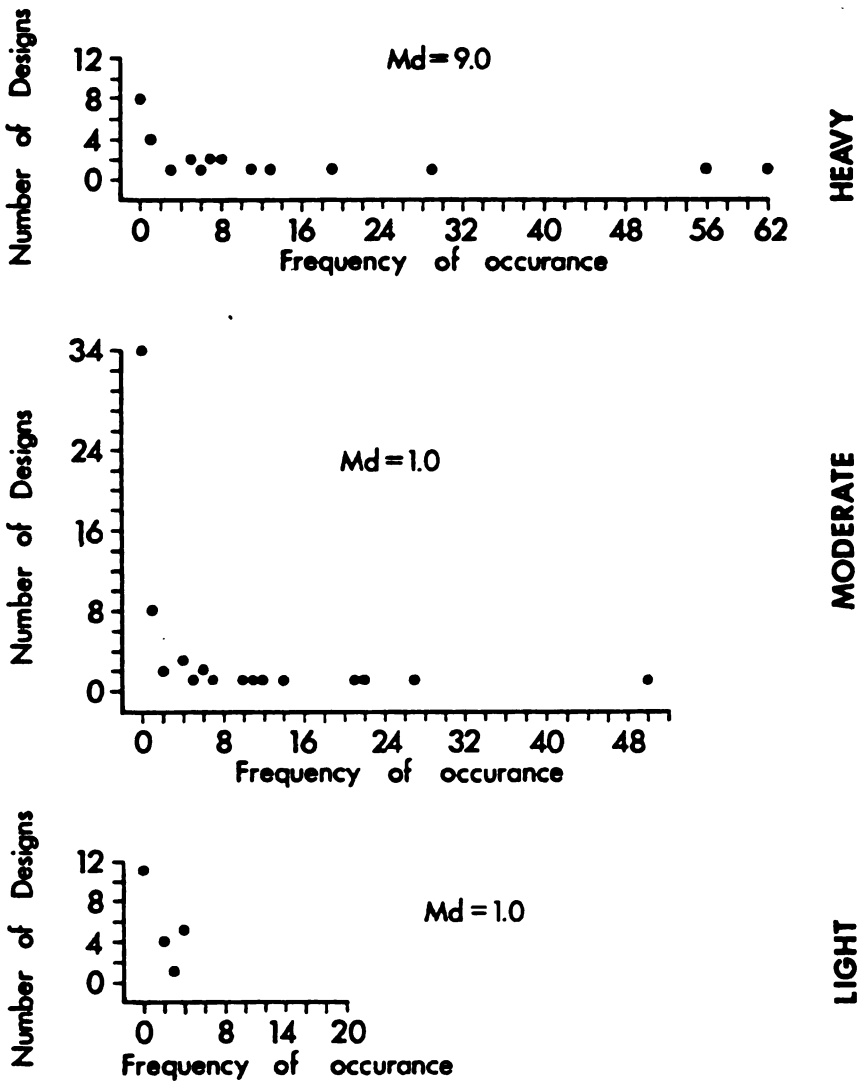


Figure 38

Distribution of Designs for Site 2



expected probability of finding all of each design at only one site. The find formula is

$$P = \frac{i=1 \quad .5^{n-1}}{I}$$

Where I = the total number of designs in each category. Probabilities for finding all of each design at one site.

Heavily weathered

42.45034814/72 = .5895881686 .590

Moderately weathered

39. 40930224/62 = .635633907 .636

Lightly weathered

21.19543457/32 = .6623573303 .662

Total

74. 7684491/113 = .6616676912 .662

This method was first employed for the heavily weathered designs. The chi square technique was used to test if the expected frequencies of designs differed significantly from the actual frequencies of designs at the two sites.

Heavily weathered

$$X^2 = \frac{(45 - 42.48)^2}{42.48} = .3646$$

df = 1 at .05 C = .3841

	One Site Only	Both Sites	N
Observed count	45	27	72
Expected count	N(.590) 42.48	N(1-.590) 29.52	

For heavily weathered category the difference between the two hills was not found to be significant at the .05 level.

For the moderately weathered category the null hypothesis of no difference was rejected. Therefore, it is concluded that the two hills are significantly different in the designs they contain.

Moderately Weathered

	One Site Only	Both Sites	N
Observed count	49	13	62
Expected count	N(636) 39.432	N(1-.636) 22.568	

$X^2 = 6.378$ df = 1 at .05 = 3.841

Lightly Weathered

	One Site Only	Both Sites	N
Observed count	27	5	32
Expected count	N(.662) 21.184	N(1-.662) 10.816	

$X^2 = 4.72$ at .05 C = 3.841

As was the case for the moderately weathered examples, the null hypothesis of no difference between the two sites is rejected. The two sites differ significantly (.05 level) for the lightly weathered category.

However, when all the designs are examined, regardless of weathering category, the two sites are not found to differ significantly.

Total

	One Site Only	Both Sites	N
Observed count	81	32	113
Expected count	N(.662) 74.806	N(1-.662) 38.194	

$X^2 = 1.517$ C(at .05) = 3.841

The conclusions drawn from the analysis are interesting when viewed in terms of differences in time.

Through time the two sites become increasingly differentiated in terms of their designs. Given the initial assumption that differences in rock art indicates social differences, it would appear that initially the two sites were quite similar in the social groups they represented. Through time, however, this social distance between the sites increased. Hence, the initial hypothesis that the difference between the two sites is culturally determined appears to be validated with different kin groups within the larger social unit utilizing the two cemeteries.

Step II: Pearson Product Moment Correlation

The two sites were also compared in terms of the relative frequencies of designs they had in common. To facilitate this the relative chronology for the art described previously was utilized.

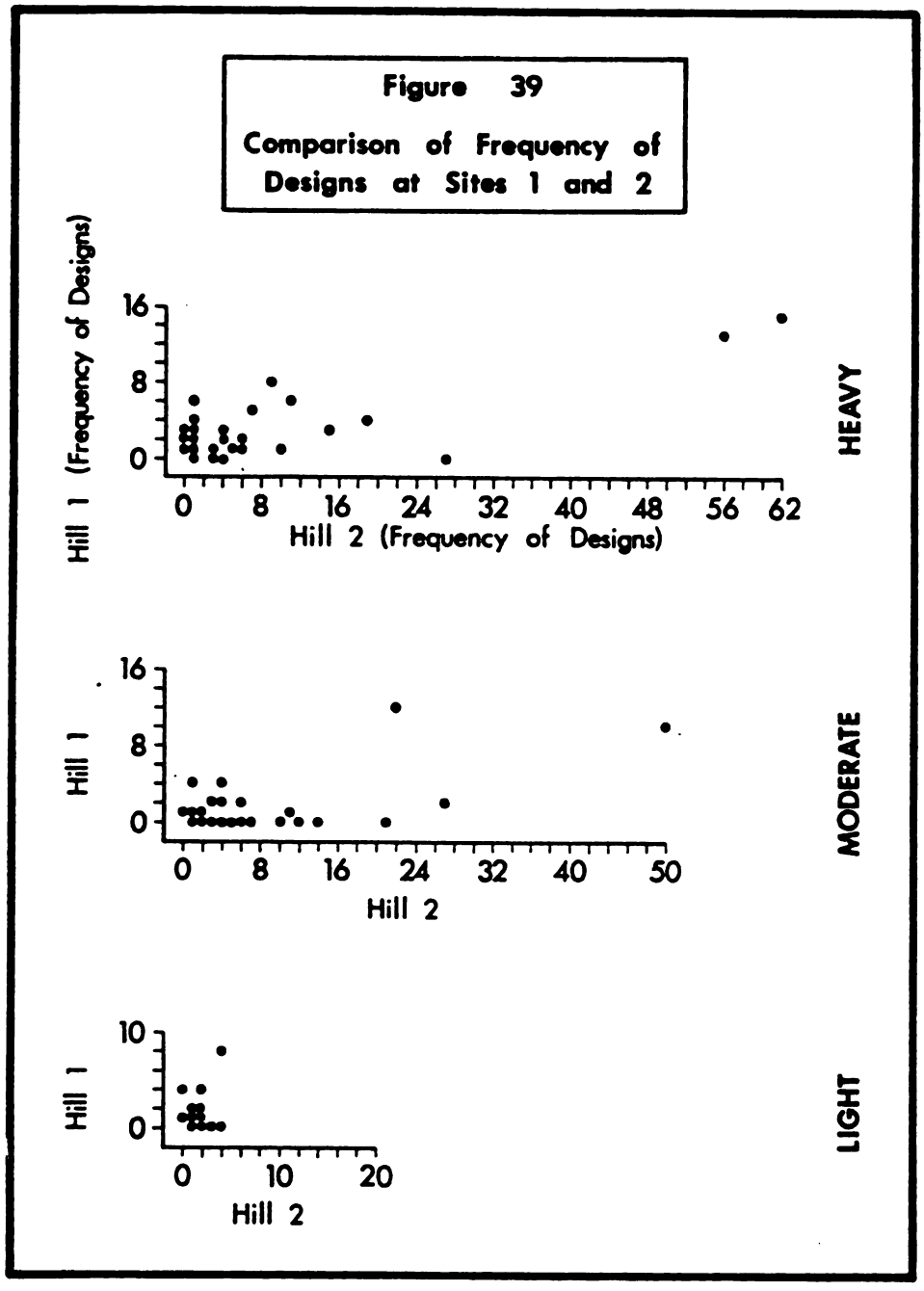


Figure 39
Comparison of Frequency of Designs at Sites 1 and 2
Hill 1 (Frequency of Designs)
16
8
0
0 8 16 24 32 40 48 56 62
Hill 2 (Frequency of Designs)
HEAVY
Hill 1
16
8
0
0 8 16 24 32 40 50
Hill 2
MODERATE
Hill 1
10
0
0 10 20
Hill 2
LIGHT

For each of the three categories of weathering, termed heavy, moderate and light, a Pearson product moment correlation was performed between the two sites (Roscoe 1975). So for example, weathered examples at site one were compared with weathered examples from site two. Because of the close proximity between the two sites, 1 km, it was hypothesized that there would be a high correlation between the two sites through time in terms of the relative frequencies of shared designs at both sites. The resulting correlation coefficients were .800, .605 and .052 for the heavy, moderate and light categories respectively. For the heavy and moderate categories the most frequent designs at site one are also the most frequent at site two. This correlation is not evident for the light designs. This indicates that in terms of frequency of occurrence of designs there is a progressive weakening in the relationships between the two sites through time.

Step III: Paired Differences Technique

To test the correlation derived from the Pearson product moment correlation for the heavy and moderate categories the paired differences technique for testing the difference in the two means was performed. Both heavy and moderate categories showed significant differences (99th percentile level) with site two having consistently larger frequencies of individual designs.

However, it should be noted that the Pearson product moment correlations for sites one and two disappears for the heavy and moderate categories if the five most common designs at the two sites

Figure 40

Distributions of Paired Differences: (H_1,i - H_2,i)

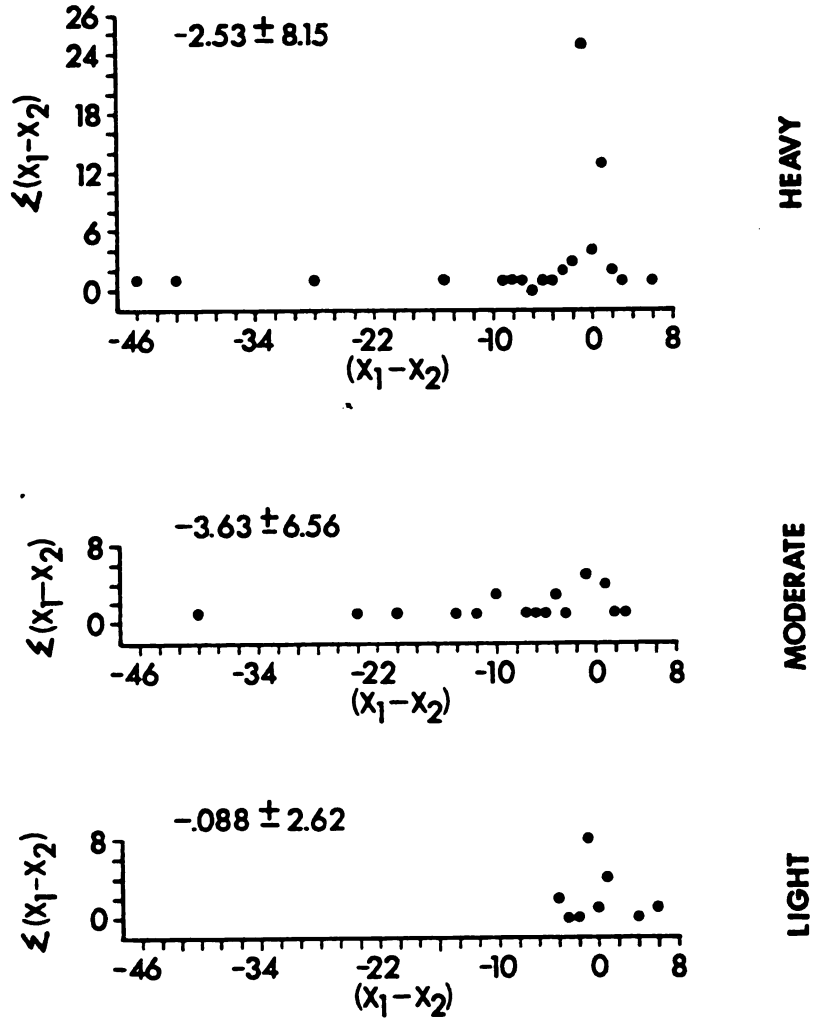


TABLE 22.--Frequency of Design by Weathering Catagory.

	Design #	Total	Freq. of Weathered	Actual %	Freq. of Moderate	Actual %	Freq. of Light	Actual %
Hill 1	3	17	14	9.5	1	1.5	2	5.3
	4	11	1	0.7	10	15.2	0	0.0
	10	36	16	10.9	10	15.2	20	26.3
	12	10	6	4.1	4	6.1	0	0.0
	17	11	4	2.7	1	1.5	6	15.8
	36	10	0	0.0	6	9.1	4	10.5
Actual Total		95	147	27.9	66	48.6	22	48.9
Hill 2	2	50	19	5.6	27	9.2	4	9.5
	3	79	56	16.4	21	7.1	2	4.8
	4	52	29	8.5	22	7.5	1	2.4
	7	18	8	2.3	6	2.0	4	9.5
	10	115	61	17.9	50	17.0	4	9.5
	12	19	11	3.2	4	1.4	4	9.5
	14	17	7	2.1	10	3.4	0	0.0
	15	12	4	1.2	5	1.7	3	7.1
	17	26	13	3.8	11	4.7	2	4.8
	50	13	6	1.8	7	2.4	0	0.0
	63	18	3	0.9	14	4.8	1	2.4
	87	13	1	0.3	12	4.1	0	0.0
Actual Total		432	341	64.0	294	65.3	42	59.5

are removed from the analysis. The five designs, 10  12  17  3  4  , are among the least elaborate found at the two sites. In addition, Merker (1910) noted that at least some of these designs  ,  ,  ,  were used by the Masai simply as adornment on a favorite animal. It appears that at least certain designs need not represent particular lineages. As such, the correlations in frequencies between the two sites may simply reflect a certain amount of redundancy inherent in the use of these designs.

Step IV: Comparison of Means

The variability in the designs at the two sites was examined further to see if the differences seen in the previous analysis were the result of a large number of designs occurring in low frequency at site two while not occurring at site one. Variability for these nominal class variables can most simply be described by the proportion of different designs to the total frequency of the petroglyphs at the two sites. Table 23 indicates that the sites only differ in these proportions for the heavily weathered examples with the ratio of the number of different designs to the total number of petroglyphs being much higher for site one than for site two. For the moderate and light categories the ratios are almost identical.

To test the significance of these percentages they are simply inversed which gives the mean or average frequency of petroglyphs for each design. As the mean or the number of different designs to the total number of designs for each age category increases, there are relatively fewer designs to the total number of

TABLE 23.--Ratio of Number of Different Designs to Total Number of Designs.

	Heavily Weathered	Moderately Weathered	Lightly Weathered
Site 1			
	$\frac{39}{147}$ # of different designs / total # of designs = .265	14/66 = .212	19/38 = .5
Site 2			
	$\frac{60}{340}$ = .176	$\frac{61}{294}$ = .207	$\frac{21}{42}$ = .5

petroglyphs in each of the three categories, hence less variability. By testing for the differences of the two means for independent samples the sites can be compared to see if these differences are significant (99th percentile). The variability of site two was found to be significantly greater for the heavily weathered sample. Both the moderate and lightly weathered categories were not found to be significantly different at the same level.

Returning to Table 23, it is apparent that the ratio of the number of designs to the total number of petroglyphs for each weathered category remains fairly constant at both sites until the lightly weathered category is examined. Here both sites have .5 ratios indicating that there is an average of only two petroglyphs per design; a ratio much lower than that found for the weathered and moderate categories. Hence, in the most recent time period there is a dramatic increase in relative variability.

Table 24 plots the trends in time of the most common (figures of ten or greater) designs at the two sites using the actual percentage of designs found in each time period. Five designs were found in high frequencies at both sites, 3, 4, 10, 12 and 17. The same designs at one site change in frequency and percentage independently from those at the other site.

Intra Site Variability

Finally the two sites were examined for intra-site variability. At site one the art appeared in four distinct locations. These four areas were situated to the north, south, east and west of the cemetery area (see Figure 41). No art was found in the intervening spaces despite the fact that suitable smooth rock surfaces were present. This distribution was particularly interesting since the cemetery itself was oriented with the four cardinal directions (see pp. 106, 107). In addition, burials within these cemeteries were also oriented toward one of the four cardinal directions, usually with less than a 10° error. As observed earlier, an individual's burial orientation depended upon his location within the cemetery. For example, an individual in the northeast quadrant of the cemetery would be oriented cranially-caudially either north-south or east-west. An individual in the southeast portion of the site could be oriented either south-north or east west. The art on the outcrop and the cemetery appear to reflect similar organizational principles in that both were oriented toward the cardinal directions.

TABLE 24

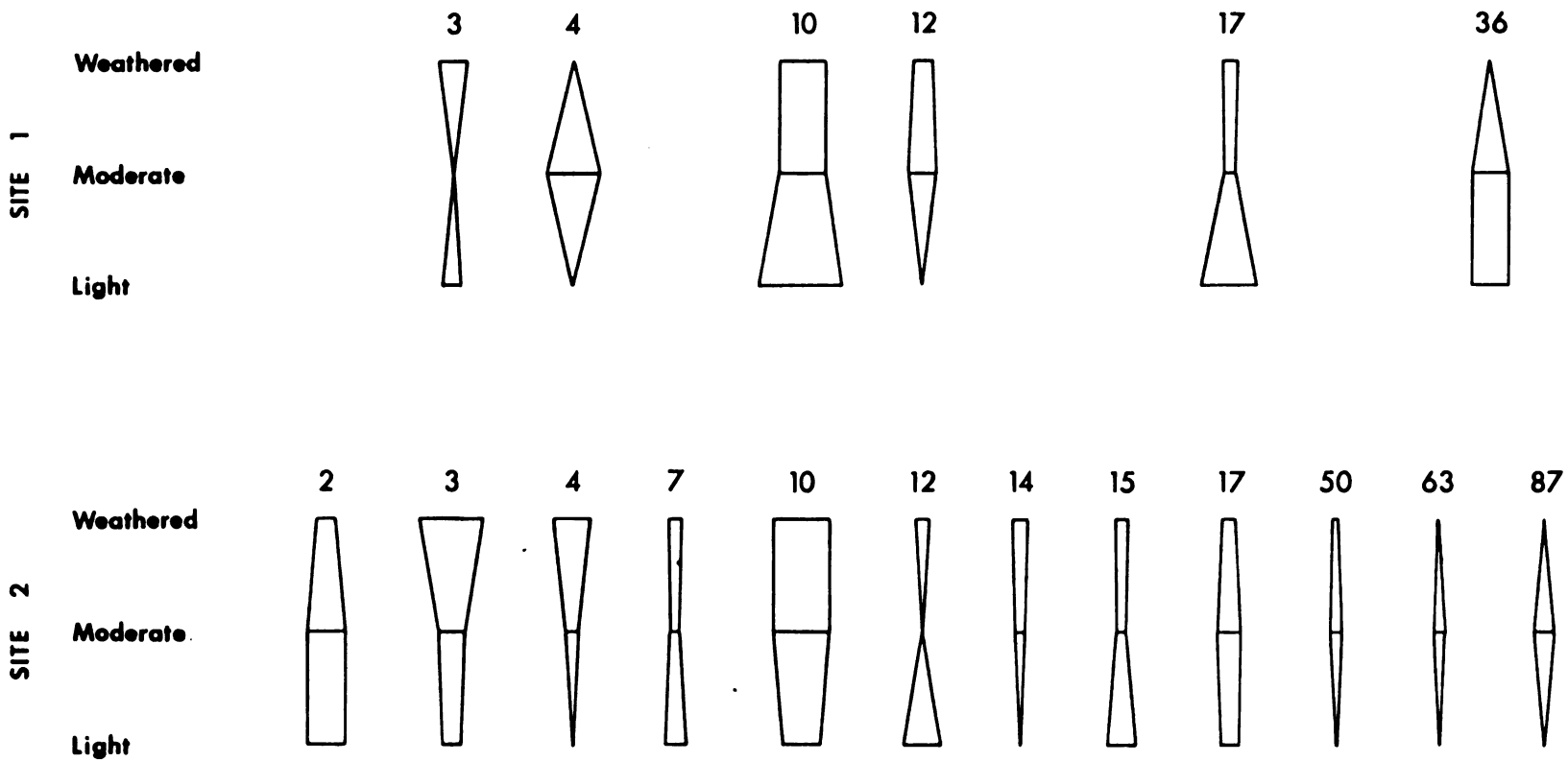
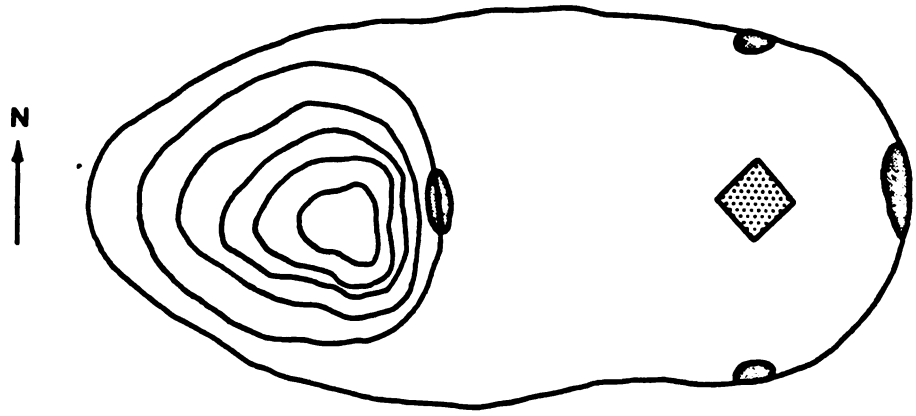

SITE 1
Weathered
Moderate
Light
3
4
10
12
17
36
SITE 2
Weathered
Moderate
Light
2
3
4
7
10
12
14
15
17
50
63
87

Figure 41
DISTRIBUTION OF ART AT SITE 1



The four areas with art were compared to see if there were significant differences between the art in each area.

TABLE 25.--Distribution of Art at Site 1.

Design No. Greater Than 9	West	East	North	South	Total
10	9	22	4	0	35
14	0	20	0	0	20
48	11	2	0	0	13
4	10	1	0	0	11
17	2	7	1	0	10
36	10	0	0	0	10
12	0	10	0	0	10
34	0	9	0	0	9
Total	42	71	5	0	118

$$X^2 = N \left[\sum_{i=1}^{I} \sum_{j=1}^{J} \frac{f^2_{ij}}{fi\ fij} - 1 \right]$$

$\Sigma\Sigma$ = 1.666 - 1.0 = .666 X 118 = 78.588

df = (3-1) X (8-1) = 14

99th percentile X^2 = 29.141

Reject Hypothesis of Independence

Of the four areas, the southern quarter had almost no art. A chi-square test was first performed on all of the designs having total frequencies of 9 occurrences or greater (see Table 24). This indicated that the location of designs was not independent of spatial areas. The four areas differed from each other significantly

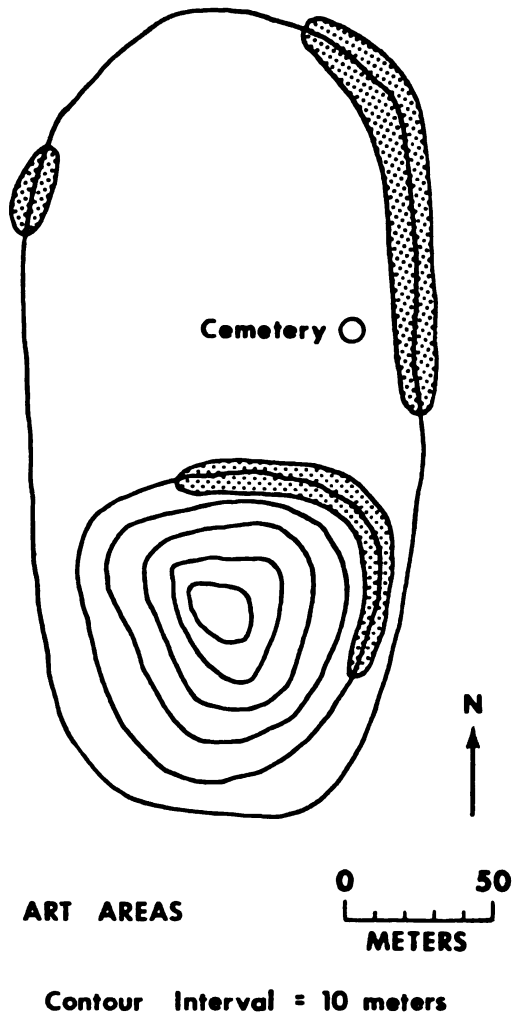
(99th percentile). In addition to being spatially distinct the four areas also differed in the designs they contained. Table 25 shows that designs 14, 12, and 34 occurred only in the east while designs 48, 4, and 36 occurred only in the west. Of these six, 12, 36, and 48 displayed this pattern in two time periods while the other three designs occur in high frequency in only one time period (heavy weathered). The designs which occurred less than 9 times also displayed a similar pattern. They, too, are spatially segregated.

Tracing these patterns temporally is more difficult. In many cases the designs remain spatially segregated through time. However, in other instances a design appears in only one area and for only a single time period. Once again, time is measured in relative terms using the broad weathering categories discussed earlier.

At site two the spatial patterns were not as distinct. Here the art on the outcrop occurs in three distinct geographical areas, to the south of the cemetery, to the west and to the northeast (see Figure 42). The west area contained much less art than either the northeast or south. These areas were separated by areas which contained no art, even though suitable rock surfaces were present. Unlike site one, the designs were not found to be spatially segregated.

All but five of the designs were found in both the south and northeast areas. This lack of patterning may reflect the lack

Figure 42
DISTRIBUTION OF ART
AT SITE 2



of spatial organization of the site two cemetery. Here unlike the cemetery at site one, the site two cemetery was not organized in any particular manner. However, the cemetery at site two was extremely small (11 graves). The burials at site two were oriented the same as site one, in one of the four cardinal directions indicating a shared mortuary routine with site one.

The art was also examined to determine if any patterns could be found in which designs occurred on individual rock surfaces. A single large rock surface, for example, could contain as many as 17 different designs. To facilitate this 50% of all the engraved rock surfaces at site one were examined with only heavily weathered engravings being utilized. A simple pattern matrix (see Table 26) revealed that the art was apparently randomly placed on particular rock surfaces. It appears that spatial consideration for the designs are important only in terms of what area of the site the art is located in and not in terms of what particular surface the art is engraved upon.

Summary and Conclusions

In summary, there was both inter and intra site variability in the art. First, there was a significant difference in the art found at the two sites for the moderate and light weathering categories. It appears that different subgroups within the larger social unit as represented by these symbols are to be found at the two sites. Through time the art at both hills becomes more divergent

TABLE 26.--Distribution of Designs by Rock Face.

Rock Faces	1	2	3	4	5	7	8	9	10	11	12	13	14	15	16	17	18	19	27	30	34	35	37	42	43	47	48	49	50	58	59	60	63	64	78	79	80	81	82	87	99	114
1						1	1	1																																		
2							1																																		
3								1	1							2																									
4									2																																
5			1																								1					1			1						
6	1		4						3	1	2					1					1	1			1											1	1				
7			4						4		1	1							1	1			1					1											1		
8									1		2							1						1																	
9									1																														1		
10			3	1					1							1											1	1												
11						1			4						1											1					1							1		1	
12	1																																								
13																															1					1					
14					1																																			
15																																1									
16															1																										
17															1	1																									
18							1	4			4				1											1					3	1								1	
19																											1														
20			2																																						
21													1															1													
22	1	2								1		2											1					1										2	1	1	
23																																						1		1	
24	1	1						1		2				1							1								1		2									
25								2		3										3																					
26																	1																								
27																														2											

perhaps indicative of increasing social distance between the two sites.

This pattern of increased social distance through time as reflected in the art at the two sites is interesting given their close proximity. As noted earlier, the most reasonable explanation for the differences between the two sites is that different kin groups were represented at each of the two sites. Assuming this to be the case, if these kin groups were exogamous, one would expect the two sites to exhibit greater similarity in their designs through time. This can best be envisioned as a process analogous to gene flow where ties would be created between the sites by cross-cutting marriages. With individuals moving between sites, it is reasonable to assume that other cultural traits, in this case livestock markings, could also move from one kin group to the other, hence from site to site. This, however, does not appear to be the case at the Namoratunga sites.

Endogamy within the respective kin groups represented at the two sites would produce just the opposite effect; the sites would diverge through time. This practice would greatly reduce contact between the kin groups represented at the two sites. In this instance a certain amount of drift might be expected to take place. Given just a minimal increase in population, each kin group would necessarily have to incorporate more symbols as it undergoes the process of segmentation (see E. E. Evans Pritchard 1940 for elaboration of this process). For example, given a single male

head of household, a span of three generations and an assumed birth rate of two males per family, it becomes obvious that by the third generation the original male will have produced eight male heads of households. All of these males would be related to the same original male and share the same brand symbol. At this point the system is obviously unworkable, since there is no way to differentiate the particular herds of these eight men. The Turkana solve this problem by incorporating new brand symbols while still referring to the symbol by the same lineage name. The lineage ngikaleso, for example, is represented by at least twelve distinct symbols. Such a process over an extended period of time with kin group endogamy should be reflected archaeologically, first, by a decrease in the similarity of the art at the two sites. Second, the oldest designs should tend to persist through time, with new symbols being progressively added as new sub-lineages form.

Returning to the art itself, there is a marked difference in the percentage of designs shared by the two sites through time. During the weathered or oldest category of art designs the two sites share a total of 38% of their designs. This drops drastically to 18% in the next category and remains relatively stable at 17% for the most recent designs. This fits the expected pattern given some form of endogamy. In addition, at site two, 75% of the most recent designs also occurred in the oldest age category. At site one this percentage is 50%. It appears that a high percentage of the designs found at the two sites persist through time. Both the increased

divergence in the art at the sites and a core of designs persisting through time tend to support the model of endogamy with the lineages represented at the respective sites undergoing segmentation. In time, this would cause a degree of drift in the art at the sites. Cleland (1972) using Jesuit ring styles has clearly shown how marked these changes can become in a relatively short period of time (60 years) simply due to style drift. Unfortunately, no additional data can be employed to test this model. If habitation site data were available, one would expect certain stylistic differences in such things as pottery and stone tools to exist between the sites associated with each of the two kin groups.

The final point concerns the change in the number of different designs found at the sites through time. For both the moderate and weathered art categories the two sites contained a total of 74 different designs. This drops sharply to only 34 for the most recent art. In addition to this reduction in the number of different designs, there is also a drop in the frequency of occurrence of each of the designs. L. H. Robbins (personal communication) working with a series of prehistoric Lake Turkana shell beds found a drastic drop in the lake level beginning at approximately 600 BC and continuing until 150 BC. In all the lake dropped 150 feet. This suggests a decrease in the amount of rainfall in the area and a general drying trend. As such, there would be a concomitant reduction in the carrying capacity of the area. The decrease in designs at the two sites may well indicate a population decrease

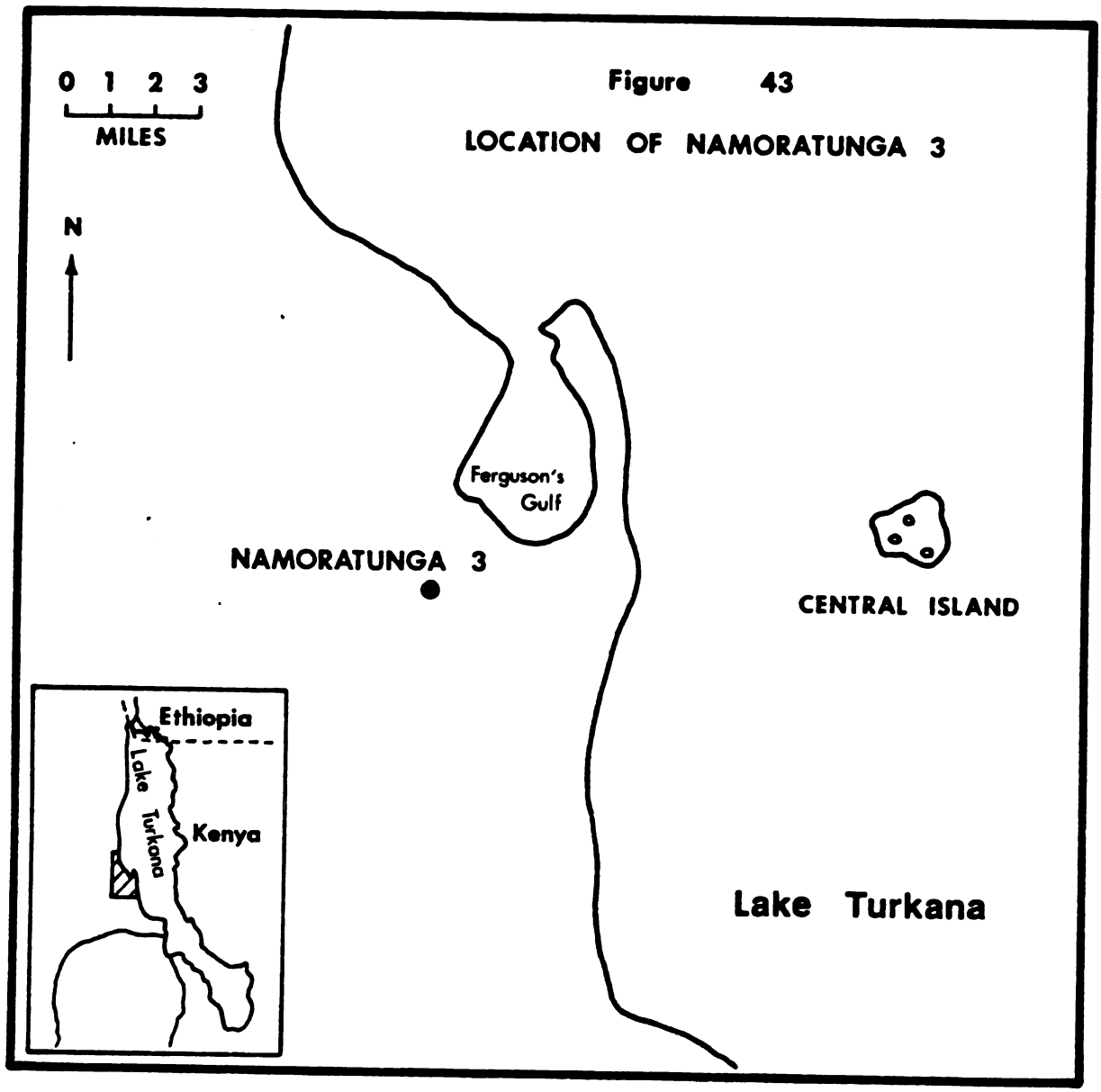
with fewer lineages occupying the area. The only date obtained from Namoratunga 1 was 330 BC, a date which falls well within this period of climatic change.

Secondly, at least for site one, there was intra site variability. The art on the outcrop itself occurred in four distinct areas and these four areas differed significantly in the art they contained. This pattern parallels the organization principles of the site one cemetery itself. The cemetery and the burials within it were oriented in the four cardinal directions with a burial's orientation dependent upon that individual's location within the cemetery. Hence, four general burial areas exist within the cemetery in terms of burial orientation and location with these areas conforming to the four cardinal directions. The art on the outcrop itself occurred to the north, south, east and west of this cemetery. One might suggest that each burial area has an accompanying art area. At site two similar intra site variability was not found, probably reflecting the less organized nature of the site's cemetery.

CHAPTER V

OTHER NAMORATUNGA SITES

In addition to the two Namoratunga sites which were excavated near Lokori, at least one and possibly two other similar sites are located west of Lake Turkana. The first site was located just to the east of the main Lodwar to Kalokol road 12 km south of Kalokol about midway up the west side of Lake Turkana. It was situated on the eastern edge of the Losidok range overlooking the Lake Turkana Basin (see Figure 43). The ridge is covered with small lava cobbles and has an extremely sparce vegetation cover of widely scattered accacia trees and some traces of grass. The elevation of the ridge is about 230 feet above the 1975 level of Lake Turkana (L. H. Robbins personal communication). The ridge has a commanding view of the Lake Turkana Basin, approximately 10 km to the east. In fact, Central Island, which is 20 km due east of the site, is clearly visible. When the site was in use it seems likely that the lake was much closer. A carbon 14 date of 2560 $\pm$ 80 BP (610 BC) was obtained from a high lake level shell sample about 166 feet above the present level of the lake. This would have placed the lake less than one mile from the site. If this date is correct, it indicates a more favorable environment around 600 BC with much more rainfall. One would assume that these conditions persisted slightly later as

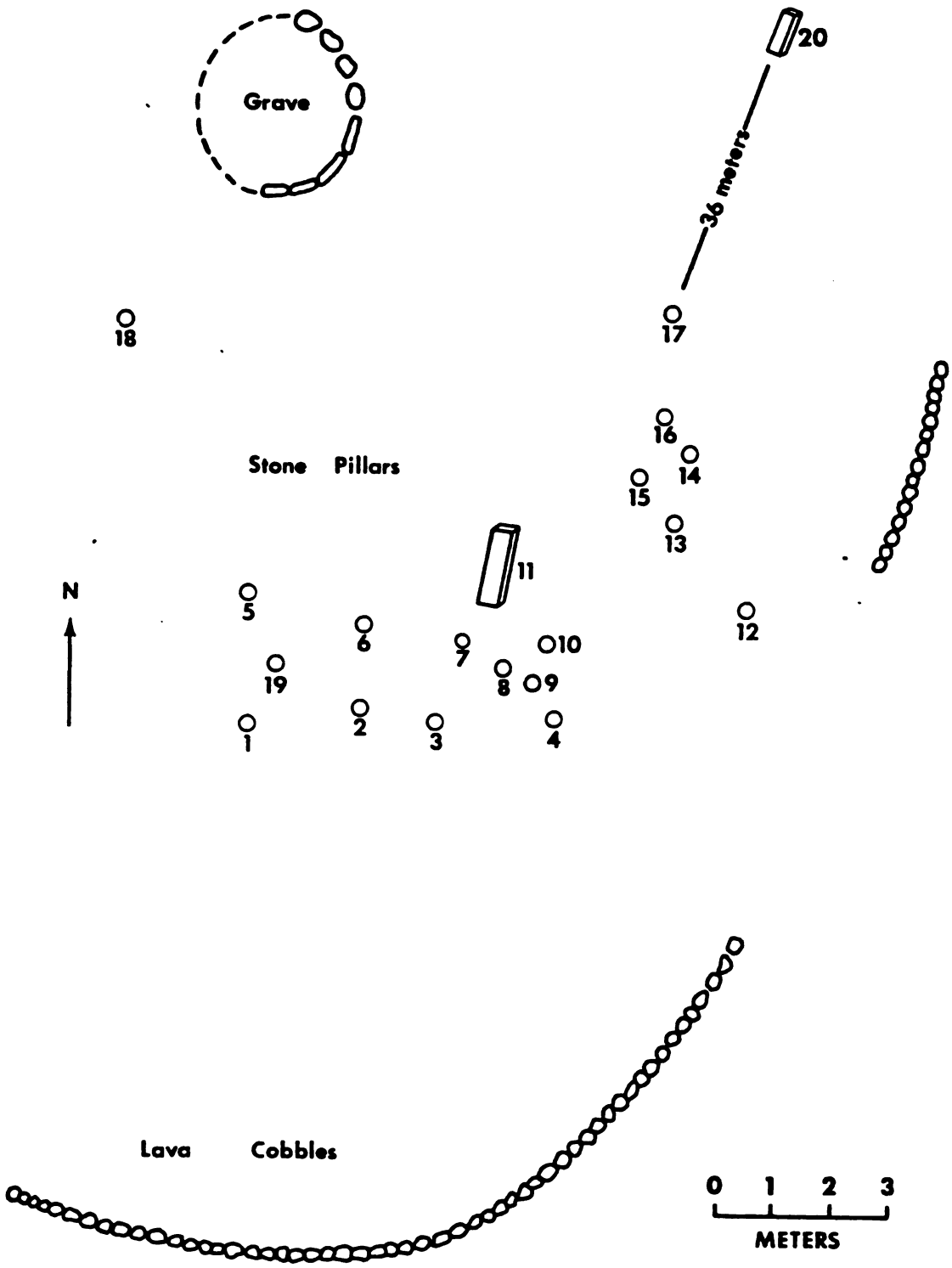

0 1 2 3
MILES
N
Figure 43
LOCATION OF NAMORATUNGA 3
Ferguson's Gulf
NAMORATUNGA 3
CENTRAL ISLAND
Ethiopia
Lake Turkana
Kenya
Lake Turkana

well which would overlap with the time when the Kalokol site was occupied (although no date was obtained from this site, it belongs to the same cultural group as the two Lokori sites for reasons to be discussed shortly and so in all likelihood also dates to roughly 300 BC). Today the area around Kalokol is semidesert with less than 6 in. of rainfall per year.

This site was also referred to by the local Turkana name of Namoratunga but, was much smaller than either of the Lokori sites. The Turkana mythological explanation of this site is also the same as that for the two Lokori sites (see page 16). Much like these sites, the Kalokol site had one grave of about 3 meters in diameter which had an outer periphery of standing stones. The grave was located in the north-west portion of the site (Figure 44). Only the eastern half of this grave was demarcated by these standing stone slabs. The western half may have also contained similar vertical slabs, but if so, these were buried below the surface. Since my excavation permit did not include this site, this was impossible to determine. None of the outer standing stones associated with the grave were decorated. Sixty-three other graves were found on the same lava ridge, but these consisted of a simple mound of stone and are clearly Turkana in origin and as such much more recent.

In addition to the grave, the site contained an arrangement of stones unlike any found at the two Lokori sites (Figure 44). It consisted of a series of rows of standing stones made of basalt. These 20 stones ranged in height from .15m to 1.0m above the surface with a mean height of .55m. One stone which had fallen (19) indicated

Figure 44
PLAN OF SITE 3



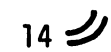
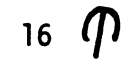
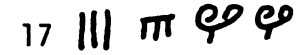
that approximately 1/3 of each stone's total length was buried below the surface. The stones were columnar basalt and were roughly cylindrical in shape with smooth sides and fairly regular widths of from 30 to 35 cm. Many of these stones were apparently intentionally placed in the ground at angles which ranged from 10 to 60 degrees. The tops of 16 of the stones were flat and smooth with rounded edges. However, four stones displayed some battering on this surface with a number of large flakes removed (stones 12, 13, 18, 19). In addition, nine of these stones were magnetic (1, 2, 3, 4, 11, 13, 16, 18 and 19) probably because of high concentrations of magnatite, a common occurrence in basalt (D. Sibley personal communication).

Twelve stones were decorated with petroglyphs similar to those found at Namoratunga 1 and 2. All of the 14 designs representing 23 different engravings were engraved on the smooth sides of the stones. In all cases these were heavily patinated and with desert polish (these would correspond to category three in terms of weathering, see pages 129, 130). Unfortunately there was not enough rock art at the Kalokol site to make any meaningful statistical comparisons with the two Lokori sites. However, the fact that all of the designs at the Kalokol site were also found at the two Lokori sites lends additional support to the premise that the three sites belong to the same culture complex.

Standing stones or monoliths have a wide distribution in East Africa, but are most heavily concentrated in SE Ethiopia.

Figure 45
Stone pillars at Kalokol Namoratunga 3

TABLE 27.--Rock Art Designs Found at Kalokol Namoratunga.

Stone 1		10	
2		14	
3		15	
5		16	
7		17	
8		20	

"Phallic menhirs are found in Sidamo, Darasa, and Konso, all in SE Abyssnia (Ethiopia) . . . outside Abyssinia standing stones or menhirs are much less frequent. They occur sporadically in the Sudan, Kenya and Uganda (Huntingford 1950, pp. 121, 122)."

Ethnographically most Eastern Cushites still make use of standing stone monoliths. Perhaps the best known of these are the Konso of the Sidamo province of SE Ethiopia. As Hallpike (1972) notes the Konso are highly skilled using stone, particularly columnar basalt. Most commonly these standing stones called wagas are used at funerary sites. Every male who has killed one or more enemies or wild animals warrants a group of standing stones at his grave. In a general way these stones are a symbol of human achievement (Hallpike 1972). When used in this manner one stone is always larger than the rest and represents the deceased; the smaller stones each represent a killed enemy.

Such standing stones are also used to represent the number of battles a particular community may have been victorious in. Among present day Konso, each community had from 3 to 10 stone pillars representing particular victories (Hallpike 1972).

Finally stones can also appear in relatively confined areas in large numbers (Jensen 1936). This would constitute a mora or sacred place where various rituals take place. Such concentrations are common throughout all of Southern Ethiopia. In all three uses of the "pillars," both wood and stone can be used depending upon what is locally available. In addition, in many cases these pillars are intentionally placed in the ground at angles (see Haberland 1963). Nowhere is there any evidence as to whether these pillars were arranged in any meaningful patterns. Haberland (1963) simply states that the stones were placed in rows.

Astronomical Alignments

However, at Namoratunga 3 the stone pillars were in an unusual alignment with their distribution appearing to be non-random. Because of this it was decided to examine the possibility that the arrangement of these stones was correlated with certain astronomical events, especially since the Borana (Legesse 1973) and Gugji (John Hinnant, personal communication) both Eastern Cushitic speaking peoples have a highly sophisticated calendar. The calendar is based on the rising of seven stars or constellations in conjunction with various phases of the moon to calculate a 12 month, 354 day year. This calendar does not correspond to the seasons since the people

do not use the sun for their calculations. The seven stars or constellations used include: Triangulum, Pleiades, Aldebaran, Bellatrix, Central Orion, Saiph and Sirius (Legesse 1973). For the first half of the year the Borana identify different phases of the moon against the background of one constellation, Triangulum. During this time none of the other six stars and constellations are visible at the rising of the moon. For the second half of the year they identify the new moon in relation to the entire set of stars with each of the seven appearing successively in conjunction with the moon.

Given the fact that the site was apparently Eastern Cushitic in origin (see Chapter VI) the rising of these seven stars or constellations was checked against the possible stone alignments at the site. Since the site is clearly connected with the two Lokori Namoratunga sites, both in terms of similar graves and rock art motifs, it is assumed to belong to roughly the same general time period (300 BC) (see page 222 for discussion of dating).

Because of gradual changes in the earth axis of rotation called precession, it was necessary to determine the azimuths of these constellations for the year 300 BC. In some cases these stars exhibited a difference of as much as 12 degrees when their present azimuths were compared with those of 300 BC. For the stars Aldebaran, Bellatrix, Saiph and Sirius the 300 BC azimuths were 9° north of east, 1° north of east, 13° south of east and 17° south of east respectively. For the constellations Triangulum, the azimuth

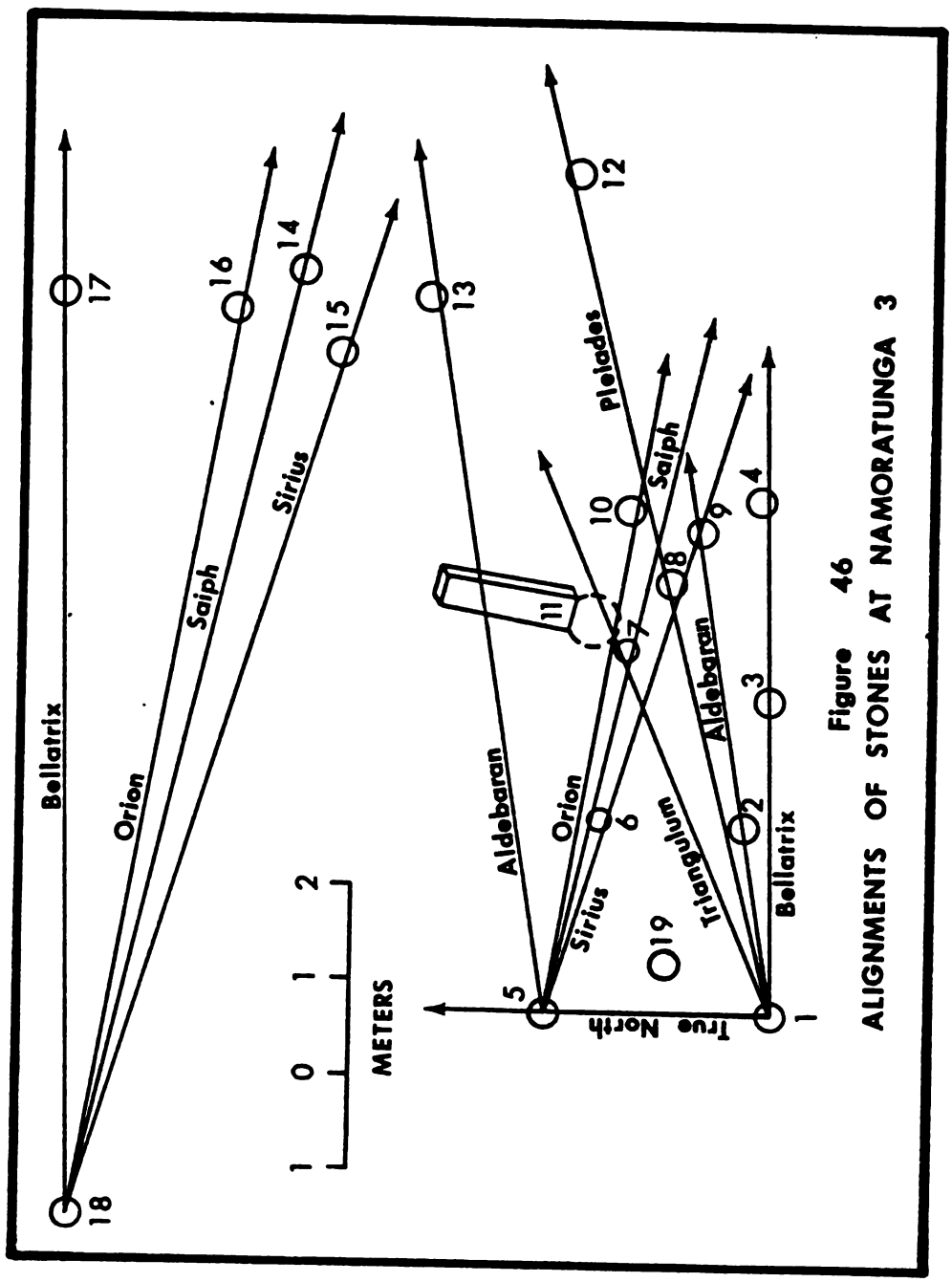


Figure 46
ALIGNMENTS OF STONES AT NAMORATUNGA 3

TABLE 28.--Azimuths of Stars in 300 BC Compared with Present Day Azimuths.

	Present Azimuths	Azimuths in 300 B.C.	Namoratunga 3 Alignment	Error
Triangulum (Beta)	35° N of E	23° N of E	Stones 1-7	0°
Pleiades	24° N of E	14° N of E	Stones 1-8-12	0°
Albedaran	17° N of E	9° N of E	Stones 1-2-9	0°
			5-13	0°
Bellatrix	6° N of E	1° N of E	Stones 5-10	1°
			16-18	1°
Central Orion	2° S of E	10° S of E	Stones 5-10	1°
			16-18	1°
Saiph (K Orionis)	10° S of E	13° S of E	Stones 5-6-7	0°
			14-18	0°
Sirius	17° S of E	17° S of E	Stones 5-6-9	0°
			15-18	0°

of its brightest star, Beta, was taken to represent the constellations as a whole, 23° north of east. For both the Pleiades and Central Orion, the azimuth of the center of the constellation was determined and yielded angles of 10° north of east and 10° south of east respectively (R. Victor personal communication).

It was first assumed that if the stone "pillars" at Namoratunga did indeed align with these stars, the stones in the far west of the site would be the most obvious stones to initially sight from since all seven stars considered rose in the east. This would allow the observer the maximum use of all of the stone pillars. Despite the fact that many of the stones were placed in the ground

at angles, only the tops of the stones were considered when checking for possible alignments. The first position examined was stone 18 (see Figure 46 for all alignments). From this vantage point it was possible to align other stones with the risings of four stars, Bellatrix with stone 17, Orion with stone 16, Saiph with stone 14 and Sirius with stone 15. Only the alignment with stone 16 yielded a 1° error.

From stone one alignments were found with Triangulum (1-7), Pleiades (1-8-12) Aldebaran (1-2-9) and Bellatrix (1-3-4). Only the alignment with Bellatrix displayed any error and it was slightly more than one degree. It is noteworthy that three of the four alignments from stone one consisted of a row of three stones. Given the close proximity of these stones, a three stone alignment would allow for more accurate sightings. This was not necessary for the alignments taken off stone 18 since the stones the particular constellations rose over were as much as 12 meters away.

Finally, alignments were also noted for stone five. From here alignments could be formed with Aldebaran (5-13), Orion (5-10), Saiph (5-6-9) and Sirius (5-6-8). The Orion alignment was off by approximately one degree. The Saiph and possibly the Sirius alignments were once again formed by a row of three stones. Stones one and five were oriented exactly true north.

Each of the three sighting points (1, 5, 18) produced four alignments. Five and possibly six of these alignments were formed by three stones (six if the 5-11-10 alignment is included). In no

case were any of these alignments off by more than 1°. In addition, with two exceptions, all of the 20 stones at the site were utilized in forming these alignments. Stone 11 which had fallen down would most likely have fallen on the 5-10 Orion alignment. Only stones 19 and 20 were not used. Stone 19 was the smallest at the site, only 15 cm above the surface, and as such would have been of questionable value as a line of sight. Stone 20 was found approximately 36 meters away from stone 17. It was at 30° east of north from stone 17. This stone was not found to be aligned with any other and its significance is difficult to assess. Given the fact that Central Island, the only geographical feature which is readily visible from the site, is due east of Namoratunga, it seems likely that some of the alignments may have utilized Central Island as a distant additional line of sight.

The same procedure was followed using the present azimuths of these seven stars. Only four of these matched the stone alignments of Namoratunga. The azimuth of Sirius, for example, was the same for both time periods. This information further supports the non-random nature of the Namoratunga alignments as well as the suggested date of 300 BC.

Surrounding the main grouping of 19 stones which occur in a relatively confined area (12 X 12m) is a half circle of small lava cobbles placed side by side (see Figure 40). At its southeast edge this half circle was broken. It could not be determined if this was intentional or the result of a recent disturbance. It seems

likely that at one time this outer ring of stones completely encircled the main pillar area. Just to the west of the pillars (less than 10 meters away) is the Lodwar to Kalokol road. In all probability this road disturbed the west half of this outer circle.

The site clearly has astronomical significance, at least half of the star alignments found at the site consisted of a row of three stones. Although similar sites have not been reported, the Konso, also Eastern Cushites, often use geographical features to sight the positions of constellations. As such the assertion that the Kalokol Namoratunga site was used as an observatory is not entirely without an ethnographic analogue. This site marks the first evidence of a "megalithic" site with astronomical significance in East Africa.

A fourth Namoratunga site was reported to exist in the Suguta Valley by five separate informants, three in Lokori, one in Kalokol and one as far north as Lokitaung. It was said to consist of circles of standing stone slabs like the two Lokori sites and also having rows of standing stones, much like the Kalokol site. Today the Suguta Valley is largely uninhabited, since water is scarce in the area. It seems likely, however, that in the past the area was much greener than its present day semidesert condition (see Dodson 1963). An initial attempt to locate the site by four-wheel drive vehicle failed. However, numerous Late Stone Age artifacts were noted in the valley attesting to less austere environmental conditions in the past. A subsequent air search of

the area also failed to locate the site. Given the close agreement in the description of the site by the individual informants and the lack of contact between these informants, it seems likely that the site does indeed exist. Hopefully subsequent research in the area will be able to locate this site.

The Turkana were asked about additional Namoratunga sites at a number of settlements west of Lake Turkana between Lokori in the south and Lokitaung, near the Ethiopian border. Only the four Namoratunga sites reported here were known. A number of leads were followed but these yielded negative results. The Turkana, being pastoralists, are very familiar with the land around them because of their migratory subsistence strategy. It seems likely that if other Namoratunga sites existed, the local Turkana would possess some knowledge of them.

The four known Namoratunga sites display a wide distribution west of the lake, and as such it seems likely that they represent a major archaeological complex. Since the area is almost completely unknown archaeologically it is impossible to determine the exact geographical extent of these sites. Lamphear (1972) reports that at least 11 sites consisting of circles of standing stones exist in the northwest Uganda. It is, however, impossible to determine with any certainty if these are related to the Namoratunga sites. If they are related, then the Namoratunga sites spread from the west side of Lake Turkana all the way across NW Kenya and into western Uganda.

CHAPTER VI

ETHNOGRAPHIC ANALYSIS

In this chapter the Namoratunga mortuary program is compared with a series of ethnographic models both in terms of relative complexity and the variables which are significant in partitioning each society to determine, if possible, which peoples are most closely related to the Namoratunga sites in terms of similar burial practices.

To compare the Namoratunga burial program with ethnographic groups it is necessary to get the archaeological and ethnographic data in a format which readily lends itself to direct comparison. Formal analysis is one method which facilitates such comparisons. It progressively subdivides a burial population on the basis of the presence or absence of all variables utilized in the burial of the dead. In doing so it elicits a series of minimal components of mortuary treatment, combinations of which account for the variability evidenced in the disposal of the dead (Brown 1971, Saxe 1970). In such a manner the Namoratunga data can be compared with a number of ethnographic groups and checked for best "fit." In this analysis five ethnographic models are drawn from present day Nilotic and Cushitic speaking peoples. Nilotes and Cushites are thought to be largely responsible for the spread of pastoralism into East Africa

and today occupy almost all of Central Kenya and southern Ethiopia. The five ethnographic groups are or were pastoralists and on the basis of oral traditions and linguistic data their ancestors appear to have occupied northwest Kenya for at least the past 2000 years and in the case of the Cushites, the past 3-4000 years (Ehret 1974).

Other non-pastoral groups such as the Bantu speakers, for example, while spread over much of East Africa, never occupied the area west of Lake Turkana.

The burial practices of five groups; the Masai, Turkana, Nuer, Pokot and Konso are dealt with here. The Masai, Turkana, Nuer and Pokot represent all three main branches of the Nilotic speaking peoples in East Africa: the Nuer are River-Lake (Western) Nilotes; the Pokot Highland (Central) Nilotes; the Turkana belong to the Karamojong-Teso cluster of the Plains (Eastern) Nilotes and the Masai to the Masai cluster of the Plains Nilotes (Sutton 1966). The Konso are Eastern Cushitic speaking peoples. Emphasis is placed on Cushitic and Nilotic speaking groups since they are thought to be responsible for the spread of pastoralism in East Africa (Clark 1976, Were 1972) and today occupy almost all of central Kenya and Southern Ethiopia.

With one exception, all of these groups are pastoralists (see Murdock, 1957 for definition of pastoralists). The Konso today rely heavily upon agriculture but in the past they too were primarily pastoralists (Hallpike 1972) and the Pokot also have an agriculturally oriented section of the tribe.

Namoratunga

The burials at Namoratunga can be divided into a number of categories largely on the basis of age and sex. Women and children are greatly underrepresented at the cemeteries and as such it would appear that they warranted an alternate form of burial treatment or were not buried and that access to the cemetery was largely confined to males. However, some females and children were buried in the cemeteries. Based on grave size it would appear that they represented the lowest status positions at the site, being buried in graves less than 2.0m in diameter and for the most part in the western half of the site (see pp. 101-105). Interestingly, all of the women (N=7) were 18+ years of age and were buried near the grave of a male. Given the ages of females at the site and their association with male graves it could be suggested that these women were married to the nearby male and warranted interment at the Namoratunga site by virtue of that position. Likewise, the two children buried at the site were also buried near the grave of an adult male.

Males warranted four alternate forms of burial. Males could be buried in graves that were decorated, in undecorated graves over 2.0 meters in diameter, and undecorated graves under 2.0m in diameter. Finally, one male in a grave over 2.0 meters in diameter was a bundle reburial, the only reburial at the site. Both the decorated graves and those over 2.0m in diameter are found in the east,

whereas the smaller diameter graves are found in the western half of the cemetery.

Given the fact that the Namoratunga cemeteries do not represent the entire population (Figure 47),* interpretations of Namoratunga burial patterning are necessarily biased. However, at least three and possibly four mortuary distinctions are symbolized at the sites. The first two have already been discussed, both age and sex. Access to the site is largely confined to adult males. The third distinction symbolized is social affiliation. From the results of the art analysis (Chapter IV) it appears that different kin groups were responsible for the two sites. If the ethnographic analogy with the animal brands is interpreted literally, different patrilineages are buried at the largest cemetery. It also seems clear that at the very least different kin groups utilized the two sites (see page 160).

Distinctions were also likely made on the basis of social position since within the sample of male burials (N=21) there were a number of different modes of burial which could not be explained on the basis of age alone. The bundle reburial, in particular, with its central position in the cemetery may represent an individual holding a particularly important social position which entitled him to the special type of interment (see Figure 48).

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*The Namoratunga mortality profile is compared with prehistoric North American populations since suitable profiles do not exist for either pastoralists or for East African burial population of comparable antiquity.

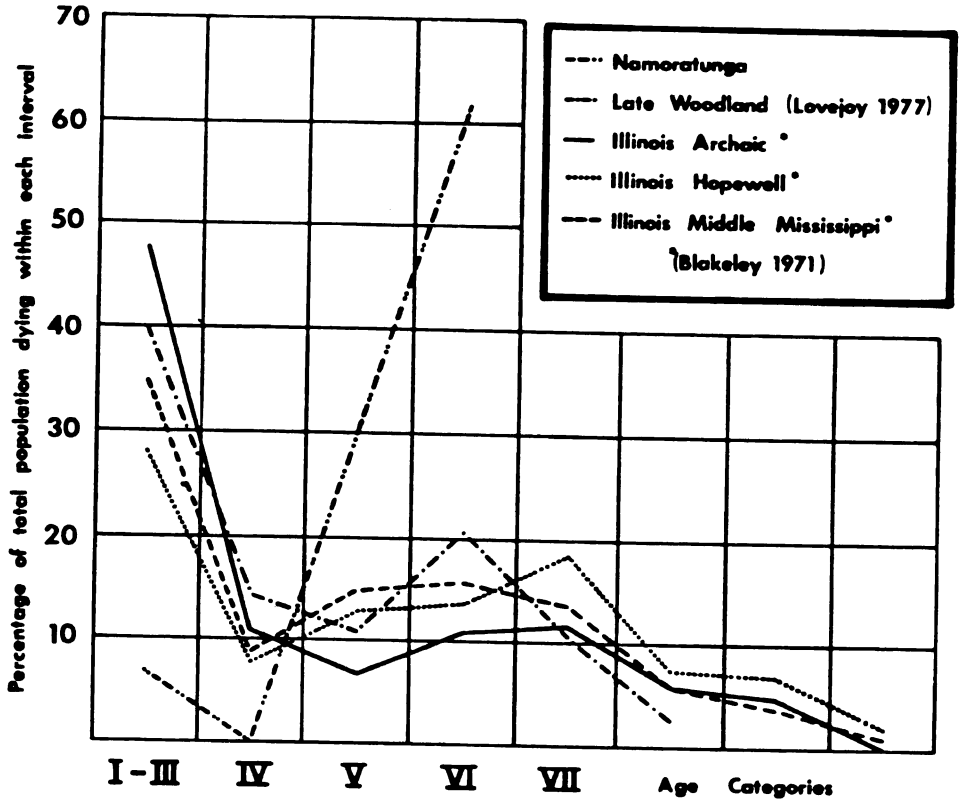

Figure 47

Mortality Profile of Namoratunga Sites Compared with Four Prehistoric American Indian Populations

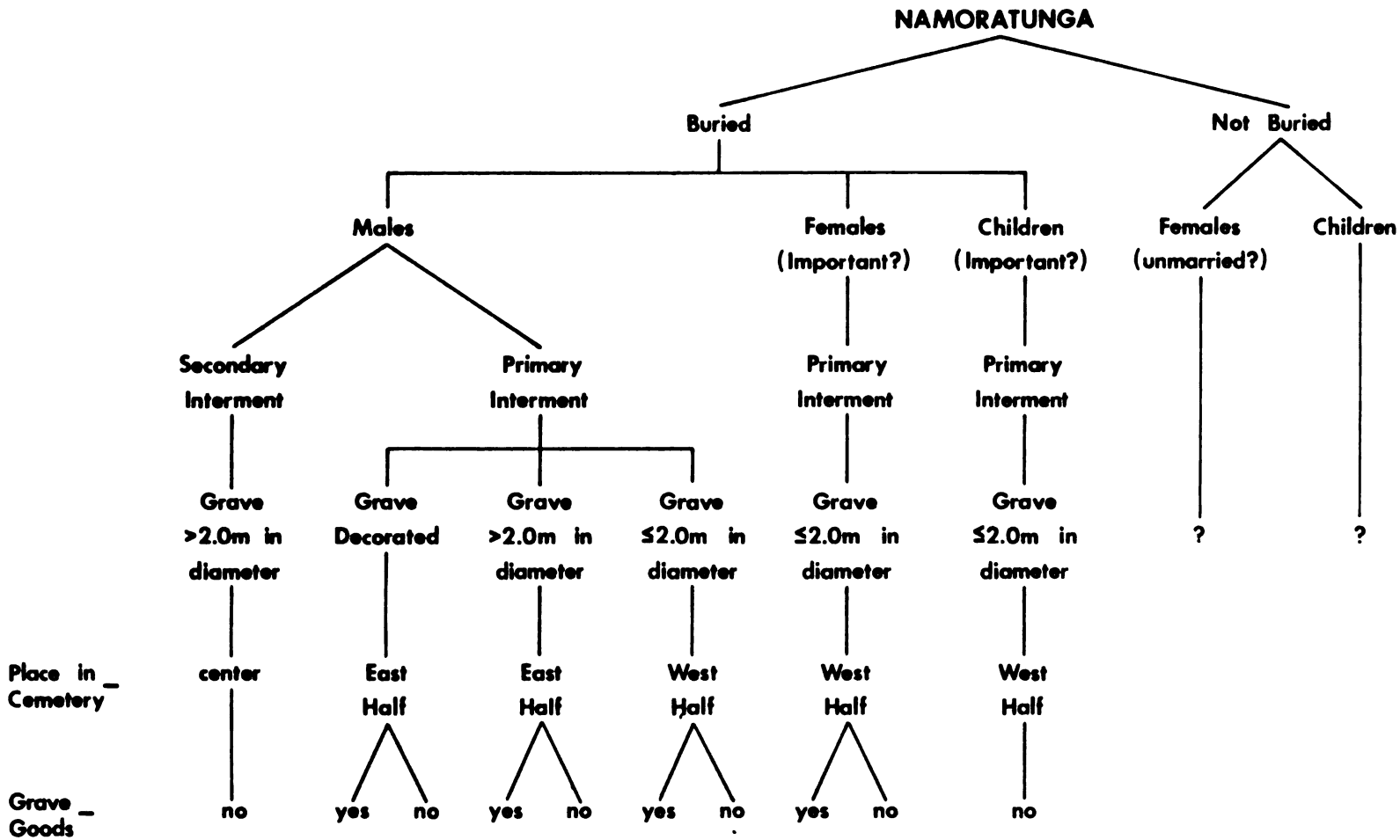

Figure 48

Summary of Namoratunga Mortuary Archaeology

Turkana

According to Gulliver (1951), burial among the Turkana is extended only to certain classes of people, namely, heads of families and all married men, and all married women. However, based on information from local elders in the Lokori area collected by the author, regional differences would seem to exist. At Lokori, the Turkana claimed that all individuals warranted interment.

When the head of a nuclear family dies (a fully independent adult man) he is buried in the center of the central goat kraal of his homestead by his sons or brothers. "He is laid on his side, head pointing east" (Gulliver 1951, p. 227). "The body is deposited in a shallow trench together with blood, meat, milk, water, tobacco and grain. According to the importance of the dead person in life, a sheep, goat or other domestic animal is killed and eaten by those present sitting in a circle around the grave" (Emley 1927, p. 186).

Very old women who are grandmothers or senior wives are likewise buried in the central kraal by their nearest male relative. A full wife, a married woman who is a mother, is buried under her day hut which is pulled down over her (Gulliver 1951). "Young and middle aged married women are left in the hut, which is broken down over the corpse" (Emley 1927, p. 186). All married women are buried barren of any ornaments which are distributed to female relatives. Although not stated in the ethnographic literature, the author was informed that in addition stone cairns were constructed over these burials.

All other dead people are put outside the homestead. Gulliver (1951) was informed that they were either just left in the bush, or a grave was dug and large stones and brush piled on top (Gulliver 1951). Here too some regional variation may be in evidence. In the Lokori area in all cases cairns were constructed over interments for the expressed purpose of keeping wild animals from the bodies. However, further to the north where suitable stones are not available for cairn construction individuals are often placed in erosional gullies or simply placed in a sand blowout area.

Exceptions to the above rules occur where the head of a homestead dies away from the homestead and is buried out in the bush and when males are killed while raiding and are left unburied at the scene (Gulliver and Gulliver 1955).

In summary, the components which in various combinations define the disposal type reflect the following social identity categories: (1) Married or not, (2) age in a broad way (i.e., child vs. adult), (3) sex, (4) degree of importance, in terms of respect and wealth. These distinctions are based largely on burial location; burial within the homestead at various locations vs. burial in the bush (Figure 49).

Pokot

Unfortunately very little ethnographic information is available on the burial practices of Highland Nilotes. The information on the Pokot was obtained from M. Robbins (personal communication). At the death of a man (married?), the body is first washed

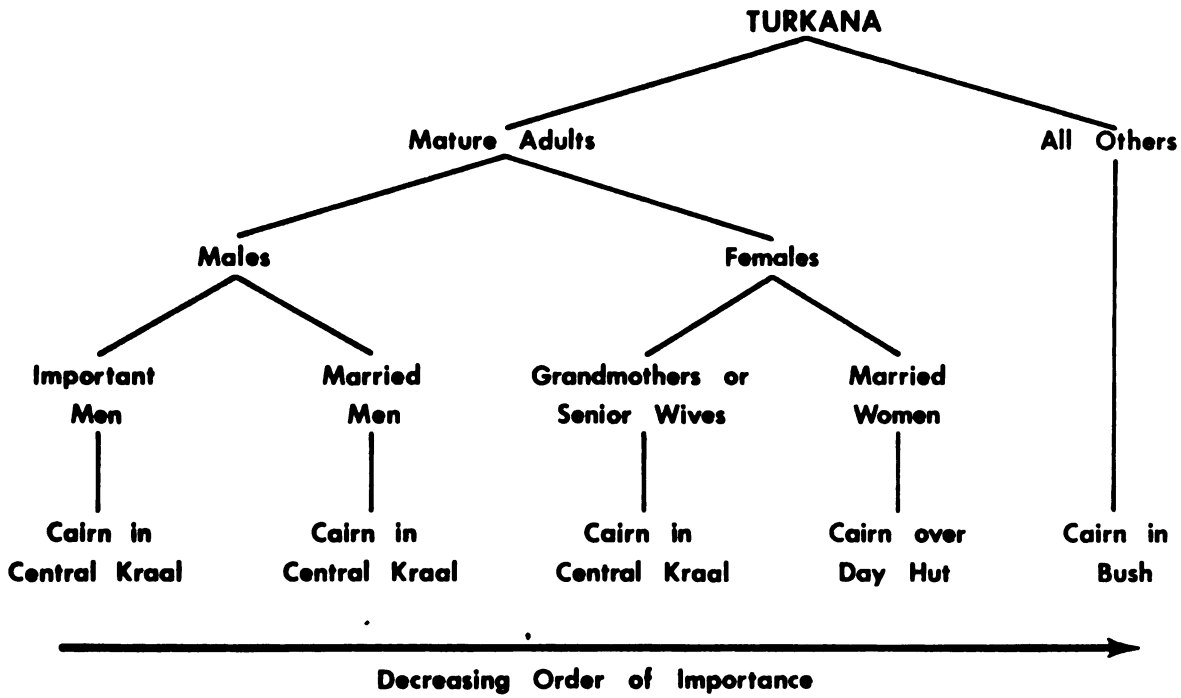

Figure 49

Turkana Burial Schedule

and then placed in a flexed position on its right side. No grave furniture is placed with the body. Stones are placed on either side of the body so as to form a box like structure. The body is then covered with brush and grass and dirt. Once the grave is filled it is covered with a small mound of stones. This grave is dug in the center of the central kraal.

An older woman (married?) is buried in the same fashion as a man. She too receives no grave furniture. Unlike the burial of a man, women are flexed and placed on their left side. In addition, their grave is placed in the central kraal but off to one side.

The remainder of the population, children and unmarried individuals are given full mortuary ritual but are simply placed in the bush.

Although the Pokot mortuary data is scant in terms of precise details, it is clear that two broad distinctions are made among the Pokot: (1) the sex of the deceased, and (2) the age of the deceased (Figure 50).

Nuer

Among the Nuer the major dimensions which serve for differential burial treatment are largely based on age and sex. At the death of an adult male he is buried in a grave dug in or just left of his hut entrance. The body is placed in a flexed position with one arm under his head and one over it and on his right side (Butt 1952). All individuals are usually buried by two or three senior male kinsmen, but sometimes female kinsmen help as well

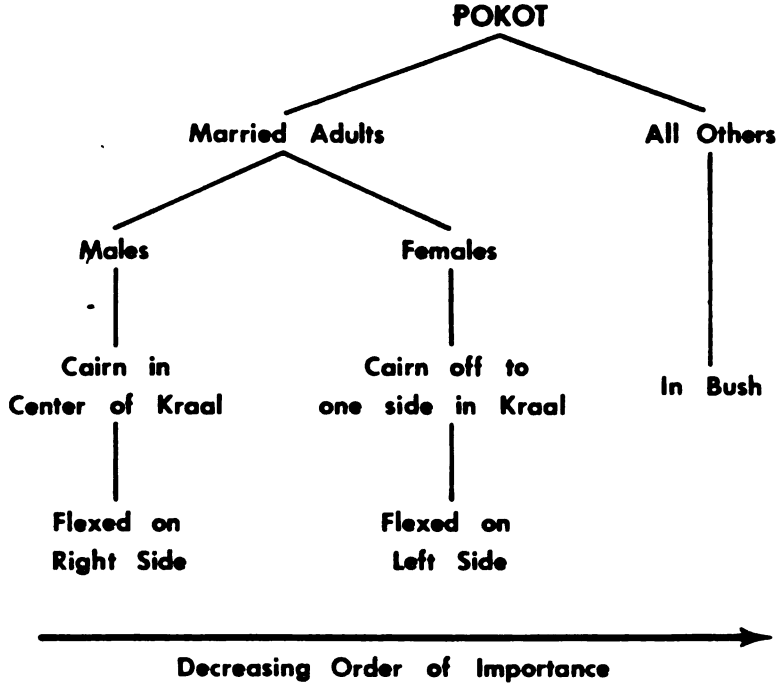

Figure 50

Pokot Burial Schedule

(Evans-Pritchard 1956). Young kinsmen and age mates do not participate. However, there appears to be some geographical variation in terms of which direction the man is to face. In Eastern Nuerland a male faces west, in Western Nuerland he faces east (Evans-Pritchard 1956). The dead man is stripped of all ornaments and his head is shaved. The only items placed in the grave are pieces of animal skin which are placed above and below the body.

A woman is buried in a similar fashion also by male or female kinsmen. She is placed in a grave either in or near her hut, flexed on her right side, facing west. An animal skin is also placed above and below the body, however, an additional piece of ox hide is placed between her legs. No other goods are placed in the grave. In the case of a very old woman, her cooking pots may be placed on top of the grave (Evans-Pritchard 1956).

Small children (under six) are buried but with no ceremony in the "bush" by old women.

Both the leopard skin chief and priests are buried like both males and females. They are also buried in or near their hut. However, a platform is built in their grave so that the body does not touch the soil (Huffman 1931). The body is then covered with animal skins. No ornaments are placed with either of these individuals.

Two categories of individuals are not buried. If twins are born, one is taken into the "bush" and placed in a tree.

Individuals that are struck by lightening are placed upon a rock in their hut. The hut is then covered with wood, ash and soil. If struck in the bush, the individual is simply covered with brush and grass. In no case is an individual killed by lightening buried in the ground (Huffman 1931).

Among the Nuer three general distinctions are made in the mortuary ritual; (1) the age of the deceased, children under six being buried at a different location; (2) the manner in which an individual died; (3) and the social position held by that individual, either a priest or the leopard skin chief. The last two social positions are achieved thus conforming to the generally egalitarian nature of Nuer social organization (Figure 51).

Masai

According to available ethnographic evidence, traditional Masai did not bury most individuals. "The bodies of most people are put out for the hyenas" (Huntingford 1953, p. 125). This is done by the nearest male relative.

In the case of a woman's death, the body is laid down on the ground a few hundred meters to the west of the central kraal (Merker 1910). The body is anointed with animal fat from a slaughtered ram by women who are not relatives. The body is then laid on the left side with the head towards the north facing east. The legs are drawn up toward the chest with the left hand supporting the head. The right arm is folded across the chest (Hollis 1905).

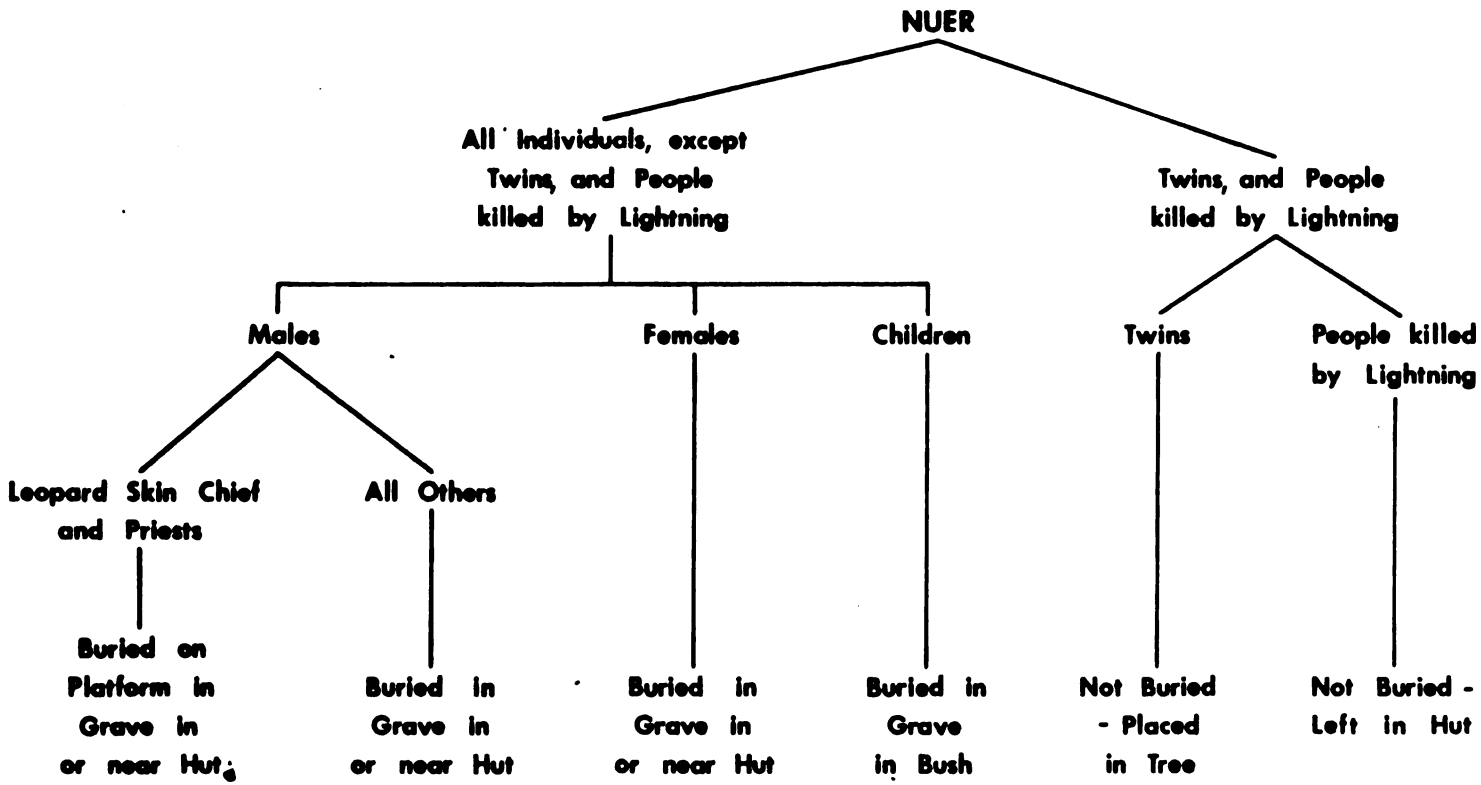

Figure 51

Nuer Burial Schedule

The body of a woman who has not had any children is treated in a similar manner, the only difference being that she is not anointed with oil (Merker 1910).

In the case of a child, the body is taken to the west of the kraal and simply "thrown away" (Hollis 1905, p. 304). The authors own information based on two local elders indicated that even children are placed in the flexed position, on the left side with the head to the north. Since this does not agree with earlier accounts, it may well be that this is a fairly recent development. In any case the child is not anointed with oil.

When an old man dies he is treated much the same as a woman (Hollis 1905). However, a sheep is slaughtered and the body is anointed with the fat. After this the body is carried to the west of the kraal where a bullock is slaughtered which is eaten on the spot. The bones are left with the deceased so that "the hyenas may smell it (corpse) and carry it away" (Hollis 1905, p. 305). If the corpse is immediately devoured the first night by hyenas it is regarded as a good sign (Merker 1910).

In contrast to this warriors that die in battle are left lying on the spot they fall. If he dies outside the kraal, he is left lying on the spot and those present throw grass or leaves over the corpse (Merker 1910).

If the deceased was a family man, his sons slaughter a black ox and anoint the body with the fat. He is taken out and placed to

the west of the kraal. All his ornaments are removed with only his sandals and leather apron being left on him.

> "The corpse is laid on its left side with the head toward the north so that the face is turned toward the east. The legs are drawn up and lie on one another. The left arm is drawn up in such a way that the hand lies close to the head, whereas the right arm is bent at the elbow at a right angle; the upper arm rests on the abdomen of the dead man. If one laid the dead man down in any other way according to popular belief, another death sould quickly occur among the offspring or other relatives of the deceased" (Merker 1910, p. 200).

The treatment given a chief, medicine man, rich person or married man of the El Kiboron lineage contrasts with the previous simple exposures of the corpse (Merker 1910, Hollis 1905). These individuals are buried by adult male relatives. An ox or sheep is slaughtered and the fat is rubbed on the body. A small hole is dug about a meter deep and a hide is placed on the bottom. The body is then placed in the same position as that of a married man (see description above). A second hide is then placed over the corpse. The pit is then filled with dirt and stones and a cairn is constructed over the grave (Fox 1930). "Whenever someone passes the spot he throws a stone on the mound" (Hollis 1905, p. 305).

In summary the Masai mortuary practices distinguish burials on the basis of three broad distinctions: (1) The age of the deceased is recognized. Children are simply thrown into the bush, whereas adults warrant a mortuary ceremony and are positioned on the ground west of the central kraal; (2) Social position is also symbolized since medicine men, chiefs and wealthy individuals are all buried, whereas the rest of the population is not; (3) In one case social affiliation

is recognized at burial by the Masai. Male members of the El Kiboran lineage are also buried (Figure 52).

Konso

Burial data on Eastern Cushitic peoples is in general of poor quality and incomplete. As is the case with most ethnographic accounts of burial data, the mortuary ritual is described in some detail, but the exact logistics of the burial in regard to orientation and grave construction are usually ignored. Perhaps the most detailed account on Eastern Cushitic burial routines is provided for the Konso. However, here too, the burial procedures had to be pieced together from a number of separate accounts (Hallpike 1972, Jensen 1936, Haberland 1963).

For the Konso, information was not available for the burial of subadults and so this discussion will be limited to the burial patterns for adults only. However, Huntingford (1953) notes that it is common practice among the Galla (also Eastern Cushites) not to bury children. Among the Konso burial areas as such exist. This is unlike the groups just discussed who usually bury an individual near their temporary homesteads. Jensen (1936) notes that an individual is buried at his traditional family burial place by young male relatives. A woman is buried at the burial ground of her husband. Haberland more specifically states that each clan or lineage has its own burial area. Although not specifically stated in Hallpike (1972), it can be inferred that kin groups do possess their own burial area.

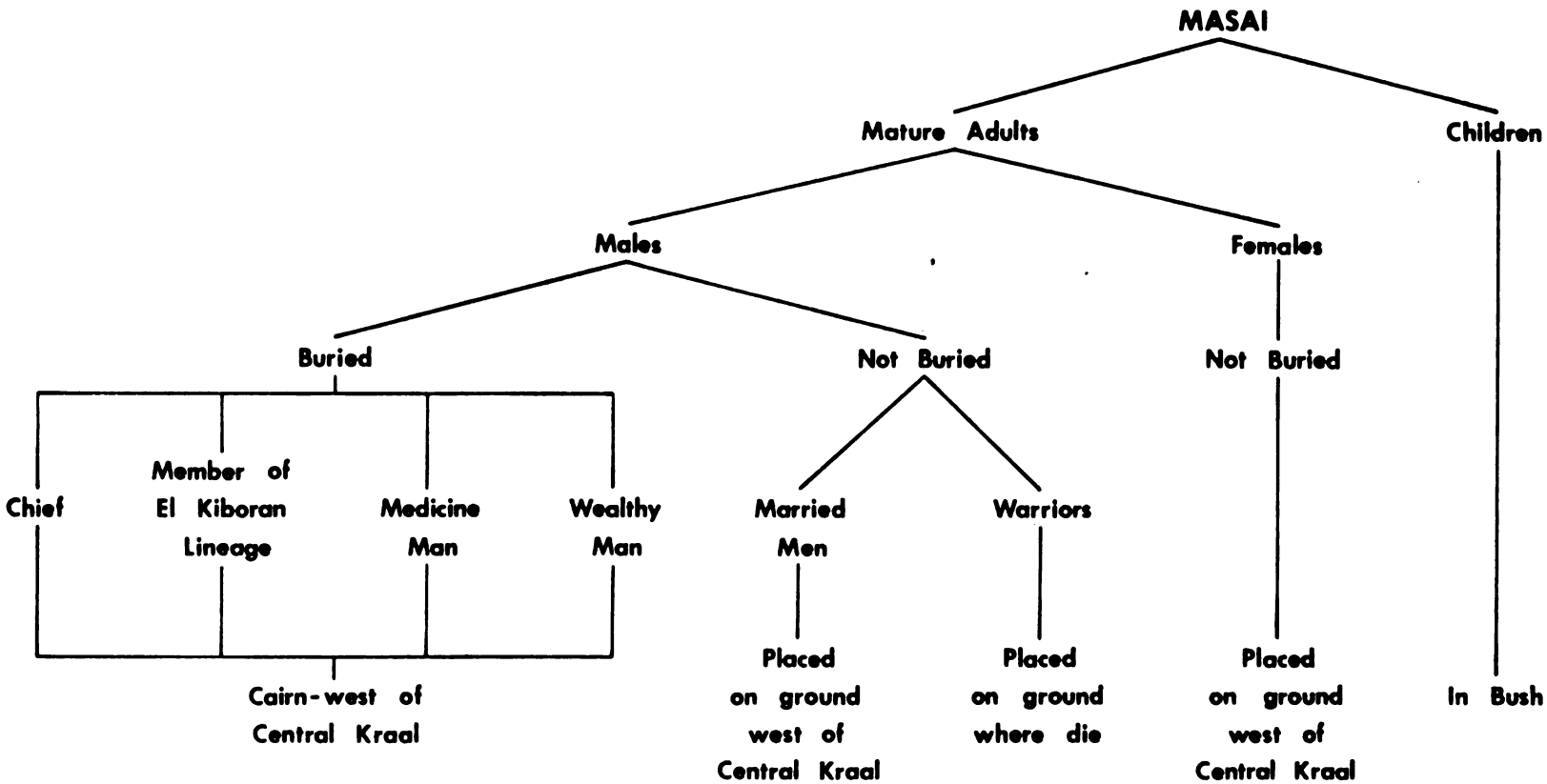

Figure 52

Masai Burial Schedule

The graves appear to be constructed in the same way for all adults regardless of sex. According to Hallpike, it consists of a hole five feet deep which is oblong in plan. The burial pit has a lateral niche at the bottom in which the body is placed. A "door" of either wood or stone is then placed over the burial pit to prevent any earth from falling onto the body (Jensen 1936, Hallpike 1972). The remainder of the grave is then filled with earth and stone (Jensen 1936) or simply earth (Hallpike 1972). Finally the grave is surrounded by a stone wall (Jensen 1936). With one exception the body is flexed in all cases. The one exception concerns the burial of a lineage priest.

> "The death of a priest is even more dreadful than the death of an ordinary man. There is no mourning, the body is eviscerated and covered with butter and honey and left unburied for nine days. After this it is buried in a basket in a temporary grave with the viscera in a jar beneath the corpse. After three years it is exhumed and placed in a grave of the usual type which is to be its permanent resting place" (Hallpike 1972, p. 158).

From this description it would appear that the final burial of a lineage priest would consist of a bundle reburial.

Both Jensen and Hallpike seem to agree on the orientation of the body. All individuals are placed on their right side. However, the cranial-caudal orientation can display a certain amount of variation. The direction an individual is oriented is dependent upon where that individual's clan originated from. A woman is oriented toward the homeland of her husband's clan. Hallpike states that an individual would face the homeland of his clan whereas

Jensen notes that the individual's feet would point toward the ancestral homeland.

While agreeing fairly closely on the disposition of the body, Jensen and Hallpike differ slightly on the items included as grave furniture. Hallpike states that usually nothing is buried with the corpse. Individuals are placed in a cotton blanket and then a sleeping skin. However, grandfathers, grandmothers and priests are covered with butter and honey. Jensen observes that an individual is wrapped in an ox hide and rubbed with butter, he does not make clear if everyone is anointed with butter or only certain individuals of a higher status.

Finally a bull (Hallpike) or a sheep (Jensen) is slaughtered at the time of death. It is not known if all individuals warrant this treatment.

The Konso recognize: (1) The age of the deceased since children are not buried, (2) the social position of the deceased with priests being initially interred at a temporary location and then being reburied at the normal clan burial ground, (3) and finally the Konso recognize the social affiliation of the deceased. Each lineage or clan has its own clearly defined burial area (Figure 53).

In general terms all of the Ethnographic models discussed parallel those of the Namoratunga sites. In all six ethnographic cases all of the burial distinctions could be accounted for on the basis of age, sex or personal characteristics of the deceased. This is congruent with the largely egalitarian nature of pastoral social

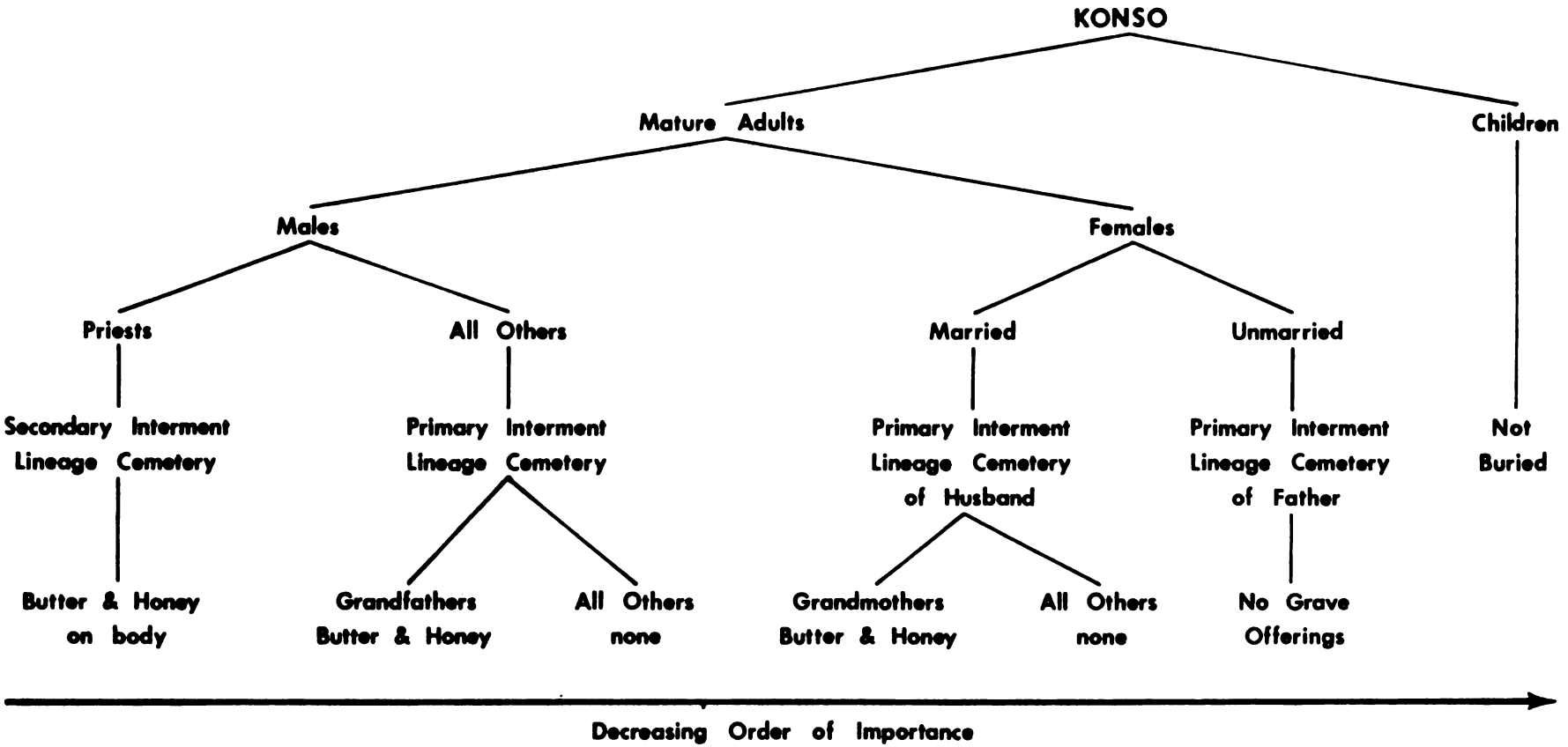

Figure 53

Konso Burial Schedule

organization (Binford 1971). However, beyond this very general level, there are clear distinctions between the various models.

When the Namoratunga burial patterns are compared with the ethnographic sample in terms of mortuary distinctions symbolized, only the Masai and Konso upon initial inspection provide good fits. Both symbolize the age, social position and social affiliation of the deceased. However, upon closer inspection, the Masai clearly have to be excluded. Although the Masai do symbolize social affiliation, it is only in the case of one lineage. Secondly, unlike Namoratunga the Masai do not bury the vast majority of their dead nor do they have clearly defined disposal areas.

The Konso provide a much tighter fit in terms of symbolizing social affiliation. The Konso have disposal areas which are based entirely upon social affiliation with an individual being buried in his lineage burial ground. The only possible disparity between the Konso and the Namoratunga burial patterns concerns the distinctions in burial based upon the sex of the deceased. At the Namoratunga sites burial distinctions are clearly made on the basis of the sex of the deceased. This distinction is not as clear among the Konso. However, among the Konso, a distinction is made between where males and females are interred. If married, a female is buried with her husband, if not, she is buried with her father's lineage. Unfortunately ethnographic data on Konso mortuary distinctions is not detailed enough and as such it is impossible to ascertain if the

TABLE 29.--Summary of Mortuary Distinctions Symbolized.

Name	Cause of Death	Location of Death	Age of Deceased	Sex of Deceased	Social Position	Social Affiliation
Nuer (River & Lake Nilotes)	X		X		X	
Turkana (Plains Nilotes)			X	X		
Masai (Plains Nilotes)			X(?)		X	X(?)
Pokot (Highlands Nilotes)			X	X		
Konso (Eastern Cushites)			X	X(?)	X	X
Namoratunga			X	X	X(?)	X

sex of the deceased is symbolized in a manner similar to that found at Namoratunga.

In terms of the particulars of the grave and burial itself, the Konso provide an extremely close fit. Many features of Konso grave construction are duplicated at the Namoratunga sites. Both employ a "door" immediately over the burial pit. In the case of the Konso this "door" can be made either of stone or wood. Its sole purpose is to keep dirt, which is seen as polluting, from falling directly on the body (Hallpike 1972). At Namoratunga the burial pit was covered by a single very large stone slab. Secondly, the Konso graves were surrounded by a "stone fence" (Jensen 1936) which consists of standing stone slabs placed edge to edge so as to form a circle around the grave. This was also found to be the case at the Namoratunga sites. The orientation a Konso receives at death is dependent upon where his clan is thought to have originated from. Hence there is a great deal of variability in burial orientation within the same cemetery. A similar pattern is found at the largest Namoratunga cemetery where four different cranial-caudal orientations were observed. Given the suggestion that a number of different kin groups or lineages were represented in the largest Namoratunga cemetery, the Konso data provides a reasonable explanation for this variability. Finally, the Konso, in the case of the death of a priest, rebury the body after a period of three years. At Namoratunga, grave 82 contained a bundle reburial with

the grave located in the center of the site. This individual may have been a priest.

The fact that Eastern Cushites are responsible for the Namoratunga sites is further supported by the Namoratunga site near Kalokol. Here a series of rows of stone pillars were found. Today in Eastern Africa only Cushitic speaking peoples make use of such pillars made either of wood or stone (see page 174 also Hallpike 1972). In addition, these stones were found to be alligned with all seven of the stars or constellations now used by Eastern Cushites to calculate their calendar (see page 173). There is little doubt that the Namoratunga sites are Eastern Cushitic in origin in terms of the social distinctions symbolized in the mortuary ritual, the details of burial and grave construction and finally in the use of standing stone.

East African Pastoralists and Mortuary Archaeology

Although archaeologists have become increasingly aware of the value of mortuary data in studying social organization, the study of pastoral society through the use of burial information has been largely overlooked. Instead most studies have dealt with hunter/gatherer and agricultural societies (Tainter 1975, Mainfort 1976, Goldstein 1975, Brown 1971). As far as the author is aware only L. Binford (1971) has dealt with pastoralists, and this was only in a very brief manner. His sample consisted of three pastoral societies which were examined in light of correlations between

subsistence and the number of mortuary distinctions symbolized at death. He found age and sex to account for most distinctions in pastoral burial practices, a discovery not completely unexpected given their largely egalitarian social organization.

This section is in no way intended to be a definitive study of pastoral mortuary patterns. However, it is still of value to examine pastoral society in light of assumptions held by most authors when analyzing mortuary data since pastoral groups present their own particular set of problems. Perhaps the most frequently cited work is that of A. Saxe (1970) whose work provides the theoretical framework for most mortuary analyses. Saxe proposes a series of eight hypotheses which will be tested against the five pastoral societies analyzed earlier in this chapter to discern their applicability to the study of pastoral groups. This section is limited to the East African pastoralists discussed in the previous section. However, a review of all the pastoralists in the Human Relations Area Files revealed that these five pastoral groups appear to be representative of pastoralists in other areas of the world as well in terms of the social distinctions recognized at death and in the form of the interment itself. Hence although this is, as mentioned earlier, not intended to be a general statement on pastoral mortuary patterns, the patterns noted in this section do appear to be broadly applicable to other pastoral societies.

Hypothesis #1

"The components of a given disposal domain cooperate in a partitioning of the universe, the resultant combinations representing different social personae" (Saxe 1970, p. 65). Since social personae are composed of social identities, these sets in any particular combination will reflect the sociocultural significance of the disposal type.

In the generalist of terms hypothesis one is confirmed for all five ethnographic groups. The components symbolized at death do cooperate in partitioning these burial populations into socially significant units. Among the Turkana none of the disposal types are identical to any other. This is true given burials within the homestead vs. burials in the bush. However, archaeologically there is a great deal of overlay between these categories since only burial location varies. Unless a Turkana homestead can be defined it would be extremely difficult to differentiate Turkana burials within the homestead vs. those in the bush. Given the perishable nature of Turkana material culture (Robbins 1973) and their nomadic subsistence strategy with frequent migrations, it is practically impossible to identify abandoned homesteads. As stated earlier the author was able to observe a homestead which had been abandoned for less than two years. All that remained were a few stones placed in roughly circular patterns which had been used as hut supports. Hence, although ideally it should be possible to differentiate Turkana disposal types, in practice it often is not.

The Pokot pose similar problems. Here two broad distinctions are made: burial within the homestead vs. no burial in the bush. Once again, ideally, all of the disposal types are readily differentiated. However, in practice, much like the Turkana, the variation in burial location is difficult to control archaeologically. This problem added to the practice of not burying a large segment of the population, makes it impossible to analyze an entire burial population and hence determine the range of mortuary behavior. Like the Pokot, vast majority of Masai warrant no burial. Of those that are buried, it is impossible to distinguish different social identities; chiefs, medicine men and wealthy men are all interred in a similar manner.

Only the Nuer and Konso readily support hypothesis one archaeologically. Among the Nuer only a very small portion of the population is not buried, twins and individuals struck by lightening. In addition, almost all those buried would be interred in or near the homestead. Females are differentiated from males in terms of orientation, while leopard skin chiefs and priests are interred on platforms built within their graves before being covered with soil. For the Konso as well there is very little overlay between disposal types; children are treated one way, males and females another and priests yet another.

The final point to be made concerning this hypothesis is that regardless of whether individuals are buried or simply left for wild animals, it would be practically impossible to get a representative sample of burials from either the Masai, Pokot,

Turkana or Nuer. Since these groups are constantly changing homesteads, it is unlikely that any one homestead area will contain the entire range of mortuary behavior. Only among the Konso which have clearly defined burial areas could nearly the entire range of burial types be recognized.

Hypotheses #2

"The principles organizing the set of social personae are congruent with those organizing social relations in the society at large" (Saxe 1970, p. 66). What this states is that given information about the social structure of the burial population, one can make certain statements about the principles organizing the burial routine. For example, in an egalitarian society (Fried 1974) the social identities present in the disposal domain should be of the type acquired on the basis of age, sex or personal attributes. If the distribution of components in the burial domain can be accounted for on the basis of these attributes, then the social structure that produced them is egalitarian (Saxe 1970).

This hypothesis is confirmed by all five societies since all of the significators can be accounted for on the basis of age, sex or personal characteristics, congruent with the largely egalitarian nature of these five societies. In no case is there a disposal type which varies independently of age and sex or achieved social position.

Among the Turkana adult married males tend to be the most significant with all infants treated one way only as are all unmarried

individuals. For the Pokot married individuals are distinguished from unmarried. The only individuals differentiated among the Masai all occupy achieved status positions: chiefs, medicine men and wealthy individuals acquired their positions due to personal characteristics. Married male members of the Masai El Kiboran lineage are buried, but within this lineage, every married male warrants a similar treatment. The Nuer differentiate the leopard skin chief and priests from the rest of the burial population, but once again these positions are achieved. Only among the Konso where priests warrant reburial is there any indication of ascribed status. However, the remainder of Konso disposal types are readily accounted for on the basis of age and sex.

Hypothesis #3

"Within a given domain personae of lesser social significance tend to manifest fewer positive components in their mortuary treatment relative to others" (Saxe 1970). Underlying this is the fact that social personae of greater social significance will contain more social identities and so their disposal type will contain more components. For example, the death of an infant in an egalitarian society may affect only its parents since very young individuals should have very low rank and hence, share duty-status relations with a very limited number of individuals (Binford 1971). On the other hand, the death of older persons may involve not only identity relations with more individuals, but with more groups, each of which may contribute a component to the final

disposal since he shares in a greater number of duty-status relations with a larger number of people.

Hypothesis #3 is confirmed by all five societies, individuals of lesser social significance warrant less elaborate mortuary treatment. Among these egalitarian societies one would expect children to have the least social significance since status is achieved. For the Turkana and Pokot, children and unmarried individuals are either not buried at all or buried in the bush away from the homestead. Among the Masai, although most individuals are not buried, children are simply "thrown away" in the bush without proper mortuary ceremony. The same is true among the Nuer who bury children in the bush away from the rest of the burial population. The Konso also do not bury children whereas all other individuals warrant burial.

It is apparent that under ideal circumstances Hypothesis three is confirmed, however, a difficulty arises in that distinctions between individuals of varying social significance are based solely upon locational differences or differences between who is and who is not buried. These distinctions are difficult to control archaeologically since individuals that are not buried are lost entirely to the archaeologist. Persons of lesser social significance who are buried are distinguished only on the basis of location; a variable almost impossible to control given the nature of pastoral settlements.

Hypothesis #4

"The greater the social significance of the deceased, the greater will be the tendency for the social persona represented at death to contain social identities congruent with the higher position at the expense of other identities the deceased may have had" (Saxe 1970).

> "In death, however, the occasion is fixed, and a choice between incompatible social identities must be made. Those involving rights and duty counterparts with the greatest degree of influence, authority and/or power by virtue of that set of relationships will be chosen" (Saxe 1970, p. 6).

Hypothesis #4 is also confirmed by all five societies. The social personae of greater social significance do reflect social identities congruent with that higher position. However, the distinctions between the individuals of varying social significance are minimal given the egalitarian nature of these five societies. For the Turkana married individuals and important men are distinguished from the rest of the population. The Pokot differentiate married from unmarried individuals while the Masai treat chiefs, medicine men and wealthy men in a manner different from the rest of the population. The Nuer distinguish leopard skin chiefs and priests, whereas the Konso only treat priests differently.

It is, however, almost impossible to distinguish these social positions archaeologically since their is little mutual exclusiveness in the treatment of these positions. Because these burials are not accompanied by permanent grave furniture or otherwise differentiated there is no way of distinguishing a Masai chief

from a medicine man, or a Nuer priest from a leopard skin chief, for example.

Hypothesis #5

"The more paradigmatic the attributes evidenced in the key structure of the domain, the less complex and more egalitarian the social organization. Conversely, the more tree-like the attributes, the more complex and less egalitarian the social organization" (Saxe 1970, p. 75).

In perfect paradigms all dimensions of the disposal domain are independent of all others so their ordering is of no consequence. Perfect paradigms are absolutely non-redundant. "This means that the appearance of a particular value on a dimension does not demand the subsequent appearance of other particular values and dimensions; a change in a single component of a significatum merely changes it into the definition of another significatum" (Saxe 1970, p. 76).

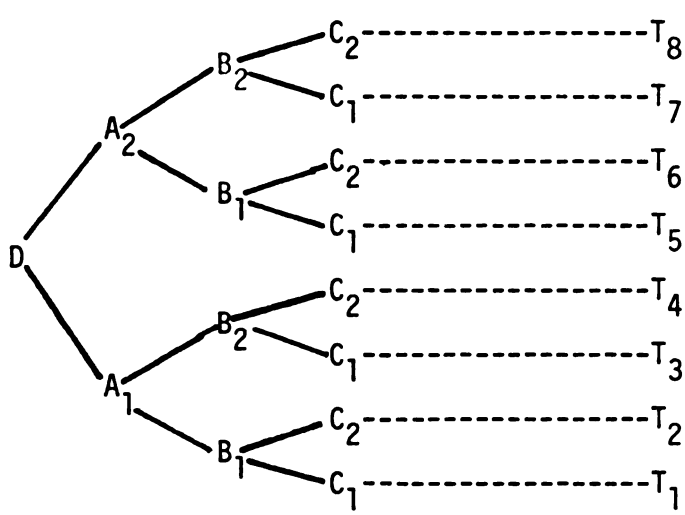

Figure 54.--Diagram of a perfect paradigm from Saxe 1970, p. 46.

A perfect tree is exactly the opposite of a perfect paradigm in that it is maximally redundant. "For any dimension, there is a unique mode at which it applies" (Saxe 1970, p. 147). Thus with a tree as one moves horizontally the branches do not pass through each and every dimension in turn.

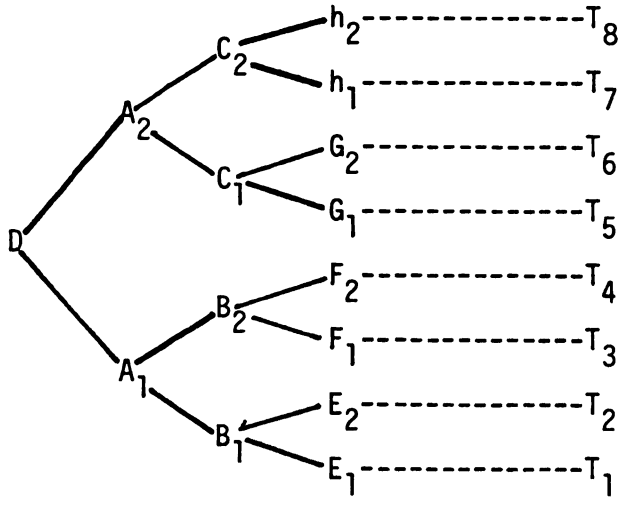

Figure 55.--Diagram of a perfect tree from Saxe 1970, p. 47.

The more paradigmatic the key structure of a given disposal domain, the more egalitarian, whereas the more tree-like, the more complex the social organization. To quantify this Saxe employed a measure, R, which is utilized to reflect the amount of redundancy in any given disposal domain. The lower the R value, the more egalitarian is the social organization of the group in question. However, the measure is dependent upon the number of significata in the disposal domain. The difficulty in applying this measure is that it requires fairly complete burial data. The mortuary information of the five pastoral societies used in this analysis is of variable quality.

Whereas the data on the Turkana, Masai and Nuer is relatively complete, that on the Konso and particularly the Pokot is not. The Turkana, Masai and Nuer yielded R values of .49, .44 and .6 respectively. These are relatively low scores. For example, the three societies analyzed by Saxe, the Kapauku, Igorot and Ashanti yielded R values of .764, .88 and .834 respectively. These much lower R values found for the three pastoral societies is in complete agreement with their egalitarian social organization and as such verifies hypothesis five.

Hypothesis #6

"The simpler a sociocultural system the greater will be the tendency for there to be a linear relationship between the number of components in significata, number of contrast sets necessary to define them, and the social significance of the significata and conversely" (Saxe 1970, p. 112).

Put more simply, the disposal domain of a society should not only reflect its gross organization (i.e., egalitarian, etc.) (Hypothesis 5) but it should also reflect the structuring principles related to the actual form of the social organization. For example, the less egalitarian a society, the greater the tendency for certain individuals to warrant unique forms of disposal.

Hypothesis six is supported by all five societies in the study. For all five groups status positions tend to grade into one another with no one disposal type being completely unique. This gradation in disposal types clearly supports this hypothesis. While

the highest status positions are differentiated from other forms of interment, it is only in terms of a single additional component. Among the Nuer, for example, leopard skin chiefs and priests warrant the same disposal type as males and females but are differentiated by the addition of a wooden platform in their grave. For the Masai, chiefs, medicine men and wealthy men are differentiated by having a stone cairn constructed over the body. The relationship between the social significance of the deceased and the number of components which define that disposal type for all five cases is linear.

Hypothesis #7

"The simpler the sociocultural system the less divergence will be evident in the treatment of different kinds of deviant social personae and conversely" (Saxe 1970, p. 118).

Hypothesis seven cannot be readily tested given the ethnographic data available for the five groups, since no burial information was available for deviant disposal types.

Hypothesis #8

"To the degree that corporate group rights to use and/or control crucial but restricted resources are attained and/or legitimized by means of lineal descent from the dead (i.e., lineal ties to ancestors), such groups will maintain formal disposal areas for the exclusive disposal of their dead, and conversely" (Saxe 1970, p. 119). That is as the degree of importance of corporateness decreases we would expect disposal areas to become less specialized,

unless, of course, rights are based upon different social institutions.

> "Differences may be noted in regard to solidarity or subgroup affiliation. Examination of the cases revealed that societies in which various membership groups (clans, kindreds, lineages, etc.) are present each may maintain a distinct burial location" (Binford 1971, p. 234).

L. Goldstein (1975) took Saxe's original hypothesis and using a much larger ethnographic sample of 30 societies, revised this hypothesis. "If there is a formal localized disposal area, used exclusively for the dead, then the culture is probably one which has a corporate group structure in the form of a lineal descent system. The more organized and formal the disposal area is the more conclusive this interpretation" (Goldstein 1975, p. 62).

For the Turkana, Pokot, Masai and Nuer, hypothesis five is confirmed. None of these groups have bounded areas set aside for different groups such as lineages for the disposal of the dead. Disposal locations are variable. This makes sense when we realize that the rights inherited by virtue of lineal membership tend to be less important than those rights acquired through individual acquisitive efforts in the course of a lifetime. Important collective functions of kinship groups with respect to ownership, inheritance and exploitation of curcial resources is weak. It would appear to be basic to mobile pastoral groups that they would not have permanent kin group graveyards, since this would only be possible if they were to transport the body of the deceased until they returned to their permanent burial area.

The hypothesis is also confirmed for the Konso who do have defined disposal areas. The Konso are unique among Eastern Cushites in that they now largely from external influences, live in towns, whereas previously they lived in scattered homesteads (Hallpike 1972). Today the Konso largely subsist by slash and burn agriculture with fields being owned individually and not by any kin group such as a lineage. However, lineage membership is an important factor in the inheritance of land. Property can only be inherited within the lineage by the nearest male relative according to seniority. In addition, members of the same patrilineage all live within the same town and each patrilineage functions as an important corporate group in Konso society, with each having its own shrines and priests.

In summary, despite the fact that the ethnographic data supported Saxe's hypotheses, they could not be verified archaeologically. There are a number of factors which mitigate against analyzing pastoral mortuary practices. The first involves the manner in which social positions are differentiated at death. As discussed previously, both Masai and Pokot do not bury a very large segment of their population. In the case of the Masai, almost no one is buried. As such a large segment of each of these populations is completely lost archaeologically. Using population profiles an archaeologist will be able to determine that part of his burial population is indeed missing but he will be unable to make any statements about the social significance of these missing individuals.

Secondly, most burial distinctions were made solely on the basis of location; burial in the homestead vs. burial in the bush, burial in the center of the kraal vs. burial off to one side in the kraal. Such locational distinctions are almost impossible to control archaeologically since these groups leave little in the way of cultural debris upon abandoning a settlement. As such homesteads are difficult if not impossible to define. Hence differentiating individuals buried in the bush from those in the homestead or burials located in different areas of the homestead is not possible. Also the use of rocks for cairns depends on availability and many areas lack rocks. None of the five groups studied placed permanent grave offerings with the decreased which might have helped distinguish the social identity of that individual and even if they did, most items are perishable. Of all burial attributes studied, grave offerings have proven to be among the most useful in analyzing the social organization of burial populations (Brown 1971, Larson 1971, Peebles 1971, 1974). This entire data set is not available when studying these East African pastoralists.

The final problem in studying pastoralists bears directly upon their subsistence strategy. Because of the generally marginal nature of the areas now inhabited by these pastoralists (Allen 1965), they must frequently migrate to optimally utilize their meager resources and exploit seasonally available resources. Due to the seasonal nature of the rainfall in these areas grasses are only available in lower lying areas during the rainy season, for example.

As such, even if it were possible to identify their settlements archaeologically, it is highly unlikely that one would encounter the entire range of burial behavior near any one settlement. The archaeologist would require a much larger sample of settlements to make any meaningful statements regarding the range of variations in mortuary behavior.

All of these factors taken in conjunction would strongly mitigate against any highly detailed analysis of pastoral social organization through burial information similar to what can be done in hunter/gatherer and agricultural societies (Tainter 1975, Mainfort 1976, Goldstein 1975).

CHAPTER VII

CONCLUSION: NAMORATUNGA IN HISTORICAL PERSPECTIVE

The origins and development of Cushitic speaking peoples has long been of interest to scholars of East African prehistory largely because of the key role they are thought to have played in the spread of food production into East Africa (Clark 1976, Sutton, 1973). Today Cushitic speaking peoples are centered in the Ethiopian highlands. The Cushitic language is entirely African and belongs to the larger Afroasiatic family which includes Arabic and other Semitic language groups. It is divided into four main groups: Eastern Cushitic, Southern Cushitic, Central Cushitic and Northern Cushitic (Ehret 1976). Of these only the Eastern and Southern Cushites are located in East Africa. The Eastern Cushites which would include such groups as the Konso, Galla, Somali and Rendille extend from the southern highlands of Ethiopia across the Horn and over much of Northeastern Kenya. The Southern Cushites are confined to East Africa where they were once widely spread throughout Kenya and northern and central Tanzania (see Figure 2). Several of these Southern Cushitic language groups, especially the M bugu and Sanye, are dying out because of absorption of the surrounding Bantu peoples.

Murdock (1959) suggested that early Cushites were responsible for a Megalithic civilization in East Africa. This complex included stone monoliths, walled enclosures, irrigation systems and other cultural remains. While I do not subscribe to Murdock's views, it is interesting to note: "If the Megalithic Cushites do, in fact, represent an early southward expansion of people belonging to the Konso cluster, the surviving culture of the latter should shed light on the civilization of the former" (Murdock 1959, pp. 199-200). Despite this interest, radiocarbon dates which could definitely link early Cushites to known archaeological assemblages have not been available. Ehret (1974) using linguistic information alone has tentatively reconstructed Cushitic prehistory; yet this chronology has never been verified by archaeological evidence.

The Namoratunga sites provide the first instance where a series of excavated sites can be linked to these early Cushites. On the basis of similar mortuary practices, the use of stone pillars and the astronomical nature of the Kalokol site, the Namoratunga sites are clearly related to Cushites, particularly Eastern Cushites. A radiocarbon date from a sample of human bone from Namoratunga 1 has yielded a date of 2285 $\pm$ 165 (335 BC, Sample GX-5042A).* Interestingly this date correlates well with what Ehret

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*A second date of 1200 $\pm$ 100 BP using collagen was obtained from a different sample of human bone from Namoratunga 1. However, this date is much too recent given the available linguistic and ethnographic evidence. The 2285 $\pm$ 165 date was obtained using apatite. It has been shown that apatite consistently yields dates which closely approximate those obtained from wood charcoal. In paired collagen and apatite samples it was found that collagen

(1974, 1971) suggested using linguistic data alone as a date when Eastern Cushites would have been in the Lake Turkana region. He places Eastern Cushites there by the first millennium B.C. It is noteworthy that the first dates from the Lake Turkana area which deal directly with the spread of Eastern Cushitic speaking peoples verify previous linguistic conclusions and clearly indicates the value of cross-checking linguistic and archaeological data in historical reconstructions.

Six other "pastoralist" sites in Kenya and northern Tanzania also fall within the first millennium B.C. Essentially these sites embrace what were formerly called the "mesolithic" and "neolithic" and include both the Elmenteitian (typified by long two-edged obsidian blades), Gumban and other stone bowl cultures. They include: Tunnel Rock Shelter, Njoro River Cave, Keringet Cave, Prospect Farm, Narosura, and Ngorongoro. Several dates from these sites belong to the early part of the first millennium B.C. suggesting that the origins of this complex may be even earlier (Njoro 970 B.C. & Prospect Farm 960 $\pm$ 110, for example). Of all these sites only the Namoratunga sites provide the first clear linkage between Eastern Cushites and terminal Late Stone Age sites in East Africa. Although Cushites were assumed to be responsible for these other six sites (Sutton 1973), the linkage was based almost entirely upon the present day distribution of language groups.

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usually produced dates 100 to 1000 years more recent than the apatite. For this reason the collagen date is excluded in this report.

The skeletal remains from these first millennium sites have long been referred to as Caucasoid (L.S.B. Leakey 1931) which would tend to indicate a Cushitic speaking population (Sutton 1973). These skeletons are relatively tall and long headed. However, these terminal L.S.A. burials need more rigorous reappraisal before such a generalization can be accepted. From observations in the field it would appear that the Namoratunga skeletons were very similar to these other burials in terms of both stature and head shape.

The evidence that these terminal L.S.A. Cushites were at least partially food producing consists of domestic cow and sheep/goat remains. Prospect Farm, Tunnel Rock Shelter and Narosura have all yielded evidence of domestic cattle and probably goats or sheep as well (Sutton 1973). At the Namoratunga sites, large numbers of tooth fragments from domestic cow and sheep/goat were recovered in the fill of many of the excavated graves.

Of agriculture, conclusive signs are lacking. At Namoratunga no evidence of agriculture was found. Nevertheless, grain cultivation is strongly indicated at other sites of the same antiquity by the occurrence at several sites, particularly in the elevated stretch of the Kenya Rift Valley, of pottery, stone bowls and especially grindstones. The only published evidence of cultivated plants which is firmly supported archaeologically is the gourd or calabash of which carbonized remains were found at Njoro. At Njoro, which has been dated 970 B.C. (M.D. Leakey and L.S.B. Leakey 1950) in addition to carbonized pieces of gourd we also find a large number of stone

bowls, grindstones and pestles. It might be suggested that grindstones and pestles provide indirect evidence for more extensive use of agriculture, especially such cereals as eleusine and sorghum which are known to be of great antiquity further north in Southern Ethiopia (Porteres 1962). However, it is possible that these were simply used for grinding or pounding wild vegetable foods or for crushing red ochre which occurs with many burials during this time period. At Namoratunga, for example, at least three burials, 105, 45, 161, were associated with red ochre.

The Namoratunga sites then are broadly related to a number of other sites of comparable antiquity in Kenya and in northern Tanzania in terms of similar subsistence strategies and, where skeletal remains are available, in terms of similar physical types. However, despite these broad similarities, these sites do not form an entirely homogeneous complex. There are some striking cultural differences between these sites. Namoratunga differs significantly in its burial practices from the cremated communal burials at Njoro River Cave, for example, even though the social organization at both sites is apparently egalitarian (Lynch N.D.). Such diversity is not unexpected, however, given the wide geographical distribution of these sites from northwest Kenya all the way into northern Tanzania. It seems reasonable to postulate that a herding/hunting (and possibly agricultural) population of Cushitic speaking peoples was spread from southern Ethiopia all the way down to northern Tanzania by the first millennium B.C. By this time it appears that

this initial group of Cushites was already in the process of fragmenting into a number of regional variants.

The Namoratunga sites provide what is clearly the first definite link between these early food producers and Cushitic speaking peoples in addition to providing the only insight into the social organization of these early pastoralists: a society which was egalitarian and one where kin groups, possibly patrilineages, were important social institutions.

APPENDICES

APPENDIX A

BURIAL DESCRIPTIONS

APPENDIX A

BURIAL DESCRIPTIONS

TABLE 30.--Key to Appendix A.

Diameter = largest surface diameter of grave.

Depth, total = depth from surface of grave to bottom of burial pit.

Depth, horizontal slabs = depth of initial zone of layered stone slabs.

Depth of burial pit = depth from bottom of horizontal slab layer to bottom of burial pit.

Vertical slabs, average size = Average total length of stone slabs that form periphery of grave.

Average size above surface = amount of vertical slab which projects above surface.

Location of largest slab = position on periphery of grave of stone slab which has largest above surface height.

Total weight = total weight of stone used in grave construction--this figure excludes the burial pit itself.

Sex = given either as male, female or unknown, if ? follows sex, the sex identification is tentative.

Age = see page 33

Orientation = given in degrees starting with 0° at due north, i.e. 0 = North, 90 = East, 180 = South and 270 = West.

Flexure = fully extended = 180° completely flexed = 0°.

Grave furniture = artifacts found in burial pit.

Artifacts found in fill = all artifacts found in excavating grave, excluding those found in the burial pit. This also includes fauna.

Decoration = the presence of petroglyphs on the vertical slab periphery. The location of this slab in reference to the

entire grave is given as is the direction the rock surface the design is on is facing. Sketches of the designs are presented.

Grave 7

Diameter	2.4m	
Depth total	1.8m	
Depth horizontal slabs	1.4m	
Depth, burial pit	.4m	
Vertical slabs, average size	.67m	
Range	.55 - .9m	
Average size above surface	.08	
Range	0 - .2m	
Location of largest slab	None	
Total Weight	4.69 tons	
Sex	Male ?	
Age	Middle Adult	
Orientation	183°	
Position	Flexed, left side facing west	
Flexure:	Right	Left
Shoulder	30°	Missing
Elbow	60°	Missing
Hip	70°	Missing
Knee	10° ?	Missing
Grave furniture	None	
Artifacts in fill	Tooth fragments of domesticated cow and sheep or goat, large lava core.	
Decoration	None	

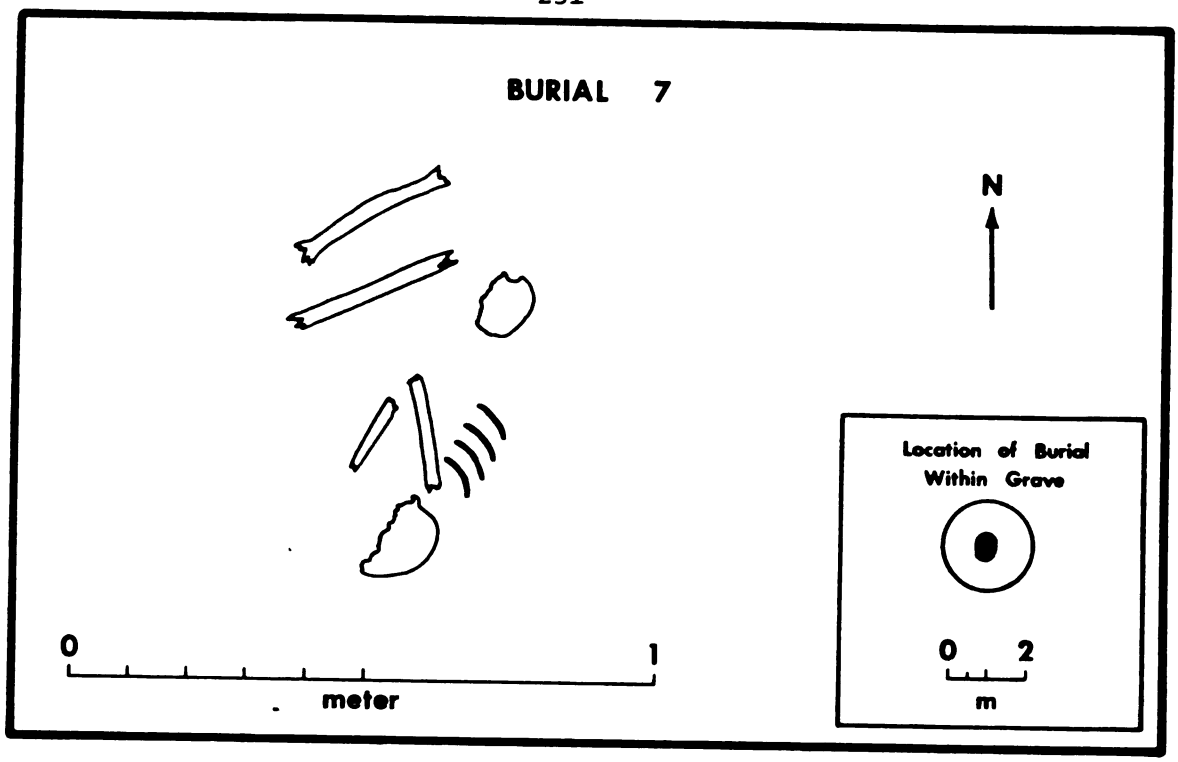
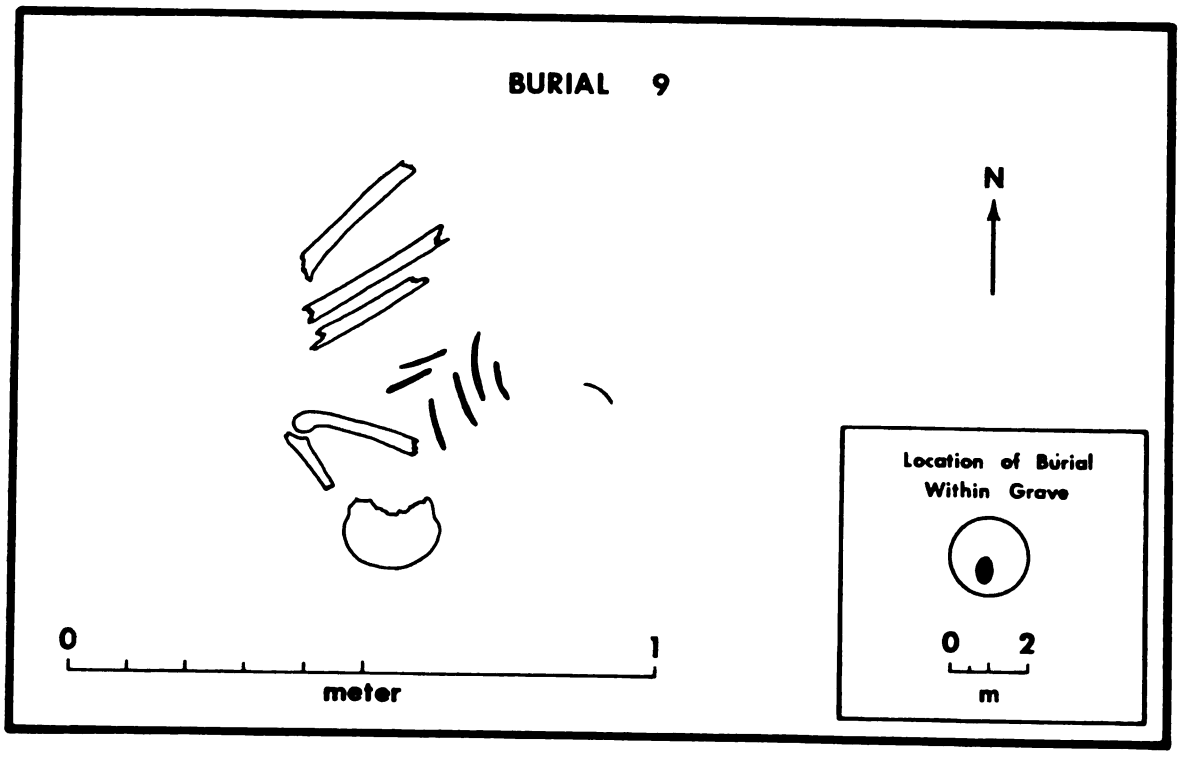

BURIAL 7
N
Location of Burial
Within Grave
0
2
m
0
1
meter

Figure 56


BURIAL 9
N
Location of Burial
Within Grave
0
2
m
0
1
meter

Comments . . . . . Burial pit located near center of cairn. Due to poor preservation, sex identification is tentative as is age determination. The third molars were erupted and dentin was exposed on M_2. Only right long bones were preserved.

Grave 9

Diameter	1.9m	
Depth, total	1.4m	
Depth, horizontal slabs . . .	1.0m	
Depth, burial pit	.4m	
Vertical slabs; average size . .	.75m	
Range	1.2 - .5m	
Average size above surface .	.17m	
Range	.45 - .05m	
Location of largest slab . .	West	
Total weight	2.9 tons	
Sex	Female	
Age	Young adult	
Orientation	185°	
Position	Flexed, left side, facing west	
Flexure	Right	Left
Shoulder	60°	Missing
Elbow	45°	Missing
Hip	45°	Missing
Knee	45°	Missing
Grave furniture	None	
Artifacts in fill	Tooth fragments of domesticated cow and sheep, or goat.	

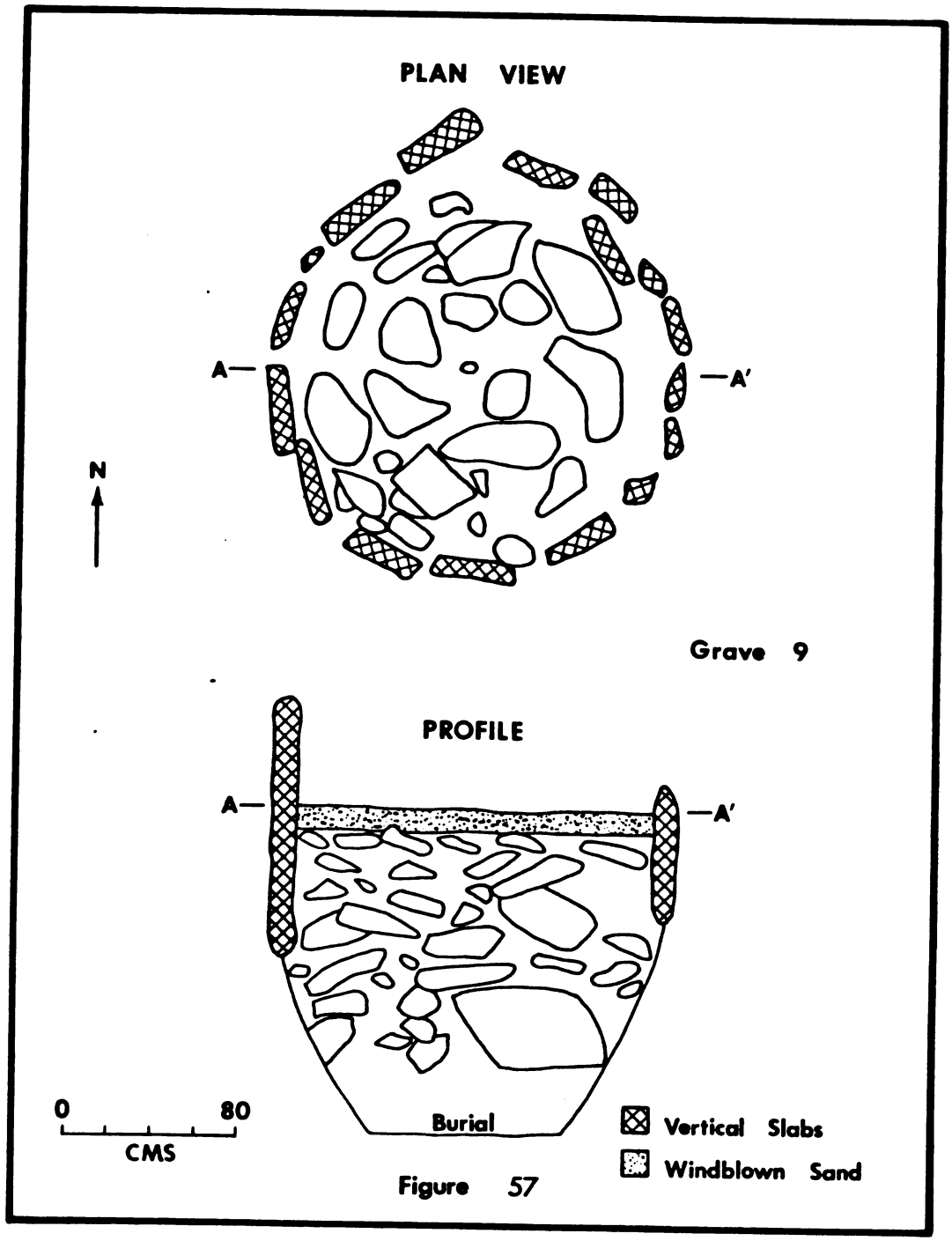

PLAN VIEW
A
A'
N
Grave 9
PROFILE
A
A'
0
80
CMS
Burial
Vertical Slabs
Windblown Sand

Figure 57

Decoration . . . . . None

Comments . . . . . Burial pit located in extreme southern half of cairn. Although preservation was poor (only right long bones remained) several cranial measurements were taken in the field (see Appendix B).

Grave 16

Diameter 3.2m

Depth, total 1.6m

Depth, horizontal slabs 1.0m

Depth, burial pit 6m

Vertical slabs, average size . . .85m

Range . . . . . .6 - 1.25m

Average size above surface . .25m

Range . . . . . .15 - .4m

Location of largest slab . . East

Total weight . . . . . 7.33 tons

Sex . . . . . Male

Age . . . . . Middle adult

Orientation . . . . . 10°

Position . . . . . Flexed, on stomach, facing east

Flexture	Right	Left
Shoulder	30°	20°
Elbow	30°	Missing
Hip	45°	Missing
Knee	5°	Missing

Grave furniture . . . . . None

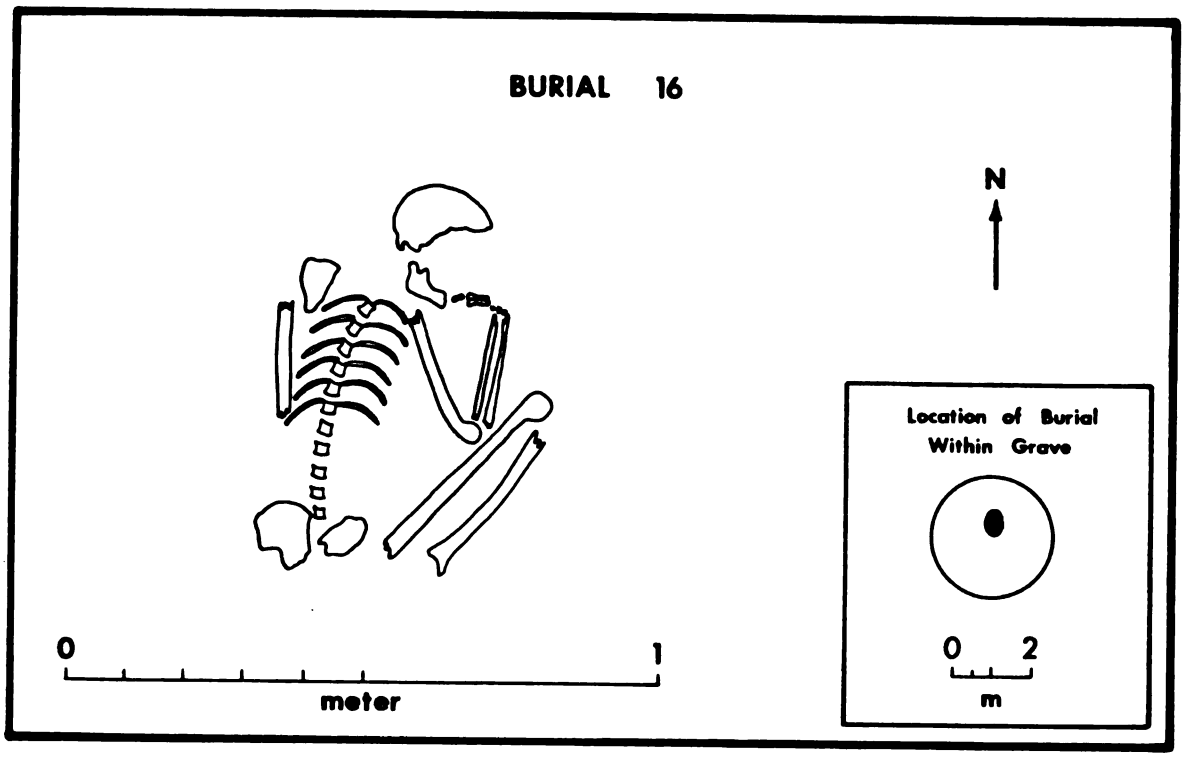
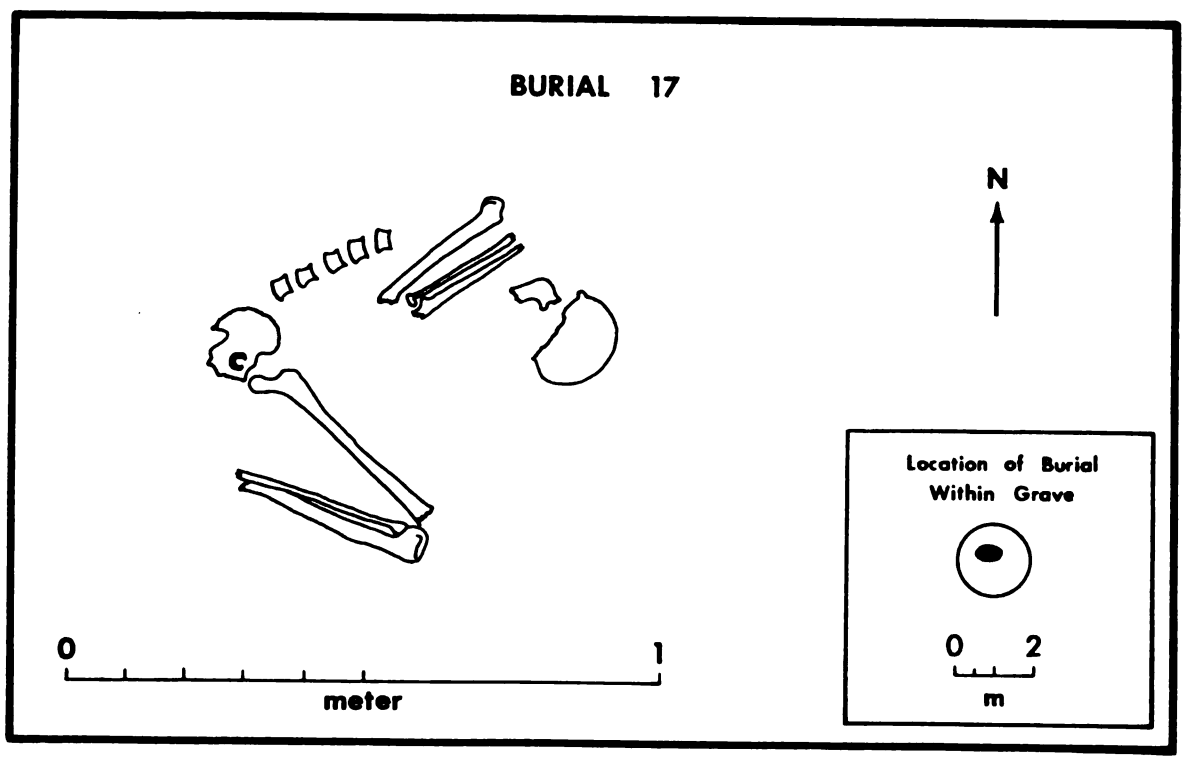

BURIAL 16
N
Location of Burial
Within Grave
0 2
m
0
1
meter

Figure 58


BURIAL 17
N
Location of Burial
Within Grave
0 2
m
0
1
meter

Artifacts in fill . . . . . Tooth fragments of domesticated cow and sheep, or goats. Three chert flakes with edge retouch.

Decoration . . . . . None

Comments . . . . . Burial pit in north half of grave. The preservation was fair. A series of cranial measurements were taken in the field (see Appendix B). The three chert flakes found in the fill were within the top .3m of the horizontal slab layer.

Grave 17

Diameter 1.8m

Depth, total 1.6m

Depth, horizontal slabs 8m

Depth, burial pit 8m

Vertical slabs, average size . . .69m

Range . . . . . .3 - .9m

Average size above surface . .14m

Range . . . . . .03 - .25m

Location of largest slab . . None

Total weight . . . . . 2.64 tons

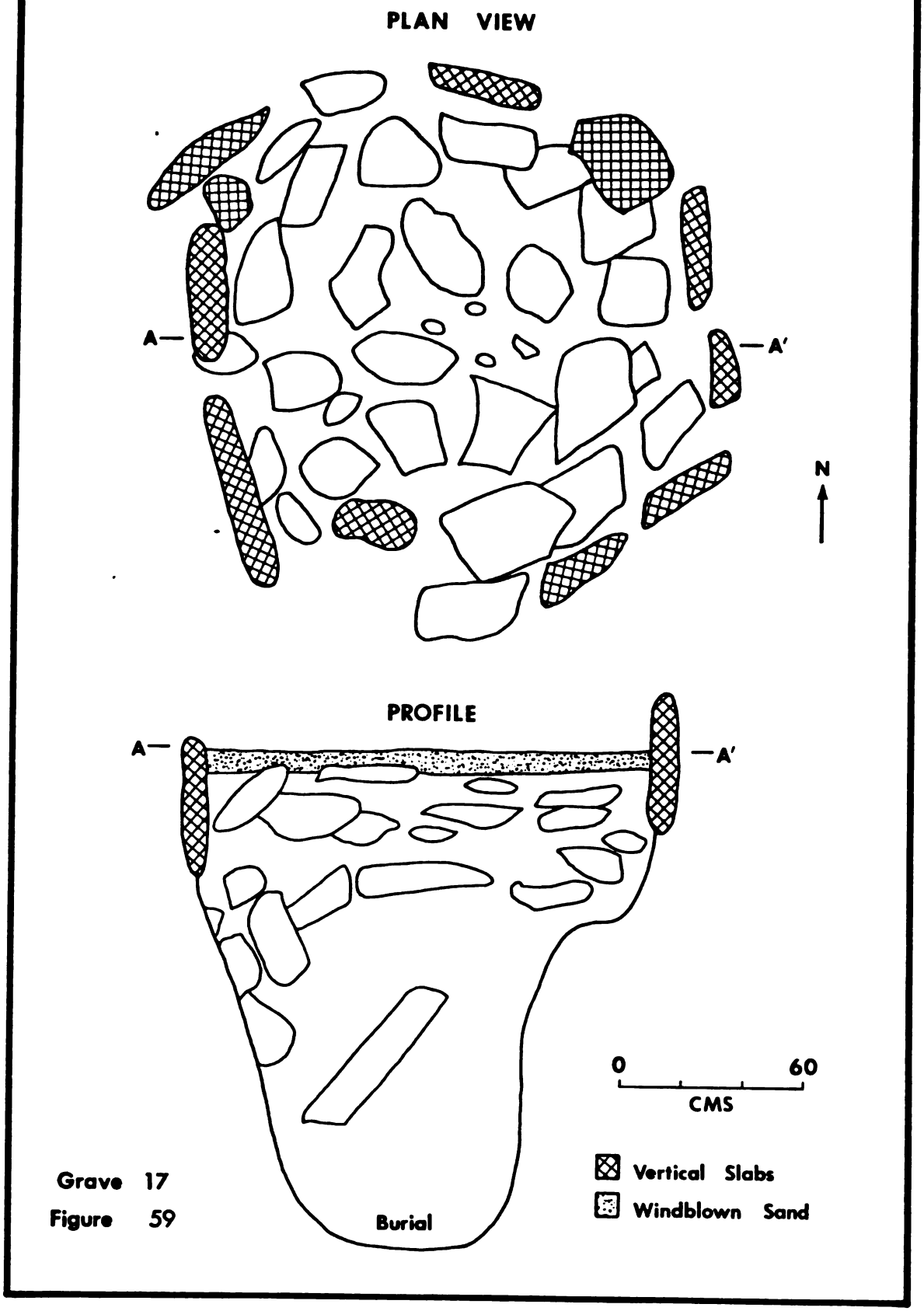
Sex . . . . . Female

Age . . . . . Middle adult

Orientation . . . . . 92°

Position . . . . . Flexed, on left side, facing southwest.

Flexure	Right	Left
Shoulder	45°	Missing
Elbow	15°	Missing



Grave 17
Figure 59

Hip . . . . . 45° Missing

Knee . . . . . 20° Missing

Grave furniture . . . . . None

Artifacts in fill . . . . . Tooth fragments of domesticated cow and sheep or goat; fragments of recent Turkana pot (undecorated) near surface; quartzite core.

Decoration . . . . . None

Comments . . . . . Burial pit located in north half of grave. Preservation was poor. Sheep/goat tooth fragments were found in burial pit itself under large slab which covered burial pit. However, slab showed evidence of slipping into burial pit (see profile). This may account for these tooth fragments in burial pit.

Grave 27

Diameter 1.8m

Depth, total 1.2m

Depth, horizontal slabs 9m

Depth, burial pit 3m

Vertical slabs, average size . . .55m

Range . . . . . .4 - .65m

Average size above surface . .12m

Range . . . . . .05 - .2m

Location of largest slab . . None

Total weight . . . . . 2.12 tons

Sex . . . . . ?

Age . . . . . ?

Orientation . . . . . ?

Position . . . . . ?

Flexure	Right	Left
Shoulder	Missing	Missing
Elbow	Missing	Missing
Hip	Missing	Missing
Knee	Missing	Missing

Grave furniture . . . . . None

Artifacts in fill . . . . . Tooth fragments of domesticated cow and sheep, or goat.

Decoration . . . . . None

Comments . . . . . Burial pit located near center of grave. Preservation was extremely poor. None of the cranium remained nor could any of the long bones be identified. As such, the burial orientation could not be reconstructed.

Grave 30

Diameter 1.5m

Depth, total 1.5m

Depth, horizontal slabs 7m

Depth, burial pit 8m

Vertical slabs, average size . . .7m

Range . . . . . .55 - .85m

Average size above surface . .08m

Range . . . . . 0 - .2m

Location of largest slab . . None

Total weight . . . . . 1.28 tons

Sex . . . . . Male

Age . . . . . Young adult

Orientation	0°	
Position	Flexed, on back, facing east	
Flexure	Right	Left
Shoulder	30°	20°
Elbow	Missing	20°
Hip	Missing	Missing
Knee	15°	Missing

Grave furniture . . . . . None

Artifacts in fill . . . . . Number of small rounded ignious rocks (Turkana gaming pieces) found within top .1m. Tooth fragments of domesticated cow and sheep and/or goat.

Decoration . . . . . None

Comments . . . . . Very small but relatively deep grave. The horizontal slab layer consisted of relatively few slabs, but all the slabs were much larger than the size generally encountered in other graves. The preservation was fair with a number of cranial measurements taken in the field. The burial pit was in the center of the grave.

Grave 31

Diameter 1.6m

Depth, total 1.5m

Depth, horizontal slabs 8m

Depth, burial pit 7m

Vertical slabs, average size . . .55m

Range . . . . . .35 - .7m

Average size above surface . .08m

Range . . . . . .02 - .15m

Location of largest slab . . None

Total weight . . . . . 1.28 tons

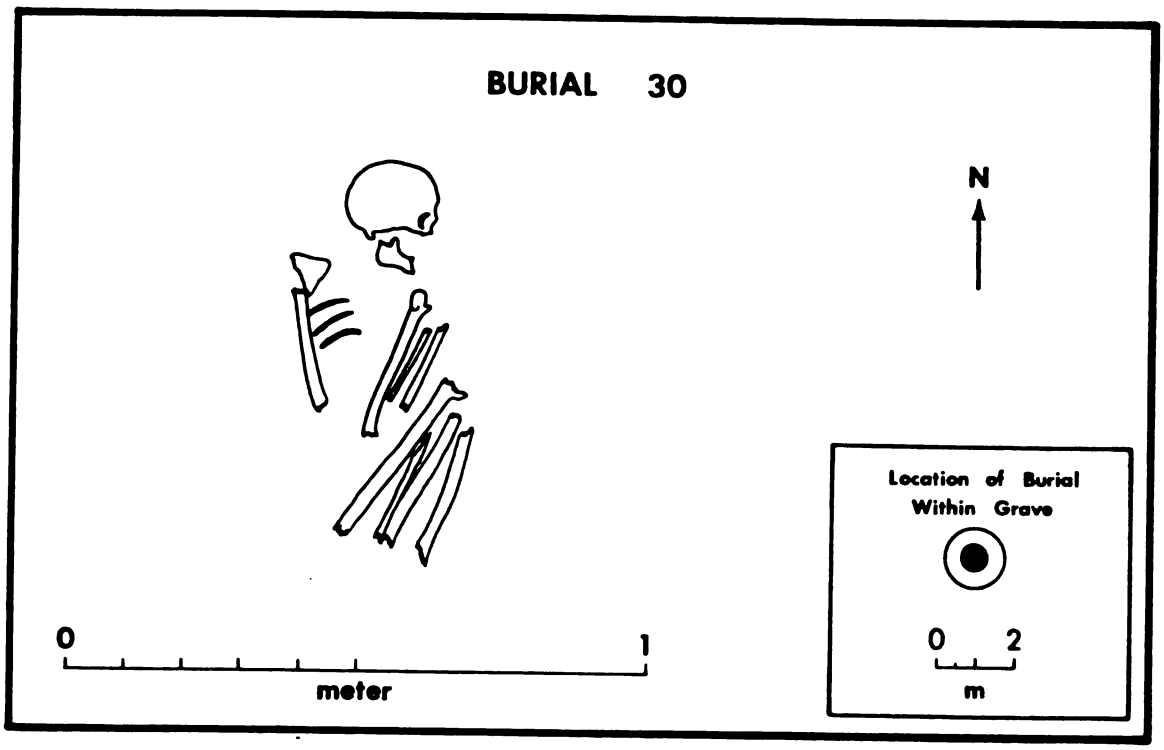
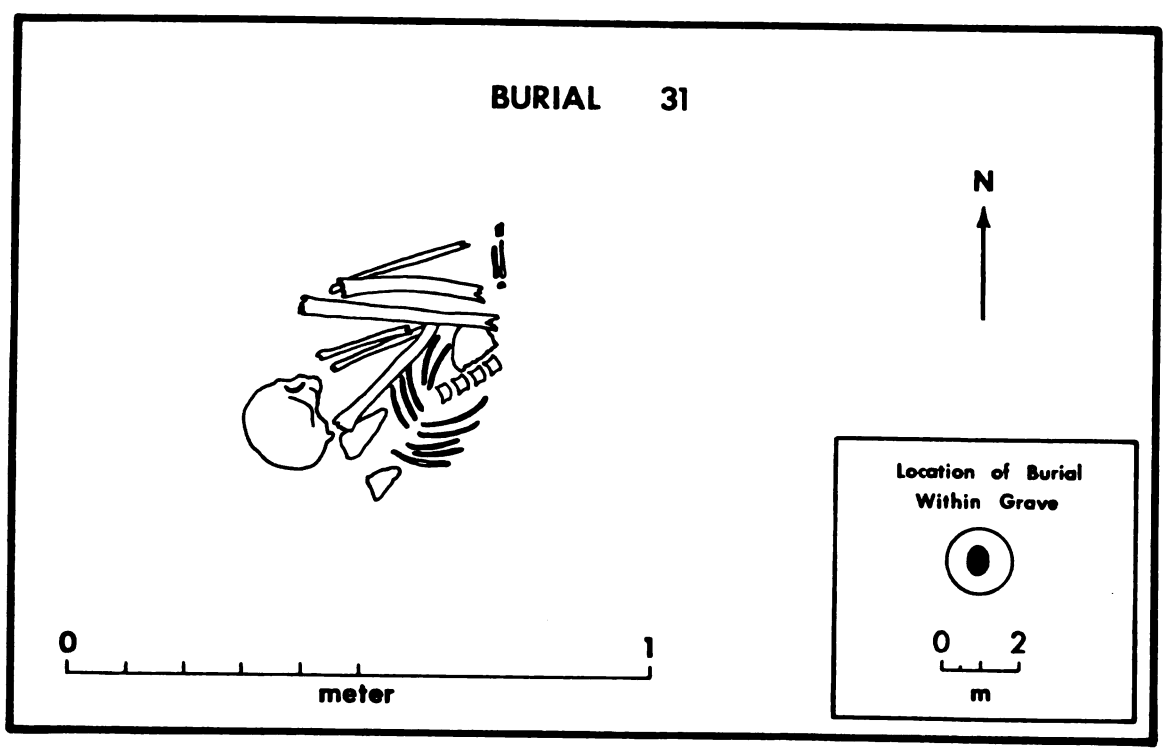

BURIAL 30
N
Location of Burial Within Grave
0 2
m
0
1
meter

Figure 60


BURIAL 31
N
Location of Burial Within Grave
0 2
m
0
1
meter

Sex . . . . . ?

Age . . . . . Child

Orientation . . . . . 170°

Position . . . . . Flexed, on stomach, facing north

Flexure	Right	Left
Shoulder	30°	Missing
Elbow	45°	Missing
Hip	60°	Missing
Knee	5°	Missing

Grave furniture . . . . . None

Artifacts in fill . . . . . One chert flake in top .1m; one percoir drill at .5m; tooth fragments of domesticated cow and sheep and/or goat.

Decoration . . . . . None

Comments . . . . . The preservation of burial 31 was fair. This grave much like Cn° 30 was small but relatively deep. The burial pit was deep and straight sided and was located in the center of the grave. There appear to be no vertical slabs for a portion of the western edge of the grave.

Grave 32

Diameter 2.2m

Depth, total 1.5m

Depth, horizontal slabs 1.0m

Depth, burial pit 5m

Vertical slabs average size . . Missing

Range . . . . . Missing

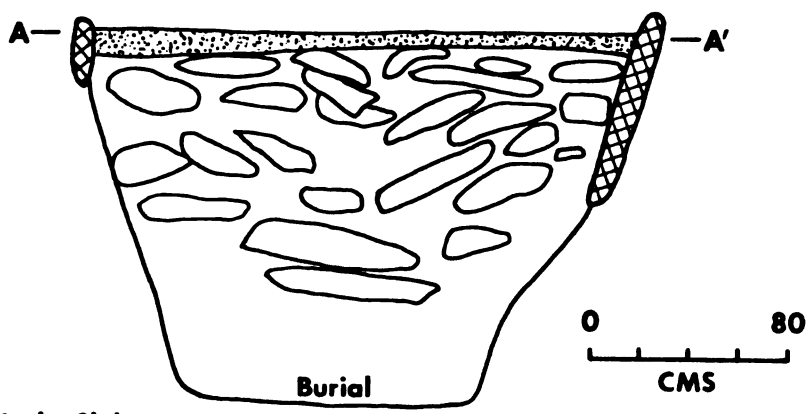
Average size above surface . Missing

Range . . . . . Missing

PLAN VIEW

Grave 32

PROFILE



Vertical Slabs

Windblown Sand

Figure 61

Location of largest slab . . West

Total weight . . . . . 3.94 tons

Sex . . . . . Male

Age . . . . . Young adult

Orientation . . . . . 272°

Position . . . . . Flexed, on left side, facing northeast.

Flexure	Right	Left
Shoulder	45°	Missing
Elbow	85°	Missing
Hip	45°	45°
Knee	10°	6°

Grave furniture . . . . . None

Artifacts in fill . . . . . 3 large lava scrapers, tooth fragments of domesticated cow and sheep and/or goat.

Decoration	Location on Cairn		Direction Facing
		SE	NW
	*	W	E
	(2)*	W	E
	*	W	E
	(2)*	W	E
	*	W	E

Comments . . . . . Burial pit in northeast portion of grave. Dimensions of vertical slabs not recorded in the field. Unlike most other graves Cn° 32 contained 2 very large (300 pounds +) slabs immediately over burial pit. The preservation of 32 was fair.

*All on same rock surface.

Grave 37

Diameter	1.8m	
Depth, total	1.4m	
Depth, horizontal slabs	.8m	
Depth, burial pit	.6m	
Vertical slabs, average size	.7m	
Range	.55 - .9m	
Average size above surface	.08m	
Range	0 - .15m	
Location of largest slab	None	
Total weight	2.11 tons	
Sex	Female	
Age	Middle adult	
Orientation	10°	
Position	Flexed, on left side, facing SE	
Flexure	Right	Left
Shoulder	60°	120°
Elbow	15°	45°
Hip	55°	45°
Knee	45°	45°

Grave furniture . . . . . Fragments of a large clay platter?, grit tempered about 4 cm thick were found throughout the burial pit. Its position would not suggest an intentional grave offering.

Artifacts in fill . . . . . Chert core, 3 chert flakes and one chert scraper; fragments of domesticated cow and sheep and/or goat; one large lava flake with edge retouch.

Decoration . . . . . None

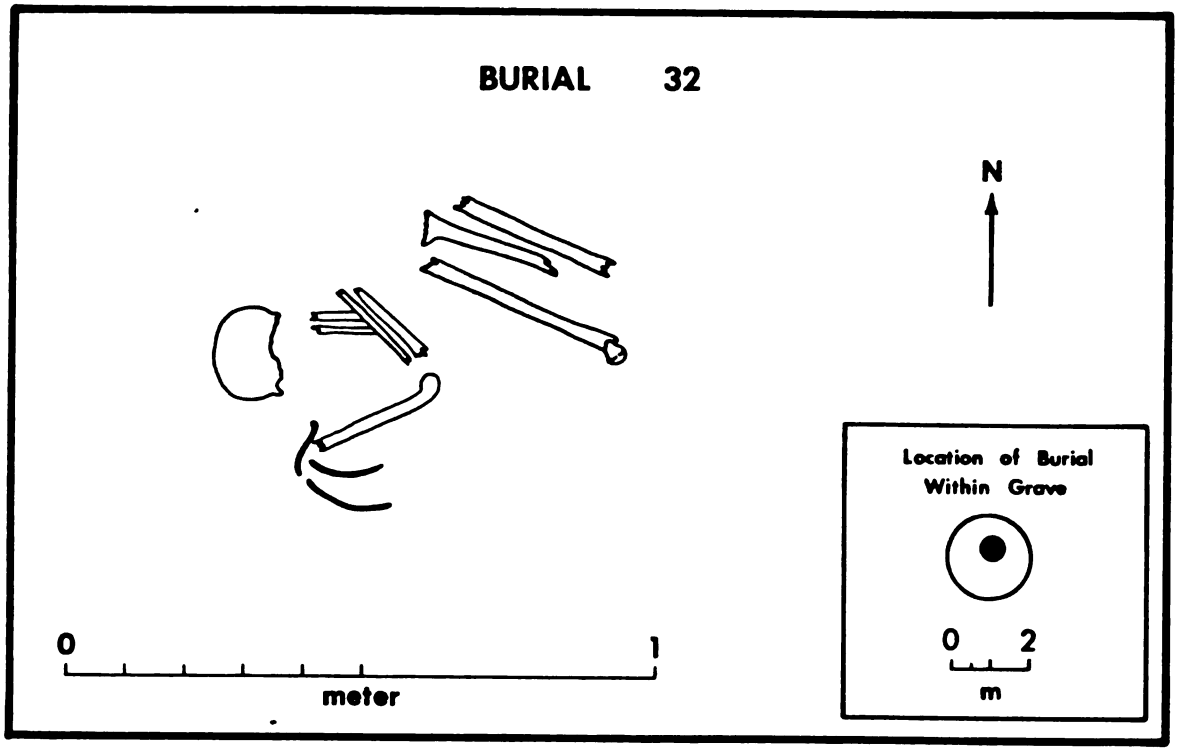
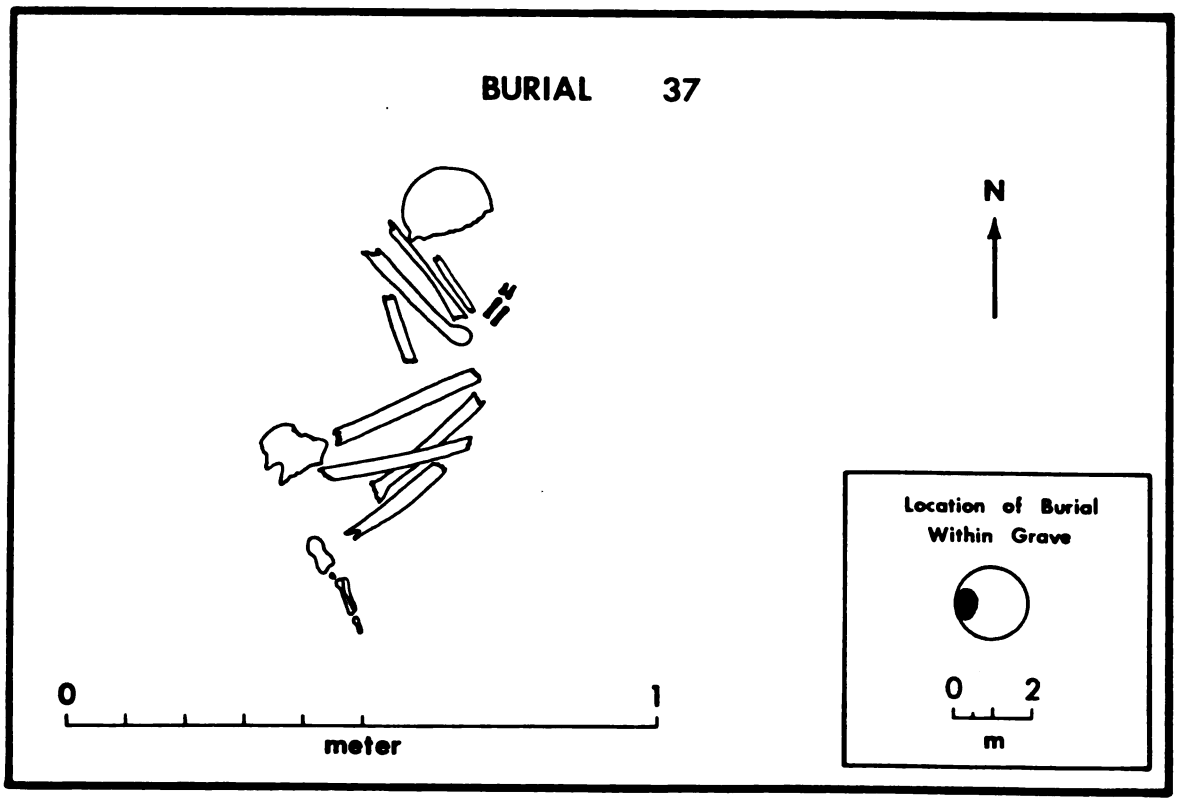

BURIAL 32
N
Location of Burial
Within Grave
0 2
m
0
1
meter

Figure 62


BURIAL 37
N
Location of Burial
Within Grave
0 2
m
0
1
meter

Comments . . . . . The preservation of this individual was fair with the right arm flexed over the face. The burial pit itself was located in the extreme western portion of the grave. Part of the burial pit actually undercut the standing vertical slabs on the west half of the grave.

Grave 39

Diameter	2.2m	
Depth, total	1.3m	
Depth, horizontal slabs	.6m	
Depth, burial pit	.7m	
Vertical slabs, average size . .	.5m	
Range	.4 - .7m	
Average size above surface .	.18m	
Range	.05 - .20m	
Location of largest slab . .	None	
Total weight	2.36 tons	
Sex	?	
Age	?	
Orientation	?	
Flexure	Right	Left
Shoulder	Missing	Missing
Elbow	Missing	Missing
Hip	Missing	Missing
Knee	Missing	Missing
Grave furniture	None	

Artifacts in fill . . . . . Small quartzite core near surface; tooth fragments of domesticated cow and sheep and/or goat.

Decoration . . . . . None

Comments . . . . . Burial pit near center of grave. Preservation was so poor that no bones could be identified.

Grave 41

Diameter 3.4m

Depth, total 1.4m

Depth, horizontal slabs 8m

Depth, burial pit 6m

Vertical slabs, average size . . .95m

Range . . . . . .7 - 1.3m

Average size above surface . .48m

Range . . . . . .2 - .9m

Location of largest slab . . East

Total weight . . . . . 6.59 tons

Sex . . . . . Male ?

Age . . . . . ?

Orientation . . . . . 190°

Position . . . . . Flexed, on stomach, facing west

Flexure	Right	Left
Shoulder	90°	Missing
Elbow	20°	Missing
Hip	20°	Missing
Knee	5°	Missing

Grave furniture . . . . . None

Artifact in fill . . . . . Several undecorated sherds of recent Turkana pot; several small rounded ignious rocks

(just below surface); tooth fragments of domesticated cow and sheep and/or goat; three chert flakes, two with utilization; one chert core.

Decorations	Location on Cairn		Direction Facing
		SE	SE
		N	S
	*	N	S
	*	N	S
	**	SE	NW
	**	SE	NW

Comments . . . . . Preservation was extremely poor making any age determination impossible and making the sex identification highly tentative. The large size and decorations on the cairn, however, would tend to support the contention that Cn° 41 was a male. The burial pit was located in almost the exact center of the grave. All the pot sherds and lithic items found were all located within the top 30 cm of the horizontal slab layer. The rounded ignious rocks were identified by the local Turkana as "gaming pieces."

*On same rock surface. **On same rock surface.

Grave 45

Diameter	2.4m
Depth, total	1.8m
Depth, horizontal slabs . . .	1.0m
Depth, burial pit	.8m
Vertical slabs, average size . .	1.0m
Range	.6 - 1.5m
Average size above surface .	.3m
Range	.1 - .65m
Location of largest slab . .	NE
Total weight	4.69 tons

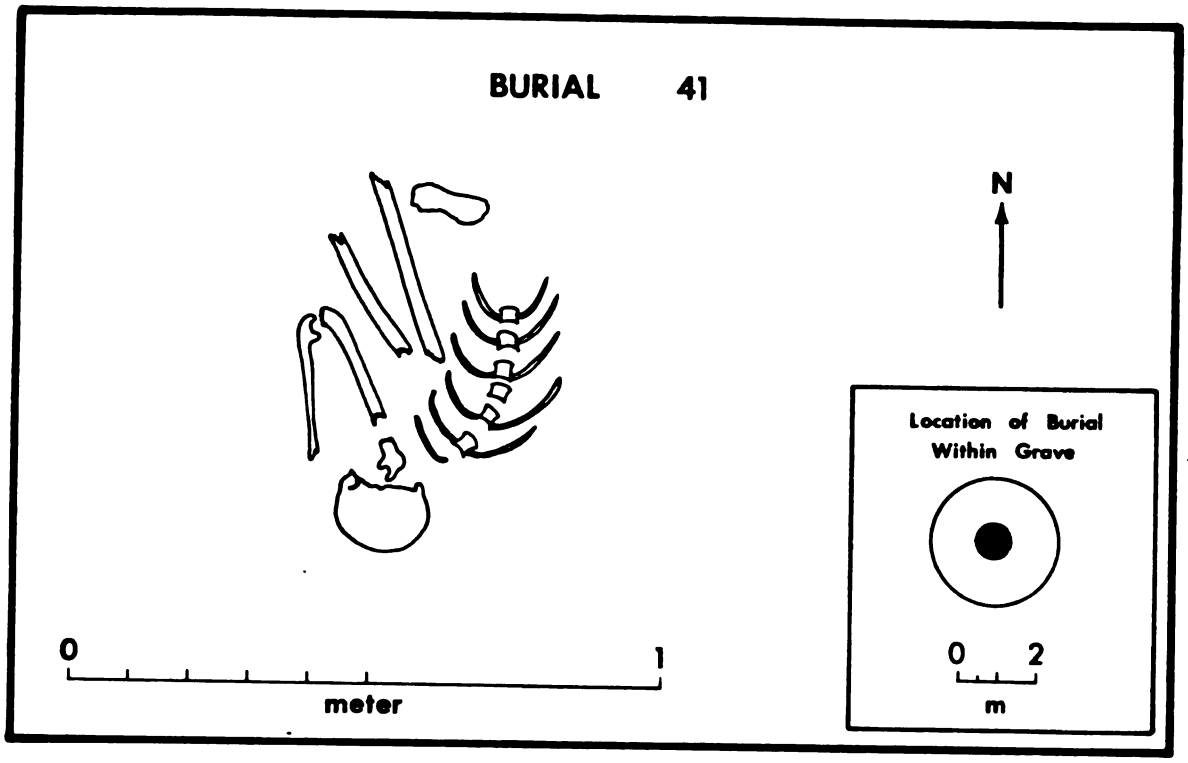
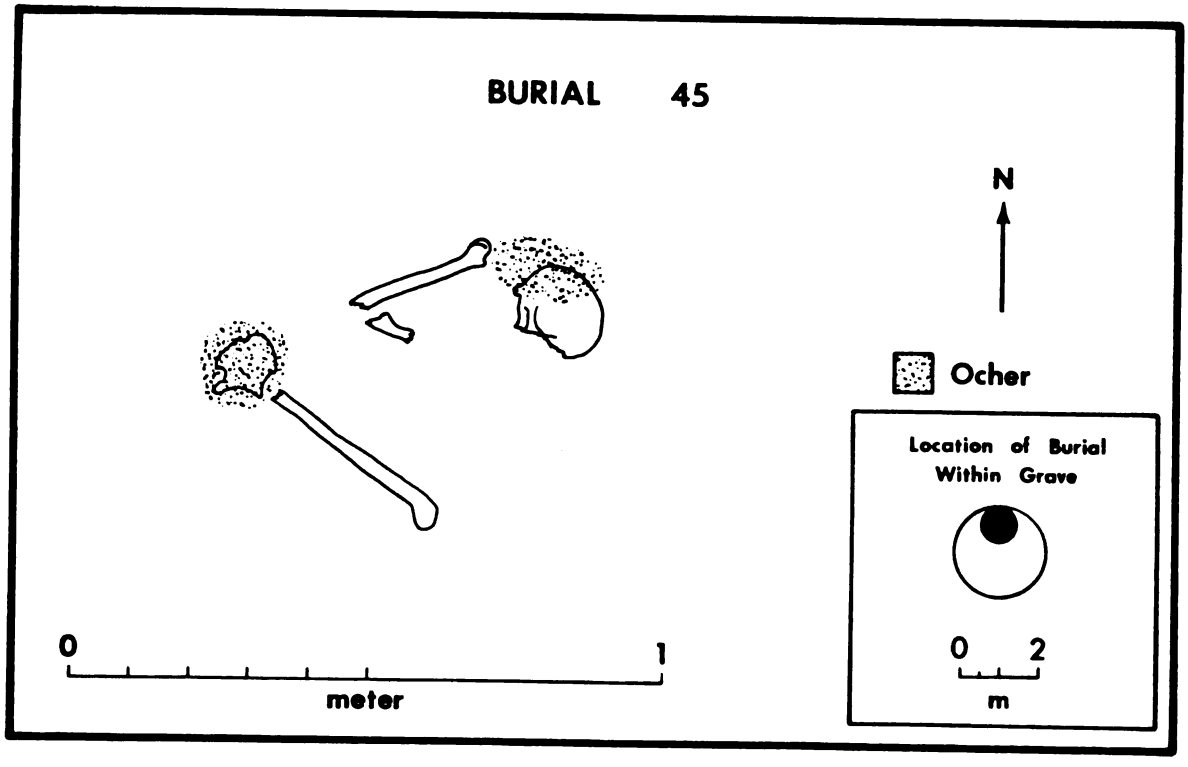

BURIAL 41
N
Location of Burial
Within Grave
0
2
m
0
1
meter

Figure 63


BURIAL 45
N
Ocher
Location of Burial
Within Grave
0
2
m
0
1
meter

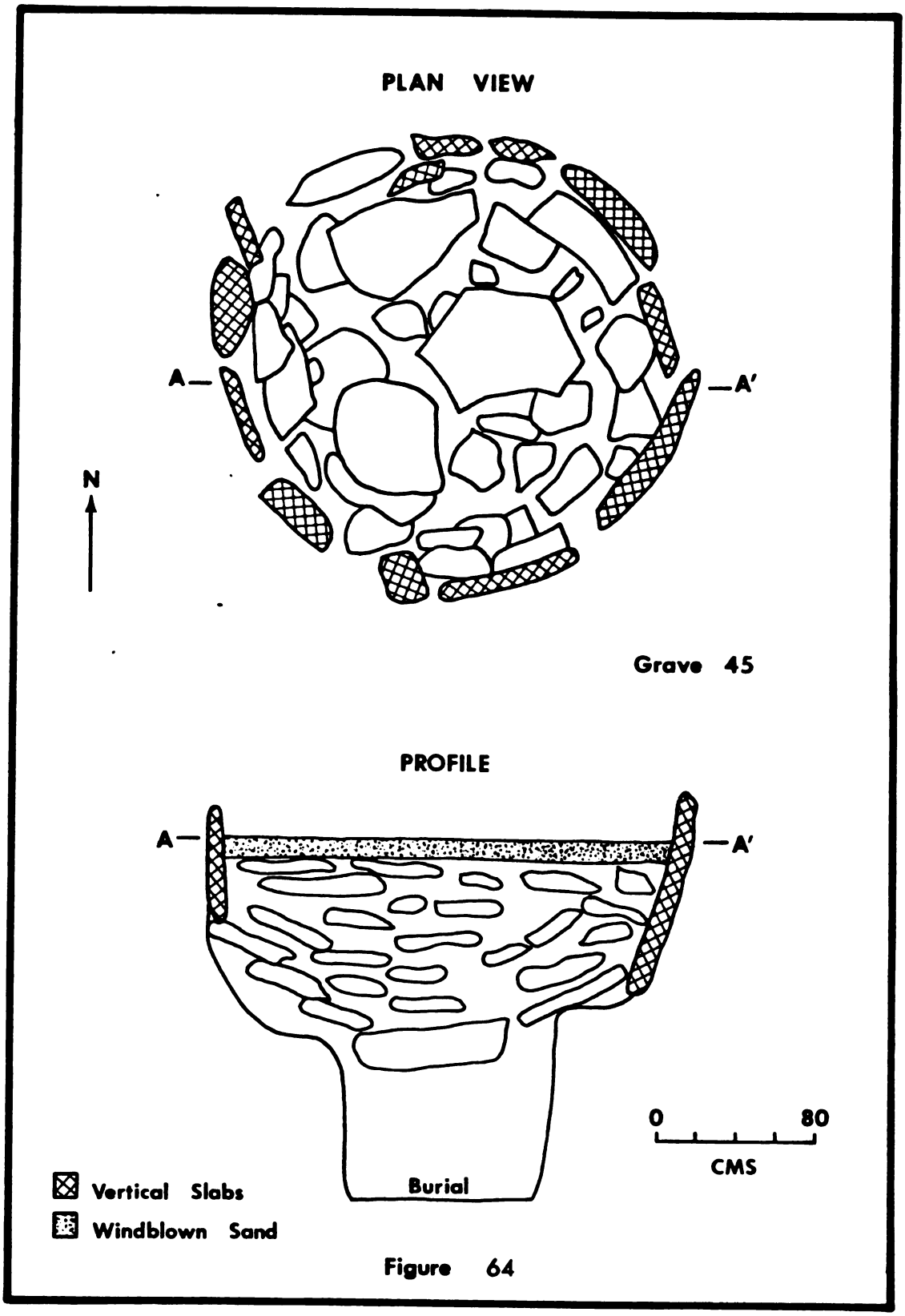

PLAN VIEW
A—
—A'
N
Grave 45
PROFILE
A—
—A'
0
80
CMS
Burial
Vertical Slabs
Windblown Sand

Figure 64

Sex . . . . . Male

Age . . . . . Adult

Orientation . . . . . 85°

Position . . . . . Flexed, on left side, facing south

Flexure	Right	Left
Shoulder	10°	Missing
Elbow	55°	Missing
Hip	Missing	Missing
Knee	Missing	Missing

Grave furniture . . . . . Red ochre near skull and over region of feet.

Artifacts in fill. . . . . Two chert flakes at depth of .75m; tooth fragments of domesticated cow and sheep or goat; one chalcedony flake at .5m and one obsidian flake at depth of .4m.

Decoration . . . . . None

Comments . . . . . The thorax was not preserved and only one femur remained from the legs. It is assumed than 45 was an adult on the basis of longbone length. The burial was in the extreme north half of the grave and was covered by a stone slab weighing 300+ pounds.

Grave 46

Diameter 4.4m

Depth, total 1.6m

Depth, horizontal slabs 8m

Depth, burial pit 8m

Vertical slabs, average size . . .75m

Range . . . . . .4 - 1.1m

Average size above surface . .4m

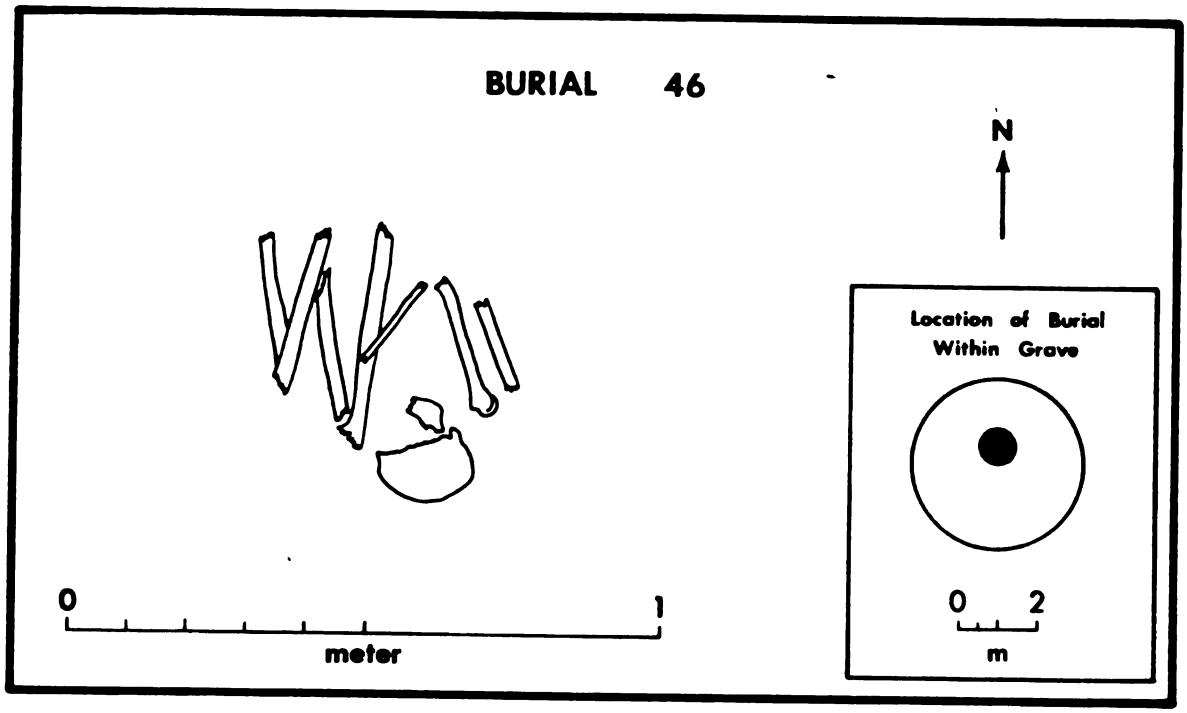
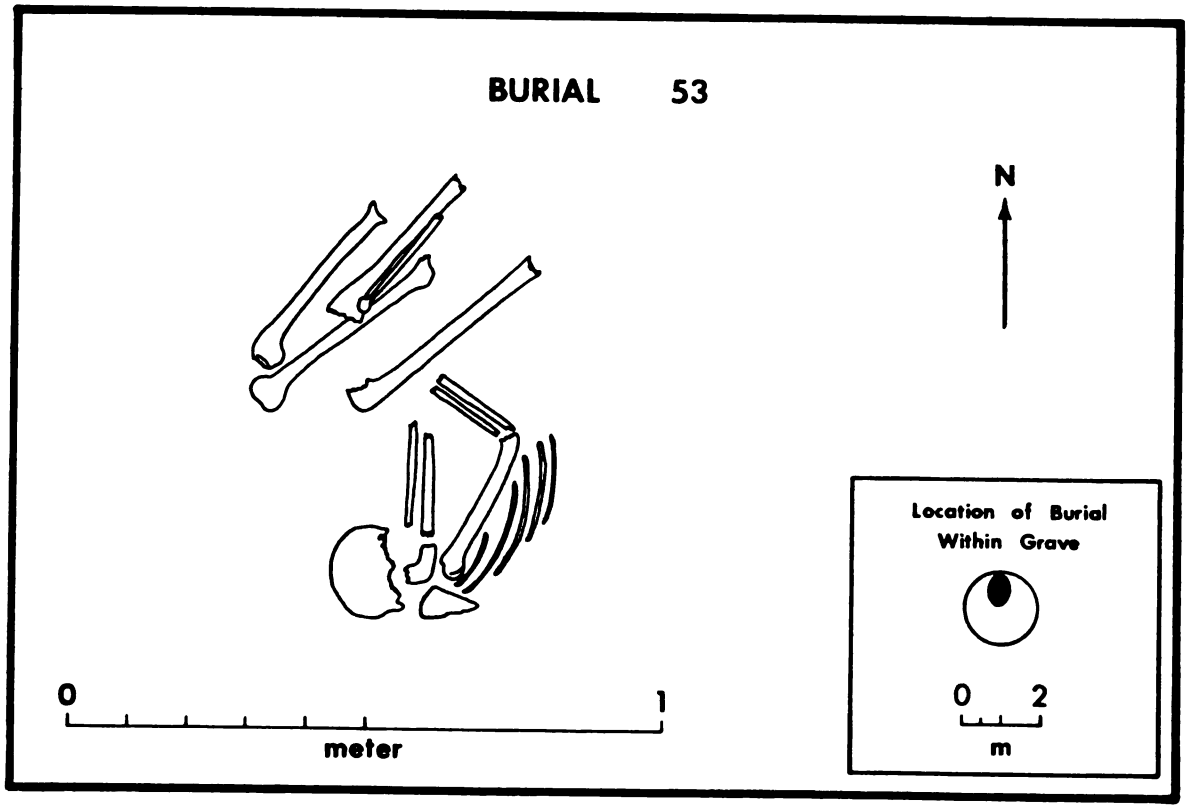

BURIAL 46
N
Location of Burial
Within Grave
0
1
meter
0
2
m

Figure 65


BURIAL 53
N
Location of Burial
Within Grave
0
1
meter
0
2
m

Range . . . . . .2 - .70m

Location of largest slab . . SE

Total weight . . . . . 5.78 tons

Sex . . . . . Male

Age . . . . . Adult ?

Orientation . . . . . 175°

Position . . . . . Flexed, on left side, facing west

Flexure	Right	Left
Shoulder	60°	60°
Elbow	45°	Missing
Hip	30°	30°
Knee	45°	15°

Grave furniture . . . . . None

Artifacts in fill . . . . . One chert scraper, one chert core, one quartzite flake (all in horizontal slab layer); tooth fragments of domesticated cow and sheep and/or goat.

Decoration	Location on Cairn	Direction Facing
	W	W
 '	SW	NE
 '	SW	NE

' both on same rock surface

Comments . . . . . The preservation of 46 was poor. Only the long bones and skull remained. The burial pit was covered by an extremely large stone slab (ca. 500 pounds).

Grave 53

Diameter 1.8m

Depth, total 1.4m

Depth, horizontal slabs 8m

Depth, burial pit 6m

Vertical slabs, average size . . .7m

Range . . . . . .05 - .9m

Average above surface 13m

Range . . . . . .05 - .3m

Location of largest slab . . None

Total weight . . . . . 2.11 tons

Sex . . . . . Male

Age . . . . . Middle adult

Orientation . . . . . 182°

Position . . . . . Flexed, on left side, facing north

Flexure	Right	Left
Shoulder	30°	60°
Elbow	90°	Extended
Hip	55°	55°
Knee	10°	5°

Grave furniture . . . . . None

Artifacts in fill . . . . . Two sherds of undecorated pottery (recent Turkana); three chert flakes; the sherds and flakes located .3m from surface; tooth fragments of domesticated cow and sheep or goat.

Decoration . . . . . None

Comments . . . . . The burial exhibited fair preservation with the burial pit located in the north half of the grave. The left arm of 53 was extended beneath both flexed legs. A very large slab covered the burial pit (300+ pounds).

Grave 54

Diameter	2.0m	
Depth, total	1.6m	
Depth, horizontal slabs	.8m	
Depth, burial pit	.8m	
Vertical slabs, average size	.75m	
Range	.4 - 1.4m	
Average size above surface	.25m	
Range	.05 - .8m	
Location of largest slab	NE	
Total weight	2.6 tons	
Sex	Male	
Age	Young adult	
Orientation	185°	
Position	Flexed, on right side, facing east	
Flexure	Right	Left
Shoulder	45°	Missing
Elbow	Missing	Missing
Hip	35°	45°
Knee	55°	10°

Grave furniture . . . . . None

Artifacts in fill . . . . . Chert blade and obsidian flake within .1m of surface; one large lava scraper; one small quartzite bladelet core; tooth fragments of domesticated cow and sheep and/or goat.

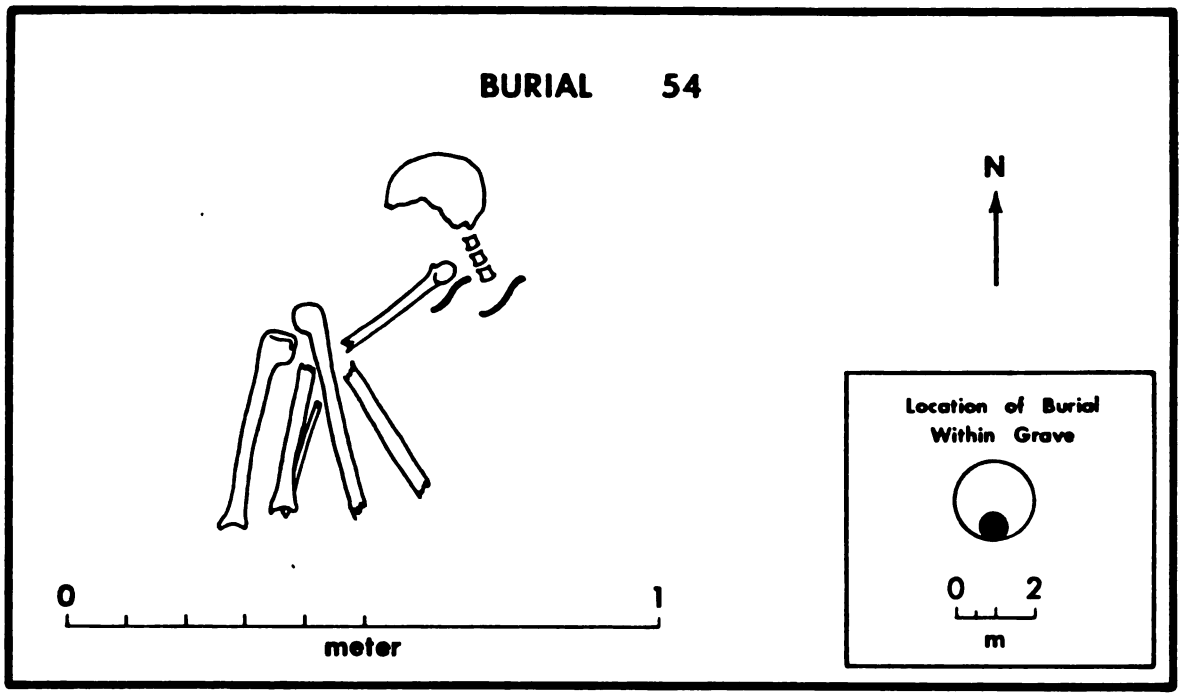
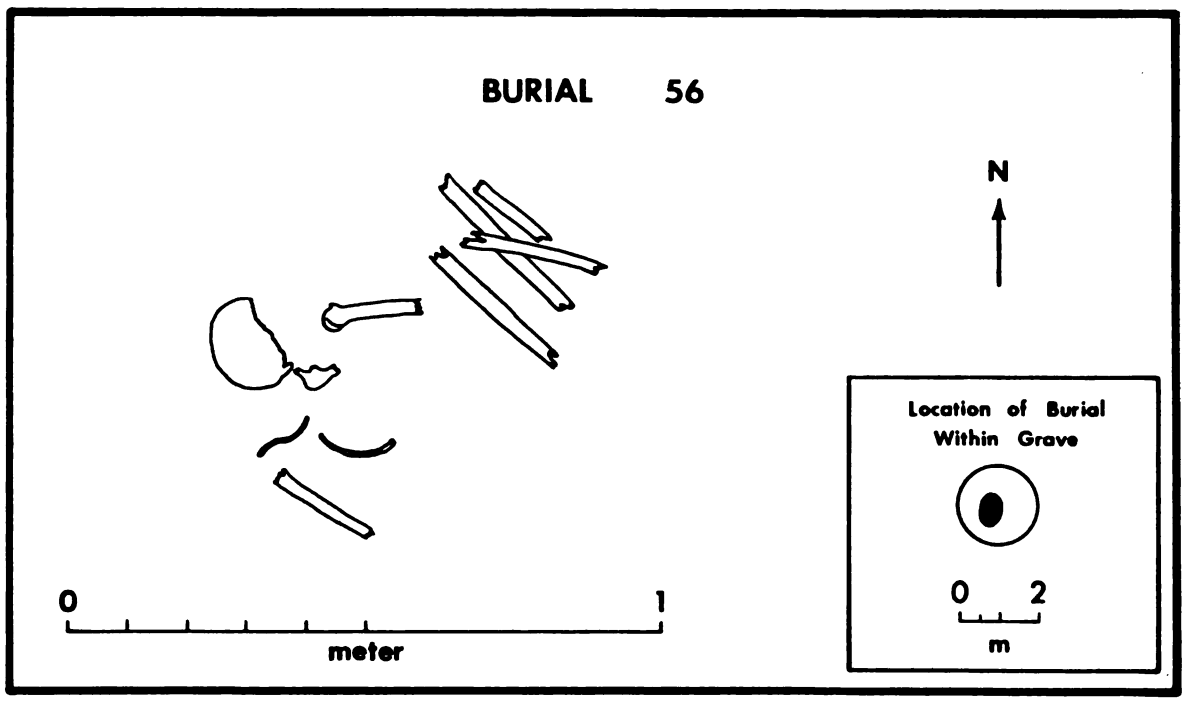

BURIAL 54
N
Location of Burial Within Grave
0 2
m
0
1
meter

Figure 66


BURIAL 56
N
Location of Burial Within Grave
0 2
m
0
1
meter

Decoration	Location on Cairn	Direction Facing
	N	S
	N	S
 '(2)	SE	NW
 '	SE	NW

Comments . . . . . The preservation of 54 was fair. However, the entire thorax region was missing. Burial 54 was the only individual interred on the right side. The burial pit was located in the extreme southern portion of the grave. The skull of 54 was actually under the vertical slab which marked the periphery of the grave. The vertical slabs in the NE were falling away from the center of the grave at a 30° angle.

' Located on same rock surface.

Grave 56

Diameter	2.0m
Depth, total	1.2m
Depth, horizontal slabs . . .	.6m
Depth, burial pit	.6m
Vertical slabs, average size . .	.7m
Range	.4 - .9m
Average size above surface .	.3m
Range	.2 - .4m
Location of largest slab . .	SW
Total weight	1.96 tons
Sex	?
Age	?
Orientation	260°
Position	Flexed, on back, facing NE

Flexure	Right	Left
Shoulder	30°	30°
Elbow	Missing	Missing
Hip	50°	55°
Knee	35°	50°

Grave furniture . . . . . None

Artifacts in fill . . . . . Small lava core; tooth fragments of domesticated cow and sheep and/or goat.

Decoration . . . . . None

Comments . . . . . The burial pit was in SW portion of grave. Preservation was extremely poor precluding any age or sex estimation. The grave had one extremely large slab covering the burial pit (c.a. 500 pounds). The west half of the circle of standing slabs was falling away from the center of the grave at 45° angle.

Grave 60

Diameter 2.2m

Depth, total 1.0m

Depth, horizontal slabs 6m

Depth, burial pit 4m

Vertical slabs, average size . . .7m

Range . . . . . .4 - 1.0m

Average size above surface . .4m

Range . . . . . .1 - 1.0m

Location of largest slab . . East

Total weight . . . . . 2.3 tons

Sex . . . . . ?

Age . . . . . ?

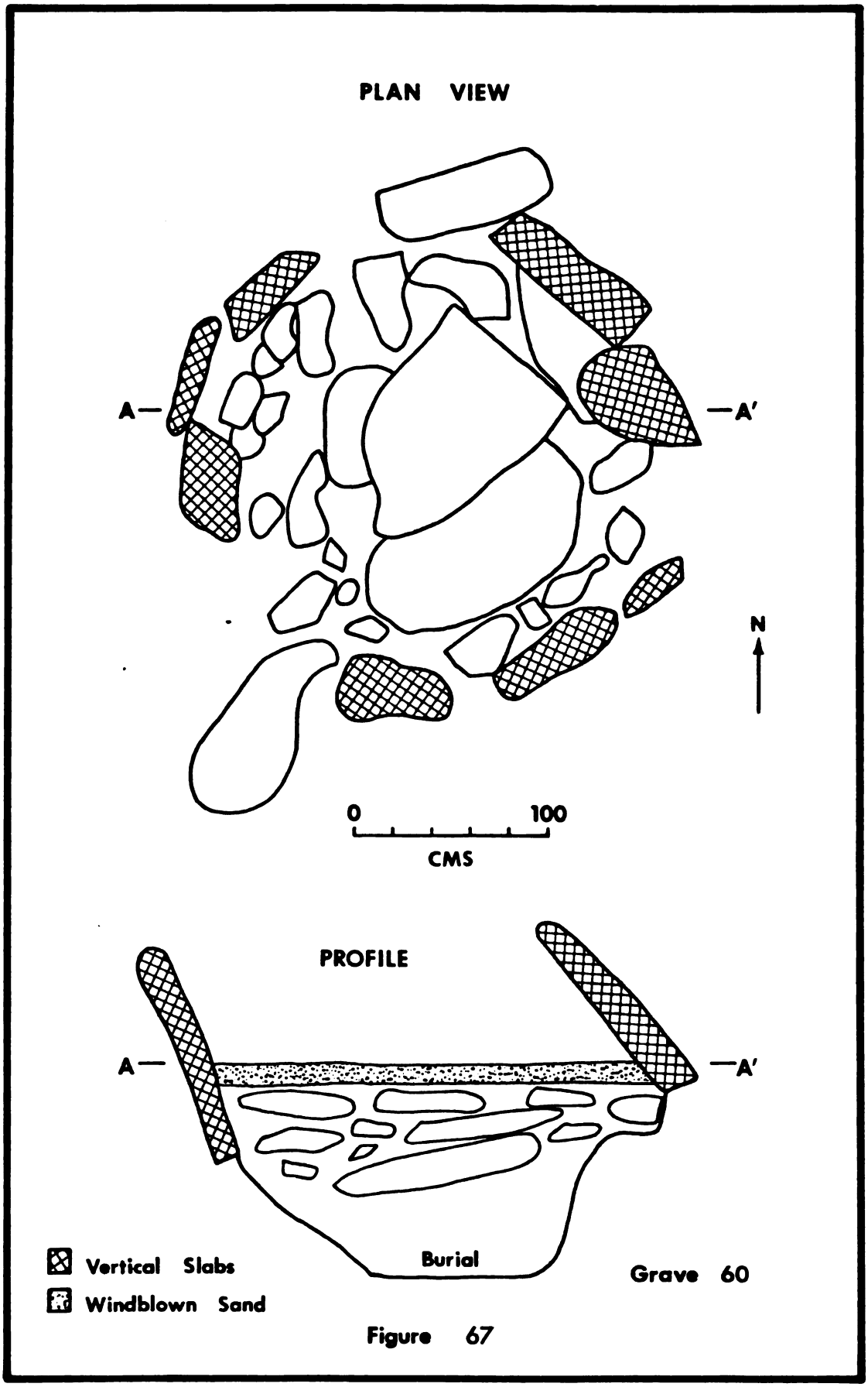

PLAN VIEW
A—
—A'
N
0
100
CMS
PROFILE
A—
—A'
Vertical Slabs
Windblown Sand
Burial
Grave 60

Figure 67

Orientation . . . . . East ?

Position . . . . . Flexed, on left side ?

Flexure	Right	Left
Shoulder	Missing	Missing
Elbow	Missing	Missing
Hip	Missing	Missing
Knee	Missing	Missing

Grave furniture . . . . . Small obsidian flake in burial pit, most likely not an intentional grave offering.

Artifacts in fill . . . . . Nine small pieces of iron slag were found just below the surface. This likely post dates grave construction. Within top .3m of horizontal slab layer two chert flakes were found. Tooth fragments of domesticated cow and sheep and/or goat found throughout grave.

Decoration	Location on Cairn		Direction Facing
	'	NNE	SW
	'	NNE	SW
	'	NNE	SW
	2	NE	SW
	2	NE	NE

Comments . . . . . The burial pit was located in the center of grave. Almost no skeletal remains were found, thus age and sex could not be determined. The orientation suggested is also highly tentative. The grave was filled with slabs which were much larger than those found in other graves. Several of the slabs in the horizontal layer weighed well over 300 pounds. The vertical slabs were leaning in toward the center of the grave on the east half of the grave at approximately a 30° angle. The vertical slabs on the west half of the grave were leaning away from the center of the grave at approximately a 30° angle.

' On same rock surface

2 On same rock but on different surface.

Grave 65

Diameter	2.0m	
Depth, total	1.4m	
Depth, horizontal slab	1.2m	
Depth, burial pit	.2m	
Vertical slabs, average size	.6m	
Range	.4 - .8m	
Average size above surface	.12m	
Range	0 - .4m	
Location of largest slab	SW	
Total weight	3.5 tons	
Sex	?	
Age	Child ?	
Orientation	180° ?	
Position	Flexed, on left side	
Flexure	Right	Left
Shoulder	Missing	Missing
Elbow	Missing	Missing
Hip	45°	45°
Knee	Missing	Missing

Grave furniture . . . . . Tooth fragments of domesticated cow and sheep and/or goat in burial pit but probably not grave offering as such.

Artifacts in fill . . . . . Tooth fragments of domesticated cow and sheep and/or goat.

Decoration . . . . . None

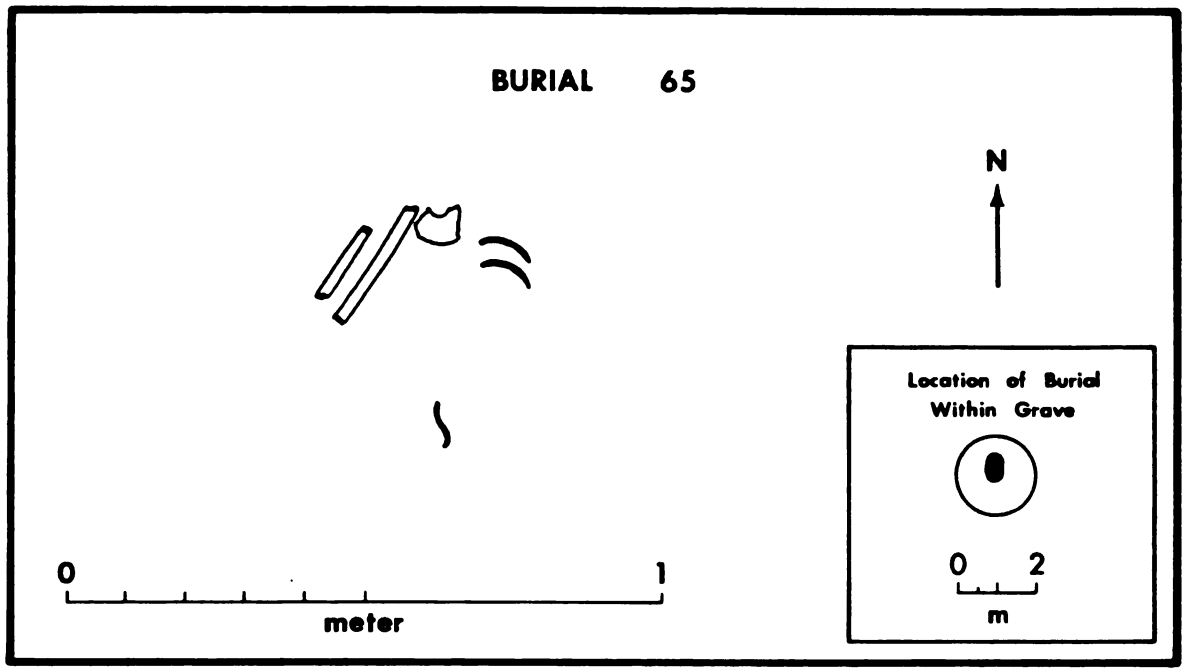
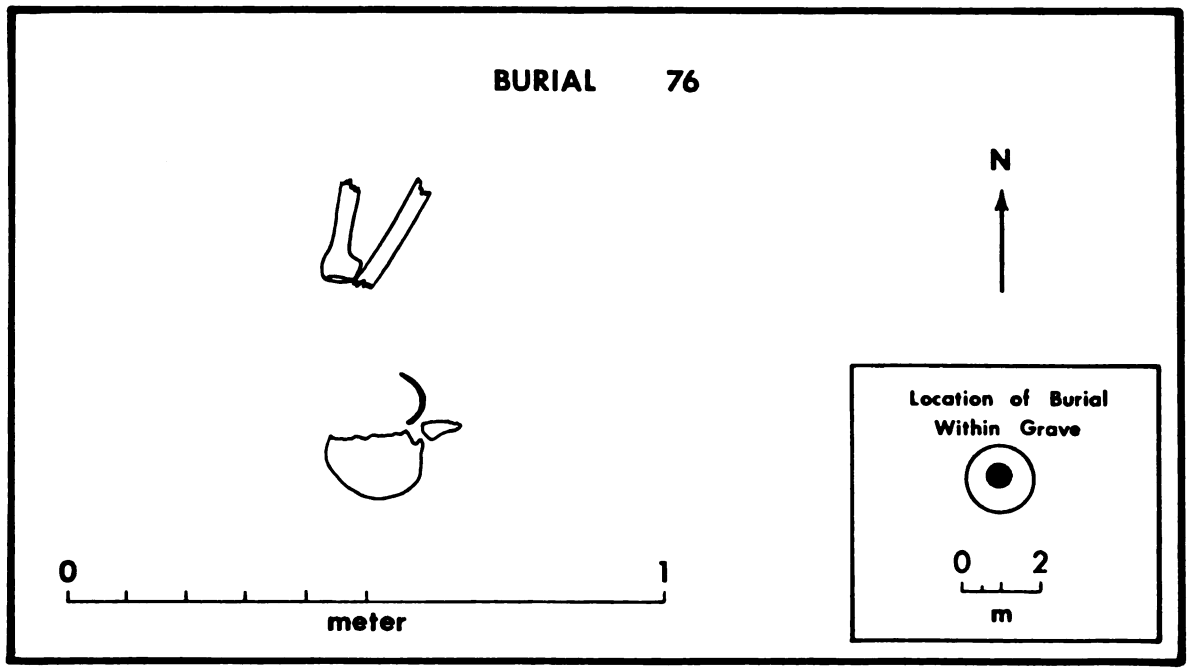

BURIAL 65
N
Location of Burial Within Grave
0 2
m
0
1
meter

Figure 68


BURIAL 76
N
Location of Burial Within Grave
0 2
m
0
1
meter

Comments . . . . . Grave filled with large horizontal slabs for .6m. The following .3m was filled with small rocks, with the next .3m once again filled with large layered slabs. The burial pit for Cn° 65 was in the center of the grave but very shallow (.2m). Preservation was extremely poor. All that remained to indicate the position of the skull were two teeth.

Grave 76

Diameter	1.6m
Depth, total	1.3m
Depth, horizontal slabs . . .	.6m
Depth, burial pit	.7m
Vertical slabs, average size . .	.7m
Range	.45 - 1.0m
Average size above surface .	.08m
Range	0 - .15m
Location of largest slab . .	None
Total weight	1.88 tons
Sex	Female
Age	Young adult
Orientation	180°
Position	Flexed, on left side, facing northwest.

Flexure	Right	Left
Shoulder	Missing	Missing
Elbow	Missing	Missing
Hip	Missing	Missing
Knee	45°	Missing

Grave furniture . . . . . None

Artifacts in fill . . . . . Tooth fragments of domesticated cow and sheep and/or goat, small chert blade with edge utilization at depth of .7m

Decoration . . . . . None

Comments . . . . . This very poorly preserved individual was interred in the center of the grave. All that remained was the right leg and a very fragmentary skull. The grave was irregularly shaped with the usual circle shape being replaced by a straight line of vertical slabs in the northwest section of the grave. The surface of the horizontal slab layer was 20 cm below present ground surface. However, this may simply reflect recent wind deposits of sand in the area raising the original ground surface.

Grave 77

Diameter 1.7m

Depth, total 1.7m

Depth, horizontal slabs 8m

Depth, burial pit 9m

Vertical slabs, average size . . .6m

Range . . . . . .5 - .7m

Average size above surface . .12m

Range . . . . . .0 - .2m

Location of largest slab . . None

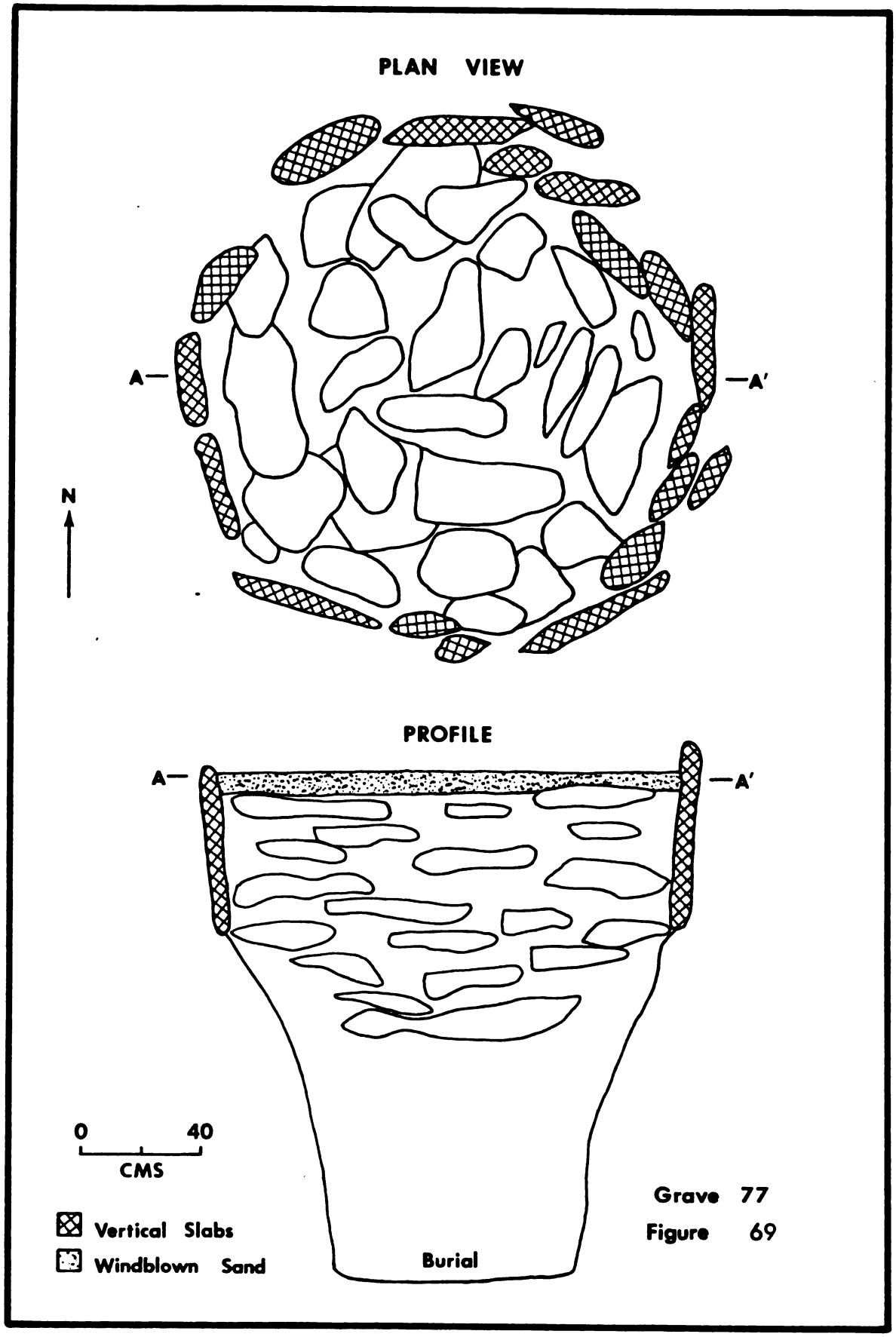
Total weight . . . . . 1.88 tons

Sex . . . . . Male

Age . . . . . Middle adult

Orientation . . . . . 180°

Position . . . . . Flexed, on back, facing west


PLAN VIEW
A—
—A'
N
PROFILE
A—
—A'
0
40
CMS
Vertical Slabs
Windblown Sand
Burial
Grave 77
Figure 69

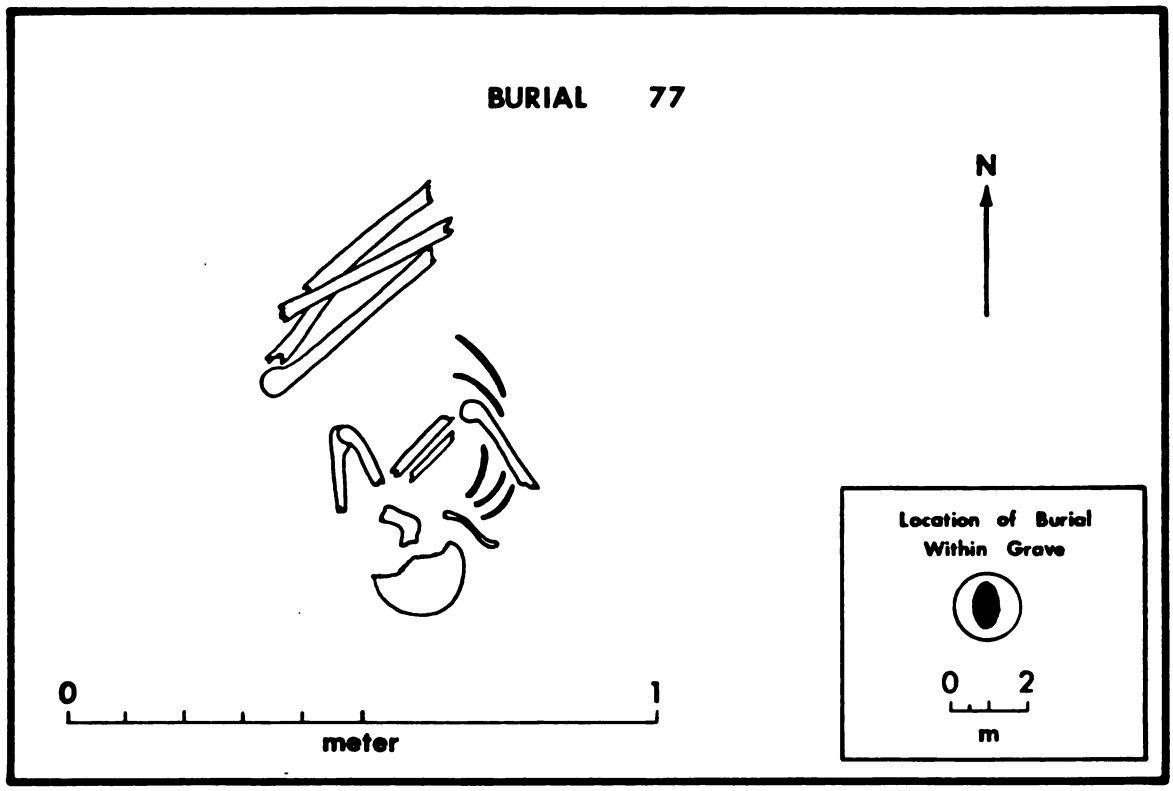
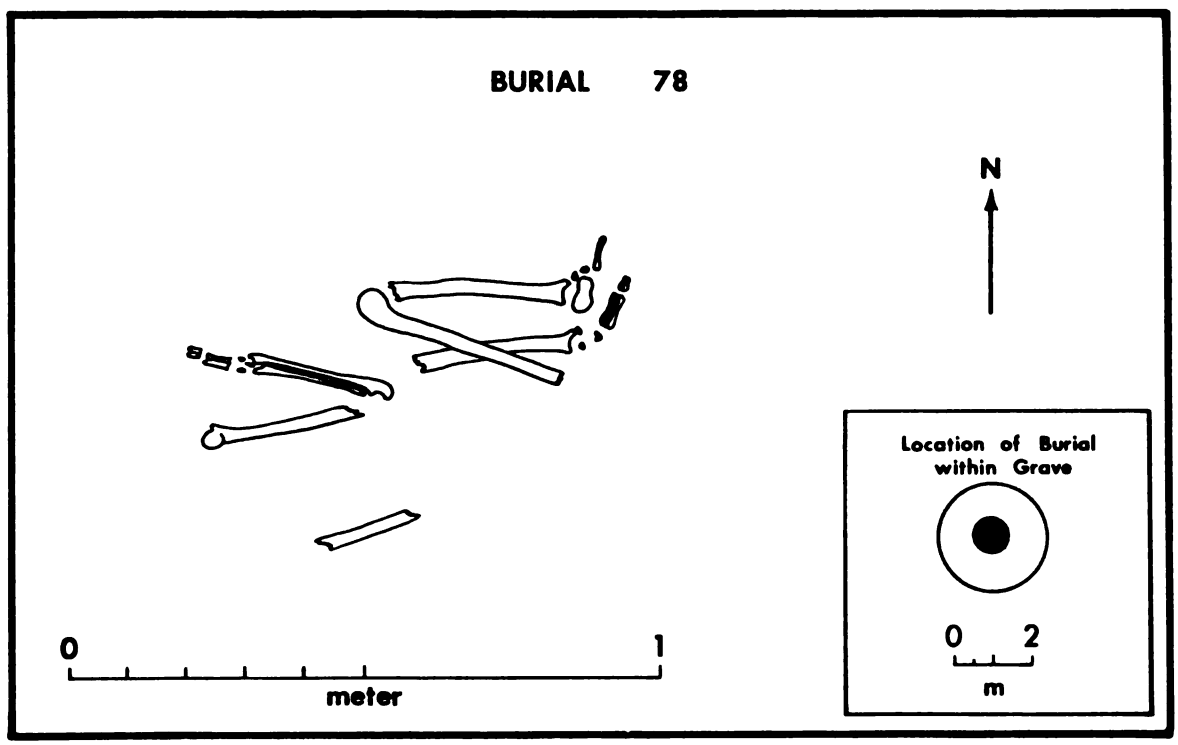

BURIAL 77
N
Location of Burial
Within Grave
0 2
m
0
1
meter

Figure 69


BURIAL 78
N
Location of Burial
within Grave
0 2
m
0
1
meter

Flexure	Right	Left
Shoulder	45°	30°
Elbow	75°	40°
Hip	85°	70°
Knee	5°	15°

Grave furniture . . . . . None

Artifacts in fill . . . . . Tooth fragments of domesticated cow and sheep and/or goat.

Decoration . . . . . None

Comments . . . . . The preservation of 77 was fair. The burial pit was located in the center of the grave and was the second deepest burial pit found at the site. The pit itself was covered by a large slab weighing 300+ pounds. The outer circle of vertical slabs had fallen away from the center of the grave in the southwest section at 30° to 60° angles.

Grave 78

Diameter 2.8m

Depth, total 1.7m

Depth, horizontal slabs . . . 1.0m

Depth, burial pit 7m

Vertical slabs, average size . . .9m

Range . . . . . .4 - 1.3m

Average size above surface . .15m

Range . . . . . 0 - .5m

Location of largest slab . . South

Total weight . . . . . 6.38 tons

Sex . . . . . ?

Age	Adult ?	
Orientation	270°	
Position	Flexed, on back, facing ?	
Flexure	Right	Left
Shoulder	Missing	Missing
Elbow	Missing	10°
Hip	35°	Missing
Knee	35°	Missing
Grave furniture	None	
Artifacts in fill	Tooth fragments of domesticated cow and sheep and/or goat.	
Decoration	None	
Comments	The preservation of 78 was extremely poor. The skull and thorax were entirely missing. Because of this it was impossible to age or sex 78. It seems likely that 78 is an adult due to long bone lengths. The burial pit was in the center of the grave and was covered by a single stone weighing approximately 300 pounds.	

Grave 79

Diameter	2.0m
Depth, total	1.4m
Depth, horizontal slabs	.9m
Depth, burial pit	.5m
Vertical slabs, average size	.7m
Range	.45 - .9m
Average size above surface	.1m
Range	.05m
Location of largest slab	None
Total weight	2.11 tons

Sex . . . . . Male

Age . . . . . Middle adult

Orientation . . . . . West

Position . . . . . Flexed, on stomach, facing ?

Flexure	Right	Left
Shoulder	10°	Missing
Elbow	5°	Extended
Hip	45°	Missing
Knee	10°	Missing

Grave furniture . . . . . None

Artifacts in fill . . . . . Tooth fragments of domesticated cow and sheep and/or goat; one pot sherd with groove design.

Decoration	Location on Cairn	Direction Facing
⊙	SE	SE

Comments . . . . . Left arm was extended under both legs. Preservation was extremely eratic; the preservation of the body was fair, but all that remained of the skull was part of the mandible and the right mastoid. The burial pit was situated in the east half of the grave. The outer circle of vertical slabs for 79 was 3 and 4 slabs deep in the west and north, a situation not found elsewhere.

Grave 82

Diameter 2.2m

Depth, total 1.8m

Depth, horizontal slabs 9m

Depth, burial pit 9m

Vertical slabs, average size . . .6m

Range . . . . . .45 - 1.10m

Average size above surface . .12m

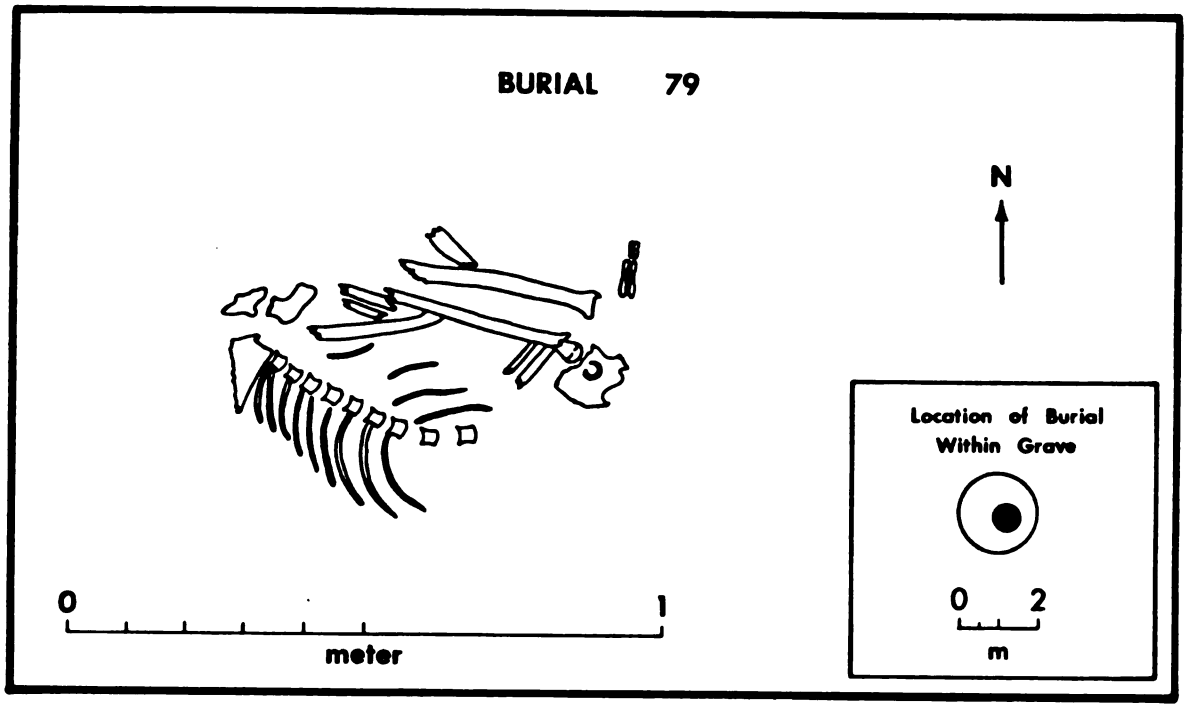
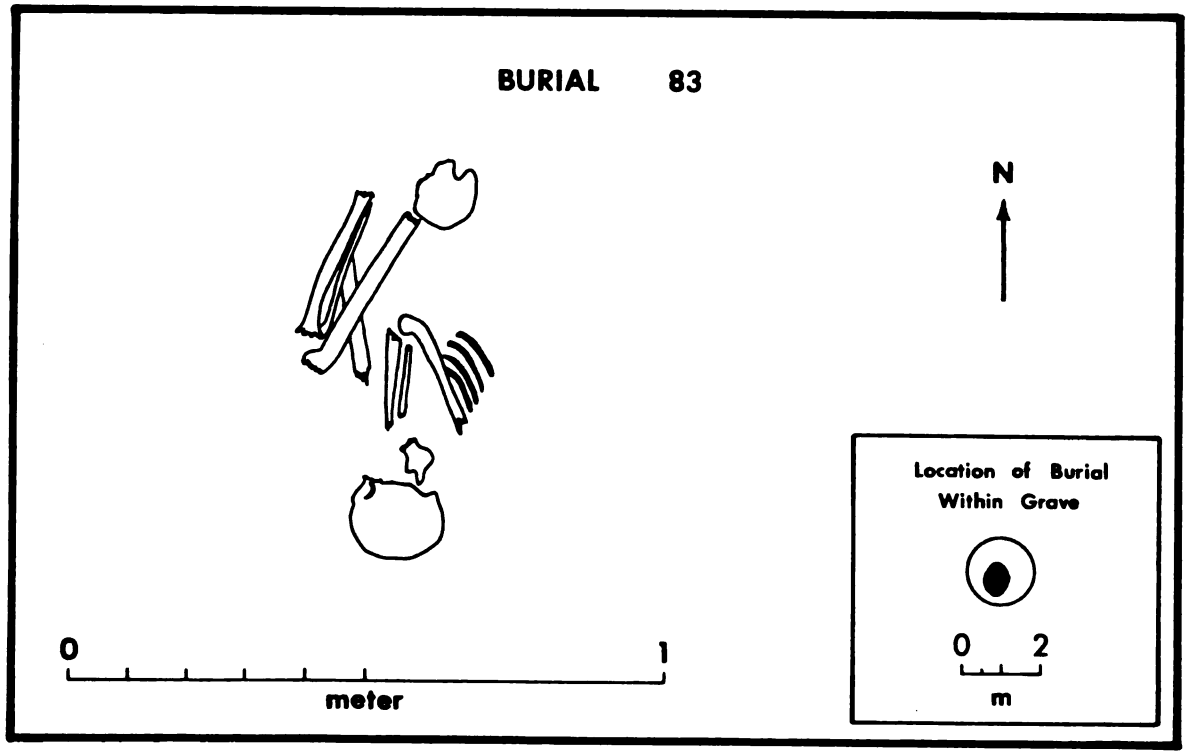

BURIAL 79
N
Location of Burial
Within Grave
0 2
m
0
1
meter

Figure 71


BURIAL 83
N
Location of Burial
Within Grave
0 2
m
0
1
meter

Range . . . . . .05 - .2m

Location of largest slab . . None

Total weight . . . . . 3.94 tons

Sex . . . . . Male

Age . . . . . Middle adult

Orientation . . . . . Bundle reburial

Position . . . . . Bundle reburial

Flexure . . . . . Bundle reburial

Grave furniture . . . . . None

Artifacts in fill . . . . . Four chert flakes, one had retouch; tooth fragments of domesticated cow and sheep and/or goat.

Decoration . . . . . None

Comments . . . . . The burial pit was in the center of the grave. The burial, which had fair preservation, appears to be a reburial. The burial consisted of the skull resting on top of the long bone, vertebrae and innominates. No bones were articulated nor were any hand or foot bones found. Also very few rib fragments were recovered. The only foot bones recovered were the talus and calcaneous from both feet. The possibility that preservation may account for the lack of these bones cannot be excluded. It would seem that 82 was interred elsewhere at least long enough for all of 82's flesh to decompose. Almost the entire skeleton was interred at the site. The only possible exception, as mentioned earlier, were the hands, feet and a number of ribs. This is the only reburial at the site. It is noteworthy that it belongs to a male and that the grave itself is one of the largest graves found at the site. Only one grave, 89, has a deeper burial pit.

Grave 83

Diameter 1.7m

Depth, total 1.7m

Depth, horizontal slabs . . . 1.0m

Depth, burial pit 7m

Vertical slabs average size . . .48m

Range . . . . . .3 - .7m

Average size above surface . .1m

Range . . . . . .05 - .2m

Location of largest slab . . None

Total weight . . . . . 1.25 tons

Sex . . . . . Male

Age . . . . . Young adult ?

Orientation . . . . . 182°

Position . . . . . Flexed, on left side, facing northwest.

Flexure	Right	Left
Shoulder	30°	Missing
Elbow	50°	Missing
Hip	45°	50°
Knee	0°	20°

Grave furniture . . . . . None

Artifacts in fill . . . . . Tooth fragments of domesticated cow and sheep and/or goat.

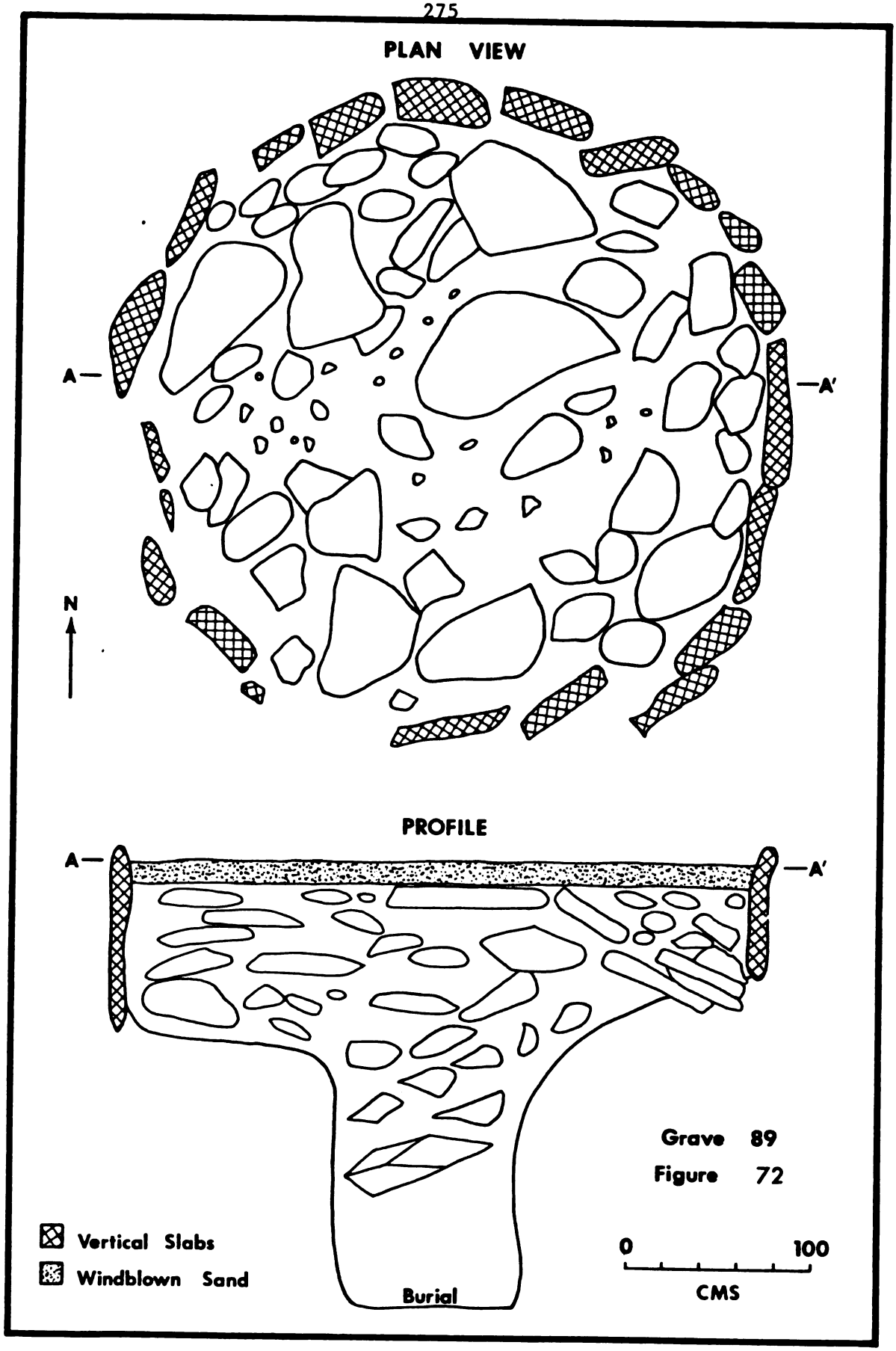
Decoration . . . . . None

Comments . . . . . The burial pit was in the south half of the grave. Unlike most other graves Cn 83 had a layer of about .5m of small rock fill immediately below the large slab layer and above the burial. The single very large slab which usually covered the burial pit was above this layer of small rock fill. Preservation was poor but several cranial measurements were taken in the field

(see Appendix B). These were somewhat limited, however, since the cranium was severely warped due to ground pressure.

Grave 89

Diameter	3.6m	
Depth, total	2.3m	
Depth, horizontal slabs	1.2m	
Depth, burial pit	1.1m	
Vertical slabs, average size	Missing	
Range	Missing	
Average size above surface	Missing	
Range	Missing	
Location of largest slab	Missing	
Total weight	10.56 tons	
Sex	Male	
Age	Middle adult	
Orientation	30°	
Position	Flexed, on left side, facing southeast.	
Flexure	Right	Left
Shoulder	45°	30°
Elbow	30°	Missing
Hip	85°	80°
Knee	10°	45°
Grave furniture	None	


PLAN VIEW
A—
—A'
N
PROFILE
A—
—A'
Vertical Slabs
Windblown Sand
Burial
Grave 89
Figure 72
0
100
CMS

Artifacts in fill . . . . . Tooth fragments of domesticated cow and sheep and/or goat; one plain pot sherd near surface (recent Turkana).

Decoration . . . . . None

Comments . . . . . The preservation was fair to poor. No cranial measurements were taken since the skull was badly wraped. The burial pit was in center of grave. This pit was the deepest encountered at the site. In terms of energy expenditure this grave was the largest at the site. The orientation of this individual shows the most variation (30°) off of one of the cardinal directions.

Grave 97

Diameter 1.9m

Depth, total 1.4m

Depth, horizontal slab 8m

Depth, burial pit 6m

Vertical slabs average size . . Missing

Range . . . . . Missing

Average size above surface . Missing

Range . . . . . Missing

Location of largest slab . . Missing

Total weight . . . . . 2.37 tons

Sex . . . . . ?

Age . . . . . Adult ?

Orientation . . . . . 187°

Position . . . . . Flexed, on left side, facing northwest ?

Flexure	Right	Left
Shoulder	45° ?	Missing
Elbow	45°	Missing

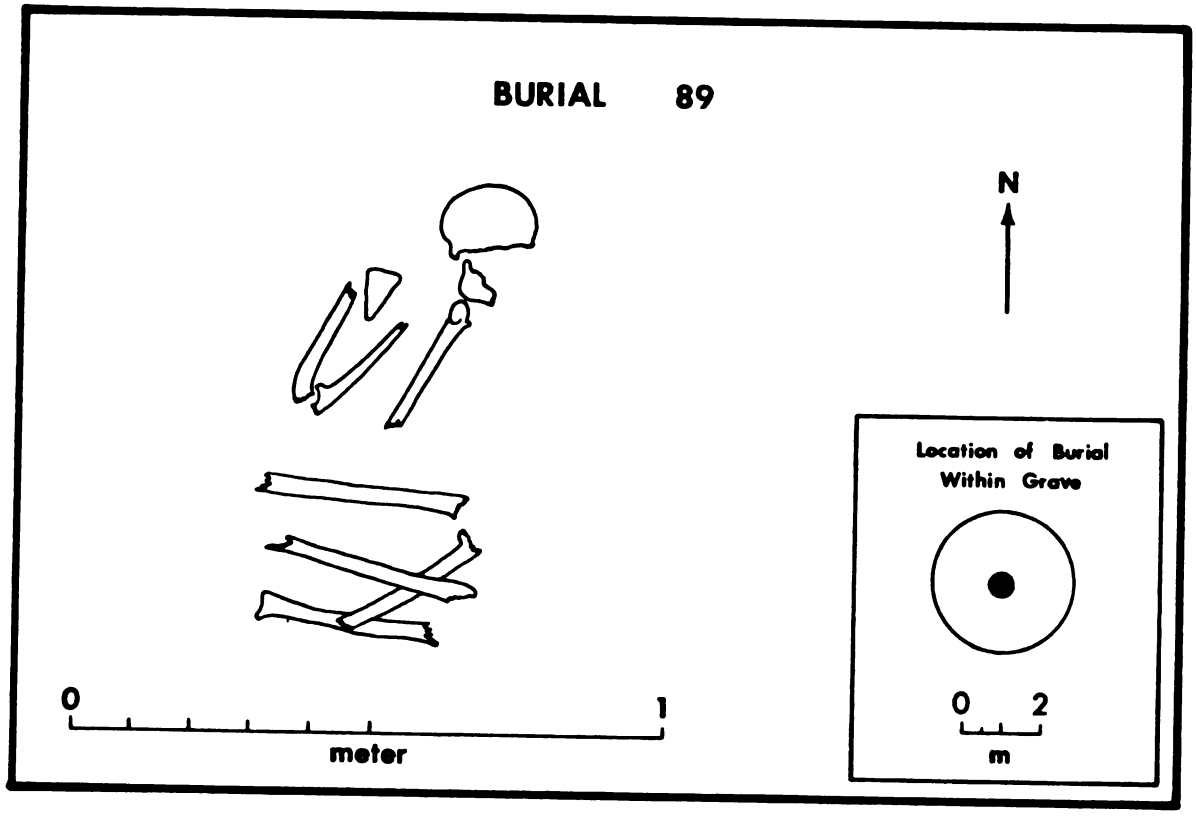
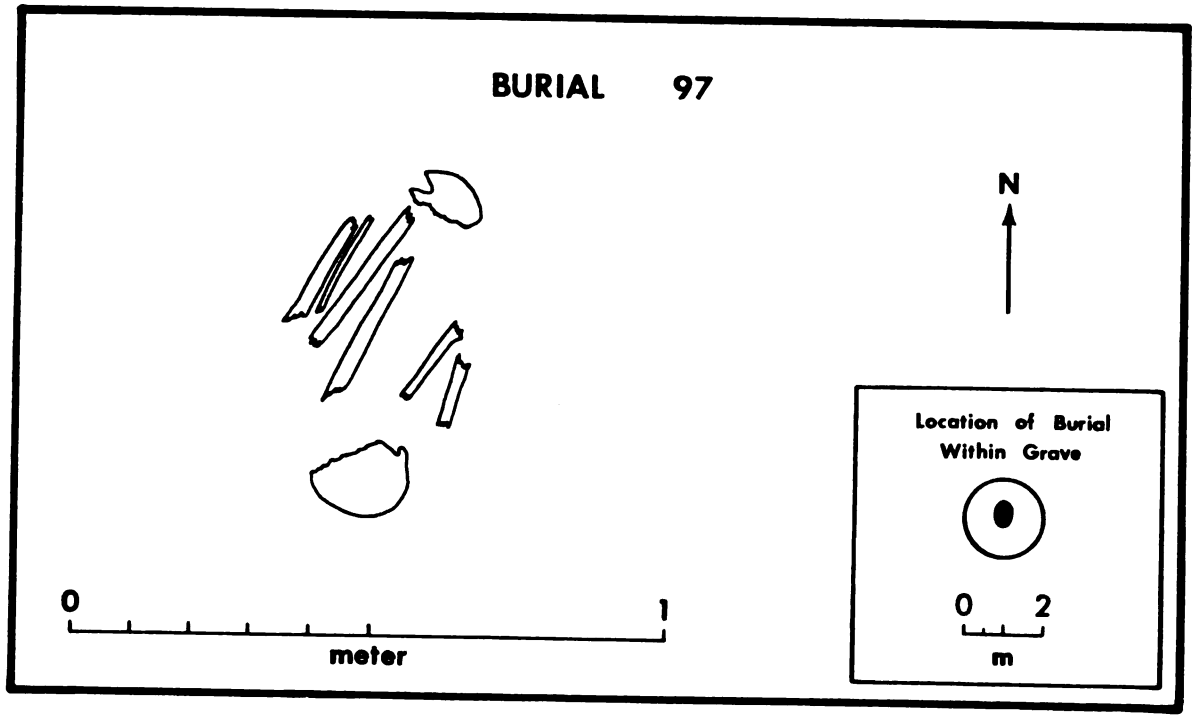

BURIAL 89
N
Location of Burial
Within Grave
0 2
m
0
1
meter

Figure 73


BURIAL 97
N
Location of Burial
Within Grave
0 2
m
0
1
meter

Hip	55°	55°
Knee	10°	Missing

Grave furniture . . . . . A retouched lava blade (5 cm long) was found approximately 5 cm above skull. It is unlikely that this represents an intentional grave offering.

Artifacts in fill . . . . . Tooth fragments of domesticated cow and sheep and/or goat; one chert flake at depth of .5m.

Decoration . . . . . None

Comments . . . . . The horizontal slab layer in this cairn consisted of two distinct parts. The top .4m consisted of the usual large slabs, the next .4m consisted of layers of much smaller stones (15 - 20 cm in length). There was no large slab immediately over the burial pit. Preservation was extremely poor. All that remained of the skull was a slight impression in the ground. It is inferred that this individual was an adult on the basis of long bone size.

Grave 98

Diameter	2.4m
Depth, total	1.5m
Depth, horizontal slabs	1.2m
Depth, burial pit	.3m
Vertical slabs, average size	.8m
Range	.6 - 1.05m
Average size above surface	.2m
Range	.1 - .35m
Location of largest slab	South
Total weight	4.69 tons
Sex	Male
Age	Middle adult
Orientation	100°

Position . . . . . Flexed, on left side, facing south.

Flexure	Right	Left
Shoulder	30°	Missing
Elbow	50°	Missing
Hip	55°	30°
Knee	50°	15°

Grave furniture . . . . . None

Artifacts in fill . . . . . Tooth fragments of domesticated cow and sheep and/or goat; small weathered obsidian core; two small lava scrapes and one quartzite core. (All lithic artifacts found throughout horizontal slab layer.)

Decoration . . . . . None

Comments . . . . . Burial pit in northeast quadrant of grave. Preservation was generally poor. The surface of the grave was 10 cm lower on the western half than on the eastern half with a line of demarcation running roughly north-south through the center of the grave. In addition, the vertical slabs in the southwest portion of the grave had fallen away from the center of the cairn at approximately a 30° angle. The burial pit was extremely shallow and lacked the usually large slab cover.

Grave 104

Diameter	1.8m
Depth, total	1.5m
Depth, horizontal slabs . . .	.8m
Depth, burial pit	.7m
Vertical slabs, average size . .	.85m
Range	.60 - 1.0m
Average size, above surface .	.16m
Range	.05 - .3m

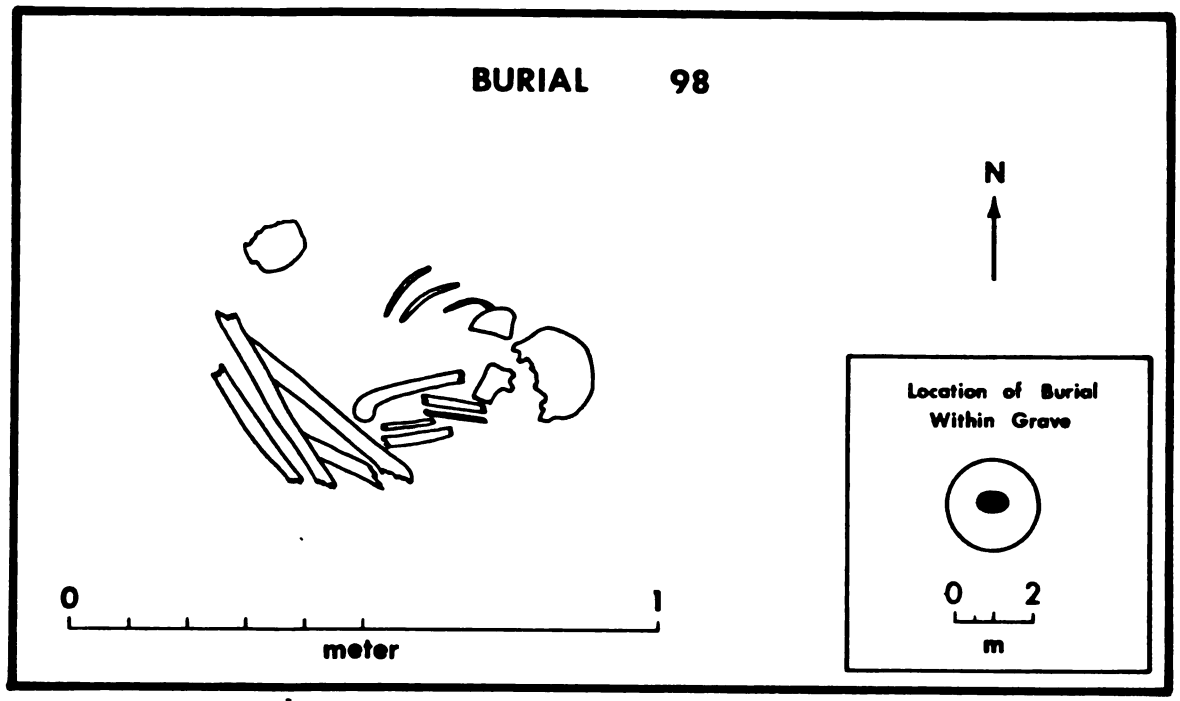
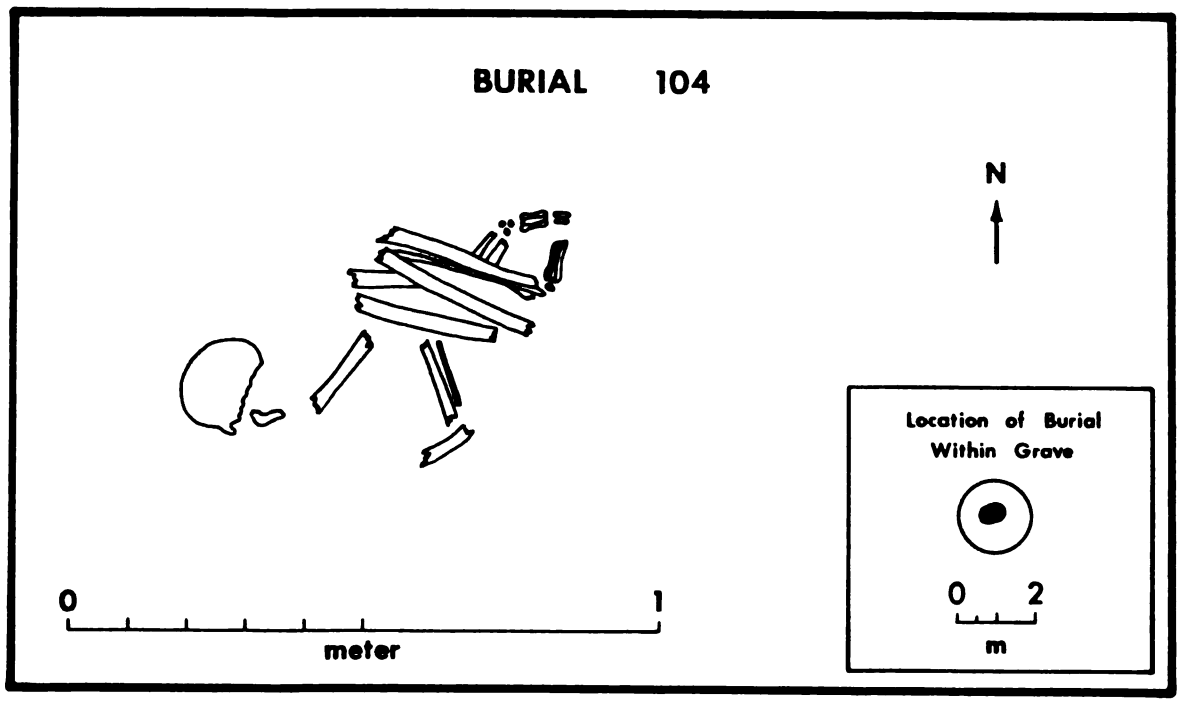

BURIAL 98
N
Location of Burial Within Grave
0 2
m
0
1
meter

Figure 74


BURIAL 104
N
Location of Burial Within Grave
0 2
m
0
1
meter

Location of largest slab . . NNE

Total weight . . . . . 2.1 tons

Sex . . . . . Male

Age . . . . . Middle adult

Orientation . . . . . 255°

Position . . . . . Flexed, on left side, facing northeast

Flexure	Right	Left
Shoulder	30°	45°
Elbow	90°	Extended
Hip	55°	45°
Knee	10°	5°

Grave furniture . . . . . Two chert flakes were resting on the cranium. One chert flake and one obsidian flake were 2-4cm in front of face. Since similar flakes were not found in the fill, these may represent intentional grave offerings. Tooth fragments of domesticated cow and sheep and/or goat were also found in burial pit 10 cm above burial.

Artifacts in fill . . . . . One quartzite core; 3 large lava choppers; tooth fragments of domesticated cow and sheep and/or goat; one chert flake.

Decoration . . . . . None

Comments . . . . . The burial was located in the center of the grave. This was a small but very well constructed cairn. The slab over the burial pit weighs well over 300 pounds. Preservation was poor. The Left arm was extended and found under both flexed legs.

Grave 105

Diameter 3.2m

Depth, total 1.0m

Depth, horizontal slab 6m

Depth, burial pit 4m

Vertical slabs, average size . . .8m

Range . . . . . .5 - 1.2m

Average size above surface . .3m

Range . . . . . .1 - .6m

Location of largest slab . . West

Total weight . . . . . 5.84 tons

Sex . . . . . Male

Age . . . . . Middle adult

Orientation . . . . . 180°

Position . . . . . Flexed, on left side, facing north

Flexure	Right	Left
Shoulder	Missing	Missing
Elbow	Missing	Missing
Hip	45°	45°
Knee	45°	20°

Grave furniture . . . . . Both feet were covered with red ochre.

Artifacts in fill . . . . . One lava blade with edge retouch; one lava chopper; tooth fragments of domesticated cow and sheep and/or goat; one ostrich egg shell fragment at a depth of .6m; four chert flakes and one small quartzite core.

Decoration	Location on Cairn	Direction Facing
	SW	SW

Comments . . . . . The preservation of 105 was fair. Both legs were flexed over both arms which were also flexed.

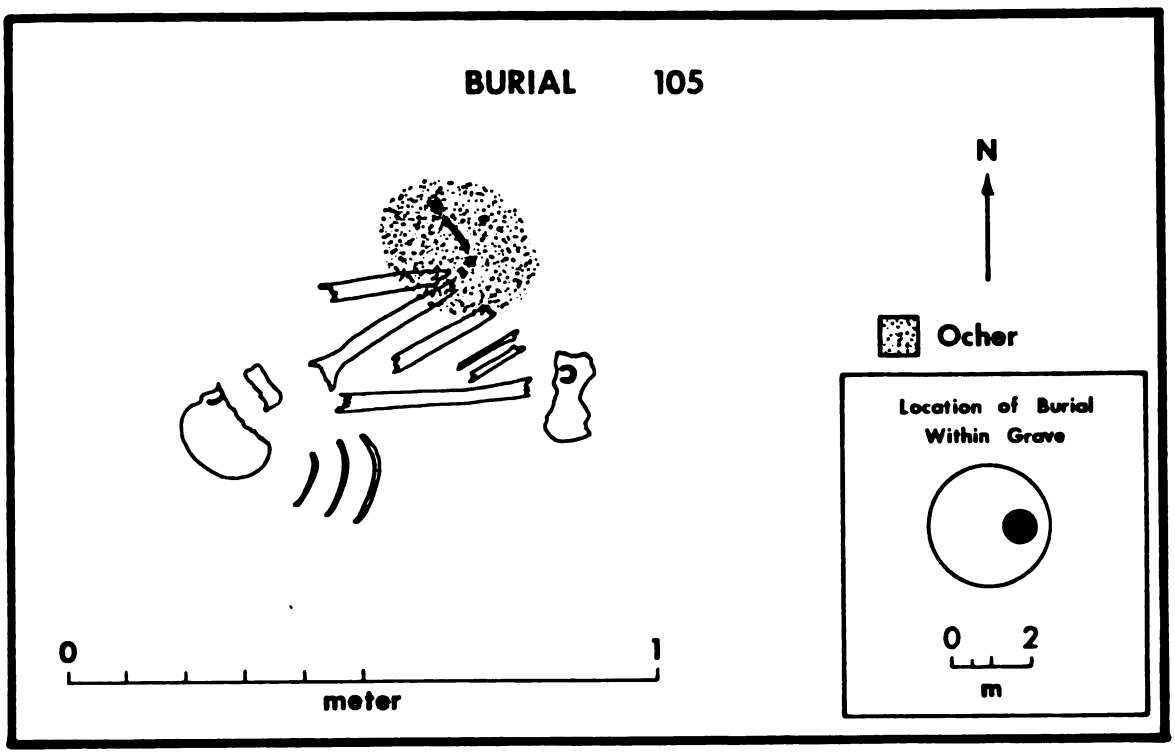
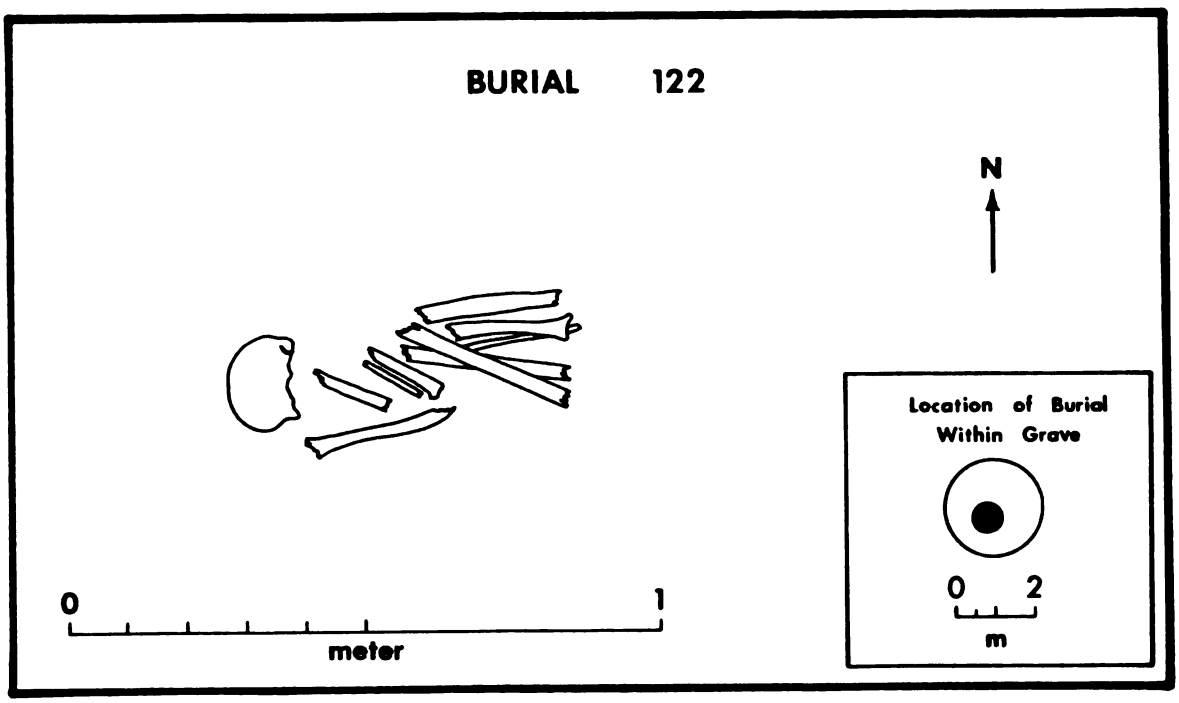

BURIAL 105
N
Ocher
Location of Burial
Within Grave
0 2
m
0
1
meter

Figure 75


BURIAL 122
N
Location of Burial
Within Grave
0 2
m
0
1
meter

The burial pit was in the extreme eastern portion of the grave and was covered by an extremely large stone slab (c.a. 500 pounds).

Grave 120

Diameter	2.8m	
Depth, total	1.6m	
Depth, horizontal slabs	1.0m	
Depth, burial pit	.6m	
Vertical slabs, average size	.73m	
Range	.5 - 1.1m	
Average size above surface	.1m	
Range	0 - .3m	
Location of largest slab	None	
Total weight	4.75 tons	
Sex	?	
Age	?	
Orientation	West	
Position	Flexed, on left side, facing ?	
Flexure	Right	Left
Shoulder	65°	Missing
Elbow	45°	Missing
Hip	Missing	Missing
Knee	Missing	Missing
Grave furniture	None	

Artifacts in fill . . . . . Small ostrich egg shell bead at depth of about .7m; tooth fragments of domesticated cow and sheep and/or goat; one chert bladelet.

Decoration . . . . . None

Comments . . . . . The preservation was extremely poor with nothing remaining from the lower 1/2 of the body. Only the teeth were preserved in the skull region. One interesting feature of this grave was double rows of vertical slabs. No other grave displayed this feature.

Grave 122

Diameter 2.5m

Depth, total 1.1m

Depth, horizontal slabs 6m

Depth, burial pit 5m

Vertical slabs, average size . . .5m

Range . . . . . .3 - .7m

Average size above surface . .16m

Range . . . . . .05 - .2m

Location of largest slab . . None

Total weight . . . . . 3.75 tons

Sex . . . . . ?

Age . . . . . Adult ?

Orientation . . . . . 184°

Position . . . . . Flexed, on left side, facing north

Flexure	Right	Left
Shoulder	20°	Missing
Elbow	60°	Missing
Hip	50°	45°
Knee	50°	20°

Grave furniture . . . . . Two obsidian flakes, one 3 cm from right hand and the other 1 cm away from 122's face.

Artifacts in fill . . . . . Blue glass bead (recent); ostrich egg shell bead .2m below the surface; 3 small chert cores within top .2m of grave; three small chert scrapers; four obsidian flakes and one small obsidian core found throughout horizontal slab layer. Two lava choppers and two large lava scrapers throughout horizontal slab layer as well as tooth fragments of domesticated cow and sheep and/or goat.

Decoration . . . . . None

Comments . . . . . The preservation of 122 was extremely poor. It is assumed that this individual is an adult on the basis of relative long bone lengths. The burial pit is located in the southern portion of the grave. This grave contained the largest quantity of chert and obsidian. Given the common occurrence of chert and obsidian throughout the fill, it is impossible to determine with any certainty if the two obsidian flakes found near the burial are intentional grave offerings. Given that these two flakes were the only lithic materials in the burial pit itself, the interpretation of intentional offerings seems likely.

Grave 132

Diameter 3.2m

Depth, total 9m

Depth, horizontal slabs 6m

Depth, burial pit 3m

Vertical slabs, average size . . .8m

Range . . . . . .5 - 1.2m

Average size above surface . .4m

Range . . . . . .1 - .65m

Location of largest slab . . SW

Total weight . . . . . 2.9 tons

Sex . . . . . ?

Age . . . . . Adult ?

Orientation . . . . . East

Position . . . . . Flexed, on left side, facing south

Flexure	Right	Left
Shoulder	Missing	Missing
Elbow	Missing	Missing
Hip	Missing	Missing
Knee	Missing	Missing

Grave furniture . . . . . None

Artifacts in fill . . . . . Broken glass bead (recent); several large lava choppers and scrapers; tooth fragments of domesticated cow and sheep and/or goat.

Decoration	Location in Cairn	Direction Facing
	N	SE
	SSE	SE

Comments . . . . . The preservation was too fragmentary to determine age or sex. Grave was oval shaped with its largest diameter in the east-west direction. The layer of horizontal slabs was very shallow in Cn° 132 with most of the rocks used being much smaller than usual (15-25 cm in size). The slab covering the burial pit was larger than the other slabs used in filling the grave but much smaller (100-200 pounds) that those found in other graves. The vertical slabs on the west half of the grave were falling away from the center of the grave at 30° angles probably reflecting the shallow nature of the horizontal slab layer. The burial pit itself was located in the southern half of the grave. It's assumed that 132 is an adult on basis of long bone length.

Grave 138

Diameter 2.2m

Depth, total 8m

Depth, horizontal slabs 4m

Depth, burial pit 4m

Vertical slabs, average size . . .5m

Range . . . . . .2 - .7m

Average size above surface . .23m

Range . . . . . .05 - .4m

Location of largest slab . . SW

Total weight . . . . . 1.56 tons

Sex . . . . . Male

Age . . . . . Middle adult

Orientation . . . . . 5°

Position . . . . . Flexed, on left side, facing southwest

Flexure	Right	Left
Shoulder	45°	Missing
Elbow	50°	Missing
Hip	55°	Missing
Knee	10°	5°

Grave furniture . . . . . Small obsidian bladelet 2 cm from right foot; 2 small obsidian flakes resting on skull. Given the paucity of other such objects in the grave these may represent intentional grave offerings.

Artifacts in fill . . . . . Two chert flakes; one lava scraper and one small chert core; tooth fragments of domesticated cow and sheep and/or goat.

Decoration . . . . . None

Comments . . . . . The preservation of 138 was fair, although no complete long bones remained. The skull was too fragmentary and badly warped to allow cranial measurements. The burial pit was in the center of the grave. The grave itself was oval in shape being larger in the north-south

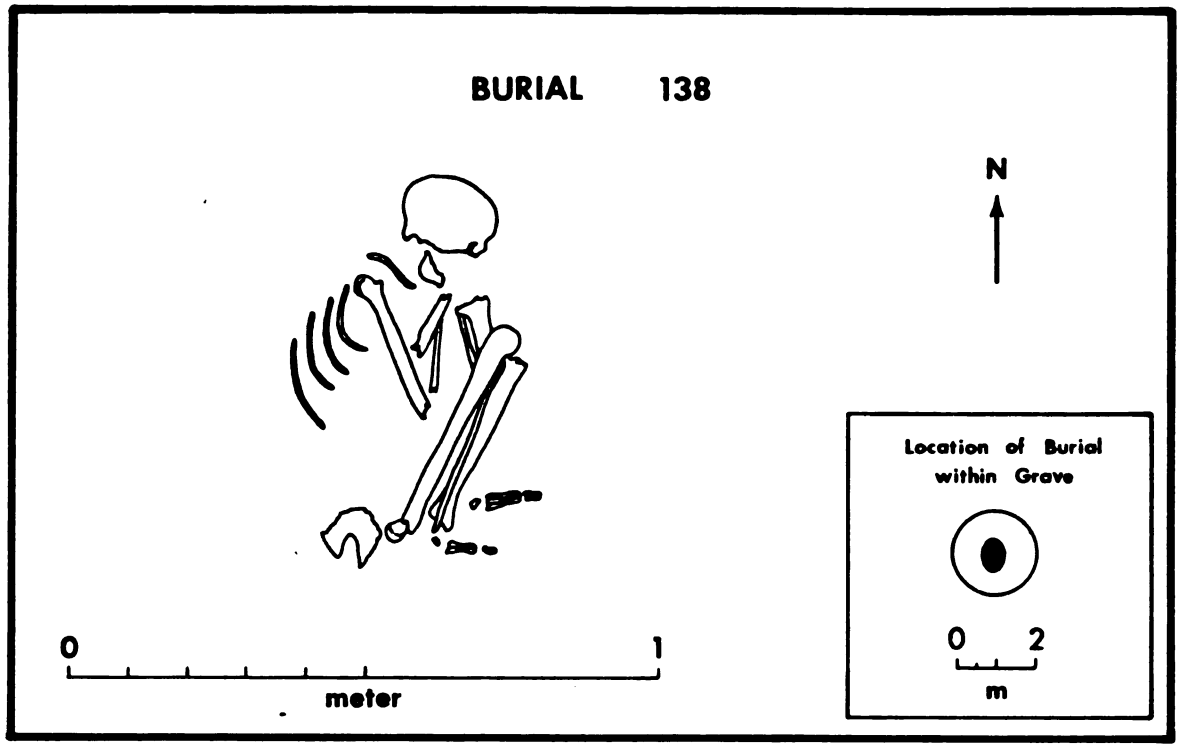
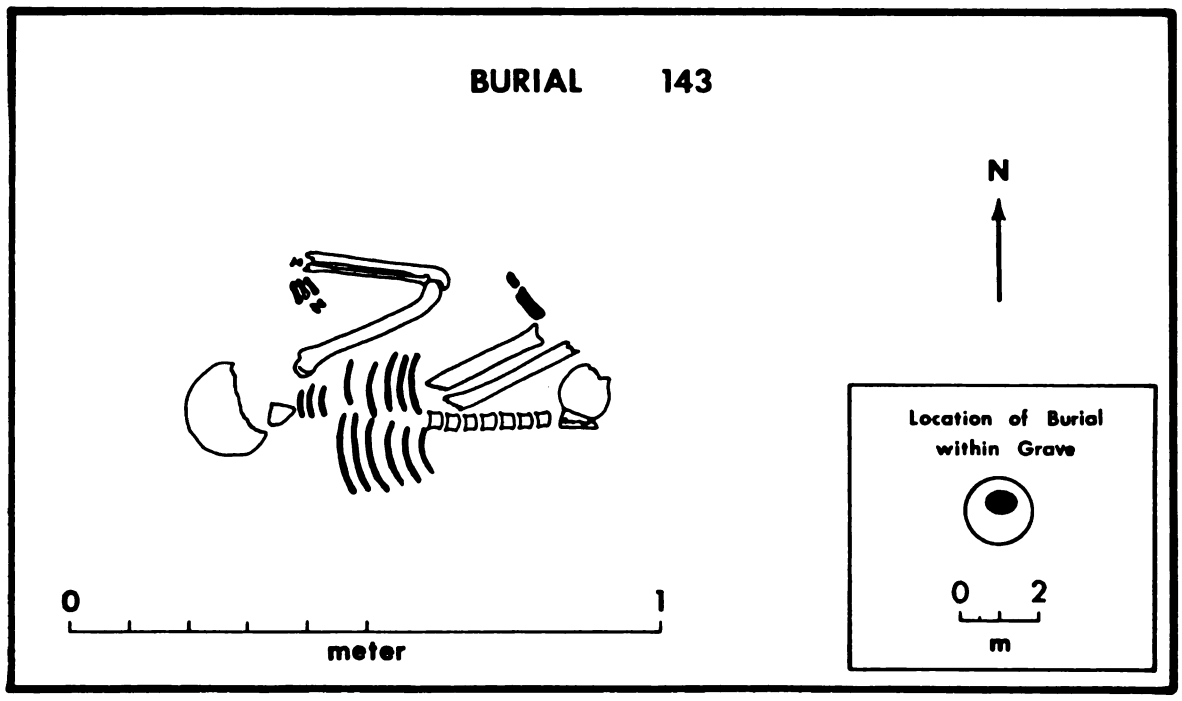

BURIAL 138
N
Location of Burial within Grave
0 2
m
0
1
meter

Figure 76


BURIAL 143
N
Location of Burial within Grave
0 2
m
0
1
meter

direction. Almost all of the vertical slabs were falling away from the center of the grave at 30° - 40° angles. This probably reflects the fact that the horizontal slab layer was extremely shallow (.4m). In addition, the surface of the horizontal slabs was 20 cm below the present ground surface. However, this present ground surface may be higher than at the time of the grave's construction due to wind deposited sand in the north and west portion of the site. The rock slab covering the burial pit was extremely large (c.a. 500 pounds).

Grave 143

Diameter	1.6m	
Depth, total	.8m	
Depth, horizontal slabs	.3m	
Depth, burial pit	.5m	
Vertical slabs, average size	.70m	
Range	.55 - .8m	
Average size above surface	.43m	
Range	.35 - .5m	
Location of largest slab	None	
Total weight (estimate)	.62 tons	
Sex	Female ?	
Age	Adult ?	
Orientation	272°	
Position	Flexed, on stomach, facing north	
Flexure	Right	Left
Shoulder	30°	Missing
Elbow	45°	Missing
Hip	10°	Missing

Knees	10°	Missing
Grave furniture	A bone point 5 cm long, 2 cm from left foot	
Artifacts in fill	Tooth fragments of domesticated cow and sheep and/or goat.	
Decoration	None	
Comments	One of the few burials placed on its stomach. This grave displayed the least amount of energy expenditure of those excavated. There was no large slab immediately over the burial pit, instead only a number of smaller slabs (30-75 pounds). In addition, the layer of horizontal slabs was very shallow (.3 meters deep). The outer standing slabs apparently were not buried very deeply since all had fallen away from the center of the grave at approximately 45° angles. The burial was located in the north half of the grave. Once again preservation was very poor, making age and sex determinations tentative.	

Grave 159

Diameter	2.4m
Depth, total	1.6m
Depth, horizontal slabs	1.0m
Depth, burial pit	.6m
Vertical slabs, average size	.7m
Range	.25 - 1.15m
Average size above surface	.12m
Range	.05 - .4m
Location of largest slab	East
Total weight	4.69 tons
Sex	?
Age	?
Orientation	90° ?

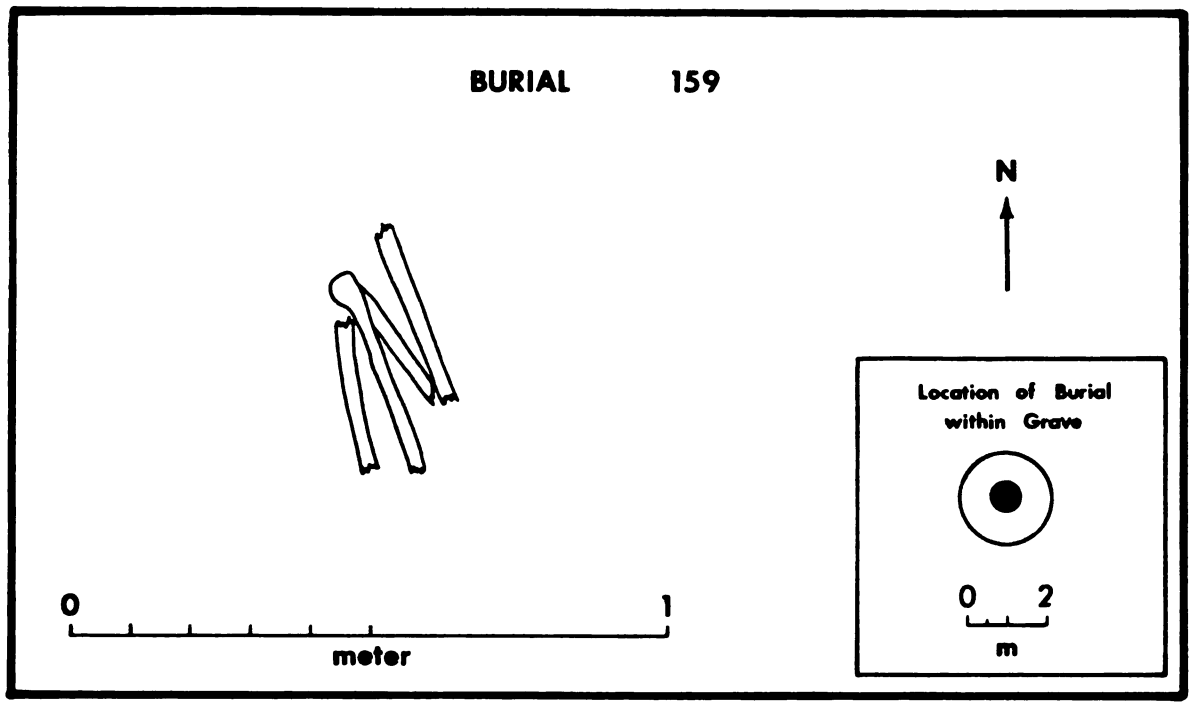
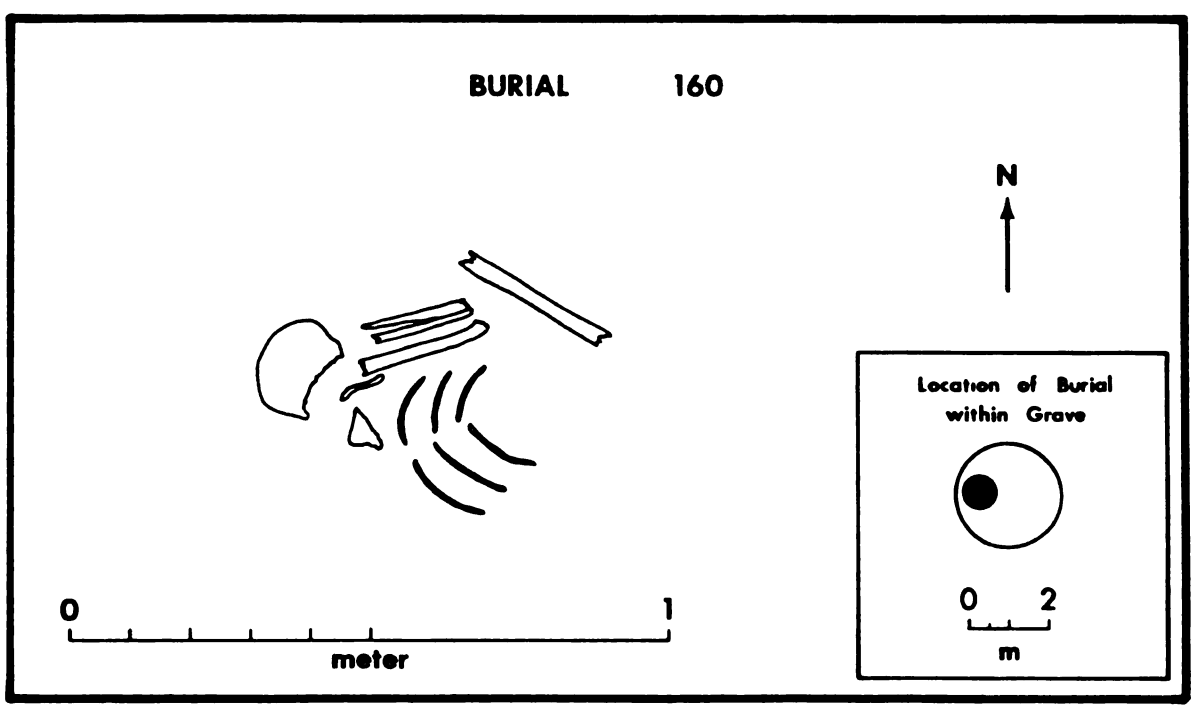

BURIAL 159
N
Location of Burial within Grave
0 2
m
0
1
meter

Figure 77


BURIAL 160
N
Location of Burial within Grave
0 2
m
0
1
meter

Position	Flexed, on left side, facing ?	
Flexure	Right	Left
Shoulder	Missing	Missing
Elbow	Missing	Missing
Hip	Missing	Missing
Knee	10°	20°

Grave furniture . . . . . None

Artifacts in fill . . . . . A triangular obsidian microlith at depth of .75m; tooth fragments of domesticated cow and sheep and/or goat.

Decoration . . . . . None

Comments . . . . . The preservation of 159 was extremely poor with only the legs being preserved. No sex or age determination could be made. The burial pit was in the center of the grave.

Grave 160

Diameter	2.6m
Depth, total	1.6m
Depth, horizontal slabs	.7m
Depth, burial pit	.9m
Vertical slabs, average size	.75m
Range	.5 - 1.05m
Average size above surface	.16m
Range	0 - .45m
Location of largest slab	East
Total weight	3.86 tons
Sex	Male

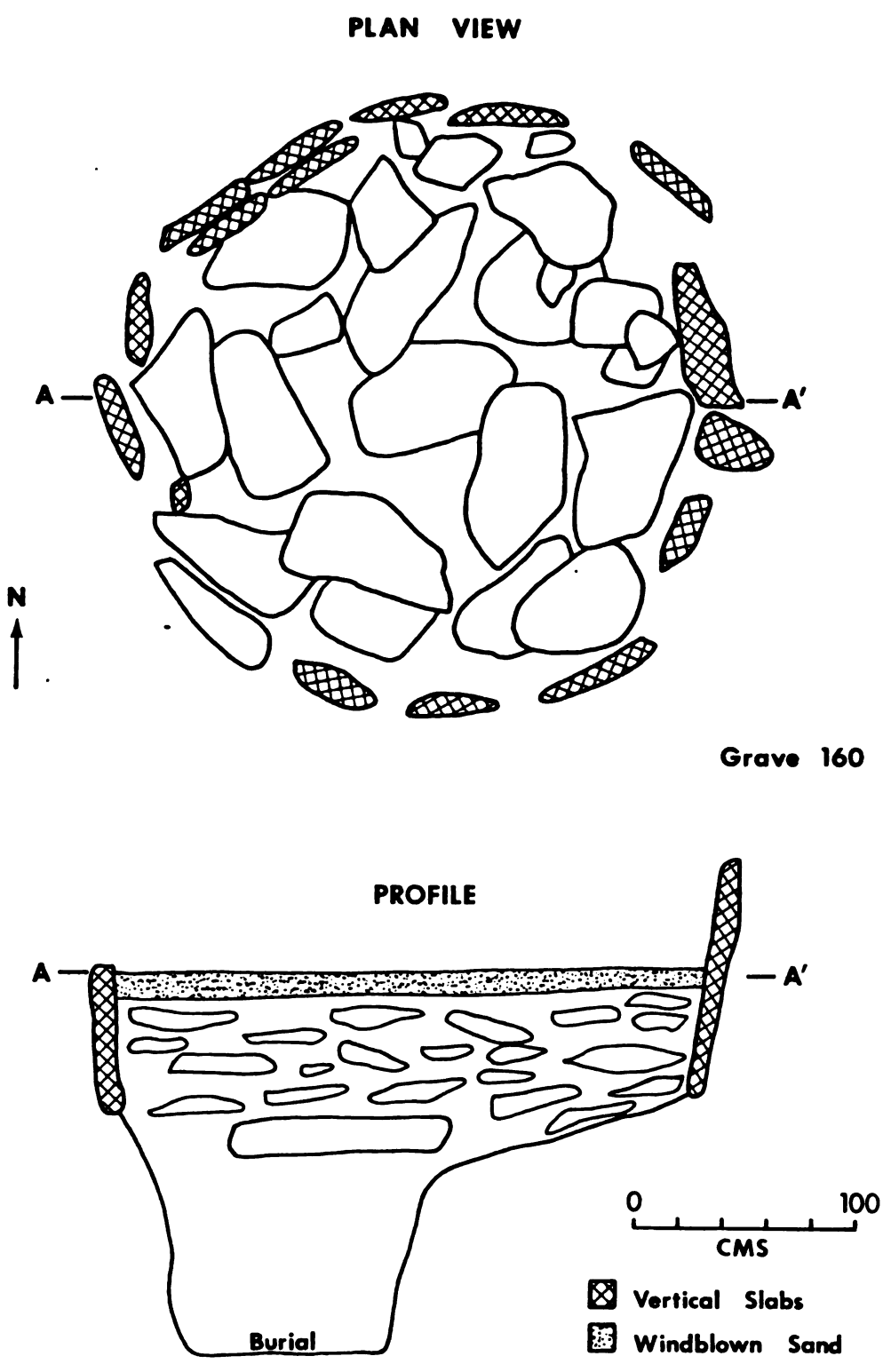

PLAN VIEW
A
A'
N
Grave 160
PROFILE
A
A'
0
100
CMS
Vertical Slabs
Windblown Sand
Burial

Figure 78

Age	Middle adult	
Orientation	275°	
Position	Flexed, on stomach, facing NE	
Flexure	Right	Left
Shoulder	10°	10°
Elbow	20°	20°
Hip	55°	Missing
Knee	Missing	Missing

Grave furniture . . . . . None

Artifacts in fill . . . . . Tooth fragments of domesticated cow and sheep and/or goat.

Decoration . . . . . None

Comments . . . . . The preservation of 160 was fair. The burial pit was in the western half of the grave and was covered by a large slab weighing close to 500 pounds.

Grave 161

Diameter	2.0m
Depth, total	1.6m
Depth, horizontal slabs	.8m
Depth, burial pit	.8m
Vertical slabs, average size	.9m
Range	.7 - 1.2m
Average size above surface	.2m
Range	.05 - .5m
Location of largest slab	East
Total weight	2.6 tons

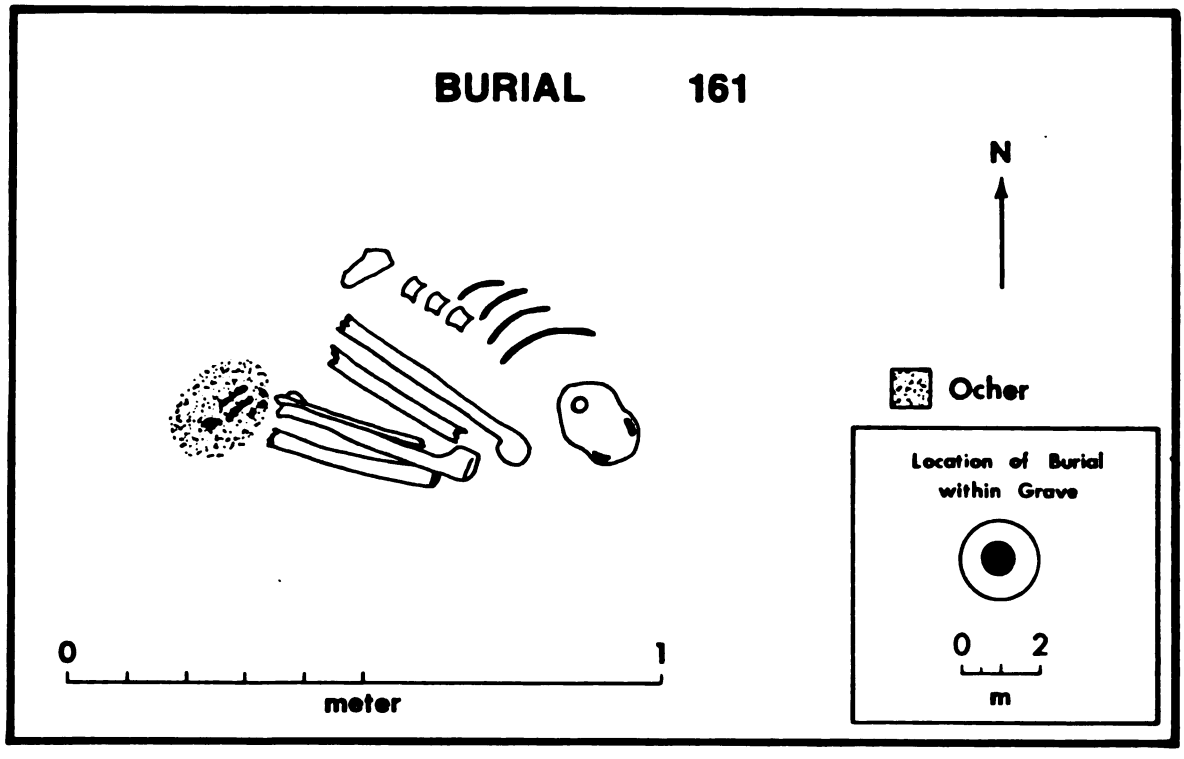
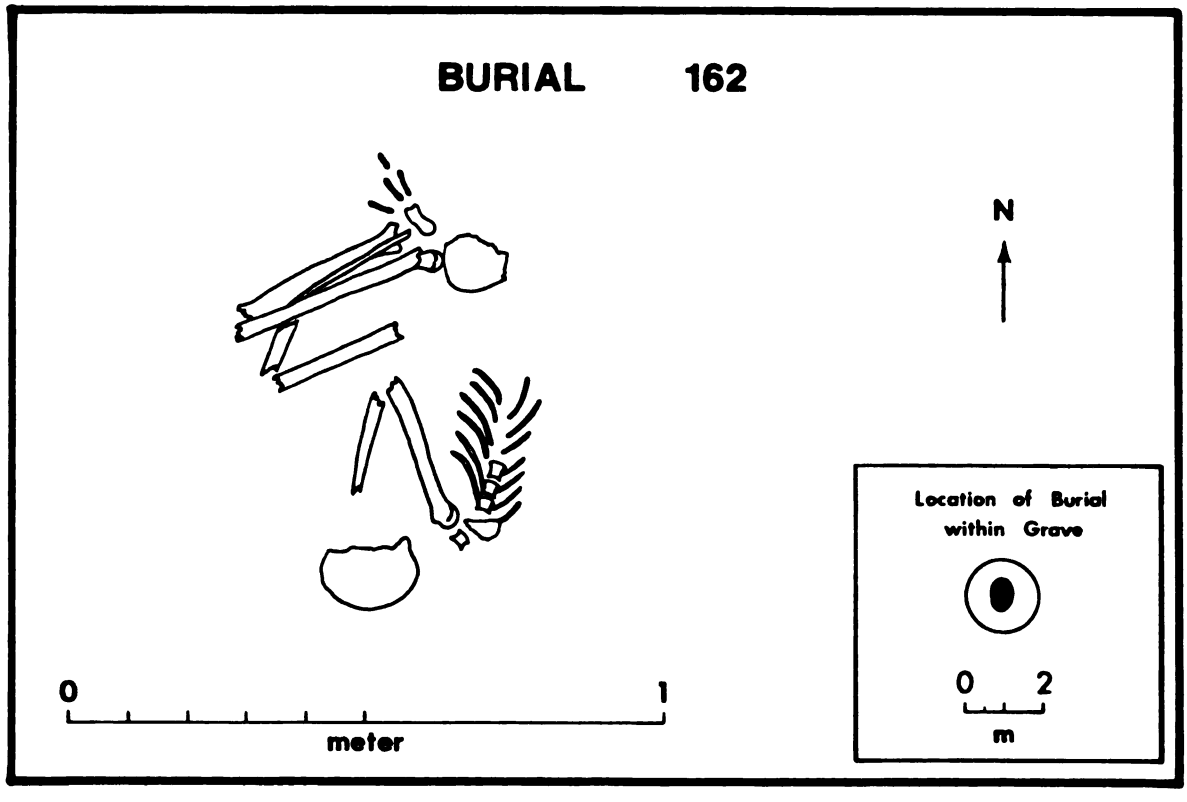

BURIAL 161
N
Ocher
Location of Burial within Grave
0 2
m
0 1
meter

Figure 79


BURIAL 162
N
Location of Burial within Grave
0 2
m
0 1
meter

Sex . . . . . Male

Age . . . . . Middle adult

Orientation . . . . . 105°

Position . . . . . Flexed, on left side, facing southeast

Flexure	Right	Left
Shoulder	Missing	Missing
Elbow	Missing	Missing
Hip	55°	55°
Knee	10°	5°

Grave furniture . . . . . Stone stained with red ochre was located over the feet of 161.

Artifacts in fill . . . . . One chert scraper (.1m below surface); three chert flakes (in horizontal slab layer); tooth fragments of domesticated cow and sheep and/or goat.

Decoration . . . . . None

Comments . . . . . The preservation of 161 was fair, as such a number of cranial measurements were taken in the field (see Appendix B). Unfortunately, neither of the arms were preserved. The skull was positioned so that the foramen magnum was facing upward. The skull was apparently resting on a stone slab approximately 25 cm in length. The burial pit which was in the center of the grave was covered by a stone slab weighing well in excess of 300 pounds.

Grave 162

Diameter 1.9m

Depth, total 1.3m

Depth, horizontal slabs 9m

Depth, burial pit 4m

Vertical slabs, average size . . .61m

Range . . . . . .35 - .9m

Average size above surface . .12m

Range . . . . . 0 - .15m

Location of largest slab . . None

Total weight . . . . . 2.65 tons

Sex . . . . . Female

Age . . . . . Young adult

Orientation . . . . . 180°

Position . . . . . Flexed, on left side, facing NW

Flexure	Right	Left
Shoulder	45°	Missing
Elbow	45°	Missing
Hip	70°	70°
Knee	10°	45°

Grave furniture . . . . . None

Artifacts in fill . . . . . Small handle of recent Turkana pot found .1m below surface; tooth fragments of domesticated cow and sheep and/or goat.

Decoration . . . . . None

Comments . . . . . The poorly preserved skeletal remains were located in the center of grave.

Grave 168

Diameter 1.25m

Depth, total 9m

Depth, horizontal slabs 5m

Depth, burial pit 4m

Vertical slabs, average size . . .5m

Range . . . . . .4 - .7m

Average size above surface . .23m

Range . . . . . .1 - .4m

Location of largest slab . . None

Total weight . . . . . .96 tons

Sex . . . . . Female

Age . . . . . Middle adult

Orientation . . . . . 0°

Position . . . . . Flexed, on left side, facing southeast

Flexure	Right	Left
Shoulder	30°	Missing
Elbow	55°	Missing
Hip	45°	Missing
Knee	10°	Missing

Grave furniture . . . . . None

Artifacts in fill . . . . . None

Decoration . . . . . None

Comments . . . . . The preservation in this extremely small grave was poor. The burial pit was in the center of the grave and was covered by a stone slab weighing 300+ pounds. Several of the vertical slabs in the north and east had fallen toward the center of the grave at 10° to 30° angles.

Grave 170

Diameter 1.2m

Depth, total 8m

Depth, horizontal slabs 4m

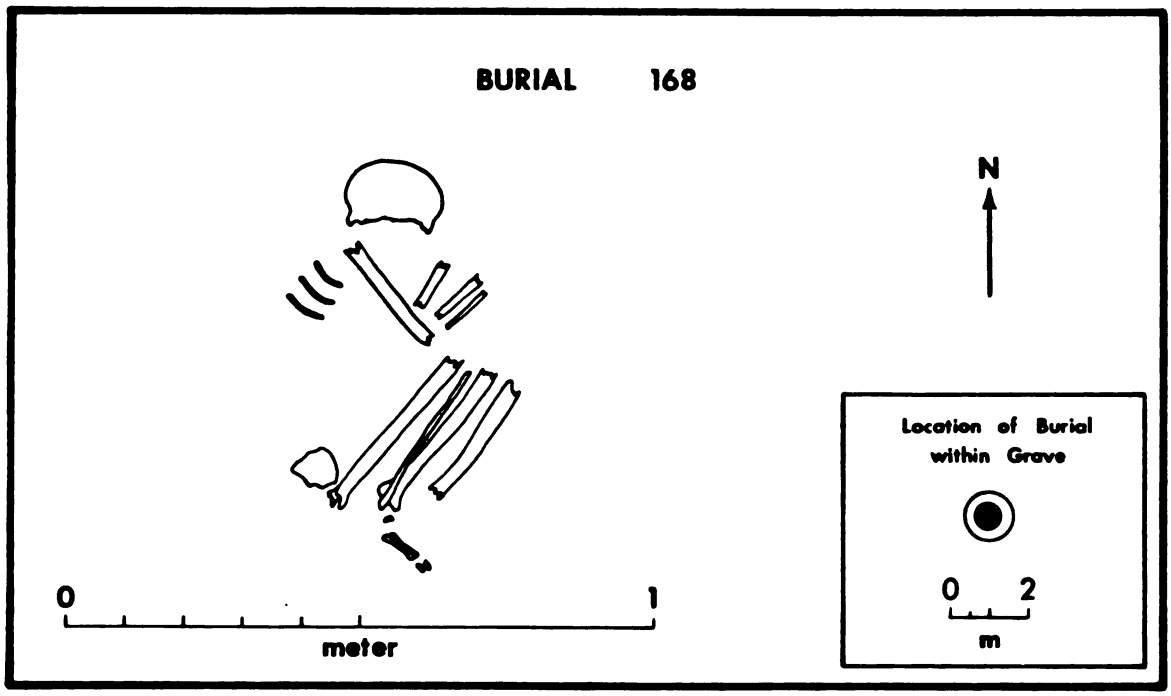
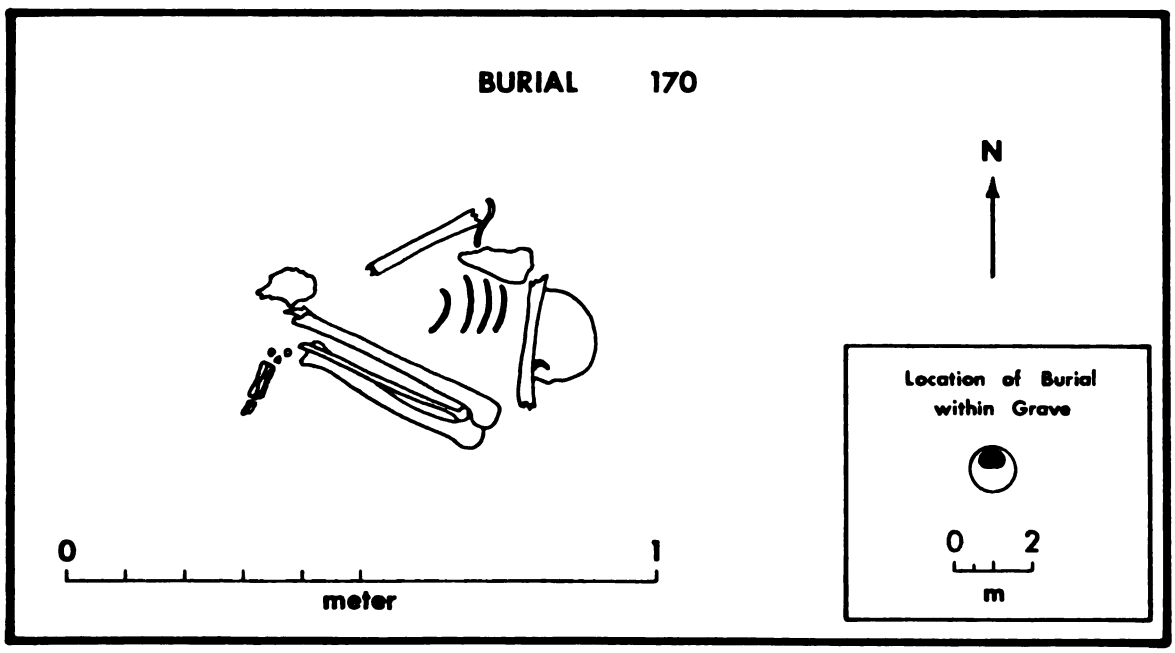

BURIAL 168
N
Location of Burial within Grave
0 2
m
0
1
meter

Figure 80


BURIAL 170
N
Location of Burial within Grave
0 2
m
0
1
meter

Depth, burial pit 4m

Vertical slabs, average size . . .62

Range . . . . . .6 - .7m

Average size above surface . .2m

Range . . . . . .05 - .4m

Location of largest slab . . None

Total weight . . . . . .87 tons

Sex . . . . . Male

Age . . . . . Adult ?

Orientation . . . . . 90°

Position . . . . . Flexed, on left side, facing south

Flexure	Right	Left
Shoulder	90°	Missing
Elbow	Missing	Missing
Hip	45°	Missing
Knee	5°	Missing

Grave furniture . . . . . Small obsidian flake 5 cm from skull

Artifacts in fill . . . . . None

Decoration	Location on Cairn	Direction Facing
	♀ SE	SSE

Comments . . . . . The preservation of 170 was poor. It is inferred that 170 was an adult on the basis of long bone length. The right arm of 170 was extended over his head, a position not found elsewhere. The burial pit was in the extreme southern portion of the grave and was not covered by any single large stone slab. The vertical slabs in the southern portion of the grave were falling inward at 10° to 45° angles.

APPENDIX B

TURKANA GRAVES EXCAVATED NEAR THE NAMORATUNGA SITES

APPENDIX B

TURKANA GRAVES EXCAVATED NEAR THE NAMORATUNGA SITES

Surrounding both of the Namoratunga sites at Lokori were a large number of cairns which were clearly unrelated to the Namoratunga sites. Sixty-seven surrounded the southernmost of the two sites and 130 were found on and around the other volcanic outcrop. These cairns were markedly different in construction and consisted of a simple low mound of lava cobbles. They ranged in diameter from 1.5 m to 3.3 m and in height from .2 to 1.1 meters. Besides being clearly different structurally, the local Turkana elders claimed that these graves were Turkana, whereas they did not know who constructed the Namoratunga graves. Finally, given similar soil Ph values from both types of graves, it is noteworthy that the skeletal Preservation in the "Turkana" cairns was much better attesting to their more recent construction.

Four (10%) of the cluster of 40 mounded cairns which occurred just north of the southernmost Namoratunga site were randomly excavated. These graves consisted of a shallow burial pit containing a single flexed individual. The burial was then covered over with large lava cobbles until the grave consisted of a low mound of stone. In no case was there any reason to believe that the graves were not Turkana in origin since the body positioning of these skeletons was identical to present day Turkana practices; both males and females are flexed on the left side with a cranial caudal orientation of east-west.

Grave 1A (Recent Turkana)

Diameter	3.0m	
Maximum height above surface	.4m	
Depth of burial pit	.5m	
Sex	Male	
Age	Middle adult	
Orientation	90°	
Position	Flexed, on left side, facing south	
Flexure	Right	Left
Shoulder	45°	35°
Elbow	50°	55°
Hip	45°	55°
Knee	40°	35°
Grave furniture	None	

Artifacts in fill . . . . . One chert flake and one iron point (3 cm long) found just above burial pit as was one domesticated goat tooth.

Comments . . . . . The local Turkana claim this grave is Turkana in origin. The preservation was only fair but better than any of the cemetery burials. Given comparable soils in the two regions and similar soil Ph levels, it appears that this burial is more recent than any of those found in the cemetery. The largest stones used in this cairn were on the periphery and were probably placed first to serve as a retaining wall for the subsequent mound of stones. Given the fact that the burial was Turkana and fairly recent it was not removed.

Grave 2A (Recent Turkana)

Diameter	2.9m
Maximum height above surface	.4m
Depth of burial pit	.2m

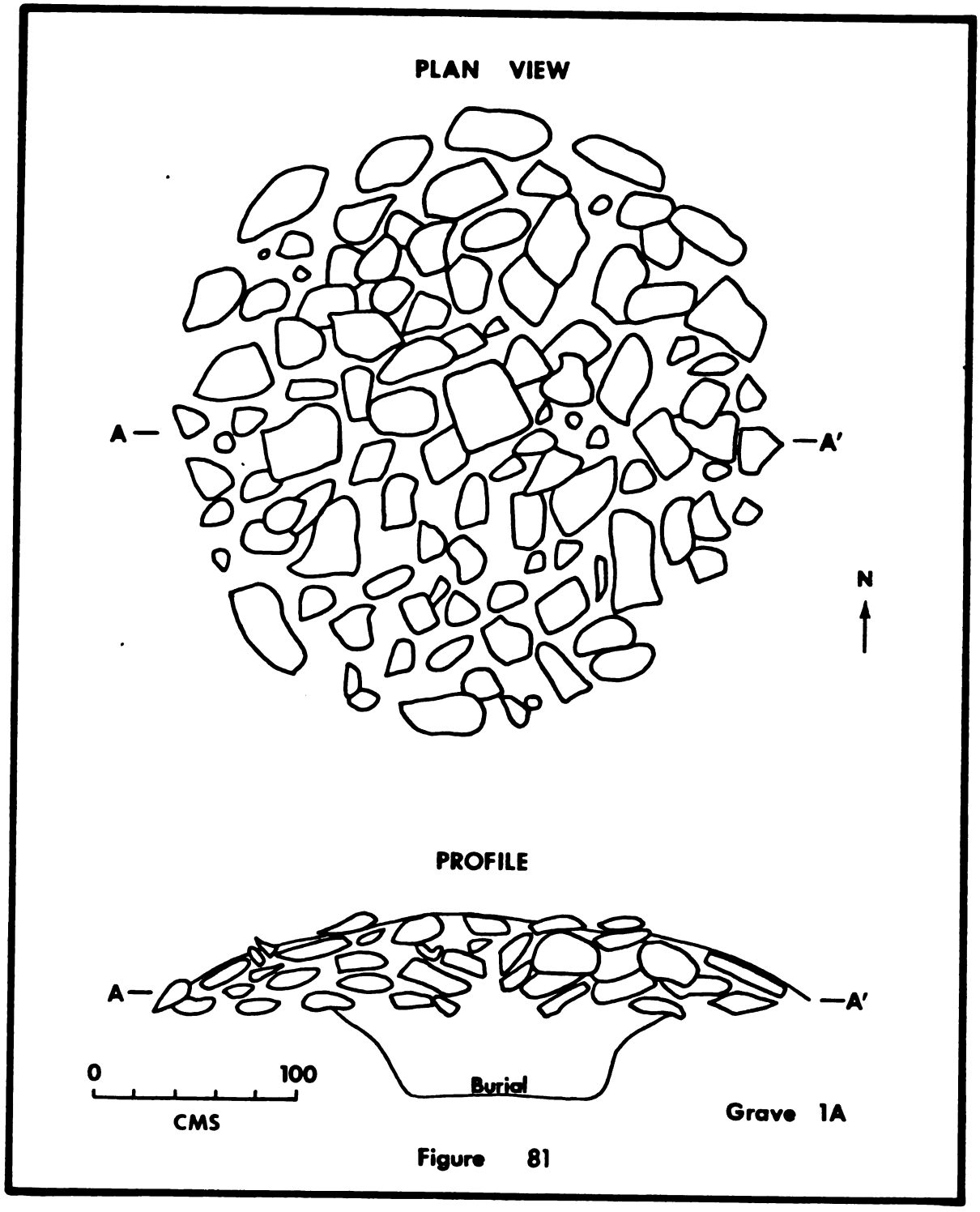


Figure 81

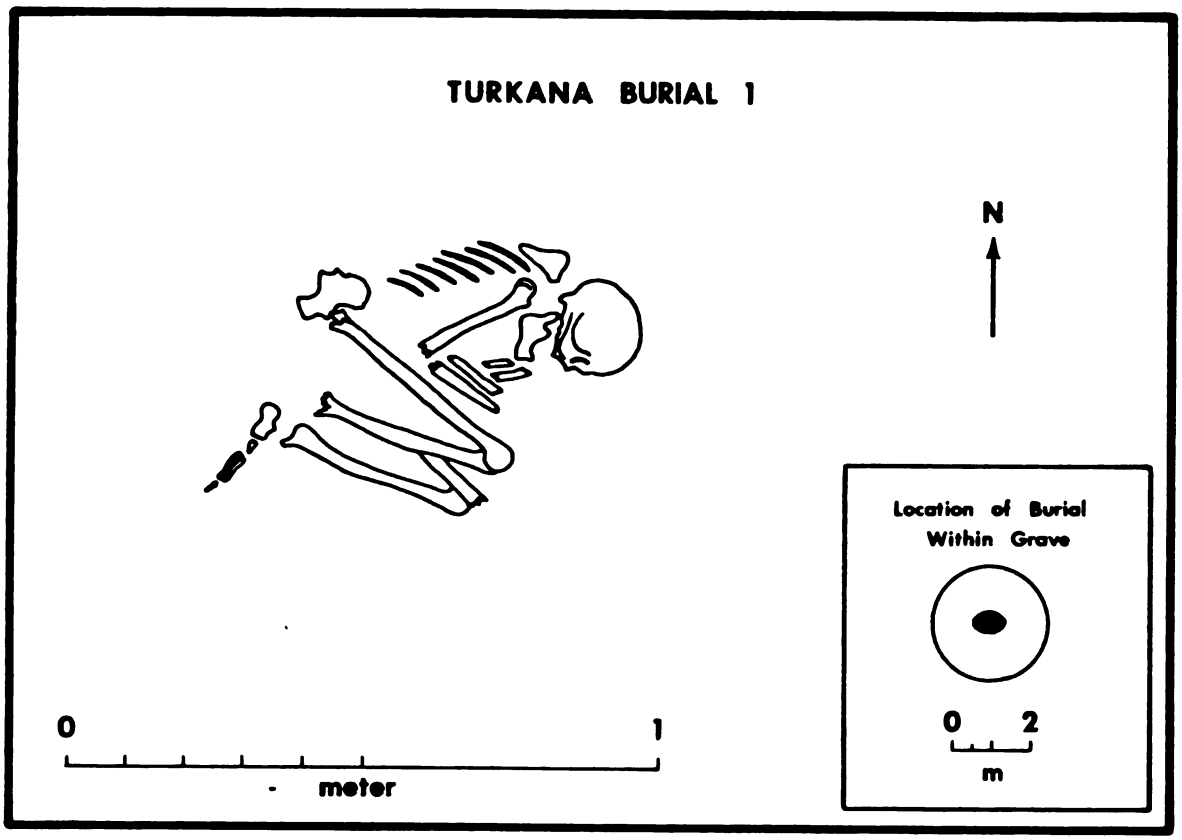
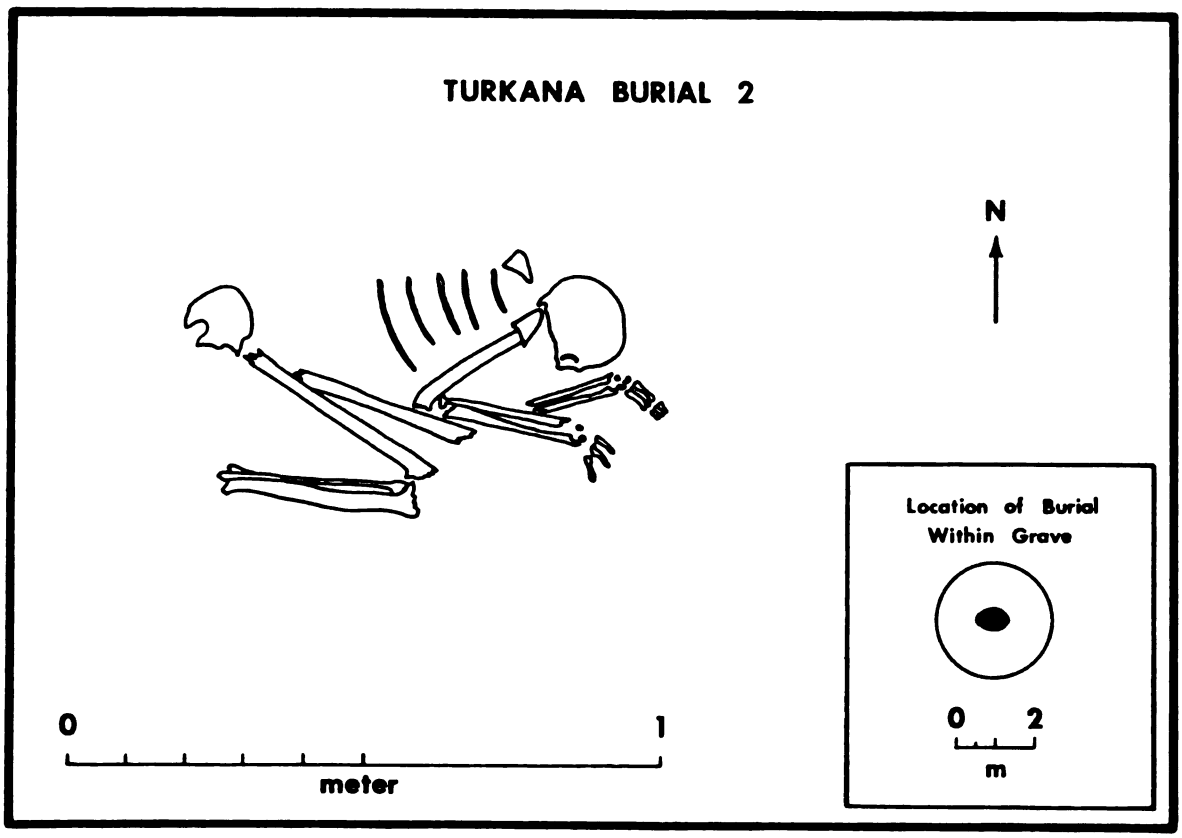

TURKANA BURIAL 1
N
Location of Burial
Within Grave
0
2
m
0
1
meter

Figure 82


TURKANA BURIAL 2
N
Location of Burial
Within Grave
0
2
m
0
1
meter

Sex . . . . . Female

Age . . . . . Late adult

Orientation . . . . . 90°

Position . . . . . Flexed, on left side, facing south

Flexure	Right	Left
Shoulder	20°	30°
Elbow	55°	55°
Hip	45°	45°
Knee	40°	40°

Grave furniture . . . . . None

Artifacts in fill . . . . . None

Comments . . . . . The grave is apparently Turkana in origin. The preservation was fair and better than any of the cemetery burials. Several cranial measurements were taken in the field, but no attempt was made to remove the burial. The stones in the center of the cairn appear to have collapsed into the burial pit with many sloping inward at 45° angles. Apparently the burial pit was not completely refilled before the cairn was constructed over it.

Grave 3A (Recent Turkana)

Diameter 1.7m

Maximum height above surface . . .2m

Depth of burial pit 3m

Sex . . . . . Male

Age . . . . . Adolescent

Orientation . . . . . 95°

Position . . . . . Flexed, on left side, facing south

Flexure	Right	Left
Shoulder	30°	35°

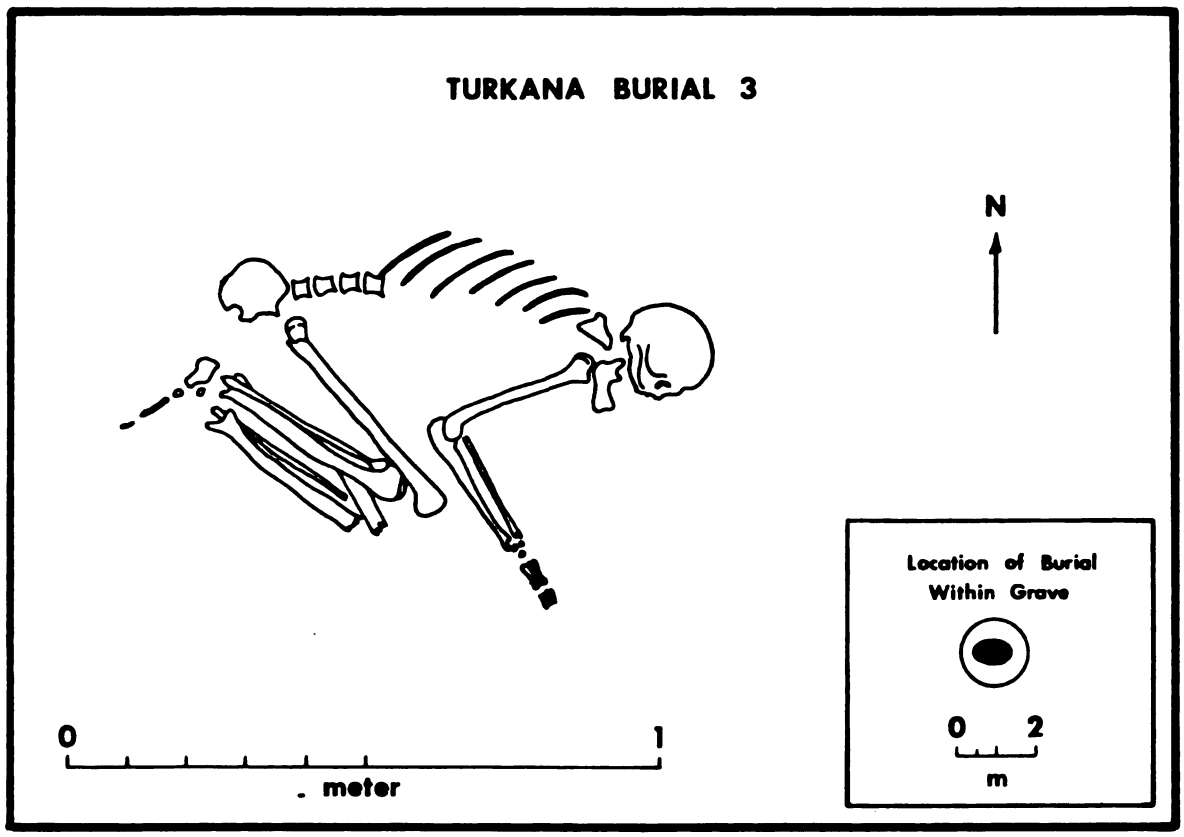
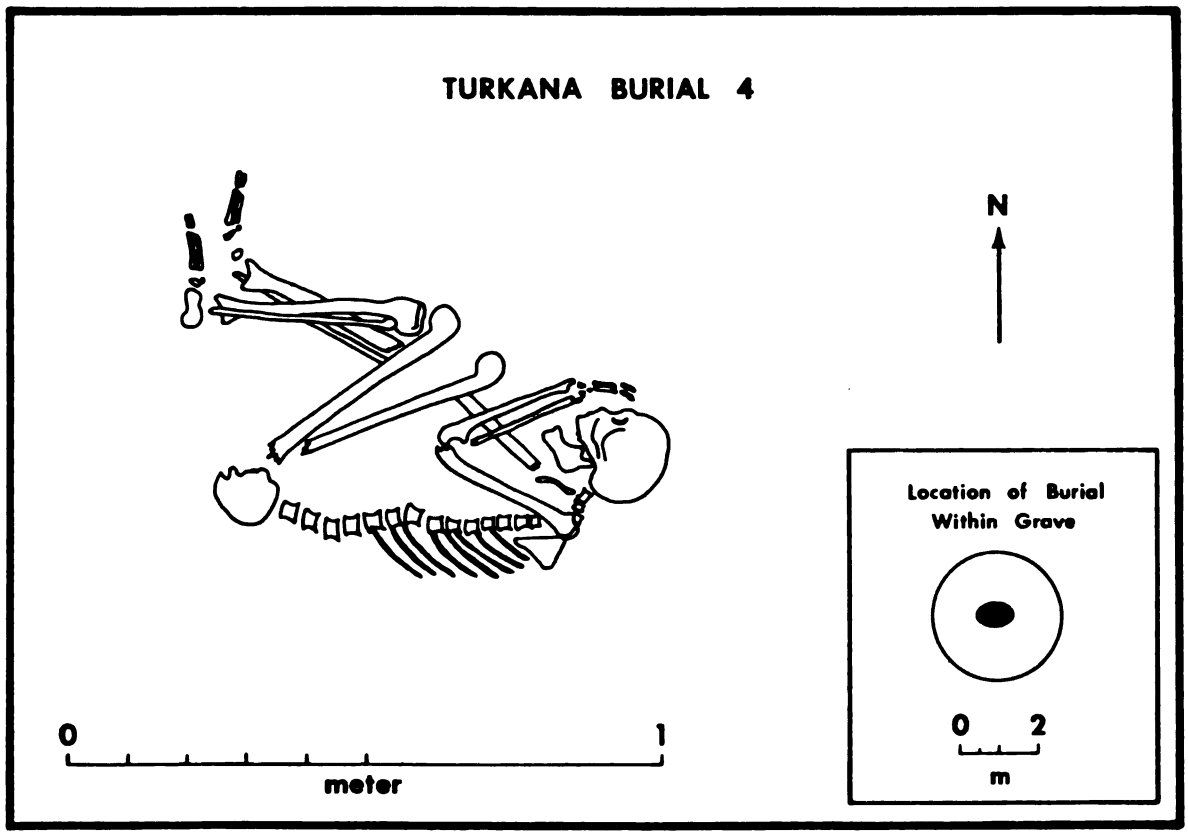

TURKANA BURIAL 3
N
Location of Burial
Within Grave
0
2
m
0
1
meter

Figure 83


TURKANA BURIAL 4
N
Location of Burial
Within Grave
0
2
m
0
1
meter

Elbow	55°	60°
Hip	45°	45°
Knee	15°	5°

Grave furniture . . . . . None

Artifacts in fill . . . . . None

Comments . . . . . This grave also seems to be Turkana in origin. The preservation of 3A was good, unfortunately the body was badly crushed. As was the case with 1A the stones on the periphery were much larger than those that made up the remainder of the grave. There was no evidence of the center of the grave sloping into the burial pit which was apparently filled before the grave was constructed. The burial was not removed.

Grave 4A (Recent Turkana)

Diameter 3.3m

Maximum height above surface . . .6m

Depth of burial pit 7m

Sex . . . . . Male

Age . . . . . Young adult

Orientation . . . . . 95°

Position . . . . . Flexed, on right side, facing north

Flexure	Right	Left
Shoulder	30°	Missing
Elbow	55°	Missing
Hip	50°	45°
Knee	15°	10°

Grave furniture . . . . . None

Artifacts in fill . . . . . None

Comments . . . . . The preservation of 4A was good, unfortunately most bones were crushed. The grave was surrounded by an outer circle of stone. These stones were approximately the same size as those used to construct the cairn. This circle was about 7 m in diameter measured from the center of the cairn. The local Turkana claim that this outer circle was once an animal krall. The stones were used to weigh down brush which formed the walls of the kraal. Given the fact that the preservation was good, that the Turkana claimed the burial was Turkana, and that the cairns placement in the center of an old kraal agrees with ethnographic data on the Turkana, it would appear that this grave is Turkana and too recent to be associated with the cemetery areas.

APPENDIX C

SKELETAL MEASUREMENTS

TABLE 31.--Cranial Measurements from Namoratunga Skeletons.

	9	83	30	161	16	Mean	Total	Galla (Eastern Cushites) Hiernaux 1974)*	Grave 2A (Turkana)
Maximum Length	173	182	193	195	188	173	189	186.2	190	183
Maximum Br.	128	--	--	137	146	128	141.5	137.0	147	--
Maximum Frontal Br.	--	--	--	112	--	--	112	112	--	--
Minimum Frontal Br.	--	--	--	97	--	--	97	97	--	--
Basion-Bregma	--	--	--	131	--	--	121	121	--	142
Left Orbit Height	--	--	--	33	--	--	33	33	--	39
Left Orbit Br.	--	--	--	39	--	--	39	39	--	39
Frontal Arc	133	--	130	131	--	133	130.5	131.3	--	129
Frontal Chord	--	--	111	116	--	--	113.5	113.5	--	113
Frontal Subtense	34	--	28	31	34	34	31	31.75	--	34
Parietal Arc	113	--	121	120	--	113	120.5	118	--	135
Parietal Chord	104	--	114	111	--	104	112.5	109.6	--	122
Occipital Arc	98	--	111	--	--	98	111	104.5	--	97
Occipital Chord	--	--	102	102	--	--	102	102	--	86
Occipital Subtense	--	--	33	34	--	--	33.5	33.5	--	--

*From a sample of 49 individuals.

**No post cranial measurements could be taken due to poor preservation.

APPENDIX D

SOIL SAMPLES

TABLE 32.--Soil Ph Values.

Grave Number		Ph
7		7.65
9		7.75
17		7.95
33		7.7
37		7.85
45		6.3
46		7.6
53		7.7
56		7.7
60		7.3
76		7.75
77		7.9
89		6.8
98		7.9
104		8.1
120		7.3
122		7.85
132		7.75
143		7.7
160		7.3
163		7.6
168		7.75
170		7.7
	Mean	7.6

TABLE 33.--Soil Samples Collected on an East-West Transect from Namoratunga 1 to the Kerio River.

	Eastern Edge of Site	200m (East of Site)	400m	800m	1200m	1200m	1800m	1800m	1800m
Depth	50cm	50cm	50cm	50cm	50cm	1m	50cm	1m	2m
Sand	89.9%	83.5%	93.8%	95.3%	97.4%	98.0%	98.2%	98.2%	98.7%
Very coarse sand	11.6	3.9	6.1	9.0	2.6	2.6	2.6	2.1	1.7
Coarse sand	28.1	6.5	28.4	32.3	13.9	2.5	2.5	4.3	5.7
Medium sand	36.2	14.2	33.6	41.4	46.4	31.8	32.4	52.5	62.9
Fine sand	12.7	34.8	20.6	11.9	30.4	59.6	59.1	37.8	28.2
Very fine sand	1.1	24.1	5.2	.7	4.1	1.5	1.6	1.5	1.0
Silt	5.2	9.0	3.2	1.6	.8	.7	.6	.7	.2
Clay	5.0	7.1	2.3	2.1	1.8	1.0	1.0	.9	1.0

APPENDIX E

SITE SURVEY

APPENDIX E

SITE SURVEY

Kangatet River Site

The site is located on lava ridge just west of the Kangatet River. The ridge is capped by a dense cover of lava cobbles averaging 5 - 18 cm diameter. Vegetation is sparse with widely scattered accacia trees and a few clumps of grass. The site itself appears to extend approximately 1/4 X 1/4 mile on this lava ridge. There is a great density of stone tools with at least one every few feet. An estimated 80-90% of these tools are classic choppers made on lava pebbles and cobbles (see Appendix H). Both bifacial and unifacial forms occur, with generally only the edges worked. The rest of the tool displays the natural exterior surface of the rock. These tools are heavily patinated and exhibit desert polish. There are estimated to be several thousand of these choppers.

Flaking debitage was rare with most objects being finished tools. However, some very large flakes were found with plain, thick, platforms. No true blades were noted. Other tools in order of frequency included: scrapers (fairly crude), marginally trimmed flakes, a few hand axes of Acheulian type (one hand axe of Olduvai Bed IV type was collected, see Appendix H) and notched pieces. There were also some large amorphous cores. All the raw material was lava. No fauna was evident.

The site appears to be Middle to Late Acheulian in age and affinities with a higher proportion of choppers than is found at other similar sites. The site appears also to be somewhat like a developed Oldowan in terms of the low percent of bifaces. It seems likely that the whole ridge was revisited over a long period of time with individuals using the locally available raw material for making choppers. Some tools which were well patinated showed obvious

traces of later re-use. Fresh flake scars were seen on various working edges. This probably occurred during the L.S.A.

Apo Hill

This site covered the flanks of Apo Hill. The talus and scree of the hill was covered with lava cobbles and boulders. Overall the cultural material was not dense with few artifacts being found. No particular class of artifacts appeared to dominate. Tools included: choppers, hand axes, a possible cleaver, scrapers, miscellaneous retouched pieces, and amorphous cores. Relatively little debitage was observed and no true blades were found. All tools were made on lava and were well patinated. No fauna was found.

The site appears to have Acheulian affinities. It was apparently also utilized by L.S.A. people since several well patinated tools showed fresh signs of re-use. However, no late material was recovered.

Kamende Site

This site is located on a small lava rise just to the north of the large lava ridge called Kamende. The site is just east of the Kerio River and due east of Lokori. The surface of the site is covered with small lava cobbles and has almost no vegetation.

The site extends for approximately 100M X 100M with a fairly light debris scatter within this area. By far the most common tool encountered were large heavy-duty scrapers. These formed approximately 60-80% of all of the tools. Other tools found listed in order of relative frequency included: choppers, both unifacial and bifacial; large flakes with some marginal retouch; cores, largely amorphous, and a few hand axe forms. Almost no debitage was found at the site. The tools were all made of lava on cobbles and pebbles and were heavily patinated. They also exhibited desert polish. No fauna was found at the site.

The site appears to be Acheulian and very similar to the Apo Hill site, but with a much higher percentage of scrapers. The site was likely revisited for a long period of time. Many tools had much fresher retouch on their working edges probably done by L.S.A. peoples.

Morilum Hill Site

A L.S.A. site was located just north of Morilum Hill on a small lava ridge. The ridge which extended for about 1/4 mile in a north south direction was covered with small lava cobbles. At the time of the survey the ridge contained several Turkana camps and recent Turkana graves.

The entire ridge contained sporatic evidence of a L.S.A. occupation. Most of the tools were well made lava end scrapers, some with side retouch as well. No flaking debris was recovered. The site contained no fauna. There was nothing on the ridge that could be considered a single site as such. That is, there were no real concentrations of artifacts. A few well weathered cores were noted on the surface which could be earlier than the other L.S.A. artifacts.

The site also contained other L.S.A. artifacts which were obviously brought to the site by Turkana children. They collect these for their games. These included chert and obsidian artifacts and at least one obsidian crescent. A single undecorated sherd was collected which is probably fairly recent.

None of these sites could be associated with the cemetery areas since all were of too great an antiquity.

APPENDIX F

DISTRIBUTION OF DESIGNS AND WEATHERING CATEGORIES AT SITES 1 AND 2

TABLE 34.--Distribution of Designs and Weathering Categories at Site 1.

	West				South				East				North			
Design #	Total	W	M	L	Total	W	M	L	Total	W	M	L	Total	W	M	L
10	9	1	2	6	1	0	0	1	22	15	5	2	4	0	3	1
63	0	0	0	0	2	0	0	2	3	3	0	0	0	0	0	0
2	1	0	1	0	1	0	1	0	3	3	0	0	2	1	1	0
20	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0
17	2	0	1	1	1	0	0	1	7	3	0	4	1	1	0	0
87	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0
14	0	0	0	0	1	0	0	1	20	19	0	1	0	0	0	0
11	0	0	0	0	0	0	0	0	6	6	0	0	1	1	0	0
3	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0
9	0	0	0	0	0	0	0	0	3	1	2	0	2	0	1	1
21	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0
78	2	0	2	0	0	0	0	0	3	3	0	0	1	0	1	0
83	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0
114	1	0	0	1	0	0	0	0	3	2	1	0	0	0	0	0
4	10	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
48	11	1	5	5	0	0	0	0	2	2	0	0	0	0	0	0
22	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
1	2	1	0	1	0	0	0	0	2	2	0	0	0	0	0	0

TABLE 34.--Continued.

	West				South				East				North			
Design #	Total	W	M	L	Total	W	M	L	Total	W	M	L	Total	W	M	L
15	1	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0
36	10	1	4	5	0	0	0	0	0	0	0	0	0	0	0	0
23	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
7	1	0	1	0	0	0	0	0	2	1	1	0	0	0	0	0
102	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
50	1	1	0	0	0	0	0	0	4	4	0	0	0	0	0	0
43	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
57	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
53	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
38	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
84	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
62	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0
49	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0
79	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	10	6	4	0	0	0	0	0
47	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0

TABLE 34.--Continued.

Design #	West				South				East				North			
	Total	W	M	L	Total	W	M	L	Total	W	M	L	Total	W	M	L
34	0	0	0	0	0	0	0	0	9	8	1	0	0	0	0	0
35	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0
80	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
37	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
82	0	0	0	0	0	0	0	0	3	3	0	0	0	0	0	0
42	0	0	0	0	0	0	0	0	3	3	0	0	0	0	0	0
59	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0
81	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0
18	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0
64	0	0	0	0	0	0	0	0	4	4	0	0	0	0	0	0
99	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
60	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0
58	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0

TABLE 35.--Distribution of Designs and Weathering Categories at Site 2.

	West				South				North			
Design #	Total	W	M	L	Total	W	M	L	Total	W	M	L
17	1	1	0	0	9	4	5	0	16	8	3	2
7	2	2	0	0	3	1	1	1	13	5	5	3
10	1	0	1	0	9	2	3	4	105	59	46	0
114	1	0	1	0	5	4		2	9	2	5	2
3	0	0	0	0	5	5	4	2	73	61	22	0
49	0	0	0	0	5	3	1	1	4	2	2	0
99	0	0	0	0	1	1	0	0	0	0	0	0
42	0	0	0	0	2	1	1	0	12	6	6	0
2	0	0	0	0	9	6	2	1	35	10	22	3
8	0	0	0	0	2	1	0	1	8	1	4	3
9	0	0	0	0	2	1	0	1	2	0	2	0
47	0	0	0	0	1	0	0	1	0	0	0	0
72	0	0	0	0	1	0	0	1	4	1	2	1
87	0	0	0	0	2	0	2	0	11	1	10	0
43	0	0	0	0	2	1	0	1	5	1	4	0
81	0	0	0	0	3	0	2	1	0	0	0	0
14	0	0	0	0	7	1	5	1	3	0	3	0
19	0	0	0	0	2	0	2	0	1	1	0	0
119	0	0	0	0	1	0	0	1	0	0	0	0
16	0	0	0	0	2	2	0	0	2	1	1	0
73	0	0	0	0	1	0	1	0	0	0	0	0
15	0	0	0	0	7	3	3	1	3	1	1	1
120	0	0	0	0	1	0	1	0	0	0	0	0
64	0	0	0	0	2	0	2	0	3	1	2	0
121	0	0	0	0	2	0	2	0	0	0	0	0
74	0	0	0	0	1	0	1	0	0	0	0	0
129	0	0	0	0	1	0	1	0	0	0	0	0

TABLE 35.--Continued.

	West				South				North			
Design #	Total	W	M	L	Total	W	M	L	Total	W	M	L
88	0	0	0	0	0	0	0	0	1	1	0	0
52	0	0	0	0	0	0	0	0	1	1	0	0
26	0	0	0	0	0	0	0	0	1	1	0	0
11	0	0	0	0	0	0	0	0	1	0	1	0
28	0	0	0	0	0	0	0	0	4	1	3	0
108	0	0	0	0	0	0	0	0	1	0	1	0
31	0	0	0	0	0	0	0	0	1	0	1	0
29	0	0	0	0	0	0	0	0	1	0	1	0
33	0	0	0	0	0	0	0	0	1	0	1	0
74	0	0	0	0	0	0	0	0	1	0	1	0
89	0	0	0	0	0	0	0	0	1	0	1	0
65	0	0	0	0	0	0	0	0	1	0	1	0
69	0	0	0	0	0	0	0	0	2	0	2	0
55	0	0	0	0	0	0	0	0	1	0	1	0
91	0	0	0	0	0	0	0	0	1	0	1	0
66	0	0	0	0	0	0	0	0	1	0	1	0
110	0	0	0	0	0	0	0	0	1	1	0	0
84	0	0	0	0	0	0	0	0	1	1	0	0
93	0	0	0	0	0	0	0	0	1	0	1	0
18	0	0	0	0	0	0	0	0	2	0	0	2
95	0	0	0	0	0	0	0	0	1	1	0	0
77	0	0	0	0	0	0	0	0	1	1	0	0
126	0	0	0	0	0	0	0	0	1	0	1	0
100	0	0	0	0	0	0	0	0	9	8	1	0
68	0	0	0	0	0	0	0	0	1	0	1	0
96	0	0	0	0	0	0	0	0	2	0	1	1
97	0	0	0	0	0	0	0	0	1	0	1	0

TABLE 35.--Continued.

	West				South				North			
Design #	Total	W	M	L	Total	W	M	L	Total	W	M	L
30	0	0	0	0	1	1	0	0	0	0	0	0
122	0	0	0	0	1	1	0	0	0	0	0	0
46	0	0	0	0	1	1	0	0	9	5	4	0
123	0	0	0	0	1	1	0	0	0	0	0	0
4	0	0	0	0	3	2	0	1	49	27	22	0
1	0	0	0	0	1	1	0	0	2	2	0	0
67	0	0	0	0	1	1	0	0	1	1	0	0
75	0	0	0	0	1	1	0	0	0	0	0	0
125	0	0	0	0	1	1	0	0	1	0	1	0
44	0	0	0	0	1	1	0	0	0	0	0	0
78	0	0	0	0	1	1	0	0	1	0	1	0
76	0	0	0	0	1	1	0	0	0	0	0	0
27	0	0	0	0	1	1	0	0	0	0	0	0
124	0	0	0	0	1	0	1	0	0	0	0	0
50	0	0	0	0	0	0	0	0	13	6	7	0
63	0	0	0	0	0	0	0	0	13	3	9	1
54	0	0	0	0	0	0	0	0	1	1	0	0
86	0	0	0	0	0	0	0	0	1	1	0	0
56	0	0	0	0	0	0	0	0	1	1	0	0
13	0	0	0	0	0	0	0	0	3	2	0	1
23	0	0	0	0	0	0	0	0	1	0	1	0
85	0	0	0	0	0	0	0	0	1	0	1	0
130	0	0	0	0	0	0	0	0	1	1	0	0
12	0	0	0	0	0	0	0	0	19	11	4	4
48	0	0	0	0	0	0	0	0	1	1	0	0
105	0	0	0	0	0	0	0	0	2	2	0	0
25	0	0	0	0	0	0	0	0	4	1	2	1

TABLE 35.--Continued.

	West				South				North			
Design #	Total	W	M	L	Total	W	M	L	Total	W	M	L
51	0	0	0	0	0	0	0	0	1	1	0	0
129	0	0	0	0	0	0	0	0	1	0	1	0
117	0	0	0	0	0	0	0	0	1	0	1	0
70	0	0	0	0	0	0	0	0	1	0	1	0
32	0	0	0	0	0	0	0	0	1	0	0	1
127	0	0	0	0	0	0	0	0	1	0	1	0
115	0	0	0	0	0	0	0	0	3	3	0	0
61	0	0	0	0	0	0	0	0	1	0	1	0
98	0	0	0	0	0	0	0	0	1	0	1	0
36	0	0	0	0	0	0	0	0	1	0	1	0
116	0	0	0	0	0	0	0	0	2	2	0	0
39	0	0	0	0	0	0	0	0	1	1	0	0
71	0	0	0	0	0	0	0	0	1	1	0	0

APPENDIX G

ARTIFACTS ASSOCIATED WITH GRAVES AT NAMORATUNGA 1 AND 2

A., B., H. End scrapers, lava

C. End and side scraper, lava

D. Side scraper, lava

E., F., I. Side scraper with serrated edge, lava

G. Single platform core, lava

Figure 84.--Artifacts in Grave Fill.

A., B. Single platform cores, lava

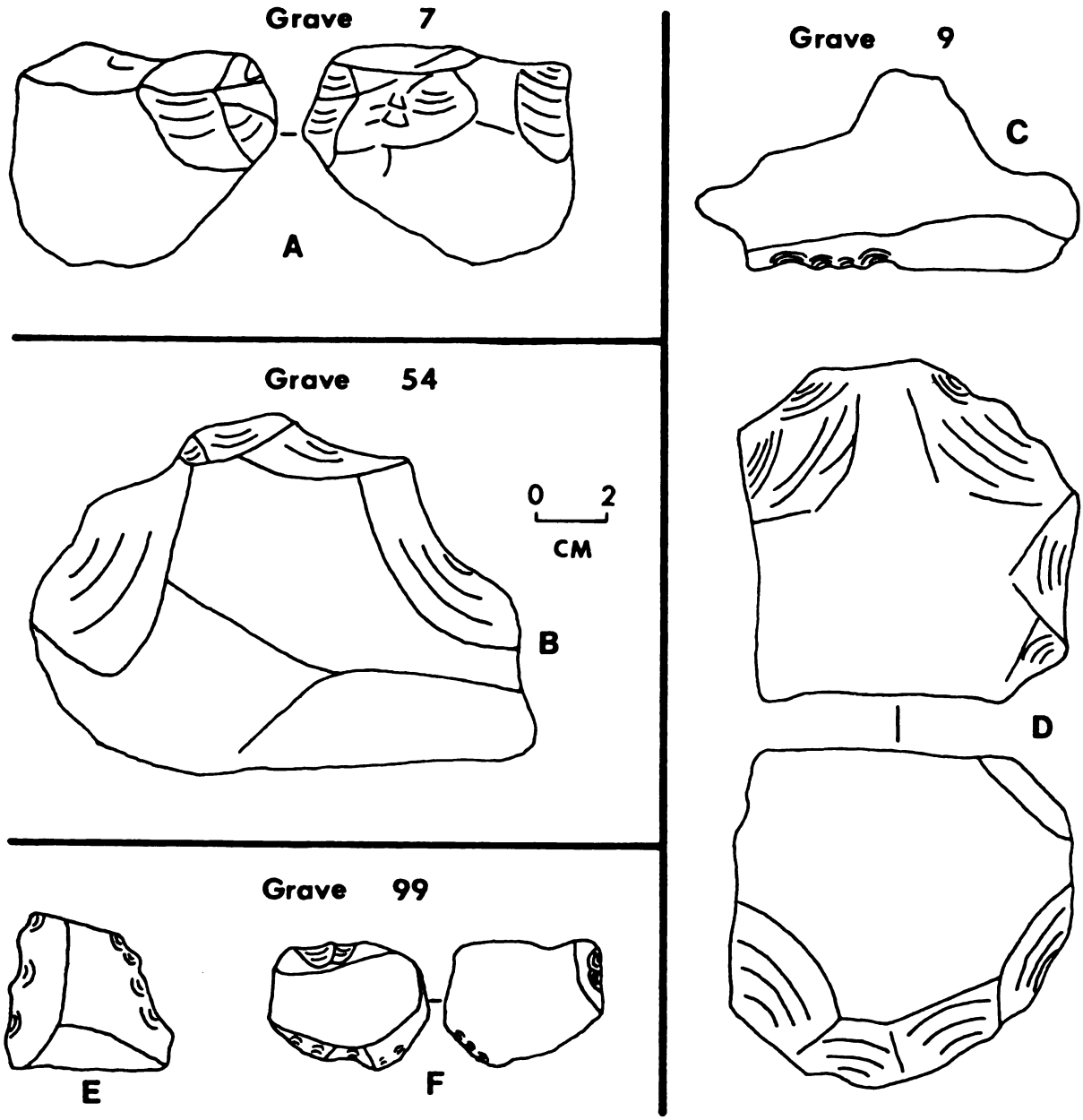
C. Side scraper, lava

D. Bifacial chopper, lava

E. End struck flake with edge utilization, lava

F. Side scraper with both sides worked, lava

Figure 85.--Artifacts in Grave Fill.



Artifacts in Grave Fill

A. Bifacial chopper, lava

B. Hammer stone, lava

C. Side scraper, lava

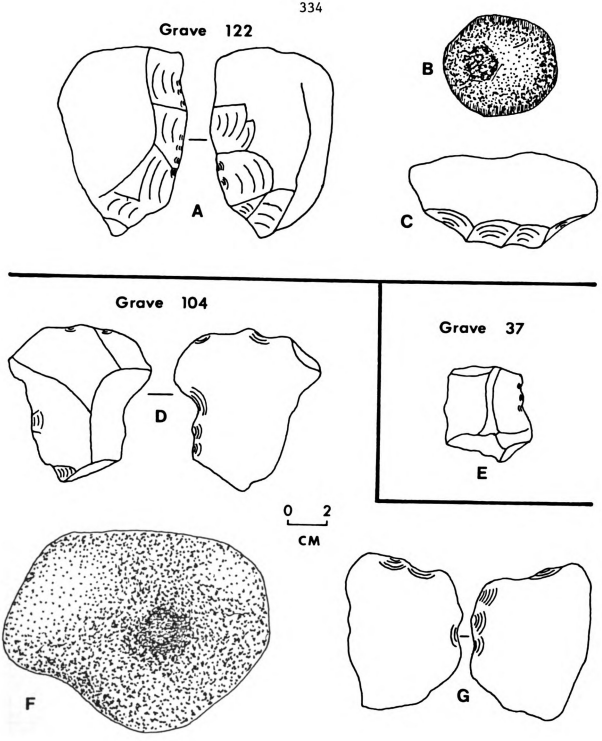
D. Side struck flake with notch, lava

E. Side struck flake, lava

F. Cobble with small depression pecked out, lava

G. End and side scraper, lava

Figure 86.--Artifacts in Grave Fill.



Artifacts in Grave Fill

A. End struck flake with notch, lava

B., D., F., H. End scrapers, lava

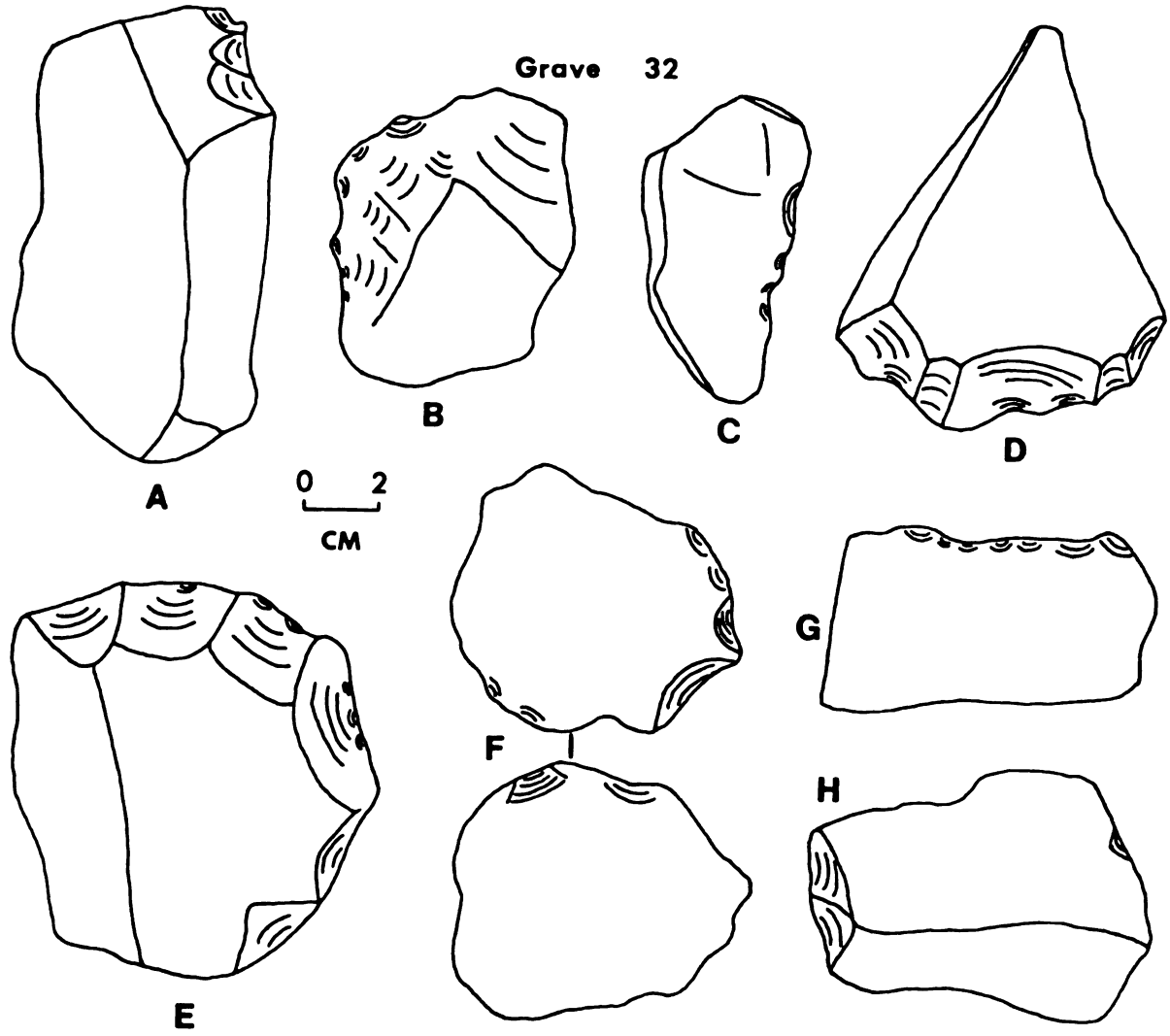
C., G. Side scrapers, lava

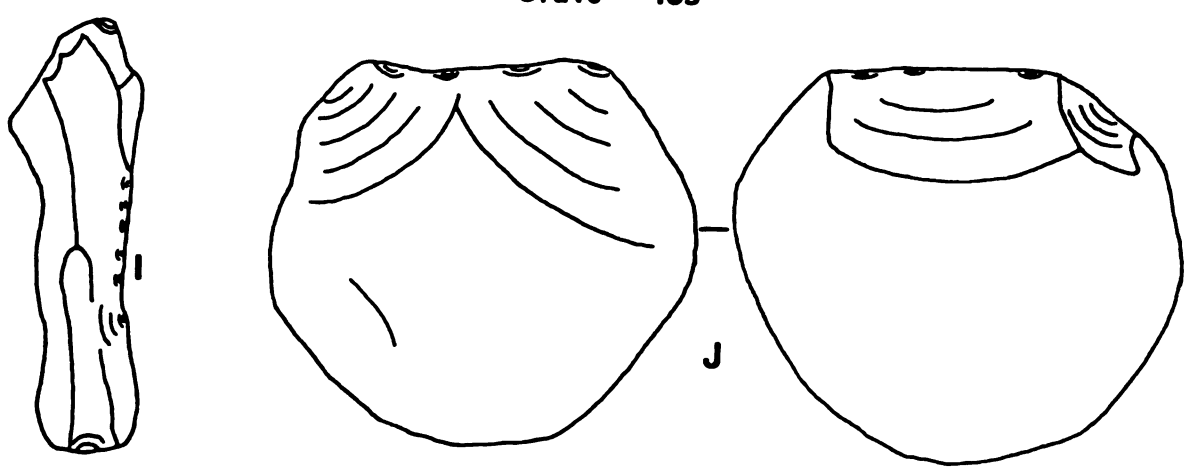
E. End and side scraper, lava

I. Blade, lava

J. Bifacial chopper, lava

Figure 87.--Artifacts in Grave Fill.





Artifacts in Grave Fill

A., D., G., H., M., N., O., S. End struck flakes with edge utilization, chert

B. Pecoir drill, chert

C. Side scraper, chert

E. End struck flake, lava

F. Side struck flake with edge utilization, chert

I., P. Single platform core, chert

J. Blade with edge utilization, chert

K., L. End struck flakes, chert

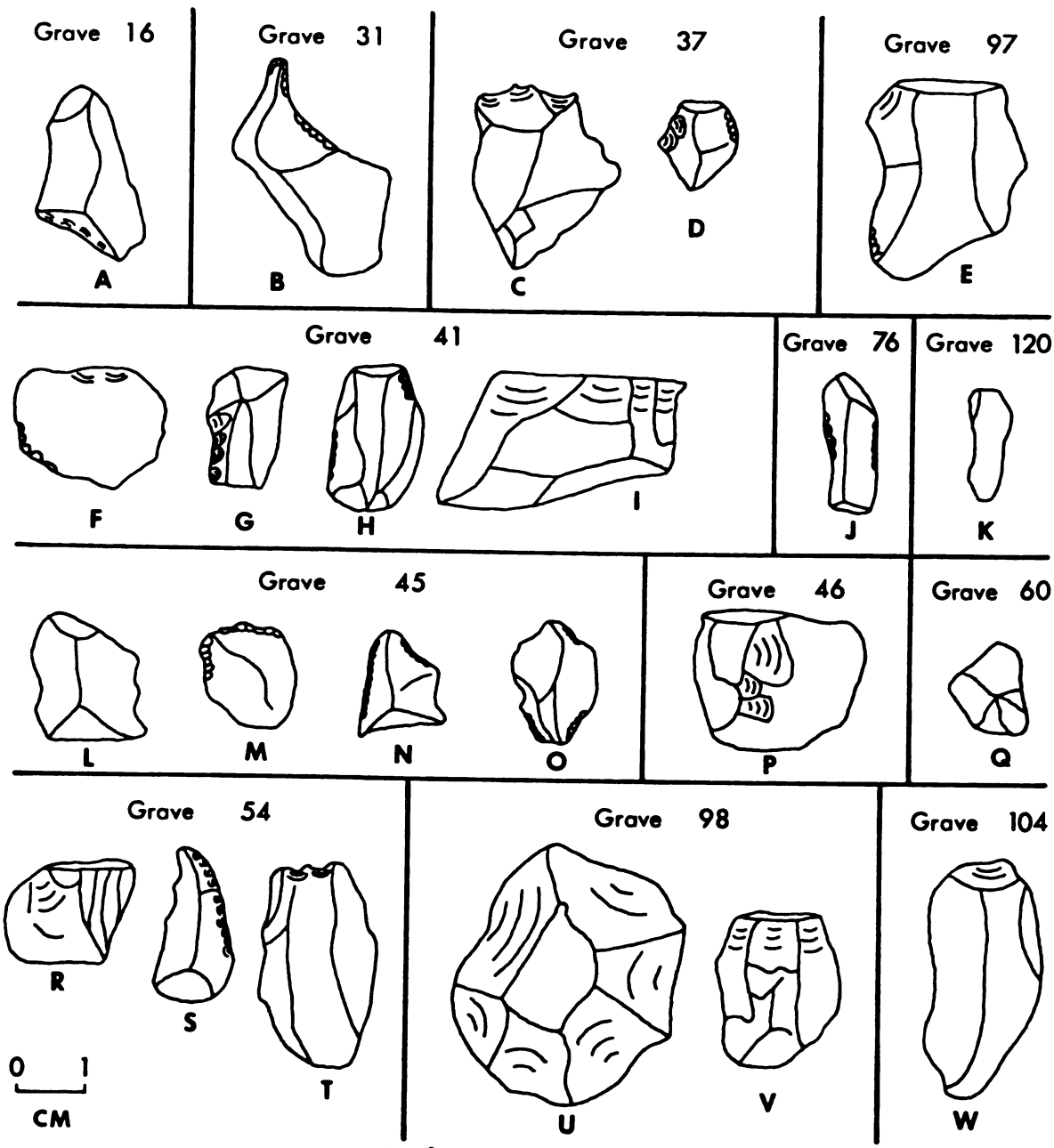
Q. Side struck flake, obsidian

R., U., V. Single platform core, quartzite

T. Side struck flake, chert

W. Blade, chert

Figure 88.--Artifacts in Grave Fill.



Artifacts in Grave Fill

A. Single platform core, quartzite

B., K., O. Single platform core, chert

C., D. Side struck flakes, chert

E. End struck flake, chert

F. Side struck flake with edge utilization, chert

G., I. End scraper, chert

H. Side struck flake, obsidian

J. Single platform core, obsidian

L. Blade with edge utilization, chert

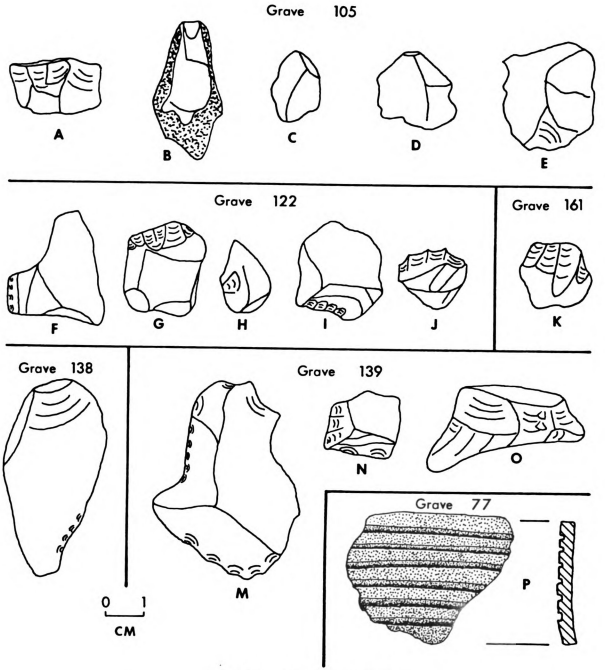
M. End scraper with notch, lava

M. End scraper, chert

N. End scraper, chert

P. Pot shard with linear grooves

Figure 89.--Artifacts in Grave Fill.



Artifacts in Grave Fill

A. Blade with notched edge, lava

B., C., D. End struck flakes, chert

E. Side struck flake, obsidian

F. Bladelet, obsidian

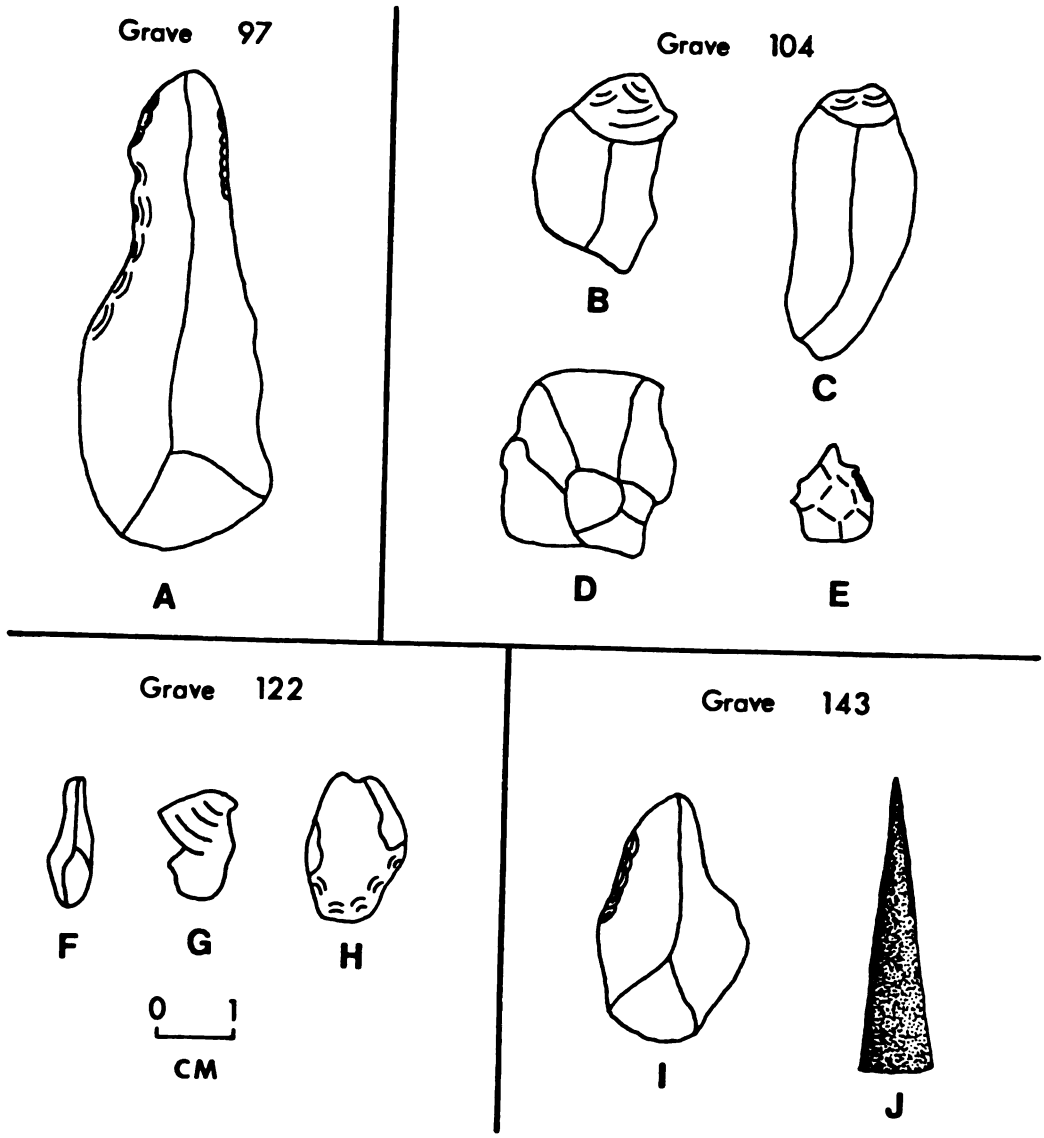
G. End struck flake, obsidian

H. End struck flake with edge utilization, obsidian

I. End struck flake with edge utilization, lava

J. Bone point

Figure 90.--Artifacts Found in Burial Pits.



Artifacts Found in Burial Pits

APPENDIX H

ARTIFACTS COLLECTED ON SITE SURVEY

A., B. End and side scraper, lava

C., E. End scraper, lava

D. Side scraper, lava

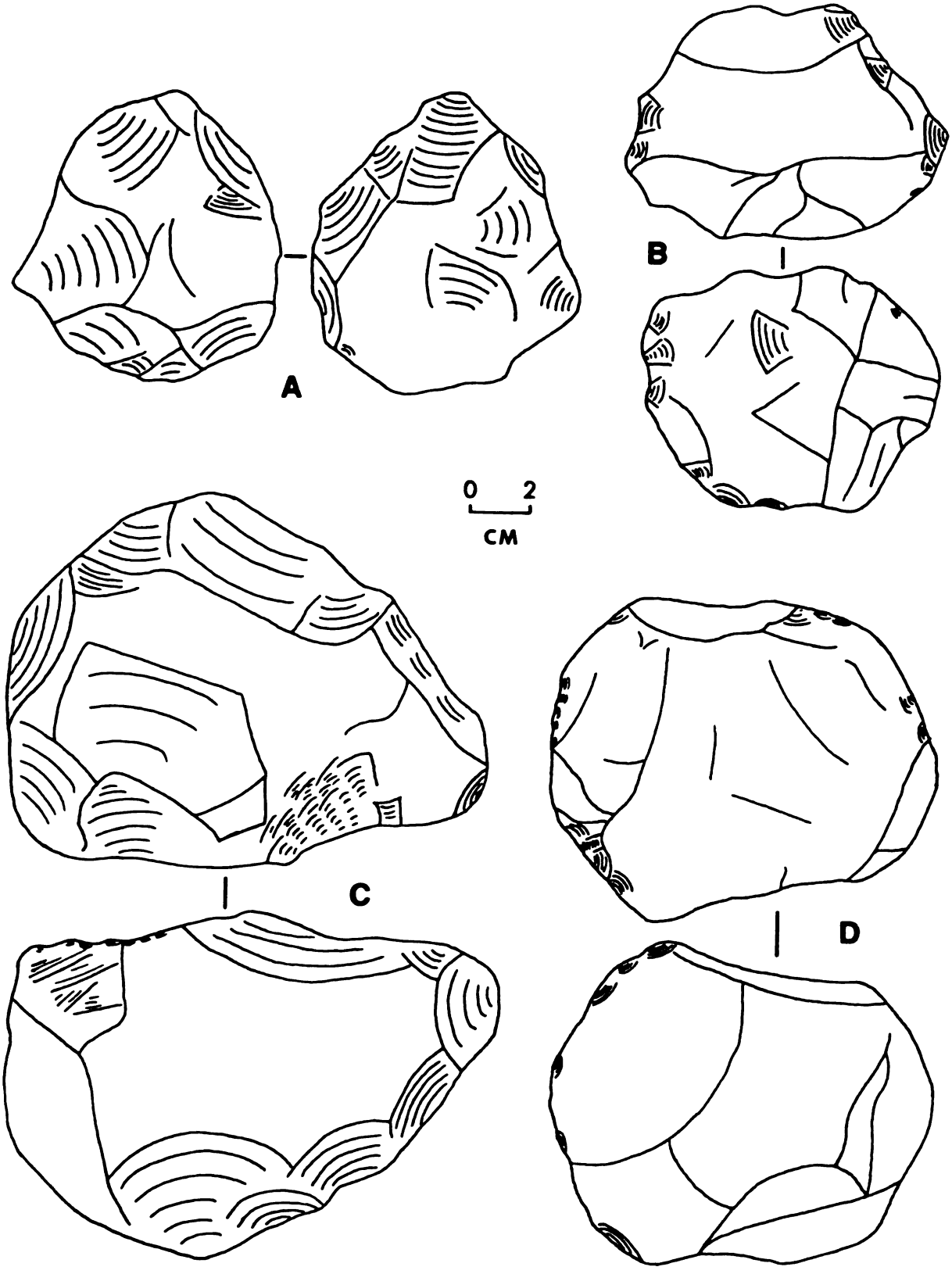
F. Hand axe, lava

Figure 91.--Apo Hill Site--Lithics.

A., B. Discoidal cores, lava

C., D. Bifacial choppers, lava

Figure 92.--Apo Hill Site--Lithics.



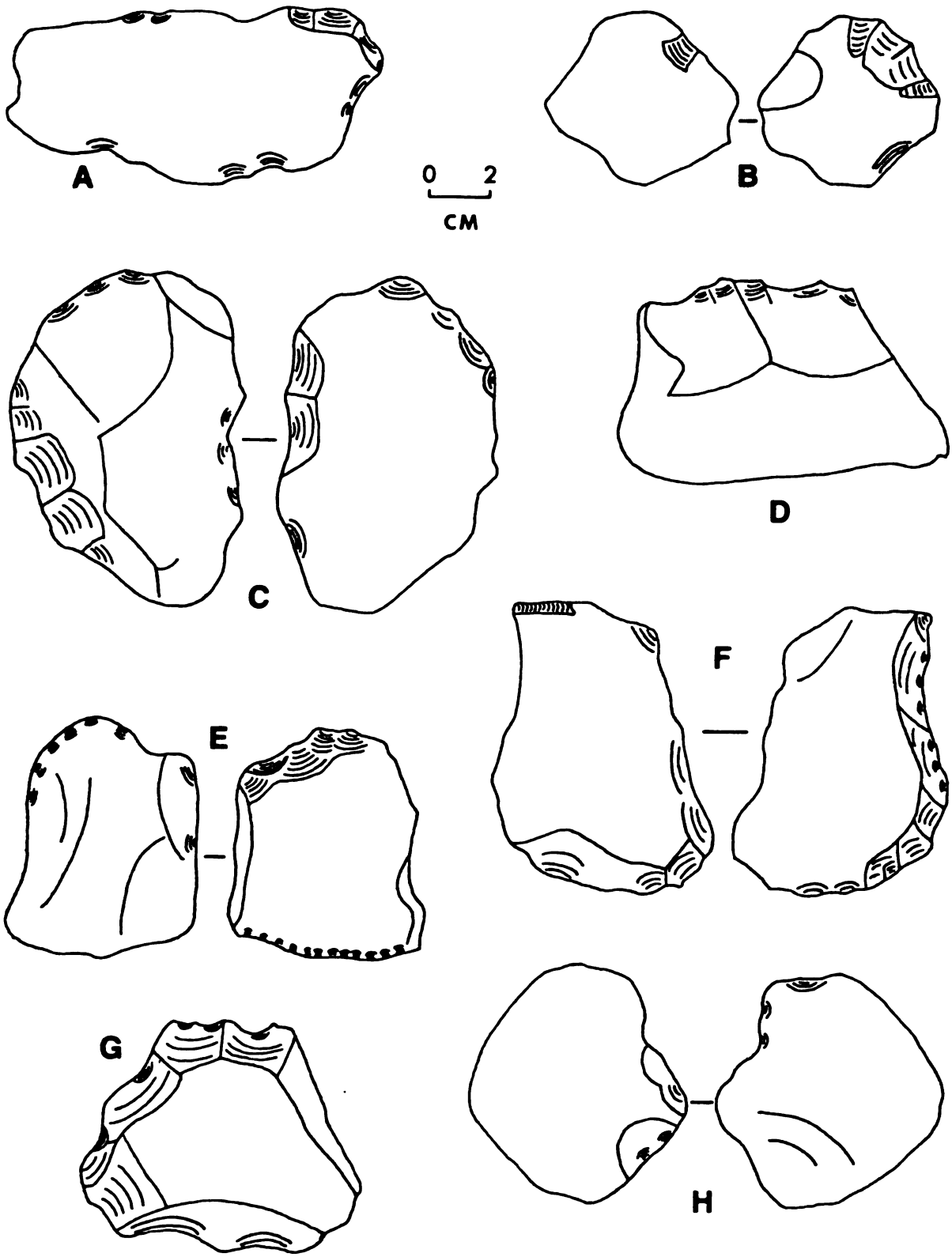
Apo Hill Site – Lithics

A., B., E., H. End scrapers, lava

C., G. Side and end scrapers, lava

D., F. Side scrapers, lava

Figure 93.--Kangatet Site--Lithics.



Kangatet Site — Lithics

A. Side struck flake, lava

B. Bifacial chopper, lava

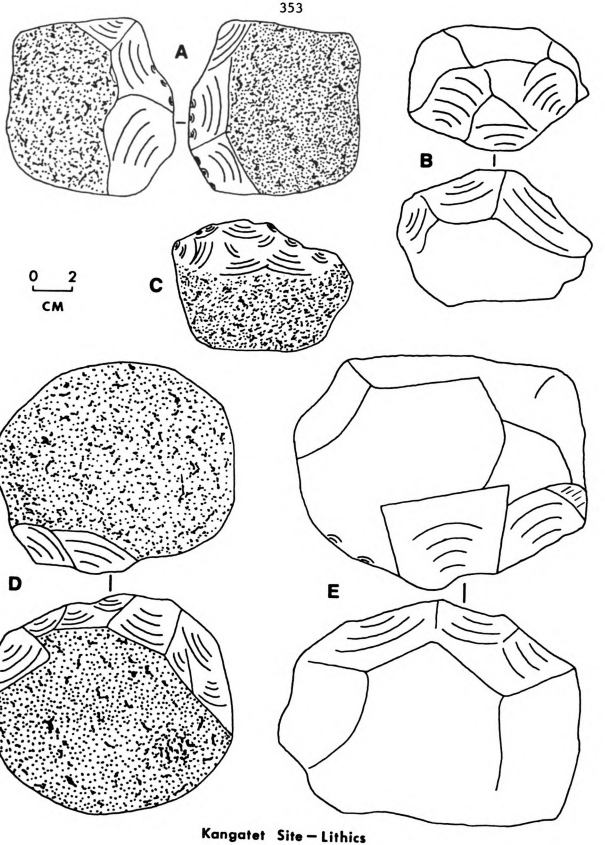
Figure 94.--Kangatet Site--Lithics.

A., D. Bifacial choppers with cortex, lava

B., E. Bifacial choppers, lava

C. Unifacial chopper with cortex, lava

Figure 95.--Kangatet Site--Lithics.



Kangatet Site – Lithics

A. Unifacial chopper with cortex, lava

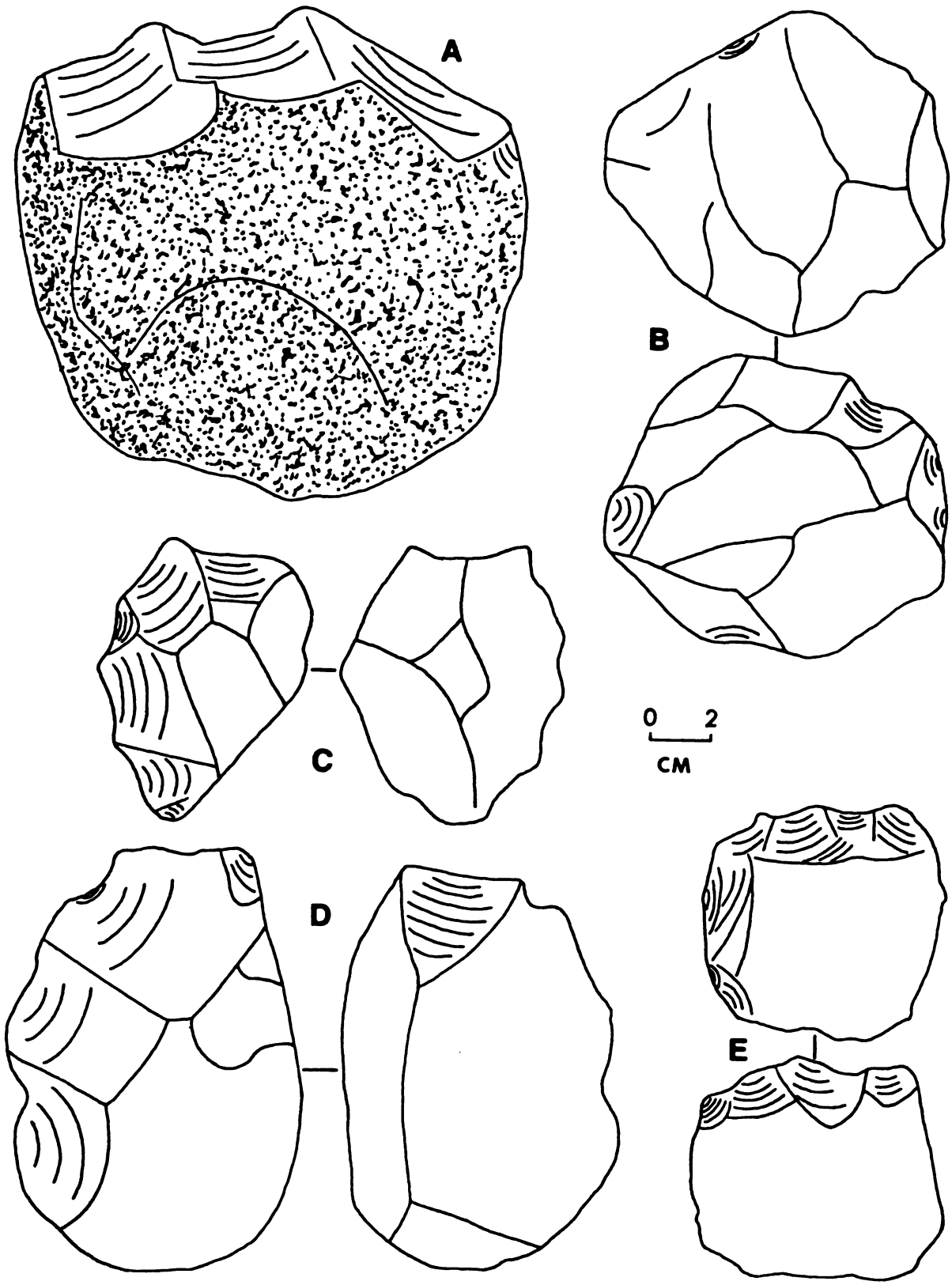
B. Discoidal core, lava

C. Single platform core, lava

D. Unifacial chopper, lava

E. Side and end scraper, lava

Figure 96.--Kangatet Site--Lithics.

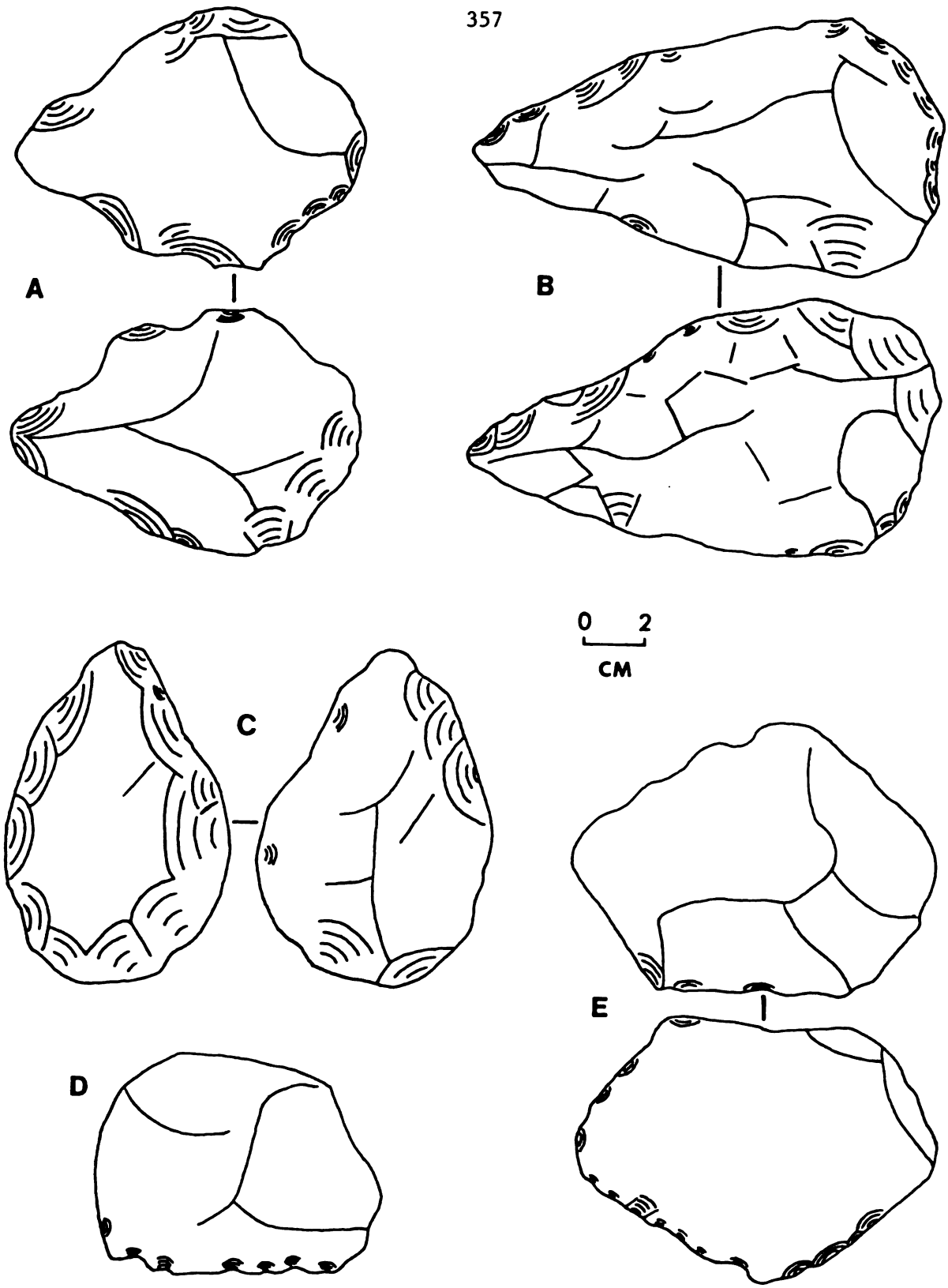


Kangatet Site — Lithics

A., B., C. Hand axes, lava

D., E. End struck flakes with edge utilization, lava

Figure 97.--Kangatet Site--Lithics.



Kangatet Site — Lithics

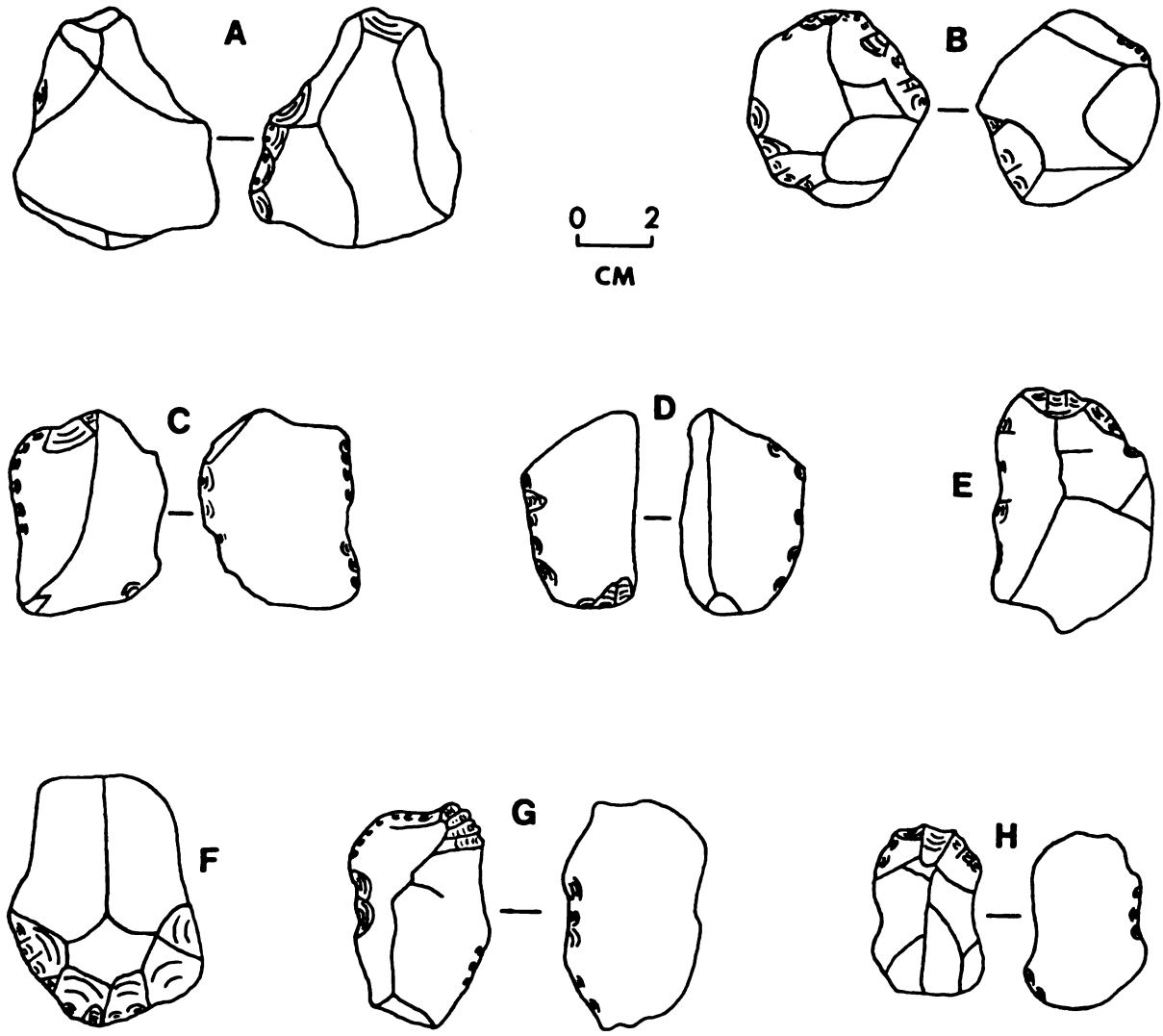
A. Side scraper, lava

B. Side scraper with both sides worked, lava

C., E., F., G., H. End scrapers, Lava

D. Side and end scraper, lava

Figure 98.--Morulim Hill Site--Lithics.



Morulim Hill Site – Lithics

A. Blade with edge utilization, chert

B. Single platform core, quartzite

C., D., E. End struck flakes with edge utilization, quartzite

F. End struck flake with edge utilization, chert

G. Side struck flake, quartzite

H. Side struck flake with edge utilization, quartzite

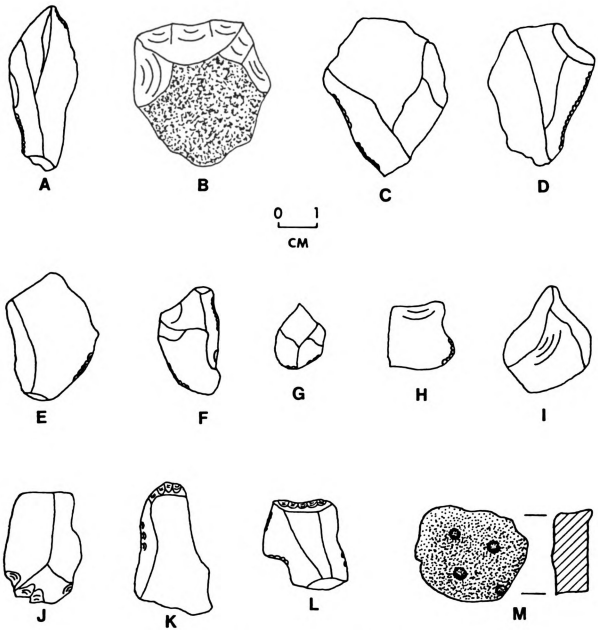
I. Side struck flake, chert

J., K. End scrapers, chert

L. End scraper, quartzite

M. Pot shard with punctate design

Figure 99.--Namoratunga 1 Surface Artifacts.



Namoratunga 1 Surface — Artifacts

A. Hand axe, lava

B. Side scraper with serrated edge, lava

C. End and side scraper, lava

E., F. Two sides and end scrapers, chert

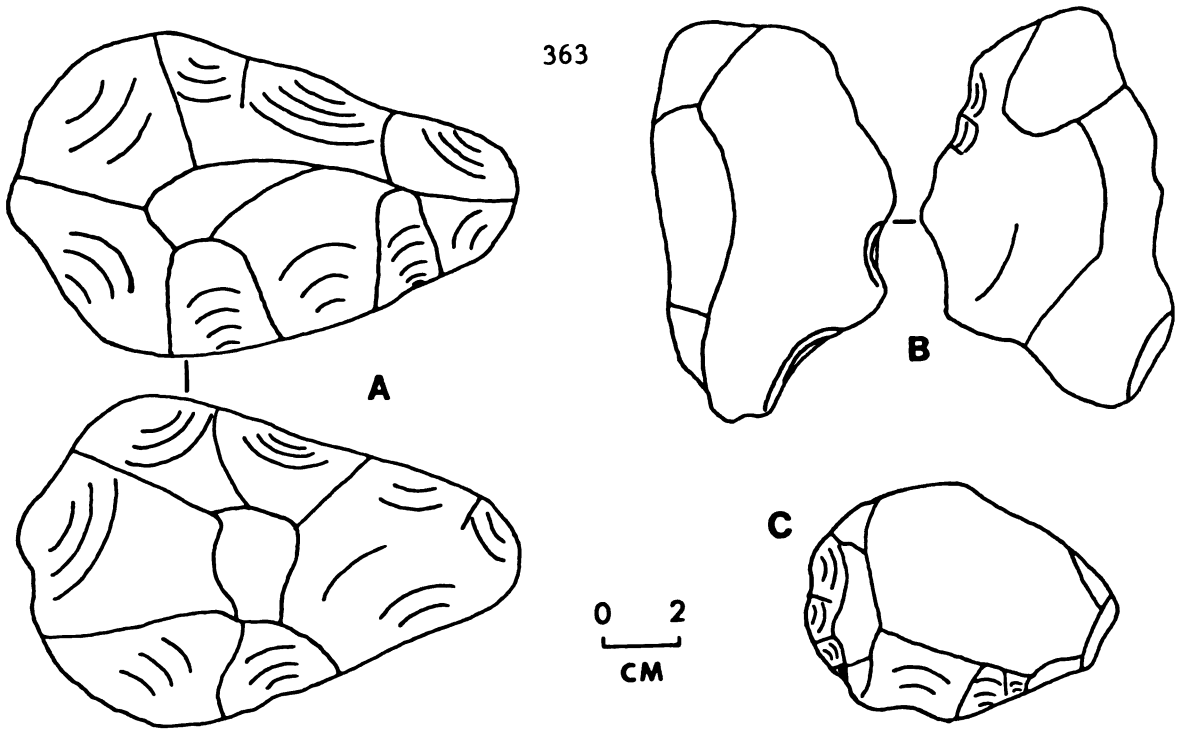
G. Side scraper with cortex, chert

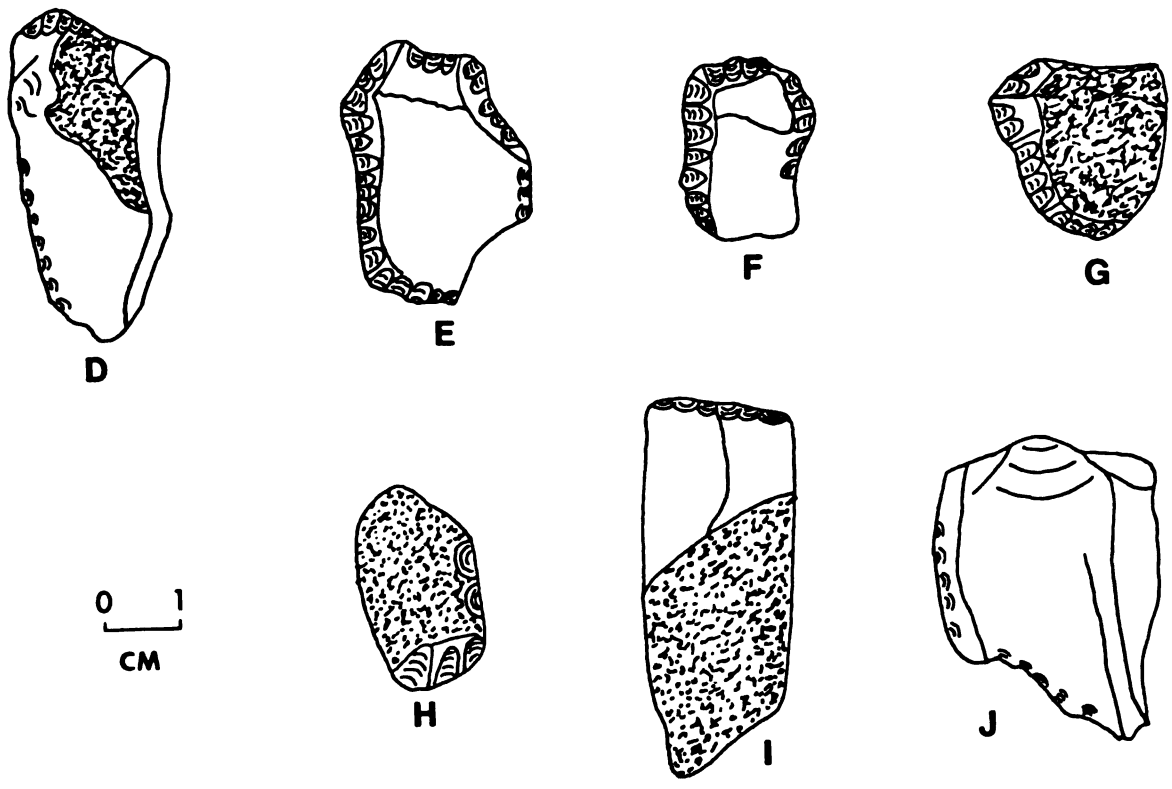
H. Side and end scraper with cortex, chert

I. End scraper with cortex, chert

J. End struck flake with edge utilization, chert

Figure 100.--Namoratunga 2 Surface Artifacts.





Namoratunga 2 Surface — Artifacts

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This is to certify that the

thesis entitled

The Namoratunga Cemetery and Rock Art Sites of NW Kenya: A Study of Early Pastoralist Social Organization

presented by

B. Mark Lynch

has been accepted towards fulfillment
of the requirements for

Ph.D. degree in Anthropology

Lawrence H. Robbins

Major professor

Date May 16, 1979

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