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EXCAVATIONS IN LAIKIPIA

An Archaeological Study of the Recent Prehistory in the Eastern Highlands of Kenya

ARI SIIRIÄINEN

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LARS PETTERSSON

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FOREWORD

This investigation is essentially a case study in which an attempt will be made to reconstruct regional culture history on the basis of artefactual, economic and ritual cultural evidence in archaeological material. Special attention will be paid to the cultural processes revealed by continuity and discontinuity in the succession of material culture. Another explicit aim is ethnohistorical: to correlate archaeological observations with historical linguistic and oral historical data in order to achieve a synthesis of ethnic succession in the study area.

On a more general level, the scope of this investigation is to demonstrate that even in rather simple material culture situations archaeological sequences can be used as a relevant data base in reconstructing culture history which, tested by other lines of evidence such as historical linguistics or oral traditions, can be interpreted in ethnic terms.

Although it is realized that to reach tenable conclusions in the complex problems involved in this kind of approach, both extensive and intensive field research are needed, only an intensive field investigation within a restricted area was carried out. This approach was chosen for two reasons: first, the area was almost completely unknown archaeologically, and secondly, especially in Africa it is by far the most practical way of obtaining basic relevant data due to the lack or inadequancy of chronological and typological frameworks for scattered observations.

The fieldwork was carried out under the aegis of the British Institute in Eastern Africa (Nairobi) and supported by the Academy of Finland; the latter institution also provided funds for completing this report. Invaluable information was obtained in 1978—79 at the University of California at Berkeley during a stay on a scholarship granted by the ASLA-Fulbright Foundation.

I am indebted to several colleagues and friends for academic and practical help. In particular I want to mention Dr Neville Chittick, formerly Director of the British Institute, and Dr David Phillipson, formerly Assistant Director, for their support. Mr and Mrs Gilfred Powys of the Kisima Farm, Rumuruti, are thanked for their interest and help during the strenuous fieldwork periods. Mr Anthony Maingi, Mr Joseph Mturi, Mr Philip Pochon, Ms Kathy Johnson and Dr Richard Bell are remembered as excellent assistants in the field. Mr Simon Reuben of the British Institute has been helpful in the laboratory.

Several researchers have put their expertice into my disposal. Dr Högne Jungner and his staff in the Radiocarbon Laboratory of the University of Helsinki are acknowledged for the prompt dating work; Dr Diane Gifford (University of California at Santa Cruz) and Dr Michael Gramly (formerly University of New York at Stony Brook) have analyzed the refuse faunae; Dr Philip Rightmire (University of New York at Binghampton) inspected the human bones and Dr Pat Shipman (The Johns Hopkins University) determined the degree of burning of Burial 4 in KFR-A5; Dr Harry Merrick (The National Museums of Kenya) gave the generous access to the unpublished data on the obsidian analysis.

The Africanist colleagues in Berkeley, Professor and Mrs Desmond Clark, Professor and Mrs Glynn Isaac, Dr and Mrs Stanley Ambrose and Dr and Mrs Steven Brandt are remembered for friendship and inspiring discussions. Mrs Marjatta Hiisivaara-Hela (the Academy of Finland) has followed my African research through all the years; her support has been invaluable.

Espoo 1984 *Ari Siiriäinen*

LAIKIPIA

Present and past environment

Laikipia is the northern part of the highland area of central Kenya east of the Great Rift (Gregory Rift) Valley stretching from the south of Nairobi northwards (Fig. 1). Laikipia is borded by the massifs of Mt. Kenya and the Nyandarua (formerly Aberdare) Range in the south and by the Rift in the west; to the north and east it merges gradually into more low-lying plains, the Lorogi Plateau and the Uaso Ngiro lowlands. The upper course of the Uaso Ngiro river flows from Mt. Kenya northwards through the plateau, turns eastward further north and receives additional waters from the slopes of Mt. Kenya, the Nyandarua Range and the Marmanet mountains in the west. The most important of these rivers are the perennial Suguroi and Uaso Narok rivers in the western part of the plateau both flowing in a southwest-northeast direction.

The first European to travel through Laikipia was Leutenant Ludwig von Höhnel who, heading towards northern Kenya from the Ngongo Bagas area with Count Teleki, took a side journey in late 1887 to explore the Uaso Ngiro river and followed its course some 150 km downstream (von Höhnel 1894). He ob-

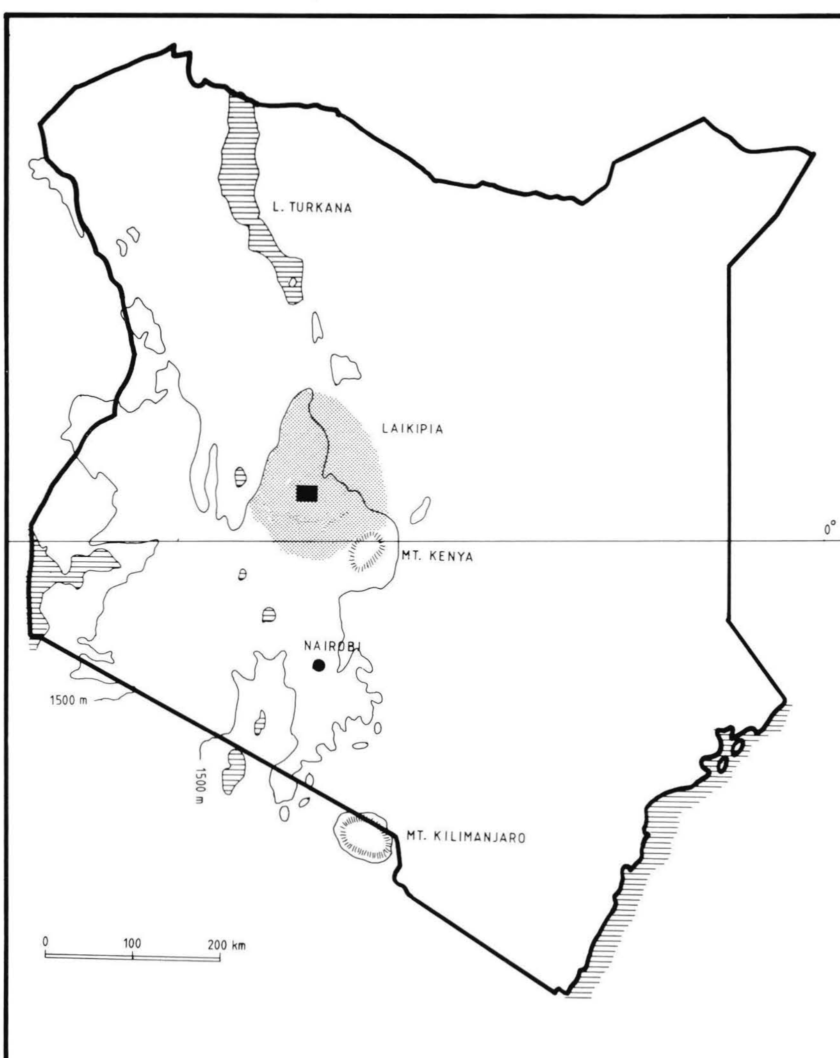

Fig. 1. Kenya. The study area marked with black rectangle.

served the Laikipia plateau to be of volcanic origin and deduced, from the general trend of the highest plateau that the lava and ashes originated from somewhere to the west of the plateau itself and not from Mt. Kenya. Von Höhnel is rather taciturn in describing Laikipia. He states that the Uaso Ngiro forms the eastern boundary of the Maasai territory in Laikipia and that to the east of the river there are no game or inhabitants. Von Höhnel met numerous Maasai in Laikipia as well as Wandorobbo (Dorobo) along the Uaso Ngiro. To von Höhnel the Wandorobbo seemed to resemble the Maasai in outlook and he distinguished the two tribes mainly by their subsistence basis, the Wandorobbo being hunters and eager honey gatherers.

J. W. Gregory, a geologist who travelled in the southern part of the Laikipia plateau in 1893, gives a more analysed physical description of the area (Gregory 1898) which he later furnished with additional data and analyses (Gregory 1921). The main geological outlines were given by the geologist Shackleton of the Geological Survey of Kenya who carried out the first geological mapping of the Laikipia highlands (Shackleton 1946).

There are two main geological formations in Laikipia: Tertiary volcanics consisting of nearly horizontal layers of phonolitic lava of Miocene age (Rumuruti Phonolites) in the west, and basement rock (granites and gneisses) of the Pre-Cambrian Complex in the east (Fig. 2). Phonolitic lava, resting on the Basement Complex and originating from the fissures in the Laikipia Escarpment zone, forms the high plateau which inclines gently eastwards from a general elevation of c. 2100—2200 m at the Escarpment to c. 1800 m at the eastern edge of the phonolite plateau. The Basement Complex zone forms an undulating terrain mainly under 1500 m asl. with some low mountain ranges running in a north-south direction with peaks reaching 2300—2400 m altitudes in the eastern part of Laikipia (Lol Daika Range). Thus a basin exists in the central part of Laikipia through which the upper course of the Uaso Ngiro flows.

The phonolite escarpment is eroding by pediplanation as several steplike surfaces (pediments) westwards irregularily so that a wide »inlet» has been formed where the lower reaches of the Uaso Narok now flows (Fig. 3). The Basement Complex is thus uncovered by erosion but only small hills (*kopjes*) and

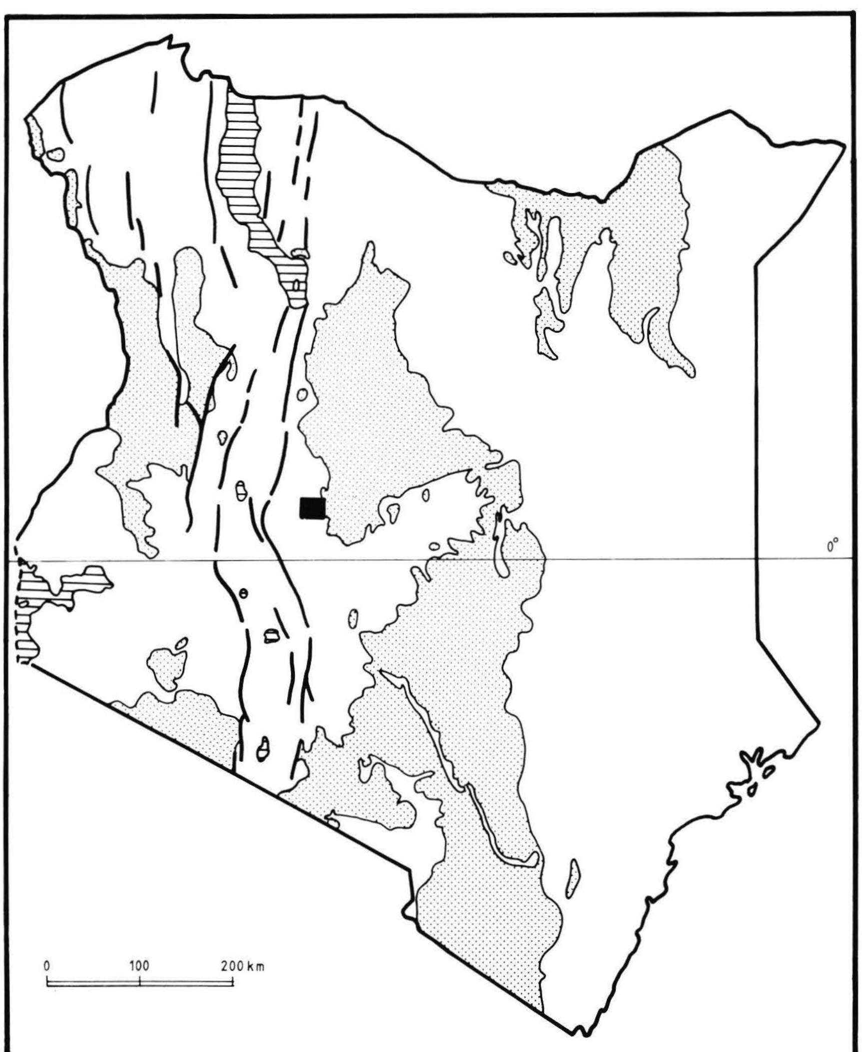

Fig. 2. Kenya. Faults (thick lines) and basement rock areas (stippled).

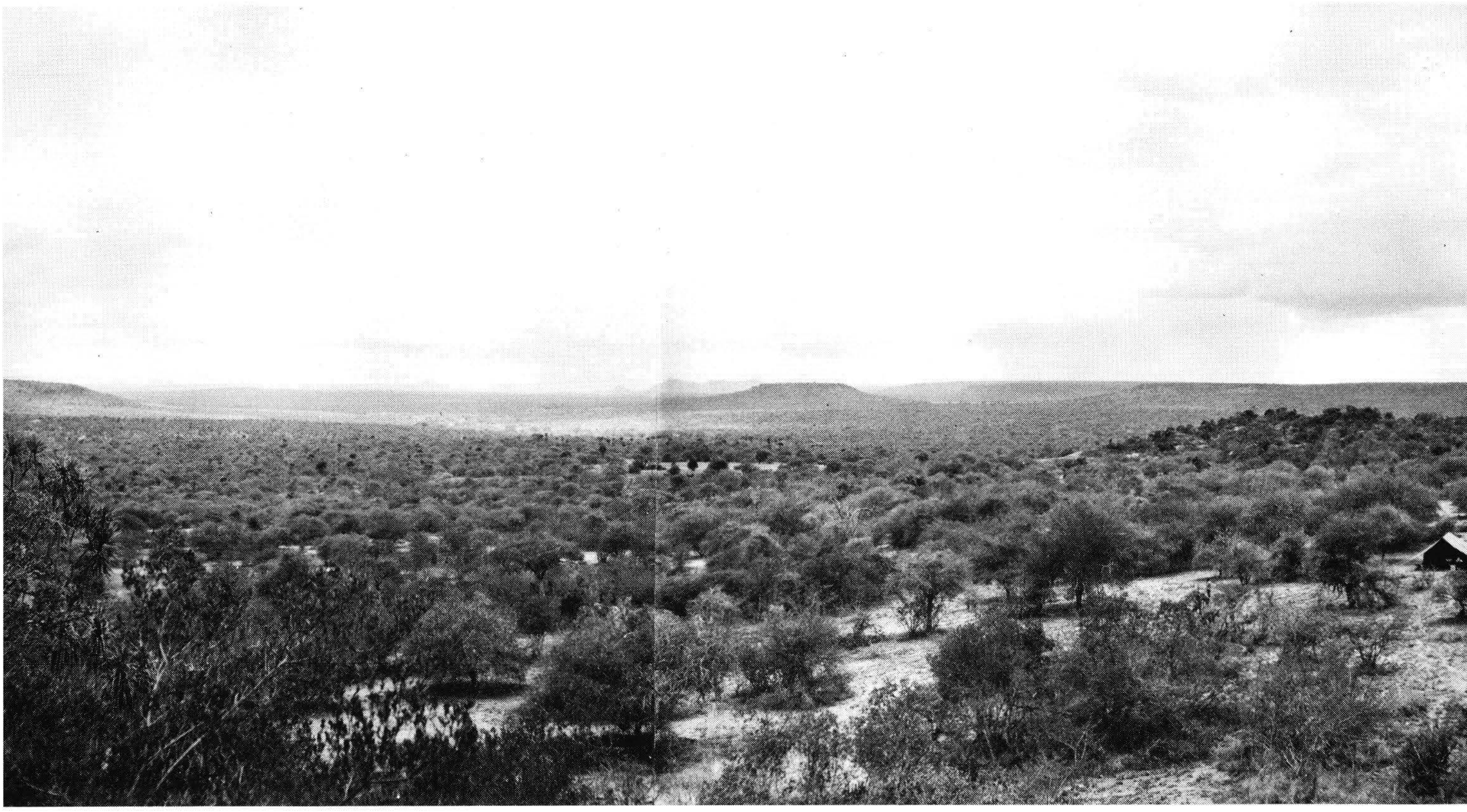

Fig. 3. View from KFR-A4 and A5 towards the east over the Uaso Narok and Uaso Ngiro valley.

low ridges are seen above the colluvial debris resulting from the erosion and covering most of the slopes.

The Laikipia plateau is situated close to the most rainy areas in Eastern Africa: the Nyandarua Range and Mt. Kenya where annual precipitation reaches c. 2000 mm (Fig. 4). However, the rainfall gradient north from these elevated high-rainfall areas is very steep so that the southern and western parts of the Laikipia plateau receive only 500—700 mm and the central and northeastern parts 300—500 mm annual rainfall. The rains fall mainly in two seasons, c. 80 % of the total annual rainfall centres around April-May (the long rains) and October-November (the short rains). In most of Laikipia rains are fairly unpredictable and drought years are frequent; the probability of obtaining less than 500 mm rain a year is calculated as over 30 %. Moreover, the rains often fall in short, heavy rains thus causing heavy sheet and gully erosion in sloping terrain; this erosion is well illustrated by the estimates that the daily sediment transport of the Uaso Ngiro can be as high as one million tonnes per year — corresponding to a soil removal of nearly 70 tonnes per km^2 per day (Kenya's National Report to the United Nations on the Human Environment, Nairobi 1972, p. 43).

The mean daily temperature is 22—26°C and it rarely exeeds 35°C while the minimum mean is 6—14°C; higher temperatures prevail in the northern and northeastern sections of Laikipia. Within one hour of sun rise the air temperature increases more than 10°C and it is evident that exfoliation due to rapid temperature changes, especially in the granite *kopjes,* is most prominent on the eastern and southeastern rock walls: it is in these walls that the rockshelters are mainly found (Fig. 5). This erosion together with soil denudation is also responsible for the extensive cobble mantles found especially on the upper talus slopes below the rock outcrops.

Because of poor drainage the uppermost pediment surface, at an elevation of 1900 m, features a grumusolic soil type commonly called »black cotton soils» with large cobble surfaces. This supports only sparse open grassland vegetation with scattered Acacia bushes. Below the phonolitic escarpment the soil type is determined mainly by the Basement Complex as brownish and reddish loamy sands. Although these soils are intrinsically infertile and strongly leached, in slopy areas with moderate rainfall the lateral seepage of water keeps the topsoil rich enough in plant nutrients to support relatively lush vegetation. In much of Laikipia, however, probably because of rather heavy grazing of both wild and domestic animals, the undergrowth is very sparse allowing an extensive lateral creep of soil weakening the soil potential. These soils grow bushed grassland with scattered trees. The bush, consisting mainly of thorned Acacia and Themeda, is in parts alomost impenetrable, and it is obvious that without grazing

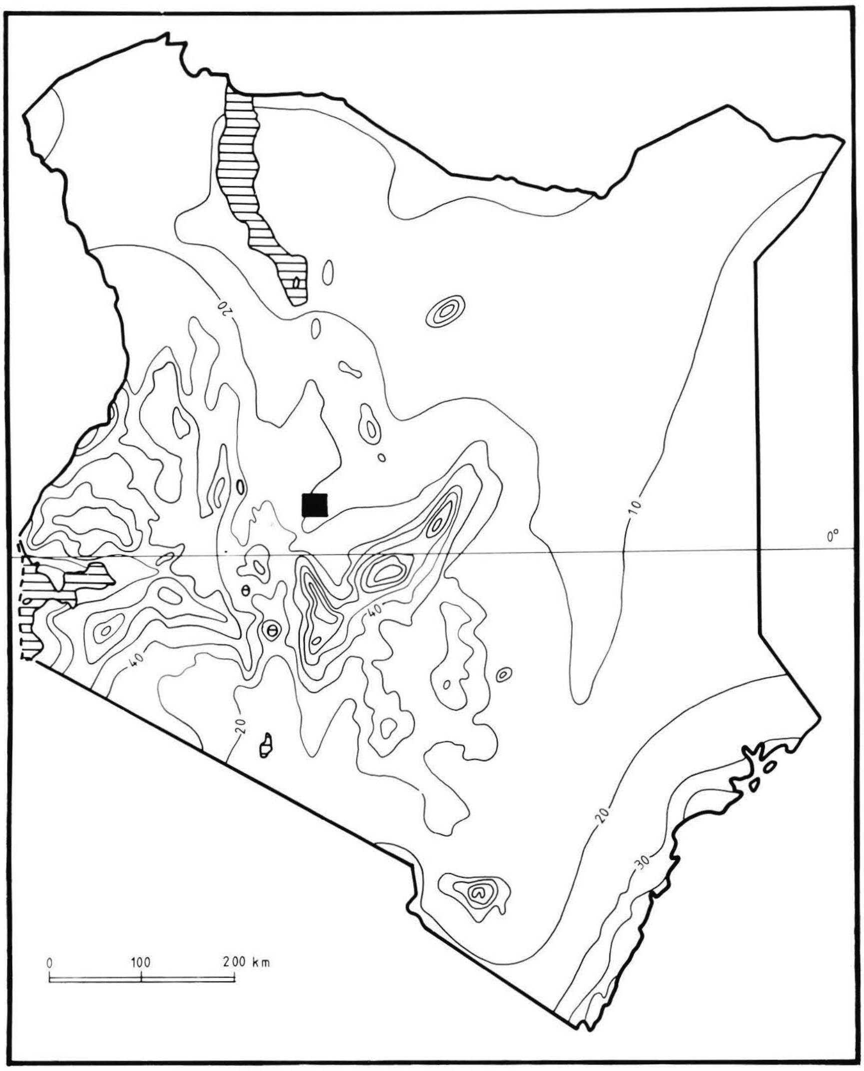

Fig. 4. Kenya. Mean annual rainfall patterns; isohytes with 10 inches' intervals.

large areas would turn into bush thicket. According to Lind and Morrison (1974 p. 68) much of the grassland in Eastern Africa is in fact »derived», i.e. maintained in that condition by regular burning and the grazing of wild or domestic animals.

In Lind's and Morrison's (1974) general ecological classification Laikipia belongs to eco-climatic zones IV and V (semiarid and arid zones) which are considered fairly good rangeland, and under conditions of moderately high rainfall, such as is the case in southern and central Laikipia, the pastoralists need not be even entirely nomadic. These ecozones, although liable to anomalies in precipitation, usually also maintain a rather varied and rich wild fauna.

In Bower's (Bower et al. 1977 fig. 1) ecozone classification according to altitude and rainfall for archaeological analysis of land use/cultural variables, Laikipia would fall into type 4E (altitude 5000—6000 ft, mean annual rainfall below 600 mm).

As stated above, an ecozone like the one described is good rangeland, but cultivation is not profitable. Nowadays some wheat and pyrethrum is grown on a small scale on European cattle ranches in the southwestern part of Laikipia.

In recent years there has been a steady accumulation of palaeogeographical data in Eastern Africa. The new evidence, thanks mostly to new dating techniques, shows that the pluvial-interpluvial succession worked out by L. S. B. Leakey is only partly valid; this is particularly the case with the Holocene, the crucial period for the present study.

Leakey (eg. 1952) postulated on the basis of Rift Valley lake beach evidence two Holocene wet periods, the Makalian during the Elmenteitan and »Kenya Wilton» industries (prior to 5000 BC) and the minor Nakuran during the Gumban phase (beginning c. 3000 BC). These wet episodes were also traced in sequences from other parts of Eastern Africa, notably Olduvai Gorge (Leakey 1952) and Uganda (Wayland 1952). Recent evidence of Holocene climatic fluctuations gives a somewhat different picture, and there is some controversy on how this evidence should be interpreted.

Fig. 5. Typical exfoliation of the basement rock (above KFR-A5).

According to van Zinderen Bakker Sr. and Coetzee (1972) both pollen analyses and lake level studies in different parts of the East African plateau indicate maximum humidity during the period 3000/2600 to 1000 BC with a subsequent trend towards the present-day situation. Sites closest to the study area in their material are situated in the Cherangani Hills in the western highlands of Kenya, Lake Victoria basin, and Mt. Kenya. However, detailed palynological, geomorphological and limnological investigations in the elevated Nakuru/Naivasha plateau in the Rift Valley, as well as the archaeological observations of the Eburran industry there (formerly Kenya Capsian; see Bower et al. 1977), clearly demonstrate that during the period 10 000 to 4000 BC precipitation was considerably higher than to-day (Coetzee 1964, Washbourn-Kamau 1975, Richardson & Richardson 1972), while between c. 3500 and 1000 BC a much drier climate prevailed and after that rainfall increased towards present values (cf. Richardson 1966, Butzer et al. 1972).

Further, there are relevant data available for our purposes from the Lake Turkana (Rudolf) basin (Butzer 1971, Butzer et al. 1972, Beadle 1974, Phillipson 1977). After a low lake level around 8000 BC there is wide-spread evidence of rising water level reaching an elevation of 77—80 m above the present level during the former half of the seventh millenium BC; a subsequent falling of the level began during the third millenium BC so that c. 2000 BC it had reached the 65 m stage (Phillipson 1977 a p. 11). There was obviously a short transgression period of the lake to the 70 m level just before 1000 BC, and a minor one during the 1st millenium AD.

Finally, the sedimentological sequence in the Nile Valley, worked out by de Heinzelin (1968) and Butzer and Hansen (1968), bears some relevance in our case as it reflects rainfall fluctuations in the Ethiopian highlands due to the fact that about 3/4 of the Nile waters derive from the Blue Nile (de Heinzelin 1968 p. 48). De Heinzelin's Nile High Water Curve from the Wadi Halfa region in the northern Sudan, based on numerous geological sections and radiocarbon determinations, shows a general lowering trend from c. 20 000 BC onwards with some oscillations, possibly at least partly due to channel erosion. The Arkin Formation, dated between c. 8500 and 3500 BC, was deposited during a relatively high level stage with a gradual lowering trend and a sudden drop of c. 8 m around 3500 BC. This high level stage with rapid regression corresponds to the high level stage of Lake Turkana mentioned above. Of particular interest are the two minor high water periods subsequent to the Arkin stage, the former during the Pharaonic Middle and New Kingdom times (2nd millenium BC) and the latter during the Christian period (c. AD 600 to 1000) (cf. also Säve-Söderbergh in Gardberg 1970 p. 18 and fig. 1 where abnormally high water levels are assumed between c. AD 700 and 1050). The younger of these oscillations is also reflected in Butzer's and Hansen's data further north in Upper Egypt: Member II of the Shaturma Formation (around AD 1000).

To sum up, there is consistent evidence from different areas in Eastern Africa of a relatively humid phase during the late Pleistoncene — early Holocene period terminating during the mid-4th/early-3rd millenium BC and some, though not equally consistent, evidence of subsequent minor humid spells during the 2nd millenium BC and around AD 1000. This gives, however, only a very general background to the climatic history for our investigations in Laikipia, and especially within an area of steep rainfall gradients such as Eastern Africa (cf. p. 11) any straightforward correlations between areas wide apart should be avoided.

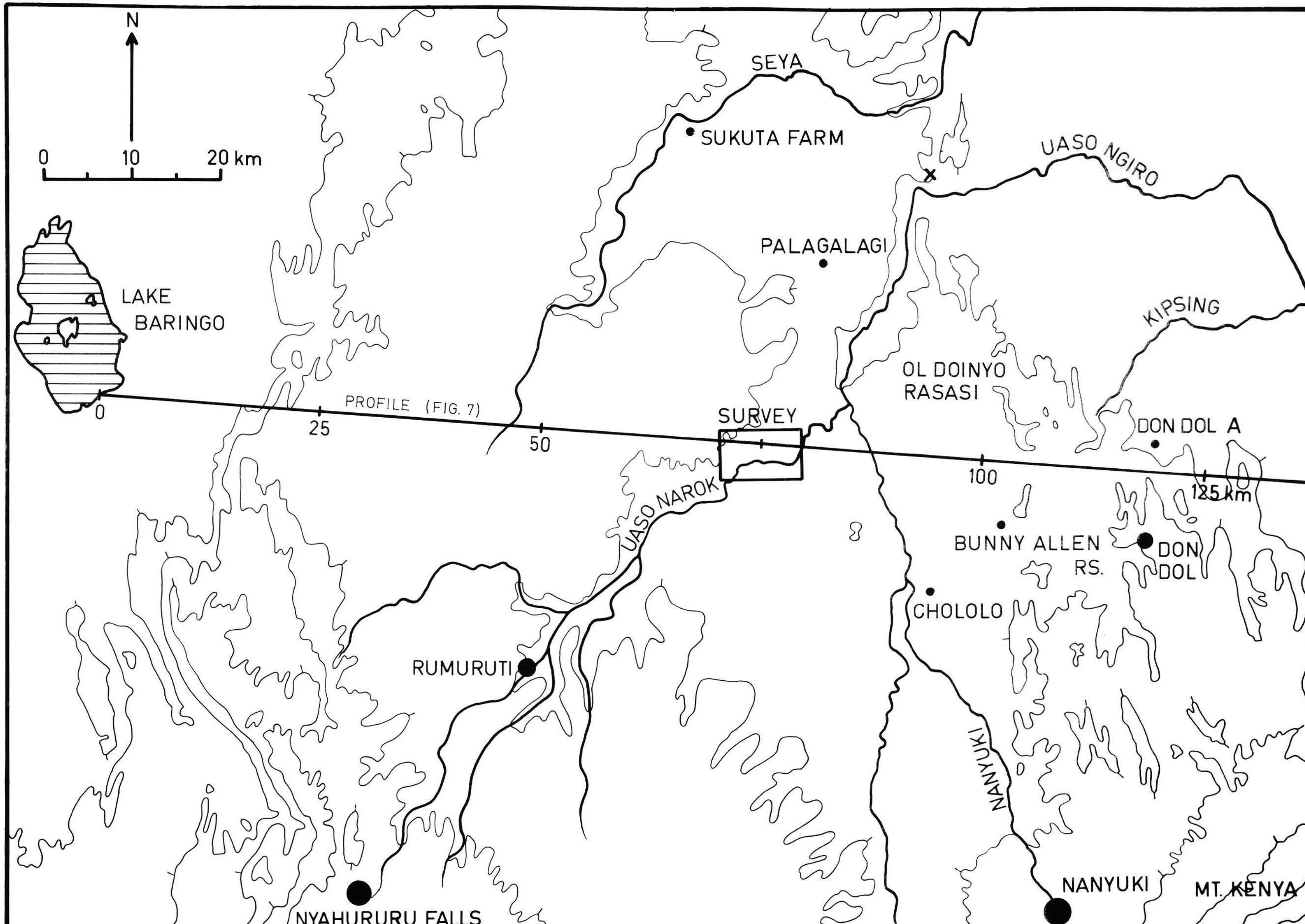

Fig. 6. Map of the western part of the Laikipia highlands showing the survey area, sites mentioned in the text outside the survey area and the position of the profile in Fig. 7.

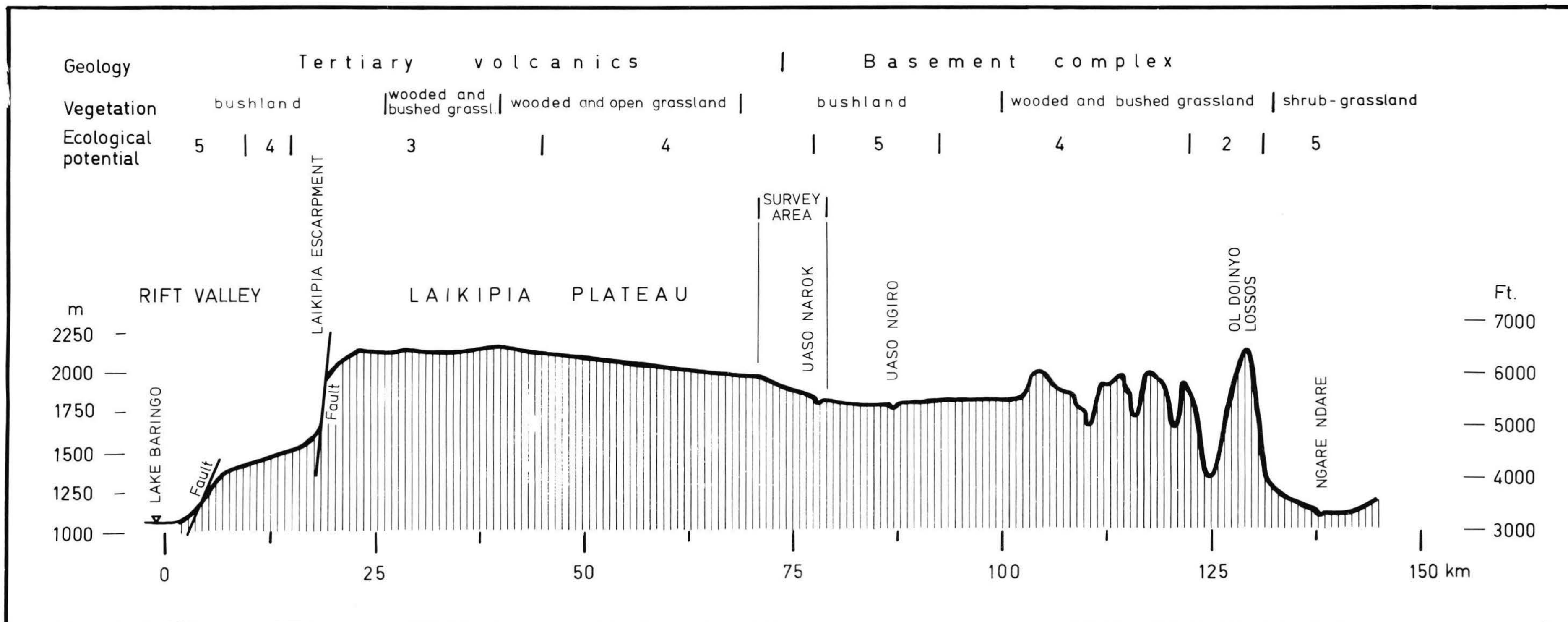

Fig. 7. Profile across the western part of the Laikipia highland (cf. Fig. 6).

Present and past peoples

The recent ethnohistory of the area — prior to 1911 when the Maasai laibon Lenana on his death bed dramatically ordered or was forced to order his people to yield their northern territory, i.e. Laikipia, to the Europeans and withdraw south — is largely affected by drought periods. The nineteenth century was obviously a period of severe famine in Eastern Africa; at least it was characterized by violent tribal wars involving almost all of the tribes in Kenya. These wars are described in the oral traditions analysed by, among others, Jacobs (1965) and Weatherby (1967).

The situation in Laikipia was mainly affected by the southward movements of the Cushitic Galla and the Nilotic Laikipiak Maasai (Jacob connects the Laikipiak with the Galla) in the 1840s. The Laikipiak came from the northeast, from the direction of the El Barta Plains, and are alleged to have chased away the Iloikop Samburu who had inhabited the Lerogi plateau, and even prior to that there had been early advanced guards of Laikipiak established in the Lerogi and Laikipia plateaux (the Doigio, the Lorogishu and the Lobbeyok) (Dundas 1910). Subsequent episodes during this war centred on the Naivasha/Nakuru area from where the Samburu made a counterattack northeastwards in the 1850s. Somewhat later, during Jacobs' (1965) »Second Iloikop War» in the 1860s and 70s, the Laikipiak became aggressive and occupied Lake Nakuru from Baringo and Laikipia. The supremacy of the Laikipiak came to an end during the 1880s when the Purko Maasai, living south of the Naivasha area, pushed north to regain their former grazing territory. Smallpox and rinderpest epidemics which devastated the Laikipiak cattle, assisted the Purko effectively, and Stigand (quoted in Weatherby 1967 p. 9) reports a severe famine among the Laikipiak in the 1880s and early 1890s.

The Laikipia plateau seems to have belonged to the Maasai throughout recent history; the Samburu attacked back east from the Lake Baringo area where

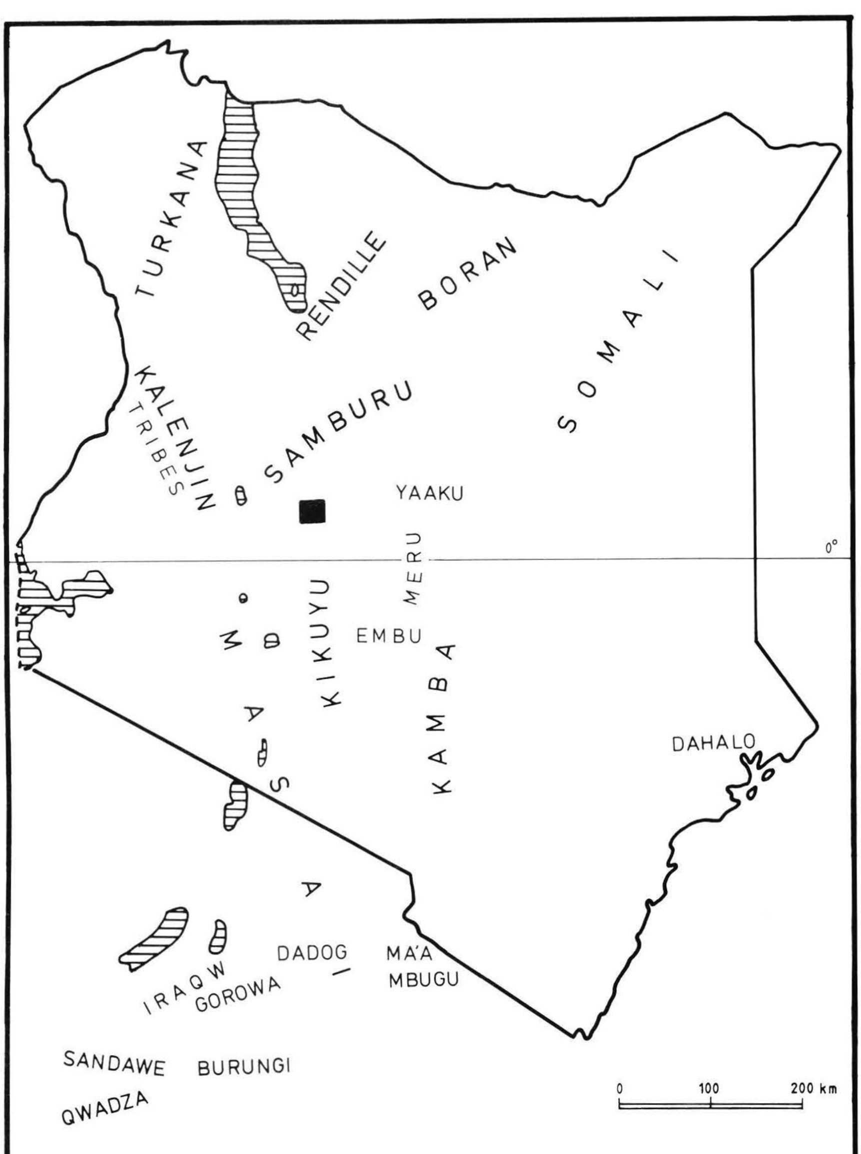

Fig. 8. Kenya. Ethnic groups mentioned in the text.

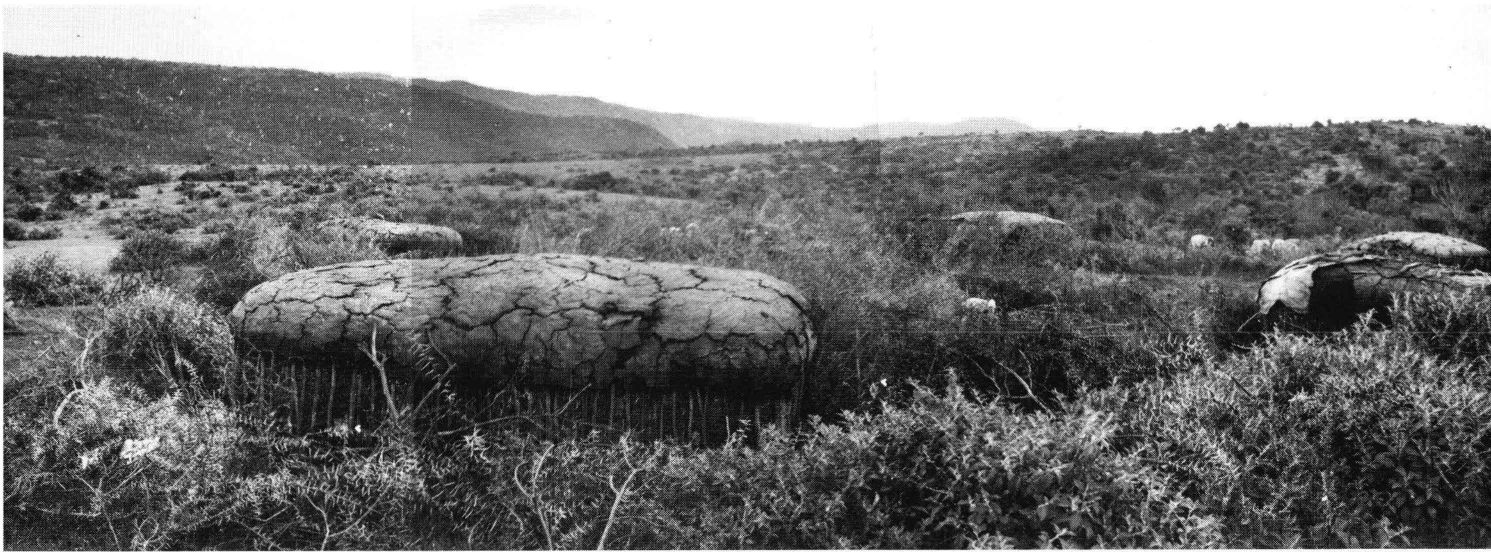

Fig. 9. A Samburu village north of Don Dol.

they had been chased by the Laikipiak from the northern part of the highlands, but this attack only resulted in an expulsion of the Maasai from the Mt. Marsabit area leaving the Laikipia plateau still to them (Spencer 1973). However, it is probable that even the Maasai did not occupy much of the area east of the Uaso Ngiro river; eg. von Höhnel reports meeting them west of the river but states that »the Uaso Ngiro forms the eastern boundary of the district inhabited by the Masai, and beyond it the landscape appears to be deserted alike by wild animals and man» (von Höhnel 1894 p. 411).

To-day the bush vegetation east of the Uaso Ngiro tends to be thicker than to the west and thus not very suitable for cattle grazing, although the recent situation might well be a consequence of lesser grazing in the east.

However, there are still hunter-gatherer populations living in eastern Laikipia, and in recent years also pastoralists have occupied certain areas around Nanyuki which is an important cattle market centre. The hunters live in scattered groups mainly in the high forest regions in Kenya. The term Dorobo (Wandorobo, Ndorobo etc.), a Maasai word for poor people,

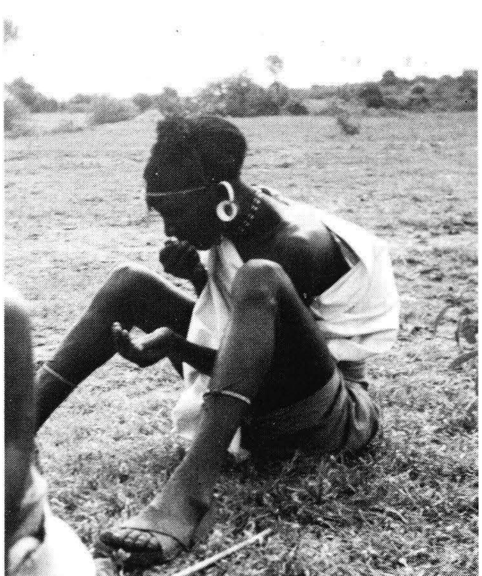

Fig. 10. A Samburu warrior in Don Dol.

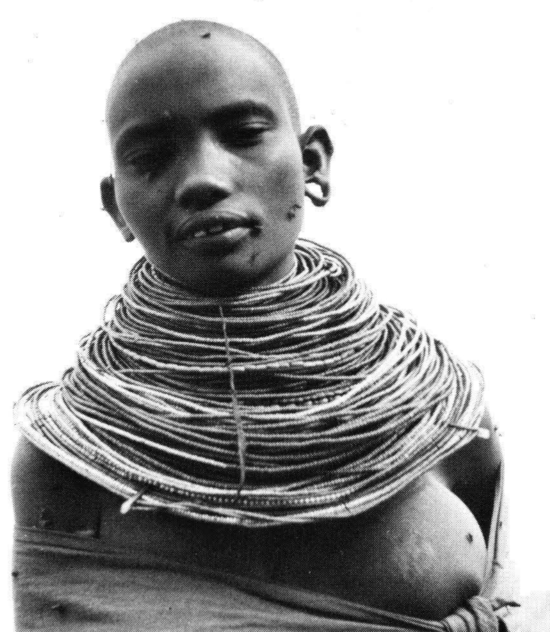

Fig. 11. A Samburu girl in Don Dol.

i.e. people who have lost their cattle and are forced to eat wild meat, was used by the early Europeans to mean all hunters in Eastern Africa. The Dorobo were thought to be of heterogenous origin and were connected by several historians (eg. Lambert 1950) to one or another »tribe» of the oral traditions of the contemporaneous tribes. However, in more recent studies a certain homogenity has been recognized in several »Dorobo» groups showing that there exists some kind of coherent tribal background behind some of the hunting peoples in Eastern Africa. This is especially borne out by the studies of Blackburn (1971, 1973, 1974, 1976) on the Kalenjin-speaking Okiek living in about three dozen local groups within an area between Mt. Elgon in the west and Mt. Kenya in the east and Lake Turkana in the north and Mt. Kilimanjaro in the south. There are five groups of Okiek within or close to the study area: the Digiri around Mt. Kenya and the northern part of the Nyandarua Range, the Masula south of the Ol Doinyo Ngiro Hills, the Loliin and the Lalaroik around the Karisia Hills as well as the Lanat around the Ol Doinyo Lailasai Hills. Of these, the Digiri are nowadays largely dependent on cattle and consequently live below the forest zone although they also exploit the lower elevation forests for honey and wild game.

There also is a small group of hunters inhabiting the northern foothills of Mt. Kenya called the Mogogodo (Mukogodo) or Yaaku who speak a remnant Eastern Cushitic language (Greenberg 1963). According to Ehret (1974 p. 32) the original Yaaku-speakers emigrated from the southern part of the Ethiopian plateau where their closest relatives still live among the Eastern Cushites. These early Yaaku-speakers were food-producers but their language was adopted by some hunter-gatherers living previously in Kenya and speaking a Sandawean-related click language, maintained it and passed it down to their descendants, while the early agricultural Yaaku-speakers were assimilated linguistically by later agriculturalists in Kenya. Despite the Cushitic language, some writers class the Yaaku together with the Dorobo because of the common subsistence basis (eg. Rottland & Vossen 1975). Sometimes also the Okiek are connected with the Dorobo but nowadays it is realized that the latter term, as noted above, does not have a precise tribal connotation.

There are several other hunter-gatherer tribes in Eastern Africa which cannot be included in the Okiek complex and which Rottland and Vossen (1975) consider, together with the Okiek, under the general term »Dorobo»; they also give a complete summary of the history of research and accounts of the Dorobo in the literature. In Laikipia, besides the different groups of Kalenjin-speaking Dorobo mentioned above, they list several Maasai-speaking Dorobo groups at least some of which (eg. the Leuaso) are living in a different ecozone — open grassland savanna — than the Okiek.

The Maasai (and Samburu)-speaking »Dorobo» include the following groups: the Eremoto, the Landana, the Lemarmar, the Leuaso, the Lorokoti, the Ltudaani (perhaps the same as the Masula Okiek of Blackburn), the Mumonyot and the Olkerenie. The Leuaso inhabit the confluence area of the Uaso Ngiro and Uaso Narok, although mainly on the east bank of the Ngiro, and are perhaps the Dorobo group encountered and described by von Höhnel; also the Kenya Land Commission of 1932 (cf. below) mentions Dorobo living on the Uaso Narok river (p. 10).

Spencer (1973) gives also a full list of the different Dorobo groups living in historical times in the northern part of the Laikipia highlands. He divides them according to their own information into the Laikipiak and Samburu Dorobo thus defining the pastoralist tribes with which they were in regular contacts.

The distribution of the Dorobo, as given by Rottland and Vossen — in Laikipia mostly after Spencer — shows the main concentrations in the highland fringes with several lowland hunters to the east of the Uaso Ngiro. There were no hunters between the river and the escarpment; this corresponds well with the observations made by von Höhnel. This distribution might either be a consequence of the expulsion of the hunters from the western part of the highlands by the pastoralist tribes and their mutual warfare or of the fact that this area is perhaps more suitable for the grazing of domestic animals than for wildlife and that there has never been any marked population of hunter-gatherers there.

As to the historical interpretation of the hunter-gatherers in Laikipia, and in Eastern Africa in general, two main theories exist. While Rottland and Vossen (1975) refrain from stating their definite conclusion regarding the origin of the Dorobo and join with Ehret in speaking only of »linguistic descendants» of the Cushites and Nilotes, some earlier researchers refer either to the original inhabitants who occupied the area before the food-producers arrived or to people originally belonging to the early pastoralists but who later, in harsh times, adopted a hunting and gathering form of subsistence. Some authors combine these theories; thus Stiegand (1913) and later Huntingford (1927) refer to »proper» and other Dorobo, viz. the original hunters and secondary hunters. Spencer, after somewhat detailed study of the Dorobo living among the Samburu, comes to the explicit conclusion that »the Dorobo can more profitably be regarded as a residue of the existing peoples of the area than as the descendants of an aboriginal race. For as long as there has been historical record, there have been such groups, absorbing odd members of defeated and impoverished tribes, forming relations with neighbouring tribes and other Dorobo groups, and occasionally becoming members of the richer tribes with whom they associated» (Spencer 1973 p. 218, cf. also Berntsen 1979. Ole Sankan, 1979, gives a list of the seven Maasai sections which have been devastated; these include the Ilng'uesi, the Iltaarromodoon and the Ildikirri the members of which escaped to the forests and became Dorobo). I regard this as a slight exaggeration, and if we rely on the observations of Huntingford (1929) and more recently Jacobs (1965) and Blackburn (1974) that there is nothing in the traditional culture of at least some of the Okiek that could be taken as evidence of a former pastoralist subsistence or of an original adaptation to open environment, we must conclude that the Okiek of to-day comprise a portion of an original hunting people who inhabited East Africa prior to the coming of the pastoralists and agriculturalists. According to Blackburn's rather cautious remarks this population left some physical features still recognized in the general outlook of the Okiek.

Further historical background to the ethnic situation in Laikipia is provided by the oral traditions. No systematic oral analyses have, however, been carried out in the area; Spencer gathered some relevant information among the Samburu. The traditions relating to the tumultuous events of the nineteenth century with the conflicts between the Samburu and the Maasai, have been referred to above (p. 00). There are, however, oral traditions going further back in time and reflecting, although rather vaguely, population movements to and from Laikipia — these have been recorded among the Maasai mainly by Jacobs in the Narok district west of the Great Rift Valley (Jacobs 1972 b and 1911). These traditions, also related by the Sonjo of the Nguruman Escarpment, describe a certain people called Iltatua alleged to have invaded the western highlands from the Laikipia plateau and who were a pastoral branch of a historic people called Ilarinkon by the Maasai. The Iltatua were said to be connected with, or have originated from, either the Somali, Rendille, Borana, Tigania Meru, or a mixed group of all these peoples. They dug wells, made pottery, cultivated a little, and buried their dead in stone cairns; they had no iron-working but obviously bought iron objects from the neighbouring tribes as it is told that they used short-bladed spears of the Somali-Borana type. They were defeated and dispersed from the Laikipia highlands by the first Laikipiak Maasai gaining importance at this time. These Iltatua eventually reached as far south as the Ngorongoro highlands of Tanzania and even regions further south. Jacobs presents good evidence for dating the dispersal of the Iltatua from Laikipia prior to AD 1600 although a more precise dating is impossible; by that time they were already expelled from Ngorongoro by the Maasai, so that their presence in Laikipia could date several hundreds of years earlier: Jacobs estimates that they occupied Laikipia already before AD 1400. It is interesting, although not conclusive, for the ethnic identification that the Maasai refer to both the Datoga and the Iraqw-speaking peoples of northern Tanzania as Iltatua although both of these groups have also their specific names in the Maasai language; the Datoga language belongs to the Southern Nilotic linguistic family while the Iraqw is a remnant language of the formerly wide-spread Southern Cushitic family (Ehret 1971 and 1974). Thus it is possible, on the basis of the Maasai traditions, to correlate the Iltatua with either the Southern Nilotes or Southern Cushites. What is important for our study, however, is that Jacobs (1972 b p. 82), although with certain reservations, inclines to correlate this people with a known archaeological cultural entity, the Narosura ware.

Perhaps the most rigorous analyses of oral traditions of the eastern highland tribes in Kenya are those carried out by Lambert (1950) and Muriuki (1974) concerning the Kikuyu legends of the Gumba and Athi, and since these, being geographically close to our area, have some bearing on the interpretation of the archaeological sequence in Laikipia, I shall give a short summary of them. These traditions were recorded mostly by two committees, namely one appointed in 1929 to investigate the systems of native land tenure within the native reserves of the Kikuyu Province and another appointed in 1932 to report on certain land problems in the Colony of Kenya. Lambert's analysis is based solely on these reports, while Muriuki gathered additional primary data in connection with his work on the history of the Kikuyu.

These traditions maintain that when the hunting and pastoralist forefathers of the present occupants of the highlands, the Thagicu Bantu, slowly penetrated into the woodlands they found the area inhabited by two hunting-gathering peoples, the Gumba and the Athi. The former lived in the high altitude plateaux near the forest fringes and the latter in the forests. The Gumba are described to have been different from the early Kikuyu in outlook whereas the Athi were rather similar. Muriuki states that »Athi» and »Dorobo» are alternative names for the same ethnic group; but as the latter term, as we have seen (p. 18), most probably does not refer to any single ethnic entity, this correlation has no significance. More significant is, however, that the Athi and the Gumba are never combined in the traditions and thus there definitely were two distinct hunting-gathering tribes living in the highlands simultaneously. The Gumba taught the Kikuyu knowledge of iron-working — thus enabling them to practice more efficient cultivation — and it also appears from linguistic evidence that it was from them that the Kikuyu borrowed the rituals of circumcision, clitorodectomy and some features of the age-set system.

It is significant that also the Maasai traditions recall the Gumba (Agumba) who, together with the Okiek, comprise the Dorobo people (Jacobs 1965 p. 26). On the basis of certain mythical elements Jacobs concludes that originally the Agumba possessed cattle but eventually lost it to the Maasai and resorted to hunting and gathering. This would confirm the hypothesis that at least some Dorobo groups are in fact impoverished pastoralists.

The third line of evidence in investigating the ethnic history of Eastern Africa is provided by linguistic studies, especially those of Christopher Ehret, in which contacts between the different linguistic groups have been detected and dated according to loan words (Ehret 1971 and 1974).

An ancient substratum of click languages, still discernible in the Hadza and Sandawe languages in northern Tanzania, was spoken by an early »Khoisan» population which was widespread over the whole of East Africa. Even a distinct substratum of click languages is still recognized in many languages otherwise non-Sandawean (eg. the Yaaku discussed above, p. 18).

During the 2nd millenium BC, or even earlier, a Cushitic speaking pastoralist and agriculturalist population penetrated East Africa from the Ethiopian highlands; they are still represented to-day by several tribes in northern Tanzania, viz. the Iraqw, Gorowa, Burungi, Alagwa, Qwadza, and Ma'a. Loan word evidence shows clearly, however, that these early Cushites, Ehret's Southern Cushites, occupied a wide area from Lake Victoria in the west to the Kenyan coast in the east where the Dahalo, speakers of a remnant Southern Cushitic tongue still live. The early Dahaloans may well have inhabited the Laikipia highlands although no direct evidence is available. The Southern Cushites were both cattle herders and cultivators, their society was loosely organized and they practised circumcision as well as divided the male societies into age-sets although these were not as important an institution as in the later Nilotic societies.

The Southern Cushites were followed by the Southern Nilotes coming from or via the Lake Turkana basin during the 1st millenium BC as estimated by Ehret (1971). Their presence in the eastern highlands can be deduced, although not precisely dated, from the Southern Nilotic loan words in Kikuyu and Kamba — Ehret dates these contacts into his proto-Thagicu period, i.e. to the period preceding the separation of the Highland Bantu cluster. If we connect the archaeological Iron Age Gatung'ang'a period of the eastern highland area, dated to the 11th and 13th centuries AD (Siiriäinen 1971), with the Thagicu, as Muriuki does (Muriuki 1974 p. 54), then there is a possibility of dating these Southern Nilotic contacts even earlier than the latter half of the 1st millenium AD; this corresponds well to the dating estimate by Ehret (1974 p. 27) for the Yaaku/S. Cushitic contacts.

Whether the Southern Nilotes ever occupied the Laikipia highlands is not known but the loan words in the Yaaku language would suggest that some kind of contacts between them and the Kenya-Kadam speakers (i.e. Southern Nilotic languages in Central Kenya c. AD 400—1000) were established in the northern foothills of Mt. Kenya already before the end of the 1st millenium AD (in fact the word »Yaaku» itself is a loan word from the Southern Nilotic in which it was used as a generic term for a hunting people in general; Ehret 1974 p. 33).

The Southern Nilotes were, like their Cushitic predecessors, herders and cultivators, and Ehret concludes that their age-set system, so deeply rooted in their arrangement of society, was in fact borrowed, along with circumcision and clitorodectomy initiations, from the Southern Cushites. There is also a noteworthy custom, readily observable in the archaeological record, of removing the two lower incisors of the males in the Nilotic communities.

At the same time as the Kenya-Kadam speakers of the Southern Nilotes were pushing into the northern parts of the eastern highlands there was another movement from the south or southeast. These were the Bantu which had entered East Africa through the Interlacustrine area during the last centuries BC and moved rather rapidly through northern Tanzania to the coast where they appeared around AD 200. This early Bantu migration has been fairly securely correlated with the Early Iron Age archaeological industrial complex (Soper 1971, Phillipson 1977); in Kenya this is represented by Kwale ware (Soper 1967). Although the archaeology of the eastern highland area has not yet been systematically investigated, it seems to me that the Early Iron Age complex did not reach the Mt. Kenya-Nyandarua area until towards the end of the 1st millenium AD when Kwale ware was beginning to lose its original traits and received new elements thus splitting into local groups; these are the Maore and related wares in northeastern Tanzania and Gatung'ang'a and related wares in the eastern highlands of Kenya (cf. also Soper 1982). In the highlands the early Bantu must have come into contact with at least the Southern Cushitic Dahaloans inhabiting the area, and probably with the Southern Nilotes somewhere on the northern and northeastern fringes of Mt. Kenya. While the penetration of the Bantu peoples into the highlands is borne out by archaeological evidence only, their later contacts with the Southern Cushites are demonstrated by Ehret in the Cushitic loan word set in the Thagicu, the common base of the Highland Bantu languages (Kikuyu, Embu, Meru, Kamba). As indicated earlier (p. 19), there are oral traditions among these tribes about earlier inhabitants of the highlands.

Another major flow of peoples from the Lake Turkana area was that of the Maasaian branch of the Eastern Nilotes (Plains Nilotes, formerly also called Nilo-Hamites or Paranilotes) who gained importance in the north during the 1st millenium AD. By about AD 1000 or slightly later, they settled the areas to the east of the Rift Valley, the territory between Mt. Kenya, Mt. Kilimanjaro and the Taita Hills, where they came into contact with the first Bantu still in the process of penetrating the highlands from the opposite direction. Exactly when the Plains Nilotes entered Laikipia is impossible to determine. As we already learned from the oral traditions of the Maasai (p. 00), the first Laikipiak expelled the Iltatua from Laikipia, and if this event is in causal connection with the coming of the Iltatua to the Narok highlands before AD 1600, or very probably already before AD 1400, then this also gives a *terminus ante quem* for the intrusion of the Plains Nilotes into Laikipia.

This ethnohistorical process, reconstructed according to more or less systematical investigations, forms the background against which the archaeological observations can be studied. It should be emphasized that the chronology is for the most part guesswork and as such is rather flexible especially when purely linguistic succession is concerned without any control by oral tradition (age-set calculations).

There is one important aspect worth keeping in mind when conclusions are inferred from oral history: the exaggerated role of warfare in African folklore should be understood. This has been realized by several historians and anthropologists (eg. Kuczynski 1949, Jacobs 1968), and it calls for caution in using such expressions as »expulsion» or »complete extinction» of people. In fact, the anthropological record does not include any cases where a population, tribe or any other unit, would have been wiped out completely either by killing or expulsion from their territory. Even if there certainly have occurred wars which might have resulted in replacement of people, there are no cases where such replacement had been total. Instead, we know from numerous examples that population movements lead to intermixture of elements; this is particularly true concerning agriculturalists tied to land and thus hard to expel — in the case of nomads the pre-existing population of an invaded territory is more easily wiped out but even this does not hold true in actual cases. It is likely that the young male population, warriors/morans, might suffer most loss through death in battles but certainly women, children and elders find their place in the new population. Thus it seems extremely improbable that any archaeological sequence would reveal a total replacement of tradition with another one which would suggest that in prehistoric times whole populations had been expelled from their domains without leaving any traces of their culture. This argument leads to the understanding of the dynamism of cultural units — whether tribes or other ethnic entities or archaeological entities such as industries or »cultures» — in constant modification both through peaceful contacts between the units (trade, intermarriage, common rituals, etc.), warfare and conflicts.

ARCHAEOLOGICAL INVESTIGATIONS

Earlier investigations

Prior to 1970 the archaeology of Laikipia was virtually unknown, the only located site being the Palaeolithic surface occurrence in Lewa in the northern foothills of Mt. Kenya; this site had yielded numerous large handaxes and cleavers of phonolite commonly assigned to the later Acheulean phase (Nanyukian or Kenya Fauresmith; Leakey 1931). No excavations have been carried out on the Lewa site so far.

In 1970 the landowners of Kisima Farm, Rumuruti, Mr. and Mrs. Gilfred Powys, reported some interesting findings and at their invitation Mr. Robert Soper (then of the British Institute in Eastern Africa) visited the area briefly in 1970 and 1971 to investigate some rockshelters in the Uaso Narok valley, which had Later Stone Age and younger artefacts on their floors. In May 1971 I spent some days in the Don Dol (Dol Dol) area north of Nanyuki and located several open sites, but no test excavations could be carried out due to lack of time and excavation permit. In 1972 Dr. Alan Jacobs (then of the Institute of African Studies, University of Nairobi) visited some cairn and rockshelter sites situated on Enasoit Farm, Chololo Ranch and Bunny Allen Ranch west of Don Dol. He made some test excavations discovering Later Stone Age and recent deposits and observed some Early and Middle Stone Age surface occurrences as well. In 1973 and 1976 I carried out more extensive excavations and survey investigations in the Uaso Narok valley — where Soper had previously visited — the results of which are the main focus of this report. It should also be mentioned that Henry Mutoro (Department of History, University of Nairobi) has examined aerial photographs of the Laikipia highlands and recognized a large amount of settlement earthworks. The excavation of some of these to clarify their structure, function, association any lithic industry and pottery tradition will certainly yield valuable information about the prehistory of the area, as Mutoro has pointed out (Mutoro 1976).

While realizing that the problems posed in the beginning of this study can only be attacked effectively by extensive survey covering large areas and intensive excavations at selected sites, thus securing a broad chorological and chronological view, the available time and economy led to a less ambitious approach of selecting an area for intensive survey where potentially productive sites were known to exist, and excavating some of these sites. The area chosen for closer study is the one where Soper inspected several rockshelters on the Kisima Farm in the Uaso Narok valley, c. 60 km to the northeast of Nyahururu township (formerly Thomson's Falls) (Fig. 6). The area measured 13 by 7 km and it is situated between the two abovementioned geological areas, the Rumuruti Phonolite plateau and the Basement Complex (cf. p. 10). In this region there is a wide »inlet» eroded into the phonolite plateau exposing the basement component underneath. The basement rock outcrops form ridges, or rather rows of hills, extending in a north-south direction. Rockshelters have been formed by exfoliation both in the phonolite escarpments and in the basement rock hills.

Survey

In the map, fig. 12, are marked all of the 38 sites found within the survey area. The sites were designated with the letters KFR (Kisima Farm, Rumuruti) plus a letter indicating the site category as follows; in each category the sites are numbered:

A (12 sites)	rockshelters
B (6 sites)	totally collapsed rockshelters (the eroded artefacts are lying on sand beneath the talus slopes; collapsed rocks can be seen where the original shelter was situated)
C (12 sites)	isolated cairns or groups of cairns
C (5 sites)	open sites
E (3 sites)	quartz-quarrying sites

Almost every rockshelter discovered in the area yielded some traces of occupation on the floor surface. The deposits varied according to tests by a metal probe from a few cm to over 50 cm; the actual depths of the deposits can however only be measured conclu-

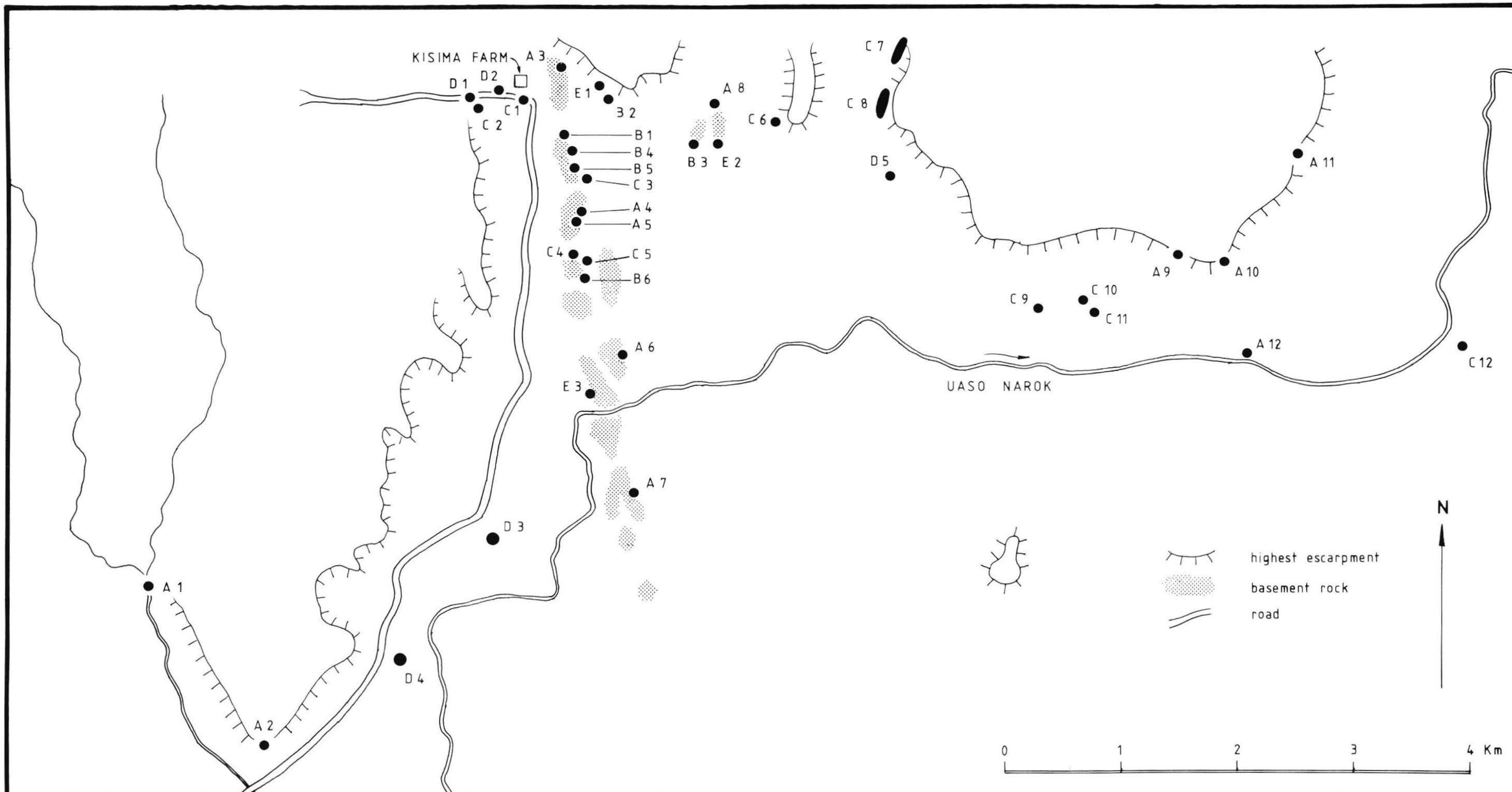

Fig. 12. The survey area with the sites discovered.

sively by excavating test pits as the heavy rock-fall activity might cover extensive surfaces as, eg., in the excavated shelter KFR-A4. The prominent erosion (cf. p. 11) renders the life-time of the rockshelters rather short both in the phonolite escarpments and granite kopjes, and it is obvious that many collapsed rockshelter sites were left unnoticed in the survey. It is probable that some of the open sites on the map are in fact concentrations of artefacts eroded from such collapsed rockshelters as beneath every existing shelter, where clear occupation debris was encountered, there were such concentrations or even flows of artefacts showing that erosion of deposits had taken place. Sometimes sheet erosion had carried artefacts to distances of 200 m as in the case of KFR-A4 and A5 (cf. Fig. 20), depending on the gradient of the talus slope, and where the gradient becomes abruptly more gentle such concentrations are found.

As in the case of rockshelters and open sites, also the given distribution of cairns does not indicate the true situation. There are obviously numerous cairns totally eroded or covered by ant hills. It is also conceivable that when cairns were constructed, especially in concentrated cairn sites, stone material from older cairns has been used (Fig. 13). In thick bush also the observing of cairns is rather accidental.

Finally, even locating quartz quarries presents certain difficulties. Quartz veins in the basement component outcrops are common and all of them are to some extent broken into flakes that cover the surface around. Sometimes it is very difficult to determine whether the flakes are just products of natural breakage or artifically smashed for further flaking. In the survey it was decided that such occurrences are quarries where clear flakes with striking platform and bulb of percussion were found or where formal cores — or pièces écaillées (cf. p. 73) — were encountered.

The above-mentioned distortions, caused by the difficulties to achieve a total and systematic survey, render it impossible to use the survey data to reconstruct a detailed settlement history of the area — this, I think, applies to all surveys in general. This is especially true in our case as no statistical samples were taken from the open sites to detect their internal structure or date. Efforts were made, however, to collect artefacts from each site to provide some idea about the occupation period.

The oldest artefacts were found on the surface of the open sites KFR-D3 and D4: a couple of crude handaxes, several chopper-like implements and large flakes of phonolite. Together with the Lewa site mentioned earlier (p. 00) and the scattered Acheulian type handaxes and »bola» stones reported by Jacobs (1972 p. 9) from the Chololo Ranch and Shackleton (1946 p. 54) from the Timau region further east, these artefacts show that Laikipia has probably a wealth of Early Stone Age sites. In our area especially site D3 would be worth closer investigation regarding the ESA as within the total area of the site (c. 10 000 m^2) several ESA concentrations were observed at least some of which might yield artefacts in a primary context — the ones encountered during the survey came, however, from derived positions in shallow water furrows on the gentle slope towards the Uaso Narok.

The Middle Stone Age is only represented by scattered artefacts showing characteristical form and retouching, found in the scree of the collapsed rockshelters KFR-B2 and B4 among the Late Stone Age artefacts. Dating isolated specimens to the MSA on a purely morphological basis is hasardous, however, as shown, eg., by a single artefact belonging to the MSA technological tradition but found in an obvious primary context within a LSA occupation material from rockshelter KFR-A4 (cf. p. 80). It is more probable

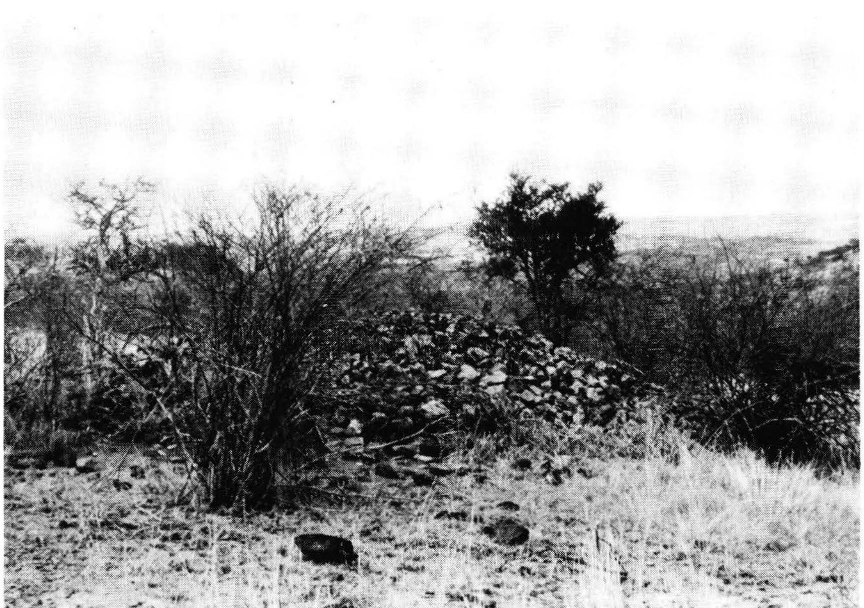

Fig. 13. One of the large cairns of KFR-C7. The diameter of the cairn is c. 8 m.

Fig. 14. Paintings on the wall of KFR-A9.

nevertheless that at least some of the rockshelters — especially older shelters which are now mostly completely eroded — might contain MSA layers; those investigated (KFR-A4, A5 and A12) did not yield layers of that period, however.

The bulk of the datable artefacts found during the survey dates to the LSA and later, apparently because pottery is readily observed and gives directly an idea of dating. LSA sites with pottery comprise both rockshelters and open sites: KFR-A4, A5, A7, A12, D1, D3 and D4; judging from the stone artefacts — which is naturally less certain than pottery — also the following sites seem to contain LSA: KFR-A2, A3, A6, A8, A9, A10, A11, B1, B2, B3, B4, B5, B6, D2 and D5. Although this emphasis of sites on the LSA might suggest a population — or cultural activity — increase during the later prehistory in the area, I hesitate to draw this conclusion given the skewing factors discussed above. All that can be said on the basis of the survey data is that there have been inhabitants in Laikipia from the Early Stone Age onwards; the later periods are better represented in the archaeological record due to better preservation, observability and, perhaps, activity patterns — LSA pastoralists leave wider occupation debris in the open than the ESA and MSA hunter-gatherers and thus their sites are more easily recognized. The later prehistory of the area is further emphasized by the burial cairns (sites C1—12) which cannot be precisely dated but most of which certainly belong to the LSA (Fig. 13); they continued to be constructed at least until the 13th century AD as shown by the dates from the excavated KFR-C4 cairn (p. 43). There are both isolated cairns (C1—3, 6, 9—11) and groups of cairns (C4 includes 4, C5 2, C7 4, C8 6 and C12 5 cairns). Thus, in all 28 cairns were located but, as stated above, this figure gives by no means the true number of cairns in the area.

There are two categories of sites which present special difficulties in dating: quartz-quarrying sites and rockpaintings. Regarding the former sites, it was already stated that in classifying a concentration of broken pieces of quartz around an exposure of vein as a quarry site cores were an essential criterion. Usually these cores are pièces écaillées and since these seem to be far more numerous in LSA assemblages than earlier it is reasonable to date the quarry sites to the LSA. Also, in the lithic aggregates quartz is the most frequent raw material.

Rockpaintings occur on the walls of five rockshelters (KFR-A1, A5, A9, A10 and A11), and a separate occurrence was discovered on the rock wall facing east c. 200 m N of site KFR-B4. All the paintings are executed in red or white paint and mostly include nonfigurative motifs except a few simple human representations at site KFR-A9 (Fig. 14) and an apparent animal figure (a scorpion ?) on the ceiling of cave KFR-A5 (Fig. 15). The paintings of the last

Fig. 15. An isolated white figure (scorpion?) on the ceiling of KFR-A5. Length of figure c. 16 cm.

Fig. 16. An isolated white figure on the ceiling of KFR-A5. Length of figure c. 25 cm.

mentioned site seem to differ somewhat from those of the other sites. There is a unique animal figure (in white) and in addition meandering lines drawn with two or more fingers (in white and red) (Fig. 16). The ceiling has been stained black by repeated fires held near the entrance of the cave and the paintings are partly covered by the stain. The archaeological findings show, as will be discussed later (p. 37), that the cave was used as a burial place towards the end of its occupation period during the LSA. The burials uncovered, with the exception of one (Burial 1), are cremations; the thick layer of ash and charcoal associated with the burials indicate that the burning took place within the cave itself. If we suppose, admittedly without any conclusive evidence, that the black stain on the ceiling originates from these burial fires, and that the paintings are from the same period, then we can conclude that the burials date the paintings to the 1st millenium BC (cf. p. 45). If we further suppose that the paintings in KFR-A5 belong to the same artistic/ritual tradition as the other paintings in the area, we can either conclude that all of the paintings in this part of Laikipia are of LSA age or that at least some of the paintings are of that age and that the tradition continued in the area later on, until an unknown point of time. — I shall not give a stylistic analysis of the rock-paintings as time did not allow us to carry out a detailed documentation of the paintings. Suffice it to say that I am inclined, on the basis of gross similarities (heavy emphasis on nonfigurative elements, combination red + white, occurrence in rockshelters) and certain common motifs (some simple human representations, so-called sun symbols), to regard the Laikipia paintings to be in connection with the rest of the rock art in Kenya (Soper 1968, Bower 1973a, Gramly 1975, Odak 1977) the age of which is so-far unknown but, according to Odak (1977 p. 192), goes back »beyond the reach of oral history». On the other hand, at least the Maasai used to mark their meat-feasting shelters, *ol-puli* in recent times, with clan marks which sometimes are quite similar to the »ancient» paintings (Gramly 1975a).

Finally, it should be noted that the casual observations made by Jacobs, Soper, myself and others elsewhere in Laikipia indicate that the highland area as a whole is extremely rich in archaeological sites of all the categories encountered within the survey area.

Excavations

Excavations were carried out in three rockshelters (KFR-A4, A5 and A12) and one cairn (KFR-C4) in October-December 1973 and February-April 1976. The excavation method was stratigraphical whenever possible. All excavated material was sifted with screens with a 1/4-inch mesh. Sorting and measuring of the finds was done after the excavations in the British Institute's artefact laboratory in Nairobi.

KFR-A4 (Terrace Rockshelter)

This site is situated some 1700 m north of the Uaso Narok and 300 m south of a minor seasonal watercourse, at 0°23′11"N,36°45′06"E. It is exfoliated into the steep eastern face of a granite *kopje*, one of a series running 5 km in a north-south direction at the western margin of the basement rock area (Figs. 17—20).

Although the situation of the shelter is not ideal for habitation, the shelter itself is suitable: it is large (17 m wide and 6 m deep) and gives good protection especially behind the large fallen rock in its southern part (Fig. 21). The even floor is about 7 m above the foot of the *kopje*. The view to the east, over the Uaso Narok valley, is open from the shelter — a good site for a hunter to watch game — but the shelter itself is

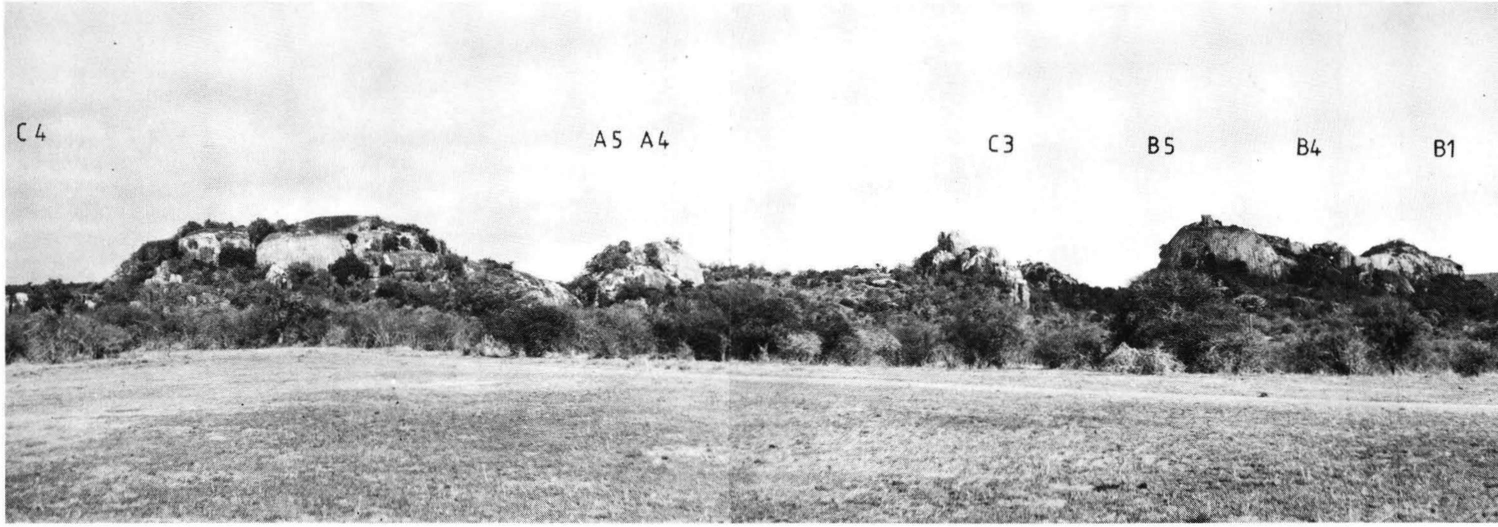

Fig. 17. The chain of basement rock hills with sites KFR-A4 and A5, from E.

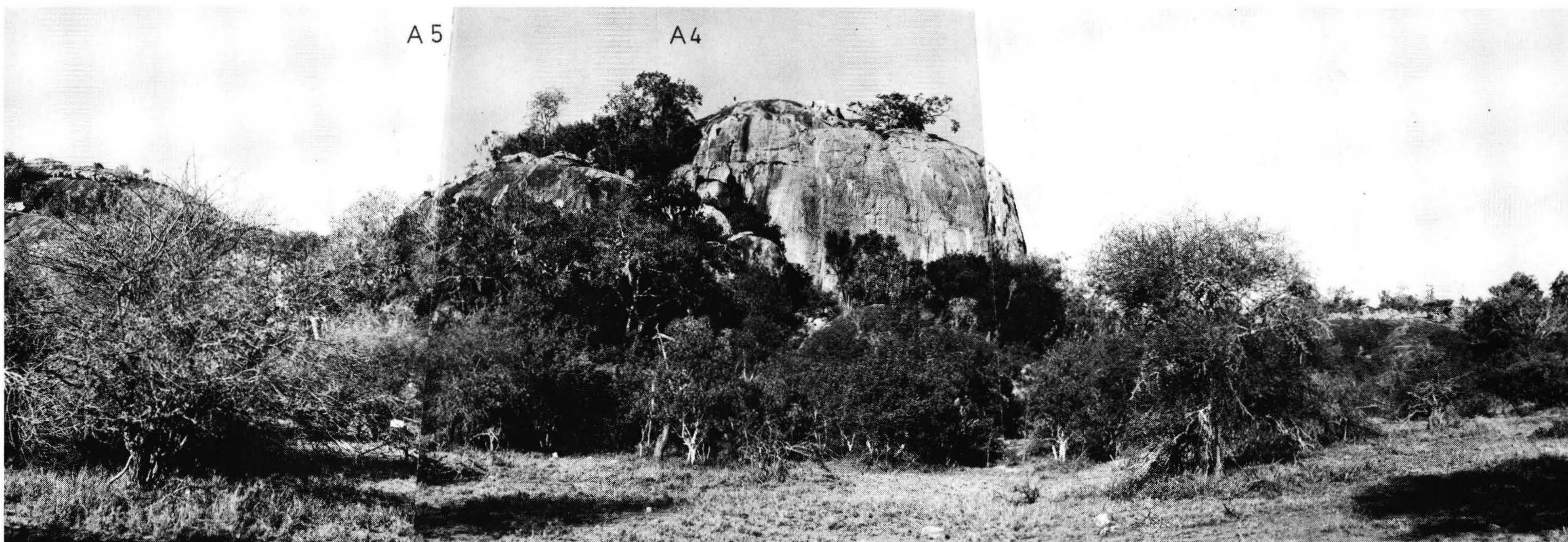

Fig. 18. Sites KFR-A4 and A5 from E.

Fig. 19. View to the north along the chain of basement rock hills. KFR-A4 and A5 are situated in the southernmost hill.

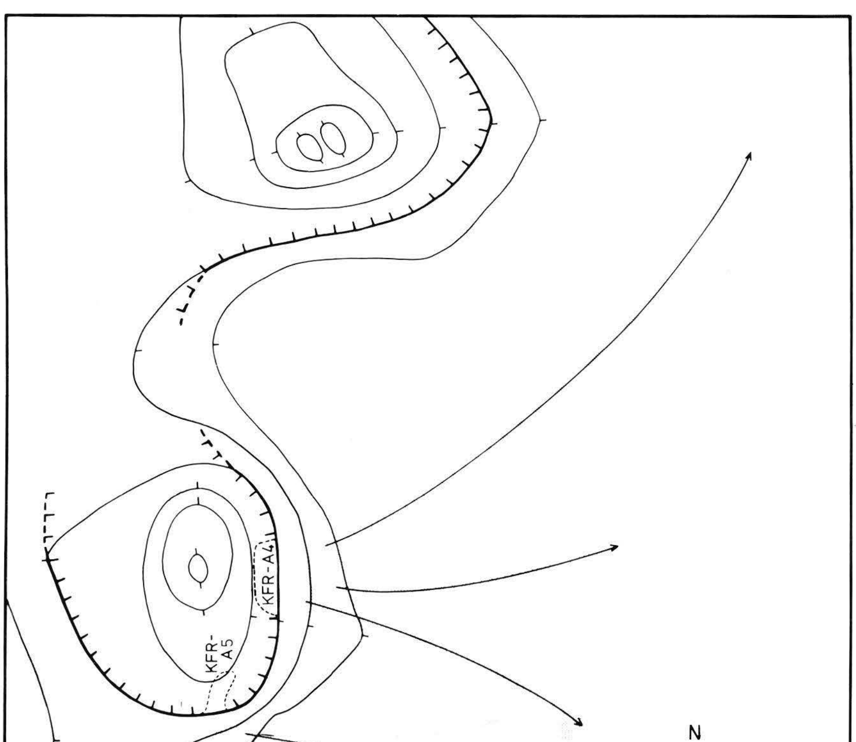

Fig. 20. Map showing the surface flow of artefacts eroding from KFR-A4 and A5 (stippled areas with arrows).

Fig. 21. KFR-A4 under excavation. Note the large fallen rock in the foreground.

well hidden behind the vegetation and cannot be seen easily even from close range.

Five trenches were excavated covering a total of 26.5 m^2, both on the »open» section of the shelter and behind the fallen rock (Figs. 22 and 23). According to the stratigraphy, the area can be divided into three sections:

Section A: Trenches I, IE and II (the open section)
Section B: Trench IIE (the talus)
Section C: Trench III (behind the fallen rock)

Stratigraphy of Section A (depths being measured from the surface) (Figs. 24 and 25):

Layer 1: 0—15 cm with an ash concentration down to 26 cm; brown, loose soil with stones (diam. over 8 cm); roots
Layer 2: 15—30 cm; transitional layer between 1 and 3 containing elements of both layers; some large stones
Layer 3: below 30 cm; quite hard greyish brown sand with large boulders, slightly looser and more finegrained towards the eastern end of Trench II, cf. Section B)

The boundaries between the layers — especially between 2 and 3 — were rather clear and easy to distinguish even during the horizontal excavation, and it seems safe to conclude that no contamination has taken place.

Stratigraphy of Section B (Fig. 26):

Similar to Section A but in the boundary between Trenches II and IIE layer 2 deepens steeply replacing layer 3 in Trench IIE, i.e. in the talus. However, below the depth of c. 50 cm layer 2 becomes slightly coarser but not as coarse as layer 3 in Section A. There are also more and larger boulders in Trench IIE than further inside the shelter. — Here the boundaries were not as clearly visible as in Section A exept in the western part of the Trench.

Stratigraphy of Section C:

Layer 1: 0—5 cm; loose sand with stone slabs
Layer 2: 5—25/27 cm; hard, yellowish ashy silt with roundish pebbles; large stone slabs; three ash concentrations
Layer 3: 25/27—75 cm; hard, reddish sandy silt with flat, sharp-edged stone flakes and some large slabs; in the northern part of the Trench the same large rock was encountered immediately beneath layer 2 as in Trenches I and IE

The boundaries were clearly distinguishable especially between layers 1 and 2.

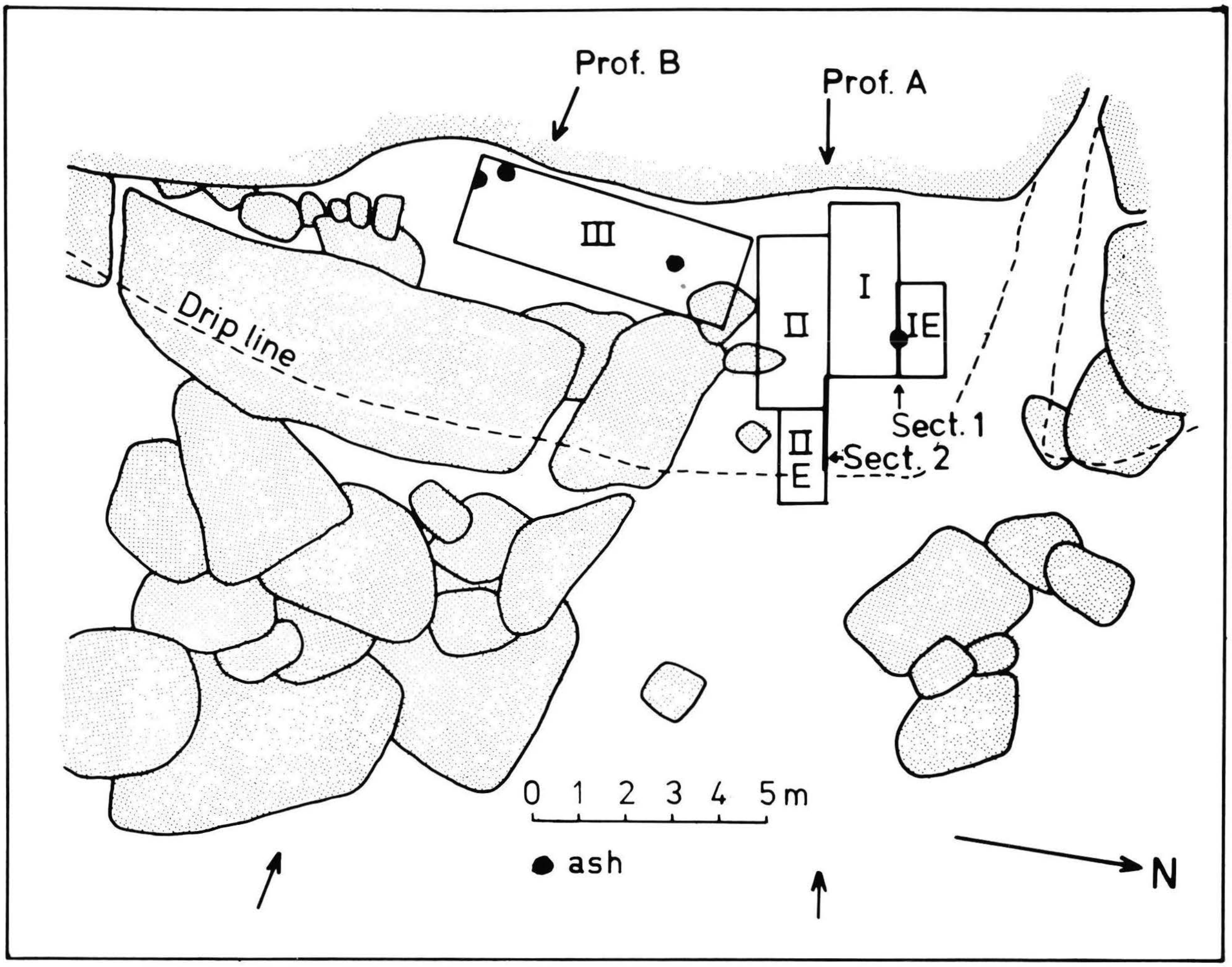

Fig. 22. KFR-A4. Plan.

The excavation followed the stratigraphical layers but the boundary between layers 1 and 2 in Trenches I, IE, II and IIE was missed so that spit 2 contains material from both layers. Similarily, in Trench IIE from spit 4 downwards no distinction between layers 2 and 3 could be made; it was not until the entire section was cleared that the nature of the stratigraphy became obvious.

The only features discovered in KFR-A4 were the four ash concentrations on the boundary of Trenches I and IE and in Trench III. They all measured c. 30 cm in diameter and were thin (c. 5 cm) lenses of powdery light grey ash with small pieces of charcoal with the exception of the concentration in Section A which formed a shallow (c. 5 cm deep) pit (Fig. 24).

All the layers yielded archaeological material except layer 3 in Trench III which was completely sterile. As regards the quantity of finds the general trend was diminishing towards deeper levels so that the bottommost spit in Trench IIE yielded only few artefacts. This is partly explained by the actual diminishing volume of soil downwards due to the increasing mass of stone blocks, but it also may indicate, especially in the talus section, increasing occupation intensity through time. It is worth noticing, however, that because of the huge buried block (or portion of bedrock), in earlier times the most favourable area for habitation in the rockshelter was closer to the talus section than later, and thus the shelter was not very suitable for habitation and only sparse occupation debris formed. Also, it is obvious that the rough flakey and blocky surface in Section C was not convenient either — hence the archaeologically sterile layer 3 there. Later, when layer 3 in Section A accumulated on top of the buried block the floor of the shelter became broader and thus more suitable for habitation. Also some fine-grained earth was accumulated above the rough layer 3 in Section C, and this section was also used for habitation.

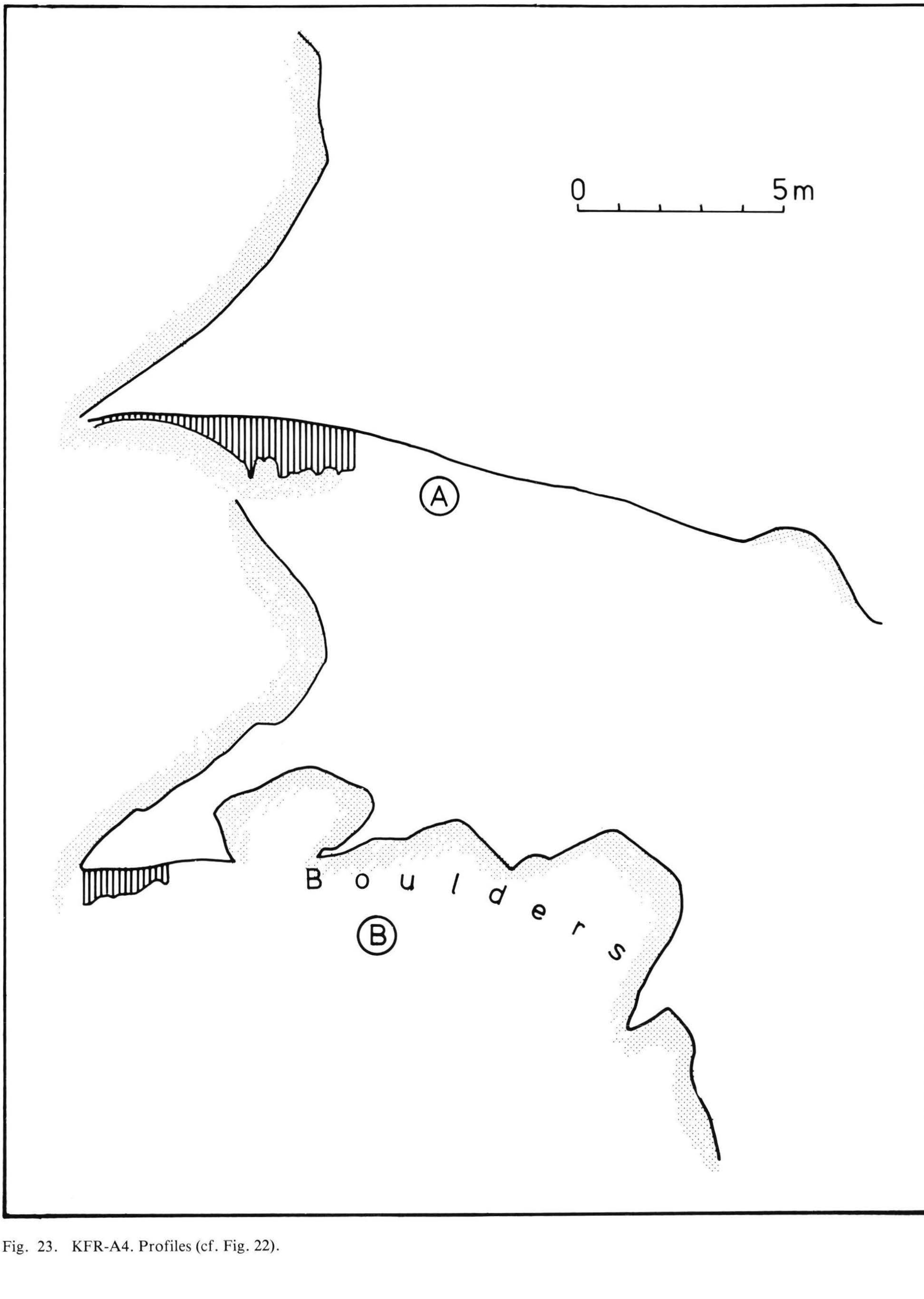

Fig. 23. KFR-A4. Profiles (cf. Fig. 22).

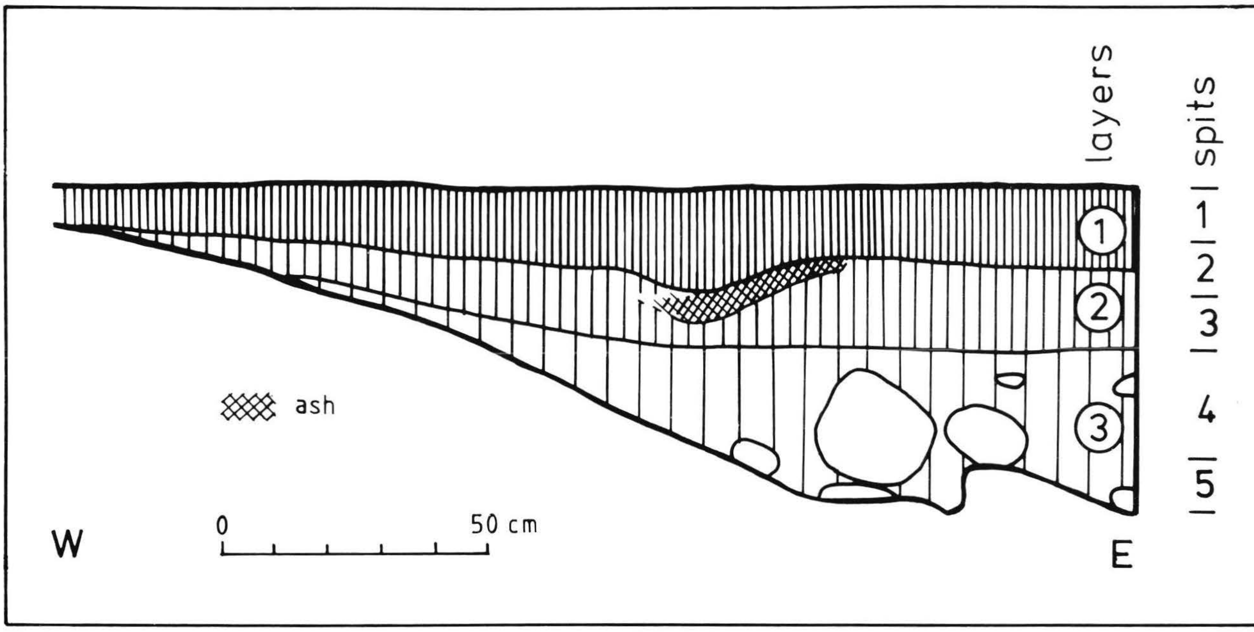

Fig. 24. KFR-A4. Section 1 (cf. Fig. 22).

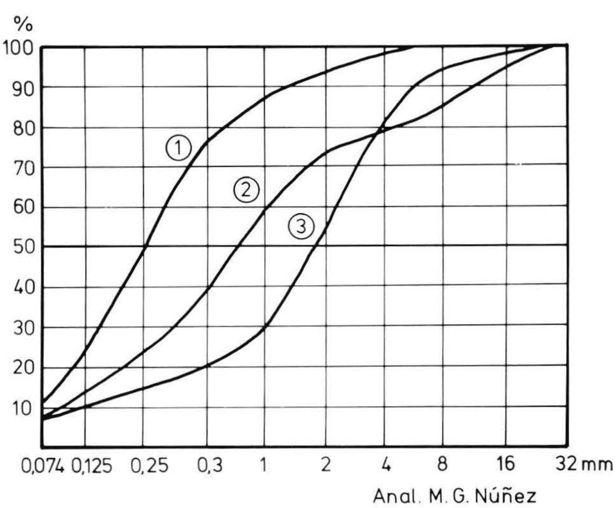

Fig. 25. KFR-A4. Granulometric analysis of layers 1 to 3 in Trench I (cf. Fig. 24).

KFR-A5 (Porcupine Cave)

This site is located in the same granite *kopje* as KFR-A4 (Figs. 17 and 18). It is a cave which originally formed part of the same shelter the northern part of which is now KFR-A4. At some point in time a long section of the overhang fell to block the southern end of the original shelter into a cave with an opening to a 10 m wide passage between two *kopjes* (Figs. 27—29). The cave is 9 m deep and 3 to 5 m wide (Figs. 30 and 31). Its height is now c. 4 m at the entrance and only 1 m at the end of the cave; the mean gradient of the floor is c. 20 cm/m. As mentioned earlier (p. 26), the ceiling has been stained black by repeated funeral (?) fires burnt in the region of the entrance; the stain partly covers some paintings the position of which is shown in the sectors (Fig. 31).

A trench of 8 m^2 was excavated inside the cave just inside the drip line. The excavation was confined to a depth of 20—30 cm (layers 1 and 2; see below) in most of the trench to uncover the burial deposit described in more detail below. Only the western flank of the trench was dug to the bottom of the total deposit. As will be reported below, even in this area only the southern section of the pit revealed an undisturbed complete sequence of layers while the northern section was disturbed down to a depth of 90 cm by a burial dug through layers 2 to mid-6 (Burial 1).

The stratigraphy of the undisturbed section of the trench was the following (Figs. 32 and 33):

Layer 1: 0—1/5 cm; very loose grey, powdery topsoil with stone slabs

Layer 2: 1/5—25 cm; as layer 1 but harder; two lenses of light grey ash plus charcoal; red and yellowish ochre; stone slabs some of which were eroded by fire; the lower 5 cm of the layer contained some sand and small pebbles but no stone slabs.

Layer 3: 25—35 cm; as the lower part of layer 2 but with no ash or charcoal (the lower limit of the ash layer was sharp); greyish brown earth

Layer 4: 35-c. 70 cm; as layer 3 but quite hard and contained less pebbles

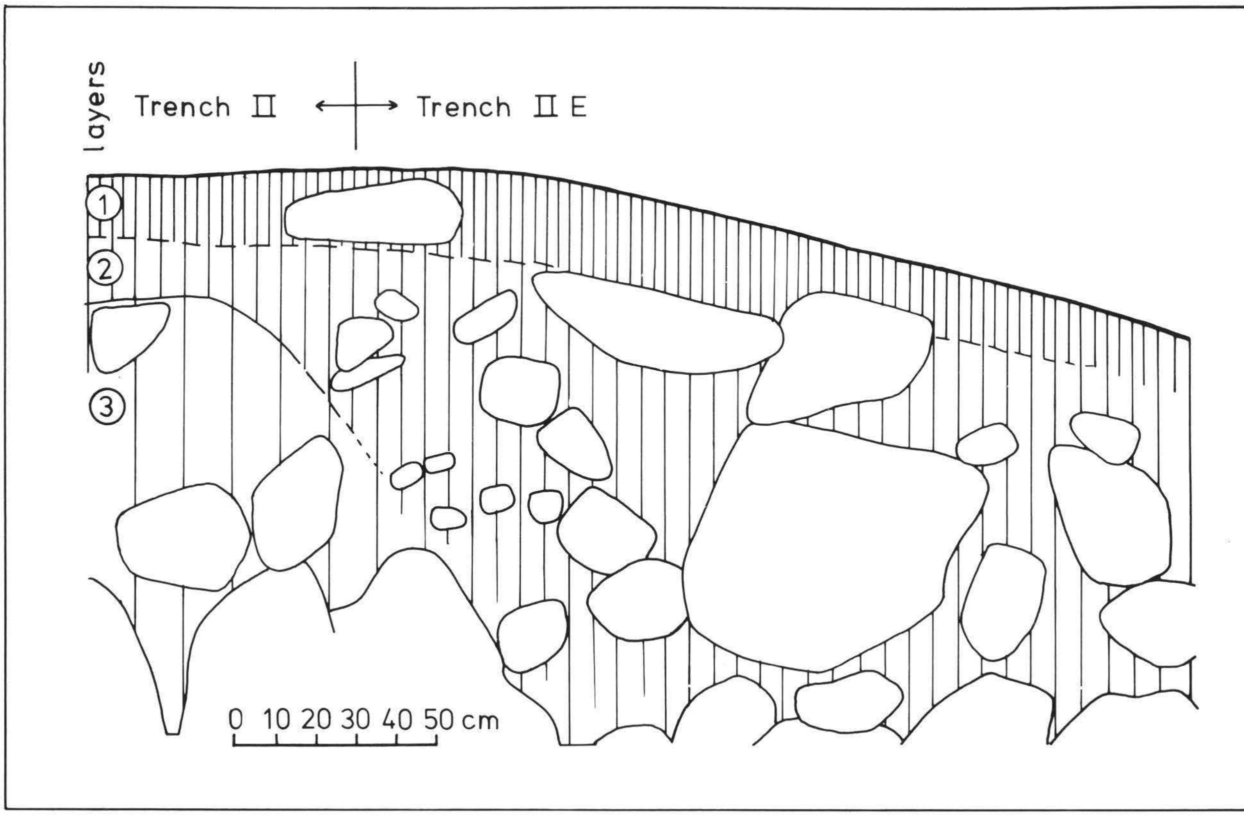

Fig. 26. KFR-A4. Section 2 (cf. Fig. 22).

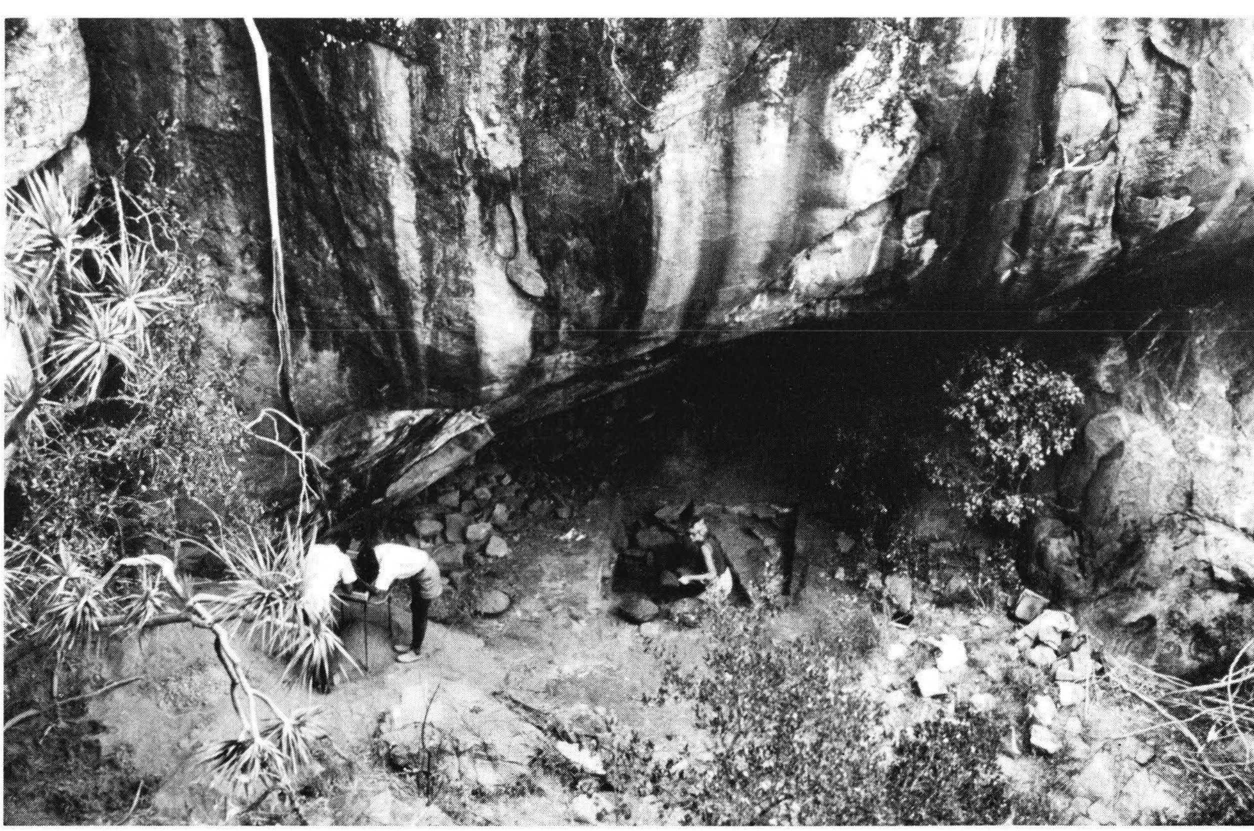

Fig. 27. KFR-A5 under excavation.

Fig. 28. The entrance of KFR-A5 from E.

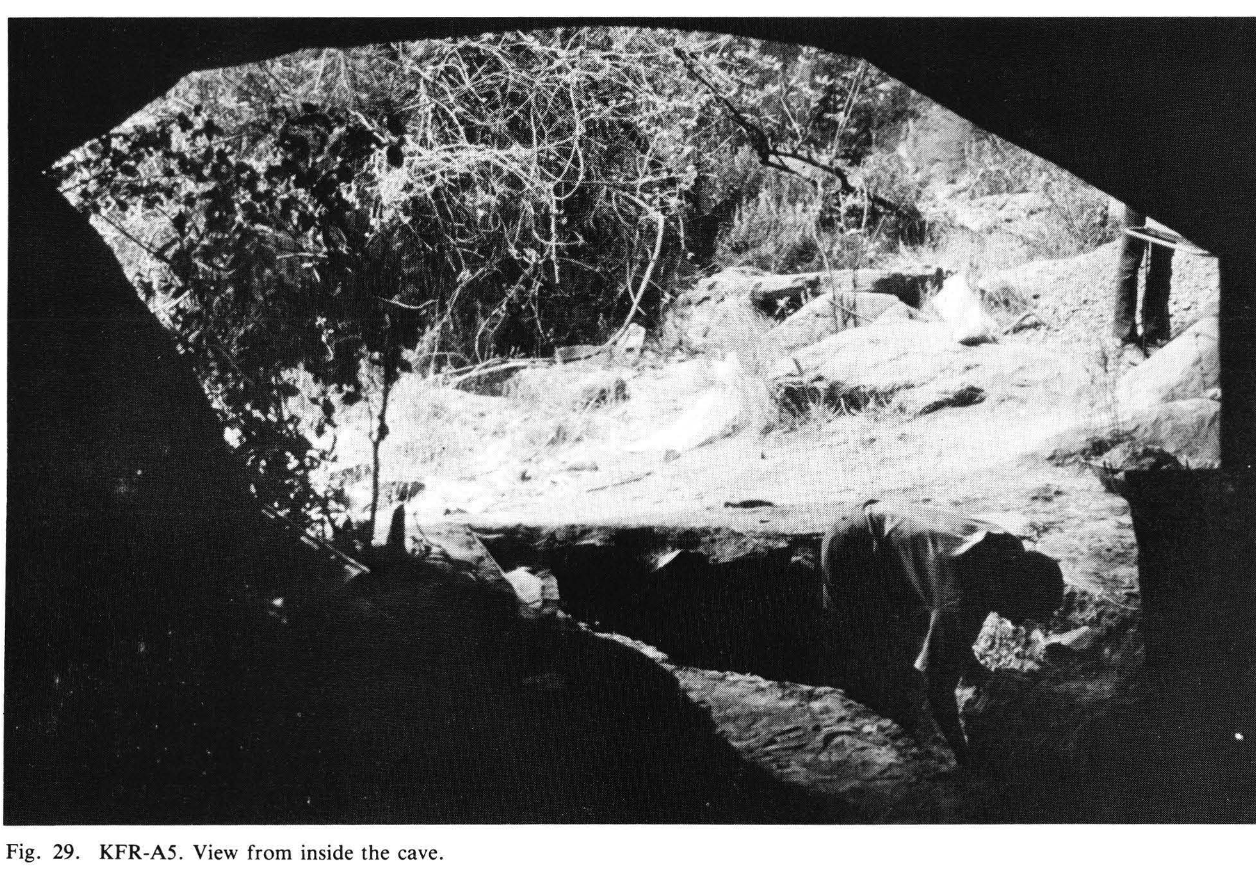

Fig. 29. KFR-A5. View from inside the cave.

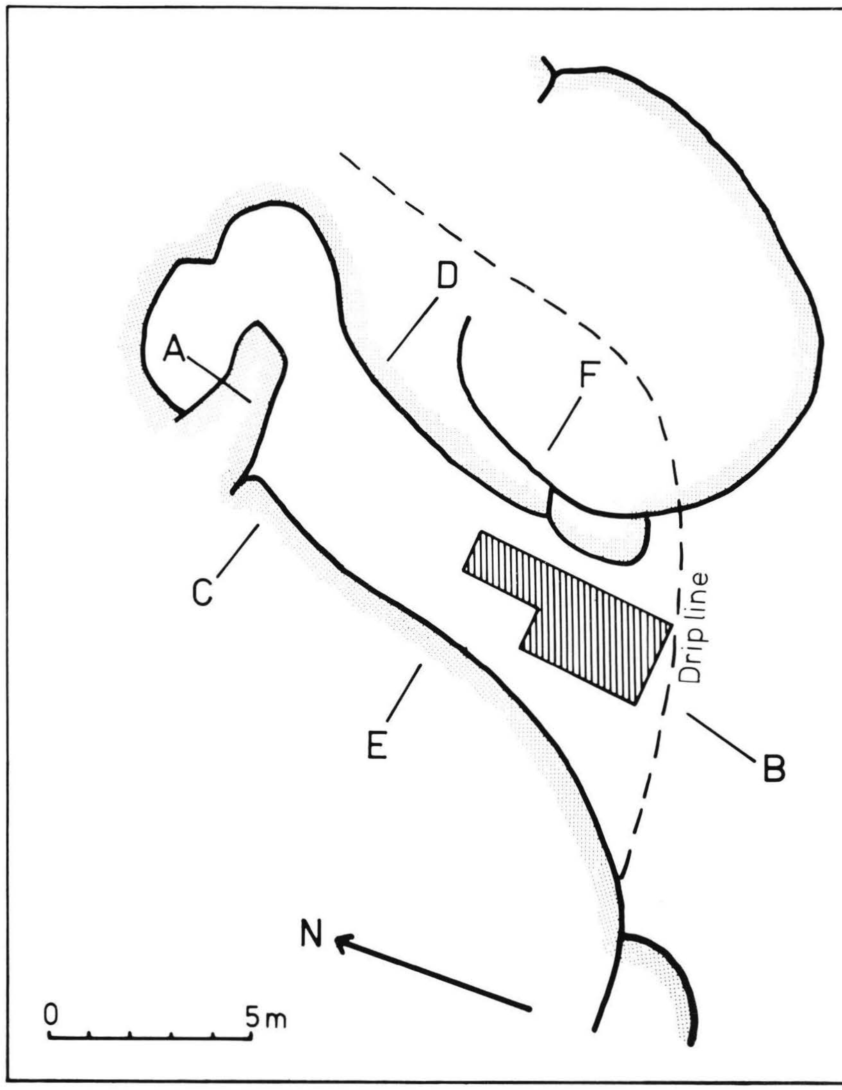

Fig. 30. KFR-A5. Plan.

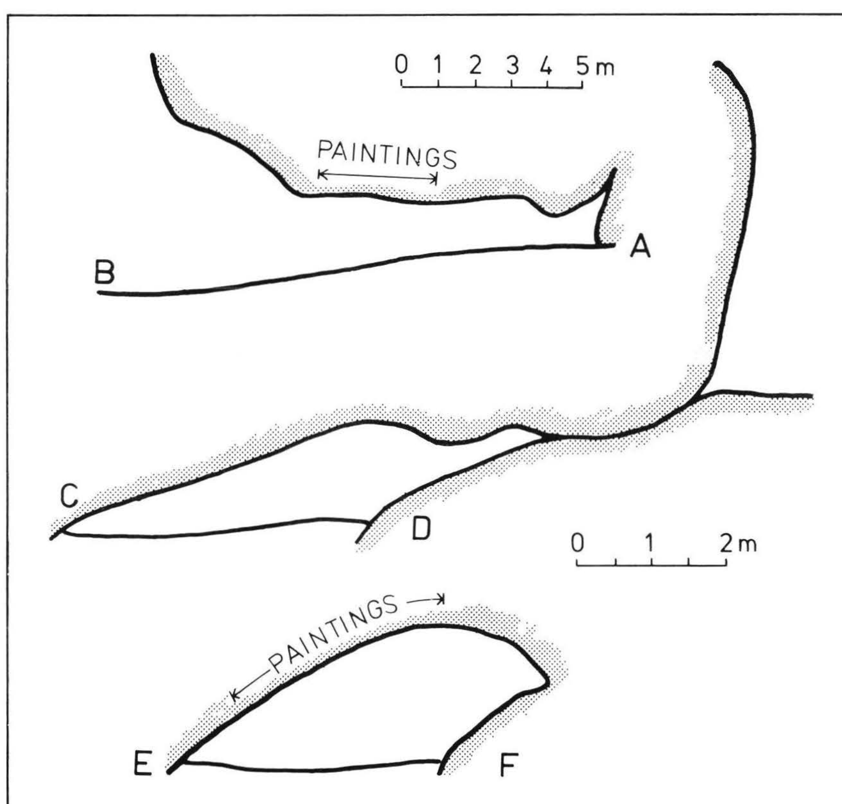

Fig. 31. KFR-A5. Longitudinal section A-B and transverse sections C-D and E-F (cf. Fig. 30).

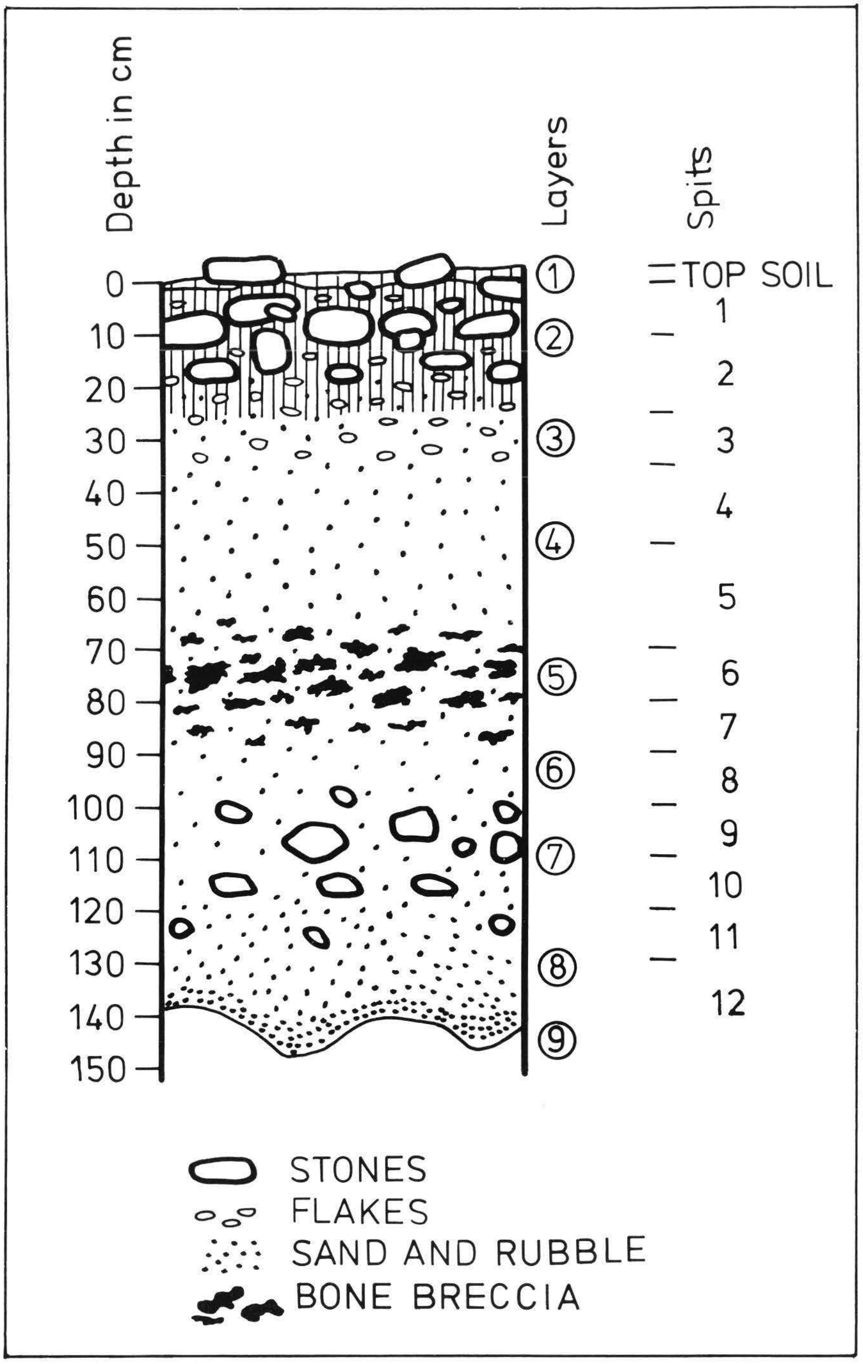

Fig. 32. KFR-A5. Section of the western wall of the undisturbed part of the trench (cf. Fig. 34).

Layer 5: c. 70-c. 80 cm; as layer 4 but even harder and with large (diam. up to 20 cm) lumps of bone breccia

Layer 6: c. 80—100 cm; as layer 4

Layer 7: 100-c. 120 cm; as layer 6 but contained stone slabs (diam. up to c. 25 cm) and flakes exfoliated from the ceiling of the cave

Layer 8: 120-c. 140 cm; as layer 7 but no stones nor flakes; yellowish earth

Layer 9: below 140 cm; very hard yellowish gravel and decomposed rock.

In the SW corner of the trench some root action was discernible down to the depth of c. 30 cm resulting in a probable contamination so that the archaeological material in layer 3 (spit 3) probably contains some of that from layer 2. Towards the far end of the cave layer 2 (burial layer) became thicker due to the gradient of the floor and was c. 45 cm thick in the inner section of the trench; the top of layer 3 was nearly horizontal. As shown in Fig. 32 only the boundary between layers 2 and 3 was clear-cut, otherwise the layers merged into each other gradually.

Archaeological material was discovered from all the layers but again markedly diminishing in the lowermost layers 7 and 8, in layer 8 only few flakes were found. As this layer mostly consisted of weathered bedrock the lack of archaeological material can be assigned to the lack of soil, and a possible secondary displacement of a few pieces must also be cosidered — this phenomenon was more specifically noted in KFR-A12 (see below). The cave had served as a habitation site until the period represented by layer 2 when it obviously became too low to be convenient: at this time it was devoted to burials.

Six burials were discovered in layer 2 and in addition to these one, although belonging to the same period as the other burials, was dug into the level of layer 6 (Fig. 34):

Burial 1 (Figs. 35 and 36). On the bottom of a pit dug through the deposits from the level of layer 2 as indicated by the stones which were used in filling the shaft after burial, down to the depth of 90 cm (spit 7, layer 6). No clear limits of the pit itself could be observed in the homogenous layers 3, 4 and 5 but some ashy flecks derived from layer 2 when the shaft was filled seem to indicate that the burial pit was rather narrow. The well-preserved skeleton was in a contracted position, the head to the southwest, lying on its left side. The hands were under the chest and the face was turned downwards. The mandible was in two pieces dislocated from its natural position. Underneath the skeleton there was a thin (< 1 cm) layer of red ochre and the bones, especially the legs, were thickly stained by the ochre. On the top of the body two stone slabs had been placed which together covered the whole skeleton. Between the skeleton and the slabs there was a c. 5 cm thick layer of earth but the weight of the grave fill had pressed the slabs so that the ribs had been broken. The grave fill consisted of stones and earth. — The skeleton belongs to an adolescent male (cf. Philip Rightmire's report, Appendix). In the upper frontal edge of the third lumbar vertebra an obsidian crescent was imbedded which clearly had served as a transversely mounted arrowhead (Siiriäinen 1977a) (Figs. 37 and 38). As the scar in the bone was unhealed the death of the victim was presumably caused by the arrow being shot through the stomach.

Burial 2 (Figs. 39 and 40). In layer 2 a small cist made of granite slabs was located. Four of these (the southern gable, two sides and one top slab) were still *in situ*, only slightly dislocated. The leg-bones and the lower jaw were still in the cist; other bones were scattered and disturbed (the vertebral column bent double) to the north of the cist. The skull was missing.

Burial 3. An isolated skull at the edge of the trench immediately to the east of Burial 2, at a depth of 10 to 20 cm.

Burial 4. At the edge of the trench to the north of Burial 3 an isolated skull was found at a depth of 30 to 45 cm. Neither skulls of burials 3 nor 4 belong to the skeleton of Burial 2 because both still had their mandibles preserved.

Burial 5. An isolated skull of an infant at the edge of the trench near its northwestern corner, at a depth of 25 to 35 cm.

Burial 6. A large stone slab was encountered at a depth of 20 cm at the edge of the trench near its southeastern corner underneath which two leg-bones were visible. The burial was left unexcavated.

Burial 7. A stone setting with a horizontal central slab at the eastern edge of the trench, at a depth of 50 cm. No bones were discovered as the excavation was not extended below the lower level of the slab; if the feature is a burial it obviously extends into layer 3.

The bones of Burials 2 to 6 were not completely burned but rather »baked», and layers 1 and 2, in which all these burials were situated, contained much powdery ash, fragments of charcoal and pink and yellowish ochre. Dr. Pat Shipman (The Johns Hopkins University, School of Medicine) has analyzed three teeth of Burials 4 and 2 under SEM to determine the degree of burning. She concludes that »the molar (Laikipia burial 4) and the premolar (burial 4) both show signs of burning, probably between 350—450°C. The incisor (burial 2) is ambiguous and full of grot we couldn't get off» (Dr. Shipman's letter to Dr. Harry Merrick of the National Museums of Kenya, Dec. 16, 1983).

Each burial was badly disturbed by subsequent burials, but Burial 2 partly preserved shows the method used: a small stone cist served as an »oven» for »baking» the bodies the fire being set on top of the »oven». The body was either tightly tied or smashed to fit into the »oven», or »baked» in a secondary funeral ritual after the soft parts had completely decomposed. This method could, however, be only seen in Burial 2, although it is obvious that the bodies of Burials 3 to 6 have been treated in the same manner; Burial 7 might prove to be of a different type.

Fig. 33. KFR-A5. Part of the western wall of the trench. Note the ash layer immediately below the stones.

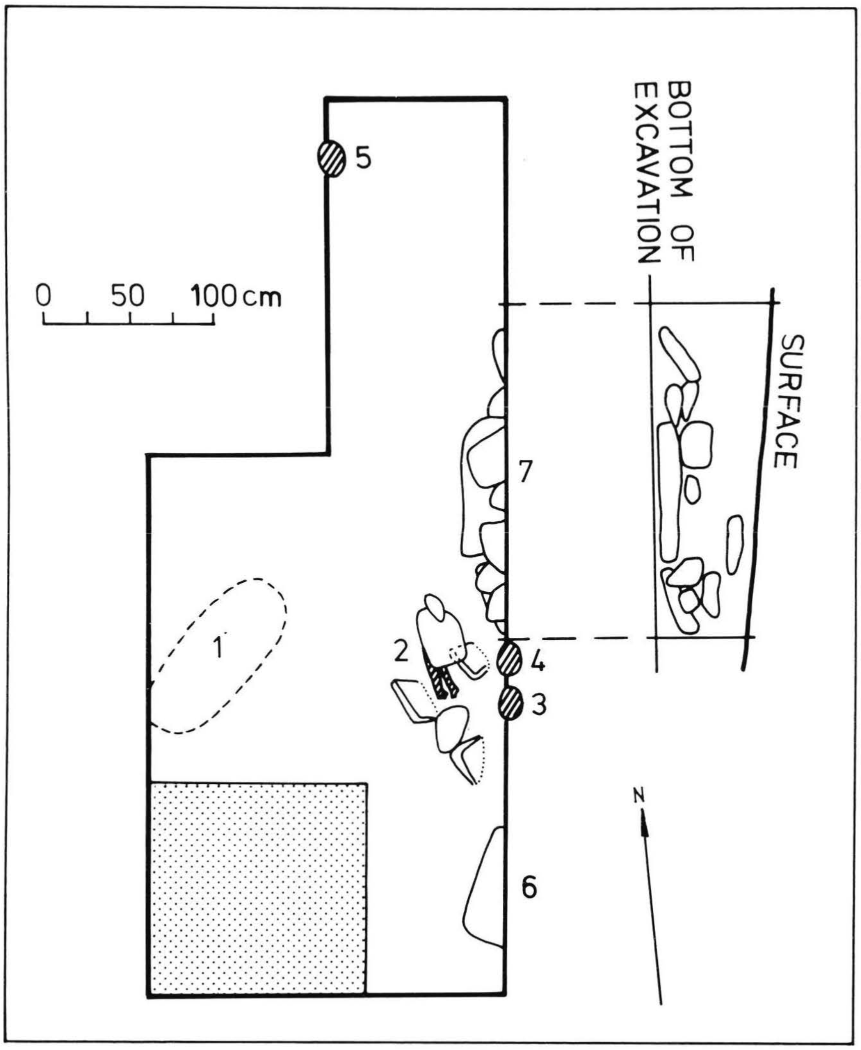

Fig. 34. KFR-A5. Plan of the trench showing the undisturbed section (stippled) and Burials 1 to 7.

Fig. 35. KFR-A5. Burial 1. Length of scale 50 cm.

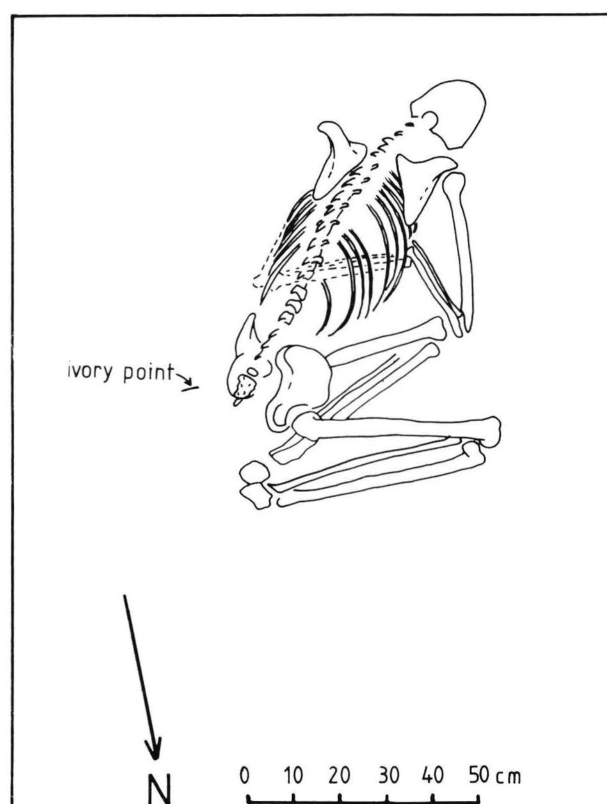

Fig. 36. KFR-A5. Burial 1.

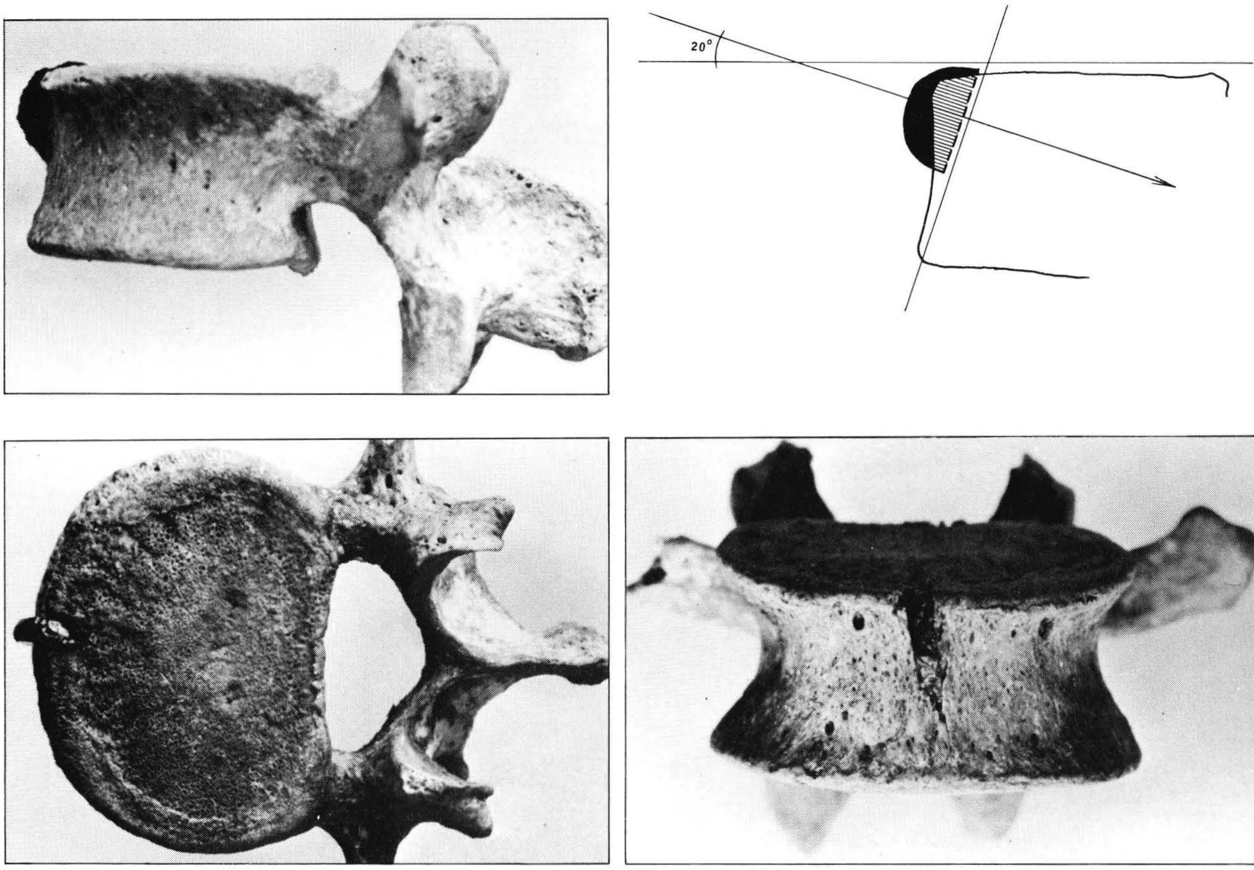

Fig. 37. KFR-A5, Burial 1. The human vertebra with an obsidian crescent.

Burial 1, as noted above, was unique and in a separate article (Siiriäinen 1977a) I have put forth a hypothesis that the buried man was shot as an outcast of his society. This would imply that the skeleton represents a physical specimen of the population living in Laikipia at the time of the burial. However, the possibility cannot be totally ruled out that the victim was in fact an executed prisoner of war and consequently might belong to a physical type living somewhere else; but given the fact that he was buried within the burial cave used by the local society, undoubtedly a sacred place of the tribe, and that he was provided with rituals (red ochre), it seems more likely that he belonged to the society which buried him.

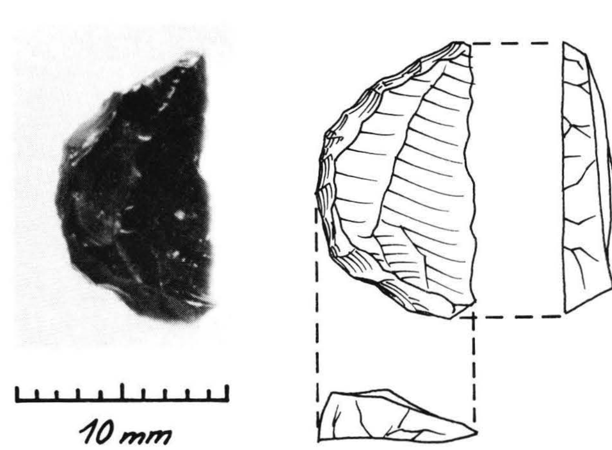

Fig. 38. KFR-A5, Burial 1. The obsidian crescent (cf. Fig. 37).

KFR-A12 (River Rockshelter)

This site is situated in the northern bank of the Uaso Narok (0°26′45''N, 36°48′10''E) which at this point flows from due west to east. The overhang is exfoliated into the southern face of a low phonolite ridge projecting southwards toward the river; the distance from the shelter to the river is 30—35 m and the shelter floor is about 5 m above the flat alluvial plain (Figs. 41—43). The shelter is 14 m wide and 4.5 m deep (Figs. 44—45). The rounded overhang gives only poor protection against wind, sun and rain: the shelter as such is clearly no ideal habitat. The relatively rich artefactual material discovered in the test excavation may be explained by reference to the topographical situation of the shelter close to the river and just above the track of game passing through the narrow passage between the river and the ridge.

Underneath the overhang a small test pit was excavated measuring 2.5 × 1.5 m at the top and 1.5 ×

Fig. 39. KFR-A5. Burial 2. Note the »oven» and the ash layer on top of it. Length of ruler 20 cm.

Fig. 40. KFR-A5. Burial 2 from above.

Fig. 41. KFR-A12. The phonolite ridge from SW.

0.5 m at the bottom. The stratigraphy was as follows (Figs. 46 and 47):

Layer 1: 0—1/5 cm; brown, loose and fine-grained silt

Layer 2: 1/5—10/14 cm; as layer 1 but harder with ash in the northeastern section of the trench

Layer 3: 10/14—32/35 cm; brown, quite hard silty sand with stone slabs and small phonolite flakes exfoliated from the ceiling of the shelter

Layer 4: 32/35—50 cm; greyish brown, hard packed weathered basement rock with small phonolite flakes

Layer 5: below 50 cm; grey, hard weathered basement rock

Only the boundary between layers 2 and 3 was sharp the other boundaries being more gradual although rather clear.

Archaeological material was again discovered from all layers — including layers 4 and 5 although these consisted of weathered bedrock. This peculiar phenomenon can be explained by assuming the vertical displacement of artefacts within the deposit through tiny cracks formed into the soil after the accumulation of habitation debris as I have attempted to show by means of a simple model published earlier (Siiriäinen 1977c). This secondary displacement probably explains the existence of the tiny granite flakes in layer 3, and it extremely likely that all the archaeological material in layers 3 to 5 belong to the same habitation period and should be considered as a single entity. According to the model there are thus only two occupation periods in the shelter: 1) layers 3 to 5, and 2) layers 1 and 2, with possibly a brief recent period represented by some potsherds on the surface of the floor. The earliest occupants came to the shelter when

Fig. 42. KFR-A12 from S.

Fig. 43. KFR-A12 from E.

its floor was formed by the (partly decomposed) granite base on which the phonolite facies rests.

KRF-C4 (cairn)

This cairn, one of the smaller type in the area, is situated some 300 m south-southwest of KFR-A4 and A5, on the northern foot of a *kopje* and on the southern side of the track leading from Kisima Farm via the Tomlinson property to Nanyuki. The terrain slopes very gently to the east, from north to south it is nearly horizontal (Figs. 48 and 49).

The diameter of the cairn was c. 3.5 m and the height c. 50 cm. The cairn consisted of stones (10 to 30 cm in diameter) and earth. It was slightly eroded to judge from the talus-like fringes and some scattered stones around the cairn. Some of the covering

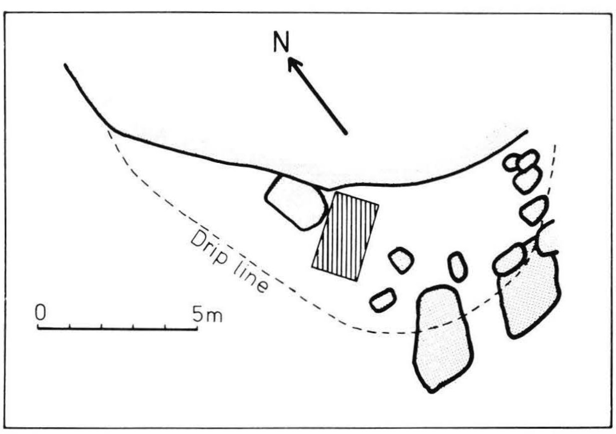

Fig. 44. KFR-A12. Plan.

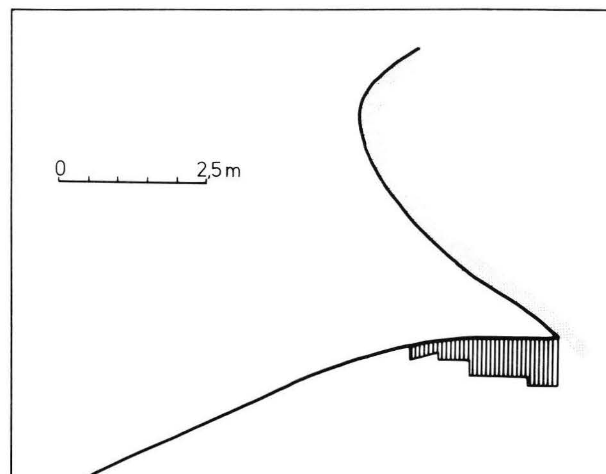

Fig. 45. KFR-A12. Profile.

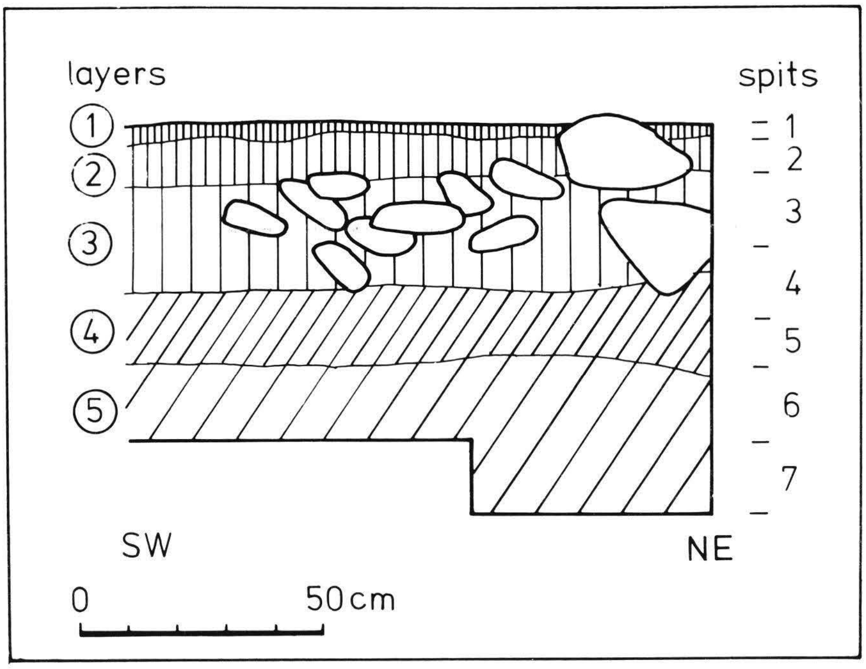

Fig. 46. KFR-A12. Section of the eastern wall of the trench.

slabs seemed to have been placed to form a smooth outer surface for the cairn.

In the excavation the sector method was followed (Fig. 50). Some scattered unretouched flakes of obsidian, quartz and chert were found, all of which might have come from the earth with which the cairn was constructed; it should be noted, however, that such flakes were observed around most of the cairns in the survey area and even Jacobs (1972) reports the same association of cairns and flakes elsewhere in Laikipia.

Two burials were discovered (Fig. 51):

Burial 1. This is the primary burial in the centre of the cairn. The body had been placed in a shallow pit, c. 30 cm below the level of the original land surface as interpolated from two points outside the cairn (Fig. 52). The body was in a contracted position on its right side with the head to the east (Figs. 53 and 54). The pit was filled with stones which had crushed the chest of the body and slightly depressed the upper part of the vertebral column and the mandible from their original positions. The bones were in rather good condition, only the joints of the long bones were decomposed. No grave goods or traces of red ochre were found.

Burial 2 was secondary in the cairn and was represented by some badly ant-eaten bones in sectors AB and BC (with some fragments in sector CD) and scattered teeth in sector AB. These occurred above the original ground surface in between the stones of the cairn.

Chronology and interpretation of the stratigraphy

In shelters KFR-A4 and A5 there was a distinct upper horizon with pottery (layers 1 and 2 in both sequences) and a lower one without any pottery (in section C of the shelter KFR-A4 layer 3 below the pottery-bearing layer 2 was sterile) (Fig. 55). In both shelters — with the exception of Section B in KFR-A4 — the boundary between these horizons was clearly visible in the stratigraphy and always very sharp and distinct giving an impression that there might be a hiatus of deposition of soil in between. In KFR-A12 the same horizons are present but, as stated above, in this case there is a strong possibility that the lithic artefacts below the pottery-bearing layers 2 and 3 are

Fig. 47. KFR-A12. NE section of the trench with the stone slabs in layer 3.

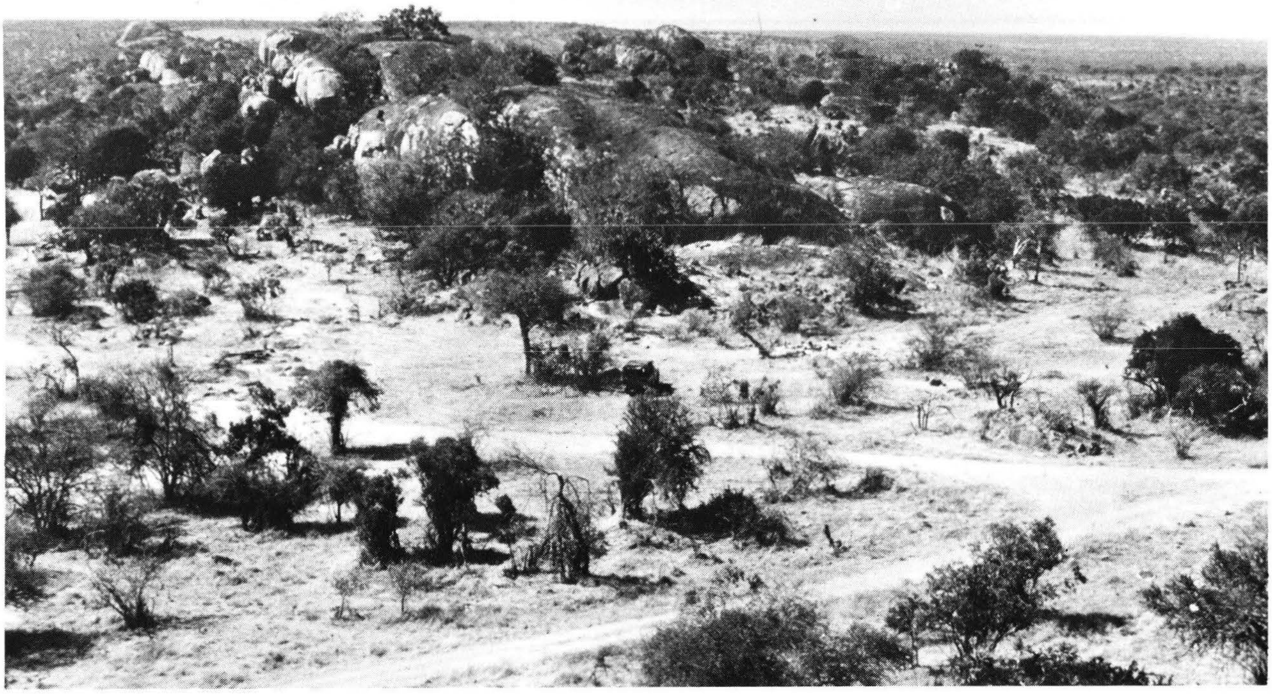

Fig. 48. View to the south over the chain of basement rock hills. KFR-C4 is situated half-way between the track and the nearest hill.

secondarily displaced from above and that there is consequently no pre-pottery horizon represented.

The chronological disposition of the sites and their horizons is based on twelve radiocarbon determinations carried out by the Radiocarbon Laboratory of the University of Helsinki (Hel), The Geochron Laboratory (GX) and the Radiocarbon Laboratory of the University of Stockholm (St) (Table I and Fig. 56).

The oldest dated layer is KFR-A5/layer 2 (Burial 1) which, together with the dates of Burials 2 and 3, shows that the cave was used as a burial site from the earlier half or the middle of the 1st millenium BC to its end. There are however some problems when inferring more exact dates for the burials on the basis of the radiocarbon measurements worth discussing in some detail. If the result of sample GX-4350 (bone apatite; ^{13}C corrected) had only been used to date Burial 1, it would have fallen somewhere around AD 1400. As this leads to obvious difficulties in interpreting the rest of the burial horizon, another sample was

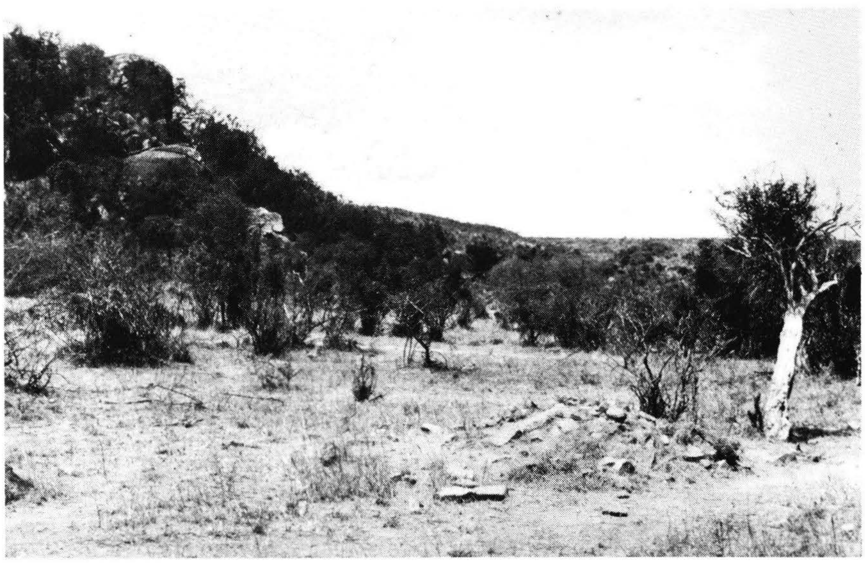

Fig. 49. KFR-C4 before excavation, from E.

Fig. 50. KFR-C4 under excavation.

taken from the same skeleton and submitted to the Helsinki laboratory, and in addition a charcoal sample associated with the burial was measured in the same laboratory as well. The results of the measurements, although not identical, overlap with each other within doubled standard deviations, which gives some confidence as to their correctness. These measurements seem to indicate a mid-1st millenium BC date for the burial which is thus roughly from the same period as Burial 2, or slightly earlier. This is also consistent with the stratigraphical conclusion but casts at the same time serious doubts on isolated radiocarbon

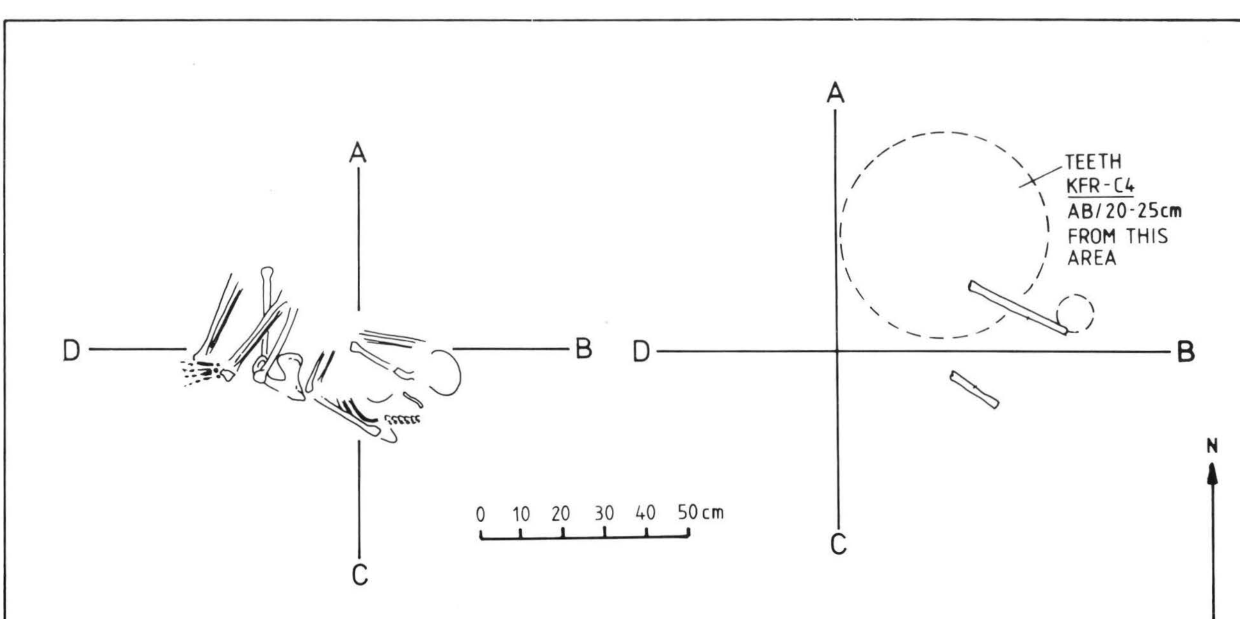

Fig. 51. KFR-C4. Right, position of the remains of the secondary burial (Burial 2); left, the primary burial (Burial 1).

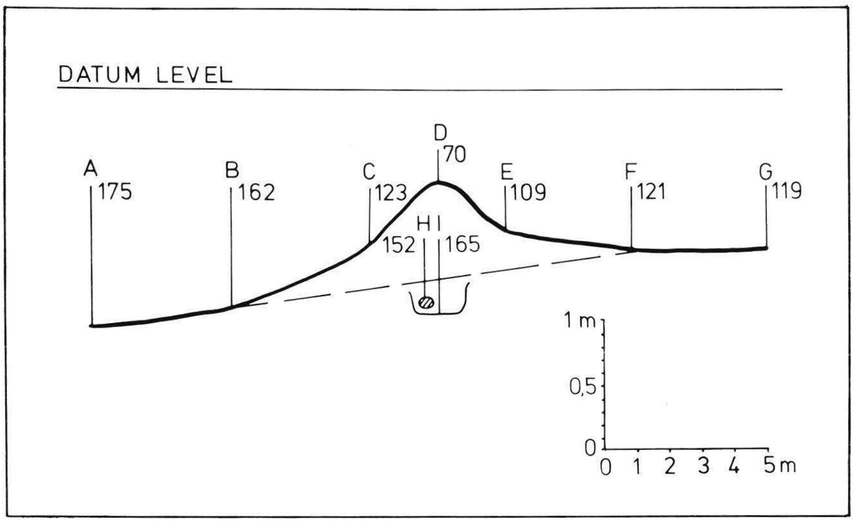

Fig. 52. KFR-C4. Profile showing the position of Burial 1.

measurements of bone, a fact that is widely understood[1].

The habitation layers beneath the burial horizon in KFR-A5 are older than the mid-1st millenium BC by an unknown amount of years; no charcoal was found for dating and attempted measurements from bone failed as only insufficient amounts of datable organic fraction could be extracted.

Sample Hel-533 (AD 50 ± 90) comes from the uppermost prepottery layer in Trench II of KFR-A4 and sample Hel-531 (AD 1420 ± 100) from the lower-

[1] Recently Geochron redated sample GX-4350 using the bone gelatin fraction; the result was 2680 ± 130 BP (C-13 corrected). This is indicated in Fig. 56.

Fig. 53. KFR-C4. Burial 1 with the stones above the skeleton.

Fig. 54. KFR-C4. Burial 1 with the skeleton uncovered. Length of scale 50 cm.

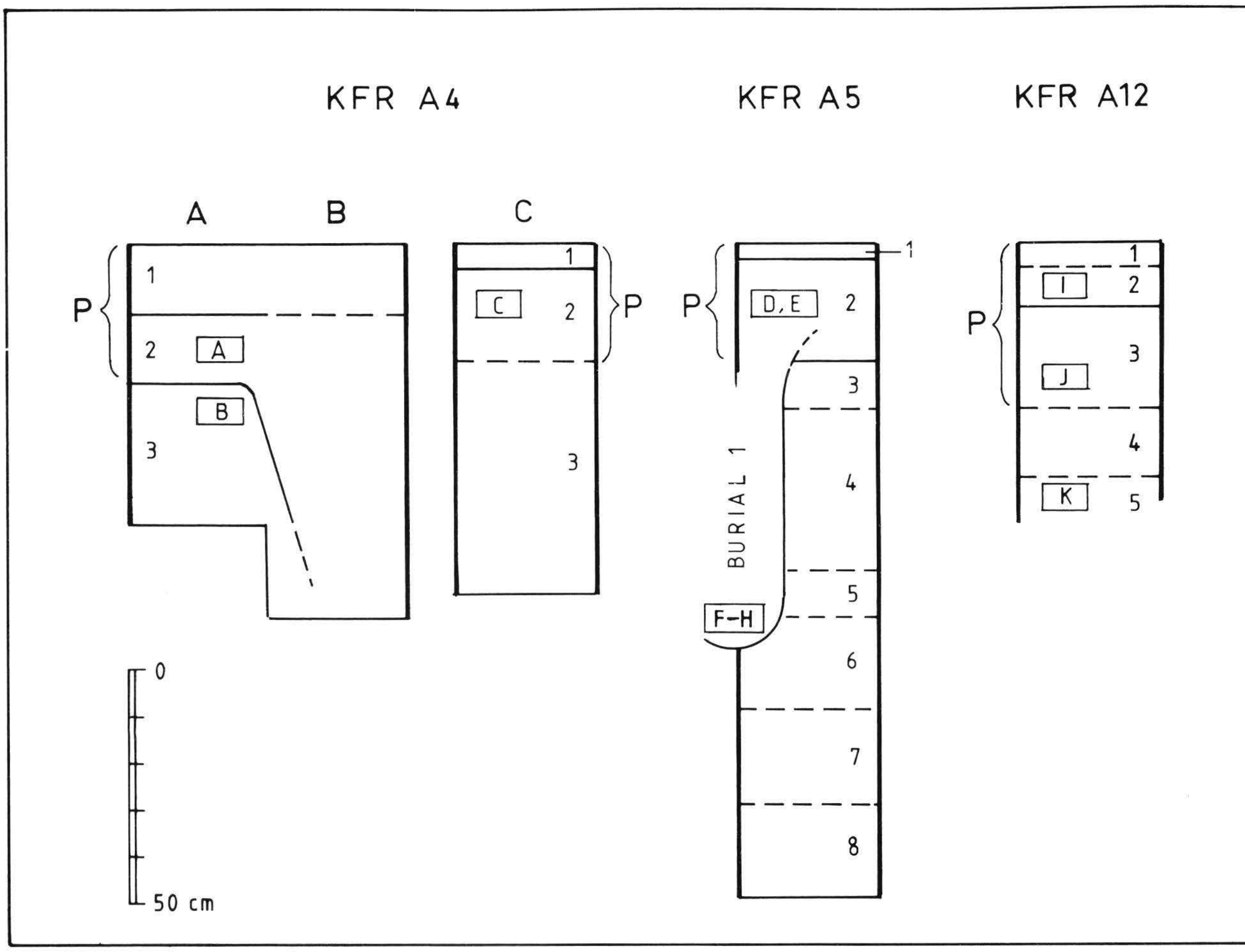

Fig. 55. Schematic summary diagram of the stratigraphy and radiocarbon datings (samples A-K) in KFR-A4, A5 and A12. P = pottery.
Radiocarbon samples:

A	Hel-531	F	Hel-851
B	Hel-533	G	Hel-871
C	Hel-530	H	GX-4350
D	Hel-853	I	Hel-529
E	St-5991	J	Hel-532
		K	Hel-534

most pottery-bearing layer in Trench I. As these trenches had a similar stratigraphy, it seems that there is a hiatus, as also suggested by the stratigraphy, of over 1000 years between layers 2 and 3. The younger of these datings is in accordance with the fact that rouletted pottery — generally dated in East Africa to the 14th century AD and later (eg. Posnansky 1967 p. 634) — came from the contact of layers 1 and 2.

TABLE I

RADIOCARBON DATINGS

Site	Layer or feature	Depth (cm)	Material	Lab.No	Date BP (T1/2 = 5568)	Date BC/AD
A 4	Trench II/3	30—50	charcoal	Hel-533	1900 ± 90	AD 50
»	Trench III/2					
	ash concentr.	15—30	»	Hel-530	2100 ± 110	150 BC
»	Trench I/2	»	»	Hel-531	530 ± 100	AD 1420
A 5	Burial 1	90—100	bone collagen	Hel-851	2490 ± 110	540 BC
»	»	80—90	charcoal	Hel-871	2830 ± 120	880 BC
»	»	90—100	bone collagen	GX-4350	545 ± 95[1]	AD 1405
»	Burial 2	10—20	»	Hel-852	2320 ± 160	370 BC
»	Burial 3	»	»	St-5991	2015 ± 195	65 BC
A 12	5	60	»	Hel-534	1100 ± 120	AD 850
»	3	20—30	charcoal	Hel-532	980 ± 100	AD 970
»	2	5—10	»	Hel-529	»recent»	
C 4	Burial 1		bone collagen	Hel-853	760 ± 90	AD 1190

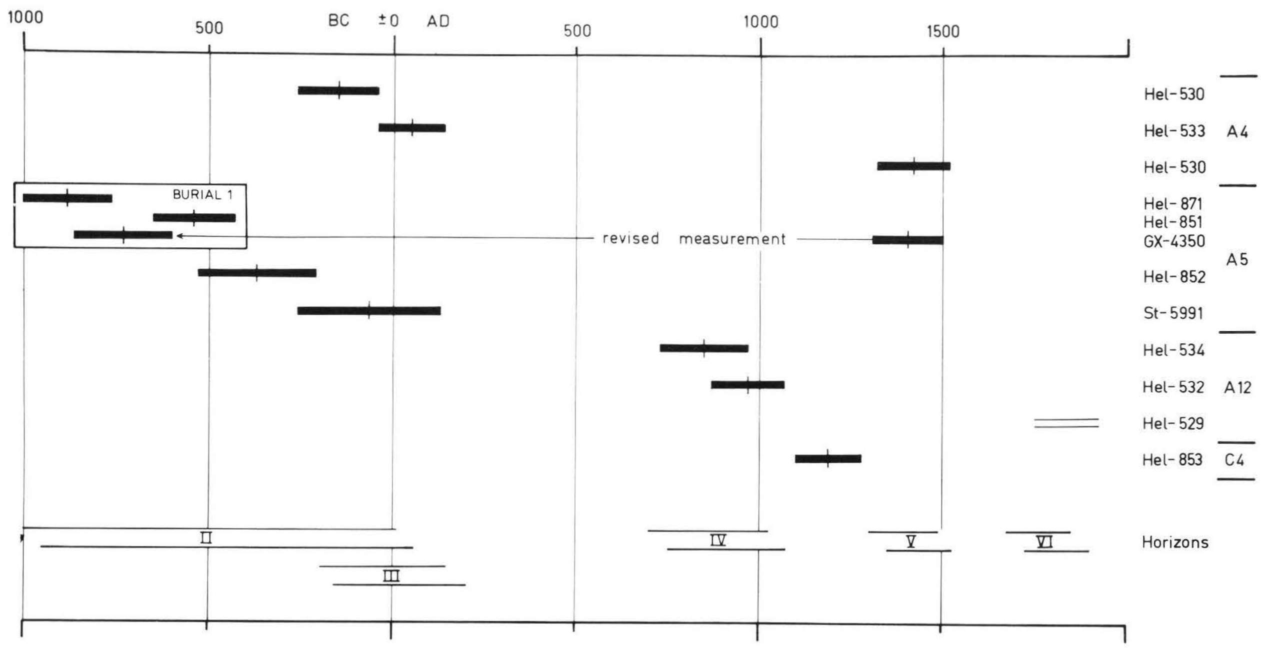

Fig. 56. Uncalibrated radiocarbon datings (with one sigma) and the sequence of Horizons II to VI. Only the GX-4350 results are C-13 corrected.

Sample Hel-530 (150 ± 110 BC) suggests that there are disturbances in Section C as the dating result is in conflict with the occurrence of the rouletted pottery found in the dated layer but indicates that KFR-A4 was inhabited already during the 2nd century BC.

The dating results from the upper part of the lower (prepottery) horizon in KFR-A4, around the beginning of the Christian era, suggest that the shelter became a habitation site at about the time when KFR-A5 was devoted to burials. There then follows a hiatus of 700 to 800 years in the archaeological succession after which the lower layers of KFR-A12 belong (c. AD 800 to 1000). The uppermost layers of KFR-A4 and A12 are »recent», and obviously there are also sherds on the floor of KFR-A5 dating to this period. Layer 2 in KFR-A4 is dated to c. AD 1400 and the cairn KFR-C4 to c. AD 1200.

Some features in the stratigraphical sequences of the rockshelters suggest that there were probably climatic fluctuations during the period covered, i.e. from some time before 500 BC to about AD 1500, although more analyses are required from several sites in a wider area to determine whether the stratigraphical changes in the rockshelter deposits only reflect changes in the local depositional and erosional environment or whether there really were systematical fluctuations of rainfall in the whole of Laikipia.

Along the banks of the Uaso Narok and Uaso Ngiro one can discern clear abrasion brinks as the result of lateral erosion by flowing water whenever the banks are high and steep enough for the formation of such brinks. While these features unambiguously indicate that at some time the rivers have carried substantially more water than to-day, it is impossible to date them or to reconstruct the mechanism by which they have been formed. The rather great masses of earth that must have been removed to leave such prominent abrasion cuts could not have been carried off by occasional seasonal floods such as occur every now and then in present times. Similar geomorphological evidence of greater waterflow in the past in the Uaso Narok is provided by the handsome kettle-holes in the granite bedrock which forms the threshold of the rapids between the kopjes near the eastern edge of the phonolite plateau to the south of Kisima Farm.

There are some changes in the stratigraphical sequences of the rockshelters which probably reflect changes in precipitation and temperature in the area. At a depth of c. 65 to 90 cm a distinct horizon rich in bone breccia was encountered in KFR-A5. The breccia occurred in lumps of different sizes (up to 20 cm in diameter weighing c. 700 g) in which bones, stones and earth had become cemented extremely hard by calcium leached from the bones within the deposit itself. The amount of breccia increased from the bottom of layer 5 to the middle of it and again decreased towards the upper part of the layer. As there was bone refuse material in all of the layers quantities large enough to produce breccia if conditions had allowed, it seems probable that a short spell of increased precipitation must have caused the breccia layer to form. Other suggestions to explain the layer would be to assume that more recent surface water had penetrated through the layers above layer 5 and that this level had formed the lower limit of the seepage into which a watertable had gathered, or that there had been a subterranean water channel fed by waters flowing from inside the cave along some crack in the rock. These explanations are less credible, however, as the former would result in breccia formation even above layer 5 and, regarding the latter, there was no marked changes in the porosity of the soil in layers 4 to 7 to lead water to seep precisely along the level of layer 5. — As mentioned earlier, the dating of the layers beneath layer 2 remains unknown as no material for radiocarbon determination was available and thus the date of the burial horizon, i.e. the 1st millenium BC, forms a rather imprecise *terminus ante quem* for the suggested moist phase.

There are also other changes in the stratigraphy of KFR-A5: layer 7 with the anomalously high frequency of stone slabs and the topmost layers (1 to 3) with similarily high frequencies of stone slabs and exfoliated flakes. While layer 7 might indicate an increase in the exfoliation process and thus an increase in precipitation in Laikipia, the increase of flakes in layers 1—3 is certainly a consequence of the funeral (?) fires discussed above which must have caused heavy exfoliation in the ceiling of the cave. The stone slabs in the burial horizon were most probably brought into the cave to provide material for burial cists.

In KFR-A4/Section C the sterile layer 3, which probably antedates the 1st century BC, with its very prominent exfoliation debris, might belong to the relatively moist period indicated by the bone breccia horizon in KFR-A5.

Also the difference in grain size statistics between layers 2 and 3 in KFR-A4/Section A (Fig. 25) can be interpreted as a change in the exfoliation process from moderate to almost non-existent some time during the long hiatus indicated above (i.e. between c. AD 100 and 1400). This suggests a shift from a climate slightly more cool and humid in average than the present one to a modern type between these dates.

Layer 4 and especially layer 3 in KFR-A12 contained also lots of exfoliated material; as already stated, it is probable that the flakes in layer 4 derived from layer 3. Layer 3 also contained phonolite blocks. Although the blocks could have been brought to the site by man for sitting platforms, the flakes certainly indicate prominent exfoliation from the ceiling which cannot have been caused by fires as no ash or charcoal concentrations were found from this horizon. Thus it seems probable that the humid conditions to which the coarse layers in KFR-A4 were assigned are also reflected here. The dating of layers 3 and 4 in KFR-A12, together with the above-mentioned dating of layer 2 in KFR-A4, make it possible to bracket the end of this period between c. AD 1000 and 1400. The powdery earth without any signs of exfoliation in the surface layers in KFR-A12 (as in A4) shows the type of deposition existing under present relatively dry climatic conditions.

To sum up the evidence of past climate, there were two episodes of higher precipitation than at present, presumably combined with lower temperatures: an older one which preceded c. 1000 BC, and a later one between c. ± 0 and AD 1000. It is possible that the former episode correlates with the wet phase discernible in the lacustrine deposits and raised beaches in the Nakuru-Naivasha and Lake Turkana basins dated to between c. 10000/8000 and 3500/2000 BC. Correlation of the younger one suggested a humid phase with a more general climatic sequence is difficult due to the scarcity of data concerning more recent events. Above (p. 13), some evidence was referred to pertaining to the late-Holocene climatic events in the Nile valley. It is worth noting in this connection, although no one-to-one correlation can be postulated, that in the Nakapapula rockshelter in Zambia Phillipson (1969) observed a similar prominent exfoliation horizon dating to before c. AD 800 and interpreted it to indicate a relatively moist and cool »sub-pluvial» in the area. Also, Clark (1969 p. 212) suggests a similar moist phase during the Early Iron Age at Kalambo Falls, northern Zambia.

The finds

The archaeological material discovered in the excavations will be described and analyzed grouped into six chronological horizons as follows (Fig. 56):

- I KFR-A5/spits 4—12 dated as older than 1000 BC; only the artefacts from spits 5, 7, 9 and 11 + 12 could be analyzed due to lack of time;
- II KFR-A5/spits 1—3 dated to the 1st millenium BC; burial horizon;
- III KFR-A4/spits 4—6 of Trenches I, IE and II dated to around ± 0;
- IV KFR-A12/spits 3—7 dated to the end of the 1st millenium AD;
- V KFR-A4/spits 2—3 of Trenches I, IE and II dated to around AD 1400;
- VI KFR-A4/spit 1, KFR-A5/surface and KFR-A12/ spits 1—2 of »recent» date.

This sequence, with a maximal refinement from any contamination, should be adequate in following the material culture development in the area through the last 3000 years.

Pottery

Description

The vessel form classification used in the descriptions is given in Fig. 57. The sherds are for the most, however, so small that no complete vessels could be reconstructed; thus the vessel form variable reflects in fact the variability in the neck and rim forms. From Fig. 57 it can easily be seen that, especially in the case of small rimsherds, it is difficult to make the distinction between types A1 and C1 as well as between A2 and C2 but determining the neck-form (1 or 2 form vessel) is easier and leads to a more reliable distribution.

The distinction between neck and rim is in some cases arbitrary and purely impressionistic. Thickness of the vessel wall has been measured from the thinnest section below the rim tapering and rounded to the nearest 0.5 mm.

In the description decorated sherds and rimsherds are numbered as vessels but plain bodysherds are described collectively.

Horizon I. No pottery found.

Horizon II. The earliest pottery in the prehistoric sequence of the Laikipia rockshelters comes from the burial layers of KFR-A5. As is shown in the following table, the majority of the potsherds came from the upper part of layer 2.

TABLE II

	(topsoil)	Spit 1	Upper part of spit 2	Lower part of spit 2
No. of sherds	17	17	57	22
weight (g)	134	159	532	161
mean weight of sherds (g)	7.88	9.35	9.33	7.32

1 Rimsherd of an A1-vessel; dark grey mica tempered paste; thickness 7 mm; smoothened. Decorated with two horizontal incised lines below the rim and a panel of triangles filled with horizontal incisions. Lower part of layer 2, SE section of trench. Fig. 58:1.

2 Rimsherd of a B2-vessel; black paste: thickness 8 mm; smoothened. Decorated with shallow horizontal grooves. Upper section of layer 2.

3 6 rimsherds (three of which glued together) and 24 bodysherds of a globular C1-vessel; dark brown to black sand tempered paste; thickness 8—11 mm. Undecorated; a hole (ø 9 mm) pierced c. 40 mm below the rim while clay was wet From lower part of spit 2 associated with Burial 2. Fig. 58:2.

4 2 rimsherds (glued together) of a C1-vessel; black sandtempered paste; thickness 8 mm (rim 10 mm); smoothened. Undecorated; faint notching on the outer edge of rim. From the same area as vessel 3, and probably associated with Burial 2. Fig. 58:3.

5 Rimsherd of a vessel of unknown shape; black mica tempered paste; thickness 5 mm; smoothened.

61 undecorated bodysherds from at least 14 different vessels. A minimum of 11 vessels with black or dark brown mica tempered paste; thickness 4—12 mm; one sherd with a burnished and pebble polished surface.

Horizon III. No pottery found.

Horizon IV. Only 12 plain bodysherds, at least three of which belong to one vessel with a black interior and a brown outer surface and very fine-grained sand-tempered paste; thickness 6—14 mm (thick sherds obviously from the lower section of the vessel). The other sherds either dark brown or black paste; thickness 7—10 mm. All the sherds from KFR-A12 layer 3 and the upper part of layer 4 but for reasons discussed earlier (p. 41), they are considered in this connection.

Horizon V. There are only four sherds with decorations, all from different vessels. Rimsherds amounted to six, also all from different vessels and thus indicating the minimum number of vessels in Horizon V. The majority (72 %) of the potsherds came from spit 2 of each trench in KFR-A4.

6 Rimsherd of a B1 or B2-vessel; brown sand-tempered paste; thickness 5 mm. Decorated with a horizontal row of closely spaced punctations 5 mm below the rim. Trench I/spit 2. Fig. 59:3.

7 Bodysherd of a vessel of unknown shape; black paste; thickness 10 mm; smoothened. Decorated with incised crosshatching. Trench I/spit 2. Fig. 60:8.

8 Bodysherd of a vessel of unknown shape; dark grey fine-grained sand-tempered paste; thickness 7 mm. Decorated

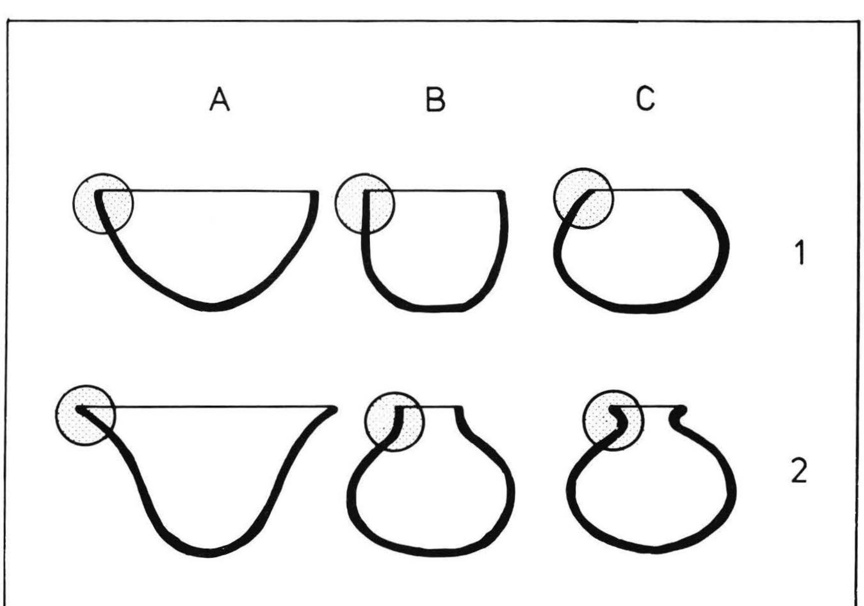

Fig. 57. Pottery vessel forms.

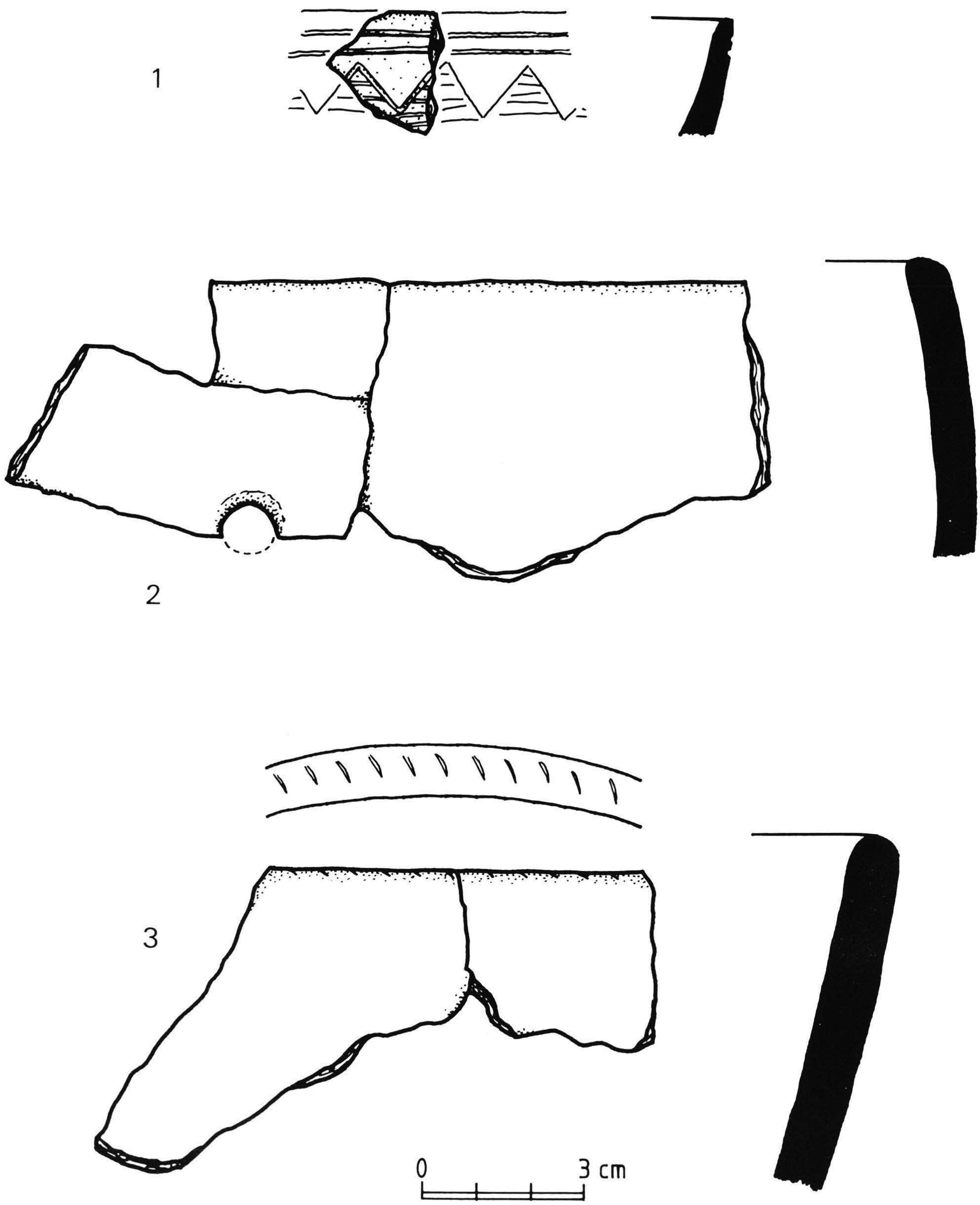

Fig. 58. KFR-A5. Potsherds.

with two parallel curved lines of dots forming a girland. Trench I/spit 3. Fig. 59:7.

9 Bodysherd of a cord-rouletted vessel of unknown shape; dark grey paste; thickness 6 mm. Trench II/spit 2. Fig. 60:11.

10 Rimsherd of a C1-vessel; dark grey fine-grained sand-tempered paste; thickness 8 mm; orifice diam. 15—18 cm. Trench I/spit 2. Fig. 61:15.

11 Rimsherd of a C1-vessel; light grey sand-tempered paste; thickness 7 mm; orifice diam. 20—25 cm. Trench I/spit 2. Fig. 61:17.

12 Rimsherd of a B1- or B2-vessel with sharply everted rim;

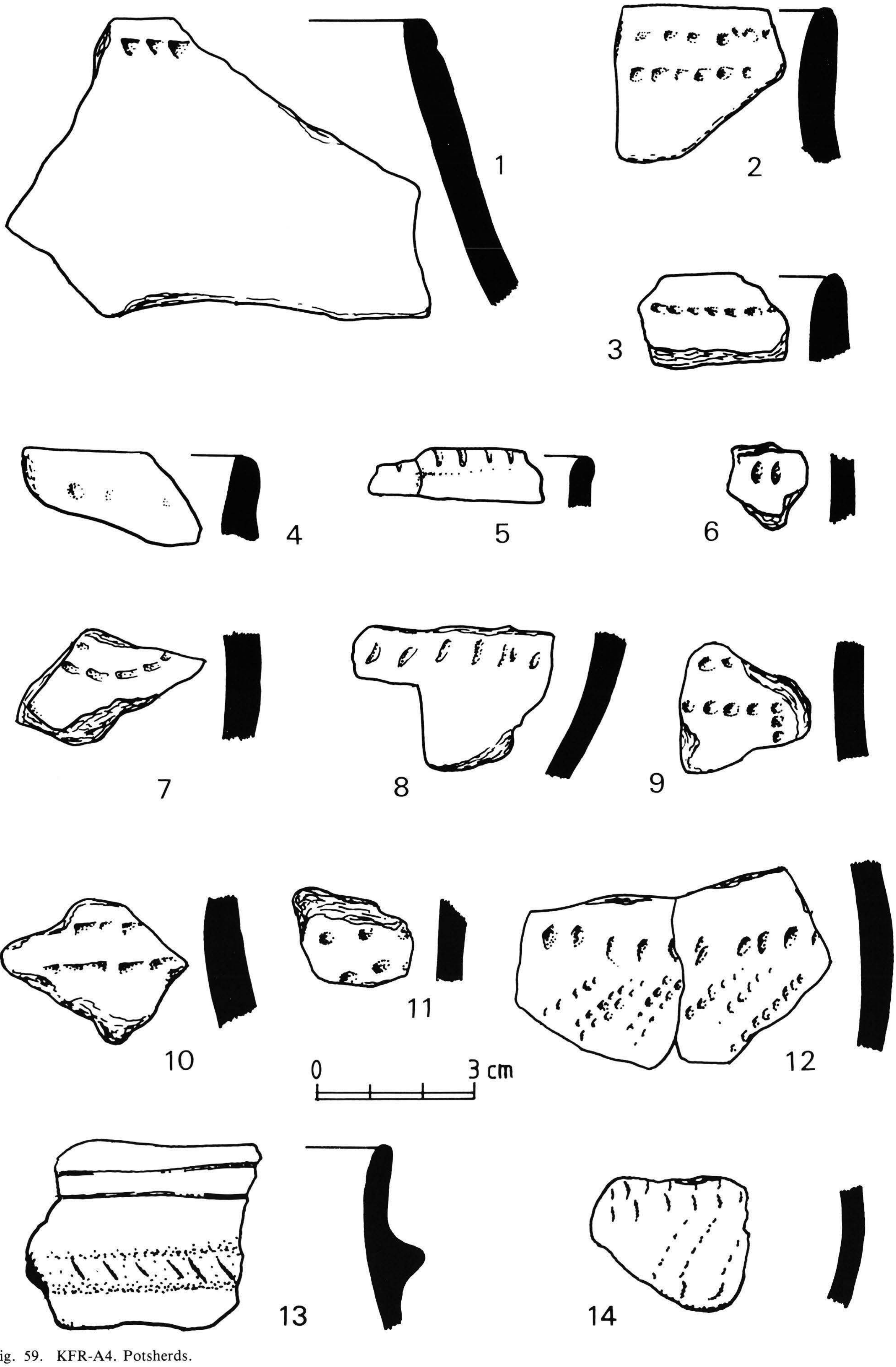

Fig. 59. KFR-A4. Potsherds.

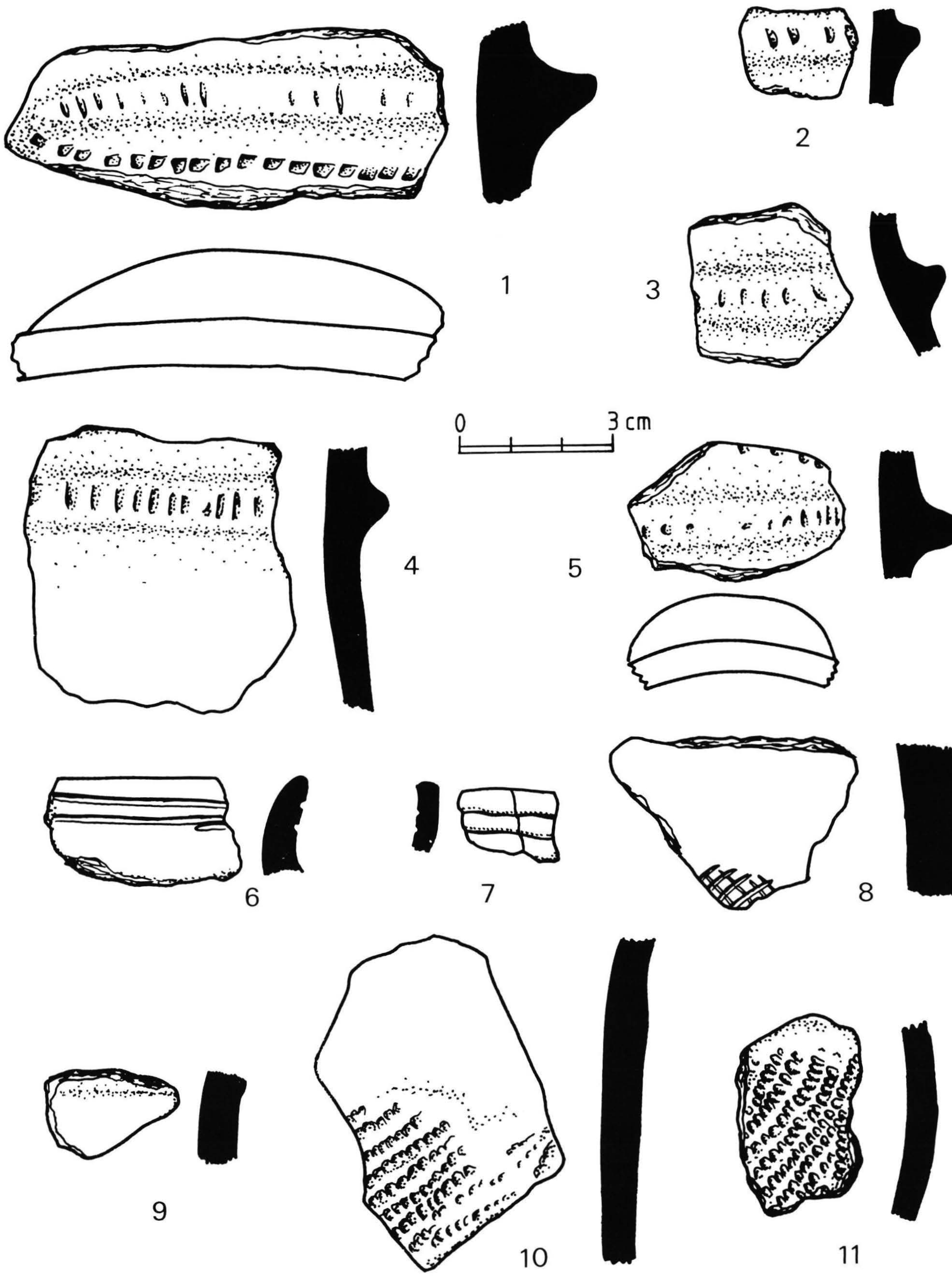

Fig. 60. KFR-A4. Potsherds.

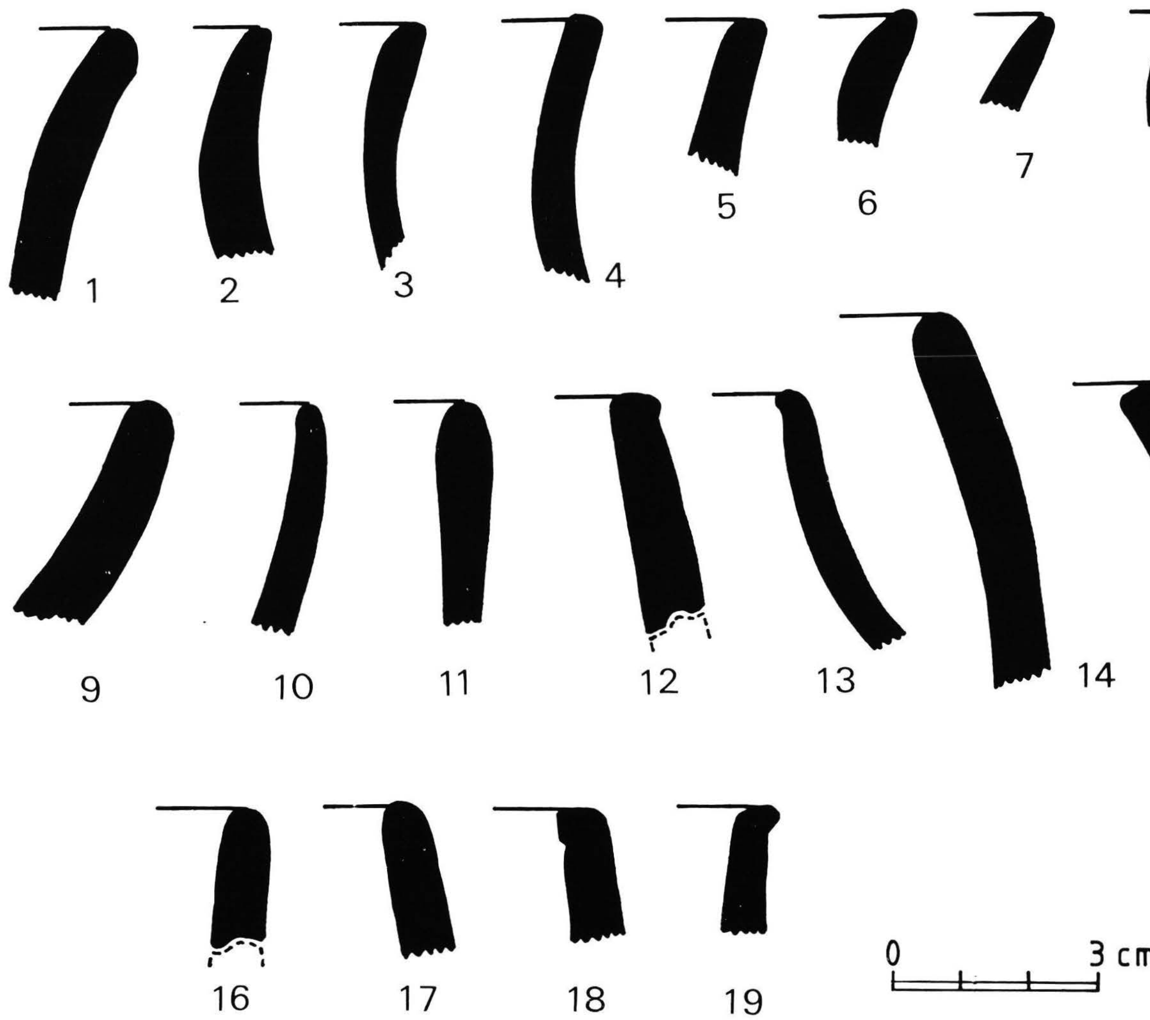

Fig. 61. KFR-A4. Sections of undecorated rimsherds.

black paste; thickness 5 mm. Trench I/spit 2. Fig. 61:19.

13 Rimsherd of an undecorated C1-vessel; greyish brown paste; thickness 10 mm; orifice diam. 15—20 cm. Trench IE/spit 2. Fig. 61:14.

14 Rimsherd of a small C2-vessel; grey paste; thickness 6 mm. Trench IE/spit 2.

183 plain bodysherds (total weight 1035 g); paste varying from brown to dark grey and black; thickness 4—12 mm; smoothened finish especially on the thin black sherds.

Horizon VI. The most representative sample of pottery, both in terms of frequency and variety, came from the uppermost spits in KFR-A4 and A12 dated to »recent» by one radiocarbon determination from KFR-A12/layer 2. The few sherds from the topsoil of KFR-A5 will be omitted from the following description due to the strong possibility of contamination with layer 2 in that shelter. Because of the rather vague dating evidence of Horizon VI, it is best to regard the pottery as representing a mixture of post-AD1500 elements but certainly not containing sherds from the last seventy years when the area has been under European settlement.

KFR-A4:

15 Rimsherd of a 2-vessel; black paste; thickness 5 mm. Decorated with two horizontal incised lines below the rim. Trench I. Fig. 60:7.

16 Rimsherd of a C2-vessel; black sand-tempered paste; thickness 5 mm; orifice diam. c. 10 cm. Decorated with two horizontal incised lines below the rim. Trench III. Fig. 60:6.

17 Rimsherd of a C2-vessel; brown sand-tempered paste; thickness 7 mm; orifice diam. c. 20 cm. Decorated with two horizontal rows of dots below the rim. Trench III. Fig. 59:2.

18 Rimsherd of vessel of unknown shape; black crushed stone-tempered paste; thickness 5 mm; orifice diam. c. 10 cm. Decorated with deep notching on the outer edge of rim. Trench III. Fig. 59:5.

19 Rimsherd of a B1-vessel; brown fine-grained sand-tempered paste; thickness 6 mm; outer surface pebble polished; orifice diam. c. 15 cm. Decorated with one horizontal row of dots below the rim. Trench III. Fig. 59:1.

20 Rimsherd of a vessel of unknown shape; brown sand-tempered paste; thickness 7 mm. Decorated with small shallow dots. Trench III. Fig. 59:4.

21 Rimsherd of a B2-vessel; black mica-tempered paste; thickness 6 mm; smoothened or burnished surface. Decorated with two incised horizontal lines below the rim and a horizontal raised ridge c. 6 mm wide 2 cm below the rim; diagonal incisions on top of ridge. Trench I. Fig. 59:13.

22 Two bodysherds of a small vessel of unknown shape; light grey paste; thickness 6 mm; smoothened. Decorated with a horizontal row of dots (»nail impressions») and diagonal rows of small dots below the horizontal row. Trench I. Fig. 59:12 and 14.

23 3 small bodysherds of a vessel of unknown shape; black paste; thickness 6 mm. Decorated with small circular dots in rows. Trench I. Fig. 59:11.

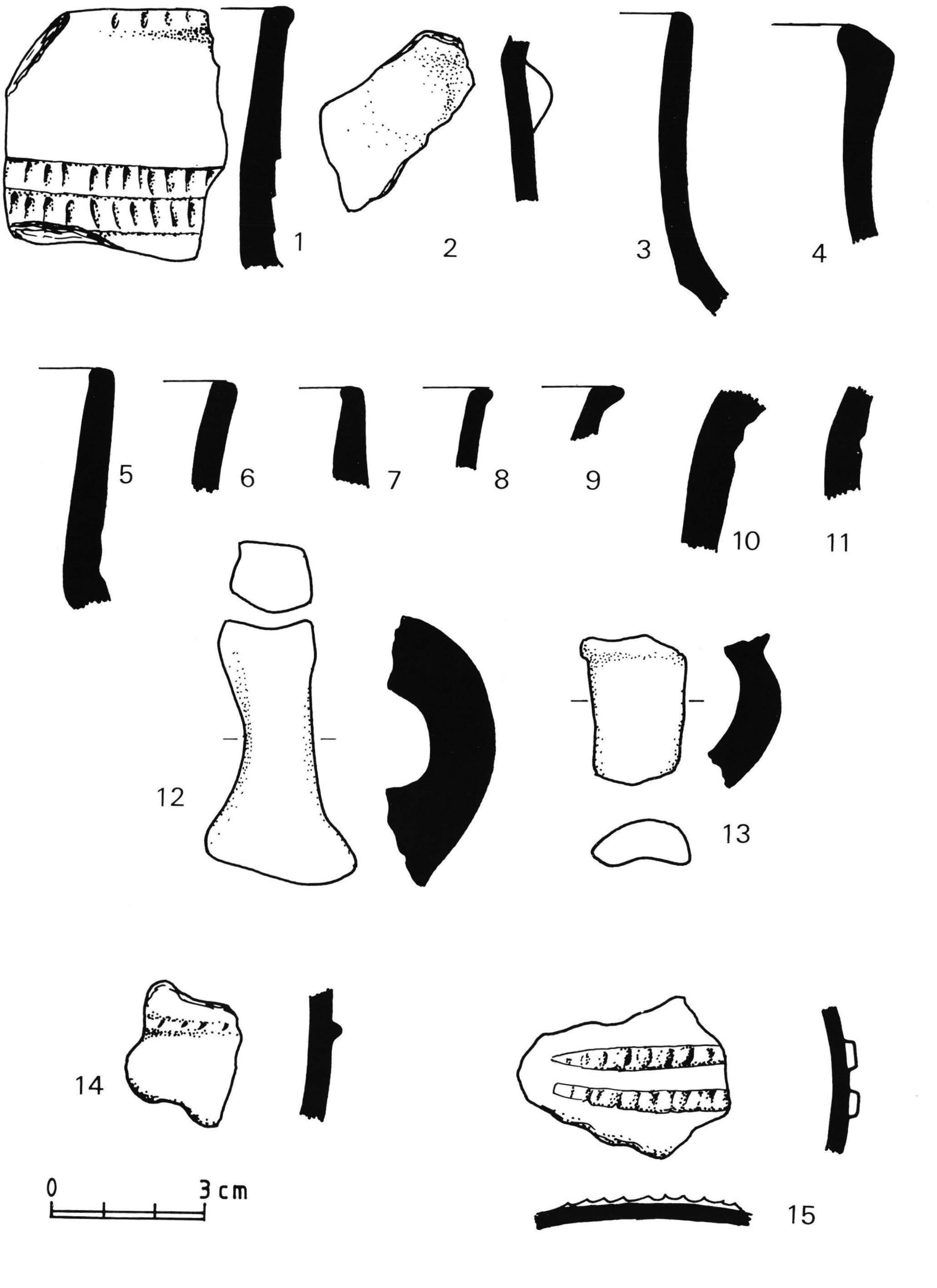

Fig. 62. KFR-A12. Potsherds.

24 Bodysherd of a 2-vessel; buff paste; thickness 8 mm. Decorated with a low horizontal channel in the neck-zone. Trench I. Fig. 60:9.

25 Bodysherd of a vessel of unknown shape; black paste; thickness 6 mm; smoothened or burnished. A horizontal raised handle 40 mm long and 10 mm wide, with small dots on top. Trench I. Fig. 60:5.

26 Bodysherd of a vessel of unknown shape; brown paste; burnished; thickness 9 mm. A horizontal raised handle at least 90 mm long and 13 mm wide with vertical short incisions on top; also decorated with a horizontal row of small dots below the handle. Trench II. Fig. 60:1.

27 3 bodysherds of a 2-vessel; greyish brown paste; thickness 6 mm; smoothened. A raised ridge handle 6 mm wide with vertical incisions on top. Trench II. Fig. 60:3.

28 Bodysherd of a vessel of unknown shape; dark brown mica-tempered paste; thickness 5 mm; smoothened. Decorated with a horizontal c. 5 mm wide raised ridge with short incisions (»nail impressions») on top. Trench II. Fig. 60:2.

29 Bodysherd of a vessel of unknown shape; greyish brown fine sand-tempered paste; thickness 7 mm. Decorated with at least two horizontal and one vertical row of dots. Trench II. Fig. 59:9.

30 9 bodysherds of a 2-vessel; greyish brown sand-tempered hard paste; thickness 7—8 mm. Decorated with cord rouletting. Trenches I and II. Fig. 60:10.

31 4 bodysherds of a vessel of unknown shape; black mica-tempered paste; burnished; thickness 6.5 mm. A low horizontal ridge (not handle) 5 mm wide and notched on top. There are also at least 21 bodysherds without ridges belonging to this vessel one of which has a drilled hole; some sherds obviously have secondarily polished rims showing, together with the hole, that the vessel has been mended after being broken. Trench III. Fig. 60:4.

32 Bodysherd of a 2-vessel; dark grey paste with a rough buff surface; thickness 6.5 mm. Decorated with a horizontal row of shallow dots. Trench III. Fig. 59:6.

33 Bodysherd of a vessel of unknown shape; brown paste; thickness 6 mm. Decorated with a horizontal row of short vertical/diagonal incisions (»nail impressions»). Trench II. Fig. 59:8.

34 Bodysherd of a 2-vessel; brown paste; thickness 8 mm. Decorated with two horizontal rows of shallow triangular or rectangular closely spaced impressions. Trench III. Fig. 59:10.

35 Rimsherd of a C2-vessel; dark grey sand-tempered paste; thickness 9 mm; orifice diam. 9 cm. Trench I. Fig. 61:2.

36 Rimsherd of a C2-vessel; light grey paste; thickness 5 mm; orifice diam. 13 cm. Trench I. Fig. 61:3.

37 Rimsherd of a A2-vessel; light grey fine sand-tempered paste; thickness 5.5 mm; orifice diam. 10—15 cm. Trench II. Fig. 61:8.

38 Rimsherd of a A1-vessel; paste as No. 18; thickness 6.5 mm; orifice diam. 10—15 cm. Trench II. Fig. 61:10.

39 3 rimsherds of a B1- or C1-vessel; dark grey sand or crushed stone-tempered paste; thickness 9 mm; orifice diam. 25 cm. Trench II. Fig. 61:12.

40 Rimsherd of a A1-vessel; light brown fine sand-tempered paste; thickness 7 mm; orifice diam. 20—25 cm. Trench II. Fig. 61:11.

41 Rimsherd of a A2-vessel; grey paste; thickness 5.5 mm; orifice diam. c. 10 cm. Trench III. Fig. 61:6.

42 Rimsherd of a B1- or B2-vessel; greyish brown mica-tempered paste; thickness 5 mm. Trench III. Fig. 61:13.

43 Rimsherd of a B2- or A2-vessel; grey paste; thickness 7 mm; orifice diam. c. 10 cm. Trench III. Fig. 61:4.

44 Rimsherd of a 1-vessel; grey crushed feldspar and mica-tempered paste; burnished; thickness 8 mm; orifice diam. 30 cm. Trench III. Fig. 61:16.

45 Rimsherd of a vessel of unknown shape (possibly A2); dark grey sand-tempered paste; thickness 8.5 mm; orifice diam. over 30 cm. Trench III. Fig. 61:1.

46 Rimsherd of a A-vessel; black paste; thickness 6 mm. Trench III. Fig. 61:5.

47 Rimsherd of a vessel of unknown shape; dark grey fine sand-tempered paste; thickness 8.5 mm. Slightly inverted rim. Trench III. Fig. 61:18.

48 Rimsherd of a vessel of unknown shape; black sand-tempered paste; thickness 5 mm. Trench III. Fig. 61:7.

49 Rimsherd of a A1-vessel; brown paste; burnished; thickness 10 mm; orifice diam. over 30 cm. Trench II. Fig. 61:9.

KFR-A12:

50 Rimsherd of a B2-vessel; dark grey fine sand-tempered paste; smoothened; thickness 5 mm; orifice diam. 17 cm. A raised ridge 2 mm high and 4 mm wide between the neck and the body. Fig. 62:3.

51 Rimsherd of a B2-vessel; dark grey fine sand-tempered paste; burnished; thickness 7 mm; orifice diam. 15—20 cm. Decorated with two horizontal bands of 5.5—6.5 mm long vertical notches in the lower section of the neck and shallow notches on the rim. Fig. 62:1.

52 One rimsherd and one bodysherd of a B2-vessel; buff mica-tempered paste; thickness 8.5—9 mm; orifice diam. 7—10 cm. Decorated with two horizontal incised lines between the neck and the body. Fig. 62:5.

53 Bodysherd of a vessel of unknown shape; dark grey paste; thickness 5 mm. Decorated with a low horizontal notched ridge. Fig. 62:14.

54 Bodysherd of a vessel of unknown shape; black mica-tempered paste; thickness 4 mm; smoothened. Decorated with the horizontal at least 3.5 cm long low applique ridges. Fig. 62:15.

55 Bodysherd of a vessel of unknown shape; dark grey mica-tempered paste; thickness 6 mm. Decorated with two horizontal deep incisions.

56 Bodysherd of a vessel of unknown shape; dark grey paste; thickness 5.5 mm. Decorated with a 5 mm high conical knob with a diam. of 14 mm. Fig. 62:2.

57 Rimsherd of a B-vessel; brown mica-tempered paste; thickness 7 mm; orifice diam. 14 cm; rim thickened to 13 mm. Fig. 62:4.

58 Rimsherd of a B-vessel; light greyish brown mica-tempered paste; thickness 5.5 mm; orifice diam. 8 cm. Fig. 62:7.

59 Rimsherd of a vessel of unknown shape; brown mica-tempered paste; thickness 4 mm; orifice diam. 13—20 cm. Fig. 62:8.

60 Rimsherd of a vessel of unknown shape; brown mica-tempered paste; thickness 5.5 mm. Fig. 62:6.

61 Rimsherd and 78 plain bodysherds of a 1-vessel; dark grey paste; thickness 7 mm.

251 plain bodysherds; dark grey to black fine sand-tempered paste; thickness 5—11 mm; mostly burnished. KFR-A4/Trench I.

19 plain bodysherds; dark grey mica and fine sand-tempered paste; thickness 5—10 mm; burnished. KFR-A4/Trench IE.

223 plain bodysherds as above. KFR-A4/Trench II.

19 plain bodysherds as above. KFR-A4/Trench IIE.

136 plain bodysherds as above. KFR-A4/Trench III.

2 plain bodysherds, one from a 2-vessel with brown sand-tempered paste and thickness of 10 mm, the other from a vessel of unknown shape with black mica-tempered paste and thickness of 12 mm. KFR-A5/surface.

131 plain bodysherds; dark grey to black mica-tempered paste; thickness 4—12 mm. KFR-A12/spit 2.

2 vertical loope handles with similar paste as vessel No. 52. KFR-A12/spit 2. Figs. 62:12 and 13.

Undated surface occurrences

KFR-A7:

62 Rimsherd of a C1-vessel; black sand-tempered paste; thickness 9 mm. Decorated with closely places deep punctations covering the whole surface (Nderit ware). Fig. 63:1.

63 Rimsherd of a vessel of unknown shape; black paste; thickness 5 mm. Decorated with 10 mm long vertical incisions below the rim and beneath it with one horizontal incised line. Fig. 63:3.

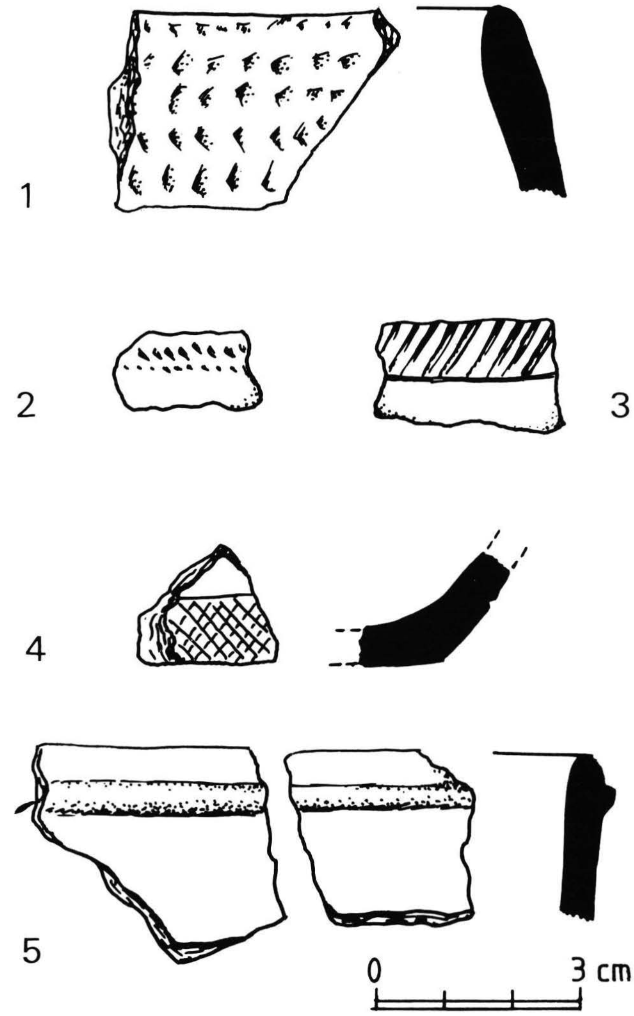

Fig. 63. KFR-A7. Potsherds.

64 Bottomsherd of a vessel with flat bottom; black paste; thickness 5 mm; burnished. Decorated with a panel of incised cross-hatching around the base. Fig. 63:4.

65 Bodysherd of a vessel of unknown shape; black paste; thickness 4 mm. Decorated with a horizontal row of shallow punctations executed with a two-pronged instrument. Fig. 63:2.

66 Rimsherd of a B1-vessel; black paste; burnished; thickness 6 mm. Decorated with a plain horizontal raised ridge c. 3 mm high and running c. 10 mm below the rim. Fig. 63:5.

KFR-D1:

67 3 bodysherds of a vessel of unknown shape; dark brown sand-tempered paste; thickness 7—10 mm. Decorated as vessel No. 56 (Nderit ware).

68 Rimsherd of a A2- or B2-vessel; black paste; burnished; thickness 5 mm. Decorated with a horizontal incised zigzag line below the rim, and notches on top of rim. Fig. 64:1.

69 Bodysherd of a vessel of unknown shape; black paste with reddish surface; thickness 10 mm. Decorated with at least two horizontal panels of incised cross-hatching. Fig. 64:5.

70 Bodysherd of a vessel of unknown shape; black paste with reddish surface; burnished; thickness 7 mm. Decorated with horizontal wavy ridges with vertical or diagonal short incisions in between, part of the vessel has been undecorated (Maringishu ware). Fig. 64:2.

71 2 bodysherds of a vessel of unknown shape; black paste; thickness 5 mm. Decorated with a pair of horizontal incised lines with vertical short incisions in between and a panel of incised cross-hatching either above or below the horizontal element. Fig. 64:4.

72 Bodysherd of a vessel of unknown shape; black paste; thickness 7 mm. Decorated with a »basket motif» in incised lines. Fig. 64:6.

73 Bodysherd of a vessel of unknown shape; dark brown or reddish paste; thickness 6 mm. Decorated with two horizontal incised lines with short vertical incisions in between (cf. vessel No. 65).

KFR-D3:

74 Rimsherd of a A1-vessel; black fine sand-tempered paste; thickness 7—7.5 mm. Undecorated but with bevelled rim.

KFR-D4:

75 Rimsherd of a C1-vessel; black sand-tempered paste with red surface; thickness 8.5 mm. Decorated with a horizontal incised line c. 13 mm below the rim and diagonal incisions or rows of very shallow punctations; in-turned rim. Fig. 65:1.

76 One rimsherd and one bodysherd of a B2-vessel; black paste; burnished; thickness 6 mm. Decorated with two horizontal incised lines.

77 Rimsherd of a B2-vessel; black paste; burnished; thickness 7 mm. Decorated with two horizontal incised lines below the rim. Fig. 65:3.

78 Bodysherd of a vessel of unknown shape; black paste;

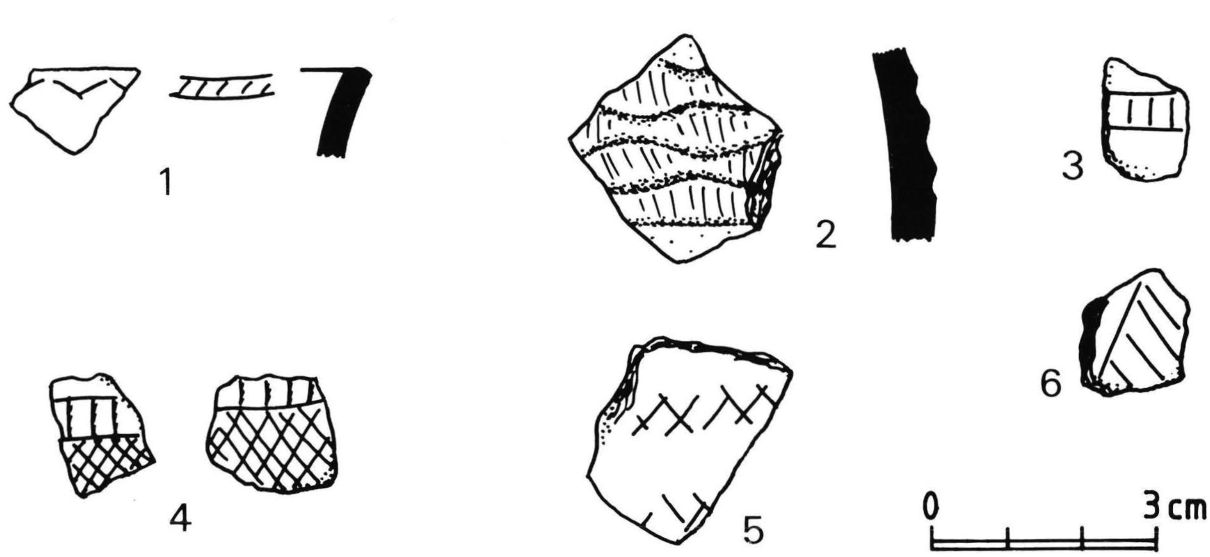

Fig. 64. KFR-D1. Potsherds.

burnished; thickness 6 mm. Decorated with two horizontal panels of vertical/diagonal incisions closely placed. Fig. 65:4.

79 2 bodysherds of a vessel of unknown shape; black paste; burnished; thickness 5—7 mm. Decorated with incised cross-hatching or »basket motif». Fig. 65:4.

80 Rimsherd of a vessel of unknown shape (possibly A2); dark grey sand-tempered paste; thickness 6 mm. Decorated with an incised horizontal line running c. 6 mm below the rim.

81 Rimsherd and 14 plain bodysherds of a vessel of unknown shape (possibly A2); grey temper; burnished; thickness 6 mm. The vessel has obviously been completely undecorated.

PALAGALAGI:

82 Bodysherd of a vessel of unknown shape; dark grey paste; thickness 7 mm. Decorated with incised lines in a »herring bone» motif. Fig. 65:5.

83 One rimsherd and 28 bodysherds of a A1- or C1-vessel; dark brown sand-tempered paste; thickness 10—11 mm. Decorated with »basket motif» of closely placed rows of

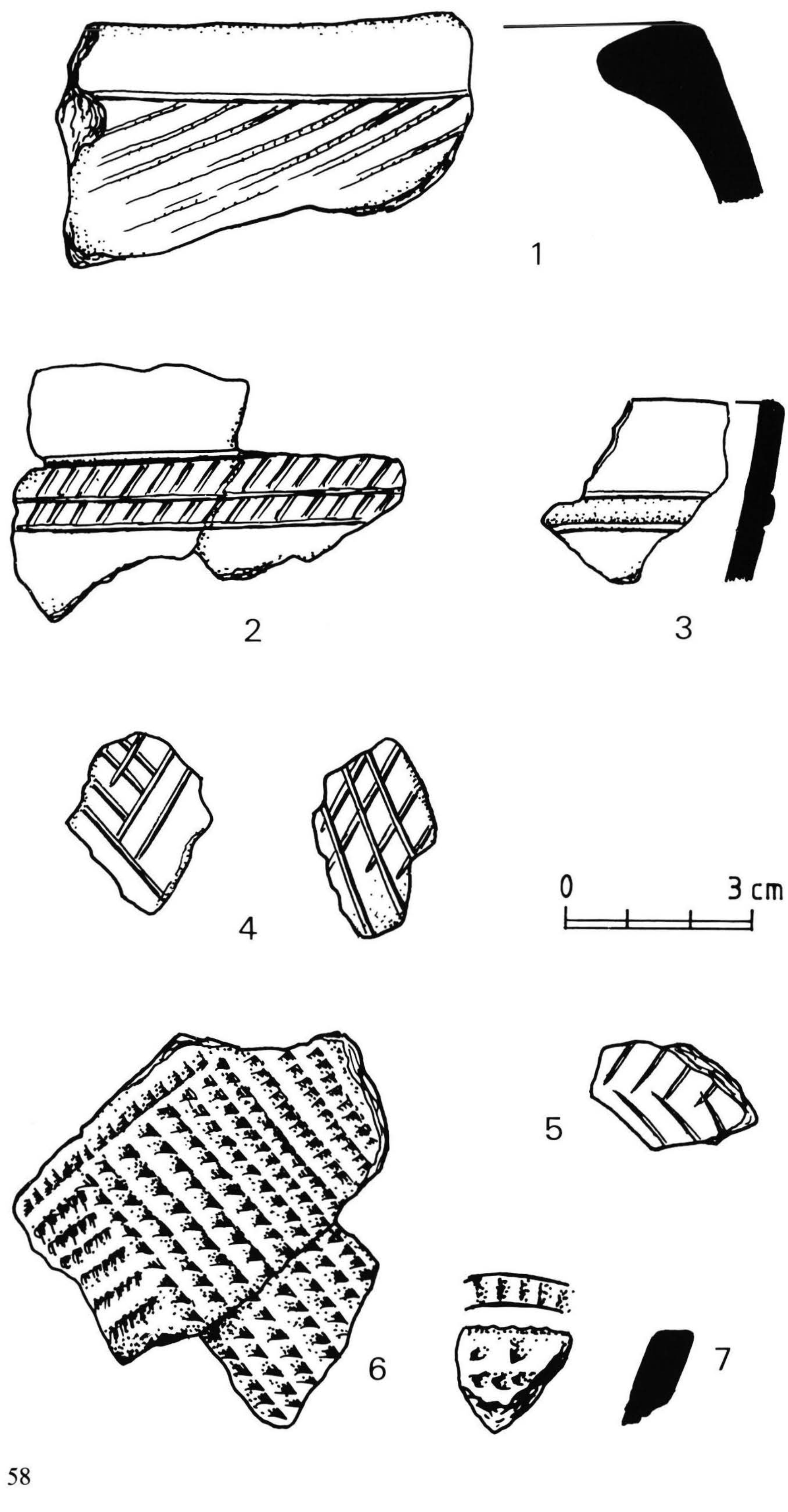

Fig. 65. Potsherds. 1—4, KFR-D4; 5 and 6, Palagalagi; 7, Sukuta Farm.

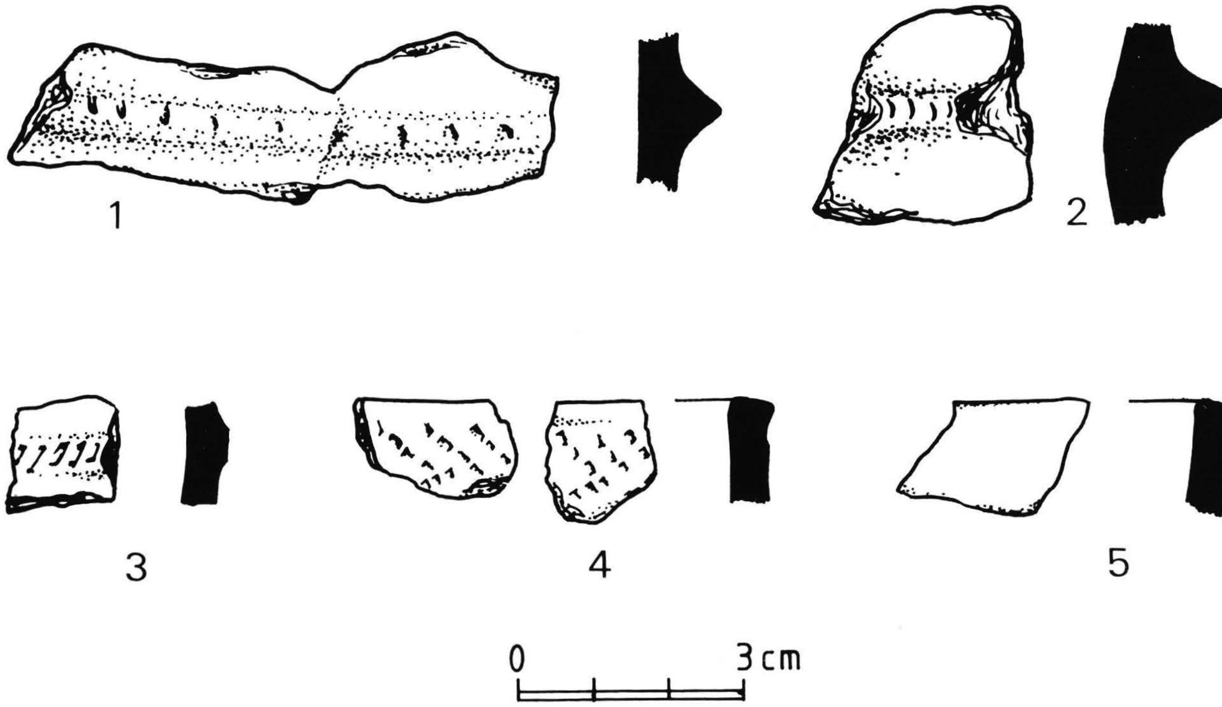

Fig. 66. Don Dol A. Potsherds.

deep punctations and deep scoring inside the vessel (»classical» Nderit ware). Fig. 65:6.

SUKUTAFARM:

84 Bodysherd of a vessel of unknown shape; dark greyish brown paste; smoothened or burnished; thickness 7 mm. Decorated with parallel incised lines.

85 Rimsherd of a A1- or C1-vessel; dark brown sand-tempered paste; thickness 11 mm. Decorated as in vessel No. 77 (including the internal scoring) (»classical» Nderit ware). Fig. 65:7.

DON DOL A:

86 3 rimsherds of a 1-vessel; dark grey fine sand-tempered paste; thickness 8 mm. Decorated with combed stamps in a »herring bone» motif. Fig. 66:4.

87 Rimsherd of a 1-vessel; thickness 6 mm. Fig. 66:5.

88 3 bodysherds of a vessel of unknown shape; black or dark brown sand-tempered paste; burnished; thickness 6.5 mm. Decorated with a 6—10 high raised notched ridge. Figs. 66:1 and 2.

89 Bodysherd of a vessel of unknown shape; paste and thickness as above. Decorated with a very low notched raised ridge. Fig. 66:3.

CHOLOLO RANCH and BUNNY ALLEN ROCKSHELTER: See Jacobs 1972. Figs. 67—69.

Comparison

The earliest complex of pottery in Laikipia consists of six components five of which belong to previously defined traditions[1]:

[1] After the manuscript of this study was completed the important taxonomic analyses by Dr. Peter Robertshaw and Dr. David Collett were published of part of the LSA pottery in Kenya (Collett & Robertshaw 1983 and Robertshaw & Collett 1983). They

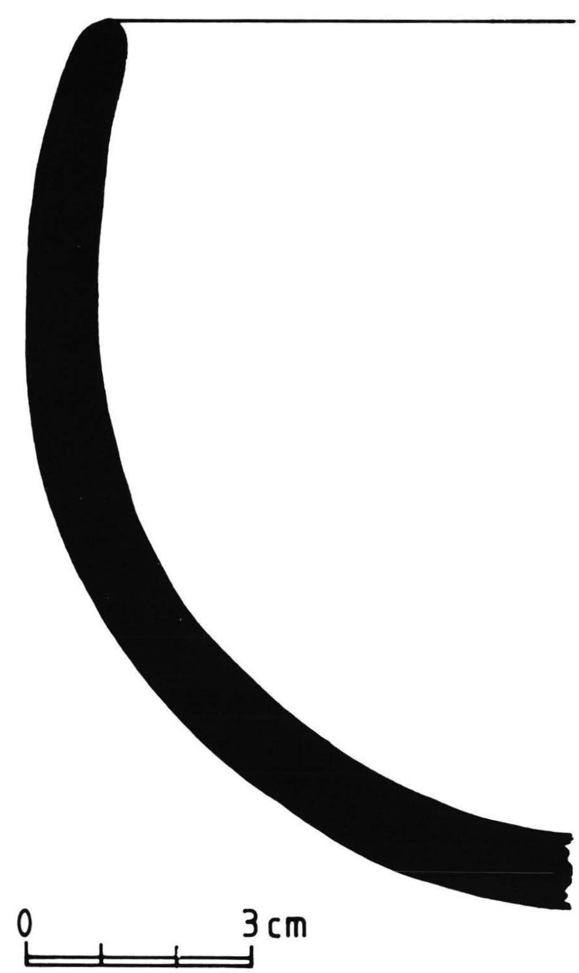

Fig. 67. Chololo Ranch. Section of an undecorated globular pot.

1 Nderit pottery: vessels 62, 67, 83 and 85
2 Akira pottery: vessels 7, 63, 64, 65(?), 68, 69, 71—73, 78, 79, 82 and 84
3 Maringishu pottery: vessel 70
4 Vessels 3 and 4 (Remnant pottery ?)
5 Vessel 1 (Jebel Moya pottery ?)
6 Rest

arrived at four distinct pottery traditions (in addition to Akira which was not included in the analysis) according to decorative characteristics and vessel shape, three of which are relevant in this connection. These correspond roughly to the types defined by Bower et al. 1977 in the following manner:

Narosura — Oldishi
Maringishu (+ other Hyrax Hill »Neolithic» pottery) — Olmalenge
Remnant — Elmenteitan

After a further detailed critical analysis of the radiocarbon evidence Collett and Robertshaw (1983) conclude that Narosura falls between c. 700 BC and AD 300 thus reducing its time range considerably from that presented by Bower et al. 1977. It is also interesting to note that Marshall and Robertshaw (1984) regard the Narosura/Oldishi tradition as genetically linked with the Akira type.

Nderit pottery (formerly Gumban A) was originally recognized and defined by L. S. B. Leakey in Nderit Drift and Stable's Drift in the southern Lake Nakuru basin (Leakey 1931). Open and restricted bowls, often carinated, are the characteristical vessel shapes. Decoration consists of cuneiform impressions covering the whole exterior surface of the vessel and arranged either in horizontal panels or triangular fields (»basket motif»). Often there are scored lines or incised grooves in the interior surface of the vessels.

The spatial distribution of Nderit pottery stretches from the northern Lake Turkana basin in the north to Seronera in northern Tanzania in the south. It has also been found on Lukenya Hill in the eastern highlands of central Kenya but is otherwise confined to the Rift Valley (Barthelme 1977, Robbins 1972, Bower 1973b, Gramly 1975b, Bower et al. 1977). In the north Nderit pottery has been dated to about 2000 BC and found in association with domestic animals (ovicaprids) although hunting and fishing has been practised, too (Barthelme 1977); further to the south the bones found together with Nderit pottery belong

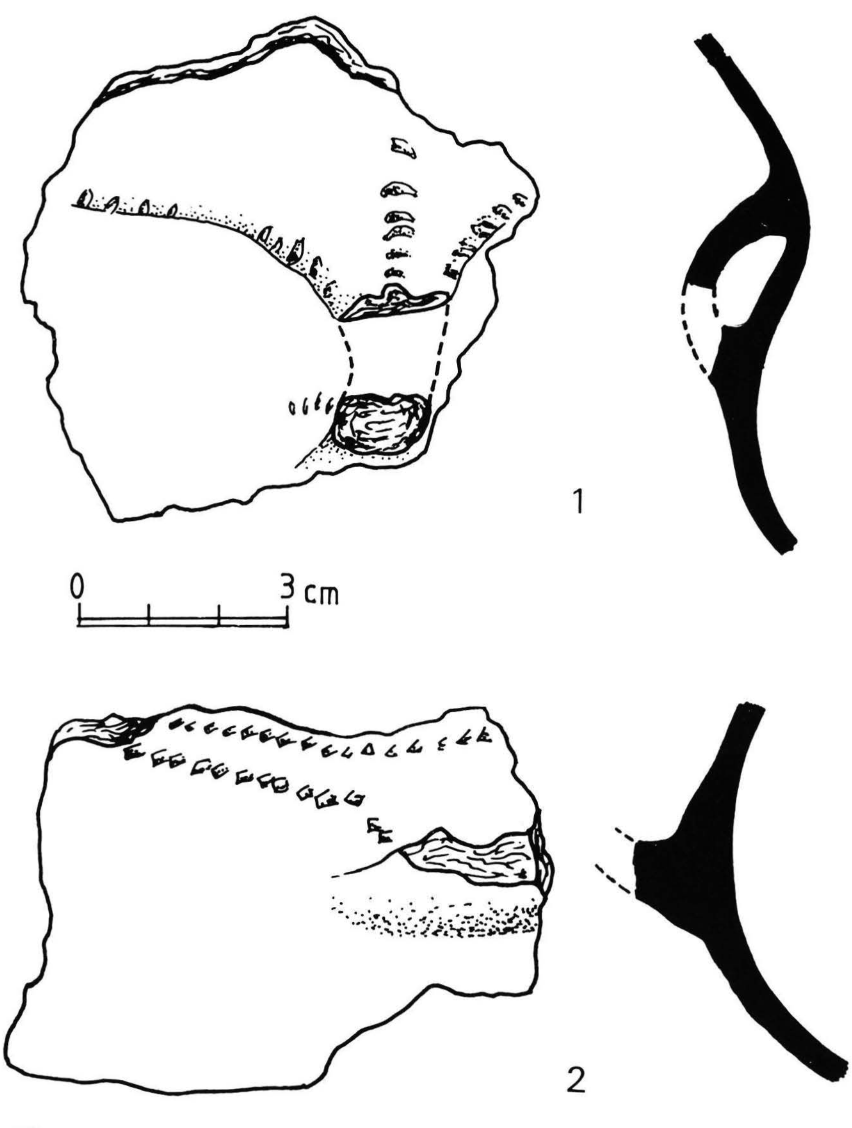

Fig. 68. Bunny Allen Rockshelter. Potsherds (after Jacobs 1972).

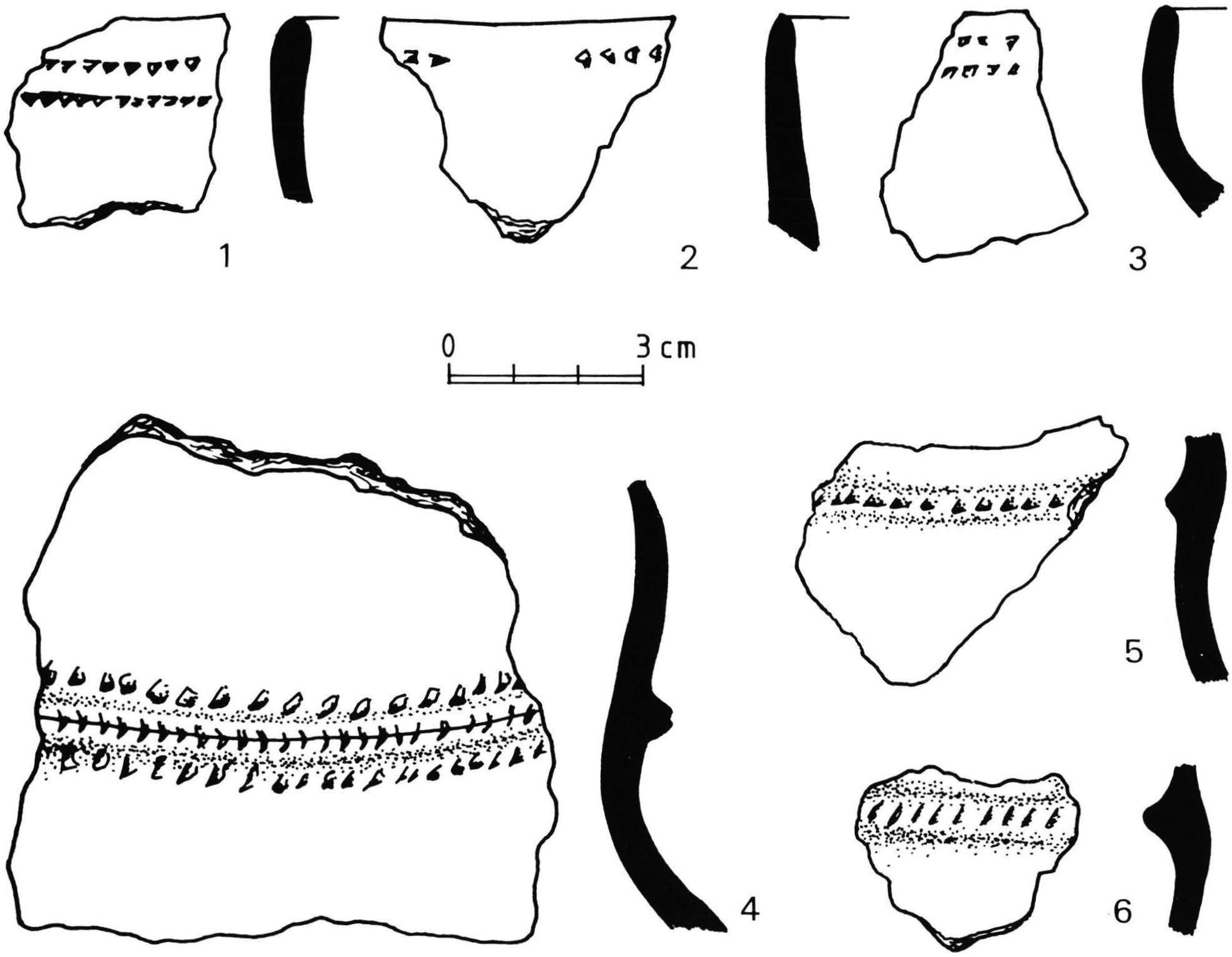

Fig. 69. Bunny Allen Rockshelter. Potsherds (after Jacobs 1972).

exclusively to wild species (Cohen 1970). Bower et al. (1977) report a dating to the 6th millenium BC from Salasun in the Lake Naivasha area (7255 ± 225 BP), while the datings from Lukenya Hill (3290 ± 150 and 2500 ± 150 BP; Gramly 1975b) show the duration of Nderit pottery up to the 1st millenium BC; in Seronera Bower (1973) observed a stratigraphical overlap of Nderit and Akira wares — the latter is dated to the former half of the 1st millenium AD. On the southwestern coast of Lake Turkana between the Turkwel and Kerio rivers there are two sites with radiocarbon datings (Kangatotha: 4800 ± 100 BP; Lorengalup River/Bb-14: 5020 ± 220 BP) giving an early 3rd millenium date for Nderit pottery in the north (Robbins 1972). Although Leakey (1931) originally claimed an association of Nderit pottery (his Gumban A) with stone bowls this has not been securely confirmed later; there is one ambiguous association reported by Robbins (1972) in Napedet (site Zu 11) to the west of the Kerio Delta.

As surface occurrences the Nderit pottery sherds in Laikipia cannot be dated. Their association at two open sites (Palagalagi and Sukuta Farm) and one rockshelter (KFR-A7) with Akira pottery suggests that the Nderit pottery here belongs to the terminal phase of its general time range.

Akira pottery was first recognised as a taxon by Bower in Seronera, northern Tanzania (Bower 1973b). He named it originally TIP emphasizing its characteristical features: thin vessel walls (5 mm in average) and incised decoration arranged in horizontal panels. The vessel forms, according to the finds from Lukenya Hill (Gramly 1975b p. 113) and Hyrax Hill (Leakey 1945 Figs. 8—24), are broad-necked open bowls with flattened or concave bases. The surface of the vessels is frequently highly smoothened or even burnished. The spatial distribution of Akira pottery encompasses the southern region of the Nderit pottery: from Seronera in the south to central Kenya in the north where the Laikipian sites are the northernmost occurrences. It should be noted, however, that the distribution very likely extends further north as indicated by such sites as Eliye Springs (Jacobs & Soper 1972) and FwJj5 (Barthelme 1977) on both sides of Lake Turkana with related though not identical pottery. Akira pottery is found in the central Rift Valley in clear association with domestic fauna (cattle, ovicaprids) and it is included in the local Pastoral Neolithic complex by Bower et al. (1977). In Seronera this association was less clear and Bower (1973b p. 100) concludes that hunting formed an important element in the economy of the population producing Akira pottery. At least in Seronera the lithic technology associated with Akira pottery was based on the use of quartz, obsidian and quartzite, while that associated with the Nderit pottery was based solely on obsidian.

There are six radiocarbon determinations dating Akira occurrences in the central Rift, Lukenya Hill and Seronera ranging from the 1st century BC (2030 ± 125 BP) to the end of the 7th century AD 1255 ± 140 BP)(Bower et al. 1977 p. 144—5, Bower 1973b). Thus it has a temporal overlap with the latter half of the time range of the Narosura pottery defined by Odner (1972), which has the same spatial distribution (except Laikipia where Narosura ware is absent) and which is dated by eleven radiocarbon determinations between c. 1000 BC (2990 ± 170 BP) and the 6th century AD (1415 ± 150 BP). I have earlier (Siiriäinen 1977b p. 172) argued for a close relationship between Akira and Narosura potteries referring to their mutual typological similarities: thin wall thickness, smoothened or burnished vessel surfaces, vessel shapes and decorative patterns (panels). Narosura ornaments consist of comb-stamps or incised lines; sherds with the latter element are often indistinguishable from the majority of the Akira sherds. Thus the distinction between the two wares presents a taxonomic problem which deserves a close study.

There are at least 13 Akira vessels from 6 sites represented in the Laikipia material, none of which are from excavated contexts dated to Horizon II. As will be discussed later, it is assumed that this pottery tradition is still discernible in Horizon V (and a late variety in Horizon VI), and thus it is unknown whether the sherds found from the surface occurrences in fact belong to Horizon II or even contain later pieces. Most of the sherds, however, are identical with the Akira pottery found from the original type site (Seronera) or other securely dated assemblages. Some of the sherds, again, could as well be assigned to the incised component of the Narosura pottery (eg. vessels 69, 71 and 73; cf. eg. Odner 1972 figs. 21b—e and Onyango-Abuje 1977 figs. 4g—i), but the lack of comb-stamped motifs, except on one occasion (vessel 86), in the Laikipia pottery seems to suggest that the pottery indeed belongs to Akira type. — In Fig. 70 the decorative motifs of the Laikipian Akira pottery are summarized.

Maringishu pottery is rather strictly defined by Bower et al. (1977) on the basis of single-component stratified occurrences in Maringishu and Nderit Drift in the central Rift Valley. It is characterized by vessels with a broad panel of horizontal undulating ridges forming a trellis pattern with small vertical incisions, impressions or rectangular punctations in the eyes. Maringishu pottery is known from Hyrax Hill (Leakey 1945 fig. 7:4), Maringishu (Bower et al. 1977 fig. 2f—g) and Nderit Drift. Thus its distribution is restricted to the Lake Naivasha basin with the Laikipia occurrence (KFR-D1, vessel 70) as a northern offshoot; there are however sherds from two or three vessels from Eliye Springs which show a somewhat similar trellis motif although with no impressions in the eyes (Jacobs & Soper 1972 fig. 2c). These vessels might belong to the Maringishu pottery as a northern sub-type.

The dating of the Maringishu pottery rests on one single radiocarbon measurement from the type site with the result 1695 ± 150 BP (Bower et al. 1977). Although the time range of the type remains unknown, it is evident that it at least overlaps with those of the Akira and Narosura wares. In KFR-D1 the Maringishu sherd was associated with Akira sherds. With its diagonal punctuations between the wavy ridges it is best comparable to the Maringishu pottery of Hyrax Hill found in the habitation level along with a complex of pottery including Akira- and Nderit-type vessels, among others (Leakey 1945 figs. 7—9).

Remnant pottery was defined by Bower et al. (1977) according to a single-component site on the Mau Escarpment near Mau Narok. It consists of undecorated vessels (some casual panels of punctuations and irregular rim milling occur) with slightly everted lips, hemispherical and cauldron-like bowls and small carinated cups; vertical lugged handles occur as well as perforations below the rims for hanging the vessels. Remnant pottery has a wide distribution within the Nakuru-Naivasha basin as indicated by surface occurrences. From the type site there are two radiocarbon determinations: 2315 ± 150 BP and 1355 ± 145 BP (Bower et al. 1977). Bower et al. conclude that »the younger date is more to be expected in the light of broad comparative evidence, but comes from a disturbed area... The earlier date, while more surprising, is from a sample both larger and more readily associated with the occupation horizon at the site». The association of Remnant pottery with the Elmenteitan lithic industry has been unambiguously verified by Nelson (1977) and Ambrose (1978) in several sites in the Naivasha-Nakuru basin (including Remnant itself, Maasai Gorge Rockshelter, Gamble's Cave, Lion Hill Cave, Njoro River Cave and Egerton Cave). The Elmenteitan prevailed from c. 2900 BP up to c. 1300 BP. In the light of this association the older dating result of the Remnant site is perfectly acceptable. There is of course the possibility that the site includes also elements considerably younger than the 1st millenium BC as indicated by the younger dating result and indeed by the single rouletted sherd found in an »ambi-

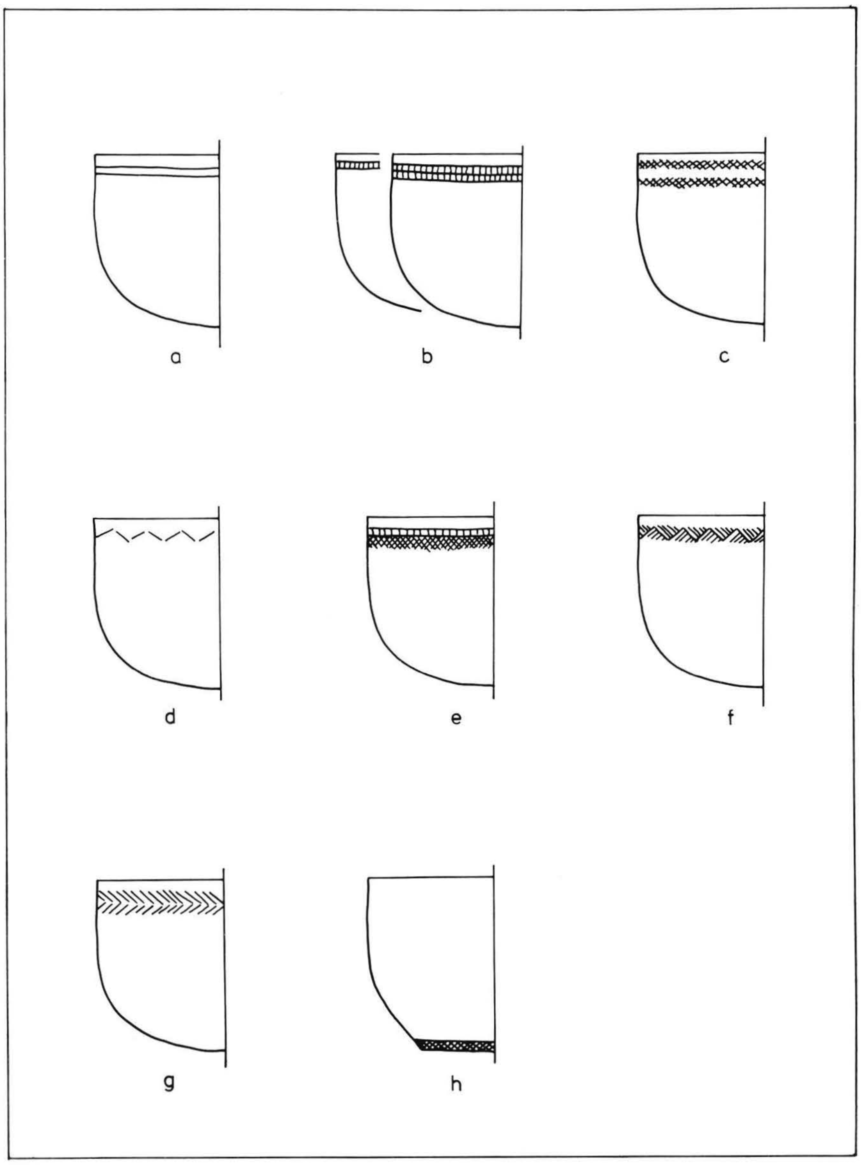

Fig. 70. Decorative motifs of the Akira pottery in Laikipia.

guous association» with the rest of the pottery (Bower et al. 1977 fig. 5b and p. 139). These elements might give the assemblage its late character assumed by Bower et al. (eg. the lugged handles and spouts; see however Marshall & Roberthaw 1984, where Elmenteitan pottery with spouts and handles are firmly dated to around 2000 BP in the Narok District, SW Kenya; also Siiriäinen, forthcoming). The pottery from Njoro River Cave is associated with cremation burials and dated to 2920 ± 80 BP. This site has also yielded pottery with combed designs comparable to Hyrax Hill pottery (a variant of Narosura ware ?) and stone bowls as has the cremation cave site Egerton close to Njoro River Cave (Faugust & Sutton 1966). In the light of this association of the Remnant ware with the 1st millenium BC cremation burials in caves, it is not surprising to find underocated globular bowls with perforations and faint irregular rim milling (vessel Nos. 3 and 4) with a similar context in KFR-A5; thus it seems safe to include the Laikipia vessels in Remnant pottery. Vessels 3 and 4 were found connected with Burial 2 in KFR-A5 and through its radiocarbon measurement they can be dated to 2320 ± 160 BP (Hel-852): the result is exactly the same as the older dating result in the Remnant site. As there were no potsherds in the shaft-filling of Burial 1, it is probable that the grave had been dug already before the accumulation of pottery in layer 2: consequently the dating obtained from this burial (2490 ± 110/2830 ± 120) should give a *terminus post quem* for the Remnant sherds in the cave.

In the preliminary report on the excavations in Laikipia (Siiriäinen 1977b), I tentatively assigned *vessel 1* to the Akira tradition on the basis of several essential characteristics: thin vessel wall (5 mm), incised decoration forming a horizontal panel, black paste, smoothened surface and the tapering rim form. As it now appears, however, the main decorative motif, either triangles standing on their bases or a horizontal zig-zag band filled with horizontal incised lines, does not in fact occur identically in any sherd commonly assigned to the Akira or Narosura wares, at least in the analyses published so-far (unless the sherd in Odner 1972 fig. 24c is placed upside down). This said, I only wish to point out that the sherds published from Deloraine Farm in the central Rift (Cohen 1972 figs. 3d and 2e) and Lukenya Hill GvJm/2 (Gramly 1975b fig. 8i) might provide parallels — the latter case is more dubious — for our vessel 1. While GvJm/2 has yielded both Narosura and Akira pottery according to Gramly (1975b), the pottery assemblage from Deloraine Farm appears to be unique in Eastern Africa. Certain features of the pottery from Deloraine Farm, and in addition the clay spoons reported from this site, find their best counterparts far to the north, in the large site at Jebel Moya in the Nile Valley in the central Sudan. Addison (1949 p. 210) calls this pottery Jebel Moya type and concludes that »there can be little doubt that it was brought there by an immigrant strain ethnically different of the earliest settlers» who made the other types of pottery found at the site. Indeed Jebel Moya has yielded several types of pottery including Wavy Line (also the dotted variant), incised and comb-stamped as well as impressed pottery, and my opinion is that Jacobs & Soper (1972) are on the right track when they seek the origin of the Akira related pottery found at Eliye Springs, West Turkana coast, from the sphere into which the Jebel Moya complex belong (cf. Siiriäinen 1977 b p. 181). It is possible to show striking parallels between the Jebel Moya complex and Narosura pottery, and I would also see the Deloraine Farm pottery in connection with it.

Although the crucial period we are dealing with here remains virtually unknown in the central — not to speak of the southern — Sudan, there are nevertheless some indications that the Jebel Moya pottery has a wide spatial distribution there (cf. Addison 1949 p. 210), and hopefully the investigations in the Ethiopian highlands will cast some light on this question. The dating of the Jebel Moya site rests on the interpretation of the stratigraphy and some — partly controversial — links with previously dated occurrence, and according to Addison (1956) it spans the period from c. 200 BC to c. AD 500, i.e. roughly the same range as the Akira pottery. The site at Deloraine Farm has yielded radiocarbon dates somewhat younger than the upper time limit of the Jebel Moya period as estimated by Addison (Collett & Robertshaw 1983). There is no doubt that vessel 1 from KFR-A5 belongs to the 1st millenium BC as it came from near the base of layer 2.

The rest of the pottery in Horizon II consists of undecorated bodysherds and a unique rimsherd with vague horizontal grooves (vessel 2) which has no exact parallels to my knowledge; it resembles vessel 74 from KFR-D3, which might imply that there is a definable type in question.

The majority of the bodysherds is from vessels with black or dark brown paste, often micaceous, at least some of which are of the necked form (2-type). A histogram (Fig. 71A) of the wall thickness of the sherds shows a rather homogenous distribution around the mode at 8 mm (mean 7.5 mm): vessels 1 to 4 have a wall thickness of the same order. When compared to the histogram of the wall thickness of the Akira sherds from Laikipia (Fig. 71B), a clear difference becomes obvious. The latter distribution is remarkably similar to that given by Bower (1973b Fig. 10) for the Akira potsherds in Seronera with a mode at 5 mm and a mean of 5.49 mm. It seems obvious that we are dealing here with two distinct ceramic traditions; chi-square calculated on the basis of the above distributions is 19.43 (df = 8) indicating a probability of less than 5 % for them being drawn from the same basic population.

To sum up the discussion of the pottery in Horizon II, it appears that several ceramic traditions are present. Of these apparently the Remnant pottery is the earliest and represented by the pottery of the cremation layer in KFR-A5. It was succeeded by the Akira pottery probably not earlier than the 1st century BC (which is the earliest appearance of the ware in general) and found both on open sites and in rockshelters. There is one sherd resembling Jebel Moya pottery and associated with Remnant pottery, and some sherds of Nderit and Maringishu wares in probable association with the Akira pottery.

During Horizon III no pottery accumulated in KFR-A4 which is the only site containing deposits from that period. As this horizon is dated to ± 0, but perhaps began slightly earlier, it is evident that Akira pottery, placed above to the Horizon II period, belongs here chronologically. The next assemblage of dated sherds is the one from layer 3 of KFR-A12, i.e. Horizon IV, belonging to the 9th and 10th centuries AD. However, these are all rather undiagnostic bodysherds and cannot be assigned typologically to any particular type.

The pottery from layer 2 in KFR-A12, i.e. Horizon V, is likewise mostly undiagnostic. Vessel 7 with its incised cross-hatched decoration, black paste and smoothened surface gives, although fairly thick (10 mm), an Akira-like »feel». The occurrence of cord-roulette decorated pottery (vessel 9) is not surprising considering the dating of the horizon, as it appears in East Africa already during the 14th century AD (eg. Soper & Golden 1969 p. 76), but it is apparent that rouletted pottery does not belong to the local pottery traditions in Laikipia, not in Horizon V or later.

The histogram of vessel wall thickness (Fig. 72) shows a range between 4 and 12 mm with two modes at 5 and 8 mm respectively. As the thin-walled vessels are likely to break into smaller pieces than the thick-walled vessels and thus cause an overrepresentation of thin sherds in the archaeological assemblages, it is nevertheless interesting to note the difference between the distributions of the assemblages from KFR-A5/ layer 2 (Horizon II) and Horizon V; chi-square test (12.86; df = 8) indicates that the difference is caused by a factor other than chance with a probability of more than 80 % but less than 90 %. In the later horizon the ceramic tradition obviously includes an element of thin-walled pottery, which is rare in the burial layer of KFR-A5 (cf. p. 50), but at the same time it also includes thick-walled pottery which explains the two modes in the histogram.

The post-15th century Horizon VI is again well represented by its total of 841 sherds. However, only one significant typological group emerges. It is represented by nine vessels in the excavated rockshelter assemblages supplemented by at least one vessel from a surface occurrence (KFR-A7) within the survey area, at least one vessel excavated by Jacobs (1972a) in Bunny Allen Rockshelter 2, and four more from surface occurrences outside the survey area. On the basis of this material a new taxon is proposed and designated *Kisima pottery*. This is characterized by raised ridges either for decoration (vessels 31, 50 and 53 with low continuous ridges) or to provide handles (vessels 25—27 with short high rigdes). Both applique ridges occur and those formed from the vessel wall itself. In some cases there are notches made with a stick on top of the ridges. In one vessel from the Bunny Allen rockshelter there is an incised line and notches on top of the ridge (Jacobs 1972a Fig. Ic) and another vessel from the same site shows that raised ridges occur together with vertical lugged handles (Jacobs 1972a Fig. Id). The ridges run either along the interface between the neck and the body of the vessel or along the neck below the rim. Besides the notching of the raised ridges, the vessels are only sparsely decorated: occasional notching on either side of the ridge (vessel 26) or on the vertical lugged handles (Jacobs 1972a Fig. Id), and incised lines or punctations below the rim. Two vessels (50 and 66) have plain raised ridges, but the typological association of these with the other Kisima type vessels is not clear however.

All the vessels have dark (mostly black or dark grey) or reddish paste with fine-grained micaceous temper and smoothened or burnished surface finish. Wall thickness varies between 4 and 9 mm (mean 6.1 mm) and the group thus includes relatively thin-walled vessels.

The exact vessel shape cannot be deduced due to the small size of the sherds but most of the fragments

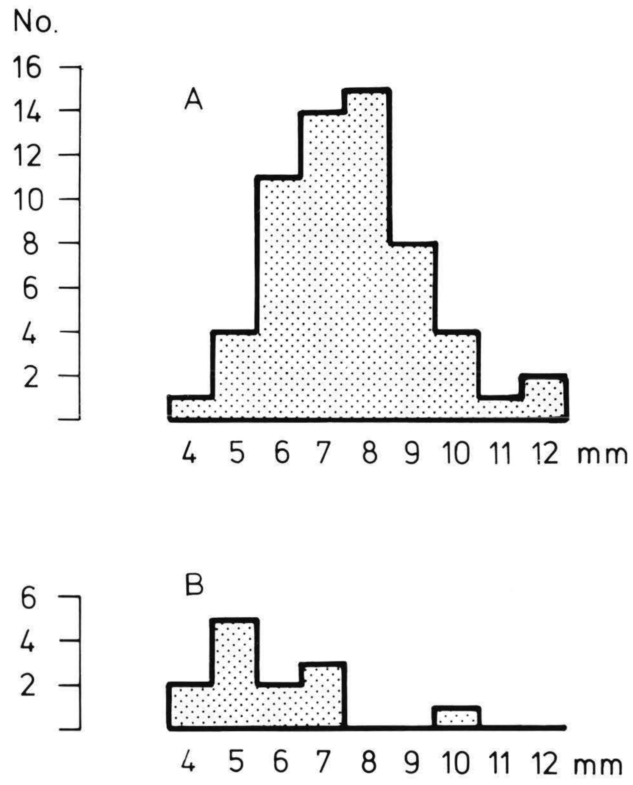

Fig. 71. Frequency distribution of wall thickness of the potsherds of Horizon II (A) with N 60, mean 7.48 and sd 1.67, and the Akira sherds from Laikipia (B) with N 13, mean 5.85 and sd 1.62.

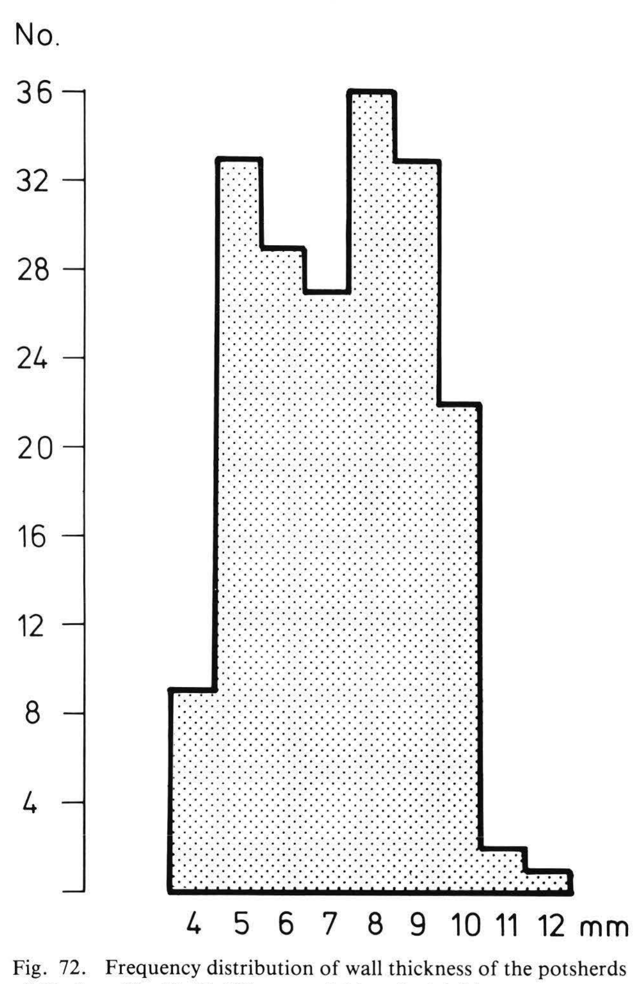

Fig. 72. Frequency distribution of wall thickness of the potsherds of Horizon V with N 192, mean 7.31 and sd 1.84.

seem to have belonged to necked vessels. Both relatively large and small vessels are represented; no exact measurements of the orifice diameters could be made, but at least in vessel 50 it cannot have been much more than 10 cm. No base-sherds showing flat base have been found together with raised ridge pottery, and thus the Kisima type vessels obviously have had rounded bases: indeed, one vessel from the Bunny Allen rockshelter is represented by at least 22 body-sherds some of which show a rounded bottom section. Two of the vessels with plain ridges have slightly convergent funnel-shaped neck-parts.

Kisima pottery seems to have an ethnographical parallel in the northeastern highlands suggesting thus a continuous tradition the time-depth of which is not precisely known. This recent pottery is represented by some vessels in the collections of the National Museum of Kenya in Nairobi, labelled as »Samburu pottery» and one vessel as »modern Turkana pot from Emuruakochomin area of S. Turkana near junction of Kerio and Kalahata rivers». Although the Samburu—Turkana collection includes also vessels completely different from the Kisima examples, some of them (eg. 1967/262) display exactly the same form as some vessels in Laikipia having similar plain horizontal ridges, vertical lugged handles and thin vessel wall. Raised ridge, sometimes notched as in Kisima pottery, is clearly a typical feature in the »Samburu» pottery (cf. Nat.Mus. UC1970/142a, 1967/263 and 1967/264). Also Jacobs has observed this mutual similarity: »it (a vessel from the Bunny Allen rockshelter) corporates certain features found in Samburu pottery (eg. raised ridges and slightly insloping straight necks), but the overall shape and mode of decoration is different» (Jacobs 1972a p. 6). Here it is essential to note that the Samburu have never produced any pottery but acquired it from the Galla-speaking Wat (Watta) or the Maasai-speaking Dorobo peoples living in the area north of Mukogodo, as we are told by Jacobs (1972a p. 10). This correlation implies that the Kisima pottery may well have occurred already before the migration of the Plains Nilotes into Laikipia.

Turning to the archaeological parallels, it is apparent that the spatial distribution of Kisima pottery is confined to the Laikipia highlands. Although investigations in the southern highlands and to the north of Laikipia are rather scanty, and lacking altogether to the east of the Uaso Ngiro, it is significant that raised ridge pottery has not been encountered in Lukenya Hill (except one related sherd, cf. below) nor in the fairly intensively surveyed areas around Lake Turkana (Robbins 1972, Barthelme 1977, Phillipson 1977). Neither does it occur in the Rift Valley (Bower et al. 1977) nor in the western highland area (except one rouletted sherd from Tunnel Rockshelter; Sutton 1973 Fig. 11:1). There is one identical occurrence in the southeastern foothills of Mt. Kenya (Ciambui; Soper 1979b Fig. 6f). If we follow, however, the most characteristic single element of Kisima pottery, the raised notched ridge, the picture becomes more complex. There is a series of sites in the eastern highlands south of Laikipia stretching from the Kiambaa district near Nairobi in the north to the Chiulu hills in the south (the distribution is given in Siiriäinen 1971 p. 220) which have yielded a special type of pottery including necked vessels with one or two horizontal raised notched ridges; the vessel surface is sometimes, but not always, smoothened (cf. also Siiriäinen 1973 where this pottery has been called Njiri ware). I have suggested that this pottery forms a distinct type, and it indeed seems to occur on sites which otherwise lack other typological groups (Siiriäinen 1971). On a purely typological basis — excluding the raised notched ridge — it is impossible to determine the connection of this pottery with the Kisima type.

A radiocarbon measurement from the southernmost site, Ngungani in the Chiulu hills, giving a date of 1515 ± 105 AD (N-290; Soper 1976), indicates that the two groups may well be contemporaneous with each other, which strongly points to the possibility that the appearance of the raised ridge in these groups is not a separate autochtonous phenomenon. The ridges in the southern Njiri pottery are certainly not of any practical function, as they are always very low and fragile appliqués. Because the ridges in both groups are in almost every vessel the only decorative element, it is probable that they possessed some ethnic identity significance.

There are isolated archaeological occurrences of raised ridges even outside the distribution areas of the Kisima and Njiri types. For instance, Sutton presents a sherd with a high notched ridge — probably a handle similar to that on vessels 25—27 in Laikipia — and in addition decorated with rouletting from Tunnel Rockshelter in Moiben in the western highland area of central Kenya, and dates it to the Iron Age (Sutton 1973 Fig. 11:1). From the same level there is also rouletted pottery probably of Luo manufacture. Occasional raised notched ridges occur further, eg., in Ivuna, western Tanzania, dated to the 13th century AD (Fagan & Yellen 1968) and in the Kilimanjaro area where the ridges are plain (Odner 1971), as well as in some recent pottery (eg. Pokomo and Luo; see Sutton 1964 Fig. 5:5). The connection of all these occurrences to the Kisima and Njiri potteries is however dubious. A sherd worthy of mention from Rangi in eastern Uganda, illustrated by Robbins et al. (1977 Fig. 8e), has a raised notched ridge and is associated with pottery which is possibly a late (15th to 17th century AD) derivate of Akira pottery.

The thinness of the vessel wall, a second characteristic feature of the Kisima ware, also indicates a continuation in the local ceramic tradition which can be followed from the Akira pottery onwards in Laikipia (cf. p. 64). This feature is consistently associated with a high degree of smoothening and burnishing (sometimes even polishing) of the vessel surface. A continuous tradition from Akira to Kisima type is further indicated by the incised lines below the rim (cf. Bower 1973b Fig. 11f—j, Odner 1972 Fig. 21d and e and 24a) and the panels in vessel 46 (cf. Bower et al. 1977 Fig. 26 b, Odner 1972 Fig. 24a). Also, the gourd-like vessel form with in-sloping straight neck, common in the related »Samburu» ware, seems to occur already in the Akira and Narosura pottery types (cf. Bower et al. 1977 Fig. 2v, Onyango—Abuje 1977 p. 154). On this basis I am inclined to regard Kisima pottery as a late derivate of the Akira pottery (cf. also Gramly 1975b p. 181). Leakey's finds from a rockshelter in Lukenya Hill (designated later as GvJm/2; quoted from Gramly 1975b) might also imply a continuity from Akira pottery to the raised ridge type (the sherd illustrated in Gramly 1975b Fig. 13b closely resembles Kisima pottery) and one sherd from this site (Gramly 1975b Fig. 13e), which Gramly assigns to Akira pottery, has a plain horizontal ridge. Unfortunately Leakey has left no excavation report of his work in Lukenya Hill and the exact provenance of the ridged sherd remains unknown. There are also unambiguous Akira sherds from the shelter as well as one sherd from a vessel with bevelled rim, probably of Kwale-related ware from the Iron Age.

Of particular interest in this connection is that on the western side of the Rift Valley, in eastern Karamoja in Uganda, Robbins et al. (1977) have excavated a site with pottery including a component called thin-incised ware by the excavators. The pottery is associated with an extremely rich Later Stone Age microlithic stone industry. Two radiocarbon determinations — albeit inconsistent with respect to their mutual stratigraphical position — date the whole deposit to the 15th to 17th centuries AD; the late date is supported by the other pottery components (including rouletted ware) which are of Late Iron Age type. According to Robbins et al. the »most obvious parallel to this type of pottery (i.e. the thin-incised ware) is Akira ware, but the shared traits of thinness, decorative techniques, and hollow bases do not include panels in the case of the Rangi material» — there are however »a few possible examples of panels in the very fragmentary Rangi sherds». As noted above (p. 66), among the sherds illustrated from Rangi there is one with a notched raised ridge.

Worked stone

Description

There are chipped stone artefacts in KFR-A5 right down to the bottom of the deposits. Layers 3 to 9 of that shelter represent a lengthy pre-pottery period. As datings are lacking from the lower levels of the cave nothing can be said about the age of this material, but judging from the thickness of the layers (total c. 110 cm), it should be several hundreds of years older than layer 2 and consequently date at least to the 2nd millenium BC. As the latest lithic aggregate comes from layer 2 of KFR-A4, dated to c. AD 1400, the lithic period spans at least 2500 years.

The description and discussion presented in this chapter follows the same horizon sequence as the pottery analysis. However, two special topics will be taken under closer examination before the detailed description, viz. the effect of raw material on the lithic technology and the question of inter-site variability in lithic artefact composition.

Four categories of raw material have been utilized in Laikipia: quartz, obsidian, chert and phonolite. Macrocrystalline quartz is the only material locally available and occurs in veins up to 2 m wide in the Basement Complex outcrops from which it has been extracted (sites E1—3). The method of extraction is not made clear by the finds but no intentionally formed hammers were found within the quarry areas, and obviously quartz was obtained either by directly gathering the naturally broken pieces, which were products of the crushing effect caused by the expansion and shrinking of the parent rock due to temperature fluctuations (cf. p. 11), or simply by smashing the veins using natural blocks of different sizes found in abundance around the veins. The few pièces écaillées discovered around the veins indicate that some flaking was going on at the quarry sites, possibly to test the quality of the material. The quartz preferred was of homogenous white milky type or the translucent »rock crystal» variety which was used especially in producing microliths.

Obsidian must have been imported from the Rift Valley where it occurs in several localities in the volcanic formations. Samples collected by Mrs. Powys from rockshelters in Laikipia were investigated by Dr. Walsh of the Geological Survey of Kenya. On the basis of refraction indices Walsh concluded that the obsidian belongs to a variety found in the Mt. Eburru Massif in the Lake Naivasha basin, c. 80 km SSW of the study area (Walsh & Powys 1970). Dr. Harry Merrick and Dr. Francis Brown have recently begun a systematic study to analyze certain trace elements in all the natural obsidian occurrences in Kenya in order to detect geographically limited petrological types, and to analyze obsidian flakes from selected archaeological sites for tracing the sources of the raw material used in tool manufacture (Merrick & Brown 1984). KFR-A5 was included in their pilot study. Two systematic samples were taken, one (48 flakes) from spit 2 (Horizon II) and the other (52 flakes) from spit 6

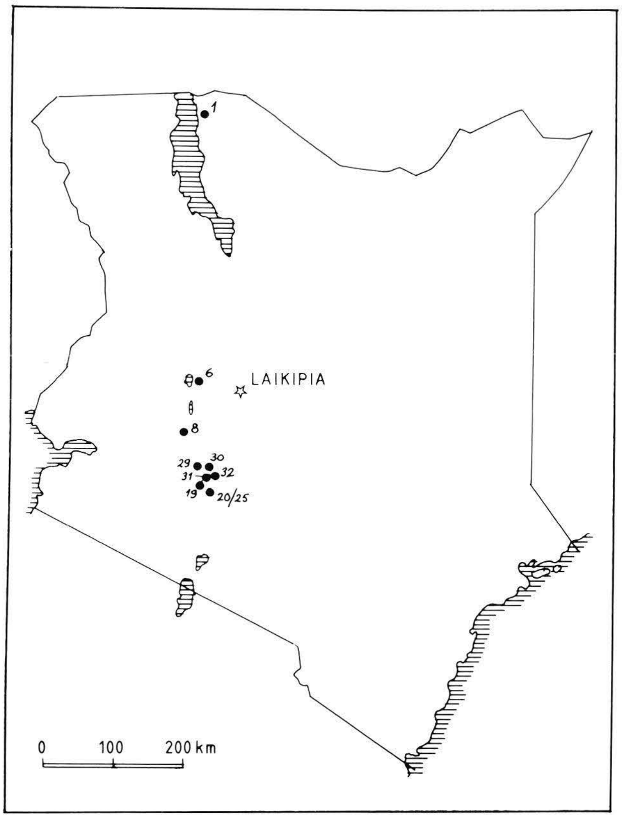

Fig. 73. The source areas of the obsidian analyzed from KFR-A5 (according to Merrick & Brown 1984).

(Horizon I). The petrological groups, as determined by the calcium/iron and titan/iron contents, are shown in Fig. 73.

The distribution according to source areas was obtained as seen from Table III.

Dr. Merrick has attached following comments to the table:

»Thus far the assignments are done on the basis of three elements only. We get reasonable separation on these elements for many of the obsidians found in Kenya. We are moderately confident of the assignments, although it is possible that as we locate more sources we may eventually find others with identical values»... »Assignments of pieces intermediate between groups 32 and 30 and between 29 and 31 are sometimes problematic, since the sources are chemically very similar. The sources however are all very close to one another geographically and cannot be easily confused with sources in other parts of Kenya, so it really makes little difference if one is only interested in demonstrating that it comes from the general Mt. Eburru area»... »We don't know where any of the unknowns are from, although I suspect one may come from the Menengai area, some of the others may come from the Londiani area, or more northerly central Rift areas which we haven't surveyed well yet».

»The sampling of the levels was done by a systematic sample, so we feel the results are a reasonable reflection of the proportions of the materials present in the level».

Most of the obsidian from KFR-A5 was imported from the general Lake Naivasha area: 41 flakes from a total of 48 (ie. 85.4 %) in spit 2 and 38 flakes from a total of 52 (73.1 %) in spit 6. Only four flakes (8.3 %) in spit 2 and ten flakes (19.2 %) in spit 6 originate from further north in the central Rift, ie. closer to the study area. This demonstrates the central role of the Naivasha area in the cultural/trade contacts of the Laikipia population both during Horizon I and II periods. An isolated flake in spit 2 comes from as far as the NE Lake Turkana area.

The colour of the obsidian is black or very dark green, in some cases striped and the texture is sometimes porous but mostly it is rather high quality material.

Chert utilized in the analyzed aggregates includes several colour variants such as dark brown and red, yellowish and grey. The texture is somewhat coarse, sometimes with tiny granules, and always opaque. Cherts of all these variants are found as chunks and nodules within a surface occurrence in the Ol Doinyo Rasasi Hills c. 20 km east of the rockshelters and were obviously imported from there. Some isolated artefacts are made of a special type of white microcrystalline quartz which occurs as small nodules in and around a concise Miocene subvolcanic sediment formation at the edge of the phonolite formation c. 15 km to the north of Kisima Farm. As it comprises only less than 1 % of the total lithic assemblage, it has been excluded from the raw material statistics. Only one artefact, a roundish disc — which even typologi-

TABLE III

Petrological groups and source areas

		19	20/25	32	30	29	31	6	8	1	unknown	total
Spit 2	No.	3	1	15	17	2	3	3	—	1	3	48
	%	6.25	2.08	31.25	35.42	4.17	6.25	6.25	—	2.08	6.25	100.00
Spit 6	No.	6	1	23	8	—	—	9	1	—	4	52
	%	11.54	1.92	44.23	15.38	—	—	17.31	1.92	—	7.69	100.00
Total	No.	9	2	38	25	2	3	12	1	1	7	100

cally constitutes an anomalous element in the rockshelter aggregates (p. 81) — was made of translucent greyish-blue chert not occurring in the Rasasi Hill chert varieties but which has been encountered by Stanley Ambrose (personal communication) as small blocks on the ground surface within a limited area c. 37 km due NE from Kisima Farm.

Some indisputable flakes of phonolite with bulbs of percussion were found from all the rockshelters. In KFR-A12 it was impossible to distinguish true flakes with striking indicators from natural flakes exfoliated from the ceiling, and consequently all phonolite flakes were omitted in the analysis. In KFR-A4 and A5, again, where all the phonolite must have been brought by man as the rock is granite, it proved to be far too time-consuming to remove the dust crust from all the flakes which were left on the screen. Chert and obsidian were easily recognized, quartz was more difficult to distinguish from the rubble (and therefore might be slightly under-represented), but phonolite was almost indistinguishable from thin granite flakes. However, when dust was carefully removed from all the flakes in test samples, it became obvious that phonolite only occurred in insignificant quantities and no retouched artefacts or formal cores of that material were discovered. Thus it seems probable that the rare phonolite flakes originate from pestle rubbers or hammerstones when these were manufactured or used in the shelters.

In Fig. 74 the percentage frequencies of the different raw materials in each horizon (cf. p. 67) are given calculated by weight. Quartz is by far the most common raw material amounting always to over 48 %; of the imported materials chert is slightly more utilized than obsidian. There is an interesting trend discernible in the mutual proportions of the raw materials: first, in Horizon I, an increase in the use of chert and a marked decrease in the use of obsidian, and later, from Horizon II onwards, a steady and clear decrease of chert and especially obsidian and a corresponding increase in quartz. This decreasing tendency in the import might reflect increasing difficulties in the access to exotic resources and/or reducing territorial contacts leading slowly towards a dependance on local resources. This is perhaps most marked if we compare Horizon V with all the earlier horizons. The trend also emphasizes the technological continuity between Horizons II and V, i.e. from c. ± 0 to c. AD 1400, which was assumed to have prevailed in the ceramic tradition. Moreover, the utilization of raw material sug-

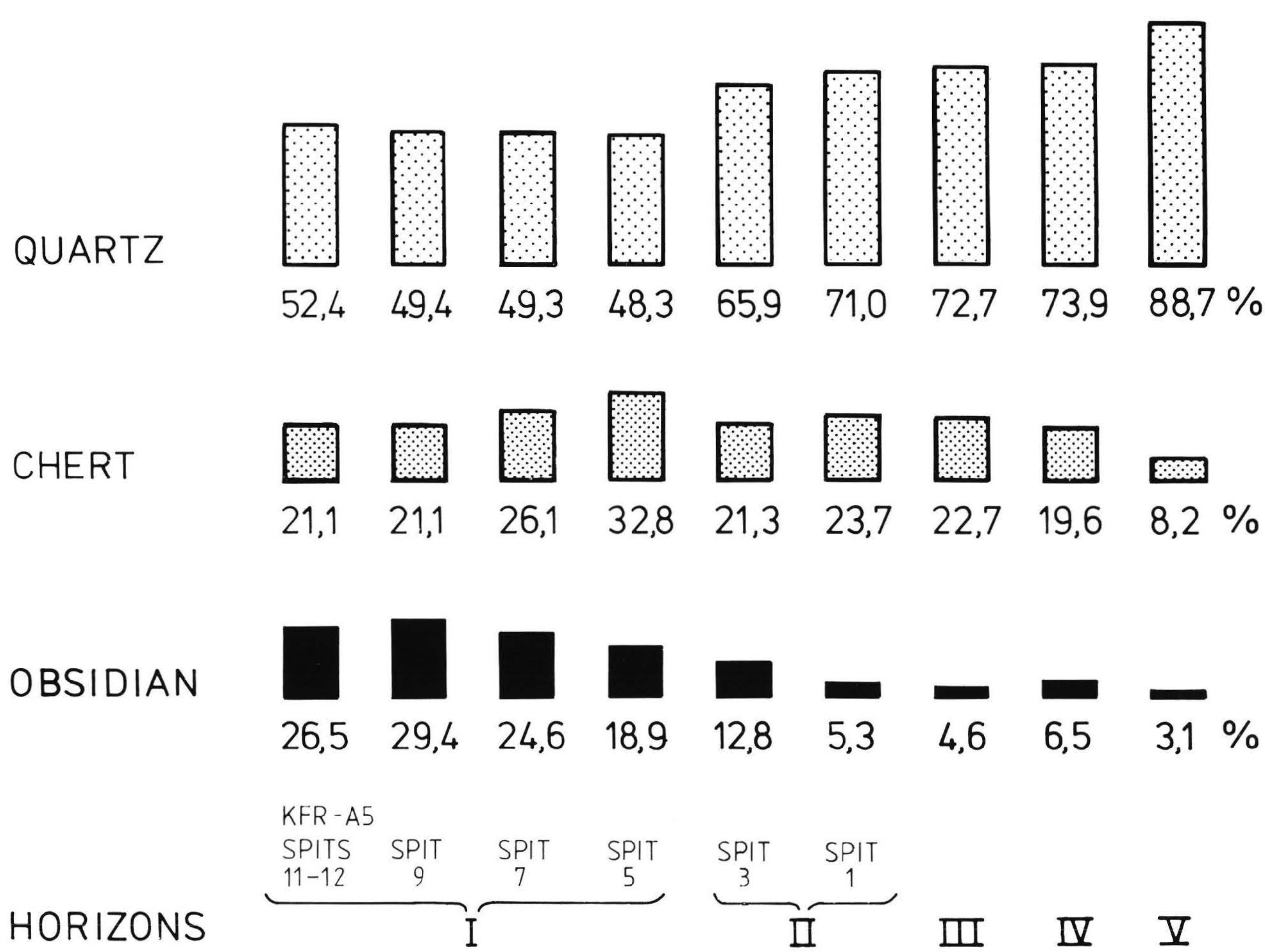

Fig. 74. Percentage distribution of the lithic raw materials in each horizon, by weight.

gests that a continuation in the lithic technology prevailed right from the beginning of the sequence, from the 2nd millenium BC onwards.

It is apparent that the different raw materials certainly had an effect on the composition of the lithic aggregates due to their differing flaking properties. To clarify this issue a comparative study was made using the material from KFR-A12/spits 3 and 4, i.e. Horizon IV, as a basis (Siiriäinen 1977d). It was assumed that the effects would be most clearly seen within one aggregate reflecting a short period during a single lithic flaking tradition. Several significant observations were made, namely that a certain flaking technique using the bipolar method and producing pièce écaillée-type residual cores was mostly applied in flaking macrocrystalline quartz as the material is too liable to fracturing in ordinary flaking from platform cores (this observation has been made by many other investigators but it has never been verified). Furthermore, that in quartz there are pieces in quartz aggregates strongly resembling those commonly classified as burins but which apparently are either byproducts of the manufacture of other heavy-duty tools (cf. Nelson's »technical burins», Nelson in Nelson & Posnansky 1970 p. 136) or merely thick flakes with accidental burin-like facets. Also, less microliths were produced from quartz than other materials, and the tools/flakes and cores/flakes ratios are different in the quartz aggregates than in those of other materials, the former having proportionally more and larger flakes. Casual utilization — as well as casual retouching — seems to be less unambiguously recognized in quartz even in microscopy. All these factors certainly have a skewing effect on the artefact type distributions. This has to be kept in mind when comparing aggregates which comprise different raw materials.

Since it is evident that cultural factors (eg., gradual culture change or radical innovations) might alter the technology so that changes occur in the choice of raw materials or in the flaking preferences of different raw materials, it is appropriate to make some comparisons in this respect between aggregates of different periods. This was done by contrasting some aspects of the aggregates of Horizons III and V. No drastic changes can be observed but several minor differences however merit attention. With respect to flaking, the younger aggregate contain proportionally more formal cores of quartz than the older one (35 % and 27 % resp.), and similarily more pièces écaillées of obsidian (29 % and 20 % resp.). In the waste category, both chert and obsidian aggregates in the younger horizon contain proportionally less waste pieces than quartz aggegates (10 and 12 % — 78 %, and 28 and 13 % — 59 % resp.). As the pièce écaillèe flaking technique indicates an ultimate exhaustion of cores (cf. Siiriäinen 1977d) it seems that both trends mentioned above reflect a maximal economic use of imported raw materials, especially obsidian, during the Horizon V period in Laikipia. This same conclusion is evident when we observe that there is a marked increase in tool percentages within both chert and obsidian aggregates from Horizon III to Horizon V: from 5.6 to 8.6 % (chert) and from 5.7 to 8.8 % (obsidian). If we further examine the main tool categories, we can see an increase of microlith manufacture from chert to obsidian (from 23 % obsidian and 71 % chert in Horizon III to 43 % obsidian and 48 % chert in Horizon V). There is also a marked increase of total tool production in obsidian as compared to chert (from 23 % obsidian and 66 % chert in Horizon III to 38 % obsidian and 47 % chert in Horizon V). Because the flaking qualities of quartz obviously force the tool categories of formal tools into rather constant ranges, the observations reflect utilization practices only in chert versus obsidian, and consequently show that in the younger horizon more care has been put in economizing the use of obsidian. Quartz was always abundantly available and it was not necessary to control its utilization. — All these minor differences between Horizons III and V can be explained as emerging from rational human behaviour and response towards slowly changing social relationships between the local population and the surrounding peoples. External access to resources situated further away became gradually more difficult; this is certainly true concerning obsidian but less clear in the case of chert. What is also important is that these differences, again, emphasize the cultural continuity in Laikipia which became already evident in the pottery analysis.

Traditionally, Late Stone Age and earlier lithic assemblages have been analysed by calculating the percentages of different tool and type categories; the underlying assumption in these type frequency calculations is that differences thus discovered reflect cultural differences which, in turn, rise from differing culturally (traditionally) controlled responses to functional needs in different cultures or ethnic groups. Sometimes these calculations have been performed with rather sophisticated mathematical computations. Some investigators have doubted this approach, however, and argued that different tasks carried out on different sites, or even different parts of sites, produce differing tool type compositions which have nothing to do with cultural, let alone ethnic variations. It is conceivable that within small rockshelters where all the tasks must have been performed within a limited space this scatter of different tools is necessarily not wide but in larger shelters it must be taken into account. If such a rockshelter has been excavated *in toto* (as in the case of KFR-A4) this effect can be controlled by calculating the total frequencies, but if only a test pit has been excavated (as in KFR-A5 and A12) it is evident that a skewed frequency distribution might be obtained.

To study this kind of selective accumulation of lithic debris, percentile frequencies of different tool and non-tool categories were calculated for each spit of each trench in KFR-A4 (Fig. 75). It is obvious that if only one trench had been excavated some clear trends could be subsumed in certain tool categories. For example, there is a marked decrease in the percentage of the truncated and backed pieces in Trench I and an even more prominent decrease of backed pieces in Trench IE. However, no such trends can be distinguished in the other trenches. Some types show a reversal trend in different trenches: eg., trapezes first increase and then decrease in Trench IE while a completely opposite trend is manifest in Trench II, and the same is true regarding the backed + truncated pieces in the same trenches. The same apparently random pattern can be seen in the non-tool categories. Although in some trenches there are somewhat distinguishable trends in some categories, there are again none in others (eg., a rather continuous increase of pièces écaillées in Trenches II and IIE whereas in Trenches I and IE no such increase is evident). Also a reverse development in the distributions of cores in Trenches II and III could be observed.

According to the above observations it seems to be meaningless to make detailed comparisons of tool or non-tool categories between rockshelters that are only partially excavated. The distributions are affected by the differences in the activies performed in different parts of the shelters. This intra-site variability postulated in KFR-A4 with its total habitation area of only c. 70 m^2 is in severe contradiction with the observation made in the Rift Valley where a lower limit of c. 2000 m^2 has been given for sites with such internal heterogenity (Bower et al. 1977 p. 143). It is strikingly evident that had we, for example, excavated only Trench III in KFR-A4 we would have concluded that the industry discovered is rather poor of scrapers and that these only appear in the uppermost layers. However, the other trenches include scrapers to the degree that we now have to regard this tool category as an integrated element in the industry throughout the period studied.

It is natural that the typological compositions and the trends in their frequencies through the stratigraphy of KFR-A4 are most similar in Trenches I, IE and II as they are situated in the largest continuous area within the shelter (Section A). In the northern part of Section A (Trenches I and IE) four clear trends are distinguishable: decrease in backed pieces, increase in scrapers and burins and triangles occurs only in the three lowermost spits. These trends are not clear in Trenches IIE and III. On the whole Fig. 75 shows only stocastic variations and gives an impression that only one single industry is represented in which no drastic changes happened during the period covered. It seems that even within a single technological tradition a very great variation in the type frequencies must be taken into account. It should be noticed that in all of the trenches in KFR-A4 there is a gradual decrease of microliths through time which, as will be seen later (p. 75), is a consistent feature in the Laikipian sequence as a whole.

In Table IV (also Fig. 76) the numerical and percentile distributions of retouched tools, cores and waste flakes from each horizon are presented; pièces écaillées are also taken as a separate category as it was supposed that they are primary cores and thus more related to flaking activity than to tool manufacture (cf. Siiriäinen 1977d).

The tool percentage is slightly higher throughout the sequence than is usual in East African Late Stone Age assemblages where the percentage is generally below 2. The highest percentage is in Horizon IV which probably reflects the activity differences in rockshelter KFR-A12 compared to the other shelters: A12 was used more often than other shelters by hunters for occasional visits and less flaking was carried out there (cf. p. 39). An interesting feature in the distribution is that there is no clear correlation in the mutual relative occurrences of tools, pièces écaillées and cores; the only exception is again Horizon IV in which the pièces écaillées seem to follow the high percentage of tools.

In the analysis of chipped artefacts a hierarchical classification according to the following type-list was applied (Figs. 77 and 78):

Microliths

Crescents (Fig. 77a). A special form of backed flakes and blades sometimes called lunates; backing (abrupt retouch) is always continuous from tip to tip of the flake or blade and the backed edge is curved without sharp angles. No subclassification was made according to the symmetry of the curved back (cf. eg., »J-shaped» microliths, Wendorf 1968) or width/length ratio of the specimen (cf. eg., »deep lunates», Phillipson 1976).

Triangles (Fig. 77b). A special form of crescent; there is a clearly distinguishable sharp angle in the backed edge which gives the specimen either a symmetrical or asymmetrical triangular form.

Backed flakes and blades (Fig. 77c). Flakes and blades with at least ⅓ of the length of one edge parallel to the flaking axis backed. Backing can either be straight or slightly curved, and it can extend to the tip of the flake/blade but the striking platform is never modified.

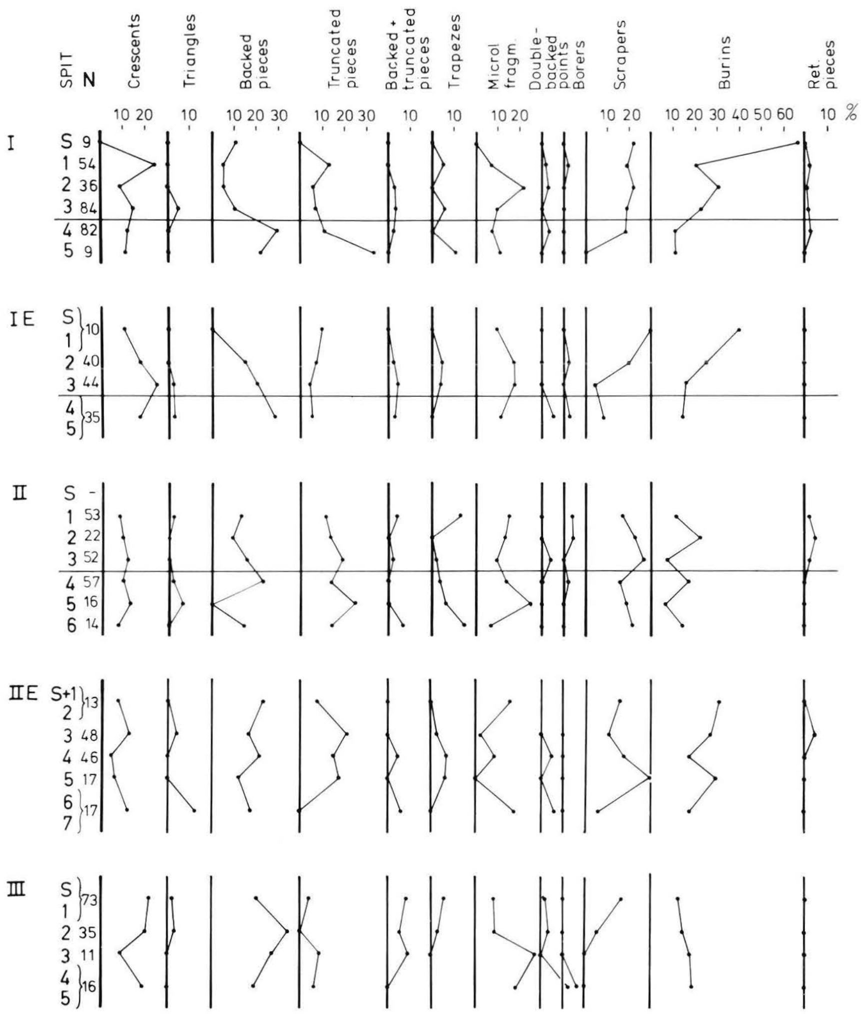

Fig. 75. Percentage distribution of the lithic categories in each spit of each trench in KFR-A4. The horizontal lines in trenches I, IE and II mark the boundaries between the pre-pottery and pottery bearing spits.

Truncated flakes and blades (Fig. 77d). Flakes and blades with steep retouching at the end opposite to the striking platform; the retouched edge runs either perpendicularly or, usually, diagonally against the striking axis. The edges parallel with the striking axis are always left unretouched.

Truncated + backed flakes and blades (Fig. 77e). These are combinations of the two previous classes; there is always a clear sharp angle between the truncation and the backing.

Trapezes (Fig. 77f). Flakes and blades with both ends truncated — this is always done to provide the flake/blade a trapezoidal form.

Fragments. These are broken pieces of microliths with some retouched edge preserved but the original form cannot be deduced.

Double-backed pieces (Fig. 77g). The same as backed pieces but with both long sides backed to form a sharp point.

Scrapers

Scrapers were classified according to the morphology of the piece which has been retouched (there was no point in classifying scrapers according to edge morphology since, with the exception of three specimens, all the scrapers had more of less concave edges)

TABLE IV

	I		II		III		IV		V	
	No.	%	No.	%	No.	%	No.	%	No.	%
Tools	242	(3.82)	137	(3.70)	214	(2.24)	474	(5.40)	277	(2.50)
Pièces écaillées	35	(.57)	29	(.78)	62	(.65)	278	(3.17)	114	(1.03)
Cores	159	(2.51)	68	(1.84)	126	(1.33)	141	(1.61)	145	(1.31)
Utilized pieces and waste	5897	(93.10)	3464	(93.67)	9082	(95.78)	7878	(89.82)	10522	(95.15)
Total	6333		3698		9484		8771		11058	

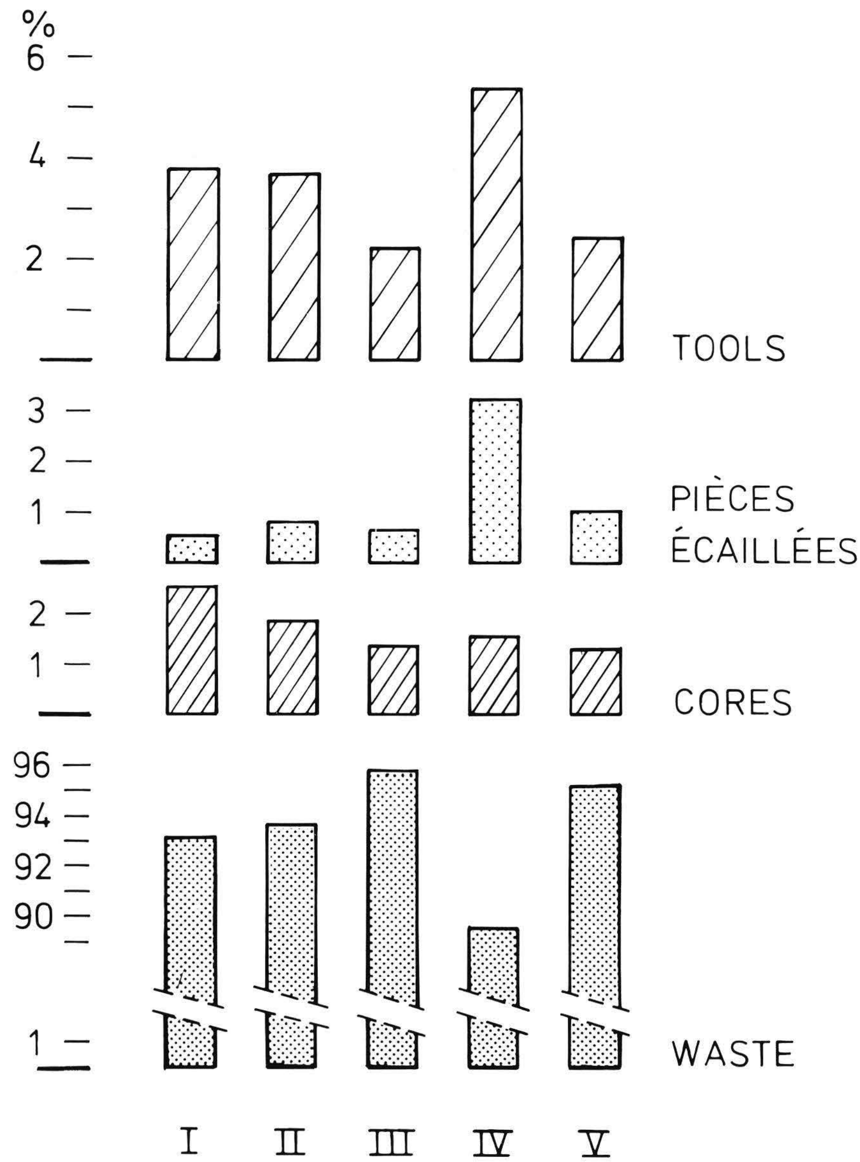

Fig. 76. Percentage distribution of the main lithic categories in each horizon.

Blade scrapers (Fig. 78a).

Flake scrapers (Fig. 78b)

Keeled scrapers. (Fig. 78c) A keeled piece is a thick, elongated flake with a clear ridge in the direction of the long axis (thus its cross-section is triangular); the scraper retouch is always on one or both long edges. These are sometimes called carinated scrapers.

Core scrapers.

Pebble scrapers.

In the scraper measurements the length is always defined as the largest dimension perpendicularly to the retouched edge. Thus a distinction can be made if necessary between an end scraper (length > width) and a side scraper (length < width).

Burins

The burin classification was based on the position of the burin facet with respect to the long axis of the flake or blade, and on the morphology of the piece itself.

Angle burin on blade (Fig. 78e, left). Angle burins have their burin facets formed by a burin blow which has removed either the whole side or a portion of the side of the original piece.

Angle burin on flake (Fig. 78e, middle and right).

Angle burin on core (Fig. 78f).

Dihedral burin on blade (Fig. 78d, left). Dihedral burins have their burin facet formed by two burin blows so that the facet is situated close to the long axis of the piece.

Dihedral burin on flake (Fig. 78d, right).

Dihedral burin on core.

Other retouched flakes

These are flakes with casual retouching on the margins but which cannot be classified as scrapers.

Pièces écaillées

These pieces, also called outils écaillés or splintered pieces, are flakes of other pieces which have two op-

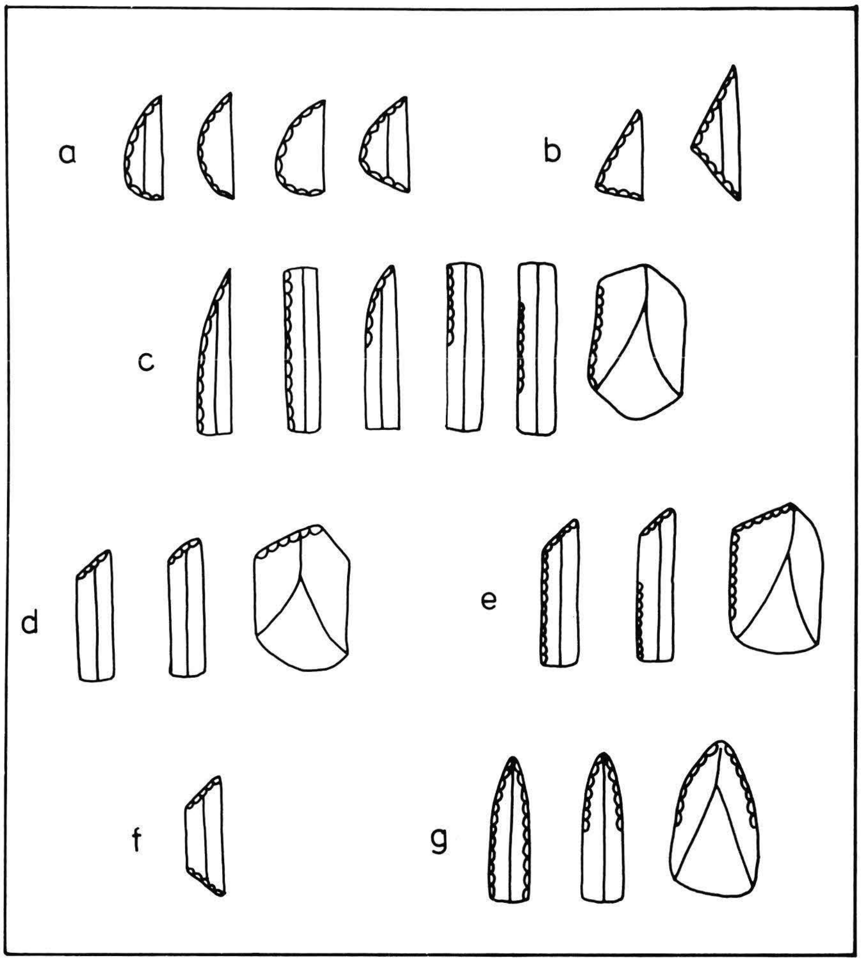

Fig. 77. Diagram showing the microlith types used in the analysis.

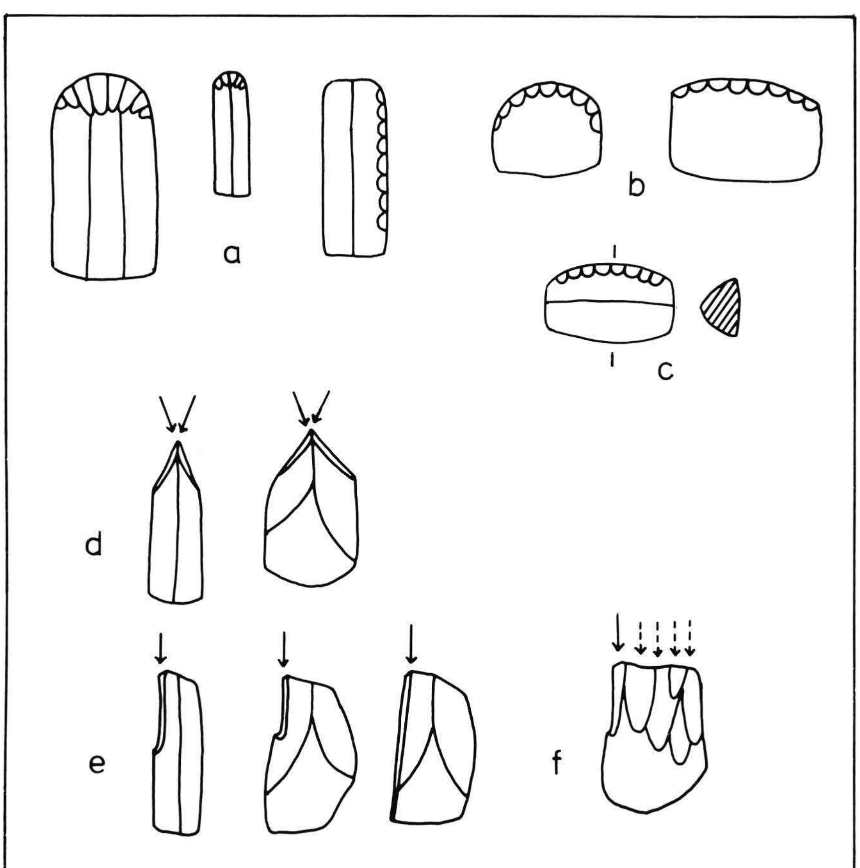

Fig. 78. Diagram showing the scraper and burin types used in the analysis.

posite chisel-like edges (rarely only one edge) showing heavy crushing. Opinions differ about the function of these pieces: others regard them as tools (eg. Masao 1979), others as cores (eg. White 1968). This problem will not be discussed here — I have earlier (Siiriäinen 1977d) stated my view that the pièces écaillées were formed by direct striking on the edges and that they were formed at least primarily to produce blades and flakes and are thus striking cores. The striking technique applied to the splintered pieces is similar to that called bipolar striking, and indeed there is a typological continuum from pièces écaillées into bipolar cores.

Cores

Phillipson's (1976 p. 25) statement concerning Zambian Late Stone Age striking cores also applies to the Laikipia aggregates, namely that they appear to merge into a multidimensional continuum of variation. Consequently, a simple classification of cores was used in this study.

Single-platform cores

Double -platform cores

Platforms at opposite ends

Platforms at a 90° angle

Bipolar cores. Two parallel striking platforms, often very narrow, at opposite ends of an elongated core.

Radial cores (sometimes called »discs»).

Globular cores

Irregular cores

The length of cores has been measured as the largest dimension parallel to the striking direction (the longest dimension was measured in the cases when there was more than one striking direction).

Waste

As no microscopic use-wear analysis could be carried out for this study and as ocular observations of use-wear were found to be highly inaccurate, and as whole flakes and blades were extremely few compared to fragments, it was considered appropriate to include all flakes, blades, flake and blade fragments as well as angular waste into a single category.

From Fig. 79 and Tables X—XIV, in which the percentile distributions of the major tool classes are presented in each horizon, it can be seen that in the Laikipia sequence there is a decreasing trend in microlith production. Scrapers and burins seem to follow each other and, besides, occur in similar relative quantities.

Within the microlith category, again, a clear shift from crescent-dominated Horizons I and II (over 45 %) to a phase more oriented towards a production of backed flakes and blades in obvious (Fig. 80). Also an increase of truncated pieces can be seen.

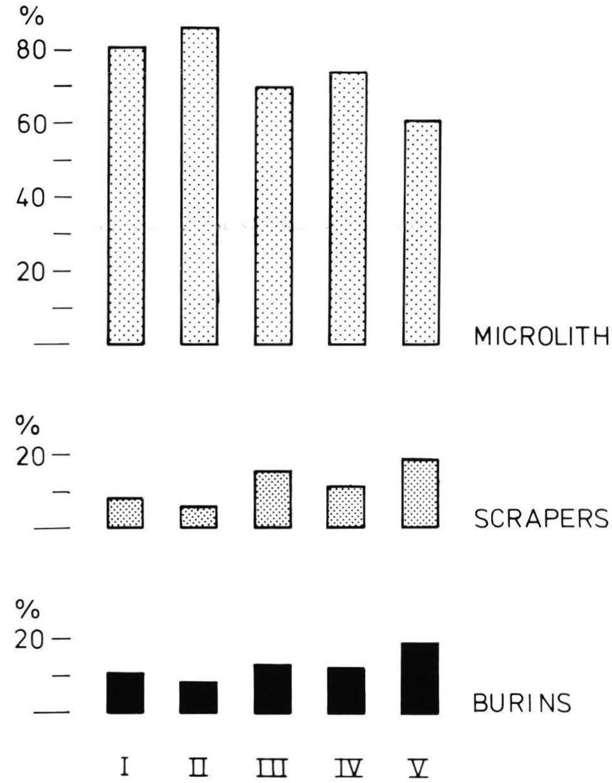

Fig. 79. Percentage distribution of the main tool categories in each horizon.

If the size parameters of the microliths are examined (Figs. 81—86), again a distinct shift can be observed between Horizons I + II with the mean length around 20 mm, and the rest with the mean length never exceeding 18 mm. This distinction is also seen in the standard deviations which show that the specimens in the earlier horizons are more scattered with respect to the length dimension than the specimens in the later horizons. Chi-square calculations show that the difference between the distributions in Horizons II and III is statistically significant at the 95.5 % confidence level whereas between the distributions in Horizons I and II it is significant only at the 10 % level.

Among the scrapers the flake scraper is by far the largest category (never less than 55 % of all scrapers) (Fig. 87). Keeled scrapers are present in small quantities in all horizons but core scrapers only in Horizons I and V. No clear trends can be observed — it should be noticed, however, that the relative frequency of blade scrapers is highest in Horizon I.

In the scatter diagram of the length and width variables of the scrapers the distribution is extremely symmetrical on both sides of the 1 : 1 line (Fig. 88). Thus end and side scrapers are equally common (cf. p. 84). No differences between the horizons occurred in this respect either. The only significant observation regarding scraper size is that Horizon V contains more large specimens (over 25 × 25 mm which constitute

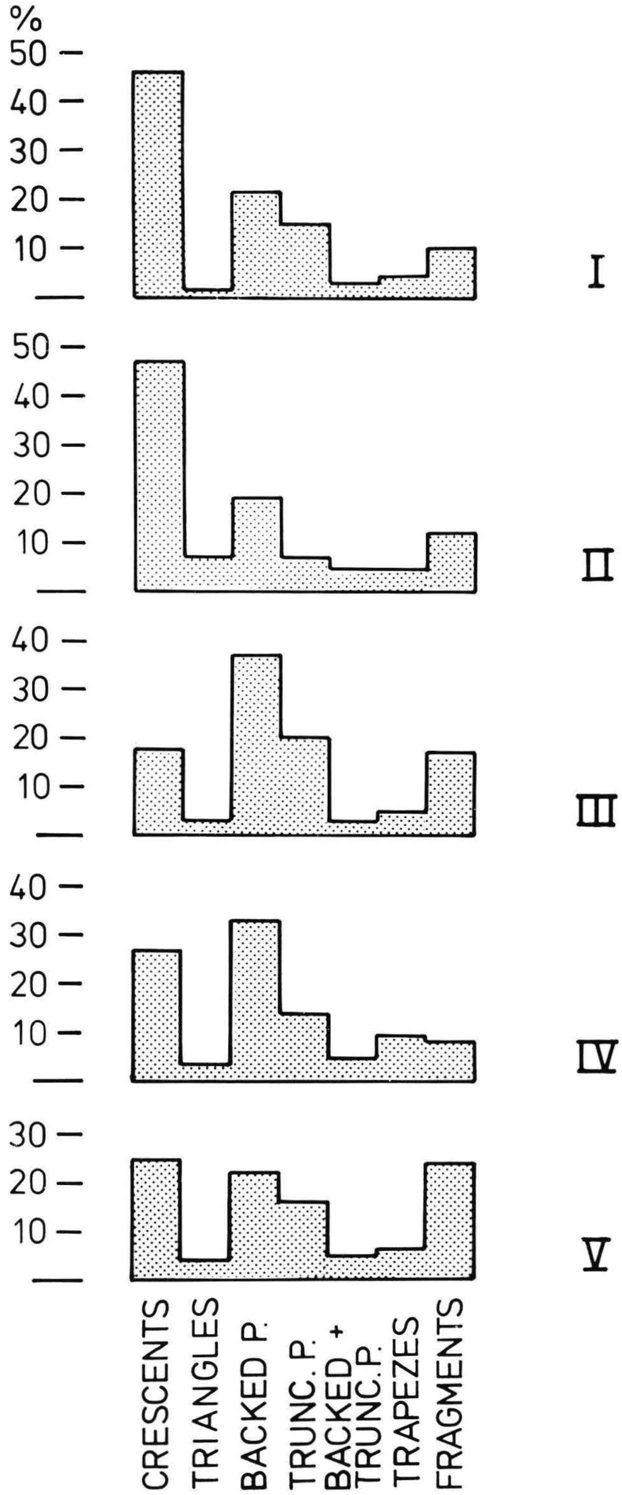

Fig. 80. Percentage distribution of the microlith categories in each horizon.

the limits within which c. 86 % of all the scrapers belong) than the other horizons.

Again, if we compare the burin categories, a significant difference can be seen between Horizons I + II on one hand and the remaining ones on the other (Fig. 89). Although angle burins form by far the most frequent type in all horizons, the mutual proportions between angle and dihedral burins alter markedly from Horizon II to Horizon III: the percentage of the dihedral type is c. 25 % in Horizons I and II but only c. 5 % in Horizons III to V. — No trends can be seen in the parent piece statistics of the burins.

The burins in Horizon V — like the scrapers (cf. above) — are larger in average than those in the other horizons (Fig. 90). This is again caused by the »oversized» specimens (length over 26 mm, width over 17 mm) in that horizon.

As seen from the scatter diagrams the pièces écaillées are not morphologically as homogenous a group as the scrapers and burins, which is obviously a consequence of their primary function as cores (Fig. 91). However, it is worth noticing that again Horizon V includes more large pieces than the other horizons; in this respect the pièces écaillées follow the trend observed in the scraper and burin categories (cf. also Masao 1979).

Among the cores single- and double-platform types dominate in all horizons (Fig. 92 and Table XIV). A weak trend can be discerned, however: there is a slight but consistent relative increase of single-platform cores from Horizon I to Horizon V. The relative frequency of bipolar cores, again, divides the horizons into two groups (Fig. 93) as Horizons I and II contain

TABLE V

		I	II	III	IV
A df = 6					
	II	10.42			
	III	30.52***	35.74***		
	IV	26.68***	27.90***	16.04*	
	V	24.70***	23.03***	10.20	25.17***
B df = 2		I	II	III	IV
	II	1.33			
	III	9.21**	11.93**		
	IV	4.43	7.35*	1.97	
	V	24.38***	25.40***	3.16	14.48***
C df = 2		I	II	III	IV
	II	1.73			
	III	54.67***	23.23***		
	IV	60.01***	52.34***	248.90***	
	V	35.30***	16.84***	4.18	216.50***
D df = 5		I	II	III	IV
	II	2.96			
	III	14.30*	6.47		
	IV	16.25**	8.15	2.80	
	V	9.41	4.28	3.41	1.21

Chi-square values for comparison of the lithic assemblages (Horizons I to V).

A, microlithic categories

B, main tool categories (microliths + double-backed points/scrapers/burins)

C, gross lithic categories (tools/cores + pièces écaillées/utilized pieces + waste)

D, length of microliths

*, **, *** = null-hypothesis rejected at the 95, 99 and 99.9 % confidence level, resp.

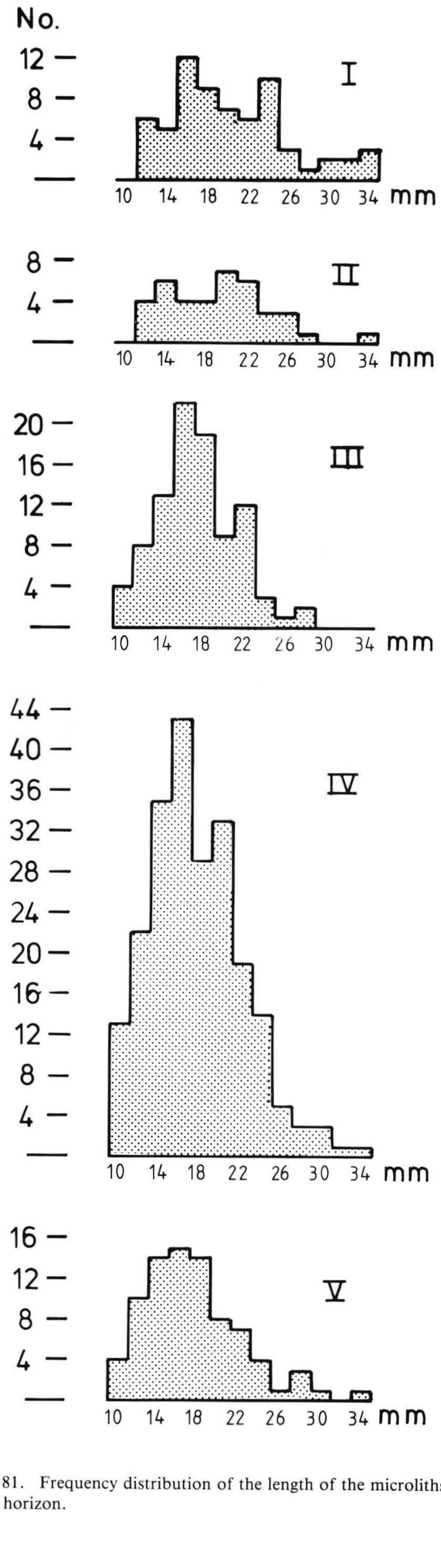

Fig. 81. Frequency distribution of the length of the microliths in each horizon.

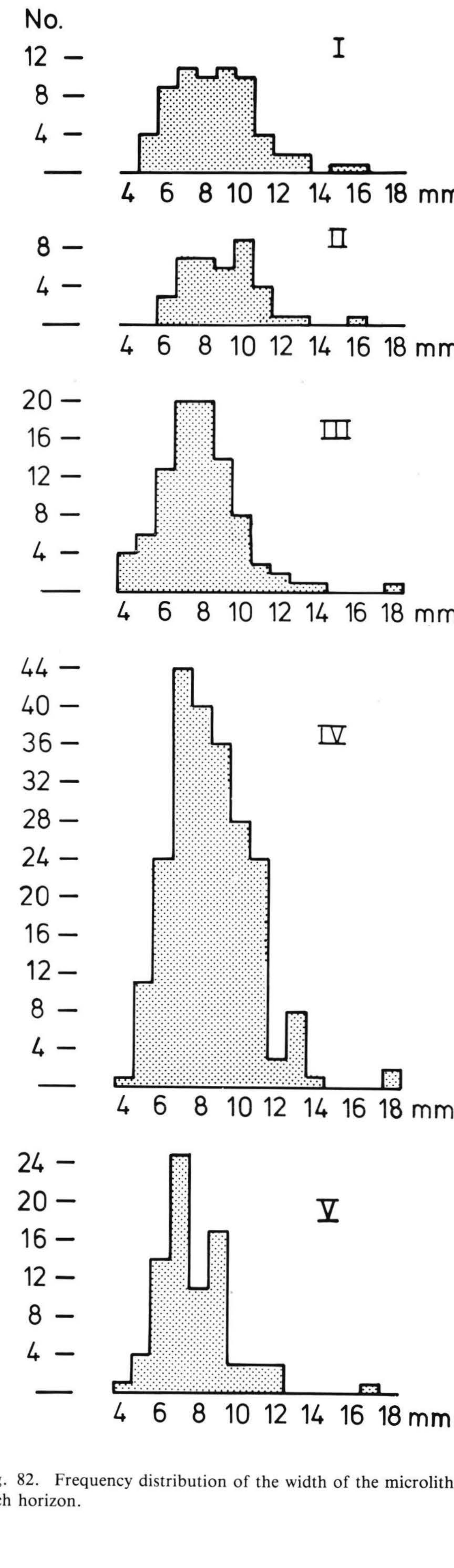

Fig. 82. Frequency distribution of the width of the microliths in each horizon.

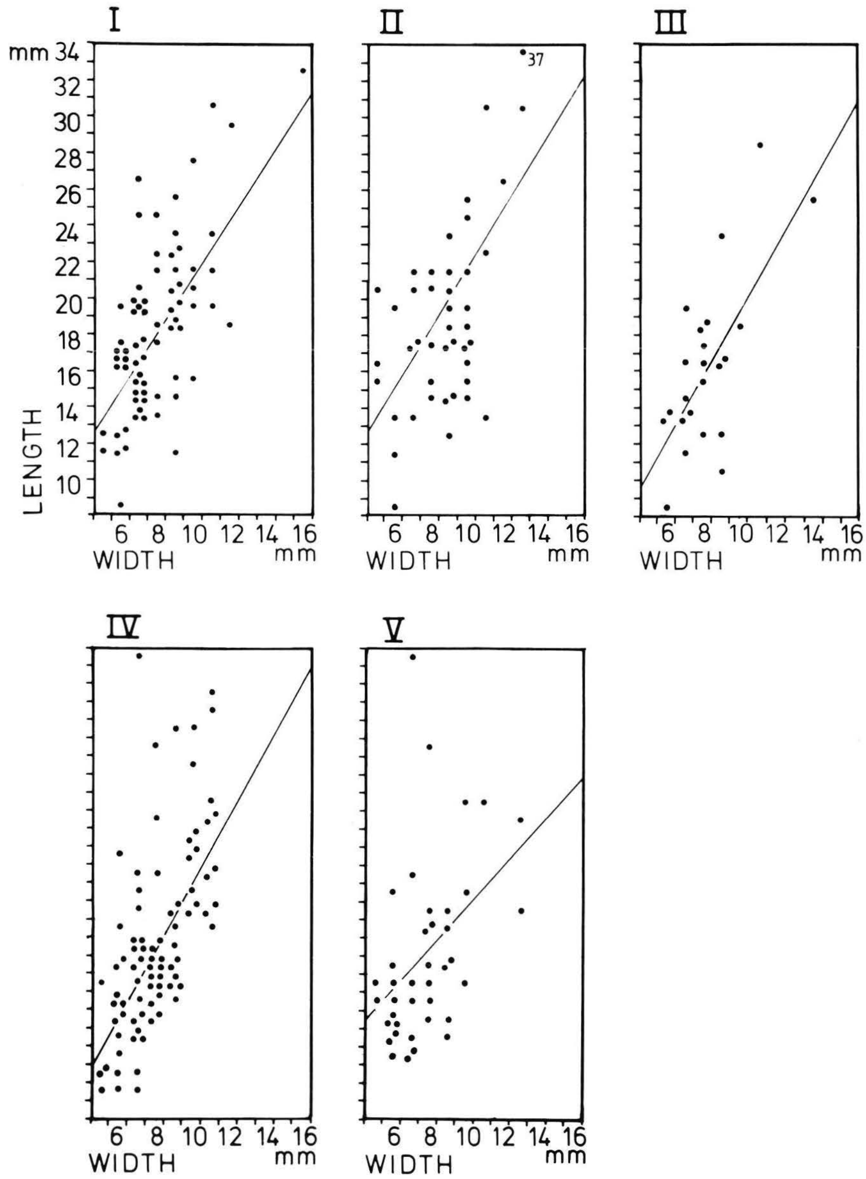

Fig. 83. Length/width scatter-diagrams of the crescents in each horizon.

I	N 74,	length:	mean 18.76, sd 4.66
		width:	mean 8.05, sd 1.98
II	N 46,	length:	mean 19.24, sd 5.28
		width:	mean 8.54, sd 2.05
III	N 23,	length:	mean 16.83, sd 4.73
		width:	mean 8.17, sd 1.80
IV	N 83,	length:	mean 18.38, sd 5.32
		width:	mean 8.02, sd 1.72
V	N 40,	length:	mean 17.63, sd 4.92
		width:	mean 7.88, sd 1.96

proportionally more of this type than the later horizons. It is significant that in the pièce écaillée category — which obviously is typologically and technically related to the bipolar core category (cf. p. 75) — the dividing line is between Horizons III and IV and even here it is less clear. Another interesting feature is that Horizon II takes here an intermediate position between Horizon I and the other horizons which thus implies a continuous trend according to these frequencies. The negative correlation between the relative amounts of pièces écaillées and bipolar cores is evident from Fig. 94. Here the trend from Horizon I to Horizon III is extremely clear although it must be admitted that the typological distinction between the categories in question is not clear-cut and is thus liable to the subjectivity of the classifier.

For a further test of the hypothesis presented above on the basis of several apparent differences in the typological compositions of the lithic assemblages, viz. that there occurred minor changes in the lithic tradition between Horizons II and III, all the assemblages were compared with each other using the chi-square statistic. The values obtained for certain distributions are shown in Tables V:A to D. According to the hypothesis, the following results were expected: low values (i.e. similarities) for pairs I—II, III—IV, III—V and IV—V, and high values (i.e. dissimilarities) for pairs I—III, I—IV, I—V, II—III, II—IV and II—V. Generally, the results corroborate the hypothesis; of the total of 30 values only seven deviate significantly from the expected ones. These are the following: IV—V in all tables and III—IV in Tables A and C show unexpectedly high values, and I—IV in Table B and II—IV in Table D show unexpectedly low values (95 % confidence level as limit). The deviation IV—V in Table V:A is caused by the high frequency of microlith fragments in Horizon IV; if these are excluded, a chi-square value of 3.71 (with df = 5) is ob-

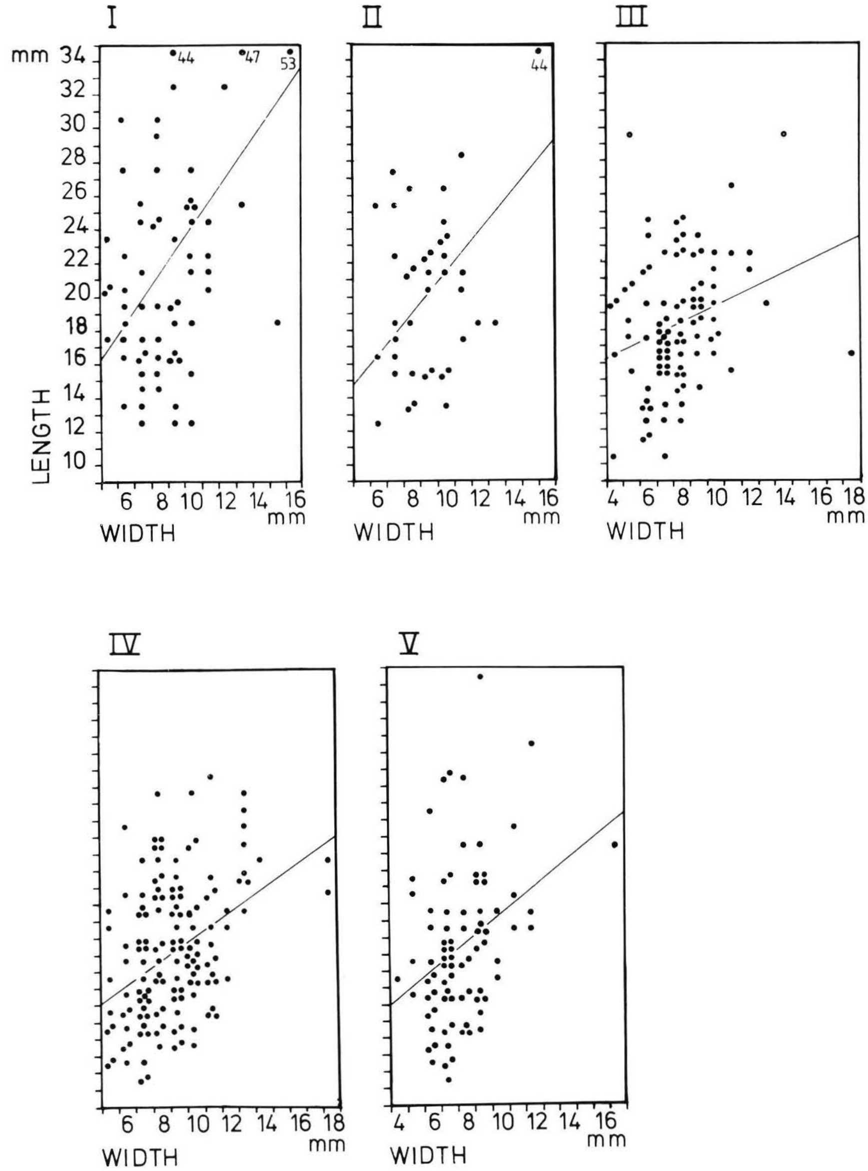

Fig. 84. Length/width scatter-diagrams of the microliths (excluding crescents) in each horizon.

I	N 65,	length:	mean 21.38,	sd 7.79
		width:	mean 8.54,	sd 2.33
II	N 39,	length:	mean 20.08,	sd 5.83
		width:	mean 9.03,	sd 2.06
III	N 93,	length:	mean 17.86,	sd 3.85
		width:	mean 7.87,	sd 2.22
IV	N 139,	length:	mean 17.75,	sd 4.10
		width:	mean 8.81,	sd 2.35
V	N 82,	length:	mean 17.96,	sd 4.66
		width:	mean 7.80,	sd 1.97

tained which is clearly below the 95 % confidence level.

The chi-square test indicates that Horizons I and II are mutually similar as are Horizons III to V while it is statistically probable with a probability of over 95 % (in most cases even 99.9 %) that the samples represented by Horizons I and II are drawn from a different hypothetical basic population than those of Horizons III to V. Within the latter group Horizon IV differs slightly from the others which might be due to the fact already referred to (p. 71) that shelter A12 was obviously used for other purposes than the other shelters.

Concerning the length distributions of the microliths (Table V:D), only in two cases where the chi-square values above the 95 % probability level; however, the values obtained seem to be consistent with the hypothesis on lower levels of probability.

Some distinct trends within the Laikipia sequence were demonstrated above. If we take all the horizons as a whole, the following summary can be presented of the lithic industry in Laikipia.

The industry is characterized by microliths which account for 64 % of the total of tools. Backed forms (crescents, triangles, backed pieces) dominate but truncated forms (truncated pieces, trapezes, backed + truncated pieces) are also frequent. Crescents include those with dorsal ridges and, sometimes very broad specimens without it; no percentage figures are available due to definitional difficulties but according to a rough estimate crescents without dorsal ridges form 15 to 20 % of the total. A very peculiar, although not very numerous, element occurring in all horizons, and especially in Horizons III and IV, is the narrow straight-backed piece with a sharp point; in the French terminology this is called »lamelle aigue à bord abattu rectiligne» (Tixier 1967 Fig. 45).

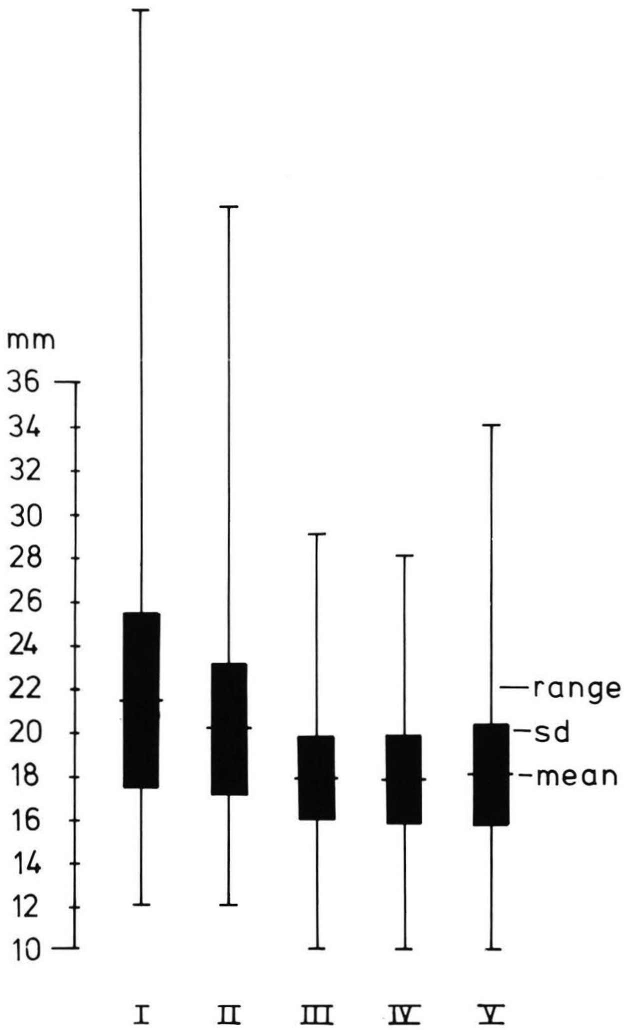

Fig. 85. Diagram of the length parameters (range, mean, standard deviation) of the microliths (excluding crescents) in each horizon.

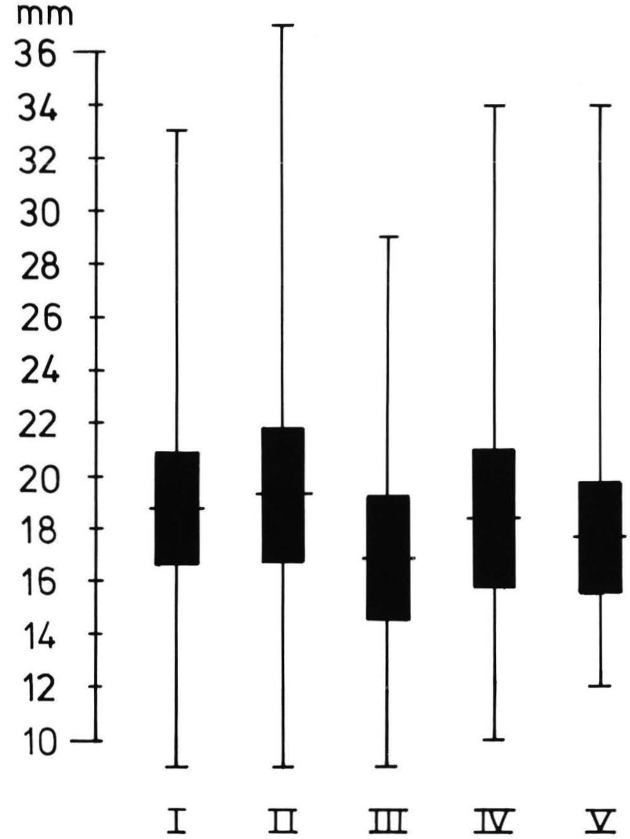

Fig. 86. Diagram of the length parameters (range, mean, standard deviation) of the crescents in each horizon.

Among the scrapers the flake-scrapers dominate but end-blade-scrapers are also fairly common (c. 20 %). Keeled or carinated side-scrapers and those on cores occur also. Concave-edged pieces seem to be extremely rare, and nosed scrapers are not represented.

Burins are very frequent, and were in no excavated spit less than 5 % of the tool aggregate. These include angle burins and dihedral types. Among the latter there are a few examples of *bec-de-flute* type. Most burins are on flakes but there are also those on blade, the rest being on core; it is possible that among the

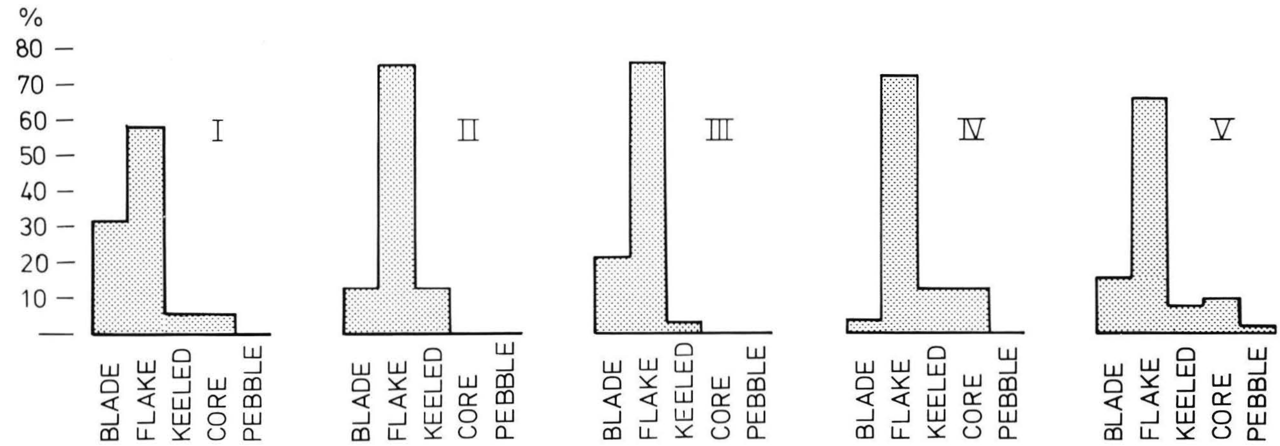

Fig. 87. Percentage distribution of the scraper categories in each horizon.

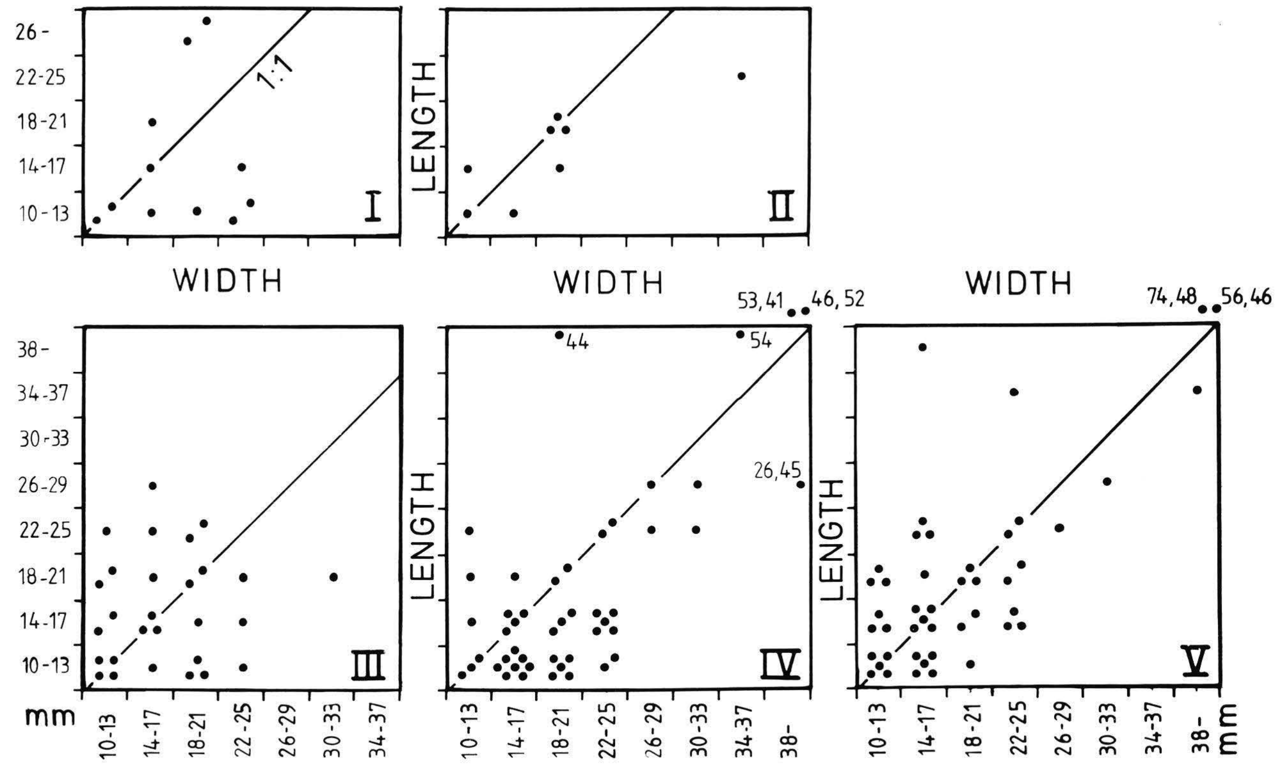

Fig. 88. Length/width scatter-diagrams of the scrapers in each horizon.

I	N 11,	length:	mean 16.1,	sd 6.6
		width:	mean 18.3,	sd 4.8
II	N 8,	length:	mean 16.5,	sd 4.3
		width:	mean 19.0,	sd 8.2
III	N 28,	length:	mean 16.5,	sd 5.1
		width:	mean 17.1,	sd 4.9
IV	N 48,	length:	mean 18.3,	sd 10.8
		width:	mean 20.6,	sd 8.6
V	N 45,	length:	mean 20.4,	sd 12.0
		width:	mean 19.3,	sd 8.5

last mentioned group there are some »pseudo burins» — flattish cores from which microblades have been detached from the narrow side leaving a burin-like facet (cf. Nelson 1973). Excluding these pieces from the burin category does not, however, markedly alter the prominent proportion of true burins.

To judge from the rather high frequency of cores, the shelters have served as flaking floors throughout the occupation period. The cores are mostly blade-cores with one or two striking platforms, these being either at opposite ends of the core or at right-angles to each other. Bipolar cores occur, and rare globular and discoidal flake-cores as well. Bipolar cores merge gradually into the pièces écaillées group which likewise certainly includes some cores.

Pièces écaillées are a characteristic element in the lithic tradition in Laikipia. Besides the core-like examples there are clear *lames écaillées* (blades and flakes with scaling on opposite ends). Some of the pièces écaillées — especially those of quartz — are fairly large but very small pieces also occur. The majority of the pièces écaillées are of quartz.

One roundish flake was found the dorsal side of which is flaked flat and whose ventral side shows a prominent bulb of percussion slightly flattened by removal of small flakes. The implement is of translucent greyish-blue chert — a material represented only by this specimen in the Laikipia assemblages — and its edges are fresh and sharp. It came from KFR-A4/ layer 2 of the disturbed Section C (Trench III). Typologically this disc is a unique and strange element in the assemblage, being more related to Middle Stone Age technology than that of the Late Stone Age.

Comparison

In the preliminary report on the excavations in Laikipia (Siiriäinen 1977b) I expressed the pessimistic view, suggested mainly by Nelson's (1973) extensive studies, that there are only three typologically definable Late Stone Age industries at most in East Africa, viz. the Eburran (former Kenya Capsian) between Mt. Eburru and Lake Nakuru, dated between c. 9000 and 5000 BC, the Winam (Kavirondo) cluster from the 1st mil-

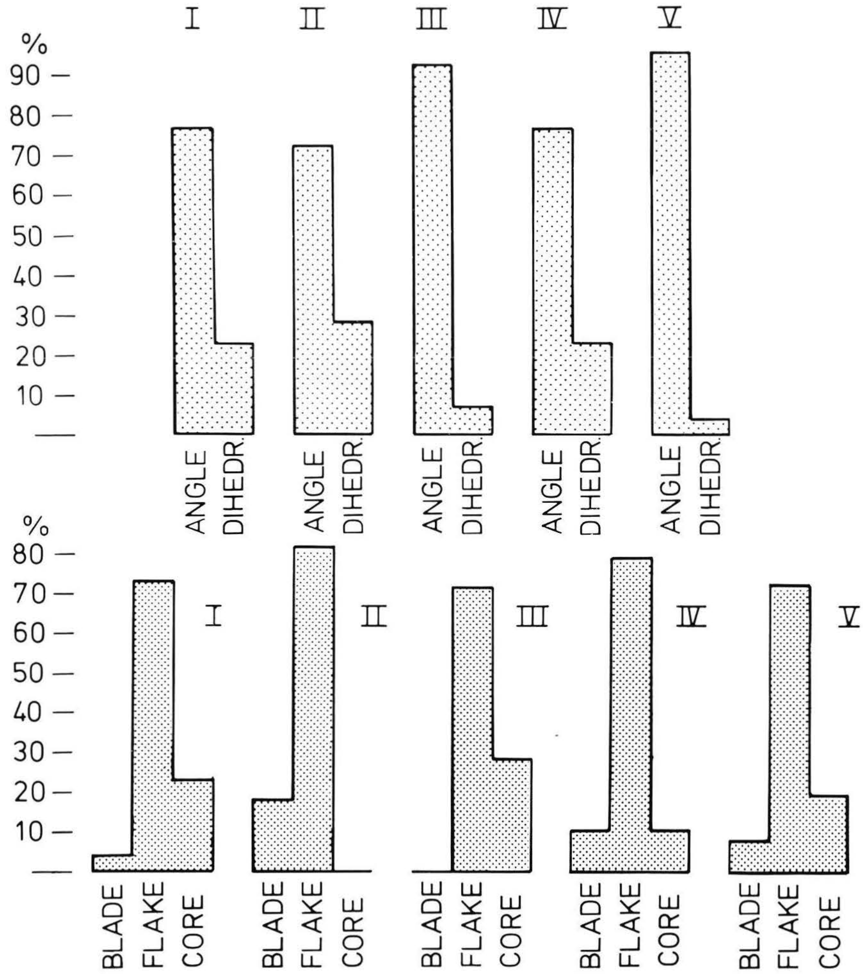

Fig. 89. Percentage distribution of the burin categories in each horizon.

lenium BC onwards (Gabel 1969), and seven occurrences at Lukenya Hill (Gramly 1975b). These industries have a limited spatial but wide chronological dispersion.

Subsequently Nelson (1980) and Ambrose (1978) have been able to demonstrate that there is, in the Naivasha-Nakuru area, a lithic industry definable as Elmenteitan as it was distinguished already in the 1930's by L. S. B. Leakey (1931). If the lithic assemblages of the sites containing Akira, Narosura and other so-called Savannah Pastoral Neolithic (SPN) wares (cf. Bower et al. 1977, Bower & Nelson 1979) are contrasted against each other, a diagnostic variable is the size of all microliths: the mean length of all microliths in the Elmenteitan assemblages varies between 16 and 19 mm and the mean width between 6.3 and 6.8 mm, whereas the corresponding ranges in Savannah Pastoral Neolithic assemblages are 18—27 and 6.7—8.8 mm. The mean lengths and widths of the microliths in the Laikipia assemblages are the following:

TABLE VI

	crescents		other microliths	
	length	width	length	width
Horizon I	18.76	8.05	21.38	8.54
II	19.24	8.54	20.08	9.03
III	16.83	8.17	17.86	7.87
IV	18.38	8.02	17.75	8.81
V	17.63	7.88	17.96	7.80

As can be seen from Fig. 95, all the Laikipia assemblages fall within the range of the Savannah Pastoral Neolithic assemblages but, especially Horizons III, IV and V, close to its lower limit and at the same time close to the upper limit of the Elmenteitan range. The Elmenteitan is also characterized by a prominent amount of large unretouched or backed blades. These are lacking in the Laikipia assemblages with the exception of the few large blades in Horizon II but these are probably associated with the burials as large blades are in some Savannah Pastoral Neolithic burials in the Central Rift (Ambrose 1978). It should be realized, however, that in Laikipia where the only local material available was quartz, which cannot be flaked into long prismatic blades, obsidian and chert were utilized to the extreme and there was never enough of those materials to be »wasted» into large blades.

As regards the Savannah Pastoral Neolithic sites in the Rift Valley, no consistent associations between

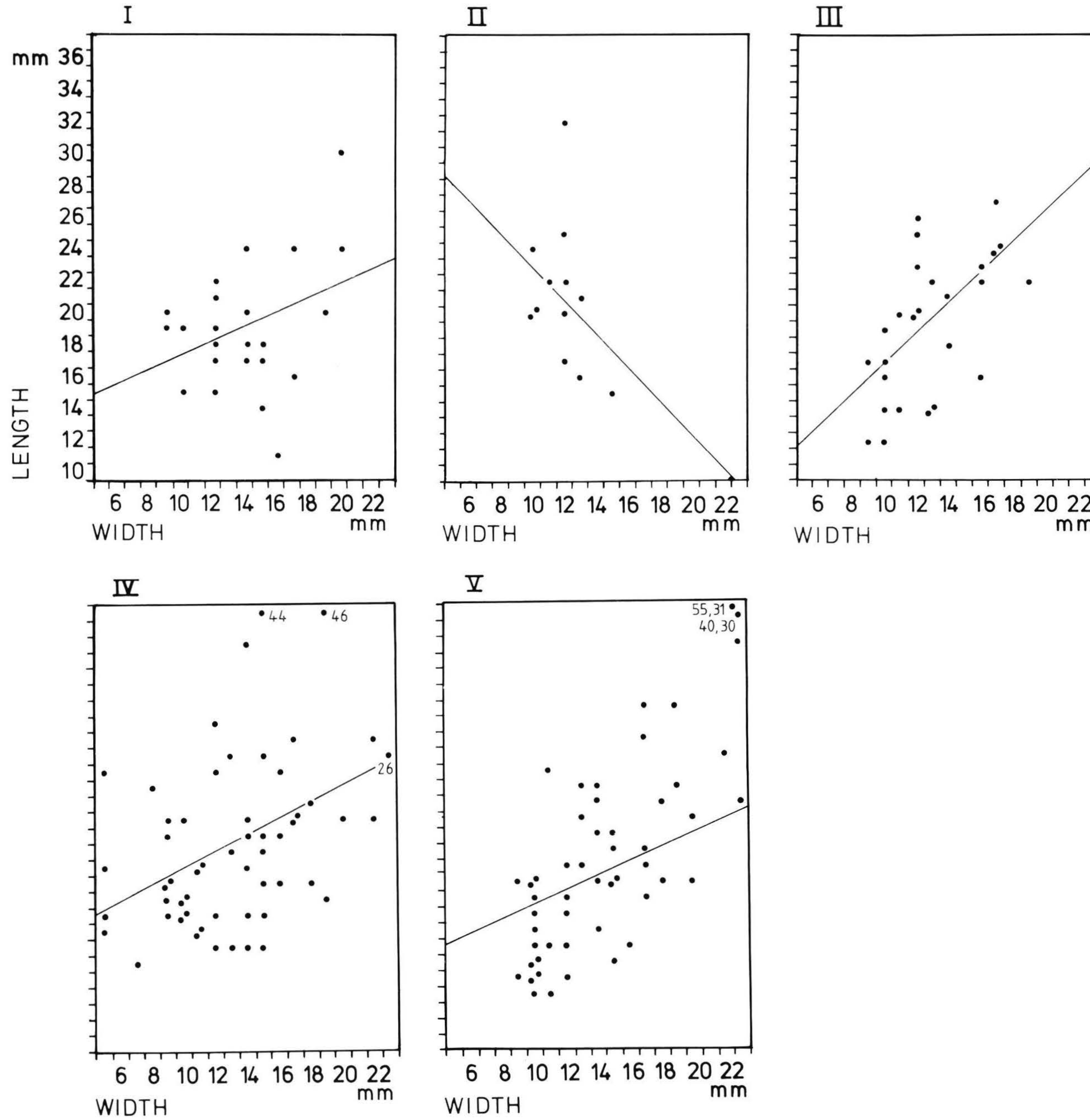

Fig. 90. Length/width scatter-diagrams of the burins in each horizon.

I	N	25, length:	mean	18.6,	sd	4.2
		width:	mean	13.8,	sd	3.1
II	N	12, length:	mean	21.2,	sd	4.5
		width:	mean	11.8,	sd	1.5
III	N	26, length:	mean	19.3,	sd	4.4
		width:	mean	12.9,	sd	2.7
IV	N	55, length:	mean	22.7,	sd	6.1
		width:	mean	13.1,	sd	4.3
V	N	51, length:	mean	21.7,	sd	7.5
		width:	mean	14.8,	sd	5.0

specific lithic industries and particular wares have been noted so far (Bower et al. 1977 p. 139). Most of the Late Stone Age lithic assemblages outside the Rift Valley in Kenya and Tanzania are assigned to the »Wilton» (or »East African Wilton») industry but this term is only reluctantly applied. The sites — the Kavirondo cluster (Gabel 1969), Chole and Nyang'oma Rockshelters (Soper & Golden 1969), Lululampembele Rockshelter (Odner 1971), Mukinanira Rockshelter (van Noten & Hiernaux 1967), Nsongezi Rockshelter (Nelson & Posnansky 1970) and Tunnel Rockshelter (Sutton 1973) — do not by any means form a homogenous group, and these aggregates cannot be regarded as samples of a common single industry. The most often used criterion to define an assemblage as »Wilton» seems to be the presence of the »thumb-nail

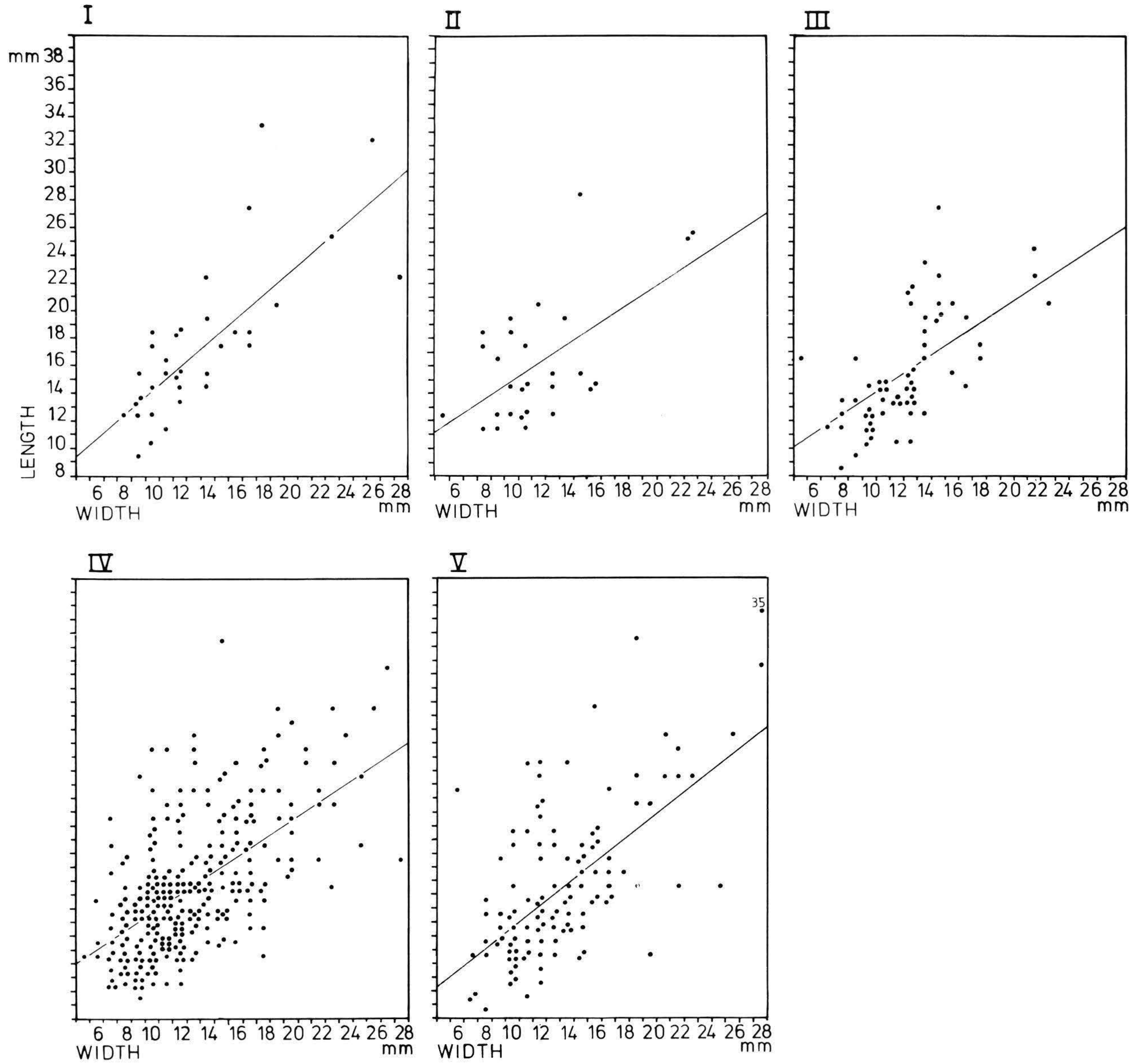

Fig. 91. Length/width scatter-diagram of the pièces écaillées in each horizon.

I	N 34,	length:	mean 16.79, sd 5.50
		width:	mean 13.72, sd 4.73
II	N 28,	length:	mean 15.61, sd 4.21
		width:	mean 11.96, sd 4.06
III	N 61,	length:	mean 14.78, sd 3.96
		width:	mean 12.14, sd 2.76
IV	N 268,	length:	mean 17.28, sd 4.83
		width:	mean 12.93, sd 4.36
V	N 113,	length:	mean 17.30, sd 5.69
		width:	mean 13.73, sd 4.71

scraper» (a small roundish end-scraper); in the microlith category only crescents are important.

Another Eastern African Late Stone Age industry, defined in the Central Rift by L. S. B. Leakey already in the 1930's, is the »Upper Kenya Capsian» (now Upper Eburran) and its later derivate »Evolved Kenya Capsian» (Eburran V). These assemblages show a variety of microliths, including frequent backed pieces, and burins.

At this stage, when very little is known about the Late Stone Age lithic industries in Eastern Africa and when no sites are known, or at least properly investigated, from the eastern highlands of Kenya, it is premature to link the Laikipia assemblages to any of the above-mentioned »industries». There are certainly elements which place the Laikipia aggregates near the Elmenteitan of, eg., Gamble's Cave and Njoro River Cave: the abundance of pièces écaillées and possibly

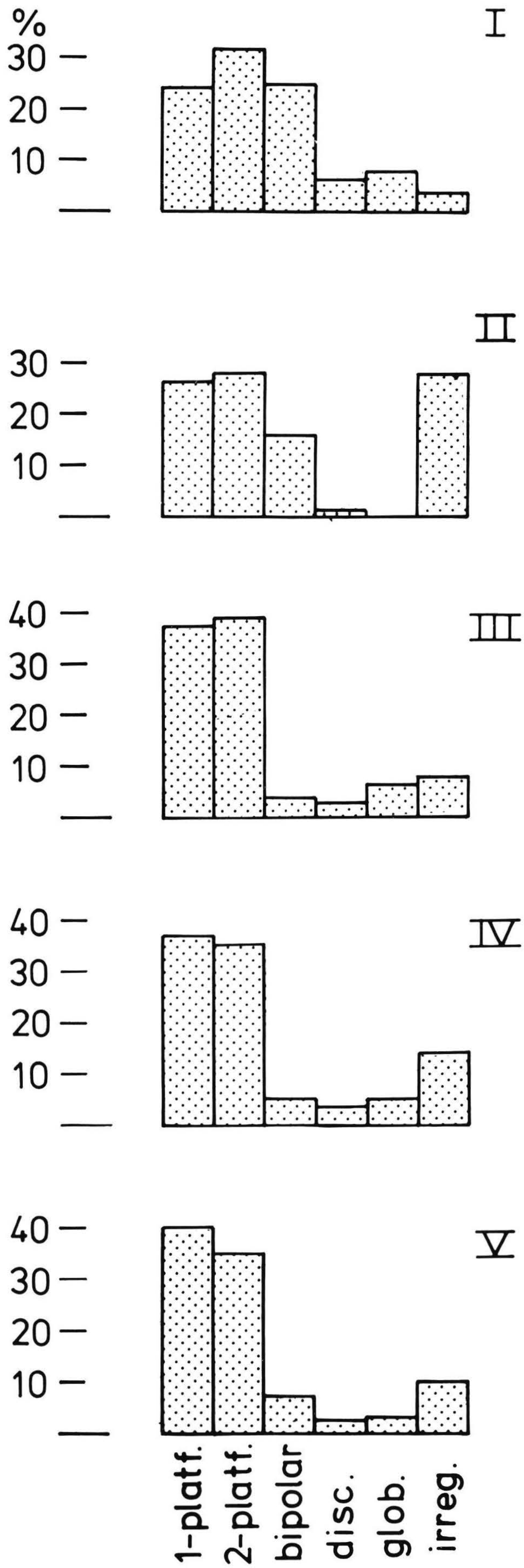

Fig. 92. Percentage distribution of the core categories in each horizon.

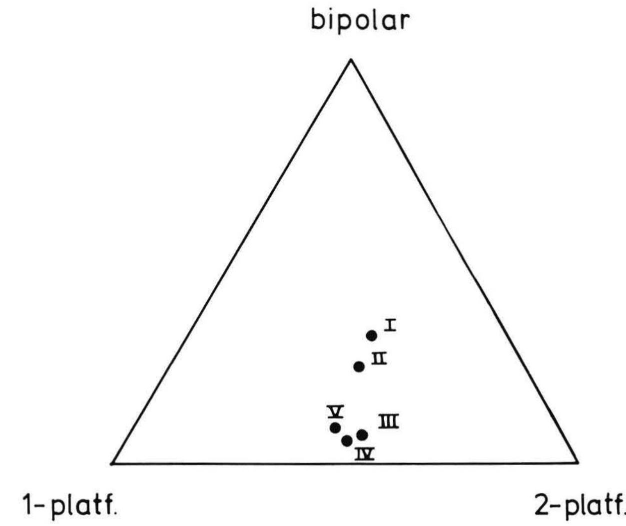

Fig. 93. Comparison of the horizons according to certain core categories.

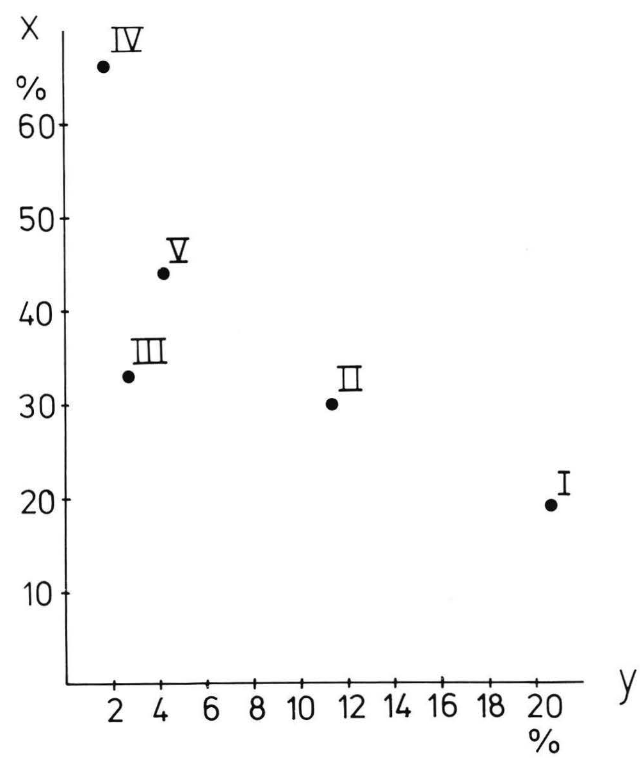

Fig. 94. Comparison of the horizons according to the percentage frequencies of pièces écaillées and bipolar cores.

$$x = \frac{\text{No. of pièces écaillées} \times 100}{\text{No. of pièces écaillées} + \text{cores}}$$

$$y = \frac{\text{No. of bipolar cores} \times 100}{\text{No. of pièces écaillées} + \text{cores}}$$

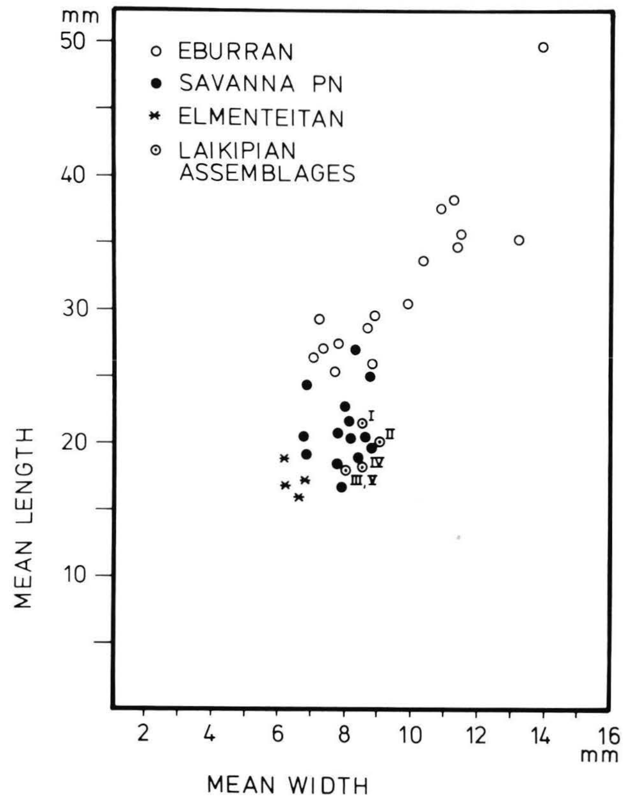

Fig. 95. Comparison of certain Later Stone Age assemblages of Kenya according to the mean lengths and widths of the microliths. Eburran, Savanna PN and Elmenteitan assemblages according to Stanlev Ambrose (unpublished data).

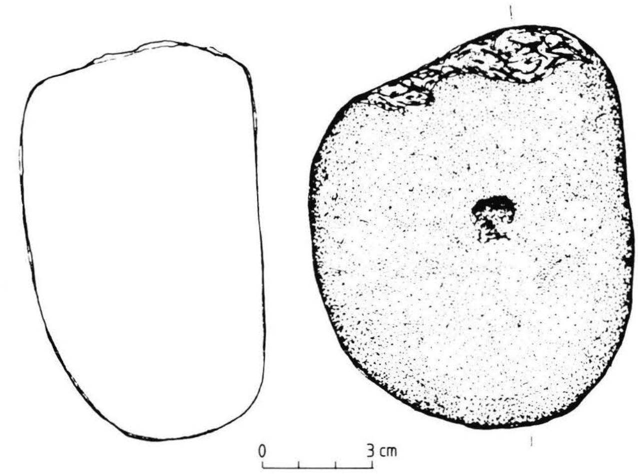

Fig. 96. KFR-A4. Pestle-rubber.

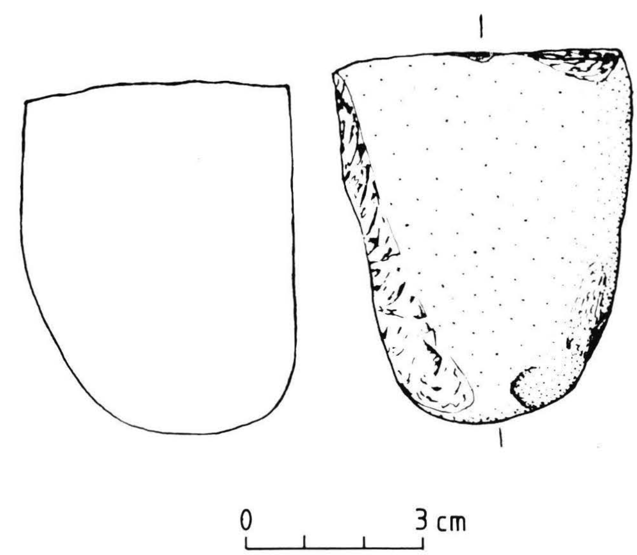

Fig. 97. KFR-A12. Pestle-rubber.

the large blades of Horizon II. On the other hand, the microliths, especially the backed pieces, are best comparable with those in the Eburran of Hyrax Hill, although the crescents also include pieces without dorsal ridges which are common in the Elmenteitan (Njoro River Cave). The frequency and variety of burins, again, link the Laikipia industry clearly with the Eburran. Scrapers in Laikipia are mostly convex-edged specimens on flakes, but end-scrapers on regular blades are also common: connection with any labelled industry is difficult, but perhaps the short »thumbnail» forms could provide a link with the »Wilton» assemblages; here the keeled or carinated side-scrapers should be noticed, since these seem to occur both on »Wilton» sites and in Laikipia (cf. Gabel 1969 Fig. 14, Nelson & Posnansky 1970 Fig. 6).

Other artefacts

KFR-A4:

A hammerstone of phonolite (weight 1450 g) was found from Trench IIE/layer 5, and two pestle-rubbers of phonolite and one of diorite (weights 960, 1020 and 1100 g) from Trench I/layer 1, Trench IE/layer 1 and Trench III/layer 2; one of the pestle-rubbers has a small (diam. 1 cm) pecked »dimple» in the middle of the flat side (Fig. 96).

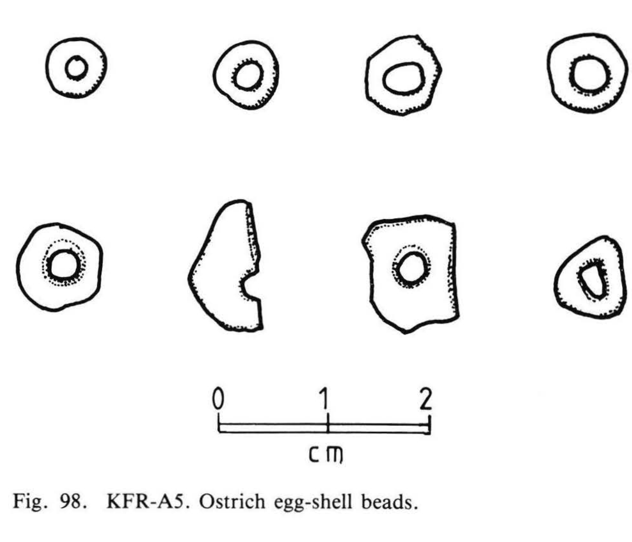

Fig. 98. KFR-A5. Ostrich egg-shell beads.

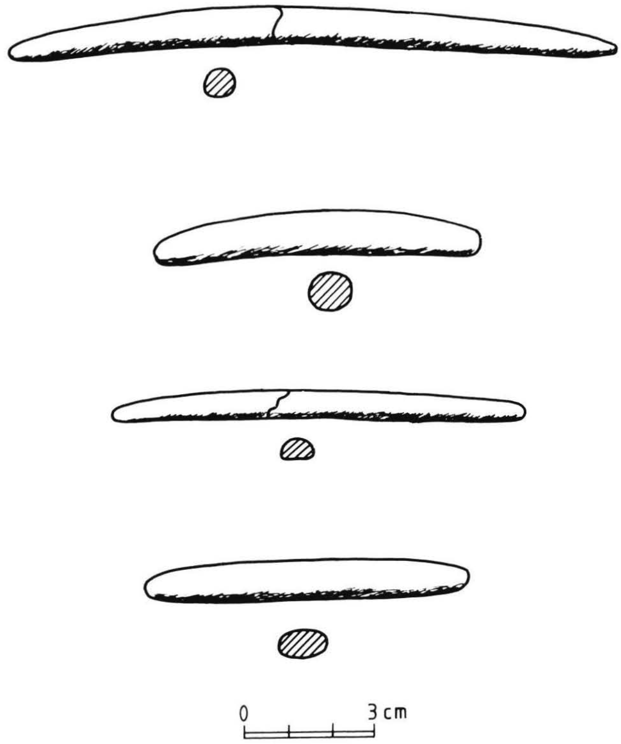

Fig. 99. KFR-A5. Pointed ivory objects.

Small water-polished quartz pebbles came from Trench I/layer 1, Trench II/layer 1 and Trench III/layer 2. Small pebbles of magnetite, which are found frequently in the area and which must have been brought by man to the shelter, were collected from Trench I/layer 4, Trench II/layers 1 to 3 and Trench IIE/layer 2.

KRF—A5:

There were two hammerstones (280 and 300 g) and a pestle-rubber (870 g) in spits 2, 3 and 5; they all are of phonolite and were broken in use (Fig. 97).

Beads (Fig. 98) were found from the following spits:

Undisturbed section of Testpit:		
top soil	2	(blue glass of fayence)
spit 2	1	(ostrich egg shell)
4	3	(—»—)
5	1	(—»—)
7	1	(—»—)
Disturbed section of Testpit:		
top soil	1	(blue glass or fayence)
spit 1	2	(ostrich egg shell)
2	2	(—»—)
3	5	(—»—)
5	8	(—»—)
Other sections of Trench:		
spit 1	1	(ostrich egg shell)
2	3	(2 of bone, 1 unfinished of ostrich egg shell)
3	2	(ostrich egg shell)

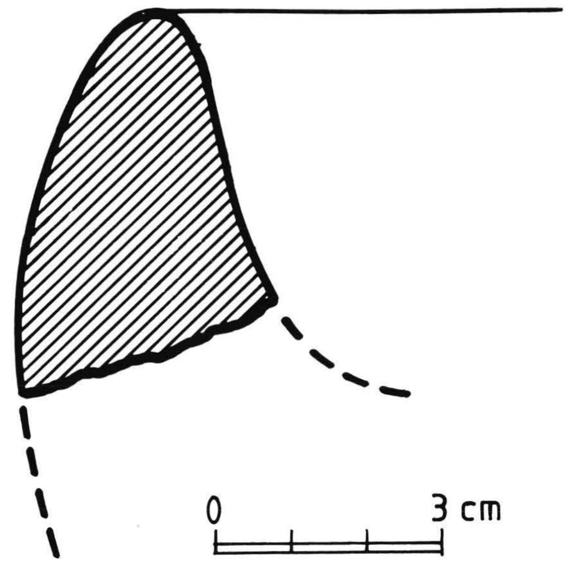

Fig. 101. KFR-D3. Stone bowl fragment.

Pointed ivory objects (Fig. 99) were found as follows:

Undisturbed section of Testpit:		
spit 2	1	whole (length 140 mm, diam. 8.5—9.0 mm)
	7	fragments
3	9	—»—
Disturbed section of Testpit:		
spit 2	1	fragment
3	1	—»—
5	1	whole (length 96 mm, diam. 6.0—6.5 mm)
6	1	whole (length 74 mm, diam. 8.0—10.0 mm)
	1	fragment
Other sections of Trench:		
spit 2	2	whole (lengths 74 and 69 mm, diams. 9.0—10.0 and 7.0—8.0 mm)
	6	fragments
3	3	—»—

All the points are symmetrical, roundish in cross-section and more or less curved in profile; some of them have pointed — but not sharp — and some a little blunted ends. All, at least those with the uncorroded surface preserved, are finely polished. Their as-

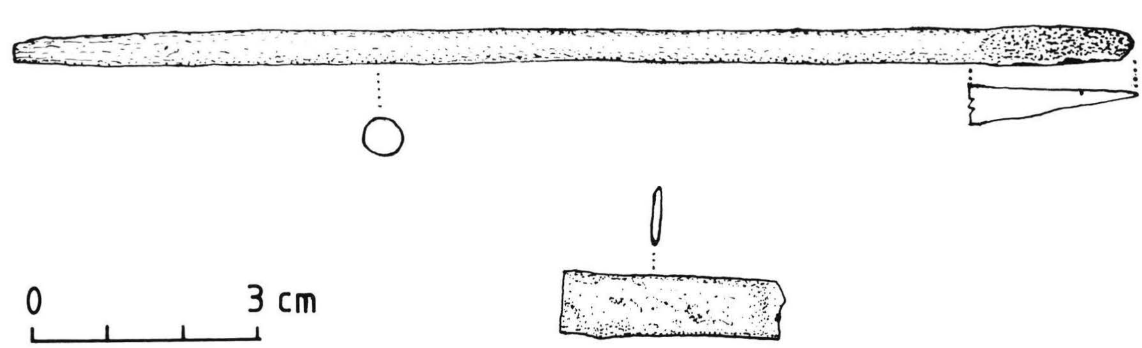

Fig. 100. KFR-A12. Metal artefacts.

sociation with the burials is indicated by their occurrence in the same spits with these (spits 1 to 3) and especially by those which were found in the pit of Burial 1 in the same level as the skeleton. The function of the points remains unknown, but their form (dull ends, no eye or perforation) seems to rule out any practical purpose, and my guess is that they are ear-plugs (although the position of the point in Burial 1 in relation to the body does not support this; however, the ear-plugs could have dropped off when the body was placed into the burial pit). A similar object, although of bone, was found at Lululampembele Rockshelter, Tanzania (Odner 1971 Fig. 23:74), and several ivory objects of the same form and size in Jebel Moya, Sudan (Addison 1949 Pl. LVI).

KFR-A12:
Fom spits 3 and 4 some fragments of ostrich egg shell were found, and from spits 5 and 6 small pieces of red ochre.

From spit 2 an iron implement (Fig. 100) was discovered which was declared by local people to have functioned as a tooth extracting tool but of a type not any more in use.

Hammerstones of phonolite were found from spits 4 and 5, and some small, water-polished roundish pebbles of quartz from spits 5 and 6.

A bone (?) bead, 5.8 mm in diameter, came from spit 4.

KFR-D3:
A small rim-fragment of a stone bowl (Fig. 101) of phonolite was collected half buried in sand. It has most probably been of a type with upright sides and flat base.

TABLE VII

KFR-A4:

Trench	spit	bones (g)
I	1	880
	2	560
	3	450
	4	20
	5	10
IE	1	40
	2	130
	3	10
	4	< 10
	5	< 10
II	1	120
	2	140
	3	50
	4	10
	5	< 10
	6	< 10
IIE	1	120
	2	150
	3	20
	4	< 10
	5	< 10
III	1	1470
	2	550
	3	320
	4	55
	5	10
Total		~ 5115

Refuse fauna

Bones were found in large quantities from all rock-shelters as follows:

The teeth from KFR-A4 and A12 were analysed by Dr. Michael Gramly (then of the State University of New York at Stony Book) in 1973.

In KFR-A4 only layers 1 and 2 contained identifiable teeth:

Layer 1: cow, goat/sheep, dik-dik
Layer 2: cow, goat/sheep, pig (?), zebra (?), warthog

In KFR-A12 the following teeth were identified from spits 2—4:

Spit 2: cow, goat/sheep
Spit 3: cow, goat/sheep, zebra
Spit 4: cow, goat/sheep, zebra, human

Dr. Diane Gifford (University of California, Santa Cruz) has analysed all the bones from KFR-A5; the report is not available yet but according to Dr. Gifford's personal information also domesticates (cow, goat/sheep) in addition to wild species are present in both horizons of that site, i.e. Horizons I and II.

TABLE VIII

KFR-A5:

	Undisturbed section of Testpit	Disturbed section of Testpit	Other sections of Trench
Spit 1	950	880	1000
2	4490	2320	5520
3	3730	3610	11260
4	1580	2250	n
5	2940	3660	o
6	2980	1960	t
7	1780	860	
8	930	900	e
9	430	210	x
10	80	30	c
11	80	3	a
12	45	100	v
Total	20015	16783	17780
Grand Total: 54578			

TABLE IX

KFR-A12:

Spit	bones (g)
1	860
2	2960
3	385
4	160
5	125
6	10
Total	4500

INTERPRETATION OF THE ARCHAEOLOGICAL SEQUENCE: CULTURAL CONTINUITY IN LAIKIPIA

The explicit aims of this study are to reconstruct the culture history of the Laikipia highlands and to propose conclusions regarding ethnic developments in the area. These aims place the central tasks of establishing continuity/discontinuity in the material culture sequence and of attempting correlations with linguistic sequences and oral traditions in order to test the applicability of ethnic labels for the population(s) reflected in the archaeological record described above. At this stage it is appropriate to present a concise discussion on the theoretical framework within which the conclusions will be made.

The underlying assumption is that ethnic development can be inferred from cultural continuity and discontinuity — some aspects of this were briefly discussed on p. 21 above. Continuity is understood in this connection as gradual culture change and it is either a function of a stabile or only gradually changing environmental setting (climate, fauna, flora, geomorphology) to which the culture is responding and adapting, or it reflects gradual processes in the sociopolitical environment, eg., change in the access to raw materials or other resources governed by neighbouring tribes. Discontinuity means arrival of new elements into the material culture, and as there must be regular intercourse between populations to allow innovations to pass from area to area, these innovation flows might imply — though not always necessarily — ethnic or genetic flows as well. Only if the continuation of a tradition through time can be shown to have been totally cut can a replacement of population be postulated. If continuity in some cultural elements is discernible through horizons of innovational impulses, then there has been only adaptation of new elements into the local tradition — adaptation which might have been connected with an assimilation of population.

As continuity/discontinuity in an archaeological sequence is relatively simple to interpret in the terms outlined above, it is far more complicated to demonstrate in an actual sequence: what is continuity/discontinuity and how does it occur? The concept of continuity, as was defined above, has a strong implicit quantitative connotation: to detect *gradual* change the criteria and approach should be quantitative so that a change from one assemblage to another could be expressed as gradual or abrupt. To define discontinuity qualitative criteria might be relevant provided they really reflect tradition in an adequate way. In both cases the sequence of assemblages should be securely placed in a relative — or absolute — chronological framework. Also, information about the internal variation of the variables within single analytical units should be available for evaluating the limits within which a single tradition can fluctuate and still be continuous.

Another so far only superficially investigated complex of problems is the relevance of different variables, observable and measurable in the archaeological record, in drawing conclusions regarding ethnic development. It was stated above that the changes, gradual or sudden, in the artefact tradition indicate something in this respect but it is obvious that different elements of the tradition are of different value as indicators of ethnic identity. Some scholars suggest that only items with a strong stylistic emphasis — such as personal ornaments — bear this group identity value and are relevant for study; thus, for example, such purely »functional» objects as stone tools should not be regarded (eg. Håland 1977). Hodder's (1977) intensive analysis among the recent Pokot and Njemps tribes in the Lake Baringo area in the central Rift Valley in Kenya has, however, shown that even items with a clear practical function have this distinctive group — but not necessarily pan-tribal — identity value. My own opinion in this discussion is that any stylistic shift in the tradition, whether observed in ornaments, functional tools or in ritual manifestations such as, eg., burial customs, and not derivative of any apparent environmental or economic factors, and if the origin of the new tradition can be postulated, is an indication of cultural and ethnic contacts and as such can be used as evidence in discussions on ethnic development. A condition concerning »functional» items is that we really know their actual function in order to make sure that the de facto shift is an innovation relating to style or manufacturing technique and not only function. Such firm knowledge is not always available, especially regarding microliths (cf. Phillipson 1976, Clark 1977 and Siiriäinen 1977a).

If we examine the Laikipia assemblages within the theoretical framework outlined above, we may discern the following significant continuities:

1 *economic continuity:* hunting and pastoralism (cow, goat/sheep)-based economy from Horizon I (i.e. from at least the late-2nd millenium BC) onwards;
2 *technological continuity:* persistence in the occurrence of the major stone tool types from Horizon I to Horizon V (i.e. until the mid-2nd millenium AD) albeit in a widely fluctuating manner (indicating obviously intratraditional variability); gradual decrease in the microlith percentage and corresponding increase in scraper and burin percentages; continuity in microlith dimensions from Horizon I to Horizon II and then, after a shift to smaller microliths, again from Horizon III to Horizon V; a similar dualism in the burin typology; a remarkable homogenity in the scraper typology throughout the sequence and in the scraper, burin and pièce écaillée size variables from Horizon I to Horizon IV; persistence of a pottery tradition producing thin-walled burnished and incised pottery from Horizon II to Horizon VI (i.e. to the recent times);
3 *socio-political continuity:* this is inferred from the gradual shift in the mutual proportions of the raw materials from Horizon I to Horizon V (with interesting development even within Horizon I) as discussed above (p. 69).

As stated above, most of the criteria indicating discontinuity are of a qualitative character and their source-critical relevance cannot be objectively evaluated especially in a fragmentary sequence like the one in Laikipia. In this study the following discontinuities are regarded as relevant:

1 *technological discontinuity:* shift from crescent-orientated to backed piece-dominated microlith production between Horizons II and III; shift in the size preferences in both crescents and other microliths between Horizons II and III; shift in the burin typology between Horizons II and III; appearance of pottery between Horizons I and II; occurrence of various pottery traditions in various phases of the sequence;
2 *cultural discontinuity:* shift from the cremation burials in caves to cairn burials sometime between Horizon II and c. AD 1200.

In interpreting the above phenomena it should be noted that the appearance of pottery into the sequence in Horizon II is, on a regional scale, probably more apparent than real: the occurrence of Nderit type sherds in KFR-D1, A7, Sukuta Farm and Palagalagi suggests that pottery could have been introduced into Laikipia already before the Horizon II phase as Nderit were has been dated even further south to the latter half of the 6th millenium BC (Bower et al. 1977).

The well documented continuities in the lithic technology and raw material selection throughout the sequence from the earliest assemblage of Horizon I until Horizon V show that there also was an ethnic continuity from at least the late-2nd millenium BC to the middle of the 2nd millenium AD, i.e. at least 2500 years.

Throughout this period the Laikipia population had regular trading contacts with the people living in the central Rift Valley, from where obsidian was imported. These contacts might also explain the typological similarities in the lithic technology with the Elmenteitan and late Eburran of the Central Rift. This is, however, very inconclusive as we know hardly anything about the contemporary industries to the east of the Rift. There is one feature which provides a further important link between Laikipia and the Rift, in the respect that it reflects a behavioural and as such a profound cultural similarity, namely the cremation burials in Horizon II. These burials have their exact parallels in Njoro River Cave (Leakey & Leakey 1950) and Egerton Cave (Faugust & Sutton 1966) belonging to the Elmenteitan »culture» and dated by one radiocarbon sample from the former site to the first half of the 1st millenium BC. Here also the stone bowl discovered from KFR-D3 should be noted.

The archaeological record in Eastern Africa reflects flows of profound cultural influences from the north during the Late Stone Age. Since they are followed by important economic and technological innovations it is necessary to postulate migrations of new populations which rapidly assimilated the earlier inhabitants at least in the Rift Valley. These innovations include such elements as cattle keeping, agriculture (not yet documented in the archaeological record, however), pottery manufacture, stone bowls and certain burial customs (cf. Clark 1976 p. 21). The arrival of these elements into the Laikipia highlands is graphically illustrated by the cremation burial practice, stone bowls, pottery and pastoralism.

The earliest dated pottery in Laikipia is from Horizon II and apparently consists of at least three, possibly even four traditions: Remnant pottery, Maringishu pottery and a thin-walled burnished pottery which belongs to the Akira tradition, and in addition the single sherd of Vessèl 1. With the exception of the last mentioned »tradition» all these wares occur on several Rift Valley sites and it is thus probable that they spread into Laikipia from that direction (cf. p. 60 ff.). However, as they all originate from an area somewhere in the north of Kenya, it is also conceivable that their spreading proceeded along a broader front and hence into Laikipia directly from the north — this remains unknown until more archaeological investigations have been carried out to the east of the Rift in northern Kenya. In this connection it should be noted that the preliminary research in the southern Sudan by the British Institute in Eastern Africa (eg. David 1979) has failed to discover other Late Stone Age pottery traditions than the one obviously related to the Wavy Line, Kansyore or Nderit potteries, and consequently the Ethiopian highland regions become extremely important in searching for the area of origin of these Late Stone Age traditions (cf. Fattovitch 1977).

It is significant that the only discernible discontinuity in the lithic technology in the Laikipia sequence occurred between Horizons II and III, i.e. during the 1st millenium BC. Thus this shift might have been connected with the introduction of Akira pottery but the sequence is not detailed or continuous enough for the verification of this assumption. More excavations of burial cairns are also needed to study the succession of burial practices — whether there really was a shift in the tradition from cremation burials in caves to cairn burials or whether these two practices were in fact contemporaneous.

The Maringishu sherd of KFR-D2 is an indication, together with the continuous occurrence of obsidian in the lithic material throughout the Laikipia sequence, of the contacts between the Laikipia and the Rift Valley populations even after the intrusion of the Akira and Remnant pottery types, as the earliest Maringishu pottery occurrence in the Rift is dated to c. AD 250.

Finally, brief attention should be paid to the disappearance of the lithic technology from the Laikipia sequence, but this important problem can only be superficially dealt with on the basis of the available material. There are lithic artefacts from the surface of each rockshelter but in each case a strong possibility of contamination from the actual deposits cannot be ruled out. The only »pure» recent deposits are layers 1 and 2 in KFR-A12 which yielded a rich pottery assemblage and, significally, only 16 flakes of quartz, chert and obsidian. According to this observation it is fairly safe to state that sometime after the 15th century AD the lithic technology, very prominent indeed until then, came to an abrupt end, and lingered on until more recent times in a rudimentary form. The culture historical implications of this phenomenon remain obscure but it might have an ethnic connotation (cf. p. 93).

By comparing the archaeological succession with the linguistic and oral historical interpretations, as outlined above, it is possible to arrive at a theory about ethnic development in Laikipia. It might be appropriate here to summarize the evidence briefly.

Ehret (1971 and 1974) distinguishes the following linguistic strata in the history of East Africa:

1 a substratum of Khoisan languages still represented by the Sandawe of Northern Tanzania;
2 Southern Cushitic languages brought by arrivals from the north perhaps during the 2nd millenium BC or even earlier; these tribes were cattle herders who probably also cultivated sorghum and millet; Southern Cushitic remnant tribes (p. 20) still live in Northern Tanzania;
3 Southern Nilotic languages spoken by new arrivals also from the north during the 1st millenium BC; they were also pastoralists who practiced some cultivation as well; the Kalenjin peoples of to-day in the western highlands of Kenya as well as the Dadog of Northern Tanzania belong to the Southern Nilotes;
4 Eastern Nilotic speakers entered the Central Kenyan Rift Valley, coming from the north, during the 1st millenium AD; these pastoralists were the ancestors of the recent Maasaians and other Maa-speaking tribes (Samburu etc.);
5 some groups of the Eastern Cushitic populations of the Ethiopian highlands penetrated southwards at least as far as the northern foothills of Mt. Kenya during the 1st millenium AD; these were pastoralists and cultivators whose language was adopted by hunter-gatherers living in Central Kenya at this time; the only surviving Eastern Cushitic-speaking tribe is the Yaaku (Mogogodo) to the north of Mt. Kenya;
6 Bantu.

Turning now to the archaeological record, there must have been pastoralist people in the Laikipia highlands already prior to the introduction of the Remnant and Akira pottery types since Horizon I already contained domestic fauna (p. 88). The absence of pottery from Horizon I is probably only apparent, and there is a possibility that the Nderit occurrences of sites KFR-A7, D1, Palagalagi and Sukuta Farm in fact belong to this occupation period — this ware has been dated to the 3rd millenium BC in the Lake Turkana basin (Barthelme 1977) and considerably earlier in the Central Rift (Bower et al. 1977; see however Collett & Robertshaw 198).

Both Nderit pottery and the later intrusives, Remnant, Akira and Maringishu types, which are all present in the Laikipia sequence, belong to the Late Stone Age Pastoral Neolithic complex. Stanley Ambrose, after detailed studies of the fairly well established Central Rift sequence (Bower et al. 1977, Bower & Nelson 1979), has correlated, basing his studies on extensive cultural ecological, archaeological and ethnographical evidence, the Elmenteitan (with Remnant pottery, cf. p. 62) with the Southern Nilotes and the rest of the Pastoral Neolithic complex with the Southern Cushites (Ambrose 1978b). Even Phillipson (1977b) correlates the early food producing cultures in East Africa with Ehret's Southern Cushites. Emphasizing the role of the original pre-pastoral elements he describes the ethnic and cultural process as follows: »... a predominantly pastoral economy, perhaps accompanied by knowledge of some sort of agriculture, was introduced to the stone-tool-using peoples of highland East Africa by means of gradual and relatively small-scale movements of Cushitic-speaking people southwards from the highlands of southern Ethiopia. This process probably occupied the greater part of the second millenium bc, but may have been proceeding intermittently for many generations before the successful translation of pastoralism to the more southerly latitudes. Over much of their territory the pastoralists' initial population was probably sparse, although extensive settlement sites such as those at Narosura and Crescent Island, together with repeatedly used burial sites such as Njoro River Cave, suggest that the more favourable and better watered areas soon proved exceptions to this generalization.»; and further: »... the archaeological evidence ... indicates that the East African stone-tool-using pastoralists followed a life-style similar in many respects to that of many modern Cushitic-speaking groups. The affinities of their pottery and stone bowls are with northern Kenya and southern Ethiopia, where burial under stone cairns is still a widespread practice among Cushitic-speaking people.»

Also Ehret's estimates of the chronology of these groups (Ehret 1971 and 1974) seem to fit well into the archaeological chronology. If Ambrose's correlations hold true, they have some important consequences considering the ethnic interpretation of the Laikipia sequence, as we must conclude that the whole continuity so amply demonstrated through the sequence implies the existence of a Southern Cushitic population in Laikipia from before the 1st millenium BC at least until the 15th century AD and very probably even subsequent to this. There might have occurred some population impulses during the 1st millenium BC which, however, did not totally cut the Southern Cushitic continuation; these were reflected in the archaeological succession by the appearance of the Remnant pottery (and cremation burials) and the slight discontinuity in the lithic technology between Horizons II and III. If the Remnant pottery indicates indeed an intrusion of Southern Nilotes into the Laikipia highlands, these did not have any profound long-term ethnic or cultural effect there. In this connection it is interesting to recall that Ehret, on the basis of Southern Nilotic loanwords in the Proto-Thagicu and Yaaku languages (cf. p. 20), postulates the presence of early Southern Nilotes (Kenya-Kadam speakers) in the eastern highlands.

Above (p. 19 ff.) some oral traditions were briefly described which were collected by Jacobs (1972b) amongst the Maasai in the Narok District in SW Kenya and which bear relevance to the ethnohistory of Laikipia. According to these traditions, a people called Iltatua was expelled from Laikipia by the incipient elements of the Laikipiak Maasai, as Jacobs concludes, some time before AD 1600, probably even before AD 1400. The Iltatua were described by the Maasai as a truculent people who were cattle keepers, buried their dead in stone cairns but did not make iron; they had trading contacts with the Somali, Rendille and Borana from whom they acquired iron weapons — they might have even originated from these tribes.

The Iltatua are alleged to have proceeded even further south than the Narok district: »Iltatua pioneers gradually spread up into the Loita highlands and along the Nguruman Escarpment, eventually crossing the eastern Serengeti Plains and moving up into the Ngorongoro highlands of Tanzania and even further south» (Jacobs 1972b p. 81). Indeed Feierman (1974 p. 74) reports a very explicit tradition told by the Mbugu (Vama'a or Ma'a) living among the Shambaa in the northeastern part of Tanzania, namely that they had their original habitat in »Lukipya», i.e. Laikipia, from where they were chased away by the Maasai. According to Feierman, the Mbugu speak a Cushitic language related to the Mogogodo (Yaaku). However, more significant is the fact that the Mbuguan language has been chosen by Ehret (1974) to represent, as a recent relict, the southernmost flank of the Southern Cushitic languages which were once widespread in northern Tanzania (cf paragraph 2 on p. 91). Ehret states that »ancestors of the Ma'a re-established themselves ... about three hundred years ago in the Pare Mountains and later in the Usambaras; and ... several thousand Ma'a still today in Usambara speak their own recognizably Southern Cushitic language, very much modified, however, by intensive Bantu linguistic influences». Thus we have two cases where Laikipia is mentioned in oral traditions which refer to southward migrations of peoples from that area, and in one case these peoples, on the basis of their recent representatives, can be firmly identified as a Southern Cushitic-speaking population.

If we now consider, looking at the archaeological sequence in Laikipia, that at least until the 15th century AD the lithic technology was extremely central in the material culture, which thus bears the implication that iron was unknown or unimportant at that time, and further that at least around AD 1200 cairn burials were practised, and that pottery was produced — although perhaps not in great quantities — with an ancient tradition, we can find a striking correlation between the archaeological record and the oral history. It seems logical to correlate the prehistoric population of Laikipia, as it is reflected in the archaeological material, with the Iltatua of the oral traditions.

From Bower and Nelson (1979) we learn that there was a transition from the Pastoral Neolithic period to the Pastoral Iron Age in the Central Rift, in the mid-1st millenium AD. This was indicated by a tendency towards the deformalisation of lithic technologies and by the adoption of twisted cord-rouletted technique in decorating pottery; the date for the latter criterion is, however, surprisingly early (cf. Phillipson 1977b and Soper 1979a). Lithic technology, although in a »deformalised» form, was practised until the 15th/16th century, but between c. AD 950 and 1450 the archaeological record is extremely sparse, and Bower and Nelson conclude that the Central Rift was almost devoid of population between those dates.

The Maasai oral traditions suggest that the Maasai intrusion into the Central Rift and the adjacent southwestern highlands can be dated to the 15th or 16th century AD (Jacobs 1965, 1968 and 1972b, Sutton 1973). There is no evidence for dating their entry into Laikipia but it is nevertheless tempting to ascribe the rapid disappearance of the lithic technology from the sequence there to that event — at least the chronology is consistent with this.

It is significant to notice that although the Maasai never possessed a pottery tradition of their own, in Laikipia there is a very strong ceramic tradition in Horizon VI. This can be explained by assuming that in Laikipia there remained remnant groups of the original inhabitants, the Iltatua, who carried on the ceramic tradition among the newcomers producing and trading pottery. It is probable that especially after the humid climatic spell, supposed to have prevailed during the latter half of the 1st millenium AD in Laikipia (p. 49), animal husbandry became less profitable and people turned increasingly to hunting and gathering. When the Maasai eventually expanded into the highlands they naturally wished to secure pasture for their cattle and expelled the pastoral Iltatua, but tolerated the hunters who did not compete for grazing grounds. With these hunters and gatherers the Maasai established a trading relationship bartering hides, honey, pottery etc. for cattle products.

A situation such as described above was in fact common in many parts of East Africa both in the past, as related in oral traditions, and is also common at present; some of these (Gumba and Athi among the Kikuyu, Okiek among the Rift Valley Maasai, Wandorobo among various tribes in the highlands) were mentioned above (p. 18 ff.). The early travellers in Laikipia described the situation there with the Wandorobo hunters living among — or in the neighbourhood of — the Maasai (cf. p. 18; von Höhnel 1894, Patterson 1909). The Wandorobo had adopted the Maasai language but were considered a distinct people.

It was noted above that there were oral traditions recorded in widely scattered areas in southern Kenya and northern Tanzania about peoples who trace their origin to the Laikipia highlands. Thus one would expect to find something — at least pottery — in the archaeological material of that general area which would show connections with the Laikipia sequence. While no such unambiguous connections can be demonstrated so far, it is nevertheless interesting to pay once more attention to a vaguely known ware which obviously forms a distinct type occurring on scattered sites precisely in southern Kenya and northern Tanzania. This is the pottery decorated with raised notched ridges which I have proposed to call Njiri type according to a site in the Nyandarua (Aberdare) mountains in central Kenya excavated by Bernard Golden in 1968—69 (Siiriäinen 1971 and 1973; cf. also Taylor 1966). The Njiri pottery is characterized by raised ridges with notches — these are mostly continuous applications around the vessels but sometimes they are only short vertical ornaments — on necked vessels. There is only one site with Njiri pottery dated by radiocarbon, viz. occurrences HcJp1/Mound 1 and HcJp3 of the site complex at Ngungani on the Chiulu Hills in southern Kenya: AD 1515 ± 105 and AD 1520 ± 75 (Soper 1976). All the other Njiri pottery sites clearly belong to the later Iron Age judging from the associated pottery, and thus confirm the Ngungani datings. Although the dating evidence is far too vague to indicate any time range for the Njiri pottery, it is, however, obvious that its earlier time limit cannot be much older than the Ngungani dates.

The raised notched ridge is a peculiar ornament which, especially as it seems to emerge rather suddenly in the Later Iron Age, probably spread rapidly from some dispersal area. Both I (Siiriäinen 1971) and Soper (1976) have argued for a typological connection between the raised ridge pottery described above and

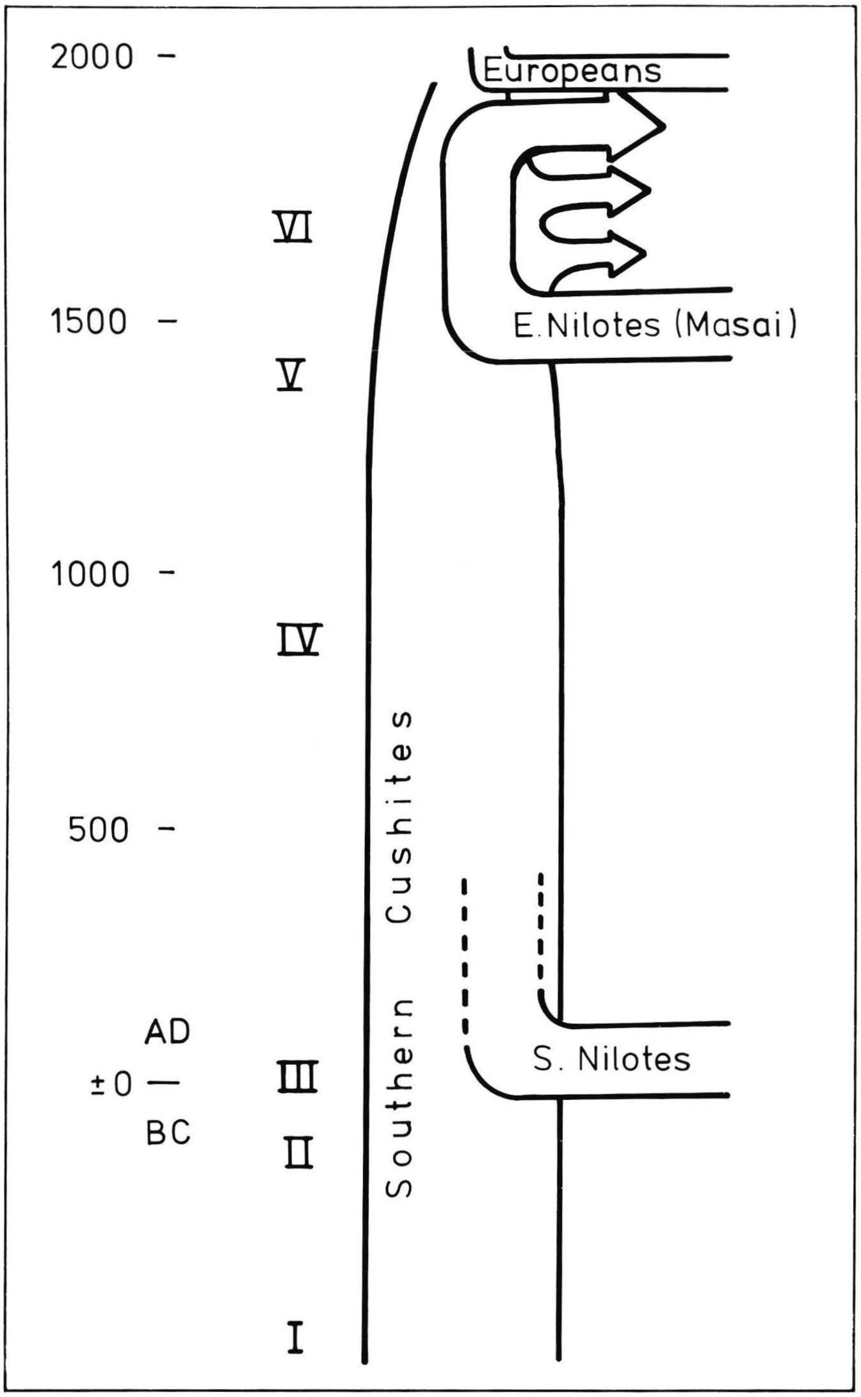

Fig. 102. A schematic diagram showing the proposed ethnic development in western Laikipia. The archaeological horizons marked with Roman numbers.

the raised ridge pottery of Laikipia (here termed Kisima type). As the Kisima raised ridge pottery is very common in Laikipia occurring at several sites and as it seems to belong to a long pottery tradition there, it is conceivable that the dispersal center of the element is precisely Laikipia. This of course remains so far a hypothesis but even as such it appears to be an interesting archaeological analogue to the oral traditions referred to above. In this connection the close correlation between the chronology of the raised ridge pottery with the expansion of the Maasai, which was the trigger effect of the population movements, should be emphasized.

A major discrepancy in this hypothesis is the economy: the people expelled by the Maasai from Laikipia were pastoralists whereas most of the tribes of the oral traditions (eg. the Gumba in the Nyandarua — Mt. Kenya area) were explicitly alleged to have been hunters; however, the Mbugu (Vama'a) of the Shambaa-Pare highlands were pastoralists and fought the Maasai over cattle (Feierman 1974 p. 77). Economy cannot be a decisive criterion as we know from several recent situations that families resort to hunting if, eg., the ecological conditions prevent pastoralism (cf. p. 18). This might well have happened to those who took refuge in the forest regions of the eastern highlands where cattle keeping wàs impossible.

It is evident from the above discussion that the archaeological and historical information from the highlands of central and northern Kenya is still far too fragmentary for any coherent synthesis of the ethnohistory of the last three millenia. However, the archaeological sequence in Laikipia seems to indicate that Late Stone Age peoples with a Late Stone Age lithic technology lived at least in the northern flank of the eastern highlands until the coming of the Maasai in the 15th or 16th centuries AD. These remained even after that as a remnant population among the newcomers (Fig. 102). This cultural and ethnic continuity may not prove to be unique when further intensive archaeological investigations are carried out in other parts of the eastern highlands.

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APPENDIX

Report on Human Skeletal Remains
from the Laikipia District, Kenya.

G. Philip Rightmire
Anthropology Department
State University of New York at Binghamton
Binghamton, N.Y. 13901

KFR-C4, a cairn, contained portions of two individuals, of which burial 1 is by far the most complete. This skeleton is represented by numerous postcranial parts, but unfortunately most of the bones are broken. In many cases, epiphyseal closure is not complete, and some of the loose epiphyses are lost. The exposed ends of long bones have suffered somewhat during the period of burial.

The remaining epiphyseal evidence together with information on dental eruption suggests an age of roughly 12 to 15 years. All M2's are in place, though the teeth are unworn, and the roots of at least one M^2 are incompletely calcified. The crown of left M_3 is visible in its (broken) mandibular crypt. However, there are signs that the primary elements of the pelvis were not yet united, and this sets an upper age limit at approximately 15 years.

The skull seems to be well preserved but has been cracked and deformed; much of the face and base is encrusted with hard soil, and the braincase is filled with earth as well. Most of the damage has occurred in the left side, where the temporal, spheroid, and much of the side of the face have been pushed inward. The same pressure has warped the remaining nasal and maxillary parts toward the right, and the zygomatic arch is shattered on this side. However, after careful cleaning, the face could presumably be restored to reasonable condition, and this would greatly facilitate measurement.

Casual inspection of the skull, without any attempt at reconstruction, suggests that this individual is within a Negro range of variation. The nasal root is flattened, though the nasal bones themselves have been raised slightly in the midline by soil packed into the nasal cavity. Subnasal prognathism is marked, and other features of face and vault are quite in keeping with a diagnosis as Negro and juvenile.

KFR-A5

Burial 1 is the most complete of five skeletons recovered from KFR-A5 (Porcupine Cave). Some of the vertebrae are missing, but both pelvic and shoulder girdles are intact, and the long bones are well preserved. Hand and foot elements are also present, so that the entire skeleton can be studied. Characteristics of the innominate bones suggest that this individual is male, and this is supported by the morphology of the cranium.

Unfortunately the skull has suffered more damage than have the postcranial parts, and much of the left side of the vault is missing. It looks in fact as if this part of the braincase has been cut away with a sharp instrument. The breaks do not follow sutural lines and instead follow a curve beginning at the orbital margin and extending back through frontal, parietal and temporal to the mastoid process. Additionally, the base has been warped and pushed upward, so that the basilar part of the occiput points toward bregma. Facial parts are broken, but most of the maxilla can be fitted back to the nasal bones, which still adhere to the frontal at nasion.

The mandible has also been broken but glued back together, and much of the dentition is in place. This jaw is lightly built and seems to have lacked M_3's completely, though the upper 3rd molars are in position.

Like C4 burial 1, this specimen exhibits some features which suggest derivation from a Negro population. In particular, the nasal bones are flattened, and the entire nasal root is low and broad. But the nasal aperature itself is high and narrow, and there is only slight alveolar prognathism. These are not Negro features, if they must be categorized one way or the other, which may not be fruitful. Anyway, given the state of the (warped and broken) material, which precludes measurement, it would not be wise to draw any sweeping conclusion as to racial affinity of this A5 burial.

Burial 2 is again reasonably complete, but the bones are more fragmentary. A surviving innominate is certainly male, and all of the material suggests that this individual is adult.

Of the skull, only a mandible remains. This is comparable to the lower jaw of burial 1.

Burial 3 consists of skull parts. The human cranium is very fragmentary, and the mandible which is supposed to go with this individual is missing.

Burial 4 is badly broken and consists primarily of skull parts, of which the mandible is most complete.

Most of the anterior part of the frontal is intact, and right and left maxillary parts can also be sorted from the collection. These bits suggest that superciliary eminences were not developed very well and that the interorbital region was quite broad and flat below glabella. There is a hint of alveolar protrusion, thought this region is much damaged.

Burial 5 is too incomplete and fragmentary to work with. The bone is thin and delicate, and this does suggest that a young individual is represented.

Tables X—XIV

Table X. Frequency distributions of the lithic artefact categories and types in each spit of each site.

	crescents	triangles	backed pieces	truncated pieces	backed + truncated pieces	trapezes	microlith fragments	sum of microliths	double-backed points	borers	end blade scrapers	side blade scrapers	end + side blade scrapers	sum of blade scrapers	flake scrapers	keeled scrapers	core scrapers	pebble scrapers	sum of scrapers
A5—11 & 12	6	—	10	4	—	—	2	22	—	—	—	—	—	—	3	—	—	—	3
9	7	—	6	4	1	—	3	21	1	—	—	—	—	—	2	1	—	—	3
7	16	1	10	7	—	2	4	40	1	—	—	—	1	1	3	—	—	—	4
5	59	2	15	13	4	6	10	109	1	—	2	1	1	4	3	1	—	—	8
Total I	88	3	41	28	5	8	19	192	3	—	2	1	2	5	11	2	—	—	18
A5—3	54	8	21	7	5	3	14	112	1	—	1	—	—	1	6	1	—	—	8
1	1	—	1	1	—	2	—	5	—	—	—	—	—	—	—	—	—	—	—
Total II	55	8	22	8	5	5	14	117	1	—	1	—	—	1	6	1	—	—	8
A4/I—5	1	—	2	3	—	1	1	8	—	—	—	—	—	—	—	—	—	—	—
4	10	1	24	9	2	1	6	53	3	—	—	—	—	—	14	1	—	—	15
IE—5	—	—	1	1	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—
4	6	1	9	1	1	—	4	22	2	1	—	1	—	1	2	—	—	—	3
II—6	1	—	2	2	1	2	1	9	—	—	2	—	—	2	1	—	—	—	3
5	2	1	—	4	—	1	4	12	—	—	—	—	—	—	3	—	—	—	3
4	5	1	13	9	—	2	8	38	—	1	2	1	1	4	5	—	—	—	9
Total III	25	4	51	28	4	7	24	143	5	2	4	2	1	7	25	1	—	—	33
A12—6	22	—	35	19	6	19	10	111	5	—	—	—	—	—	8	3	1	—	12
5	39	10	56	17	7	8	11	148	6	1	—	—	—	—	11	1	5	—	17
4	27	1	17	10	3	4	3	65	3	2	1	1	—	2	17	3	1	—	23
3	2	—	3	1	—	1	4	11	—	—	—	—	—	—	5	—	—	—	5
Total IV	90	11	111	47	16	32	28	335	14	3	1	1	—	2	41	7	7	—	57
A4/I—3	11	4	9	6	3	5	8	46	1	—	1	1	—	2	11	—	2	—	15
2	3	—	2	2	1	—	8	16	1	—	1	—	—	1	4	2	1	—	8
IE—3	11	1	9	2	2	2	8	35	—	—	—	—	—	—	1	—	—	1	2
2	6	—	6	3	1	2	7	25	1	1	2	1	1	4	3	1	—	—	8
II—3	6	—	8	10	1	1	5	31	2	—	—	1	—	1	11	—	2	—	14
2	2	—	2	3	—	—	3	10	—	1	—	—	—	—	4	1	—	—	5
Total V	40	5	36	26	8	10	39	164	5	2	4	3	1	8	34	4	5	1	52
Grand Total	298	31	261	137	38	62	124	951	28	7	12	7	4	23	117	15	12	1	168

angle burins on blade	angle burins on flake	angle burins on core	sum of angle burins	dihedral burins on blade	dihedral burins on flake	dihedral burins on core	sum of dihedral burins	sum of burins	other retouched pieces	sum of tools	pièces écaillées	»multifaceted spikes»	single-platform cores	double-platform cores	bipolar cores	radial cores	globular cores	irregular cores	sum of cores	utilized pieces & waste
—	4	—	4	—	—	1	1	5	—	30	3	—	7	10	7	2	1	1	28	672
—	4	3	7	—	—	1	1	8	—	33	4	—	8	7	6	3	2	1	27	481
—	5	1	6	1	—	—	1	7	2	54	6	1	13	19	9	1	3	—	45	1442
—	2	1	3	—	2	1	3	6	1	125	22	—	11	15	18	4	7	4	59	3302
—	15	5	20	1	2	3	6	26	3	242	35	1	39	51	40	10	13	6	159	5897
2	5	—	7	—	2	—	2	9	—	130	24	—	14	14	7	1	—	19	55	3302
—	1	—	1	—	1	—	1	2	—	7	5	—	4	5	4	—	—	—	13	162
2	6	—	8	—	3	—	3	11	—	137	29	—	18	19	11	1	—	19	68	3464
—	1	—	1	—	—	—	—	1	—	9	4	—	1	2	—	—	—	1	4	53
—	5	3	8	—	1	—	1	9	2	82	24	—	25	25	3	1	4	5	63	2615
—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	53
—	5	—	5	—	—	—	—	5	—	33	6	—	6	10	1	—	—	2	19	1365
—	1	1	2	—	—	—	—	2	—	14	1	—	1	—	—	—	—	—	1	359
—	—	1	—	—	—	—	—	1	—	16	5	—	4	1	—	—	2	1	8	616
—	5	3	8	—	2	—	2	10	—	58	22	—	10	13	1	3	2	2	31	4021
—	18	8	26	—	3	—	3	29	2	214	62	—	47	49	5	4	8	10	126	9082
1	11	1	13	—	2	—	2	15	—	143	53	—	20	14	3	1	1	9	48	2496
1	15	3	19	2	3	—	5	24	7	203	129	—	18	17	2	1	3	9	50	3889
1	8	1	10	1	4	—	5	15	2	110	84	—	12	14	2	3	2	2	35	1376
—	2	—	2	—	—	1	1	3	1	20	12	1	2	5	—	—	1	—	8	117
3	36	5	44	3	9	1	13	57	10	476	278	1	52	50	7	5	7	20	141	7878
1	13	4	18	—	2	—	2	20	1	83	44	2	24	20	7	—	2	2	55	3483
1	7	3	11	—	—	—	—	11	—	36	18	—	3	7	1	1	—	2	14	1180
1	6	—	7	—	—	—	—	7	—	44	7	1	8	4	—	1	1	1	15	903
1	3	1	5	—	—	—	—	5	—	40	14	1	5	6	1	1	1	4	18	2178
—	4	—	4	—	—	—	—	4	1	52	15	—	12	9	—	1	—	5	27	1518
—	4	1	5	—	—	—	—	5	1	22	16	—	7	5	2	—	1	1	16	1260
4	36	9	49	—	2	—	2	51	3	277	114	4	59	51	11	4	5	15	145	10522
9	111	27	147	4	19	4	37	174	18	1346	518	6	215	220	74	24	33	70	639	36843

Table XI. Percentage distributions of the main lithic categories in each spit of each site.

	tools	pièces écaillées	»multifaceted spikes»	cores	utilized pieces and waste	N (100 %)
A5—11 & 12	4.1	.4		3.8	91.7	733
9	6.1	.7		5.0	88.3	545
7	3.5	.4	.1	2.9	93.1	1548
5	3.6	.6		1.7	94.1	3508
Total I	.3.8	.5		2.5	93.1	6334
A5—3	3.7	.7		1.6	94.0	3511
1	3.7	2.7		6.9	86.6	187
Total II	3.7	.8		1.8	93.7	3698
A4/I—5	12.9	5.7		5.7	75.7	70
4	2.9	.9		2.3	93.9	2784
IE—5	3.6				96.4	55
4	2.3	.4		1.3	95.9	1423
II—6	3.7	.3		.3	95.7	375
5	2.5	.8		1.2	95.5	645
4	1.4	.5		.7	97.3	4132
Total III	2.3	.6		1.3	95.8	9484
A12—6	5.2	1.9		1.7	91.1	2740
5	4.7	3.0		1.2	91.1	4271
4	6.8	5.2		2.2	85.7	1605
3	11.5	7.7	.6	5.1	75.0	158
Total IV	5.4	3.2		1.6	89.8	8774
A4/I—3	2.3	1.2		1.5	95.0	3667
2	2.9	1.4		1.1	94.5	1248
IE—3	4.5	.7	.1	1.5	93.1	970
2	1.8	.6		.8	96.8	2251
II—3	3.2	.9		1.8	94.2	1612
2	1.7	1.2		1.2	95.9	1314
Total V	2.5	1.0		1.3	95.1	11062

Table XII. Percentage distributions of the main lithic tool categories in each spit of each site.

	microliths	double-backed points	borers	scrapers	burins	other retouched pieces	N (100 %)
A5—11 & 12	73.7			10.0	16.7		30
9	63.6	3.0		9.1	24.2		33
7	74.1	1.8		7.4	13.0	3.7	54
5	87.2	.8		6.4	4.8	.8	125
Total I	79.3	1.2		7.4	10.7	1.2	242
A5—3	86.1	.8		6.1	6.9		130
1	71.4				28.6		7
Total II	85.4	.7		5.8	8.0		137
A4/I—5	88.9				11.1		9
4	64.6	3.7		18.3	11.0	2.4	82
IE—5	100.0						2
4	66.7	6.1	3.0	9.1	15.1		33
II—6	64.3			21.4	14.3		14
5	75.0			18.8	6.3		16
4	65.5		1.7	15.5	17.4		58
Total III	66.8	2.3	.9	15.4	13.5	.9	214
A12—6	77.6	3.5		8.4	10.5		143
5	72.9	3.0	.5	8.4	11.8	3.4	203
4	59.1	2.7	1.8	20.9	13.6	1.8	110
3	50.0			27.8	16.7	5.6	20
Total IV	70.4	2.9	.6	12.0	12.0	2.1	476
A4/I—3	55.4	1.2		18.1	24.1	1.2	83
2	44.4	2.8		22.2	30.6		36
IE—3	79.5			4.5	15.9		44
2	62.5	2.5	2.5	20.0	12.5		40
II—3	59.6	3.8		26.9	7.7	1.9	52
2	45.4		4.5	22.7	22.7	4.5	22
Total V	59.2	1.8	.7	18.8	18.4	1.1	277

Table XIII. Percentage distributions of the microlith types in each spit of each site.

	crescents	triangles	backed pieces	truncated pieces	backed + truncated pieces	trapezes	microlith fragments	N (100 %)
A5—11 & 12	27.3		45.5	18.2			9.1	22
9	33.3		28.6	19.0	4.8		14.3	21
7	40.0	2.5	25.0	17.5		5.0	10.0	40
5	54.1	1.8	13.8	11.9	3.7	5.5	9.2	109
Total I	45.8	1.6	21.3	14.6	2.6	4.2	9.9	192
A5—3	48.2	7.1	18.8	6.3	4.5	2.7	12.5	112
1	20.0		20.0	20.0		40.0		5
Total II	47.0	6.8	18.8	6.8	4.3	4.3	12.0	117
A4/I—5	12.5		25.0	37.5		12.5	12.5	8
4	18.9	1.9	45.3	17.0	3.8	1.9	11.3	53
IE—5			50.0	50.0				2
4	27.3	4.5	40.9	4.5	4.5		18.2	22
II—6	11.1		22.2	22.2	11.1	22.2	11.1	9
5	16.7	8.3		33.3		8.3	33.3	12
4	13.2	2.6	34.2	23.7		5.3	21.0	38
Total III	17.5	2.8	35.7	19.6	2.8	4.9	16.8	143
A12—6	19.8		31.5	17.1	5.4	17.1	9.0	111
5	26.3	6.6	37.8	11.5	4.7	5.4	7.3	148
4	41.5	1.5	26.1	15.4	4.6	6.1	4.6	65
3	22.2		33.3	11.1		11.1	22.2	9
Total IV	26.9	3.3	33.1	14.0	4.8	9.5	8.4	335
A4/I—3	23.9	8.7	19.6	13.0	6.5	10.9	17.4	46
2	18.8		12.5	12.5	6.3		50.0	16
IE—3	31.4	2.9	25.7	5.7	5.7	5.7	22.9	35
2	24.0		24.0	12.0	4.0	8.0	28.0	25
II—3	19.3		25.8	32.3	3.2	3.2	16.1	31
2	20.0		20.0	30.0			30.0	10
Total V	24.4	3.0	21.9	15.8	4.9	6.1	23.8	164

Table XIV. Percentage distributions of the core types in each spit of each site.

	single-platform cores	double-platform cores	bipolar cores	radial cores	globular cores	irregular cores	N (100 %)
A5—11 & 12	25.0	35.7	25.0	7.1	3.6	3.6	28
9	29.6	25.9	22.2	11.1	7.4	3.7	27
7	28.9	42.2	20.0	2.2	6.7		45
5	18.6	25.4	30.5	6.8	11.9	6.8	59
Total I	24.5	32.1	25.2	6.3	8.2	3.8	159
A5—3	25.4	25.4	12.7	1.8		34.5	55
1	30.8	38.5	30.8				13
Total II	26.5	27.9	16.2	1.5		27.9	68
A4/I—5	25.0	50.0				25.0	4
4	39.7	39.7	4.8	1.6	6.3	7.9	63
IE—5							
4	31.6	52.6	5.3			10.5	19
II—6	100.0						1
5	50.0	12.5			25.0	12.5	8
4	32.3	41.9	3.2	9.7	6.4	6.4	31
Total III	37.3	38.9	4.0	3.2	6.3	7.9	126
A12—6	41.7	29.2	6.3	2.1	2.1	18.8	48
5	36.0	34.0	4.0	2.0	6.0	18.0	50
4	34.3	40.0	5.7	8.6	5.7	5.7	35
3	25.0	62.5			12.5		8
Total IV	36.9	35.5	5.0	3.5	5.0	14.2	141
A4/I—3	43.6	36.4	12.7		3.6	3.6	55
2	21.4	50.0	7.1	7.1		14.3	14
IE—3	53.3	26.7		6.7	6.7	6.7	15
2	27.8	33.3	5.6	5.6	5.6	22.2	18
II—3	44.4	33.3		3.7		18.5	27
2	43.8	31.3	12.5		6.3	6.3	16
Total V	40.7	35.2	7.6	2.8	3.4	10.3	145

Plates

Abbreviations:

o = obsidian
c = chert
q = quartz
scales 1:1

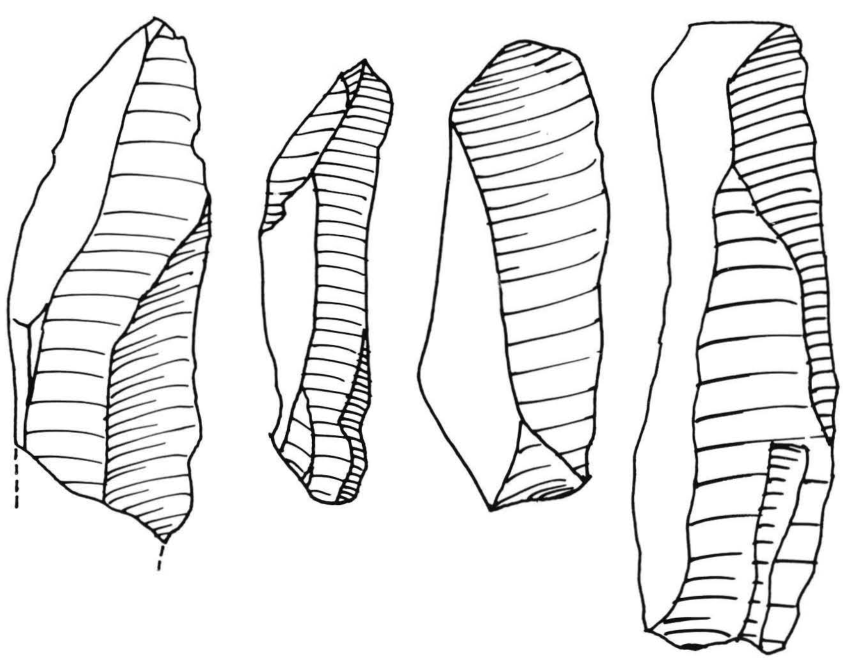


Plate 1. KFR-A5.
Large blades of obsidian from spits 2 and 3 (Horizon II).

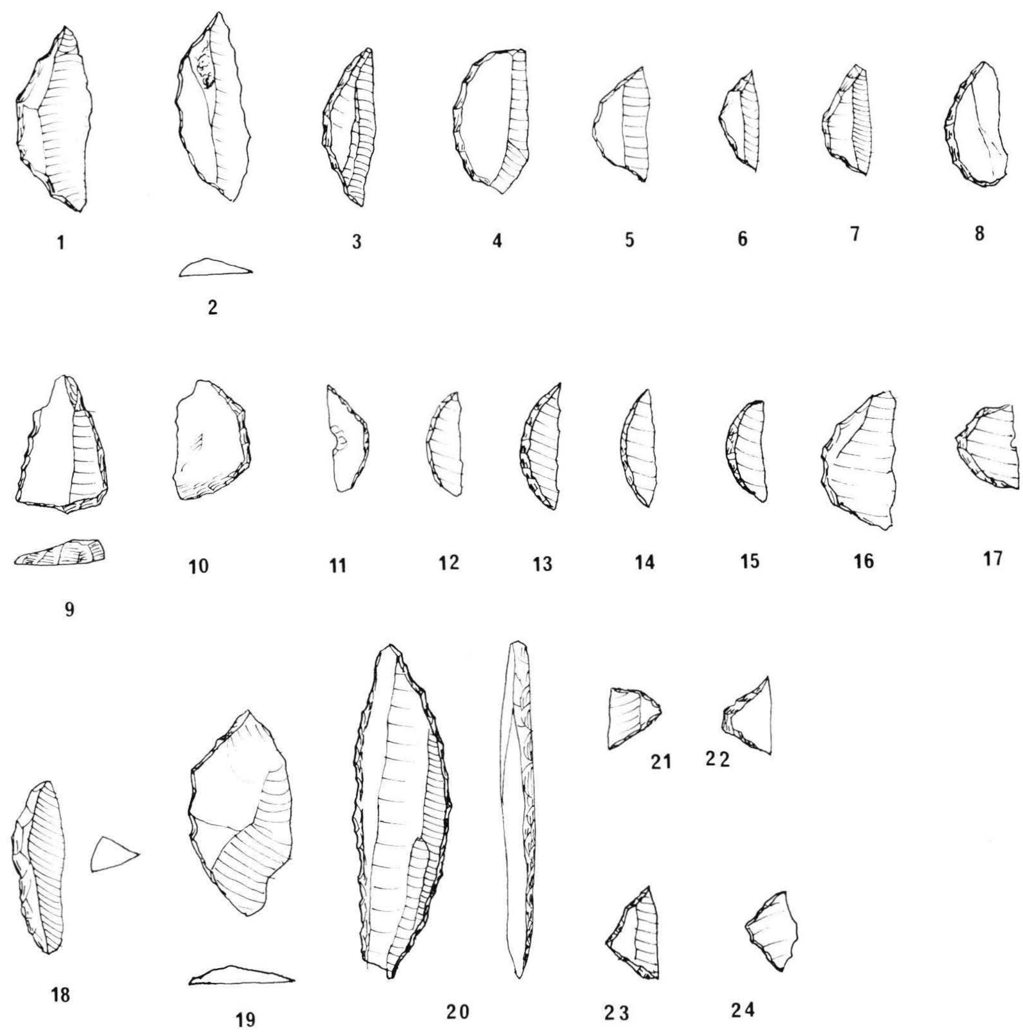


Plate 2. KFR-A4.

Crescents from H. III: 2c, 3c, 6c, 16q, 17o, 19c
crescents from H. V: 1o, 4c, 5o, 8o, 13o, 14o, 15o, 18c, 20o
crescents from H. VI: 7c, 9c, 10q, 11o, 12o
triangles from H. III: 21q, 22c, 23c, 24q

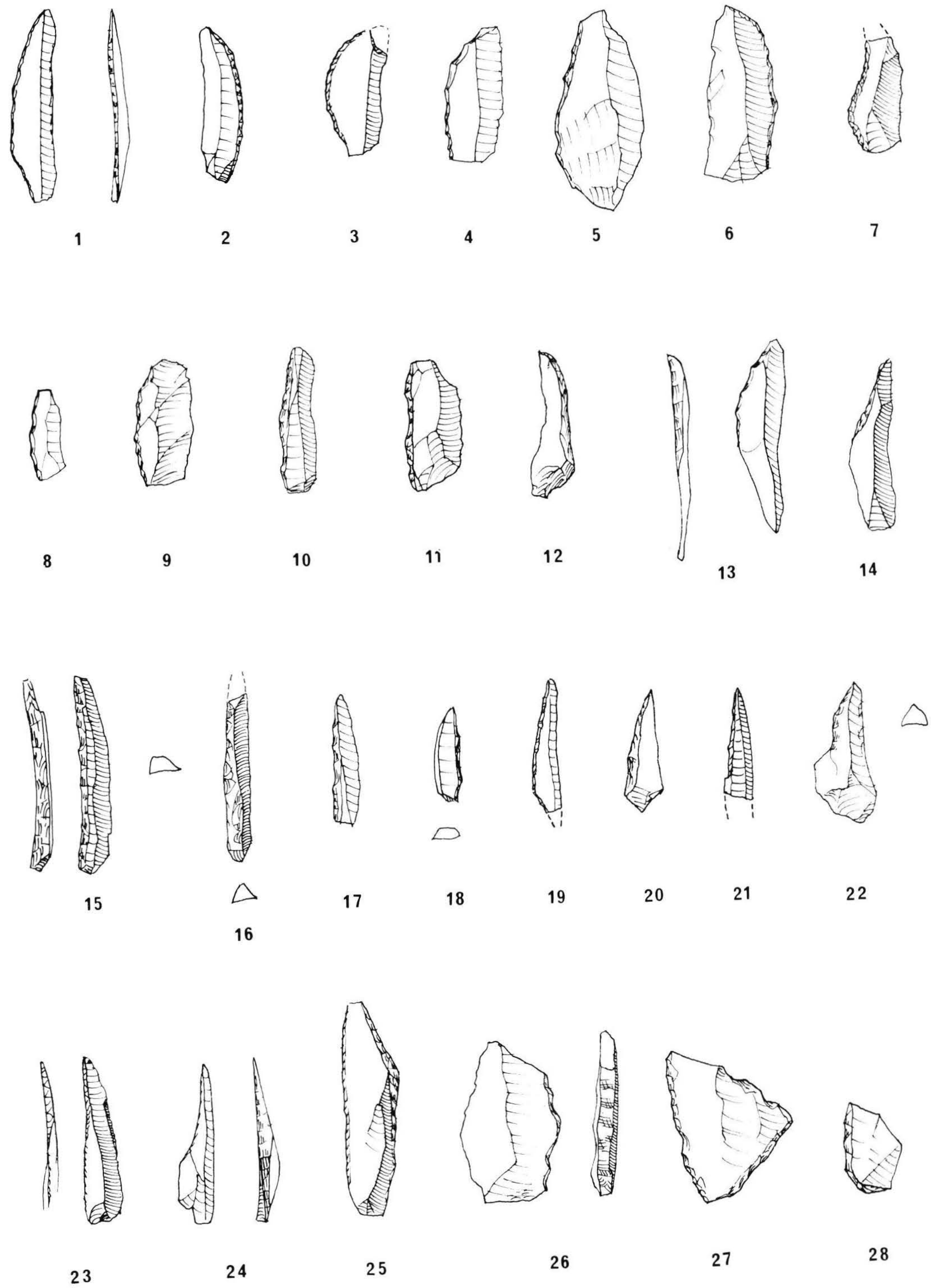


Plate 3. KFR-A4.

Backed blades from H. III: 3c, 5q, 12c, 17c, 19o, 21c, 24c, 25c, 26q
backed blades from H. V: 1o, 6c, 7q, 8o, 9c, 10c, 11o, 13c, 14c, 15c, 16c, 18o, 20c, 22q, 23c
backed blades from H. VI: 2c, 4o
backed flakes from H. VI: 27o, 28o

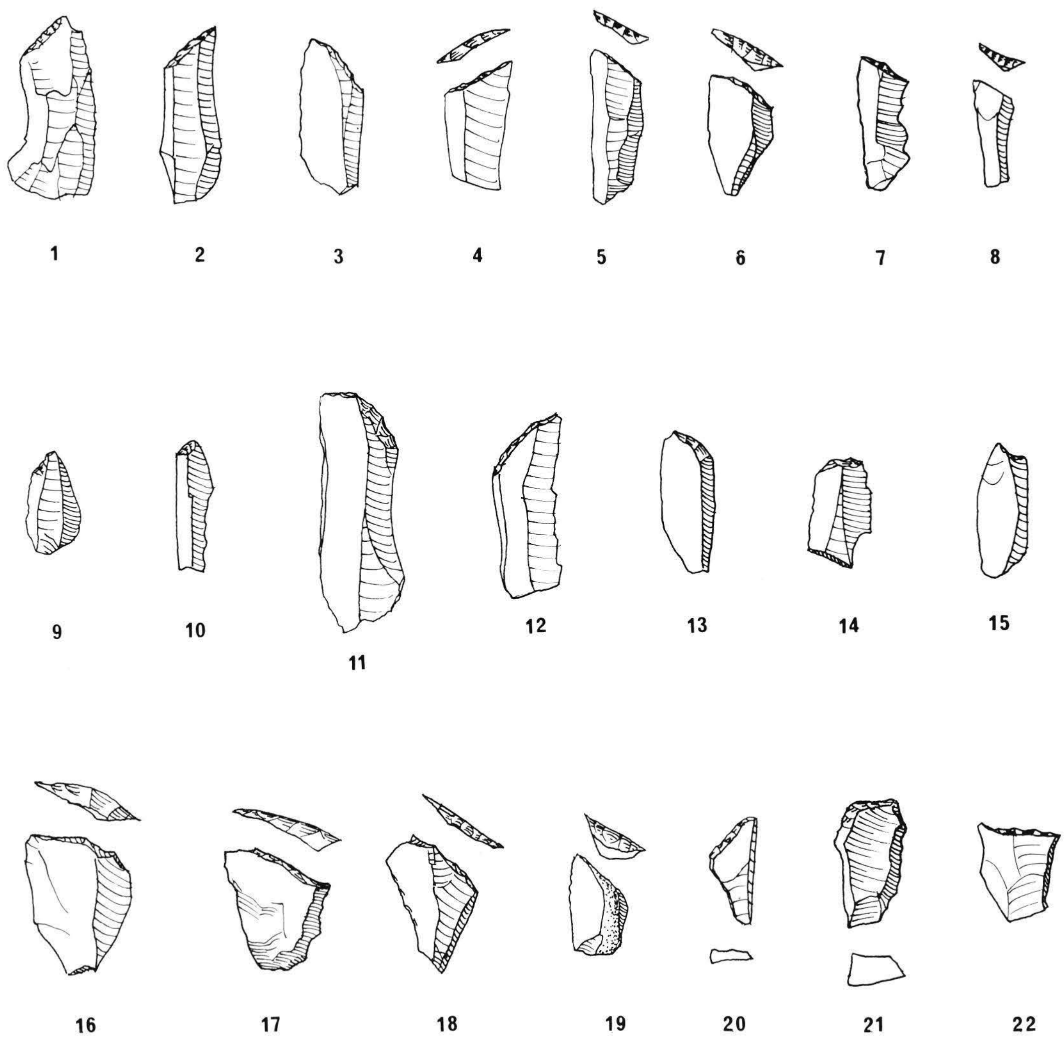


Plate 4. KFR-A4.

Truncated blades from H. III: 3c, 4c
truncated blades from H. V: 2o, 5c, 6c, 7c, 10o, 11o, 12o, 13c, 15o
truncated blades from H. VI: 1c, 8c, 9c, 14c
truncated flakes from H. III: 16c, 18c
truncated flakes from H. V: 20c, 21q
truncated flakes from H. VI: 17q, 19c, 22c

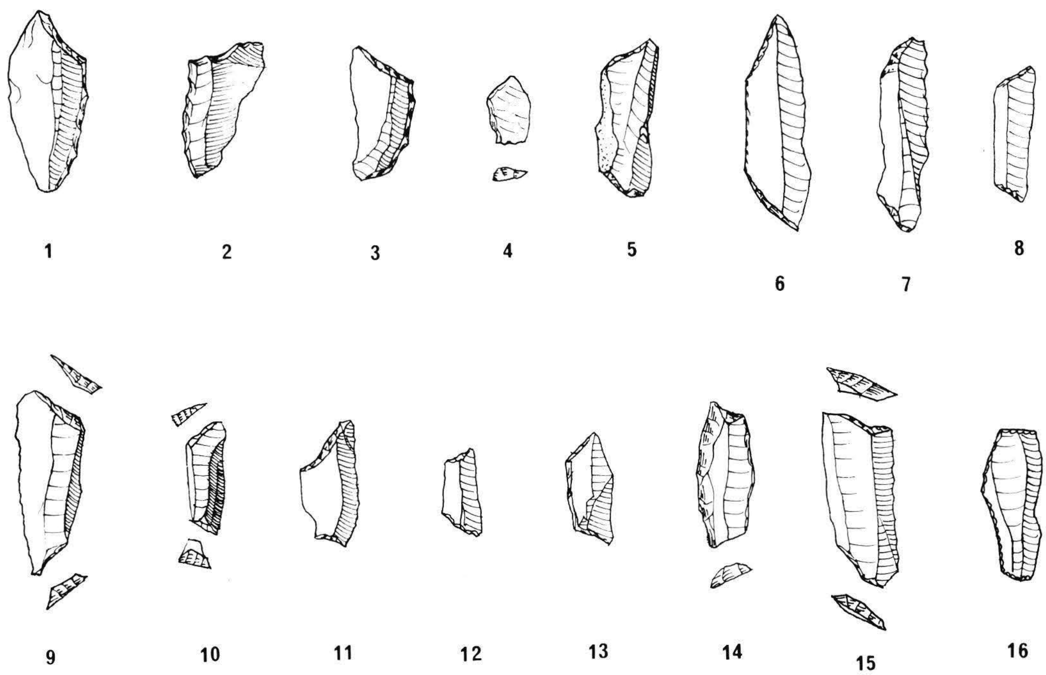


Plate 5. KFR-A4.

Truncated and backed blades from H. III: 2o
truncated and backed blades from H. V: 3o, 16o
truncated and backed blades from H. VI: 1c
truncated and backed flakes from H. V: 4q
trapezes from H. III: 8c, 10c, 15c
trapezes from H. V: 6c
trapezes from H. VI: 5c, 7o, 9c, 11c, 12c
backed trapezes from H. V: 13o, 14c

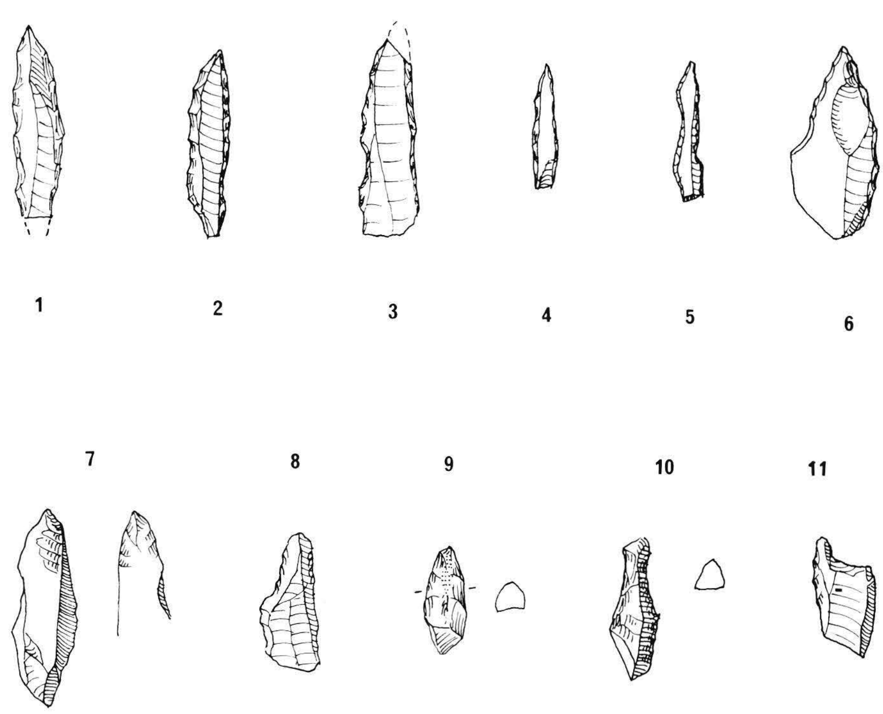


Plate 6. KFR-A4.

Double-backed pieces from H. V: 1c, 2c, 3c, 4c, 6c
double-backed pieces from H. VI: 5o
borers from H. III: 8o, 10c
borers from H. VI: 7c, 9o, 11c

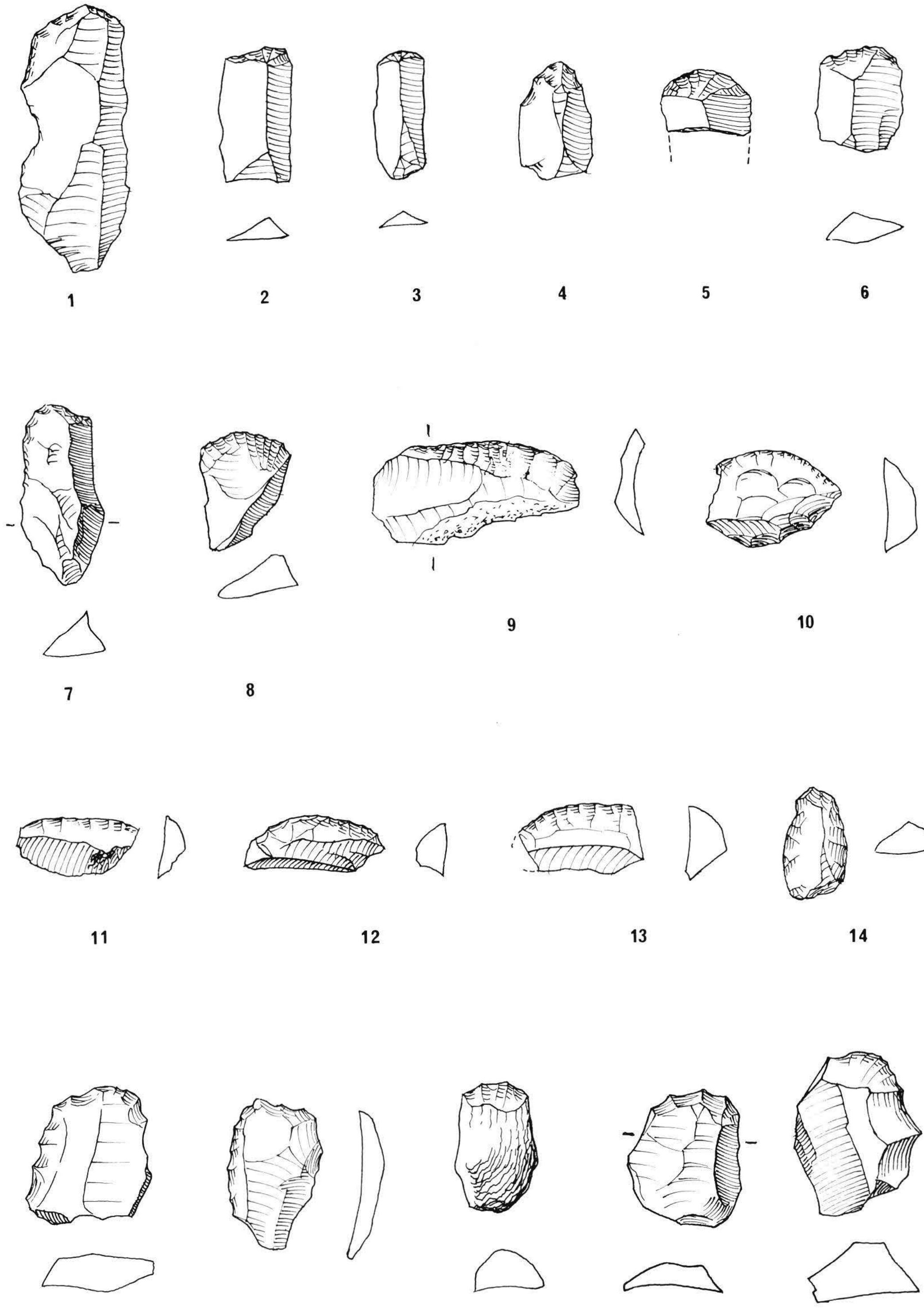


Plate 7. KFR-A4.

Blade scrapers from H. III: 5c, 6c
blade scrapers from H. V: 1c, 4c
blade scrapers from H. VI: 2c, 3c, 7q
flake scrapers from H. III: 11c, 13c, 15c, 17c
flake scrapers from H. V: 8c, 10c, 12c, 14c, 19c
flake scrapers from H. VI: 9o, 16o, 18o

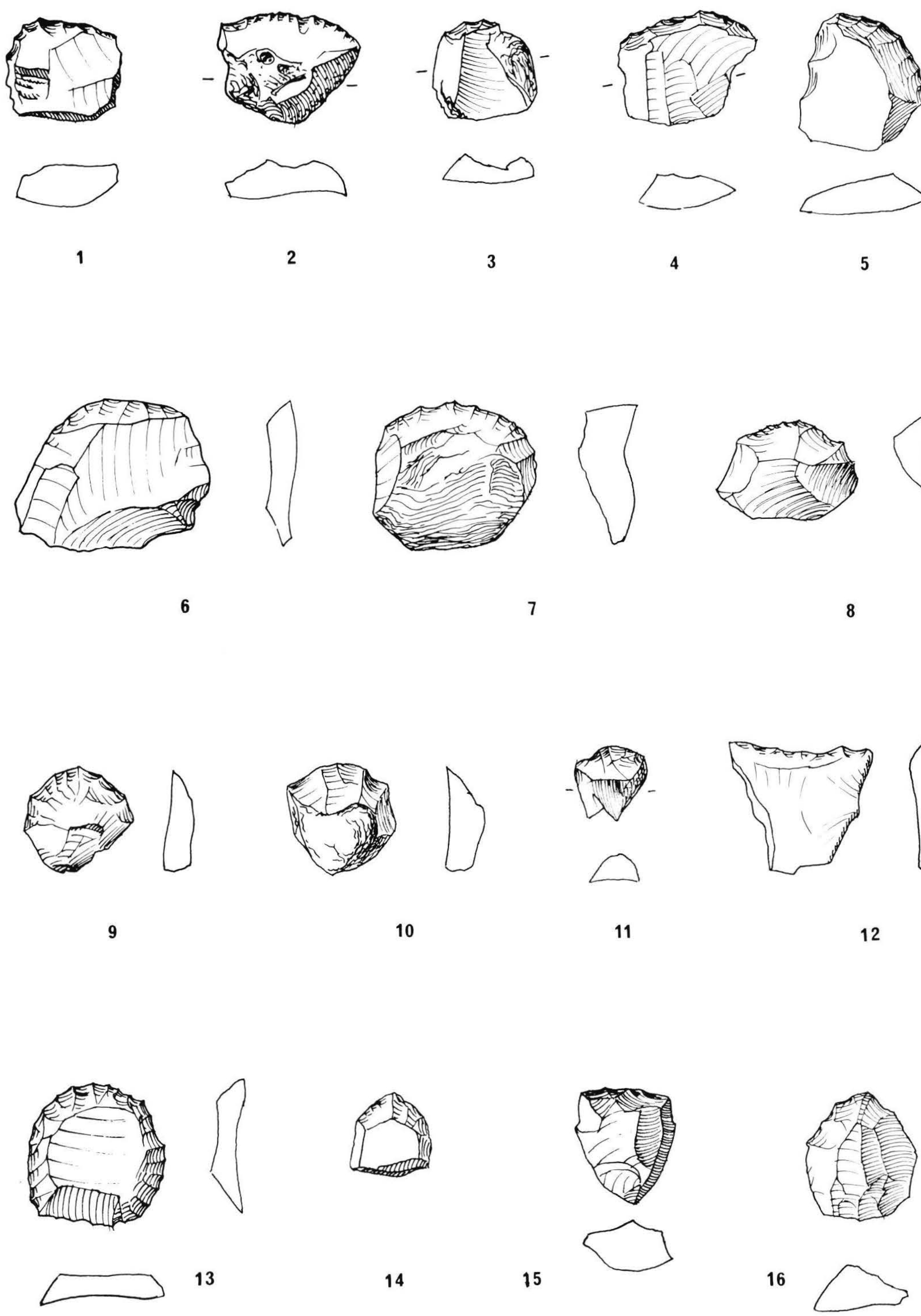


Plate 8. KFR-A4.

Flake scrapers from H. III: 1o, 6c, 7c, 10c
flake scrapers from H. V: 4c, 5c, 11c, 12c, 14c
flake scrapers from H. VI: 2c, 3c, 8o, 9o, 13o
core scrapers from H. III: 15c
core scrapers from H. V: 16c

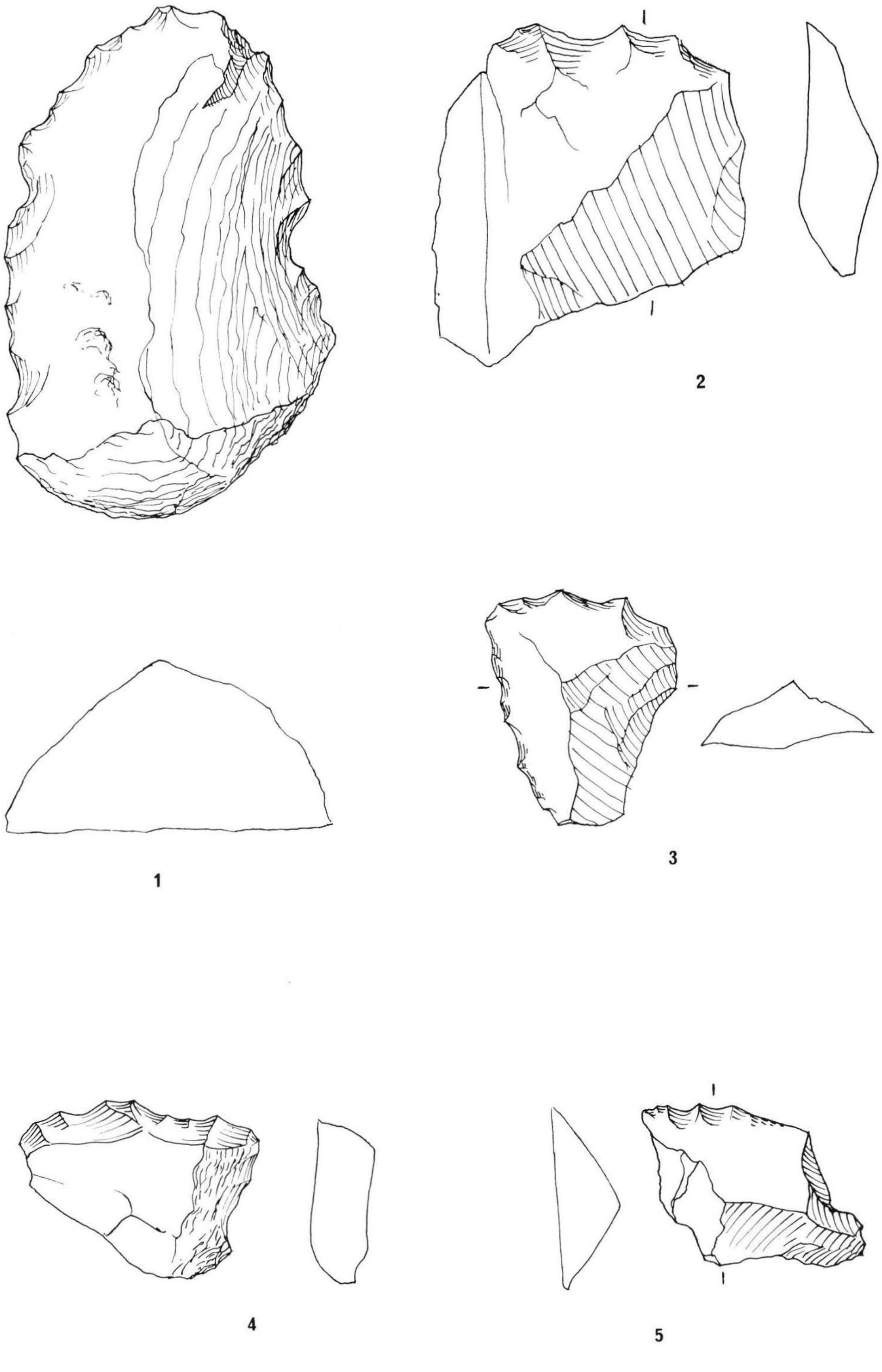


Plate 9. KFR-A4.

Flake scrapers from H. V: 1q, 2q, 4c, 5q
flake scrapers from H VI: 3q

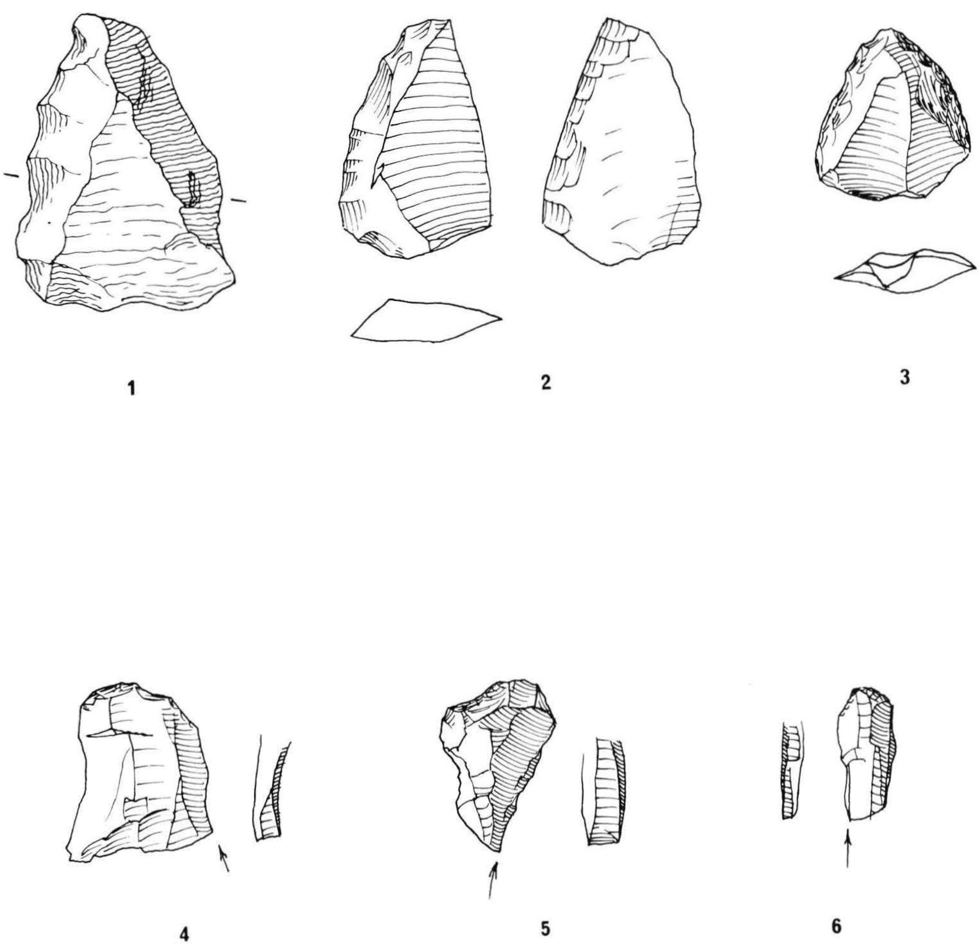


Plate 10. KFR-A4.

Flake scrapers from H. III: 2c, 3c
flake scrapers from H. VI: 1q
scraper-burins from H. V: 5c, 6c
scraper-burins from H. VI: 4c

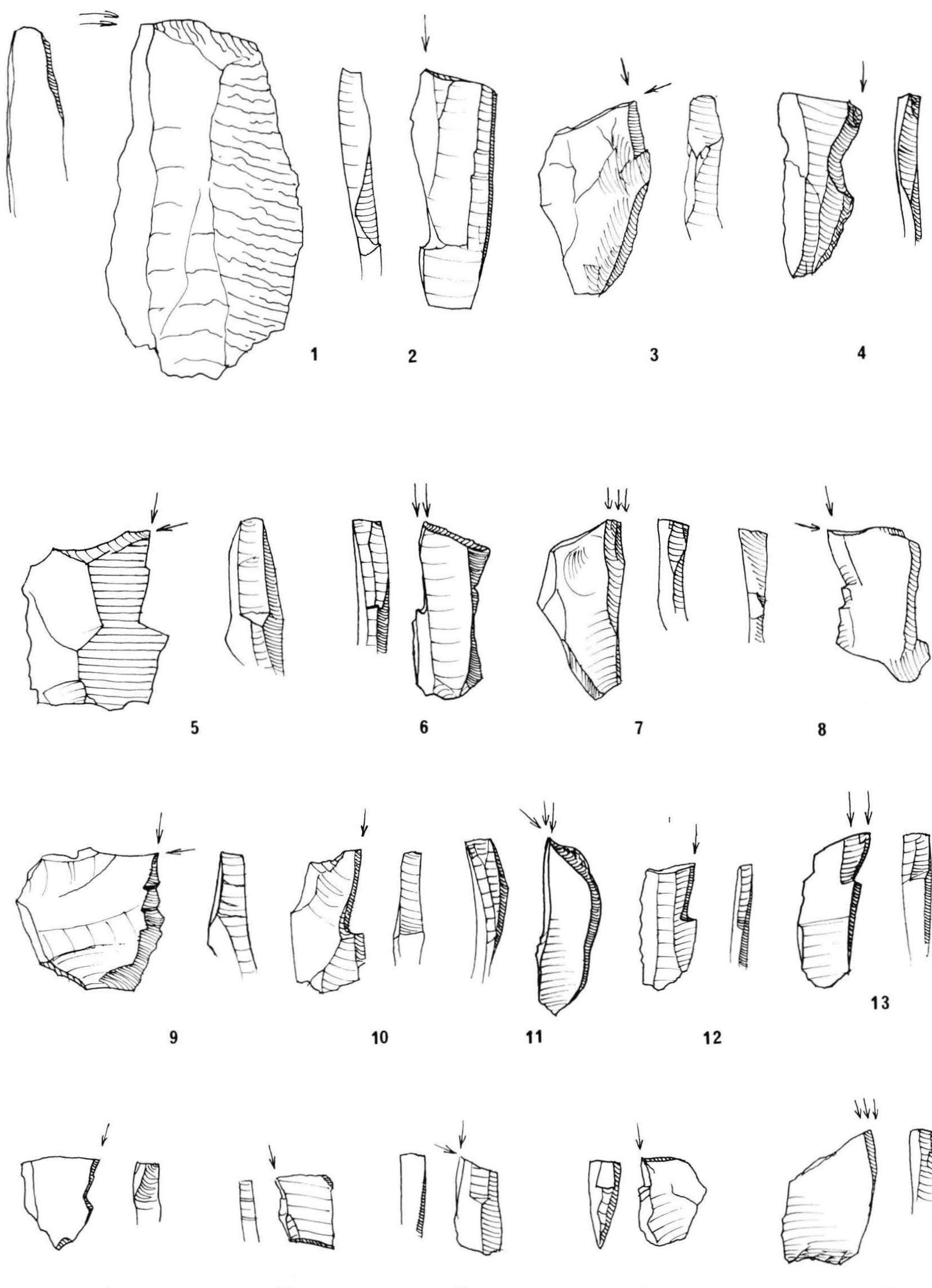


Plate 11. KFR-A4.

Burins on flakes from H. III: 2c, 5c, 14c
burins on flakes from H. V: 1q, 3q, 4o, 6c, 7c, 8q, 9q, 18q
burins on flakes from H. VI: 10c, 11c, 12o, 13c, 15o, 16c, 17o

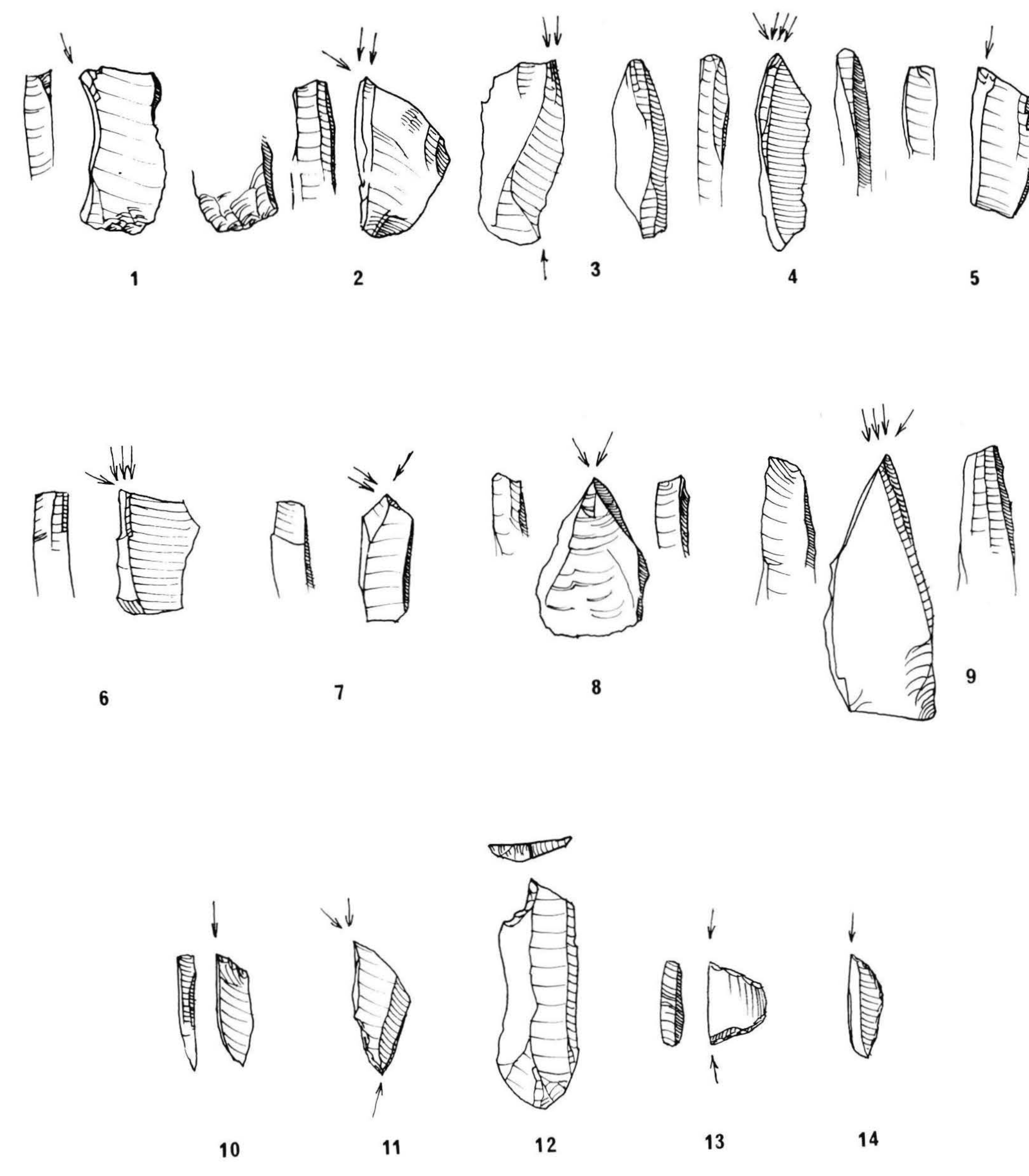


Plate 12. KFR-A4.

Burins on flakes from H. III: 2c, 6c, 9q
burins on flakes from H. V: 7q
burins on flakes from H. VI: 1o, 3q, 4o, 5q, 8o
»microburins» from H. III: 10o, 13c
»microburins» from H. V: 11o, 12c, 14o

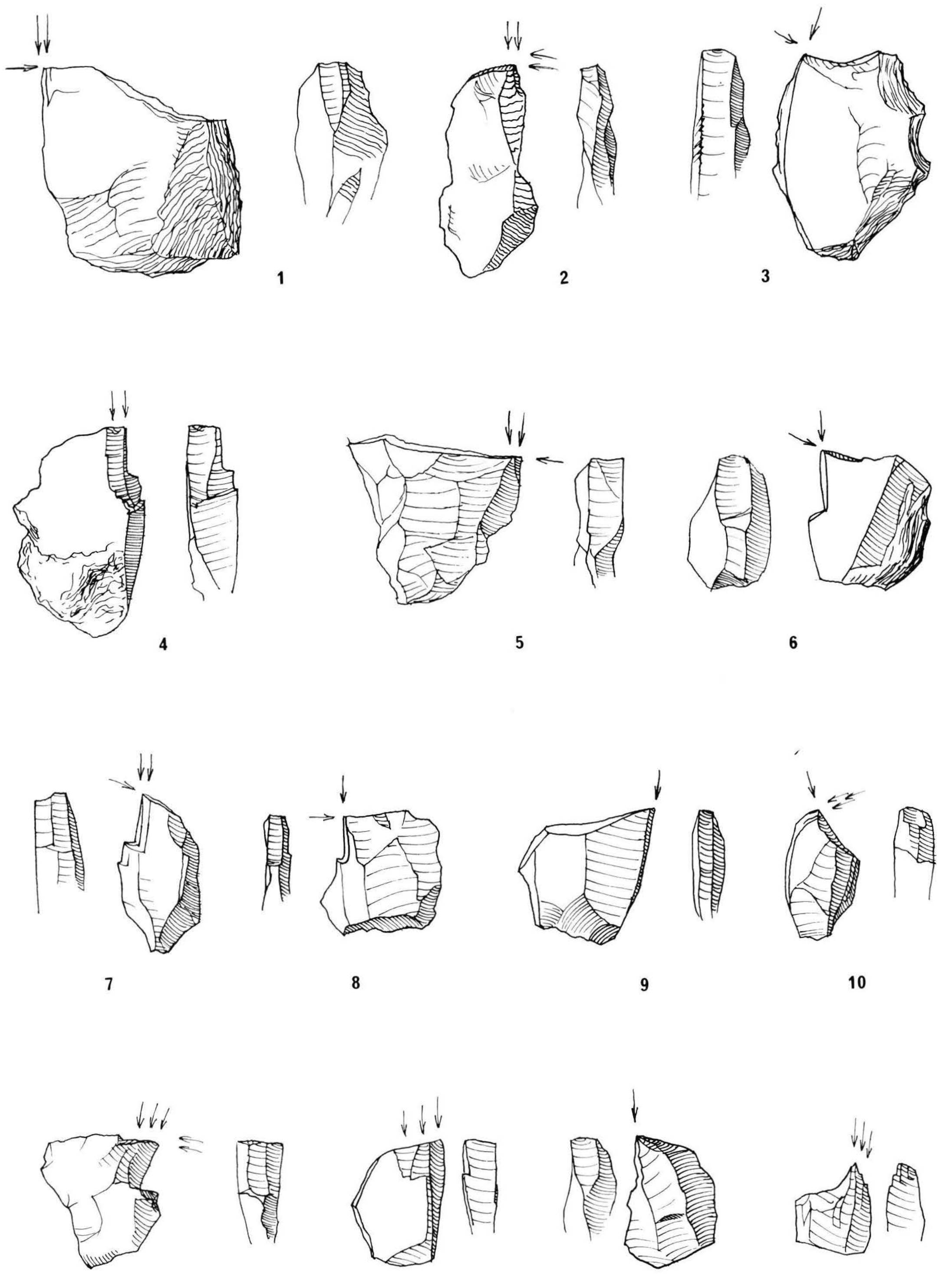


Plate 13. KFR-A4.

Burins on cores from H. III: 6c, 7c, 9o
burins on cores from H. V: 1q, 3q, 4c, 10c, 11c, 12c, 13q, 14q
burins on cores from H. VI: 2q, 5c, 8c

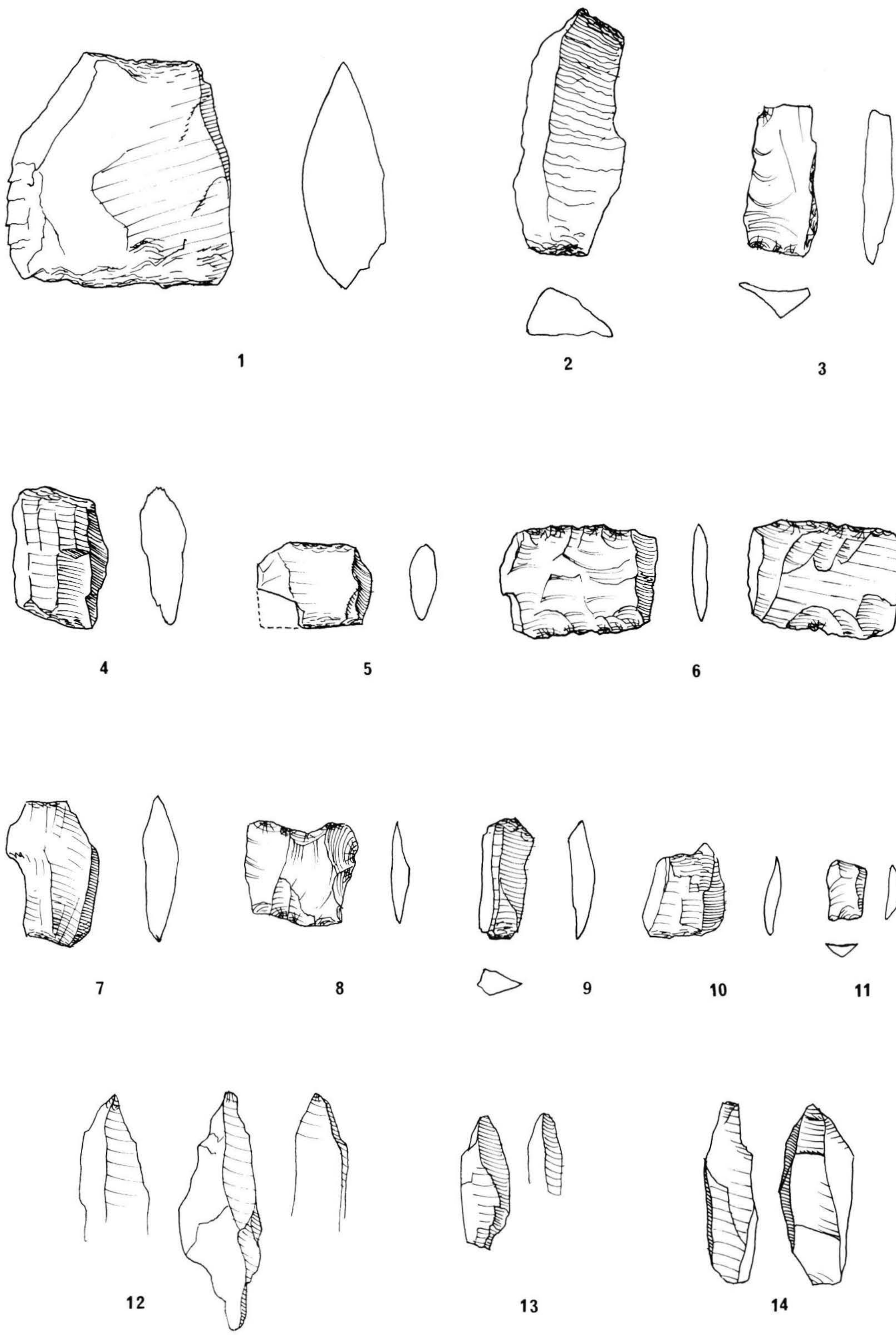


Plate 14. KFR-A4.

Pièces écaillées from H. III: 3o, 10c, 11o
pièces écaillées from H. V: 1q, 4q, 6o, 8o
pièces écaillées from H. VI: 2q, 5q, 7q, 9o
»spikes» from H. V: 12q, 13q
»spikes» from H. VI: 14q

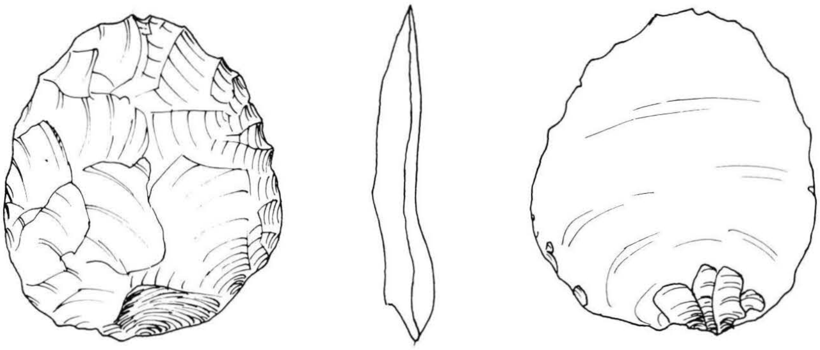
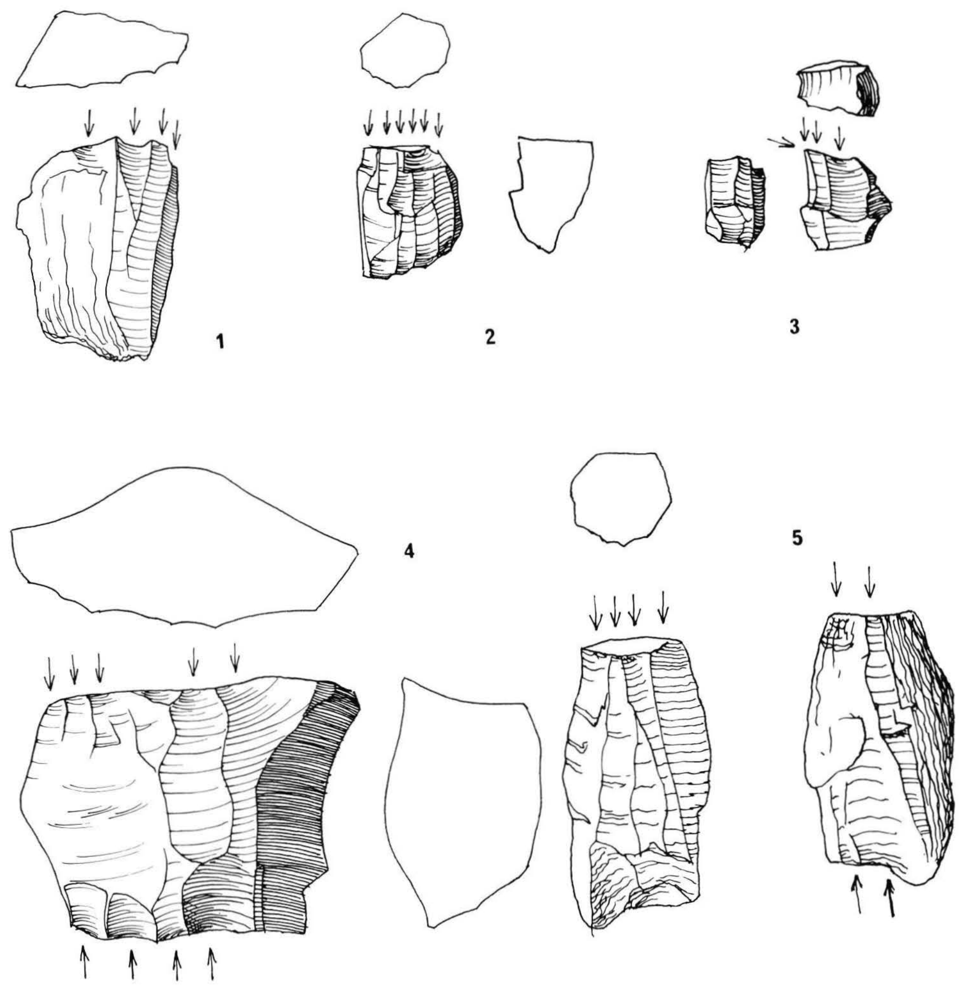


Plate 15. KFR-A4.
Disc from H. V.



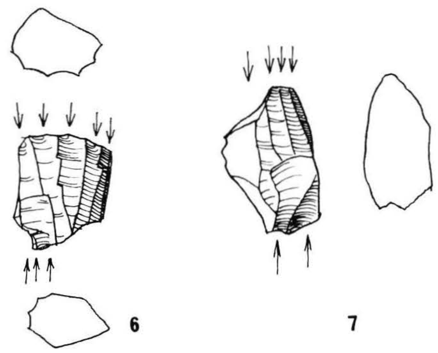


Plate 16. KFR-A4.

Cores from H. III: 2c, 5q
cores from H. V: 3c, 7q
cores from H. VI: 1q, 4c, 6c

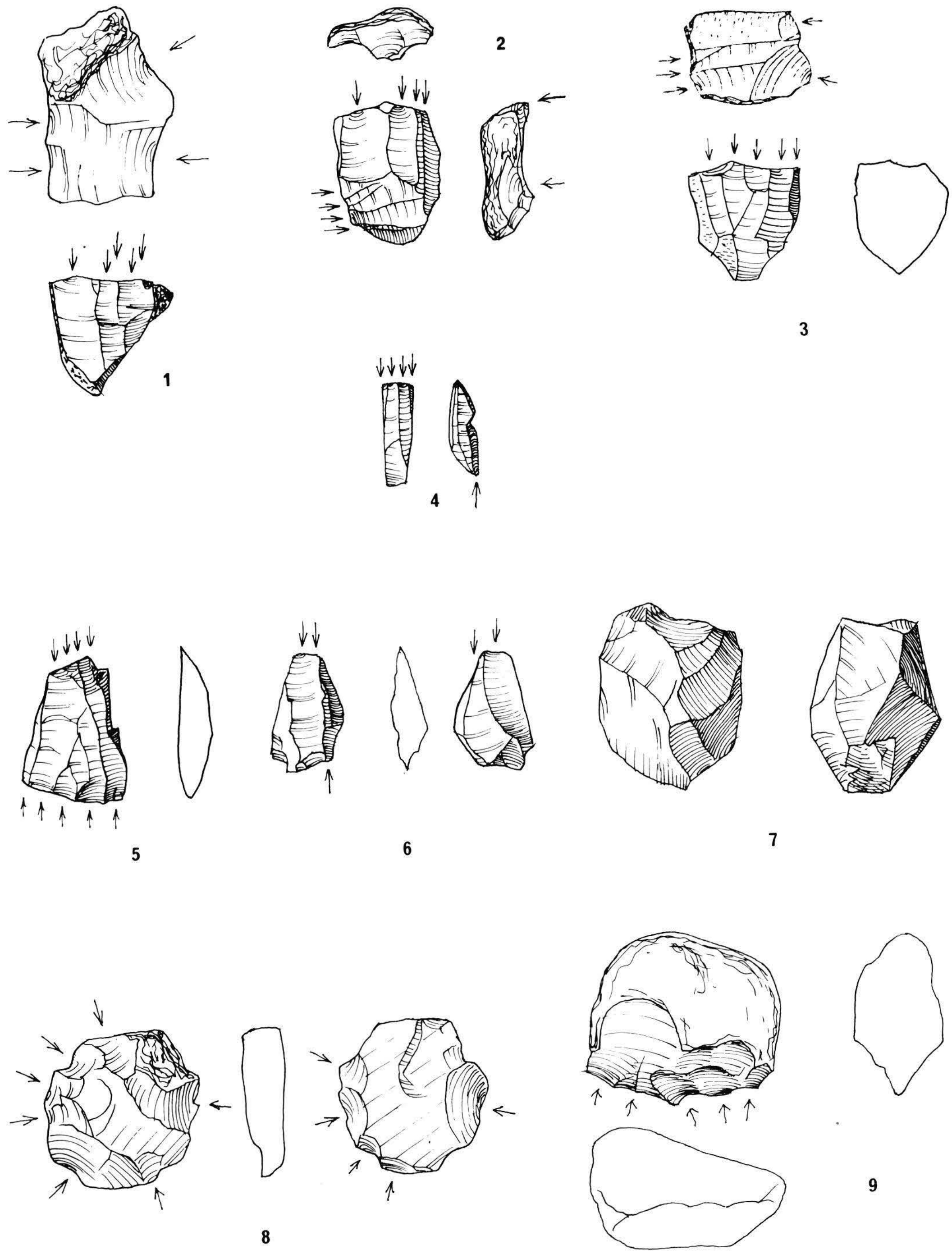


Plate 17. KFR-A4.

Cores from H. III: 3c, 5c, 7c, 8c, 9q
cores from H. V: 1c, 2c, 4o, 6c

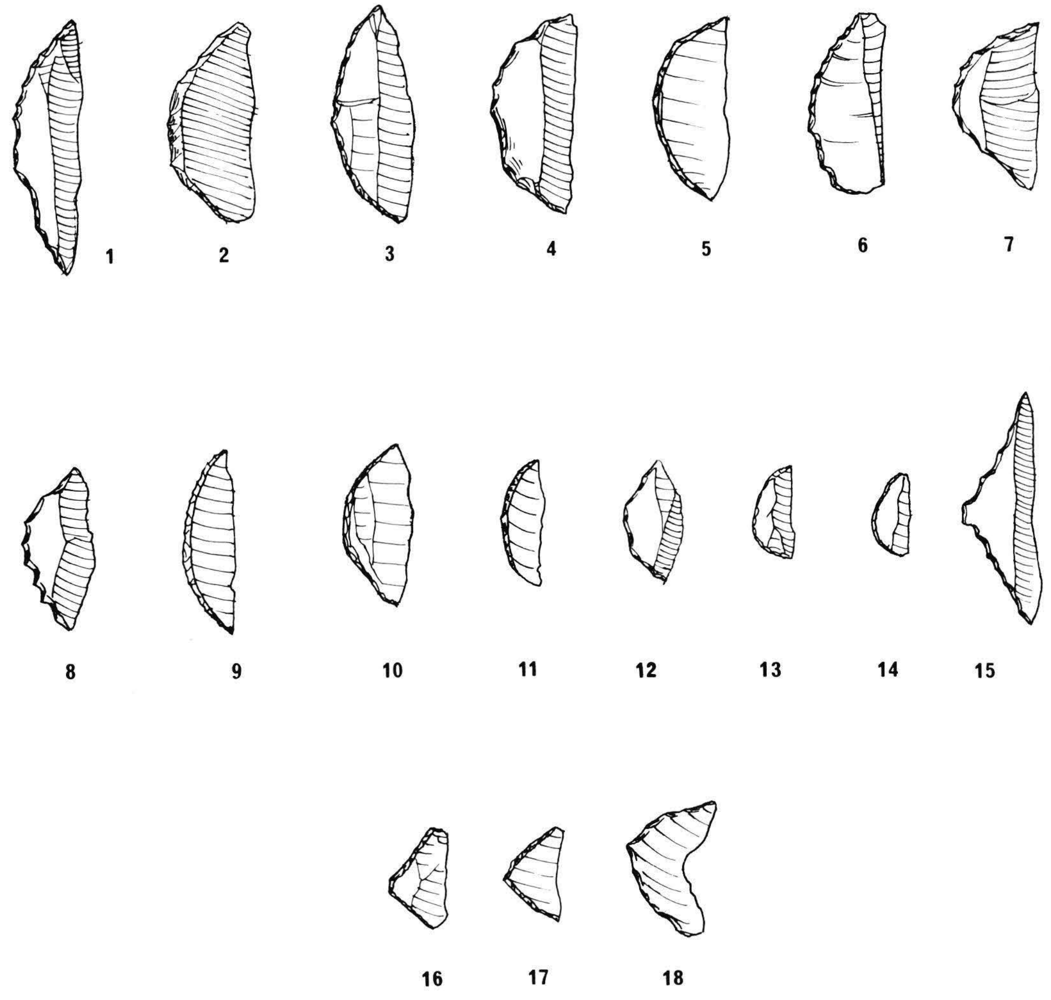


Plate 18. KFR-A12.

Crescents from H. IV: 1o, 2c, 3c, 4c, 5c, 6o, 7c, 8c, 9o, 10q, 11o, 12c, 13q, 14c
triangles from H. IV: 15c, 16c, 17q, 18q

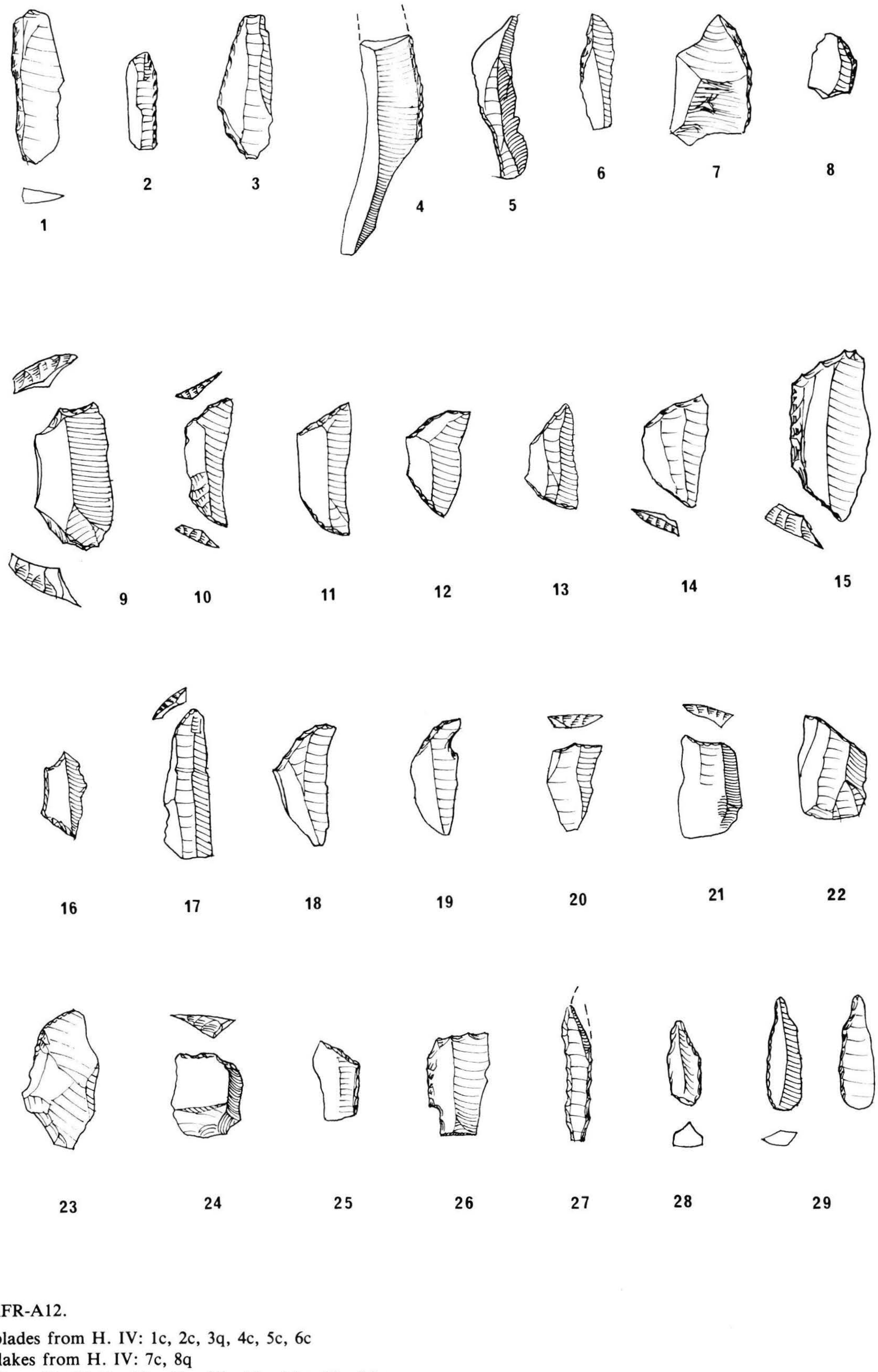


Plate 19. KFR-A12.

Backed blades from H. IV: 1c, 2c, 3q, 4c, 5c, 6c
backed flakes from H. IV: 7c, 8q
trapezes from H. IV: 9c, 10o, 11c, 12c, 13c, 14q, 15c, 16o
truncated blades from H. IV: 17o, 18c, 19o, 20c, 21c
truncated flakes from H. IV: 22o, 23o, 24q
truncated and backed blades from H. IV: 25o, 26c
double-backed pieces from H. IV: 27q, 28c, 29o

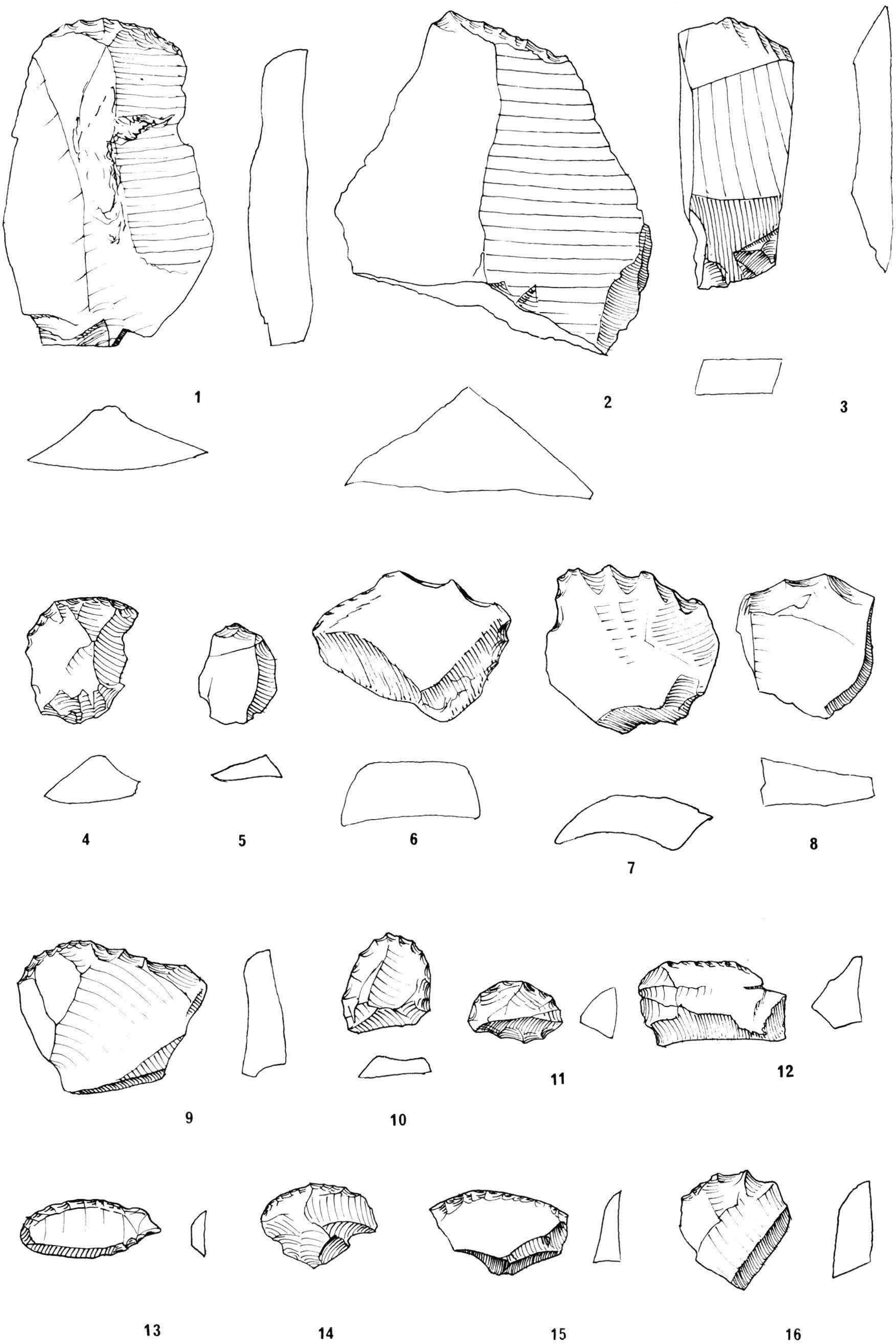


Plate 20. KFR-A12.

Blade scrapers from H. IV: 1c
flake scrapers from H. IV: 2q, 3c, 4c, 5c, 6q, 7q, 8q, 9c, 10c, 11o, 12q, 13c, 14c, 15c, 16q

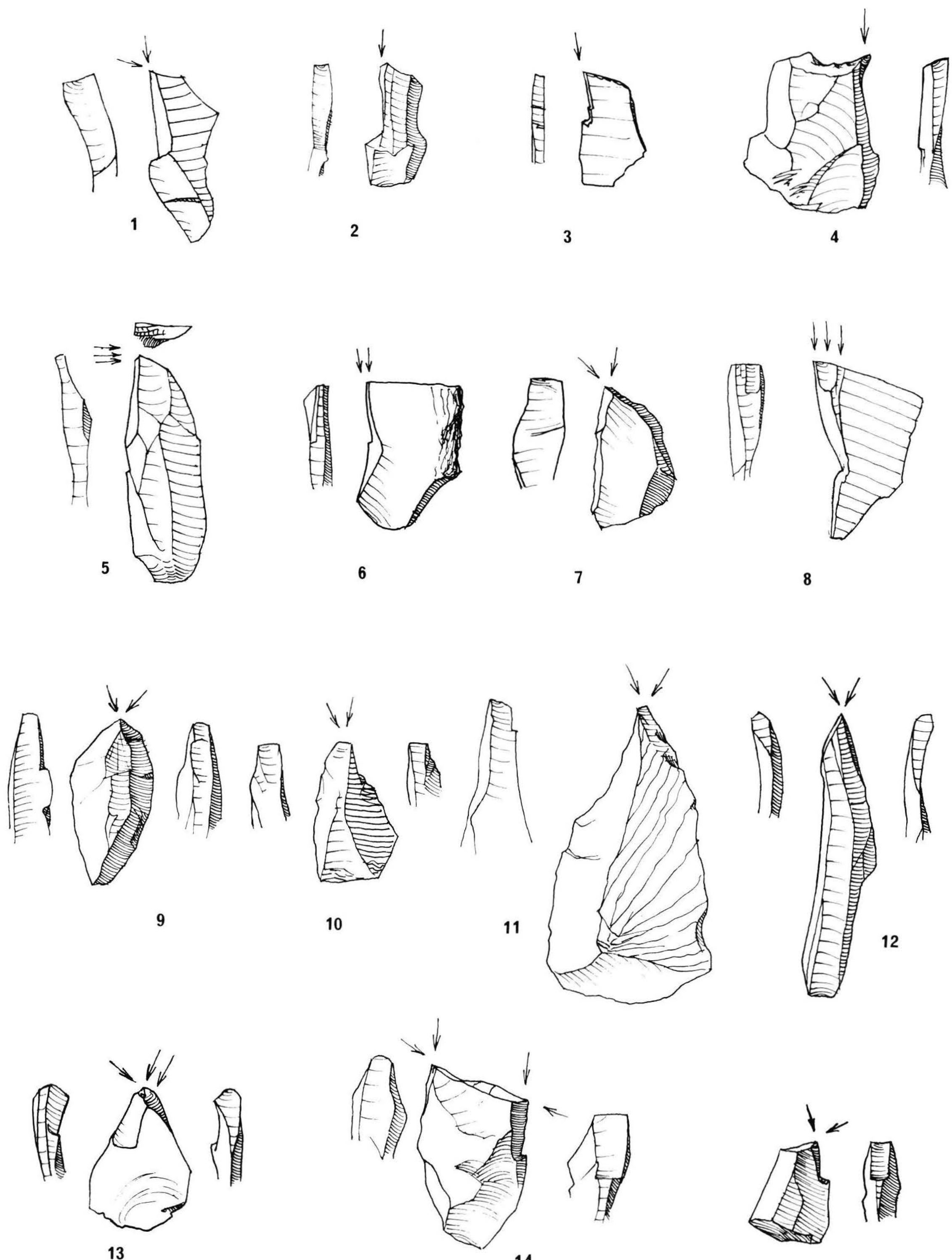


Plate 21. KFR-A12.

Burins on blades from H. IV: 5c, 12c
burins on flakes from H. IV: 1c, 2c, 3o, 4c, 6c, 7q, 8o, 9q, 10q, 11q, 13c, 14q, 15q

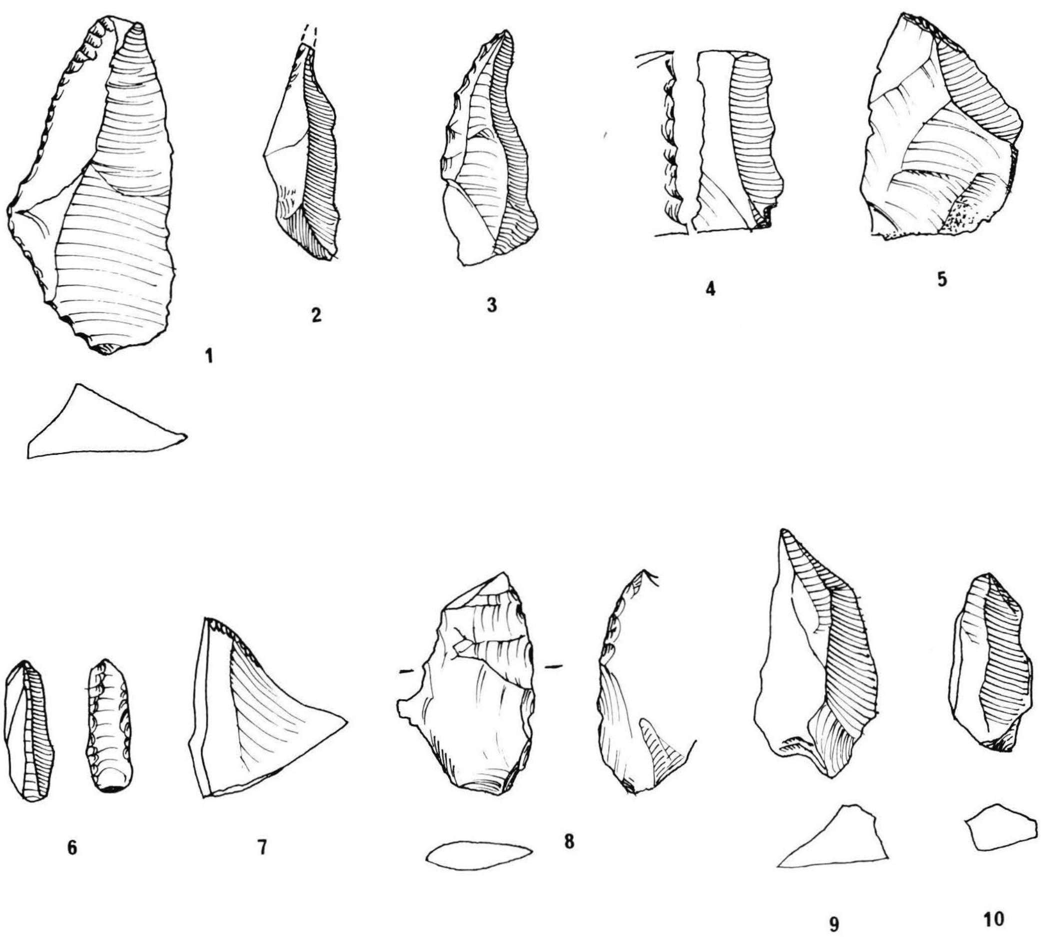


Plate 22. KFR-A12.

Retouched flakes from H. IV: 1o, 4o, 5c, 6o, 7o, 8o
borers from H. IV: 2q, 3q
»spikes» from H. IV: 9q, 10q

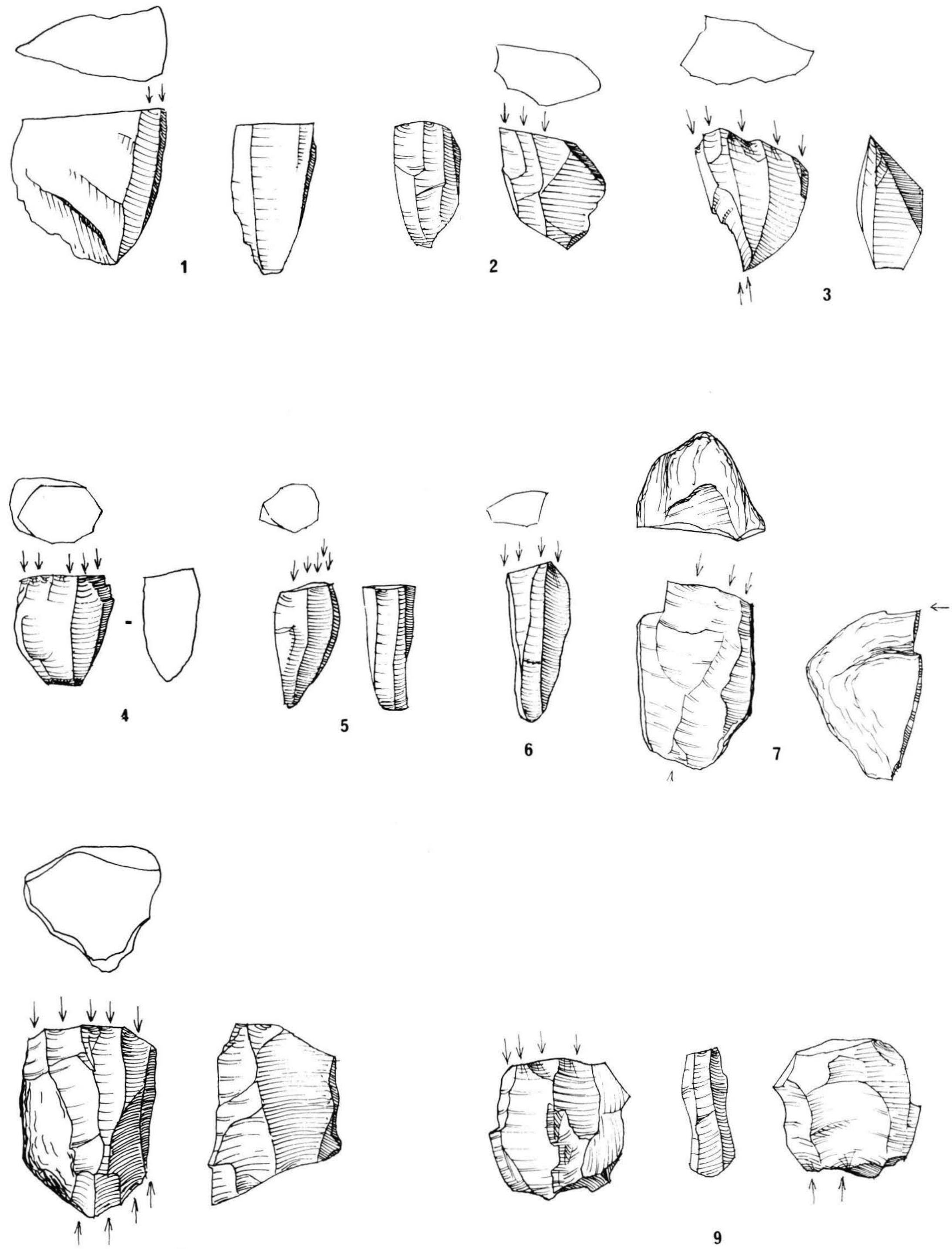


Plate 23. KFR-A12.

Cores from H. IV: 1q, 2c, 3o, 4q, 5q, 6q, 7q, 8c, 9o

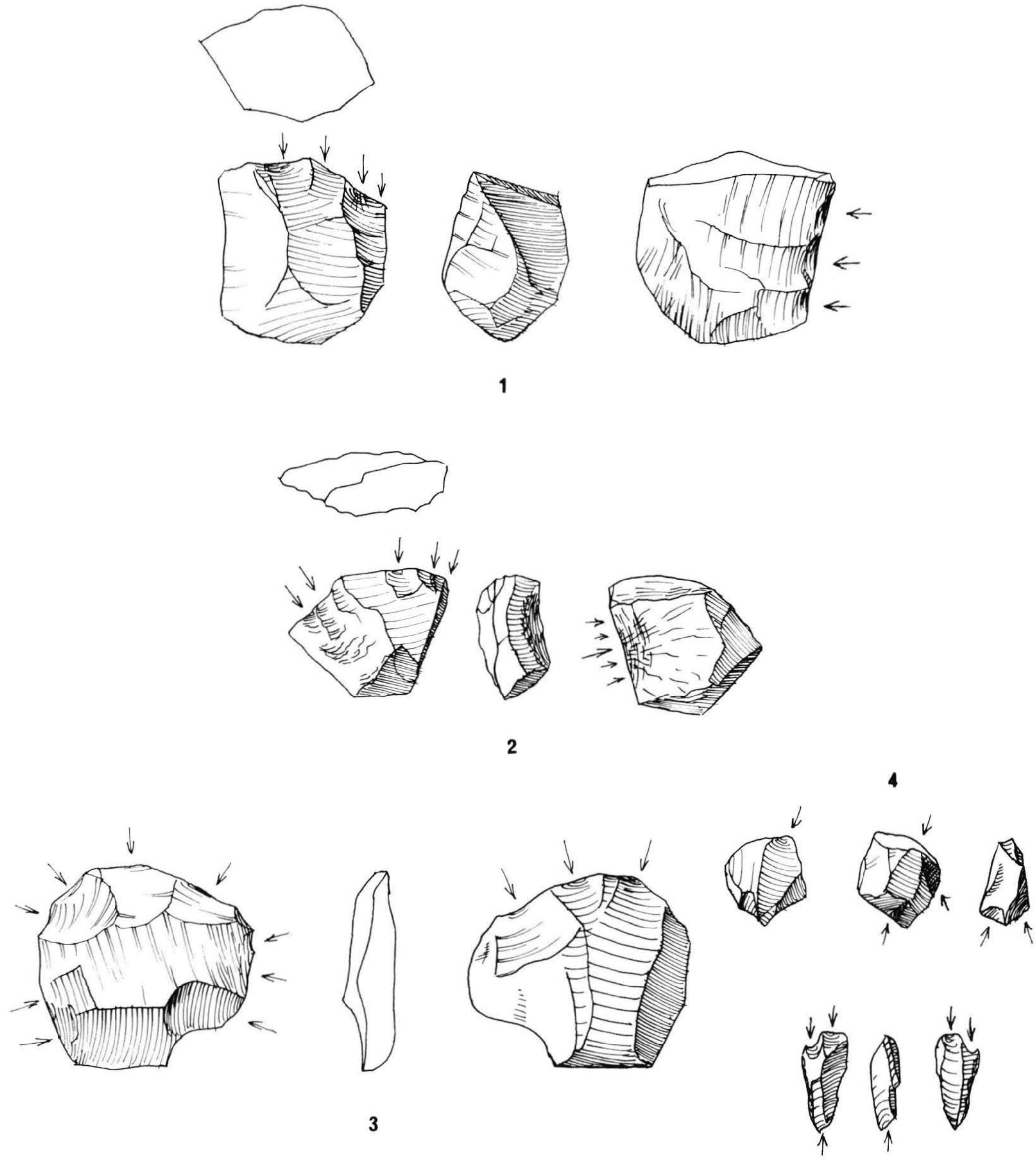


Plate 24. KFR-A12.
Cores from H. IV: 1q, 2c, 3c, 4o, 5o