

HAASKRAAL AND VOLSTRUISFONTEIN

**LATER STONE AGE EVENTS AT TWO ROCKSHELTERS IN THE ZEEKOE VALLEY,
GREAT KAROO, SOUTH AFRICA**

By

Timothy James Graham Hart

Dissertation submitted to the Faculty of Arts,
University of Cape Town,
in fulfillment of the
degree of Master of Arts.

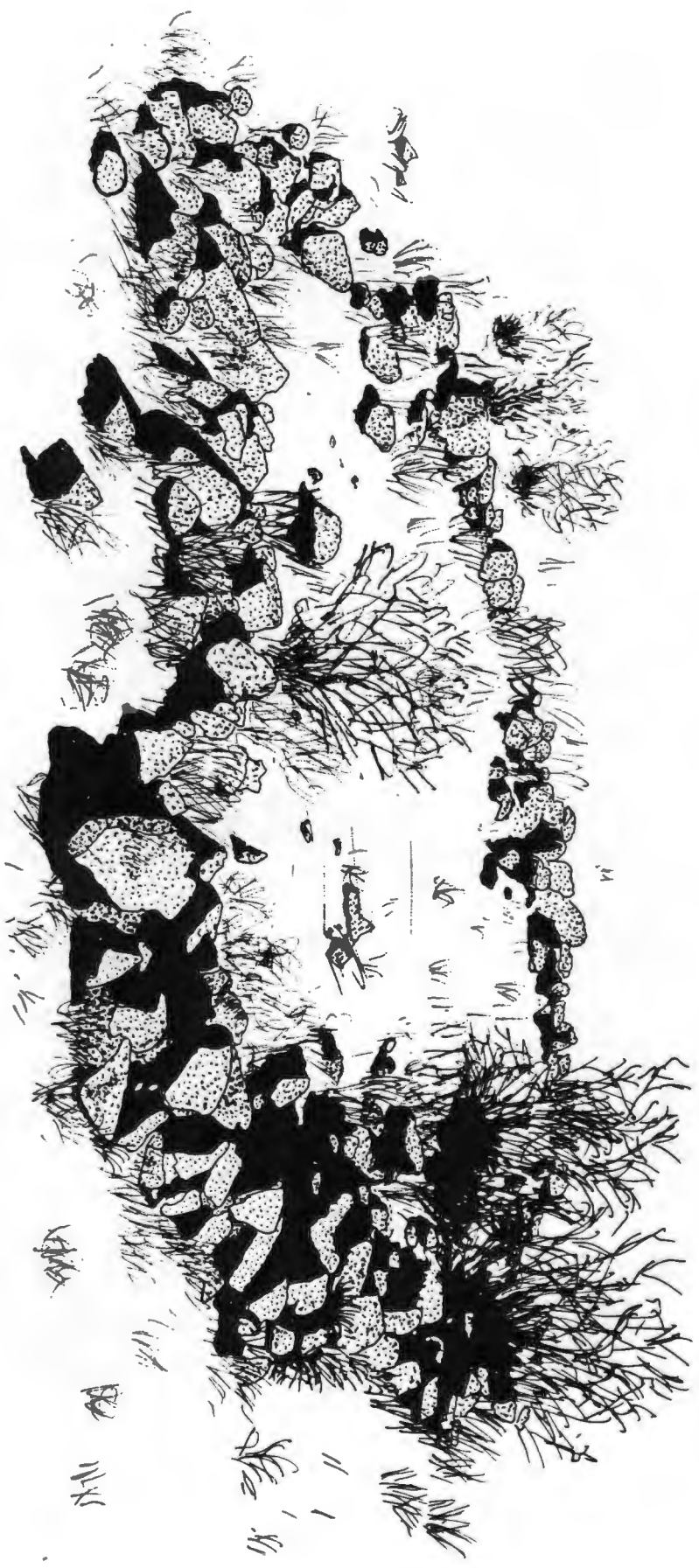
February 1989

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*Tumbled walling of a prehistoric kraal
near Haaskraal shelter, Great Karoo.*



ABSTRACT

The Zeekoe Valley Archaeological Project has been directed towards establishing whether group territories of prehistoric hunter gatherers could be detected by plotting areas of shared decorative motifs found on grass tempered pottery of Late Stone Age open sites. Much information about the surface sites of the Late Stone Age period of the Zeekoe Valley, Karoo, has accumulated. This included an apparently bounded distribution of stone circles thought to be kraals of prehistoric herders. It was possible that the presence of hunter gatherers and herders in the same region at some unknown period in the past would have resulted in a frontier zone where interaction between people following different lifestyles took place.

Haaskraal and Volstruisfontein shelters were excavated to provide a temporal dimension to the body of surface data that had been collected. In addition, both shelters were close to prehistoric kraal zones that were rich in a specific associated ceramic type. It was expected that the excavations would provide dates for the advent of kraals. A survey along the banks of the Seekoei River was conducted to establish the northernmost geographical extent of the kraal distribution.

Results of the excavations have revealed that the kraals were constructed between 600 and 1100 B.P. A complicated ceramic

sequence involving the introduction of undecorated grass tempered pottery (1100 B.P.) followed by at least one intrusive technological tradition (herders) was revealed. During later times (post 600 B.P.) a number of decorative motifs on grass tempered pottery were discretely stratified within the sequence, thus providing a chronology for some of the decorative boundaries found among surface sites in the Zeekoe Valley. The kraal survey revealed that the distribution of kraals is wider than originally thought with the result that expectations of an archaeologically visible frontier zone in the Zeekoe Valley have been abandoned.

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PREFACE

Archaeologists attempt to study human behaviour in prehistory. In so doing, he or she tries to re-create and understand past human physical and social environments. This is a multi-disciplinary endeavour which often requires both the co-operation of the public and the expertise of people with specialist knowledge. Thus, archaeological research (and most certainly this project) embodies the collaboration and goodwill of many people working in diverse fields - academics and landowners alike.

All the field work for this dissertation was supported by the Zeekoe Valley Archaeological Project (ZVAP). Professor C.G. Sampson provided continuous discussion, support as well as ZVAP information during the excavation and subsequent phases of this project. I am also indebted to Mrs B. Sampson who provided logistical support, ran the ZVAP camp and nourished the crew during the 10 months of field work.

Mnr F. Naudé and Mnr v.Z. Naudé granted permission to excavate on Haaskraal and Volstruisfontein farms. Acknowledgement is also due to the many Zeekoe Valley farmers who allowed access to their land during the kraal survey.

During the analysis phase of this project, funding was provided by the Human Sciences research council, the University of Cape Town and British Petroleum in the form of bursaries. The

Archaeology Department of U.C.T. provided me with working space and the use of their facilities. Prof. J.E. Parkington supervised the project and I am particularly grateful to him for his support and close attention during the preparation of this manuscript.

The Archaeometry Research Group willingly provided me with data, access to their facilities and general interest in this project. Particular thanks are due to Ms D. Alder (isotopic analysis of fauna), Ms J. Sealy, Mrs J. Lee-Thorp for their help and advice. Ms S. Saitowitz analysed the glass beads. Prof. N.J. van der Merwe flew me to Richmond to collect comparative fauna. Mr J. Lanham furnished his expertise in the final production of this dissertation.

Mr M. Herbert processed photographic material appearing in this dissertation. Special thanks are due to Mr I. Webling who wrote a number of computer programs for the analysis of the excavation material.

Mr G. Avery aided identification and allowed me access to the S.A. Museum faunal collection. Mr "Tommy" Steele (Cape Gunsmiths, Sun Valley) identified a rifle bullet. S. Woodborne analysed the Haaskraal potsherds and allowed me use of his findings. Dr. P. Roux (Grootfontein Agricultural College) and Mr P. Watermeyer kindly lent us survey equipment during the course of the excavations. Mr C.B. Bousman (Southern Methodist University) provided useful comment and assisted with the mapping of the sites. The radiocarbon laboratory of Southern Methodist

University, Dallas, Texas provided all the dates pertaining to Haaskraal and Volstruisfontein shelters.

Thanks are due to Prof. T. Huffman (Wits), Dr. D. Miller, Dr. F. Thackeray, Mr R. Yates, Dr. J. Deacon (access to literature stored at University of Stellenbosch), Ms L. Webley, Ms M.K. Patrick, Ms J. Sugden (Environmental Studies) and S. Newton-King for their interest and discussion. Mrs K. Sprekenbrink, Ms F. Tucker, Ms J. van Wyk, Ms D. Alder, assisted with the analysis and computerization of artefacts.

Finally, special mention is due Mr and Mrs C.F. Rubidge of Zoetvlei, Richmond who furnished me with a wealth of local knowledge and typified the friendship and hospitality of the people of the Zeekoe Valley.

CHAPTER 1

INTRODUCTION

The Great Karoo has been a focus of archaeological interest for most of this century. Observations by pioneering archaeologists working in this area have resulted in some of the first formulations of models of prehistory in the southern most parts of Africa (Hewitt 1921; Goodwin and van Riet Lowe 1929). These early interpretations of the Southern African sequence formed a research base that continued to be enlarged upon by subsequent archaeologists for some 50 years. A period of intense investigation undertaken by C.G. Sampson in the Middle Orange River resulted in a reformulation of the latest of these sequences. This work, completed in 1972 (Sampson 1972) has stood as a backdrop to much scientific enquiry that has taken place in the interior of Southern Africa of late.

The Zeekoe Valley Archaeological Project (ZVAP) led by C.G. Sampson is the latest study of Karoo prehistory to date (Sampson 1985). The Seekoei River is a tributary of the Orange - thus the research area is geographically and environmentally linked to that of the Middle Orange River. The research area is essentially the catchment area of the upper and central Seekoei River which incorporates a variety of Karoo landscapes ranging from alpine grasslands to dyke and hillock strewn Karoo plains. The project has thus far involved a series of detailed excavations coupled with a huge regional survey aimed at

achieving a 100% sample of surface sites in the area. Haaskraal and Volstruisfontein shelters were the first of a series of sites excavated in the Zeekoe Valley. The cultural remains from these shelters have now been completely analysed, the results of which are presented in this thesis.

Prior to the excavation of Haaskraal and Volstruisfontein shelters, a large body of surface information had been collected by ZVAP field archaeologists. Most of this consisted of details of Late Stone Age sites that contained possible evidence of group territories recorded in ceramic motifs, as well as hints of hunter gatherer and herder interaction at some unknown period in the past (Sampson 1984b). The body of surface information urgently needed to be given a temporal context. Haaskraal and Volstruisfontein were excavated with this in mind.

Haaskraal and Volstruisfontein not only answered immediate questions raised by the ZVAP, but may also be seen as providing some of the latest evidence and newest interpretations of that aspect of the Late Stone Age of the interior known as the Smithfield industry (Sampson 1974). The use of the term 'Smithfield' has evoked much discussion among researchers of the Late Stone Age (Humphreys 1979, Thackeray 1981). New evidence recovered from Haaskraal and Volstruisfontein that is of relevance to the debate, will be discussed during the course of this thesis.

Part of this thesis is devoted to providing a brief history of research into the Late Stone Age in the interior of Southern Africa. It is important that the excavations at Haaskraal and Volstruisfontein are viewed within the context of the long history of research development and debate that has been mirrored in archaeological interpretations in the central interior of South Africa. Haaskraal and Volstruisfontein are part of a new body of archaeological evidence and interpretations that have been generated as a result of the Zeekoe Valley Archaeological Project - the latest and without doubt, the most detailed study of the Stone Age archaeology of the interior of Southern Africa to date.

The first 2 chapters are designed to give the reader a general insight into the Great Karoo - the kind of environment that prehistoric people were adapting to and surviving in. The arrival of European farmers resulted in a bitter frontier war that initiated the eventual demise of Stone Age people of the Great Karoo. The area's geological history and ecology are briefly discussed in the second chapter. Chapter 3 presents a little of what is known of historical European experience of the Karoo - this includes some ecological observations as well as accounts of the indigenous people who were living there before the advent of European farmers. Chapter 4 contains an historical account of the birth and growth of archaeological research in the interior with specific reference to the work undertaken by Sampson (1972) and Humphreys (1979) at sites near the Middle Orange River. This is followed by a detailed discussion of the achievements of the ZVAP which provides

context to the excavations and kraal survey carried out by the author. Chapters 7, 8, 9, 10 and 11 contain the results of the kraal survey as well as the analyses and results from the excavations at Haaskraal and Volstruisfontein. The concluding chapter discusses the findings in terms of their implications for both the ZVAP and the regional sequence in general. The final pages of this dissertation contain summary tables of artefacts, as well as raw data and statistics concerning measurable artefactual samples recovered.

The data for this dissertation were accumulated over a 10 month period in 1984-85. During this time the author was employed for 4 months as a field worker by the ZVAP. Two months were spent at Blydefontein gaining experience in ZVAP excavation methods before the excavations at Haaskraal and Volstruisfontein were attempted. The author's own field work included a kraal survey of the Seekoei River and the excavation of Haaskraal and Volstruisfontein shelters.

CHAPTER 2

KAROO GEOLOGY AND ECOLOGY

INTRODUCTION

Much of the Cape province as well as the southern part of the Orange Free State is known as the Karoo. Most people who pass through the Karoo today do not realise that what seems to be a vast expanse of arid landscape was once home to many groups of pre-colonial people. A deep understanding of the this seemingly harsh environment enabled humans to exploit the many hidden resources that this region had to offer. This chapter introduces Karoo geology and ecology - many aspects of which were important in the lives of prehistoric people as well as those of Europeans who moved into the region in historic times.

The Karoo, a large portion of South Africa, is arid or semi-arid with a characteristic vegetation that consists of dwarf shrublands and open grasslands (Cowling and Roux 1987). Much of the Karoo is of high economic value to South Africa. During the last 2 centuries the region has been subjected to intensive sheep farming with the result that very few indigenous animals remain. Hoffman and Cowling (1987) have divided the Karoo into 2 regions on the basis of rainfall. The Succulent Karoo in the west is subject to winter rainfall, while the Nama Karoo, which covers the central interior of the country (including the research area), experiences a late

summer/autumn rainfall. Both these regions are vegetated by drought adapted plants. Roux (1966) however, has observed that the composition of plant species in the Eastern Karoo (ZVAP) is sensitive to changes in rainfall with grass cover increasing after wet periods.

GEOLOGY

Although little is known about the ecology of the Karoo biome, the geology and paleontology of the region has been a subject of research for some years. The flat plains of the Nama Karoo are underlain by a series of shale and mudstone strata which represent some 400 million years of depositional events (Visser 1986). The basal rocks of the Karoo sequence are known as the Dwyka formation which was deposited by a wet based glacier during the Permo-Carboniferous glaciation. This was followed by the deposition of the Ecca formation which is made up of sediments deposited in a shallow lake that covered what is now the interior of Southern Africa. Ecca shales form many of the large flat plains of the Northern Karoo (Truswell 1977; Tankard et al 1982; Visser 1986). The best known depositional event of the Karoo sequence is the laying down of the Beaufort shales at about 230 million years ago. These shales are rich in a stratified sequence of fish, reptilian and amphibian remains that lie fossilized in Permian and Triassic period swamp deposits (Truswell 1977; Visser 1986; Oelofsen and Loock 1987).

At the end of the Triassic period a series of geological upheavals took place with the fragmentation of the Gondwanaland

continent. These were largely responsible for giving the Karoo its characteristic landscape. Triassic period volcanic activity took place over an extended period of time beginning at 187 million years ago (Truswell 1977). During this time the horizontal volcanics of the Drakensberg were laid down and the shales of the Karoo were penetrated by dolerite intrusions and extrusions in the form of vertical dykes and horizontal sills following the bedding planes of the shales. These geological structures give rise to a very uneven topography with general occurrences of mesas, hillocks and sharp ridges (Visser 1986). The Sneeuberg mountains of the Zeekoe Valley are made up shales and siltstones capped with dolerite sills.

In the Zeekoe Valley extruding dolerite dykes and hillocks exposed through differential erosion are dominant features of the landscape. These igneous events resulted in the the formation of lydianite - a fine grained black rock with a conchoidal fracture. Lydianite is formed when a dolerite intrusion takes place and bakes the surrounding mudstone to a metamorphic form (Visser 1986). Prehistoric peoples enthusiastically exploited lydianite exposures for raw material.

GEOHYDROLOGY

In terms of yearly average rainfall the Great Karoo is a semi-desert area. Like many parts of the eastern Karoo the Zeekoe Valley is rich in fountains and seepages that play an important

role in making this area viable farming country. By the same token the land was habitable for prehistoric man and animals.

Ground water in the Great Karoo is usually associated with dolerite dykes and to a lesser extent, sills. Cracks in the Karoo shales along dolerite intrusions are common. The shales themselves are fairly impermeable to water. Most of the groundwater storage takes place in cracks which act as underground reservoirs. This means that the Karoo system's ability to store water is actually fairly limited. It is easily depleted by borehole action with groundwater levels being sensitive to fluctuations in rainfall (Hodgson 1986).

Intensive borehole pumping and donga formation has lowered the water table in historic times. Many natural fountains no longer flow because of this.

CLIMATE

The Karoo climate is one of extremes of temperature with heavily fluctuating yearly rainfall. Venter, Mocke and de Jager (1986) noted that South Africa's average annual rainfall decreases from east to west. The south eastern part of the country receives some 600 mm of rain per year whereas the north west gets little more than 100 mm per year. The eastern part of the Great Karoo (research area) has a mostly summer rainfall of about 200-300 mm per year. The lowlands and Camdeboo plain to the east of the escarpment enjoy a little more at 4-500 mm

per year. Winter rain can occur but this tends to be less than 10% of the total average rainfall.

In the Zeekoe Valley most of the yearly rain tends to fall in the months of February and March but the quantity can fluctuate greatly from year to year. Periods of extended drought that seriously affect grazing are a feature of this rainfall pattern. Tyson, Dyer and Mametse (1975) suggested that the summer rainfall area may be subjected to a 15-20 year drought cycle but this too, is highly variable which means that accurate predictions cannot be made.

Temperatures in the Great Karoo are extreme with cold winters and bitter winds that blow from the south. For 60 days a year minimum temperatures are below freezing and frost may occur for some 160 days a year. Snowfalls in the Sneeu Berg Mountains are quite common. The summers are warm with an average temperature in the summer month of January in excess of 30 degrees. During the spring, strong north westerly winds add to the harshness of the environment. Wind factors and fluctuations in temperature are thought to have strongly influenced prehistoric settlement patterns (Sampson 1988b).

ECOLOGY

Deterioration of the Karoo veld has been reported throughout this century. Cowling, Roux and Peterse (1986) have stated that the dwarf shrublands and arid grasslands of this region have

changed in their species composition with the advent of European farming. Reduction in the productivity of this region has resulted in the launch of the Karoo Biome Project directed at establishing a fundamental understanding of this ecosystem.

Acocks (1953) has hypothesized that the Karoo has been spreading at the expense of sweetveld grasslands. The arid karoo is invading the central upper Karoo and the succulent Karoo is invading the arid Karoo. He presented an overall picture of increased aridity and unpalatability of vegetation. He predicted that by the year AD 2050 much of the central Karoo will be desert with karoo veld taking over much of the Orange Free State, Lesotho and the Eastern Cape. More recently, Roux and Theron (1987) are in agreement with Acocks's (1953) documentation of veld change. The mechanism of this deterioration is seen to be selective grazing and overgrazing which leads to the domination of unpalatable veld types and increased soil run off. In many instances erosion caused by overgrazing has led to donga formation. This results in lowering of the water table, soil loss and fertility loss when B horizons are exposed (Roux and Opperman 1986). Deep donga formation in the Sneeuberg Mountains has resulted in the desiccation of many vlei areas which could have supported high quality grazing (F. Rubidge, pers. comm.). Conservation measures are currently directed towards the reclamation of these vlei areas.

It is possible that Karoo veld deterioration need not only be a feature of historic farming but the process may have begun with the introduction of prehistoric herding. In addition, very little is actually known about the appearance of the Great Karoo before the advent of European farming. There is very little by way of a standard to quantify Karoo veld deterioration. What is clear, is that this area was heavily grazed by wild animals including massive herds of trek springbok (Skead 1985) and a variety of large ungulates. Little is known about the effect of these animals on Karoo veld as compared with the habits of domesticated animals farmed in the interior in historic times. This thesis will document a preliminary examination of veld change in the Karoo by archaeometrical means.

The Zeekoe Valley falls into the false upper Karoo zone as designated by Acocks (1953). Acocks believed that these areas used to be sweetveld grass land now converted to Karoo scrub by the introduction of merino sheep. Grasses still grow on dolerite dykes and after good rains large stands of Themeda triandra may be seen on the plains. Perennial grasses amounting to some 22 species as well as numerous bushes and shrubs have been documented by Acocks (1953).

The southern part of the research area (map 1 and 2) is dominated by the Sneeu Berg Mountains that form and lie north of the great escarpment. The high reaches of these mountains are vegetated with snow-adapted sourveld grasses which are

considered to be of low nutritional value by farmers in the area. These grasslands are almost devoid of shrubs as severe winter frosts and snowfalls are common. Less extreme conditions on the lower slopes and plains are more conducive to the growth of shrubs and bushes. Louw (1962) conducted a study on the relationship of divergent veld types and the productivity of merino sheep. Upper mountain plateaux, lower mountain plateaux and Karoo flats were examined for comparative nutritive efficiency. It was found that the grasses of the high regions were deficient in crude protein whereas grasses and bushes growing on the flats contained more than adequate amounts for sheep. A similar situation applied to a range of trace elements essential for sheep. In other words the mountains of the Karoo, despite a higher rainfall, are not solely adequate for maintenance of livestock in contrast to the plains which are adequate in all respects. In prehistoric times the mountain areas would have attracted few people or animals. For short periods in the late summer resources would have been a little more plentiful when the alpine grasses reached their full nutritive status.

Many species of indigenous fauna in the Zeekoe Valley no longer exist as the area is used for the rearing of sheep. Antidorcas marsupialis (springbok) are the only remaining herd animals and these are commercially culled by farmers from time to time. Damaliscus dorcas phillipsi (blesbok) which were also historically encountered are occasionally maintained in small herds. Pelea capriolus (vaal ribbok) are still found wild in the high Sneeuberge and are probably one of the few herbivores

able to inhabit this environment (Smithers 1984). Tragelaphus strepsicolus (kudu) are common in the scrubby bushveld below the escarpment and farmers report that they have been known to move onto the high lying areas in response to drought.

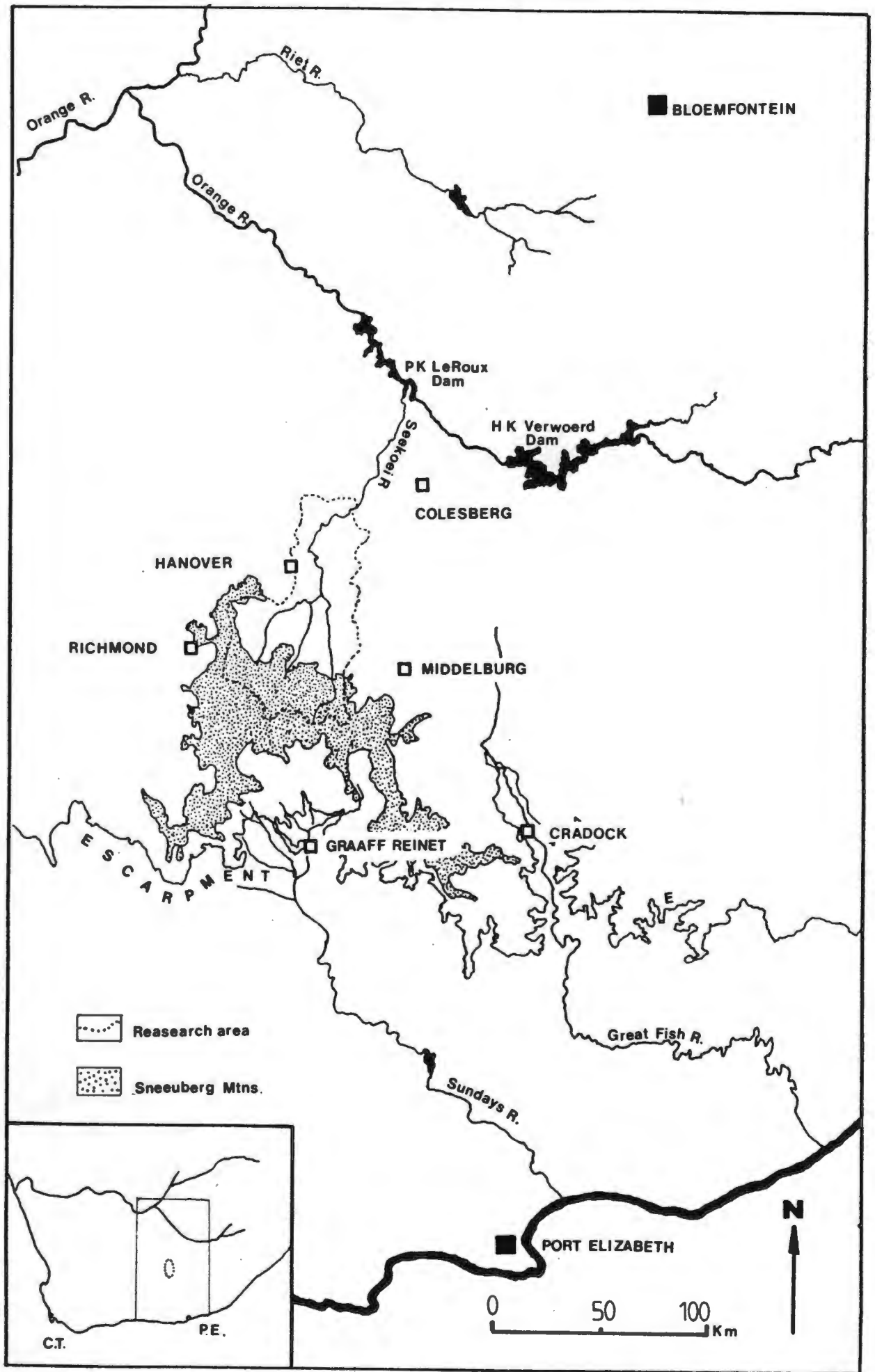
Small game is still numerous in the Zeekoe Valley. Raphicerus campestris (steenbok) abound as do Procavia capensis (dassie). Pronolagus rupestris (rock hare) are often seen on dolerite rock formations. Lepus saxatilis (hare) are common in the open country. Orycteropus afer (aardvark) are common but not often seen. Hystrix africaeaustralis (porcupine) are often hunted and favoured as a delicacy by local people. Pedetes capensis (spring hare) are also hunted but not favoured as food. Larger carnivores still living in the area include Felis caracal (favoured as food), Felis lybica (wild cat) and Canis sp (jackals). Small carnivores include a multitude of members of the family Viverridae. Reptile species and avian species abound throughout the Karoo.

The mammalian fauna of the area is, in comparison with that mentioned in historic texts, depleted. Large herds of Equus quagga (quagga), Connochaetes sp. (gnu) and Alcelaphus buselaphus (hartebeest) no longer exist. The huge herds of trek springbok (Green 1955) have been fragmented with the advent of barbed wire fences.

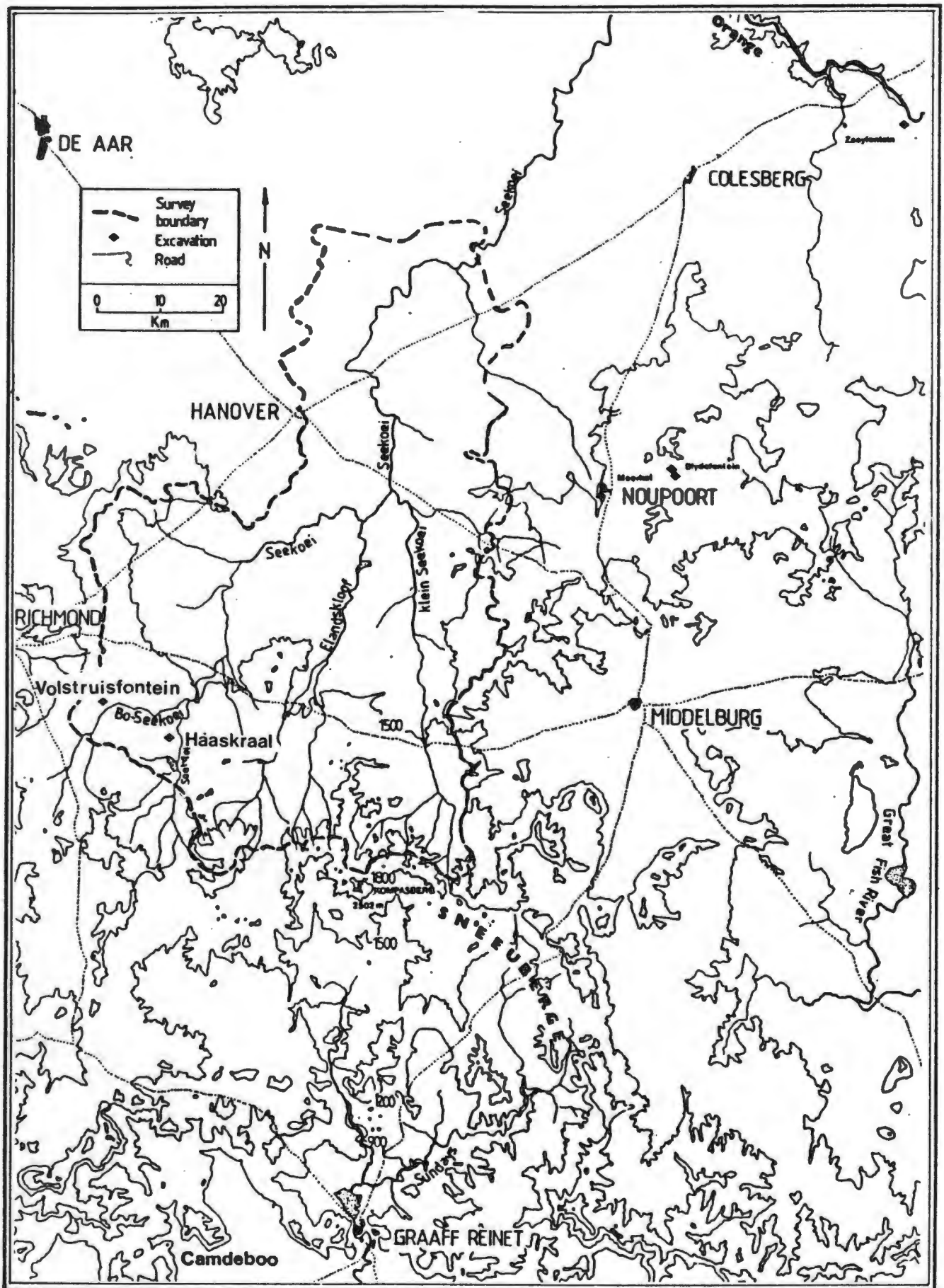
Acocks (1953) is of the opinion that the great diversity and mobility of game in the Karoo would have resulted in diverse grazing habits and so maintained the veld in climax state.

Recent archaeological surveys (Sampson 1985) have shown that the Karoo has been the home of both herding and hunting peoples in prehistory and this could also have had an effect on the appearance of the Karoo (Sampson 1986a). Researchers of Karoo ecology may be seen to be in tentative agreement that the Karoo landscape as known by prehistoric people was less harsh than it is today. Historic records indicate that European settlers were able to farm quite successfully in the Eastern Karoo - the major problem that they faced was not the physical environment but the indigenous people with whom they were competing.

The following chapter describes some early European experiences in the region of the Zeekoe Valley.



MAP 1 Geographical location of the Zeekoe Valley research area.



MAP 2 Geographical location of the Zeekoe Valley research area (detail).

CHAPTER 3

SOME EARLY TRAVELLER'S ACCOUNTS OF THE ZEEKOE VALLEY

INTRODUCTION

Historic records can be a valuable source of information about the behaviour of indigenous peoples and the character of Pre-European conquest environments in Southern Africa. Until recently all that was known about Khoi herders in southern Africa came from diaries of governors of the Cape and accounts of explorers and traders who penetrated into the interior. Parkington (1984) has put forward the broad suggestion that the early colonists in the Western Cape made a distinction between hunting and herding peoples. Hunters were commonly referred to as Sonqua or Soaqua. They inhabited the mountains of the Cape Fold Belt in historic times. These people have been described as being small in stature and lived in humble dwellings made of branches. They lived by hunting and gathering and occasionally raided stock. The herding peoples, who called themselves Khoikhoi and were known by the colonists as Hottentots, lived in fairly large settlements of 'matjieshuise' and maintained herds of cattle and sheep. Parkington feels that the Soaqua or Sonqua mentioned in historic records were relict populations of people, who today would be known as Bushmen or San. The existence of real cultural and physical differences between Khoi and San stimulate debate among researchers today.

During the course of the ZVAP it became apparent that possible remains of herding communities existed in the area. It was necessary to consult historic records to find out whether these people were present in the valley during historic times or whether this was a prehistoric event. Acocks (1953) has suggested that a great deal of botanical change has taken place in the Great Karoo as a result of European land usage. It was hoped that historic sources may contain clues as to what the environment may have looked like prior to this time. A final reason for consulting historic records was to gain insight into the San who populated the area prior to and during the arrival of Dutch frontiersmen into the area. This event resulted in serious conflict and the demise of the San (Van der Merwe 1937).

EARLY TRAVELLERS IN THE ZEEKOE VALLEY

The Cape frontier was opened up well prior to the Great Trek by the advance of transhumant trekboer farmers. The expansion of the Cape Colony is documented by Van der Merwe (1937). Trekboer expansion began early in the 1700s with the colonisation of the Cape south of the Cape Fold Belt mountains. By 1740 European stock farmers had begun to penetrate into the Great Karoo and by 1760 this expansion had reached as far as the Nieuweveldsbere (in the Beaufort West district). From this point onwards farmers moved north eastwards below the escarpment and by 1770 were beginning to settle in the Graaff Reinet district, the Camdeboo plains as

well as the lower regions of the Sneeu-berg Mountains (Van der Merwe 1937).

The Graaff Reinet district was an historically and geographically important land mark in the expansion of the Cape Colony. North east of this point expansion was curtailed by encounters with Bantu speaking agro-pastoralists (Bergh and Visagie 1985). Any penetration of the interior had to take place via the escarpment and the Sneeu-berg Mountains to the west. North of the Sneeu-berge the Seekoei River with it's permanent standing water in the winter months provided a passage to the Orange River. The area had the reputation of providing excellent grazing for sheep and supported herds of game (Burchell 1822). The area was also populated by numerous San who put up a fierce resistance to the encroachment of the Europeans.

Published accounts by early travellers who ventured into the Zeekoe Valley are rare. The trekboers and frontiersmen who had settled in the Graaff Reinet district by 1770 were illiterate. By the time that people such as Spaarman, Gordon, Barrow, Lichtenstein and Burchell had written accounts of the area, Graaff Reinet had become an established centre with the surrounding Sneeu-berg Mountains being exploited by European settlers and their Hottentot followers. By this stage the indigenous population was in a state of upheaval and living fugitive lives in the rocky kloofs of the Sneeu-berg mountains. Consequently, historic information regarding the San must be

seen as being influenced by the conflict. It is likely that the aggressive frontier situation would have had an impact on the final archaeological manifestations of the indigenous people.

The very earliest written account of any expedition venturing anywhere near the research area was that of Isaq Schrijver, who journeyed to the Camdeboo Plains near where the Karoo town of Aberdeen is today (Mossop 1931). Schrijver was despatched by order of Simon Van der Stel in January of 1689. The purpose of the journey was to make contact with the Inqua Hottentots and open up a route to the interior. Schrijver travelled along the eastern and southern coast and then entered into the interior via the Outeniqua mountains towards Uniondale, Willowmore, and into the Great Karoo. Here they "found a plain level as far as the eye can see" (Mossop 1931: 228). This land was described as being poor for agriculture but good pasture was found along the river banks where the cattle could be grazed. En route through the Karoo the party encountered a small group of people who were described as being Sonqua but eventually made contact with chief Heijkon of the Inquahase Hottentots on the Camdeboo Plain. Heijkon's kraal lay in the Ouplaas River kloof at the foot of the Camdeboo mountains which today lies some 40 kms west of the town of Graaff Reinet.

Schrijver's description of Heijkon's kraal is not informative except that he tells that a good deal of bartering took place and some 500 cattle and a flock of sheep were obtained (Mossop 1931: 236). It would seem likely that the Inqua were a very strong

herding community since their resources were sound enough to enable them to exchange such a large quantity of stock. Shortly after the bartering took place Heijkon moved his kraal for he feared that the Songwas would raid him. Schrijvers return to the coast was marred by continuous attacks by the Hongliquis Hottentots who were intent on stealing the stock. It is probable that the Hongliquis were actually Songwas as described by Parkington (1984). Schrijver's account substantiates that herders were on the Camdeboo Plains below the escarpment and the Zeekoe Valley. The Camdeboo Plain existed as a fertile island in what was mostly a barren landscape.

The Inqua are described by Elphick (1985) as an unusually powerful group of Khoi under very strong leadership. They enjoyed the allegiance of both the Cape Khoi and the Central Khoi peoples (Khoi groups in the Southern and Eastern Cape) but were absorbed by the Xhosa by about 1700 (Newton King and Malherbe 1981).

For the next 90 years very little was recorded of events in the eastern interior of South Africa until 1760 when Europeans were beginning to settle on the pasture lands of the south east coast and on the plains of Camdeboo (Newton King and Malherbe 1981; Van der Merwe 1937). The early colonists were orientated towards stock keeping and subsistence and did not record the "irrelevancies" of indigenous peoples or environment. This kind of information was collected by pioneer explorers who visited the Cape at the end of the 17th and the beginning of

the 18th century. Many people travelled along the east coast but very few ascended onto the escarpment and moved into the Great Karoo. The village of Graaff Reinet developed as a trekboer centre (Van der Merwe 1937). The Sundays River which flows through the town contains pools of permanent water and allowed a small amount of settled farming with vegetable cultivation and raising of cattle (Lichtenstein 1815 :467). The lower slopes of the Sneeuberge had been taken over by trekboers by 1780. They enjoyed excellent circumstances for the raising of stock but lived under the continuous threat of San resistance (Van der Merwe 1937).

Some early travellers who ventured into the interior provided fairly rich accounts of the natural history and the habitat of the people they visited during their travels. The Swedish doctor Anders Spaarman travelled to the Eastern interior and visited the area called Agter Brintjies Hoogtes which lies some 80kms east of Graaff Reinet in 1775. He described the area north of the Camdeboo Plains as being dominated by the Sneeuberge in the north. These mountains were covered by snow in the winter months. He also told that the lower slopes of these mountains were inhabited year round but the higher reaches of the range are so inhospitable in the winter months that farmers had to move their complete households down onto the plains of Camdeboo (Spaarman 1772-76 Vii: 110). Also mentioned by Spaarman (1772-76 Vii: 100) is the fierce resistance put up by the San of the Sneeuberge who would use terror tactics against lonely farms and shepherds, often driving off complete herds of sheep and maiming those that they could not

steal. According to Spaarman the San were coming together in large groups "to the amount of some hundreds of people" (Spaarman 1772-76 Vii: 111) and were hiding in the Sneeu-berg mountains.

According to Spaarman (1772-76 Vii: 112) the people who were residing at Agter Bruintjies Hoogtes prior to and during the arrival of the Europeans were the Snese Hottentots. Their complexions were of a yellow cast and they were said to be of "a different nation." Spaarman was unfortunately not able to journey into the Sneeu-berge as a horse disease was afflicting the area.

The first concise record of any penetration of the Sneeu-berge and the land beyond was that of Robert Jacob Gordon who was in command of the Dutch garrison at the Cape. His original journal is not yet translated but is commented on by Forbes (1965). On his first journey he ascended to the area of the Compass Berg and connected with the Seekoei River which flowed northwards from this point. Here he gave up his search for the Orange River but eventually reached his goal via Cookhouse and Somerset East. Gordon made a second trip to the area in the company of Governor Van Plettenberg on his journey to the eastern boundary of the colony in 1778. By this time European farms had been established north of the Sneeu-berg watershed and well into the Zeekoe Valley research area. Gordon travelled a long way down the Seekoei River and set up Van Plettenberg's beacon which marked the outermost extent of the colony.

Another visitor to the Sneeuherge was Hendrik Swellengrebel in 1776 (Forbes 1965). He described the Camdeboo Plain as being a green strip of land beneath the Sneeuherg mountains. Grass grew well here unlike in the karoo "which is meagre and dry" (Forbes 1965:68). By this time there were some 30 wheat and cattle farms on the Camdeboo Plains, many of which were owned by people from the Cape.

Sir John Barrow journeyed through the Sneeuherg Mountains in 1789 and followed the course of the Seekoei River to the Orange. By the time that Barrow reached the Graaff Reinet district there were no independent "Hottentots" in the area as they were all employed by the Dutch. There was a bitter state of conflict between the colonists and the San of the Sneeuherge. In 1789 it was impossible for a farmer to venture out of his home unarmed lest he be attacked by raiding San. In turn the Boers were actively hunting the San by means of commandos (Barrow 1801, Moodie 1838). Sheep farming, despite the circumstances, was very well entrenched and some Sneeuherg farmers were managing between 3-4000 animals (Barrow 1801).

Barrow (1801 :259) found the plains of the Seekoei River valley covered with countless herds of wildebeest, eland, springbok, hartebeest and quagga. Carnivores also abounded.

In 1803 Henry Lichtenstein (1815) moved through the Sneeuberge which he described as being bare and uniform (Vii:3). In many of the hills of the Sneeuberge lay low marshy hollows which provided excellent grazing for cattle. The ridges were covered with small aromatic plants. He also mentions that the higher parts of the Sneeuberge were vacated in winter when the Boers moved to lower ground. Both Barrow (1801) and Lichtenstein (1815) remark that some people of the Sneeuberge had never seen a tree or a copse in their lives and were obliged to burn cowdung on their fires.

In 1812 William Burchell crossed into the Zeekoe Valley on his journey to the border of the colony from the Kuruman district. He travelled over many miles of Karoo and wrote one of the most detailed but confusing accounts available. While travelling somewhere between where De Aar and Hanover are today in the summer of 1812 Burchell crossed several huge plains where no true grasses were seen except for "Cyperus usitatus intermingled in various places with low bushes such as are generally met within the lands partaking of the nature of the Karoo (Burchell 1822; Vii :71)." As the party penetrated deeper into the colony towards the Agtersneeuberge the amount of grasses increased and many new species of bush were seen. Somewhere between present day Hanover and Richmond Burchell found himself on a huge plain where large herds of springbok and wildebeest were grazing. The plain was covered with low bushes not more than nine inches high and mat rushes grew in abundance along the banks of the Seekoei River (Burchell 1822, Vii:79). Once in the colony, a much frequented road lay along

the Seekoei River which serviced the needs of the transhumant trekboers. As Burchell ascended into the Sneeuberge he noted an abundance of thick grasses and on his descent a fine grassy flat abounding with mat rush and turf. The area was damp with a thick misty rain. Below the escarpment it was hotter and drier but the village of Graaff Reinet abounded in citrus, orchards and vegetable gardens. Cattle breeding was prolific.

Burchell makes no mention of people called Hottentots while on his journey from the Orange River to the colony. The "Koras" were at that time, encamped along the banks of the Orange River (Burchell 1922; Vii:6-7) where they were keeping cattle and sheep. 'Bushmen' were only seen in the central Karoo. Burchell made contact with these people with the help of Riizo, a half bushman whose kraal lay close to the confluence of the Orange and Brak rivers (Vii:13). Burchell, with Riizo acting as an interpreter, was joined by Kaabi, a bushman, who eventually led Burchell to a kraal of some people that he knew. Burchell took this as an act of friendship as the 'Bushmen' concealed the position of their kraals from the colonists. The kraal was situated on the summit of a ridge and consisted of "half a dozen wretched worn huts" (Burchell 1822; Vii:27). This kraal, according to Burchell was a melancholy picture of poverty which inspired him to depart with liberal quantities of tobacco and meat.

Two days later the party reached Kaabi's kraal which lay some 70 km north of where Britstown is today. Here Burchell gained an

opportunity to make a closer study of the 'Bushmen' (Burchell 1822 Vii:35). Once initial gifts of tobacco changed hands these 'Bushmen' gave Burchell the freedom to travel in their land after they had found out that he was not one of the Boers but of a different nation and language. Kaabi's kraal was noted to be quite large with some 20 huts arranged circularly and inhabited by some 120 people. The entrances faced inwards to the area where they kept their goats and cattle. There were some 5 or 6 oxen and 100 sheep and goats. People carried bags for the collection of uintjies. It is of interest to note that Burchell documents the use of a half-gallon bag shaped pot very similar to the class A pottery described by Sampson (1974) found near the Orange River. Many people in the kraal had the appearance of great age with their skin hanging in loose wrinkles. Their height was universally less than five feet. Burchell makes no reference to the use of stone walling in the construction of kraals. These appeared to be formed by and within the arrangement of huts.

Before entering the colony Burchell reached the kraal of another bushman called Old Crow Head. He had 98 goats and kids and 50 people under his leadership. These people spent much time telling of the injustices of the Boers. Once Burchell entered the colony no more kraals were seen so it was quite clear that by 1812 indigenous people were only to be found beyond the borders of the colony. The area south of Colesberg had been cleared and occupied by the colonists.

Burchell was in a privileged position when he crossed the Cis-Gariep for he was one of very few Europeans who had the opportunity to view indigenous people other than through a rifle sight. The mutual experience of San and travellers at that time was one of conflict which has resulted in very scanty accounts of these people in journals. The most remarkable aspect of Burchell's account was that in at least two instances 'Bushmen' were involved in what appeared to be serious stock keeping. Burchell is very assertive in his assessment of these people as being 'Bushmen' and had, at the time of his coming through the Cis-Gariep, travelled through the land of the Korannas and was familiar with the Cape Hottentots. He emphasises his fortune at being able to examine the 'bushman' nation close at hand yet Burchell's description of Kaabi's kraal is very reminiscent of the traditional idea of a Khoi settlement (Schapera and Farrington 1933; Goodwin 1952). It was constructed of houses made from mats, cattle and sheep were being maintained and the group consisted of some 120 people which is large in hunter gatherer terms. They did not appear to be using Cape Coastal pottery. It would appear that Burchell's Cape Hottentots were not able to communicate with these people as an interpreter was needed. Burchell made no reference as to whether these people belonged to any particular group such as the Kora but they seemed to exist as a unit within the nation of 'Bushmen'.

Of importance in the consideration of historic texts is a qualitative assessment of the authors tone of writing. Burchell (1822; Vii:40) states that the kraal was constructed

in a circular fashion so that cattle could be kraaled within. The style of his writing within the text would seem to indicate that the presence of cattle in this instance was not extraordinary and in a sense was expected. In contrast the tone of Burchell's words (Vii:41): "I saw no more than 5 or 6 oxen, and as many sheep, but of goats they possessed at least 100" does indicate a measure of surprise at this discrepancy. At the same time the general intonation behind the words is that it was expected that this group of people would have been in possession of stock. The fact that Burchell comments on the small size of these people indicates that this was extraordinary in contrast to other people that he had seen around. He also mentions an anomaly of the thigh bones of the women (Burchell 1822; Vii:42) which he did not notice among the Hottentots. This may have been a sign of nutritional stress or steatopygia.

The most frustrating feature of Burchell's account of these people is that the reader is presented with a picture of people who are assertively described as being 'Bushmen' or San. To all intents and purposes they are pursuing a herding economy and possess a material culture very similar to that of the Khoi. What is clear is that Burchell's conception of what constituted a bushman was certainly not governed by whether that person was in possession of stock or not. His definition was based on some feature or preconception that was so accepted at the time that he did not consider it being worthy of mention in his writings. If we are to believe Burchell's account we must accept the possibility that there were stock keeping San

near the Zeekoe Valley in 1812. It is possible that this state of affairs could have extended back into the Late Stone Age with San maintaining a herding relationship with Khoi on the Orange river or Camdeboo plain.

The demise of the hunter gatherers of the Sneeuberge came with the advent of European farmers. In 1770 a terrorist war lasting some 40 years began. Reports came back to the Cape that the colonists were being raided by San who were making forays out of the Sneeu Berg Mountains onto farms (Van der Merwe 1935). By 1774 the situation became so serious that many Sneeu Berg farmers were abandoning their farms. Calls for assistance were made to the Cape, while on the war front intensified commando activity began to take place. The commando was an informal detachment of freeburgers and armed Hottentots who actively hunted out the marauding San. In the Graaff Reinet district, the notorious actions of the veld cornet Adriaan van Jaarsveld resulted in the slaying of scores of San with 120 people being killed in a single incident (Moodie 1838; Viii:43). Accounts in Moodie's Record (1838) indicate that the colonists were facing a united front of unprecedented San resistance in 1776. In 1777 legislation passed at the Cape opened the way for the formal annihilation of the San. By the time that Burchell had passed through the region in 1812, very few San were seen.

Historic records concerning the research area indicate broadly that the 'Bushmen' were living in and north of the Sneeu Berg Mountains before 1770. Khoi were recorded as having occupied

the Camdeboo plains that lie below the Great Escarpment. It is possible that a European bias may have been responsible for causing this kind of grouping in that the term 'Bushman' may have applied to anyone who resisted the European incursion, were unwilling to barter stock with Khoi or Europeans and were therefore living in a refuge situation. Burchell's labeling of a group of people as being 'Bushmen' is curiously unqualified but it must be concluded that it was likely that herding people were living in the Zeekoe Valley in historic times. The 'Bushmen' as described by Burchell, conflict with the archaeological notion of what has become a stereotype hunter gatherer band (Lee and DeVore 1968). These 'Bushmen' clearly knew how to keep livestock. It is likely that hunter gatherers were capable of cultural fluidity in both the long and short term. Archaeologists are unable, however, to determine the extent to which group identities may have changed according to their circumstances. Burchell's description, if accepted, bears testimony to Schrire's (1984) assertion that hunter gatherer societies are often perceived as culturally static - mainly as a result of the preconceptions of the researchers.

In the late 17th century the Inqua, a strong group of herding people, occupied the Camdeboo Plains. Newton King and Malherbe (1981) suggest that that they practiced transhumance over an extremely wide area. These people also fell victim to stock theft which was probably part of a long Sneeuberg tradition in which European stock keepers found themselves involved. It is likely that the hunter gatherers of the Sneeuberge had been rubbing shoulders with stock keepers for many years,

occasionally keeping small herds of their own (see Yellen 1984; Denbow 1984). The term 'Snese Hottentot' or D' gauas ascribed to the people of the Sneeu-berg Mountains has never really been adequately qualified in the historic sources. Newton King and Malherbe (1981) as well as Forbes (1965) are of the opinion that they were hunter gatherers. It is likely that they may be the same people that Burchell (1822) described in his travels - stock having been acquired as a result of the European presence.

Historic accounts have indicated that Trekboers moved in a clearly seasonal fashion. They retreated from the Sneeu-berge during the winter months because snow falls and bitter night time frosts, freezing southerly winds (that reduce day time temperatures to below zero) are regular occurrences in this region. The scarcity of fuel would have rendered this an acute problem for European farmers and hunter gatherers alike. People could move to the lower reaches of the Orange River in the north or southwards to the lower lying Camdeboo plains below the escarpment. The Sneeu-berge are warm in summer with relatively good rain. It is likely that these regions contained many vleis and marshy areas that would have provided good pasture. Not many of these places exist today as overgrazing has led to donga formation and lowering of the water table. It may be reasonably suggested that prehistoric herders may have moved seasonally in and out of the Sneeu-berge in response to alternatively available resources.

The journals of Schrijver, Lichtenstein and Burchell hint at the environment at the time. In general, grasses were seldom found except on the banks of water courses and on the higher reaches of the Sneeu Berg Mountains. The region immediately north of the Sneeu Berge held a few grasses but there were also many bushes. The vast plains of the Cis-Gariep Karoo which were outside the border of the colony, were vegetated with little other than stunted bushes. This picture is similar to the Karoo of today, thus conflicting with Acocks (1953) hypothesis that the dominant vegetation was sweetveld grassland which gave way to scrub after the advent of modern farming.

Unfortunately records relating to the Zeekoe Valley are limited as a result of the conflict situation and the narrow interests of the people who were travelling or lived in the area. None of the accounts examined make any reference to people called Hottentots living in the area immediately north of the Sneeu Berge. This was the territory of the 'Bushmen' who are known only by records of their criminal activity listed in archival sources of the Veld-cornet reports to the Stellenbosch District authorities. A single author who made contact with these people, indicates that they were strongly interested in herding and had a lifestyle very similar to that of the Khoi as described by historic writers.

CHAPTER 4

THE SMITHFIELD COMPLEX - A HISTORY OF RESEARCH

INTRODUCTION

The birth of Stone Age archaeology in South Africa as a professional endeavour came about with dedicated studies by A.J.H. Goodwin and C. van Riet Lowe during the 1920s (Goodwin and van Riet Lowe 1929). Although interest in Southern African prehistory first manifested itself as early as 1855 most of the knowledge obtained up to this time amounted to little more than a few selective collections and papers by interested amateurs and geologists (Goodwin 1946). Goodwin initiated a breakaway from the European system of classification that earlier researchers had attempted to use in Southern Africa and was responsible for coining the terms Early, Middle and Late Stone Age (Goodwin and van Riet Lowe 1929) which are broadly used in Southern Africa today. The second development that took place at this time was a recognition of two Late Stone Age traditions known then and now as the Wilton and the Smithfield. Research has proceeded on these two traditions in a roughly parallel trajectory. Their validity is being questioned today and is a source of continuous theoretical debate.

THE WILTON AND SMITHFIELD COMPLEXES

The Wilton complex was first defined in 1921 by Hewitt and has a microlithic character with segments, small end scrapers and a

range of tools made on backed bladelets (Hewitt 1921; Burkitt 1928). The youngest phases of the Wilton contained crude pottery and non-lithic artefacts such as ostrich eggshell beads, worked bone points and linkshafts (Clark 1959). The term 'Wilton' came to be used to describe all microlithic industries in Southern Africa that display a similar tool kit. These assemblages have been noted in the Orange River Valley, parts of Southern Zimbabwe, Namibia, the south east Cape and the mountains of the Cape Fold Belt (J. Deacon 1976). Parkington (1984) points out that these areas often correspond with the distribution of fine grained rocks in Southern Africa.

The other Late Stone Age tradition that existed parallel to the Wilton is the Smithfield complex that dominates much of the north east Cape, Karoo and southern Orange Free State. The pioneering work on this industry was done by Dr. N. Kannemeyer who made many observations on the upper reaches of the Orange River near the Town of Smithfield as well as in parts of the Eastern Cape (Goodwin 1946). Kannemeyer published some descriptive papers and put forward an idea that the differing degrees of patination on the surface of the artefacts found in caves and on plains indicated that "Bushmen" who lived on the plains were driven into shelters by "higher races." Kannemeyer described a wide range of artefacts and made notes on rock art and site location (Goodwin 1946).

In 1926 it was decided that the Late Stone Age industry of the central interior should be termed the Smithfield in honour of the

late Dr. Kannemeyer and in compliance with Goodwin's desire that the Stone Age of Southern Africa should not be forced into a European classification (Goodwin and van Riet Lowe 1929).

Van Riet Lowe, an engineer, developed an interest in archaeology while working on construction sites in the Orange Free State. He was closely interested in the Smithfield industry and by observation concluded that it contained two or more phases. Whilst working on the Riet River he found a site where Smithfield A and B as well as Middle Stone Age industries had been superimposed on one another (the above mentioned classifications came at later date). Many of these artefacts were heavily patinated and some had been reworked. Van Riet Lowe concluded that Smithfield people had been working old artefacts on Fauresmith camps. He also noticed that circular, concavo-convex and duckbilled scrapers were rather more patinated than smaller Smithfield end scrapers and associated implements (Goodwin and van Riet Lowe 1929). It was becoming clear that there was more than one phase in the the Smithfield complex. Further investigation revealed the presence of some early Smithfield sites on the farm, "Lockshoek" in the Fauresmith area of the Orange Free State. A classification based on the examination of these open sites resulted. It was decided that the earlier phase be called the Smithfield A and the later phase the Smithfield B.

Later it was decided that another group be appended onto the Smithfield complex and this was the Smithfield C or cave Smithfield. This industry differed from that of open sites in

that it tended to be very close to the Wilton but lacked segments in the assemblage. It was mostly found along the banks of the Orange and Caledon Rivers, contained many microliths made from fine grained chalcedonic rocks. The type-site is the Ventershoek rock shelter (map 3) in the Orange Free State. The most popular explanation favoured by archaeologists at the time was that the various Smithfield industries came about after waves of neoanthropic peoples moved into the area and diluted existing Middle Stone Age peoples. This was seen to give rise to the Smithfield A industry followed by the B and eventually the C (Goodwin and van Riet Lowe 1929). By the end of the 1930s several more variations of the Smithfield had been defined (Goodwin 1946) and Goodwin excavated Oakhurst shelter (Goodwin 1938).

Oakhurst shelter contained what today would be termed a 'Late Stone Age Holocene sequence'. The excavation was the most systematic completed in South Africa at the time but was geographically far removed from the interior of the country. The artefacts from this site were classified by Goodwin (1938) in terms of the industries labeled and known at the time. In retrospect, the results and conclusions from this exercise are considered to be misleading (see J. Deacon 1972). Industries discovered at Oakhurst appeared to have characteristics in common with those seen in the interior of the country and were named accordingly. The upper levels of the shelter contained what Goodwin termed "normal, developed, and pottery Wilton." Under this lay a crescentless industry with small scrapers which Goodwin classified as being Smithfield C. Below this, scrapers were longer and more robust which resulted in them

being misleadingly classified as the Smithfield B. Research today reveals that Goodwin's interpretation of the site was governed by preconceptions caused by his faithfulness to the cultural model which he applied to the Oakhurst sequence. Goodwin failed to take active cognizance of the effect of differing raw materials and environment on the coast and inland.

The Smithfield concept operated through much of Southern Africa as a classificatory and explanatory tool regardless of the yet undefined complications of raw material and environment. The concept expanded further to incorporate a host of new variants. Excavations at the mouth of the Umgazana River in Pondoland by Chubb, King and Mogg (1934) produced an industry which in many ways bore a resemblance to the Smithfield A industry of the interior. This was called the Smithfield P. Goodwin (1930) used the term Smithfield N to describe an industry in Natal that was rich in strangulated scrapers and notched pieces. Van Riet Lowe (1936) suggested that the woody environment of Natal stimulated the Smithfield N people to develop specialized wood working tools.

By the end of the 1950s, areas from the Transvaal to Namibia had been incorporated into the Smithfield hegemony (Clark 1959; Mason 1962). The name Smithfield originally referred to an open scatter near the town of that name in the Orange Free State. From this grew a large and cumbersome assortment of labels that incorporated a host of embryonic concepts evident

in texts written by archaeologists at the time. Ideas about the role of raw material and environment had been expressed by van Riet Lowe (1936) but these were overridden by the prevailing notion that cultural diffusionism and migration were the sole determinants of Southern African prehistory. Clark (1959), in his pioneering summary of the prehistory of Southern Africa first put forward the idea that the Smithfield was an indigenous Southern African industry and its variants were regional adaptations to both environment and raw material availability. He saw the Smithfield C as a product of raw material and contacts with Wilton people. By 1960 the Wilton was seen as a sort of pan-southern African industry surrounding the Smithfield to the west, north and south, periodically infiltrating it and enriching it.

MODERN HISTORY OF SMITHFIELD RESEARCH.

The period from 1940 to 1965 was a fairly stable one in Southern African Stone Age research. Meanwhile, internationally, archaeology had become more multi-disciplinary, with a large array of analytical techniques including radiometric dating becoming available. It was also a time of archaeological introspection with the Burg-Wartenstein conference in 1965. Research on the Late Stone Age accelerated with Jeanette and Hilary Deacon re-examining the Wilton type site and Garth Sampson developing a first regional sequence for the interior -the Middle Orange River.

Inskip (1967) asserted that the term 'Wilton' had begun to lose its meaning in that it was applied in a huge geographic area. In addition, the term Smithfield came about as little more than a combination of historic accident and the use of the type-site naming system for industries. The Smithfield complex had become an immensely important archaeological structure which was built on the very insecure foundations of undated surface sites in the interior. The use of the label 'Smithfield' was to a degree responsible for propagating the idea that the variants of this industry were geographically and chronologically related. The Burg-Wartenstein conference highlighted the debate that was growing among archaeologists about the equivalence of material remains to culture and the possible determining affects of environment on human activity. What was needed to clarify the situation in Southern Africa was more dated sequences and wider regional research. Between 1965 and 1987 survey and excavation accelerated with the increase in archaeologists working in Southern Africa. Although much has been clarified, debates centred around typology and the effects of environmental determinism continue in Southern Africa.

SMITHFIELD RESEARCH POST 1965

The first significant research to be undertaken during this period was that of C.G. Sampson who completed a large rescue operation in the Middle Orange River where a series of dams was to be constructed. The project involved the excavation of 7 shelters from which Sampson constructed a regional sequence for the interior and a redefinition of the Smithfield.

Subsequent years saw a proliferation of research in the Northern Cape with excavations undertaken by Humphreys (1979) and Thackeray (1981). In the eastern part of the country H.J. Deacon and J. Deacon had been refining the Wilton sequence. This has added to the reservoir of regional Holocene data that is available to archaeologists. Sampson's original conclusions have been challenged by various researchers to varying degrees, but of particular interest in this study is the debate revolving round the cultural evolution of the Late Stone Age industries of the interior.

The archaeological investigations commenced after the government chose 2 dam sites near Norvals Pont and Petrusville on the Orange River. The proposed project would involve the flooding of hundreds of square kilometers of land. Financial support was requested and obtained for an archaeological and paleontological salvage operation (Sampson 1972). The project began in 1965 in the Hendrik Verwoerd and Van der Kloof dam sites.

The geology, vegetation and climate of the area are very similar to that of the Zeekoe Valley with dolerite sills and intrusions penetrating the shales. Thermal metamorphism took place along some of these dolerite intrusions providing unlimited lydianite for prehistoric usage. Exotic rocks such as carnelians, agates, jaspers and cherts may be found in the gravels of the Orange River (Sampson 1972) and are obviously

more available as raw material in this area than in the Zeekoe Valley.

As a result of 7 excavations at shelters, Sampson developed a 6 phase classification scheme for the Late Stone Age of the area (Sampson 1972). Of these 6 phases, phases 1 and 2 were mainly delineated through examining the results of work done by archaeologists outside of the research area due to poor manifestations of these phases in the Middle Orange River.

PHASE 1 is represented at sites such as Oakhurst, Glentyre, Matjies River, Umgazana. The only excavatable sample in the Middle Orange River came from a sealed secondary context at Zeekoegat 13. The assemblages from these sites are characterised by large concavo-convex scrapers, circular scrapers and large steep and side scrapers, trimmed/utilised flakes and trimmed/utilised blades and pebble adzes (Sampson 1972). This phase is represented in the interior as the old Smithfield A but has more recently been termed the Lockshoek (Sampson 1972; 1974). The phase has not yet been adequately dated.

PHASE 2 is very similar to phase 1 but contains backed crescents and variations on small convex scrapers. The use of increasing proportions of siliceous raw materials gives rise to the beginning of a microlithic tradition at sites on the Orange River. The phase is represented at Zaayfontein (map 2) in a primary context, on an open scatter at Lemoenfontein and in a

secondary context at Zeekoegat (Sampson 1967c). Dates from level x at Zaayfontein indicate that the phase predates 3305 B.P. and 3960 B.P. (Sampson 1970).

PHASE 3 is represented at 5 excavated samples on the Orange River. These are at Zaayfontein, Riversmead, Glen Elliot, Blydefontein and Holmesgrove shelters. This phase is essentially Wilton-like with new technological innovations from the previous phase becoming entrenched into the assemblage. Small convex scrapers form about 30% of the sample with a range of backed microliths including segments being dominant in the formal tool category. Large scrapers and heavy duty tools form a very small percentage of the sample. At Zaayfontein 80% of the tools were made of siliceous rocks and at Blydefontein siliceous rocks were carried over 64 km to the site from the Orange River. These made up about 20% of the sample. Sampson sees phase 3 as a transitional phase where people were beginning to become aware of the advantages of lydianite. This phase yielded associated dates from between 2323 B.P. to 3650 B.P. (Sampson 1967a; 1967b; 1970; 1972; Sampson C.G. & Sampson M 1967).

PHASE 4 sees a further decrease in the use of siliceous rocks with lydianite coming increasingly into favour. Straight backed points were common and rare pressure flaked points were also present. Backed crescents become rare or absent. There was an increased use of large end scrapers. Lydianite began to dominate the raw material category while siliceous rocks became

less popular. Decorated ostrich eggshell and beads were also present. Associated dates range between 2285 B.P. and 1980 B.P. (Sampson 1970)

PHASE 5 includes the assemblage found in the previous phase with the addition of class B pottery. End scraper length increased further. In addition, a small iron arrow point and a sheet of beaten copper was found in these levels at Zaayfontein. Sampson (1972) has postulated a problematic (few sherds were represented in the context of this sample) 730 ± 75 B.P. (GXO 666) date as being the marker for the advent of pottery at Zaayfontein. Phase 5 is also dated to 430 ± 95 B.P. (SR 133) - the context of this date was rather richer in class B pottery (Sampson 1967a; 1972).

PHASE 6 is the final phase of the Late Stone Age in the interior and includes an abundance of class A grass tempered pottery with profuse and varied decoration. European items, glass trade beads as well as stone pipes and metal work are also characteristic. Lydianite end scrapers are the dominant formal tools. Bone points are also a feature of this phase. Phase 6 material has been excavated from the sites Zaayfontein, Glen Elliot and Ventershoek. Dates from Glen Elliot indicate that this phase occurred in the last 300 years (Sampson 1967a; 1967b; 1972; 1974).

Sampson (1972) has interpreted the phases within a diffusionist model. He sees the use of siliceous rocks in phases 3 and 4

as being a remnant value system of people who came into the area from the north and needed time to learn of the advantages of lydianite which was readily available in the area. Phase 6 is also seen as possibly representing the arrival of another group who had been in contact with and displaced by pottery and iron working Bantu speaking people further north. This phase ended with the entrenchment of Europeans.

Sampson (1974) reformed the Goodwin and van Riet Lowe classification system that had been in operation for some 40 years. The Smithfield A became phase 1 or the Lockshoek industry, which was considered to be part of the Oakhurst complex. Phase 2 is seen by Sampson (1972) as a development of phase 1 as it had some similar lithic components. Phases 3-5 were considered to belong to the Interior Wilton industry in keeping with the findings of Deacon's (1972) reanalysis of the type site that was in progress at that time. The modern equivalent of the Smithfield B industry is phase 6 which Sampson has simply termed the Smithfield industry. This is because he felt that this phase represented a break in the sequence and an influx of Iron Age influenced people into the area. The Smithfield industry as defined at the Ventershoek type site, was also incorporated into this classification as a phase 6 assemblage. The raw materials at this site showed a higher proportion of siliceous rock. Stone tools were therefore smaller but the assemblage was essentially in keeping phase 6. Blydefontein shelter has recently been re-excavated by C.B. Bousman and the author. Bousman is currently in progress with a analysis of the phases of the interior Wilton

with a view to developing a methodology for the relative dating of open scatters (Bousman in prep.).

The concept of a Smithfield complex existing as an island in a pan - Southern African Wilton complex has largely fallen away. Only phase 6 is deemed to be unique by Sampson (1974) but even this has been challenged by archaeologists who have worked in the interior (Humphreys 1979).

While the work on the Middle Orange River was in progress, J. Deacon was completing a re-excavation of Wilton rockshelter with a view to reappraising Hewitt's (1921) results. The results of this exercise were published in Deacon (1972). When Hewitt (1921) excavated Wilton he considered two cultures to be superimposed on each other with a large scraper entity at the bottom of the sequence and pygmy cultures overlying it. The Deacon's excavation sampled the Wilton shelter from the ceramic Wilton down to early Holocene industries. Unlike the Middle Orange River sites, this shelter preserved natural stratification, thus allowing the Deacons to excavate in natural layers.

Deacon (1972) noted changes in the frequency and form of various artefacts at the site and interpreted them as being an interplay of cultural and activity change factors. The data from the analysis was interpreted in a model of cultural system ontogeny (Clarke 1968). This model predicts that culture follows a trajectory of birth, life, and death phases. Deacon saw the

sequence at Wilton as fitting this kind of model. The lowest phase of the excavation (layer 4) containing a large scraper element is seen as the death phase of a preceding culture. The layers above this, 3I to 3G, are seen as the growth phase or formative phase of the Wilton and the layers overlying these, 3f to 3b, containing a large range of microliths, as the mature phase of the industry. The subsurface layers, 3a to 2b, lose their artefactual variety and show greater scraper variability. This is seen as a decline phase in the industry. Final layers, 2a and 1 show a breakdown in the stone tool tradition with the appearance of grit and grass tempered pottery and scrapers comprising the sole formal tool category.

Deacon's (1972) analysis of the artefact tradition at Wilton shows that this site has many similarities with the sites of the Orange River. Sampson's classification is mainly arbitrary and descriptive but with strong cultural model undertones whereas Deacon has applied a defined model to her sequence and has phased the Wilton accordingly. The final phase of the Late Stone Age is seen by Sampson (1972) as deserving a separate term - the Smithfield. The upper levels of the Wilton site are conspicuously similar to the upper levels of the sites of the Middle Orange River save differences in raw material (see Deacon 1972; Sampson 1972). Of major significance is that Deacon preferred to see this final stage of the Late Stone Age as a death phase of the Wilton industry and does not afford it a separate classification.

In 1974 Sampson published an overall synopsis of his findings which were tentatively extended to include other parts of Southern Africa. This has attracted comment from J. Deacon (1976), Humphreys (1979) and Thackeray (1981). The 6 phase scheme had not been found in complete sequence in any particular site but had been synthesised from a number of excavations in a limited geographic area. Authors thought that it was a little premature to generalise findings to the rest of Southern Africa before more complete sequences were available. J. Deacon (1974) compiled a sequence of available radiocarbon dates for the interior of the country and concluded that there was an occupational hiatus between 4600 B.P. and 9500 B.P. She hypothesized that environmental fluctuations had rendered the interior of the country uninhabitable during this time. This would mean that phase 1 would be separated from subsequent phases for a period of up to some 5000 years. Humphreys (1972a) writes that phase 1 and later phases are not part of the same industry.

In 1979 Humphreys completed an analysis of material excavated by Sampson in the Middle Orange River. He disagreed with Sampson's original interpretation of the sequence for a variety of reasons. After re-examining material from Zaayfontein, Riversmead, Glen Elliot and Ventershoek, Humphreys' main criticism was that he found it difficult to accept the degree of precision with which Sampson (1972) had assigned 6 phases to the Late Stone Age. The major reason for this was that no single site had provided a complete dated sequence from phases 1 - 6. The second reason was that Sampson's excavation method

involved arbitrary spits. Each spit acted as an uncontrolled variable in sampling as arbitrary levels made for an artificial cut off point in what could have been a continuous sequence. Humphreys (1979) also took into consideration that recent work by Deacon (1974) had revealed that it was possible that there was an interior hiatus between 4000 - 9000 B.P. which would separate phase 1 from subsequent phases. In addition phase 1 material could only be located in a secondary context at the Zeekoegat excavation and could not be safely related to the phase 2 material excavated at Zaayfontein shelter. Phase 1 material was made exclusively from lydianite whereas in phases 2 and 3 agates were quite popular as raw material. In phases 4, 5, and 6 lydianite gradually became dominant. Humphreys (1972a) wrote that this was good evidence to show that there was a real break between phase 1 lydianite dominated assemblages and subsequent ones in which agate played an important role. It was possible that the area was reoccupied by a new group of people who were accustomed to using agates and required time to change over to lydianite. By the time that phase 6 is reached lydianite was the fully dominant raw material. Humphreys (1979) felt that Sampson's (1972; 1974) interpretation of the Lockshoek and it's geographical and sequential relationships with other industries was premature.

Humphreys re-examined scraper dimensions from phases 2 - 6 for the Middle Orange River sites and on the basis of mean scraper lengths he concluded that these phases represented a stable cultural system. Mean scraper lengths changed gradually over time and there was no evidence to suggest that the use of

phases as a classificatory tool was justified. Consequently Humphreys condemned the use of the term 'Smithfield' as applied to phase 6 materials. He saw the advent of pottery, and an apparent increase in the use of bone points as opposed to stone microliths as a new addition in a stable cultural system. The raw material change-over that took place between phases 2 - 6 is not a well understood phenomenon as it is difficult to isolate the degree to which cultural factors govern raw material choice. It is also difficult to determine the extent to which the selected raw material influences stone tool (scraper) size. There is a general tendency for scraper length to increase and small scraper forms to decrease with greater lydianite usage (Humphreys 1972). Since archaeologists experience difficulties in extracting non-material cultural information from material remains, this issue is destined to remain in a state of academic debate until a methodology has been developed.

The ZVAP may eventually provide some clues that will show scholars of the Late Stone Age the extent to which they may or may not be denying the existence of culturally determined changes in sequences in South Africa. Humphreys (1979) suggested that differences in these interior sequences are a result of functionally adaptive changes. He did not accept that there is evidence for any change of 'culture', thus the term "Inland Wilton" was applied to phases 2 - 6 of Sampson's (1972) sequence. Sampson (1974) favoured the use of the term "Interior Wilton" to describe phases 2-5.

Humphreys did not undertake any excavations in the Orange River sites but was critical of Sampson's findings as his sequences did not generate enough evidence for his conclusions. Humphreys' challenges are based on the same material evidence and although they may be valid it should be remembered that relatively little is known about this part of the country and ample scope for research, discovery and debate exists. The ZVAP with it's large regional survey and excavation program is currently doing just this.

Another part of the interior that has recently been the subject of considerable research is the Ghaap escarpment and the Kuruman Hills in the Northern Cape that lie some 300 kms north west of the Middle Orange River (Humphreys 1979; Thackeray 1981; Humphreys and Thackeray 1983). The purpose of the research was to examine the Holocene sequence in this area and place it within the context of Southern African research.

The rainfall of the Northern Cape is similar to that of the Great Karoo (307 - 452 mm per year). It is also punctuated with numerous spring eyes. In contrast, the landscapes tend to be uniform and featureless with bushveld vegetation. Quartzites, lavas and ironstones are features of the geology. Excavations at Wonderwerk shelter in the Kuruman hills have revealed a long Holocene sequence with ceramics in the later levels (Humphreys and Thackeray 1983). Artefacts are in chert, banded ironstone, dolomite and quartz. The sequence here which spans some 8000 years, shows similarities with other

Wilton sites in Southern Africa. Of interest is the fact that scrapers from this site (in contrast to those from the Middle Orange River) do not show noticeable variation in length over time during the later stages of the industry. Backed and retouched artefacts are mostly made from chert followed by banded ironstone except in early Holocene times when large scrapers of banded ironstone dominated. Quartz also played a significant role in microlith manufacture before 4000 B.P.. The ceramic levels have an unusually early (and dubious) date of 3990 ± 60 B.P. (Pta-2785). Pottery is universally grit tempered and undecorated with associated lithics changing very little. Thackeray (1981) feels that the coming of ceramics is merely a new addition in a stable cultural system and did not drastically alter the existing way of life.

Excavations at Blinklipkop specularite mine (Thackeray 1981, Humphreys and Thackeray 1983; Thackeray et al 1983) have supplemented those at Wonderwerk cave in that they have provided a closer examination of the ceramic times in the area. Quantities of grit tempered ceramics were excavated revealing a bottom date of 1150 ± 40 B.P. (Pta-2835). In addition, 40% of fauna recovered from this site consisted of sheep or goat. Lithics were recovered from all levels and included a low incidence of blades and blade cores with the formal category containing a few crudely worked scrapers and some retouched pieces. Thackeray (1981) and Humphreys and Thackeray (1983) concluded that the mine contained periodic phases of occupation by San and Khoi and eventually Tswana speaking Iron Age peoples.

Thackeray also analysed material from Klein Witkrans excavated by Beaumont in 1978 (Thackeray 1981). This site revealed a Holocene sequence lasting some 7000 years and unlike other sites on the Ghaap Escarpment, does not show a hiatus between 9000 - 4000 years ago. Of interest is that scraper lengths do not differ greatly on a spit to spit basis but do according to raw material used. Thackeray (1981) felt that the site represented a single industry with pottery being introduced at about 1500 B.P..

Thackeray (1981) concluded that two different industries existed in the Northern Cape during the Holocene. The separation of these industries is based on differences in raw material and the variety and frequency of artefacts recovered. The Kuruman industry existed until 8000 B.P. and is characterised by crudely retouched artefacts, large scrapers and adzes constructed from dolomite and banded ironstone. The Kuruman industry is succeeded by the Wonderwerk industry which shows a proliferation of raw material types and artefact forms including bladelet production and backing not found in the Kuruman industry. The difference is so marked that Thackeray has difficulty in accepting that the Wonderwerk industry is a continuation of the Kuruman industry and sees these industries as belonging to distinct cultural groups or perhaps different peoples. The Wonderwerk industry is seen as being a regional element in the Wilton complex and the Kuruman industry part of the Oakhurst complex (akin to Lockshoek) (Humphreys and

Thackeray 1983). The advent of pottery into the area by at least 1500 B.P. and possibly as early as 3000 B.P. (Thackeray 1981) is an addition to the Wonderwerk industry with few changes taking place thereafter.

Humphreys, besides re-analysing material from the Middle Orange River, completed a number of excavations on the Ghaap Escarpment (Humphreys 1979). These were at Powerhouse cave, Limerock 1 and 2, Dikbosch 1 and 2 and Burchell's shelter (map 3). All the sites apart from Powerhouse cave contained late Holocene deposits with ceramics. As with the sites excavated by Thackeray (1981) in the Kuruman hills, 2 industries appear to have existed during the Holocene with the earlier industry only found at Dikbosch 1 and to a lesser extent at Little Witkrans. This early industry has been classified (Humphreys and Thackeray 1985) as being part of the Kuruman industry as defined by Thackeray (1981). The later Holocene Wonderwerk industry, deemed to have started around 8500 B.P. at Dikbosch 1, Powerhouse cave and Little Witkrans, shows evidence of the use of a wide variety of raw materials dedicated to specific classes of artefacts. Lydianite and chert are widely used for scraper construction on the Ghaap escarpment. The individual types of raw materials show clear differences in scraper sizes with lydianite producing larger scrapers. In all instances backed artefacts are constructed from fine grained materials such as chert and quartz. The Wonderwerk industry (Humphreys and Thackeray 1983) is considered to be part of the Wilton complex as changes in the Northern Cape are broadly similar to those documented by Deacon (1972) in the

Southern Cape and by Sampson (1972) in the Middle Orange River. The mechanisms that brought about similar changes in sequences separated by hundreds of kilometers are a subject of debate.

CERAMIC SEQUENCES AT SITES IN THE INTERIOR

The excavations at Haaskraal and Volstruisfontein shelters were undertaken in an attempt to make a very close study of the ceramic sequence in the Zeekoe Valley which is not far from the sites of the Middle Orange River. The decision to excavate these sites came from a realisation that survey work in the area had revealed the likelihood of a very complicated ceramic sequence. This would not only complement research taking place in the Zeekoe Valley at present, but also afford an opportunity to examine criticisms made by various authors of the work that had taken place in the Middle Orange River and review the status of the Smithfield culture as defined by Sampson (1974).

Archaeologists have tended to view Late Stone Age ceramic sequences as single events. This is mainly because the ceramic levels at many sites in Southern Africa are quite thin and lack resolution. Stone age pottery has existed in Southern Africa for the best part of 2000 years (H.J. Deacon et al 1978), easily enough time to afford changes in the ceramics themselves. A reasonable ceramic sequence is now available from the northern and central part of the Cape and indications are that even within this area regional variations in the

ceramics may be discerned. Beaumont and Vogel (1984) have documented the spatial patterning of the ceramic Late Stone Age and have discerned two major groupings excluding areas where iron age influences were historically known.

The interior of the country and the Great Karoo contain the first of these groupings which Sampson (1967a) has termed class A and B pottery. Class A pottery is mainly grass tempered and this is clearly evident as numerous imprints of the grass may be seen on the inner and outer surfaces of the sherds. The sherds are normally irregularly curved, black with occasional orange patches and are not normally burnished or painted. Firing took place at low temperatures giving the interior of the sherds a black, charred appearance. There is no evidence to show that the pots were coil constructed and it would appear that they were flat sided and flat bottomed. Rims tend to be straight in section and uneven in curvature. Class A pots are densely decorated from rim to base with a wide variety of impressed and incised decorations. Interior ceramics were also classified by Rudner (1979) who delineated their northern distribution to the Southern Free State, North East Cape and Karoo interior. This type of pottery is considered to be typically "Bushman" (Rudner 1979). Class B pottery is smooth and orange or light brown or black in colour. Sherds are tempered with sand or large grits and sometimes small amounts of grass may occur. Rims are usually straight but rare slightly everted specimens have been noted. Decoration is normally absent, although Sampson (1967a) has noted examples with parallel incised lines.

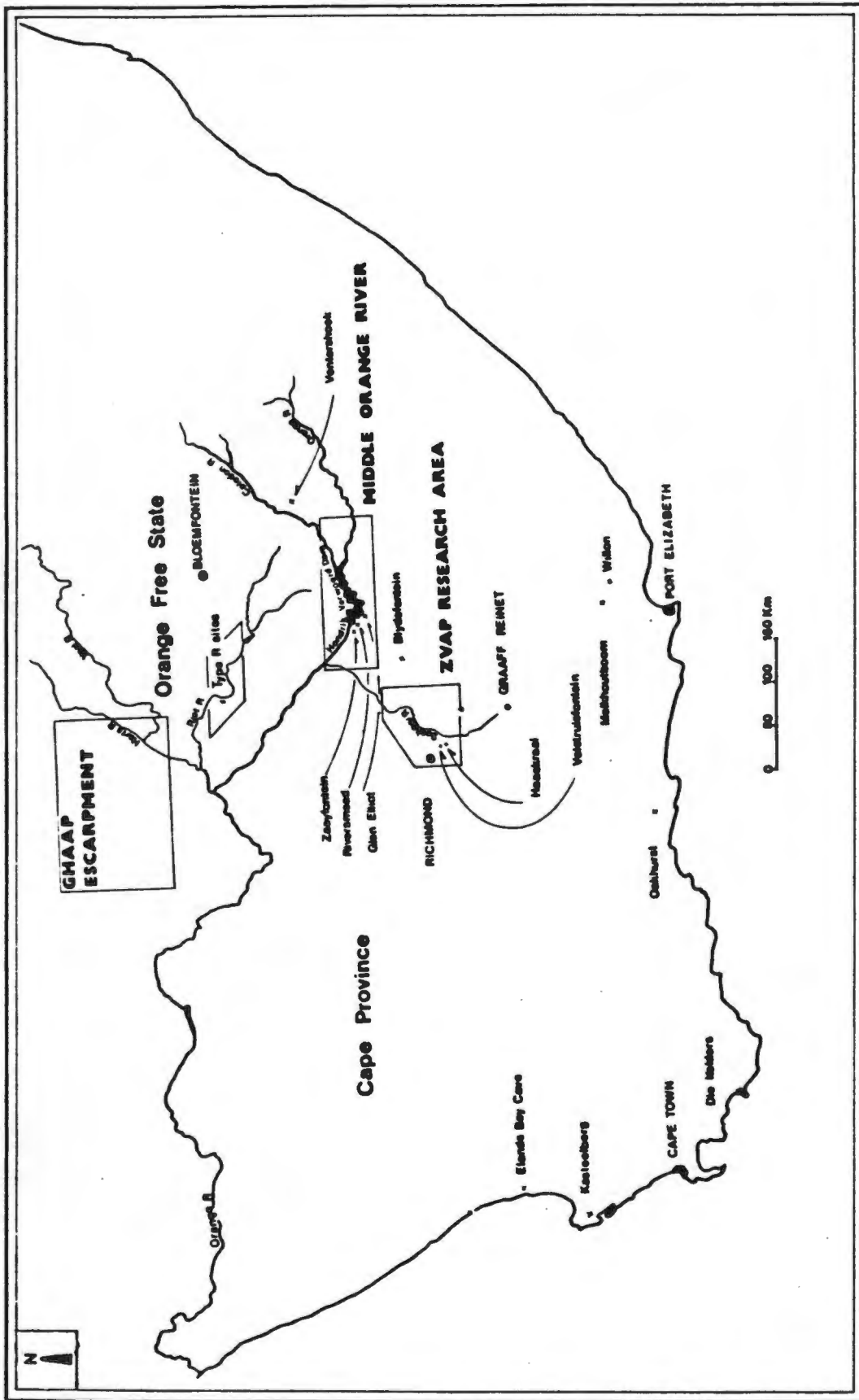
Rudner (1979) and Beaumont and Vogel (1984) have defined the geographical distribution of the second grouping of ceramics and this is the Cape Coastal pottery. It is limited to Namibia, the western Orange River, the Cape west coast, south coast and south east coast. This pottery is considered to be of Khoi herder or Hottentot origin (Rudner 1979). Although the dating of the advent of pottery into Southern Africa is spatially incomplete and the implications are not well understood, dates are becoming increasingly more widely available. The earliest come from Namibia and the South Western Cape (Kinahan 1985; Schweitzer 1974; Smith 1985). It is also within the coastal area that the ceramic sequence has been most closely examined and understood. Proposed routes of pastoral movement have been hypothesized by many authors (Stow 1905; Cook 1965; Elphick 1977; Robertshaw 1979, H.J. Deacon et al 1978) but none of these have yet been archaeologically verified.

The Late Stone Age pottery found in the interior of the country tends to differ from that found on the southern and western coastal areas. According to dates available up to now, initial indications are that this pottery is also younger. At Zaayfontein shelter the advent of the earliest class B pottery has been dated to 730 ± 75 B.P. (GXO-66) in level 7 which contained three sherds and Sampson's phase 3 artefacts. Subsequent level 6 which contained large quantities of sherds and phase 5 artefacts, was dated to 430 ± 95 B.P. (SR-133). At Blydefontein class B pottery occurred after a date of 1980 ± 120

B.P. (SR-132) (Sampson 1967a; 1970) though the ceramic levels themselves have not been dated (Sampson 1970). At Riversmead shelter two class B body sherds were dated to 2645 ± 95 B.P. (GXO-723) but Sampson (1972) feels that this date is anomalous. At Glen Elliot shelter class A pottery has been dated to 235 ± 80 B.P. (GX-1295) (Sampson 1970) but the preceding class B levels were not dated at this site. More recently, class A pottery from the Welbedacht dam site has been dated by Brooker (1980) to historic times. No sequence has been completely dated but Sampson (1967b; 1972; 1974) has accepted the 730 ± 75 B.P. date from Zaayfontein as being a rough marker indicating when ceramics were introduced into this part of the interior. More recently grass tempered sherds from Zaayfontein and Glen Elliot have been dated by their carbonised grass temper (Beaumont and Vogel 1984) to 1040 ± 60 B.P. (Pta-3393) and 1120 ± 70 B.P. (Pta-3402/75) thus pushing back the age of the ceramic tradition back by 3-400 years (see chap 6, table 1).

The dates from the Ghaap escarpment and the Kuruman hills are earlier than the Orange River dates. Thackeray (1981) has suggested a date for the advent of ceramics in excess of 3000 years ago at Wonderwerk, however Humphreys and Thackeray (1983) agree that pottery and domesticates had reached the Northern Cape by at least 1500 B.P. - some 4-500 years before Zaayfontein and Glen Elliot. These poorly dated sequences hints at many mysteries yet to be solved about the origins and the routes of entry of the various types of Late Stone Age ceramics. It is expected that the excavations taking place in

the Zeekoe Valley will at the very least provide some adequately dated sequences.



MAP 3 Major sites and research areas mentioned in the text.

CHAPTER 5

THE ZEEKOE VALLEY ARCHAEOLOGICAL PROJECT

INTRODUCTION

In 1979 Garth Sampson (of Southern Methodist University, Dallas, Texas) initiated the Zeekoe Valley Archaeological Project (ZVAP) in the Great Karoo. The research area was chosen as a natural consequence of the work he had previously completed at the now flooded Orange River Scheme (Sampson 1985). The sequence that had been established in the Middle Orange River could easily be related to that of the Zeekoe Valley due to the geographical proximity of the two areas (Sampson 1985) (see map 3).

The ZVAP was conceived in order to establish and to put into operation a method of detecting long term changes in hunter gatherer group territories. These changes were probably influenced by a dynamic interplay of social and environmental factors. The focus of interest at this stage of the project is the distribution of Smithfield surface sites by means of potsherd signature analysis (Sampson 1988a). To achieve this Sampson had to complete a massive and exhaustive survey of an area large enough to be equivalent in size to an area in the Kalahari known to contain several group territories of ethnographically documented San (Lee 1979; Silberbauer 1981) By 1982 a region of some 4954 square kilometers had been

exhaustively surveyed. The project has proceeded in three phases. The first phase was the survey phase followed by a period of potsherd collection and decorative matching. A third phase of excavation to establish temporal control of the data, that has been accumulated so far, is now underway. The excavations at Haaskraal and Volstruisfontein are part of this. All research revolves round the central theme of the establishment of group territories as analogous to those of Kalahari hunter gatherers.

PHASE 1: SURVEY AND SITE DISTRIBUTION

The following pages contain a summarized account of the methodology employed by Sampson for the the ZVAP.

The first phase of the project began in 1979 with the survey of the northern half of the research area and the recording of all archaeological sites. At this stage of the project data collection was limited to site location and an initial site content description (C.G. Sampson pers. comm.). Sites from Early Stone Age times to the historic period were recorded. It was during this period of research that it became evident that the pottery found on Late Stone Age sites exhibited diverse decorative forms which could be useful group signatures (Sampson 1982). A variety of flakeable stone was also seen by Sampson (1982) as being possible territorial signatures.

During the survey period no archaeological sampling method was used but an intuitive method of sampling with intense land surface coverage was favoured with a view to recording all archaeological sites (Sampson 1984a). This was more adapted to the purpose of the study which required complete maps that would cover San group territories. In addition, it was necessary that the implications of environmental variables for the distribution of sites be gauged as this would strongly affect site clustering and territory size. Once the middle and northern catchment area of the Zeekoe Valley had been searched (Sampson 1985) some 10 000 sites had been recorded and of these some 5000 belonged to the Smithfield complex as classified by Sampson (1974). These sites were rich in Smithfield type pottery and from this point onwards formed the artifactual basis for developing a method for establishing group territory.

The 5000 Smithfield sites have been divided into several working categories. These are: **camp**s (sites with pottery), **other chipping stations** (sites which contain no pottery and fewer formal tools), **lookouts** and **quarry** sites. Smithfield sites with pottery are estimated by Sampson (1984a) to make up some 21% of all Smithfield sites. These sites show strong tendencies to form clusters which, in most instances, are less than 1 km from water.

Once the data base was available Sampson set about analyzing the spatial distribution of Smithfield sites, the results of which are published in Sampson (1984a; 1985). 61% Of the

research area consists of treeless plains of shale based soils vegetated only by Karoo scrub. Twenty percent of the research area is made up by the Sneeu Berg Mountains in the south (map 2) vegetated by scrub and sourveld grasses. The remaining 18% of the landscape consists of low dolerite dykes and mounds which were of major importance in making this part of the world attractive to prehistoric people.

Dolerite dykes are likely locations for spring eyes that produce dependable waters. They are also areas where high grade lydianite is available. Other resources such as fire wood and plant foods are more readily found in these areas (Sampson 1984a). Shelter from the harsh winds of the Karoo and strategic elevation would have been attractive features for hunter gatherers (Sampson 1988b). Eighty seven percent of all the Smithfield sites occur near or on dolerite dykes and hills. Only 3% of the sites are to be found in the mountainous zones and 10% are found on the flats and plains. It was therefore concluded (Sampson 1984a) that the dolerite features exerted a strong "gravitational pull" on Late Stone Age peoples. In addition Sampson noted that the distribution of sites was not entirely similar to the distribution of water points and lydianite outcrops. A chi-square test indicated that the distribution of sites was primarily governed by the presence of dolerite dykes with water and quarries being of secondary importance (Sampson 1984a).

It was also evident that Smithfield sites occurred in fairly dense clusters along dolerite dykes close to water points. All but 2% of the water sources in the research area have site clusters associated with them. Sites show a strong tendency not to occur directly on the water sources but are normally found within a radius of 1km. Of the few site clusters not found near water, most are found close to a quarry. The few exceptions to this rule are seen by Sampson (1984a) to be in strategic positions offered by topography.

We may wonder why sites occur in clusters and not as single large sites found close to resources? Encapsulated within this problem is that of temporal control of sites within these clusters and the degree to which superimposition has affected them. Sampson has looked strongly to Kalahari analogues for explanations. Information gathered by Brooks (1984) and Silberbauer (1981) indicates that camps are not reoccupied when a group returns to a waterhole. They wait until the camp has been naturally cleansed of unpleasant debris left over after the previous occupation. During this time a separate camp is established in the vicinity. Sampson (1984a) uses this analogue to explain the clustering phenomenon. It is plausible that the Karoo San concepts of hygiene were similar to those of the Kalahari which may well explain the clustering phenomenon. The fact that the Karoo environment and topography is rather different to that of Kalahari should also be taken into consideration. The severe Karoo winds create a need to use what ever shelter is available which means that topographic features can be seen as a constant influencing site position

(Sampson 1988b). This implies that site location could be changed at any time depending on the number of people in a group because the amount of protection offered by any one feature is limited. Even if a choice site location was reoccupied once every 10 years over a period of some 60 years, this would mean that the location has offered no less than 6 superimpositions. In all, the Karoo environment implies that site distribution is a function of a more complex set of variables than found in the Kalahari. It is expected that a dated sequence of potsherd decorative styles would help qualify problems of superimposition.

It may also be argued that the clustering phenomenon could be a result of the survey design which involved an intuitive decision as to whether an area would be searched or not. This would mean that heavily searched areas would reveal more sites. Sampson (1984a) defends the design by arguing that it is the process of discovery that stimulates tightening of the search pattern and thus that site clusters are real phenomena. This assertion is backed by a statistical analysis of search paths which revealed that some intensively searched areas contained very few sites. All dolerite hills and dykes as well as riverine areas were intensively searched. None of the Karoo plains were searched systematically by the team although many kilometers of this terrain were walked by surveyors en route to dolerite dykes. Very few sites were recorded on these plains which means that the tendency for sites to be found on dolerite dykes is, for working purposes, a real phenomenon. A systematically searched random sample of Karoo plain would only

serve to make Sampson's (1984a) assertions more scientifically acceptable.

PHASE 2: CERAMICS AND GROUP TERRITORIES

Most of the ceramics found on Smithfield sites are highly decorated. The diversity of styles found in the research area has stimulated the idea that they may provide a 'group signature'. By signature is meant a unique decorative motif, the use of which may have been the prerogative of single bands of hunter gatherers who used pottery decoration as a symbol of identity. In other words the diversity of decorative styles in the research area could be the signatures of numerous potters representing their bands. The second phase of the project was dedicated to the detection of hunter gatherer territories (Sampson 1982).

Sampson (1982) borrowed extensively from ethnographic information obtained from the Kalahari San in order to develop models and a research design suitable for the Zeekoe Valley. The basis of these is that territorial networks "may alter with time, in response to population increase, climatic change, conversion to semi-sedentary farming practises, and or invasion by colonizing elements." (Sampson 1986c:ii). The band may be seen as a "depository of slowly growing wisdom that can be wiped out by catastrophe and permanently lost." (Sampson 1982:ii) The death of a culture through catastrophe or habitat change means that territory development has to start from scratch as a new culture develops. As bands accumulate more

knowledge about the environment that they are living in so their territories change accordingly. Demographic, ecological, cultural and during historic times, colonisation factors can be seen as agents that influence territory size (Sampson 1986c).

A multi-disciplinary research program that involves building up territory maps over time as well as excavation may provide insight into what combination of factors would influence territory change (the reader is referred to Sampson (1988a) for further detail).

Looking for territories on the landscape involved collecting every single sherd on the surface of every Smithfield camp over an area large enough to blanket more than one Kahalari territory. If the distribution of decorative styles could be mapped on the landscape, it should be possible to plot the contact zone of an individual potter and show the territory in which he / she was operating. Research has been directed towards showing that similar pottery decorations group together in delineable areas (Sampson 1988a). Implicit in this design is the untested premise that decorative styles are the signatures of individual potters and that these in turn can be used to detect "group territories."

By the end of 1984, 972 Smithfield camps had been collected. These were distributed over the southern half of the research area and a total sample of some 66 000 sherds was obtained. Classification of the decorative styles revealed that a least 7

major categories could be defined (Sampson, 1986c). These major categories also show variation in style and method within them. Each decorative motif tends to be strongly influenced by the tool of application. The major categories are stab and lift (applied with micromammal mandibular condyle or spatulate object), stab and drag, cord-impressed and quill (applied with porcupine quill). Comb stamp and rocker stamp decorations are applied with plain or notch cut pieces of fresh water mussel shell using either a stab or stride method. Rodent incisor pottery is decorated by means of using the incisors on a rodent mandible in a stab and drag or stab and lift fashion (Sampson, 1986c). These major categories incorporate method of application and tool of application factors in decoration design. For example, rocker stamp decoration is a methodological variation of comb stamping that creates a strong visual difference between the two designs. Sampson's categories should be seen as working terms derived from his visual experience of the decorations.

Sherds from sites have been cross matched and distributions plotted. Comparisons were made to see whether particular stylistic attributes matched up to camp clusters and swarms. Results available to date indicate that most stylistic motifs are restricted to specific geographic locations. These tend to occur within several geographically close site swarms. A swarm is a camp cluster together with categories of sites that do not have any pottery. A group of site swarms with similar motifs is termed by Sampson (1986c) as being a cell cluster. Cell clusters vary in size but are generally smaller than that

of the Kalahari San territories. Most cell clusters are associated with similar numbers of waterholes - mostly between 4 and 7 each. There appear to be major differences in motifs between the east and west sides of the Zeekoe Valley where comb stamp and non-rocker stamp motifs are separate from each other. Raw material source tracking reinforces this observation in that grey chert is discretely located within the non-rocker stamp area. In a similar fashion porcelainite usage is restricted to the comb stamp area. The boundary between the usage of these raw materials coincides directly with the proposed comb stamp and non-rocker stamp boundary. Rocker stamp motifs are found throughout the research area in varying percentages which is contradictory to the hypothesis and other findings in the valley. It was expected that the different motifs would separate out into discrete geographic areas and would not exist ubiquitously over the landscape. Sampson also posed the question as to whether areas occupied by cell clusters are territories owned by families or bands. Most motifs are concentrated in groups of contiguous cells and for this reason Sampson infers that they were band specific (Sampson, 1986c).

THE HERDER PRESENCE IN THE ZEEKOE VALLEY

The discovery of stone circles and features came as a by-product of the 1979-80 season. Previous work by archaeologists in the Cape with the intention of finding archaeological evidence of Khoi herders had ended in relative failure. A wide spread belief that herder remains are hard to detect in the

archaeological record has been a feature of Late Stone Age archaeology in Southern Africa (Robertshaw 1979). It is probable that many stone features in the Zeekoe Valley were not recognised at first by the field archaeologists or were dismissed as being historic. Only when oddly large clusters of stone features were seen in the foothills of the Sneeuberge did the team become aware that another archaeological scenario had begun to manifest itself.

Sampson (1984b) suggested that a theoretical hunter-herder frontier zone existed in the Zeekoe Valley. Stone features appeared to be concentrated in the south west corner of the research area. Stone features often existed in large complexes where abnormally high ratios of Cape Coastal pottery (Khoi sherds) as opposed to Smithfield pottery lay on the surface. Details of these stone features are described in chapter 5. The presence of minimal amounts of Khoi sherds on clearly Smithfield camps has led Sampson (1984b) to suggest that a herder presence was exercising a strong influence on the San in the form of a possible client herder relationship. Hunters were, he thought, tending Khoi livestock in their own territories in exchange for material goods. Sampson suggested that the herders were based in or beyond the Sneeu Berg Mountains (Sampson 1984b; 1986b). A wider regional survey would help clarify this problem.

The herder presence in the Zeekoe Valley has implications of some kind of disruption of the suggested distribution of group

territories as both zones of attraction and conflict could have existed. If Smithfield people acquired stock, group territory change may have taken place so as to accommodate the needs of their herds. Likewise displacement of hunter gatherers would have resulted in gross interruptions of territorial behaviour - both of these factors would theoretically influence the present day distribution of decorative motifs. It was possible that the herder influx could have taken place as a single event stimulated by social or environmental factors on the Orange River or in the eastern part of the country. Alternatively, the influx may have been seasonal over a period of many years or it could have resembled a static frontier (Alexander 1984). What ever happened it was likely that this new presence would have had some sort of material and social effect on the people of the area. These questions could only be answered by excavation which would hopefully illustrate the chronology of material change (if any) associated with the appearance of Khoi ceramics. Both Haaskraal and Volstruisfontein shelters lie in areas rich in stone features and kraals and were obvious excavation choices.

PHASE 3: THE NEED FOR EXCAVATION

By the end of the sherd matching phase of the project a two-dimensional map of tentative territories had been completed. Many of these were overlapping and had fuzzy boundaries (Sampson, 1986c; 1988a). The third temporal dimension was missing. It had become crucial at this stage of the project to establish chronological control of overlapping and superimposed cell

clusters. A date for the appearance of Smithfield pottery was also needed. The sites Haaskraal and Volstruisfontein were selected for pilot excavation to this end with excavation taking place during the course of 1985. The excavation phase of the project has now been expanded to cover most of the Valley (Sampson, Hart, Wallsmith and Blagg, in prep.). Sampson is currently analyzing material from a host of small deposits in the upper Zeekoe Valley. It is hoped that this will yield data that will clarify the sequence of decorative motifs and other associated artifacts.

The survey conducted by Sampson in the Zeekoe Valley has resulted in one of the most detailed maps of Late Stone Age settlement available today and provides a basis for extensive studies on settlement patterns years to come. As yet, much of the research in the ZVAP been largely descriptive and empirical, but within the broad framework of the hypothesis that prehistoric settlement patterns are visible in the archaeological record. At the moment more detailed hypotheses involving rival models as to why ceramic decoration took place, why stylistic boundaries varied and the character of the Khoi incursion into the area, are being tested. Extensive regional excavations will clarify some of these issues (Sampson 1986c).

CHAPTER 6

KRAALS AND STOCK KEEPERS

INTRODUCTION

The discovery of stone features in the Zeekoe Valley was seen as both an archaeological breakthrough and as a complication by members of the team. The form and associations of the structures indicated that they were prehistoric, and introduced and used by people who manufactured Khoi pottery. If the kraal builders were stock keepers, it would have been likely that their settlement pattern would have had some degree of impact on that of hunter gatherers living in the valley. As the primary goal of the ZVAP is the study of prehistoric hunter gatherer group territory, it became important that some control be established over the extent and time scale of the herder penetration. The discovery of the stone features also roused some excitement. In the Western Cape, an area rich in historic records of Khoi herders, much investigation has revealed only minimal evidence of these archaeologically "invisible" people. It appeared that the Zeekoe Valley provided a long awaited opportunity to study a wide spread patterning of herder sites, albeit in a different environmental setting.

It is not known precisely when or how herding peoples entered into Southern Africa and, more specifically, the Cape. A substantial accumulation of dates from excavated sites (J. Deacon

1984) indicates that ceramics and domesticates were introduced into Southern Africa at or shortly after 2000 B.P. (Klein 1986). This distribution of dated sites is still marred with gaps but archaeologists have used the radiocarbon pattern that is available to construct models of herder migration.

Linguistic, environmental and historical evidence has been used by researchers to compile hypothetical routes of herder movement into the Cape. Most of these models have been formulated with very little archaeological evidence. Stow (1905) proposed a route of herder movement based on oral tradition. Herders moved into Southern Africa from central East Africa migrating westwards across the continent and eventually entering Southern Africa via Namibia and the west coast. A similar route was proposed by Cook (1965), the essence being that Khoi people had their origins in Zimbabwe, after which they moved through Botswana, ultimately reaching the Cape via Namibia. Linguistic evidence compiled by Westphal (1963), had placed the origin of the Khoi in the present region of the 'central bush speakers' which lies in northern Botswana. The patterns of dates available so far tends to support the Namibia entry model but at the same time the patterns are confusing. Late Stone Age dated ceramic sequences are non-existent in Botswana but some very early dates that are older than 2000 B.P. have been reported by Kinahan (1984) in Northern Namibia. In the Southern Cape, very early dates of between 1800 B.P. and 2000 B.P. have been reported by Avery (1975), Schwietzer (1974; 1979) and Smith (1986; 1987). If the herding economy spread from Namibia southwards, the advance was indeed rapid (Robertshaw 1979). The Namaqualand area of the west coast

provides a bridge between Namibia and the Southern Cape coast, thus being an important area to test the west coast movement model. The only date from this area was obtained by Webley (1984;1986) who was able to show that herding began at the site of Bethelsklip only 1000 years ago. Further south the advent of sheep and pottery at the sites of Diepkloof, Tortoise cave and Elands Bay cave (Parkington 1979) tend to be some 300 years younger than those from Namibia and the Southern Cape. In reality there is little evidence to suggest that there is a gradation of dates from older to younger indicating movement down the west Cape coast and Namibia.

More recently Elphick (1977; 1985) has used a multi-disciplinary approach in drawing up another migration hypothesis. Ecological factors have played an important role in the concept's formulation as the movement of herding peoples is dictated by the availability of water and pasture. Little Namaqualand receives an average of 100mm of rain a year, rendering the region difficult to cross with stock. In addition Elphick points out that the Cape Khoi were much better informed about the people living towards the east of the country than the Namaqua to whom they had no genealogical linkage and whom they viewed as a separate nation. Elphick concluded that the Cape Khoi had their origins in the east sharing only a very early common ancestry with peoples of the North West Cape. He proposed a double stream model of herder movement with a common origin in the area of the central bush languages of northern Botswana. After people had radiated southwards, he suggested that they may have reached the permanent waters of the Orange River where they split into 2

separate streams. A western stream followed the course of the Orange River, eventually settled in the North West Cape as the Great and Little Namaqua groups. The other stream moved southwards across the Orange and used tributaries such as the Seekoei River as a means of crossing the Great Karoo to reach the Eastern Cape. After moving south and west they ultimately became known to the Dutch as the Cape Khoi. Elphick (1977) cites the Seekoei and Sundays River systems as being the most suitable corridor for herder movement. The radiocarbon pattern available at the time he wrote did not refute this model. Until recently ceramic sequences in the Karoo were not well dated (see table 1 for dates for the interior). If this model is to stand dates for Karoo ceramics and domestic stock should be a little older than those of the Southern Cape. Our excavations in the Zeekoe Valley are directly relevant to this issue.

Until recently all that was known about the Khoi came out of historic records written mainly during the Dutch period at the Cape. It has only been during the last decade that Smith's (1986; 1987) work at Kasteelberg has at last provided some hope of identifying a herder site in the Western Cape. Recently Schrire (1987, 1988) has approached this problem from an historical perspective in her excavation of the dutch outpost of Oudepost 1 where Khoi and colonists interacted in the historic period. She feels that this site will provide greater evidence of the subtleties of European versus Khoi land and resource usage than the excavation of L.S.A. sites which invariably produce (if at all) European trade goods (already well documented in the historic record).

Klein (1986) has introduced the idea that sheep and cattle were not brought into the Southern Cape simultaneously. He suggested that sheep were introduced into the Cape via the west coast 2000 years ago but that cattle were introduced from the east some several hundred years later after Khoi had come into contact with Bantu speaking people. This hypothesis is supported by the fact that there are no cattle bones in the Southern Cape that have been dated to older than 1600 B.P. (Klein 1986; Smith 1986).

The arrival of pottery and domestic animals is manifested in many shelters throughout the Cape and Namibia. In many instances ceramic sequences correlate with changes in stone tool assemblages which often involve the total or partial disappearance of formal artefacts (H.J. Deacon et al 1978). In the South Western Cape post pottery settlement patterns show signs of disruption with people moving into refuge situations in small shelters in the Cape Fold Belt mountains and hills in the Sandveld (Manhire 1984). The variety of formal tools in these sites is limited compared with older ones in that backed elements virtually disappear, with scrapers, particularly adzes, becoming dominant (Manhire, Parkington and Robey 1984). At Wilton rock shelter in the eastern Cape, J. Deacon (1974) has described the youngest levels as being the death phase of the Wilton. At Melkhoutboom H.J. Deacon et al (1978) and J. Deacon (1984) have noted a fall off in the frequency of formal tools in the sheep bearing levels. In the Karoo interior changes in assemblages

become so marked during ceramic times that Sampson (1972) saw fit to attribute them to another industry - the Smithfield.

Despite these visible changes in assemblages after 2000 years ago, the ability to recognize a herder site in a Late Stone Age context has proved a major problem for archaeologists. Smith (1983) has argued that in the Western Cape high herder mobility in areas suitable for grazing has left no identifiable artefactual remains. Surveys by Robertshaw (1979) and Hart (1987) have proved fruitless in locating prehistoric kraals. A series of stratified middens at Kasteelberg (an obvious focal point in the the grazing lands of the Western Cape) which is currently being excavated by Smith (1986), may provide the long sought for opportunity for identifying a herder assemblage characterised large numbers of domestic animal bones, pottery and an informal stone tool assemblage.

Archaeological remains in rock shelters cannot easily be designated as being of herder or hunter gatherer origin as we know very little about the material culture of herders. Archaeologists have simply not known what to look for. The mere presence of ceramics and domestic sheep in sites is not diagnostic. It is historically known that people called Soaqua often raided herding groups for their domestic stock and these could often end up in shelter situations (Parkington 1984). Pots may also have been bartered or stolen. Kasteelberg stands out from this scenario by virtue of the fact that ceramics and domesticates occur in copious amounts. In addition Smith

(1987) has strong historic evidence that the Vredenberg Peninsula was seasonally occupied by herding peoples. Kasteelberg remains one of few sites in the Western Cape where archaeologists can pin their hopes for a secure herder identification.

No prehistoric stone kraals have been identified in the Southern and South Western Cape. Of late, the situation in the interior of the country is looking more hopeful with the discovery of stone features in the Zeekoe Valley. Very few stone features in Southern Africa have been associated with Late Stone Age peoples. Until recently, the only settlements that had been documented have been those along the southern stretches of the Riet River in the South Western Orange Free State and Griqualand west (Maggs 1971). These were first documented by Van Riet Lowe in 1929 but it was not until the 1970s that the first detailed studies came about. Metrical analysis of human remains associated with the Riet River or 'type R' settlements (Humphreys 1970; Morris 1983) reveal a khoisan physical type. Associated burial practices are deemed to be unique (Humphreys 1970; Humphreys and Maggs 1970; Maggs 1971) with complex graves containing collections of grave goods. It was thought possible that there may be some cultural similarity between the Type R settlements and those of the Zeekoe Valley as it is suspected that both were constructed by people of a similar physical type who may have had common language and material interests. Contrasting the available data from these two settlement patterns may provide some insights.

THE TYPE R SETTLEMENTS OF THE RIET RIVER

Humphreys (1972) has provided a detailed account of the Type R settlements (map 3) with respect to the environment, their appearance, spatial distribution and cultural associations. The settlements lie in a 130km stretch of the Riet River between the town of Plooyburg in the west and the Kalkfontein dam in the east. The area is considered to be unsuitable for agriculture with a yearly rainfall figure marginally higher than that of the Zeekoe valley. The vegetation consists of sweetveld grassland with possibly Karroid intrusive elements (Maggs 1971).

The arrangement of each of the 96 Type R settlement units is consistent except for size variation. Settlement units may occur in clusters containing as many as 13 units but in most instances between 2 and 7. Clusters tend to be separated from each other by a distance of between 5 and 10 kms. Settlement units characteristically consist of large central enclosures of about 20 - 70 m in diameter, surrounding which are 4 or 5 smaller enclosures of about 14m in diameter. These latter normally have their entrances facing the central enclosure. The settlements are constructed from piled, unaltered slabs of dolerite. The walling has a collapsed appearance, being seldom more than 1 m in height.

Most of the settlement units are located less than 2 km from the Riet River and always less than 3km. The other major factor that determines the location of settlements are dolerite dykes,

ridges and hills. Hollows between hills, terraces, slopes and flat areas near hill slopes are favoured areas for the construction of the Type R settlements (Maggs 1971; Humphreys 1972). A mixture of cultural and environmental influences probably determined this settlement pattern. Excavations at the Type R sites have revealed burials with grave goods as well as scatters of artefacts that are essentially a manifestation of Sampson's (1972) phase 6 or Smithfield assemblages. Whether the scatters are directly associated with the settlements is not known but dates that have been attributed to the Smithfield (post 400 B.P.) indicate contemporaneity with the Type R burials which are between 600 and 200 years old (Humphreys 1970, Humphreys and Maggs 1970). The burials themselves contain pottery, east coast marine trade items, beads as well as copper and iron objects of Iron Age Tswana origin. The pottery is unlike that of the Iron Age in that it is essentially non-decorated, sometimes grass tempered and 10-13mm thick (Humphreys 1972).

Humphreys (1972) believed that the people of the Type R settlements were essentially herders of domestic sheep and perhaps cattle which were kraaled in the central enclosures of the settlements. It is also possible that their tradition of herding and settlement construction had origins in the arrival of the Tswana people to the north west. The Zeekoe Valley stone features, which were brought to the attention of archaeologists in the early 1980s, are located at least some 300 kms south east of those of the Riet River (which have a discrete geographical location). The distribution of the stone features of the Karoo is not known as yet and therefore it cannot be

established whether the two systems are geographically linked by other stone features. The topography and geology of the two areas are similar with karoo shales and dolerite dykes dictating the physical appearance of the country.

STONE FEATURES IN THE ZEEKOE VALLEY.

Stone features were discovered in the valley during the site survey phase of the project. A large cluster of stone kraals associated with Khoi Pottery was brought to the attention of the team by Mrs Stella Rubidge of the farm Zoetvlei in the high southern reaches of the Zeekoe Valley (Sampson 1984b). A closer inspection of these finds revealed a multitude of isolated, interlinked and abutting stone circles which were not familiar to the team members who had, by this stage in the project, examined a number of historic farm houses and stock posts. These features were then considered to be prehistoric because of their associations with scatters of Khoi pottery. The term "Khoi pottery or ware" (as used in all ZVAP publications) refers to a ceramic type that is similar to the Cape Coastal pottery as described by Rudner (1968).

Once the site survey phase had been completed the archaeologists collected potsherds from all the recorded camps in the south western sector of the research area. During this operation, more stone features were recorded. These included some huge clusters of up to 80 features on the farms of Haaskraal and Volstruisfontein. As the collecting team moved further away from the foot hills of the Sneeuberge an apparent drop off in feature

frequency occurred which led Sampson (1984b) to the opinion that the stone feature distribution was restricted to the south western sector of the research area. At this stage 282 stone circles had been recorded. The term, **stone feature** refers to any individual stone structure. These may include stone circles (kraals), stone piles or cairns as well as sections of isolated piled stone walling. Complete and semi-complete stone circles are referred to as **kraals** in this text. Stone features (including kraals) often occurred in close proximity, forming large clusters. A **cluster** refers to 3 or more features that may abut or be linked to each other, or a number of features that cluster together in close proximity.

The data that was available on the distribution of Khoi as opposed to Smithfield pottery indicated that stone feature clusters were associated with sites on which more than 60% of the sherds were of the Khoi type. This indicates that there is a relationship between stone circles and the presence of Khoi pottery (map 4a and 4b). Sampson (1984b) tentatively suggested that a hunter\herder frontier situation may have existed in the Zeekoe Valley. Sampson (1986b) went on to detail this notion and concluded that a bow wave diffusion zone had been in existence in the research area at some time in prehistory. This had produced a three phase spatial organization with herders occupying the south west. North of this area lay a zone of herder influenced hunter gatherers followed by pure hunter gatherers in the very north of the research area. Archaeological evidence that backed this hypothesis at the time was that Khoi sherd frequency decreased towards the northern end of the valley. Stone based

windbreak distribution (construction knowledge thereof acquired from herders) according to Sampson 1986b, decreased in a similar fashion as one moved further away from the kraal zone. The outer edge of the diffusion front coincided with the southern most limit of Orange River jasper and agate usage. This could have represented some sort of socio-political boundary that prevented the movement of ideas in the territory of the pure hunter gatherers (Sampson 1984b, 1986b).

The second sherd collection phase in 1985 revealed that further stone features did exist beyond the bounds of what was thought to be the frontier zone. It was then decided that a wider survey was needed to confirm whether there was a frontier zone at all. Dictates of time available for the survey rendered it impossible to re-examine the whole of the valley so the search was extended down the Elandskloof and Seekoei Rivers (map 5). Farms directly close to the rivers provided an arbitrary search boundary. Some clusters were located well north of the Sneeuberg mountains and at least 60 km north of the previously proposed frontier. Large clusters were recorded at the confluence of the Seekoei and Elandskloof Rivers which marked the northernmost extent of the stone feature survey.

This particular project did not succeed in delineating any boundaries to the distribution of stone features. Recent sightings by the author, of stone features in the Victoria West district (well to the west of the research area) indicate that the construction of stone features in the Karoo during

prehistoric times was a fairly widespread phenomenon. It is consequently suggested that they are probably ubiquitous throughout the Zeekoe Valley. The distribution of the features does not indicate a geographically coherent frontier situation. It is nevertheless possible that temporary frontier situations may have blanketed the Zeekoe Valley in the past resulting in hunter gatherers and herders interacting within a common landscape. It has become quite clear that Sampson's (1984b; 1986b) hypotheses were based on the analysis of incomplete data.

Stone features in the Zeekoe Valley exist in a variety of different forms but their spatial patterning is consistent. By the time that the kraal survey had been completed 384 individual features had been recorded. Discernible major factors that govern the location of these features are main water courses, permanent springs and convenient dolerite outcrops. In this respect settlement patterns are very similar to those found among the type R sites previously described.

Stone features lie within 1km of a water source and very seldom anymore than 2 (map 5). In the central Zeekoe Valley some features have been recorded within 50 m of the Seekoei River with many more not more than 300 m away. The densest clusters of stone features lie in the south western sector of the Zeekoe Valley where they are scattered over dolerite ridges overlooking the Bo-Seekoei and Zoetvlei rivers. The largest of these clusters is that found on the farm Niekerksfontein on the Bo-Seekoei. Similar clusters on the farms Haaskraal and Zoetvlei,

with 50 and 30 individual features respectively, are exceptionally large as most others contain between 3 and 15 stone features. There are also many single features to be found on ridges near isolated springs on the flat plains of the Agtersneeberge. This is a common pattern in the Elandskloof drainage system of the southern central Zeekoe Valley (map 5).

Very few stone features were found in the higher reaches of the Sneeuberge, a pattern which also applies to Late Stone Age sites in general. The harsh climatic conditions of the mountains, as well as the poor quality winter grazing they offer, would have resulted in low human population densities.

All stone features are associated with dolerite geological formations. Terraces on ridges, tops of ridges, slopes and the tops of hills as well as sheltered places in dolerite mazes often house clusters. Locations that appear to afford protection from prevailing winds were often chosen. There are several environmental reasons as to why the builders of stone features may have selected these situations. Loose dolerite boulders and rubble are the main materials of construction. These are available in virtually unlimited quantities, but are heavy, because the rock is rich in iron. People had to choose site locations where building material was readily available. Many of the stone circles that were recorded were constructed from stone which had been cleared from the area of the interior of the circle and piled on the perimeter to form walling. Apart from the strategic advantages of being in a raised position,

dolerites and the availability of ground water are geologically interlinked (Hodgson 1986). The lower flat Karoo plains act as reservoirs of cold air on still nights. Higher areas are appreciably warmer under such conditions. These are all obvious environmental factors that may have influenced the stone feature builder's choice of location. The broad spatial patterning of stone features in the Zeekoe Valley is analogous to that determined by Humphreys (1972) for the Type R sites of the Riet River. Conclusions reached within an environmentally deterministic paradigm would suggest people were responding to similar ecological pressures in both places. Environments were certainly similar in many respects.

The main differences between the Zeekoe Valley stone feature sites and those of the Riet River lie in their individual spatial layout and configuration. Settlement units of the Type R sites show formality and uniformity of plan. In the Zeekoe Valley the variety of stone features and their configurations are spectacular by comparison. Unfortunately they cannot be identified on aerial photographs which would mean that a specially designed low altitude aerial photography program would have to be implemented to obtain information about spatial layout of individual clusters. At present spatial information is limited to that derived from ground observations.

STONE FEATURE AND KRAAL FORMS

Sampson (1984b) has classified most of the stone features as being kraals. This identification has not yet been confirmed by

excavations of dung or bone on open sites. The size and layout of the features indicate that this is an intuitively reasonable identification so the term 'kraal' will be used in this text. Nine different forms of stone feature occur in the research area (fig 1).

1. **Historic kraals** are common. Most of these were constructed before the turn of the century when wire fencing was introduced. Before this time farm boundaries were not defined and the herds owned by individual farmers had to be tended by shepherds at all times. Historic kraals were used as stock posts in rotational grazing systems before sheep camps were individually fenced off. Historic kraals are normally quite large. In many instances there are associated remains of the shepherd's temporary stone hut. Since these kraals were reoccupied time after time, cultural debris such as tin cans, rifle cartridges, porcelain and a variety of other objects normally lie close by. Dung accumulations in these kraals were fired in order to destroy parasites. This often leaves a characteristic white vitreous matter visible today. Kraals were constructed from dolerite and shales alike using systematic walling with a rubble infill method of construction. Kraals may be square or circular with construction facilitated by natural rock outcrops. Sheltered situations close to ridges were often preferred. The potential for an historical archaeological investigation of early historic farming in the research area is immense.

2 & 3. The most common form of prehistoric kraal is the stone circle. These may (2) or may not (3) have visible entrances and may occur as individuals or abut or border on each other in groups of 3 or 4. They also occur together with wind breaks, stone piles and lengths of piled walling. Common locations are on ridge slopes, hill slopes and tops. The walling, in contrast to historic sites is constructed from piled dolerite rocks - this simple construction method resulting in the walls having a collapsed appearance. Walling is seldom more than 1m in height which would render these kraals unsuitable for kraaling goats (they are more nimble and independent than sheep). Alternatively the piled walls may have been made more efficient by packing thorn bushes on top. Thorn bush kraals and skerms are frequently used by the people of the Namaqualand reserves today (Webley 1984). Diameters of Zeekoe Valley kraals are normally between 8 m and 15 m but examples in excess of 20 m are not uncommon (fig 1; 2).

4. Kraals with smaller enclosures near their entrances have been recorded throughout the research area. The building method used in the construction of these kraals is piled stone walling less than 1 m high. The characteristic feature of these structures is that a section near the entrance has been divided so as to form a small subdivision or enclosure. The walling used in the construction of the smaller section is often lower and more ephemeral than that used in the rest of the kraal. Sampson (1984) has argued that this small enclosure may be a 'lammerhok' where lambs were kept separate from milk sheep. Webley (1984) has documented enclosures of similar spatial arrangement that

serve this function among the Nama of the Leliefontein reserve. It is also possible that this small enclosure may constitute a hut floor, but as yet no cultural material has been located that would verify this. The larger enclosures of kraals of this type are between 8 m and 15 m in diameter but the smaller entrance enclosure is never more than 3 m or 4 m wide. This type of stone feature may be found in all the locations previously described (fig 1; 3; 4).

5. **Open kraals** are found throughout the research area and in all the localities previously described. They may occur in isolated contexts or as parts of larger clusters. The main characteristic of the kraals is that they are only semi-enclosed. Structures that have been broken open by erosion or flooding are normally distinguished by visible wall debris scattered in the general area. Open kraals appear to be purposefully constructed as such. Quite often walled sections are piled onto dolerite slopes with the lowermost section being open. It may be suggested that huts positioned in the opening could have been an effective barrier to stock kraaled on the inside (fig 1).

6. **Isolated stone walling** is found on the edges of dolerite ridges. Cultural remains are seldom found in association with these and their significance remains a mystery (fig 1).

7. **Circular formations of stone piles** are a feature of the Elandskloof drainage system. In most instances these circles are larger than 10 m in diameter. In one instance a feature that had

a diameter of 200m was found linking several dolerite kopjies near the confluence of the Elandskloof and Seekoei Rivers. The large size range of these features means that a highly variable number of stone piles may be constructed to form the circle. Dolerite mazes appear to be favoured places for this type of construction, as natural outcrops could be conveniently utilised. Individual piles of dolerite rubble are normally not higher than 1 m and have a diameter of 1 - 3 m. Some of the piles clearly take the form of skerms or windbreaks as they have a slightly arc like shape. Others are simply round or slightly oval. Lengths of piled walling are often found associated with these structures in that they may also have been used to define odd stretches of the perimeter of the circle. It is possible that these circular configurations may be remnants of composite kraals that in some ways bear similarity to the layout of indigenous stock keeper camps described by Burchell (1822). The stone piles, combined with brush and bush supplements, may have been constructed between matjies huts or bush dwellings so as to form a fairly large circular enclosure. Cultural remains associated with structures such as those of the Elandskloof and Seekoei confluence are typical of the Smithfield complex in that grass tempered pottery as well as end scrapers are commonly associated (fig 1; 5).

8. Small stone **windbreaks** are common on Smithfield sites. Enigmatic single stone piles may be found in association. The windbreaks are arcs of single stones that range in length between 1 m and 4 m. Sampson (1986b) suggests that the arcs of single stones were foundations that supported mat or brush wind

shelters. He has also suggested that the stone piles may simply be stones removed from a camping place and discarded to a single point. He points out that it is unlikely that they are burials as the piles have not been mined by porcupines, a disturbance commonly afflicting historic graves. As yet, none have been excavated in the research area (fig 1).

Only about 20% of kraals have associated cultural material, although superimpositional problems are difficult to resolve in this instance. The kraals themselves may, subsequent to their construction, have been foci that attracted hunter gatherers. The piled walls could have functioned as wind breaks or hunting blinds. If we are to take cogniscence of ethnographic information further complexities are added to the problem. Webley (1984) states that the Nama never camp in the immediate vicinity of their kraals but always position themselves a fair distance (some 70 m) away. An equivalent situation in the Zeekoe valley would create the problem of learning to distinguish a kraal related site (that may be 60 or 70 m away from an associated kraal) from the masses of other camps that pepper most dolerite dykes. This would also mean that cultural material on kraals need not be herder related at all, but debris from subsequent hunter gatherer occupation.

Despite the above mentioned complexities, strong evidence for a material cultural association of the kraals, that is separate from the Smithfield, has been documented by Sampson (1984b) and the author. During the collecting phase of the ZVAP it soon

became evident that 2 ceramic traditions existed in the research area. These are Smithfield and Khoi pottery. Smithfield pottery is found throughout the central interior of South Africa (Beaumont and Vogel 1984). It has a characteristic manufacture method and is heavily decorated in a wide variety of styles. A typical Smithfield pot tends to be bagged shaped or more often, 'sauce pan' shaped with a flat bottom and vertical walls. The walls of the pot are molded onto the flat bottom and the whole vessel is then shaped to the taste of the maker. As a result Smithfield pots have a crude and robust appearance. Most of the tempering of the clay was achieved with the addition of liberal quantities of grass stems. The finished product was then decorated from lip to bottom with a variety of motifs documented by Sampson (1988a). This type of pottery has been previously referred to as class A pottery by Sampson (1972). The Khoi pottery is similar to that documented by Rudner (1979). It is thin, well fired, grit tempered and coil constructed. Lugged sherds and pointed bases are also characteristic. Most sherds of this type display a red slip, but decoration is rare and confined to linear incisions on the neck of the vessels.

The sherd collecting phase of the ZVAP enabled the compilation of much information on the distribution of the various types of sherds. Ratios of Khoi as opposed to Smithfield sherds were compiled from site to site. These have been spatially plotted so as to show areas of increased frequency of the respective sherd types (Sampson 1984b). Most ceramic period sites show surface evidence of both Smithfield and Khoi pottery with only about 13% of sites showing 100% Smithfield sherds (Sampson 1984b). Sites

associated with the large stone feature clusters in the south western sector of the research area show that between 90% and 50% of the sherds collected on these sites fall within the Cape Coastal tradition. Kraal associated sites on the southern parts of the Elandskloof Rivers show between a 60% and 80% frequency of Khoi sherds. In contrast, sites that are not associated with kraals show a rather lower frequency of Khoi sherds - normally below 40% of the total (see maps 4 and 5). Although it is difficult to associate individual sites with kraals, the broad regional picture shows a definite relationship between kraal rich areas and Khoi pottery. Some camps with kraals that are spatially associated show Smithfield pottery dominance. Many kraals show no cultural associations at all. Until archaeologists succeed in demonstrating whether individual scatters are temporally related to kraals or not, very little besides this broad regional conclusion can be claimed.

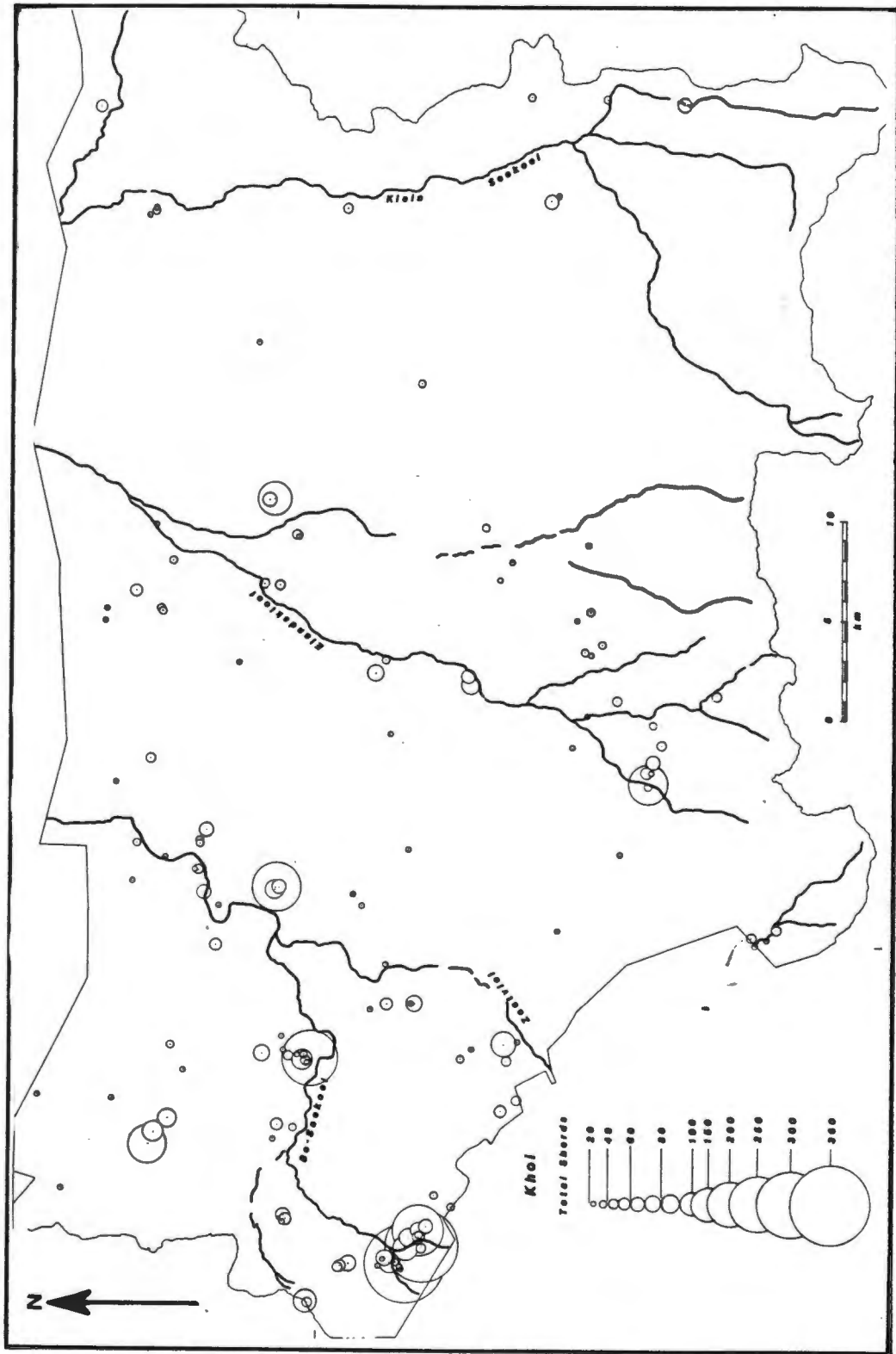
Before the completion of this thesis, no dates on the introduction of stone feature construction were available in this part of the Karoo. Archaeologists were contemplating the possibility that material evidence verifying Elphick's (1977) hypothesis had now been found. Historic sources relevant to the area made no mention of anyone keeping stock in stone enclosures which seemed to indicate that the features were prehistoric. With the refutation of the frontier hypothesis (Sampson 1986b), some suggestions about Khoi herders making seasonal summer grazing ventures into the Karoo may be made. Early travellers documented a powerful group of Khoikhoi below the escarpment in the Aberdeen district as well as the stock keeping nation of the Korana on the

banks of the Orange River (Engelbrecht 1936, Mossop 1931). These groups may have moved northwards through the Sneeuberge or southwards up the Seekoei River to the high Karoo in response to seasonal summer grass and standing water suitable for cattle grazing. Alternatively, herders may have kept sheep permanently in the research area as farmers do today. It was expected that archaeological excavations in the Zeekoe Valley would help place such events in a temporal context.

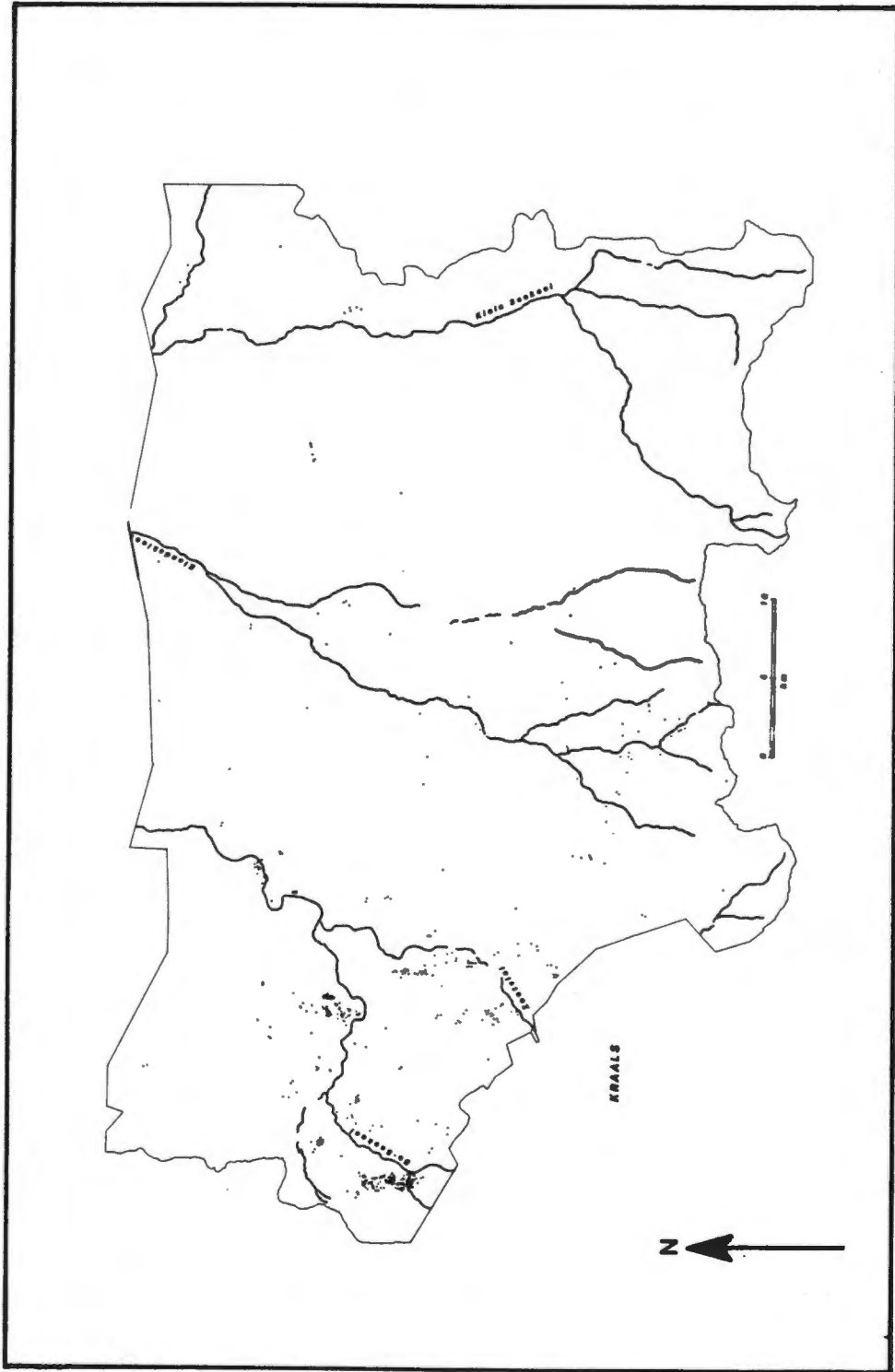
The spatial patterning of individual stone features as well as the associated pottery tend to indicate that these sites are culturally dissimilar to the Type R sites of the Riet River to the north west. They show little evidence of Iron Age influence. There is a similarity in settlement patterns but this is probably due to broad environmental constraints.

The discovery of a herder presence in the research area had serious implications for the goals of the ZVAP. There was an urgent need to establish whether the event took place prior to Smithfield settlement or not. Knowledge of the effect of the herder presence on subsequent archaeological events in the research area needed to be developed. It was not known whether the herder presence was a single event, a seasonal event or a long term occupation. It was hoped that an excavation at suitable sites would reveal ceramic sequences that would show the time depth and stratigraphic occurrence of Cape Coastal pottery as opposed to Smithfield pottery, thus facilitating the interpretation of the spatial evidence accumulated during the

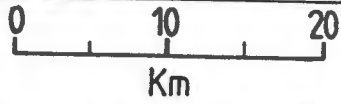
course of the ZVAP. The next phase of this project involved the excavation of 2 sites in the south western section of the Zeekoe Valley.




MAP 4a South west portion of the research area.
Frequencies of Khoi sherds on Late Stone Age sites.



MAP 4b South west portion of the research area.
Distribution of stone kraals.



MAP 5 The known extent of stone kraals/circles in the Zeekoe Valley.

- stone circle
-  mountain

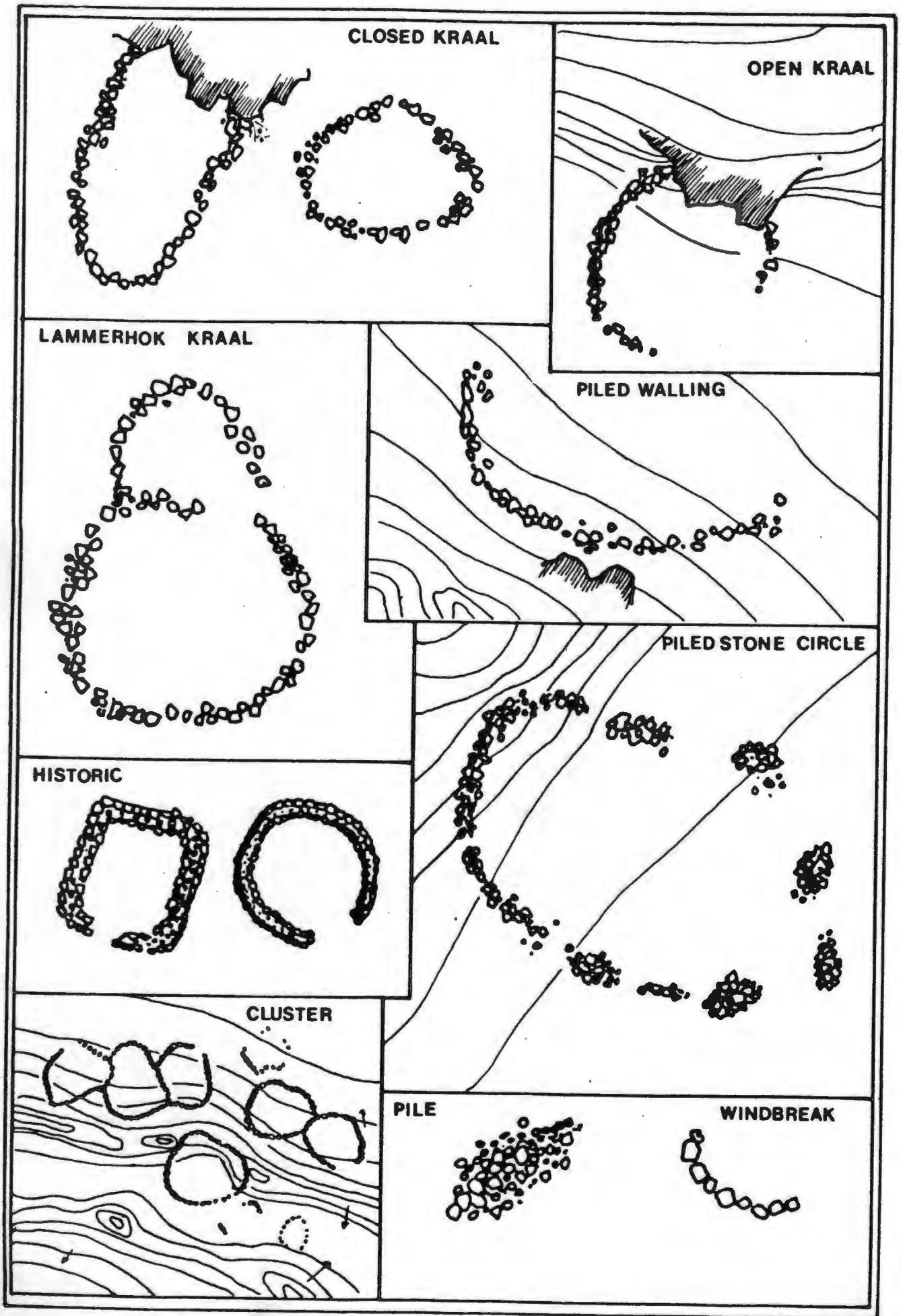


FIGURE 1 Stone feature forms in the Zeekoe Valley (not to scale).

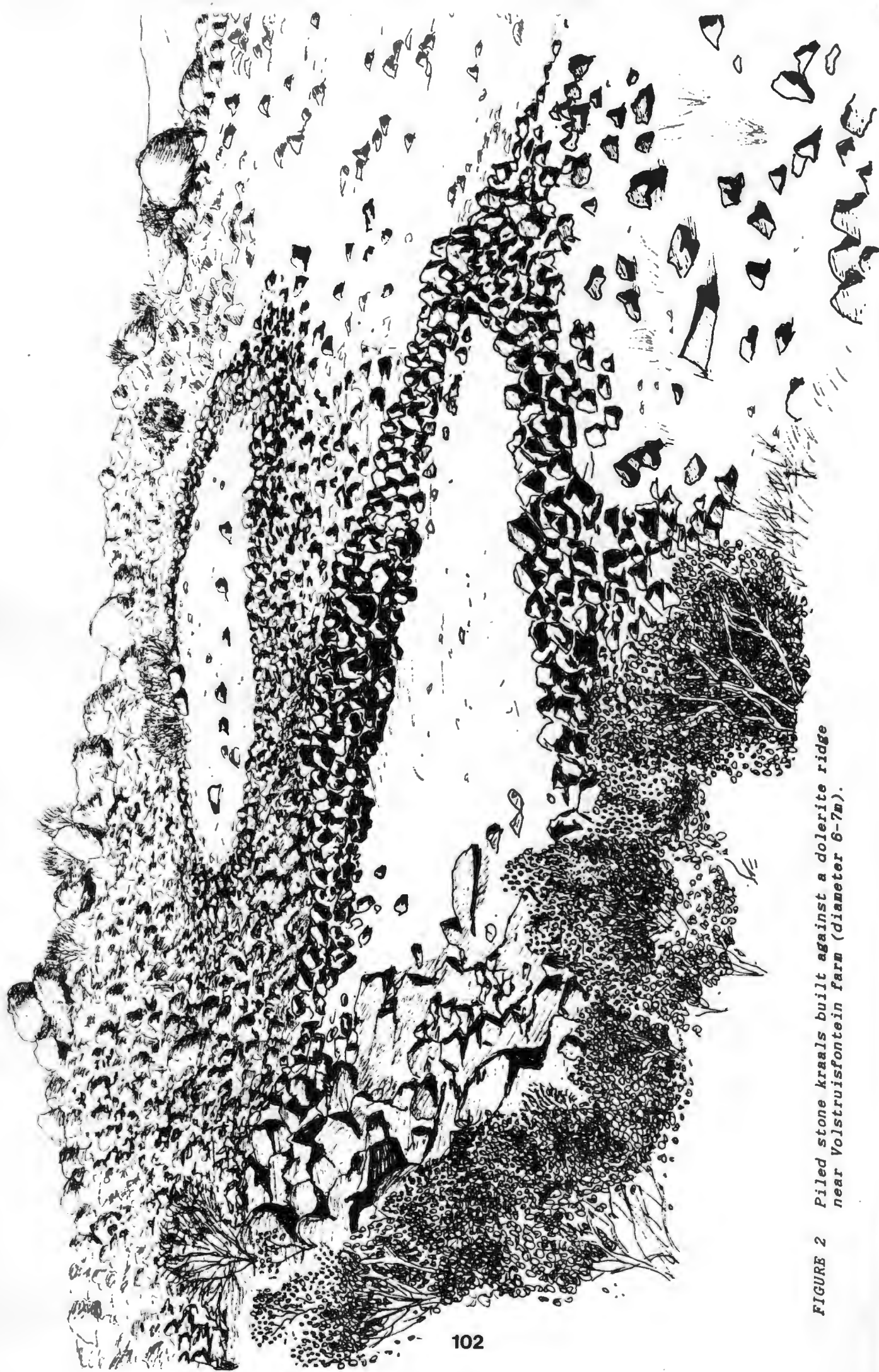


FIGURE 2 Piled stone kraals built against a dolerite ridge near Volstruisfontein farm (diameter 6-7m).

FIGURE 3 Kraal with lannerhok (left) discovered near the confluence of the Zeekoe and Elands-kloof rivers (length 6-7m).

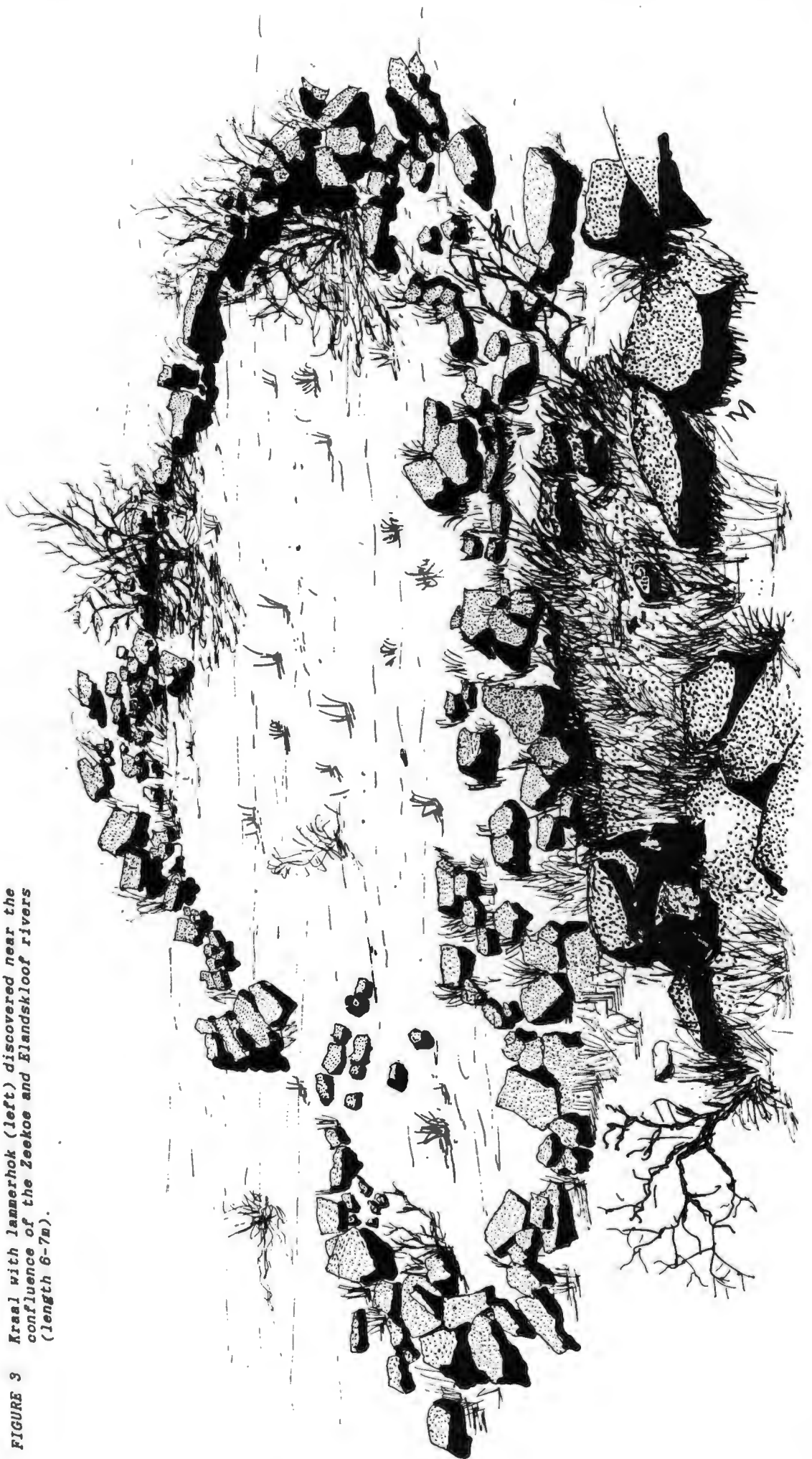


FIGURE 4 *An outcrop of large boulders has been incorporated into the construction of this kraal with an abutting secondary enclosure (foreground).*

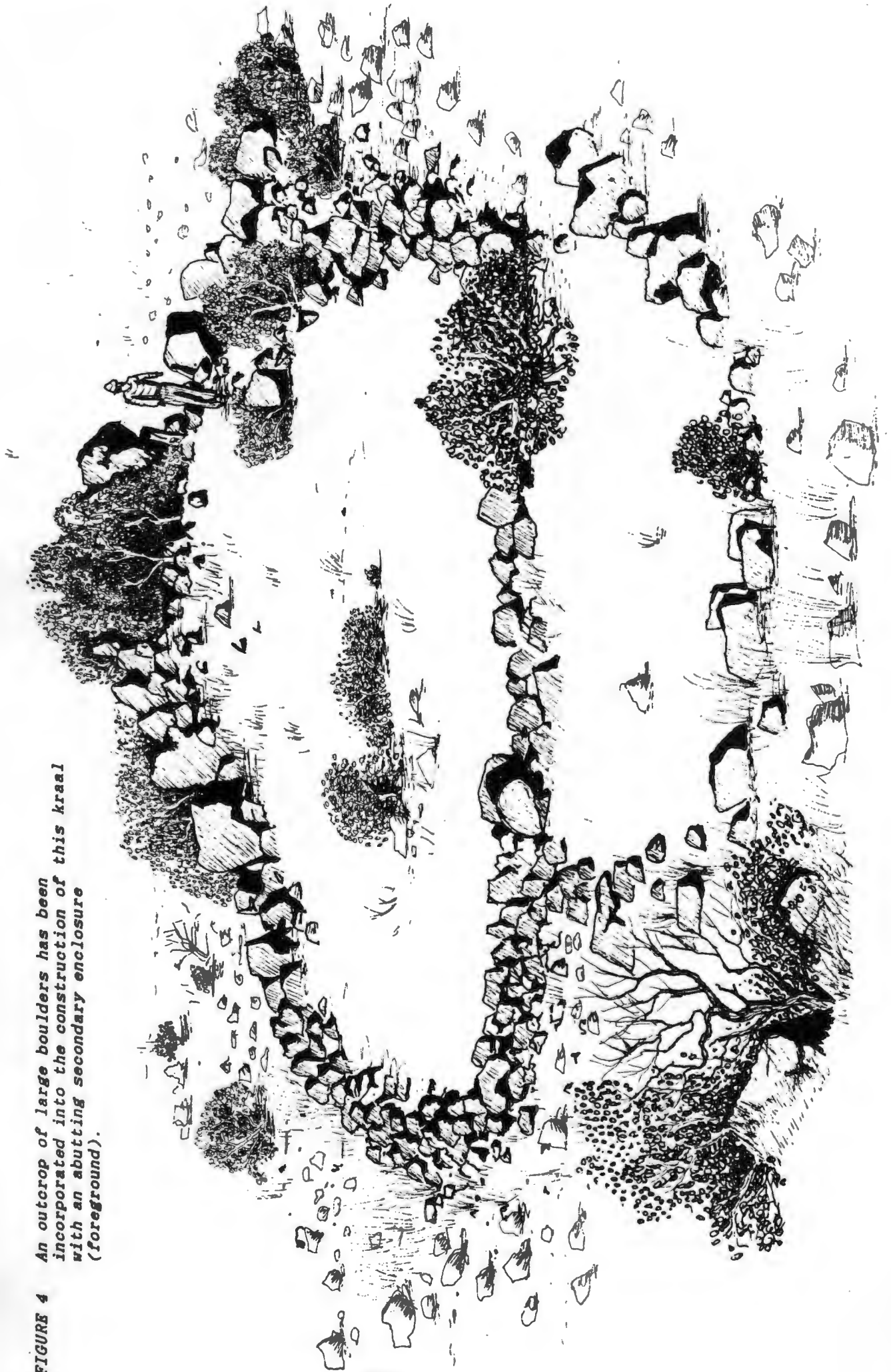


FIGURE 5 This large enclosure is some 21m in diameter. The stone piles that make up much of the circumference are clearly visible.



TABLE 1

DATES FOR CERAMICS AND DOMESTIC STOCK IN THE CENTRAL INTERIOR

Zeekoe Valley

Vinkelfontein. Class A grass tempered pottery. Open site.

320 \pm 40 B.P. Pta-2843. (Beaumont and Vogel 1984).

Middle Mount. Class A decorated grass tempered pottery.

Smithfield open site.

440 \pm 45 B.P. Pta-2844.

580 \pm ? B.P. Pta-2846. (Beaumont and Vogel 1984).

Victoria West

Biesiesfontein. Stone circle with class A pottery.

440 \pm 45 B.P. Pta-3417. (Beaumont and Vogel 1984).

Middle Orange River

Zaayfontein shelter. Phase 5. Class B pottery. level Vii,

diffuse charcoal fragments associated with 2 potsherds.

730 \pm 35 B.P. GXO 666. (Sampson 1972).

Zaayfontein shelter. Phase 5. Class B pottery. Level Vi,

diffuse charcoal fragments associated with 199 sherds.

430 \pm 95 B.P. SR 133. (Sampson 1972).

TABLE 1

Zaayfontein shelter. Grass tempered sherd.

1040 \pm 60 B.P. Pta-3393 (Beaumont and Vogel 1984).

Glen Elliot shelter. Phase 6. Level ii.

90 \pm 90 B.P. SR 121. (Sampson 1972).

Glen Elliot shelter. Phase 6. Level iii.

235 \pm 80 B.P. GX 1295. (Sampson 1972).

Glen Elliot shelter. Grass tempered sherd from bottom of quence.

1120 \pm 70 B.P. Pta-3402/75. (Beaumont and Vogel 1984).

Orange Free State

Tienfontein 2. Grass tempered sherds associated with glass beads.

80 \pm 45 B.P. Pta-1583. (Brooker 1980).

Rose Cottage Cave. Class A pottery. Spit 5.

610 \pm 50 B.P. Pta-350. (Beaumont 1963, Vogel and Marais 1971).

TABLE 1

The Type R settlements of the Riet River, Orange Free State

O.F.D. 1 Koffiefontein.

290 \pm 45 B.P. Pta-964. (Maggs 1971).

Waterval West 3. Stone enclosure associated OES.

350 \pm 45 B.P. Pta-3109. (Humphreys 1972)

Khartoum 1. Jacobsdal. Sherds associated with structure.

570 \pm 60 B.P. Pta-3093. (Beaumont & Vogel 1984).

Ghaap Escarpment, Northern Cape

Little Witkrans Shelter. Creramics.

1490 \pm 40 B.P. Pta-2447

Ovi-caprines.

1830 \pm 50 B.P. Pta-3418.

Limerock Shelter 1. Ovi-caprines.

1620 \pm 50 B.P. Pta-1621.

Limerock shelter 2. Ceramics.

1720 \pm 40 B.P. Pta-2095.

Dikbosch shelter 1. Ceramics.

1720 \pm 40 B.P. Pta-3413.

Ovi-caprines.

3060 \pm 60 B.P. Pta-1065.

TABLE 1

Blinklipkop. Ceramics.

80 \pm 35 B.P. Pta-2841/260 \pm 45 B.P. Pta-2833/280 \pm 50 B.P. Pta-839/

830 \pm 45 B.P. Pta-3419.

Ovi-caprines.

1160 \pm 50 B.P. Pta-2840. (Humphreys and Thackeray 1983).

CHAPTER 7

THE EXCAVATIONS

INTRODUCTION

The excavation of 2 rock shelters in the research area was undertaken by the author to try to answer questions that arose during the survey, sherd collecting and sherd matching phases of the ZVAP.

A wealth of surface information had been collected by the team but there was no chronological control for these data in the research area. The sherd matching program produced a patchwork of interlocking and superimposed stylistic boundaries that covered the southern half of the Zeekoe Valley. Somewhere within this conflation of the past the makers of Khoi pottery and stone features had occupied a niche in archaeological time. The expectation was that suitable rock shelters with stratified deposits would provide archaeologists with a means of inflating this superimposition and thus teasing apart past events as manifested above ground in the Zeekoe Valley.

HAASKRAAL ROCKSHELTER

LOCATION AND DESCRIPTION

Haaskraal rockshelter lies on the southern border of the farm, 'Haaskraal' in the Richmond district of the Karoo (map 6). The

site is most easily reached by driving 2.5 km in a northerly direction from Zoetvlei farm house until the northern boundary of Zoetvlei farm is reached. The shelter is situated on the top of a dolerite dyke 200 m west of this point and approximately 100 m inside the boundary fence of Haaskraal farm.

The dolerite dyke overlooks a large plain through which the Zoetvlei River flows (2.5 km east of Haaskraal shelter). This river is dry in the winter but some permanent springs in the bed provide standing water throughout the year. The river banks are thickly vegetated with 'Hartebeestbos' reeds. Other sources of water in the area are a fountain (a wind pump in present times) 1km north east of the site, and a wet-season spring 200 m south of the site at the base of the dolerite dyke. The plain below the dolerite dyke is normally vegetated with Karoo scrub but dense stands of Themeda triandra may appear after good rains. At the time of excavation a small herd of springbok and cattle were permanently grazed on the 'camp' close to the river.

The summit of the dolerite dyke is littered with boulders, some of which provide wind shelter for a number of Smithfield open scatters that are commonly found in such areas. The summit of the dyke takes the form of a double ridge with a raised and sheltered natural platform in the middle. Several broken stone circles and features have been constructed within this sheltered area. Haaskraal shelter (haa 1) is a small sheltered hollow lying under a large dolerite boulder (plate 1; fig 7). It is little more than 5 m in width and 4 m in depth. The roof of

the shelter slopes steeply towards the back which means that only a limited part of the shelter provides standing room. The south easterly view looks over the remains of an historic walled kraal and shepherd's hut which have been constructed on top of a scatter of Wilton and Smithfield artefacts. The talus slope extends out not more than 13 m (horizontal distance) from the shelter entrance. The shelter is elevated some 6 m above the surrounding plain.

Underneath the drip line of the shelter lies a tumbled stone wall with the remains of a small entrance on the eastern side. It was not known whether this walling was prehistoric or historic but it was suspected that this too was once a shepherd's hut. Standing examples are fairly commonly constructed in shelters and overhangs so as to make use of naturally available protection.

Lower down the talus slope is further evidence of piled walling which on first impression appears to be prehistoric. It takes the form of a three-quarter circle that extends from the dolerite on the west of the shelter down onto the talus slope until it reaches a point 8 m from the drip line. The walling then curves upwards to make contact with the dolerite on the east side of the shelter. The presence of this walling was a major motivation for choosing this particular shelter for excavation. It is one of few closely associated with one of the many stone features that had been recorded in the Zeekoe Valley. Initial inspection indicated that this stone walling was sufficiently old to have acted as a 'dam' on the talus slope that trapped almost a meter's depth of

artefactual material and debris that had spilled out of the shelter. An arc of secondary walling abuts onto the eastern side of this enclosure. This walling extends down the talus slope then curves back upwards to form an enclosure of similar size and form but a little more ephemeral than the western enclosure previously described. This secondary walling contains little accumulated deposit. The rocky talus slope below the site and enclosures (kraals) is dense in both Smithfield and Wilton artefacts including both Khoi and grass tempered pottery (plate 1; fig 7).

The surface deposit within the shelter, which is composed of mostly shrew and dassie faeces, showed little surface evidence of artefactual material. It was suspected that this was an historic accumulation and that artefactual material would appear once this accumulation had been removed. After an initial inspection and preliminary mapping it was decided that excavation should begin with an east to west 3x1 m cutting within the shelter some 2.5 m within the drip line. This would be expanded with the eventual addition of a 4x1 m north to south cutting from the drip line to the back of the shelter. This would penetrate the tumbled walling along the drip line and show to what extent it was historic or prehistoric. Once some preliminary chronological control had been established a second excavation would be opened up on the inside of the eastern enclosure against the piled stone walling. It was hoped that this would reveal evidence of chronological deposition within the 'dam' and enable excavators to obtain a sample of carbon for an absolute date, or

at the very least obtain a stratigraphic date that could be linked to the sequence within the shelter.

EXCAVATION STRATEGY

A permanent hanging 1m grid system was attached to the roof of the shelter. This proved to be a most satisfactory method of establishing permanent markers as nocturnally feeding rodents quickly consumed any string that was within their reach. The powdery shrew dung overburden was then removed in 1x1 m horizontal units and sieved. The removal of the overburden revealed that the deposit underneath was dark and damp showing very little colour variation which lowered hopes for a successful stratigraphic excavation. A combination of spit and stratigraphic excavation that had been previously successfully used by Bousman and the author at Blydefontein (Bousman in prep.) was put into operation at Haaskraal. At this time members of the ZVAP team were aware that the Late Stone Age sequence in the Zeekoe Valley held potential for great complexity. This meant that any excavation in this area, where stratified deposits are rare, needed to be carefully conducted so as to achieve a highly resolved documentation of the sequence. Each 1x1 m square was given an alphabetical label and was then subdivided into 16, 25 cm blocks which were each given a numerical label. Each 25 cm block was considered to be a single excavation unit and was sieved and bagged as such. Arbitrary spits of between 3,5 cm and 2 cm in depth provided the vertical control. These were regulated in such a way as to take cognisance of visible stratigraphy and the strike of the deposit. Although spit

excavation is not an ideal excavation strategy, it was expected that the close spatial control of the deposit combined with the thinness of the spits would account for any shortcomings. Theoretically, any artefact could be replaced within a maximum error of 25cm from its original position which would mean that undulations in the stratigraphy could be accounted for once the analysis was underway. Section drawings and spit levels were recorded for every section as it was exposed.

Once the loose overburden had been removed, dark, damp deposit was reached. This was a uniform dark grey brown in color and very fine in texture. Excavation commenced in square G where 7 levels (spits) were excavated and bed rock was revealed at a depth of 23 cm. In adjacent square F, 11 levels were excavated and bedrock was reached at a depth of 28 cm. It was now apparent that bed rock sloped steadily downwards towards the western side of the shelter. At the western section of square E bedrock lay 48 cm below surface. The 14 levels excavated in this square are therefore deemed to provide the best resolution in the whole of the excavation (fig 8; 9). In all squares the deposit was damp throughout with the levels close to bedrock being quite compacted. Very little stratigraphy was visible immediately after excavations but once the deposit had dried for a month, this became visible. After the excavation of squares E, F, and G, the excavation was continued for 2 m towards the drip line (squares I and J). Part of the tumbled stone wall had to be removed to accomplish this. The wall foundations lay on top of the deposit indicating that it was of historic origin. The deposit at the drip line was very shallow (10 cm), leached and

devoid of stratigraphy but deepened in depth towards the back of the shelter. The final phase of the shelter excavation came with the removal of 2 squares (A and B) at the rear of the shelter where bedrock was reached at 48 cm below the surface (fig 7). At the rear of the shelter the top 20 cm below the loose overburden consisted of compacted small mammal faeces containing very little by way of archaeological material.

In addition to the shelter excavation, a 1x3 m trench was opened against the inner side of the enclosure (kraal) wall on the talus slope. A maximum depth of 80 cm of deposit was excavated using an identical method to that used within the shelter. A major reason for excavating squares K,M,O was to attempt to locate the foundations of the wall. This eventually proved to be a difficult exercise as the deposit was very rocky which hindered excavation control. The kraal itself had been constructed on a loose rubble scree which did not simplify the attempt to isolate the foundations. The deposit however, was rather richer in stone artefacts and pottery than that within the shelter. This helped to increase the artefactual sample although little was known about the depositional processes that had taken place behind the kraal wall on the talus slope. If this material was to be of any use at all, an attempt had to be made to establish the degree to which vertical disturbance had taken place. A potsherd refitting program eventually helped provide some control.

HAASKRAAL SHELTER - A LEVEL BY LEVEL DESCRIPTION

Previous chapters of this project have outlined the rationale and archaeological complexities that led to a decision to excavate this shelter. Surface evidence had revealed that it was possible that a number of significant events could be trapped in a mere 40 cm of archaeological deposit. There was a strong possibility that the deposit would also hold depositional complexities that would hinder the interpretation of these events. Before reading the results of the excavation it would be of benefit for the reader to be familiar with the detailed progress of the excavation. This is now documented without paying attention to the details of the artefactual analysis which will be discussed in forthcoming pages. The following description of the levels excavated within Haaskraal is illustrated in detail in appendix C.

Overburden: The loose overburden was removed per 1x1 m squares and sieved through 4 mm and 2 mm sieves. Very little archaeological material was found save a few lydianite flakes and chips. Historical material included a number of pieces of rusting tin and some pieces of decomposing leather belt. Bones of small mammals and reptiles were common - most probably due to natural accumulation. The historic remains probably reflect occupation of the site by shepherds who had constructed a large stock kraal below the dolerite ridge. A recent hearth lay in the overburden in blocks E1 and E2.

Level 1. All the deposit below the overburden was excavated in 25x25 cm blocks. Throughout level 1 archaeological material remained thin. A small cluster of waste pieces and 2 decorated sherds were located along the south eastern edge of square G. No formal tools were recovered apart from a single fragment of worked bone and an undecorated grass tempered sherd. Ostrich eggshell beads were scattered throughout the western sector of the excavation. Bone occurrence was comparatively low and the pieces were highly fragmented. Fragments of ostrich eggshell (OES) were common.

Level 1.5. The ephemeral waste scatter along the southern edge of square G continued to appear but lithics were very thinly scattered over the rest of the excavation. A cluster of grass tempered sherds - some with rocker stamp decoration and a single glass trade bead were located in square F. Ostrich eggshell beads were recovered from square E. Historic items recovered from this level included a single large lead bullet from a heavy (.570) calibre rifle. Bone was still very fragmented but together with ostrich eggshell occurred in denser quantities along the southern edge of square G.

Level 2. This level was characterised by a general increase in the amount and distribution of both decorated rocker stamp and undecorated grass tempered pottery. Glass trade beads occurred along the southern edge of square G. OES beads as well a number of pieces of decorated OES container rims were found in increased numbers in squares A and F. A single end scraper was recovered

from square G. Waste remained ephemeral but bone and OES densities tended to increase. Two hearths indicated by the presence of orange-buff oxidised soil were found in the northern edge of square G and in the centre of square F.

Level 3. Decorated and undecorated grass tempered pottery was scattered throughout the excavation. In squares I and J close to the drip line the decorated sherds showed first evidence of a new kind of decorative motif that was found in lower levels within the shelter. Non-rocker stamp ware, together with a number of utilised pieces and a circular scraper, indicates that the deposit immediately within and under the drip line is older than that further back under the the main overhang of the shelter. Within the shelter, glass trade beads were located in squares G and B. The bulk of the pottery was of the rocker stamp type. Worked bone was present within the shelter and under the drip line. Formal tools excavated included some forms of end scraper. OES beads and decorated shell fragments occurred in increased numbers in areas well behind the drip line but not in squares I and J where the deposit was more exposed to the elements. Square G revealed large amounts of bone and OES along the southern edge. Faunal quantities showed a tendency to increase throughout the rest of the excavation except under the drip line. Waste, as in previous levels, was ephemeral.

Level 3.5. This level does not occur in square G. Grass tempered undecorated and decorated rocker stamp pottery was found in squares A,B,E,I. End scrapers were the only formal tools. As in

previous levels OES beads occurred deep within the shelter but no decorated OES was found. Waste showed a tendency to increase in squares E and I. Worked pieces of bone including bone points, were found. Bone and OES fragments increased enormously in this level indicating possible intense human occupation at this time although this is not reflected in the quantities of lithics recovered.

Level 4. The pottery was all grass tempered but both non-rocker and rocker stamp decorative motifs occurred. This is indicative of the fact that rocker stamp pottery disappeared from the sequence at this level as an earlier complex of decorative motifs appeared. OES and fauna remained dense in most of the squares. No decorated OES was recovered but beads and worked bone occurred in squares well under the shelter. Glass trade beads appeared towards the back of the shelter with a single anomalous example in square G. Formal tools in the form of end scrapers were 3 times more prolific in this level than in higher ones. A number of utilised/retouched pieces also appeared which may be an event which predated the rocker stamp pottery period. Lithic waste showed a strong tendency to cluster in square I behind the drip line. Compacted white ash indicating the top of a hearth was encountered in block F12.

Level 5. All of the pottery encountered in this level was grass tempered. Rocker stamp decorations were entirely absent but a minority of sherds displayed non-rocker stamp motifs. Trade beads were not recovered nor were any decorated OES pieces. OES

bead counts were the densest in this level but none were found under the drip line. A single bone point was found in block B16. Of particular interest in this level is that formal artefact forms associated with the interior Wilton appeared in square G. These are small scraper forms and small backed microliths which are not characteristic of the Smithfield according to Sampson (1974). It would appear that earlier deposit had been encroached on by the excavator in block G. Generally utilised/retouched pieces and large end scraper forms dominate the formal tool classes. Lithic waste is noticeably denser in square G but the densest area was that behind the drip line. Faunal remains were abundant in the western half of the shelter but not to the same degree as was encountered in levels 3.5 and 4. The hearth encountered in block F12 in level 4 continued into level 5 (blocks F12 and F8).

Level 6. Bedrock was reached at the north eastern edge of square G. Grass tempered pottery with a few non-rocker stamp decorated sherds were found within the shelter. In outlying square I (just within the drip line) some grit tempered Khoi sherds were encountered for the first time. OES beads and worked bone remained relatively abundant behind the drip line. Utilised/retouched pieces continued with end scraper forms dominating the formal tool category. A new addition was a single adze found under the drip line. Waste was comparatively dense over most of the excavation except in squares A and B close to the rear of the shelter. A pair of glass trade beads that occurred towards the northern edge of square B (close to the rear wall of the shelter) may be construed as evidence of disturbance

or a downward slumping of the deposit towards the rear of the shelter. A rocker stamp sherd unearthed in front of the drip line is considered to be out of context due to the disturbance of this portion of square J by run off from the roof and roots of nearby vegetation.

Level 7. Undecorated grass tempered sherds dominated the ceramics but non-rocker stamp decorated sherds persisted. Khoi sherds occurred in greater numbers in squares J, I and E. End scraper forms dominated the formal tools within the shelter. In squares J and I adzes made a stronger appearance while backed forms suddenly proliferated. A single tanged point was recovered in block I13. No worked bone was recovered from this level. A single piece of decorated OES was retrieved from block F4. OES beads were found in squares A and B. Waste was abundantly distributed throughout the central and southern sectors of the excavation but thin towards the rear of the shelter. No formal tools or pottery were recovered in this area. In general terms faunal remains diminished in frequency and appear to be very fragmented.

Level 8. Khoi sherds were almost absent from this level and apart from 2 instances so was decorated pottery. Undecorated grass tempered pottery dominated the ceramics. A well formed internally reinforced lug (similar to those associated with Cape Coastal pottery except that this example was grass tempered) was recovered from block E8 (protruding into level 9). Square G was now clear to bed rock which was beginning to encroach into the

lower levels of square F. End scraper forms and utilised/retouched pieces dominated the formal tools within the shelter. A drill was recovered in block E15 and a tanged point in block F4. In squares I and J backed elements retained a strong presence together with some small scraper forms and an adze. Waste was infrequent towards the rear of the shelter and most common close to the drip line. In block B6 (rear of the shelter) a complete bone point was construed as further evidence that the deposit had slumped downwards along the back wall. The frequency of OES beads diminished in this level as only a single example was recovered in block F9. Faunal remains had become increasingly rare and fragmented. A dense charcoal lense at the northern edge of square E provided carbon for dating purposes.

Level 9. Decorated sherds were entirely absent from this level where a few plain grass tempered sherds persisted. Backed pieces, small scrapers and large ends scrapers, adzes and utilised/retouched pieces make up the formal tool kit. The waste distribution shows that waste had become more common towards the rear of the shelter but the richest area was still that nearest the drip line. Another bone point was recovered at the rear of the shelter adding weight to the argument that this deposit had slumped and was therefore younger. A single OES bead was found in block E12. Faunal remains were uncommon and fragmented.

Level 10. No pottery, OES beads or worked bone was noted in this level. The formal tools consisted of backed pieces, small and large scraper types, adzes and utilised/retouched pieces. Waste

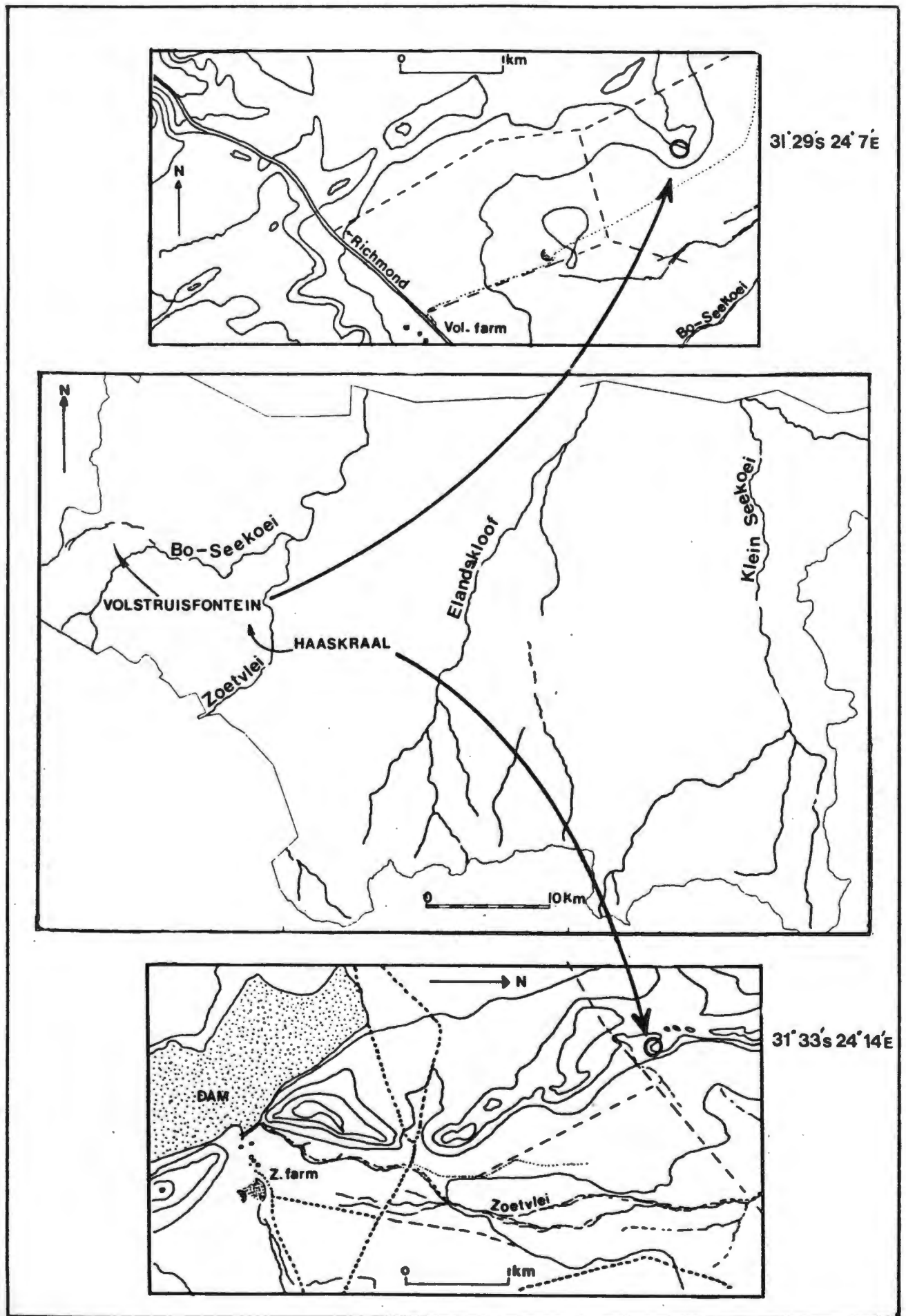
distribution was clearly denser near the front of the shelter. Bedrock was now fully exposed in squares F and G. The deposit in the remaining squares had become harder and more compacted. Faunal remains were thinly distributed and very fragmented.

Level 11. No pottery was present. Squares G and F had been cleared to bedrock and square J and the southern portion of I had been cleared to sterile compacted red soil. The deposit in the remaining part of the excavation had become increasingly compacted whilst changing colour to a reddish brown. Formal tools included small and large scraper forms, adzes, utilised/retouched pieces and backed microliths. Waste counts remained high in areas where deposit remained. No worked bone, decorated OES or beads emerged from this level. Preservation of fauna was universally poor.

Level 12. This was the final level reached in the excavation. At this point all squares apart from the lowest part of square E had been excavated to bed rock. The remaining compacted deposit contained a single backed microlith and 2 utilised/retouched pieces. Waste density remained high. Faunal remains were virtually non-existent. A residual MSA component was found on bedrock.

During the course of the excavation it became apparent that the original deposit within the shelter was not evenly distributed partly because of the spatial arrangements of past human behaviour and partly because bedrock within the shelter was very

uneven. The sequence in square G, although complete, was constricted by the shallow depth of deposit. Consequently older assemblages were exposed sooner than in other areas of the shelter. A similar effect was noted in squares I and especially in J close to the drip line. Water from the roof of the shelter had conflated the deposit causing older artefacts to be exposed sooner. The southernmost section of square J had also been subjected to disturbance by roots and the construction of the wall of the shepherd's hut. Towards the back of the shelter, deposit did not accumulate quickly because the shelter roof was too low for comfortable occupation. The human generated debris thus formed a 'pile' a meter or so behind the drip line. Material dropped at the rear of the shelter was positioned lower relative to material of similar age in the central shelter area. Once the shelter had been abandoned dung and dust filled the interior to a horizontal and even surface. At first the original lie of the deposit could not be determined as little or no stratigraphy could be seen. Desiccation of the deposit as well as further artefactual analysis resulted in greater verification of the above mentioned trends.



MAP 6 Location of Haaskraal and Volstruisfontein shelters.

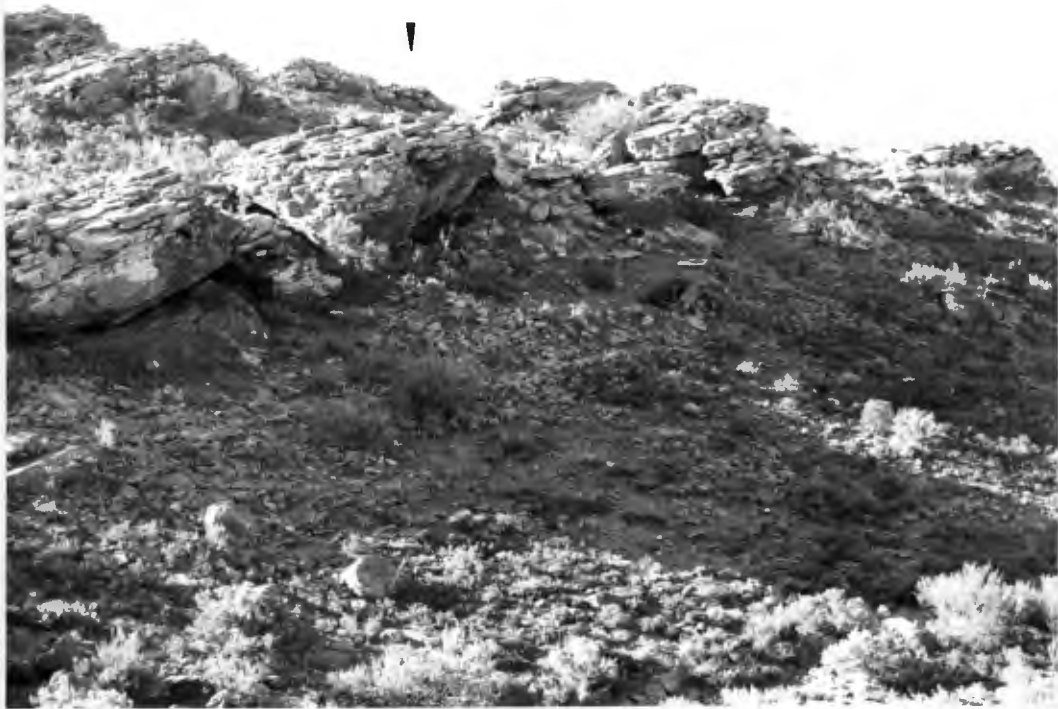


PLATE 1 Haaskraal shelter is situated below the indicator.



PLATE 2 Haaskraal shelter interior.

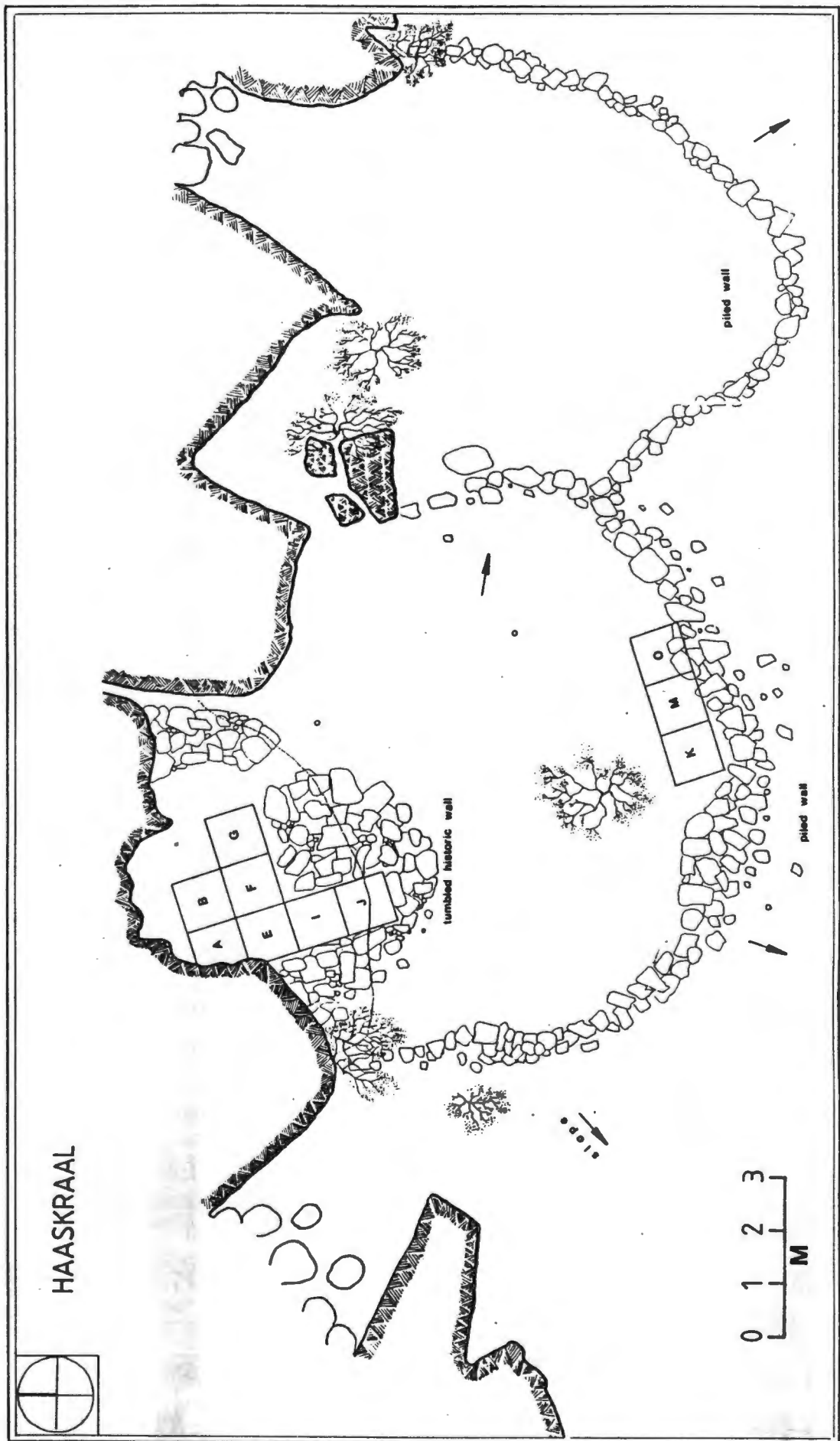
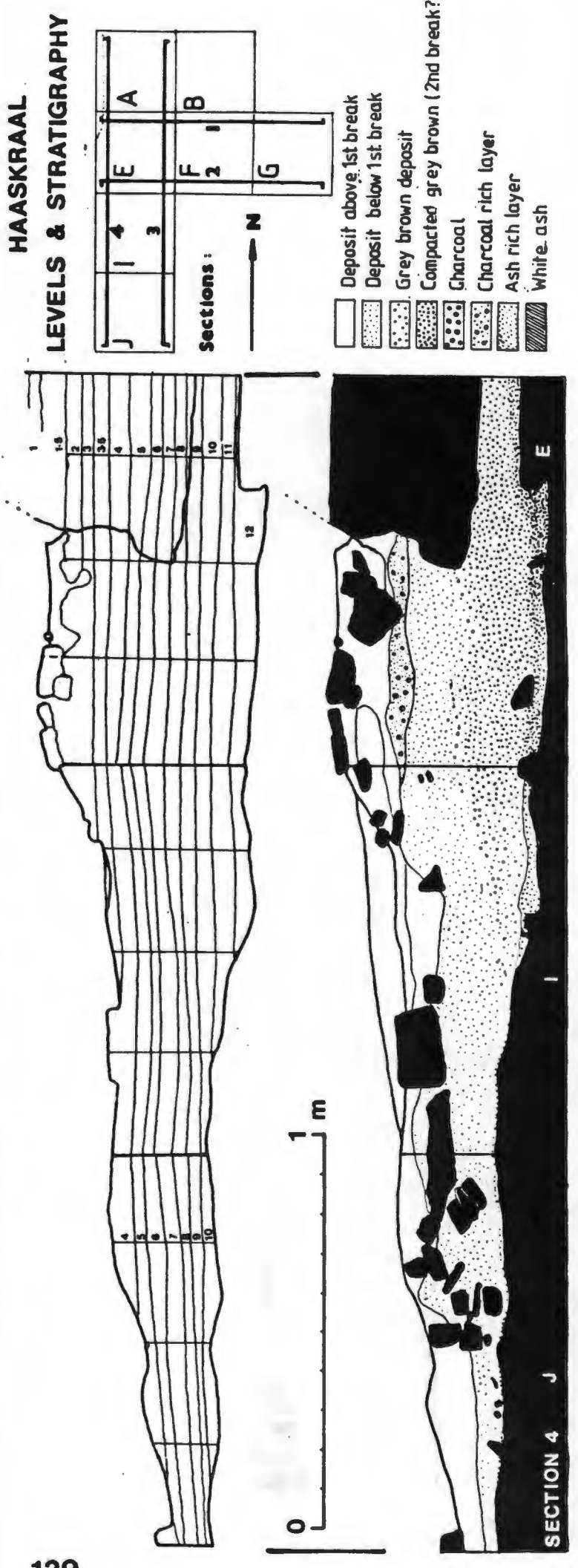
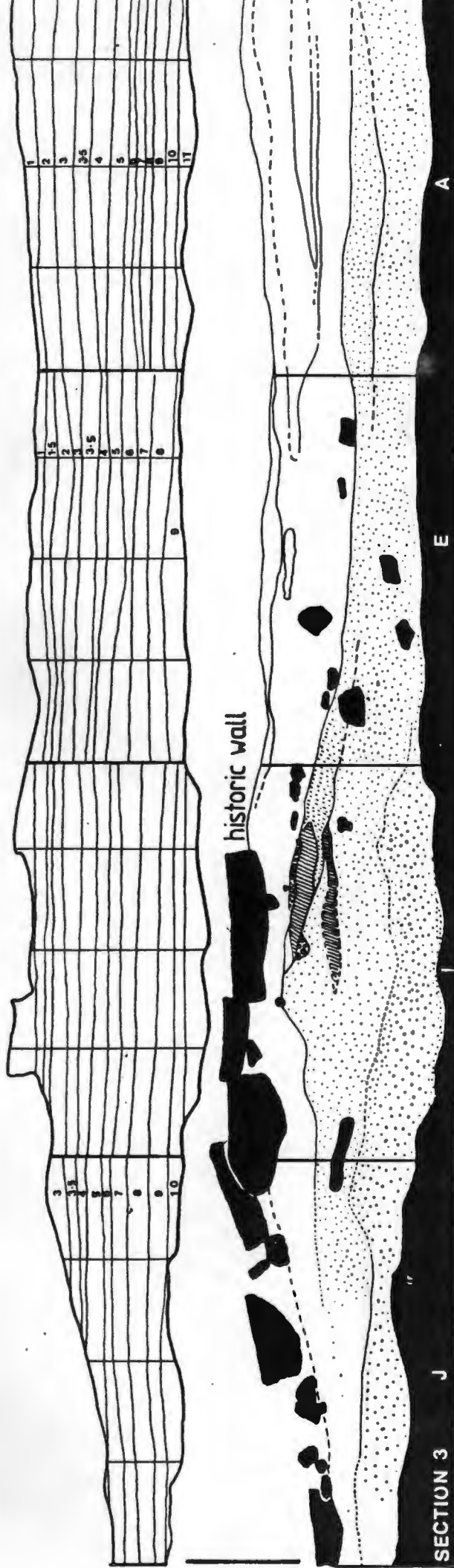
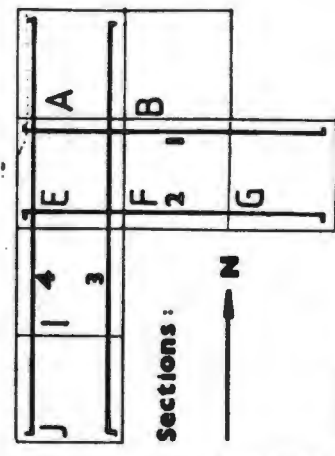


FIGURE 7 Haaskraal site plan.



HAASKRAAL
LEVELS & STRATIGRAPHY

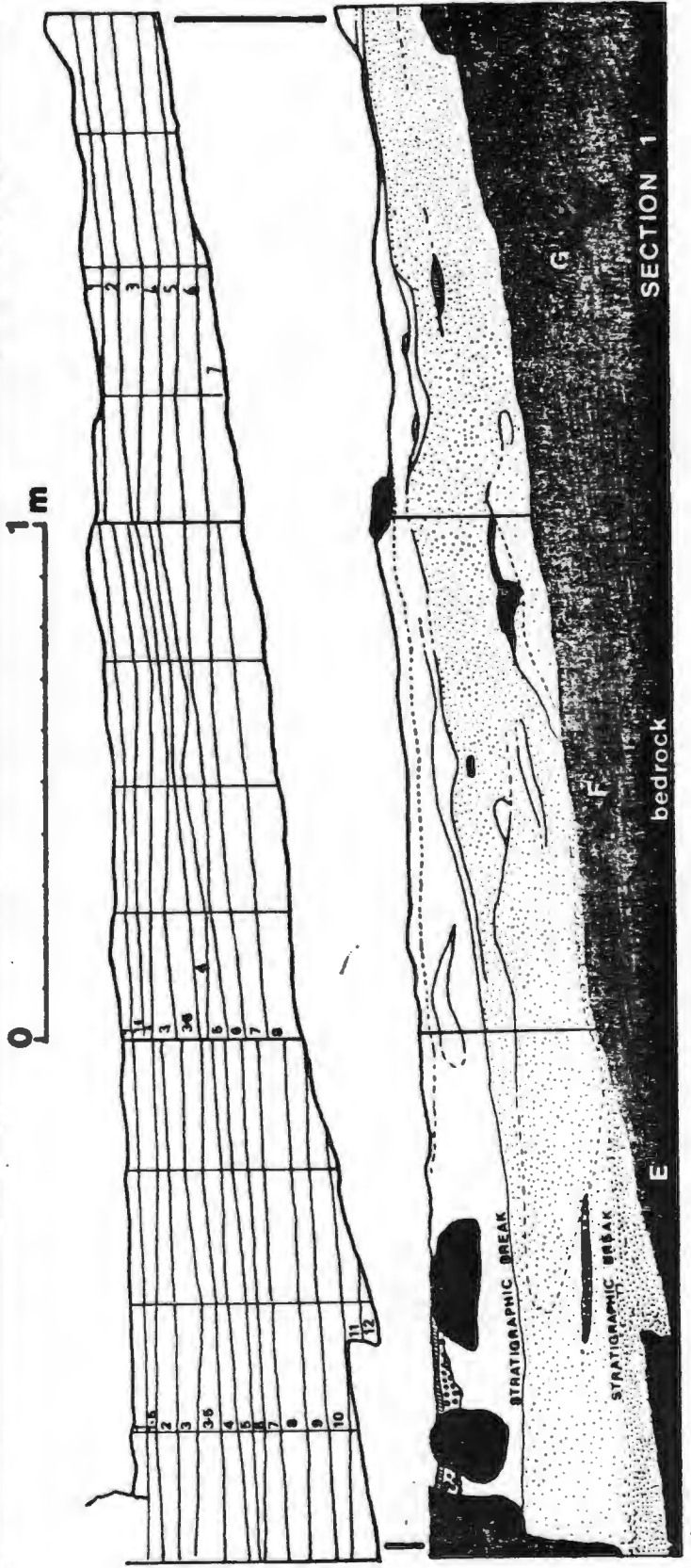
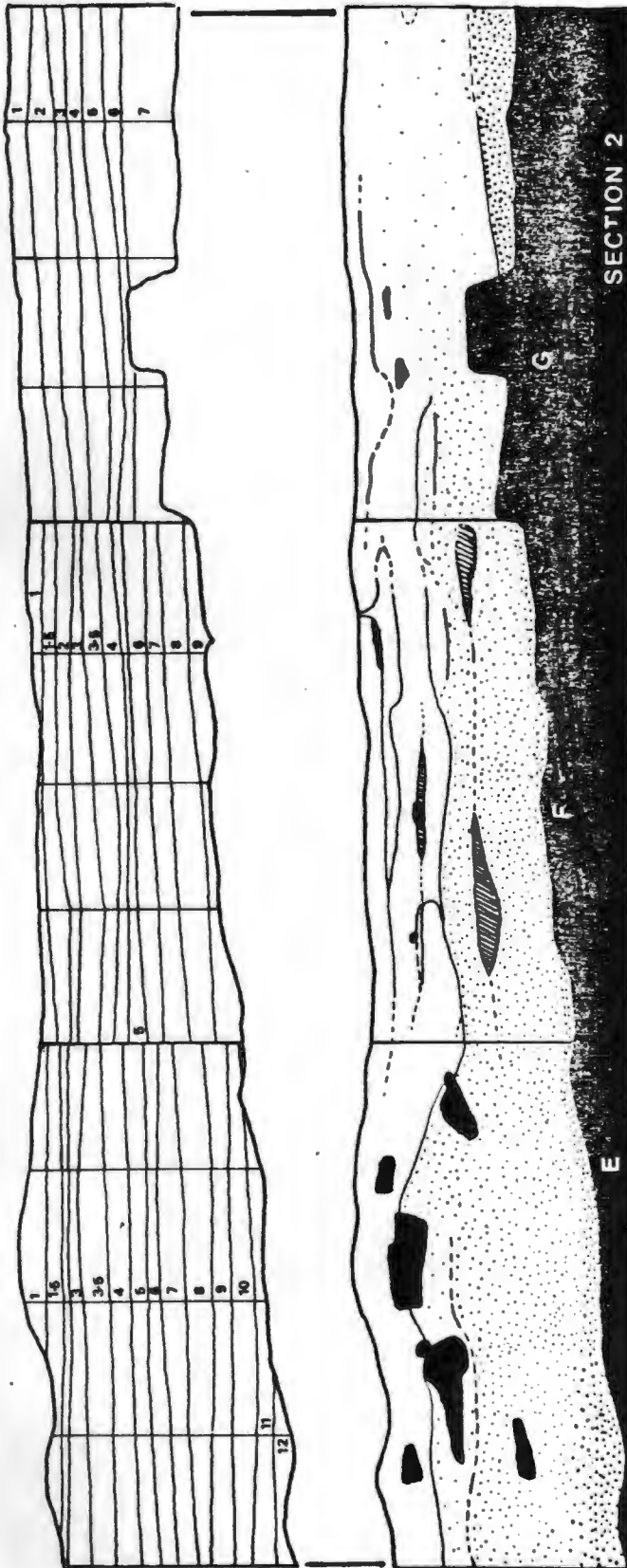


- Deposit above 1st break
- Deposit below 1st break
- Grey brown deposit
- Compacted grey brown (2nd break?)
- Charcoal
- Charcoal rich layer
- Ash rich layer
- White ash

FIGURE 8 Haaskraal shelter north-south section.

FIGURE 9

Haaskraal shelter
east-west section.



POT SHERD REFITTING PROGRAM.

The apparent complexity of the sequence and the lack of visible stratigraphy necessitated the development of a method by which greater understanding of the movement of artefacts in the deposit could be achieved. An obvious tactic that was not at first sight too complex was to attempt to refit pot sherds. The variety of decorative motifs would act as an aid in this instance - especially once the sherds had been sorted into their respective blocks and levels.

Of 115 grass tempered sherds excavated from within the shelter, 49 were refitted. Of these 26 sherds were part of a single rocker stamp pot. The remaining sherds accounted for a further 9 refits. It was decided that if sherds matched within three levels, (that is a level above and a level below that of the parent sherd) this indicated an "acceptable degree" of movement within the deposit. An examination of the 9 refits that were not part of the single vessel revealed that in only 1 instance did a set of refitted sherds exceed the prescribed limit. A pair of sherds located in the central shelter area (levels 5 and 6) matched with a sherd found in the rear of the shelter in level 8. This finding is consistent with the previously hypothesized notion that deposit slumped downwards towards the rear of the overhang. A pair of refits of 5 sherds in square F confirm that the first 4 levels excavated were not noticeably disturbed. Three refits made in squares I and J indicate that these blocks were not too badly disturbed between levels 3 and 6. It should be noted, however, that the 3 refits were achieved respectively

within 3 single blocks (appendix C) which weakens the significance of these refits.

The single rocker stamp vessel was made up of refitted sherds from all squares from the central and rear part of the shelter (appendix C). Curiously no parts of this vessel were found in squares I and J which may indicate that the pot was destroyed after the erection of what is presumed to be a shepherd's hut wall under the drip line. It is also possible that the San occupied the hut at odd times when it was vacant - possibly during the early European settlement of the Karoo. The vertical distribution of sherds from the single pot show some noteworthy trends. All sherds from square G were found in levels 1 and 2. Sherds from square F were mainly found in level 3 although some pieces were produced from levels 1 and 2. In square E all sherds were unearthed in level 2. These results indicate that the deposit dipped downwards slightly from east to west with a little sinkage in the middle of the shelter. In square B towards the rear (north) of the shelter sherds were evenly distributed between levels 3.5, 4, and 6. Single sherds occurred in level 1 and 3. A similar situation existed in square A where sherds were distributed between level 2 and level 6. This is a clear indication that artefacts located towards the rear of the shelter tended to be younger than those from equivalent depths in the central shelter area. It is certainly evident that throughout the shelter, material excavated from level 1 to 3.5 and in some instances lower, could be handled with confidence, or even be considered to be from a single unit. Sherd refitting from below level 6 was relatively unsuccessful meaning that data extracted

from the lower levels of the site could not be regarded with the same degree of confidence.

STRATIGRAPHY

Sections showing the stratigraphy of Haaskraal shelter could only be drawn after the excavation had been exposed to the atmosphere for over a month. A number of stratigraphic breaks became apparent within parts of the shelter well under the drip line (fig 8; 9). The northern section of trench G, F, and E revealed an upper discontinuity that ran the complete length of the section. On the central north face of square G the break was visible at some 4.5cm below surface - roughly equivalent to the base of level 2. On the north face of square F the break was visible at some 9cm below surface or the equivalent of the base of level 3. In square E the break was visible at 17 cm below surface or equivalent to the base of level 3.5. Water percolation from the drip line obscured the break in square G along the south section of the same trench. Parts of the break were nevertheless evident in on the south sections of squares F and E where it was 15cm and 9cm below the surface respectively (equivalent to base of levels 4 and 3).

A lower stratigraphic break was visible along the northern section of square E and parts of square F. In the central square E section this break was 37.5cm below the surface or equivalent to the bottom of level 9.

The 2 stratigraphic breaks were visible to a lesser extent on the east and west sections (sections 4 and 3) of trench J, I, E, and A. At the southern end of section 3 stratigraphy had been rendered confusing by run off from the drip line. The upper stratigraphic break in square E was not clearly defined as the section was removed before the deposit had a chance to dry out. In squares I and J, drip line interference and tumbled stone foundations from the shepherd's hut had interfered with the micro-stratigraphy in the upper levels resulting in difficulties in determining the actual thickness of the upper stratigraphic units which reached a maximum depth equivalent to level 4 (square I). Square A at the rear of the shelter showed a well defined layer of semi-compacted animal dung above what appeared to be the first stratigraphic unit. This dung unit was between 18cm and 8cm in thickness reaching level 3.5 at maximum thickness. The lower unit was not visible on this section apart from a very small amount at the base of the section of square E. In squares I and J the lower break tended to merge with deposit higher up resulting in an arbitrarily defined distinction. The western section (section 4) revealed that what would have been the deposit above the upper stratigraphic break had mixed with surface dust and dung that had accumulated between the tumbled wall stones. A grey brown deposit was clearly visible under the mixed surface. The lower (2nd) stratigraphic break was clearly defined at the base of square E at a depth of 50cm below the surface deposit (level 11-12).

The good sections available from within the central area of the shelter combined with the results of the sherd refitting exercise

revealed that all rocker stamp decorated sherds as well as most of the sherds making up the single vessel lay in the deposit above the upper stratigraphic break. Other grass tempered sherds, non-rocker stamp and Khoi sherds lay below the upper stratigraphic break. A general increase in microliths and a wider range of formal tools found inside the shelter from level 9 downwards may be loosely associated with deposit below the lower stratigraphic break. Further discussion on the vertical distribution of stone tools will take place in the forthcoming chapter.

HAASKRAAL: TALUS SLOPE KRAAL EXCAVATIONS

INTRODUCTION

A section of the kraal that lay some 8 m south east of the shelter excavation was selected for excavation. A considerable depth of deposit had accumulated behind this walling creating a favourable chance that stratification may have existed in this locality. The main purpose of excavating here was to explore the potential for achieving an absolute or relative date for the base of the kraal wall. A 1x3 m excavation abutting against the the visible surface of the wall was opened to this end.

Each of the 3 squares (K,O and M) were divided into 16 numbered blocks with the intention that a +/- 2 cm spit system be used. Once the excavation was underway, it became apparent that 50% of the deposit consisted of loose talus rubble which made it impossible to maintain adequate control over the thin spits. Consequently spit depth was regulated according the quality of the deposit with resulted in spits being between 4-10 cm in depth. No level by level plots have been constructed for the kraal excavation as most of the material is considered to be in secondary context. The level by level findings will be briefly discussed together with the pot sherd refitting program implemented for this excavation.

Faunal preservation of the talus slope material amounted to little or nothing - only pottery and lithics occurred.

THE EXCAVATION

Level 1. Decorated grass tempered (both rocker and non-rocker stamp) undecorated and a few Khoi sherds were present (n=60). Waste consisted of both patinated and non - patinated pieces of lydianite. Formal tools included small numbers of various scraper types, a single adze and a small backed element (lithics: n=467). Utilised/retouched pieces were present in all levels in this excavation.

Level 2. Decorated grass tempered sherds (both rocker and non-rocker stamp) undecorated and few Khoi sherds were present (n=45). Lithics consisted of both patinated and unpatinated pieces with larger scraper types dominating the formal tool category. A small backed element was also present (lithics: n=511).

Level 3. Decorated grass tempered sherds (both rocker and non-rocker stamp) as well as undecorated sherds were present (n=39) There were no Khoi sherds in this level. The patinated component in the lithics decreased but remained present. Formal tools were virtually absent apart from a single end scraper and a backed piece (lithics: n=473).

level 4. Decorated grass tempered sherds decreased in frequency but nevertheless contained both rocker and non-rocker stamped components. Undecorated grass tempered sherds maintained a high frequency with a few Khoi sherds appearing again (n=52). Large

scraper types and a single small double end scraper were out numbered by the backed elements that included a tanged point. Total stone tool frequencies increased by some 40% (n=835).

Level 5. This level was found only in square K - the first excavated on the talus slope. At this point the deposit became so rocky that it was decided that the spits should be expanded in subsequent levels excavated. Spit 5 was consequently abandoned and included within level 6 in squares M and O. Level 5 contained the last decorated grass tempered pottery of the rocker stamp variety. Undecorated grass tempered sherds were abundant but the Khoi presence was small (n=54). Lithics were dense with few backed pieces, large scraper types dominating the formal tool category. A comparatively large quantity of fragmented bone was recovered from this level.

Level 6. No decorated grass tempered pottery occurred in this level but undecorated sherds were abundant. Khoi sherds showed a tendency to increase in frequency (total sherd count: n=69). Large and small scraper types dominated the formal tool categories with backed pieces showing an increased presence. A single tanged point was found. Adzes made their first appearance into the sequence in squares K and O (lithics: n=1205).

Level 7. Large amounts of undecorated grass tempered pottery and relatively abundant Khoi-like (small grass inclusions) sherds were present (n=74). This level was rich in a diversity of

formal tools including adzes, a strong backed component, many end scrapers as well as smaller types (lithics: n=1092).

Level 8. The larger stones used in the construction of the kraal wall appeared to bottom out at this level. Underlying stones appeared to be smaller but it was not possible to distinguish the foundations of man made walling from the talus slope scree which was commonly used as an aid to kraal construction. Between levels 7 and 8 there was a substantial increase in the density of dolerite scree in the deposit (this is stratigraphically visible, fig 10). This was an indication that the dammed deposit trapped behind the walling had now been excavated through to the original land surface of dolerite rubble. It is likely that the walling was constructed onto this land surface. Grass tempered and Khoi sherd frequencies were markedly lower than in the previous level (n=30). The lithics remained dense (n=1142) showing the presence of a wide variety of scraper types (end scrapers, double end and double side and end) and backed artefacts.

Level 9. Grass tempered and Khoi sherd frequencies decreased (n=15) indicating that the excavation was beginning to reach pre-ceramic times. The deposit which existed in small pockets in the dense dolerite scree was extremely rich in stone artefacts (n=1432). Backed artefacts gained dominance over a wide variety of scraper forms. The recovery of the only 2 segments found on this excavation program indicate that some mixing with pre-ceramic elements took place.

Level 10. Several sherds (derived from above?) existed in this level (n=6) which can be considered to be largely pre-ceramic. Lithics were dense (n=1469) with backed elements dominating a small sample of end scrapers and an adze.

Level 11. No potsherds occurred in this entirely pre-ceramic level. Lithics were extremely dense (n=1962) with a strong formal component. The backed elements were once again dominant over the wide range of scraper types.

Level 12. This consisted of 4 25x25 cm test spits excavated into the floor of level 11. Some waste was recovered (n=73) between the now densely packed talus scree. At this stage it was decided that the difficulties of excavating the virtually impenetrable rubble outweighed the archaeological need to excavate further.

SHERD REFITTING PROGRAM

The kraal excavation produced 37 sherds which allowed some 16 refits. All of these refits apart from a single example in square O (levels 2 and 6) satisfied the criteria set out for the shelter excavation. Sherds refitted as far down as level 9 indicate that the deposit had suffered surprisingly little vertical disturbance considering the presence of backed elements in the upper part of the sequence. Equally unexpected was the fact that only a single sherd was able to be refitted to those recovered in the shelter excavation. A plain sherd from the surface of square O was fitted into the rocker stamp vessel

excavated from the upper levels in the shelter. It thus became apparent that there is a possibility that the material retained by the kraal wall was not directly or substantially related to that within the shelter. Further examination of the artefactual sequence from both excavations and the stratigraphy from within the shelter excavation produced a potential explanation.

The preliminary results of the excavation from within the shelter revealed a fairly well ordered artefactual sequence showing a clear separation of ceramic decorative motifs and elements of the lithic assemblage. Rocker stamp decoration was separated from non-rocker stamp decoration by a clear stratigraphic break. Backed elements in the lithics became prevalent after the disappearance of decorated pottery while undecorated grass tempered and Khoi sherds remained part of the sequence. This sequence of events was more roughly represented in the kraal excavations. The distinction between rocker stamp and non-rocker stamp was lost in the first 4 levels. The first 2-3 levels revealed that part of the assemblage was older due to visible patination and the presence of a backed element. Level 4 revealed a lithic assemblage containing an oddly high proportion of backed pieces. The sum total of this is that the first 4 levels of the kraal excavation contained a mixture of old and young artefacts of which the ceramic component, although temporarily related was spatially divorced from contemporary decorative styles within the shelter.

An accumulation of artefacts on the talus slope as a result of everyday site activities including the ejection of broken sherds onto the talus slope would result in a situation where at least some of the sherds on the talus slope could be refitted to sherds remaining in the shelter. This could not be achieved at Haaskraal which implies that the talus deposit was originally bulk removed from the shelter (for living space purposes) and discarded onto the talus slope where it accumulated behind the kraal wall. It is hypothesized that the makers of rocker stamp pottery dumped a large portion of the deposit which not only contained their own debris but also an amount of the underlying non-rocker stamp ware (or deeper in places). They then continued to leave rocker stamp deposit over the underlying non-rocker until the historic period. This situation would account for the clear stratigraphic break between rocker stamp and non-rocker stamp deposit within the shelter as well as the mixed deposit in the upper 4 levels of the kraal excavation.

STRATIGRAPHY

Squares K,M and O were excavated to a depth of some 80-90 cm. Throughout the excavation very little by way of stratigraphy was visible in the sense that the deposit was uniformly coloured (plate 3 and 4). The only break that could be discerned was that which occurred in levels 7-9 (fig 10) when the rubble scree became dramatically more compacted. This is interpreted as being the original land surface on which the kraal was constructed. The deposit above this break is seen as being slope wash that had become trapped against the inner portion of the kraal wall after

construction. The actual foundations of the kraal wall could not be isolated satisfactorily. The eastern section of square M provided reasonable evidence that the larger stones making up the construction rests on the dense talus rubble of level 8, 40 cm below the surface (fig 10). The difficulty in locating the foundations is attributed to the construction method which involved the incorporation of expedient boulders on the talus slope into the walling. Large stones within the enclosed area were removed and used as building material which would create further complexities in determining stratigraphic relationships.

FIGURE 10

HAASKRAAL KRAAL EXCAVATION

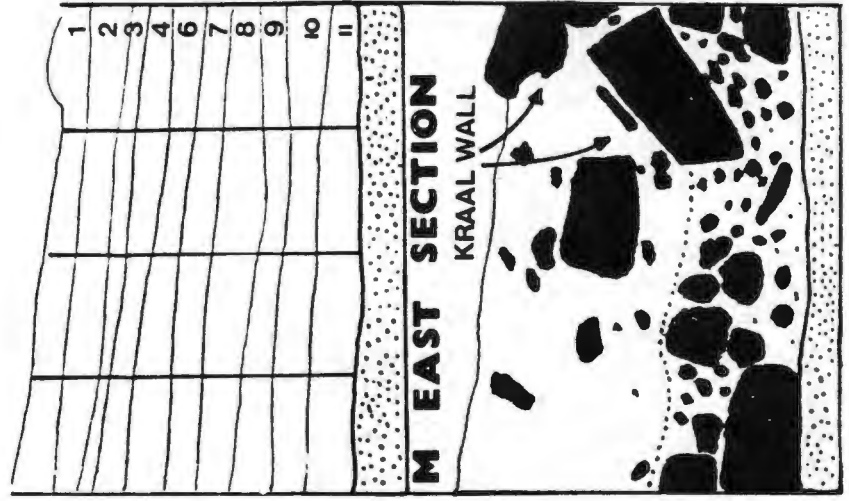
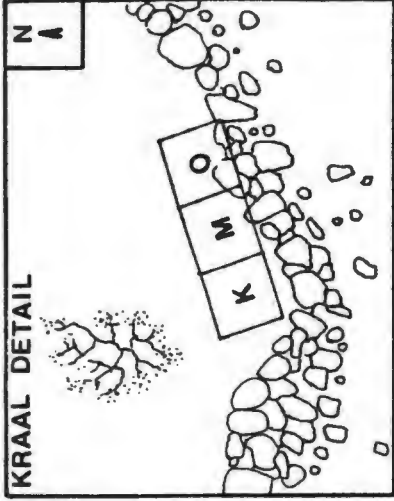
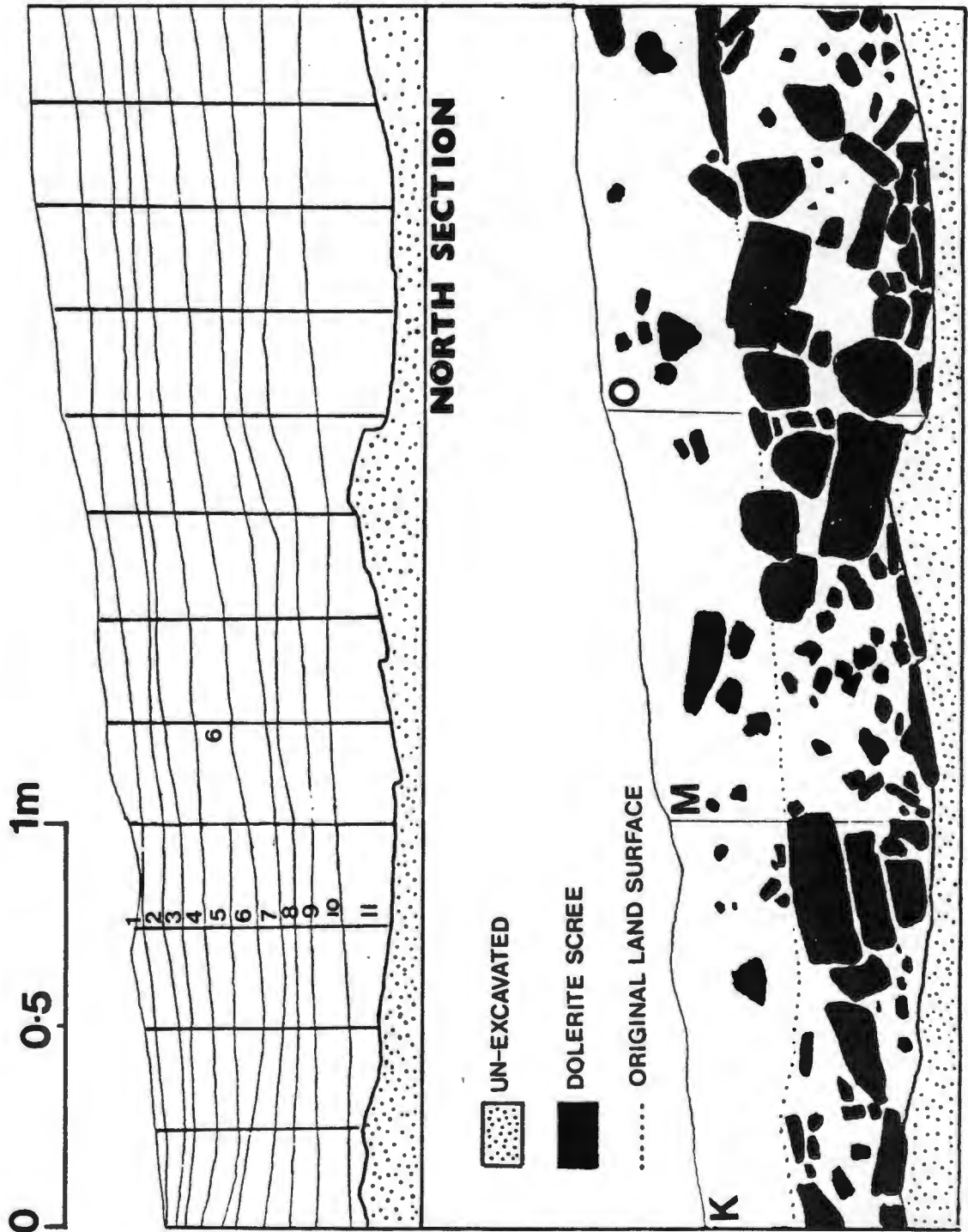




PLATE 3 Haaskraal kraal excavation showing exposed piled walling.

VOLSTRUISFONTEIN EXCAVATION

INTRODUCTION

Volstruisfontein rockshelter is on the farm Volstruisfontein in the Richmond district of the Cape (map 6). The site is some 15 km west of Haaskraal shelter in a region which holds some of the densest concentrations of stone features yet located in the research area. Easiest access to the site is via the gravel road from Richmond to Graaff-Reinet through Waterkrans. A farm road opposite Volstruisfontein farm house heads in a northwesterly direction. After some 4km the ridge in which the site is situated may be viewed to the north.

Volstruisfontein is one of a few rockshelters in the south western sector of the research area that is reasonably large and sheltered (plate 5, fig 11). It was hoped that there would be a deep deposit that would not only confirm the Haaskraal findings but provide a greater resolution of this complex sequence. The shelter was excavated for similar reasons to Haaskraal - namely to gauge when Khoi pottery was introduced into the sequence and, secondly, to establish further temporal control of decorative motifs on Smithfield pottery. An additional reason for excavating the site was to determine whether there is any evidence of regional differentiation within the research area.

Volstruisfontein site lies under a large shallow overhang in a shale ridge overlooking the Bo-Zeekoei river. The area under the

drip line is some 17 m wide and the distance from the drip line to the back of the shelter is 5 m. An ephemeral line of stone walling had been constructed along the entire length of the drip line. It was not known whether this was historic or prehistoric. The shelter faces a south easterly direction and is thus protected from northerly to westerly winds. There is an artefact-rich talus slope and a large scatter of Wilton artefacts below the slope. The siltstone ridge (which is less than 20 m in height) overlooks a large expanse of plain through which the Bo-Zeekoei river flows during the wet season. At present, water is scarce in the immediate vicinity of the site with both the river and two closest springs being more than 2 km distance.

EXCAVATION

The area of the shelter with the greatest drip line to back wall distance was chosen for excavation. A single 1x1 m excavation was initially begun but once bed rock had been reached this was expanded into a 1 x 3 m trench. The removal of a very thin layer of loose dung overburden revealed a dark damp deposit with very little evidence of any colour variation. It was decided that an excavation strategy similar to that implemented at Haaskraal should be used - that is 2 cm vertical spits and 25 cm horizontal excavation units. Square meters were labeled A, B, C and within them each of the 16, 25 cm units was given a numerical designation. Excavations began in square A 3 m behind the drip line. Level siltstone bedrock was reached after 28 cm in this unexpectedly shallow deposit. Squares B and C were situated progressively towards the drip line with square C extending

marginally beyond it. A level by level general description of the progress of the excavation and the contents of the deposit will now be presented (see appendix C).

Level 1 (surface). Ceramics in this level include both rocker and non-rocker stamp decorated forms, as well as undecorated grass tempered sherds. Historic material consisted of a single glass trade bead. Two OES beads were also recovered. Bone was poorly preserved and highly fragmented, most pieces of OES were partially decomposed due to the dampness of the deposit. The lithics consisted of evenly distributed moderate amounts of waste as well as a few utilised pieces which were very rare in the upper levels of Haaskraal shelter.

Level 2. Grass tempered decorated sherds as well as decorated rocker stamp sherds made up the pottery sample. Historic material was also present in the form a small porcelain sherd recovered in square A. No OES beads were recovered. Lithics consisted of moderate amounts of waste, a single end scraper, an adze (not seen in the upper levels at Haaskraal), a drill and a number of utilised pieces.

Level 3. The frequency of ceramics increased with many undecorated grass tempered sherds as well as those displaying both rocker and non-rocker stamp motifs. A fragment of glass as well as a piece of European earthenware (square A) were indicative of the recentness of this deposit. Other non-lithic items included 2 OES beads. Faunal remains were not well

preserved in the damp deposit. Lithics from this level included a single backed piece from square B, several utilised pieces, drills and a single end scraper. Waste frequencies remained more or less as in the upper levels. Artefacts were concentrated in squares B and C behind the drip line.

Level 4. A grass tempered lug as well as numerous grass tempered sherds were recovered from squares B and C. These included rocker-stamp decorated sherds only. The uppermost Khoi sherd located was found in square B. Historic items included a single trade bead, a fragment of glass and part of a cheap ear ring with a coloured glass setting (all located in square A). Lithics were concentrated in square B - many utilised/retouched pieces, end and end and side scrapers as well as a double backed point from block C1. Waste was concentrated in the centre of square B. The deposit continued to be featureless and damp throughout the excavation. It also became apparent that the source of the moisture was a slow seepage at the rear of the shelter which had made the deposit in square A quite wet.

Level 5. General artefact concentrations were lower than in the 2 previous levels. Non-rocker stamp as well as rocker stamp grass tempered sherds were present. This was the lowest level in which historic artefacts (a small piece of porcelain in square A) were recovered. Other artefacts included a single OES bead, an end scraper and several utilised/retouched pieces in square B. Waste continued to cluster behind the drip line.

Level 6. No rocker stamp sherds were found in this level which contained 1 non-rocker stamp and some plain grass tempered sherds. An isolated Khoi sherd was located in block B11. Other artefacts were a single OES bead, a partially backed point as well as several utilised/retouched pieces in squares B and C. Waste was concentrated in the area of square B. The area under the drip line (most of square C) contained quantities of exfoliated siltstone that had become detached from the roof of the shelter.

Level 7. Because exfoliated siltstone had rendered excavation control in square C very difficult, it was decided that the levels at this end of the shelter be increased in depth. Level 7 and 8 were excavated as level 8 in square C. Level 7 contained mostly plain grass tempered sherds with a single non-rocker stamp decorated piece. A single Khoi sherd occurred in block A16. Waste densities remained unchanged, and utilised/retouched pieces continued to be present. Formal tools comprised a small convex and an end and side scraper.

Level 8. No decorated sherds were found in this level. Plain grass tempered sherds and a single Khoi sherd were located within the drip line. Utilised/retouched pieces were evenly distributed throughout the excavation. An adze was the only formal tool found. A single OES bead lay within the drip line.

Level 9. This level was not excavated in square C due to the stoney nature of the deposit. Deposit was excavated together

with subsequent level 10. The pottery sample was made up of plain grass tempered sherds only. A grass tempered lug found in block B14 showed similar characteristics to the example in level 4. It is possible that the 2 sherds may be from the same vessel. End scrapers made up the formal tool category. Utilised/retouched pieces and waste were most dense in square A.

Level 10. A single rocker stamp sherd found in block A10 seems out of context and may be an indication of some disturbance. All other sherds excavated from this level are plain grass tempered. Formal tools were 2 end scrapers and a drill. Retouched/utilised pieces were also infrequent. Waste was most dense in square C.

Level 11. The first indications of bedrock were encountered in squares A and B. Loose rubble under the drip line was more than the amount of deposit retrieved from that area. This resulted in square C being omitted from this level so as to be included in level 12. Pottery consisted of 3 plain grass tempered sherds and a single Khoi sherd in block B8. An adze, a convex scraper and an end scraper made up the formal tool sample. Utilised/retouched pieces retained their ubiquitous presence with waste densities remaining unchanged.

Level 12. Parts of squares A and B were cleared to bedrock. A single non-rocker stamp sherd (which would appear to be out of context) was recovered in block C5. Formal tools included a backed piece and an end scraper. Utilised/retouched pieces were present but general waste densities decreased.

Level 13. Squares A and B were completely excavated to bedrock. Bedrock sloped steeply downwards along the western edge of square C where the drip line had eroded a deep cleft into the siltstone. The resulting mixture of exfoliated rubble and deposit was excavated in levels 13 and 14. A single plain grass tempered sherd, a tanged point, a straight backed point and 4 utilised/retouched pieces interspersed with minimal waste made up the artefactual assemblage.

Level 14. Bedrock was reached in most of square C. No pottery or formal tools were recovered apart from 3 utilised/retouched pieces. Waste was thinly scattered among the rubble and clefts in the bedrock.

STRATIGRAPHY

Volstruisfontein shelter displayed no visible stratigraphic breaks (fig 12). A total of 3 hearths were discerned within the north section. These occurred in squares A and C. A well defined charcoal rich hearth was visible 5 cm below surface on the north face of square C (levels 4-6). A white ash concentration was apparent 3 cm below the surface on the north section of square A (level 3). Another ephemeral concentration of charcoal was discerned at 6 -10 cm below surface on the same section. A large rodent hole (filled with humic material) penetrated the southern quarter of square A. The ephemeral walling that followed the drip line did not penetrate the deposit

beyond 2 cm indicating that it was constructed during historic times.

No sherds were successfully refitted at Volstruisfontein shelter. This is an indication that sherds were widely distributed throughout the site - the excavation covering too small an area to achieve any refits. Two grass tempered lugs found in levels 4 and 9 of square B are similar in form and thickness. This could mean that the deposit was disturbed if the lugs were parts of the same vessel. Items of European origin occurred in the first 5 levels of square A. In square B, backed lithics as well as Khoi sherds were found at similar elevations. Backed artefacts and historic items were not manifested together in the upper levels at Haaskraal nor is the association documented at Smithfield sites in the Middle Orange River (Sampson 1974). Further evidence of disturbance is that the separation between rocker stamp sherds and non-rocker stamp sherds is not as discrete as that from Haaskraal shelter. Both decorative types existed together in the upper levels at Volstruisfontein with non-rocker stamp frequencies decreasing lower down (level 7) than their rocker stamp counterparts (level 5). At Haaskraal the separation of the decorative motifs was exclusive and stratigraphically defined. At Haaskraal shelter the majority of Khoi sherds were distributed between levels 6 and 7 (2 levels only) whereas at Volstruisfontein they occurred between levels 4 and 11 in the central part of the excavation. This may be a regional difference in occupation period, but the finds that are out of context such as backed pieces in the same area in the upper levels, argue for a stronger case of disturbance.

In general terms the Volstruisfontein sequence has similarities to that of Haaskraal. European artefacts and rocker stamp pottery appear to be contemporary. Plain grass tempered sherds and the majority of Khoi sherds underlay decorated sherds. With the exception of square B (the central area of the excavation) backed lithics and adzes occurred towards the bottom of the sequence. Artefacts that were apparently out of context in square B indicate that there was some degree of disturbance at Volstruisfontein. Unfortunately there is no confirmatory stratigraphic evidence which would help quantify the degree to which this had taken place. At the time the excavation was completed, the deposit was still damp and stratigraphy could not be seen.



PLATE 4 Volstruisfontein shelter.

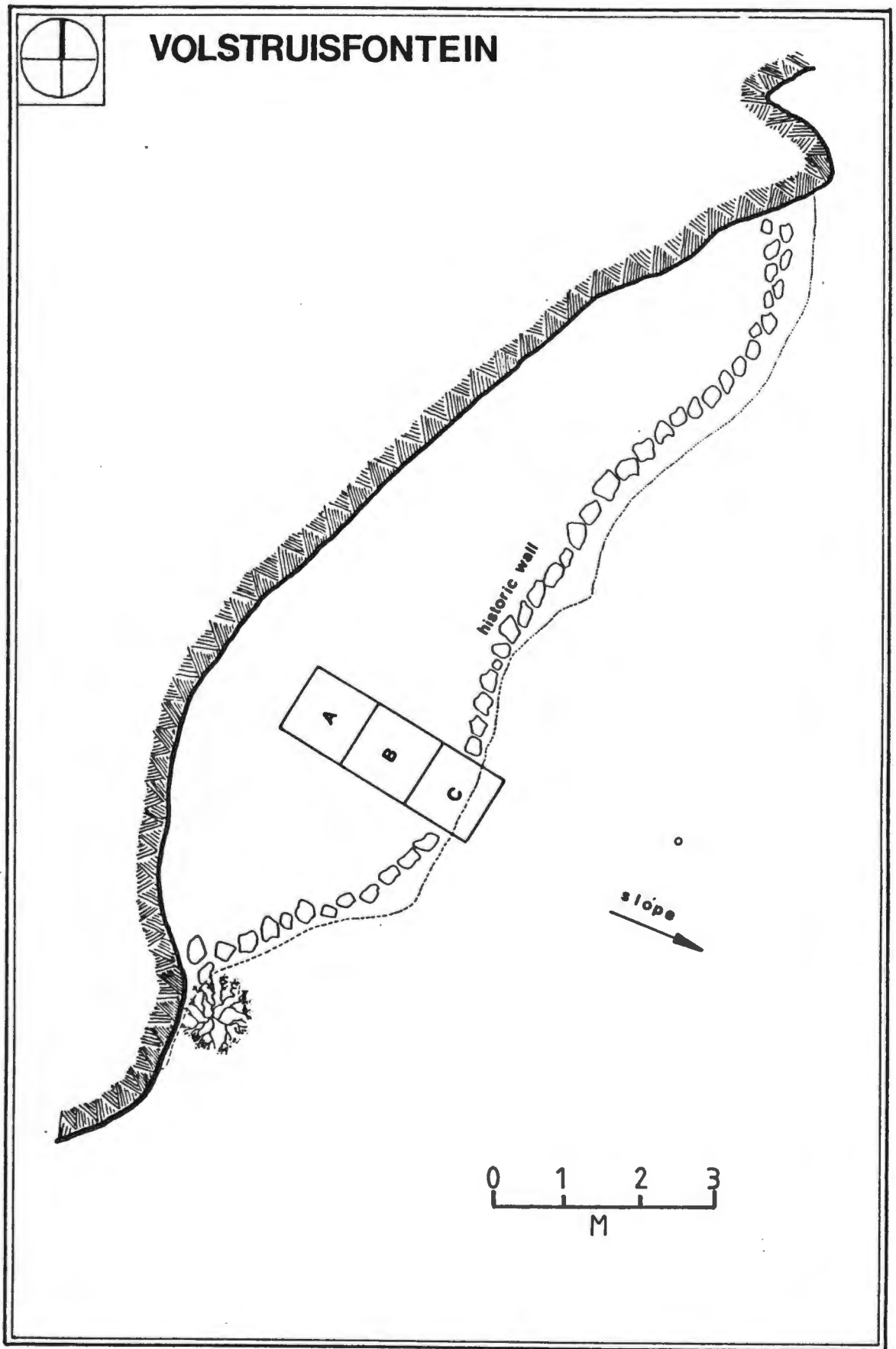
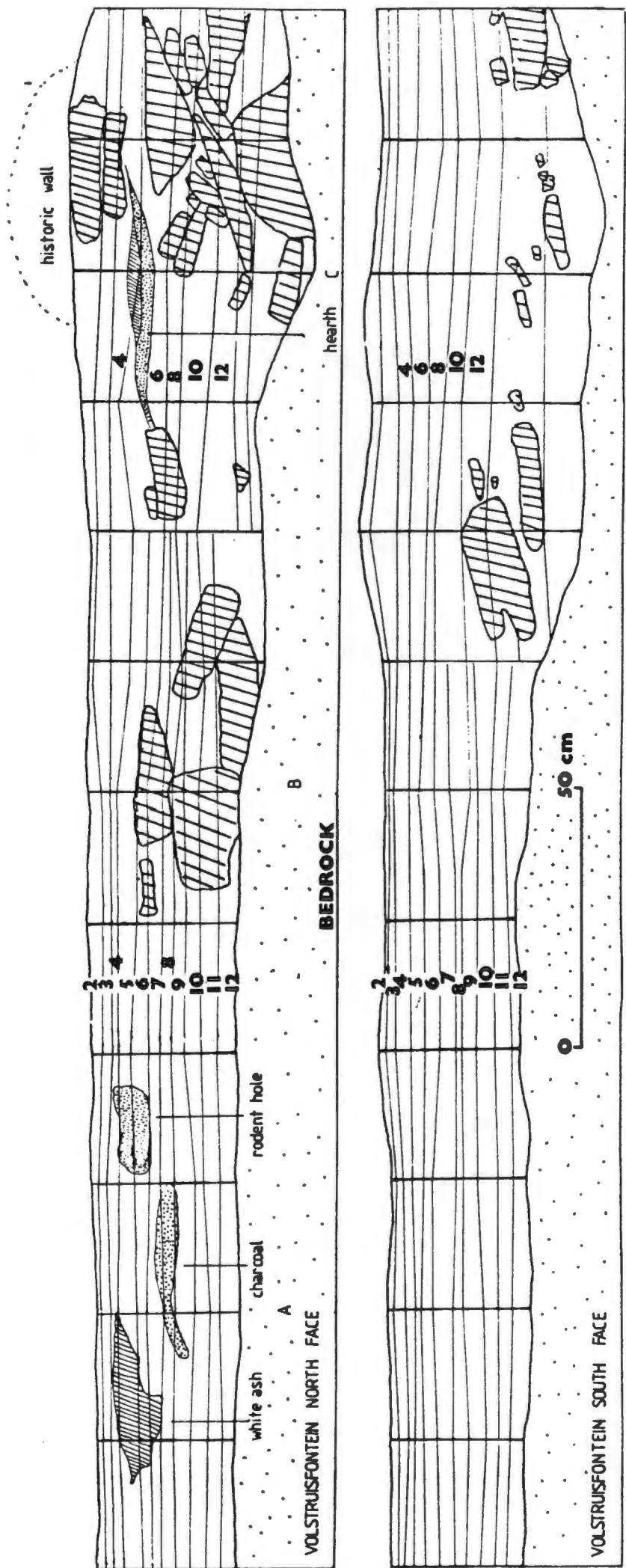


FIGURE 11 Volstruisfontein site plan.

FIGURE 12 Volstruisfontein sections.

VOLSTRUISFONTHEIN
LEVELS AND STRATIGRAPHY (visible)



CHAPTER 8

CHRONOLOGY

DATING OF HAASKRAAL SHELTER AND KRAAL EXCAVATION

Square E at Haaskraal shelter contained the greatest depth of deposit and probably the most reliable sequence. A total of 5 charcoal samples were selected from the shelter for dating purposes. The majority of these samples were collected from locations in square E with a single sample being collected from square J. The following dates were obtained:

Square E, block 12 & 13, level 3.5, (scattered charcoal within blocks):

295 \pm 42 B.P. (SMU 1637).

Square J, block 2, level 7, (scattered charcoal within block):

1140 \pm 60 B.P. (SMU 1790).

Square E, block 8, level 8, (hearth within block):

544 \pm 43 B.P. (SMU 1636).

Square E, block 15, level 9 (dense charcoal within block):

1180 \pm 70 B.P. (SMU 1789).

Square E, level 12 (all blocks combined):

1850 \pm 45 B.P. (SMU 1635).

The kraal excavation contained very little charcoal or bone that could be used for dating purposes. It was of some importance that a date from what was considered to be the basal area of the kraal wall was obtained. All the charcoal in level 7 of square K was collected and combined as no single block contained enough for a radiocarbon date. The following date was obtained:

Square K, level 7, (all blocks combined)

172 \pm 30 B.P. (SMU 1639).

The date obtained from level 12 (1850 \pm 45 B.P.) is consistent with the only date previously attributed (by Sampson 1970) to what was then phase 4 of the Wilton complex. An assemblage containing various forms of backed bladelets but no pottery or segments was dated to 1980 \pm 120 B.P. (SR-132) at Blydefontein level 3. The level 9 date (1180 \pm 70 B.P.) from Haaskraal came from directly below the lower stratigraphic break (fig 9) and may be construed as the terminal date for the pre-ceramic period (or Sampson's (1972) phase 4) at this shelter. The date from Haaskraal, level 8, came from directly above the lower stratigraphic break. These results indicate that the lower stratigraphic break represents a break of some 500 years in the sequence. The possibilities are either that the site was abandoned during this period or that a considerable amount of the deposit has been removed. The lack of any means of relative or absolute dating of the pre-ceramic material on the talus slope renders this problem insoluble as yet.

The date of 1140 ± 60 B.P. from square J, block 2, level 7 (above the lower stratigraphic break) is associated with a Khoi sherd. This date is surprisingly early compared with the date from level 8 in square E. Square J was one of the more poorly controlled sections of this excavation as this area lay directly under the drip line. The artefact plot for level 7 revealed that squares I and J contained a relative abundance of backed artefacts as compared with areas of a similar elevation from within the shelter. The date for this area confirms that this deposit close to the entrance of the shelter was actually older. Plain grass tempered sherds as well as Khoi type sherds were relatively abundant in this area together with the backed artefacts. Deeper within the shelter, backed artefacts and pottery (mostly grass tempered) tended to be exclusive of each other (see appendix C level 9). This indicates that some mixing may have taken place in these levels (of squares I and J) as a result of drip line action. Khoi sherds were mainly located in association with the backed artefacts under the drip line as compared with their apparent overall scarcity deeper within of the shelter. It could be that there is a real association between backed artefacts and Khoi pottery which would place the appearance of Khoi pottery quite early on in the sequence at Haaskraal - that is somewhat before 900 AD.

The lower stratigraphic break inside the shelter is problematic as it is indicative of something missing. This in turn means that the level 8 date is not applicable to the advent of pottery but merely represents the advent of redeposition within the shelter. If any deposit had been removed at the time of the lower

stratigraphic break, this may have included Khoi sherds and associated artefacts. It is argued that the level 7 date from the drip line area could refer to remnants of this deposit that had been lost deeper within the shelter.

The level 3.5 date of 295 ± 42 B.P. refers to the upper stratigraphic break which has been discussed in some detail already. Most of the pottery above the break was of the rocker stamp decorated type which at Haaskraal, occurred in association with artefacts of European origin. The earliest European penetration of the Great Karoo took place after 1720 (Van der Merwe 1937). Settlement in the Sneeuberge took place a little later than the radiocarbon date obtained.

The meagre charcoal sample obtained from level 7 of the kraal excavation produced an enigmatic date of 172 ± 30 B.P. This date is surprisingly late considering that level 7 was some 34 cm below surface. It has been suggested that some mixing of the upper levels within the kraal had taken place. Due to the lack of control of the depositional events on the talus slope, the context of this date is questionable.

VOLSTRUISFONTEIN

A sample of diffuse charcoal was collected from 2 blocks in level 11 which is the second last level above bedrock. No pottery was excavated from underlying level 12 whereas level 11 contained a single Khoi and a plain grass tempered sherd. No samples were

selected from the overlying levels as preliminary analysis indicated that disturbance may have occurred.

The level 11 sample produced the following date:

Volstruisfontein square B, blocks 6&7, level 11, (scattered charcoals within blocks):

560±170 B.P. (SMU 1791).

This is in almost perfect agreement with the date of 544±43 B.P. from Haaskraal level 8. The similarity of these 2 dates may add weight to a rival scenario of the previously mentioned assertion that ceramic deposit existed at Haaskraal earlier than the second stratigraphic break. If the absence of sherds in level 12 is significant, which it may not be - the Volstruisfontein date may imply that ceramics were introduced into the area less than 600 years ago. This question requires more excavated samples and many more dates.

The combined patterning of dates from Haaskraal and Volstruisfontein shelter leave the archaeologist with a dilemma as to whether the Haaskraal level 7 date (square J) is to be accepted or not. The physical context of square J at Haaskraal is more conducive to deposit mixing. Evidence from the interior (non-drip line) of Haaskraal is that backed pieces and ceramics did not occur together. On the other hand, if deposit was lost from below the lower stratigraphic break, there is no way of judging its volume or content. The fact that the depositional processes that took place under the drip line can only be guessed

at, makes the level 7 (square J) date for Khoi ceramics suspect. It must be borne in mind that the dates from these excavations are in need of replication elsewhere in the valley. For the moment the concordant dates from Haaskraal (level 8) and Volstruisfontein (level 11) are accepted - thus concluding that Khoi pottery and plain grass tempered ware were introduced into the sites of Volstruisfontein and Haaskraal shortly after 600 B.P.

CHAPTER 9

ANALYSIS OF CULTURAL MATERIAL

INTRODUCTION

The dates from Haaskraal and Volstruisfontein reveal that the period of time under examination in this particular project is relatively short in archaeological terms. Most of the deposit excavated is less than 1000 years old. The Wilton (Late Stone Age) of the interior of Southern Africa is considered to have entered a formative phase some 8000 years ago (J. Deacon 1974). During the trajectory of Wilton development archaeologists have documented changes within the industry which have attracted a variety of differing explanations and interpretations (Sampson 1972; J. Deacon 1974; Humphreys 1979).

The sequence represented at Haaskraal and Volstruisfontein covers a mere fraction of the time period investigated by scholars of the Wilton and related industries. In a sense this project (as well as the ZVAP) may be seen as a move from general investigation of a fairly broad interval of time, to a highly specific investigation of a selected period. In human cultural terms the excavations at Haaskraal and Volstruisfontein have revealed a period of dynamic change within a very short segment of Late Stone Age time.

Much of the recent research that has taken place during the course of the ZVAP, has been concerned with the use of decorative motif analysis as a tool for determining group territory. Tentative areas have been delineated thus far, but before the excavation phase of the ZVAP, temporal control of these territories had not been established. For this reason analysis of pottery in terms of decoration and construction is a central pivot around which the analysis of the cultural remains from Haaskraal and Volstruisfontein has been constructed. Ceramics at these sites are a major marker of cultural change. Both the analysis of the stone artefacts, and to some extent, historic artefacts have revealed trends that have complemented events in the pottery sequence.

Faunal remains from Haaskraal have not been exhaustively analysed but have been used to some extent as a means of answering specific questions that arose during the course of the analysis. Identification of ovi-caprines and Antidorcas marsupialis from the Haaskraal deposits are specifically referred to. Plant remains (apart from charcoal) were not preserved at either site.

Since pot sherds are a major issue in interpreting the sequences from these sites, their analysis is considered first.

THE CERAMICS

Sampson (1984) defined 2 ceramic traditions based on surface collections of sherds in the Zeekoe Valley. The classification

which has been made on the physical characteristics of the sherds has resulted in the use of the terms Smithfield and Khoi pottery among ZVAP researchers. Smithfield pottery is thick walled, slab built, grass tempered and normally takes the form of a straight or curve sided bowl. These vessels are characteristically heavily decorated with crudely executed lines and impressions (plate 6). Khoi sherds are thin walled, grit tempered, and well fired. The vessels are coil constructed, display shoulders and slightly rounded bases. Lugs and spouts are occasionally associated with Khoi sherds. Examples of both traditions were excavated from Haaskraal and Volstruisfontein. The decorative motifs on the Smithfield grass tempered pottery have been closely analysed for chronology of decoration. The variation in the physical characteristics between grass tempered and grit tempered sherds has been subjected to some scrutiny with a view to further qualifying the 2 traditions.

LUGGED SHERDS

Both Khoi and Smithfield pottery may show evidence of lugs. Over 70 lugged Khoi sherds have been collected in the southern sector of the Zeekoe Valley. Most of these were concentrated in the south west corner of the research or the kraal rich zone (map 7). Grass tempered lugs were rare in comparison, with only 14 such examples collected from surface sites. The construction of grass tempered lugs differs considerably from those found on Khoi sherds in that they have a comparatively crude and unsymmetrical appearance. In most instances there is no evidence of any attempt to reinforce internally the vessel at the lug attachment point.

The lugs themselves tend to be small with a suspension hole no more than 4 mm in diameter. Heavy decoration on some grass tempered lugs is indicative that they may have been made after 500 B.P. The Khoi lugs are well designed, practical attachments with wide suspension holes and careful internal reinforcing. The poor functional design of grass tempered lugs may reflect the fact that these fixtures may have been purely decorative borrowings from the makers of Khoi pottery in the area.

Of the grass tempered lugs, 9 were collected from the upper reaches of the Bo-Zeekoei River (map 7) within the area dense in kraals. Two grass tempered lugs of the type previously described, were excavated out of levels 4 and 9 of square B at Volstruisfontein (also within the kraal rich area). A lug from square E, level 8/9 at Haaskraal is an exception to the attributes ascribed to both traditions of lug in general. The sherd (lowest in the sequence) was well formed with internal reinforcement and a well developed suspension hole. Had the lug not been grass tempered, it would most certainly be classified within the Khoi tradition. Unfortunately this is an isolated find without reinforcing information from other excavations as yet. It is, however, testimony to the assertion that the distinction between grass tempered and Khoi sherds loses some clarity at the beginning of the ceramic sequence.

DECORATIVE MOTIFS

Subsequent to the excavation of Volstruisfontein and Haaskraal the ZVAP team excavated some 6 more shelters in the valley

(Sampson, Hart, Wallsmith and Blagg in prep.). Although the full artefactual analyses from these sites has not been completed, the results of the decorative motif analysis are available and have been integrated with those from Haaskraal and Volstruisfontein (Sampson, Hart, Wallsmith & Blagg in prep).

At Haaskraal shelter and kraal, 8 varieties of decorative motifs have been discerned among the grass tempered sherds. These are as follows (see Sampson 1988a):

large spatulate oblique	(n=7)
large spatulate vertical	(n=4)
notched spatulate	(n=9)
small spatulate	(n=2)
double punctate rows	(n=6)
cord impressed	(n=1)
stab-and-drag	(n=2)
rocker stamp	(n=47)
comb stamp	(n=2)
indeterminate	(n=5)

Other motifs found in the research area but not at Haaskraal are as follows:

- quill groove
- quill gash
- spherical stylus tip

A sequence of decorative motifs was determined by using a system of stack analysis (Sampson, Hart, Wallsmith and Blagg in prep). A stack is a level by level sequence of 25x25 cm blocks. In other

words each square (1 x 1 m) contained some 16 stacks, each stack containing the full sequence from levels 1 to bed rock. Stacks containing 2 or more different types of pottery or decorative motif were selected as a means of determining the relative ages of the sherd types. The vertical arrangement of the sherds within each stack is indicative of the relative ages of the motif. This method is very suitably used within the Zeekoe Valley where a total of 8 sites have now been excavated by the same team using identical methods. A combined total of 1107 stacks were available for analysis by members of the team. In this way the universal instances of superimposition of one particular decorative motif over another could be quantified.

Of the grand total, Haaskraal produced some 155 stacks and Volstruisfontein another 48. Haaskraal yielded some 19 stacks that produced 2 or more different types of pottery. Of this quantity 8 stacks can be considered suspect for reason of them being part of the kraal excavation where at least the first 4 levels were mixed. This meant that 11 stacks yielded results. This small sample is fairly meaningless on its own, until considered in the context of 21 other stacks obtained from the other 7 excavations.

Most clearly evident at Haaskraal was the fact that in 6 stacks rocker stamp decorations were superimposed over any other decorative motifs. In 2 instances double punctate decorations appeared directly under rocker stamp and large spatulate

vertical. Stab and drag decoration, notched spatulate, large spatulate vertical and large spatulate oblique were consistently lower down in the sequence at levels marking the advent of decorated pottery (mostly level 7 at Haaskraal). Using the stack system of analysis, Haaskraal demonstrates that in the decorated sherd levels alone, there were at least 2 (and possibly 3) superimposed motif traditions.

Three different types of decorative motif were excavated from the deposit at Volstruisfontein. These included:

rocker stamp (n=11)

cord-impressed (n=2)

comb-stamp (n=2)

Volstruisfontein shelter yielded 5 instances of diagnostic stacks. In 3 of these, rocker stamp decoration was superimposed over other stylistic motifs. The decorative motifs found lower down in the sequence differ from those found at Haaskraal in that they consist of comb-stamp and cord-impressed sherds only. These types did occur at Haaskraal but were numerically insignificant.

Stack analysis at Haaskraal and Volstruisfontein failed to reveal the relative contexts of the rarer decorative motifs such as comb-stamp, cord-impressed and small spatulate. An examination of individual sherd provenances reveals that at Haaskraal, small spatulate occurred in the upper levels of the kraal excavation only, which means that there is a good chance that they are out of context. The cord-impressed and comb-stamp sherds from this

site all occur in square E, level 7 which places them in a chronological position very close to the advent of decorated pottery and the earliest occurrence of Khoi pottery. At Volstruisfontein the individual provenances of these motifs are rather more scattered between levels 3 and 7 in square C. Large spatulate oblique and large spatulate vertical occurred as low as level 6 within the shelter. This may be taken as a tentative indication that comb-stamp and cord-impressed ware were the earliest of the decorative motifs.

From Haaskraal and Volstruisfontein a preliminary ceramic sequence may be proposed. Khoi and plain grass tempered ware appeared first in the sequence - this could have occurred as early as 900 years ago but certainly no later than 570 years ago. Decorated grass tempered comb-stamp and cord-impressed ware was introduced shortly after 570 years ago. This was followed by a group of motifs that included stab and drag, stab and lift oblique, stab and lift vertical and notched spatulate. The double punctate may have followed this. The sequence was finally capped with copious quantities of rocker stamp ware that was first manifested 300 years ago.

The results of these excavations allowed members of the ZVAP team to achieve a greater understanding of chronologies of stylistic traditions that have thus far been mapped in the Zeekoe Valley. The comb-stamp territories of the southwestern Zeekoe Valley were probably amongst the oldest traced. The large spatulate variants of the central and eastern valley followed with double punctate

ware (not well represented at Haaskraal or Volstruisfontein) eventually appearing valley wide. Of major interest is the fact that the enigmatic rocker stamp ware that occurred throughout all the territories is equated to historic times (Sampson, Hart, Wallsmith and Blagg in prep.).

PHYSICAL CHARACTERISTICS OF GRASS TEMPERED (SMITHFIELD) AND KHOI POTTERY

Sampson (1967a) defined 2 kinds of ceramics - class A and class B, - in the Middle Orange River. In the Zeekoe Valley, Sampson (1984b) chose to define grass tempered pottery (class A) as Smithfield pottery and grit tempered pottery (less easily translated as class B?) as Khoi pottery. The notion of 2 ceramic traditions (as proposed by Sampson 1967a) was challenged by Humphreys (1979) who asserted that there was a gradual change over from grit temper to grass temper accompanied by increasing amounts of decoration in the Late Stone Age. This view is supported by Beaumont and Vogel (1984).

Computation of percentages of decorated as opposed to non decorated grass tempered pottery per level at Haaskraal reveals observable patterning. There is no gradual increase in the frequency of decorated pottery from levels 8 to 5. The mean occurrence in these levels is 14.65%. Percentages of decorated sherds show a significant jump in level 4 at 33.3%. From level 4 to level 1 the mean occurrence is 32.32%. This apparent jump in frequencies may be a function of deposit having been moved from the site at the time of the upper stratigraphic break. The sudden

increased frequency of decoration appears to be contemporary with the appearance of rocker-stamp pottery in historic times. Haaskraal shelter has produced no evidence to support the notion that decoration of pottery increased gradually over time.

All measurable sherds from Haaskraal and Volstruisfontein were measured for thickness (at their widest points) with the expectation that there would be a mean reduction in thickness towards the base of the pottery sequence. During the course of the excavation, it was observed that sherds appeared to be "finer" with less grass temper close to the bottom of the sequence. It was hoped that the large sample size of sherds from these excavations would override the effect of variation in sherd thickness from a single grass tempered vessel. These can range from anywhere from 18mm in thickness for a basal sherd to 9mm for a body sherd or 6mm for a rim. This characteristic of grass tempered pottery would seriously jeopardize the significance of spit means in small samples. The total sample of sherds from Haaskraal shelter and Kraal excavation amounted to 637 sherds - almost double the sample excavated from Zaayfontein (n=279) and Glen Elliot (n=359) (Sampson 1967a;b). Sampson documented a shift in sherd thickness at both sites with levels dominated by class A sherds showing a thickness shift of some 2 mm to the large end of the spectrum. Humphreys (1979), after calculating the mean sherd thickness per spit from the same sites, could not demonstrate sherds lower down in the sequence to be thinner. The chances are that differing methodologies account for this discrepancy.

Sherd thicknesses from Haaskraal were examined in 2 ways. Firstly, mean thicknesses per level from both kraal and shelter excavation were calculated and plotted. Secondly, all sherd thicknesses obtained in block/levels in which decorated sherds occurred were plotted within 1 mm class intervals. Sherds that were excavated from blocks/levels that were not associated with decorated sherds were treated in a similar manner.

A sequence of mean thickness per level measurements from the kraal excavation showed that there is a tendency for body sherds from level 6 and below to be on average 1 mm thinner than those from overlying layers. As can be seen, the thickness change is not gradual but takes the form of a fairly sudden jump. In square E of the shelter excavation, the trend appears to be rather similar with sherd thickness decreasing by 1 mm from level 7 downwards. A similar jump appears to occur in square J below level 6 and in square I below level 5. The mean thicknesses per level from square F tend to be exceptional as they show a gradual decrease in size from top to bottom of the ceramic sequence. The samples from squares A, B and G were not included in these calculations on account of the small sherd samples (fig 13).

The thickness class interval analysis of sherds from Haaskraal was similar to the differentiation of class A and B sherds (Sampson 1967a) from Zaayfontein, except that in this instance decorated pottery and non-decorated pottery (instead of class A and class B pottery) were considered separately. The distribution from the kraal excavation revealed that sherd thicknesses for

decorated levels range between 18 and 3 mm. Sherds thicker than 13 mm tend not to be body sherds but parts of grass tempered vessel bases. These make up no more than 6% of the total sample. The distribution starts peaking from 11 mm with sherds between 8, 7, and 6 mm being the most common. Sherd thicknesses between 5-6 mm occur substantially less often (fig 13). Thicknesses obtained from the undecorated levels ranged between 15 and 3 mm. Sherds within the range of 7, 6, and 5 mm were most common with sherd thicknesses of 4-5 mm being substantially higher than in the decorated levels.

This pattern is more profoundly manifested inside the shelter with sherds from decorated levels occurring most commonly in the 8-9 mm thickness class interval (33%). This decreases to 14% in the 6-7 mm class. Sherds in the 5-6 mm class are minimally manifested. In the undecorated levels only 10% of sherds are between 8-9 mm thick. Most sherds are between 7-5 mm thick with the 5-6 mm class interval showing the highest frequency (fig 13). This is sound evidence to conclude that a fairly sudden increase sherd thickness took place with the adoption of decoration on grass tempered pottery.

Khoi sherds from Haaskraal showed a mean thickness of 5,8 mm. The small sample from Volstruisfontein showed a mean thickness of 6 mm. This indicates that these sherds are well within the range of thickness classes determined for undecorated pottery.

Humphreys (1979) maintains that the reanalysis of the Middle Orange River assemblages showed that sherds gradually tended to include greater proportions of grass temper as levels reached the top of the sequence. Sampson's (1967a) original definition of class B pottery allowed for small but variable amounts of grass temper with the dominant grit temper and small amounts grit with the grass tempered class A. During the course of excavations at Haaskraal it became apparent that there was considerable variability in the amount of grass temper used in sherd construction. Some sherds appeared to contain abundant amounts of carbonized vegetable matter whereas others were virtually indistinguishable (save a strand or two of grass) from those classified as Khoi. It is confirmed that a change over from mainly grit temper to mainly grass temper took place at Haaskraal.

It is impossible to quantify the character of this apparent shift without developing a method to determine the amounts of grass tempering in a sherd. The distinction between grass tempered and Khoi pottery thus far portrayed in this project implies that there would also be a difference in porosity between the 2 types of sherd. It is suggested that grass temper would cause a sherd to be relatively porous and less dense than a well fired, grit tempered sherd. A pilot study that included an attempt to measure degrees of porosity in sherds from Haaskraal was instituted by Woodborne (1986). A sample of 50 sherds including 4 diagnosed Khoi sherds were selected from all levels in the kraal sequence. A method described by Grimshaw (1971) and Matson (1963) was used for the measurement of the porosity and

density of the sherds. This involved first dry-weighing the sherds, followed by wet weighing them after they had been submerged in non-polar paraffin. The porosity was defined as the amount of paraffin absorbed per unit mass of sherd. The density of the sherds was obtained by submerging them in mercury (density = 13.6) and observing the increase in mass. The experiment produced an apparently random scatter of results that showed no clear groupings or grading of temper quantities through the excavated levels over time.

Woodborne (1986) then hypothesized that if 2 separate ceramic traditions were present (Khoi and Smithfield), they would have 2 different forms of sintering curve (since the traditions were grit and grass tempered respectively). A porosity temperature plot would iron out the different porosities that could show on sherds from the same vessel due to localized firing conditions. A small sample of 20 sherds were selected for porosity temperature analysis. Sherds were successively fired for 15 minute periods at 50 degree intervals starting at 700 degrees. After each firing, density versus porosity plots were produced. The first firing produced a sudden increase in porosity as a result of the burning out of foreign organic matter in the pores of the sherds. Once firings of 850 and 900 degrees had been accomplished, some unexpected patterning had begun to appear. One group of sherds (group 1) sintered rapidly while other sherds (group 2) remained unchanged until firings of 1200 degrees had taken place (fig 14). Of the 20 sherds, 4 did not conform to either group (group 3). The provenances of the group 1 and 2 sherds were replotted with surprising results. Group 1 (n=9) sherds were all classic

Smithfield including decorated sherds. Apart from a single exception, all of these occurred in level 1-5 or the decorated levels of the kraal excavation. Group 2 sherds (n=5) included both Khoi type grit tempered and undecorated sherds with varying amounts of grass temper. All of these sherds came from levels 6,7,8, and 9 or the undecorated lower ceramic levels of the kraal excavation. Arbitrary labeled group 3 sherds (n=4) which is comprised of Khoi sherds and undecorated grass tempered pottery did not adhere to any trend.

Woodborne's (1986) physical analysis of the potsherds showed that temperature, porosity and density measurements could not be used to define the difference between Khoi and grass tempered pottery on the basis of temper. The groupings that have come to light are a product of differing mineral contents of the original clay. It may be suggested that the addition of a flux to the clay used for manufacturing group 1 or decorated sherds may have been responsible for the lowering of the sintering temperatures of these particular sherds.

Physical analysis of the sherds has revealed that the adoption of decorated grass tempered pottery may have involved technological changes or innovations that allowed the pottery to be fired at a lower temperature. Detailed explanation of these changes will require further advanced physical analysis of the sample.

The analysis of the physical characteristics of ceramics from Haaskraal and Volstruisfontein have partly resulted in the suggestion that 4 major 'ceramic' events that took place in the Zeekoe Valley. The earliest pottery recovered from Haaskraal is undecorated and grass tempered. Khoi pottery appeared in the sequence shortly after. Decorated grass tempered pottery became common after the Khoi phase which appears to be quite short lived. The final ceramic event was the spread of rocker stamp motifs throughout the research area shortly after 300 B.P.

The results of earlier analyses of the ceramics from the sites of the Middle Orange River (Sampson 1967a; Humphreys 1979) need to be revised in the light of the results of the current methodology used in the ZVAP. It is strongly suspected that a detailed re-analysis of the ceramics excavated from the sites of the Middle Orange River would result in findings similar to those from Haaskraal and Volstruisfontein. It is probable that sequences of decorative motif and ceramic technology existed at the Orange as well.

WORKED BONE

Most worked bone referred to here was recovered from Haaskraal shelter. Very little was preserved in the kraal excavation nor at Volstruisfontein shelter.

The shelter excavation at Haaskraal produced 16 pieces of worked bone that were found between levels 3 and 9. The kraal excavation and Volstruisfontein contributed 1 and 2 bone artefacts respectively. The provenances, numbers and dimensions of whole artefacts are as follows:

	Diameter (mm)	Length (mm)
Level 3		
E15 link shaft	5	39.6
Level 3.5		
I3 link shaft	5	broken
I7 awl	14.5 (max)	110
B7 worked bone fragment		
Level 4		
B9 sawn-snapped bone section	5	7.3
B12 sawn-snapped bone section	5.8	6
E11 bone point (broken)		
Level 4		
A7 bone point (broken)	incomplete	84
A11 bone point	5.6	76.5
Level 5		
B16 bone point (broken)		

Level 6

E7 bone point (broken)

E2 bone point (broken)

E9 bone point (broken)

F16 link shaft (broken) 4.6 broken

Level 8

B6 bone point 7 115

Level 9

B1 worked bone fragment

Kraal excavation, level 1

O2 link shaft (broken) 5 broken

VOLSTRUISFONTEIN**Level 10**

B6 bone point (broken)

B13 bone point fragment

The above table shows that link shafts and bone points dominate this assemblage. At Haaskraal shelter these are mainly distributed between levels 3 and 6. Bone points from levels 8 and 9 both came from square B at the back of the shelter where it is suggested that artefacts from these lower levels are younger than those excavated from similar elevations closer to the drip line. The advent of worked bone at Haaskraal may be associated with the same levels that produced decorated grass tempered pottery. Worked bone was not prevalent in the upper levels of the site associated with historic times and rocker stamp pottery.

Bone points and link shafts from Haaskraal show clear longitudinal whittle marks. Very little grinding was evident in their construction apart from on the very tips of the points.

WORKED WOOD

Plant remains (except charcoal) were almost completely absent from Haaskraal and Volstruisfontein. A single wooden peg was recovered in block B4, level 1, at Haaskraal shelter. This artefact is 134mm in length and a maximum of 13mm in diameter. One end has been sharpened (whittled) to a point whereas the other forms a blunt butt. Rodent gnawing is evident along the length of the artefact.

OSTRICH EGGSHELL

Ostrich egg shell (OES) occurred in all three excavations. Preservation in the damp Volstruisfontein deposit and the exposed Haaskraal kraal excavation was poor. Preservation was excellent in the surface levels of the western sector of Haaskraal shelter, but diminished steadily down to level 9. After the lower stratigraphic break only small fragmented and poorly preserved pieces were found. Exceptionally large amounts of OES were recovered from levels 4, 3.5, and 3 in squares F, E, and I.

At Haaskraal shelter, fragments of a reconstructable OES container were found between levels 6 and 9, squares A and B at the very rear of the shelter. Besides this example, 4 fragments of container mouths were discovered in the deposit. Decorated

OES was recovered from levels 2, 3 and 7, OES beads were scattered from levels 1-9 at Haaskraal shelter.

At Volstruisfontein considerably fewer beads were recovered (between levels 1-11) while decorated OES and container mouths were absent. Numbers of OES beads per level (Haaskraal and Volstruisfontein) are given overleaf

Haaskraal shelter:	level	n
	1	4
	1.5	3
	2	6
	3	8
	3.5	5
	4	9
	5	12
	6	9
	7	3
	8	2
	9	1
	Total	62

Volstruisfontein:	level	n
	1	2
	2	-
	3	1
	4	-
	5	1
	6	1
	7	-
	8	1
	9	-
	10	-
	11	
	Total	7

HAASKRAAL AND VOLSTRUISFONTEIN OES BEADS

All beads recovered from Haaskraal shelter were associated with ceramic-bearing deposit above the lower stratigraphic break. A total of 43 beads from the shelter were complete enough to provide external diameter measurements. The samples per level were too small to provide reliable statistics so these were obtained from the collection as a whole: (overleaf)

mean 5.53 mm

standard deviation 1.05 mm

range 5-7.5 mm.

Descriptive statistics of the 7 beads recovered from Volstruisfontein are given below:

mean 5.74 mm

standard deviation 0.71 mm

range 5-7 mm.

The above mentioned bead sizes are in keeping with statistics compiled by Yates (pers. comm) for beads manufactured in the Southern Cape during ceramic times. Pre-ceramic beads tend to show mean external diameters in the region of 4.5-5 mm. There is considerably more variation during ceramic times as beads in excess of 7.5 mm may occur although most samples show means between 5-6 mm.

Of the 8 decorated OES fragments excavated within Haaskraal shelter, 7 fragments from levels 2 and 3 showed evidence of a standardized design. This consisted of vertical or near vertical lines incised between parallel lines (ladder-like motif). The single fragment from level 7 differed from the others in that the motif consisted of cross-hatching within parallel lines.

HISTORIC ARTIFACTS

HAASKRAAL

Historic artefacts, apart from glass beads were rare at Haaskraal. A fragment of a European clay pipe bowl was found in

the overburden. Square F, block 11, level 1.5 yielded a heavy lead bullet identified as that used in some early makes of Martini Henry or British army Enfield/Snider rifles (calibre = ,577 inches). These weapons were popular in South Africa after circa. 1870 A.D. (R. Steele, pers. comm.). An analysis of the glass beads according to international standards is included in table 2.

VOLSTRUISFONTEIN

Historic artefacts included glass beads, several fragments of glass and European porcelain that were mostly found in square A towards the rear of the shelter (see overleaf).

The finds (excluding beads) include:

	provenance	artefact
A	level 2	Small white porcelain rim fragment with purple decoration.
	level 3	Thin fragment of light green glass. Small sherd of European earthenware.
	level 4	Small fragment of light green glass Fragment of cheap metal ear ring with a machine cut light blue glass setting.
	level 5	Fragment of white porcelain vessel base.

TABLE II

HAASKRAAL AND VOLSTRUISFONTEIN: GLASS BEAD ANALYSIS

Analysis by Sharma J. Saitowitz
Archaeometry Research Group
University of Cape Town

HAASKRAAL

UNIT	COLOUR	MUNSELL No.	MANUFACTURE	SIZE L/B	LUSTRE
A11/4	creamy white	5GY9/1	drawn	L.25 W.39	shiny
A16/4	dark royal blue	7.5PB2/8	wound	L.55 W.71	shiny
B2/3	creamy white	5GY9/1	drawn	L.25 W.35	shiny
B7/6	white	84.2XR	drawn	L.22 W.31	shiny
B7/6	ivory white	5Y9/2	drawn	L.32 W.40	dull
E1/3.5	dark marigold	10YR6/12	drawn	L.19 W.28	dull
F10/1.5	creamy white	5GY9/1	drawn	L.21 W.36	dull
G9/3	pearl white	5GY9/1	drawn	L.12 W.10	shiny
G9/3	pearl cream	5Y8/4	drawn	L.29 W.35	shiny
G9/4	pearl cream	5Y8/4	drawn	L.39 W.35	shiny
G15/2	black	N2/3.1XR	drawn	L.40 W.42	dull
G16/2	candy pink	2.5R5/14	wound	L.50 W.69	shiny
F3[SEC.]	turquoise	5B7/6	drawn	L.19 W.31	shiny

VOLSTRUISFONTEIN

A1/4	black	N1.75/2.5XR	drawn	L.20 W.30	dull
A2/1	indian red on green	10R4/8 (outside colour)	drawn	L.42 W.55	dull

HAASKRAAL

UNIT	STRUCTURE	DIAPHANEITY	TYPE	SHAPE	DECORATION
A11/4	simple	opaque	1a	1.B.1b	none
A16/4	simple	translucent	w1b	1.B.1a	none
B2/3	simple	opaque	1a	1.B.1b	none
B7/6	simple	opaque	11a	1.B.1a	none
B7/6	simple	opaque	1a	1.B.2b	none
E1/3.5	simple	opaque	11a	1.B.1a	none
F10/1.5	simple	opaque	1a	1.B.1b	none
G9/3	simple	opaque	1a	1.B.1b	none
G9/3	simple	opaque	11a	1.B.1a	none
G9/4	simple	opaque	11a	1.B.1a	none
G15/2	simple	opaque	1a	1.B.1a	none
G16/2	simple	translucent	w1b	1.C.1a	none
F3[SEC.]	simple	translucent	1a	1.B.1a	none

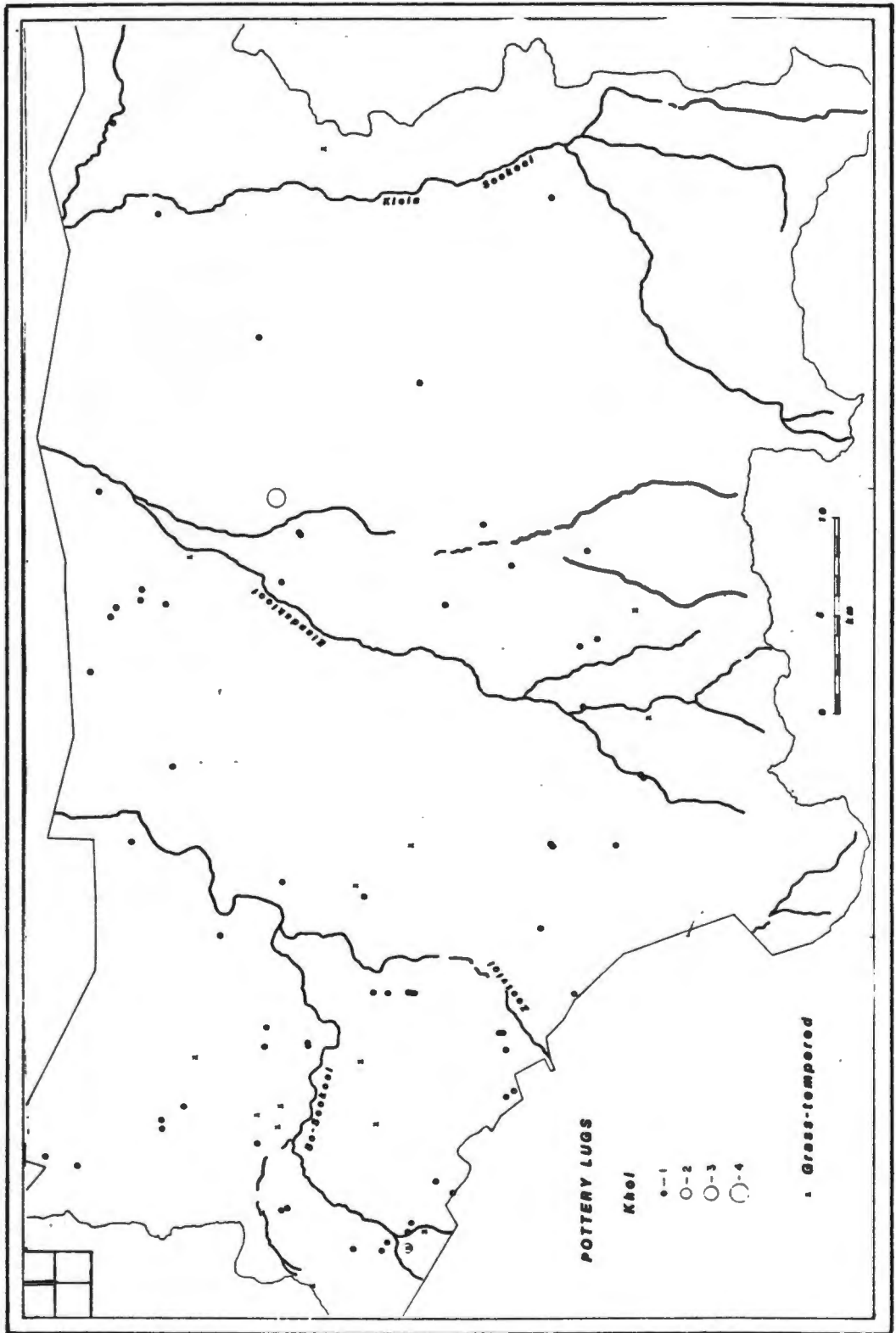
VOLSTRUISFONTEIN

A1/4	simple	opaque	11a	1.B.1a	none
A2/1	compound	opaque	1Va	1.B.1a	none

After: Beck (1928), Sprague (1985), Munsell colour (1978)



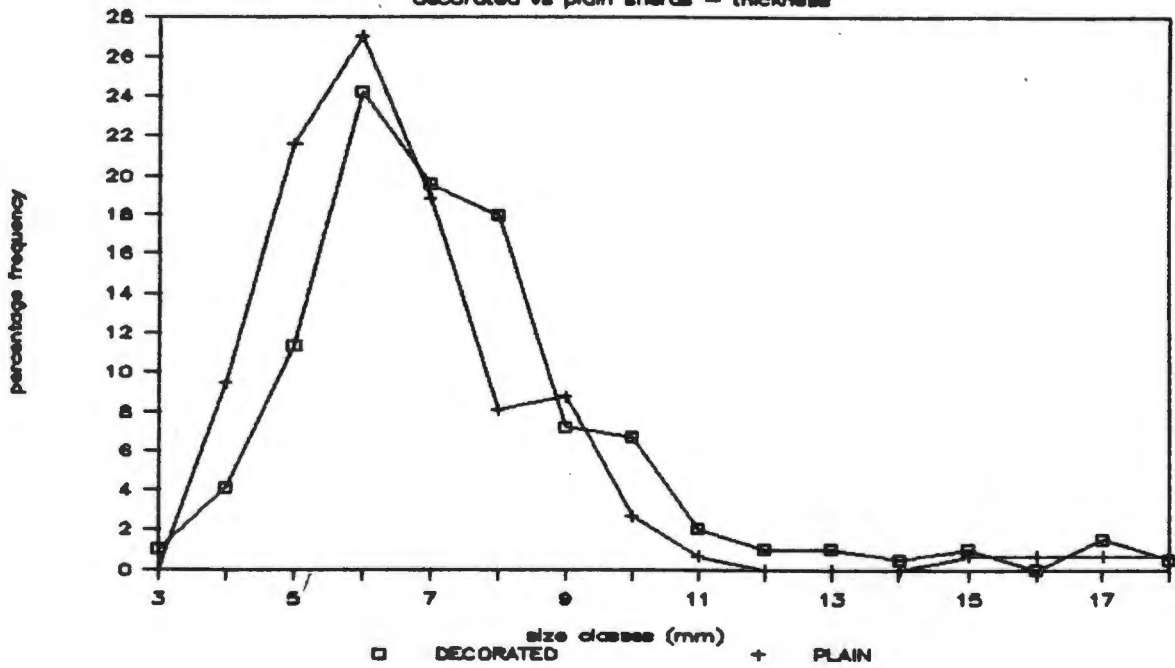
PLATE 5 Grass tempered rocker stamp vessel from the rocker stamp levels at Haaskraal shelter.



MAP 7 Distribution of Grass tempered and Khoi pot lugs in the southern Zeekoe Valley.

HAASKRAAL KRAAL EXCAVATION

decorated vs plain sherds - thickness



HAASKRAAL SHELTER EXCAVATION

decorated vs plain sherds - thickness

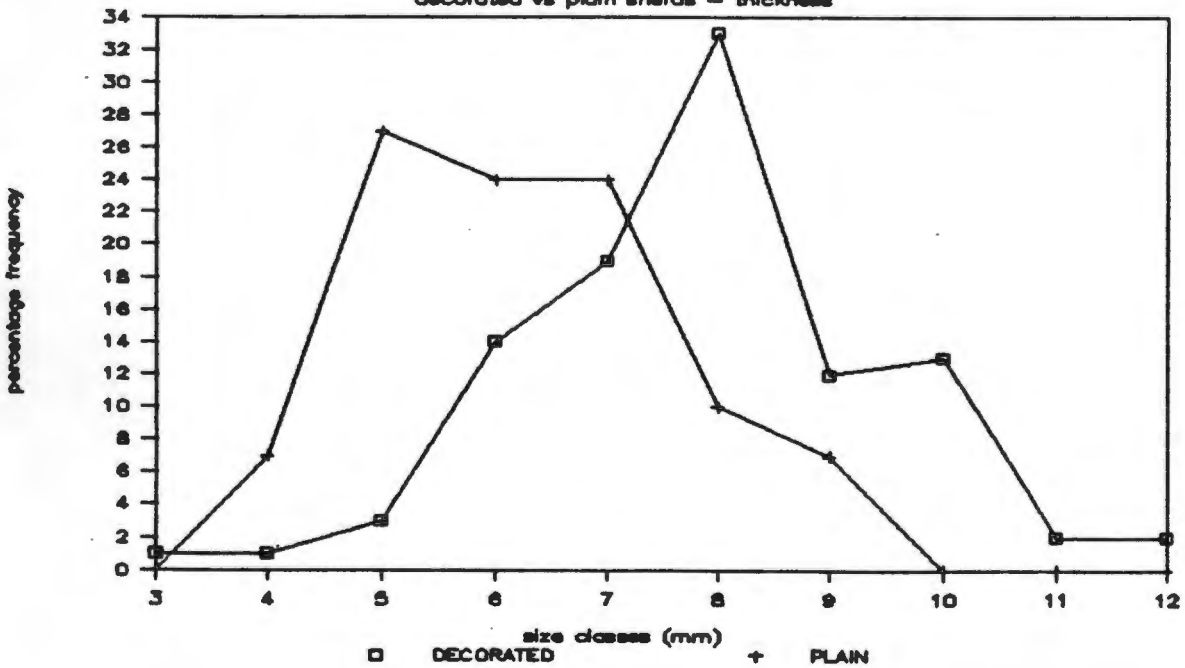


FIGURE 13 Thickness class analysis of decorated and plain sherds from Haaskraal.

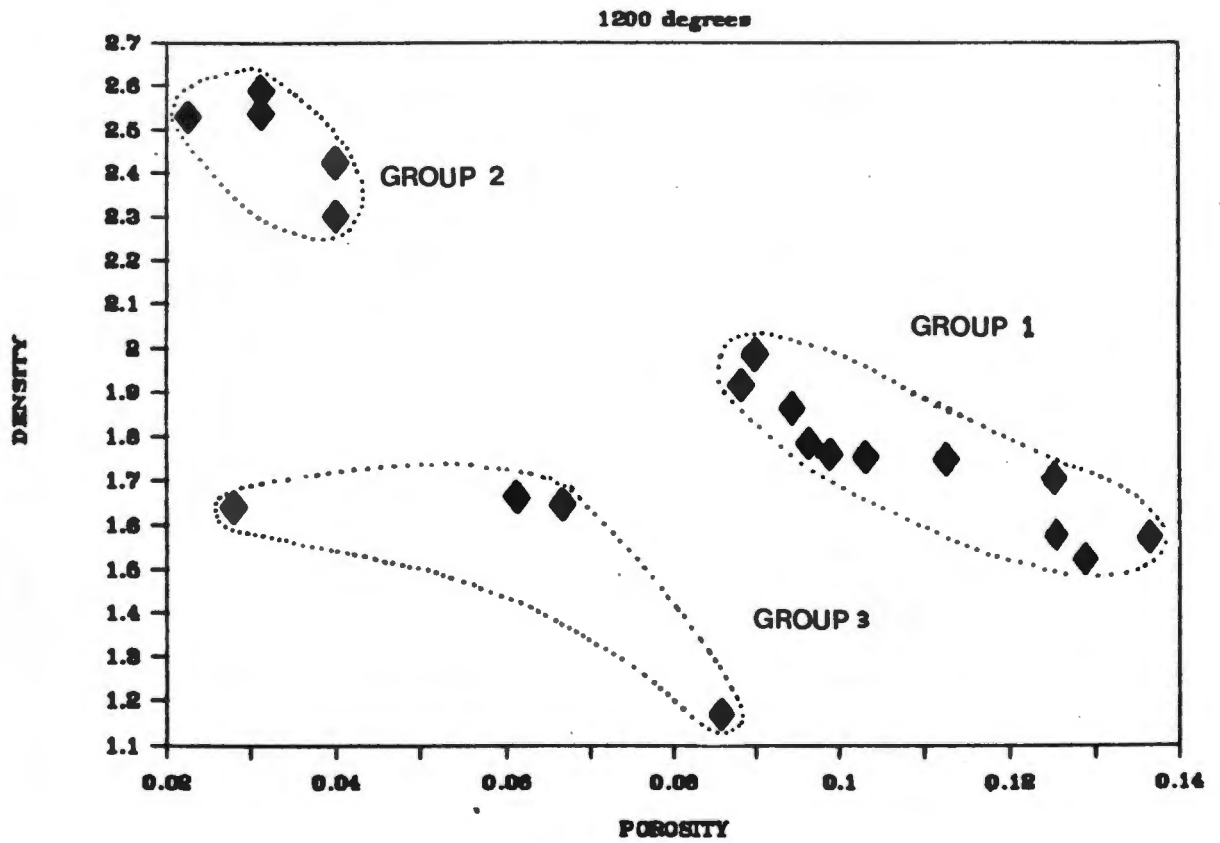


FIGURE 14 Porosity versus density groupings after Haaskraal sherds had been fired at 1200 degrees (after Woodborne 1986).

CHAPTER 10

LITHIC ARTIFACTS

INTRODUCTION

The analysis of stone artefacts from both Haaskraal and Volstruisfontein excavations revealed a number of changes in both toolkit composition and raw material over time. The broad trends manifest at these excavations will be briefly summarized before more specific aspects of the assemblages are considered.

Both Haaskraal shelter and kraal excavations provided adequate samples of formal tools and waste. Volstruisfontein shelter provided a somewhat smaller sample containing very few formal tools. An additional problem with the analysis of the Volstruisfontein excavation material is that the degree of disturbance of the deposit is not easily assessed. Marginally more success in this regard had been achieved at the Haaskraal kraal excavation whilst the deposit within that shelter is considered to be the best understood.

At both Haaskraal shelter and kraal excavations the ceramic rich levels were comparatively poor in stone artefacts. In the shelter, levels 1-4, which contained rocker stamp pottery, were almost devoid of stone artefacts apart from siltstone dominated waste and rare end scrapers. The high frequency of ceramics and fauna in these levels indicates that there was no occupational

hiatus accounting for the reduced amounts of stone tools. End scraper and waste frequencies increased in the non-rocker stamp ceramic levels. Further diversification of scraper types may be seen in levels that contained undecorated grass tempered ceramics and pre-ceramic assemblages. At Haaskraal shelter backed artefacts are extremely rare in levels containing decorated grass tempered pottery, but increased in levels containing undecorated grass tempered pottery as well as in pre-ceramic times.

Results of the analysis of formal tools indicate that the Haaskraal kraal excavation provided results broadly similar to those from within the shelter. The disturbances that had taken place had resulted in some loss of resolution between the levels. The artefact summary sheet (appendix A) shows that overall scraper frequencies are depleted in levels that contain decorated ceramics. Similarly, backed artefacts (which make up quite a large proportion (45%) of the formal tool category) increase in frequency in pre-ceramic and undecorated grass tempered pottery levels.

At least 8 different types of raw material were used at Haaskraal. Lydianite was by far the most popular, being exploited for the production of all microliths and over 99% of scrapers. Noteworthy is a clear change in raw material usage with the advent of ceramics. Square E in Haaskraal shelter reveals that in pre-ceramic times siltstone accounted for no more than 10% of the raw material used. This climbed sharply to more than 45% with the advent of ceramics. The trend was replicated in the

waste analysis from the kraal excavation. Along with the increase in siltstone usage is a reduction in bladelet production in the ceramic levels from both the kraal and the shelter excavations. In essence, the advent of decorated ceramics at Haaskraal may be equated with a deformatisation of the lithic assemblage in all spheres culminating in significant diminishing of stone artefact manufacture once historic items had been introduced into the sequence.

The Volstruisfontein sequence is enigmatic. Besides the stratigraphic complications outlined in the previous chapter, samples of formal tools are very small at this site. The few scrapers and backed pieces that were recovered appeared to be evenly distributed throughout the sequence. Lydianite was the dominantly exploited raw material throughout with little evidence of pronounced raw material change. The assemblage may be described as being informal and mostly post ceramic.

The following pages provide a more detailed account of the lithic analysis from Haaskraal and Volstruisfontein.

HAASKRAAL

FORMAL ARTIFACTS

SCRAPERS

Scrapers were analysed according to retouch position and length/breadth dimensions. All numerical data for scrapers from Haaskraal are presented in appendix A and B. A total of 194 scrapers were recovered from both Haaskraal excavations. The shelter produced 84 scrapers and the kraal excavation some 110. These samples were analysed in terms of 10 retouch classes largely based on those used by Humphreys & Thackeray (1983).

End scrapers. End scrapers with convex scraper retouch at the end of a flake or a blade are the most common scraper type, occurring ubiquitously throughout both Haaskraal sequences. These are rare above level 4 of the shelter excavation (historic contact period). From level 6 downwards, the frequency of these artefacts increases substantially. A similar situation applies to the kraal excavation where end scraper frequencies are comparatively low above level 6. Rapid increase occurs below level 6 with the highest number per level occurring in level 11. The majority of end scrapers are made of lydianite with a single small porcelanite example recovered from level 11 in the kraal excavation. End scrapers occur in a wide range of sizes ranging between 14 and 64 mm.

Mean end scraper lengths per level were calculated for both Haaskraal excavations. The results from both excavations show

that there was a very slight tendency, in both instances, for end scrapers to increase in length towards the upper levels of the deposit. End scrapers from the kraal excavation show broadening in the upper levels.

End extended. Scrapers with extended end retouch are extremely rare in the Haaskraal assemblage. A single example was recovered from level 11 inside the shelter and more were found between levels 8 and 11 in the kraal excavation. Raw material used is exclusively lydianite.

Side Scrapers with retouch along the laterals parallel to the long axis of the artefact were recovered from both excavations. The sample from the shelter came from below level 7 and below level 4 in the kraal excavation. This indicates that their appearance can be associated with pre-ceramic and undecorated ceramic times. These scrapers tend to be quite small in size with lengths and breadths not normally exceeding 25 mm.

Side extended. Very few scrapers with side retouch extending onto the ends of the artefacts were recovered from either excavation. The small sample size prevents any definitive statement about the vertical position of these types of artefacts. The same applies to the mean dimensions that cannot be considered to be reliably descriptive.

Double side. A single example of a small scraper with retouch on both opposing sides was recovered from Haaskraal shelter.

Double end. Scrapers with retouch on both ends of the length of the artefact were the most common of the small scrapers. They are mostly characteristic of the pre-ceramic and undecorated grass tempered ceramic levels, having been found most frequently below level 7 of the shelter excavation and level 6 of the kraal excavation. Raw material used is exclusively lydianite.

Double end and side. Both excavations produced single examples of scrapers with retouch on both ends and a side. The small sample prohibits further comment.

Double side and end. Small scrapers with retouch on a single end and 2 sides showed a very small presence between levels 6 and 9 within the shelter - they may be roughly associated with the presence of undecorated grass tempered ceramics. The sample from the kraal excavation is too small for reasonable comment.

All. Small round scrapers retouched on all sides were scarce at both excavations. These occurred in level 8 in the shelter and in level 11 in the kraal excavation. Indications are that this scraper type is mainly associated with early ceramic or pre-ceramic levels. The sample from Haaskraal is too small for further comment.

End and side. Scrapers with retouch on one end and one side were recovered virtually throughout the sequence at Haaskraal shelter. Although these scrapers were recovered from the upper levels in the kraal excavation they were mainly concentrated below level 6. Sizes range from 14-44 mm in length and 12-32 mm in breadth. The mean sizes tend to be quite small with a mean length of 26.12 mm and mean breadth of 20.89 mm.

SCRAPERS - GENERAL TRENDS

The entire scraper sample from Haaskraal was analysed in terms of mean lengths/ breadth as well as frequency of artefacts per size class per level (fig 15). Mean scraper lengths for all scrapers showed an easily observable trend towards larger size in the upper levels of the deposit from both kraal and shelter excavations. In both instances this trend is rather more marked than in end scraper lengths alone. The implication of this is that the apparent increase in scraper lengths is not mainly due to individual scraper types (such as end scrapers) increasing in length over time but that the apparent increase in size is due to the smaller scraper types (double end, side) that were more common towards the bottom of the sequence.

Scraper breadths show a marked mean increase per level at both Haaskraal excavations. Breadths low in the sequence were far more standardized than scraper lengths although broad scrapers did occur. At both excavations scraper frequencies are low above level 4. A high proportion of these scrapers were quite broad thus raising the mean scraper breadths per level above level 4.

In essence scrapers associated with the final Late Stone Age tended to be rather large and heavy when compared with the end scrapers of lower levels (see appendix B:16-17).

Frequency distributions of overall scraper lengths revealed that that scraper size classes of 16-20 mm, 21-25 mm, and 26-30 mm contained the highest frequency at both excavations. Distributions from both shelter and kraal were quite similar in that they showed enigmatic peaks in the 36-40 mm class (scraper frequencies in the 36-40 mm class were comparatively low in both instances). It is possible that this peak may represent the most popular and smallest practical size for hand held scrapers whereas scrapers smaller than 30 mm were hafted with size class 31-35 mm representing an unpopular intermediate category.

Scraper length/breadth ratios were computed for the total Haaskraal shelter and kraal sequences. No strongly observable trends were noted indicating that scraper length/breadth ratios remained stable over time. This is because scrapers tended to be more 'bulky' in the upper levels of both excavations without necessarily affecting the proportions of length to breadth.

BACKED ARTIFACTS

At Haaskraal shelter and kraal excavation backed artefacts are found mostly in the lower levels of the sequence, in pre-ceramic and undecorated grass tempered levels. Their occurrence is

recorded in artefacts summary sheet (appendix A). At Haaskraal kraal excavation, the mixing in the upper levels of the deposit causes few backed bladelets above level 6, but these increase in frequency below level 8 towards the beginning of the ceramic period. At this point backed elements marginally outnumber scrapers. At both Haaskraal and Volstruisfontein, the depth of pre-ceramic material is minimal with a correspondingly small artefact sample. This means that very little can be said about long term changes in pre-ceramic times apart from descriptively quantifying the sample obtained from these 2 excavations. It is of interest to note that no segments were recovered from the Haaskraal and Volstruisfontein excavations. Only 2 were recovered from Haaskraal kraal excavation. This indicates that most of the pre-ceramic material is less than 3500 years old (J. Deacon 1984) or roughly equivalent to Sampson's (1972) phase 4 and 5 of the interior Wilton.

Dimensions of backed artefacts are presented in appendix B provenances are presented in appendix A.

Backed bladelets were analysed according to the method described by H.J. Deacon (1976) and Humphreys and Thackeray (1983). Some 7 classes of backed bladelet were recognised from this site. These are presented in artefact summary table (appendix A). Mean dimensions of measurable samples are presented in appendix B. Artefact frequencies per backed bladelet class were not high enough nor consistent enough per level to determine whether there were any changes in size or form over time. Numerical data from Haaskraal indicate that Class D and Class E (backed points and

segmented backed bladelets) were most common in the assemblage. All these artefacts were made from lydianite.

Awls are not found in Haaskraal shelter and show low frequencies from the kraal excavation. The example that occurs in level 4 at the kraal excavation is considered to be out of context as the other 3 were found in pre-ceramic levels. Lydianite is the raw material used (see artefact summary table - appendix A).

Drills. A single lydianite drill was recovered from level 8 at Haaskraal shelter. This tool type is poorly represented from the kraal excavation with 4 artefacts recovered from between levels 1 and 9 (see artefact summary table - appendix A).

Segments. No segments were recovered from the shelter excavation while 2 were recovered from level 9 at the kraal excavation. Both of these were less than 10 mm in length and were made from lydianite.

Miscellaneous backed pieces. A small number of artefacts showed minimal backing in places and could not be included within the above categories.

TANGED POINTS

Haaskraal shelter produced 2 triangular shaped points with basal tangs. In both instances the points are incomplete in that the

tips have snapped off. Backing is clearly evident along the tangs and shoulders of the artefacts that must have originally been made on flakes of lydianite. Within the shelter both these specimens were found immediately above bedrock which means that they were deposited between 1200 and 1900 years ago. A further 6 tanged points were excavated from below level 4 at the kraal excavation.

ADZES

Vertical provenances of adzes are of particular interest at Haaskraal shelter. They occur without exception in deposits associated with pre-ceramic times and early undecorated grass tempered pottery. In several instances, end scrapers have also shown evidence of adze retouch and usage along their sides. These were also confined to older deposits. The Haaskraal kraal excavation produced adzes mainly from level six and below, thus replicating the tendency within the shelter. All adzes were made from lydianite.

UTILISED/RETOUCHED PIECES

It was originally expected that the frequency of flakes, bladelets and chunks with marginal retouch and or visible utilisation would increase in the decorated ceramic levels as a consequence of the decrease in formal tools. The results from Haaskraal reveal that this is not the case. Within the shelter as well as the kraal excavation the frequency of these artefacts appear to have increased along with the increased usage of formal tools below level 7. Lydianite was the preferred raw material

with siltstone making up less than 11% of the total. It must be borne in mind that the figures for this artefact category presented in appendix B are based on what can be determined by naked eye examination.

GRINDING SURFACES

Upper and lower grinding surfaces were excavated from both the kraal and shelter. Lower grinding surfaces consisted of large dolerite and, less commonly, siltstone slabs with round wear patches in either one or both sides. Upper grinding surfaces were rarely of river pebble origin but more usually of roundish chunks of dolerite.

OTHER

Decoration materials (red ochre and specularite) were virtually nonexistent at Haaskraal. Other miscellaneous artefacts recovered included the butt end of an Early Stone Age weathered siltstone hand axe from level 5 of the kraal excavation. Several 'Middle Stone Age' artefacts including a large retouched flake and blade were recovered from pockets of hardened deposit close to bedrock at Haaskraal shelter. Three 'Middle Stone Age' flakes were recovered from the lowest level excavated (11) in the kraal excavation

WASTE

RAW MATERIAL USAGE

The formal tools thus far described from Haaskraal kraal and shelter were almost universally made from lydianite. The waste from both these excavations show some highly significant patterning in that after the appearance of decorated ceramics, one particular raw material type gained popularity.

Raw materials used at Haaskraal included some 8 different types. Lydianite and siltstone were most commonly used with lydianite making up some 70% of the total pieces. Siltstone, used more often in later levels, make up some 20% of the total. Dolerite (from which occasional flakes and rubbing surfaces were constructed) make up less than 4%, while agate, chert, porcelainite, quartz and quartzite combined accounted for no more than 10% of the total sample. While most of the raw material types retained a very low baseline usage throughout the sequence, it is interesting to note that siltstone usage increased along with the adoption of grass tempered pottery. Percentage usage per level was calculated individually for each square meter excavated, revealing that the trend could be confirmed throughout the shelter. Square E (containing the deepest deposit within the shelter) showed that at level 9 siltstone made up 15% of the raw material used. Siltstone usage at level 7 had risen to 45% and was dominant by level 5. This trend is manifested as a gradual increase at the kraal excavation with siltstone usage climbing from less than 10% at level 9 to some 40% at the top of the sequence. It may be noted that comparatively few siltstone

artefacts showed visible utilization although their presence is indicative of some purpose. It is suggested that they were used as ad hoc cutting tools which were quickly disposed of before visible utilization could appear. Raw material usage at Haaskraal is documented in appendix B.

WHOLE WASTE

Waste from Haaskraal (excluding cores) was analysed in terms of whole flakes and bladelets, chips and chunks. Since the majority of bladelets were less than 10 mm in maximum dimension, the sample was not subjected to arbitrary division in terms of length. Further subdivision of the already small sample may have marred chances of determining visible trends.

Waste frequencies indicate that levels 1 - 3.5 are comparatively depleted of stone artefacts. Counts increase from level 4 to the lower levels of the sequence within the shelter (see appendix B). Levels 1 -3.5 within the shelter are associated with the presence of rocker stamp decorated grass tempered pottery and artefacts of European origin. It is apparent that during this time, stone tool manufacture was minimal and informal compared with earlier levels. It is possible that iron had reached the hands of indigenous people, diminishing the need for stone artefacts, though no evidence of this is preserved in the deposit at Haaskraal or Volstruisfontein.

A noticeable trend from both Haaskraal shelter and kraal excavation is the decrease in bladelet production after the advent of decorated ceramics. Between levels 8 and 12 within the shelter bladelets (almost entirely of lydianite) form a significant proportion of the whole waste (see square E, fig 16). The trend was not as well defined at the kraal excavation with bladelet frequencies increasing gradually after level 6 (fig 17).

CORES

The distribution of cores at both Haaskraal kraal and shelter reflect the tendency for increased stone artefact usage below the top 4 levels of the sequence at both excavations. Cores were analysed in terms of the character of the blanks that they produced (functionally) rather than by their physical form. Cores from Haaskraal fell into 2 technological forms - prepared platform and irregular. The detachment scars on cores were examined in order to establish whether primarily flakes or bladelets were removed. On this basis cores were divided into 4 subclasses: irregular blade core and irregular flake cores, or prepared platform blade cores and prepared platform flake cores (appendix B).

The results revealed that in both excavations irregular flake cores of lydianite and siltstone were marginally dominant. The majority of cores from siltstone fell into the irregular flake core category (only 1 prepared platform core of siltstone origin). Few irregular cores produced bladelets whereas prepared

platform cores produced mainly bladelets. Unlike irregular cores, prepared platform cores were made almost exclusively from lydianite. Most of this class were exclusively used for bladelet production. It is noteworthy that within the shelter the majority of prepared platform cores occurred below level 7. This trend is confirmed (although not so acutely noticeable) above level 6 of the kraal excavation. This is in keeping with the revelation that bladelet frequencies were higher in the lower levels of both kraal and shelter excavations. In contrast, irregular cores of both lydianite and siltstone persisted throughout the deposit at the kraal and shelter excavations. Irregular cores occur almost exclusively between levels 1 - 6 within the shelter.

Other core classes at Haaskraal are poorly represented. These include 3 natural platform cores, a single disc core and a bipolar core. The minimal presence of the bipolar cores is likely to be a reflection of the large sizes of raw material available in the region of Haaskraal shelter.

VOLSTRUISFONTEIN

FORMAL TOOLS

SCRAPERS

The Volstruisfontein assemblage contained a small sample of some 15 scrapers. Compared with the Haaskraal sample the amount of information that can be afforded from a sample of this size is comparatively modest. End scrapers accounted for the majority of

the sample with double end, end and side forms making small contributions. The single double end scraper was found close to bedrock in level 11. Such a provenance compares well with those of double end scrapers excavated from Haaskraal (appendix A, appendix B).

BACKED ARTEFACTS

The lithics from Volstruisfontein included 5 backed bladelets. The majority of these were class D straight backed points while single class E backed bladelets and class C proximal discards occurred. These tools were distributed between levels 3 and 14 which means that some are considered to be out of context (appendix A).

Drills. No drills were recovered from Volstruisfontein.

Awls. Volstruisfontein produced 4 such items made from lydianite, mostly from the upper levels.

TANGED POINTS

A single triangular lydianite tanged point with backing on the tang and shoulders was recovered from deposit close to bedrock.

UTILISED/RETOUCHED PIECES

A comparatively large number of utilised retouched flakes, bladelets and chunks were recovered from throughout the deposit

at Volstruisfontein. Over 95% of these were made from lydianite and the remainder from siltstone. It is of interest to note that the frequency of utilised/retouched pieces is higher than that of formal tools at this site, which contrasts with the situation at Haaskraal. The insecurity revolving round the preservation of the vertical sequence at Volstruisfontein prohibits further comment (appendix B).

WASTE:

RAW MATERIAL

Lydianite, siltstone, dolerite and chert were used in stone artefact manufacture. Lydianite was always the favoured raw material making up 90% of the stone usage in all levels excavated. Siltstone (although readily available) was of minimal importance in all levels while chert and dolerite accounted for less than 1% of the totals (appendix B).

WHOLE WASTE

Artefact densities for squares A, B, and C are variable. Squares B and C revealed that densest concentration of waste occurred in the centre of the sequence in square B and towards the top of the sequence in square C. Square A (which contained all the historic material excavated at this site) was the only part of Volstruisfontein which showed any patterning that was consistent with the findings from Haaskraal shelter. Density plots for square A revealed that the first 6 levels (in which historic finds occurred) were depleted of stone artefacts - frequencies

rising substantially from level 7 downwards. It is suggested that square A contained the only remaining intact sequence (appendix C). Bladelet frequencies increased in proportion to other waste in square A from level 8 to level 11. This is consistent with the previous findings from Haaskraal. Squares B and C did not replicate the pattern.

CORES

A small sample of cores was recovered from Volstruisfontein. The majority of these had been made from lydianite, siltstone accounting for less than 5%. The analysis applied was the same as that at Haaskraal. Irregular and prepared platform cores accounted for equal proportions of the sample. The irregular cores were all used in flake construction only. The majority of prepared platform cores had been used for bladelet production while a small proportion of them had produced mainly flakes. Bladelet cores tended to occur below level 8, but it should be noted that the sample used to generate this statement is dangerously small. Other core forms include a single bi-polar lydianite core (appendix B).

SUMMARY

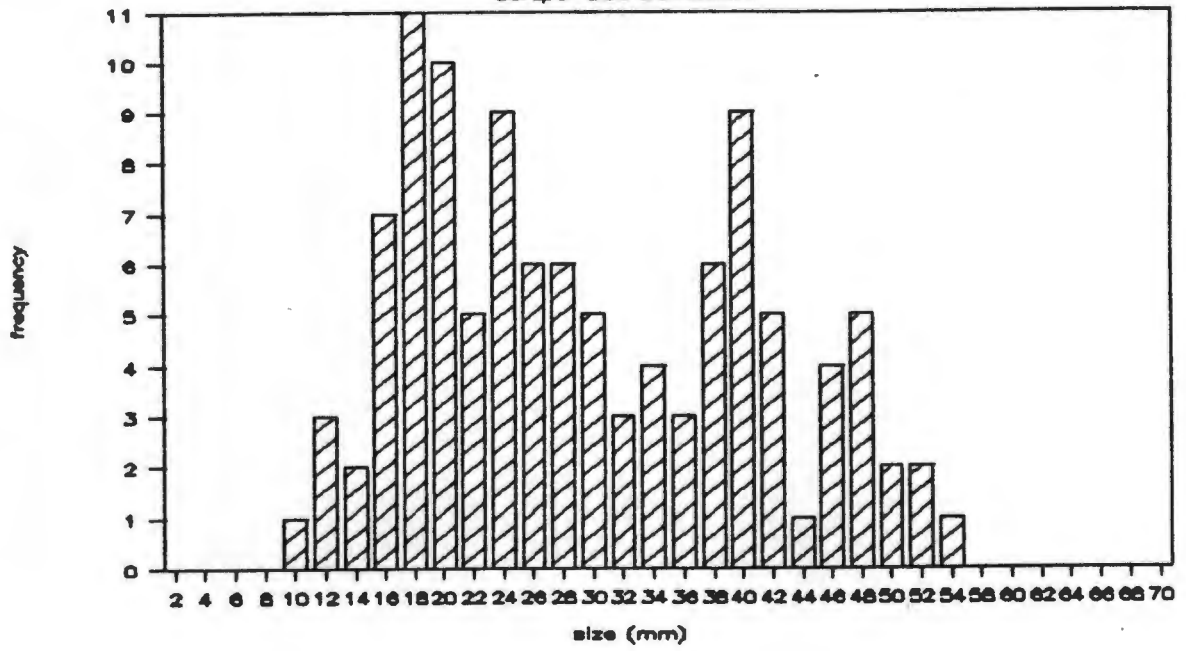
At Haaskraal the preceramic and early ceramic levels contain a lydianite dominated microlithic assemblage characterised by a variety of backed artefacts, small and large scraper forms, adzes and bladelet rich waste. The advent of decorated grass tempered pottery is linked with a decrease in the diversity of these artefacts. Adzes, small scrapers and backed pieces disappeared

from the sequence. The waste contains fewer bladelets while siltstone gained importance as a raw material. During the European contact period stone tool production diminished.

At Volstruisfontein the assemblage is rather less formal than at Haaskraal but the trends are broadly replicated. For reasons as yet unknown, siltstone at the former was not important as a raw material in the later levels.

HAASKRAAL KRAAL EXCAVATION

scraper size distribution



HAASKRAAL SHELTER SCRAPERS

scraper length distribution

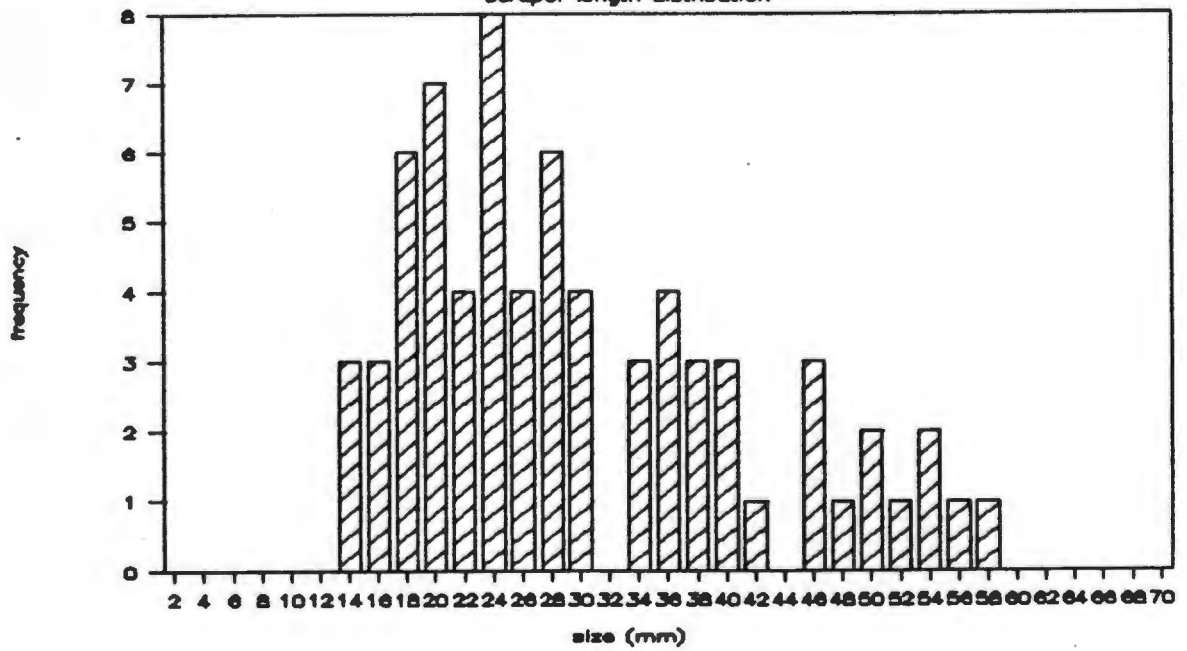


FIGURE 15 Haaskraal scrapers - length distribution.

HAASKRAAL E. WASTE (shelter excavation)

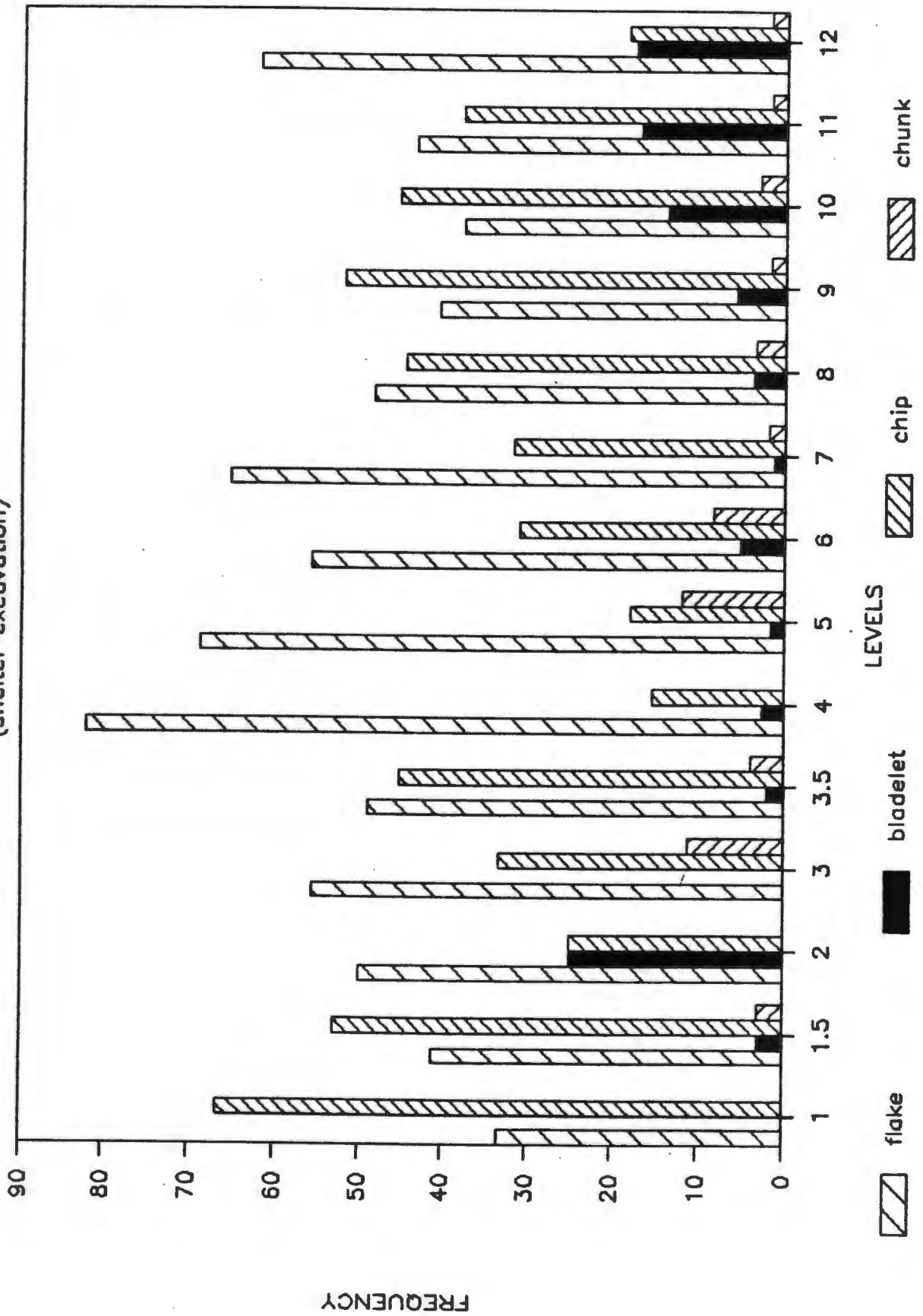


FIGURE 16 Whole waste frequencies per level.

HAASKRAAL O. WASTE.

(kraal excavation)

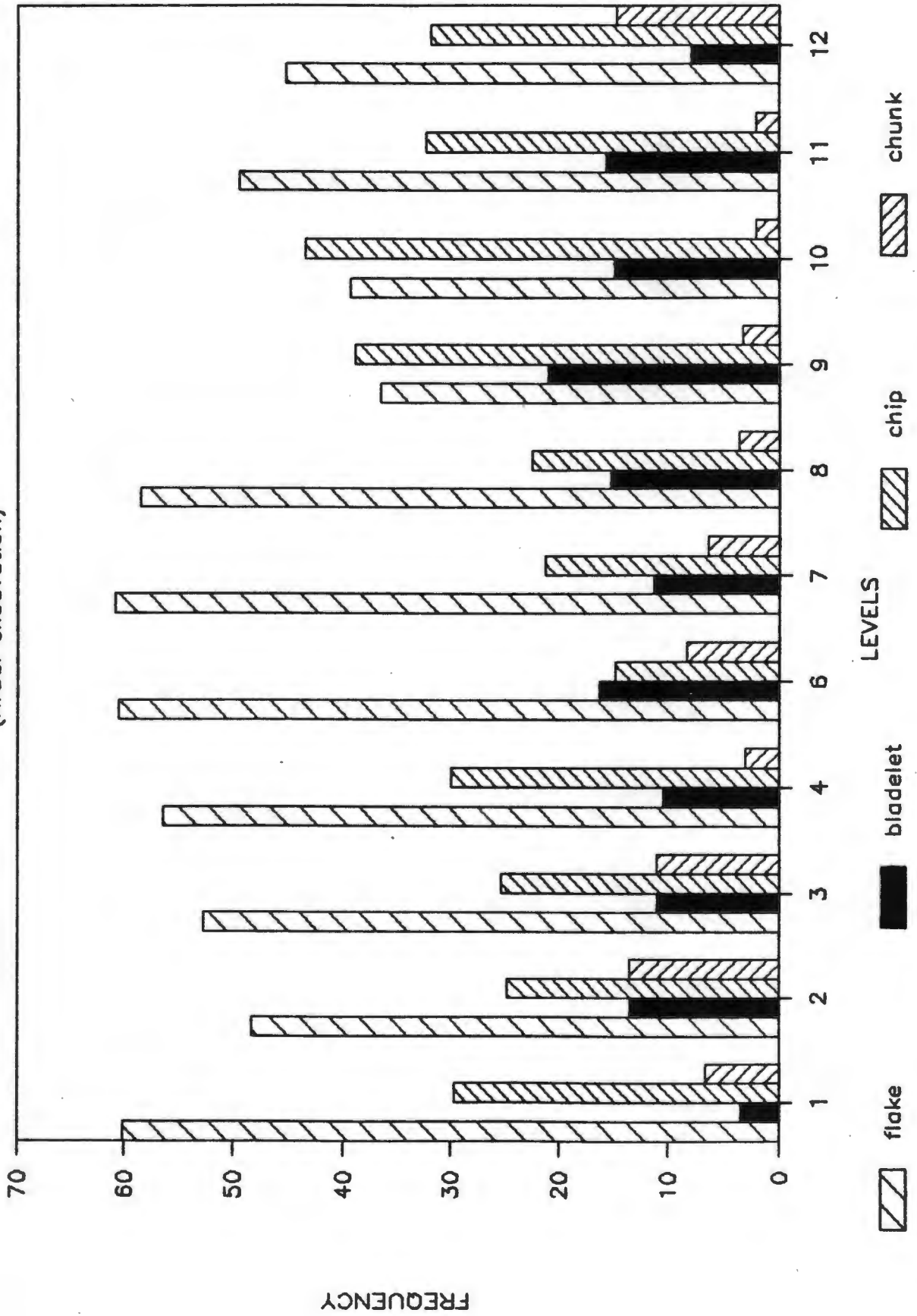


FIGURE 17 Whole waste frequencies per level.

CHAPTER 11

FAUNA

INTRODUCTION

The preservation of fauna was poor at Volstruisfontein. Only a few highly fragmented bones were found. At Haaskraal shelter preservation was rather better, especially in the western half where the deposit was protected from the rain. Very little bone was found in the exposed kraal excavation. In general, few bones are to be found on open sites in the research area. Faunal remains from Haaskraal and Volstruisfontein shelters have not been analysed for species composition. Instead the collection was examined for small and large domestic stock as well as Antidorcas marsupialis.

It is suspected that the Khoi sherds that were found in levels 6-9 at Haaskraal shelter are of herder origin. If this is the case, there would be a good chance that the remains of domestic stock would be found in association. For this reason the sample was examined for the presence of domestic stock.

A sequence of Antidorcas marsupialis (springbok) bones was selected from the Haaskraal shelter deposit with a view to establishing an indirect means of finding out whether there were any changes in vegetation cover associated with the herder levels or thereafter. The method of analysis used is the measurement of

stable carbon isotopes as described by Van der Merwe (1982) and Sealy (1986).

DOMESTIC STOCK

No remains from large stock (cattle) were recovered from the excavations. Remains of ovi-caprines were mostly recovered from the upper levels of Haaskraal shelter. The majority of ovi-caprine bones were found in square F between levels 2 and 4. Some of these consisted of near-articulated ribs and metapodials. Several phalanges were found between levels 2 and 3.5 in square E. In square A, ovi-caprine bones were found in deeper levels - namely level 6. This was to be expected as the sherd refitting program revealed that the deposit had slumped downwards towards the back of the shelter causing younger artefacts to occur in deeper levels. In essence, no remains of small stock could be safely related to levels containing Khoi sherds.

Preliminary indications are that small stock remains are associated with levels containing rocker stamp pottery. It is possible that these relate stock stolen from colonists during the expansion of the northern frontier (Van der Merwe 1987, Penn 1986). (Faunal remains from Haaskraal shelter will not be formally tabulated until a complete MNI and species analysis has been obtained).

ANTIDORCAS MARSUPIALIS (SPRINGBOK) AS AN INDICATOR OF VELD CHANGE
IN THE KAROO

INTRODUCTION

Stable carbon isotope measurement is a useful method of testing and quantifying the relative proportions of C₄ (grasses) plants as opposed to C₃ (bushes and trees) plants in the diets of animals. The different types of photosynthetic cycles in these two plant groups give rise to differing ¹³C/¹²C ratios. These characteristic ratios are replicated to a degree as 'isotopic signatures' in the tissues of herbivores and other animals higher in the food chain. This principal (described in detail in Van der Merwe (1982)) provides the basis for the examination of the Haaskraal sample.

RATIONALE

Apart from the winter rainfall regions and high alpine grasslands of South Africa, most of the grasses are of C₄ type. Throughout the country, most trees and bushes are C₃. In the Karoo over 90% of grasses are of the C₄ variety in contrast to the bushes that are C₃ (Vogel 1978). A mixed feeding herbivore from this area would theoretically produce an isotopic signature that would reflect the relative proportions of grasses as opposed to bushes in it's diet. In reality many herbivores tend to establish preferences when circumstances afford them the opportunity (Smithers 1983).

The springbok (Antidorcas marsupialis), a mixed feeder, was present in the Karoo in large numbers in the past (Skead 1980). They are quite common in the research area today. If any gross

changes in the grass cover of the Karoo had occurred in the past, this should be represented as a change in the isotopic signature of prehistoric springbok bones. Acocks (1953) has suggested that much of the north eastern parts of the Karoo were grasslands in the past. These changed to shrublands subsequent to the introduction of European farming. If prehistoric springbok were limited to eating C_4 grasses, this would be manifested as a ^{13}C value of between -6% and -14%. . In contrast, if the animals were including many C_3 bushes in their diet, their ^{13}C values would range from -14% to -22% depending on the quantity of bushes or grasses included in the diet (Vogel 1978).

METHOD

In order to test whether changes in grass cover had occurred in the past in the region of Haaskraal shelter, a series of springbok bones were selected from the deposit and subjected to $^{13}C/^{12}C$ analysis. In terms of Acock's (1953) hypotheses, it was expected that a positive shift in the isotopic signature of springbok bones would occur in prehistoric times if grasses formed a major part of their diets.

As far as was possible, a bone sample was collected from every level in square E. Preservation below level 8 (600 B.P.) in square E was poor with the samples unable to produce enough collagen for the tests. In addition, a small sample of pure grazers as well as ovi-caprines were also selected for comparative purposes. Modern control samples of springbok and

sheep bone were collected from the Richmond district as well as on Zoetvlei farm close to Haaskraal shelter.

RESULTS

The ^{13}C values from the sequence of springbok bones from Haaskraal shelter are more negative than expected. In addition there was no apparent shift in the signatures over time (table 3). This is confirmed by a regression calculated on the values over time. The mean ^{13}C value for bones from all levels (2-10) is -18.8%. . This indicates that prehistoric springbok from Haaskraal shelter were including a high percentage (85%) of C_3 plants such as karoo bushes in their diets. The results do indicate that some individuals (those from level 3 and level 7) enjoyed a mixed diet (70% bushes) whereas an individual from level 8 (about 600 B.P.) was subsisting off a diet consisting of over 90% C_3 bushes. The general trend is that springbok living between the present and 600 B.P. show evidence of a mixed diet with a strong orientation towards browsing.

^{13}C values of modern springbok bones collected from Huchinson and Richmond (eastern Karoo) as well as the vicinity of Haaskraal shelter are very similar (mean = -18.1%) to those of the prehistoric samples. ^{13}C values for modern springbok from the grassier regions of the Orange Free State are more enriched (mean = -16.1 % or +-65% of diet consisting of bushes) These animals were including a higher proportion of grass in their diets. Modern springbok bones collected in the South Western Cape show ^{13}C values in the region of -21%. . This is because most

plants that grow in the winter rainfall areas of the Cape are of the C₃ variety. The samples from Haaskraal shelter are only slightly more positive indicating that the C₄ or grass component of their diets was quite small. The small sample of prehistoric ovi-caprine bones from Haaskraal shelter show similar readings to the springbok. Bone samples from pure grazers (Alcelaphus buselaphus (hartebeest) and Equus sp) show positively inclined results (-10.2%) indicating that there was enough C₄ grass to support them (table 3).

NITROGEN ISOTOPES

Sealy et al (1987) have suggested that analysis of nitrogen isotope (¹⁵N/¹⁴N) ratios can be used as indicators of nutritional or water related stress in animals. All the springbok bones from Haaskraal show relatively high values (10.1% - 11.8%) that can be taken as an indicator of relative stress. It is of interest to note that ¹⁵N/¹⁴N values for ovi-caprines are rather lower ranging between 8.7% - 8.2%. These readings may reflect the fact that shepherds who were tending the animals made sure that they were watered regularly.

CONCLUSION

The results suggest that the diets of springbok that were hunted in the region of Haaskraal shelter have not changed very much during the last 600 years. There were certainly a considerable quantity of bushes in the research area at this time as well as enough grasses to support large bovids dependent on grazing. The C₁₃ values for the large grazers indicate that they were not

eating C₃ high alpine grasses that exist in the Sneeuberge close to the research area.

This exercise, because of its small samples and low time resolution, has not succeeded in detecting any factors that may be construed as short term drought cycles and alternating periods of increased rainfall that would have attracted herders to the Zeekoe Valley. It is quite possible that a study based on larger regional control samples as well as a broader base of securely dated archaeological samples would succeed in isolating climatic and ecological events. This particular study does provide a general picture of the Karoo over the last 600 years. The Zeekoe Valley looks very similar today as it did in the past. This is in contrast to Acock's (1953) assertion that the Karoo was a sweetveld grassland before the advent of European farming.

TABLE III

STABLE CARBON AND NITROGEN ISOTOPE VALUES FOR Antidorcas marsupialis, OVI-CAPRINES FROM HAASKRAAL SHELTER.

LAB.NO.	LEVEL	SQUARE	CARBON	NITROGEN	%C3	%C4
<u>Antidorcas marsupialis</u>						
2185	2	I4	-20.9		100	0
2187	3	I8	-16.3	10.7	70	30
2186	3.5	E9	-20.6	11.7	97	3
2189	4	E14	-18.1	11.8	80	20
2190	5	I16	-17.9	10.07	80	20
2190	5	I16	-18.1		80	20
2177	6	E6	-18.1	10.7	80	20
2184	7	E5	-16.9	11.1	70	30
2191	8	E12	-22.7		?100	?0
2192	10	A14	-18.3	10.4	80	30
<u>Ovi-caprines</u>						
2183	6	A12		8.7		
2193	3.5	F4	-19.5		95	5
2183	6	A12	-17.5	8.6	76	24
2194	8	A11	-15.1	8.2	80	40
GRAZERS: HAASKRAAL						
<u>Alcelephus busalephus</u>						
	2	E10	-7.2		10	90
<u>Equus sp.</u>						
	8	F9	-12.1		40	60
	3	E14	-14.3	5.9	55	45
MODERN <u>Antidorcas marsupialis</u>						
ORANGE FREE STATE						
1836		SOETDORING	-14.7		57	43
2173		SOETDORING	-14.6	9.2	58	44
2176		SOETDORING	-17.1	10	75	25
2175		SOETDORING	-17.8	11.4	80	20
KAROO (CAPE)						
2195		ZOETVLEI	-17	11	75	25
2059		RICHMOND	-15.5	9.8	62	38
2171		RICHMOND	-18.8	10.5	85	15
823		HUTCHINSON	-20	13.3	95	5
720		ASPOORT	-19	11.8	85	15
822		KIMBERLEY	-18.4	9.8	80	20
SOUTH WESTERN CAPE						
819		CHURHAVEN	-20.9	16.3	100	0
820		CHURHAVEN	-21.2	15.4	100	0
821		CHURHAVEN	-21.6		100	0
MODERN <u>Ovis aries</u>						
2071		KASTEELBERG	-17.4*	14.9	76	24
2072		KASTEELBERG	-19.5*	13.7	90	10
2135		LANGKLOOF	-19.1	8.82	86	14
2172		RICHMOND	-14.8	10.51	58	42

* Supplementary feeding possible

CHAPTER 11

CONCLUSIONS

INTRODUCTION

The excavations at Haaskraal and Volstruisfontein Late Stone Age sites were the first of a series of similar excavations conducted in the Zeekoe Valley. Several shelters have now been excavated (Sampson, Hart, Wallsmith and Blagg in. prep.), ceramic sequences have been described but as yet lithic analyses have not been completed. It is hoped that the results presented in this project will form grounds for comparison once the analytical results of Sampson's latest excavations are available.

Haaskraal and Volstruisfontein have provided answers to many problems posed during the survey and collection phases of the ZVAP. In doing so further questions have been raised which will only be resolved once more radiocarbon dates are available from other excavations in the research area. The excavations at Haaskraal and Volstruisfontein may be considered to be regionally related to those conducted earlier by Sampson (1972) in the Middle Orange River. Although there has been rather an hiatus in investigation at field work level in the central interior between the early '70s and the beginning of the ZVAP in 1979, theoretical debate over the status of industries delineated by Sampson (1972; 1974) continued. The excavations and results described in this project have allowed a re-examination of both

the time period and issues around which some of these debates have taken place. A portion of this chapter will thus be devoted to making a retrospective comment on Sampson's (1972) original findings from the Orange River as well as Humphreys' (1979) re-examination. Haaskraal and Volstruisfontein findings will be summarized and discussed in terms of their relevance to the results of the ZVAP.

SUMMARIZED FINDINGS FROM HAASKRAAL AND VOLSTRUISFONTEIN

In summary, 4 major events were manifested in the sequences at Haaskraal shelter and kraal excavation. These were replicated to a lesser extent at Volstruisfontein, disturbance rendering the deposit there more difficult to interpret.

1. THE INTRODUCTION OF GRASS TEMPERED POTTERY

The first major event was the introduction of plain grass tempered pottery to a mainly microlithic assemblage at 1100 B.P. On the evidence of the lithics at Haaskraal this was accompanied by little alteration in the prevailing stone tool assemblage which was lydianite dominated and rich in small and large scraper types as well as backed artefacts. Unlike the sites excavated in the Middle Orange River region (Sampson, C.G. & Sampson, M. 1967; Sampson 1967b; 1967c), few of the artefacts had been made from siliceous rocks of the Orange River gravels.

2. THE HERDER INCURSION

A second event took place sometime between 600 and 1100 B.P. This involved the probable penetration of the higher reaches of the Karoo by transhumant pastoralists who were responsible for the construction of the several hundred stone kraals that have been so far recorded in the Zeekoe Valley. The excavation of such a kraal at Haaskraal is not reliably dated in absolute terms, but the excavation revealed that the kraal predated the advent of decorated grass tempered pottery. The distribution of Khoi sherds in the research areas corresponds with the geographical distribution of stone kraals (Sampson 1984b). At Haaskraal shelter Khoi sherds marginally postdate the introduction of grass tempered pottery. Associated dates place their occurrence between 1100 and 600 B.P. which indicates that the kraal was constructed at this time.

3. THE APPEARANCE OF DECORATED GRASS TEMPERED POTTERY

The third major event happened shortly after or simultaneously with the deposition of Khoi sherds at Haaskraal. Grass tempered pottery became highly decorated with a wide range of motifs represented in stratified order at Haaskraal and more recent excavations in the Zeekoe Valley (Sampson, Hart, Wallsmith and Blagg, in prep.). Woodborne (1986) has shown that this grass tempered decorated pottery sinters at a lower temperature than earlier undecorated grass tempered pottery. The implication of this is that the makers of decorated grass tempered pottery had acquired a technique that would enable them to achieve this -

either self initiated or borrowed from the makers of Khoi pottery who were in the area shortly prior to this time.

At the same time as the advent of decorated grass tempered pottery changes in the lithics were noted. These are specifically, the disappearance of double end scrapers and other smaller scraper forms, adzes and a variety of backed pieces. The waste analysis revealed that there was less concentration on bladelet production and that prepared platform cores of lydianite were rarely made after this time. It is also apparent that people were no longer so discriminating in their choice of raw material in the sense that usage of the softer (but more common) siltstone more than doubled. After this, end scrapers were the only formal stone tools that persisted through to historic times. Bone points make an appearance in the sequence at about this time indicating an overall tendency for bone points to replace stone points during the ceramic period. The appearance of decorated OES fragments is associated with the advent of decorated grass tempered pottery.

4. THE APPEARANCE OF ROCKER STAMP POTTERY

The final event manifested at Haaskraal and Volstruisfontein shelters is the advent of rocker stamp pottery dated to just after 300 B.P. This type of motif tradition was associated with the presence of historic artefacts which included glass trade beads, porcelain and glass. A single rocker stamp grass tempered bowl recovered from Haaskraal is highly decorated from rim to base. The frequency of decoration on rocker stamp pottery is more than twice that from other levels. The rocker stamp levels at Haaskraal were the only levels to contain the remains of domestic sheep/goats which occur very late in the sequence. Stock theft from European farmers was one of the causes of bitter conflict during the latter half of the 18th and the beginning of the 19th centuries (Van der Merwe 1937). During the historic period, stone artefact manufacture diminished considerably which has led to the proposition that during historic times metal may have been available for use by people who made rocker stamp pottery.

Haaskraal shelter has revealed evidence to suggest that the makers of rocker stamp pottery were living in the Zeekoe Valley well into the occupation of the region by European farmers. Before the days of extensive fencing of farm property, European farmers employed shepherds who guided the flocks from stock post to stock post, thus practicing a form of rotational grazing (C.F. Rubidge, pers comm). Haaskraal shelter was once walled up so as to form a stone shepherd's hut. Rocker stamp pottery was confined within the tumbled foundations of this structure

indicating that indigenous people were at one stage living behind it's walls. As yet it is not known whether the site was occupied by indigenous people employed as shepherds, who continued to construct grass tempered pottery during their time of European employment. Alternatively, indigenous people were moving into the structure after it had been vacated by shepherds in European employment. Zoetvlei farm house, which is some 3 km from the shelter, was constructed in 1847 (F. Rubidge pers. comm.). Other ruins of historic farm houses are quite common in the area but these are not yet dated. Until historic farm houses have been dated, together with the time period of usage of associated stock posts, it will not be possible to obtain an accurate date for the construction and occupation of the Haaskraal stock post structure. It is expected that this will be somewhat later than the early 19th century, a time by which the Zeekoe Valley was cleared of San (Van der Merwe 1937).

HAASKRAAL, VOLSTRUISFONTEIN AND THE ZVAP

RELATIVE DATING OF SURFACE SITES

The 1000 Smithfield camps that have been measured and collected by the team, as well as the 4000 other Smithfield sites (Sampson and Bousman 1985; Sampson 1988a), were found to form clusters close to water points. The size and position of these camps have been the basis of studies of seasonality and land use by prehistoric people (Sampson and Bousman 1985; Sampson 1988b).

The clustering and size of Smithfield sites is difficult to subject to analysis without gaining insight into the problem of

site superimposition. Large Smithfield sites situated in selected topographical locations close to water sources may have experienced many dozens of partial or complete reoccupations by prehistoric people. This would affect site area as well as the density of artefacts. The same may apply to sites close to water sources. Without temporal control there is no way of determining the sequence of site deposition in a given location. The preliminary excavations in the Zeekoe Valley have revealed that archaeologists working in this area are in the unique situation of being able to determine relative dates of occupation of surface sites over the last 1300 years. Once further excavations have been completed, the methodology for relative dating on the basis of lithic content and decorative motif could be refined.

The 4 events associated with the last 1100 years at Haaskraal and Volstruisfontein shelters have characteristic artefact associations. These could be used as a guide for the relative dating of surface sites in the Zeekoe Valley. In addition, information from other excavations (Sampson, Hart, Wallsmith and Blagg, in prep) can be used as an even finer guide in that the decorated non-rocker stamp pottery has revealed evidence of 4 or more superimposed decorative motifs that have been associated with group territories (Sampson 1988b). Once these motif sequences have been determined for different parts of the Valley, it should be possible to relatively date Smithfield surface camps within well resolved temporal ranges and enable researchers to gauge the length of usage of particular site locations.

ROCKER STAMP POTTERY AND THE FINAL LATE STONE AGE

Rocker stamp pottery was recovered throughout the collected zones of the Zeekoe Valley (Sampson 1988b) which meant that it did not serve as a particularly useful tool for determining group territory by means of motif analysis. The association of this decorative type with the historic period indicates that historic influences caused San to cease to use decorative motifs as a group signature, that the turbulence of the historic period resulted in cultural breakdown and the disruption of previously delineated territories. Van der Merwe (1937) and Forbes (1965) indicate that the 'Bushmen' of the Sneeuherge formed a united front against the Europeans. They launched attacks in bands comprising over 100 members. Large numbers of European stock were driven away during the 60 odd years of the duration of this war. It is likely that, during the period of early European occupation of the Sneeuherge, San altered their economic base in order to cope not only with the prevailing conflict situation but also with massive and vulnerable flocks of European owned stock. Unity against a common enemy brought about the need to feed large groups of people which compounded the requirement for organized stock theft. These factors would have resulted in a breakdown of the prevailing system of group territories as San banded together to adapt to the new circumstances. It is suggested that the universal rocker stamp pottery is an archaeological manifestation of this situation.

Results from Haaskraal have indicated that pottery found in the rocker stamp levels was highly decorated in comparison to levels

lower down in the sequence. Parkington, Yates, Manhire and Halkett (1986) have suggested that increased social and ecological stress in the Southwestern Cape after 2000 B.P. is archaeologically manifested in the form of increased ritual and painting. If potsherd decoration among the San of the Zeekoe Valley has ritual connotations, the increased use of decoration on rocker stamp pottery may be a similar phenomenon. It is possible that the need for increased social unity during the conflict situation is symbolized in the intense and ubiquitous use of the rocker stamp motif throughout the Zeekoe Valley.

Burchell's (1822-24) account of his travels through the Sneeuberge and the area of current research indicates that the region as far as the northern boundary of the Cape was clear of free 'bushmen'. Very little is known about the ultimate fate of the San in this area - were they totally annihilated or did groups lead isolated marginal existences before gradually being incorporated into the prevailing system of farm labour?

The comparatively short sequence of decorated non-rocker stamp grass tempered pottery from Haaskraal and Volstruisfontein, as well as the latest excavations in the Zeekoe Valley, have helped to provide a chronological sequence of decorative motifs which in turn provide time depth to the patterns of group territories described by Sampson, Hart, Wallsmith and Blagg (in prep). The samples from Haaskraal and Volstruisfontein alone would not have been enough to accomplish this as frequencies of the rarer forms of decorative motif are too low. The comparatively short

duration of the sequence of non-rocker stamp pottery (600-250 B.P.) supports Sampson (1982) in his assertion that group territories that are preserved on the landscape can be archaeologically detected. The expected problems of superimposition of group territories hindering research is partially solved by the fact that the pottery sequence displaying these traits is fairly short. The time period during which superimposition could have taken place is limited.

HERDING IN THE ZEEKOE VALLEY

INTRODUCTION

The plain grass tempered pottery underlying the decorated levels does not lend itself to group territory studies without the aid of in depth physical examination of the sherds. Khoi sherds which occurred at the interface of decorated and undecorated grass tempered pottery also show few decorations. Haaskraal and Volstruisfontein demonstrated that the makers of Khoi pottery did not intrude into the time period of decorated grass tempered pottery but rather occurred at its onset. For this reason it would seem reasonable to conclude that the notion of decoration of grass tempered pottery occurred shortly after or as a result of the Khoi incursion. Little is known about the introduction of plain grass tempered pottery into the karoo. The presence of a Cape Coastal type lug close to the bottom of the Haaskraal pottery sequence may be reason to suspect that an earlier Khoi incursion may have taken place. This evidence is in need of replication. Another possible source of the technology, besides

independent development is the Iron Age community of the southern Highveld of the Orange Free State (Maggs 1976).

THE HERDER INCURSION

The thin horizons containing Khoi sherds at Haaskraal and, to a lesser extent, at Volstruisfontein shelters did not yield any associated lithic technology that appeared to be unusual in the sequence. It is quite likely that herders did not inhabit the shelter at Haaskraal at all if the shelter and area in front was used as a kraal. This would account for the scarcity of Khoi sherds and lack of sheep bone in the sequence. Webley's (1984; 1987) ethnographic studies in Namaqualand show that herders tend to camp some distance away from where their stock is kraaled. If this analogy is applied to the Zeekoe Valley, it could be expected that herders would have set up their camps away from the shelter where there was level ground suitable for the erection of mat houses. Any stock that expired through natural cause in the kraal-shelter would have been removed by the herders for disposal or consumption within the camp. Many of the kraals located in the research area are not associated with lithics at all. The probable cause of this was that the contemporary human occupation was situated some distance away.

The detection of herder occupation sites has always been problematic for archaeologists (Robertshaw 1979; Hart 1987). Apart from Smith's (1987) excavations at Kasteelberg in the Western Cape, archaeologists have as yet not managed to isolate an assemblage on open sites purely attributable to herders. A

regional analysis of lithics on surface sites in the Zeekoe Valley may succeed in delineating broad regional trends that correspond to the known distribution of Khoi pottery and kraals. If there is a specific lithic assemblage attributable to herders, an equivalent of the Khoi pottery, this should be visible on a regional basis.

The sequences from Haaskraal shelter indicate that the herder occupation of the Zeekoe Valley took place within a short and well defined time period - sometime between 1100 and shortly after 600 B.P. The occurrence of a single internally reinforced lug recovered from near the bottom of the pottery sequence (separated from other Khoi sherds by plain grass tempered pottery) could be taken as tentative evidence that the herder incursion may not have been a single event but rather a series of 2 or more separate incursions. This has implications for the distribution of diverse kraal forms in the Zeekoe Valley. Changing kraal forms - perhaps a manifestation of changing herding patterns from incursion to incursion, lie apparently unstratified on the landscape. Thus problems of conflation apply equally to kraals as to Smithfield sites. Archaeologists need to develop means to date these structures before in depth understanding of the herder incursions can be achieved.

THE HERDER INCURSIONS: CAUSES

A question that begs an answer is: what sequence of events caused or facilitated the herder incursions? Without reliable supplementary information archaeologists experience difficulty in

reconstructing cultural and demographic factors that cause people to move from place to place. This supplementary knowledge does not exist for the questions posed in this project. Available evidence tends to be environmental which does, however, help researchers understand some of the constraints limiting people's life styles.

The intensive historic occupation of the Sneeuberge gives credibility to the assertion that during periods of good rainfall the Karoo would have supported indigenous herders. Even during times of drought modern farmers experience little need to purchase supplementary feed for their stock. Extensive borehole usage ensures a continuous water supply, whereas natural springs tend to lose their strength during dry periods and droughts (F. Rubidge pers comm.) This latter observation would have had implications for surface water availability during prehistoric times. Herding people who were in possession of cattle would not have been able to move into the Karoo unless good rains had fallen leaving standing water and seasonal grasses. Keepers of small stock (browsers) would have fared better during drier times. It is historically known that herders living on both the Orange River (Engelbrecht 1936) and the Camdeboo plains (Mossop 1931) were in possession of cattle. Had conditions been reasonable there would have been little to hinder them from the higher reaches of the Zeekoe Valley.

Paleo-environmental reconstruction in the interior of Southern Africa have concentrated on the Pleistocene and Early and Middle

Holocene (Klein 1984; Tyson 1986). Very little is known about events during later times in the Great Karoo although experts are currently investigating this problem. Meadows and Sugden (1988) have detected an organic depositional period in vleis in the Nuwevelsberge at about 750 B.P. An increase in grasses indicating a moister period followed shortly, then rather drier conditions set in. This project suggests that herders (especially if in possession of cattle) entered the Karoo in response to a period of increased resource availability. The sequence of Antidorcas marsupialis stable carbon isotope readings from Haaskraal are reliable to 540 B.P. or the base of level 8 at Haaskraal shelter. In contrast to Acocks (1953) predictions, these results indicate dominantly shrub (bush) cover in the Zeekoe Valley since that time. This could actually be a result of the alteration of vegetational cover by prehistoric herding (a shift from grass to scrub) in an area very sensitive to the impact of grazing techniques (Roux and Theron 1987). Although paleo-environmental reconstruction of the last millennium in the Great Karoo is at an early stage, researchers should be aware that the current state of the Karoo biome may be due not simply to the activities of European farming as argued by Acocks (1953). It is suggested here that prehistoric herders had initiated the process of vegetational change several centuries before (see also Sampson 1986a).

DISCUSSION - HERDING

According to the results of the Haaskraal and Volstruisfontein excavations, herders penetrated the Zeekoe Valley far later than

the date predicted by Elphick (1977). Elphick considered the Zeekoe Valley to be an obvious corridor for early pastoralists en route to the Eastern Cape. If this were the case expected dates from the Zeekoe Valley would have to be in the region of 2000-1800 B.P. which is at least 500 years earlier than the dates obtained so far. This may be good reason to argue for the alternative route of movement to the Cape via the west coast, although further dates from the Orange River basin are sorely needed. The kraal survey that extended the area of known kraal distribution to the central Zeekoe Valley has refuted previous hypotheses that a mid valley herder frontier existed (Sampson 1984b; 1986b). As far as is known the herder occupation, although most densely clustered in the south western Zeekoe Valley research area, is wide spread to the extent that it exceeds the limits of the research area.

HAASKRAAL AND VOLSTRUISFONTEIN IN THE CONTEXT OF REGIONAL RESEARCH

INTRODUCTION

Sampson's (1972, 1974) reorganization of the regional sequence in the eastern interior of Southern Africa created a springboard for future research as well as a target for further debate. Sampson (1972) divided the Late Stone Age into 6 separate phases according to differences in toolkit composition throughout the sequence. Probably because most of the sites excavated by Sampson (1972) were fairly close to the Orange River, agate dominated the raw materials in the early phases (excluding phase 1) with lydianite being more widely used later on. Phases 2 - 5

were described by Sampson as being Interior Wilton, whereas phase 6 was given a separate classification - the Smithfield. The Smithfield differed from previous phases in that the backed component of the lithics disappeared, long lydianite end scrapers dominated the formal artefacts and heavily decorated grass tempered class A pottery was extensively used. Historic artefacts were common in Smithfield sequences. Phase 5 contained a backed element, a variety of scraper forms and grit tempered plain pottery. This phase was classified by Sampson (1972; 1974) as being the final phase of the Interior Wilton. The sequences from Haaskraal and Volstruisfontein fall roughly into phases 4, 5 and 6 of the old Middle Orange River sequence.

Humphreys (1972; 1979) has criticized both the 6 phase (Sampson 1972) and 3 stage (Sampson 1974) classification of the Late Stone Age. Sampson (1974) classified the early Holocene industry of the interior as the Lockshoek Industry. This was followed by the interior Wilton Industry of the middle-late Holocene and finally the Smithfield Industry. Humphreys (1979) rejected the phase 1 or Lockshoek as being continuous with the later Wilton Industry, he was critical of the system of phase divisions - particularly the separate classification of the Smithfield. Humphreys (1979) felt that the use of arbitrary spits employed in the excavation of sites by Sampson was a causal factor in the phases recognised by the subsequent analysis. Humphreys also re-analysed some of the material excavated by Sampson, revealing evidence to suggest that distinct phases could not be recognised. There were no real differences in scraper lengths from level to

level, he noted, although there was a tendency for scraper lengths to increase gradually over time.

Humphrey's reanalysis of the pottery from the Middle Orange River sites ignored Sampson's distinction between class A and class B pottery. He noted that the majority of sherds from Glen Elliot and Blydefontein were grit tempered. Decorated and grass tempered sherds showed a minority presence in the upper levels of Glenn Elliot only. Mean sherd thicknesses showed an increase with the advent of decoration into the sequence. Detailed analysis of decoration and temper were not carried out. It is of interest to note that although many of the sherds from the Middle Orange River were grit tempered, neither Sampson (1967) nor Humphreys (1979) recorded any Cape Coastal or 'strandloper' sherds and no lugs, spouts or pointed bases (Rudner 1969) among any of the grit tempered sherds. Humphreys (1979) asserted that the pottery of the Middle Orange River had origins other than in the Cape Coastal pottery which occurred in the Southern Cape as early as 2000 B.P. (Schweitzer 1974). Whatever the origins of pottery in the Middle Orange River, Humphreys saw it along with other artefactual changes, as being a new technology adopted by a stable society. He thus suggested the term "Smithfield" be abandoned in favour of the all embracing "inland Wilton" which would describe the trajectory of the last 4500 years of Late Stone Age in the interior of the country.

DISCUSSION

There is no doubt about the fact that some changes did take place in the Karoo with the advent of pottery. Changes in the formality of the lithic assemblages, variation in pottery type, the virtual disappearance of backed pieces before increased bone point usage and the appearance of European items were noted at Haaskraal as well as at sites in the Middle Orange River. Sampson (1972; 1974) took this as sufficient evidence to label this later manifestation as Smithfield. He (Sampson 1985) continues to use the terms Smithfield and Interior Wilton in his description of field results from the ZVAP.

The attribution of phase 1 (Lockshoek) (Sampson 1972) of the Late Stone Age to a separate industrial complex is justified in terms of the well documented occupational hiatus (J. Deacon 1974) between 4600 and 9500 B.P. that seems to have occurred in the interior of the country. Dates for the sequences containing youngest late Stone material (referred to as Wilton and Smithfield by Sampson) have not yet produced any evidence of an occupational hiatus in the interior over the last 2500 years. In other words, as far as is known the Wilton and the Smithfield were temporally continuous. Without supporting regional and spatial information archaeologists cannot assume that artefactual changes within a given sequence necessarily reflect an influx of new people. Interplays of environmental change, cultural response and innovation are not easily documented by archaeologists without borrowing from available ethnography.

The sequences from Haaskraal and Volstruisfontein are the products of high resolution excavations including a detailed pottery analysis. In addition there is now a large body of detailed regional information that helped assist in the interpretation of these sequences. The artefactual material from Haaskraal and Volstruisfontein differed from that recovered from the Middle Orange River in two ways. These are with respect to stone raw material and ceramics.

Raw material. The choice of good quality raw material in the Zeekoe Valley was limited mainly to lydianite. Nearly all the small scrapers and microliths recovered were made from this raw material. Agate was available at sites close to the Orange River. Microliths and small scrapers from this area that predated the advent of pottery were almost exclusively made from agate common to the gravels of the Orange River. The pre-ceramic phase 4 (Sampson 1972) is characterised by an increase in the use of lydianite, particularly in the manufacture of large end scraper forms. At Zaayfontein, Glen Elliot, Riversmead - sites close to the Orange River - small convex scrapers are almost exclusively made from agate and siliceous rocks. The frequency of their occurrence drops in later levels in favour of end scraper forms made from lydianite. At Blydefontein, which is some 60 km from the Orange River, artefact frequencies showed similar trends except that a large proportion of small convex scrapers were made from lydianite rather than agate. For this reason, both Sampson (1970) and Humphreys (1972) agreed that people who were living at Blydefontein were doing similar things to others living close to the Orange river except that the distance from the

nearest agate sources caused them to override culturally required raw materials (agate) etc in favour of the lydianite that was more readily available. Haaskraal is even further away from the Orange River than Blydefontein. Although the sequence at this site is not as deep as those on the Middle Orange River, enough pre-ceramic artefacts were recovered to demonstrate that nearly all the microliths recovered were made from lydianite. Despite this consistency of raw material usage, the indications are that small scraper forms are more diverse and common at the bottom of the sequence. In addition, very small and finely constructed backed microliths were recovered from the lower levels of the sequence. It is thus true to say (Sampson and Sampson 1968; H.J. Deacon 1976) that small microliths could be readily made from lydianite. The diverse types of raw material available close to the Orange River had little effect on the relative frequencies of artefact types on sites close to the Orange River. Raw material selection in these instances was probably culturally determined.

Ceramics. A basis of the definition of the Smithfield industry (Sampson 1972) was the appearance of heavily decorated class A grass tempered pottery, together with the disappearance of small scraper forms as well as backed artefacts from the sequence. The Haaskraal and Volstruisfontein excavations have revealed that there were at least 4 separate ceramic events in the area with early plain grass tempered pottery occurring in association with backed microliths. This means that the Smithfield complex needs to be redefined, or alternatively abandoned. Any one of the ceramic traditions that have emerged from the ZVAP could be used

as an arbitrary point of division or a marker of cultural change that need not necessarily imply a movement of peoples.

It is suggested that if the term Smithfield is to be used at all, it should be continued to be used as a term of historical convenience, but referring to the period of Late Stone Age occupation that occurred after the encroachment of herders into the Zeekoe Valley. This event saw the adoption of pottery decoration, the inclusion of siltstone as a raw material as well as the disappearance of microliths from the assemblage. In other words, the cultural impact of the herders heralded a period of relatively unprecedented cultural change that involved the abandoning of previous norms of ceramic and lithic artefact production. Similar observations have been noted by Parkington, Yates, Manhire and Robey (1984) as well as Robey (1984) who have noted evidence of cultural change involving the deformatisation of lithic assemblages after the introduction of ceramics into the South Western Western Cape. The phenomenon has been widely noted in the Eastern Cape with notable examples documented by H.J. Deacon, J. Deacon, Brooker and Wilson (1978), H.J. Deacon (1976) and J. Deacon (1974). Changes documented in the sequences in the Zeekoe Valley may be grossly related to what appears to be general changes in assemblages that occurred after herding people moved into the southern most part of the African subcontinent.

CONCLUSIONS

The kraal survey of the Seekoei River and subsequent excavations at Haaskraal and Volstruisfontein rock shelters have enhanced our

understanding of events in the Zeekoe Valley in a number of ways. The kraal survey has shown that the presently known distribution of kraals exceeds the frontier originally postulated by Sampson (1984b; 1986b). The full geographical extent of the kraals is not known as yet, but examples have been recorded well outside of the margins of the research area.

Excavations at Haaskraal kraal associated shelter indicate that Khoi sherds were deposited at the shelter between 1100 and shortly after 600 B.P. It is suggested that an environmentally motivated incursion(s) of kraal building herders took place during this time. The source of the incursion have not yet been established - the Camdeboo plains or the Orange River Valley are suspected origins. Neither Haaskraal nor Volstruisfontein shelters have provided early evidence of herding in support of Elphick's (1977) migration hypothesis.

Undecorated grass tempered pottery are the earliest ceramics. These predate most Khoi sherds at Haaskraal and are associated with a microlithic lydianite industry. Decorated non-rocker stamp pottery (grass tempered) was introduced after 600 B.P. This pottery type associated with the disappearance of microliths, has provided a stratified sequence of motifs that have aided the understanding of the chronology of group territories (based on the geographical distribution of decorative motifs) in the Zeekoe Valley (Sampson, Hart, Wallsmith and Blagg, in prep.).

The final Late Stone Age of the Zeekoe Valley is rich in rocker stamp grass tempered pottery and poor in stone artefacts. According to dates from Haaskraal, the rocker stamp motif (Sampson 1988a) became ubiquitous throughout all group territories in the research area shortly after 300 B.P. This is seen as a manifestation of the breakdown of group territories of indigenous people in the face of the colonial expansion.

The complex sequence of the last 1000 years as manifested in the artefactual remains from Haaskraal and Volstruisfontein suggest that some 4 archaeological events took place during this time. This is indicated by the appearance of a series of ceramic styles and toolkit modifications. This conflicts with both Humphrey's (1979) notion of gradual change within the inland Wilton and Sampson's (1974) division of the final Late Stone age as a separate Smithfield industry characterised by a single ceramic and lithic tradition. The last 1200 years of the Late Stone Age in the Zeekoe Valley was a period in which Late Stone Age hunter gatherers experienced the influence of herders, the distant impact of Iron Age agro-pastoralists and eventually confrontation with Europeans. This has resulted in a complex archaeological sequence - the current understanding of which has come about as a result of the interpretation of detailed regional data and new excavations.

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APPENDIX A

Haaskraal and Volstruisfontein.
Artefact summary sheets.

HAASKRAAL CERAMICS SUMMARY SHEET
 frequencies per level per squares:
 shelter A,B,E,F,G,I,J
 kraal K,M,O

Undecorated grass tempered pottery

	LEVELS	1	15	2	3	35	4	5	6	7	8	9	10	11	12
A				3	1		2	1							1
B	1				2	2	3		4	3	3				1
E				2	1	4	1	8	2	4	4				1
F		4		6	4			2	1						
G				3				2							
I					4	3	8	4	2	4	1				1
J					1			2	3	2	2				
total:		1	4	14	13	8	14	19	12	13	10	4			
K	6			15	23		25	53	23	24	14	1			
M	14			7	5		10		23	26	9	6	4		
O	28			9	2		12		14	14	3	5			
total:		48		31	30		47	53	60	64	26	12	4		

Khoi (grit) tempered pottery

	LEVELS	1	15	2	3	35	4	5	6	7	8	9	10	11	12
A															
B															
E								1?		2		1?			
F															
G															
I									3	1					
J										3					
total:									1	3	6		1		
K				1						1					
M									4			1	1		
O					1		1					1			
total:				1	1		1		4	1		2	1		

Haaskraal ceramics summary sheet:

Non-rocker stamp grass tempered pottery

	<u>LEVELS</u>	<u>1</u>	<u>15</u>	<u>2</u>	<u>3</u>	<u>35</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>
	A						1	2							
	B						1				1				
	E						1		2	2					
	F														
	G														
	I				2	1									
	J				2										
total:					<u>4</u>	<u>1</u>	<u>3</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>1</u>				
	K	1		2	6		1								
	M	2													
	O	1		1											
total:		<u>4</u>		<u>3</u>	<u>6</u>		<u>1</u>								

Rocker stamp grass tempered pottery

	<u>LEVELS</u>	<u>1</u>	<u>15</u>	<u>2</u>	<u>3</u>	<u>35</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>	<u>11</u>	<u>12</u>
	A					1	3								
	B														
	E			1		1	1								
	F	1		3	5										
	G	1		2	1										
	I				1		2								
	J						1		1	1	1				
total:		<u>2</u>		<u>6</u>	<u>7</u>	<u>2</u>	<u>7</u>		<u>1</u>	<u>1</u>	<u>1</u>				
	K	1		3	3		1	2		1					
	M	5		3	1		1								
	O	1		2											
total:		<u>7</u>		<u>8</u>	<u>4</u>		<u>2</u>	<u>2</u>		<u>1</u>					

VOLSTRUISFONTEIN CERAMICS SUMMARY SHEET
frequency per level per squares A,B,C

Undecorated grass tempered pottery

LEVELS	1	2	3	4	5	6	7	8	9	10	11	12	13	14
A			1	1		1	5	1	4	3	2			
B		6	8	9	4		2	2	1	3	1			
C	2	4	6	5	3	3				1		1	1	
total:	2	10	15	15	7	4	7	3	5	7	3	1	1	

Khoi (grit tempered) pottery

LEVELS	1	2	3	4	5	6	7	8	9	10	11	12	13	14
A							1							
B				1		1		1			1			
C														
total:				1		1	1	1			1			

Non-rocker stamp grass tempered pottery

LEVELS	1	2	3	4	5	6	7	8	9	10	11	12	13	14
A			1		1		1							
B														
C	1		1	1	1	1								
total:	1		2	1	2	1	1							

Rocker stamp grass tempered pottery

LEVELS	1	2	3	4	5	6	7	8	9	10	11	12	13	14
A					2					1				
B		2	2											
C	1		2	1										
total:	1	2	4	1	2					1				

HAASKRAAL SHELTER EXCAVATION FORMAL TOOLS SUMMARY SHEET
 frequency per level per squares:
 shelter A,B,E,F,G,I,J

SCRAPERS	LEVELS	1	15	2	3	35	4	5	6	7	8	9	10	11	12	TOTAL
END/SIDE	A															
	B												1			1
	E															
	F				1											1
	G							1								1
	I															
	J				1				1		1					3
ALL																
	A															
	B															
	E															
	F															
	G															
	I															
	J											1				1
DOUB. SID/END																
	A															
	B															
	E															
	F									1		1				2
	G															
	I								1	1						2
	J															
DOUB. END/SIDE																
	A															
	B															
	E															
	F															
	G							1								1
	I															
	J															
DOUBLE END																
	A														1	1
	B												1			1
	E															
	F									1						1
	G							1								1
	I											1	3	1		4
	J											1				1
DOUBLE SIDE																
	A															
	B															
	E															
	F									1						1
	G															
	I															
	J															

Haaskraal formal tools summary sheet:

		<u>LEVELS 1 15 2 3 35 4 5 6 7 8 9 10 11 12</u>												
SIDE														TOTAL
	A													
	B													
	E													1
	F													
	G													
	I													2
	J													1
END EXTENDED														
	A													
	B													1
	E													
	F													
	G													
	I													
	J													
END														
	A													1
	B													1
	E													12
	F	1	1	1	2	2	3	2	4	1				14
	G	1	1	1	4	1	6		1				4	
	I		3	1	4	1	3	3	3	1				15
	J				1	3	4							8
<u>ADZES</u>														
	A													1
	B													1
	E													2
	F													1
	G													2
	I													1
	J													
<u>BACKED PIECES</u>														
<u>DRILLS</u>														
	A													
	B													
	E													1
	F													
	G													
	I													
	J													
TANGED POINTS														
	A													2
	B													
	E													
	F													1
	G													
	I													1
	J													

Haaskraal formal tools summary sheet:

		<u>LEVELS 1 15 2 3 35 4 5 6 7 8 9 10 11 12</u>																
MISCELLANEOUS														TOTAL				
	A																	
	B																	
	E																	
	F																	
	G																	
	I							1							1	2		
	J																	
CLASS B	A																	
	B													1	1			
	E																	
	F																	
	G																	
	I							1	1	1				3				
	J																	
CLASS C	A																	
	B														1	1		
	E																	
	F																	
	G							1								1		
	I								1								1	
	J									1								1
CLASS D	A																	
	B														1	1	2	
	E																	
	F																	
	G							1								1		
	I								1								1	
	J									1								1
CLASS E	A																	
	B																	
	E														1	1		
	F																	
	G							1								1		
	I								2	2	1	1				6		
	J																	
CLASS E	A																	
	B																	
	E														1	1		
	F																	
	G							1								1		
	I								1	1				2				
	J																	
CLASS G	A																	
	B																	
	E																	
	F																	
	G								2								2	
	I																	
	J																	
TOTAL:		-----																
		1	2	5	6	7	29	26	18	19	9	1	123					

HAASKRAAL KRAAL EXCAVATION FORMAL TOOLS SUMMARY SHEET
 frequencies per level per squares:
 kraal K,M,O

		<u>LEVELS: 1 2 3 4 5 6 7 8 9 10 11</u>											TOTAL
<u>SCRAPERS</u>													
	END/SIDE												
	K												3
	M												4
	O	1											4
ALL													
	K												
	M												2
	O												2
	DOUB. SID/END												
	K												1
	M	1	1										1
	O												
	DOUB. END/SIDE												
	K												1
	M												
	O												
	DOUBLE END												
	K												2
	M	1	1	1									3
	O	1	1	1									3
	DOUBLE SIDE												
	K												
	M												
	O												
	SIDE EXTENDED												
	K												1
	M												
	O												2
	SIDE												
	K												4
	M	1	1	2	1	1	2	1	1				2
	O	2	2									4	
	END EXTENDED												
	K												2
	M												1
	O												2
	END												
	K	1	2	1	1	4	2	2	3	16			
	M	1	1	4	1	3	6	3	9	28			
	O	6	1	2	3	4	2	4	2	1	25		
<u>ADZES</u>													
	K												1
	M												1
	O	1											4
<u>BACKED ARTIFACTS</u>													
<u>DRILLS</u>													
	K	1											4
	M												
	O												
<u>AWLS</u>													
	K												
	M												
	O	1									2	1	4

Haaskraal formal tools summary sheet:

		<u>LEVELS: 1 2 3 4 5 6 7 8 9 10 11</u>											TOTAL		
TANGED POINTS															
	K				1										1
	M							1		1		1	1		3
	O						1	1							2
MISCELLANEOUS															
	K						1			1		2			4
	M				2						1				3
	O														
CLASS B															
	K				1				1	1		1			4
	M				2		1								3
	O				1					1					2
CLASS C															
	K				2	1									3
	M						2	1				2			5
	O														
CLASS D															
	K		1				1			1					3
	M				1				1	1	1	8			12
	O	1							1	3	1				6
CLASS E															
	K		1	1			1	2	2	2	3	2			14
	M							3	1	2	4	4			14
	O				3				1	3	1				8
CLASS G															
	K					1			1						2
	M														
	O														
CLASS H															
	K														
	M										1				1
	O														
CLASS I															
	K														
	M										1				1
SEGMENTS															
	K										1				1
	M														
	O										1				1
TOTAL															
		10	6	3	22	7	23	21	26	41	19	40	218		

VOLSTRUISFONTEIN SHELTER FORMAL TOOLS SUMMARY SHEET
squares A,B,C

		<u>LEVELS: 1 2 3 4 5 6 7 8 9 10 11 12 13 14</u>														TOTAL		
<u>SCRAPERS</u>	END/SIDE	A																
		B			1			1										2
		C																
DOUBLE END	A															1		1
	B																	
	C																	
END	A		1			1					2	2						4
	B				1			1		2		1						5
	C			1	1								1					3
<u>ADZES</u>	A								1									1
	B		1									1						2
	C												1		1			2
<u>BACKED PIECES</u>	DRILLS	A																
		B			1													1
		C	1	1								1						3
TANGED POINTS	A																	
	B																	
	C														1			1
CLASS C	A																	
	B																	
	C																	
CLASS D	A																	
	B																	
	C												1					1
CLASS G	A																	
	B			1														1
	C							1						1				2
	A																	
	B																	
	C				1													1
TOTAL		3	4	4	1	1	2	1	2	3	3	3	3	2	1		30	

APPENDIX B

Dimensions, provenances and characteristics of pottery,
formal artefacts and waste.

* Note on this appendix.

The availability of personal computers and sophisticated spreadsheet packages enables archaeologists to manipulate any given set of data in many different ways. Consequently it is unfeasible to present the multitude of different graphs and descriptive statistics that can be generated from these particular data. The information contained within the following pages is presented in raw data form where possible. This will enable easy use of these data in research in related fields.

HAASKRAAL POTTERY THICKNESSES

HAASKRAAL shelter A.B.E.F.G.I.J kraal K.M.O

all measurable sherds:
thickness {mm} plotted per level

preceramic levels 11 and 12 omitted

LEVEL	1	1.5	2	3	3.5	4	5	6	7	8	9	10

SQUARE A			5.2	6.1		7.5						
			10	7.5		8.5					6	7.7
	7		12.4	8.7		10.7	7				9.5	8.4

mean	7		9.2	7.4		8.9	7				7.8	8.1
var			9	1.1		1.8					3.1	0.2
std			3	1.1		1.3					1.8	0.4

LEVEL	1	1.5	2	3	3.5	4	5	6	7	8	9	10

SQUARE B									6.7			
						6	6.3	9	11	8.8	6	6.6
				10.7						10.1	8.4	7

mean				10.7		6	6.3	9	8.9	9.5	7.2	6.8
var								3.1	0.4	1.4	0	
std								1.8	0.7	1.2	0.2	

LEVEL	1	1.5	2	3	3.5	4	5	6	7	8	9	10

SQUARE E									4.9			
					6.3				5.1			
					6.9		4.4	7.5	5.5			
				8.3	8		6.3	8.6	6.7	6		
			6.7	8.7	9		7.9	8.9	6.9	6.1		
			8.4	10.7	9		11.8	9.6	7.5	8	8.4	

mean			7.6	9.2	7.8		7.6	8.7	6	6.7	8.4	
var			0.7	1.1	3.5		1.2	0.6	0.8	0.8		
std			0.9	1	1.1		2.7	0.8	0.9	0.9		

LEVEL	1	1.5	2	3	3.5	4	5	6	7	8	9	10

SQUARE F		8.4	8									
		8.4	8.4	7.3								
			9	7.6			7.4					
	10	8.9	10	7.7		8	8.6	6.5				
	10	10	10.1	8		8	9.2	8.3		7.8		

mean	10	8.9	9.1	7.7		8	8.4	7.4		7.8		
var	0	0.4	0.7	0.1		0	0.6	0.8		0		
std	0	0.7	0.8	0.3		0	0.7	0.9				

Haaskraal pottery thicknesses:

LEVEL	1	1.5	2	3	3.5	4	5	6	7	8	9	10

SQUARE G				7.3								
				8								
				9.6		6.7	8.4					

mean				8.3		6.7	8.4					
var				0.9								
std				1								

LEVEL	1	1.5	2	3	3.5	4	5	6	7	8	9	10

SQUARE 1						3.7						
						5.4						
						5.8						
				5.4		6						
				5.9		7.5	5.4					
				8.1		7.6	5.9	4	5.4			
				9	7.7	8.1	6.1	5	6			
				9.1	8	8.4	6.6	7.2	6.8			
				9.3	10.9	8.6	7.4	7.8	7.5	6.1		

mean				7.8	8.9	6.8	6.3	6	6.4	6.1		
var				2.5	2.1	2.4	0.5	2.4	0.6			
std				1.6	1.4	1.6	0.7	1.6	0.8			

LEVEL	1	1.5	2	3	3.5	4	5	6	7	8	9	10

SQUARE J				7								
				7				4.8				
				9.9			6.1	5.2	5.9			
				10		8.3	7	5.6	7.8			
				12.7		8.7	8.2	9	9.2			

mean				9.3		8.5	7.1	6.2	7.6			
var				4.6		0	0.7	2.8	1.8			
std				2.1		0.2	0.9	1.7	1.4			

Haaskraal pottery thicknesses:

KRAAL:

LEVEL	1	1.5	2	3	3.5	4	5	6	7	8	9	10
SQUARE K								4				
								4.1				
								4.6				
								4.9				
								5.3				
								5.5		3.6		
								5.8		3.7		
								5.8		4		
								6		4		
				5				6.1		4.4		
				5.1				6.4		4.5		
				6.3				6.4		4.7		
				6.3				6.6		5.1		
				6.5		3.5		6.6		5.2		
				6.7		5.4		6.7		5.3		
				6.8		5.6		6.8	4.5	5.3		
				6.9		6.1		6.8	4.8	5.5		
				7		6.2		6.9	5	5.7		
				7		6.6		7	5	6.2		
				7.2		6.6		7.1	5.4	6.3		
		4.3		7.3		6.6		7.2	5.5	6.3		
		5.5		7.3		6.6		7.4	5.9	6.4		
		5.8		7.6		6.7		7.5	6.6	6.5		4
		6.5		7.9		6.8		7.5	7	6.7		4
		6.9		7.9		7		7.7	7	6.8		4.3
		7.6		8.1		7		7.9	7	6.9		5.1
		7.7		8.4		7.2		8.1	8	6.9		5.8
	4.8	7.9		8.8		7.5		8.2	8	7.4		6.4
	5.4	8.2		9		7.6		9	8	7.9		6.6
	6.5	8.3		9.3		8	10.9	8.5	8.5	8.6		7
	6.8	8.3		9.8		8.4	14	8.7	8.7	8.9		7.3
	7.1	8.7		9.9		8.4	15	9	9	9.3		7.4
	7.4	9.4		10.3		9	16	9	9	16.3		7.6
	9.5	9.5		11.5		9.6	16.2	9.2	9.2	17.4		8.3
	13	18.2		11.6		10	17.2	9.7	9.7	18.2		8
mean	7.6		8.2	7.9		7.1	8	7.1	7.1	6.4		6.9
var.	5.9		9.1	2.9		2	11.7	2.7	13.6	2.7		1.6
std.	2.4		3	1.7		1.4	3.4	1.6	3.7	1.7		1.3

Haaskraal pottery thicknesses:

LEVEL	1	1.5	2	3	3.5	4	5	6	7	8	9	10
SQUARE M								5				
								5.3				
								5.3	4.3			
								5.7	4.6			
4.9								5.7	4.9			
5								5.9	5			
5								6	5.2			
5.2								6	5.5			
6.2								6.5	5.6			
6.3								6.6	5.7			
6.3								6.7	5.7			
6.3								6.8	5.8			
6.4		3.5						6.9	6			
7.3		6						7	6			
7.5		6.5				4.2		7	6			
8		6.6				5		7	6.2			
8		7.4				5.1		7.1	6.3			
8.9		7.9				5.9		7.3	6.5			3.2
8.9		7.9				5.9		8	6.6			5
9.1		8.4	5.6			6.3		8.4	6.7			5.5
10		8.7	6.6			6.9		9	7		7	5.9
10		10	7.4			7.5		9.1	7.2		7.8	6.6
13		10	8.6			8		9.1	7.9	7.5	7.9	7.7
17.3		11.2	9.3			10.3		15.5	9	8.4	8.2	11
mean	8	7.8	7.5			6.5		7.2	6.1	8	7.7	6.4
var.	8.6	4	1.8			2.8		4.3	1.1	0.2	0.2	5.2
std.	2.9	2	1.3			1.7		2.1	1.1	0.5	0.4	2.3

Haaskraal pottery thicknesses:

LEVEL	1	1.5	2	3	3.5	4	5	6	7	8	9	10
SQUARE	0											
	5											
	6											
	6											
	6							5.4				
	6							5.5				
	6.5							6				
	7					4.6		6				
	7		5			5.3		6	3.5			
	7.2		6			6		6	5			
	7.9		6			6.5		6	6.2			
	8.2		6			7		6.2	6.8			
	8.5		6			7		6.2	7			
	8.5		6.5			7		6.5	7			4
	9		6.5			7		6.5	7.7			4
	9		7	5		7		6.5	8	4.9		6
	9		7	6		8		8	8.5	5.9		6
	10		7	6.5		8		9	8.5	6.2		7
	11		11	7		8.5		11	9	7		7.5
mean	7.7		6.7	6.1		6.8		6.7	7	6		5.8
var	2.5		2.2	0.5		1.1		2.1	2.4	0.6		1.8
std	1.6		1.5	0.7		1.1		1.5	1.6	0.8		1.3

VOLSTRUISFONTEIN POTTERY THICKNESSES

all measurable sherds:
thickness {mm} plotted per level

LEVELS:	1	2	3	4	5	6	7	8	9	10	11	12	13

SQUARE A							5.5						
							5.5						
							5.5		6				
							8.8		7	6.4			
							10		9	6.5	5		
			6.6	5		6.5	12	6.5	10	6.5	5.5		

mean			6.6	5		6.5	7.8	6.5	8	6.4	5.2		
var							6.5		2.5				
std							2.5		1.5		0.2		

LEVELS:	1	2	3	4	5	6	7	8	9	10	11	12	13

SQUARE B				5									
			5	5.3									
			5	5.5									
			6	6									
	5.5	6	6	6	5								
	6.5	7.4	7.5	6						5.1			
	6.5	7.4	7.6	6.4						6			
	7.5	8.3	8	6.5			7	5.5		7.2			
	10.	9	9	6.5			7.2	8.8	5	7.4			

mean		7.3	6.7	6.6	6		7.1	7.1	5	6.4			
var		3	1.9	1.7	0.3			2.7		0.8			
std		1.7	1.3	1.3	0.5		0.1	1.6		0.9			

LEVELS:	1	2	3	4	5	6	7	8	9	10	11	12	13

SQUARE C													
				3.9									
				5.2	5.5								
		6.9	5.2	6		4.9							
		8.7	5.2	6.5	7	5.1							
	5	9.2	6.4	7.5	7.2	6							
	9.2	11	7.2	9	8.5	7.5							

mean	7.1	8.9	5.5	6.9	7.5	5.8				5.2		6.5	7.5
var	4.4	2.1	1	1.5	0.4	1							
std	2.1	1.4	1	1.2	0.6	1							

HAASKRAAL AND VOLSTRUISFONTEIN:
KHOI SHERDS AND MINIMAL GRASS TEMPERED SHERDS

HAASKRAAL

KHOI SHERDS			SHERDS WITH MINIMAL GRASS TEMPER		
SQUARE	LEVEL	THICKNESS (mm)	SQUARE	LEVEL	THICKNESS (mm)
O9	8	4.3	O14	1	5.5
O8	3	6.3	M8	1	4.5
O3	4	6	M7	6	5
O16	9	5.4	M2	6	6.5
M8	6	8	M15	3	5.7
M4	6	5.6	M14	6	6.1
M3	10	8	M13	9	7.5
M3	6	5	K5	8	5.5
M14	9	4.5	K3	6	6.5
M13	6	7.3	K2	6	5
K15	2	5.4	K16	7	6.2
K11	7	5.5	K16	5	6.8
J2	7		K15	5	4.8
I8	6	4.9	K14	5	
I7	7	6.1	K13	8	6.3
I4	6	7.5	K13	7	5.2
I15	6	5.8	K12	6	5.5
I13	7	6	K11	7	5
E14	9		K1	1	6.5
E12	7	5.4	J8	7	5.8
E12	5	4.4	J1	8	5
E10	7	4.8	I16	5	6
		-----	E16	8	10
	mean	5.81		mean	5.95
	var	1.2		var	1.32
	std	1.1		std	1.15

VOLSTRUISFONTEIN

SQUARE	LEVEL	THICKNESS (mm)	SQUARE	LEVEL	THICKNESS (mm)
B7	6	6.9	B5	9	6
B4	11	5	A8	9	6.9
B16	8	6.4	A15	10	5.5
B11	4	5.4			-----
A16	7	5.7		mean	6.13
		-----		var	0.34
	mean	5.88		std	0.58
	var	0.47			
	std	2			

HAASKRAAL OSTRICH EGGSHELL BEADS

SQUARE	BLOCK	DIMENSIONS (mm)		
		LEVEL	EXTERNAL	INTERNAL
E	7	1	7.1	1.6
E	14	1	5.3	1.8
E	14	1	5	2
F	5	1	4.6	1.5
E	16	1.5	4	1.5
E	16	1.5	5	2
F	5	1.5	5.6	2
A	8	2	6	2.2
A	15	2	5	2
F	10	2	5.6	1.7
F	11	2	6.3	2
B	9	3	5	1.7
B	6	3	5	2
E	6	3	6.2	1.8
E	3	3	5.8	2
F	11	3	6.5	1.7
F	4	3	6.4	2.1
E	7	3.5	6.5	2
E	9	3.5	5.7	2.8
F	3	3.5	6	1.8
F	11	3.5	5.9	2
F	14	3.5	5.7	1.8
A	3	4	5.5	2
B	4	4	6.4	2
E	15	4	5.4	1.8
E	15	4	5.6	1.8
F	12	4	5.7	2
F	15	4	4.6	1.6
I	8	4	6.3	1.9
B	2	5	5.8	2
B	10	5	5	1.7
B	2	5	5	1.8
B	2	5	5.6	2
I	4	5	5.7	2
A	3	6	5	1.5
B	3	6	6.4	2
B	13	6	5.3	1.8
F	7	6	5.6	2.3
F	8	6	6.8	2
A	4	7	5.8	1.6
B	13	7	5.5	1.5
B	16	7	6.3	2
F	9	8	4.8	2
E	12	8	6.4	2.5

mean	5.53	1.86
var	0.14	1.1
std	1.05	0.38

n=44

VOLSTRUISFONTEIN OSTRICH EGGSHELL BEADS

DIMENSIONS (mm)

<u>SQUARE</u>	<u>BLOCK</u>	<u>LEVEL</u>	<u>EXTERNAL</u>	<u>INTERNAL</u>
A	8	1	5	1.7
B	8	1	5.1	1.9
A	12	3	6	1.8
B	14	5	5.3	2.1
B	7	6	7	2
B	15	8	5.6	2
B	3	11	6.2	1.4

mean	5.7	1.8
var	0.4	0.1
std	0.7	0.2

n=7

HAASKRAAL SHELTER SCRAPERS
Dimensions (mm)

n=84

SQUARE	LEVELS	LENGTH	BREADTH	RATIO	TYPE	FORM
A	8	56	30	53.5	END	DIVERGENT
A	11	29	26	89.6	DOUBLE END	CIRCULAR
SQUARE	LEVELS	LENGTH	BREADTH	RATIO	TYPE	FORM
B	3.5	45	27	60	END	CIRCULAR
B	9	28	14	50	END	PARALLEL
B	9	17	17	100	DOUBLE END	CIRCULAR
B	10	14	16	114.2	SIDE/END	PARALLEL
B	11	25	24	96	END.EXTED	DIVERGENT
B	11	18	16	88.8	END	DIVERGENT
SQUARE	LEVELS	LENGTH	BREADTH	RATIO	TYPE	FORM
E	4	29	21	72.4	END	DIVERGENT
E	4	18	14	77.7	END	PARALLEL
E	8	24	16	66.6	END	PARALLEL
E	8	50	23	46	END	PARALLEL
E	8	53	22	41.5	END	CONVERGENT
E	9	24	17	70.8	END	PARALLEL
E	9	25	16	64	END	DIVERGENT
E	10	27	20	74	END	DIVERGENT
E	10	45	16	35.5	END	CONVERGENT
E	10	28	33	117.8	SIDE	DIVERGENT
E	10	21	16	76.1	END	CIRCULAR
SQUARE	LEVELS	LENGTH	BREADTH	RATIO	TYPE	FORM
F	3	58	38	65.5	SIDE/END	DIVERGENT
F	4	36	23	63.8	END	DIVERGENT
F	6	29	24	82.7	END	DIVERGENT
F	6	24	15	62.5	END	DIVERGENT
F	6	23	30	130.4	DOUB. SIDE	CIRCULAR
F	7	38	23	84.2	DOUB. SID/END	CONVERGENT
F	7	36	22	61.1	END	DIVERGENT
F	7	42	19	45.2	END	DIVERGENT
F	7	27	28	103.7	END	DIVERGENT
F	7	29	23	79.3	END	PARALLEL
F	7	16	14	87.5	DOUBLE END	PARALLEL
F	8	40	19	47.5	END	PARALLEL
F	8	19	16	84.2	END	PARALLEL
F	8	24	14	58.3	END	PARALLEL
F	8	38	24	63.1	DOUB. SID/END	DIVERGENT
F	8	22	18	81.8	END	PARALLEL
F	8	20	16	80	END	DIVERGENT
F	8	26	16	61.5	END	CONVERGENT
F	10	36	24	66.6	END	DIVERGENT
SQUARE	LEVELS	LENGTH	BREADTH	RATIO	TYPE	FORM
G	2	48	22	45.8	END	PARALLEL
G	4	16	19	118.7	END	DIVERGENT
G	5	27	21	77.7	END	PARALLEL
G	5	26	31	119.2	SIDE/END	DIVERGENT
G	5	19	14	73.6	DOUBLE END	CIRCULAR
G	5	33	24	72.7	DOUB. END/SID	PARALLEL

Haaskraal shelter scrapers:

G	7	23	12	52.1	END	DIVERGENT
G	7	16	13	81.2	DOUB.SID/END	DIVERGENT
SQUARE	LEVELS	LENGTH	BREADTH	RATIO	TYPE	FORM
I	3	50	32	64	END	DIVERGENT
I	4	54	24	44.4	END	DIVERGENT
I	4	36	18	50	END	PARALLEL
I	6	27	30	111.1	DOUB.SID/END	CIRCULAR
I	7	21	25	119	END	DIVERGENT
I	7	40	22	55	END	PARALLEL
I	7	52	18	34.6	END	PARALLEL
I	7	22	28	127.2	SIDE	WIDE
I	7	20	8	40	END	PARALLEL
I	2	18	11	61.1	SIDE	WIDE
I	8	40	32	80	END	DIVERGENT
I	8	17	17	100	DOUBLE END	CIRCULAR
I	8	20	24	120	SIDE	DIVERGENT
I	9	33	16	48.4	END	PARALLEL
I	9	38	20	52.6	DOUBLE END	CONVERGENT
I	9	20	16	80	DOUBLE END	PARALLEL
I	9	14	14	100	DOUBLE END	CIRCULAR
I	9	20	16	80	END	DIVERGENT
I	9	18	18	100	END	DIVERGENT
I	10	34	21	61.7	END	PARALLEL
I	10	13	17	130.7	END	DIVERGENT
I	10	24	16	66.6	DOUBLE END	DIVERGENT
I	10	24	12	50	END	PARALLEL
I	11	46	22	47.8	END	DIVERGENT
SQUARE	LEVELS	LENGTH	BREADTH	RATIO	TYPE	FORM
J	3	18	14	77.7	SIDE/END	CONVERGENT
J	6	44	28	63.6	SIDE/END	DIVERGENT
J	6	30	18	60	END	CONVERGENT
J	7	31	20	64.5	END	PARALLEL
J	7	37	25	67.5	END	DIVERGENT
J	7	23	16	69.5	END	DIVERGENT
J	8	44	24	54.5	ALL	CIRCULAR
J	8	35	25	71.4	END	PARALLEL
J	8	16	14	81.5	END	DIVERGENT
J	8	24	23	95.8	DOUBLE END	CIRCULAR
J	8	24	40	166.6	SIDE	CIRCULAR
J	8	19	14	73.6	END	CONVERGENT
J	8	26	12	46.1	SIDE/END	CONVRG./PARA
J	8	22	10	45.4	END	PARALLEL

n=110

HAASKRAAL KRAAL SCRAPERS
Dimensions (mm)

SQUARE	LEVELS	LENGTH	BREADTH	RATIO	TYPE	FORM
K	2	42	26	61.9	END	PARALLEL
K	3	52	30	57.6	DOUB. SID/END	DIVERGENT
K	3	48	48	100	END EXTENDED	CIRCULAR
K	4	42	36	85.7	END	DIVERGENT
K	4	42	36	85.7	END	DIVERGENT
K	4	16	14	87.5	DOUBLE END	PARALLEL
K	5	52	45	86.5	SIDE EXTENDE	CIRCULAR
K	5	24	21	87.5	END	DIVERGENT
K	6	38	25	65.7	END	CONVERGENT
K	6	13	24	184.6	SIDE PARALLEL/DIV.	
K	7	40	20	50	END	PARALLEL
K	7	25	25	100	END	DIVERGENT
K	7	37	26	70.2	END	DIVERGENT
K	7	32	14	43.7	END	CONVERGENT
K	7	24	20	83.3	SIDE/END	CONVERGENT
K	8	20	46	230	SIDE	WIDE
K	8	46	16	34.7	END	PARALLEL
K	8	20	16	80	DOUBLE END CONVG./DIV.	
K	8	11	12	109	SIDE	PARALLEL
K	8	24	16	66.6	END	DIVERGENT
K	9	40	27	67.5	END	PARALLEL
K	9	17	17	100	DOUB. END/SID	CIRCULAR
K	9	26	19	73	SIDE/END	PARALLEL
K	9	20	13	65	END	PARALLEL
K	9	22	14	63.6	SIDE/END	CONVERGENT
K	10	20	24	120	SIDE	DIVERGENT
K	11	40	20	50	END	DIVERGENT
K	11	37	22	59.4	END	DIVERGENT
K	11	40	21	52.5	END	DIVERGENT

SQUARE	LEVELS	LENGTH	BREADTH	RATIO	TYPE	FORM
M	1	35	20	57.1	END	DIVERGENT
M	1	16	12	75	DOUB. SID/END	PARALLEL
M	4	44	24	54.5	END EXTENDED	CONVERGENT
M	4	20	16	80	SIDE	DIVERGENT
M	4	27	14	51.8	END	DIVERGENT
M	6	31	22	70.9	END	PARALLEL
M	6	47	32	68	END	DIVERGENT
M	6	30	16	53.3	END	PARALLEL
M	6	30	26	86.6	END	DIVERGENT
M	7	18	18	100	DOUBLE END	PARALLEL
M	7	24	16	66.6	END	CONVERGENT
M	8	18	16	88.8	END	DIVERGENT
M	8	18	14	77.7	SIDE/END	DIVERGENT
M	8	54	26	48.1	END	CONVERGENT
M	8	31	24	45.1	END	PARALLEL
M	8	42	32	76.1	SIDE/END	DIVERGENT
M	9	26	14	53.8	END	PARALLEL
M	9	28	22	78.5	END	PARALLEL
M	9	37	20	54	END	PARALLEL/DIV.
M	9	21	24	114.2	END	PARALLEL
M	9	20	21	105	SIDE/END	CIRCULAR
M	9	33	13	39.3	END	PARALLEL
M	9	19	17	89.4	END	DIVERGENT

Haaskraal kraal scrapers:

SQUARE	LEVELS	LENGTH	BREADTH	RATIO	TYPE	FORM
M	10	22	17	77.2	END	DIVERGENT
M	10	23	14	60.8	END	DIVERGENT
M	10	48	26	54.1	END	DIVERGENT
M	11	48	34	70.8	END	PARALLEL
M	11	33	37	112.1	END	DIVRGNT/PARA.
M	11	50	24	48	END	PARALLEL
M	11	36	32	88.8	SIDE/END	DIVERGENT
M	11	27	30	111.1	ALL	CIRCULAR
M	11	20	16	80	END	DIVERGENT
M	11	29	18	62	END	PARALLEL
M	11	17	14	82.3	DOUBLE END	PARALLEL
M	11	15	16	116.6	SIDE	DIVERGENT
M	11	20	20	100	ALL	CONVERGENT
M	11	42	20	47.6	END	CONVERGENT
M	11	18	12	66.6	DOUBLE END	CNVRG./DIV.
M	11	26	11	42.3	END	PARALLEL
M	11	24	22	91.6	END	DIVERGENT
M	11	18	16	88.8	END	DIVERGENT

SQUARE	LEVELS	LENGTH	BREADTH	RATIO	TYPE	FORM
O	1	48	26	54.1	END	PARALLEL
O	1	28	16	57.1	END	PARALLEL
O	1	28	18	64.2	END	DIVERGENT
O	1	33	22	66.6	END	DIVERGENT
O	1	38	26	68.4	END	DIVERGENT
O	2	24	23	95.8	SIDE/END	DIVERGENT
O	2	24	20	83.3	END	DIVERGENT
O	4	17	23	135.2	SIDE	DIVERGENT
O	4	20	13	65	END	PARALLEL
O	4	18	23	127.7	SIDE	WIDE
O	4	22	14	63.6	END	CIRCULAR
O	6	35	20	57.1	DOUBLE END	PARALLEL
O	6	50	34	68	END	DIVERGENT
O	6	39	18	46.1	END	PARALLEL
O	6	40	18	45	END	CONVERGENT
O	6	45	28	62.2	END/EXTENDED	PARALLEL
O	6	16	12	75	SIDE	DIVERGENT
O	6	22	20	90.9	SIDE/END	PARALLEL
O	6	10	15	150	SIDE/END	PARALLEL
O	6	18	20	111.1	SIDE	COVERGENT
O	7	40	26	65	END	DIVERGENT
O	7	40	26	65	END	PARALLEL
O	7	30	20	66.6	END	PARALLEL
O	7	16	20	125	SIDE EXTENDED	WIDE
O	7	30	16	53.3	END	PARALLEL
O	7	18	14	77.7	DOUBLE END	CIRCULAR
O	8	46	14	30.4	END	DIVERGENT
O	8	25	16	64	END	PARALLEL
O	8	15	12	80	END EXTENDED	CIRCULAR
O	9	46	16	34.7	END	PARALLEL
O	9	26	23	88.4	END	DIVERGENT
O	9	14	12	85.7	SIDE/END	PARALLEL
O	9	28	26	92.8	DOUBLE END	PARALLEL
O	9	11	10	90	END	CIRCULAR
O	9	38	22	57.8	END	DIVERGENT
O	10	23	18	78.2	END	PARALLEL

Haaskraal kraal scrapers:

SQUARE	LEVELS	LENGTH	BREADTH	RATIO	TYPE	FORM
0	10	16	14	87.5	END	CONVERGENT
0	10	12	16	133.3	SIDE EXTENDE	DIVERGENT
0	11	34	17	50	END	PARALLEL

HAASKRAAL SHELTER SCRAPERS
Means, variances and standard deviations of scraper dimensions

MEANS PER LEVEL

LEVEL	LENGTH	BREADTH	RATIO	N
2	33	16.5	53.5	2
3	42	28	69.1	3
3.5	45	27	60	1
4	31.5	19.8	71.7	6
5	26.3	22.5	85.8	4
6	29.5	24.2	85.1	6
7	29.6	19.8	73.2	16
8	30	20.4	73.6	22
9	23.7	16.4	74.9	10
10	26.6	19.1	79.2	10
11	29.5	22	80.6	4

VARIANCE PER LEVEL

LEVEL	LENGTH	BREADTH	RATIO	N
2	225	30.3	58.5	2
3	298.7	104	37.6	3
3.5	0	0	0	1
4	162.6	11.1	587.1	6
5	24.7	37.3	375.4	4
6	48.3	34.1	722.8	6
7	101.3	32.3	674.5	16
8	145.5	49.3	802.5	22
9	51	2.8	389.6	10
10	87.2	31.5	879	10
11	106.3	14	365.3	4

STANDARD DEVIATION PER LEVEL

LEVEL	LENGTH	BREADTH	RATIO	N
2	15	5.5	7.7	2
3	17.3	10.2	6.1	3
3.5	0	0	0	1
4	12.8	3.3	24.2	6
5	5	6.1	19.4	4
6	7	5.8	26.9	6
7	10.1	5.7	26	16
8	12.1	7	28.3	22
9	7.1	1.7	19.7	10
10	9.3	5.6	29.7	10
11	10.3	3.7	19.1	4

HAASKRAAL KRAAL SCRAPERS
Means, variances and standard deviations of scraper dimensions

MEANS PER LEVEL

LEVEL	LENGTH	BREADTH	RATIO	N
1	33.3	20.8	63.4	8
2	30.	23.	80.3	3
3	50.	39.	78.8	2
4	26.8	21.3	83.7	10
5	38.	33.	87.	2
6	30.9	22.	82.3	15
7	28.8	20.1	74.3	13
8	28.5	20.	79.3	13
9	26.2	18.3	75.15	18
10	23.4	18.4	87.3	7
11	30.2	21.2	74.8	19

VARIANCE PER LEVEL

LEVEL	LENGTH	BREADTH	RATIO	N
1	80.2	23.9	42.4	8
2	72.	6.	195.9	3
3	4.	81.	449.4	2
4	116.4	70.2	724.8	10
5	196.	144.	0.3	2
6	151.	35.9	1428.	15
7	70.3	18.5	481.6	13
8	179.8	88.6	2355.	13
9	85.	24.3	471.8	18
10	114.8	19.4	739.2	7
11	111.6	51.1	556.6	19

STANDARD DEVIATION PER LEVEL

LEVEL	LENGTH	BREADTH	RATIO	N
1	9.	4.9	6.5	8
2	8.5	2.5	14.	3
3	2.	9.	21.2	2
4	10.8	8.4	26.9	10
5	14.	12.	0.5	2
6	12.3	6.	37.8	15
7	8.4	4.3	21.9	13
8	13.4	9.4	48.5	13
9	9.2	4.9	21.7	18
10	10.7	4.4	27.2	7
11	10.6	7.2	23.6	19

n=15

VOLSTRUISFONTEIN SCRAPERS
Dimensions (mm)

SQUARE	LEVEL	LENGTH	BREADTH	RATIO	TYPE	FORM
A	2.00	37.00	20.00	54.05	END	DIVERGENT
A	5.00	48.00	21.00	43.75	END	DIVERGENT
A	10.00	41.00	31.00	75.61	END	DIVERGENT
A	10.00	41.00	23.00	56.10	END	CONVERGENT
B	4.00	43.00	28.00	65.12	END	DIVERGENT
B	4.00	38.00	23.00	60.53	END/SIDE	PARALLEL
B	7.00	22.00	22.00	100.00	END	CIRCULAR
B	7.00	60.00	31.00	51.67	END	DIVERGENT
B	9.00	45.00	23.00	51.11	END	DIVERGENT
B	9.00	46.00	24.00	52.17	END	PARALLEL
B	11.00	62.00	38.00	61.29	END	DIVERGENT
B	11.00	24.00	20.00	83.33	DOUBLE END	PARALLEL
C	3.00	45.00	25.00	55.56	END	DIVERGENT
C	4.00	37.00	21.00	56.76	END	DIVERGENT
C	12.00	40.00	23.00	57.50	END	DIVERGENT
mean		41.93	24.87	61.64		
var		106.06	23.85	195.79		
std		10.30	4.88	13.99		

HAASKRAAL: CLASS E BACKED BLADELETS
Dimensions (cm)

SQUARE	BLOCK	LEVEL	LENGTH	BREADTH	HEIGHT
G	5	7	1.25	0.35	0.16
I	15	8	0.93	0.62	0.2
I	15	9	1.23	0.37	0.12
K	4	2	2.86	0.39	0.23
K	8	3	1.03	0.81	0.19
K	2	7	1.56	0.48	0.2
K	14	7	0.83	0.38	0.25
K	4	8	1.14	0.58	0.3
K	11	8	1.03	0.52	0.15
K	6	8	1.1	0.4	0.18
K	9	10	0.9	0.4	0.2
K	14	10	1.72	0.44	0.26
K	12	10	1.38	0.24	0.23
K	7	10	0.95	0.27	0.18
K	9	11	0.72	0.39	0.13
M	6	6	1.49	0.39	0.18
M	3	7	1.11	0.41	0.23
M	3	7	1.79	0.5	0.22
M	6	7	1.69	0.34	0.22
M	10	8	1.19	0.44	0.19
M	4	9	1.3	0.62	0.31
M	5	9	1.84	0.39	0.18
M	14	10	1.27	0.33	0.2
M	5	10	1.18	0.27	0.17
M	8	10	1.45	0.3	0.24
M	4	10	1.55	0.32	0.2
M	13	11	1.3	0.38	0.14
M	5	11	1.75	0.44	0.21
M	8	11	1.74	0.45	0.23
M	14	11	1.79	0.43	0.24
O	5	4	0.74	0.52	0.27
O	14	4	2.49	0.66	0.29
O	3	4	1.14	0.45	0.18
O	4	8	0.93	0.42	0.15
O	4	9	1.8	0.41	0.2
O	10	9	1.27	0.34	0.15

mean	1.4	0.43	0.21
var	0.22	0.01	0.01
std	0.47	0.16	0.05

n=36

HAASKRAAL: CLASS D BACKED BLADELETS
Dimensions (cm)

SQUARE	BLOCK	LEVEL	LENGTH	BREADTH	HEIGHT
A	6	10	1.52	0.36	0.14
G	6	5	2.03	0.37	0.2
I	9	10	1.63	0.51	0.17
I	5	10	1.88	0.7	0.23
I	11	10	1.57	0.6	0.2
J	11	7	2.08	0.31	0.2
J	11	7	1.77	0.35	0.2
J	3	8	1.55	0.42	0.13
J	3	8	2.2	0.49	0.24
J	2	9	1.54	0.35	0.15
J	1	10	1.4	0.6	0.14
K	9	2	1.13	0.32	0.19
K	16	6	1.44	0.27	0.19
K	6	9	1.85	0.42	0.27
M	7	4	1.96	0.62	0.27
M	3	8	0.96	0.18	0.16
M	14	9	1.88	0.5	0.16
M	4	10	2.59	0.55	0.24
M	14	11	1.65	0.35	0.16
M	10	11	2.32	0.36	0.17
M	9	11	1.16	0.26	0.15
M	10	11	2.27	0.45	0.33
M	11	11	1.2	0.3	0.23
M	14	11	2.12	0.3	0.3
M	9	11	1.23	0.35	0.16
M	12	11	1.89	0.3	0.23
O	2	1	1.37	0.27	0.22
O	6	8	2	0.79	0.23
O	1	9	1.77	0.43	0.19
O	3	9	1.77	0.36	0.15
O	16	9	1.52	0.64	0.22

mean		1.72	0.42	0.2
var		0.15	0.02	0.002
std		0.38	0.14	0.05

n=31

HAASKRAAL CLASS G DOUBLE BACKED POINTS
Dimensions (cm)

SQUARE	BLOCK	LEVELS	LENGTH	BREADTH	HEIGHT
I	16	7	2.96	0.5	0.25
I	9	7	1.46	0.48	0.23
K	5	5	2.05	0.48	0.3
K	7	8	1.93	0.4	0.29

mean		2.1	0.46	0.27
var		0.3	0.001	0.0001
std		0.54	0.04	0.03

n=4

HAASKRAAL SHELTER AND KRAAL EXCAVATION: ADZES
 Dimensions (cm)

SQUARE	LEVEL	LENGTH	BREADTH	HEIGHT
A15	10	4.2	1.8	0.8
B10	11	4.1	1.5	1
E13	10	6.1	3.5	1.8
F6	8	3.4	1.5	1
G1	7	2.6	1.1	0.4
I15	7	3.4	1.5	0.7
I6	7	3.3	1.2	0.5
K14	8	3.5	1.7	0.9
K6	6	3.2	1.6	0.7
M11	7	5.6	1.4	1.4
M14	11	3.3	2	1.9
M4	6	3.8	1.5	0.9
M6	1	4.3	1.5	0.7
M8	7	3	1.3	0.8
O3	2	2.9	2.15	1.3

mean		3.78	1.68	0.98
var		0.88	0.31	0.18
std		0.94	0.55	0.42

n=15

HAASKRAAL UTILISED PIECES
Lydianite

<u>SQ/BLOCK</u>	<u>LEVEL</u>	<u>FLAKE</u>	<u>BLADELET</u>	<u>CHUNK</u>	<u>TRIMMED UTILSD.</u>
A11	11			1	1
B	5	1			1
B11	7	1			1
B11	10	1			1
B12	6	1			1
B9	9	1			1
E12	9	1			1
E12	12			1	1
E13	11			1	1
E13	12	1			1
E14	6	1			1
E16	4	1			1
E5	6	1			1
E8	10		1		1
F12	8	1			1
F14	8	1			1
F2	7			1	1
F3	6			1	1
F9	8			1	1
G1	7	1			1
G13	5	1			1
G13	6	1			1
G16	1	1			1
I1	10	1			1
I11	8			1	1
I11	8	1			1
I14	7	1			1
I15	8	1			1
I16	3	1			1
I16	7			1	1
I16	8	1			1
I16	8	1			1
I16	9	1			1
I16	9			1	1
I2	8			1	1
I4	5	1			1
I4	9	1			1
I5	10	1			1
I7	8		1		1
I8	3		1		1
I8	7	1			1
I9	3	1			1
I9	8	1			1
I7	1				1
J1	7	1			1
J10	3	1			1
J13	8	1			1
J15	15	1			1
J2	5			1	1
J2	8	1			1
J2	8		1		1
J3	8			1	1
J4	6	1			1

Haaskraal lydianite utilised:

<u>SQ/BLOCK</u>	<u>LEVEL</u>	<u>FLAKE</u>	<u>BLADELET</u>	<u>CHUNK</u>	<u>TRIMMED</u>	<u>UTILSD.</u>
J5	9	1			1	1
J6	7	1			1	1
J8	6	1				1
J8	6	1				1
J9	7			1		1
J9	9	1				1
J9	10			1		1
J9	3	1				1
K10	4	1				1
K10	4	1			1	1
K10	5			1	1	1
K10	5	1			1	1
K10	6			1		1
K10	7			1	1	1
K11	2	1				1
K11	3	1			1	1
K11	3		1			1
K11	6	1			1	1
K11	7	1			1	1
K11	11	1				1
K12	6			1		1
K12	7	1			1	1
K12	10	1			1	1
K14	7	1				1
K14	7	1			1	1
K14	7			1		1
K15	8	1			1	1
K16	3	1				1
K16	6			1		1
K16	10	1				1
K16	11	1			1	1
K2	3	1				1
K2	4			1		1
K2	6	1			1	1
K3	1			1		1
K3	5	1			1	1
K3	6	1			1	1
K4	4	1			1	1
K4	7			1		1
K4	8	1				1
K5	6	1				1
K5	8			1		1
K6	3	1			1	1
K6	11	1				1
K7	2	1				1
K7	8			1		1
K8	2	1			1	1
K8	6	1			1	1
K8	10			1	1	1
K9	8		1			1
K9	11			1	1	1
K9	11			1		1
M1	0	1				1
M1	3	1			1	1
M1	10	1				1
M1	10	1				1
M10	8			1	1	1

Haaskraal lydianite utilised:

<u>SQ/BLOCK</u>	<u>LEVEL</u>	<u>FLAKE</u>	<u>BLADELET</u>	<u>CHUNK</u>	<u>TRIMMED</u>	<u>UTILSD.</u>
M10	9	1			1	1
M11	6	1			1	1
M11	8			1		1
M11	10	1			1	1
M12	1		1		1	1
M12	6	1			1	1
M12	11	1				1
M14	1	1			1	1
M14	10	1			1	1
M14	10	1			1	1
M14	11		1			1
M14	11			1		1
M15	10	1				1
M15	10			1	1	1
M16	10		1		1	1
M16	10	1			1	1
M18	8	1				1
M2	2		1			1
M2	6	1				1
M2	9	1			1	1
M2	10			1	1	1
M2	11	1				1
M3	6			1	1	1
M3	11	1				1
M4	3	1				1
M4	4	1				1
M4	6	1			1	1
M4	6	1			1	1
M4	6		1			1
M5	7	1			1	1
M5	7	1				1
M5	9			1	1	1
M5	11			1	1	1
M5	11	1			1	1
M5	11			1		1
M6	10	1			1	1
M6	10			1		1
M7	1			1		1
M7	4		1			1
M7	7			1	1	1
M7	8	1			1	1
M7	8			1	1	1
M7	8			1	1	1
M7	11	1			1	1
M8	6	1				1
M8	7	1			1	1
M8	10			1		1
M8	10			1		1
M8	10			1	1	1
M8	10			1		1
M9	7	1			1	1
M9	8			1		1
O1	7			1		1
O1	8			1	1	1
O1	9	1				1
O1	9			1	1	1
O10	10		1		1	1

Haaskraal lydianite utilised:

<u>SQ/BLOCK</u>	<u>LEVEL</u>	<u>FLAKE</u>	<u>BLADELET</u>	<u>CHUNK</u>	<u>TRIMMED</u>	<u>UTILSD.</u>
011	1	1				1
011	9			1		1
012	9	1				1
012	11	1			1	1
012	11	1				1
013	10	1			1	1
013	10			1		1
013	10	1				1
013	11			1		1
013	11	1			1	1
015	9	1				1
03	1	1			1	1
03	6	1				1
03	6	1				1
03	6		1			1
03	6	1			1	1
03	9	1				1
04	1	1				1
04	4	1			1	1
05	6	1			1	1
05	10	1			1	1
05	10	1				1
05	11	1			1	1
07	9	1				1
07	9			1		1
08	1	1				1
08	7		1			1
09	9	1			1	1
TOTALS		126	15	54	93	195

HAASKRAAL UTILISED PIECES
Siltstone

<u>SQ/BLOCK</u>	<u>LEVEL</u>	<u>FLAKE</u>	<u>BLADELET</u>	<u>CHUNK</u>	<u>TRIMMED</u>	<u>UTILSD.</u>
E11	7	1			1	1
E12	8			1		1
E13	10	1			1	1
E6	5	1			1	1
F6	8			1		1
I4	6	1				1
I8	7	1				1
K1	3	1				1
K10	8	1				1
K16	2	1				1
K16	6	1			1	1
K2	1	1			1	1
K3	2	1			1	1
K4	1	1			1	1
K6	3	1				1
K7	2			1	1	1
K9	4			1		1
M10	11	1			1	1
M12	7	1			1	1
M15	11	1				1
M16	2	1			1	1
M16	9			1		1
M2	6	1				1
M4	6	1			1	1
M5	7	1				1
M9	4			1	1	1
O1	2			1		1
O1	4	1			1	1
O11	1	1			1	1
O3	6			1		1
O8	10			1		1

TOTALS:				9	15	31

VOLSTRUISFONTEIN UTILISED PIECES
lydianite

SQ/BLOCK	LEVEL	FLAKE	BLADELET	CHUNK	TRIMMED	UTILSD.
A1	11	1				1
A1	9	1			1	1
A1	2	1				1
A12	12			1		1
A12	4	1				1
A14	9	1				1
A14	8			1		1
A14	9	1				1
A15	8		1		1	1
A15	8	1			1	1
A15	7	1				1
A16	9	1				1
A3	10			1	1	1
A4	12	1			1	1
A5	7			1	1	1
A6	8	1				1
A6	2	1			1	1
A7	2	1			1	1
A8	2			1		1
B1	6	1				1
B1	10	1				1
B1	10	1				1
B1	10			1		1
B10	3		1			1
B10	4	1			1	1
B10	7		1		1	1
B10	12		1		1	1
B11	8	1				1
B12	6		1			1
B12	4	1				1
B13	6		1			1
B13	12	1			1	1
B13	7	1				1
B13	5	1				1
B14	4		1			1
B14	6	1				1
B14	4	1				1
B15	3	1			1	1
B15	8	1				1
B15	12	1			1	1
B15	4	1				1
B2	3	1				1
B2	11	1				1
B2	3	1				1
B4	7	1				1
B5	5	1			1	1
B5	11	1				1
B5	4		1		1	1
B6	1	1				1
B6	5	1				1
B6	11	1				1
B6	11	1				1
C1	13	1				1
C1	5	1				1
C1	4	1				1
C10	13	1				1

Volstruisfontein utilised pieces:

C12	4	1				1
C12	8	1				1
C13	4	1				1
C14	2	1				1
C15	6			1		1
C2	4	1				1
C2	5	1				1
C3	5	1				1
C5	10			1		1
C5	8			1		1
C5	1	1				1
C5	14	1				1
C5	14	1				1
C5	8	1				1
C5	13	1			1	1
C7	14	1				1
C8	1	1				1
C8	2	1				1
C9	7	1				1
C9	13	1				1
C9	2	1				1

TOTAL		60	8	9	17	77

VOLSTRUISFONTEIN UTILISED PIECES
siltstone

<u>SQ/BLOCK</u>	<u>LEVEL</u>	<u>FLAKE</u>	<u>BLADELET</u>	<u>CHUNK</u>	<u>TRIMMED</u>	<u>UTILSD.</u>
A5	9	1				1

HAASKRAAL WHOLE WASTE (excluding cores)
Shelter

SQUARE A

LYDIANITE LEVELS	FLAKE	BLADELET	CHIP	CHUNK
1				
2	4		1	1
3	3	2	3	2
3.5			3	
4	3		4	
5	8			
6	5		1	1
7	11	3	1	1
8	26	2	3	
9	22	3	15	1
10	16	4	6	
11	22	5	3	1

total:	120	19	40	7

SILTSTONE LEVELS	FLAKE	BLADELET	CHIP	CHUNK
1				
2	2		1	
3				
3.5	1			
4	12			
5	2			
6	4			
7	7		4	
8	8			
9	11	1	5	
10	7		2	
11	3		1	

total:	57	1	13	

DOLERITE LEVELS	FLAKE	BLADELET	CHIP	CHUNK
7	1			
9	1			

totals:	2			

PORCELAINITE LEVELS	FLAKE	BLADELET	CHIP	CHUNK
10	1			
QUARTZ				
11	1			

Haaskraal waste:

SQUARE B

LYDIANITE LEVELS	FLAKE	BLADELET	CHIP	CHUNK
1	1		1	
2	1	2		1
3	3	2		
3.5	9	1	1	1
4	10		4	
5	6		4	5
6	9		3	
7	10	2	2	
8	20	6	3	
9	24	7	6	
10	24	4	10	1
11	23	4	10	
<hr/>				
total:	140	28	44	8

SILTSTONE LEVELS	FLAKE	BLADELET	CHIP	CHUNK
1	2			
2				
3	3		2	
3.5	9			1
4	13		2	2
5	6			
6	9		1	
7	2			1
8	7		2	2
9	8		1	1
10	11		2	2
11	1			
<hr/>				
total:	71		10	8

DOLERITE LEVELS	FLAKE	BLADELET	CHIP	CHUNK
5			1	2
6	1			3
8				1
11			1	
<hr/>				
total:	1		2	6

CHERT LEVELS	FLAKE	BLADELET	CHIP	CHUNK
6			1	
7			1	

Haaskraal waste:

SQUARE E LEVELS	FLAKE	BLADELET	CHIP	CHUNK
1	1		1	
2	1		1	
3	3		1	1
3.5	15	1	17	
4	19	1	10	
5	22	1	4	1
6	23	5	16	3
7	50	2	28	1
8	68	6	72	5
9	55	13	81	3
10	46	21	79	4
11	94	44	77	3
12	65	19	30	
<hr/>				
total:	462	113	417	21

SILTSTONE LEVELS	FLAKE	BLADELET	CHIP	CHUNK
1			3	
2				
3	2		2	
3.5	24	1	28	2
4	37		8	
5	21		8	4
6	29		14	2
7	45		24	
8	53	2	42	3
9	13		13	1
10	15		1	1
11	8		1	
12				
<hr/>				
total:	247	3	144	13

OTHER LEVELS	FLAKE	BLADELET	CHIP	CHUNK
PORCELAINITE				
8	1			
10	1			
11	1			
QUARTZ				
8	1			1
CHERT				
9	1			
AGATE				
11			1	

Haaskraal waste:

SQUARE F

LYDIANITE
LEVELS

	FLAKE	BLADELET	CHIP	CHUNK
1	1			
1.5	4		14	
2	3	1	11	
3	6	2	3	
3.5	7	2	4	
4	21	4	7	2
5	52	7	29	2
6	73	17	47	4
7	90	14	58	4
8	70	11	54	3
9	34	11	10	2
<hr/>				
total:	361	69	237	17

SILTSTONE
LEVELS

	FLAKE	BLADELET	CHIP	CHUNK
1				
1.5	4		1	
2	6		1	
3	11		5	1
3.5	6		5	
4	10		15	1
5	15		5	3
6	15		1	
7	9		1	1
8	22	2	4	1
9	1	1		
<hr/>				
total:	99	3	38	7

DOLERITE
LEVELS

	FLAKE	BLADELET	CHIP	CHUNK
1	1			
1.5				
2	1		1	
3			1	
3.5				
4	1		1	
5	3			
6	5			1
7	8			3
8	15			
9	1			
<hr/>				
total:	35		3	4

QUARTZ
LEVEL

	FLAKE	BLADELET	CHIP	CHUNK
7	1			

Haaskraal waste:

SQUARE G

LYDIANITE LEVEL	FLAKE	BLADELET	CHIP	CHUNK
1	7	26	15	10
2	7	2	9	0
3	8	3	20	1
4	37		39	1
5	126	42	76	1
6	59	28	53	1
7	28	6	30	1
total:	272	107	242	15

SILTSTONE LEVEL	FLAKE	BLADELET	CHIP	CHUNK
1				
2			2	
3	6		1	1
4	22	2	10	
5	1			
6	6		9	1
7	3			1
total:	38	2	22	3

OTHER

LEVEL	FLAKE	BLADELET	CHIP	CHUNK
DOLERITE				
6	3			1
POERCELAINITE				
6				1
7				1
AGATE				
3	1			

Haaskraal waste:

SQUARE I

LYDIANITE LEVEL	FLAKE	BLADELET	CHIP	CHUNK
1			2	
1.5	1			
2	12			
3	40		3	1
3.5	41		4	2
4	94	8	31	2
5	79	3	38	1
6	88	6	15	3
7	138	4	27	1
8	180	23	15	4
9	188	40	34	4
10	121	56	75	4
11	152	44	97	9
total:	1134	184	341	31

SILTSTONE LEVEL	FLAKE	BLADELET	CHIP	CHUNK
6	10			
3	22			1
3.5	19		2	1
4	77		2	5
5	52		5	2
6	49		16	3
7	49		21	5
8	32		1	1
9	28		4	
10	4			
11	5			2
total:	347		51	20

DOLERITE LEVEL	FLAKE	BLADELET	CHIP	CHUNK
3.5	12			
4	18			
5	8			
6	13		3	
7	1			
8	10			
9	4			
11	7			
total:	73		3	

PORCELAINITE LEVEL	FLAKE	BLADELET	CHIP	CHUNK
6	1		1	
10			1	
11	1	1		

Haaskraal waste:

SQUARE J

LYDIANITE LEVEL	FLAKE	BLADELET	CHIP	CHUNK
3	22	5	5	
3.5	1		1	
4	22	2	9	
5	18	2	18	1
6	48	210	42	4
7	156	32	77	2
8	187	86	156	5
9	83	38	83	2
10	29	7	20	

total:	566	382	411	14

SILTSTONE LEVEL	FLAKE	BLADELET	CHIP	CHUNK
3	11		4	
3.5				1
4	7			1
5	11		10	
6	34	1	11	3
7	51	1	32	4
8	10		4	
9	4			1
10				

total:	128	2	61	10

DOLERITE LEVEL	FLAKE	BLADELET	CHIP	CHUNK
3				1
5	1		1	
6	1			
7	7			1
8	3			
9	1			1
10				1

total:	13		1	4

OTHER

LEVEL	FLAKE	BLADELET	CHIP	CHUNK
PORCELAINITE				
7	1			1
8	3		3	
QUARTZ				
9				1
AGATE				
8				1

Haaskraal waste:

KRAAL

SQUARE K

LYDIANITE

LEVEL	FLAKE	BLADELET	CHIP	CHUNK
1	13	4	10	2
2	28	9	48	22
3	45	14	27	10
4	95	28	137	13
5	131	29	101	16
6	143	34	73	19
7	167	42	109	21
8	185	69	189	25
9	204	45	92	15
10	140	33	134	12
11	142	59	166	8
total:	1293	366	1086	163

SILTSTONE

LEVEL	FLAKE	BLADELET	CHIP	CHUNK
1	10		4	1
2	65	2	36	20
3	44		2	8
4	80		20	14
5	92		21	13
6	99	1	35	11
7	93	3	49	10
8	55	1	8	12
9	34		4	12
10	32		1	5
11	22	1	12	6
total:	626	8	192	112

DOLERITE

LEVEL	FLAKE	BLADELET	CHIP	CHUNK
1	2			
2	3			
3	5			
4	2			1
7	5			2
8	4		11	1
11	3			1
total:	24		11	5

PORCELAINITE

9 1

CHERT

6 1

9 1

AGATE

11 1

Haaskraal waste:

SQUARE M

LYDIANITE

LEVEL	FLAKE	BLADELET	CHIP	CHUNK
1	54	4	34	3
2	18	3	38	4
3	20	4	35	4
4	72	9	77	10
5				
6	144	23	121	26
7	124	19	85	10
8	120	20	81	12
9	128	58	123	38
10	225	58	167	33
11	391	117	427	80
<hr/>				
total:	1296	315	1188	218

SILTSTONE

LEVEL	FLAKE	BLADELET	CHIP	CHUNK
1	41		1	5
2	18		1	1
3	9		6	3
4	44		9	8
5				
6	78		15	12
7	78		14	9
8	38	1	4	7
9	44	1	23	6
10	28		5	8
11	58		8	20
<hr/>				
total:	434	2	86	78

DOLERITE

LEVEL	FLAKE	BLADELET	CHIP	CHUNK
6				1
7				4
8				2
10	11			2
<hr/>				
Total:	11			9

OTHER

LEVEL	FLAKE	BLADELET	CHIP	CHUNK
PORCELAINITE				
1	2			
6	1			
11	2			
CHERT				
6				1
7	1			
9	1			

Haaskraal waste:

SQUARE O

LYDIANITE LEVEL	FLAKE	BLADELET	CHIP	CHUNK
1	100	9	77	10
2	43	10	18	3
3	33	9	20	7
4	63	16	39	1
5				
6	108	47	39	14
7	78	22	38	8
8	101	34	50	6
9	102	81	152	9
10	188	86	148	8
11	125	44	85	3
12	31	6	21	6
<hr/>				
total:	972	364	687	75

SILTSTONE LEVEL	FLAKE	BLADELET	CHIP	CHUNK
1	70		8	9
2	26	1	4	9
3	15	1	2	3
4	28	1	9	4
5				
6	65		4	10
7	31	1	5	4
8	29			2
9	41	1		3
10	33		5	1
11	28		6	3
12	3		3	1
<hr/>				
total:	368	5	46	49

DOLERITE LEVEL	FLAKE	BLADELET	CHIP	CHUNK
1	2		1	
2	2			
3				
4	1		1	
5				
6	1		1	
7	1			
8				
9				
10	7		2	3
11	5			
12				
<hr/>				
total:	19		5	3

Haaskraal waste:

SQUARE 0

OTHER LEVEL	FLAKE	BLADELET	CHIP	CHUNK
PORCELAINITE				
1		1		
2		1		
7	3			
9				1
11		1		
CHERT				
6	1			
8			1	
10	1			
AGATE				
8				1
10	1			
11			2	

VOLSTRUISFONTEIN WHOLE WASTE

SQUARE A

LYDIANITE

LEVELS:	FLAKE	BLADELET	CHIP	CHUNK
1	22	18	25	6
2	45	7	38	6
3	40	11	30	19
4	22	7	33	8
5	34	5	21	19
6	25	11	20	10
7	41	12	37	10
8	82	36	35	16
9	127	32	54	21
10	103	32	39	16
11	55	24	29	8
12	18	10	27	5
<hr/>				
total:	614	205	388	144

SILTSTONE

LEVELS:	FLAKE	BLADELET	CHIP	CHUNK
1	5	1	2	1
2	6	0	3	16
3	13	3	7	5
4	2	2	2	3
5	5	0	1	4
6	4	0	0	1
7	5	0	2	2
8	9	2	4	4
9	5	3	2	7
10	10	4	6	4
11	5	5	1	2
12	1	0	0	3
<hr/>				
total:	70	20	30	52

OTHER

LEVELS:	FLAKE	BLADELET	CHIP	CHUNK
DOLERITE				
3				2
CHERT				
3				4
4				2
6				3
7				4
9				1

Volstruisfontein waste:

SQUARE B

LYDIANITE

LEVELS:	FLAKE	BLADELET	CHIP	CHUNK
1	24	1	12	4
2	59	1	18	10
3	65	4	21	33
4	140	11	17	134
5	127	3	45	21
6	163	4	30	16
7	126	3	41	17
8	132	1	15	16
9	86	12	28	18
10	76	3	10	6
11	69	7	13	17
12	38	3	18	9

total:	1105	53	268	301

SILTSTONE

LEVELS:	FLAKE	BLADELET	CHIP	CHUNK
1	4	0	4	4
2	20	2	8	6
3	25	0	3	21
4	30	0	2	11
5	22	0	4	5
6	38	1	0	10
7	34	0	6	7
8	23	0	0	5
9	19	0	0	5
10	7	0	1	2
11	7	0	0	7
12	3	0	1	2

total:	232	3	29	85

OTHER

LEVELS:	FLAKE	BLADELET	CHIP	CHUNK
CHERT				
3				2
4	1			
6				1
7				1
8	1		1	

Volstruisfontein waste:

SQUARE C

LYDIANITE

LEVELS:	FLAKE	BLADELET	CHIP	CHUNK
1	31	11	11	6
2	47	19	17	19
3	75	34	40	27
4	109	46	15	19
5	65	34	31	16
6	54	41	31	36
7				
8	30	19	21	9
9				
10	33	21	21	11
11				
12	45	35	30	18
13	35	15	17	19
14	14	15	1	11
<hr style="border-top: 1px dashed black;"/>				
total:	538	290	235	191

OTHER

LEVELS: SILTSTONE	FLAKE	BLADELET	CHIP	CHUNK
1	2			
3	4			
12	1			

HAASKRAAL LYDIANITE CORES
Frequencies per type per level

	LEV1	15	2	3	35	4	5	6	7	8	9	10	11	12
FLAKE IRREGULAR	A													
	B													
	E								1					
	F								1	1				
	G							1						
	I					1						2		
	J										1			
	K			2	1		1	1		1	4	1		1
	M				1				1	1	3	2	2	4
	O	2			1		1		1	1	1	3	1	1
	total:	2		2	3		3	1	3	5	10	8	3	6

BLADELET IRREGULAR	A													
	B													
	E													
	F													
	G													
	I													
	J													
	K						1				1	1		
	M										2			1
	O											1	1	
	total:						1				3	2	1	1

PREP. PLTFM FLAKE	A													
	B													
	E													
	F													
	G													
	I													
	J									1				
	K						1							
	M				1					1	1	2		
	O						1							
	total:				1		2			2	1	2		

HAASKRAAL SILTSTONE CORES
Frequencies per level per type

	LEV1	15	2	3	35	4	5	6	7	8	9	10	11	12	

FLAKE IRREGULAR	A														
	B										1				
	E										1	1			
	F														
	G														
	I														
	J														
	K	1						2	1		4	1			2
	M	1			1		2				3	3			6
	O	1		2			2		2						1
total:	3		2	1		4	2	3		7	6	1		9	

PREP. PLTFM BLADELET	A														
	B														
	E														
	F														
	G														
	I														
	J														
	K														
	M														1
	O														
total:														1	

OTHER CORES	E	CHERT IRREGULAR FLAKE										1			
	O	PORCELAINITE NAT. PLAT. FLAKE											1		
CORE REJUVINATED PIECES															
	O										2			1	
	M											1		1	

VOLSTRUISFONTEIN CORES

LYDIANITE

<u>square</u>	<u>level</u>	<u>square</u>	<u>level</u>
IRREGULAR FLAKE		PREPARED PLATFORM BLADE	
A4	2	B6	8
C1	2	A14	9
C4	4	C1	10
C1	5	C7	10
B7	6	B10	11
A5	6	A12	11
B14	7		
B6	7		
A12	8	PREPARED PLATFORM FLAKE	
B4	10	C7	3
B1	11	C4	3
B15	12	C5	8
C7	14	B3	9
		B5	11
		BI-POLAR	
		A14	9














SILTSTONE

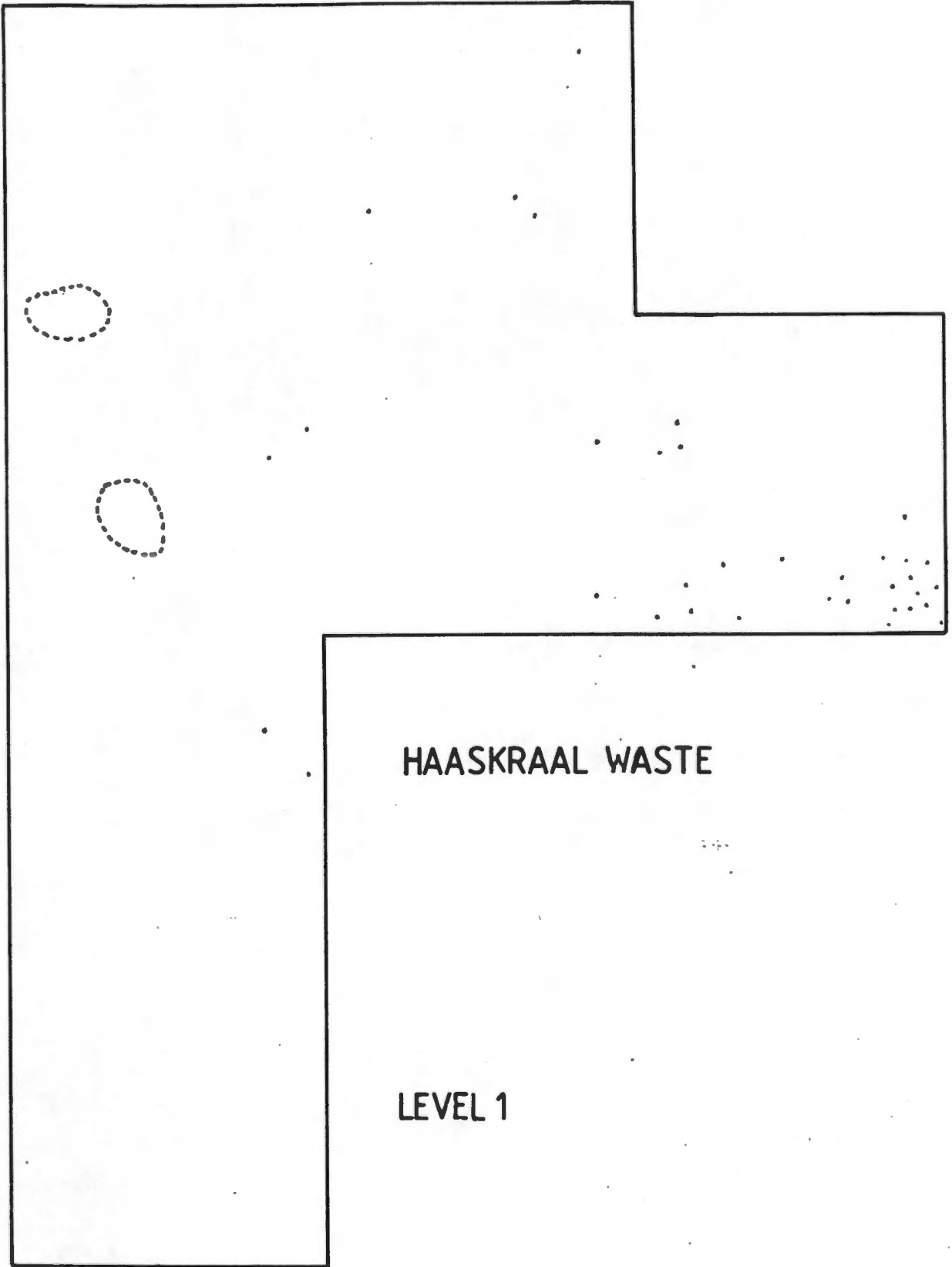
<u>square</u>	<u>level</u>
IRREGULAR FLAKE	
A3	8

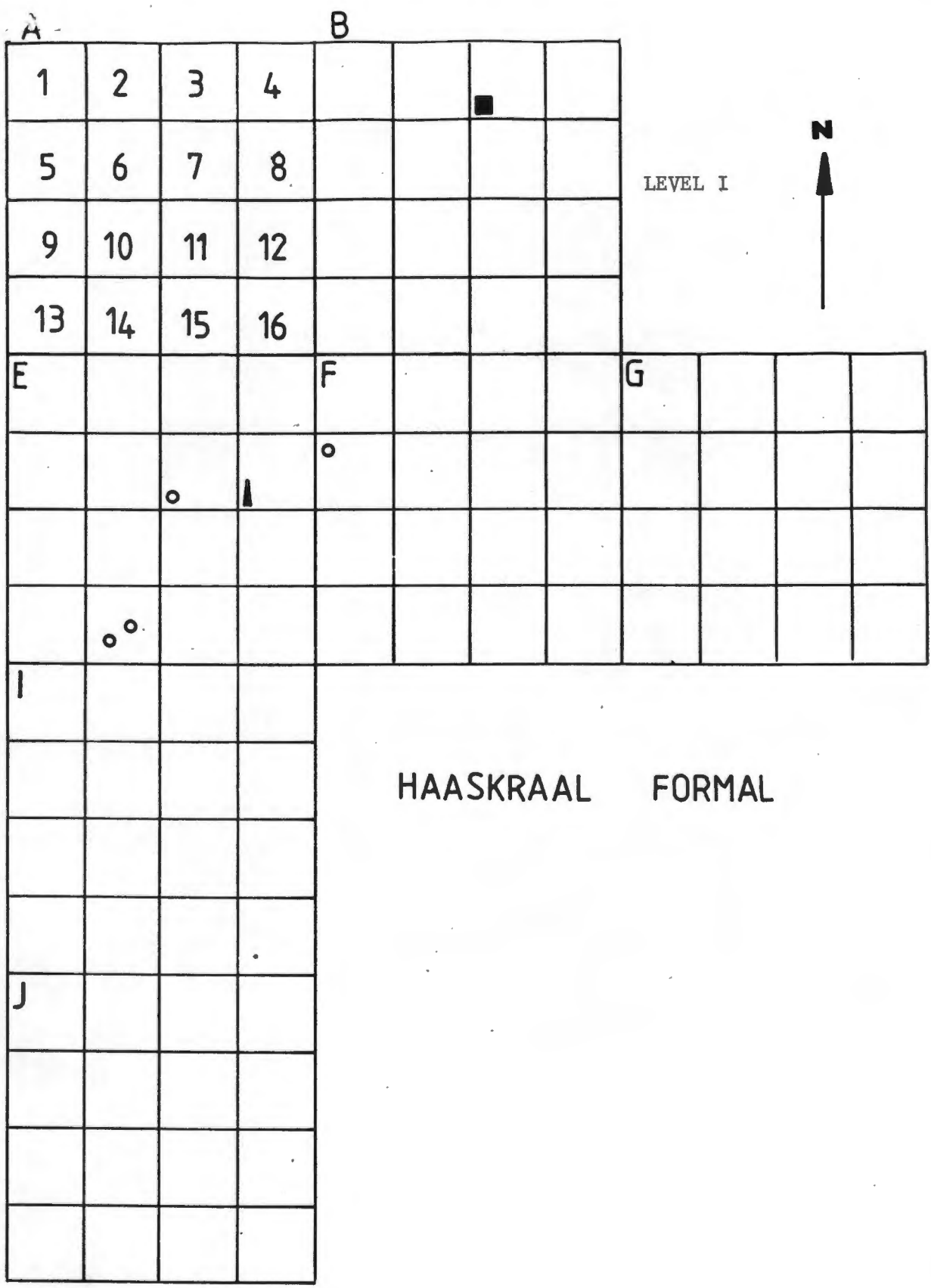
APPENDIX C

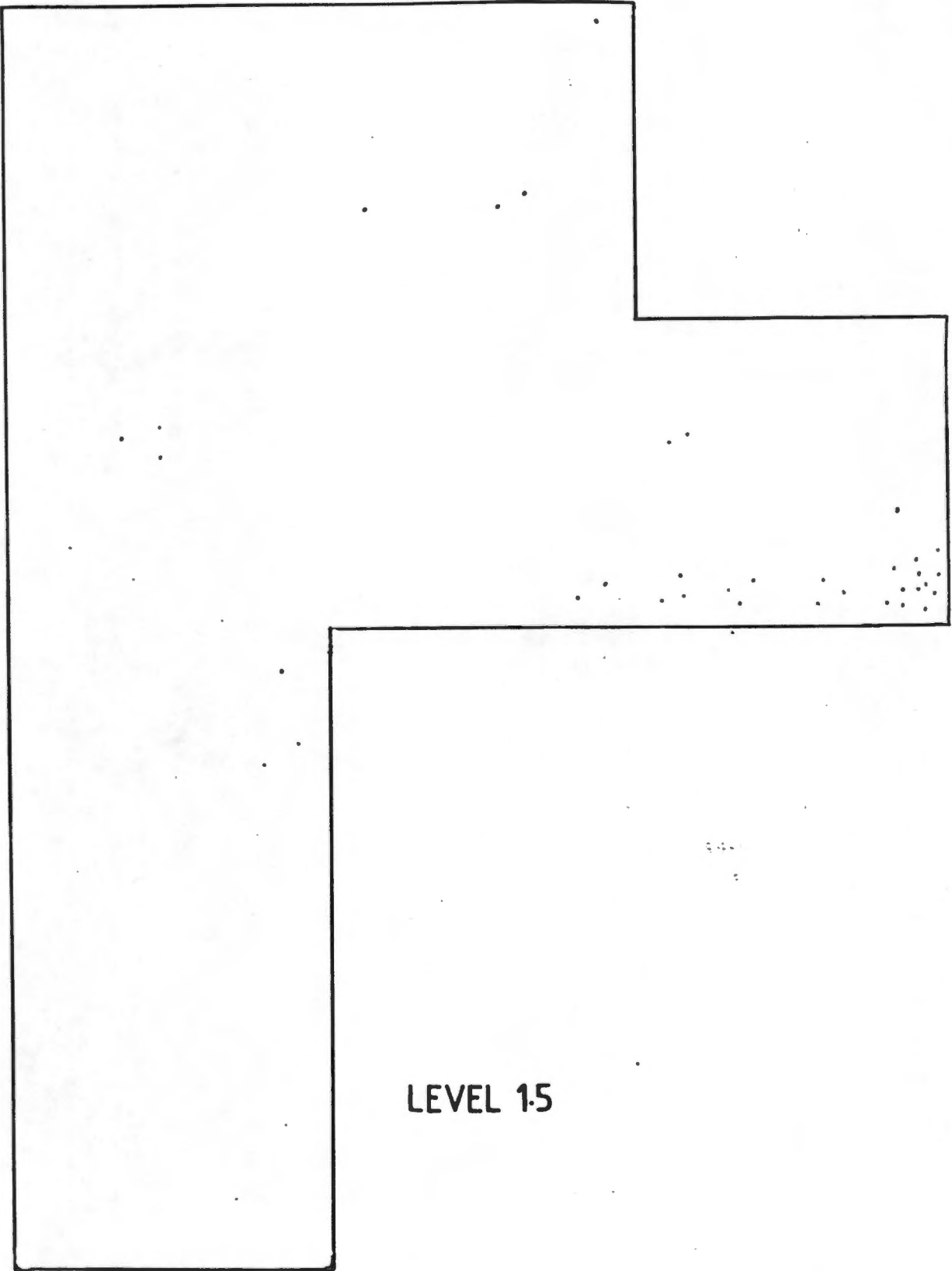
Haaskraal and Volstruisfontein. Level plots of formal artefacts, pottery and waste.

KEY

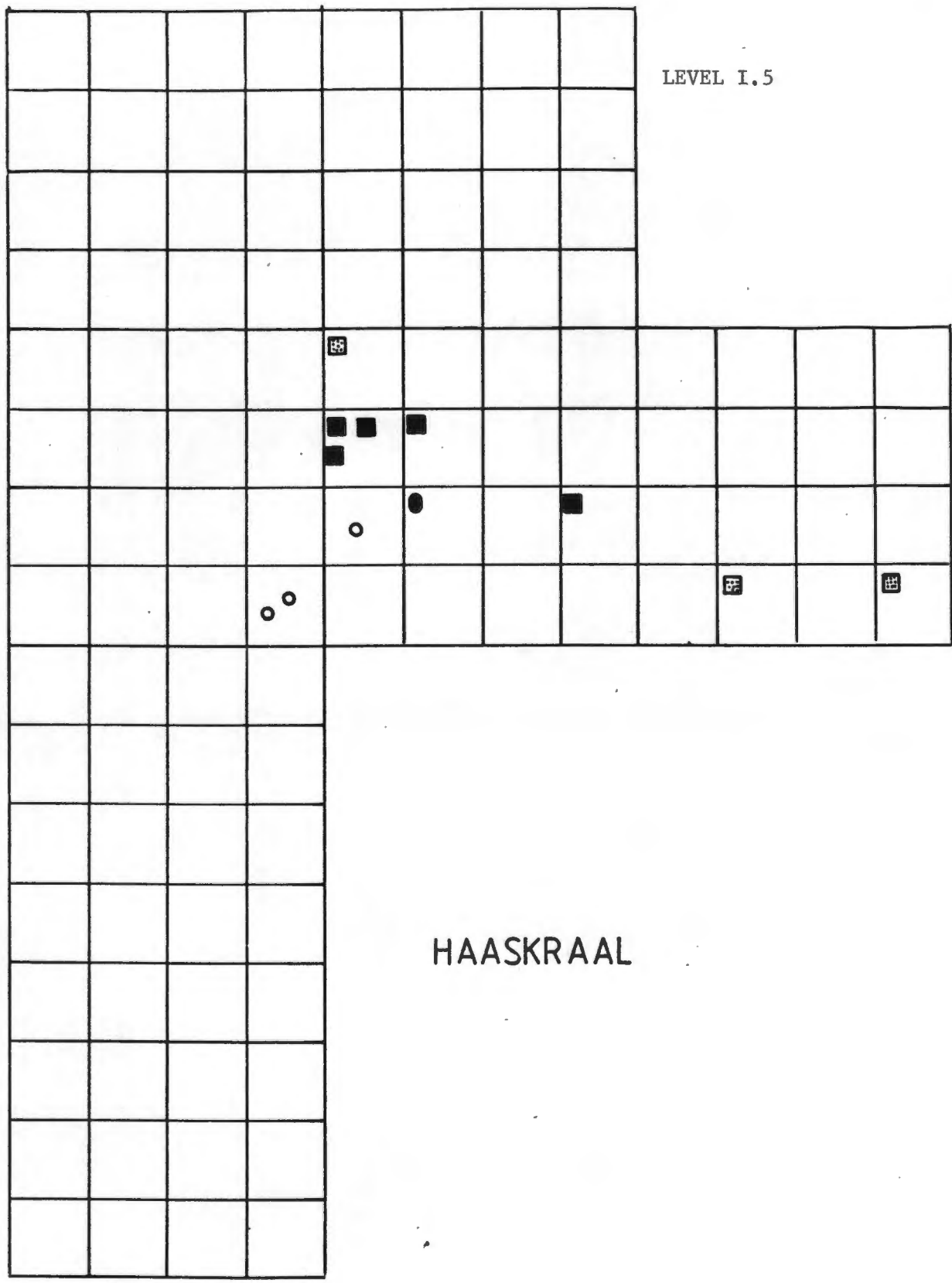
	Rockerstamp sherd (grass temper)
	Non-rockerstamp sherd (grass temper)
	Undecorated sherd (grass temper)
	Khoi sherds and sherds with minimal grass temper
U	Utilized/retouched
	Scrapers
	round
	small end scrapers
	end scrapers
3	Backed piece
T	Tanged point
A	Adze
D	Drill
	Worked bone
	Glass bead
	OES bead
	Hearths
	Bedrock
	Waste

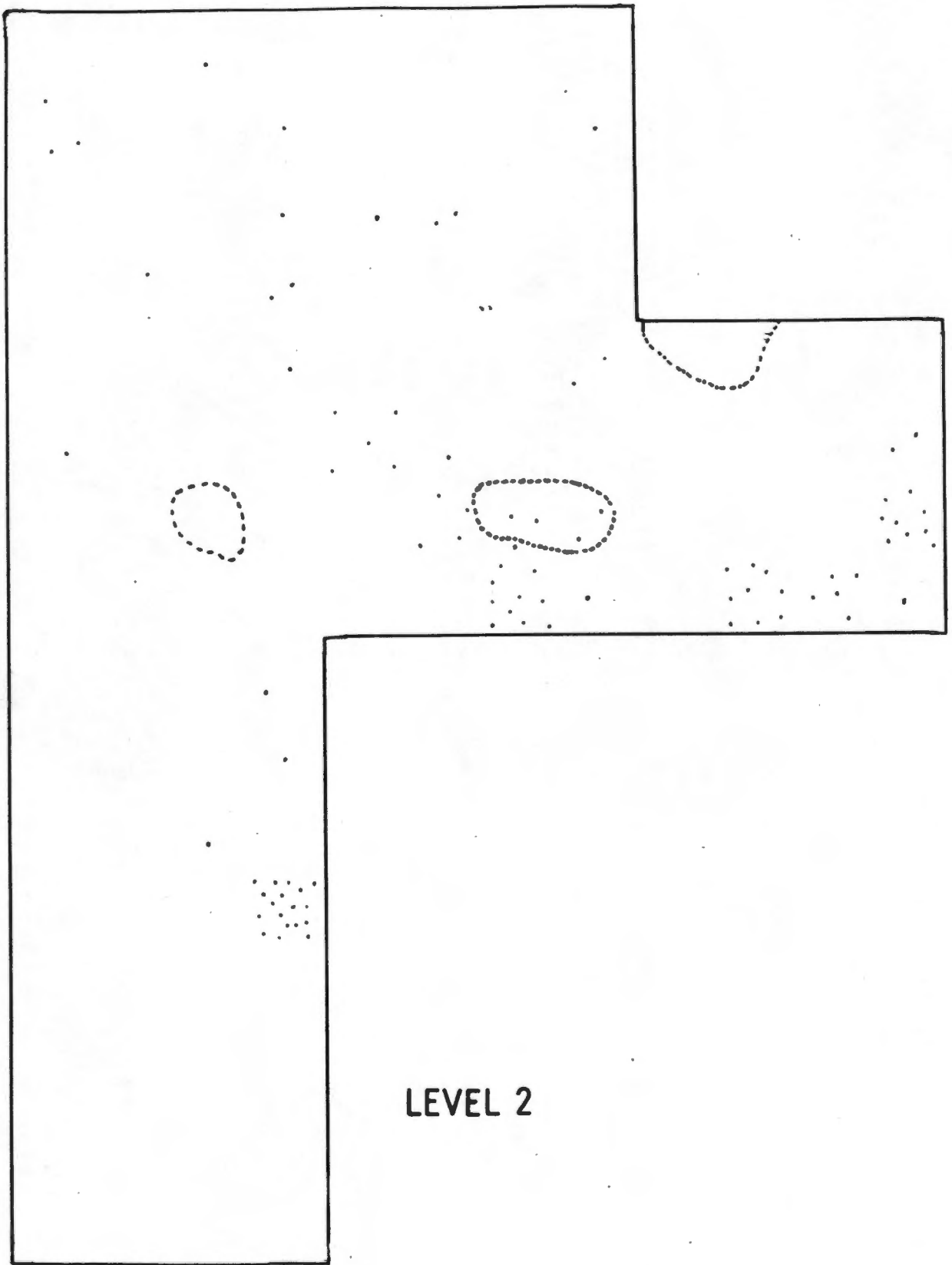






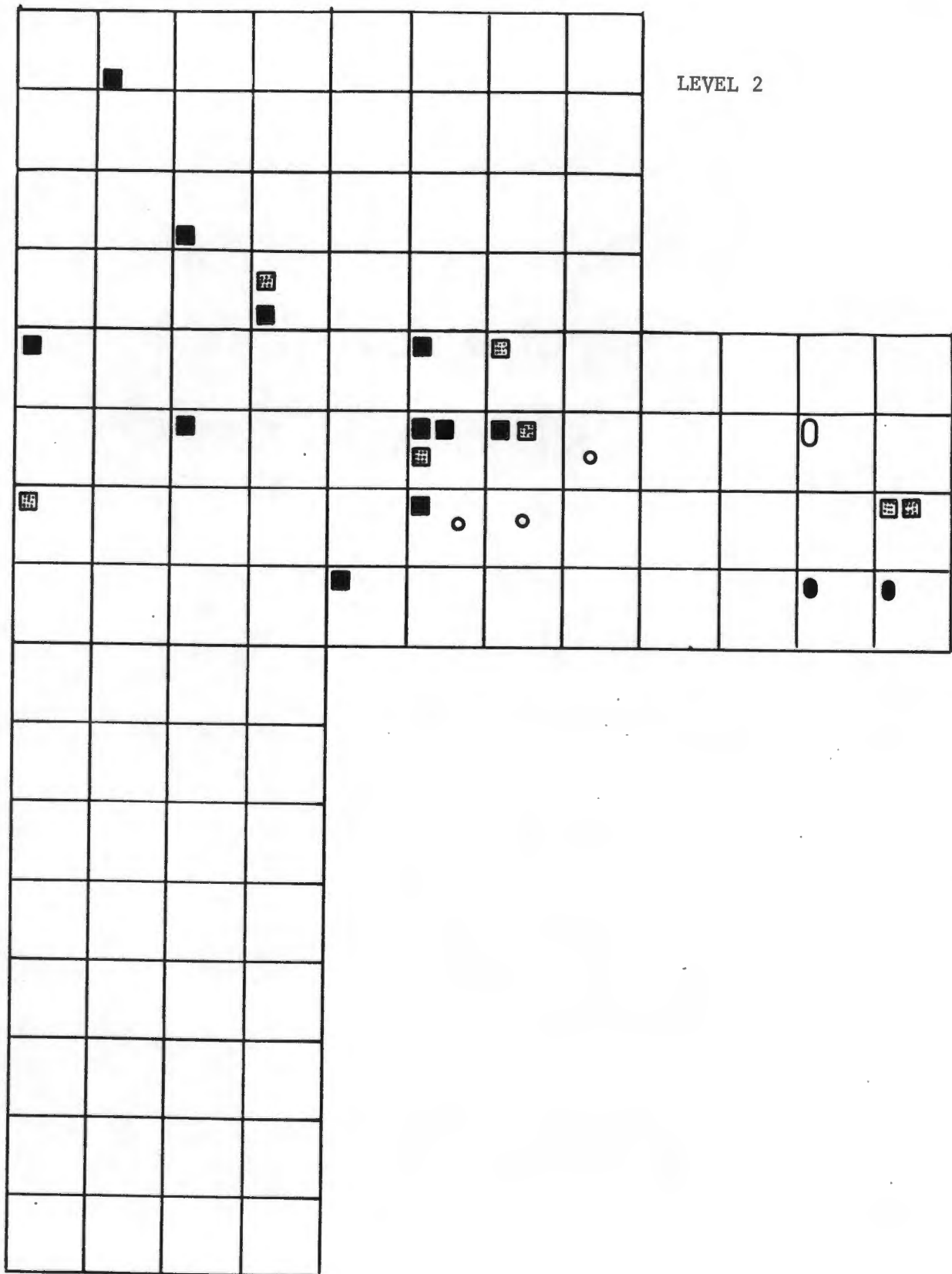
LEVEL 1.5

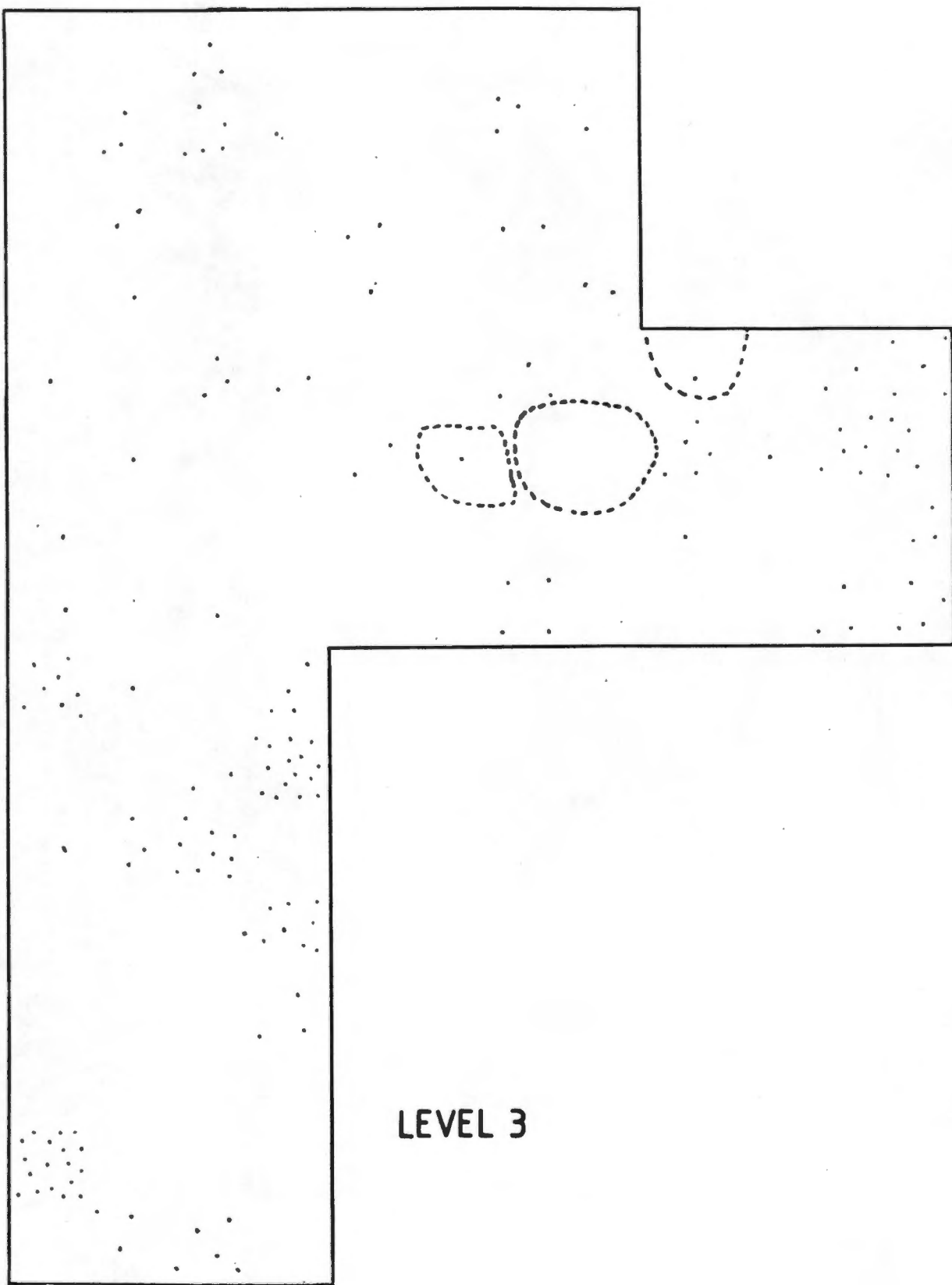




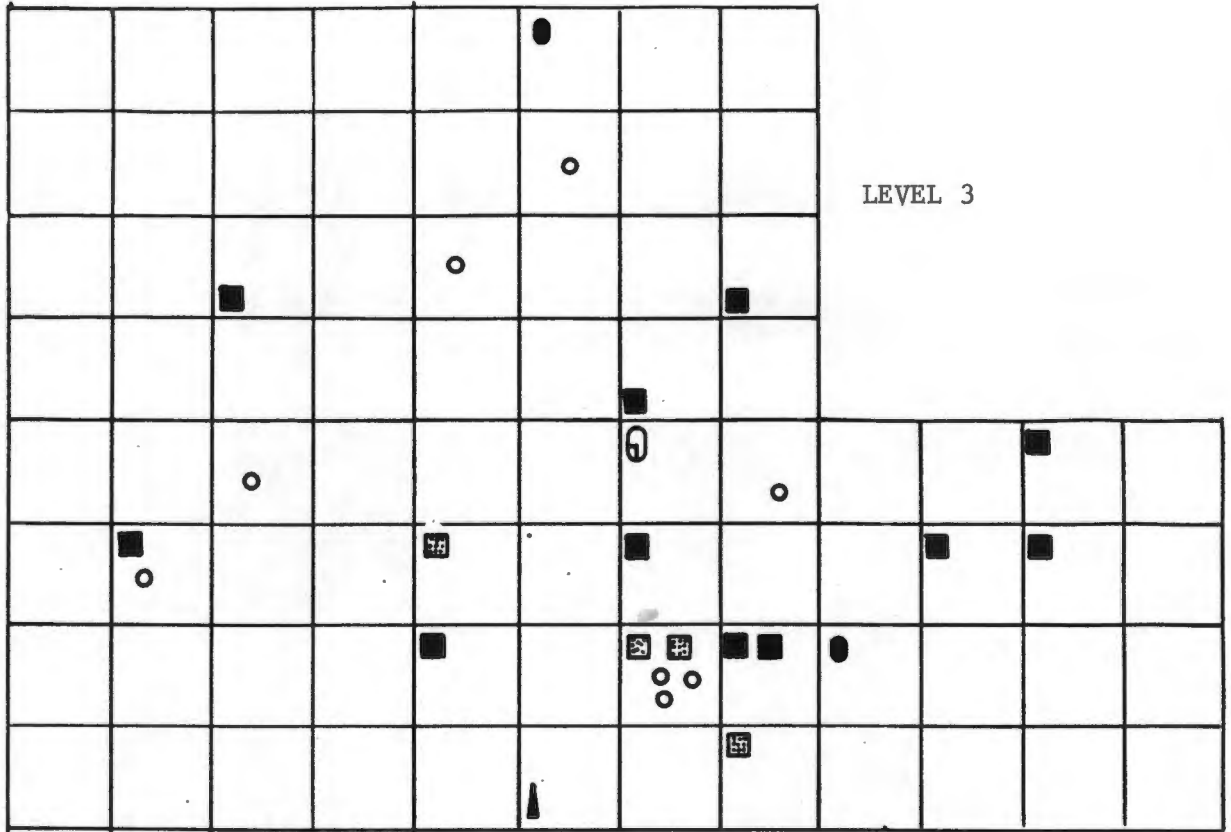
LEVEL 2

LEVEL 2



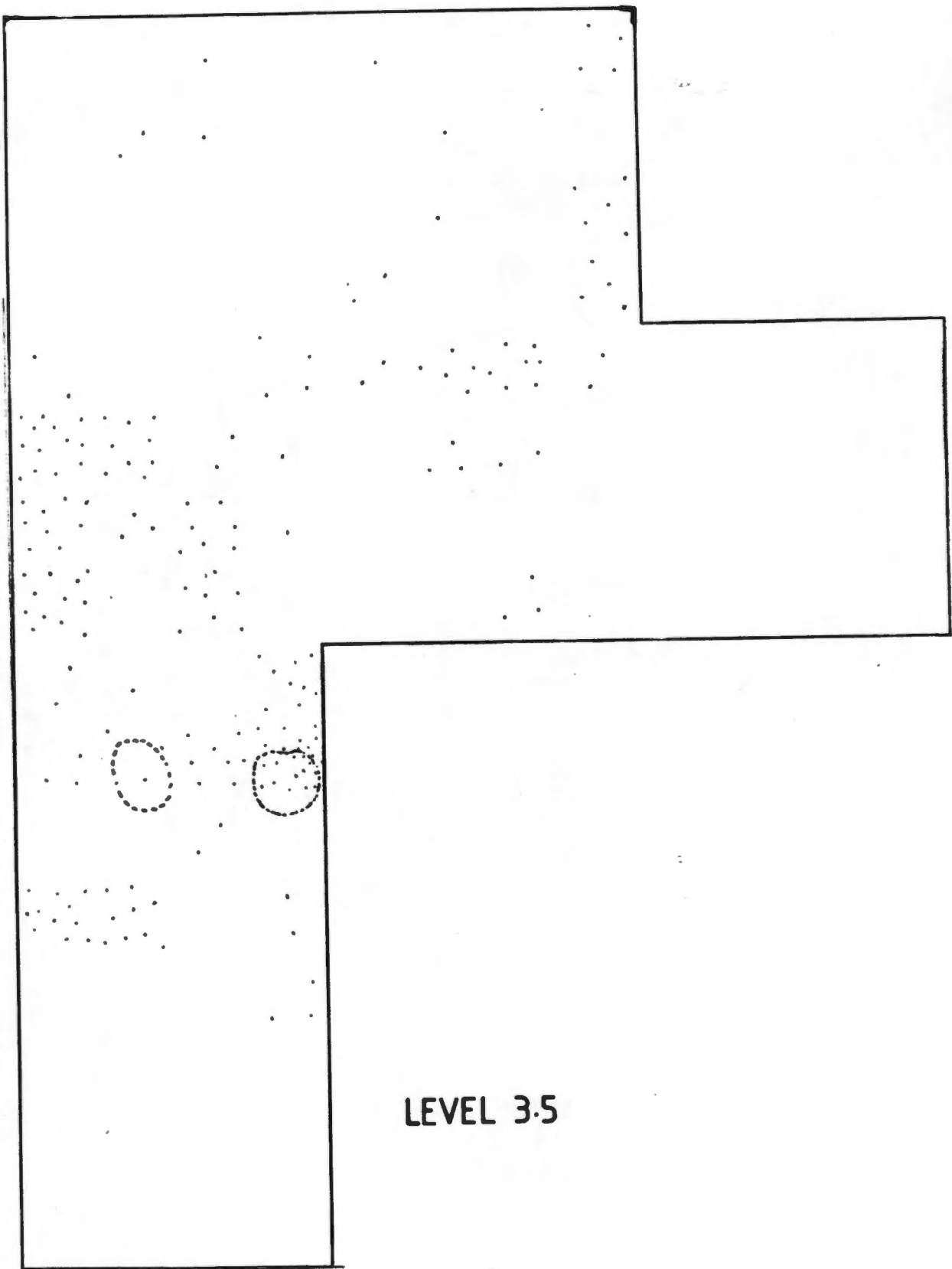


LEVEL 3

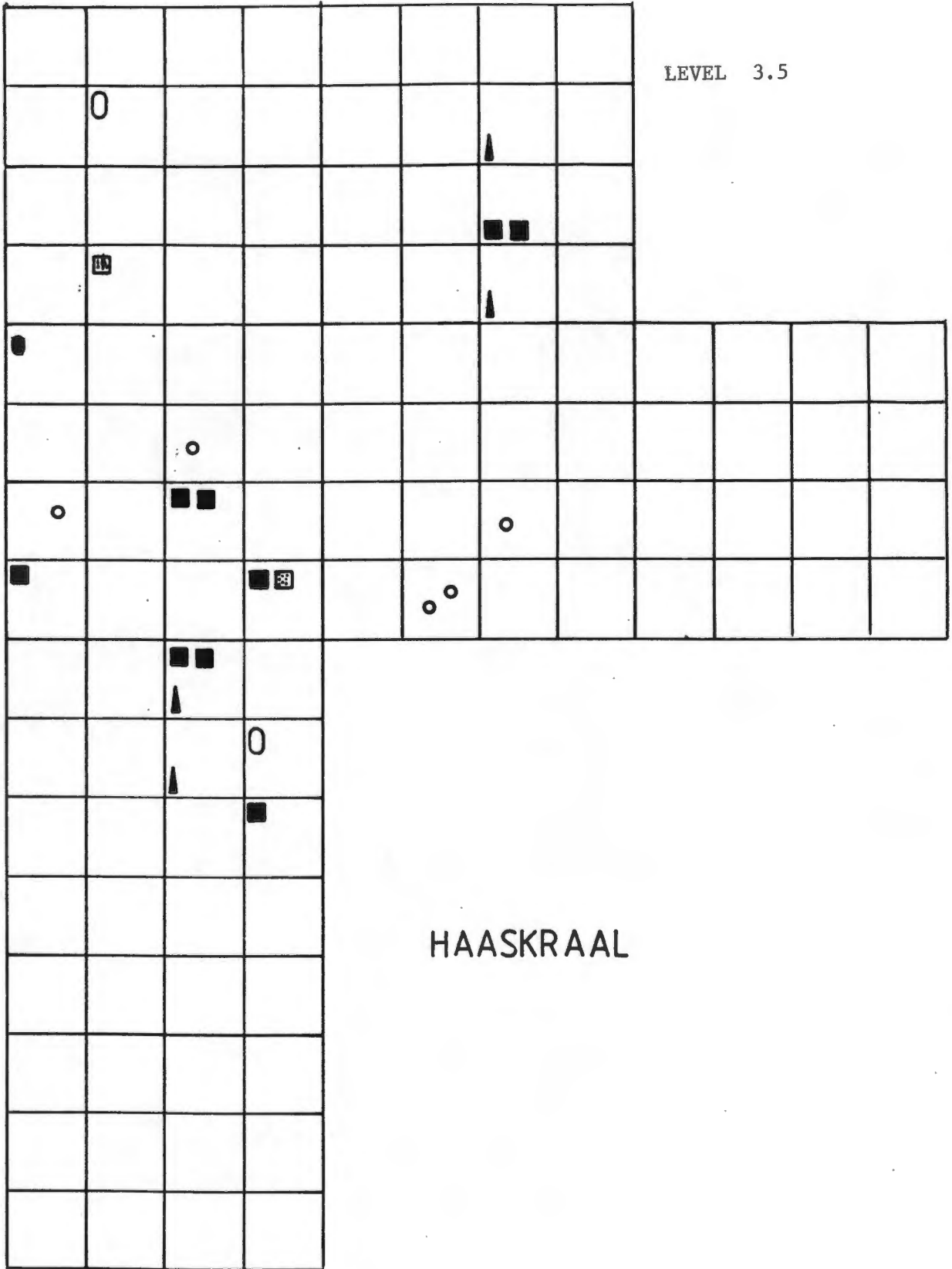


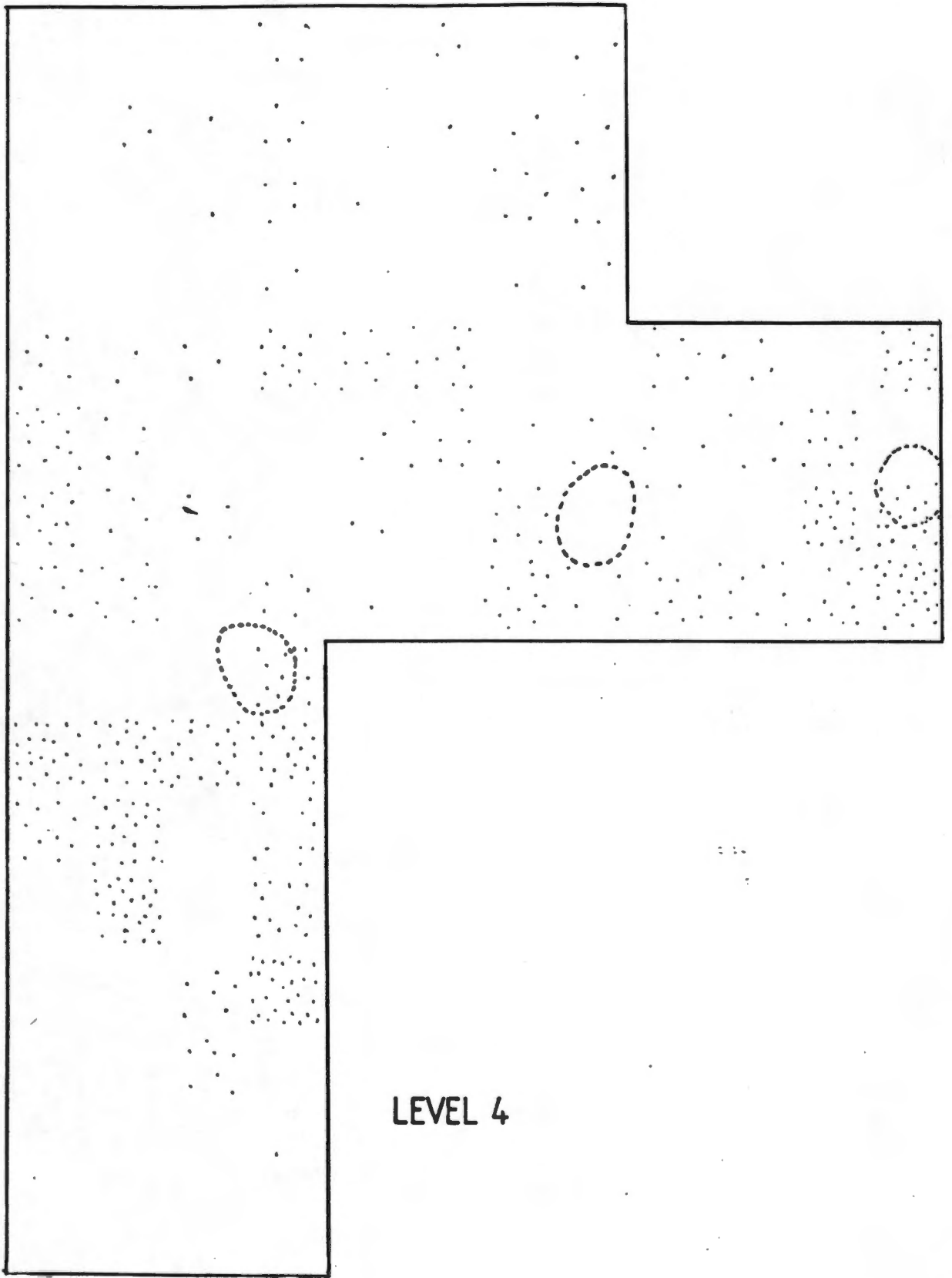
LEVEL 3

HAASKRAAL

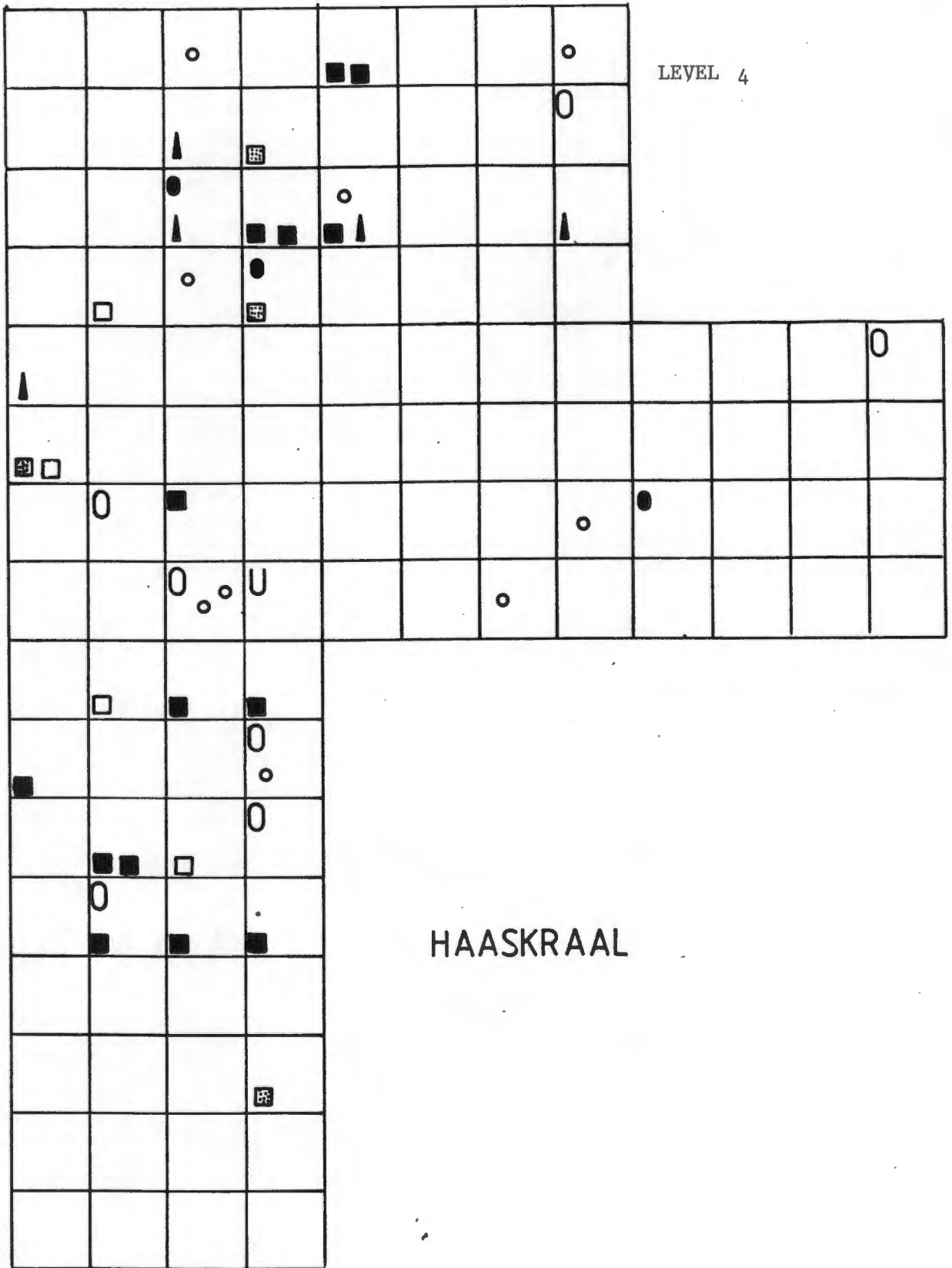


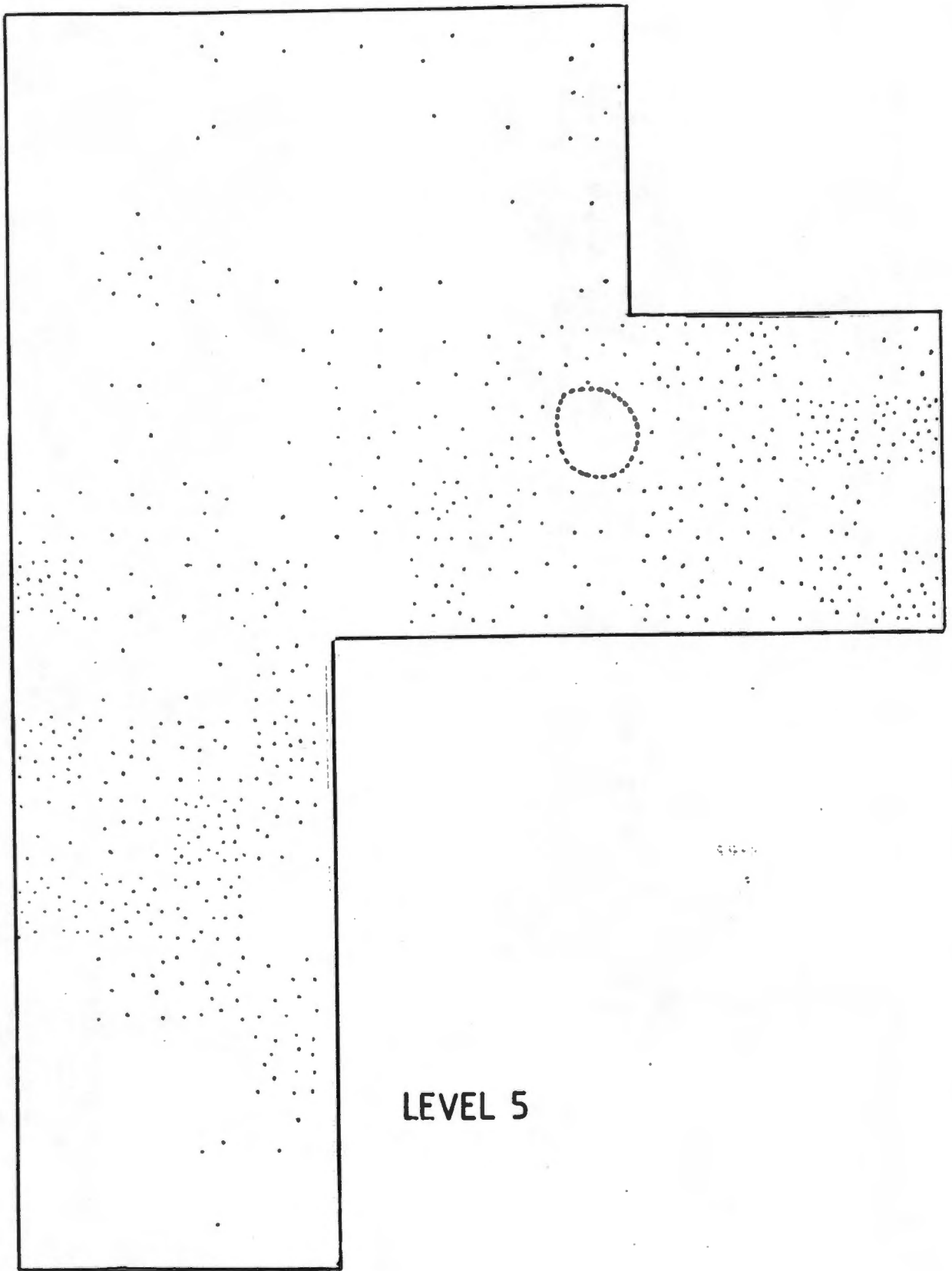
LEVEL 3.5



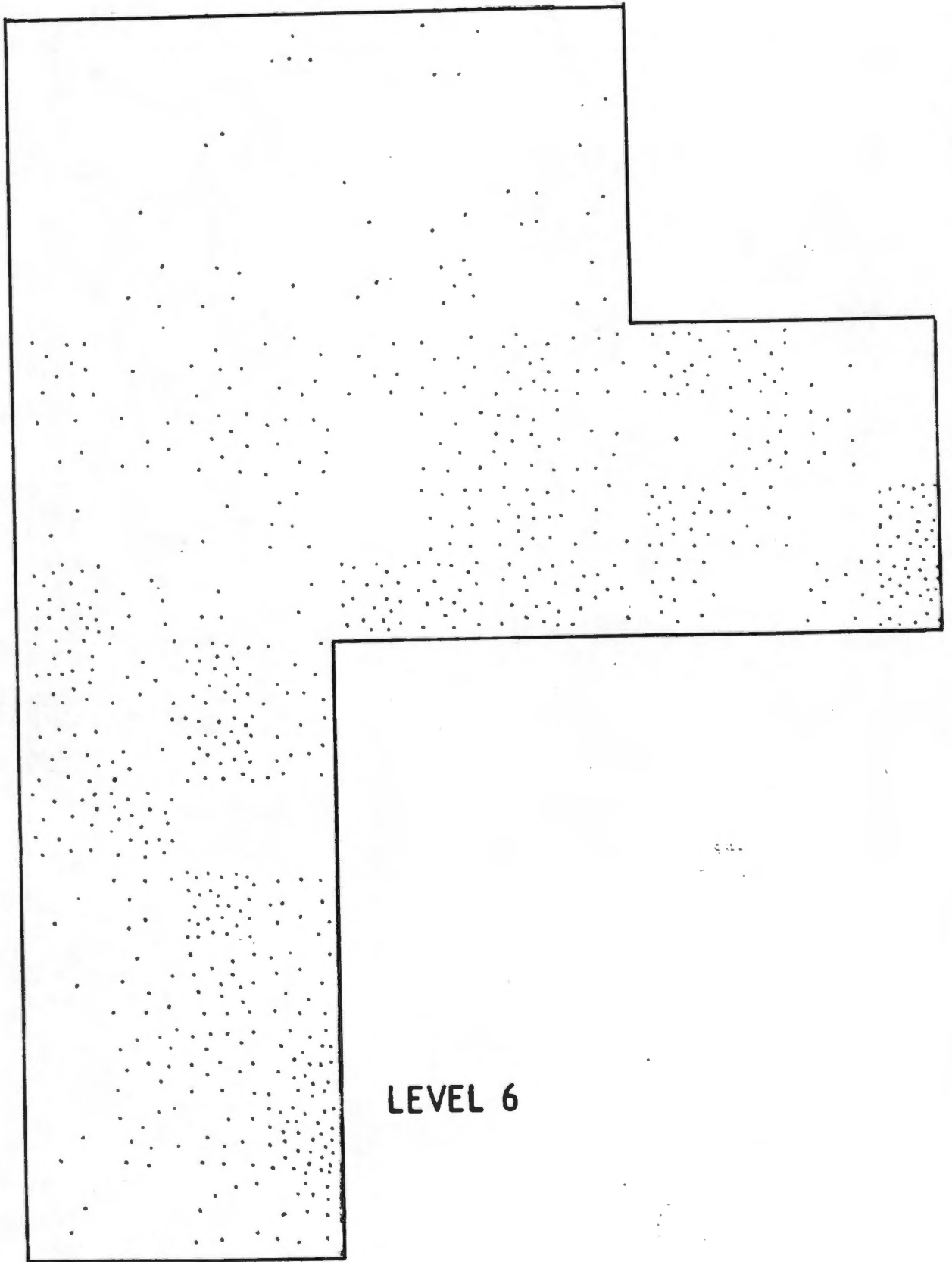


LEVEL 4

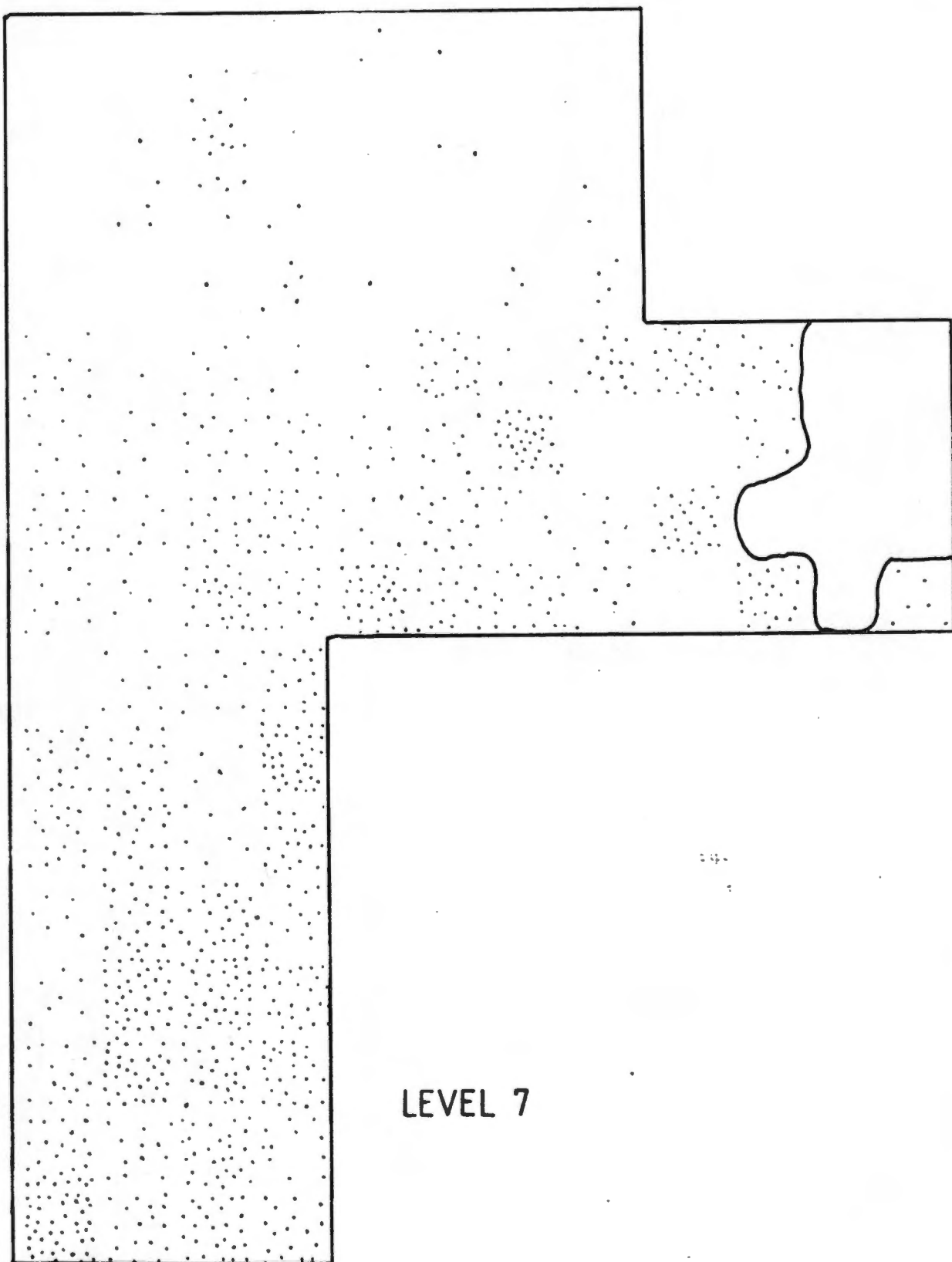




LEVEL 5

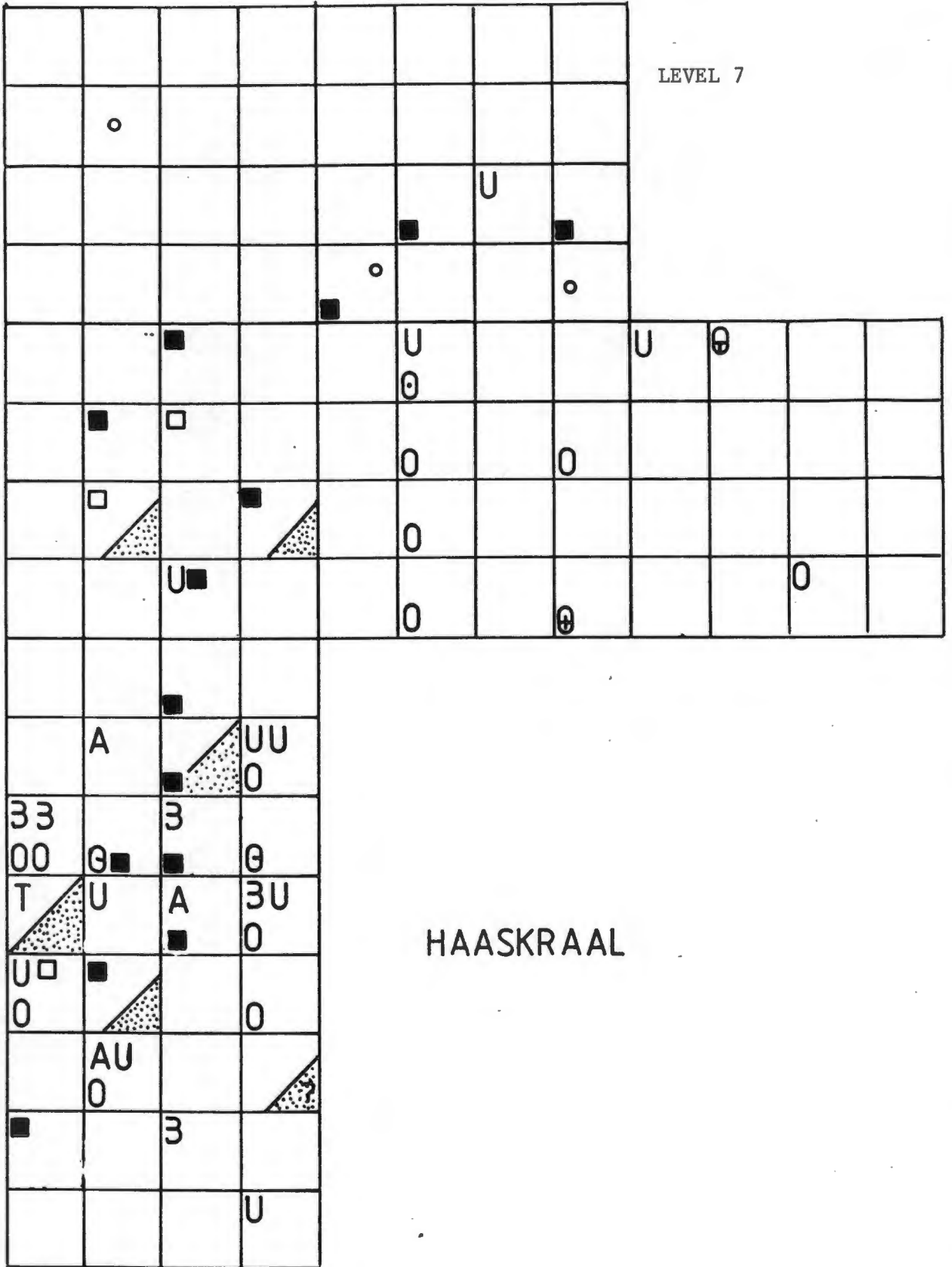


LEVEL 6

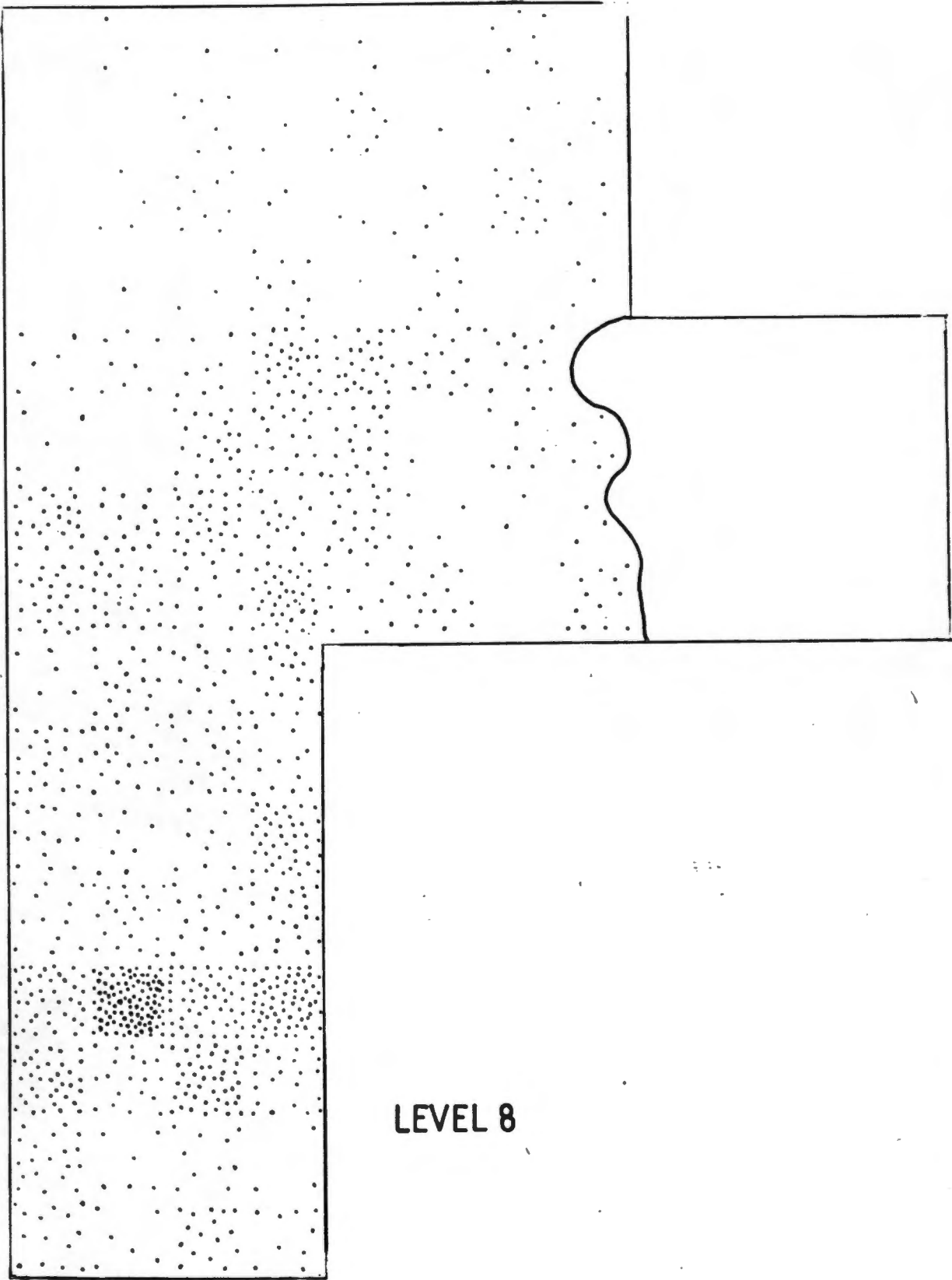


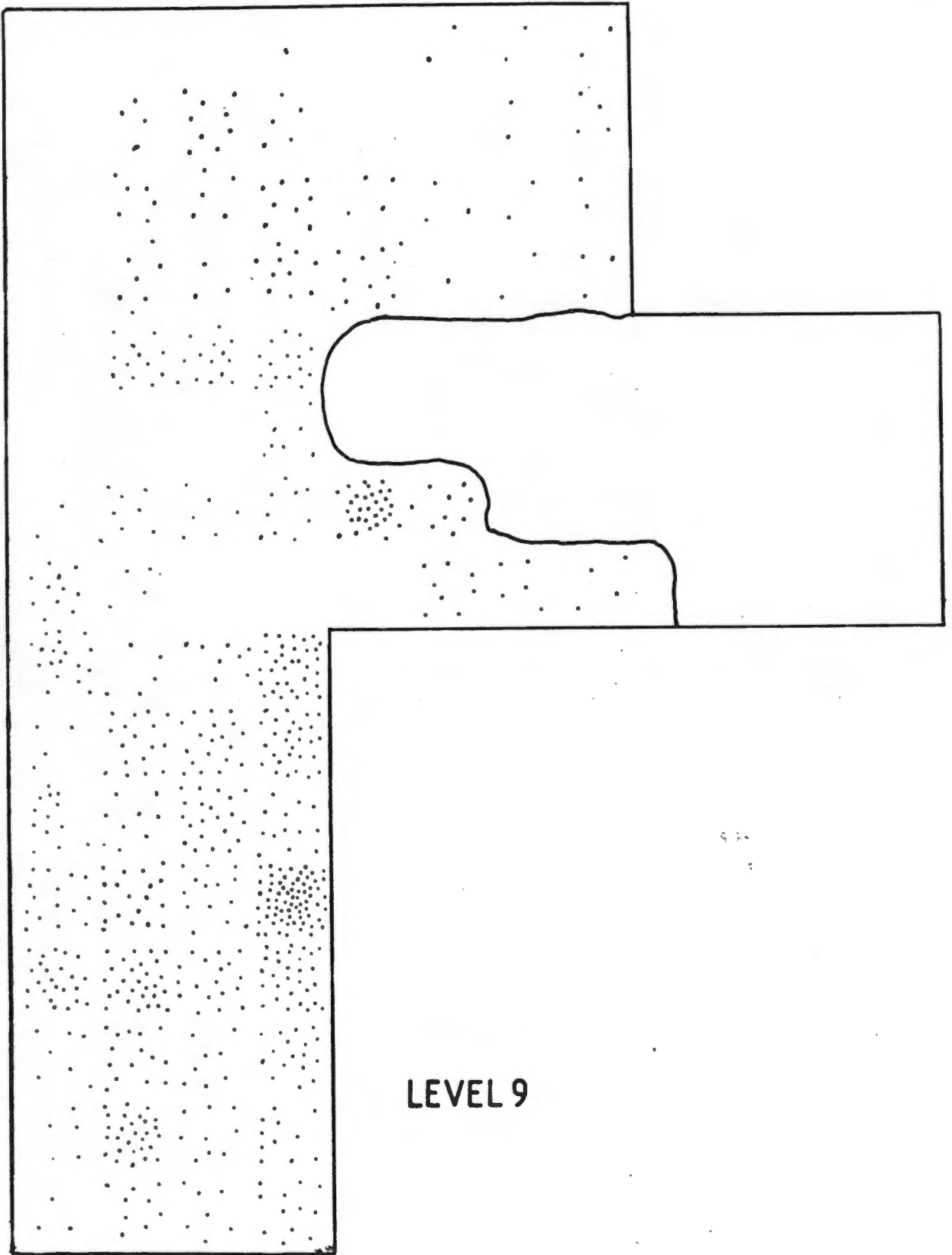
LEVEL 7

LEVEL 7

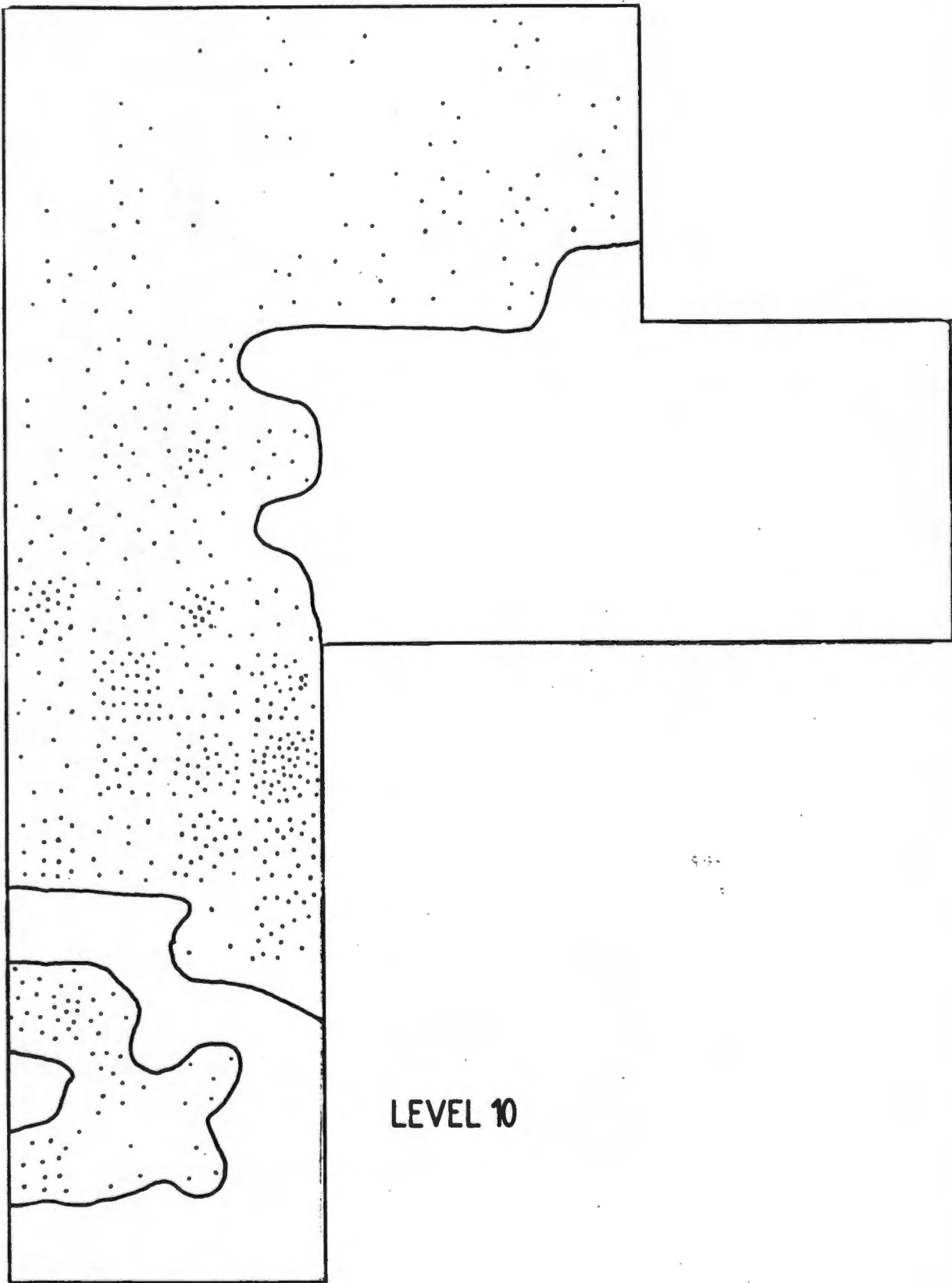


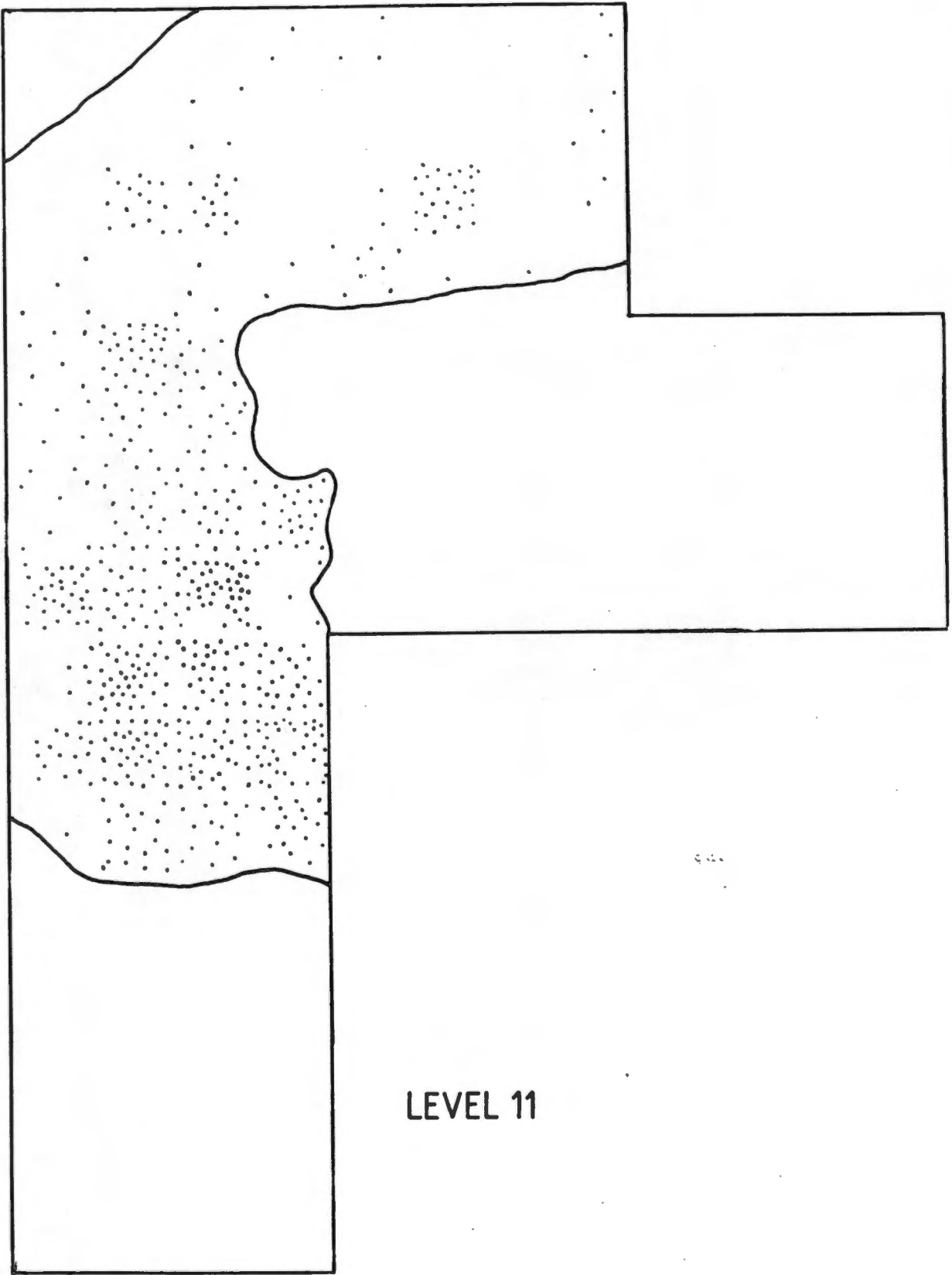
HAASKRAAL



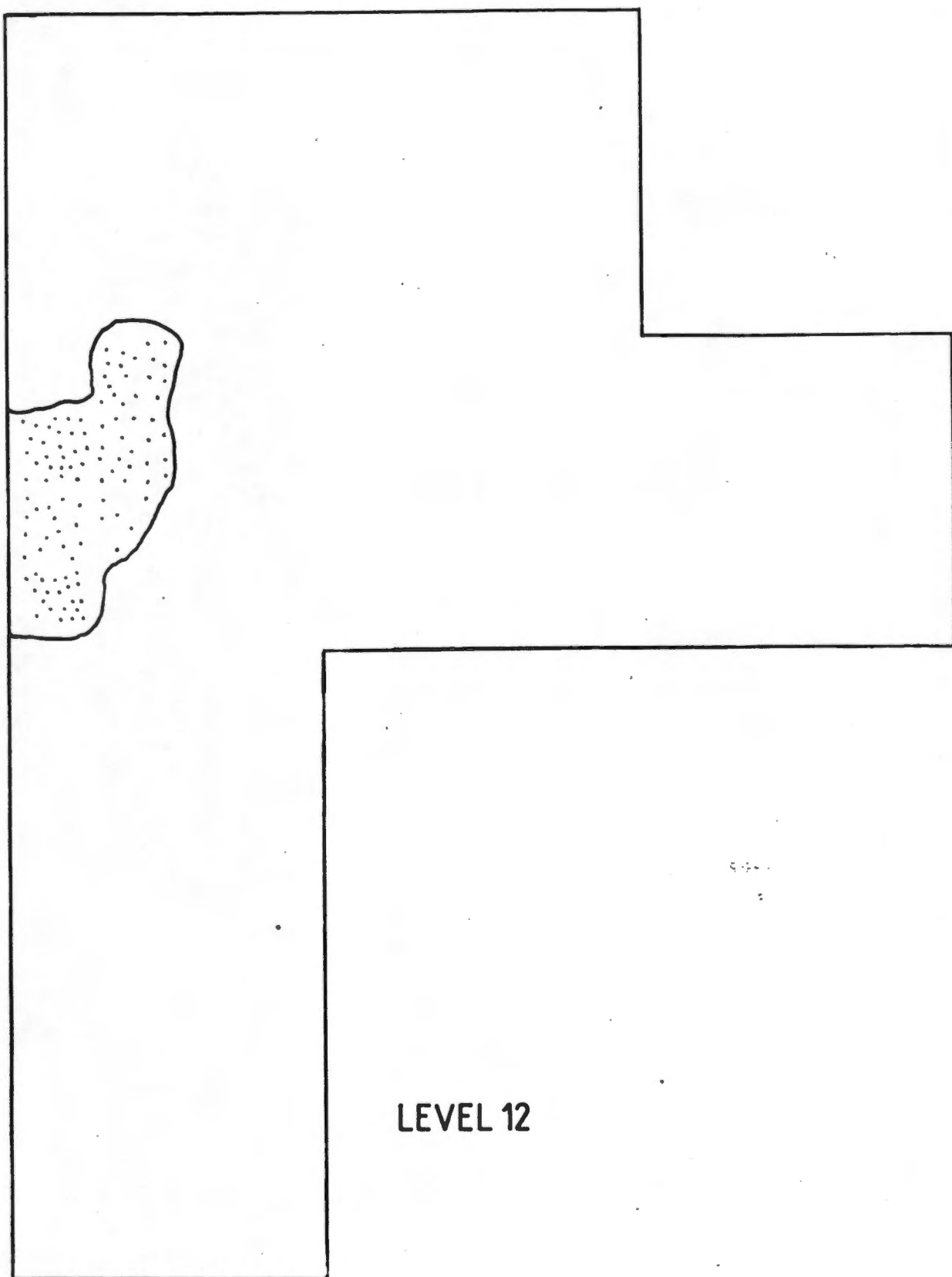


LEVEL 9

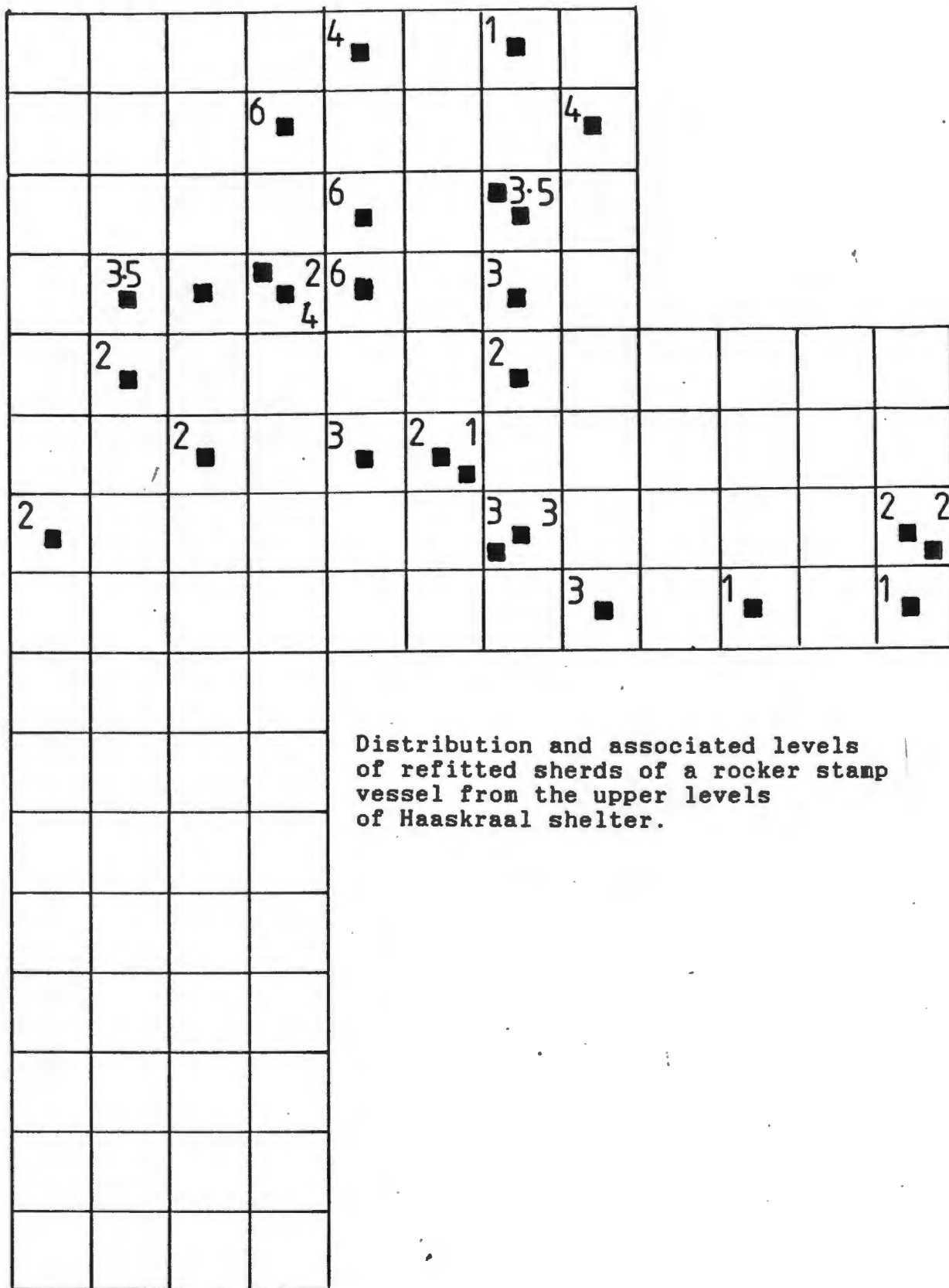




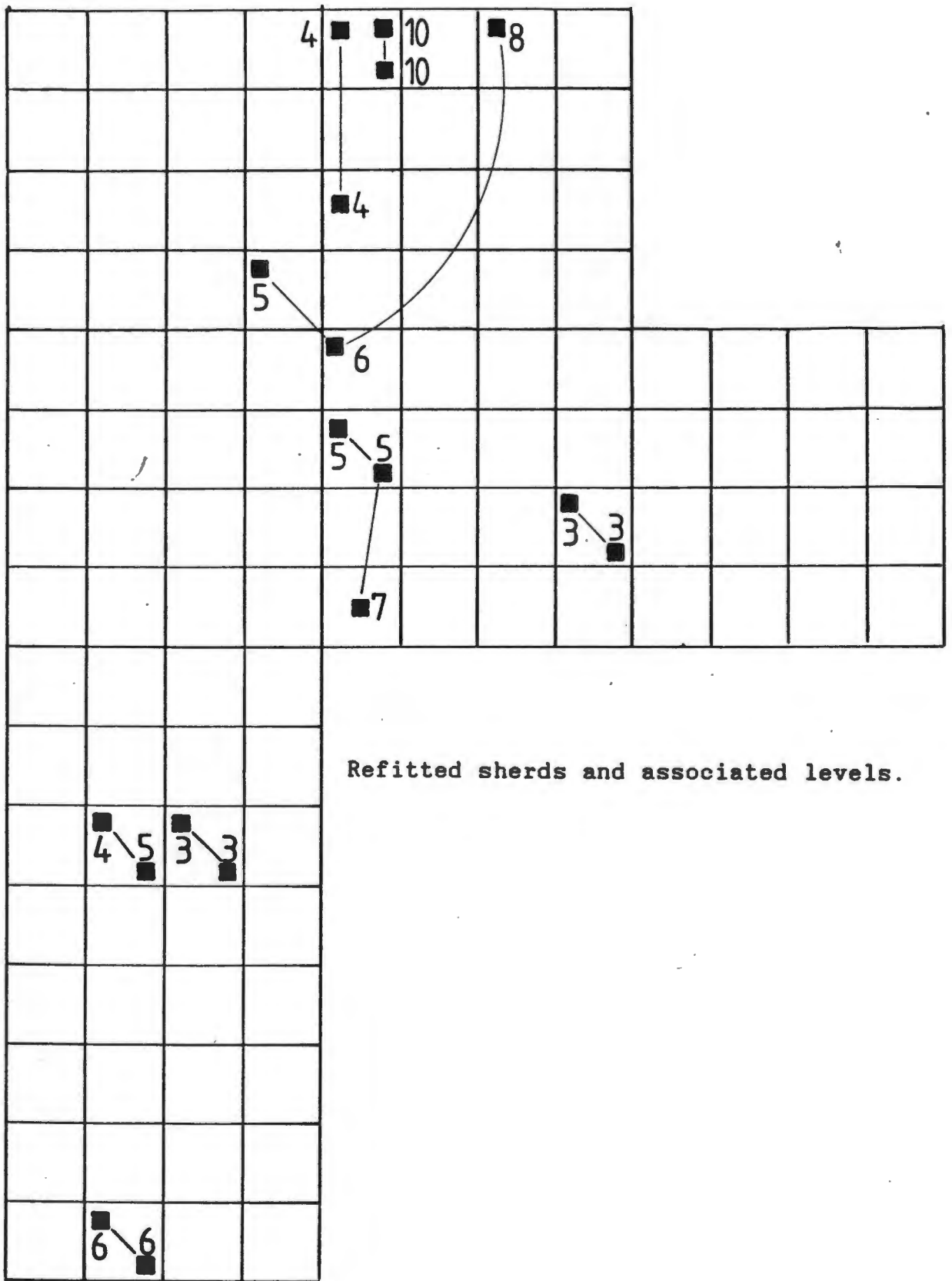
LEVEL 11



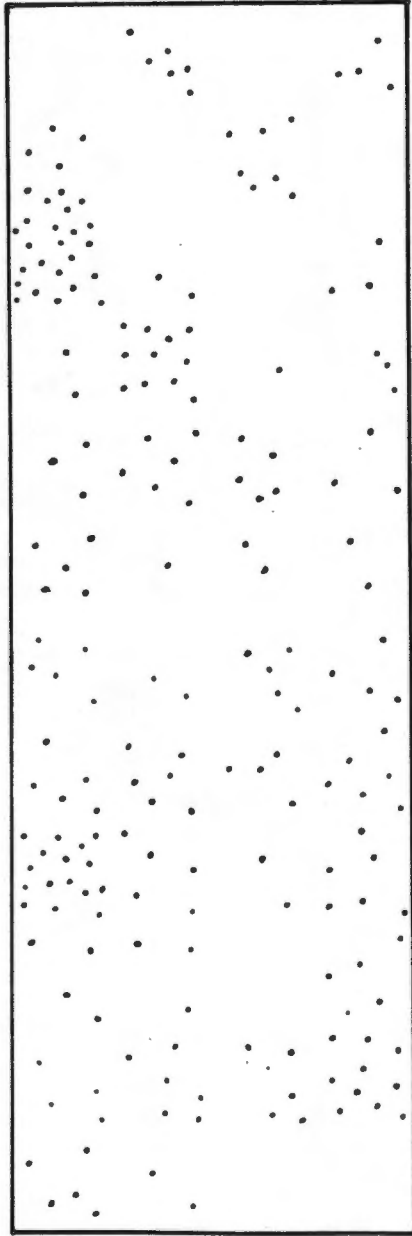
LEVEL 12



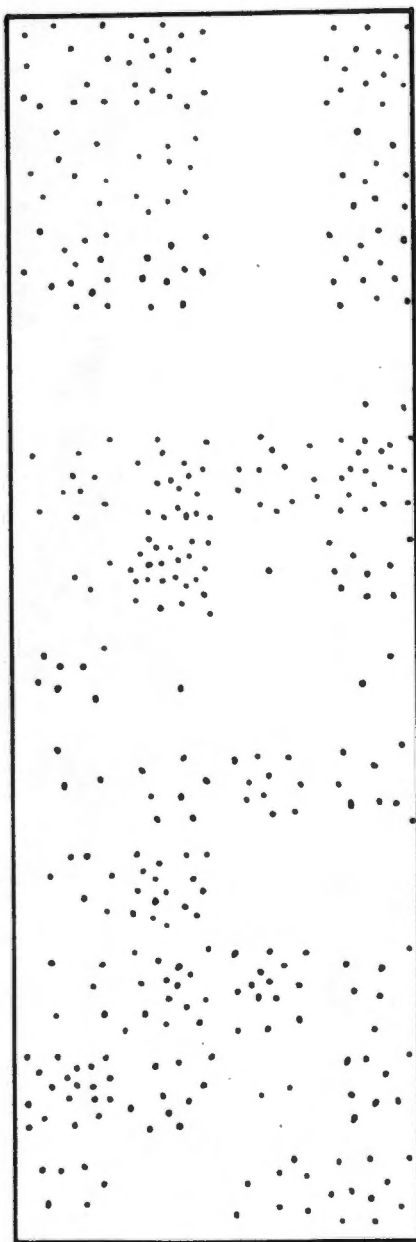
Distribution and associated levels of refitted sherds of a rocker stamp vessel from the upper levels of Haaskraal shelter.



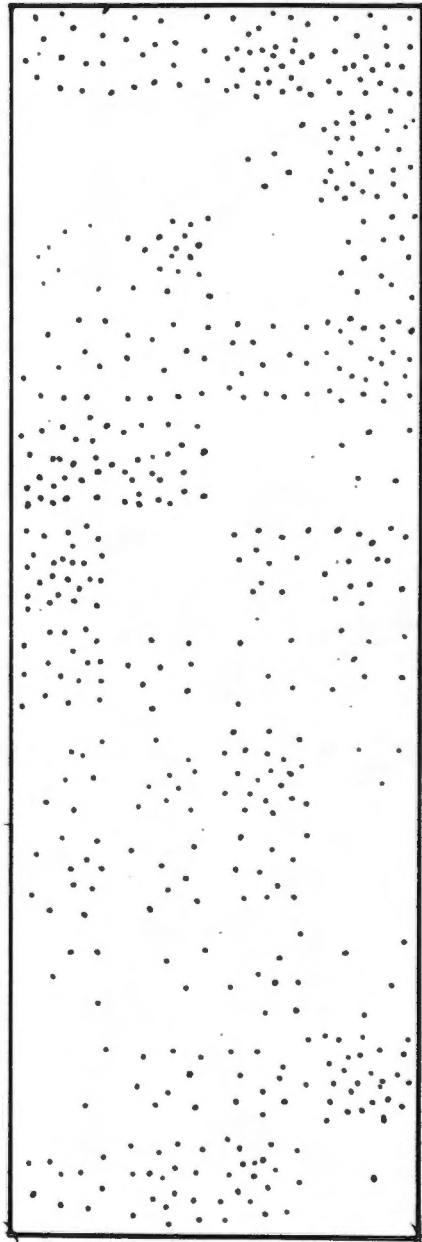
VOLSTRUISFONTEIN



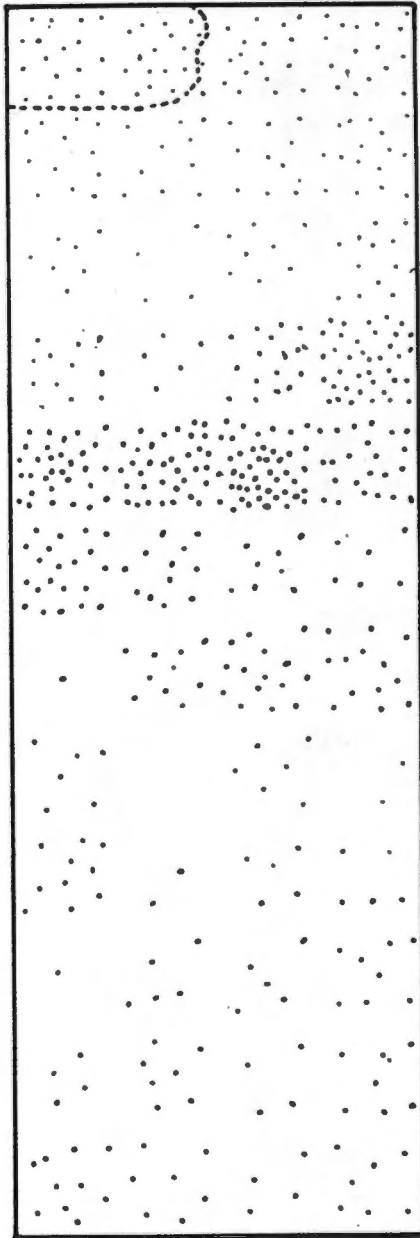
LEVEL 1



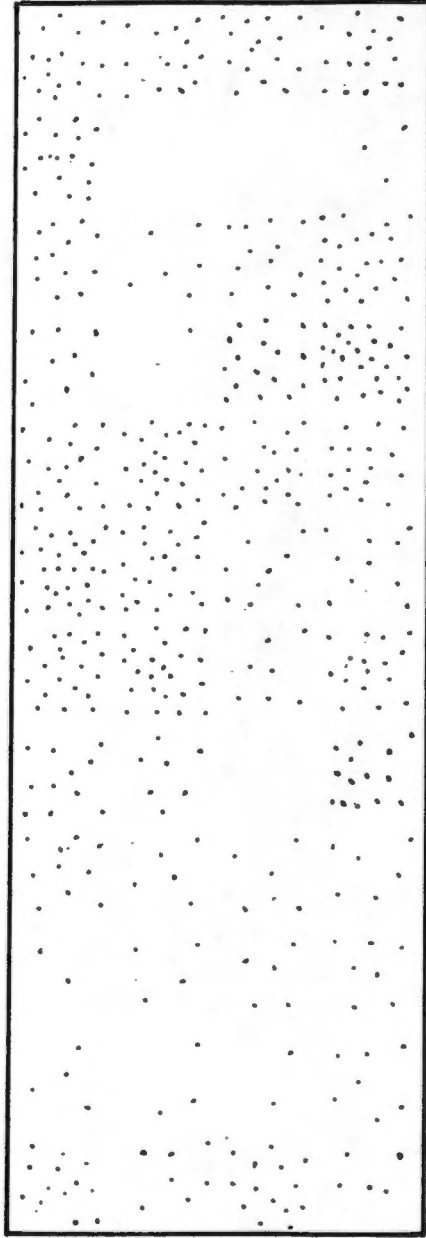
LEVEL 2



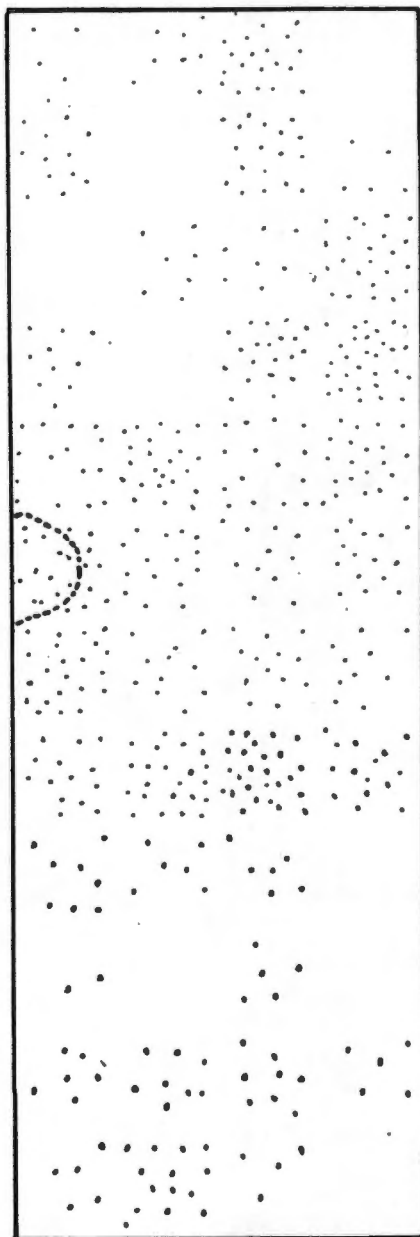
LEVEL 3



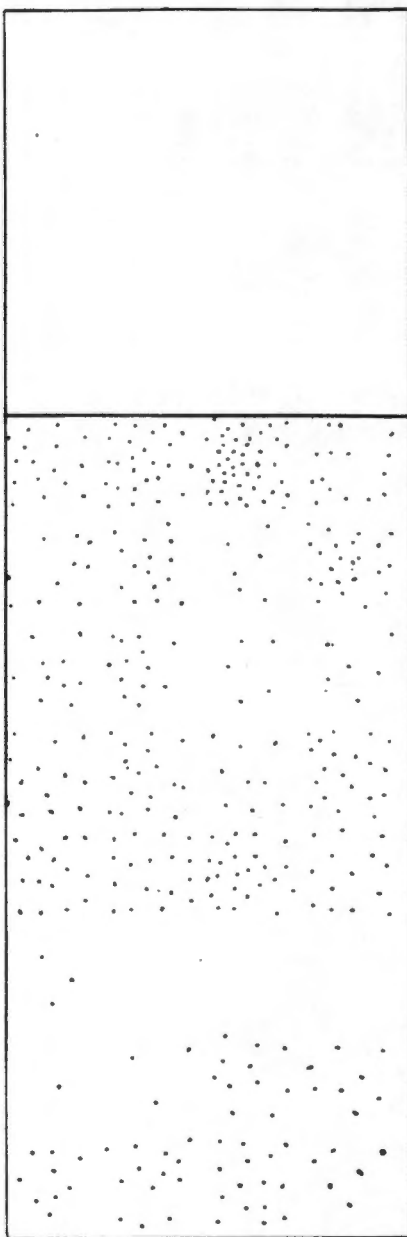
LEVEL 4



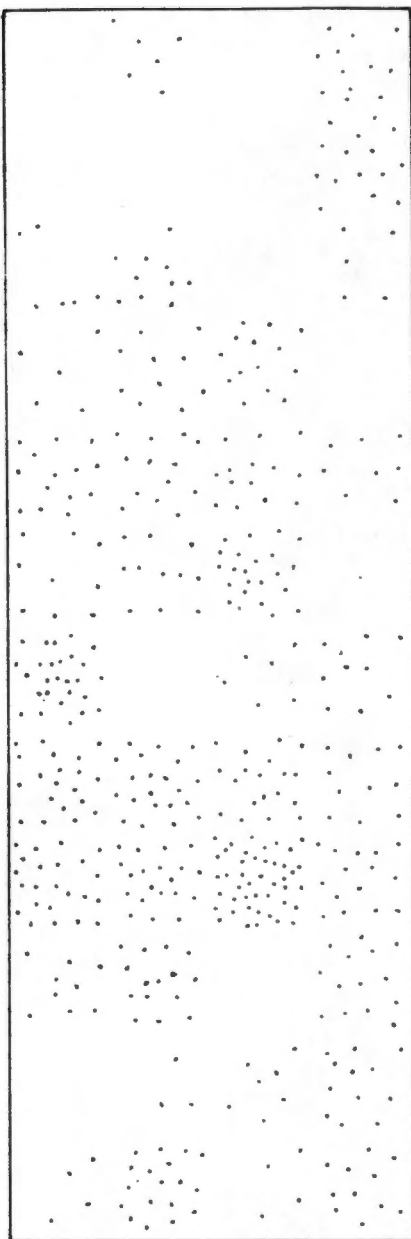
LEVEL 5



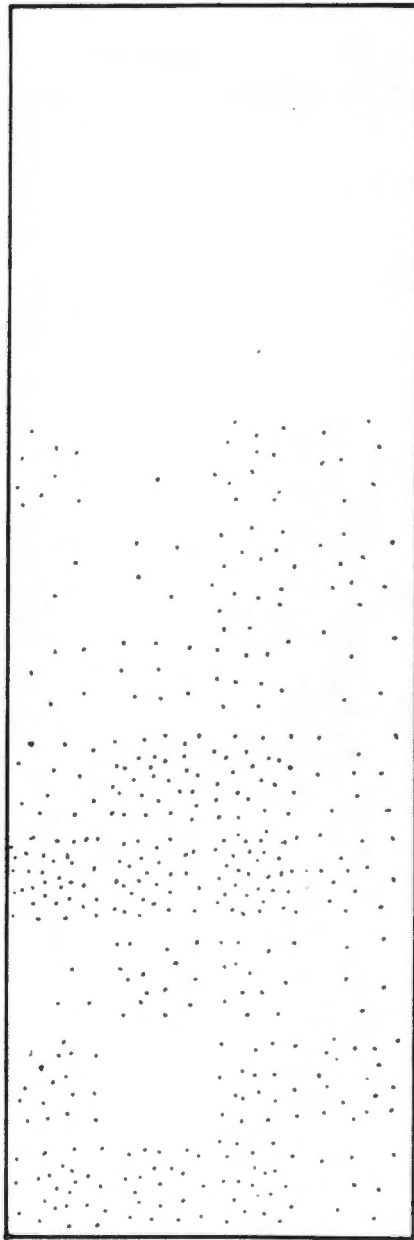
LEVEL 6



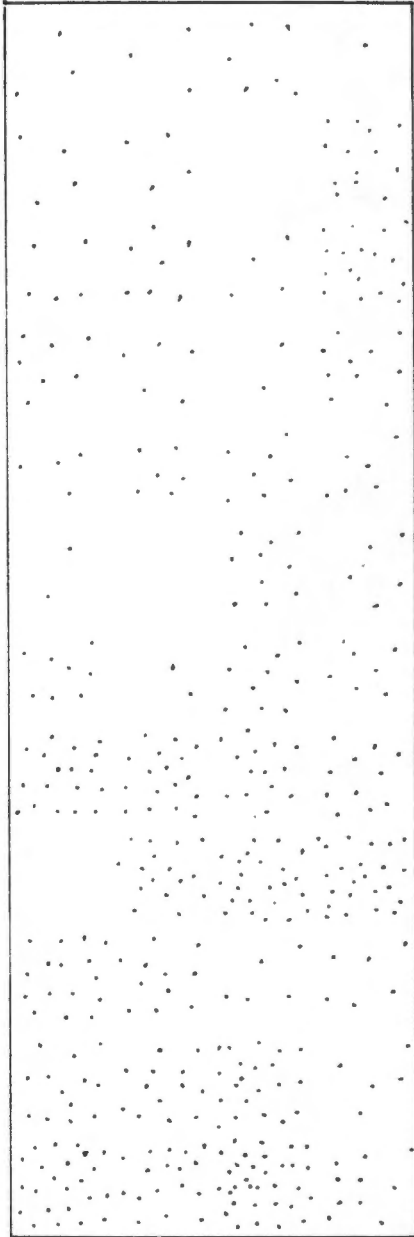
LEVEL 7



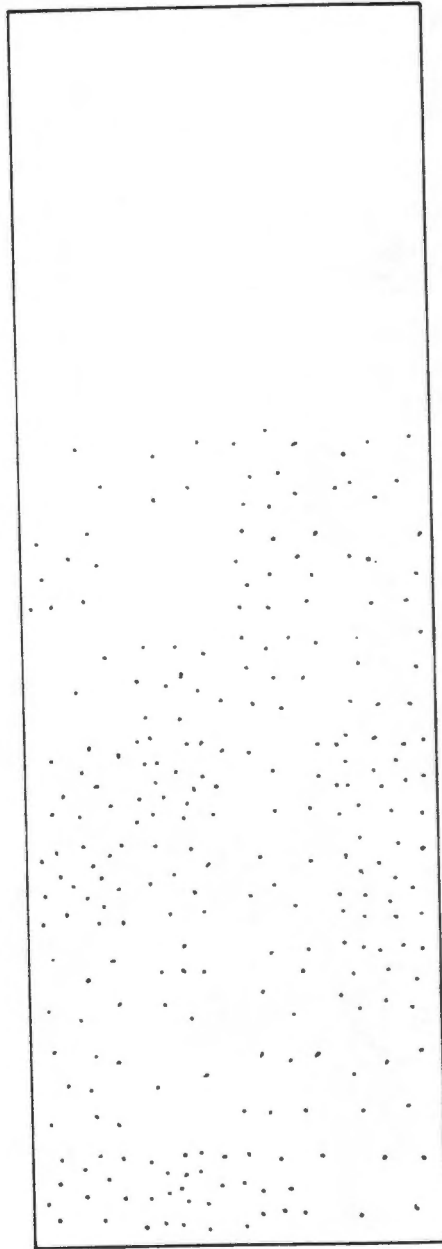
LEVEL 8



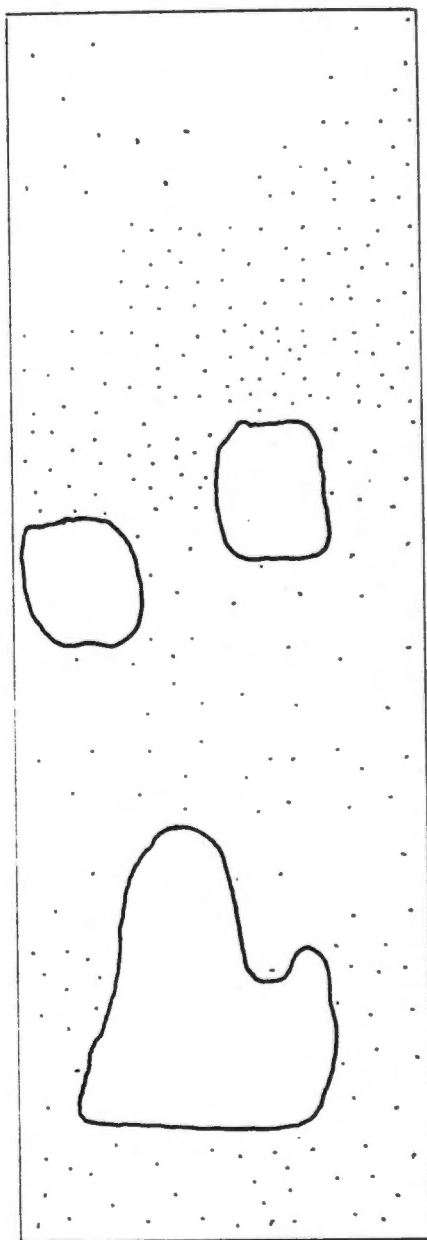
LEVEL 9



LEVEL 10



LEVEL 11

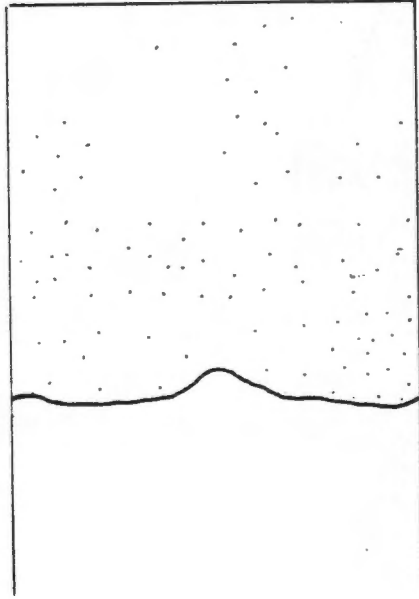


LEVEL 12

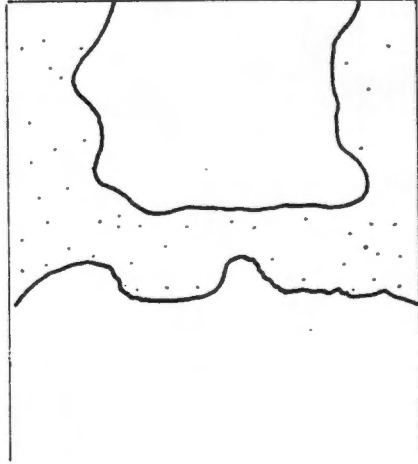
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VOLSTRUISFONTEIN

LEVEL I2



LEVEL 13



LEVEL 14

