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EXCAVATIONS AT /HEI-/KHOMAS (VAALHOEK) IN THE RICHTERSVELD, NORTHERN CAPE

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ABSTRACT

Archaeological research was initiated in the Richtersveld Rural Area in 1990 with the view to determining prehistoric land use. Excavations in three areas around large boulders in the Vaalhoek valley suggest episodic occupation between 1980 BP and 330 BP. The introduction of ceramics and sheep during this period do not seem to have impacted significantly on other items of material culture with the possible exception of an increase in the size of ostrich eggshell beads. Sheep remain an insignificant portion of the faunal assemblage (4%) but there is an interesting inverse relationship between klipspringer and dassie, with dassie remains becoming more numerous through time.

Vaalhoek is compared with sites in the Northern Cape and in Namibia, which date within the last 2000 years. While manifestly different from Jakkalsberg and Bloeddrift (on the Orange River), the site resembles Bethelsklip in central Namaqualand and Rosh Pinah in southern Namibia. Two possible interpretations are offered for the occupation of the site.

INTRODUCTION

Research into prehistoric land use in the Richtersveld was initiated in 1990 with excavations at /hei-/khomas or Vaalhoek. Negotiations into the establishment of the Richtersveld National Park, in the northern part of the Rural Area (Fig. 1), broke down in 1989 when many of the local stock farmers opposed the formation of the Park because their rights to grazing in the Park had not been recognised (Boonzaier 1991). Much discussion centred on the utilisation of the resources in the area designated for the Park and it was proposed that archaeological research could provide a time depth for pastoralist land use. A number of sites were excavated, including Die Toon or Kokerboom-kloof (Webley *et al.*1993), Tatasberg and Vaalhoek (/hei-/khomas).

The latter site was previously (Webley 1992) referred to as /Ai tomas on the basis of information from an informant. However, Nama-speakers in the Richtersveld indicated to me in 1997 that this spelling is incorrect and that it should be /hei-/khomas.

SETTING

The western half of the Richtersveld is composed of sandy plains, sand dunes and rocky hills while the eastern section is extremely mountainous with the highest peaks reaching a height of 1378 m. The mean annual rainfall of 80 mm is extremely irregular and falls mainly in the winter months (May-September) although summer thunderstorms do occur. Coastal fog also provides additional moisture to plants in the wester section. The Richtersveld is situated in the Succulent Karoo biome and the western area includes Strandveld, Lowland and Upland Succulent Karoo.

The site (28 . 35 S; 17 . 05 E) is situated 50 km east of the Atlantic Ocean and about 15 km south-east of Kuboes, the largest of the four villages surrounding the Richtersveld National Park (Fig. 1). It comprises two large clusters of boulders some 100 m apart at one end of a valley situated next to the Ploegberge. The dense scatter of pottery and stone artefacts around one group of boulders led to the excavations around this site in January 1990. The second cluster of boulders is almost entirely hidden from view by an enormous tree, which provides shelter to shepherds during the summer months when the daily temperature can soar to 45°C. There is a permanent natural spring approximately 100 m to the west of this camping spot. While requiring regular maintenance, the spring did provide sufficient water to support a team of four researchers for two weeks during the hottest and driest time of the year. Contemporary herders make seasonal use of the locale around the boulders. When we arrived at the site a herder was living at a stockpost nearby while his shepherd was residing under the tree. The presence of an abandoned "kookskerm" (cooking shelter) and several old ash heaps testify to further recent occupation of the site (Webley 1982).

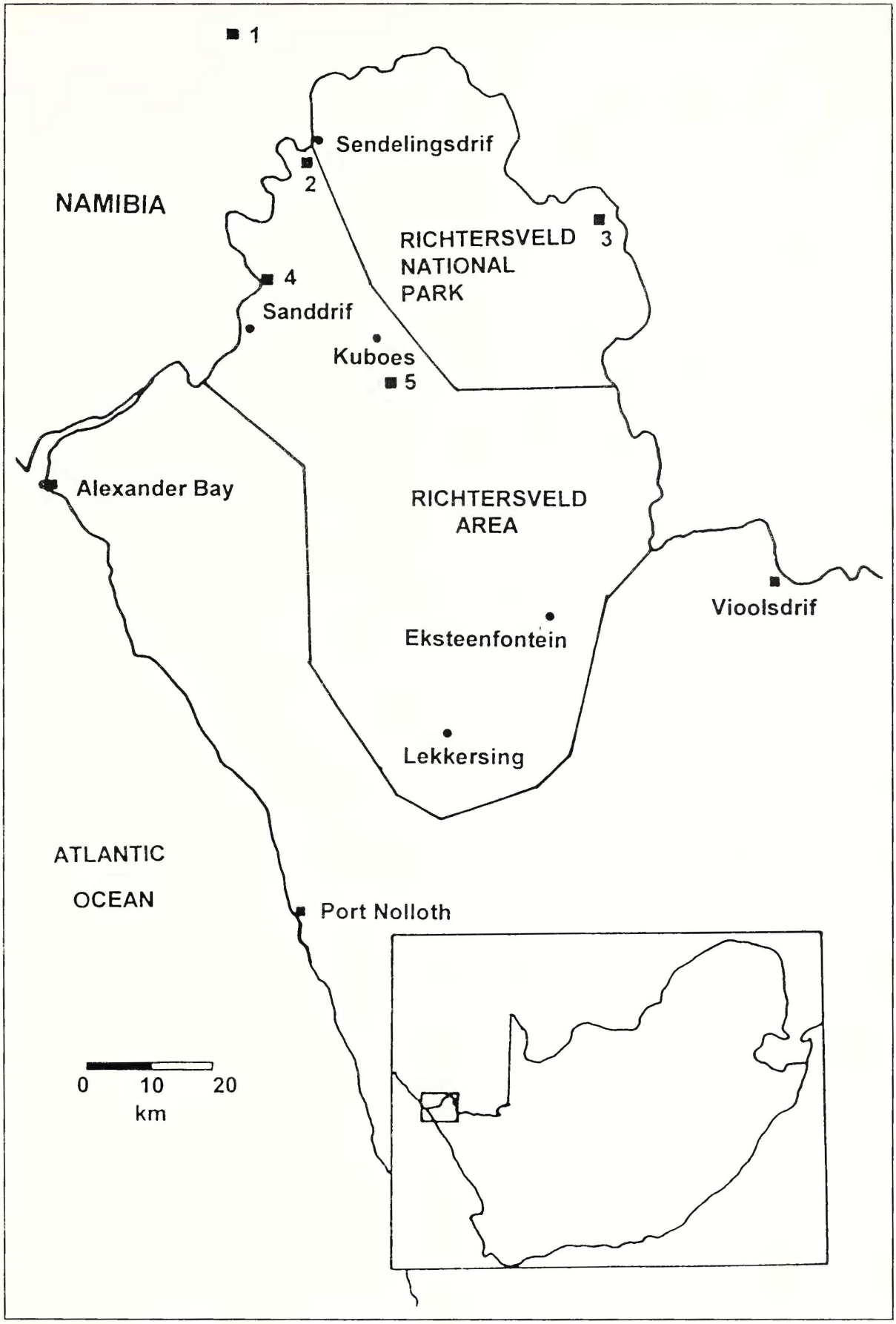

Fig. 1. The location the Richtersveld National Park in the Richtersveld Rural Area, Northern Cape. Site 1 = Rosh Pinah, Site 2 = Jakkalsberg A & B, Site 3 = Die Toon (Kokerboomkloof), Site 4 = Bloeddrift 23 and Site 5 = Vaalhoek (/hei-/khomas).

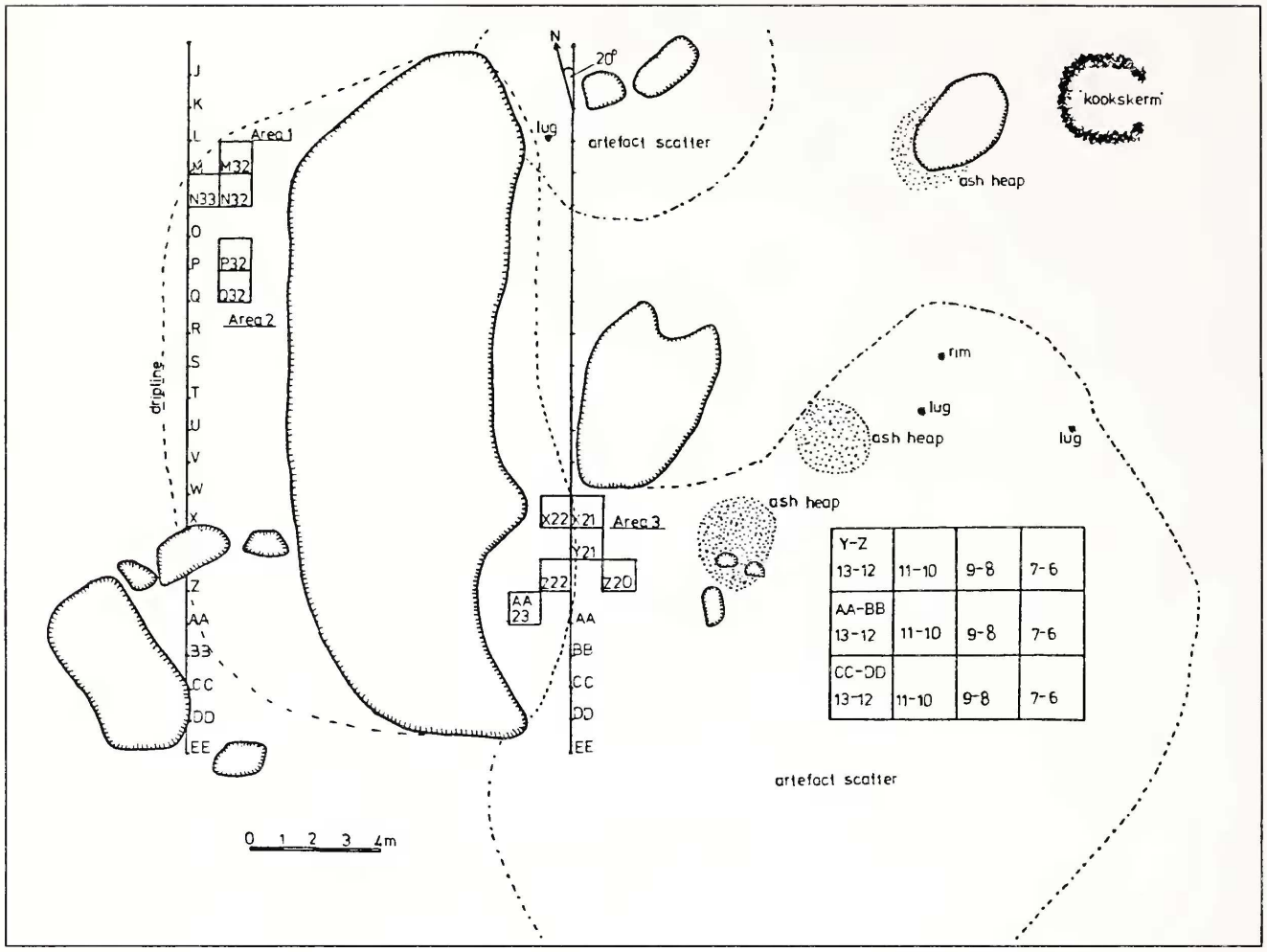

Fig. 2. The site plan of Vaalhoek showing the location of the excavation in Areas 1, 2 and 3 and the surface collection made to the east of the boulders. Remnants of old stockposts are also visible on this site plan.

The scatter of pottery and stone to the east of the boulders mentioned above, suggest that this was also a popular spot for settlement in the past. Further, to the west of the large tree and near the spring is a thick, crust-like deposit which appears to be dung. Potsherds are scattered here as well.

EXCAVATION STRATEGY

The site was surveyed and a grid was set up over the artefact scatter to the east of the boulders. A surface collection was made of those areas indicated in Figure 2. Since each square measured two metres by two metres, material was collected from 32 square metres in total. The results of this surface collection are presented in Table 1 and are discussed below.

Excavations were started to the west of the boulders (Fig. 3), as it was erroneously believed that the size of the rock overhang on this side would provide welcome shelter from the summer heat. It soon became apparent however, that a combination of early morning shade and strong gusting winds made this a particularly cold and unpleasant spot. We excavated three square metres on this side of the boulder (Area 1). The deposit was not particularly rich and two further squares were excavated to the south-west (Area 2) merely to confirm that we were correct in shifting our attention to the east of the boulders. We were fortunate to recover well-preserved plant remains from these two squares as this provided a valuable time-depth to the ethnobotanical survey undertaken by Archer (1994). Plant remains also provide information on diet and season of occupation.

Our excavations then concentrated in a small shelter to the east of the boulder (Area 3). This side receives early morning sun but it does not get unbearably hot until 11 am when the small overhang provides shelter for the rest of the day. Six square metres were sampled in this area (Figs 4 & 5).

SURFACE COLLECTION

Material was collected from the surface to the east of the boulders. The collection was undertaken in squares of 2 x 2 m, amounting to 32 square metres in total. The stone artefact numbers are disproportionately high for a single

Table 1. Surface lithic collection from the east of the boulders.

	Y-Z 13 & 12	Y-Z 11 & 10	Y-Z 9 & 8	AA-BB 13 & 12	AA-BB 11 & 10	AA-BB 9 & 8	CC-DD 13 & 12	CC-DD 11 & 10	CC-DD 9 & 8	CC-DD 7 & 6
Chips	166	421	92	678	443	63	296	601	721	160
Chunks	59	204	123	74	208	35	81	152	160	94
Flakes	165	524	339	224	453	148	284	357	413	216
Cores	105	183	138	82	175	62	148	108	163	93
P. esq.	-	2	2	1	-	-	1	5	-	2
Specularite	-	-	-	1	1	1	-	6	5	-
q. crystal	-	2	2	4	7	-	-	4	2	-
Total Waste	495	1336	696	1064	1287	309	810	1233	1465	565
Utilised flakes	14	18	20	7	19	1	31	15	13	41
Grind. Pieces	-	2	2	-	1	-	-	-	-	-
Bored stone	-	-	1	-	-	-	-	-	-	-
Total Utilised	14	20	23	7	20	1	31	15	13	41
Scrapers	4	9	4	5	5	-	3	10	13	4
Backed pieces	1	1	3	-	1	-	-	1	4	2
Adzes	-	2	-	1	2	-	-	-	-	-
MRPs	2	6	5	1	9	1	2	3	3	5
Borer	-	1	-	-	-	-	1	-	-	-
Total formal	7	19	12	7	17	-	6	14	20	11
Grand Total	**516**	**1375**	**731**	**1078**	**1324**	**311**	**847**	**1262**	**1498**	**618**

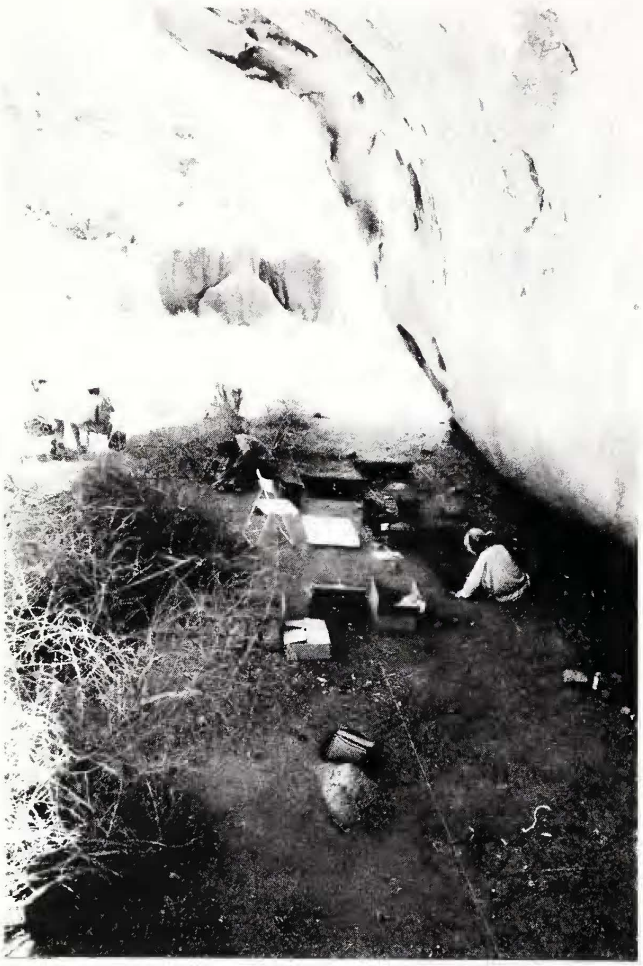

Fig. 3. Areas 1 and 2 to the west side of the boulders.

occupation and would seem to imply repeated occupation of this particular area in the past. Despite a lack of temporal control, the sample can nevertheless be indirectly dated by comparing the artefacts with those obtained from the chronological sequence established at the site. There are very few backed pieces in the surface formal tool assemblage but the large number of scrapers (Table 1) would appear to tie in with the middle units of the deposit in Area 3. The large sample of scrapers was measured and yielded a mean width/length ratio of 124, *i.e.* approaching a circular form. One unusual find was a broken bored stone as these are fairly uncommon in Namaqualand. The nine decorated potsherds found on the surface, all have oval impressions, and other diagnostic elements include three internally reinforced lugs. The potsherds all contain a grit temper and resemble the rest of the excavated samples in decoration and thickness. A few complete and unfinished ostrich eggshell beads were recovered, with external diameters ranging from 3,4 mm to 7,5 mm. A few fragments of specularite as well as marine shell fragments (mainly *Patella sp.*), were found in some areas. Although the area sampled is rather too small for spatial analysis, there does appear to be an inverse relationship between the distribution of scrapers and beads.

Fig. 4. Area 3 to the east of the boulders.

STRATIGRAPHY

The stratigraphy of Areas 1 and 2 are better defined than in Area 3.

Area 1

There are very few intrusive, modern items in the upper units of the deposit. The occasional glass fragment was recovered from the top 5 cm but there are no trade beads or other items, which would suggest early colonial contact. The stratigraphy of these three squares consisted of a number of layers of brown soil, ash and hearths. A charcoal sample from N33 BL produced a date of 420±50 BP. Square N33 contained a pit with the complete skeleton of an adult and foetal klipspringer. We stopped excavating in N33 at 32 cm when the soil became quite hard and sterile. Bedrock was reached in places in M32 at depths of between 20 cm and 28 cm. The lower layers of the deposit overlying bedrock contained a great deal of gravel.

Area 2

The eastern half of squares Q32 and P32 contained a series of soft, gritty layers rich in organic remains and charcoal. Samples of both were collected and a radiocarbon date of 330±45 BP was obtained from P32 SLS2. The western half of these squares contained a number of compacted, fine ash layers. They appeared to be relatively sterile. The plant remains showed no signs of burning or charring suggesting that the ash was probably not in primary context but had been dumped there; *i.e.* it was possibly an ash heap of sorts. We stopped excavations in these squares when we reached a gritty, sterile horizon.

Area 3

The overhang on this side of the boulder extends over 5 metres, providing both shade and shelter. Very few clear stratigraphic lenses or units could be identified in Area 3. Although the excavators remarked on changes in the texture of the soil (more gritty or more powdery) there were no visible changes in soil colour. The soil was predominantly of a light brown colour and fairly gritty. Hearths and pits,

Fig. 5. Excavations in Area 3

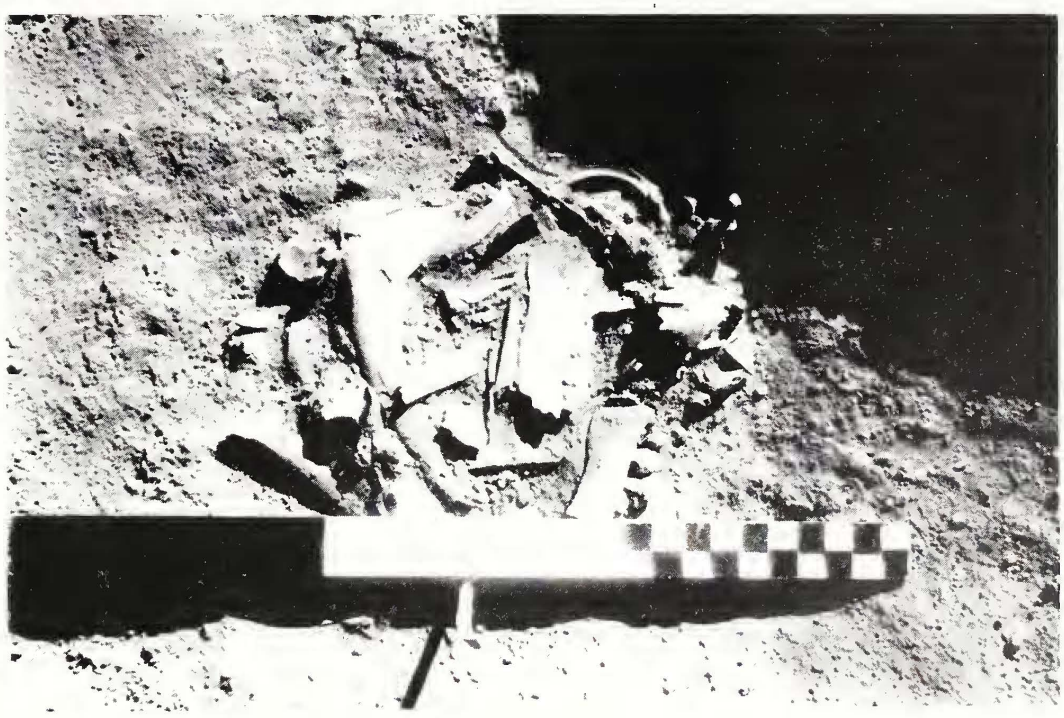

Fig. 6. A pit in Area 3.

however, were identified and excavated separately. Excavations in general proceeded in 5 cm spits to a depth of 30 cm. Charcoal from a hearth in Y21 Unit 2 at a depth of 7 cm below the surface produced a date of 106.1±0.6 which is recent.

Preservation of charcoal and organic remains on this side of the boulder is particularly poor and it was for this reason that the lower date from Area 3 had to be obtained on bone. A sample from Y21 LBS3 was dated to 1980±120 BP. Square Z20, which is most exposed to the elements, had root and termite disturbance. Excavations were stopped at Unit HAG 2 when the soil became very sterile. The soil toward the back wall of the shelter (as in square AA23) was considerably softer. Pits (Fig. 6) are a feature of the deposit,

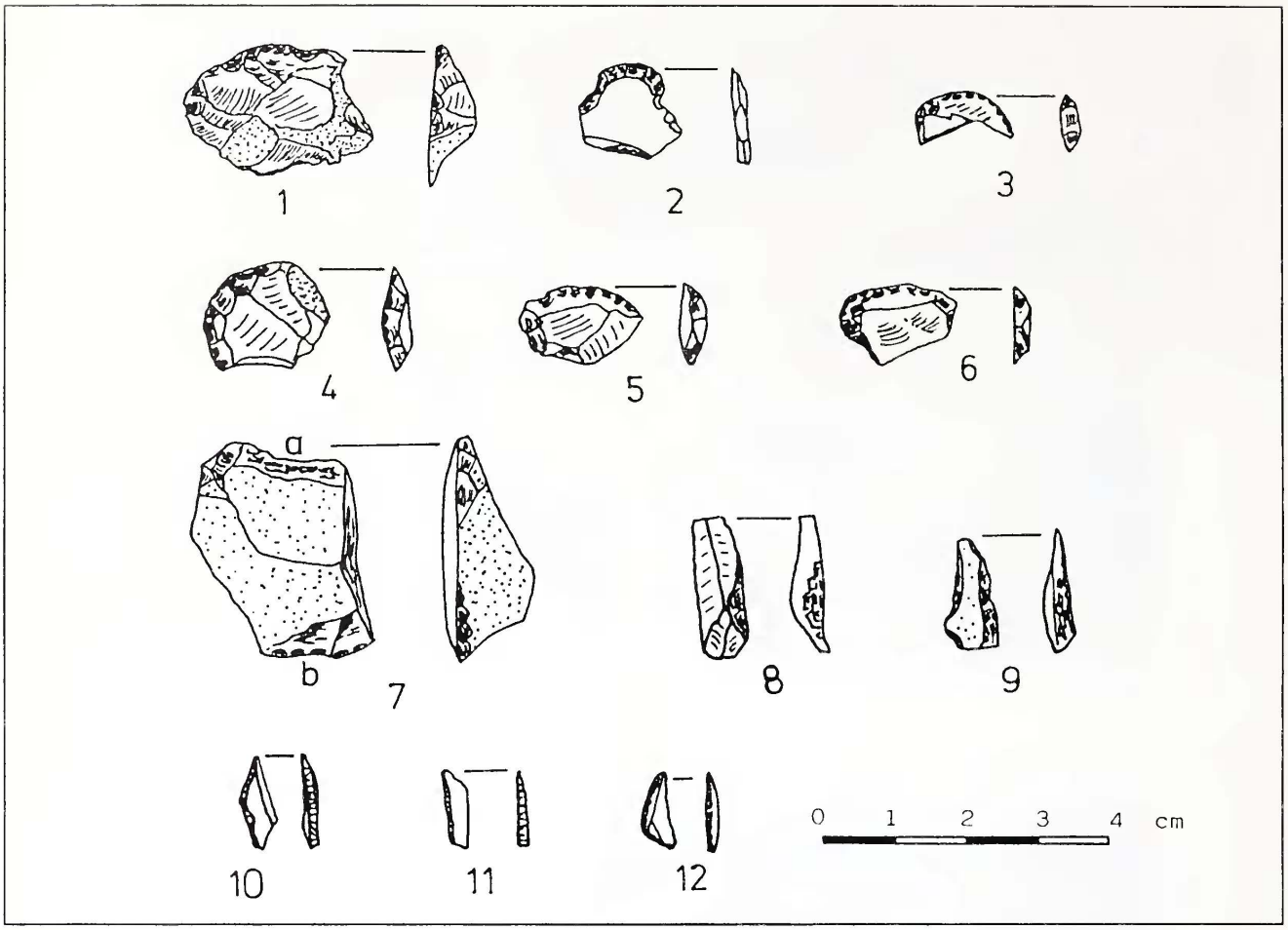

Fig. 7. The stone artefacts from Area 1: 1 - silcrete scraper N33 S; 2 - chalcedony scraper N33 BL; 3 - broken silcrete scraper N33 GG; 4 - silcrete scraper N33 GG3; 5 - chalcedony scraper N33 GG3; 6 - silcrete scraper N33 RG2; 7 - chalcedony adze-scraper N33 GG (a is the adze end and b is the scraper end); 8 - silcrete adze N33 RG2; 9 - silcrete adze N33 RG; 10 - chalcedony backed bladelet N33 RG; 11 - chalcedony backed bladelet N33 BL; 12 - silcrete segment N33 GG2.

at least five pits (all containing faunal and some with cultural material) were uncovered in Area 3. The pit in Y21 LBS4 was particularly rich in bone as well as containing an upper grindstone and a piece of ochre. There are no signs of rodent disturbance although some termite activity was observed in certain areas. Soil build-up may have been slow, the result of weathering of the granite boulders, wind action and human activity.

DATING

All three areas around the rock were dated using radiocarbon methods.

1. A charcoal sample from N33 BL (Area 1) at 5 cm from the surface dated to 420±50 BP (Pta-5458) which may be calibrated to AD 429(1474)1643.

2. A charcoal sample from P32 SLS2 (Area 2) at a depth of 16 cm from the surface was dated to 330±45 BP (Pta-5452) which may be calibrated to AD 1474 (1640)1666.

3. The charcoal sample from 7 cm below the surface in Y21 unit 2 (Area 3) appears to have been contaminated as it produced a date of 106.1±0.6% (Pta-5444) calibrated to AD 1957/8. It is most unlikely that this unit, which contained stone artefacts and pottery, could date to the present period. There are no intrusive modern items in this unit suggesting hat the charcoal sample itself may have been contaminated.

4. In order to obtain a date for the lower units of Area 3, a charred bone sample was submitted from Y21 LBS3 from a depth of 18 cm. It produced at date of 1980±120 BP (Pta-5530) which calibrates to AD 328/334 or 207/353 which is a most probable calibrated date of AD 64 (Vogel pers. comm.). One distal sheep phalange was recovered from the same grid square and stratigraphic level as the date of 1980 BP and this bone was submitted by Sealy and Yates (1994) for accelerator radiocarbon dating. Unfortunately, the specimen contained insufficient protein for a date.

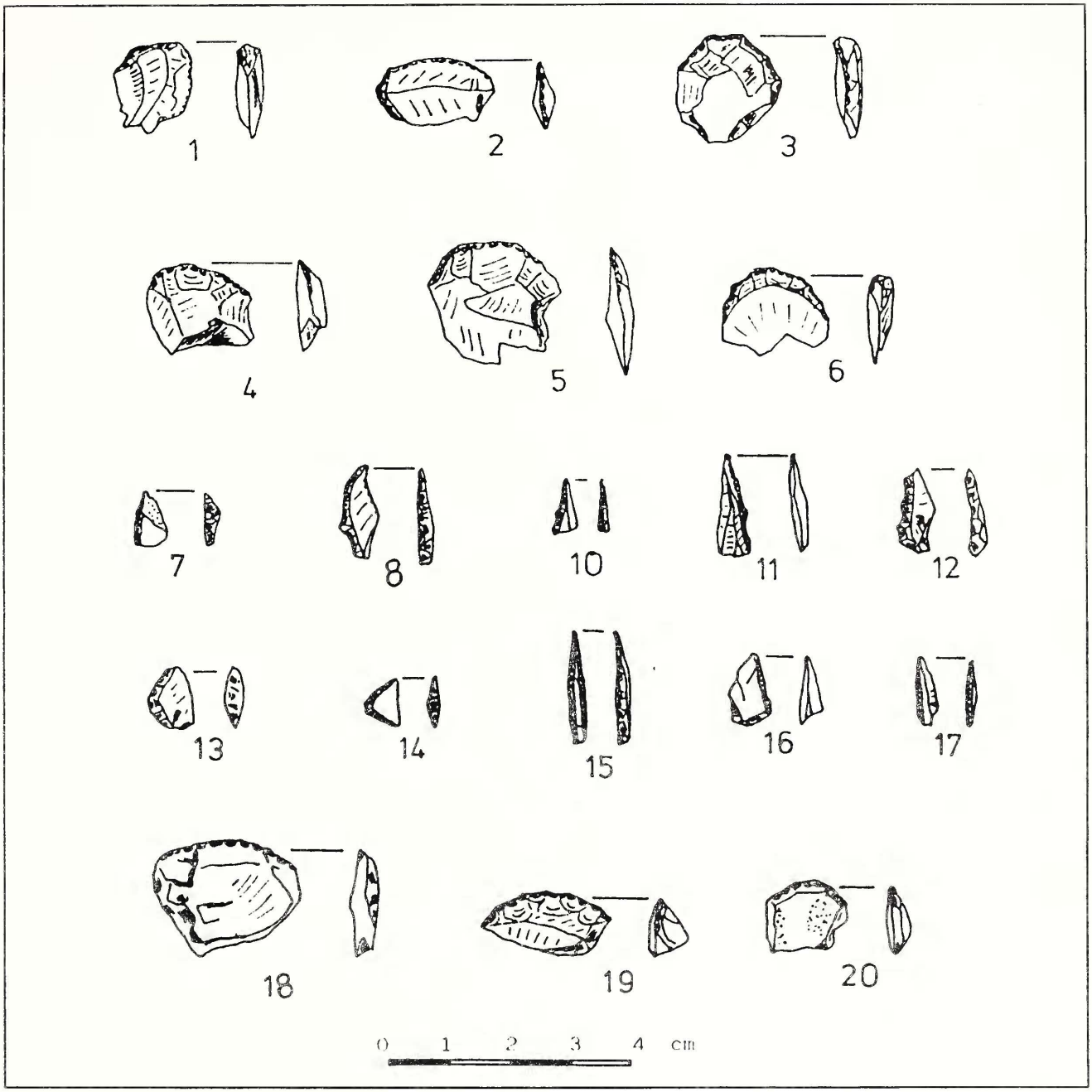

Fig. 8. The stone artefacts from Area 3: 1 - silcrete scraper X22 S; 2 - chalcedony scraper X22 Unit 2; 3 - silcrete scraper X22 Unit 3; 4 - silcrete scraper X22 LBS; 5 - chalcedony scraper X22 LBS3; 6 - chalcedony segment/scraper X22 LBS4; 7 - quartz backed piece X22 Unit 2; 8 - quartz backed flake X22 Unit 3; 10 - quartz backed point X22 LBS; 11 - quartz backed bladelet X22 LBS2; 12 - quartz backed flake X22 LBS3; 13 - quartz segment X22 LBS3; 14 - quartz segment X22 LBS3; 15 - chalcedony borer X21 Unit 1; 16 - quartz backed bladelet X21 Unit 1; 17 - quartz backed bladelet X21 Unit 2; 18 - quartz scraper X21 Unit 2; 19 - chalcedony scraper X21 Unit 2; 20 - silcrete scraper X21 LBS4.

At present, therefore, it would appear that the site was first occupied around the beginning of the first millennium and thereafter again between the 14th and 16th centuries.

CULTURAL REMAINS

Stone artefacts

The assemblages are of a microlithic nature and comprise a small formal tool component with scrapers, backed and miscellaneous retouch pieces (Figs 7 & 8) predominating. There are a few, non-standard adzes and their identification may be debated. The formal tool component varies between 1,3% and 2% in Area 1 (Table 2), is less than 1,5% in Area 2 (Table 3) and varies considerably between stratigraphic layers in Area 3, reaching 4% in some units (Table 4). There seems to be two peaks in formal tool distribution in the latter area, one during the period of most intensive occupation (around

Table 2. Area 1 - Lithic artefact inventory.

	SUR	GBS	CCG	GGW	GRO	RO	RR	TOTAL
Chips	219	213	165	212	245	259	86	
Chunks	28	59	36	35	41	37	24	
Flakes	102	147	114	143	156	177	69	
Bladelets	1			3	1			
Cores	66	65	42	32	51	39	21	
P. esq.	1	1			1			
Specularite		5	2		3	1		
Other			1	3	3	2		
Total	**417 (96%)**	**490 (94%)**	**360 (94%)**	**428 (95%)**	**501 (95%)**	**515 (95%)**	**200 (92%)**	**2911**
Util. Flakes	8	18	15	15	15	13	14	
Grindstone					1		1	
Total	**8 (1,8%)**	**18 (3%)**	**15 (4%)**	**15 (3%)**	**16 (3%)**	**13 (2%)**	**15 (6%)**	**100**
Scraper	2	4	3	2	3	4	2	
Adze			1			1	1	
Segment				1				
B. bladelet		1			1	1		
Backed point					2			
Backed flake		1				1		
Borer			1					
M.R.P.	7	4	3	3	2	3		
Backed basal segment				1				
Total	**9 (2%)**	**10 (2%)**	**8 (2%)**	**7 (2%)**	**8 (2%)**	**10 (2%)**	**3 (1%)**	**55**
Grand Total	**434**	**518**	**383**	**450**	**525**	**538**	**218**	**3066**

Units 2 and 3, and in LBS) and another peak close to the base of the excavated deposit.

Scraper numbers remain constant through the sequence in all three Areas. Width/length ratios were calculated but because of the small sample sizes in each Area, the results should be applied with caution. Width/length ratios are an indication of scraper shape and at Vaalhoek they tend to be wide rather than square or long. Scrapers are manufactured on quartz, silcrete and chalcedonies.

Miscellaneous Retouch Pieces (MRP's) are second in frequency to scrapers and they are generally also made on silcretes or chalcedonies.

Backed Pieces was examined using Deacon's (1976) description for sub-types. Backed pieces showed a noticeable peak in the middle units of the deposit; i.e. in units 2, 3 and LBS. Segmented and unsegmented backed bladelets as well as backed points are generally made on quartz. Very few segments, borers and awls were recovered (Tables 2, 3 & 4). The low frequency of borers is significant in view of the widespread evidence for the manufacture of ostrich eggshell beads on site.

Adzes are generally quite small and they tend to conform to a rectangular plan. The flake scars are shallow and more closely resemble heavily utilized flakes. Microscopic examination of one such 'adze' showed wood polish on one side and hide polish on the other; apparently

Table 3. Area 2 - Lithic artefact inventory.

	SUR	SBH	SLF	SLV	SL3	TOTAL
Chips	113	196	70	66	1	
Chunks	11	28	23	9	1	
Flakes	37	97	64	47	3	
Cores	21	52	23	18	1	
Core rej. Flake		1				
Specularite	1	2	1			
Other				3		
Total	**183 (95%)**	**376 (95%)**	**181 (96%)**	**143 (98%)**	**6 (85%)**	**889**
Util. Flakes	6	12	7	2	1	
Total	**6 (3%)**	**12 (3%)**	**7 (3%)**	**2 (1,3%)**	**1 (14%)**	**28**
Scraper		1				
Backed point	1	1				
Backed flake		1				
M.R.P.	2	2	1	1		
Total	**3 (1%)**	**5 (1%)**	**1 (1%)**	**1 (0,6%)**		**10**
Grand Total	**192**	**393**	**189**	**146**	**7**	**927**

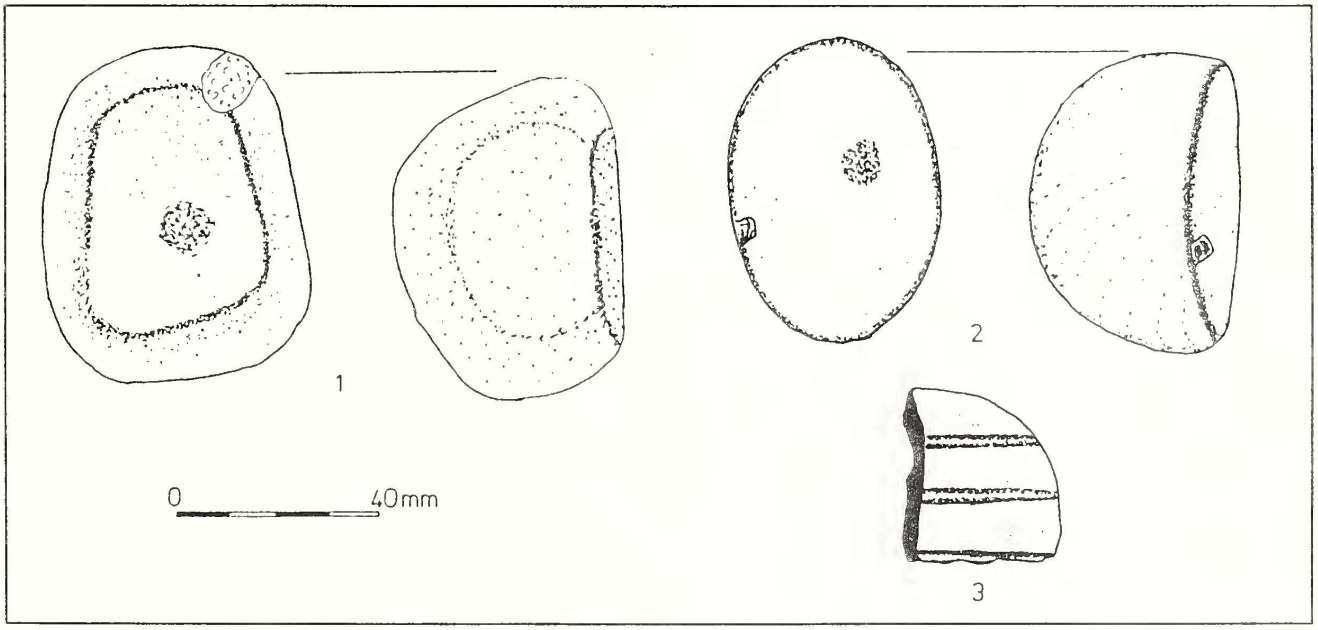

Fig. 9. Ground stone artefacts: 1 & 2 - quartzite upper grindstones from Y 21 LBS4, both are ochre-stained. 3 - grooved, quartzite pebble from Y21 Unit 2.

such 'scraper-adzes' are common in the Eastern Cape (J.N.F. Binneman pers. comm.).

Utilized flakes are the most common tool in the utilized category in all three areas. They are manufactured on quartz, silcrete or chalcedonies. Utilized flakes vary from 2- 6% in Area 1, to less than 3% in Area 2 and from 4-5%

Table 4. Area 3 - Lithic artefact inventory.

	SUR	UNG	U2S	L3S	LHS	L4S	L4P	TOTAL
Chips	95	438	1007	916	898	322	212	
Chunks	102	189	414	244	217	110	73	
Flakes	229	684	1329	923	930	568	291	
Bladelets	2		6	24	9	1	5	
Cores	70	161	261	135	132	72	20	
Red. Piece	3	10		5	7		1	
P. esquillees	1		8	7	5	1		
Ref. Flake	1							
Specularite		22	29	16	29	9	4	
Other lithic	2	4	14	13	19	8	6	
//Khom			1	4		2		
Total	**505 (94%)**	**1509 (96%)**	**3069 (96%)**	**2287 (97%)**	**2246 (97%)**	**1093 (96%)**	**612 (98%)**	**11 321**
Util. Flakes	21	22	48	29	29	16	1	
Grindstones		3	4	1	1	2	2	
Total	**21 (4%)**	**25 (2%)**	**52 (2%)**	**30 (1%)**	**30 (1%)**	**18 (1%)**	**3 (0,5%)**	**179**
Scraper	4	6	10	9	2	11	4	
Adze	1		3		2			
Segment	1	2	3			1		
B. bladelet		2	6	4	4	3	1	
B. point		2	3	3	1	4		
B. flake	3	3	4	7	3	3		
Borer		2		1	1			
M.R.P.	5	17	30	10	14	10	2	
B. basal segment			2		1	1		
Total	**14 (3%)**	**34 (2%)**	**61 (2%)**	**34 (1%)**	**28 (1%)**	**33 (3%)**	**7 (1%)**	**211**
Grand Total	**540**	**1568**	**3182**	**2351**	**2304**	**1144**	**622**	**11 711**

in Area 3.

Ground stone tools occurred in small numbers. A few smoothed, flaked granite cobbles as well as two quartzite upper grindstones with ochre staining (Fig. 9) and one broken, grooved stone (probably used in the manufacture of ostrich eggshell beads) were recovered from Area 3.

The waste category is composed of chips, chunks, flakes and cores. There are very few bladelets, core reduced pieces or piece esquillées. There is a general increase in artefact numbers in the middle of the sequence.

Stone Tools: Raw Material

The most significant aspect of the lithic toolkit is the wide range of raw materials encountered on site. Some of

Table 5. Area 1 - Lithic artefact raw material.

	Quartz	Sil.	Chal.	Qzte	Granite	Spec.	Other	Total
SUR waste	344 (82%)	54 (13%)	9 (2%)	9 (2%)	1 (0,2%)		1 (0,2%)	417
utilised	1 (13%)	3 (37%)	4 (50%)					8
formal	2 (22%)	3 (33%)	4 (44%)					9
GBS waste	383 (78%)	78 (16%)	14 (3%)	9 (2%)		5 (1%)		490
utilised	3 (16%)	9 (50%)	6 (33%)					18
formal	5 (50%)	1 (10%)	4 (40%)					10
CCG waste	261 (72%)	75 (20%)	16 (4%)	5 (1%)		2 (0,5%)	1 (0,2%)	360
utilised	4 (27%)	6 (40%)	5 (33%)					15
formal		3 (37%)	5 (63%)					8
GGW waste	295 (69%)	101 (23%)	24 (6%)	5 (1%)	1(0,3%)		2 (0,5%)	428
utilised	4 (27%)	4 (27%)	7 (46%)					15
formal	2 (28%)	1 (14%)	4 (57%)					7
GRO waste	318 (63%)	131 (26%)	40 (8%)	6 (1%)		3 (0,5%)	3 (0,5%)	501
utilised	5 (31%)	5 (31%)	5 (31%)		1 (6%)			16
formal	4 (50%)	2 (25%)	2 (25%)					8
RO waste	316 (61%)	148 (29%)	43 (8%)	4 (0,7%)	1 (0,2%)	1 (0,2%)	2 (0,4%)	515
utilised	4 (30%)	5 (40%)	4 (30%)					13
formal	2 (20%)	6 (60%)	2 (20%)					10
RR waste	121 (60%)	65 (32%)	10 (5%)	3 (2%)			1 (1%)	200
utilised	5 (30%)	4 (27%)	5 (30%)				1 (6%)	15
formal		3 (100%)					3	3
Total	**2079**	**707**	**213**	**41**	**4**	**11**	**11**	**3066**

these raw materials had clearly been collected elsewhere and brought to the site (D. Miller pers. comm.).

Quartz amounts to about 60 % of the total lithic assemblage in the lower units and increases to 80% in the upper units (Tables 5, 6 & 7). This is accompanied by decrease in the frequencies of silcrete and chalcedonies. Quartzite is generally present in small numbers (2%), while the peak in other raw materials (*i.e.* specularite, *etc.*) appears linked to similar peaks in pottery, shell, ostrich eggshell beads and decorated ostrich shell pieces. Specularite, haematite, shale, mica, slate, agate and quartz crystals occur in the middle units. The specularite pieces are small (less than one centimetre in size) and appear to have been ground down to this size.

Large pieces of sheet mica, obviously not the weathered from the parent granite at the site, were also recovered. Ground mica appears to have been incorporated as temper in some of the potsherds. There were also a few

Table 6. Area 2 - Lithic artefact raw material.

	Quartz	Sil.	Chal.	Qzte	Granite	Spec.	Other	Total
SUR waste	153 (83%)	25 (14%)	3 (1%)	1 (0,5%)		1 (0,5%)		183
utilised	1 (17%)	1 (17%)	4 (67%)					6
formal	3 (100%)							3
SBH waste	304 (81%)	62 (16%)	4 (1%)	3 (0,8%)		2 (0,5%)	1 (0,2%)	376
utilised	8 (66%)	2 (17%)	2 (17%)					12
formal	3 (60%)	2 (40%)						5
SLF waste	137 (76%)	26 (14%)	12 (7%)	2 (1%)		1 (0,5%)	3 (2%)	181
utilised	4 (57%)	2 (28%)	1 (14%)					7
formal	1 (100%)							1
SLV waste	117 (82%)	11 (7%)	10 (7%)	4 (3%)			1 (0,6%)	143
utilised	1 (50%)		1 (50%)					2
formal	1 (100%)							1
SL3 waste	4 (67%)	2 (33%)						6
utilised	1 (100%)							1
formal								0
Total	**738**	**133**	**37**	**10**		**4**	**5**	**927**

pieces of rounded sandstone which resembled //khom stones (Webley 1990). Unusual finds included a shale pencil or point and two quartz flakes from the surface unit and which were coated in an unknown red pigment.

Pottery

A total of 557 potsherds were recovered from eleven (11) square metres of excavation; 59 from Area 1, 75 from Area 2 and 423 from Area 3. There is a gradual increase in sherd numbers from the base of the excavation in Area 3, to the top; with a peak in Units 2, 3 and LBS and then a slight increase again close to the surface.

The pottery thickness ranges from 3 mm to 9 mm with a mean of around 5,4 mm (Table 8). Two lugs were recovered (Unit 3 and LBS) from the excavations and a further two from the surface collection. Decoration most commonly consists of circular or oval punctations and less commonly horizontal scoring below the rim. There is a single rim fragment with diagonal lines on the lip itself. Sherd sizes are very small and it is difficult to reconstruct vessel shape. The typology for lip types and orientations developed by Sadr for the Western Cape (Sadr & Sampson 1999) was applied to the excavated rim sherds (Table 9). Rim orientations are either vertical or flared and lip types are most commonly bevelled, rounded or flat. These fragmentary remains would appear to fit into Phase D of the four-part sequence developed by Sadr for Khoekhoen vessel types from the south-western Cape (Sadr & Sampson 1999). Pottery from the surface collection is illustrated in Figures 10 and 11.

The temper is gritty with a small number of sherds containing ground mica. Very few sherds show a red or orange burnish, the majority have a rough black exterior and interior finish. One sherd contained a conical, bored hole which may have been drilled to facilitate mending a crack. Rudner (1968) has described how fibre, sinew or copper clamps could be inserted through the holes and the cracks covered with resin or wax.

Ostrich eggshell pieces

Fragments of ostrich eggshell were recovered throughout the deposit although they too showed a peak in Units 2,

Table 7. Area 3 - Lithic artefact raw material.

	Quartz	Sil.	Chal.	Qzte	Granite	Spec.	Other	Total
SUR waste	362 (72%)	94 (17%)	29 (6%)	15 (3%)	2 (0,4%)		3 (0,5%)	505
utilised	6 (28%)	11 (52%)	3 (14%)				1 (5%)	21
formal	5 (36%)	8 (57%)	1 (7%)					14
UNG waste	1042 (69%)	312 (21%)	84 (5%)	39 (3%)		22 (1%)	9 (0,5%)	1509
utilised	5 (20%)	12 (48%)	5 (20%)	2 (8%)	1 (4%)			25
formal	22 (65%)	7 (21%)	5 (14%)					34
U2S waste	2072 (67%)	667 (22%)	214 (7%)	65 (2%)	4 (0,1%)	29 (0,9%)	18 (0,5%)	3069
utilised	12 (23%)	24 (46%)	11 (22%)	3 (5%)	2 (3%)			52
formal	24 (39%)	23 (38%)	14 (23%)					61
L3S waste	1495 (65%)	522 (23%)	181 (8%)	48 (2%)		16 (0,6%)	25 (1%)	2287
utilised	5 (16%)	15 (50%)	9 (30%)	1 (3%)				30
formal	5 (15%)	19 (56%)	10 (29%)					34
LHS waste	1405 (62%)	527 (23%)	222 (10%)	41 (2%)		30 (1,3%)	21 (0,9%)	2246
utilised	9 (30%)	12 (40%)	8 (26%)		1 (3%)			30
formal	11 (39%)	15 (54%)	2 (7%)					28
L4S waste	716 (65%)	228 (21%)	99 (9%)	28 (2%)	2 (0,1%)	9 (0,8%)	11 (1%)	1093
utilised	4 (22%)	5 (28%)	6 (33%)	2 (11%)	1 (5%)			18
formal	16 (48%)	11 (33%)	6 (18%)					33
L4P waste	403 (66%)	133 (22%)	61 10%)	4 (0,6%)		4 (0,6%)	7 (1,1%)	612
utilised	1 (33%)	2 (66%)						3
formal	2 (28%)	3 (43%)	2 (28%)					7
Total	**7 623**	**2 650**	**972**	**248**	**13**	**110**	**95**	**11 711**

3 & LBS (Table 10). Some of the fragments showed evidence of burning. A small number of decorated ostrich eggshell fragments (presumably from flask mouths) was recovered from all three areas but was especially concentrated in Area 3 (Fig. 12 & Table 10).

Ostrich eggshell beads

The deposit was sieved through a 1 mm mesh to recover all the beads. The external diameter of complete as well as broken beads was measured (Table 9). In Area 3 there is evidence for a gradual increase in mean bead diameters through the sequence from 4,2 mm in the lower units to 5,4 mm in the upper units. Larger beads start appearing in those units with larger sheep/goat samples and a peak in pottery numbers. The date of 1980±120 BP is from a unit in Area 3 with no large beads (*i.e.* 7,5 mm in diameter). A single large bead was found in the unit immediately above it. This seems to indicate that large beads post-date the first appearance of pottery. Two ochre-stained beads were recovered from the lower units. Furthermore, two of the

Table 8. Pottery numbers and sherd thickness.

	Numbers	Rims	Decoration	Lugs	Bases	Thickness (mm)
Area 1						
Surface	20					58
GS/BL/SG	24		1			58
CH/CH1/GG	12	1				52
GG/GG2/WA	3					63
Area 2						
Surface	7	2	1			58
SS/BP	27	1	2			54
SLS/FAS	14	1				55
SLS2/VGS	26	2				54
SLS3	1					67
Area 3						
Surface	48	1	2			58
Unit 1	67	3	3			58
Unit 2	166	5	5	1		55
U3/LBS	82	6			1	54
LBS2/3	35	2			1	49
LBS3/4	11	2				50
LBS4	1					

beads from the upper units were of a pronounced oval shape and appear to have been manufactured in this way as they do not show signs of wear. It is quite apparent from the number of unfinished beads recovered from all three Areas that bead manufacture took place on site (Table 9).

Marine shell

In view of the distance to the Atlantic Ocean (50 km) a surprisingly large number of marine shell fragments was recovered from the excavation. Six complete *Bullia* sp. shells and one complete *Conus* sp. were recovered. Four of these were from Area 2 in the organic units. One of the *Conus* sp. shells has an aperture and shows signs of having been strung, possibly from the hair, in a necklace or sewn onto clothes. A large number of *Patella granatina* and *Patella argenvillei* fragments were found in Area 3 (Table 11). The fragments are all very small and it is not clear what the shell was used for. While they may have been broken up to make decorative items, the only two broken pendants (Fig. 13) recovered from the deposit, were not made on *Patella* sp.

Bone artefacts

The sample was small, comprising a worked bone flake, five broken bone points, a broken bone pendant and a fragment of a tortoise carapace bowl (Fig. 13).

SUBSISTENCE INFORMATION

Plant remains

One of the most significant, and unexpected, discoveries made at the site was a small sample of well-preserved plant remains from Area 2. The plant remains were recovered from very soft, sandy lenses which appeared to be inter-digitated with grey ash deposits. The plant remains showed no sign of fire damage and it is therefore possible that the ash may be in a secondary context, for example something like an ash heap. The presence of *Bullia* sp. shells, a large

Table 9. Pottery - lip types and orientations (after Sadr & Sampson 1999).

	Lip Type	Orientation	Diameter of Vessel Mouth (mm)
Area 2			
Q32 SUR	Tapered	Vertical	70-80
Q32 SUR	Bevelled	Vertical	?
P32 SS	Tapered	Flared	?
Q32 SLS2	Half-round	Vertical	?
Area 3			
Y21 SUR	Bevelled	Flared	70-80
AA23 Unit 1	Bevelled	Convergent	70
AA23 Unit 1	Everted	Vertical	?
Z22 Unit 1	Bevelled	Vertical	80
X21 Unit 2	Half-round	Flared	60
Z22 Unit 2	Flat	Vertical	?
AA23 Unit 2	Flat	Flared	35-40
X22 LBS	Bevelled	Convergent	?
X22 LBS	Round	?	?
Z22 Unit 3	Bevelled	?	?
AA 23 Unit 3	Round	Vertical	?
AA 23 LBS3	Round	Vertical	?

pottery sample and large ostrich eggshell beads would suggest that the deposit relates to a period of more intensive occupation of the site, but that this particular area may not have been a focus of human activity itself.

A preliminary analysis of the plant remains was undertaken with the assistance of Mrs E Brink (previously Curator of the Schonland Herbarium at the Albany Museum). The lack of an adequate comparative collection meant that we were only able to assign corm bases to the Iridaceae family. At least three, but possible more different types of corm bases could be distinguished. A small sample of *Diospyros* sp. (probably *austro-africanus*) seeds and *Rhus undulata* seeds were recovered. They are edible from October to December (F. Archer pers. comm.). A large number of grass stems, unfortunately unidentifiable, were also found. Two large seeds were recovered and are presently being subjected to microscopic examination.

According to Archer (1994), corms and bulbs are generally edible from the end of July to October although much depends on the occurrence of rain during that particular year. However, the plant remains certainly suggest that the site was occupied, for a period in its history, during the spring and early summer months.

Faunal remains

Faunal preservation in general was good although the remains were highly fragmented. This is a feature of faunal collections also observed at other central Namaqualand sites (*eg.* Bethelsklip and Wolfkraal) which was excavated by Webley (1992). The fauna was identified by J. Brink (National Museum in Bloemfontein) who noted that the bone from Area 1, 2 and 3 was not markedly different in species composition (Tables 12, 13 & 14). These areas have been presented separately here for purposes of comparison. Klipspringer (*Oreotragus oreotragus*) and dassie (*Procavia capensis*) dominate the assemblage with a small, but consistent, component of small grey mongoose (*Galerella pulverulenta*), red rock rabbit (*Pronolagus rupestris*) and sheep/goat (*Ovis/Capra).* At least two sheep/goat (*Ovis/Capra*) individuals (one juvenile and one adult) are represented in the remains recovered in Area 3 from Unit L4S, dated to 1980 BP. One fragment was a tooth, however, which could have moved down through the deposit. An attempt was made to obtain an accelerator radiocarbon date from the charred distal sheep phalange but unfortunately the specimen contained insufficient protein for a date (Sealy & Yates (1994). Sheep/goat remains

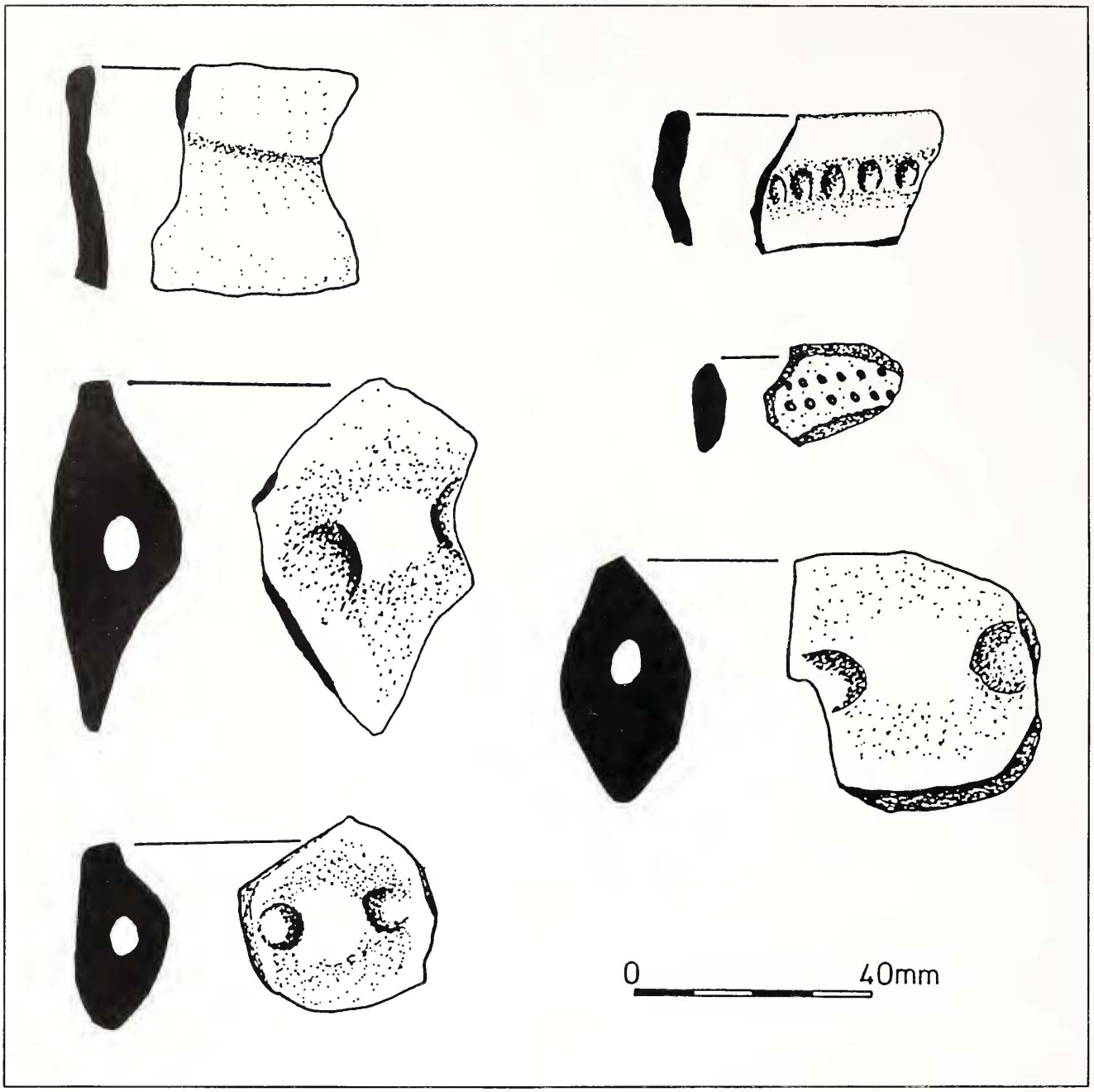

Fig. 10. Potsherds from the surface collection to the east of the boulders.

increase in Unit LHS, immediately above L4S, while large samples were also found in L3S and U2S.

There is an interesting inverse relationship between klipspringer and dassie (Fig. 14). The former is more common in the basal three units of Area 3, after which it declines in importance as dassie becomes more important. Cattle (*Bos taurus*) remains are very rare and only fragmentary portions were recovered in UNG and U2S. There is also evidence for goat (*Capra hircus)* on the surface. The presence of small numbers of steenbuck (*Raphicerus campestris)* is also interesting as steenbuck does not supplant klipspringer in importance. This suggests very specific hunting strategies which, amongst contemporary herders in the Richtersveld, involves dogs and hooked sticks. The faunal remains recovered from the pits are almost complete (Fig. 6), indeed in one instance a complete adult and juvenile klipspringer were buried together in a small pit. The remains in the pits seem to have been deliberately deposited after marrow extraction had taken place. The pits have no modern parallels among contemporary Nama herders in the region and need further investigation. One remarkable feature of the fauna is the abundance of juvenile and feotal klipspringers. However, since these small bovids can calve at any time of the year (depending on environmental conditions), no seasonal information can be deduced from their presence. The fragmentary nature of the dassie remains also makes seasonal observations based on tooth eruption sequences

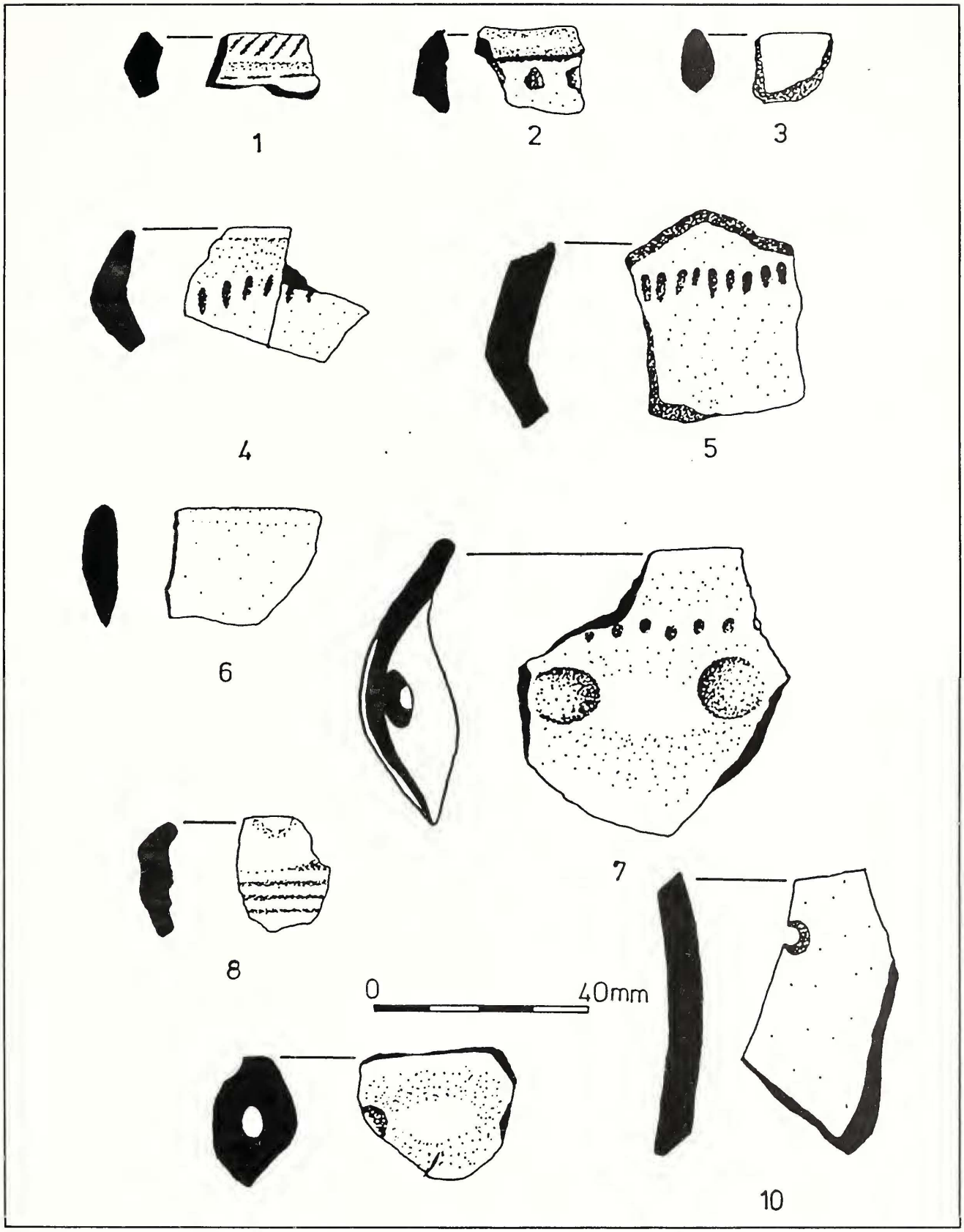

Fig. 11. Diagnostic excavated pottery: 1 = Y21 S; 2 = Q32 S; 3 = X22 Unit 1; 4 = P32 SS; 5 = Z22 S1; 6 = Z22 S1; 7 = AA23 SS; 8 = AA23 S1; 9 = Y21 Unit 3; 10 = X22 LBS.

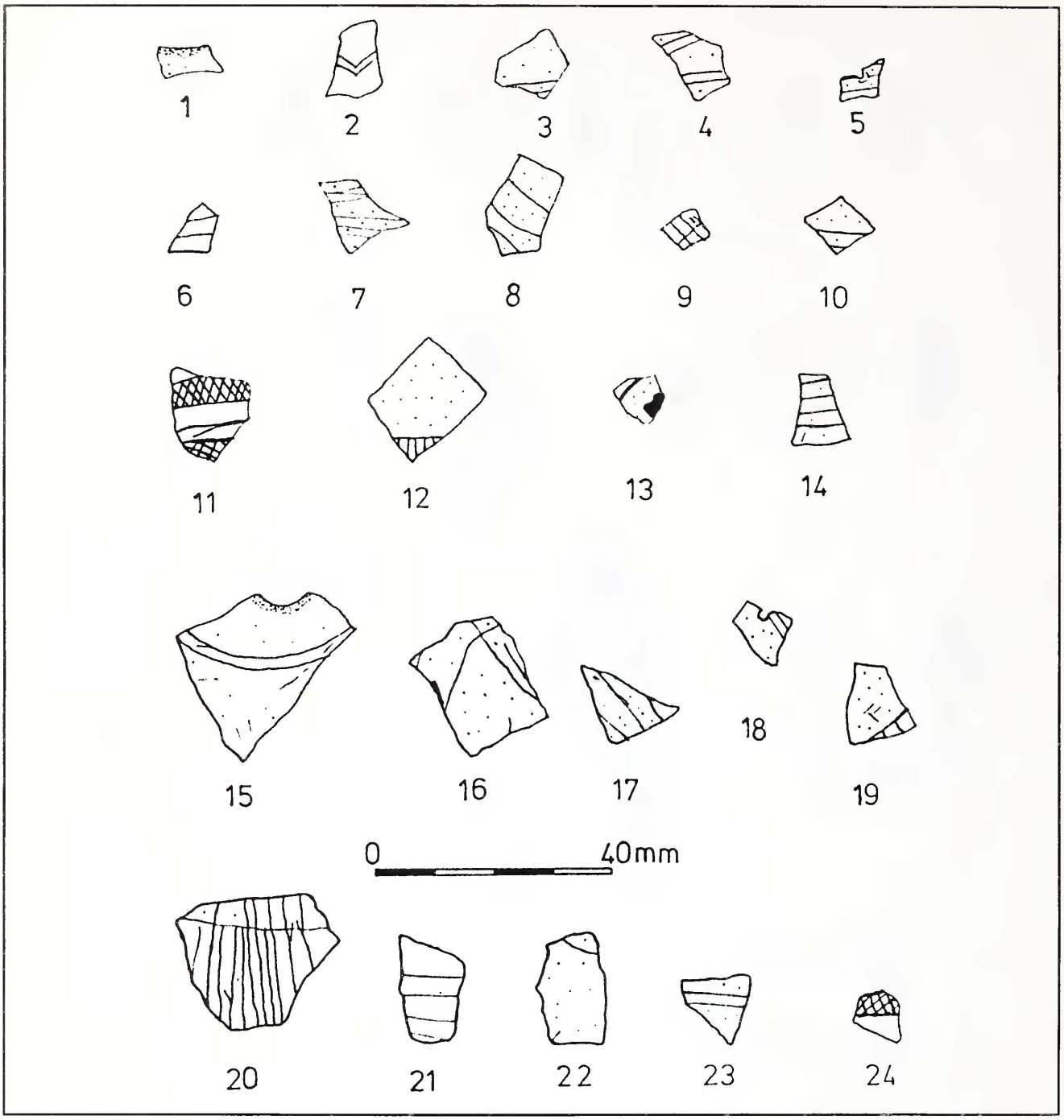

Fig. 12. Worked and decorated ostrich eggshell pieces: 1 - AA23 S1 (flask mouth); 2 - X21 Unit 1; 3 - P32 SS; 3 - P32 SS; 4 - X21 Unit 2; 5 - X22 Unit 2; 6 - X22 LBS; 7 - Y21 Unit 3; 8 - X21 Unit 2; 9 - X22 Unit 2; 10 - Y21 Unit 3; 11 - Z20 AG; 12 Z20 AG; 13 - Z20 AG; 14 - Z20 AG; 15 - X21 LBS2/3 (also a flask mouth); 16 - Y21 LBS3; 17 - Y21 LBS3; 18 - X21 LBS2/3; 19 - N33 GG3; 20 - X21 LBS4; 21 - X22 LBS4; 22 - X22 LBS4; 23 - X21 LBS4; 24 - X21 LBS4.

eruption sequences difficult. Cut marks were observed on several of the bones and one bone was coated in red ochre.

Not all the faunal remains are necessarily indicative of diet. For example, red rock rabbits (*Pronolagus rupestris)* and black-backed jackals (*Canis mesomelas*) are hunted by contemporary pastoralists in Namaqualand for their skins. Grey mongoose (*Galerella pulverulenta)* on the other hand, does not have a suitable skin for processing and its meat is not currently eaten.

DISCUSSION

A comparison of the material culture and faunal remains from the 3 areas excavated around the boulders at /hei-/khomas allows for a tentative construction of the chronology of the site (Table 15). Area 2, with a date of 330±45 BP, fits on top of the sequence in Area I and is also comparable with the upper units in Area 3. This is confirmed by large numbers of quartz artefacts as well as

Table 10. Ostrich eggshell pieces and beads.

	Decorated OES	Unfinished beads	Beads	Mean diameter (mm)	Minimum-Maximum diameter (mm)	Number > 7,5 mm
Area 1						
SUR			3	75	4,5 - 10,5	2
GBS			6	53	4,3 - 7,2	0
CCG		2	6	47	3,9 - 5,5	0
GGW		4	10	46	3,4 - 5,8	0
GRO	1		13	46	3,3 - 5,2	0
RO			10	43	3,3 - 5,4	0
RR			2	38	3,5 - 4,2	0
Area 2						
SUR			2	52	4,5 - 5,9	0
SBH	1	2	9	59	4,0 - 8,1	2
SLF		2	10	70	3,7 - 8,1	4
SLV		2	10	61	3,9 - 8,2	2
Area 3						
SUR		2	8	50	3,6 - 5,6	0
UNG	1	20	48	54	3,2 - 7,9	1
U2S	3	40	93	51	3,2 - 10,4	6
L3S	10	25	79	48	3,0 - 8,8	4
LHS	2	27	87	47	2,8 - 8,0	1
L4S	5	12	43	45	3,1 - 5,9	0
L4P	3	5	16	42	3,5 - 5,3	0

the concentrations of potsherds and ostrich eggshell beads greater than 7,5 mm in external diameter. Although these top units contain significant numbers of marine shell, the decorated eggshell fragments and specularite frequencies are more frequent in the lower units.

Although the date of 1980±120 BP was obtained from close to the base of the excavations in Area 3, there is evidence for even earlier occupation of the site in Area 1. Unit L4S (with the date of 1980 BP) in Area 3, closely resembles units GGW and GRO in Area 1 in terms of relative frequencies of quartz and fine-grained raw materials, as well as pottery and ostrich eggshell frequencies and bead sizes. Unit L4P at the base of Area 3 exhibits the same increase in lithic concentrations and formal tool numbers evident in RO and RR in Area 1. These basal units probably predate 1980 BP, but unfortunately the poor preservation of bone and charcoal makes dating of these units difficult. The archaeological data suggests that there may be a hiatus between short, episodic occupation of the site around 1980 BP and longer, more intensive occupation around 400-300 BP. More dating is required to determine if this hiatus is a true reflection of the occupational history of the site.

Tentatively, the following 3 Phase division is proposed (Table 15):

Phase 3 includes RO and RR from Area 1 and L4P from Area 3. The mean bead diameter is 4,2 mm and

Table 11. Marine Shell Fragments.

Area 1					
CH1					*Ocenebra* sp. ?
GG2					
GG3	*Patella* sp.				
OG1					
RG					
Area 2					
SUR				1 *Bullia digitalis*	
SS/BP					
SLS/FAS				2 *Bullia digitalis*	
SLS2/VGS				1 *Bullia digitalis* 1 *Turbonilla* sp.?	
SLS3					
Area 3					
UNG	3 *Patella* sp.	1 *P. argenvillei*		1 *Bullia digitalis*	
U2S		6 *P. argenvillei*			
L3S	4 *Patella* sp.	3 *P. granatina*	2 *Choromytilis* sp.	1 *Bullia digitalis*	1 *Conus* sp.
LHS		6 *P. argenvillei*	1 *Choromytilis* sp.		1 *Conus* sp.
L4S		1 *P. argenvillei* 1 *P. granatina*			
L4P		1 *P.granatina*			

there is only one potsherd in these lower layers. Flaked silcrete artefacts amount to 27% as opposed to 18,4% in Phase 1, confirming the greater percentage of fine-grained raw materials in the lower units.

Phase 2 includes CCG, GGW and GRO from Area 1 and L3S, LHS (1980 BP) and L4S from Area 3. The mean bead diameter is 4,7 mm and the potsherd thickness is 5,2 mm. Flaked as well as formal quartz stone artefacts decline in this phase with an increase in the number of silcrete and ccs artefacts.

Unit U2S falls between Phase 1 and Phase 2 and has a mean bead diameter of 5,1 mm and a potsherd thickness of 5,5mm.

Phase 1 includes SUR, SBH, SLF, SLV (330 BP) and SL3 from Area 1, SUR and GBS (420 BP) from Area 2 and SUR and UNG from Area 3. This Phase is characterised by a mean bead size of 5,7 mm, a mean potsherd thickness of 5,7 mm and a relatively high percentage of flaked as well as formal quartz stone artefacts.

With regards the faunal distribution, it is important to note that figures for sheep/goat remain constant in Phases 1 and 11 at around 3% of the total assemblage but falls to 0,4 % in Phase 111. However, klipspringer amounts to some 33% in Phase 1 and almost 60% in Phase 111. There appears to be an inverse relationship between klipspringer and dassie, as the latter amounts to 63,6% in Phase 1 and some 39,3% in Phase 111.

It is important to note that differences in the stone artefact concentrations between Area 1 and 2, on the one hand, and Area 3 on the other, could in part be due to their differing spatial functions. Area 1 does not appear to have been a prime living area but may have been occupied on a more infrequent basis. Stone tool numbers are not really

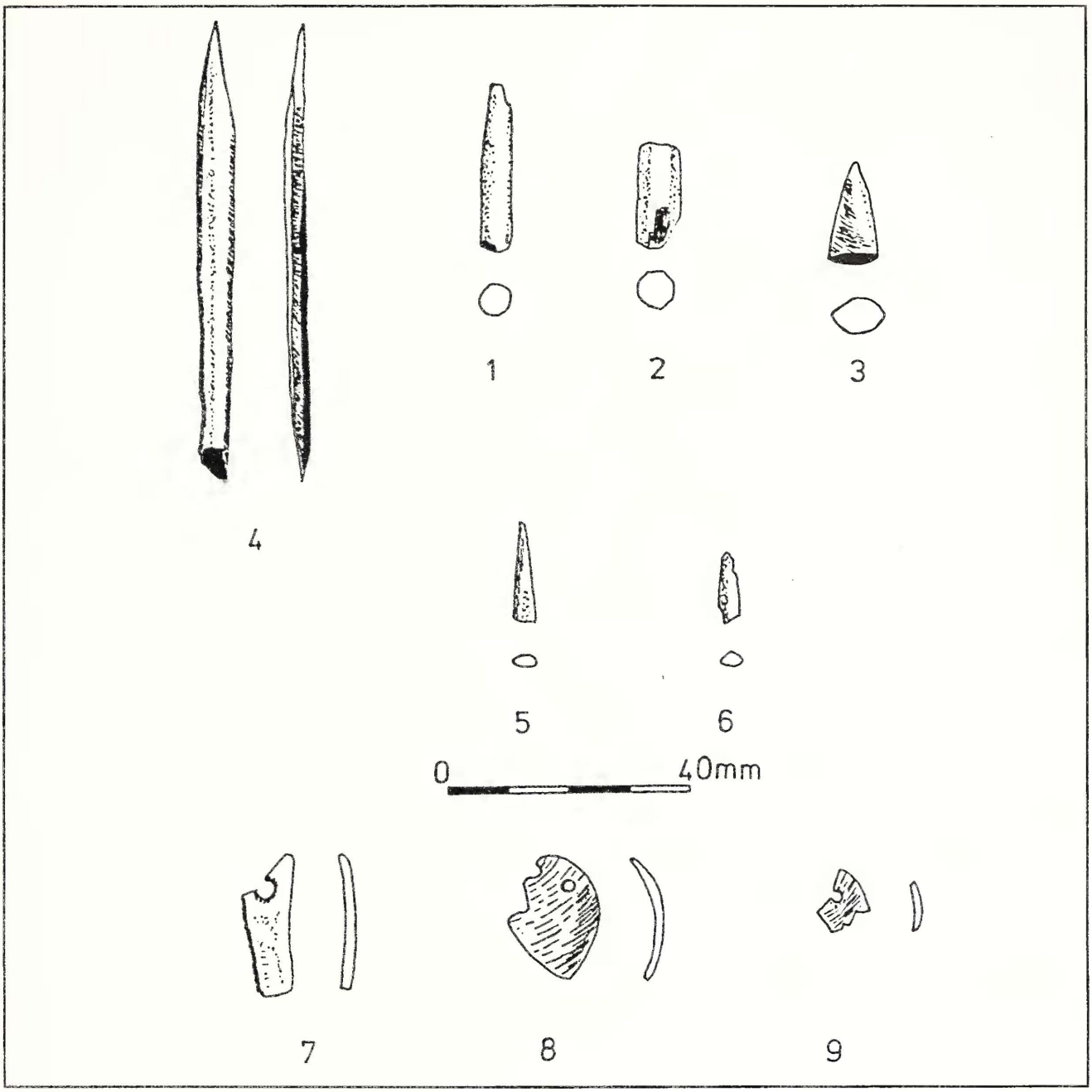

Fig. 1 3. Bone and shell artefacts: 1 - X22 LBS; 2 - Z20 HAG; 3 - X21 LBS2/3; 4 - AA 23 SS2; 5 - X22 LBS; 6 - N33 GG; 7 - N32 CH1 (bone pendant); 8 - AA23 SS4 (shell pendant); 9 - X22 LBS (shell pendant).

comparable because Area 3 functioned more prominently in terms of continuous occupation. In addition the evidence for large scale ostrich eggshell bead manufacture and the presence of many marine fragments confirm that Area 3 functioned as the prime living area around the boulders.

The internal homogeneity of the assemblages on both sides of the boulders can be confirmed by a number of cultural items:

a) scrapers and backed tools in the formal toolkit vary in frequency but are nevertheless always present (*i.e.* no new formal tool types are introduced during the occupation of the site);

b) raw materials used in the production of stone artefacts also vary infrequency but, once again, no new raw materials are introduced;

c) decorated ostrich eggshell fragments are present from the basal units and gradually decrease in numbers. They do not, however, decrease or increase significantly with the introduction of pottery.

In this discussion, Vaalhoek is compared with the

Table 12. Area 1 - faunal remains according to minimum number of individuals (MNI)/ number of identified specimens (NISP)/ and weight in grammes.

	SUR	GBS	CCG	GGW	GRO	RO	RR
Procavia capensis	3/25/14	3/61/40	1/19/8	1/12/3	1/8/3	1/17/6	1/5/3
Pronolagus rupestris	-	-	-	-	-	1/2/1	-
Leporidae indet.	-	1/1/1	-	-	-	-	-
Galerella pulverulenta	-	1/2/1	1/1/1	-	-	-	-
Oreotragus oreotragus	1/2/1	4/331/660	2/16/22	2/31/6	1/6/5	2/24/37	1/2/1
Ovis/Capra	-	-	1/1/1	-	-	1/1/1	-
Bovidae indet.							
small	-	1/21/144	1/13/6	1/3/3	1/6/4	1/1/1	1/4/1
small/medium	1/2/1	-	1/1/1	-	-	1/1/1	-
Squamata indet.	-	1/1/1	1/1/1	-	-	-	-
Chelonia indet.	1/2/1	-	1/6/3	-	1/2/2	1/2/1	-

Table 13. Area 2 - faunal remains according to minimum numbers of individuals (MNI)/ number of identified specimens (NISP)/ and weight in grammes.

	SUR	SBH	SLF	SLV	SL3
Procavia capensis	1/3/2	5/52/27	4/76/59	4/101/83	3/15/11
Leporidae indet.	-	-	-	1/1/1	-
Galerella pulverulenta	-	1/1/1	1/8/3	1/5/1	1/1/1
Canis mesomelas	-	1/2/1	-	1/2/1	-
Oreotragus oreotragus	-	2/51/52	4/49/64	3/48/41	1/5/3
Ovis/Capra	-	-	1/2/2	1/1/3	-
Bovidae indet.					
small	-	1/10/8	1/40/33	1/12/10	-
small/medium	1/1/1	-	-	-	-
large	1/1/3	-	-	-	-
Squamata indet.	-	-	-	1/1/1	-
Chelonia indet.	-	1/3/1	1/2/3	1/1/1	-

upper layers at Rosh Pinah (dating between 760 and 330 BP) in Namibia; with Jakkalsberg (dating to 1300 BP) and Bloeddrift (dating to 355 BP) on the Orange River in the Richtersveld; as well as Spoegrivier (dating between 3 500 BP and 1300 BP) and Bethelsklip (dating between 800 BP and 360 BP) further south in central Namaqualand.

Consideration of the formal tool assemblages at Vaalhoek indicates that Phase 111 amounts to 1,5%, Phase 11 to 1,9% and Phase 1 to 2,0%. This is the opposite of what one would expect, *i.e.* a slight in increase in formal

Table 14. Area 3 - faunal remains according to minimum number of individuals (MNI)/ number of identified specimens (NISP)/ and weight in grammes.

	SUR	UNG	U2S	L3S	LHS	L4S	L4P
Procavia capensis	1/6/9	3/56/32	7/190/114	7/255/97	3/233/109	5/140/65	4/73/35
Pronolagus rupestris	-	-	2/12/4	2/14/6	2/10/7	1/1/1	-
cf *Lepus capensis*	-	-	-	-	1/2/1	-	-
Galerella pulverulenta	-	2/5/3	1/9/4	1/7/2	1/6/2	2/6/1	-
Canidae indet.	-	-	-	1/1/1	-	-	-
Felis cf *caracal*	-	-	-	-	-	1/1/1	-
F.lybica	-	-	?1/1/1	-	-	-	-
Raphicerus campestris	-	-	1/1/1	2/4/4	1/5/5	-	1/2/4
Oreotragus oreotragus	1/2/2	1/17/17	2/54/48	2/42/53	3/232/437	3/95/179	4/118/424
Ovis aries	-	1/1/1	1/1/2	1/1/6	1/1/3	-	-
Capra hircus	1/2/55	-	-	-	-	-	-
Ovis/Capra	1/7/7	1/3/3	1/9/10	1/16/47	1/15/13	2/2/1	-
Bos taurus	-	1/1/2	1/1/3	-	-	-	-
Bovidae indet.							
small	1/3/2	1/14/9	1/40/22	1/24/34	2/141/125	2/46/36	1/31/26
small/medium	1/5/6	1/3/3	1/19/22	1/17/26	1/12/23	2/13/66	1/4/5
large/medium	-	1/1/5	-	-	-	-	-
large	-	1/3/9	-	-	1/1/1	-	-
Squamata indet.	-	1/4/2	1/8/3	2/15/3	2/18/4	1/1/1	1/1/1
Celonia indet.	-	1/1/2	1/20/15	1/4/1	1/9/5	1/1/1	1/1/1
Freshwater mollusc	-	-	1/1/1	-	-	-	-
Crab	-	1/1/1	-	-	-	-	-

tool numbers with the introduction of pottery. With regards only backed tools (flakes and blades), there is an increase from 15% in Phase 111, to 28,6% in Phase 11, and then a slight drop again to 19,5% in Phase 1 (the latter dating to the last 300 years). Smith and Jacobson (1995:7) also noted a "definite resurgence of retouched microliths" at Geduld in northern Namibia, "which seems to coincide with the appearance of ceramics".

Formal tool percentages at Vaalhoek are slightly higher than at Bloeddrift 23, where they amount to 0,04% and Jakkalsberg A where they amount to 0,05% of the lithic assemblage. There were no formal tools at Jakkalsberg B (Webley 1997) or in the pottery layers at Rosh Pinah (Sievers 1984). At Geduld in Namibia, formal tool numbers varied but there was a mean of 0,3% for the total assemblage. Further south, at Bethelsklip, the formal tool percentages varied, but an average of 0,7% was measured for a layer with a date of 800 BP. Formal tool percentages in the pottery units at Spoegrivier Cave, varied between 0,8% and 3,7% in the pottery layers but there is no consistent trend in either direction.

With regards to pottery at Vaalhoek, the decoration (mainly punctate impressions and horizontal incised lines) as well as lugs, closely resembles the pottery from Jakkalsberg, Bloeddrift 23, Bethelsklip, and Rosh Pinah.The pottery from these sites differs from that at Geduld, which in the lower layers contains burnished corrugations. Potsherd thickness at Vaalhoek varies between 5,2 mm in Phase 111 and 5,7 mm in Phase 1. The potsherd thickness for Jakkalsberg A is 5,7 mm and for B is 5,2 mm and is less than 4,00 mm for Bloeddrift 23. At Rosh Pinah, the mean potsherd thickness varies between 5–7 mm and at

Table 15: The arrangement of units from Area 1, 2 and 3 into three chronological Phases.

	Phase 1		Phase 1/11		Phase 11		Phase 111	
	n=	%	n=	%	n=	%	n=	%
Mean bead size (mm)	5,7		5,1		4,7		4,2	
Bead Total	96		93		238		28	
Mean pot thickness (mm)	5,7		5,5		5,2		0,0	
Potsherd numbers	234		166		143		1	
Flaked quartz	2918	74,2	2108	67,4	4559	64,9	854	62,8
Flaked silcrete	725	18,4	714	22,8	1682	23,9	367	27,0
Flakes CCS	205	5,2	239	7,6	651	9,3	127	9,3
Flaked quartzite	84	2,1	68	2,2	136	1,9	11	0,8
Total Flaked	**3933**	**100**	**3129**	**100**	**7028**	**100**	**1359**	**100**
Formal quartz	42	54,5	24	39,3	38	32,2	4	20,0
Formal Silcrete	21	27,3	23	37,7	51	43,2	12	60,0
Formal CCS	14	18,2	14	23,0	29	24,6	4	20,0
Total Formal	**77**	**100**	**61**	**100**	**118**	**100**	**20**	**100**
P. capensis	334	63,6	190	72,0	667	57,9	95	39,3
Leporidae gen.	1	0,2	12	4,5	27	2,3	2	0,8
O. oreotragus	174	33,1	52	19,7	422	36,6	144	59,5
Ovis/Capra	16	3,0	10	3,8	36	3,1	1	0,4
Total NISP fauna	525	100	264	100	1152	100	242	100

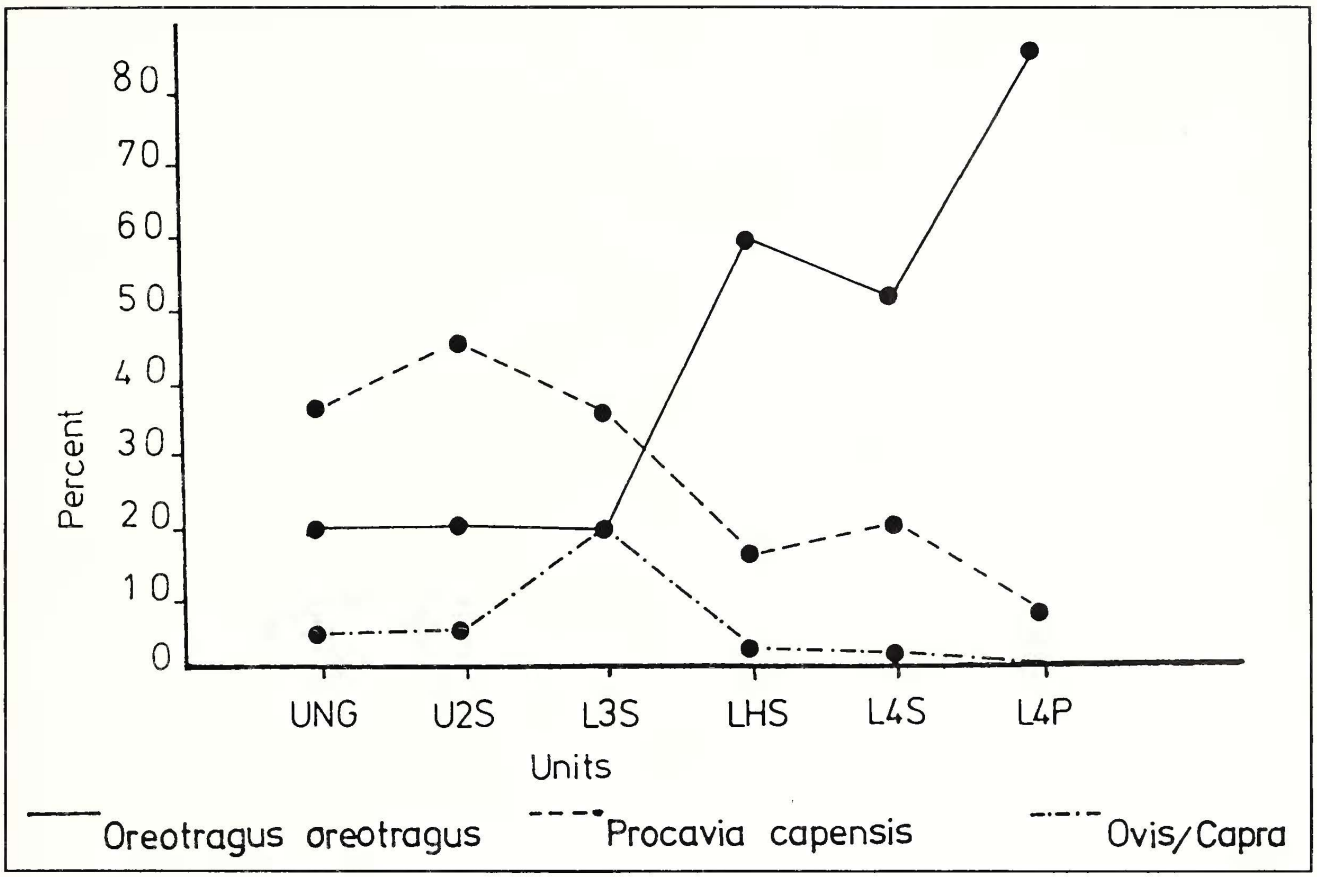

Fig. 14 Area 3: the percentage mass of klipspringer, dassie and sheep/goat.

Bethelsklip it amounts to 5,7 mm. At Spoegrivier Cave, the pots-herds are thinner (4,8 mm) in the layers dating to 1980 BP than in the upper layers (6,1 mm) dating to 1300 BP. There appears to be a trend towards slightly thicker potsherds through time at all these sites with the exception of Bloeddrift.

Decorated ostrich eggshell pieces seem to be a feature of Northern Cape sites such as Wonderwerk Cave, Dikbosch, Limerock and Little Witkrans Shelter (Humphreys & Thackeray 1983) where they have been found in units dating to as early as 13 500 BP. They were also recovered at Rosh Pinah in southern Namibia (Sievers 1984) and Spoegrivier Cave, on the Namaqualand coast, but not at Bethelsklip, Geduld or Bloeddrift. At Spoegrivier Cave they were found in layers dating to 2400 BP (Webley 2001) and therefore predate herding. However, at many Northern Cape sites they have been found in units together with pottery and dating to within the last 2000 years. The presence of a number of decorated ostrich eggshell fragments from Vaalhoek is interesting in the light of a more limited sample from Jakkalsberg (Webley 1997) dating to 1300 BP.

The mean ostrich eggshell bead diameters from Vaalhoek for Phase 111 (1980 BP) is only 4,7 mm and the increase to 5,1 mm occurs at the interface between Phases 11 and 1. Means of around 6,0 mm are only reached in the period 400 – 300 BP (Phase 1). Geduld, in Namibia, shows the same incremental increase in mean bead sizes as that observed at Vaalhoek, with Levels 14-8 (2 300 BP) measuring 4,6 mm, level 7 (1980 BP) measuring 5,5 mm and Levels 6 and 5 (1790 BP) measuring 6,1 mm. The significant change occurs in Level 7, which dates to 1980 BP, and is associated with the first appearance of ceramics, but not domestic stock. At Spoegrivier Cave (Webley 2001) in Namaqualand, the mean bead diameter increases from around 4,4 mm in the pre-pottery layers to 5,2 mm in Layer 6 (introduction of pottery) dating to 1980 BP. There is another increase in bead sizes to 6,2 mm in Layer 2 (1300 BP) coinciding with increases in sheep numbers. Geduld, Spoegrivier Cave and Vaalhoek appear to show a similar trend in increasing mean bead diameter but these trends appear to be slightly earlier at Geduld. Clearly, more dates are needed from Vaalhoek to confirm this.

The mean bead diameter from Jakkalsberg A (dating to 1330 BP) is 6,0 mm and at the B site is 5,7 mm (Webley 1997). Bloeddrift 23 (Smith *et al.* 2001), some 30 km from Jakkalsberg has a mean of 7,6 mm. Yates (1995) has indicated that the initial impetus to larger beads occurs together with the first appearance of ceramics, rather than domestic stock.

To sum up, in terms of cultural remains, Vaalhoek appears to resemble Bethelsklip (Webley 1984) more closely than either Jakkalsberg or Bloeddrift 23, which are located nearby and which have been designated as

pastoralist sites. It also resembles Rosh Pinah (Sievers 1984) across the Orange River in southern Namibia.

With regards the faunal remains from the site, it would appear that the inhabitants hunted klipspringer (small game) almost exclusively (60%) in Phase 111, with dassie (very small game) gradually becoming more important in Phase 1. Sheep/goat is introduced, possibly around 1900 BP, and stays a constant 4% of the faunal assemblage. Other very small game, such as red rock rabbit, grey mongoose and jackal never amount to a significant portion of the diet.

This restricted diet remains constant for some 2000 years, suggesting a remarkably localised exploitation strategy (Brink, pers. comm.). There is no evidence that the inhabitants of the site crossed the mountains to hunt larger game on the plains. Sites such as Kokerboomkloof (Webley *et al.* 1993) indicate the presence of game such as springbok and zebra in the area called Springbokvlakte.

The disposal of the faunal remains at Vaalhoek also raises some interesting issues. A number of pits containing faunal remains (in the majority of cases that of klipspringer) were discovered at the site. Such faunal pits are not common in Northern Cape sites. The presence of a complete adult and foetal klipspringer in one pit may be an indication of certain ritual practices which have no modern equivalents.

Sadr and Plug (2002) have observed of two sites in southeastern Botswana that, as the proportion of domestic stock increases through time, large and medium game numbers remains unchanged but there is a sharp drop in small and very small game numbers. They have proposed that amongst the foragers of southeastern Botswana, livestock was equated with the socially unimportant smaller game rather than the meat of large or medium game. Small game, they note, is not subject to the same sharing ethic among the San and since livestock, in effect, took the place of small game, this would have facilitated the gradual transformation toward a pastoralist society. Vaalhoek is not directly comparable with this observation, as it has no evidence for the hunting of medium or large game. Furthermore, the hunting of dassie increases with the acquisition of sheep, rather than declining.

CONCLUSIONS

The archaeological deposit from Vaalhoek, like Spoegrivier Cave (Webley 2001) further south on the west coast of Namaqualand, spans an important time period during which domestic stock and ceramics were introduced to the region. It is unfortunate, however, that the stratigraphy of the site is not well developed and the cultural and faunal remains not well preserved. Vaalhoek is therefore not as informative as sites such as Geduld and Spoegriver Cave spanning the same time period.

The original inhabitants of the site during Phase 111 were almost certainly hunter-gatherers. However, the archaeological evidence seems to point to these hunter-gatherer groups acquiring ceramics (and perhaps livestock) as early as 1900 BP. Unfortunately, the single sheep sample from Area 3, which was submitted for dating, did not have sufficient protein for an accelerator radiocarbon date and therefore the date of 1980 BP for the introduction of sheep to the Richtersveld, cannot be confirmed. However, the accelerator radiocarbon dates of c. 1900 BP on sheep remains from Spoegrivier Cave (Webley 2001) and Blombos Cave on the Cape south coast (Henshilwood 1996) suggests that an equally early date from the Richtersveld is not unlikely.

The introduction of ceramics seems to have triggered an increase in mean bead diameter, suggesting changes in behaviour (Yates 1995). However, the acquisition of domestic stock (i.e. sheep) at Vaalhoek does not seem to have had a similar impact on other items of material culture. The fact that the occupants of the site appeared to have relied on sheep for at least 4% of their diet, suggests some modification of their social system. Does it herald a transformation to pastoralism?

If a pastoralist site is defined as having a predominance of domestic stock in the faunal assemblage, then the faunal remains in Phase 1 at Vaalhoek clearly do not point to a pastoralist society. An example of this extreme type of pastoralism may be found at Jakkalsberg A & B (Brink & Webley 1996) where domestic stock amount to more than 90% of the mammal assemblage. However, it is important to note that Jakkalsberg is located on the Orange River, with plentiful supplies of fresh fish. It is very difficult to measure the importance of the fish to the inhabitants of Jakkalsberg because of the relatively poor preservation of the fish remains (Brink & Webley 1996).

The inhabitants of Vaalhoek had as their main source of food, the game in the surrounding mountains, i.e. mainly of klipspringer and dassie. It is tempting to suggest that the site represents the winter outpost and that, as in the past, herders would have moved down to the Orange River in the summer months, where they relied more heavily on fish and sheep. Currently, herders seldom slaughter their livestock in winter when there are plentiful supplies of milk and veldkos (Webley 1986). The absence of domestic stock at a site, does not, as I have indicated elsewhere, mean that the site must represent a hunter-gatherer settlement (Webley 1986).

The scenario described above, suggests that that the site represents one end of a transhumant cycle, during which pastoralist groups utilised the resources of the area during the winter months. Another scenario is that the site continued to be visited until modern times by hunter-gatherer groups who acquired livestock from their pastoralist neighbours. The ceramics and larger ostrich eggshell beads would have to be interpreted as trade items as well.

The two dates from the western side of the boulder, that of AD 1640 and 1474 are of interest as they coincide with the Little Ice Age, a period between AD 1300 and 1800 when conditions in many parts of South Africa were both cooler and drier that they are today (Tyson *et al.* 2001). In fact, many of the settlements in the Kuiseb River delta in southern Namibia were abandoned between 1460 and 1640

(Burgess & Jacobson 1984). While conditions are estimated to have been some 1 °C cooler than present, this may not have impacted negatively on human occupation in this part of the Richtersveld. However, if cooler conditions were coupled with drier conditions, then this would almost certainly have made settlement in this region extremely difficult. This may have resulted in the site being abandoned in the 17th century.

The introduction of ceramics and later, sheep, does not seem to have impacted significantly on the economy and the social life of the inhabitants of Vaalhoek. Similar observations have been made at many sites in Namibia, the Northern and Western Cape. Isolated sites such as Kasteelberg (Smith *et al.* 1991), or Jakkalsberg (Webley 1997) appear to offer a relatively clear-cut view of the advent of pastoralism in southern Africa (Bousman 1998). The vast majority of sites, however, are as enigmatic as Vaalhoek. They contain tantalising fragments of material culture and glimpses into a mixed economy quite unlike that which researchers would predict from the historic records. These sites suggest that the transition to pastoralism was a very complex process (Kinahan 1996), which took many turns during the last 2000 years. Documenting this variability, without preconceived notions about what it represents, should be the first stage in our research.

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REFERENCES

Archer, F. 1994. Ethnobotany of Namaqualand: The Richtersveld. Unpublished M.A. Thesis: University of Cape Town.

Boonzaier, E. 1991. People, parks and politics. In Restoring the land, edited by M. Ramphele, pp. 155-213. Panos: London.

Bousman, C.B. 1998. The chronological evidence for the introduction of domestic stock into Southern Africa. African Archaeological Review 15 (2):133-150.

Brink, J. & Webley, L. 1996. Faunal evidence for pastoralist settlement at Jakkalsberg, Richtersveld, Northern Cape Province. Southern African Field Archaeology 5: 70-78.

Burgess, R.L. & Jacobson, L. 1984. Archaeological sediments from a shell midden near Wortel Dam, Walvis Bay, South Africa. Palaeocology Africa 16: 429-435.

Deacon, H.J. 1976. Where hunters gathered: a study of Holocene stone age people in the eastern Cape. South African Archaeological Society Monograph Series 1: 1-231.

Henshilwood, C. 1996. A revised chronology for pastoralism in southernmost Africa: new evidence of sheep at c. 2000 BP from Blombos Cave, South Africa. Antiquity 70:945-9.

Humphreys, A.J.B. & Thackeray, A.I. 1983. Ghaap and Gariep: Later Stone Age studies in the Northern Cape. The South African Archaeological Society monograph Series No. 2. Cape Town.

Kinahan, J. 1996. Alternative views on the acquisition of livestock by hunter-gatherers in southern Africa: a rejoinder to Smith, Yates & Jacobson. South African Archaeological Bulletin 51:106-108.

Rudner, J. 1968. Strandloper pottery from South and South West Africa. Annals of the South African Museum 49: 441-663.

Sadr, K. & Sampson, CG. 1999. Khoekhoe ceramics of the upper Seacow River Valley. South African Archaeological Bulletin 54:3-15.

Sadr, K. & Plug, I. 2001. Faunal remains in the transition from hunting to herding in south-eastern Botswana. South African Archaeological Bulletin 56:76-82.

Sealy, J. & Yates, R. 1994. The chronology of the introduction of pastoralism to the Cape, South Africa. Antiquity 68:58-67.

Sievers, C. 1984. Test excavations at Rosh Pinah shelter, southern Namibia. Cimbebasia (B) 4 (3):29-40.

Smith, A.B. & Jacobson, L. 1995. Excavations at Geduld and the appearance of early domestic stock in Namibia. South African Archaeological Bulletin 50:3-14.

Smith, A.B., Sadr, K., Gribble, J. & Yates, R. 1991. Excavations in the south-western Cape, South Africa, and the archaeological identity of prehistoric hunter-gatherers. South African Archaeological Bulletin 46: 71-91.

Smith, A.B., Halkett, D., Hart, T. & Mutti, B. 2001. Spatial patterning, cultural identity and site integrity on open sites: evidence from Bloeddrift 23, a pre-colonial herder camp in the Richtersveld, Northern Cape Province, South Africa. South African Archaeological Bulletin 56:23-33.

Tyson, P.D., Odada, E.O. & Partridge, T.C. 2001. Late Quaternary environmental change in southern Africa. South African Journal of Science 97:139-150.

Webley, L. 1982. Settlement studies among descendants of Nama herders: an ethno-archaeological approach. Khoisis 3:1-26.

Webley, L. 1986. Pastoralist ethnoarchaeology in Namaqualand. In Hall, M. & Smith, A.B. eds. Prehistoric pastoralism in Southern Africa. The South African Archaeological Society Goodwin Series Vol. 5:57-61.

Webley, L. 1990. The use of stone `scrapers' by semi-sedentary pastoralist groups in Namaqualand, South Africa. South African Archaeological Bulletin 45:28-32.

Webley, L. 1992. The history and archaeology of pastoralist and hunter-gatherer settlement in the north-western Cape, South Africa. Unpublished Ph.D thesis: University of Cape Town.

Webley, L. 1996. Faunal evidence for pastoralist settlement at Jakkalsberg, Richtersveld, Northern Cape Province. Southern African Field Archaeology 5 (2):70-78.

Webley, L. 1997. Jakkalsberg A and B: the cultural material from two pastoralist sites in the Richtersveld, Northern Cape: Southern African Field Archaeology 6(1):3-19.

Webley, L. 2001. The re-excavation of Spoegrivier Cave on the West Coast of South Africa. Annals of the Eastern Cape Museums Vol 2:19-49.

Webley, L., Archer, F. & Brink, J. 1993. Die Toon: a late Holocene site in the Richtersveld National Park, northern Cape. Koedoe 36(2):1-9.

Yates, R. 1995. Appendix B: Report on the analysis of ostrich eggshell beads from Geduld. South African Archaeological Bulletin 50:17-20.