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### PART III: THE FAUNAL ASSEMBLAGES FROM THE GAMTOOS VALLEY SHELTERS

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TABLE I. SITE AK 1; FAUNA — THE SKULL

Zoological Groups		Complete Skulls	Skull Fragments	Horn Cores		Maxillae		Mandibles		Loose Teeth	No. of Pieces	Min. No. Indiv.
Families	Specific Types			L	R	L	R	L	R			
Cercopithecidae	<i>Papio ursinus</i>									2	2	1
Viverridae	<i>Genetta genetta</i>							1			1	1
	<i>Herpestes pulverulentus</i>					2	2	2	2	1	9	3
	<i>Herpestes</i> sp. (?)								2		2	2
Felidae	<i>Felis lybica</i>							1	1		2	2
	<i>Panthera</i> sp. (?)		1							1	2	1
Canidae	<i>Canis mesomelas</i>								1		1	1
Procaviidae	<i>Procavia capensis</i>					5	8	3	9	12	37	9
Hippopotamidae	<i>Hippopotamus amphibius</i>									2	29	1
Suidae	<i>Potamochoerus porcus</i>					1				3	4	1
Bovidae	<i>Tragelaphus strepsiceros</i>									4	4	1
	<i>Tragelaphus scriptus</i>					1	2	2		4	9	2
	<i>Cephalophus monticola</i>					1		2	1		4	2
	<i>Sylvicapra grimmia</i>			2	1			4	1		11	4
	<i>Raphicerus</i> cf. <i>campestris</i>		5	2	4	6	4	10	20	7	65	20
	Undetermined									104*	104	—
Hystricidae	<i>Hystrix africae-australis</i>									6	6	2
Unidentified rodents						3	1	7	9	26	46	9
Leporidae	<i>Lepus europaeus</i>					7	3	9	16	42	78	16
Undetermined			196							5	201	—
TOTALS		—	202	4	5	26	20	41	62	219	617	78

\*Mostly fragments

The faunal assemblages from the two shelters (described in part I) have proved to be of great interest, since they owe their origins, in the one case, to the activities of a 'bone collecting' animal (the porcupine), and in the second largely to the activities of man. Owing to their proximity to one another, and since they are probably broadly contemporary, it has been possible to compare directly the bone collecting propensities of man with those of the porcupine.

The total weight of bones recovered from the site AK 1, the 'human shelter', is 46 lbs (20.9 Kg.), while that of the AK 2 assemblage is 188 lbs (85.3 Kg.). The bone collection from AK 1 was made up of a total of 11,056 pieces, of which 8,887 were not identified, these being largely

small fragments. From AK 2, where a total of 1,105 pieces were recovered, 465 fragments were not identified. By excluding these fragments, it is considered that no significant difference is made to the determination of either the faunal types present or the numbers of skeletal components involved (Tables I-IV). For the analysis of the remains of skulls, all horn cores, maxillae, mandibles and loose teeth were included, while the analysis of the postcranial components included all fragments showing articular surfaces. Consequently the pieces not identified were almost entirely represented by calvarial and diaphyseal fragments and their exclusion was compensated for by the inclusion of epiphyseal elements of the postcranial skeleton and the above skull parts.

TABLE II. SITE AK 2; FAUNA — THE SKULL

Zoological Groups		Complete Skulls	Skull Frags.	Horn Cores		Maxillae		Mandibles		Loose Teeth	No. of Pieces	Min. No. Indiv.
Families	Specific Types			L	R	L	R	L	R			
Cercopithecidae	<i>Papio ursinus</i>							2	1		3	2
Mustellidae	<i>Mellivora capensis</i>	1						1	1		3	1
Felidae	<i>Panthera</i> sp. (?)					1					1	1
Procaviidae	<i>Procavia capensis</i>	1	1			6	8	7	5	1	29	10
Equidae	<i>Equus asinus</i>							2	2	1	5	2
Hippopotamidae	<i>Hippopotamus amphibius</i>									4	4	2
Suidae	<i>Potamochoerus porcus</i>		1			1	1	4	1	9	17	4
Bovidae	<i>Bos</i> sp.		5	2	3	1	1	1	5	9	27	6
	<i>Capra</i> sp.		4			6	4	1	3	1	19	6
	<i>Tragelaphus scriptus</i>			6	5						11	6
	<i>Raphicerus</i> cf. <i>campestris</i>		1		1	1	1	1			5	1
	<i>Cephalophus monticola</i>							2			2	2
	Undetermined						1	1		1	21	24
Hystriidae	<i>Hystrix africae-australis</i>	1	4			3	3	2	2	21	36	5
Undetermined			35								35	-
TOTALS		3	51	8	9	20	9	23	21	67	221	48

TABLE III. SITE AK 1; FAUNA — THE POST-CRANIAL SKELETON

Zoological Groups		Scapulae			Humeri			Ulnae/Radii			Pelves			Femora			Tibiae/Fibula		
		Left	Right	Undet.	Left	Right	Undet.	Left	Right	Undet.	Left	Right	Undet.	Left	Right	Undet.	Left	Right	Undet.
Mammalia	Carnivore				3	3		2	1										
	Hippopotamus																		
	Bush Pig								1										
	Bovid	14	18		14	13		25	19		3	5		7	5		10	15	
	Small forms <sup>2</sup>	15	23		18	7		27	18		7	10		11	7			1	
Aves	Tortoise			32 <sup>3</sup>			46						29			20			3
	Ostrich																1		
	Other bird			4 <sup>4</sup>			8			1	1								2
	Undetermined		5	5			4	1	1	7	18	10	5	2	2	12			6
TOTALS		29	46	41	35	23	58	55	40	8	29	25	34	20	14	32	11	16	11

Zoological Groups		Metapodials	Phalanges	Calcanei		Astragali		Other Tars. & Carp. <sup>1</sup>	Vertebrae					Ribs	Carapace	Undetermined	No. of Pieces	Min. No. Indiv.	
				Left	Right	Left	Right		Cerv.	Thor.	Lumb.	Sac.	Caud.						Undet.
Mammalia	Carnivore	13	10				1									33	3		
	Hippopotamus	6														6	1		
	Bush Pig	7														8	1		
	Bovid	132	55	6	5	11	5									362	25		
	Small forms <sup>2</sup>	1			1		1									147	27		
Aves	Tortoise													370		500	23		
	Ostrich															1	1		
	Other bird	12	1										4		13	46	6		
	Undetermined	5	10	1				60	15	49	31	4	15	64	318 <sup>5</sup>	8686	9336	—	
TOTALS		176	76	7	6	11	7	60	15	49	31	4	15	68	318	370	8699	10439	87

<sup>1</sup>Including sesamoids and patellas.

<sup>2</sup>Including *Lepus*, *Procyon*, *Hystric* and small rodents.

<sup>3</sup>Includes scapulae, proscapulae and coracoids.

<sup>4</sup>Includes scapulae and coracoids.

<sup>5</sup>Mostly fragments and probably includes some human material.

TABLE IV. SITE AK 2; FAUNA — THE POST-CRANIAL SKELETON

Zoological Groups	Scapulae			Humeri			Ulnae/Radii			Pelves			Femora			Tibiae/Fibula			Metacarpals			
	Left	Right	Undet.	Left	Right	Undet.	Left	Right	Undet.	Left	Right	Undet.	Left	Right	Undet.	Left	Right	Undet.	Left	Right	Undet.	
Mammalia				1																		
Carnivore				1																		
Elephant			1				1	1						1								
Equid								3			1		1	3		3	1		2	1		
Rhinoceras								1						1								
Hippopotamus				1	2			1					1			1	1					
Bovid	6	6		13	11		8	5								8	3		3	1	1	
Reptilia																						
Tortoise																						
Aves																						
Ostrich										1	1					1	1					
Other bird						5							1	3								
Undetermined	3	8	1	3	7				6	19	20	6	7	11	2	3	6	1				
TOTALS	9	14	2	18	20	5	9	11	6	20	22	6	9	20	2	16	12	1	5	2	1	

Zoological Groups	Meta-tarsals			Metapodials	Phalanges	Calcanei		Astragali		Other Tarsals		Sesamoid	Vertebrae					Ribs	Sterna	Carapace	Undetermined	No. of Pieces	Min. No. Indiv.			
	Left	Right	Undet.			Left	Right	Left	Right	Left	Right		Cerv.	Thor.	Lumb.	Sac.	Caud.							Undet.		
Mammalia					1				1														3	2		
Carnivore					1				1															3	2	
Elephant					2																			6	1	
Equid	2	2	3		4		1		1															28	3	
Rhinoceras							1																	3	1	
Hippopotamus				3				1																11	2	
Bovid	5	5	3	5	6	3	3		2	1	2	1							1					102	13	
Reptilia																						2			2	1
Tortoise																						2			2	1
Aves																										
Ostrich		1																				1			6	1
Other bird																									9	3
Undetermined							1						36	18	41	5		36	44				430	714	—	
TOTALS	7	8	6	8	13	3	6	1	4	1	2	1	36	18	41	5	—	36	44	2	2	430	884	27		

The faunal types present in the assemblages are either forms found in the area at present or are known to have inhabited the Eastern Cape during historic times. It is possible that exceptions may be found amongst those types not positively identified.

Terrestrial mammals are the most frequently occurring faunal types in both assemblages, excluding the fish, molluscan and crustacean remains from AK 1, which were not considered in this report. Tortoises made up about 21% of the total number of individuals represented in the AK 1 assemblage. Bird remains were scantily represented in both assemblages.

The faunal lists\* for the two sites, with the minimum number of individuals of each type indicated in brackets, are as follows:

## SITE AK 1

- Mammalia.*
- Primates  
*Papio ursinus* (Chacma Baboon) (1)
- Carnivora  
*Genetta genetta* (Small Spotted Genet) (1)  
*Herpestes pulverulentis* (Cape Grey Mongoose) (3)  
*?Herpestes* sp. (2)  
*Felis lybica* (Cape Wild Cat) (2)  
*Panthera ?pardus* (?Leopard) (1)  
*Canis mesomelas* (Black-backed Jackal) (1)
- Hyracoidea  
*Procavia capensis* (Dassie) (9)
- Artiodactyla  
*Hippopotamus amphibius* (1)  
*Potamochoerus porcus* (Bush Pig) (1)  
*Tragelaphus strepsiceros* (Kudu) (1)  
*Tragelaphus scriptus* (Bushbuck) (2)  
*Cephalophus monticola* (Blue Duiker) (2)  
*Sylvicapra grimmia* (Grey Duiker) (4)  
*Raphicerus campestris* (Steenbok) or *R. melanotis* (Grysbok) (20)
- Rodentia  
*Hystrix africae-australis* (Cape Porcupine) (2)  
Unidentified small rodents (2 types) (9)
- Lagomorpha  
*Lepus europaeus* (Scrub Hare) (16)
- Reptilia.*  
Undetermined genus (or genera) of tortoise, and at least one turtle (23)
- Aves.*  
*Struthio australis* (Ostrich) (1)  
Undetermined genus (or genera) of smaller birds (6)
- There are a minimum of 23 faunal types present, representing at least 108 individuals.

\*Where possible, nomenclature follows that of Ellerman, Morrison-Scott and Hayman (1953).

- Mammalia.*
- Primates  
*Papio ursinus* (Chacma Baboon) (2)
- Carnivora  
*Mellivora capensis* (Honey Badger) (1)  
*Panthera ?pardus* (?Leopard) (1)
- Proboscidea  
*Loxodonta africana* (African Elephant) (1)
- Hyracoidea  
*Procavia capensis* (Dassie) (10)
- Perissodactyla  
*Diceros bicornis* (Black Rhinoceros) (1)  
*Equus asinus* (Domestic Donkey) (3)
- Artiodactyla  
*Hippopotamus amphibius* (2)  
*Potamochoerus porcus* (Bush Pig) (4)  
*Bos* sp. (Domestic ox) (6)  
*Capra* sp. (Possibly *Ovis* sp. in part) (Domestic Goat) (6)  
*Tragelaphus scriptus* (Bushbuck) (6)  
*Cephalophus monticola* (Blue Duiker) (2)  
*Raphicerus campestris* (Steenbok) (1)  
*Raphicerus campestris* (Steenbok) or *R. melanotis* (Grysbok) (1)
- Rodentia  
*Hystrix africae-australis* (Cape Porcupine) (5)
- Reptilia.*  
Undetermined genus of tortoise (1)
- Aves.*  
*Struthio australis* (Ostrich) (1)  
Undetermined genus (or genera) of smaller bird (3)
- There are a minimum of 18 faunal types present, representing at least 56 individuals.
- The two genets common in South Africa (*Genetta genetta* and *G. tigrina*), are distinguished only on the basis of skin colour, and in the present analysis the specific type listed is the one thought most likely to have occurred in the area, i.e. *G. genetta*.
- Several other questionable identifications (indicated in the above lists) were made. The ascribing of the rhinoceros remains from AK 2 to *Diceros bicornis* is tentative, and based largely on the size of the bones. The condition of these bones, together with the mandibles assigned to *?Herpestes* sp. (probably *ichneumon*), was such as to preclude more positive identification. At least some of the cranial fragments listed as domestic goat, may in fact belong to the domestic sheep (*Ovis* sp.).
- The skull fragments of two large carnivores (*Panthera ?pardus*) probably belong to young leopards. They are comparatively small but fall within the large range of variation found in leopards.

COMPARISON OF THE ASSEMBLAGES

In deciding upon the origins of the two assemblages, three possibilities present themselves:

- (a) The bones were collected by man;
- (b) The bones were collected by some animal;
- (c) They represent the remains of animals which died in the shelters.

There are some indications that the latter possibility applied in part to both AK 1 and AK 2, probably to a greater extent to the latter. This cannot be easily proved, but it is considered likely that the porcupine and dassie remains recovered from AK 2 represent animals which died there, especially as it has been observed that these animals frequently inhabit the same lairs. From the AK 1 assemblage, the skull fragments of two viverrids (*Herpestes pulverulentis*) have a very fresh appearance, and considering the fragility of these remains and the methods of their removal, transport and storage, they are remarkably complete. Both skulls were probably intact before removal. These pieces, together with some postcranial components, do not have the filmy covering of cave dust seen on other bones from this shelter. It is considered likely that these remains, at least, were introduced to the shelter very recently. They probably died in the shelter, although the possibility that the remains were carried in by porcupines cannot be dismissed. However, in both shelters the bulk of the bone accumulations are attributable to the activities of man or animals.

The presence of human skeletal remains and cultural material in the AK 1 shelter suggests man as the collector, and there is little doubt that the porcupine was the collector from AK 2. The persons who investigated the caves referred to AK 2 as a "dassie crack", implying that the shelter was small in size. This is borne out by photographs of the site, which also show that it was relatively inaccessible. With other larger shelters in the vicinity it seems unlikely that man would have chosen it for occupation, and certainly would not have aggravated the space problem by leaving large quantities of bone inside the shelter. The total absence of cultural material is perhaps the decisive factor in establishing the occupational status of the AK 2 site.

The high percentage of gnawed bones testifies to the activities of animals in this assemblage. The animal concerned with the collecting and gnawing is almost certainly the porcupine, although the dassie may have been partly responsible. Apart from its undoubted presence, some of the gnawing was done by an animal other than the porcupine, the chisel-like incisors of which produce characteristic flattened grooves. The second type of gnaw-marks noted in a few isolated instances are thin V-shaped grooves, which could possibly have been produced by the dassie,

although small carnivores or rodents (e.g. field mice), may have been responsible.

Of the identified skull and mandible fragments from AK 2, 39% had been gnawed. The incidence of gnawing on the postcranial components is far higher (Table V). It is probable that the percentage of gnawed bones in the original assemblage actually collected by the porcupine was greater, since included in the analysis are the remains of animals which died in the shelter. However, it is clear from observations made that porcupines do not necessarily gnaw all the bones they collect.

TABLE V. SITE AK 2; FAUNA — INCIDENCE OF GNAWING OF POST—CRANIAL REMAINS

<i>Skeletal Components</i>	<i>Total Number</i>	<i>% Gnawed</i>
Scapulae	25	88
Humeri	43	81
Ulnae/Radii	26	81
Pelves	48	73
Femora	31	58
Tibiae/Fibulae	29	90
Meta-podials	37	62
Phalanges	13	54
Tarsal bones	18	44
Vertebrae	136	91
Ribs	44	30
<b>TOTAL</b>	<b>450</b>	<b>74</b>

There is nothing to indicate that the porcupine limited its gnawing to particular skeletal components, although a preference is shown for more solid, compact bone (Table V). This, however, is not a general rule, since, for example, the skull of a goat has had delicate portions gnawed away completely, in addition to the more solid horn cores and occipital condyles.

A consideration of the AK 1 assemblage brings to light several notable features. First, it is not an "uncontaminated" assemblage because it includes at least a small percentage of pieces which were apparently collected by animals. Secondly, whereas from AK 2 the complete bone content of a single shelter was recovered, the AK 1 material is only a "sample", since part of the shelter had been destroyed prior to its recovery (see part 1). Consequently it may or may not, present a typical picture of the original complete assemblage.

There is little concrete evidence to suggest that there has been transfer of bone from one shelter to the other. It might be supposed that the porcupines would have scavenged bone from the refuse heaps of the inhabitants of AK 1, but this could not be demonstrated with any degree of certainty. There is a clear overlap of faunal types represented, viz. of the 29 distinct faunal types from the two shelters, at least 10 forms are common to both. The condition of several bones from

AK 1 is comparable to those from AK 2, and are out of character in the AK 1 assemblage. This suggests the possibility that some mixing of material has taken place, and although the possibility that the suspect material was moved from AK 2 to AK 1 by some animal cannot be dismissed, it is thought that the mixing took place subsequent to removal from the shelters.

The first major difference in appearance between the bones from the shelters is in the incidence of gnawing. Of the total 2,169 identified pieces from AK 1, only 7 had been gnawed (0.3%), while in AK 2 shelter 385 out of 640 (60%) were gnawed.

Another striking difference is to be seen in the condition of the bone. Approximately 80% of the AK 1 assemblage was classed, in the present analysis, as unidentified pieces, whereas only about 42% of the AK 2 assemblage was similarly classified. Further, the 11,056 pieces from AK 1 weighed only 46 lbs, while the 1,105 pieces from AK 2 (about 1/10 the number), weighed 188 lbs (about four times as much). This latter point can be explained in part by the fact that smaller faunal types predominate in AK 1, and consequently greater numbers of bones are required to make up the weight of the larger bones from AK 2. Nevertheless, these two sets of data taken in conjunction clearly illustrate that a major difference does exist in the incidence of fractured bones.

The reason for this is simple and significant. Whereas the porcupine restricted itself to the gnawing of bone, man set about breaking it up. This was done first to extract the marrow, and secondly, to obtain fragments for the manufacture of the bone tools found in the deposit (see part 1).

Further damage to bones would be produced by their being trampled underfoot on the floor of the shelter by man. Because of the relative lightness of such animals as porcupines and dassies, this condition would not apply equally in an animal lair. The production of fractures by such mechanisms as rock falls, rough methods of removal, transport and storage cannot be invoked to explain the difference in this case, since similar conditions apply to both assemblages.

The fractures evident in the bones from AK 2 are without exception of the simple longitudinal and transverse type, with superficial variations in appearance produced by gnawing. Much the same, apart from the gnawing, can be said of the AK 1 assemblage. Stress lines of bones indicate that they have areas of weakness where fractures will tend to occur whether they are broken naturally or artificially. Consequently induced or natural fractures must result, broadly speaking, in a basic series of fracture patterns. In induced fractures differences will appear in the immediate area

subjected to stress, whether this be tensional or compressional. It is in this respect that some of the fractures in bones from AK 1 differ from those of AK 2.

Several long bone fragments clearly show that holes had been knocked into them with some sharp instrument before the bone broke apart (Fig. 1). Apparently the Arabs of the East Coast of Africa, when extracting the marrow from a bone, first hammer a hole into it, and by inserting

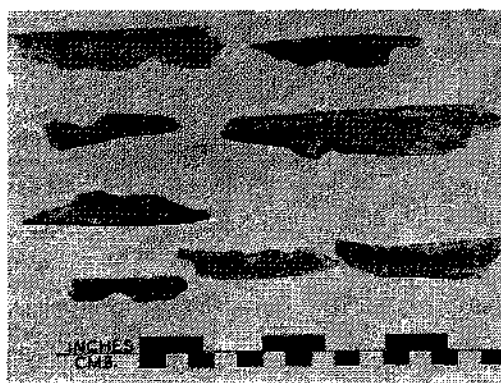


Fig. 1

a sharp object and forcing this at right angles to the axis of the bone, split it longitudinally. It seems that the inhabitants of AK 1 used a similar technique when fracturing bones.

The controversial "spiral fractures", which have aroused much discussion in the past, and which are stated to be artificially produced, are also in evidence.

The most common technique employed in fracturing bones in the AK 1 assemblage appears to have been simply to shatter them with some blunt instrument. This explains the presence of large numbers of tiny fragments and splinters which would represent that part of the bone on which the blow fell.

The net result of all this destructive activity was to reduce a very high percentage of the bones in the shelter to a highly fragmented state. All components of the appendicular skeleton (excluding limb girdles, carpals and tarsals) had been treated in the same way. Even the apparently insignificant bovid phalanges and suid metapodials have received this treatment. With these, as with bovid metapodials, where the amount of marrow is negligible, the reason must have been to secure bone fragments for certain tools.

Further fragmentation of bone is likely to have occurred through exposure to heat from fires in the shelter, and another notable difference be-



tween the assemblages was in the incidence of burnt bone. A little over 10% of the 8,686 unidentified fragments from AK 1 have been burnt, most being heavily charred as would be expected of those bones which lay in or near "camp" fires. None of the few pieces from AK 2 similarly affected shows more than superficial charring, which could have been caused by bush or grass fires passing over bones before they were carried to the shelter.

There was marked selectivity shown for the faunal types hunted by the inhabitants of AK 1. They were obviously not very ambitious, and small antelope, hares, dassies, small rodents and tortoises make up about 76% of the faunal types represented (see faunal lists and Table VI). In

TABLE VI. SITES AK 1 AND AK 2; FAUNA — OCCURRENCE (EXPRESSED AS PERCENTAGES OF TOTALS) OF SELECTED FAUNAL TYPES

	AK 1	AK 2
Small carnivore	8	2
Dassie	8	18
Small antelope	24	5
Small rodent*	8	—
Hare	15	—
Tortoise	21	2
Small bird	6	5
Other	9	68
TOTALS	±100	±100

\* Excluding porcupine.

spite of their preference for small game, the hunters do not appear to have limited themselves to young or immature forms. In fact, adult forms predominate. The presence of a large number of tortoises and vegetable remains suggests that the occupants were a community of hunter-gatherers, an example of which is to be found today in the Bushmen of the Kalahari.

It is apparent from the presence of domesticated animals in the AK 2 assemblage (25% of the total number of individuals represented), that the shelter was in use until fairly recently. The actual date when these forms were introduced into the area is not known. Another factor testifying to a relatively recent date for at least part of this assemblage, was that some of the donkey and goat (?sheep) postcranial bones still have sinew and cartilage attached to them. Furthermore, four porcupine quills and a fragment of the horn sheath of a goat were also recovered. These

perishables are unlikely to have survived any great length of time in this shelter.

Since no domesticated animals were represented in the AK 1 assemblage, it may be assumed either that the occupants had moved out before their introduction into the area, or that they were not interested in eating domestic animals.

All the bones in this shelter, as in AK 2, have a very fresh appearance, and even allowing for ideal conditions for preservation, are unlikely to be very old.

#### CONCLUSIONS

This analysis clearly illustrates the contrasts between bone accumulations made by man and by porcupine, and it is considered that these differences are likely to be fairly typical of what might be encountered elsewhere in bone assemblages of similar origins, and dating from the same time.

It is hoped that in the near future more analyses of the faunal content of archaeological sites and of bone accumulations such as occurred in the AK 2 shelter will be undertaken. In this way much valuable information will accumulate regarding the faunal associations of man during his occupation of the sub-continent, and of the distribution of fauna in particular areas at particular times.

Already much valuable material has been lost, and the importance of faunal assemblages at sites, with or without archaeological significance, cannot be sufficiently emphasized.

The present report describes material from a salvage operation undertaken entirely by, and on the initiative of, amateurs. If this section of the report only serves to bring about the realization that information can be derived, even under these circumstances, then it will have served a useful purpose.

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