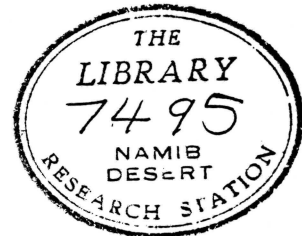


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THE PEOPLES
OF THE LOWER KUISEB VALLEY
SOUTH WEST AFRICA

by

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(With 12 figures and 7 tables)

Published with the aid of a Grant awarded to the Namib Desert Research Station by the South African Council for Scientific and Industrial Research

SCIENTIFIC PAPERS OF THE NAMIB DESERT RESEARCH STATION,
ORIGINAL PRINT, NO. 35, OCTOBER 1967

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INTRODUCTION

The Namib Desert Research Station has been built on the site of a deserted Hottentot village, one of several, scattered along the length of the lower Kuiseb valley as it makes its way across the arid Namib plain. Of the 18 villages, known to have existed in recent years, only 8 are currently occupied and it is clear that the way of life of the inhabitants of this part of South West Africa is undergoing rapid change. With the growth and industrialisation of ports such as Walvis Bay, it is inevitable that a movement of people away from the rural villages should occur, and that radical changes in traditional ways of life should be introduced.

The present paper has two objectives: to record the present position, describing the way of life of the people as we found them in 1966 and, secondly, to present the results of a genetical study carried out on a large proportion of them.

THE NATURAL ENVIRONMENT

The Kuiseb is the southernmost of the three rivers which arise in the central plateau region of South West Africa and reach the Atlantic Ocean. Its source is to be found west of Windhoek, and it reaches the sea at Walvis Bay, barely 20 miles

south of the mouth of the Swakop River (see Fig. 1). The Kuiseb descends over the escarpment through a spectacular canyon, enters the Namib Desert and continues for almost 100 miles with gravel plains on its north bank and some of the world's largest sand dunes rising to the south. For the last 8 miles of its course, its bed is completely covered by sand and only after the rare heavy rains does surface water flow in temporary channels.

Below the Kuiseb canyon, the Namib plain forms an area of extreme aridity and the river-bed is normally dry. However, subsurface flow supports dense vegetation in the bed itself and, by digging shallow wells, the human inhabitants obtain sufficient water for their needs (see Fig. 2). The vegetation consists of a number of species of *Acacia*: *Acacia albida*, the Ana tree whose pods provide the staple food for the goats and sheep; *A. giraffae*; the great spreading wild fig, *Ficus sycomorus*; the pseudo-ebony *Euclea pseudebenus*; *Tamarix austroafricana* and *gallica*. *Salvadora persica* and *Acanthosicyos horrida* grow along the river banks and the exotic wild tobacco plant *Nicotiana glauca* grows as a straggly shrub or tree. The well-known plant *Welwitschia mirabilis* is also found in a restricted area of the Kuiseb valley, though generally it is not thought to occur so far to the south.

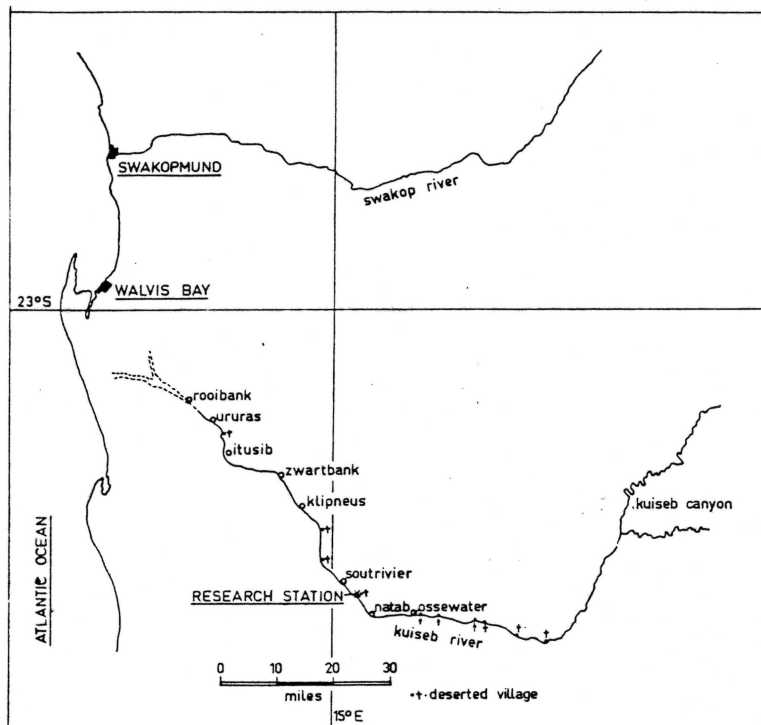


Figure 1: Map of the Kuiseb Valley area showing the positions of the occupied and deserted villages.



Figure 2: The Kuiseb river-bed at Soutrivier, showing one of the Hottentot wells. The large trees are *Acacia albida*.

HISTORY OF HUMAN SETTLEMENT IN THE KUISEB VALLEY

Vedder (1938) relates how the recent settlement of the Kuiseb Valley probably began. After Tjanuaha, Maharero's father, led his Herero people in the early 1800's south from the Kaokoveld along the coast, they tried to establish themselves and their small herds at the mouth of the Swakop River. However, due to persecution by the Bergdamaṛas and the uncertainty of the water supply in years of drought, they explored the lower reaches of the Kuiseb. A Bergdamara servant of the Nama (or Namaqua) Hottentots, who were living near the present day Walvis Bay, found the lost Hereros wandering about in the plains and she took them to Awa-haos, which means 'Ridge of Red Rock', and which afterwards became Schlepmandorp and Ururas, the former

name being changed more recently to Rooibank (see map, Fig. 1). The Hereros gave the place a different name, Otjombinda, which means 'ant-bear houses', because of the large numbers of ant-bears (ombinda) which lived there. Oral tradition claims that, in those days, there were no sand dunes between Walvis Bay and Swakopmund and that the Kuiseb mouth was entirely free from dunes and grass grew on its broad plains. For some time the Herero and the Nama lived peaceably together but eventually, due to disagreements over pasturage of their cattle, the Nama massacred many Herero and those who escaped settled on the lower parts of the Swakop River.

When Alexander visited the Topnaar Hottentots of the Walvis Bay area in 1837 he described them as the tallest and best built of the Namaquas; however

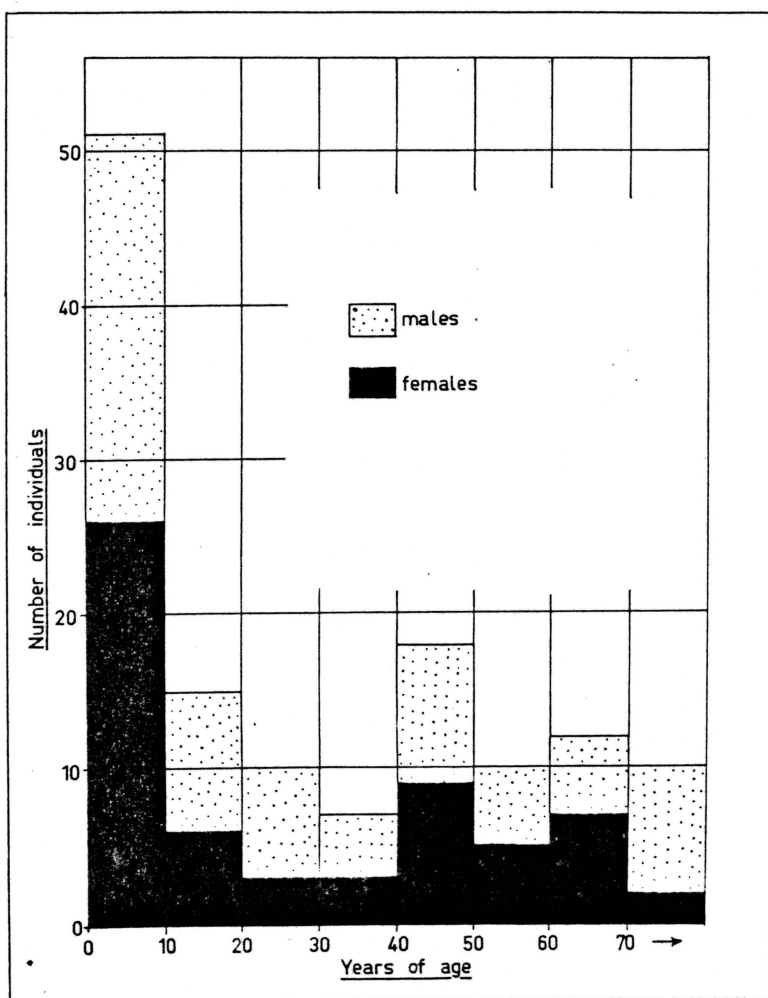


Figure 3: Diagram showing the age and sex structure of the indigenous population resident in the lower Kuiseb Valley, March, 1966. Many of the people aged between 20 and 40 years who belong in these villages were absent, working in Walvis Bay and elsewhere.

when Mrs. Hoernlé studied them in 1923, she considered them to be "the most miserable remnant of all". The cause of this decline in their physical and moral fitness she ascribed to the fact that they had sold their stocks to sailors who called at Walvis Bay in return for beads, brandy and "other worthless articles" (Hoernlé, 1923). With no meat and no naras melons to eat, they became prey to many diseases which attacked them as they lived in the more crowded conditions of the Bay.

The great English traveller, anthropologist, biometrician and the founder of the science of Eugenics, Sir Francis Galton, travelled a short distance up the Kuiseb (or, as he called it, the Kuisip) River at the start of his journey from Walvis Bay to Damaraland in 1851. He stayed for a short while with missionaries at Schleppmansdorp (called Rooibank today) and described the physical characteristics of the Hottentots and Bergdamara whom he saw there. However, he did not venture any further up the Kuiseb valley because he believed "the watering places are few and uncertain; the road by it is execrable in places and cannot bear comparison with the Swakop" (Galton, 1853).

POPULATION DISTRIBUTION AND SETTLEMENT PATTERNS

At the time of the study, in March 1966, our estimate of the total population of the lower Kuiseb valley was about 130. It was not possible to carry out an altogether complete census as many of the

'permanent' inhabitants were away from their homes working, either in Walvis Bay or on road construction camps.

The people live in a number of separate villages situated on the river bank, almost invariably the north bank, at varying distances apart (see map, Fig. 1). The histogram in Fig. 3 shows the age and sex distribution of all inhabitants available in the villages when the study was made. It will be noticed that very few individuals in the 20—40 years age group were found at home, due to the fact that, in their late teens, many leave home to seek employment in Walvis Bay and elsewhere. Some girls marry while they are away, others do not, but many become pregnant and, in this event, the baby is brought home to grow up in the grandparents' care, while the mother returns to her work.

A village is composed essentially of a family group and Fig. 4 shows a typical village genealogy, representing the inhabitants of Soutrivier (see map, Fig. 1). Marriage partners have, in the past, been found in neighbouring villages but as migration to Walvis Bay has increased, the selection of a partner much further afield has become possible.

Spacing of the villages along the river bank is determined by the number of goats kept at each. This is because grazing is possible in the river-bed only and the extent of a village's pasturage is measured in a linear fashion along the Kuiseb bed. The main stock owner of the Ossewater village explained how, as the size of his original goat herd

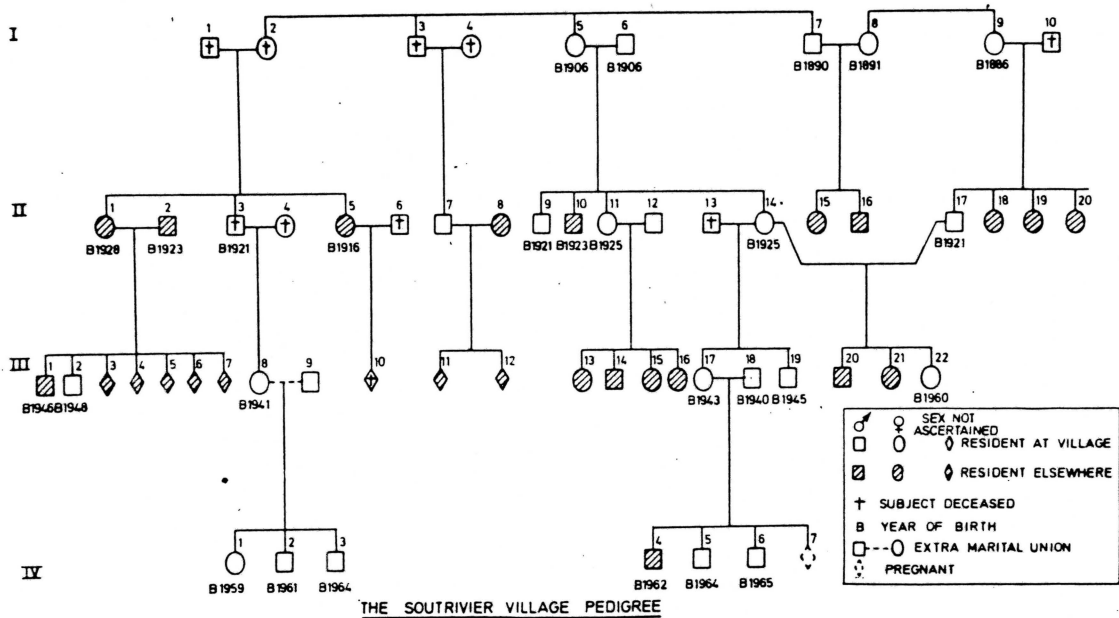


Figure 4: Genealogy of the people of the Soutrivier Village, lower Kuiseb Valley.

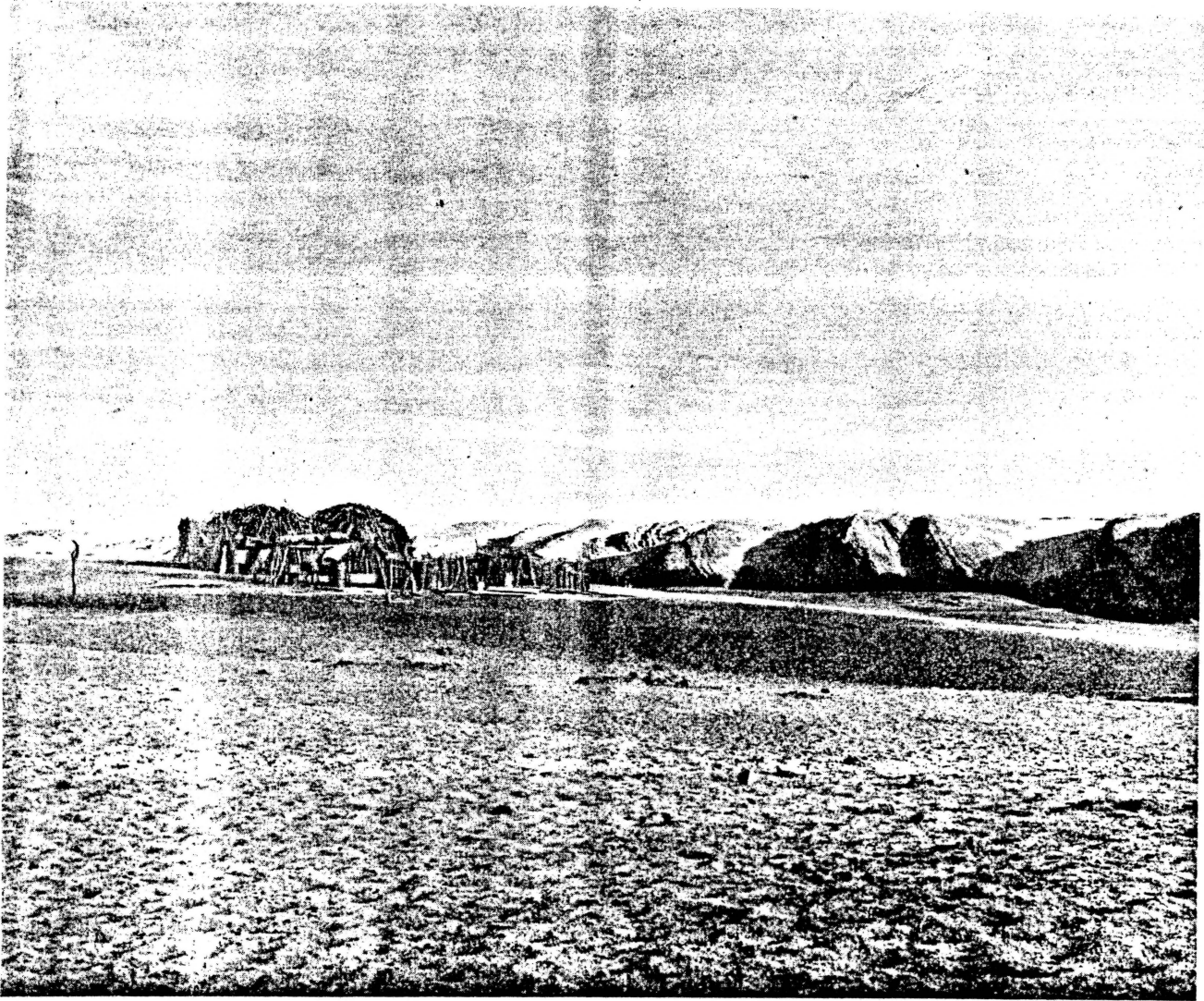


Figure 5: A general view of part of the Natab village. The Kuiseb River course is also visible, supporting the only vegetation to be found in this part of the arid Namib Plain.

at Soutrivier increased, he was obliged to move his home to a new village, in this way avoiding disputes over pasturage.

The villages themselves are typically situated on the banks overlooking the river-bed (see Fig. 5), exposed to the glaring sun. The cooler, shady river bed is avoided, for fear of the rare floods which sweep all before them, as they rush down the valley.

The layout of a typical village, in this case Soutrivier, is shown in Fig. 6. It will be seen that three wells, each about 10 ft. deep, have been dug close to the river bank. The upper part of each is lined with tree trunks and the water is extracted in a bucket, suspended from the end of a long, counterbalanced

pole running over a fulcrum (see Fig. 2). Living quarters consist of circular, bark-covered huts, situated higher up the river bank. Occasionally the individual huts are connected together to form clusters (see Fig. 6) with interleading doors.

Goats and lambs are kept in separate enclosures, made of dry tree trunks and branches embedded upright in the sand. A similar palisade had been constructed round a small tobacco garden on the river bank. In addition to the tobacco, this contained a small number of mealie plants, constituting the only attempt at agriculture to be found in any of the villages when the study was made.

Hut construction provides some idea of the influence of modern civilisation on the people. In

he upstream villages the traditional materials are still being used, while nearer Walvis Bay, at Rooibank and Ururas, these are being abandoned in favour of corrugated iron and sacking as shown in Fig. 7.

The traditional Hottentot huts were made by sticking supple lengths of wood into the ground forming a circle, the tops being bent over and tied together to make a bee-hive shape. Over this framework were secured reed mats. The spaces between the reeds permitted the cool breezes to enter in the summer; with rain, the reeds became swollen, closing the gaps and keeping the water out. This type of dwelling was easily dismantled, the sticks tied together, the mats rolled up and the lot carried to a new site by pack oxen. In this way the

frameworks on the Kuiseb River are normally covered with long pieces of bark from the Ana trees (*Acacia albida*) which grow in the river-bed (see Fig. 8).

ECONOMIC LIFE

Private ownership of land amongst the Hottentots in their old way of life was unknown and even today this is the general rule for all the Nama speaking peoples with the exception of the Topnaars living in the Kuiseb River valley (Schapera, 1930). Each Topnaar family here has an hereditary claim to certain naras bushes and trespassers, even though they belong to the same tribe, are dealt with severely if they are caught.

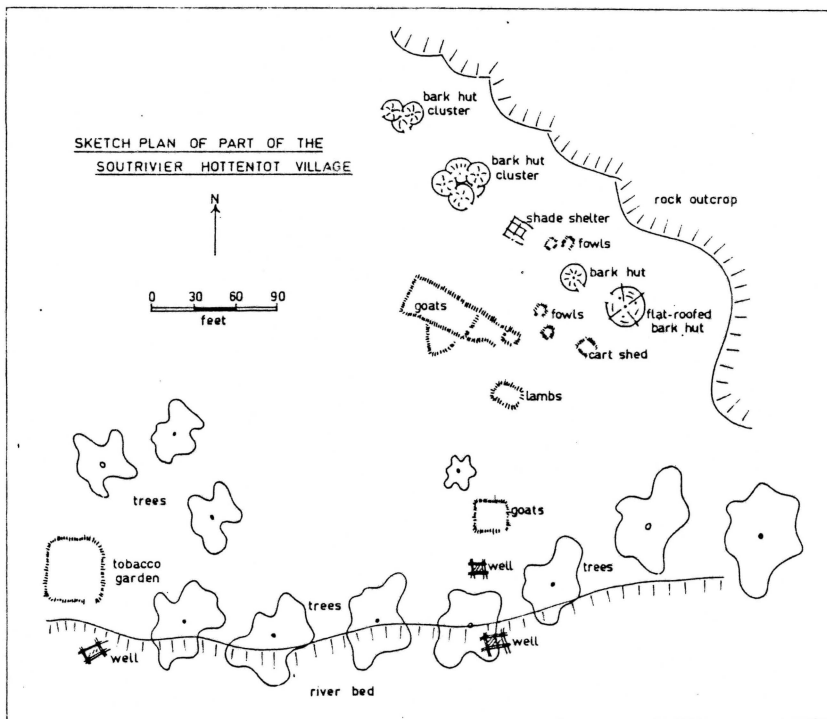


Figure 6: Plan of part of the Soutrivier village. The living quarters are built on the bank above the normal flood level.

Hottentots were able, with a minimum of inconvenience, to move their homes as they went in search of new pasture grounds for their cattle.

The Hottentots seen by Galton near Walvis Bay in 1851 made similarly shaped huts, but instead of the reed matting, they covered the sides with wattle. This would suggest that, even then, the population was fairly settled. At present the hut

Although the Hottentots at the Cape were rich in cattle when the Dutch settlement began in 1652, they soon lost their herds through barter with the newcomers. Further to the north the Nama remained a pastoral people until after the rebellion against the Germans in 1904, when they were only allowed to keep a limited number of sheep and goats but no "great stock", i.e. horned cattle. It seems likely that

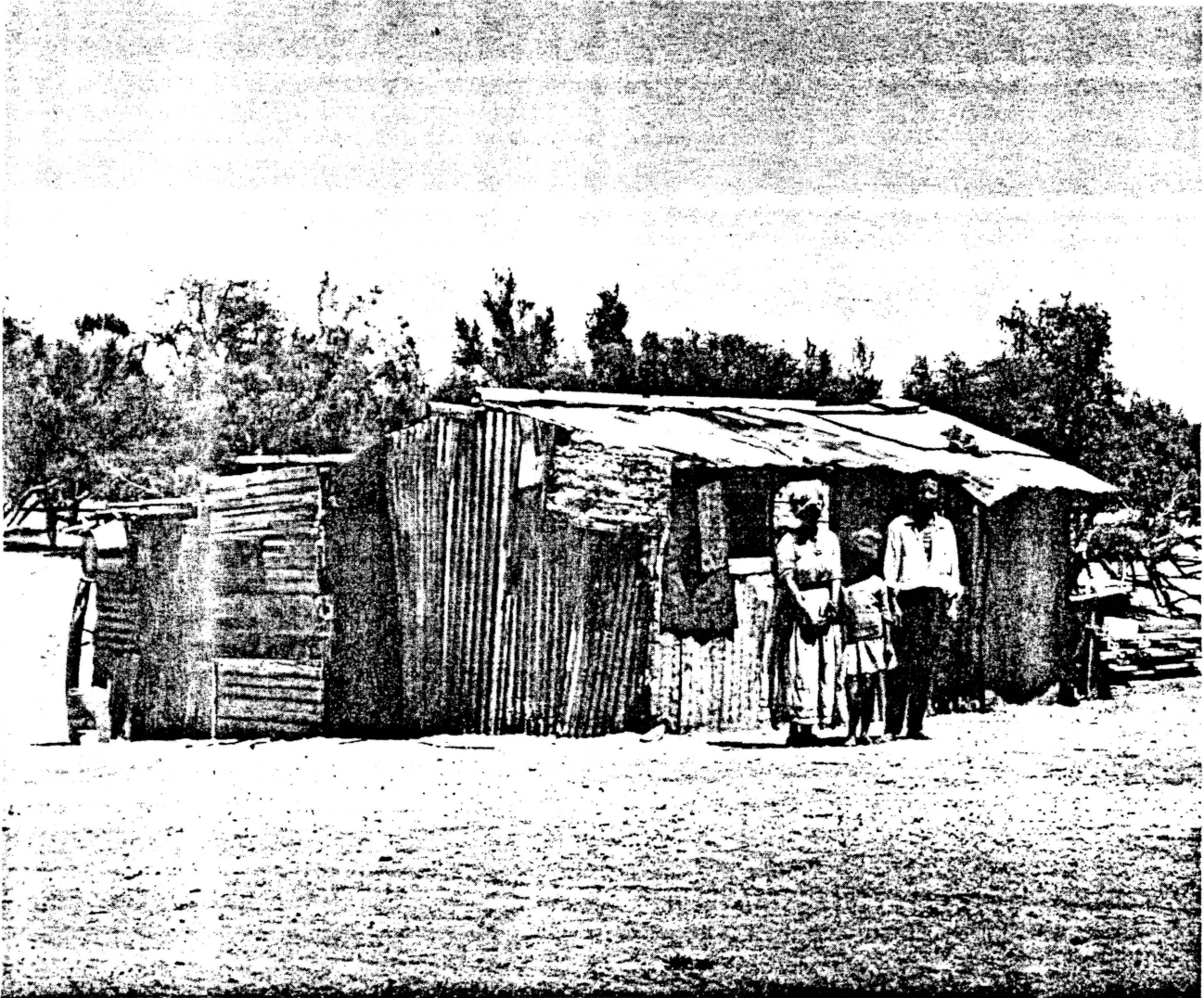


Figure 7: A corrugated iron and sacking hut of the kind currently built by Hottentots at Rooibank. This is in contrast to the traditional building methods still used in the more remote parts of the Kuiseb valley. (See Figure 8).

large numbers of cattle could not have survived in the Kuiseb valley in any case, due to the unfavourable terrain. Here the inhabitants have had to depend for their livelihood on the many goats and fewer fat-tailed sheep which they keep, since these animals are able to survive on the fallen pods of the Ana trees (*Acacia albida*). Herding is made simple by the fact that the only water available to the animals is at the wells which have been dug in the river-bed. The animals, therefore, return to the village for water and after their evening drink are herded into kraals for the night. The lambs are not allowed to forrage with their mothers and are kept in a separate enclosure (see Fig. 6) during the day, until they are big enough to successfully keep up with the rest of the flock during their travels in search of food.

Table I shows the number of animals owned by the individuals at the various villages. Some are evidently more successful livestock breeders than others and if one considers that each animal is worth about R4.00, it can be seen that some individuals are fairly wealthy.

Many villages now own donkey carts which are used for transporting livestock into Walvis Bay and for bringing back food supplies such as mealie meal. We saw one cart load of naras melons being taken into town and understand that the seeds of this fruit are now sold as a delicacy in various parts of the world.

PHYSICAL CHARACTERISTICS OF THE PEOPLE

The majority of the people in the Kuiseb Valley referred to themselves as Nama or Hottentots; a

smaller number as Bergdamara (or klipkaffers) and one claimed to be a Herero. Two men were coloureds: one had a Hottentot mother and an English father, the other a Bergdamara mother and a German father.

We made no attempt to define their physical characteristics in terms of anthropometry but were impressed with the differences between the Hottentots and the Bergdamara. The former were of slight build, had light brown-yellow skin and black 'peppercorn' tufts of hair on the head and very sparse facial hair. They had high cheek bones, broad noses and eyes possessing 'Mongoloid' characteristics, the loose skin of the upper lids being particularly marked in many individuals (see Figs. 9 and 10). An extreme tendency to wrinkling of the skin was most obvious in the older subjects (see Fig. 11). Steatopygia was very marked in some of the females.

Sir Francis Galton was very impressed by the steatopygia of the Hottentot women and wrote to his cousin, the famous Charles Darwin, from Walvis Bay on the 23rd February, 1851: (Pearson, 1914) —

"... I have just left the land of the Hottentots, I am sure that you will be curious to learn whether the Hottentot ladies are really endowed with that shape which European milliners so vainly attempt to imitate. They *are* so, it is a fact, Darwin. I have seen figures that would drive the females of our native land desperate — figures that could afford to scoff at Crinoline, nay more, as a scientific man and as a lover of the beautiful I have dexterously even without the knowledge of the parties concerned resorted to actual measurement. Had I been a proficient in the language, I should have advanced, and bowed and smiled like Goldney, I should have explained the dress of the ladies of our country, I should have said that the earth was ransacked for iron to afford steel springs, that the seas were fished with consummate

TABLE I.

VILLAGE	MALES	FEMALES	DOGS	GOATS
Ossewater	5	6	8	460
Natab	2	4	7	188
Soutrivier	10	11	3	177
Klipneus	7	4	6	200
Swartbank	3	4	3	125
Itusib	6	6	3	44
Ururas	17	25	6	320
Rooibank	11	12	4	240
TOTALS	61	72	40	1,754



Figure 8: Traditional beehive huts of the Kuiseb River Hottentots. The wooden framework is covered with pieces of bark from *Acacia albida* trees that grow in the river-bed.

daring to obtain whalebone, that far distant lands were over-run to possess ourselves of caotchouc — that these 3 products were ingeniously wrought by competing artists, to the utmost perfection, that their handiwork was displayed in every street corner and advertised in every periodical but that on the other hand, that great is European skill, yet it was nothing before the handiwork of a bounteous nature. Here I should have blushed, bowed and smiled again, handed the tape and requested them to make themselves the necessary measurement as I stood by and registered the inches or rather yards. This, however, I could not do — there were none but Missionaries near to interpret for me, they would never have entered into my feelings and therefore to them I did not apply — but I sat at a distance with my sextant, and as the ladies turned themselves about, as women always do, to be admired, I surveyed them in every way and subsequently measured the distance of the spot where they stood — worked out and tabulated the results at my leisure."

The Bergdamara, in contrast to the Hottentots, were more robust, much darker and generally more negroid (Fig. 12). The women were much fatter than their Hottentot counterparts and some were frankly obese.

Blood samples were collected from 58 Hottentots, 10 Bergdamara, the Herero and the two Coloureds and these have been subjected to a number of laboratory investigations. Standard techniques were employed and are consequently not described in this paper. The Hottentot sample is not very large but in view of the fact that very few Topnaar Hottentots exist in the Kuiseb Valley, we consider that the various gene frequencies ought to be calculated for

the available sample. Some of the subjects are in fact blood relations, but no correction for this has been made when analysing the data.

THE BLOOD GROUPS (*Red cell antigen groups*)

We have far more data on the ABO blood group system of the Hottentots than we have for any of the other systems. The first survey was carried out by Pijper in 1935. Including the present study, no fewer than 1,192 individuals have been studied and the data are summarized in Table II. The Topnaars of the Kuiseb Valley demonstrate the same features as the other Hottentots, namely, a high frequency of the B gene, which serves to distinguish them from the Bushmen and, to a lesser degree, from the Southern Bantu; Group A occurs in approximately the same frequency in Hottentots as it does in Bushmen and Southern Bantu, the B gene having increased in frequency in the Hottentots at the expense of the O gene.

No example of the so called Ax antigen was encountered in this Kuiseb sample and it was apparently not found in the groups studied by Zoutendyk *et al* (1955) and Singer *et al* (1961), either. This antigen, which is probably a very weak variant of A has been shown to occur in 1.6% of Johannesburg Bantu (Zoutendyk, 1954), in 4.11% of 219 unselected Bantu group A specimens in Durban (Brain, 1966) and also in Bushmen: 1 out

TABLE II.

THE ABO BLOOD GROUPS OF VARIOUS HOTTENTOT POPULATIONS

Population	No.	Phenotype frequencies(%)				Gene frequencies			Reference
		O	A	B	AB	p	q	r	
Hottentots (South West Africa)	506	34.8	30.6	29.2	5.3	.20	.19	.59	Pijper, 1935
Hottentots (South West Africa)	213	37.1	32.4	24.4	6.1	.21	.16	.62	Zoutendyk <i>et al</i> 1955
Korana:									
Vaal River Basin	174	26.4	24.8	24.7	4.0	.25	.11	.64	
Orange River Basin	203	18.2	35.5	37.4	8.9	.22	.23	.51	
Richtersveld ("Little Nama")	44	27.0	34.0	25.0	13.0	.27	.22	.51	Singer <i>et al</i> , 1961
Kuiseb (Topnaar)	58	24.1	25.8	34.4	15.5	.21	.27	.49	Present study



Figure 9: A middle-aged Topnaar Hottentot from the Kuiseb River. Notice the loose skin-folds of the upper lids and the high cheek bones.

of 144 tested by Weiner and Zoutendyk (1959) and in 4 out of 128 tested by Jenkins (1966). One individual belonged to Group A_2 and one was $A_{intermediate}$. There are no available data on other Hottentot groups for comparison but the Kalahari Bushmen studied by Weiner and Zoutendyk (1959) had an $A_2 : A_1$ ratio of 1 : 3, which approximates quite closely that found in Southern Bantu. Although the samples so far tested are too small for one to be dogmatic, it seems as though the low frequency of A_2 and the absence of weaker sub-groups of A might help to distinguish the Hottentots from Bantu and Bushmen populations.

Zoutendyk *et al* (1955) discovered that the frequency of the M gene in the Hottentots is the highest known in Africa. The present study confirms this finding, the frequency of 0.69 being insignificantly lower than the earlier figure. The Southern Bantu have a somewhat lower M gene frequency (0.53—0.56) whilst the Bushmen occupy an intermediate position (0.60). The number of samples tested for the S antigen is too small to enable gene frequency calculations to be made.

We were unable to test for the Henshaw antigen, which is a great pity because the studies of Zoutendyk *et al* (1955) and Singer *et al* (1961) showed that the Hottentots have one of the highest Henshaw gene frequencies ever found and, in addition, it differed from West African peoples, but

resembled the Southern Bantu, in accompanying MS rather than NS.

Although Zoutendyk *et al* (1955) found one Hottentot who was Rh (D) negative those tested by Singer *et al* (1961) and those who are the subjects of this study have all been shown to possess the D antigen, even though 7 of the present 58 had a weakly reacting (D^u) form. It seems possible, therefore, that true rhesus negatives do not occur amongst the Hottentots and that the individual classified as such in the 1955 survey was not a "pure" Hottentot. Similarly, the few isolated rhesus negative Bushmen reported to date may reflect a degree of racial admixture. Table III shows the very close similarity in Rh gene frequencies of the three Hottentot groups for which we have data. [The cDe (R_0) chromosome is by far the commonest whilst cDe (R_1) occurs in a moderately high frequency. R_2 (cDE) is of very low frequency whilst the other Rh chromosomes do not occur.] All 12 individuals possessing the C antigen were negative when tested with C^w antiserum.

The V antigen was not tested for in this series but it was shown to exist in 9 of the 44 Richtersveld Hottentots (Singer *et al*, 1961) so indications are that it does occur in the Hottentots, and in a higher frequency than in Bushmen. Weiner and Zoutendyk (1959) found it in 5.3% of the 114 Kalahari Bushmen. Figures for South African Bantu are lacking

TABLE III.

RHESUS AND MN BLOOD GROUPS OF VARIOUS HOTTENTOT POPULATIONS

Population	No.	Gene frequencies						Gene frequencies		Reference
		CDe	Cde	cDE	cDe	cD^u_e	cde	M	N	
		(R_1)	(r')	(R_2)	(R_0)		(r)			
Hottentots (South West Africa)	213	.19	0	.06	.68	0	.07	.74	.26	Zoutendyk <i>et al</i> , 1955
Richtersveld ("Little Nama")	44	.17	0	.07	.76	0	0	-	-	Singer <i>et al</i> , 1961
Kuiseb (Topnaar)	58	.12	0	.06	.75	.06	0	.69	.31	Present study



Figure 10: A young Hottentot woman from the Kuiseb River.

but Blecher and Zoutendyk (1963, unpublished data) found that the Zambezi Valley Tonga showed a 36.4% phenotype frequency for this character.

Twenty nine samples were tested with anti-hr^s (Shabalala) serum (Shapiro (1960)) and all except one were positive. (This compares with the 94% of South African Bantu found to possess the antigen [Shapiro, 1960]).

Only one of the 58 Topnaars tested was Kell positive to give a *K* gene frequency of .0086 which compares with .05 for Bushmen, and .03 for Southern Bantu. We found 43 out of the 58 Hottentots tested to be P positive and 46 out of 57 to be I positive. Both these antigens are known to be more common in Negroid peoples than in Caucasoids. Although not tested for in this survey, due to scarcity of suitable anti-sera, it might be noted that the characteristic "Mongoloid" antigen, Diego, has not been found in the 44 Richtersveld Hottentots or the 114 Kalahari Bushmen who were examined for it. Seven of these 44 Hottentots and 5 of these Bushmen were found to possess the characteristic "Negroid" antigen, Js.

A scarcity of good Lewis anti-sera has prevented us from making a thorough study of this system. However, we found that 9 out of the 58 Hottentots tested did have Le (a+) red cells and all of these except one were non-secretors of ABH substance in their saliva. Table IV shows the ABH secretor status of the Kuiseb Hottentots compared with data for Bushmen and Bantu. The inability to secrete the ABH substance in the saliva (or other body secretions, for that matter) is determined by a recessive gene, *se*, so the frequency of this gene in

the population can easily be estimated by calculating the square root of the proportion of non-secretors. It will be seen from this table that the Hottentots have a very similar gene frequency to the Pedi, and much higher than the Bushmen. However, for samples of this size, the differences are not statistically significant.

SOME OTHER MONOGENIC BLOOD CHARACTERS

Haptoglobins and transferrins

In the last decade a number of genetic polymorphic systems have been discovered in the serum proteins and many have been successfully exploited by anthropologists in their studies of various populations. The fifty eight Hottentot samples were examined by starch gel electrophoresis for haptoglobin and transferrin type and the results are presented in Table V. It will be seen that no transferrin variant was encountered although the Bushmen and Southern Bantu have quite an appreciable frequency of the slow D₁ variant. Barnicot *et al* (1959) found this slow variant in 4 of 59 Richtersveld Hottentots. The *Hp*¹ gene frequency of the Topnaars corresponds very closely with the Richtersveld Hottentots and falls within the Bantu range. Interestingly, the Bushmen have a significantly lower *Hp*₁ gene frequency ($\pm .30$) and the figure clearly falls in the Mongoloid range (Jenkins and Steinberg, 1966).

Gamma-globulin Groups

The distribution of the Gm phenotypes of 57 Hottentots, compared with data for Bushmen and

TABLE IV.

ABH SECRETOR STATUS OF HOTTENTOT, BUSHMAN AND BANTU POPULATIONS

Population	No.	Non-secretors		<i>se</i> gene frequency	Reference
		No.	%		
Kuiseb (Topnaar) Hottentots	53	8	15.1	0.37	Present study
Kalahari Bushmen	86	2	2.3	0.05	Jenkins & Cleaton-Jones, 1966
Southern Bantu (Pedi)	100	10	10.0	0.33	Jenkins 1966 (unpublished)



Figure 11: Extreme wrinkling of the skin in an aged Hottentot woman. Soutrivier village, Kuiseb River.

TABLE V.

HAPTOGLOBIN AND TRANSFERRIN TYPES OF HOTTENTOT BUSHMAN & BANTU POPULATIONS

Population	No.	Haptoglobin phenotypes					H_p^1 gene frequency	Transferrin phenotypes		D_1 gene frequency	Reference
		1-1	2-1	2-1m	2-2	0-0		CD ₁	D ₁		
Kuiseb (Topnaar) Hottentots	58	17	34	0	7	0	0.59	0	0		Present study
Richtersveld (Little Nama) Hottentots	59	18	25	0	16	0	0.51	4	0	0.034	Barnicot <i>et al.</i> , 1960
Bushmen (Central and Southern)	113	12	40	0	59	2	0.29	13	1	0.066	..
Bushmen (Central and Southern)	125	13	48	2	59	3	0.31	11	0	0.044	Jenkins and Steinberg, 1966
Southern Bantu (Pedi)	110	33	39	5	17	16	0.59	2	0	0.009	Jenkins, 1966 (unpublished data)

TABLE VI.

GM PHENOTYPES OF TOPNAAR HOTTENTOTS, BUSHMEN AND K GALAGADI

<i>Gm</i> Phenotypes ¹ :		<i>Hottentots</i>		<i>Bushmen</i> ²		<i>Kgalagadi</i> ²	
<i>Terminology</i>		(n = 57)		(n = 112)		(n = 48)	
<i>New</i>	<i>Old</i>	<i>No.</i>	<i>%</i>	<i>No.</i>	<i>%</i>	<i>No.</i>	<i>%</i>
1, 5, 13, 14	a b ¹ b ³ b ⁴	16	29.8	57	50.9	26	54
1, 5, 13	a b ¹ b ³	0	—	1	0.9	0	—
1, 5	a b ¹	0	—	3	2.7	0	—
1, 13	a b ³	5	8.7	38	33.9	2	4
1	a	0	—	4	3.6	0	—
1, 5, 6, 13, 14	a b ¹ b ¹³ b ¹⁴ c	23	40.3	5	4.5	7	15
1, 5, 6, 13	a b ¹ b ¹³ c	1	1.75	0	—	8	17
1, 5, 6, 14	a b ¹ b ¹⁴ c	5	8.7	2	1.8	2	4
1, 5, 6	a b ¹ c	0	—	2	1.8	3	6
1, 2, 5, 6, 14	a b ¹ b ¹ c x	2	3.5	0	—	0	—
1, 2, 5, 6	a b ¹ c x	1	1.75	0	—	0	—
1, 2, 5, 13, 14	a b ¹ b ³ b ⁴ x	1	1.75	0	—	0	—
1, 3, 5, 13, 14	a b ¹ b ² b ³ b ⁴	2	3.5	0	—	0	—
3, 5, 13, 14	b ¹ b ² b ³ b ⁴	1	1.75	0	—	0	—

¹ All samples were tested for Gm (1), Gm (2), Gm (3), Gm (5), Gm (6), Gm (13) and Gm (14). Only the positive reactions are recorded. The generic term 'Gm' is omitted in the body of the table.

² Data taken from Jenkins and Steinberg (1966).

Kgalagadi (in Table VI. must be possible only present in Mongoloid Caucasoids and *Gm*^{1,5,6}.

Since *Gm* percentage indicates a "unique" Bushmen in the Bushmen Hottentots - Bushmen they have to have expect it to

Gm^{1,2} w presence in Caucasoid undoubtedly Caucasoids. each having type Gm (two alleles and *Gm*^{1,5,6}.

The *Gm* Hottentots constitution probably, fr

Seventeen were Inv (Bushmen Steinberg, significant

Haemoglobin

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Red Cell (G-6-P.D.)

Many E 25% of in

galagadi (Jenkins and Steinberg, 1966) is shown in Table VI. The minimum number of alleles which must be postulated to explain the phenotypes of the Hottentots are the following six: $Gm^{3,5,13,14}$ commonly present in Caucasoids; $Gm^{1,13}$ commonly present in Mongoloids and Bushmen; $Gm^{1,2}$ found in both Caucasoids and Mongoloids; and $Gm^{1,5,13,14}$, $Gm^{1,5,6}$ and $Gm^{1,5,6,14}$ found only in Negroids.

Since $Gm^{1,13}$ is very common in Bushmen, the low percentage found in the Hottentots probably indicates admixture between the groups. The "unique" Bushmen allele $Gm^{1,5}$ was not encountered in this Hottentot sample but until its gene frequency in the Bushmen is known with certainty, it is not possible to say how likely it is to be found in the Hottentots — it might, in fact, be so rare in the Bushmen that a great deal more admixture would have to have taken place before we could reasonably expect it to be present in the Hottentots.

$Gm^{1,2}$ was not encountered in Bushmen so its absence in the Hottentots might well be due to Caucasoid admixture. The $Gm^{3,5,13,14}$ allele was undoubtedly introduced into the Hottentots by Caucasoids. Interestingly, the two coloured subjects, one having a Caucasian father, were of the phenotype $Gm(1,3,5,6,13,14)$, probably produced by the two alleles $Gm^{3,5,13,14}$ a classical Caucasoid allele, and $Gm^{1,5,6}$ a classical Negroid allele.

The Gm findings indicate, therefore, that these Hottentots have an essentially Negroid genetic constitution with admixture from Caucasoids and, probably, from Bushmen.

Seventeen (29.8%) of the 57 Hottentots tested were Inv (1+), a figure well below that found in Bushmen (62 out of 112 tested by Jenkins and Steinberg, 1966) the difference being highly significant ($X^2_1 = 9.92$, $p < .005$).

Haemoglobin types

All samples were examined by means of starch electrophoresis for their haemoglobin types and were shown to possess only the normal pattern. The foetal haemoglobin content was determined and found to be within the normal range in all cases. As far as we are aware this is the only investigation of Hottentot haemoglobins so far carried out. Many hundreds of samples from Bushmen have now been investigated and no abnormal haemoglobin has been found in them, either. The very interesting sickle cell haemoglobin polymorphism does not appear to occur further south than the Zambezi.

Cell Glucose-6-Phosphate Dehydrogenase (G-6-P.D.)

Many Bantu tribes in Central Africa have up to 50% of individuals deficient in this enzyme. South

of the Zambezi the figure is much lower and in South Africa a range of 0-9.9% has been defined (Bernstein, 1963). A few Bushmen out of some hundreds now tested have been shown to possess this X-linked genetic condition (Jenkins *et al*, 1967) and it is of interest that not one G-6-P.D. deficient Hottentot (or for that matter Bergdamara) was encountered in this investigation.

The enzyme occurs in several forms differing in electrophoretic mobility. The commonly occurring "B" type is the only one found in Caucasoids, but Nigerian and American Negroes possess a faster moving A variant, the Nigerians in a frequency of about 0.40. Balinsky and Jenkins (1966) have shown that this same A variant occurs in South African Bantu but in a lower frequency. Table VII presents the findings in Bushmen, Hottentots and Bantu. Among the Bergdamara we encountered one out of five males and two out of five females with the A variant, and in view of their supposed negroid affinities the results of studies on larger samples will be awaited with much interest.

Plasma Pseudocholinesterases

All the samples were examined for pseudo-cholinesterase variants (see Lehman and Liddell, 1964) but none was found. About 4% of Caucasoids possess the dibucaine resistant or atypical form of this enzyme but information concerning the enzyme in Africa is lacking. It is possible that the gene responsible for the atypical enzyme is rarer in Africa than in Europe (Jenkins and Balinsky, unpublished observation).

SENSORY POLYMORPHISMS

The people of the Kuiseb Valley were studied for two sensory polymorphisms: colour vision and the ability to taste phenylthiocarbamide (P.T.C.).

Colour vision

Nineteen Hottentot males were tested by means of Pseudo-Isochromatic charts and one colour blind individual was discovered. He had a mild to medium red green defect. On such a small sample it would be unwise to calculate a gene frequency; suffice to note that the gene does at least occur in this population. Nearly 200 Bushmen males have been tested to date with an overall incidence of 1% colour blind but no other figures are available for Hottentots. The Bantu appear to have the gene for colour blindness but in a frequency much lower than Caucasoid populations (Jenkins, 1966).

Ability to taste P.T.C.

Using the sorting technique of Harris and Kalmus (1949) twenty nine Hottentots and six Bergdamaras were tested for their ability to taste P.T.C. One

TABLE VII.

**ELECTROPHORETIC VARIANTS OF GLUCOSE-6-PHOSPHATE
DEHYDROGENASE IN HOTTENTOTS, BUSHMEN AND BANTU**

Population	No.	Phenotypes						A gene frequency
		Males			Females			
		B	A ⁺	A ⁻	BB	AB	AA	
Kuiseb (Topnaar) Hottentots	60	27	0	0	30	3	0	.0361
Kalahari Bushmen	69	30	1	0	37	1	0	.0186
Southern Bantu (various tribes)	109	74	11	5	13	5	1	.1796

Bergdamara and six Hottentot non-tasters were encountered. The suggestion is, therefore, that the gene for taste "blindness" is more common in the latter than in either Bushmen or South African Bantu (Jenkins, 1965) but firm conclusions cannot be drawn until larger samples have been tested.

EXCLUSIONS OF PATERNITY

Apart from their value as gene markers in anthropology these mono-genic characters are, of course, exploited in medico-legal studies, more particularly in exclusion of paternity cases. Although in South Africa only the ABO, Rh and MN systems are accepted in law, in the Scandinavian countries many other red cell and serum protein polymorphic systems are now considered sufficiently tested to be acceptable to the courts and are accordingly widely used.

Since some of the data collected in this survey concerns family groups we were able to compare some of the stated genealogies against our findings concerning a number of genetic systems. And as might have been expected in a population undergoing rapid cultural transformation two discrepancies were discovered out of an analysis of 7 matings with a total of 12 offspring. In both cases the exclusion of paternity would be acceptable to the courts in South Africa because in one it was made on the MN System and in the other on the Rhesus system. But interestingly, in both cases other genetic

systems were informative too. In one case the haptoglobin type and the ABH secretor status were informative and in the other case the sex-linked G-6-P.D. electrophoretic variant provided corroborative evidence that the putative or stated father could not, in fact, be the true father.

HEALTH OF THE COMMUNITY

We carried out no detailed medical examinations on these people inhabiting the lower Kuiseb Valley but we did look for the stigmata of malnutrition and saw a few patients. There was no evidence of avitaminosis or of protein malnutrition. The absence of Kwashiorkor might at first seem surprising in view of the large number of young children being cared for by grandmothers but, of course, the explanation is obvious. Goat's milk and meat are virtually the only articles of diet available!

We examined the thyroid gland of all the subjects in order to be able to correlate the size of the gland with their taste threshold for phenylthiocarbamide. No case of goitre was discovered.

Purulent conjunctivitis was common in all age groups particularly the young children and there were a few cases of blindness or severely impaired vision in the older generation. We saw no convincing case of trachoma but we presume that some of the corneal opacities were the end result of that disease.



Figure 12: A Bergdamara man from the Kuiseb River. Facial features are more negroid than those of the Hottentots and the skin a much darker colour.

We visited one old man who was confined to his hut with general debility and we saw two middle-aged women (sisters) who had not left their home for some years. One had gross deformities of hands and feet which we thought might be due to leprosy.

In the laboratory we carried out haemoglobin estimations on all the blood samples. The mean of 62 readings was 12.2 G% with 10.6 G% being the lowest figure encountered.

Sixty two serum samples were subjected to the V.D.R.L. test and no fewer than 22 (35%) were found to be positive. Murray *et al.* (1956) found a sero-positivity rate of 37% in the Bakwena Reserve of the Bechuanaland Protectorate (now Botswana) and they considered the high figure was due to endemic syphilis, called "dichuchwa" by the people themselves. Although no lesions suggestive of endemic syphilis were noticed amongst the inhabitants of the Kuiseb Valley it is possible that the high sero-positivity rate is a reflection of the existence of this disease. There would certainly appear to be a concentration of positive tests within certain family units.

CONCLUSIONS

The Hottentots are a rapidly changing people. Although only a couple of hundred years ago they numbered over 50,000 and covered large areas of present-day South West Africa and the Cape Province of the Republic of South Africa, today it is doubtful whether any "pure" Hottentots survive — certainly two of the three groups (the Korana and the Cape Hottentots) found by the early European settlers have lost their identity, whilst it is estimated that perhaps 34,000 Nama-speaking Hottentots remain (Odendaal Report, p. 29).

North of the Orange River, in Great Namaqualand, are to be found the Nama (or Namaqua) Hottentots, who were already settled in these parts when the early Dutch settlers arrived at the Cape. These Namaqua were divided into seven tribal groups and it is to one of these, the ɣaunin or Naranin (Topnaar) "tribe" that the Hottentots living in the Kuiseb Valley belong, although the majority of the Topnaars live in and around Zesfontein, in the Kaokoveld.

Some authorities consider that the Kuiseb and Walvis Bay Hottentots constitute the remnants of large coastal tribes of former years, who had enjoyed exclusive rights to a very large territory. When Missionary Schmelen, for instance, visited Okahandja and Walvis Bay in 1825 he observed herds of the Topnaars' cattle grazing as far inland as Okahandja. However, with the encroachment of the Herero from the north and other Nama tribes from the south, the Topnaars were confined to the barren area of Walvis Bay.

Although in former years the Hottentots and Bergdamara were sworn enemies and committed gross atrocities against each other, they now live peaceably together in the harsh environment of the Kuiseb Valley. The Bergdamara are something of an anthropological enigma in Southern Africa, since they are obviously more negroid-looking than their Hottentot neighbours and even than the Bantu. Culturally they are indistinguishable from the Nama, speaking the same click language and practising the same type of economy. It is estimated that over 44,000 Bergdamara remain in South West Africa (Odendaal Report, 1964) and from the anthropological point of view they are of immense interest and well worthy of a detailed study. Unfortunately, the sample in the Kuiseb Valley is too small to permit any analysis to be made.

Because the interesting riverine type of pastoralist culture practised by the inhabitants of the Kuiseb Valley is being modified so rapidly we felt that some attempt ought to be made to place on record some brief account of it. We believe that a properly trained cultural or social anthropologist would be able to derive a great deal more information about the way of life of these people before it has changed completely. This account might simply serve as a pilot study.

Similarly, we feel, the physical anthropology of these people needs to be studied in far greater detail than it has been possible for us to achieve with the limited time and resources at our disposal. A whole-population health, genetic and anthropometric survey of these people needs to be carried out and particular attention paid to the effect of diet on growth and health. Many more genetic markers could be exploited and with a longer period of time spent in the field, additional members of the various families could be seen and examined.

The size of the Hottentot sample on which we have calculated a number of gene frequencies is, we are well aware, very small. However, we feel justified in drawing from them certain conclusions about the Hottentots in general.

Firstly, we have shown that this group of Hottentots so closely resembles the few other, geographically far-removed groups as far as frequencies of many of the blood groups and other serological factors are concerned that the Hottentots might be legitimately considered a fairly homogenous ethnic group.

Secondly, although some of the genetic systems (like the haptoglobins and ABH Secretor status) ally the Hottentots with the Southern Bantu and separate them from the Bushmen other systems (like the G-6-P.D. electrophoretic patterns) would tend to lead one to group the Hottentots and Bushmen together and apart from the Bantu. However, by and large, the verdict of the sero-geneticist would

be in favor of indigenous the Hottentots many genetic agencies that arisen from are apparently suggesting confirmed

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in favour of the hypothesis that all three of the
ancient population groups of Southern Africa —
Hottentots, Bushmen and Bantu — have so
many genes in common and in such similar frequen-
cies that they must all be considered to have
descended from one common stock, the differences which
are apparent from their physical appearances
being due to greater divergences than can be
explained by a study of many monogenic characters.

ACKNOWLEDGEMENTS

Financial support of this research from the South
African Council for Scientific and Industrial

Research and the Wenner-Gren Foundation for
Anthropological Research, New York, is gratefully
acknowledged.

The writers would like to express their gratitude
to all the following people for their invaluable
assistance, both in the field and the laboratory:
Dr. V. FitzSimons, former Director of the Transvaal
Museum, Prof. J. H. Gear, Director of the S.A.I.M.R.,
Dr. A. Zoutendyk, Dr. C. Koch, Director of the
Namib Desert Research Station Gobabeb, Mrs. R.
Koch, Mr. O. P. M. Prozesky, Mr. L. Goode, Dr. P.
Brain, Miss. P. Moores, Dr. A. G. Steinberg, Dr. H.
Teodorczuk, Miss. M. van Dijk, Miss. E. F. Andrews
and Mr. M. Ulrich.

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