THE NAIVASHA FOSSIL SKULL AND SKELETON.

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Introduction.

In 1928, I located a very rich prehistoric living site at the base of a cliff a few miles from Naivasha. No opportunity to excavate this site presented itself until December, 1939, when it was learned that a new alignment of the Railway was being planned, the embankment of which would be carried right through the occupation zone. The Railway and the Government were informed that the projected alignment would damage an important prehistoric site, and, since it was found impossible to alter the existing plans, the Railway authorities very generously offered to provide some funds for an immediate scientific excavation of part of the site before it should be damaged by the constructional work. This offer was made dependent upon Government making a further grant, to which they subsequently agreed.

As I was engaged upon full-time war work, my wife, Mrs. M. D. Leakey, undertook the excavations, which lasted for three months from December 15th, 1939. During the last month work was transferred to a promising new site, closer to Naivasha, which had been revealed by further constructional work.

The results of these excavations will be published in due course, when the 73,000 specimens obtained have at length been examined and classified. One result was to establish a sequence of strata containing stages of culture apparently derived from the Upper Kenya Aurignacian, and the existence of old lake beaches and associated silts which proved to be implementiferous.

At the end of two months' excavation, on February 15th, 1940, the contractors at once began to build up the embankment over the site. In order to do this they had to excavate immense quantities of soil from borrow pits in the surrounding area, including the prehistoric occupation zone. This destruction of a large part of the site could not be avoided, and was not so serious as it would otherwise have been, owing to the fact that scientific excavation had already taken place. In addition, the Railway engineers agreed that a part of the site, destined for use as a borrow pit, should be preserved for future work. Apart, however, from this small reserved area the borrow pits were entirely dug into the implementiferous deposits, and the Railway

embankment at this point is composed of soil containing thousands of obsidian artefacts.

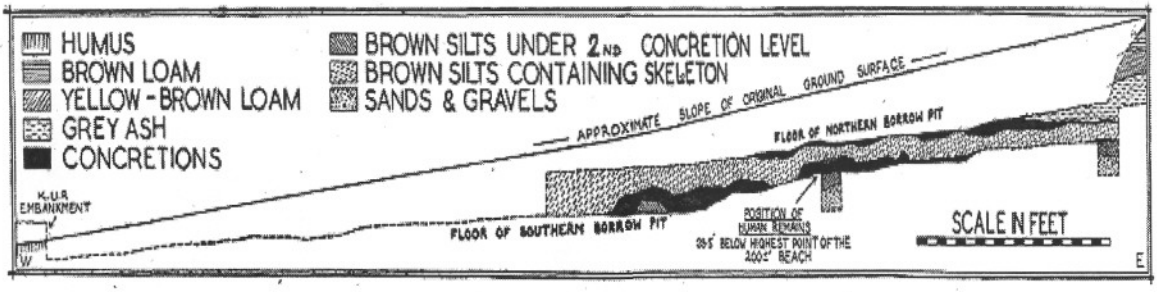
On July 11th, 1940, when on duty in Naivasha, I took the opportunity of visiting the site, accompanied by Mr. A. J. Poppy of the C.I.D., Nairobi, in order to see if any outstanding archaeological material had been unearthed by the contractors' labourers during their digging of the borrow pits. Just as darkness was falling Mr. Poppy, who was in one of the many borrow pits, called to me that he had found some human skull fragments. There was a small heap of fossilized bone fragments, including parts of a skull and fragments of limb bone, lying on the floor of the pit. In the growing darkness only the skull fragments were collected, while the rest of the bones were temporarily left to mark the exact spot for examination in daylight. A brief visit to the site next day showed that there was just a possibility that only a part of the human skeleton had been disturbed and that the rest was still *in situ*. It seemed likely that as soon as the native labourers had realised that they were disturbing a human skeleton their superstitions had made them desist and leave that part of the borrow pit severely alone.

At the earliest opportunity, Sunday, July 28th, 1940, I visited the site again with my wife, who soon discovered a part of the face and some dorsal and cervical vertebrae *in situ*. It was then decided that proper excavations must be carried out. On August 9th, we went with some trained native assistants to Naivasha and made careful excavations, and a study of the site and of the deposits in which the bones were found embedded.

As the result of a week's work the exact position of this fossil human skull and skeleton in relation to the known sequence of implementiferous deposits was determined and a number of further parts of the skull and skeleton were recovered *in situ* in lake silts. An interesting fact that emerged was that whereas the skull and the main bones of the skeleton were all together, such of the smaller bones of the extremities as were recovered were scattered through the lake silts up to a distance of fifteen feet away. Moreover, where the main part of the skeleton was found there was no sign of any grave. There would appear to be two explanations of this, either that the body somehow got into the muddy edge of the lake or that it was buried in a shallow grave near the water's edge during temporary recession of the lake. If the first explanation is correct, it must be assumed that the individual was either drowned and sank into the mud, or else that the body by accident or design found its last resting place in the water at the edge of the lake. However the body came to be in the water, there would be every likelihood that the decomposing

PLATE 57.

NAIVASHA RAILWAY ROCKSHELTER 1940



EAST-WEST SECTION THROUGH
SITE OF DISCOVERY OF
THE HUMAN REMAINS

FIG. 1.

PLATE 58.

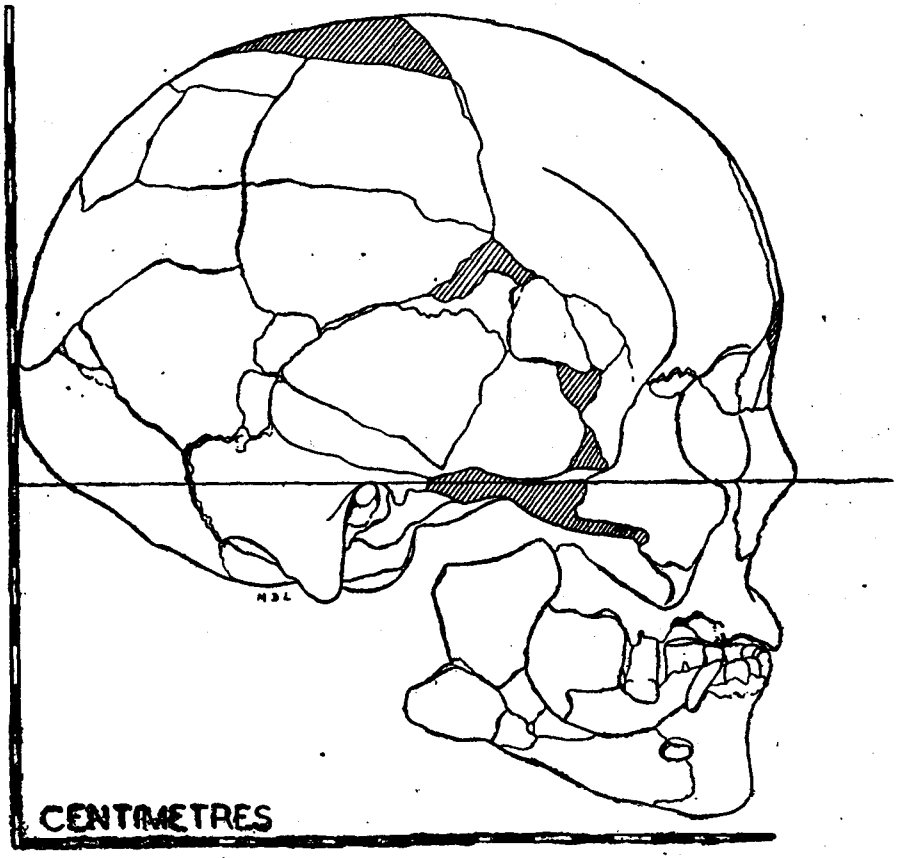


FIG. 2A.
The profile of the Naivasha fossil skull in the Frankfurt plane.

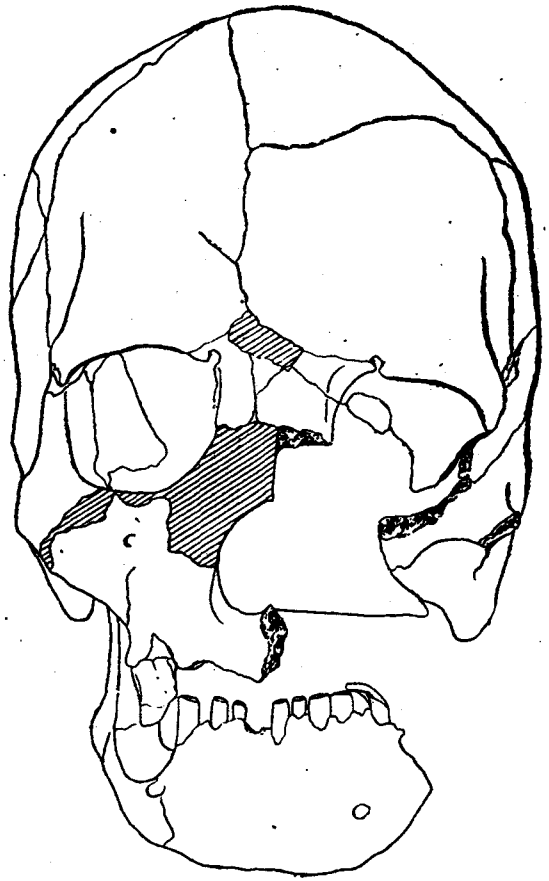


FIG. 2B.
The face view of the Naivasha fossil skull in the Frankfurt plane.

(DRAWN WITH LEAKEY-HARPER DRAWING MACHINE.)

fingers and toes were removed from the body by fish or crabs. This would explain the dispersal of the bones recovered and the fact that the rest were not recovered at all. If the second alternative is regarded as the more probable the scattering of the smaller bones of the hands and feet can be explained by wave action of the lake when it rose again after its temporary recession.

Although it is not possible to be absolutely precise as to the date of the lake deposits in which the skeleton was found, it is possible to give both a backward and a forward limit and thus give an approximate age to this find.

The 200 feet ± beach of Lake Naivasha, which is banked against the cliff just behind the site where the skeleton was found can be dated to the second peak of the Gamblian Pluvial. This dating, first made in 1929, was confirmed in 1940, by my wife's discovery of rolled tools of developed Levalloisian type in the beach. The silts containing the skeleton are 33.5 feet below the highest point of the beach revealed in the trial trench of the first excavation. As the highest beach of the Makalian Wet Phase in the Naivasha basin does not go above the 120 feet mark, the skeleton must be dated to some time between the second peak of the Gamblian Pluvial and the end of that period. It is not easy to determine to which of the many minor climatic fluctuations of the declining Gamblian Pluvial these silts should be attributed.

On the other hand, the artefacts found in the same silts during the excavations fortunately help to determine the cultural horizon to which the skeleton belongs. The total number of artefacts found *in situ* in the deposits around the skeleton was 866 obsidian implements or fragments of implements, 5,797 waste flakes of obsidian, two waste flakes of chert, one waste flake of quartz, eight fragments of pottery, including one rim sherd (undecorated), and one fragment of a small quartzite palette stained with ochre, similar to those found in the Upper Aurignacian levels of Gamble's Caves at Elmenteita in 1929.

An analysis of the 866 specimens gives the following results:—

80 crescents (varying from 2 inches to less than ½ inch long).

46 backed blades, some of the chatelperron but mostly of the gravette type.

287 fragments of crescents and/or backed blades.

22 end scrapers, including three well made double-ended specimens.

74 micro burins.

31 burins, mostly poorly made angle burins, with a few bec-de-flute types.
47 burin spells.
47 triangular fabricators.
6 sinew frayers.
5 two-edged blades.
40 fragments of two-edged blades.
38 cores.
8 core rejuvenators.
29 rolled flakes and implements.
2 burned flakes.
8 pottery fragments, including one rim sherd.
1 palette fragment.

This assemblage somewhat resembles Upper Kenya Aurignacian Phase "C" for both the high proportion of micro burins and low proportion of sinew frayers indicate a stage later than either "A" or "B". The pottery appears to be a little too developed for Phase "C" and on the whole it would probably be best to regard it as representing a slightly later stage in the evolution of the Upper Kenya Aurignacian.

When the full results of the excavations made by my wife at the main site near-by have been worked out, it may be possible to make a more precise determination of the assemblage found round the skeleton.

The exact position of the skeleton in relation to the deposits which occur at this site as shown in the accompanying diagram was on the boundary between two borrow pits which had been dug to slightly different levels. This fact was of considerable assistance. The skeleton lay in a thin layer of lake silts between two bands of concretion of varying thickness. In the southern and deeper borrow pit the skeleton had been disturbed by the labourers, but the part of it which lay within the area of the northern pit was undisturbed and the position of the bones was determined in the low wall or step between the pits. The whole of the overburden had, of course, been previously removed by the labourers, but the complete section was very clearly exposed in the east wall of the pit.

THE SKULL.

The skull is that of an adult, probably male, and the condition of the sutures which are almost completely closed suggests that the age at death was over fifty. The limb bones and the fragments of pelvis also indicate the sex as male.

The left half of the face is missing and the right half is incomplete with the nasal bones and the upper portion of the maxilla missing. The right maxilla contains one single tooth, the first molar and the alveolar region exhibits an extreme degree of absorption which has completely obliterated all trace of the other root sockets, proving that all these teeth were lost during life. The roof of the palate is on a level with the alveolar margin as a result of this absorption. At the position of the posterior premolar there is a deep cavity with rounded margins indicating a severe alveolar abscess. The existing first molar is worn down to such a degree that only a very small amount of enamel remains and there is a small carie on the posterior aspect.

The whole of the left side of the sphenoid is missing as well as a part of the basi-occipital, including most of the *foramen magnum.* The mastoids are small and the digastric grooves of unusual size. A large fragment of the left parietal was not recovered, although the freshness of the breaks shows that it was only broken when the workmen disturbed the bones. A small fragment of the right parietal is also missing.

THE MANDIBLE.

The mandible is incomplete. The whole of the left ramus is missing, having been broken off just behind the position of the third molar, which had been lost during life. The angle and the posterior portion of the right ramus, including the condyle are also lacking.

The mandible contains the following teeth; on the left, the first molar, both the premolars, the canine and both incisors. On the right side only the lateral incisor, the canine and the second premolar are present. All the other teeth of the mandible were lost during life. Behind the right second premolar the *corpus* of the mandible shows an extreme degree of absorption, comparable only to that in the right maxilla. On the left side behind the first molar this extreme absorption is not seen, suggesting that the second and third left molars were lost at a much later time, though definitely before death. The mental eminence is well developed, but not large. The mandible though small, is thick and strongly built.

THE SKELETON.

The following bones of the skeleton were found: both femora, the right tibia and fragments of the left, both humeri, the left radius and a fragment of the right, fragments of one ulna, both fibulae, both clavicles, both scapulae (damaged), a large fragment of the right innominate bone and a small fragment of the left, both astragali, one patella, eight carpals and tarsals, ten metacarpals and metatarsals, two phalanges, and an assortment of fragmentary vertebrae and ribs.

MEASUREMENTS OF THE SKULL.

The following table sets out the principal measurements of the skull, all of which were taken in accordance with the methods set out in *Stone Age Races of Kenya*, page 37, *et seq.*

	mm.		mm.
L'	194.5	DC	——
L	197	DA	——
B	125.5	O1r	38.5
B1	97	O1l	——
B2	95.5	O2r	33.5
B3	96.5	O2l	——
H'	135	G1	——
H	135	G'1	——
OH	116	EH	——
LB	103	GL	99.5
Q	302	fmb	——
Q'	300	fml	——
S	400?	P	83
S1	151	N	76
S2	——	A	69
S3	——	B	30
S3'	——	Oc. Ind.	——
U	522	100B/L'	64.52
PH	13.5	100H/L	68.53
G'H	60	100H/L'	69.46
GB (estimated from right half) ...	105	100B/H	92.96
J (estimated from right half) ...	126	100NB/100NHr ...	55.93?
NHr	46.5	10002r/O1r ...	85.7
NHl	——	100fmb/fml ...	——
NB (estimated from half)	26	100DS/DC	——
DS	——	100SS/SC	——
		100EH/G2	——

The mandible is in such condition that no measurements of any comparative value can be taken.

MEASUREMENTS OF THE SKELETON.

Only a few bones of the skeleton are sufficiently well preserved for accurate measurement. These have been taken by the methods described in *Stone Age Races of Kenya*, page 40, *et seq.*

	mm.	
The femora:		
Maximum length ...	415.5	(R)
	415.5	(L)
Oblique length ...	411	(R)
	411	(L)
Minimum length ...	398.5	(R)
Bi-condylar width ...	70	(R)
	70	(L)
Platemeric APD ...	24.5	(R)
	24	(L)
Platemeric TD ...	31.5	(R)
	30	(L)
Pilastric APD ...	28	(R)
	27.5	(L)
Pilastric TD ...	27	(R)
	26	(L)
Poplitial APD ...	31	(R)
	28.5	(L)
Poplitial TD ...	37.5	(R)
	37.5	(L)
Platemeric index ...	77.77	(R)
	80	(L)
Pilastric index ...	103.7	(R)
	105.76	(L)
Poplitial index ...	82.66	(R)
	76	(L)
The radius (left only):		
Maximum length ...	228	
Physical length ...	222	
Mid-shaft APD ...	12	
Mid-shaft TD ...	11	
Maximum shaft APD	13	
Maximum shaft TD .	11	
Minimum circumference ...	38	
Mid-shaft index ...	109.09	
Maximum shaft index	118.18	
Gracility index ...	17.12	

	mm.	
The tibia (right only):		
Maximum length ...	346	
Minimum length ...	——	
Mid-shaft APD ...	28	
Mid-shaft TD ...	20	
Foramen nutricium APD	32	
Foramen nutricium TD	21	
Mid-shaft index ...	71.42	
Foramen nutricium index	65.62	
The humeri:		
Maximum length ...	284	(R)
	290	(L)
Bi-condylar width ...	58	(R)
	——	(L)
Maximum mid-shaft diameter	19	(R&L)
Minimum mid-shaft diameter	14.5	(R&L)
Minimum circumference ...	54	(R&L)
Deltoid APD ...	18	(R&L)
Deltoid TD	25	(R)
	22	(L)
Maximum APD ...	18	(R)
	16	(L)
Maximum TD ...	20	(R)
	19	(L)
Mid-shaft index ...	71.41	(R&L)
Maximum shaft index	90	(R)
	84.2	(L)
Gracility index ...	18.43	(R)
	16.62	(L)

The fragment of innominate bone has the sciatic notch preserved. The form of this strongly suggests that the individual was a male.

COMPARISONS.

The relationship of this Naivasha skull and skeleton to other East African prehistoric skulls is not at all easy to determine. It is a long and very narrow skull with a cranial index of 64.52, as compared with the indices of 71 and 73.7 in

the two Upper Kenya Aurignacian skulls from Gamble's Cave. In the series of skulls belonging to the makers of the Elmenteitan Mesolithic culture the lowest cranial index is that of skull Elmenteita "A" with a figure of 67.45, all the others in the series having indices of over 71. Such is the difference between the nasal and also between the orbital indices of this Naivasha skull and the nearest comparable specimen from the Elmenteitan series that the similarity in the cranial indices cannot be sustained; for the nasal and orbital indices of Elmenteita "A" are respectively 49.7 (the highest in all that series), and 70.07 (the lowest in all that series), as compared with a nasal index of 55.93 and an orbital index of 85.7 in the Naivasha skull. Moreover, when compared with the Neolithic skulls from Kenya, the Naivasha skull shows considerable differences.

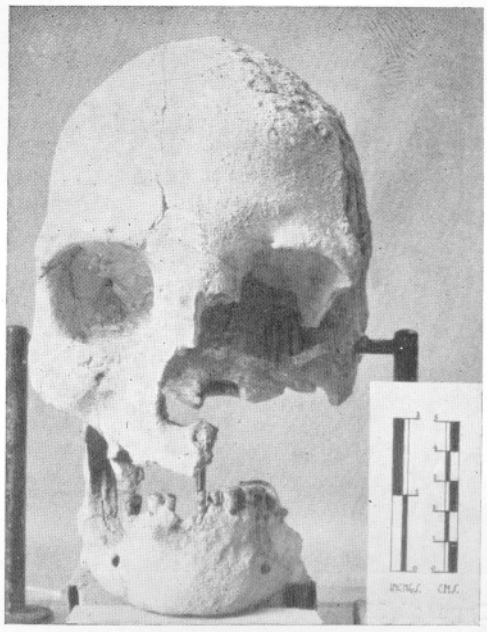
Unfortunately there are not in any Kenya prehistoric series sufficient skulls to establish racial means capable of determining if the Naivasha skull could be regarded as within the limit of proved variability.

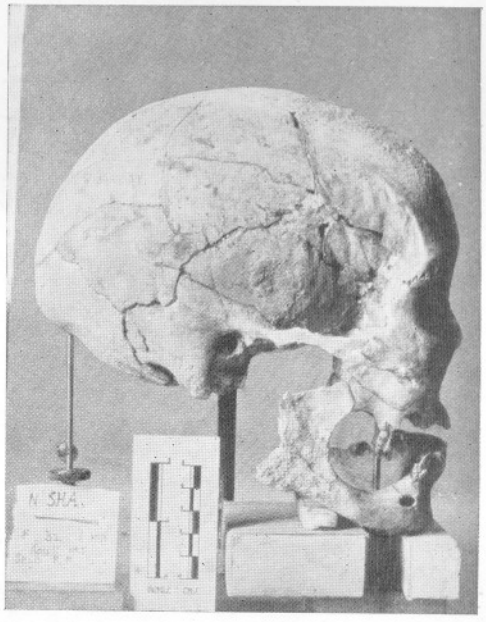
It is also to be regreted that the Oldoway Aurignacian skull is too crushed for accurate measurement, since a comparison by simple appreciation suggests that there may be affinities to the Naivasha skull.

SUMMARY AND CONCLUSIONS.

The Naivasha skull probably represents a male of *Homo sapiens* type and is dated as belonging to the closing phase of the Gamblian Pluvial, after the second maximum of that Pluvial had been passed. The associated industry somewhat resembles that known as Upper Kenya Aurignacian Phase "C", but may prove to be a slightly later stage, as yet unnamed. The type represented by the skull has no very close affinity to any other prehistoric types from Kenya, although it bears a certain resemblance to the Oldoway skull from Tanganyika Territory which is also attributed to the closing stages of the Gamblian Pluvial and is probably connected with a late stage of the Upper Kenya Aurignacian culture.

PLATE 59.





The Naivasha fossil skull orientated in the Frankfurt plane (face and profile).