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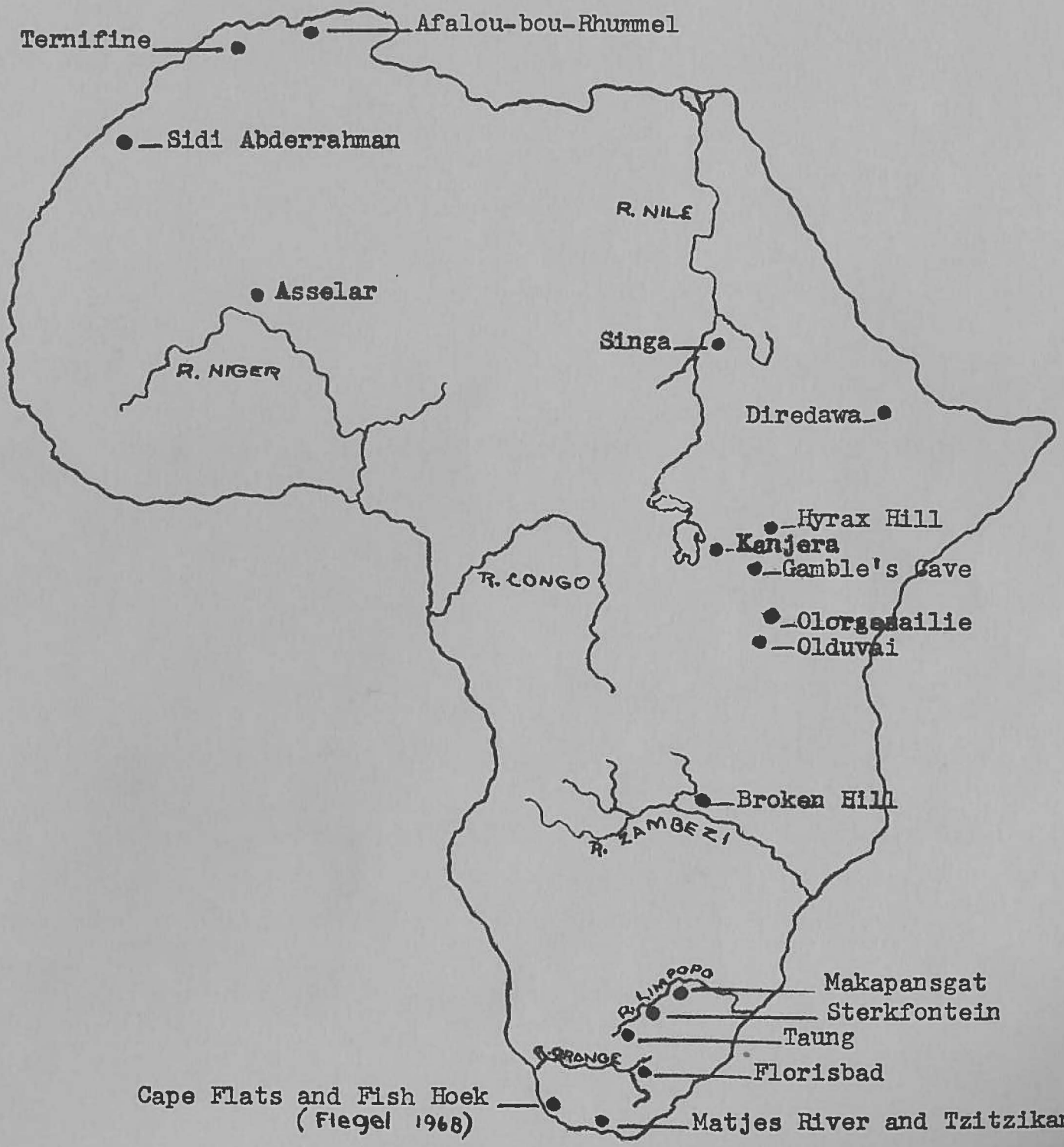
DELAWARE



MAIN SITES OF FOSSIL MAN IN AFRICA

The Archeolog 1968, Vol. XX, No. 1

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PREFACE

Mr. Flegel has only recently returned from a two year tour of duty overseas with the State Department's Agency for International Development (A.I.D.).

He was stationed in Kenya, East Africa about 80 miles north of Nairobi, on the southern foothills of Mt. Kenya, at an elevation of 6000 feet.

As an A.I.D. employee, he was under contract with West Virginia University, and a member of a team concerned with the development of agriculture in Kenya. The months of April, August, and December were vacation periods, during which time there were opportunities for visiting a number of archeological sites and areas.

This is the first of a series of papers dealing with the archaeological sites visited by the writer during his stay in Africa.

These include Olduvai Gorge in Tanzania. Visited in Kenya were Gambles Cave and the Nderit Drift south of Lake Najuru, the Hyrax Hill Complex east of the town of Nakuru (where the earliest variant of the Stone Bowl culture, probably Neolithic, has been found), the Njoro River Cave site south of the Town of Njoro, and the Olorgesailaie prehistoric site on the Magadi road.

A VISIT TO OLDUVAI GORGE

by

Perry S. Flegel

One cannot enter East Africa, no matter for what purpose, without being awed by its greatness, vast expanse of endless variable scenery, and its animals.

Our approach to Olduvai Gorge was quite unconventional in that we entered through the "back door." The shortest way to the Gorge is by plane from Nairobi. (Dr. Leakey makes it this way.) The "trunk" road from Nairobi via Arusha, Ngorongoro Crater, is not really an all-weather road, but is passable most of the year, and the distance is about 332 miles. (Plate I)

We drove west from Nairobi continually upward to more than 8000 feet before dropping abruptly in the great Rift Valley. In the valley we turned south over a road that was so deep in dust that we had to keep our heaters on in the car to build up pressure inside a closed vehicle to prevent choking dust from collecting on the inside.

This is Masai country, and from it we entered the Serengeti Plains crossing from Kenya into Tanzania. We drove down the center of the northern leg of the Serengeti National Park, spending the night at Seronera, a very modern lodge in the middle of nowhere.

Our evening was most interesting. In addition to a beautiful sunset (the reddest I have ever seen), an excellent meal and quarters, we were introduced to the Barbet.

This interesting bird is related to the woodpecker in that it has its first and fourth toes directed backwards, and are thick set with heavy bills. There are about eight common varieties in East Africa.

D'Arnaud's Barbet was our entertainer for the evening. It is a bird about six inches long and marked with brown, white and yellow.

These birds burrow into the ground for their nests. They dig a hole about two feet deep, straight down into the hard earth and then turn 90 degrees for a distance of one foot. At the end of this hole they make their nest.

Nearing sundown these birds return to their burrows from a day of feeding upon insects, fruits and berries. They perch on the mound of earth that surrounds their burrow and begin calling in chorus. Two or more birds will face each other uttering a loud 4-note song which sounds like "doo, do, dee, dak." The calling is accompanied by a sort of bobbing of each bird. This calling is repeated over and over until all of the birds finally slip into their burrows for the night.

I have been interested in what way these birds defend themselves against predators such as mongooses, rats, snakes

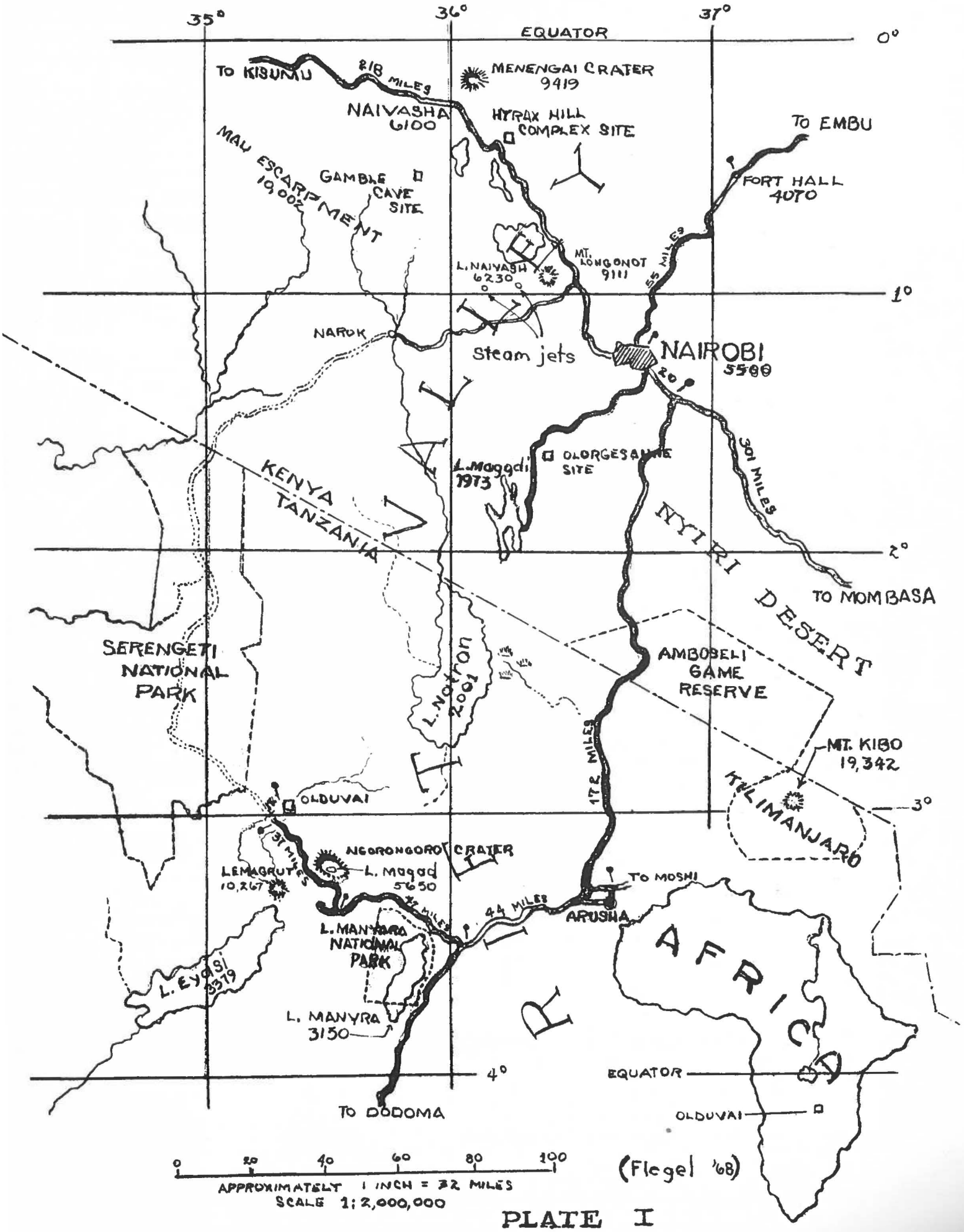

35°
36°
37°
EQUATOR
0°
1°
2°
3°
4°
TO KISUMU
218 MILES
NAIVASHA
6100
MENENGAI CRATER
9419
HYRAX HILL
COMPLEX SITE
TO EMBU
FORT HALL
4070
MAU ESCARPMENT
10,000'
GAMBLE
CAVE
SITE
L. NAIVASH
6230
MT.
LONGONOT
9111
55 MILES
NAROK
Steam jets
NAIROBI
5500
201
301 MILES
L. Magadi
1973
OLORGESAILIE
SITE
KENYA
TANZANIA
NYIRI
DESERT
TO MOMBASA
SERENGETI
NATIONAL
PARK
L. Natron
2001
AMBOSELI
GAME
RESERVE
172 MILES
MT. KIBO
19,342
KILIMANJARO
OLDUVAI
137 MILES
NGORONGORO CRATER
LEMAGRUT
10,267
L. Magad
5650
TO MOSHI
32 MILES
44 MILES
ARUSHA
L. MANYARA
NATIONAL
PARK
L. EYASI
3379
L. MANYRA
3150
AFRICA
TO DODOMA
EQUATOR
OLDUVAI
0 20 40 60 80 100
APPROXIMATELY 1 INCH = 32 MILES
SCALE 1:2,000,000
(Flegel '68)

PLATE I

and the occasional heavy deluge of rain.

Out of Serenora we came upon a sight rarely seen by tourists. A lion kill. Three huge male lions were standing watch over a dead Cape buffalo, which we estimated weighed over 1800 pounds. They had overpowered this animal, which is considered the most dangerous animal in East Africa. The blood stained grass, which was trampled over a large area, indicated a terrific struggle had taken place. Standing less than a quarter of a mile away was a large herd of buffalo feeding unconcernedly in the dry plains grass searching for succulent bits of green food.

Every turn in the road offers a picture for the camera enthusiast. Hundreds of buffalo, giraffe, elephant, lion, rhino, and the plains game seem unafraid and pose for pictures. Truly this was an experience never to be forgotten, and as far as Africa is concerned, we were seeing the last of the best.

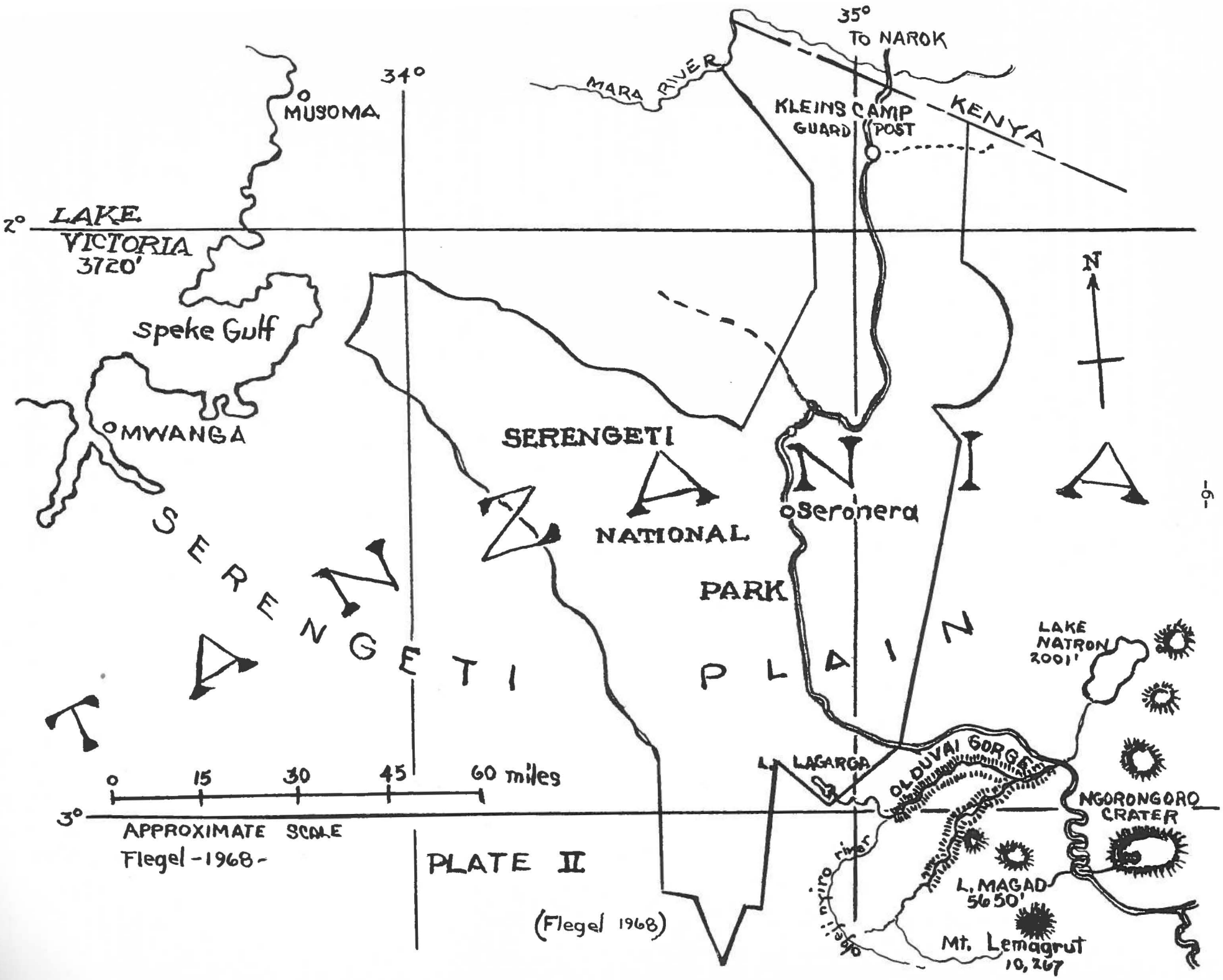
Olduvai Gorge is just outside the boundaries of the Serengeti National Park in Tanzania. (See Plate II) It is, however, still within the bounds of the Serengeti Plain and somewhat east of the great Rift Valley. The park is nearly in the center of the Plain, and encompasses about 4500 square miles. By comparison it is about twice the size of the State of Delaware. Its irregular shape extends from Lake Victoria (second largest fresh water lake in the world) eastward to Olduvai Gorge, northward to the Kenya-Tanzania border and southward about 130 miles to the Kimali Track.

One small lake is found within the park's borders. We crossed no bridges, but forded dozens of dry river beds.

This dry condition is the basis for the great migrations of the plains game, some of which never drink water, but get their moisture from the grasses they eat. As the rains arrive the herds drift east, west, north or south over definite patterns eating the green grass. Herds are mixed. Wildbeeste and zebras, as well as the gazelles (Thompson's, Grant's and Impallas), feed together. In this area these are the five most important kinds of plains game.

There are no boundary markers for the park. One never knows when one is entering or leaving. No sign posts indicate where you have been or where you are going. There is only one road in the park and it stops halfway through it. Many tracks cross and criss-cross the main road which at times is not as well defined as the tracks. The Germans and English have developed excellent maps of the area which we used to find our way. The Serengeti is so level at the point where we turned off the main road toward the Gorge that you feel you could close your eyes and walk in any direction for hours without meeting an obstacle, except for an aardvark hole or the skull of an animal. If you actually tried this and walked toward the gorge, you would stumble into a 300 foot crevasse within ten minutes.

Mt. Lemagrut is south and west of the Ngorongoro caldera. It rises to a height of 10,267 feet and appears very formidable as it is observed on one's right driving around the rim of Ngorongoro.


35°
TO NAROK
MARA RIVER
KLEINS CAMP
GUARD POST
KENYA
34°
MUSOMA
2° LAKE VICTORIA 3720'
Speke Gulf
OMWANGA
SERENGETI
NATIONAL
PARK
oSeronera
N
SERENGETI PLAIN
LAKE NATRON 2001'
L. LAGARGA
OLDUVAI GORGE
NGORONGORO CRATER
L. MAGAD 56 50'
Mt. Lemagrut 10,267
0 15 30 45 60 miles
3°
APPROXIMATE SCALE
Flegel - 1968 -
PLATE II
(Flegel 1968)

Waters from Lemagrut flow westward and northward in a great circle. Two of the streams flow into two gorges about fifty miles from their sources. One of these gorges is Olduvai, and of the two, it is the most westward. This stream is the Olgeji Nyiro River. Olduvai is the longest of the gorges. It is about 35 miles in length. The other gorge, which somewhat parallels Olduvai is smaller and not more than 18 to 20 miles long. Ultimately these two gorges meet and their rivers converge. Beyond this confluence the gorge continues for several miles. About ten miles farther to the north, the river empties into a small shallow lake, which dries up during the dry season. This is lake Natron. (See Plate II)

Olduvai Gorge, in the language of the people who live in the area (the Masai), means a place where a type of wild sisal grows.

During the past, the ground upon which we stood was covered by a huge lake. For thousands of years this lake rose and fell according to the rainfalls. At a later date, surrounding volcanoes spewed ashes and lava into it and upon its shores. The formation of the Gorge is shown in Chart I. All animal life was asphyxiated. These ashes settled where they fell and resulted in five sharply defined and variously colored layers. These were deposited on the basic volcanic rock. The waters of Olduvai Gorge have cut away the stratum, and today all five of these layers are clearly visable.

During the dry season there is little or not water flowing through the gorge. At the time of our visit it was exceptionally dry and no water flowed. Only a few small pools in the deeper parts of the stream bed were visable, and these sink-holes and eddy-holes were drying up.

In 1911, Professor Kattwinkel found fossils of prehistoric mammals in the gorge, and the Geological Institute of Berlin and Munich cooperated two years later to send Dr. Hans Reck with a party of fifty bearers and workers to make further investigations. It took him some time to find the place in the uncharted wilderness where his predecessor had worked, and then for weeks his African helpers scraped and sifted the soil. Gigantic and brittle bones were unearthed, fixed in resin and linens strips and carefully packed away.

Millions of years ago the Serengeti was inhabited by many strange and odd creatures. Giraffes with antlers, elephants with tusks pointing downward instead of upward as they are today, and these tusks in their lower jaws; a small horse with three toes instead of a single toe like the zebra of today; and a hippopotamus with eyes so high above its head that they seemed to be mounted on stalks.

Many people have attempted to conjecture what fate had assembled so many different animals in one spot at one time. It was not a herd, and yet many animals found death there together.

Dr. Reck's black assistant found the first humanoid skull and some bones. The skeleton was taken to Berlin where it aroused much excitment. It had been found in the same lay-

er that contained fossil bones of long distinct animals. It was found to be a proper man and not a humanoid!

Years later Dr. Leakey, along with Dr. Reck, discovered that the skeleton had slipped into an older lower layer and was of much more recent date than the prehistoric animal bones. Stone tools fashioned by human hands were also found throughout all of the strata. There were primative hand axes in the lowest layer and knives and axes in the upper layers. Olduvai is considered the best place to study the gradual development of human skills in Africa.

Dr. Leakey, on July 17, 1959, found the nutcracker man (Fig. 1). It was so named due to its unusually strong and large teeth (Fig. 2). This specimen is definitely placed between the South African ape and modern man.

While there has been a lot of work done in the gorge, there are many sites still to be explored. This can be seen in the form of fossil bones and stone tools lying about on the surface of the gorge. These are constantly being washed out by the rains. For this reason, and others, visitors are not allowed to remove any of the bones or tools found lying on the ground, in excavated areas or unexcavated areas. A guide was available to take us through the area that had been excavated. It was unfortunate that he was not well enough informed to answer the myriad of questions we proposed.

Olduvai is probably the most impressive Paleolithic site to be found anywhere in the world.

It is no drier than many parts of East Africa, but at times it cannot be reached overland at all. During the rainy season the track often becomes impassable, the dust being turned into a sea of mud. In 1962 a torrent of water flowed through the gorge, the likes of which had not been seen in modern times. Erosion must have been terrific, and there were changes in the canyon walls. What treasures, archaeologically, must have been washed away or destroyed will never be known. Olduvai's uniqueness as a prehistoric site is evident for several reasons, two of which are:

(1) There have been as many as eleven distinct stages of the Chelles-Acheul* hand axe culture exposed. This is by

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*The Chelles-Acheul is a lower Paleolithic hand-axe culture of Europe, parts of Asia and Africa. It has been named after Chelles and St. Acheul, France. Chelles is a town in the department of Seine-et-Marne where there is supposed to be the oldest relics of prehistoric man in Europe. In this area were found certain leaf-shaped flint implements. The climate then was much wetter and warmer than it is today, and hippopotomus and rhinos inhabited Europe. There is no way in which the equivalent to one of the earlier retreats of the continental ice sheets in the glacial period, and maybe even pre-glacial.

St. Acheul, France is an archaeological site near Amiens which has given the name Acheulian to the paleo-

far the longest evolutionary sequence of this culture that is known.

(2) These Chelles-Acheul hand axe cultures also overlie the pre-Chellean Oldowan pebble culture, which has been named after this site. (Plate III)

There are four Pleistocene beds at Olduvai, as well as the post-Pleistocene Bed V. Due to the fact that these beds have been repeatedly faulted, there is no place in the gorge, so far discovered, where a complete succession of beds is exposed one above the other.

The strata of the gorge consists of five main beds, the lowest of which rests on the lava bed previously mentioned. There are really four stages into which the gorge can be divided. The Olduvai Gorge time lapse and approximate levels of hominid discoveries are shown in Chart III.

Stage 1.

In the first stage a series of gray-buff silts, clays, sands and volcanic ash was laid down. This varied from 12 to 150 feet in thickness, due to the unevenness of the lava. This is known as Bed I and it is in this bed that the Zinjanthropus skull was found, the location of which has been identified by a concrete slab about two feet square. Near the top of Bed I there is evidence of very dry, even desert conditions. Within this area are certain crystals known as "desert roses" and also the remains of certain animals like the jeroba, which live in the Sahara today. The upper part of this series is known as Bed II. (Chart II)

Between Bed I and II is a hard yellow deposit. It is a demarcation between the two beds, but fauna of Bed I continues into Bed II. A deposit of wind-blown ash indicated a dry period between the beds. Bed II contains many new species of animals not found in Bed I. This is especially true in the upper part of Bed II. Bed II contains many old erosion channels, filled with river sands and gravels, and extends up to the base of Bed III. This bed is known as the Red Bed.

Bed III contains very few fossils or remains of stone tools. It, in turn, was overlain by further deposits of clays, sands, and volcanic ash. This is known as Bed IV. Many places do not show Bed IV since it has been washed away.

Subsequent to the formation of the four beds mentioned above, considerable earth movement must have taken place. Many believe that this earth movement was connected with the formation of the great Rift Valley.

Olduvai deposits are being dated by the University of California using the potassium-argon method. Results indicate

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lithic deposits that have been discovered there. These contained flint implements evidencing human industry at a time corresponding to the second glacial period in France.

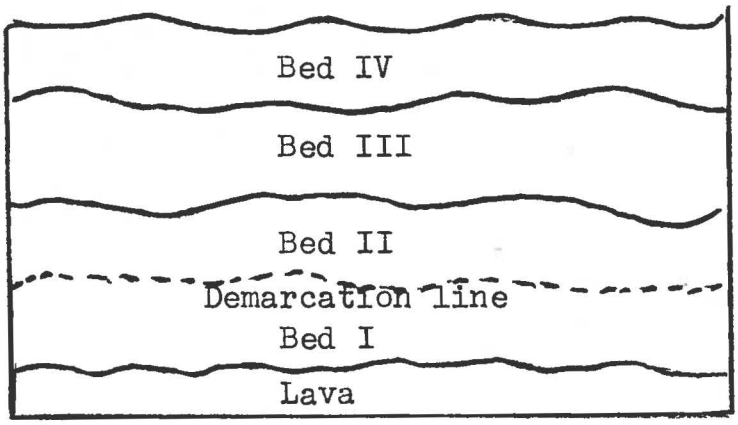
CHART I

OLDUVAI GORGE

Deposition of the Beds

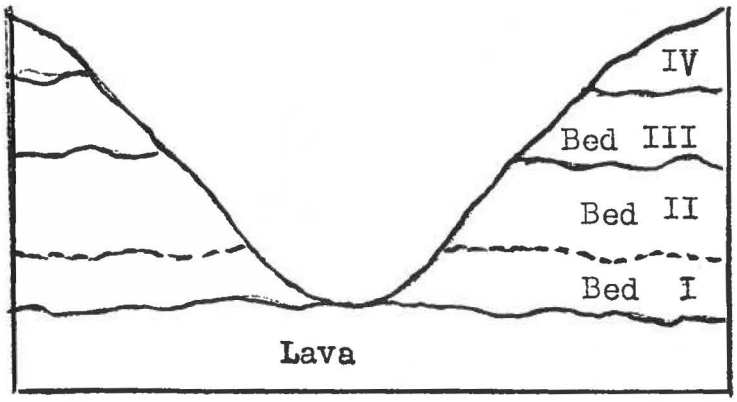
Lava laid down 1,000,000 years ago.

STAGE I



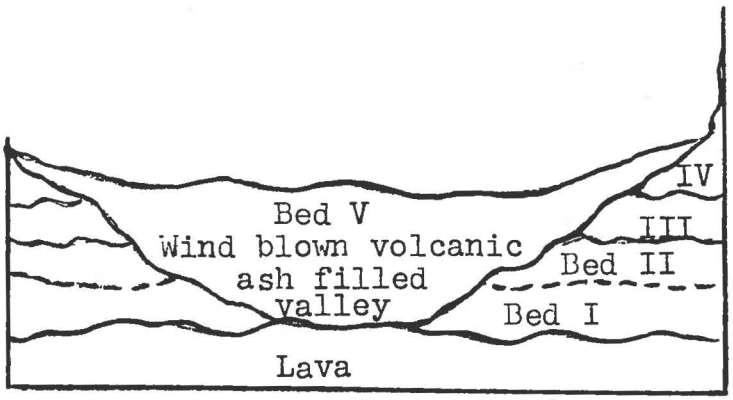
Valley cut away thousands of years later following earth movements. May have been connected with Rift Valley development.

STAGE II



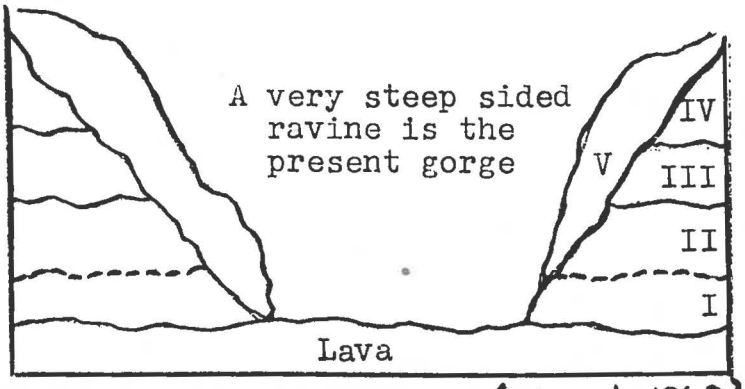
Climate at this time very dry. Wind blown ash is fawn colored. Can be seen today in many places.

STAGE III



Present ravine follows the drainage system of the earlier valley.

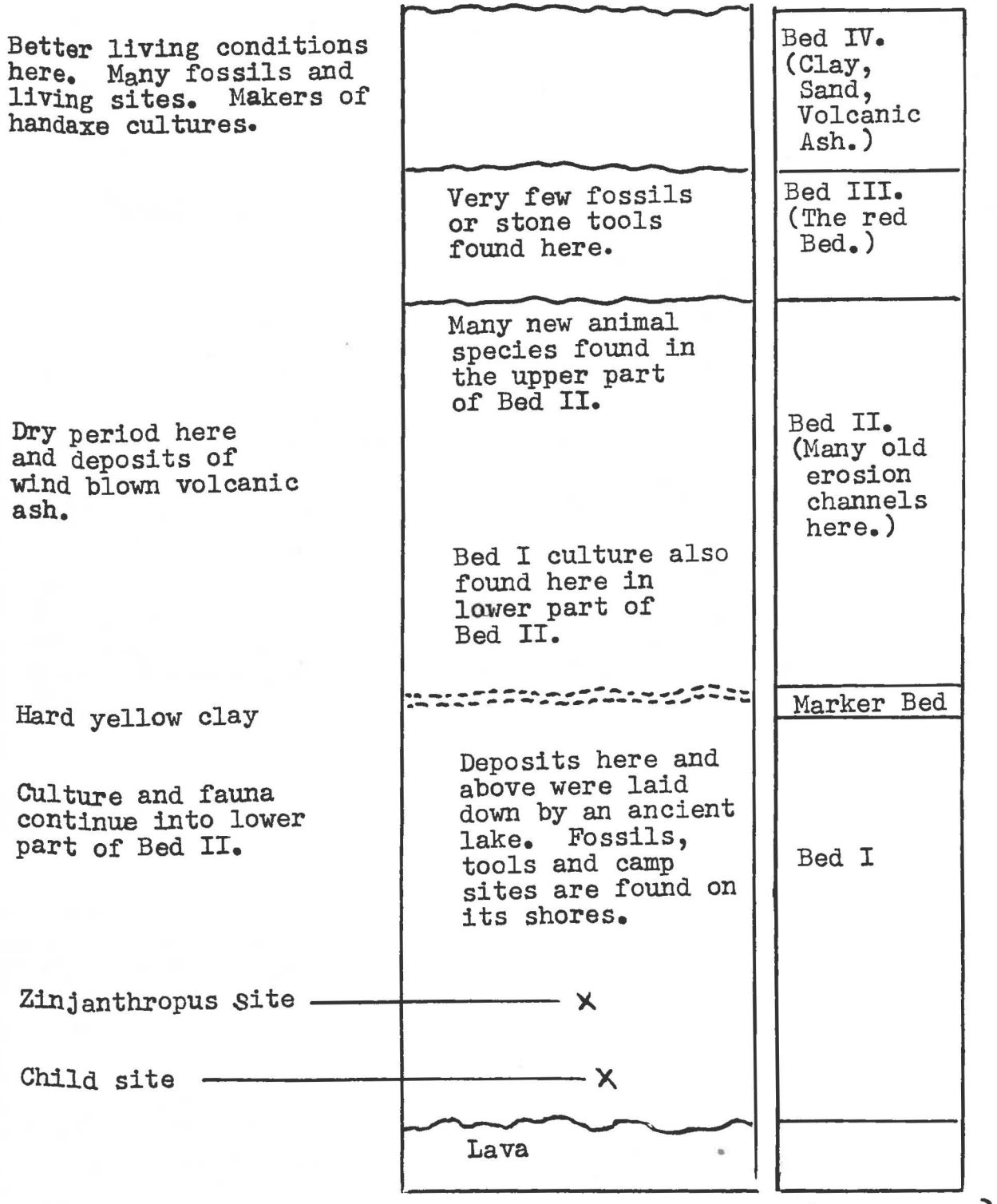
STAGE IV



(Flegel 1968)

CHART II

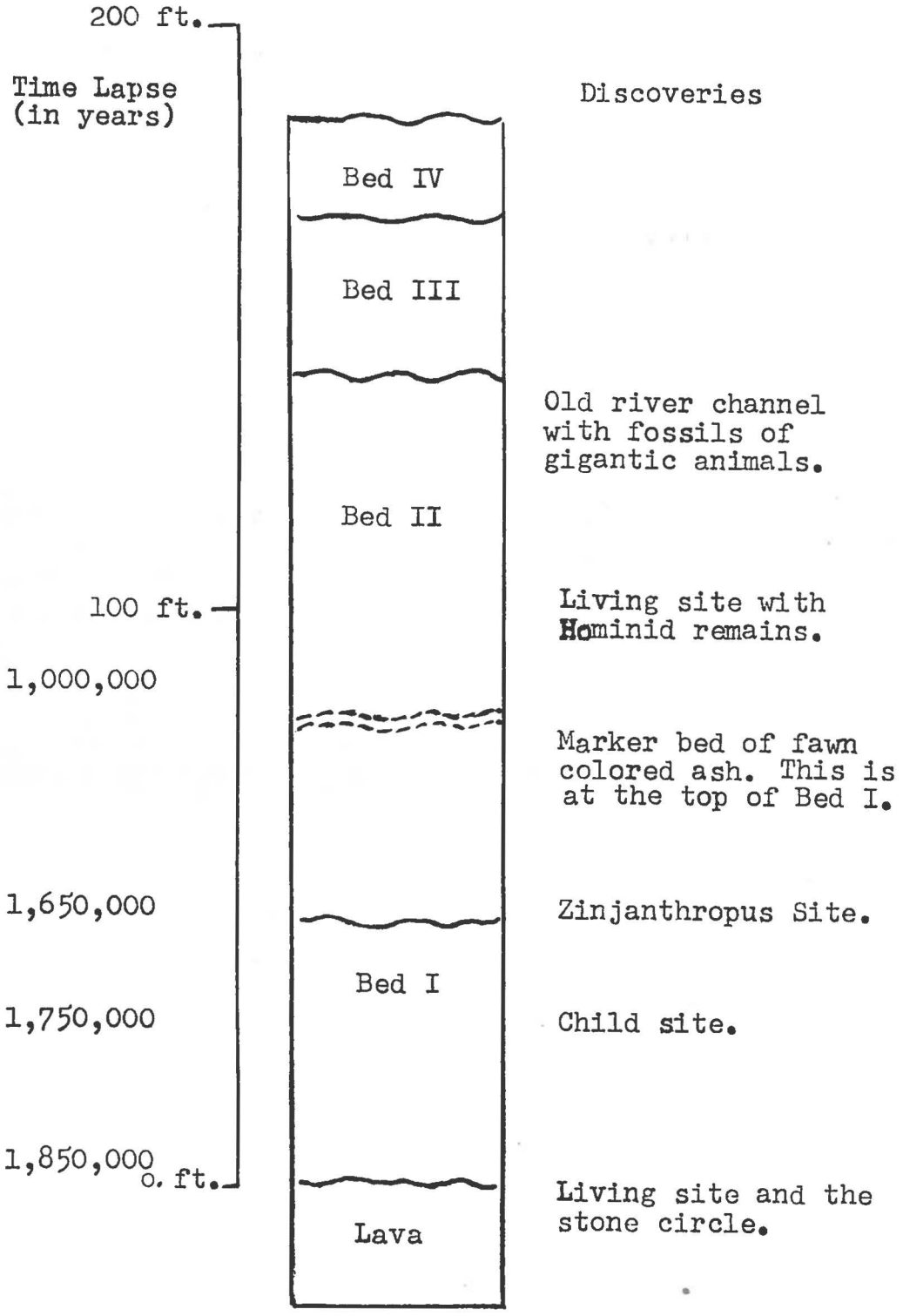
GEOLOGY OF OLDUVAI GORGE



(Flegel 1968)

CHART III

OLDUVAI GORGE TIME LAPSE AND DIAGRAMATIC SECTION SHOWING APPROXIMATE LEVELS OF HOMINID DISCOVERIES



Flegel 1968

that the lava at the bottom of the gorge (which can be seen in many places) is about 1,800,000 years old. Deposits immediately overlaying the Zinjanthropus skull are dated about 1,750,000. Bed II is considered to have lasted from 1,000,000 to 500,000 years. (Chart III)

Stage 2.

In the second stage of the gorge long after the beds were deposited and after the earth movements took place, a valley was cut, running the same direction as the present day gorge. This valley had gently sloping sides and they were not steep like those of the gorge today. (Chart I, Stage II)

Stage 3.

Again later, a dry climate deposited wind-blown volcanic ash, which formed Bed V. This is a light tan-colored deposit and can be seen in many places along the sides of the gorge. (Chart I, Stage III)

Stage 4.

Finally, there was another erosion and the present valley and gorge were cut. This followed the drainage system of the first valley that was formed. The sides of the present gorge are very steep. (Chart I, Stage IV)

In Table I there is shown the East African Climatic Sequences and Presumed Equivalents in Europe. This has been arranged by Dr. Leakey, and given the relation to the chronological periods of time with the Olduvai Gorge. It also relates other East African sites in the same time periods.

In Table II there is listed the North American equivalents of the European glacial and interglacial phases that are found in Table I. Only the main corresponding phases are given.

Variations that took place in tropical zones during the Pleistocene were probably related to glacial and interglacial periods all over the world. These glacial and pluvial periods almost had to be caused by worldwide climatic changes. It does not follow, however, that the climatic conditions would be the same.

The late A. du Toit gave these words of warning which have not always been heeded: "The chief source of error (in interpreting past climates) lies in the general assumption that the conditions deduced from one or two spots must prove representative of the country, or even be applicable to half a continent."

During the Pleistocene tremendous tectonic movements that took place in East Africa, and the volcanic flows have made it extremely difficult to geographically fit this area together. Lava flows may have dammed normal streams to present a large body of water which appears to be formed by heavy rains. The geology of the Gorge is shown in Chart II.

The large fossil animals that have been studied in East Africa show little indication of climatic changes. They probably adapted themselves to changing conditions. When the small animals, insecta, etc., from Olduvai are studied, there should

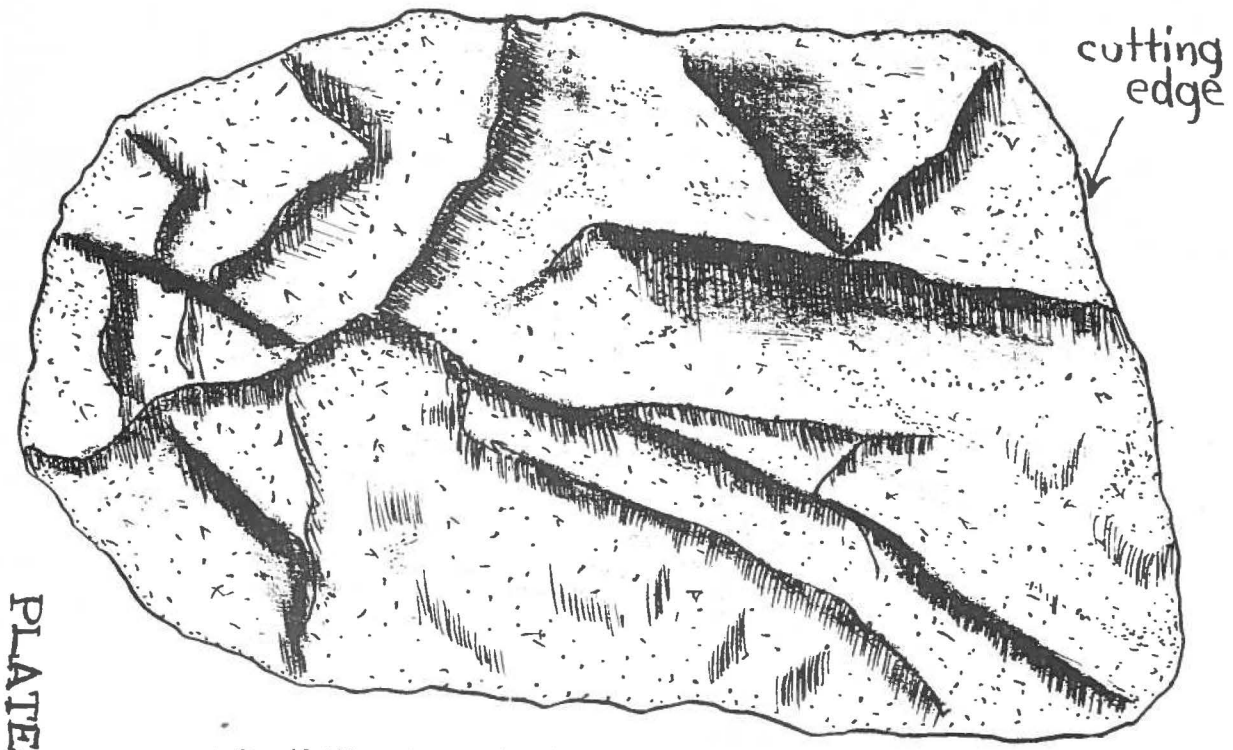
Fig. 1.

The Skull of Australopithecus (Zinjanthropus boesei) with the lower jaw reconstructed from the mandible found at Peninj, Lake Natron, which belonged to the same type of "Near Man"

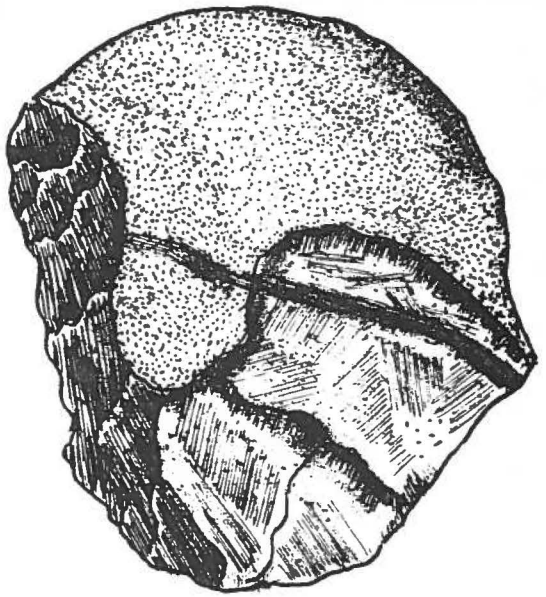
Fig. 2.

The teeth of Australopithecus (Zinjanthropus boesei) compared with the much smaller teeth of Modern man.

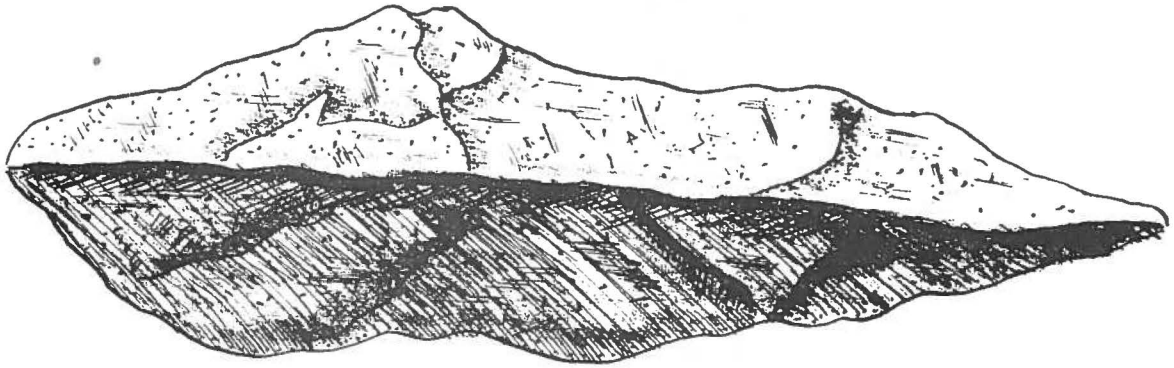
PLATE III



HAND AXE - OLDUVAI GORGE - BED IV



Pebble tool or chopper
of Oldowan culture
Olduvai Bed I.



← cutting edge

TOP VIEW HAND AXE BED IV

(all drawings full size)

(Flogel '68)

be evidence of climatic changes. Pleistocene climate changes in Olduvai does not appear to have been too extreme.

TABLE I

LEAKEY'S EAST AFRICAN CLIMATIC SEQUENCE AND PRESUMER EQUIVALENTS IN EUROPE

Years B. C.	European Climatic Phases	E. African Climatic Phases	Olduvai	Other East African Sites
800	Present	Nakuran		L. Nakuru 145 ft.
2,500	Sub Boreal	Drier		
5,500	Atlantic	Makalian		L. Nakuru 335 ft.
7,500	Boreal	Drier		
8,000	Pre Boreal	Makalian 1		L. Nakuru 375 ft.
				Gamble's Cave
8,850	Younger Dryas	Drier	Bed V	Deighton's Cliff
10,000	Allerod			
10,500	Older Dryas			
11,000	Bolling			
12,500	Late Wurm	Gamblian 3		L. Nakuru 375 ft.
18,000	Brandenburg	Drier		
24,000	Middle Wurm (Main Phase)	Gambian 2		L. Nakuru 510 ft.
25,000	Paudorf	Drier		
30,000	Middle Wurm	Gambian 1		L. Nakuru 720 ft.
45,000	Gottweig	Drier		MN Horizon
				Kagera
				Kalambo
54,000	Early Wurm			Isimila
		Kanjeran	Bed IV	Semliki Series
				Olorgesaille
				Kanjera?
60,000	Interstadial			
65,000	Cold Oscillation			
100,000	3rd Interglacial (Eemian)			
200,000	Riss	Wetter	Bed III	
250,000	2nd Interglacial (Great)			
400,000	Mindel	Kamasian	Bed II (Upper Part)	Rawi
500,000	1st Interglacial (Cromerian)		Non-Sequence	
1,000,000	Gunz		Bed II (Lower Part)	Laetolil
2,000,000	Pre-Gunz		Bed I	Kanam Kaiso

TABLE II

NORTH AMERICAN EQUIVALENTS OF THE EUROPEAN GLACIAL AND INTERGLACIAL PHASES

European	North American
Yunger Dryas	Valders Readvance
Allerod Interstadial	Two Creeks Phase
Older Dryas	Port-Huron-Mankato Readvance
Bolling Interstadial	Lake Acrona Recession
Middle Wurm Main Phase	Wisconsin Glacial Maximum
Eemian Interglacial	Sangamon Interglacial
Riss Glacial	Illinoian Glacial
Great (Hoxnian Interglacial)	Yarmouth Interglacial
Mindel Glacial	Kansas Glacial
Cromerian Interglacial	Aftonian Interglacial
Gunz Glacial	Nebraskan Glacial

Mrs. Leakey came upon the skull of Zinjanthropus as she was searching for fossils that had been washed out on the slopes of the deposits. It had been partly exposed erosion, and a small part of the bone behind the ear was first seen. The skull had been broken into hundreds of pieces and today all of them have been reassembled into an almost complete skull. (Fig. 1)

The area in which the skull was found was about 50 by 70 feet and in it were found hundreds of stone tools and chips that had been knocked from the tools as they were being made. In this area there were also the remains of animal bones most of which had been broken in order to get at the marrow. There was no sign of fire which might have been indicated by charred or blackened bones and rings of stone fire circles.

The location of this skull is shown in the diagramatic section of the beds. (Chart II)

In 1960, a short distance to the north, Jonathan Leaky discovered parts of the skull of a child. This has become known as the child site. The bones of a hand and the lower jaw of a child about ten or eleven years old were discovered. Close by was a collar bone and almost a complete foot of a second adult. These came from a level slightly lower than Zinjanthropus, but are generally considered contemporary from a geological viewpoint.

The above mentioned adult had a brain case quite a bit larger than Zinjanthropus. The adult foot had developed along human lines in that the large toe was close to the other toes and not widely separated as in apes and monkeys. The child's hand, although not exactly like ours, was capable of holding small objects with some degree of precision. The adult collar bone was human in form. It is unfortunate that more of these

parts were not found, but it is highly possible that the child and the adult belonged to the stock from which man ultimately evolved. How many more individuals are waiting to be discovered in this area is unknown. There must be more and they will be exposed in time. In 1964, the remains of these two specimen were described as the type specimen of an entirely new species to which the name Homo habilis has been given. This means, "Man with ability."

An ancient camp site, or living floor has been excavated in the lower part of Bed II. It has been roofed over and fossil bones and stone tools can be seen 'in situ'. They are today, exactly as they were when the site was abandoned by prehistoric man.

Resting almost upon the underlying lava near the bottom of Bed I is the earliest known camp site or living floor in the Gorge. Here are the remains of a rough circle of stones which Dr. Leakey thinks may have been one of the earliest attempts by man to build for himself some kind of shelter from the elements.

Some part of this early hut-circle has been preserved. Some stones are still piled on top of each other, as they were placed there by man about one and three quarter million years ago. In another part of the shelter are some very well preserved teeth of the extinct elephant Dinotherium. This is the elephant with its tusks set in the lower jaw and curving downwards. It was a fairly common animal in the Olduvai region during Bed I times.

More than 150 species of mammals have been identified in Olduvai. There are also many birds, reptiles, amphibia and fish. Included among the mammals are many different types of antelopes and pigs, several species of horses and elephants, hippopotamus, crocodiles, two different rhinoceroses and rodents of many kinds. The elephant (dinotherium) with tusks pointing down like the walrus; the (metaschizotherium), a creature with five toes and related to the rhino; the (savatherium), a giraffe with a short neck and antlers that branched out to a distance of six feet; and the (bularchus), a giant ox, were also identified. Nearly all forms found in Bed I had become extinct by the time Bed IV was laid down. During Bed II times, many of the animals had assumed gigantic proportions. One of the pigs had tusks 30 feet long, and was about the size of a hippopotamus. A very large horned animal, known as Pelorovis, had a horn span of over six feet! More recent types of animals began to appear in Bed IV and the giant began to die out.

In Bed I, and in the lower part of Bed II, the main type tool was made from a water-worn stone, from which two or three flakes were struck along one side forming a jagged cutting edge. In the upper part of Bed II the hand axe developed. They gradually attained a sharp cutting edge all the way around the edge. In Bed IV these became beautifully made tools and a new type of tool with a transverse cutting edge, like today's axe, was also developed. (Plate III)

It is interesting to note that only recently the Glass fission-track dating method has also been applied to the lower part of Bed I. It has affirmed that the Potassium-argon dating technique has correctly placed the early stone tools, hut-circle, and early remains of both of Zinjanthropus and Homo habilis at about 1-1/2 or 1-3/4 million years.

Since my return from Africa, new light has been thrown upon early man by Dr. Leakey.

Plaster casts of incisors and canine teeth as well as bits of upper and lower jaws of the oldest known ancestors of man were recently displayed at the National Museum in Nairobi.

These fragments have been named (Kenyapithecus africanus) and (Kenyapithecus wickeri). There were eleven specimens which were presumed to have come from eight adults and one infant. These fossils appeared to have been cracked apart by some flesh-eating animal.

Their age has been estimated to be more than a million generations old! This has been placed at more than 19,000,000 million years and represent the oldest identifiable remains of Hominidea - the family of man.

The results of the excavations at Olduvai Gorge from 1951 to 1961 are being published in four volumes.

The first of these is now available, and provides the essential background for the understanding of the later volumes.

The second volume will contain a very detailed report by Professor Phillip Tobias on the skull of Australopithecus (Zinjanthropus boesei).

The third volume will consist of an account by Mrs. M. D. Leakey of the stone age culture of Beds I and II, and of the living floor upon which these tools were found.

The fourth volume will deal with the geology of Olduvai Gorge in detail.

These books are being printed by:

Cambridge University Press
32 East 57th Street
New York, New York 10022

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Credit is hereby given to the Des Bartlett Armand Denis Productions for the reproductions of photographs in Figures 1 and 2.

Additional information was gleaned from the purchase of some reference material at the Olduvai Gorge entrance.

1907 — H. Geiger Omwake — 1967

Delaware archeology has suffered a big loss in the death of a comparatively young man. Weslager has aptly called Prof. Joseph Leidy the father of archeology in our State, and H. Geiger Omwake can be as aptly called the founder of organized archeology in Delaware. He was the founder of the first two of the three present archeological societies.

1. Mr. Clark Hill (Sussex County Road Engineer) discovered the Slaughter Creek Site in 1928 while building a county road along the southern bank of this creek, and Mr. Omwake soon realized the need for its orderly excavation and in 1933 organized the Archeological Society of Delaware as an emergency measure. Unfortunately, the urgency caused by pothunters had been in full swing for several years and there was not time enough to effect an organization and a workable plan for its orderly excavation. The result was the destruction and loss of one of the best and most extensive Indian encampments in Delaware. In time this Society developed its organization and talents and became the means for the collection of much useful knowledge of Delaware archeology and history.

2. Mr. Omwake's second attempt to organize an archeological society was made in 1948 and was much more successful because he had time to effect a workable organization - The Sussex Archeological Association - before the actual excavations on the Townsend Site were begun. We suspect a big factor in the success of this project was the fact that he kept close supervision and control of the amateur archeologists through consultation with and visits from the professional archeologists of the Smithsonian Institution.

We also suspect that he was an important factor in the development of the Delaware Archeological Board, which, with the services of a professional archeologist, Mr. Thomas, has contributed so much to the development of scientific archeology in this State.

He was also a collector of Indian artifacts and a leading authority on European trade tobacco pipes. He had nearly completed a monograph on this subject (trade pipes) which, we understand, the Smithsonian Institution will soon publish.

Mr. Omwake did all he could over a period of 35 years to further the cause of archeology in Delaware and by any standard of measurement this was a herculean accomplishment.

* * *

1887 — Mrs. C. A. Bonine — 1967

A native Delawarean, Mrs. Bonine was interested in all that has gone on in the State - particularly its archeology and early history.

After her husband, a geologist, retired, they decided to make their home in Rehoboth Beach. Her husband also was interested in history--especially the early Dutch attempts to make a settlement at Swannendael (Lewes) beginning in 1631 and it was a frequent sight to note her presence and helping her husband during the excavations of the Fort Site of the ill-fated De Vries Colony in Pilottown. In this project many difficult problems (mostly man made) were encountered after the lapse of over 300 years--notably by erosion, excavation and dredging on the left bank of Lewes Creek; the establishment of a cemetery on the fort site; the erection of the De Vries monument by the State; and, the infringement of real estate developments.

Mrs. Bonine was a faithful attendant at the meetings of the Sussex Society until the Lewes Historical Society was founded. This has taken most of their efforts since then. But age and declining health finally took its toll.

* * *

1901 — Mrs. C. W. Berl — 1967

After the death of her husband, Mrs. Berl - a native of the Peninsula - and her daughter Katharine came to live in Rehoboth Beach. Both became interested in Southern Delaware archeology and especially its history and joined the Sussex Society. Both were loyal and regular attendants of our meetings and supported all the activities of the Society - both archeological and historical - in every way possible despite their physical handicaps.

After the Lewes Historical Society was formed she became interested in and aided in acquiring the historically important "Cannon Ball House." Both local Societies mourn the loss of a helping hand.

* * *

SUSSEX SOCIETY OF ARCHEOLOGY AND HISTORY

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