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THE ARCHEOLOG

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DELAWARE

SUBMERGED FOR NEARLY 350 YEARS BUT STILL GOOD TIMBER

The Archeolog 1969, Vol. XXI, No. 2

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OLD TREE TRUNKS RECOVERED IN EXCAVATIONS FOR THE NEW BRIDGE AT BETHEL, DELAWARE

Henry H. Hutchinson and David Marine

In July of 1967 the State Highway Department started to build a high level bridge over Broad Creek at Bethel, Delaware, to replace the old pivot drawbridge originally built in 1887.

Preparatory to erecting the new bridge it was necessary to remove the muck of the cripple down to firm ground for the approach road on the South side of the creek to a depth of about 8 feet, a width of 100 feet and a length of about 400 feet.

The engineers started to use a hydraulic dredge but had to abandon its use because it became continuously entangled in the sunken trunks and roots of a windfall of large trees, and remove them with a dragline and hooks. About 40 such trunks (all with roots attached) were recovered from the right-of-way and all but 10 (Fig. 1) were disposed of in a spoils pit nearby. These trunks (with roots attached) varied from 15 to 20 feet in length and from 1 to 3 feet in diameter. All had been broken off from longer trunks for a long time.

Several cross sections averaging 4-1/2 inches thick were removed with a chain saw from one of the badly mutilated trunks. The workman who made the cross sections was a professional woodcutter and made the remark "Can't you smell the cedar." These cross sections were distributed to the State Forester (W. S. Taber), the State Geologist and to the authors of this report. Mr. Taber thought the wood was bald cypress (Taxodium distichum) because of the large size of the trunks but the workman and the authors thought the well preserved wood was white cedar (Chamaecyparis thyoides). One of the cross sections, badly mangled on the bark edge, is shown in outline in Fig. 2. Its greatest present diameter was 21-3/4 inches and the smallest diameter was 12 inches. No fragments of bark were visible. The annual growth rings were quite distinct and numbered 166 from the center pith to the maximum present radius. The annual growth rings were fairly uniform in width showing that the tree had similar annual, major growth conditions (water, soil and climate) throughout its life. The eccentric location of the central pith (Fig. 2) is not due to

Fig. 1.

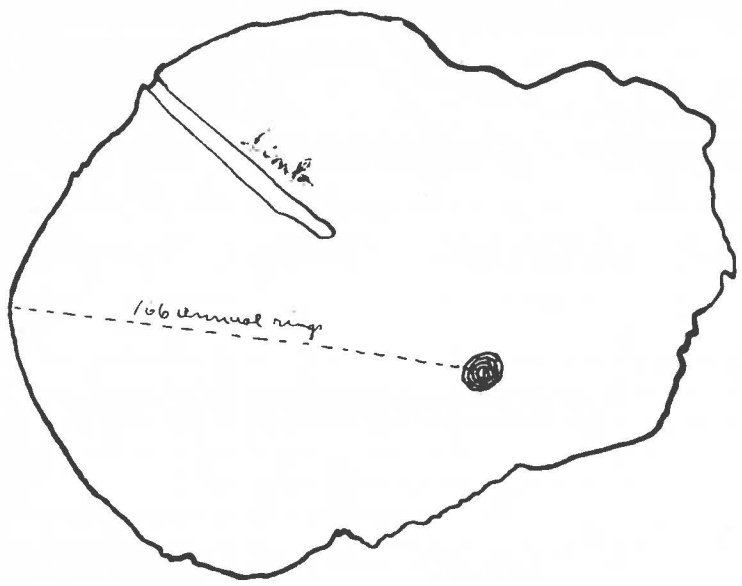

Fig. 2.
Outline of the trunk cross-section, approximately 1/6 natural size, showing the old embedded radial branch (limb) and the now off center central pith, which is due to past loses of large strips of the trunk. No evidence of decay.

growth deformity and in all probability dates from the windfall. The wood is well preserved, soft, light-weight and has the odor of cedar.

The visible branch (limb) buried in the trunk and exposed by the chain saw is 6-3/4" long and nearly uniform in width (9/16"). Fig. 2 shows that it extended internally at nearly a right angle to the trunk and to within 6-1/4" of the central pith. This preservation of branches is a characteristic of the cedars.

No living bald cypress trees of any size were seen although several living white cedars could be seen on either side of the 100 ft. right-of-way. In our opinion the State Forester has offered the best explanation for this occurrence of the uprooted and broken tree trunks. In his opinion this windfall was caused by an exceptionally severe hurricane which swept inland about the year 1620 A.D. leaving many such windfalls of timber in the coastal plain of this area. These tree trunks bore evidence that could have been caused by a severe wind storm and since the wood was so well preserved we have accepted Mr. Taber's explanation as to cause and time of the windfall and decided that a carbon 14 date was not justified.

OLORGESAILIE - "A MUSEUM ON THE SPOT"

By

Perry S. Flegel

This is the third in a series of articles descriptive of archaeological sites visited by the writer during a two year stay in East Africa.

The city of Nakuru is a thriving metropolis in the heart of the Rift Valley, East Africa, nestled on the southeastern slope of the Menangai crater. A steep dirt track leads to the top of the crater. The road is impassable in even the slightest of rains due to the mud which is found on the crater's slopes.

On the edge of this 7475 foot ASL (above sea level) crater is a fabulous view. Twelve miles to the south-southwest is the Bromwell site; eastward the Kariandusi field museum, and for its backdrop the majestic wall of the Great Rift Valley escarpment which extends north and south from horizon to horizon.

At our feet 1375 feet below us is the Hyrax Hill Complex, where a stone bowl culture has been discovered; 18 miles to the south is Gamble's Cave; Olduvai is 240 miles southeast, and Olorgasailie 100 miles east-southeast; and Rusinga Island in Lake Victoria 135 miles to the west. (Plate I)

The Menangai Crater is ringed by sites of early man, in fact probably first man.

At the top of the crater and at its most eastern edge has been erected a tall steel pole prepared with a series of interesting signs. The rising spiral of sign boards points the way to all parts of the world. Dar Es Salaam 510 miles; Leopoldville 1500 miles; New York 7800 miles; Rome 3600 miles; Tokyo 6324 miles; and a host more. This sign was erected by Rotary International. The sign points out how far it is to other Rotarian cities, and how far one is from home. To me it had another meaning. It showed how far man has traveled to his skyscraper "caves" in the sky, from his lowly caves in the Rift Valley.

Geologically, the whole of the Arabian Peninsula must be considered as unitary with the African continent. The Rift Valley which cuts through the whole area begins in Anatolia, in Northern Turkey, stretches through what is now the Jordan Valley and the Dead Sea. It then follows down the length of the Red Sea (which is best thought of as an inland lake with a small opening onto the Indian Ocean), and down through Lake Rudolph. The Rift divides and spreads out around Lake Victoria, but joins again at the head of Lake Nyasa, runs down the Shire River and the Zambezi and finally out to sea where it continues as a valley in the Indian Ocean floor.[1] It extends through more than 70 degrees of latitude which is almost one-fifth of the way around the world.

Such a terrific pressure weakness of the earth's surface has made a fitting place for man's beginning on earth, as well as a most remarkable area for conditions perfect for the preservation of fossil remains.

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[1]See "Indian Ocean Floor", Map supplement: National Geographic Magazine, October, 1967.

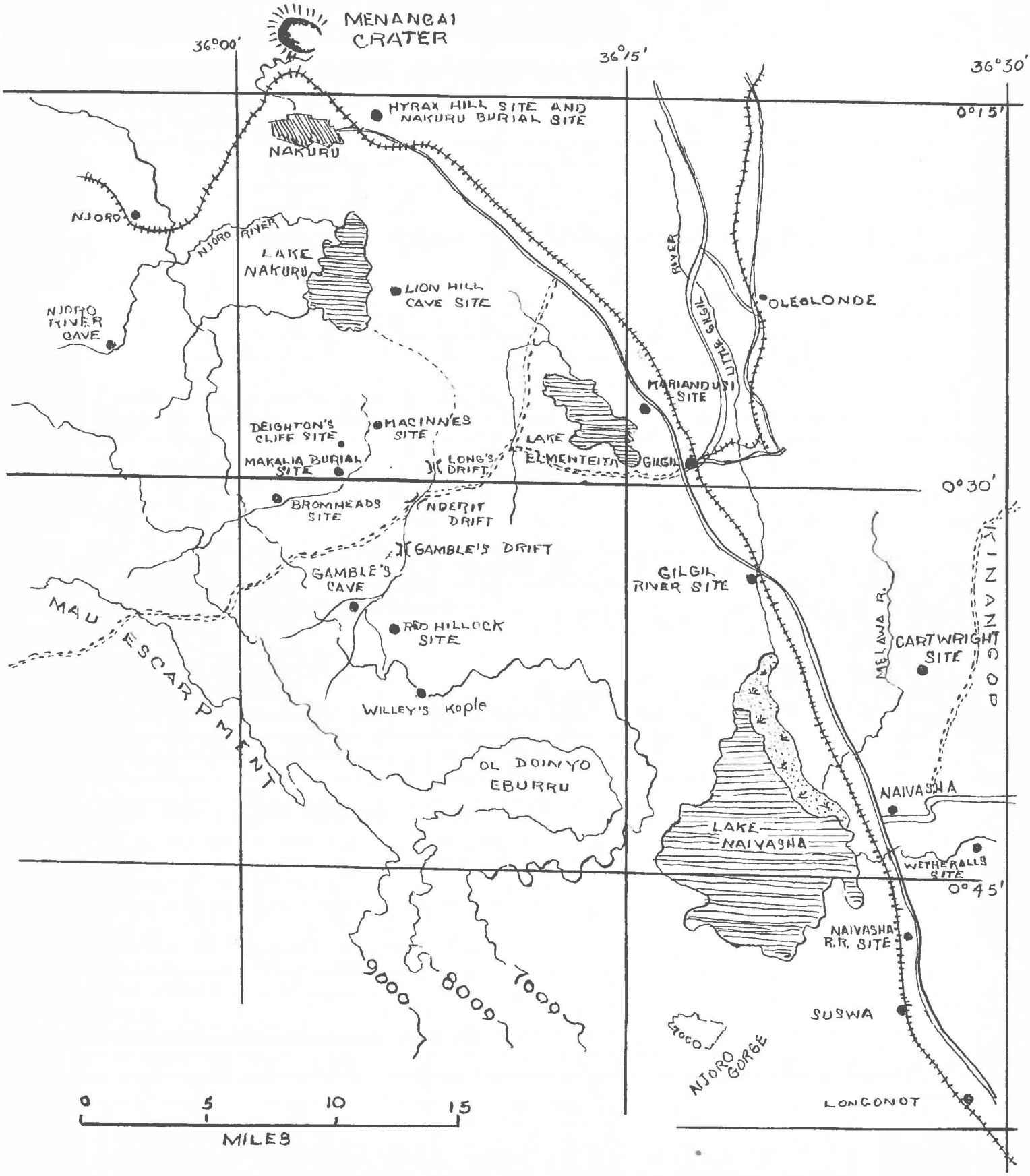
MENANGAI CRATER
36°00'
36°15'
36°30'
0°15'
0°30'
0°45'
HYRAX HILL SITE AND NAKURU BURIAL SITE
NAKURU
NJORO
NJORO RIVER
LAKE NAKURU
LION HILL CAVE SITE
NJORO RIVER CAVE
OLEOLONDE
MARIANDUSI SITE
LITTLE GILGIL RIVER
DEIGHTON'S CLIFF SITE
MACINNES SITE
MAKALIA BURIAL SITE
LONG'S DRIFT
LAKE ELMENTEITA
GILGIL
BROMHEADS SITE
ENDERIT DRIFT
GAMBLE'S DRIFT
GAMBLE'S CAVE
GILGIL RIVER SITE
MAU ESCARPMENT
RED HILLOCK SITE
WILLEY'S Kople
OL DOINYO EBURRU
MELAWA R.
CARTWRIGHT SITE
KINANGOP
NAIVASHA
LAKE NAIVASHA
WETHERALLS SITE
NAIVASHA R.R. SITE
9000
8000
7000
SUSWA
NJORO GORGE
LONGONOT
0 5 10 15
MILES

PLATE I.

The Rift Valley will be a source of archaeological excavations for centuries to come.

I found Olorgesailie one morning in a Nairobi hotel room! It was during a 45 day stay there awaiting arrangements prior to going "up country" to work. I was reading Sonia Cole's book, "The Prehistory of East Africa," when I realized how close Olorgesailie was. That afternoon we rented a Volvo and drove down just to see it.

Subsequent trips, made in the mornings may have been more interesting, but nothing can erase the thrill and excitement of that first trip.

Leaving Nairoba (Plate II) past the sailing regatta lake on our right and the famous Wilson Aerodrome on our left, we soon came upon the high fence which encloses the Nairobi National Game Reservation. This game park is not entirely fenced in. It is open on the southern end so that all of the game may come and go as it pleases. This is most interesting because it offers an endless variety of game which might be found in the park. It is constantly changing as the various animals come and go. In one of our last trips to the park we observed nine cheetah in one group, in the fading light of an equitorial sunset. (There is usually about 20 minutes from sunset to darkness on the equator.)

Four miles from the Nairobi city limits is the main gate of the Nairobi Game Park and a mile past it is the turn off to the town Magadi. (Plate III) A sign post erected by the Nairobi Museum Trustees reads:

Olorgesailie*

Excavations illustrating human
and animal life in Kenya more
than 100,000 years ago.

The tarmac road was narrow and good, but only extended a few miles to the edge of the headwaters of the Embakasie River which flows southwest into the great Athi River. The pavement gives way abruptly to a dirt road of red clay and gravel which is impassable in wet weather. (Plate II)

Whereas the land appeared level, we were gradually descending from the highlands of Kenya. Before us were the beautiful Ngong Hills, looking very blue, high, and refreshingly cool. They were about 2000 feet above the Nairobi highlands which stand 6000 feet ASL. They form a part of the southern end of the Kenya Rift Valley escarpment. Ages of rain and weathering have taken much of the height and steepness out of the escarpment wall there. (Plate II) Our road led to the southern end of the hills around which we were to skirt, prior to circling them on the inside in a great horseshoe curve.

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*The word Olorgesailie is spelled two ways. I do not know which spelling is correct - whether Olorgesailie or Olorgasailie. The sign board uses an "e" after the "g", as does a number of authors and maps. The National Geographic uses an "a" after the "g".

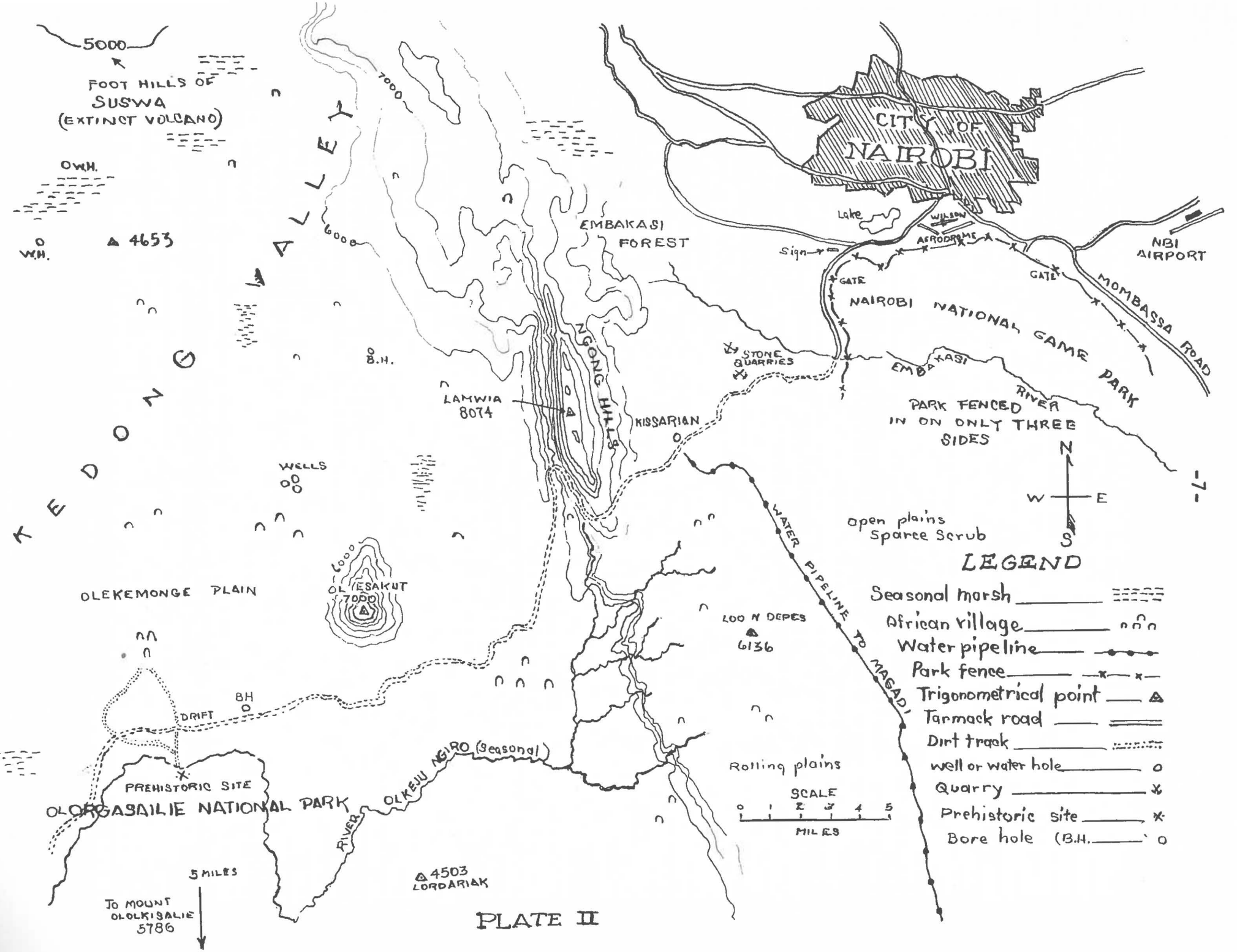
5000
FOOT HILLS OF SUSWA (EXTINCT VOLCANO)
O.W.H.
W.H.
▲ 4653
RIFT VALLEY
7000
6000
EMBAKASI FOREST
CITY OF NAIROBI
Lake
WILSON AERODROME
Sign
GATE
GATE
NBI AIRPORT
MOMBASSA ROAD
NAIROBI NATIONAL GAME PARK
STONE QUARRIES
EMBAKASI RIVER
PARK FENCED IN ON ONLY THREE SIDES
B.H.
LAMWIA 8074
NGONG HILLS
KISSARIAN
WELLS
N
W
E
S
open plains
Sparse Scrub
OLEKEMONGE PLAIN
OL TESAKUT 7000
WATER PIPELINE TO MAGADI
LOO N DEPES
6136
BH
DRIFT
PREHISTORIC SITE
OLORGASAILIE NATIONAL PARK
OLKEJU NGIRO (Seasonal) RIVER
Rolling plains
SCALE
0 1 2 3 4 5
MILES
5 MILES
TO MOUNT OLOLKISALIE 5786
▲ 4503 LORDARIAK
LEGEND
Seasonal marsh
African village
Water pipeline
Park fence
Trigonometrical point
Tarmack road
Dirt track
well or water hole
Quarry
Prehistoric site
Bore hole (B.H.)

PLATE II

Here game was abundent. With field glasses we observed rhino, bushbuck, giraffe and zebra grazing on the hillsides. We spent almost an hour looking for and finding them standing almost motionless among the euphorbia and acacia. It is hard to believe that the bold colors, spots and stripes of these animals can so cleverly blend into the surroundings of an African landscape. In this valley is the source of the Loodarial River. From either side of the valley one has a magnificent view of everything before him, as well as the road on the other side. Game browsing and moving on the slopes below, small herds of giraffe feeding on acacia, (thorn trees), accompanied by zebra grazing knee deep on the abundant Kikuyu grass, bushbuck singly or in twos or threes feeding unconcernedly intermixed with a few elephant and rhinoceros. As we drove on, baboons scurried off the road into the underbush.

What an idyllic place! We passed no cars on the road, saw no buildings or signs of civilization, except the man made road ahead of us. The road had no turn-offs, there were no side roads, or intersections and only one sign on the road. We passed that almost immediately. It stated that it was 38 miles to Magadi and on the way there was no water, food, gasoline or repairs available.

From the Ngong Hills the road descends steadily onto the Uaso-Ngiro plain, where it terminates at Lake Magadi. Lake Magadi is a soda lake about 36 to 40 miles wide and 100 miles long. It is surrounded by many hot springs and interesting rock formations. A lot of its shores are surrounded by lowlands which form large swamps during rains. Fresh water is piped into the town from Kisserian, a missionary school 80 miles away. A pipeline runs in a great circle to the west in order to supply the water by gravity.

The temperature increases as we descend and the tall acacia and candlebra-like euphorbia disappear. Dwarfed bushes, trees and grasses take their place, and the "whistling thorns" are abundant. They are so-called due to the construction of baubles of mud by certain ants. There are many holes in the baubles and when the wind blows an eerie whistling sound can be heard.

The soil changes as one leaves the Ngong Hills from a red to a white color. The white color of the soil is caused by diatomic clays and marls. Here is the bottom of an ancient lake bed. The rainfall at the present time is about 18 inches a year. This vast lake bottom is a stark reminder that at one time much more water fell on this area than does today.

At the turn-off to the Olorgesailie site, from the Magadi Road is a thatched roof covered sign stating that it was a mile away. (Plate III) This straight stretch of track sloped gently downhill and the land was heavily strewn with both large and small boulders of pumace and lava.

On our right the lake bed stretched away about on the same level as our road. On the left a terrific faulting of the area produced the same lake bottom 20 to 30 feet lower and sloping away toward the west.

Our first visit to the area was during a severe dry period and the barren landscape was foreboding. Seven miles away and directly in front of us was volcanic Mount Ololkisalie. It and Moung Longonot, as well as others to the north and west were responsible for the rock strewn landscape.

Along the one mile approach to the Olorgasailie site and on the left (Plate III) were a series of signs describing briefly the area in general; sort of an introduction of things to come. They read in part: "They left a litter of stone tools and bones." "The camping sites were buried deeply under the lake silts." "Earth movements have destroyed the older lake basin." "Excavations reveal aspects of the life of these early men."

The site is guarded day and night by attendants. There is no charge for admission, although entrance must be obtained by securing permission from Dr. Leakey or his assistant, Mr. G. Issac. Mr. Issac has made many valuable contributions to the history of the area and has done considerable work at the site.

Masai warriors dressed in their very best shukas and with face and hair plastered with ochre are willing to pose for pictures. A guided tour of the site was awarded us on our first trip. English was spoken by the guides, but little archaeological information was available from them. After our first visit, recognition of my permit, as well as myself afforded me free access to the area unhampered by a guide. It was never quite clear to him why, after I had seen the mass of "stone and rubble," I was interested in returning to the site.

Olorgesailie is situated at an elevation of 3300 feet ASL (above sea level) and on the floor of the Rift Valley. It is really not the Rift Valley proper, but an extension of it and in the southeast end of what is called the Kedong Valley (Plate II). To the south is Mount Olorgasailie (spelling on British Air Ministry Map). Ol Domingo Esakut stands to the northeast. These are about 16 miles apart. Both mountains are the remains of volcanoes extinct since the pliocene era (2-3 million years ago). During the subsequent geological era, the Pleistocene earth movements connected with the development for the Rift Valley formed a basin of internal drainage. The fresh water lake which it contained was probably similar to some Rift Valley lakes of today (Plate II).

Two plains can be seen from this site. One sunken to the east and directly in front of you and the other raised, behind. These are the ones that can be seen from the entrance road. These are the silt flats of the lake and at one time were continuous, but due to earth movements, they have been broken and separated. The lake beds can be traced eastwards for about 24 miles to the rocky ridges and outcroppings of the Nguruman escarpment, and westward to the cliffs which are just visable from where one stands at the site. The southern shore of the lake is marked by white silts at the foot of Olorgesailie. The earth movement which destroyed the lake basin produced the ridge at the site where a notice to that effect has been posted. Erosion now exposes fossils and tools that were buried between 100,000 and 200,000 years ago. The line of fault (Plate II) separates the two plains.

The main site is littered with many stone tools grouped in a number of distinct camp sites at several stratigraphic levels. There is a fault which cuts the area into halves, the easterly one being displaced downward (Plate II). Probably when the hand-axe men camped here, the area was situated in the middle of a swampy plain extending unbroken to the rocky hills that form the edge of the lake

basin. About fifty feet of silt lies below the site and later more than 100 feet of sediment were deposited above it. One of the faults is clearly marked out for the layman, and at it is a sign which states: "Fault: A line along which earth movement has occurred." (Fig. 1.) "The ground on the right has dropped down ten feet relative to that on the left. The effect can be most clearly seen in the displacement of the red bed and the grey sand." The Rift Valley is riddled by such faults which may show displacement of 100 feet or more. Movements occur intermittently in a series of jerks accompanied by earthquakes.

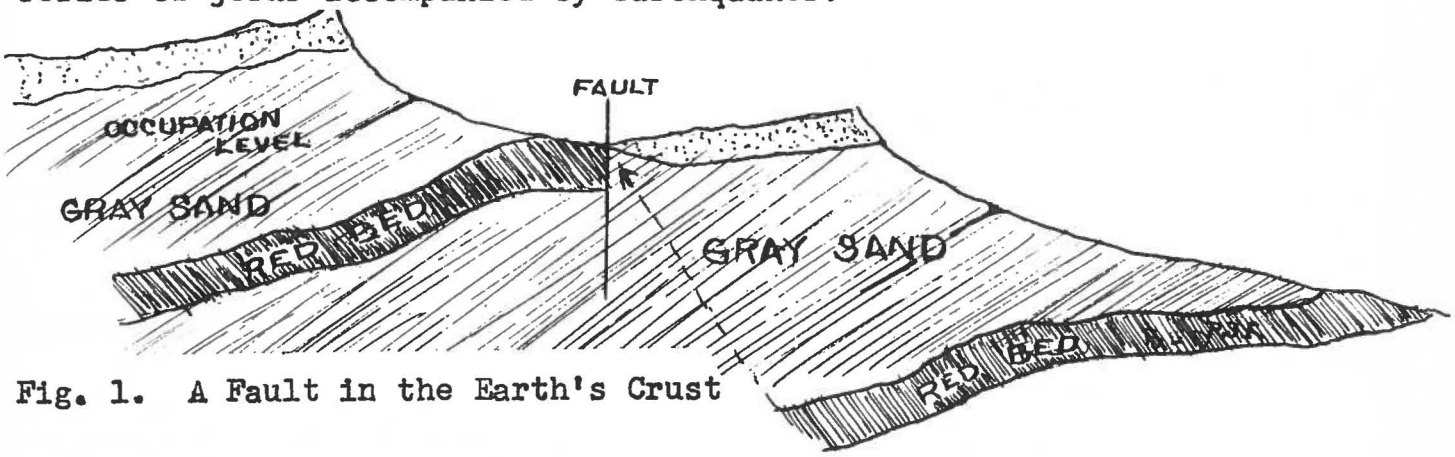

Fig. 1. A Fault in the Earth's Crust

"The Catwalk"

This "Museum on the Spot" has a very interesting innovation. The washed out area which was formed by a gully and was discovered by Mrs. L. S. B. Leakey in 1942 exposes hundreds upon hundreds of hand axes. In order for the visitor to obtain a close look at these prehistoric tools, and get close to them without disturbing their position, a low circular walk has been built out over the area. The hand axes are "in situ" and their size, shape, color and position can be studied. A good picture of this area can be seen in the National Geographic Magazine issued February, 1965, pp. 202-203.* The "catwalk" is a rickity, thin-pole affair over which one must travel at one's own risk. It is about three feet wide. The poles that make up the walkway are not more than 2 inches in diameter and the openings between the poles make walking treacherous. It is easy to see the ground and the axes through the walk itself. There is a hand rail on one side of the walk.

The abundance of tools is thought to be the result of repeated visits by small bands of nomadic hunters - seasonal jamborees when normally dispersed may have gathered there - or possibly some other reason. The several levels where tools were deposited show that the site was popular for a long period of time. Such heavy tools were easy to make and cumbersome to carry around. As a result they were made and discarded where they were used. It is possible that so many

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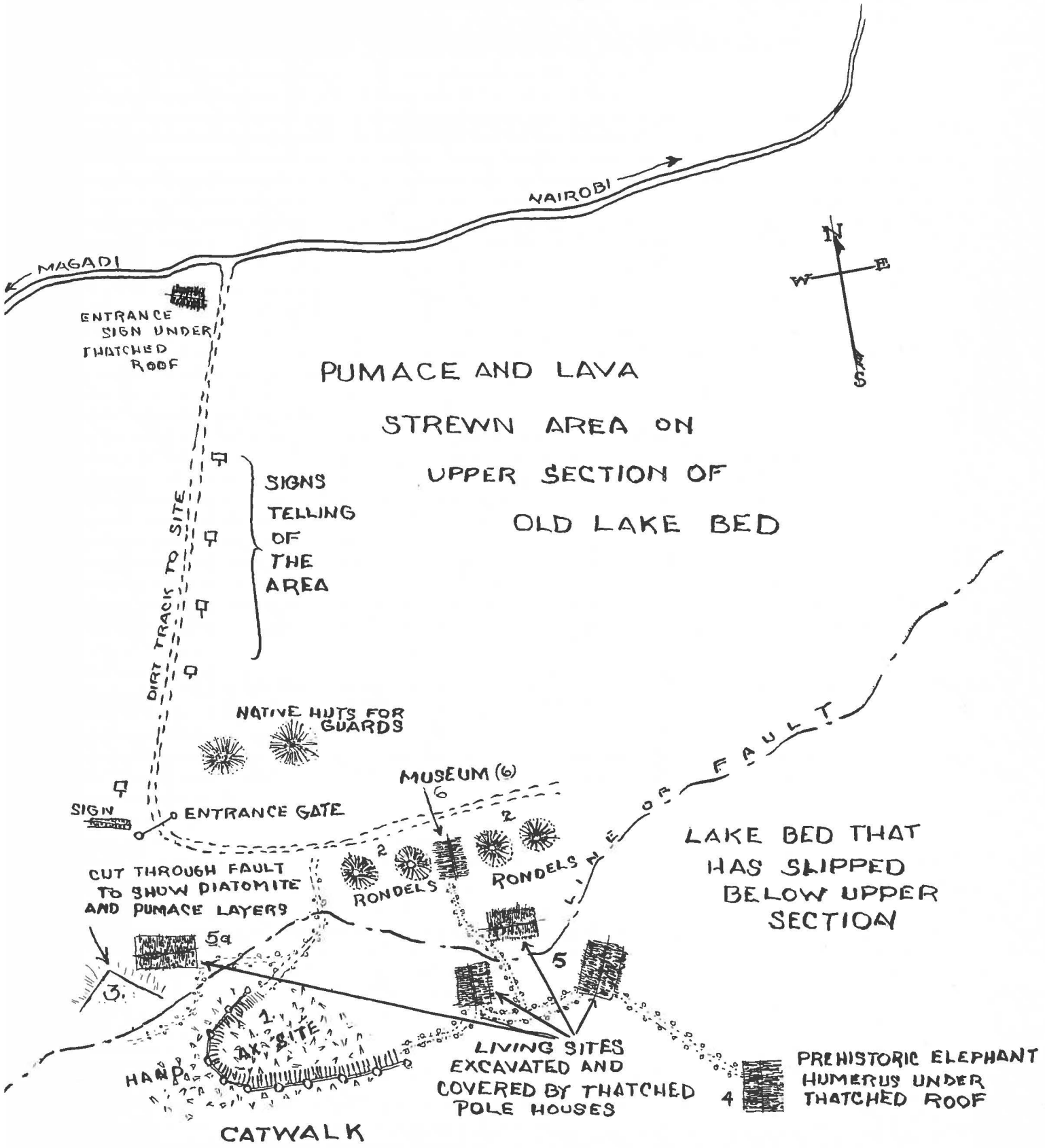
*Another picture of the catwalk, in poor repair is shown in "Life Nature Library," "Early Man," p. 109.



Drawing not to scale

P.S.E.

PLATE III

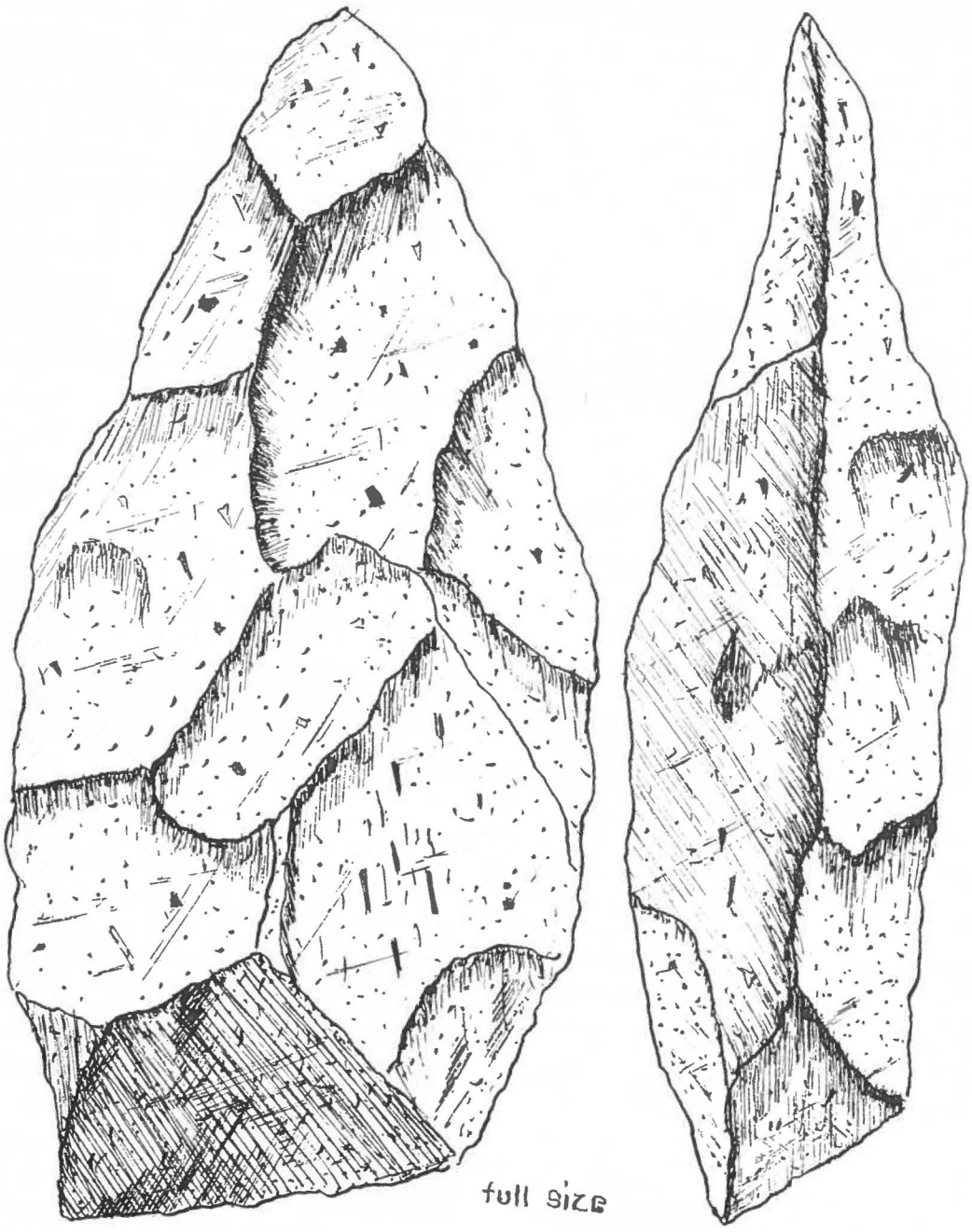


Fig. 2 Hand Axe from Olorgesailie

tools at various levels occurred due to the fact that the lake level was rising as new tools were made instead of using the old ones because the old ones had disappeared below the surface of the rising waters.

Through the kindness of one of the attendants, I was given one of the hand axes (Fig. 2). Its absence from the site will probably never be noticed since it was taken from the perimeter of the exposed hand axe collection and almost out of sight from the "catwalk."

The material from which the hand axe in Fig. 2 is made is an igneous metamorphic rock. It is a form of granite composed of feldspar, mica and quartz. It has both muscovite and biotite mica in it. The mica is strewn throughout the stone and in typical varied shaped flakes, shreds and irregular leaves, some drawn out in bands and others in patches. There are a few pinkish to reddish spots on the surface of the stone. Except for a somewhat darker grey color and a definite mottling, the stone from which the hand axe is made looks very similar to the muscovite granite found in the cache of blades (found in Dorchester Co., Maryland) and described in an earlier Archeolog.[1]

The axes are large and small. Some seven inches in length, and others fifteen inches long. They seem to have been made from several types of stone and all very crudely done. The flakes from the worked pieces were large and coarse. All of the hand axes gave the appearance of having been weathered to the extent that the edges from which the chips were struck were dull and worn.

The colors of the hand axes ranged from weather worn ferriconic reds to browns, yellow, and creams. The shapes varied from rounded to pointed, and many were shaped so that they gave the appearance of scrappers.

A hand axe of the type found at Olorgesailie is now known not to have been an axe at all, but the name has been used for such a long time that changing it would be about as difficult as our changing to the metric system. Probably the hand axe was used for skinning and cutting up game, and perhaps for rough working of wooden implements. It was a general purpose tool that was seldom carried from place to place, but simply made on the spot when it was needed.

There are a number of questions unanswered relative to the hand axes which appear provocative.

1. Why are there so many thousands of axes in one area? Would additional uncovered areas adjasent to this one reveal additional tools of this type?
2. If this was a stopping place along a well travelled route, as has been suggested, were these people all of the same religion and certain "taboos" were in order that prevented them from using another man's discarded axe?

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[1]Flegel, P. S. "Cache Blades from Marshyhope Creek," Archeolog Vol. VI, No. 2, Plate II, and page 16. September 15, 1954.

3. Indications are that these stone axes were all discarded at about the same time. It then follows that they were in all probability used at or about the same time. If so, then there must have been plenty scattered around at the time others were being made. (All stones appear to be weather worn or about alike.)
4. If there was any, I failed to notice any stone axe material in the immediate vicinity. Some similar material was observed about a mile away. I do not believe that a tool maker would carry heavy material such a long distance and then cut it up, throwing the discarded flakes away. It seems he would have worked out the stone where he found it.

   There appears to be no chips or flakes visible at the site. Indications point up the fact that the tools were made at another place. There are many small stones and gravel at the site and they appear to be well worn from washing and grinding against each other. They did not appear to be flakes or chips, but the weathering may have been severe enough to have so changed them.
5. Some of the axes were small enough to have been used with only one hand, while others were so large that two hands were necessary for their manipulation. Still others were so unwieldy as to be unpractical for any use we know of at this time.
6. The weight of some of the axes made them almost too heavy to have been handled in a convenient way.
7. All axes gave the appearance of having been weathered to a considerable extent. Is it possible that there was some religious significance attached to the discarding of the tools in a specific place?

Hand axes are of many styles and types, and they are to be found over most all of the world, and over hundreds of thousands of years of time.

While the type sites, namely the excavations that give the "culture" names to the types of implements, are those of Chelles and Acheul in France, hand axes in Kenya would seem to have come earliest into use in the highland area of present day Kenya. The knowledge known today only lets us suppose this to be true in a general sense of the word.

These stone tools came to be mixed with and finally superseded by a whole series of more specified and locally limited additions such as scrappers, awls, points, barbs, microliths and other stone tools of the very late Old Stone Age and Middle Stone Age periods. Therefore, in general terms, it may be observed that the drylands and highlands of Africa gave rise to the cultures which are now called Levalloisian[1] and Stillbay[2] with some special and smaller ones

[1]Levalloisian: This term is used to describe a culture based on tools made from flakes with faceted platforms: It also describes a technique known more properly as the "Faceted-platform technique." It is executed by striking flakes from a core previously prepared by making a platform with facets.

[2]Stillbay: This reference is made to a middle stone age culture of the eastern part of Africa which has been characterized by leaf-shaped points.

called Faurensmith[1] and Capsian[2]. The area of Africa which is today represented by the rain forest region - namely the Congo Basin and the Guinea Coast - gives rise to another and significantly different set of stone tools called the Sangoan.[3]

Recent discoveries relative to the Mesolithic era in Africa have caused concern about ideas held on the basis of archeological findings in Europe, because the introduction of the defining cultural traits came in a different order in Africa. The Mesolithic is referred to as the Middle Stone Age in Africa. It is interesting to note that pottery is found in Kenya in the Late Paleolithic sites. Pottery in Europe has been one of the basic standards defining the Mesolithic Era.

The topography of the area as a camp site lasted while the lake level rose and fell at least four times. This sequence can be clearly seen in the walls of the excavations that have been made. In several places parts of the camp floors have been uncovered and the tools left in place. Large thatched roofed open-sided structures have been erected in order to protect the site from erosion.

A considerable amount of time and effort has been put forth in order to develop this "Museum on the Spot."

Excavations were begun a year after Mrs. Leakey's discovery of the main site. During and after the Second World War, three Italian prisoners and some Africans lived and worked at the site. The work was done under the supervision of Dr. Leakey. The area was fenced in, the catwalk was constructed through the hand axe area, shelters of poles and thatched roofs were erected where artifacts were exposed in order to preserve them "in situ." Paths were constructed, areas cleared and some digging done. (Plate III)

There is no water at the site, and it, as well as food, was brought in from Nairobi, about 40 miles away. Game was plentiful, but none could be shot since the area had been declared a National Park.

It was soon found out that the fences were of little value at the site because the elephants and rhino walked right through them. Electric fences were tried but the game soon became wary of their effect on them and avoided a direct entry into the site. The giraffe merely stepped over them. It was finally decided to resort to the ugly but very efficient thorn bush and thorn tree fences. These have been used since time immemorial for the protection of the African and his family against the "big five" - namely the elephant, rhinocerous, cape buffalo, lion and leopard. Poles line the walkways throughout

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[1]Faurensmith: This represents a culture of the first intermediate period following the Chelles-Acheul in south and east Africa. It has been given its name after a site in South Africa.

[2]Capsian: A mesolithic culture of North Africa characterized by blades, burins, and microliths.

[3]Sangoan: Here is an early Middle Stone Age culture found in the forested and Steppe country of Central Africa. It has been named after Sango Bay on the west shore of the lake in the Masaka district of Uganda.

the site. There are no wires, ropes or other material connecting the posts. It would be destroyed by the animals that roam the area.

Probably the most interesting area at the site is the "catwalk" over the hand axes. I remember my thrill and excitement over the first stone axe I found. At Olorgesailie I stood in awe upon viewing thousands upon thousands of hand axes in one area left exactly as they were discarded by Paleolithic Man. The axes in this area were made by Acheulean Man[1]. He moved his camp site back and forth on the shores of the lake as the waters rose and fell. This lake was about six miles wide and seven miles long. Periodic shore levels can easily be seen in the thick diatomatic[2] and silt deposits which are separated by volcanic ash and pumace. These deposits contain no artifacts or mammalian remains of any sort. Some deposits are as much as 175 feet thick. In this area there has been much faulting and the deposits indicate that they have been in a very unstable land area for long periods of time.

There are as many as 17 distinct horizons that can be determined here within an area of several square miles. These contain fossil mammalian remains and artifacts. Some of the type sites are confined to such small areas that it has been suggested that they may have been located near the end of some small peninsula which probably jutted out into the center of the lake flats.[3]

None of the 17 horizons were occupied for more than 100 years, if that long. The horizons one to five are separated from horizons six to nine by volcanic ash and sediments which may have been laid down for a period of at least a thousand years or more. Levels 10 through 13 represent still longer periods of time. The entire Acheulean occupation in this area may not have been in existence for more than a few thousands of years.[4]

---

[1]Acheulean Man: This is a name that has been given to early man who was a maker of hand axes. It is considered the later of two stages of the Chelles-Acheul culture. The name has been derived from the town in France called St. Acheul.

[2]Diatomite: A silt composed of the silica shells of countless microscopic plants that live in water. The diatoms are very small but under favorable conditions, they may multiply extremely rapidly. The shells of dead diatoms sink to the bottom and accumulate there. Pure diatoms such as the ones at Olorgesailie form only under still deep water. The silts here were laid down in standing water.

[3]G. Issac: "New Evidence from Olorgesailie Relating to the Character of Acheulean Occupation Sites," Teneriffe. 1963.

[4]Kliendienst, M. R.: "Variability within the Late Acheulean Assemblage in East Africa," S. African Archeological Bulletin 16, 1961, pp. 35-48

In area (3) Plate III, the bank has been cut away to a depth of 12 to 14 feet. Here may be seen the layers of diatomite and volcanic silt. The dark area of ash represents the time when the explosive eruptions took place between the diatomic shell formation (Fig. 3).

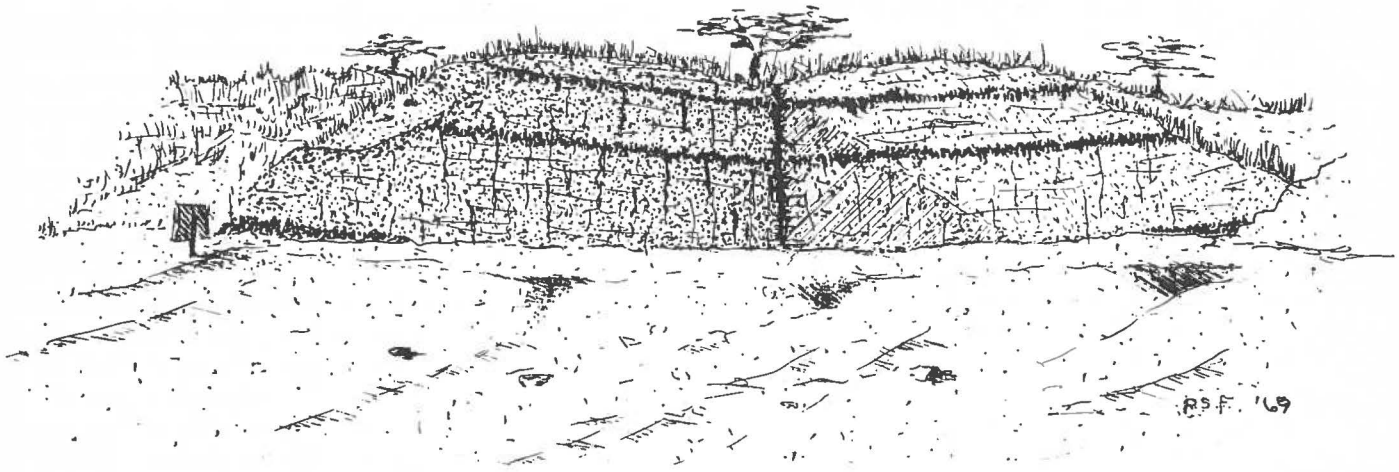

Fig. 3. This sketch of the area 3 in Plate III showing diatomic and pumicite stratification reveals a portion of the land that has been cut away to expose these several intermittent layers. The back of a sign post is shown in the front left foreground. On its other side, this area is explained to visitors.

The cutaway section of the land is about 12 feet deep and two distinct layers of volcanic ash can be seen. A portion of a third layer is visible at the bottom. This bottom layer and a foot of diatomic material could be seen in its entirety if one were standing at the level of this sign.

The sketch was made from a kodachrome color slide taken at the scene by the writer. He was standing at least ten feet below the level of the above mentioned sign.

A sketch of a typical rondel is shown below in Fig. 4. The location of these huts is shown in Plate III (2). They are 14 to 15 feet high and round with a diameter of approximately 12 feet. There is a circular porch-like awning entirely around the exterior. Both the walls and the roof of the building were thatched over a framework of poles. All the area was well groomed and the insides very clean. Inside, the huts were supplied with bunk beds, each with a mosquito netting over it. It hung from the roof in a circular arrangement, so tied that a pull of a string dropped the netting over the bed. There was also a table and two

chairs. Solid door and shutters allowed the visitor to close the hut up securely for the night.

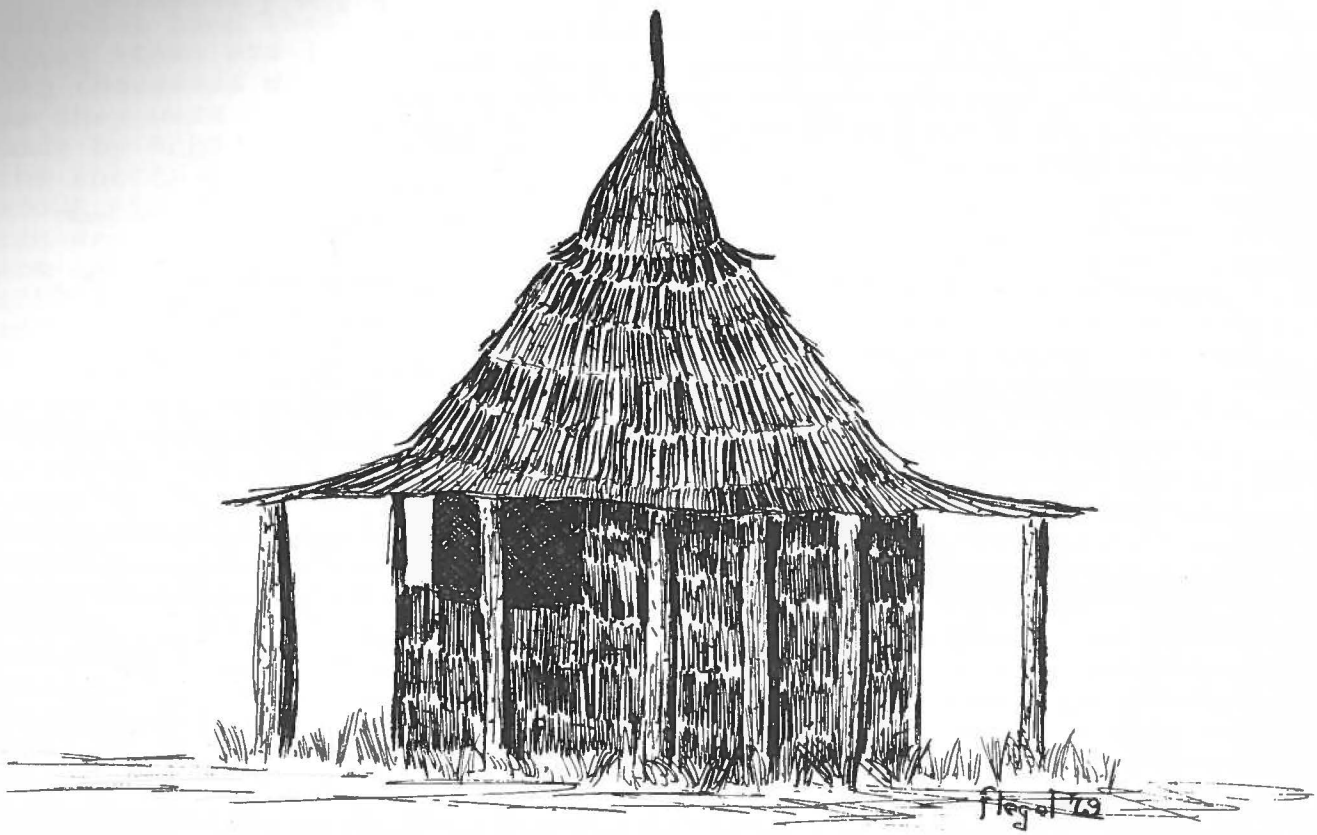

Fig. 4. A Sketch of a Typical Rondel

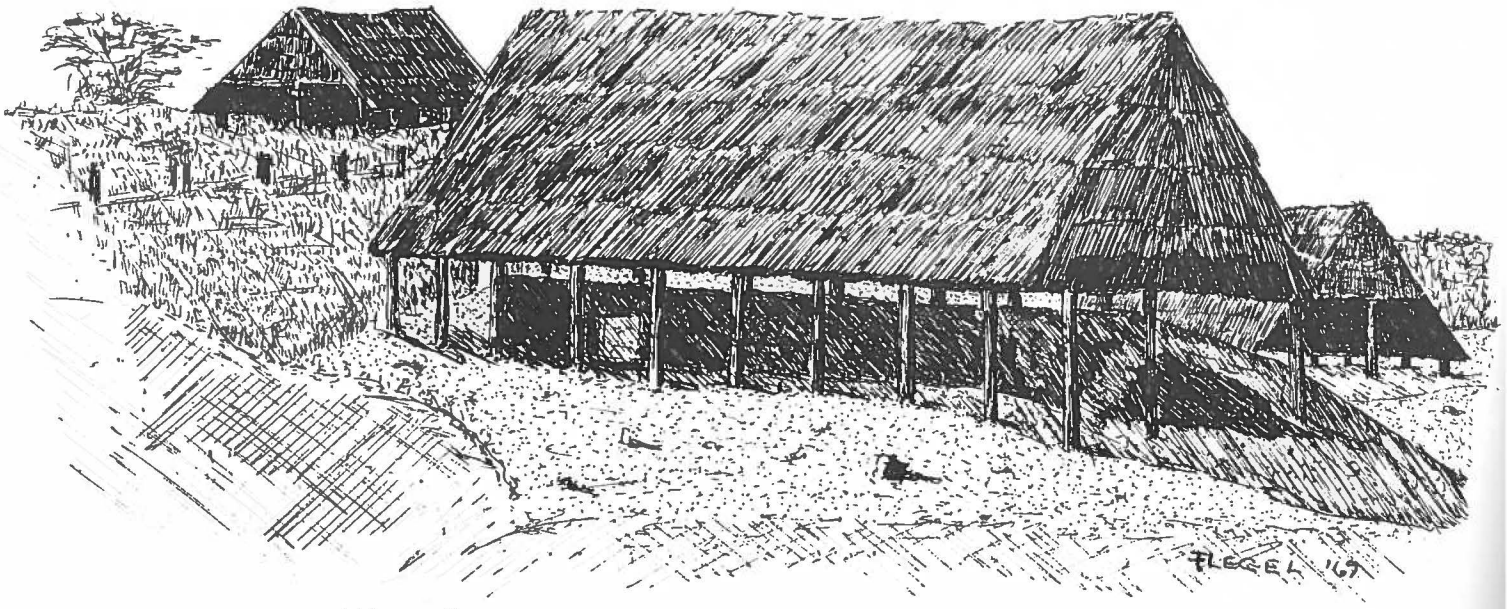

Fig. 5. Excavations Preserved Against Weather by these Shelters

There are four "living" sites that have been excavated at the site. It is probable that countless others do exist, but since those that have been exposed are all similar, it might be assumed that others are the same. At the present time there are no plans for further exposing "living" sites.

Yearly rains are not heavy in the vicinity of the site, but that which does fall comes all at one time. Considerable washing and erosion takes place at this time.

In an effort to preserve the "living" sites as they were exposed upon excavation, thatched roofed pole houses have been erected over these areas. Fig. 5 shows a sketch of one of the pole houses along with two others that are adjacent to this one. Under these houses are all of the artifacts and other bits and pieces of bone and stone left as they were found. Those that were at higher levels are intact upon pedestals of earth.

In each area is a signboard describing the particular area as well as a charted drawing of the site. Complete protection from the elements is not entirely provided, since during prolonged rains some water seeps through the thatch and the holes in the earth, made by dripping water, are clearly visible. The rainfall in this section of Kenya has been recorded to be an average of 21 inches a year.

The three "living" sites sketched in Fig. 5 are shown at Number 5 in Plate III. No. 5a is another site that has been uncovered and protected.

No. 6 is a small museum. It is also a pole house like those mentioned above but the back end of it has been closed up for use as a wall to keep out the rain and also hang some charts and tables. There are two glass-topped showcases with a few bones and some artifacts including stone axes. On a stand there are additional stone axes out in the open that the visitor may pick up and handle. The back wall contains several charts and drawings showing the place in time when the area was inhabited, a contoured drawing of the area, and other pertinent information. The location of the museum is shown as No. 6 on Plate III.

At the extreme end of the present layout and excavations there is a thatched covered pole house similar to the others. Under this roof can be seen a gigantic humerus of a prehistoric elephant. Plate III, No. 4.

A walkway traverses the house from front to back allowing visitors to walk past the fossil bone. Along side it has been placed a humerus of a modern elephant so that one may compare the two. The visitor can get an idea as to the difference in size and shape of the fossil. It was estimated that the prehistoric humerus is about half again as large as that of the present day elephant's leg bone.

At this writing there has been no complete report on this site. It has been mentioned in a number of books and publications, but no detailed information has been given. Much more work could be, and no doubt will be done when time and money are available. Until such time takes place, Oloresailie will withhold its additional secrets that are locked up within its dolomitic and marly contents.

THOMAS JEFFERSON - THE FIRST AMERICAN ARCHEOLOGIST

Thomas Jefferson, the many sided genius, has aptly been called the first American Archeologist.

The sole basis for this distinction rests on his excavation of an Indian burial mound in the valley of the Rivanna river near Montecello and the interpretation of his findings as briefly portrayed in his "Notes on the State of Virginia" (about 1782) which are quoted herewith: "...that when they settled in a town, the first person who died was placed erect, and the earth put about him, so as to cover and support him; that when another died, a narrow passage was dug to the first burial , the second reclined against him and the cover of earth replaced, and so on.

"There being one of these burial mounds in my neighborhood, I wished to satisfy myself whethe any, and which of these opinions was just. For this purpose I determined to open and examine it thoroughly. It was situated on the low grounds of the Rivanna, about two miles above its principal fork, and opposite some hills on which had been an Indian town. It [the mound] was of a spheroidal form of about forty feet diameter at the base, and had been of about twelve feet altitude, though now reduced by the plough to seven and a half [feet], having been under cultivation about a dozen years. Before this it was covered with trees of twelve inches diameter and around the base was an excavation of five feet depth and width, from whence the earth had been taken of which the hillock was formed.

"I first dug superficially in several parts of it, and came to collections of human bones, at different depths, from six inches to three feet below the surface. These were lying in the utmost confusion, some vertical, some oblique, some horizontal, and directed to every point of the compass, entangled and held together by the earth. Bones of the most distant parts were found together, as, for instance, the small bones of the foot in the hollows of a scull: many sculls would sometimes be in contact, lying on the face, on the side, on the back, top or bottom, so as, on the whole, to give the idea of bones emptied promiscuously from a bag or a basket, and covered over with earth, without any attention to their order. The bones of which the greatest numbers remained, were sculls, jaw-bones, teeth, the bones of the arms, thighs, legs, feet and hands. A few ribs remained, some vertibrae of the neck and spine without their processes, and one instance only of the bone (Os. Sacrum) which serves as a base to the vertebral column. The sculls were so tender, that they generally fell to pieces on being touched. The other bones were stronger. There were some teeth which were judged to be smaller than those of an adult; a scull, which on a slight view appeared to be that of an infant, but it fell to pieces on being taken out, so as to prevent satisfactory examination; a rib and a fragment of the under-jaw of a person about half grown; another rib of an infant; and a part of the jaw of a child, which had not cut its teeth. The last furnishing the most decisive proof of the burial of children here. I was particular in my attention to it. It was part of the right half of the under-jaw. The processes by which it was attenuated to the temporal bone were

entire, and the bone itself firm to where it had been broken off, which, as nearly as I could judge, was about the place of the eye tooth. Its upper edge where in would have been the sockets of the teeth was perfectly smooth. Measuring it with that of an adult, by placing their hinder processes together, its broken end extended to the penultimate grinder of the adult. This bone was white, all the others were sand color. The bones of infants being soft, they probably decay sooner, which might be the cause so few were found here.

"I proceeded then to make a perpendicular cut through the body of the barrow that I might examine its internal structure. This cut passed about three feet from its center, was opened to the former surface of the earth, and was wide enough for a man to walk through and examine its sides at the bottom, that is, on the level of the circumjacent plain. I found bones, above these a few stones, brought from the cliff a quarter of a mile off, and from the river one-eighth of a mile off; then alarge interval of earth, then a stratum of bones and so on. At one end of the section were four strata of bones plainly distinguishable; at the other, three; the strata in one part not ranging with those in another. The bones nearest the surface were least decayed. No holes were discovered in any of them, as if made with bullets, arrows or other weapons.

"I conjectured that in this barrow might have been a thousand skeletons. Every one will readily sieze the circumstances above related, which militate against the opinion, that it covered the bones only of persons fallen in battle; and against the tradition also, which would make it the common sepulchre of a town, in which the bodies were placed upright, and touching each other.

"Appearances certainly indicate that it has derived both origin and growth from the accustomary collection of bones, and deposition of them together; that the first collection had been deposited on the common surface of the earth, a few stones put on it, and then a covering of earth, that the second had been laid on this, had covered more or less of it in proportion to the number of bones, and was then covered with earth, and so on.

"The following are the particular circumstances which give it this aspect. 1. The number of bones. 2. Their confused position. 3. There being in different strata. 4. The strata in one part having no correspondence with those in another. 5. The different states of decay in these strata, which seems to indicate a difference in the time of inhumation. 6. The existence of infant bones among them.

"There is another [burial mound] much resembling this, in the low grounds of the south branch of Shenandoah, where it is crossed by the road leading from the Rockfish gap to Staunton. Both of these have, within these dozen years been cleared of their trees and put under cultivation, are much reduced in their height, and spread in width, by the plough, and will probably disappear in time. There is another on a hill in the Blue Ridge of montains, a few miles north of Wood's gap, which is made of small stones thrown together. This has been opened and found to contain human bones, as the others do. There are also many others in other parts of the Country."

CACHE BLADES FROM THE MILES RIVER
(Preliminary Report)

By Paul A. Howard, Jr.

The blades (fig. 1) were located along the shore of the Miles River (fig. 2) in Talbot County, Maryland.

I have hunted waterfowl on this farm for the past several years. The only evidence of prehistoric habitation I had previously found consisted of two broken stone points. I found the first three (3) blades one cold morning before sunrise. While walking the shore towards a hunting blind I found the first blade. Before reaching the blind two more blades were found. Since then further visits to the site have produced more blades and I now have a total of eight (8).

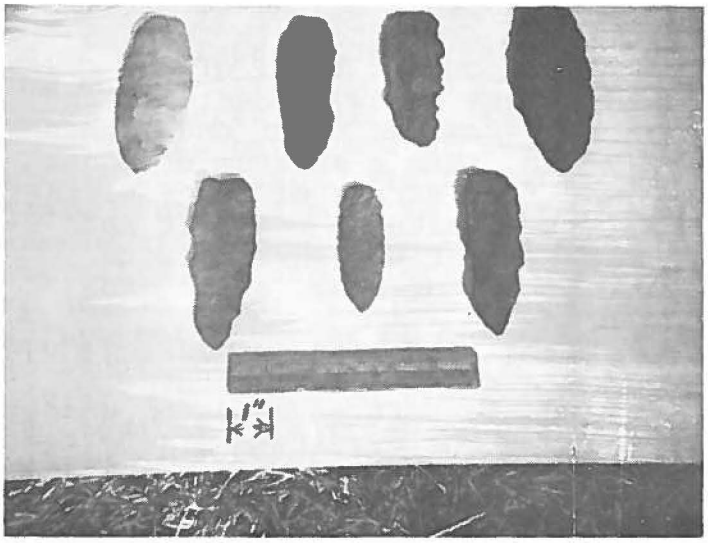

Fig. 1

I have not yet had positive identification made of the type of stone used. Hopefully this can be reported in the near future along with additional finds from the site. The blades vary in size from the smallest which is 4" by 1¼" to the largest that measures 5-7/8" by 2-1/8". Maximum thickness of the blades is 1/2".

All blades were found within a 150 yard section of the shore (fig. 2). This would lead one to suspect that a larger cache once existed. This thought is further supported by the fact that a cache of blades was found several years ago in the bank of the nearby Wye River. There is no evidence of blades protruding from the bank of Miles River at the present time. Apparently any future finds will depend on tidal action.

Fig. 2

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