IN SEARCH OF TELEKI'S VOLCANO.

My interest was first roused in this volcano by Mr. A. G. Baker, the late Director of Surveys, who said to me just as I was departing from Nairobi in 1928 on a safari to demarcate the Suk and Turkana boundaries: " By the way, though Teleki's Volcano is mentioned in the description of Provincial boundaries, we are not quite sure where it is or whether it still exists. You may be able to help us."

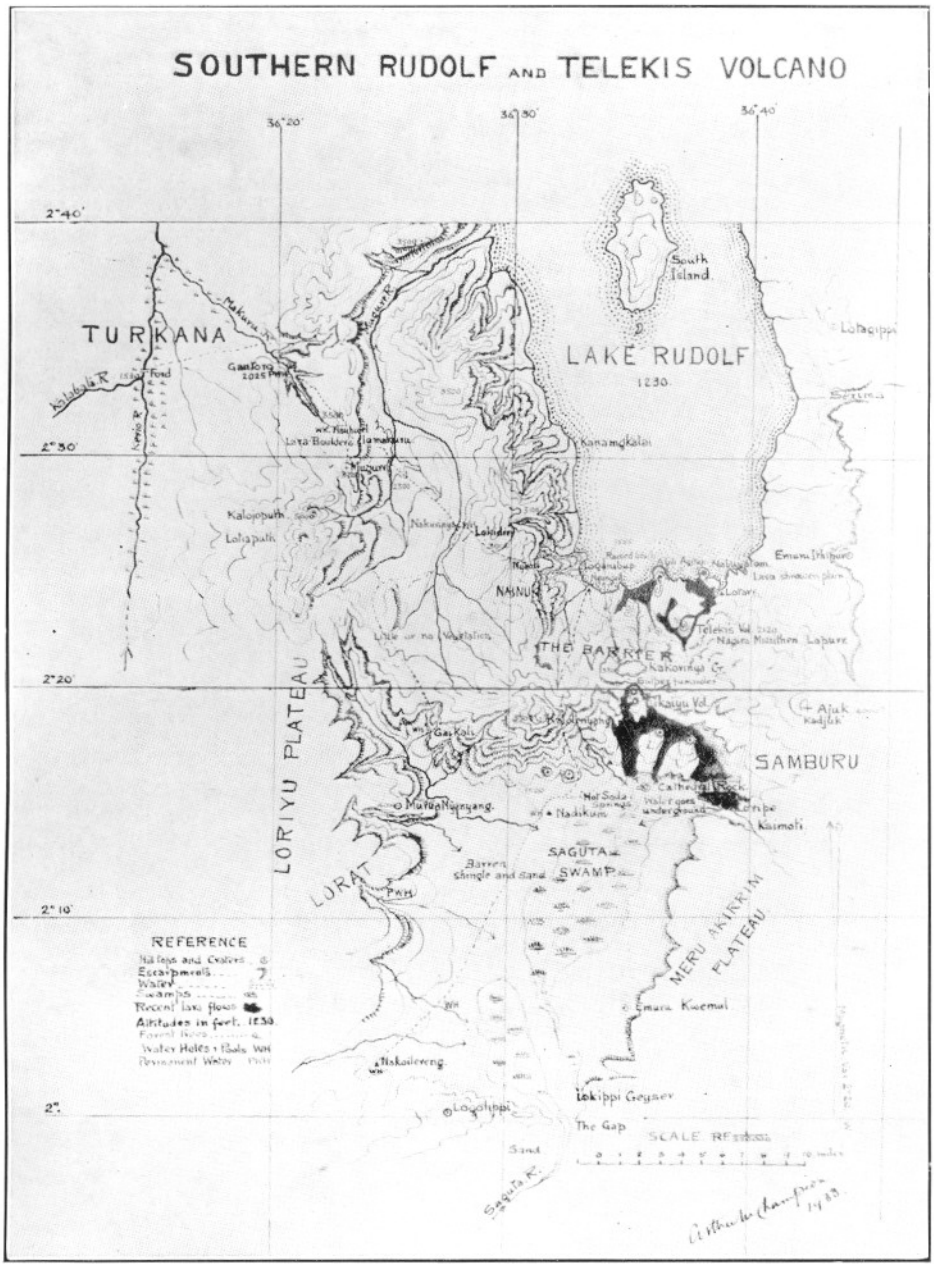
That he had some reason for saying this is borne out by a statement which appeared in the *Geographical Journal* of April, 1898, by Mr. H. S. H. Cavendish. It ran thus: " On arriving at the south end of the lake (Rudolf) I was surprised to find Teleki's Volcano had entirely disappeared, its place being taken by an entirely flat plain of lava. We got hold of some Ligob men who lived at the south end of Lake Rudolf, and within a couple of miles of the volcano, who told us that about six months ago the lake overflowed and as the waters rushed towards the mountain, the native name of which was Lubburua, there was a vast explosion, after which the waters swept in where the crater had been and put out the fire."

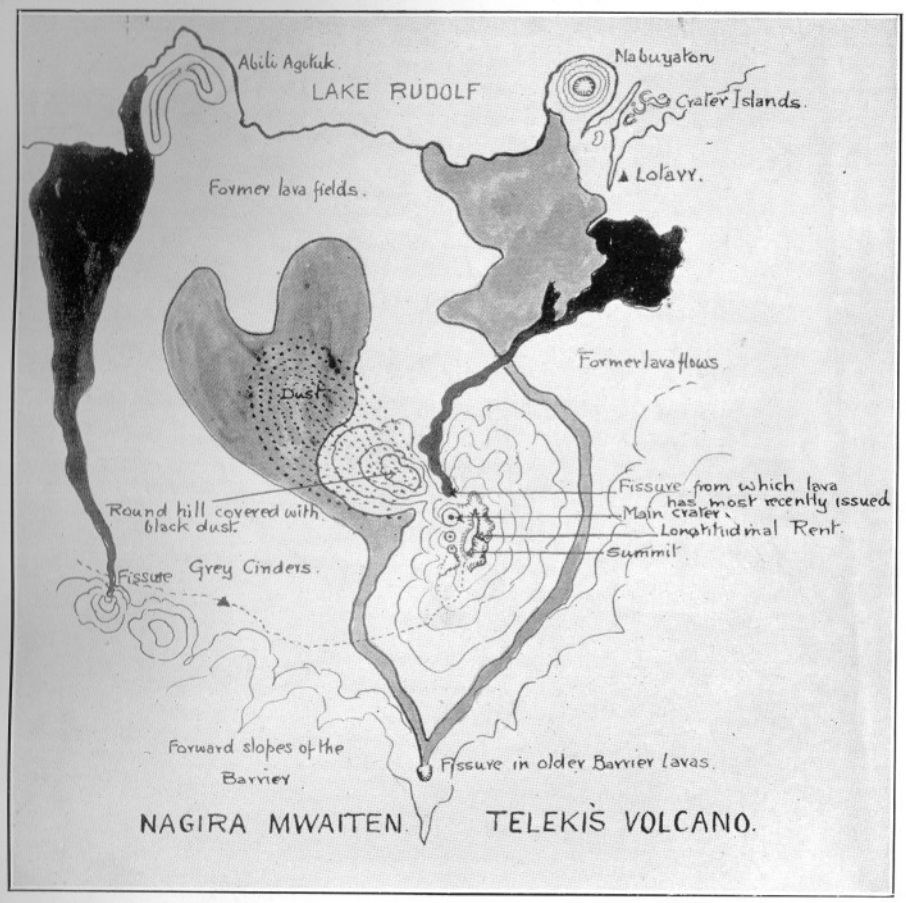
In addition, such a weighty authority as the *Enc. Britannica* informs us as follows: " Great changes have been reported since 1889. In particular the great Volcano of Lubburua (Teleki's Volcano) at the south end of the Lake is said to have been destroyed between 1889 and 1897 by a sudden explosion "

As it turned out I did not reach that region at all on that trip, and so the position and existence of Teleki's Volcano remained an uncertainty.

Some years later I returned to the Turkana Province and determined to seek an opportunity to unravel the mystery, and with this object in view I set out in April of 1931 with Mr. Baker Beall, the District Commissioner of Southern Turkana, and Dr. Robertson, the Medical Officer at Lodwar.

We had, unfortunately, none of us studied the literature of the area or we might have saved ourselves very much trouble. The existing maps were so lacking in detail that they were of little or no assistance. As the name implies, the original discovery of this volcano must be attributed to Count Samuel Teleki, that redoubtable and undaunted explorer who, accompanied by Von Hohnel (who is still alive), left Zanzibar in 1886 with a safari of 500 porters and returned three years later with the news that he had discovered a volcano and two lakes. The former was named after himself whilst the Lakes Rudolf and Stephanie were called after the Crown Prince and Princess of Austria. Only 200 of Teleki's porters returned and his adventures make wonderful reading. His dogged determination and courage are perhaps only equalled in a similar field by those of General (then Major)


SOUTHERN RUDOLF AND TELEKIS VOLCANO
36°20'
36°30'
36°40'
2°40'
2°30'
2°20'
2°10'
2°
TURKANA
LAKE RUDOLF
1230
South Island
Lokipi
Kalokolo R.
Ford
Makuru
Gamtoro
2025 Peak
Lata Boulder
Kanamgkalai
Kalojopath
Lotapath
Nakuru
Loiodin
NASNUK
THE BARRIER
Emuru Ikipuro
Telekis Vol. 2120
Nagura Mountain
Lapsure
Kakoriwa
Kaiyu Vol.
Ajuk
Kadjuk
SAMBURU
Gas Kali
Cathedral Rock
Hot Soda Springs
Water goes underground
Kaimoli
LORIYU PLATEAU
LURAT
Nadikum
SAGUTA SWAMP
Barren shingle and sand
MERU AKIRKIM PLATEAU
Emuru Kwemul
Nakoileweng
Lokipi Geyser
The Gap
Sand
Saguta R.
SCALE
REFERENCE
Craters
Escarpments
Swamps
Recent lava flows
Altitudes in feet. 1230
Forest Wood
Water Holes
Permanent Water



NAGIRA MWAITEN. TELEKI'S VOLCANO.

H. H. Austin who, eleven years later, made that wonderful trip from Khartoum to Mombasa. The volcano when discovered was in such a condition of thermal activity that Teleki had perforce to make his way round the southern end as he could not cross the flow of molten lava which enveloped its northern and eastern sides and extended for a distance of about five miles to the shores of the lake. Whilst his caravan was making this arduous detour, he made an attempt to reach the summit, but was driven back by the fumes and gigantic cracks, both of which made further progress an extremely hazardous undertaking.

The only natives whom he mentions as living in the neighbourhood, but not in the close vicinity of the volcano (which was uninhabited), are the Lokob, who appear to be the fisher-folk of several tribes from the area lying to the east—in fact paupers or El Molo who, owning no stock, were driven to seek a living by fishing, and the Bukenedji, who are undoubtedly the Samburu. I do not know if this name is still in use for the tribe, or perhaps for a section only. The area was visited by Capt. Welby in 1899 when the volcano was apparently quiescent. A lava flow which he describes very graphically, he considers from the condition of trees which had been overwhelmed by it, to have been formed only about three or four years before. Still later, Lord Delamere in 1900, and Capt. Stigand in 1912, I think traversed this area, but neither, as far as I am aware, make any mention of the volcano.

In 1917, however, Mr. Deck, when travelling in the Samburu country, tells me he distinctly saw black smoke rising from that neighbourhood, but was unable at that distance to say if it came from the north or the south side of the barrier which divides the Suguta from Lake Rudolf.

Mr. Juxon Barton, who in 1921 and 1922 was travelling in Southern Turkana, informs me that the natives brought him terrifying stories of a mountain of fire, and that he saw a glare at night which gave support to their story. So much for the history of the volcano.

Setting out from Lodwar, the Government Station for Northern Turkana, I joined my two companions three days later at Ndiki on the Kerio River. Our combined safari amounted to 30 camels, of which eight were carrying water and the rest only half loads. We could thus carry about 160 gallons of water, which would give us three days' supply.

Leaving the Kerio, in which there was a little water flowing, we struck south eastwards for a re-entrant in the long horizon of the Loriyu plateau which forms the watershed between the Kerio and Suguta Valleys. On entering the gorge the floor was found to consist very largely of detrital material from the basement complex which east of the Turkwel had been covered by a thick sheet of lava. At

Gautoro, where we rested for the remainder of the morning, we were fortunate enough to find water in some holes in the river bed. Here the junction of the overlying lava, an olivine basalt with the basement complex, was well exhibited. Soon after midday, all receptacles capable of holding water being filled, we ascended by a rugged path up the southern side of the valley and found ourselves on the edge of the boulder-strewn plateau. We set our teeth against a strong and never-ceasing wind which blew dust and gravel into our faces, and even caused the Turkana to use their forearms as protection. There was no soil: it had all been blown away into the Kerio Valley below and progress was only achieved by hopping from one big boulder to another. By nightfall the beasts were tired out and many were suffering from strained and bleeding feet. Early next morning we stood on the edge of an escarpment of about 500 feet, looking down into the parched valley of the Mugurr River. As we descended the escarpment, an excellent example of the successive and parallel fault lines of the Rift Valley was exhibited, and at the foot we found ourselves again on the Gneisses and Schist of the basement complex.

Here we made a great mistake, and instead of continuing our easterly course, we allowed ourselves to be deflected south by our advisers who, after the manner of African guides, assured us of the insuperable difficulties along the direction we wished to take. Making our way as directed, we traversed broken country, where we found ourselves back again on the basalt and volcanic tuffs. The presence of water in a rock pool induced us to stop there for the night and make an extra early start next morning. This we did, and stumbling over boulder-strewn country, made a circuitous course to Gaikali. Here we had our first view of the Suguta Valley, which was shimmering in the heat and mirages of the midday sun. Rather late in the afternoon we started on the descent, and as we got down, so we began to see the southern slopes of the natural barrier which dams the Suguta Valley. They were covered with volcanic cones in all stages of disintegration. One of the party said: "That looks just like the moon through a telescope." He described it well, and very beautiful and striking the scene was as it lay bathed in the light of the setting sun. One detached mass, standing like an island in the golden sands of the Suguta, immediately arrested our attention, for we thought it must be the volcano of which we were in search. Closer examination through glasses proved this to be improbable. The horizontally stratified brown and yellow tuff of which it was composed had, under the agency of denudation, been so modelled as to impart to it the appearance of a gigantic Gothic pile. We therefore dubbed it the Cathedral Rock. Darkness fell upon us before we had reached the bottom, and as a report was brought in that the camels carrying the water were too exhausted to proceed further, we camped on the spot.

The next morning, an hour's march brought us to Nadikum, where was a little spring of fresh water under some dom palms, which seemed to be the sole representatives of the vegetable kingdom in these parts. Between us and the Cathedral Rock extended a sea of mud and water inhabited, as far as I could ascertain, exclusively by flamingo. The wrack at the edge, representing a high water mark, was composed largely of their quills, as well as the skeletons and bones of a fish, which Mr. Dent has kindly identified for me as *Tilapia nilotica*. An attempt to cross this quagmire nearly ended disastrously. A specimen of the black slime, which underlay a yellow brown scum, contained such a high percentage of soda that it was found to have corroded through the tobacco tin in which it was placed, before the end of the trip. Baker Beall decided to strike off northwards over the barrier whilst the Doctor and I preferred to make an examination of the southern slopes of the barrier. We first of all skirted along the northern edge of the swamp, where we came on numerous hot springs, until, under the shadow of a high cliff over which hung a cascade of black lava, we found the spot where the Suguta disappears underground. Whether it hereafter pursues an underground course to Lake Rudolf or not I am unable to say, nor did I ever find any evidence of it coming to the surface again.

The black lava we found to be an olivine limbergitic basalt of very recent origin. It rested on the rocks which composed the barrier. They had the appearance of *Trachytes* and *Andesites* of intermediate age.

We pitched camp, and after tea walked up the slopes of the barrier in the hope of being able to ascertain the origin of this field of black lava. We had not proceeded far before we saw, perched high up on the slopes, a cone-shaped heap of yellow and black cinders. It was too far off to reach that evening, so we decided to tackle it the next day. It proved further than we thought, and several big detours had to be made to avoid deep and precipitous gullies. As we approached our objective, we noticed the bare hard ground began to be sprinkled more and more thickly with black lapilli. Interspersed were volcanic bombs, from a hen's egg to a football in size, lumps of molten rock ejected with violence and flung some 1,000 yards or more from the crater. It was lying as if it had but recently fallen and not blown into heaps into protected places, and on examination proved to be sharp and angular. It first made its appearance about one mile from the cone, and became thicker as we approached. Eventually a lava flow about 300 yards wide separated us from the base of the cone. This was very jagged and rough with numerous spiracles and steam holes, quite unweathered and without the least trace of vegetation. On gaining the other side we found the lip of the cone about 150 feet above us. The crater was elliptical with its longer axis oriented north

and south, and contained two if not three distinct vents. Detrital material had, however, fallen back from the inner walls in sufficient quantities to choke the throats. There was no thermal activity beyond a slight sense of heat, a few sulphur fumaroles, from which fumes may still have been issuing, and a number of steam vents dotted about the country side. At the S.-W. edge of the crater lip a large breach had occurred and from this had issued the black lava, which had poured over an area estimated at between 12 and 15 square miles, lying to the south and south-east of the cone. The inner walls of the crater were hung with chocolate coloured stalactites of clinker. To the north lay another crater which had been completely shattered, evidently by an explosion. It was situated a little too far away, and had evidently been of too large proportions, to be correctly termed a parasitic cone. A mile north of this and we found ourselves standing on the edge of a large crater, perhaps a mile across. It was obviously very much older than those we had just left. The inner walls were precipitous and in the form of a circle, slightly breached on the southern side. The floor was 200 to 300 feet below the lip, flat, and with a thin covering of scrub. From this point we had an excellent, if somewhat distant, view of the geyser at Lokippi, nestling under the Samburu Escarpment.

We returned to camp in the evening, quite convinced we had rediscovered Teleki's Volcano.* The next morning Baker Beall came back, having reached the lake shore the evening of the day he set out. The next he spent exploring and had met Turkana, who supplied him with some fish and stories of the past. He gave a wonderful description of the lava flows along that rugged shore and of a big cone which stood on the end of a peninsular of lava running out into the lake. He did not think, however, that it was of recent origin and therefore could not be the volcano Count Teleki had found in eruption. In fact he had not spotted the real volcano any more than Cavendish had thirty-four years before, and for the same reason, which will be explained later. His photographs, when developed, proved beyond all doubt the relative antiquity of the cinder cone he had seen.

A month or two later I managed to get the loan of a copy of Von Hohnel's work, and from the description contained therein was convinced that neither the cone described by Baker-Beall nor the one examined by Robertson and myself could be the volcano which Teleki discovered in eruption in 1888: evidently Baker Beall had overlooked it, or, as Cavendish had reported, it had been wiped off the map. A few months later Baker Beall and Kennaway set off again in search of the elusive volcano. They travelled down the Suguta and visited the Lokippi Geyser, from which at regular intervals so vast a volume of

* From subsequent reading, I feel sure that it was the one discovered by Cavendish and called Andrew Volcano after his companion.

boiling water surges to the surface, that it gives quite a new lease of life to the river, which at that point had almost ceased to flow.

They then proceeded over the barrier, and Kennaway soon spotted the volcano and was, as far as I know, the first European to reach the lip of the crater. An injured foot prevented his companion from accompanying him. He returned with some excellent photographs and a detailed plane-table sketch, not only of the immediate area but also of the Suguta to the south, and that intricate country along the south-west coast line of the lake.

It was not till August of last year, however, that I could spare the time to visit such distant parts again. This time, providing myself with a theodolite and a plane table, I was able, by an extension of the Kenya Triangulation, to fix with sufficient accuracy a few major points in the vicinity on which to tie the plane table sketch accompanying this article. The whole may be subjected later to some adjustments for longitude and latitude. I refused to be deterred from following the direction I wished—for I was sure it was more the Turkana fear of the devils which haunted this land of fire and smoke, than the difficulties of the route, which had prompted them a year before to lead us off to the Suguta in the hopes that we should be contented with a view of the less evil-omened geyser.

Leaving my camels behind in the Kerio, I made my way across the Loriyu Plateau with four donkeys and a mule, and by five o'clock next evening was standing on the eastern edge of the Plateau, evidently at the very spot at which Teleki had forced his way up by a path so steep and rocky, that the donkey carrying his pet monkey, Hamus, had lost his footing and fallen over the side. We, too, had a rough descent, man-handling the loads and pushing, pulling, and belabouring the unwilling beasts. From the brink of this precipice a truly wonderful panorama of African landscape is unfolded. It was evening, and the sloping rays of the sun projected a deep shadow half way across the silent surface of the lake, which lay 2,000 feet below. From the opposite shore and out of a plain of lava, volcanic mountains rose in tiers, cliffs and plateaux characteristic of the greatest physical feature of the continent, to a distant horizon where the double peak of Kulal pierced the deep blue sky, the remnants of a once mighty volcano. A sandy beach below curved round to the southern shore, deeply indented with capes, bays, and promontories, and on the end of one was perched, like a gigantic mole hill, with all its symmetry of contour, the cone Baker Beall had described so well. Other cones of lesser size and perfection of shape seemed to pierce this dark field of lava, thrown like a black mantle over the lower slopes of the barrier. A high water mark was clearly visible at what appeared to be a uniform height on several of these cones, and from a rough calculation appeared to be about 250 feet above the present water level. To the

right, just as the northern slopes of the barrier begin to steepen, two round black hills, back-grounded by the lower slopes of Mt. Nyeru, were just discernible. The top of one I could see through the glasses was coloured red, yellow, and green, and I could make out a small but very well-formed crater. This surely could be none other than Teleki's Volcano, and so it proved to be. But for the strong sunlight behind me I also might have overlooked it, as Cavendish and Baker Beall had done.

After passing the night on a rocky ledge half way down, the descent was continued next morning to about 300 feet above the lake, where the remains of a raised beach were found, but in spite of as thorough a search as time permitted, no trace of fossil remains were seen. Just before reaching the foot, the junction with the basement complex was again encountered, and looking northwards along the cliffs I could very plainly see the characteristic moulding of the Gneisses and Schists, extending eventually almost up to the top of the Escarpment. North of the mouth of the Mugurr River the dip causes these beds to come to the surface, and the lava cap, which is such a characteristic feature of the Loriyu plateau, gives place to the more broken features associated with the archæan rocks.

On gaining the water's edge, men and beasts slaked their thirst, and we followed along the grey sandy beach which I had observed from above, to the mouth of the Neangoil River. A solitary Grant's Gazelle scurried away on our approach, but bird-life was more abundant. A Goliath Heron was making his breakfast off a huge Tilapia, which an hour later found its way to my table; two pairs of lesser black-backed gulls, a pair of Egyptian geese, a pelican, and an egret or two were seen. Stint, sandpipers, curlews, plovers, etc., so common on the sandy shores of the lake elsewhere, were entirely absent. The sand was composed of a mixture of volcanic and crystalline grains and the water's edge was here and there tinged with a delicate mauve, due to the presence of large numbers of minute shells, which I have not yet identified. The river has cut a deep channel into the deposits which, when the lake level stood much higher, were the shoals about its mouth. They consisted of a fine white mudstone of volcanic material in which statification under current influence was very clearly visible. Beds of coarser material occurred from time to time recording the occurrence of exceptional floods. These deposits, which are probably of upper Pleistocene Age, are well exposed in the cliffs over 30 feet high, which form the banks, and may extend for a considerable depth below. With the exception of one fish vertebra no fossil remains were found. About 500 yards up from the present mouth, a lava flow has completely blocked the channel, and ends abruptly like the foot of a glacier. The lava is a compact warm grey basalt and is not of very recent origin. The lava stream evidently flowed from some fissure which I could not detect, high up on the northern slopes of the barrier.

After a midday rest in the welcome shade of some dom palms in the river bed, and a chat with some of the inhabitants whom I found to belong to the Engebelai Section of the Turkana,* I set out in the direction of Teleki's Volcano with only three natives and a pack mule. About two miles inland I struck some horizontal shelves of rock, which proved to be raised beaches in which shells were very closely packed together. The beaches were about 250 feet, by the aneroid, above the lake level. For an hour or more our way lay through typically volcanic country, across lava flows of various ages and in different stages of weathering; vertical walls often marked their edges. A local Turkana guided me for the first two miles, then showing me the best direction, gave me his blessing and departed. I had, therefore, to find my way as best I could, and about 5 p.m. we found ourselves at the northern foot of a large round hill, which was rent in two, and appeared to consist of concentric layers of red clinker, and from a fissure at the base had recently issued a large volume of ropy lava, which, as far as I could see, extended to the lake shore. We experienced some difficulty in crossing this. On the other side the ground was covered in a thick layer of grey cinders, which crunched crisply under the feet. There were a few leafless trees, which appeared to be quite dead, and an occasional tuft of coarse straw-like grass. The volcano was now about a mile to the east and I hastened to take a photograph before the sun was quite off it.

Rising with the first signs of light, I awoke my recumbent companions, two of whom protested that the devil had entered their bones so that they could even stand up. So, with only my Bugisho garden boy carrying the survey instruments, and hung about with the other impedimenta, I set out towards the volcano. At the foot a stream of very recent lava, some 80 yards wide, lay across the path, and after crossing this, which I found to consist of black limbergitic basalt with small crystals of olivine, the ascent of the cinder cone commenced. Four open pipes were met with about half way up. These varied from 3 to 6 feet in diameter. Viewed from above they suggested the inside of a factory chimney. They had formed neither cone nor crater and appeared to be bottomless.

A V-shaped gap seemed to indicate an easy line of ascent, and here I noticed signs of vegetation in the form of a bush with a delicate cream-coloured flower, kindly identified by Miss Napier as *Caparis galeata*, and which is to be found growing amongst the coral rag cliffs on Mombasa Island. I soon gained the summit, which consisted of a light chocolate and ochre coloured clinker, the colour being due, I think, to the sublimation of mineral gases, probably ferric chloride and sulphuretted hydrogen. A number of grey volcanic bombs lay around, but

* They stated that the Samburu no longer live on the lake shore. These Turkana keep a few goats, but live mostly on fish and dom palm nuts.

they were neither as big nor as numerous as those round the Likaiyu Crater. The position was soon fixed, and the altitude found to be 2,120 feet above sea level and 890 feet above lake level, which I have accepted at 1,230 feet. The volcano itself stood approximately 200 feet above the normal level of the ground on the south side, and 300 feet on the north side, or lake side. From this position I noticed that I was standing between two V-shaped rents* two hundred yards in length and perhaps 60 feet in depth. Their longer axes were oriented approximately north and south. The outer edge of the eastern one had the appearance of the lip of a crater, but the outer edge of the western one was very broken. In fact the whole area occupying the summit of the hill reminded me of nothing so much as the more devastated portions of the battlefields of France. The inner walls were lined with chocolate-red clinker. The outer slopes were of grey cinders which slipped away from under the feet as one walked. The whole was elliptical in shape. I paused a while to look at the view which lay before me. Far away to the north could be seen the faint outline of South Island† set in a wide expanse of deep blue water. On the foreshore some five miles away at the end of a stream of lava which seemed to issue from under my feet, stood the cone of Nabuyatom which in Turkana means "Place of the war horn," from here as elsewhere a conspicuous feature of the landscape. On the left stood the great escarpment which I had descended two days before, and some fragmentary cones and curious boil-like hills lay scattered like islands in a sea of rugged rusty-looking black lava. To the north-west, and not 500 yards away, was a most curious phenomenon: a large mound covered with a thick coating of fine jet black volcanic dust. It seemed to me that there was a slight depression on the top. Its summit was apparently 100 feet lower than the spot on which I stood. This volcanic dust not only completely covered the mound but extended for about a mile beyond, with an average breadth of about 800 yards, and effectively smothered all the minor surface features like a carpet of black velvet. The wind had evidently been from the S.-E. when Teleki's Volcano had shot dust into the air. Far away to the north-west was Kulal, the home of the Rendili, whilst nearer were the eastern walls of the Rift standing back a little from the shore and gradually merging into the foot hills of Mt. Nyeru; behind, the steep slopes of the barrier, rising to some 3,000 feet or more, afforded a near horizon, shutting out any distant view in this direction. Here, however, lay a point of great interest, for in a small

* The name of the volcano in Turkana is Nagira-Mwaiten, which means place that is split in two.

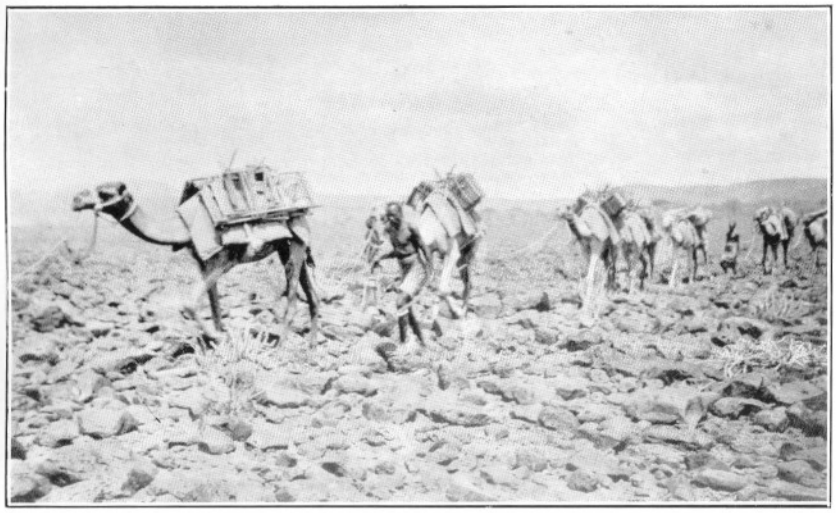
† This island might well be named on our maps Von Hohnel's Island as a small compliment to the man who first put it on the map of Africa, and by whose careful notes and observations when accompanying Count Teleki added so much to our geographical knowledge of this region.

valley at the foot of the older lavas was to be seen an orifice or fissure from which great quantities of lava had obviously welled up and flowed on both sides of the volcano. It was this flow, which was then molten, which had so hindered Teleki in his attempt to approach the volcano. One arm had followed down a valley on the eastern side of the cone, and about a mile and a half north of where I stood, opened out and formed a large lava-field which extended to the lake shore. The other, after being deflected by the large black mound described above, opened out into two pear-shaped fields about a mile in width and perhaps two miles in length, and did not, as far as I could see, extend as far as the lake-shore. The former flow was crossed about a mile to the north by a light grey stream of lava, obviously of still more recent date. From my position I was unable to determine the point from which this last flow issued. Whilst looking through the glasses for Count Teleki's Camp at Lotarr, I could see a number of lagoons which suggested a group of submerged craters, and the idea has since struck me that a slight rise in the lake level about thirty-five years ago might have caused the water to flow into one of these and given rise to the story which the natives told to Cavendish.

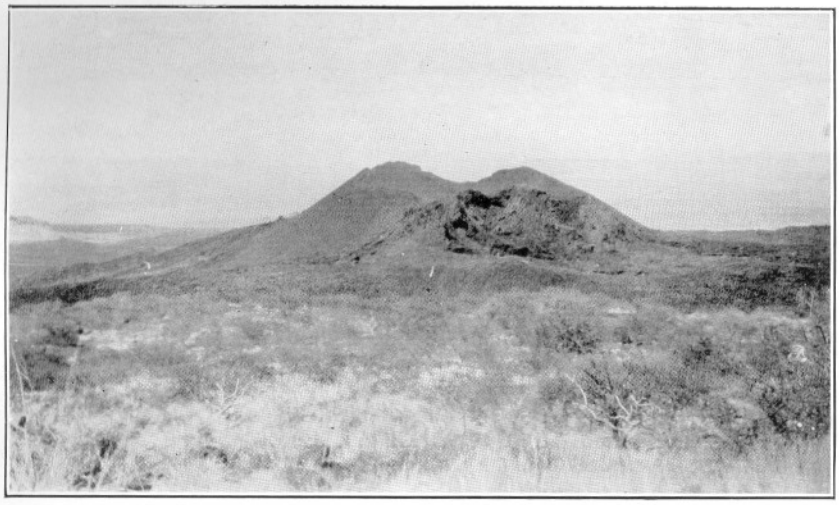
I then made my way round the eastern crest and striking some deep and unpleasantly broad crevasses on the northern cinder slopes, decided not to continue my attempts from this side to approach what I could see was a well-formed crater, but to work down the forward slopes on to the light grey lava stream below. This I succeeded in doing and found the flow to rest directly on the grey cinders. The edges stood up in a wall from 4 to 8 feet in height and were rugged black and highly vesicular. The centre was grey in colour, very ropy, and with a texture rather similar to thin glue. It splintered under foot, and one had to proceed with caution, as huge steam cavities, some exploded and exhibiting great yawning chasms, others intact like gigantic bubbles, were of very common occurrence. These chasms were armed with the most formidable looking spiracles of jagged lava capable of inflicting the most unpleasant wounds on those unfortunate enough to fall in. As one stood in that complete silence one could hear the crackling of the lava all around. My companion was too terrified to pose in one of the steam holes which I wished to photograph. Following up this flow to its source it was found to emanate from a basal fissure on the N.-W. side of the cinder cone and not from the crater, on the lip of which I found myself standing a few minutes later. This I reckoned to be 120 feet from lip to lip with an inner wall of loose material standing at the natural angle, and at the bottom of this perfectly circular basin was an open pipe about 40 feet across, and judged from stones thrown into it, apparently bottomless. The sides of the pipe, as is seen from the accompanying photograph, are hung with red clinker with almost stalactitic structure and have been worn

smooth by the passage of the material blown up through the pipe. I formed the opinion that it was from this pipe that most of the dust, cinders, and clinker which lay around had been ejected and possibly the bombs, whilst the magma which forms the vast majority of the ejected material of which these extensive lava-fields are composed, would appear to have welled up with little or no violence from the two orifices which I had just seen, and that the one I had just examined must have opened and exuded lava since Count Teleki's visit. Working southwards I passed two more pipes of smaller dimensions but of exactly similar structure. Here I joined up with my tracks of the early morning and so completed the tour of the volcano. From most of these pipes, though fumes, possibly of carbon dioxide and sulphuretted hydrogen at a high temperature, were issuing, on the occasion of my visit they caused no inconvenience. I saw no sign of either smoke or steam. The discomfort, however, which I experienced during the latter part of the morning could not, I feel sure, have been due entirely to the heat of the sun. The rapid accumulation of geological specimens and their weight, added to the other impedimenta which I was carrying, may, of course, have led me to be mistaken in this. The camp at the Neangoil River was reached that evening in time for a refreshing bathe, and it was with a feeling of the utmost relief that the Turkana the next day ascended by Teleki's cliff path on to the Loriyu Plateau, where the appearance of a lonely camel carrying fresh water from the Kerio was hailed with great joy. The alkaline water of the lake, though at first not too unpalatable, soon becomes most nauseating, and is especially disagreeable when served with tea.

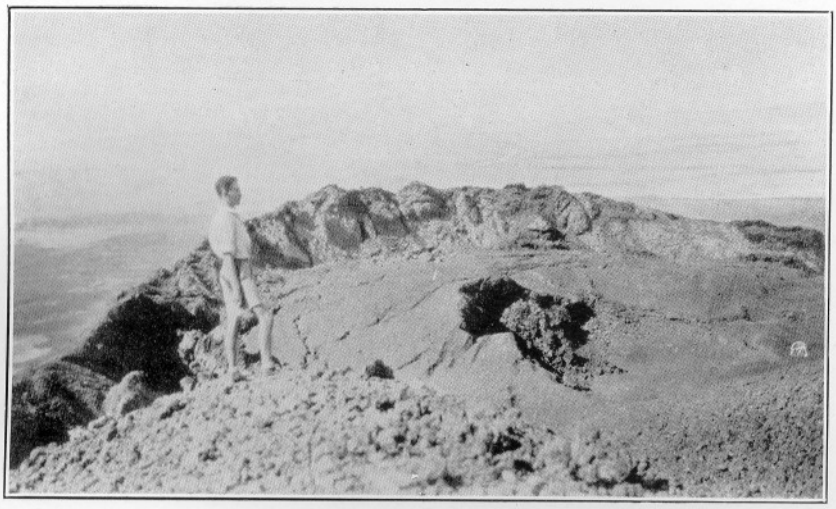
I do not propose to dwell at any length upon the extremely interesting physiographical theories which are prompted by travel in these regions. A glance at the map, however, suffices to suggest that the deeply sunken trough in the Great Rift Valley, which it represents, may once have been covered by a single sheet of water and that south of Von Hohnel's Island there existed yet another island or group of islands where the barrier is now situated. There is no reason to suppose that such islands were different in origin from those now found in the lake, and may have consisted of one big island-crater a mile or more across. From this gigantic opening in the crust of the earth, enormous masses of molten rock were ejected, and spreading east and west, formed the barrier now separating the Suguta Valley from Lake Rudolf. The more recent origin of the Trachytic lavas and Andesites, of which it is composed, and the existence of the very big crater in the middle, lend support to this theory. Zoological evidence in the form of the presence of *Tilapia nilotica*, a fish believed to be foreign to other Kenya lakes, in the Suguta Swamp, as well as Lake Rudolf, would seem almost to confirm it. An examination of



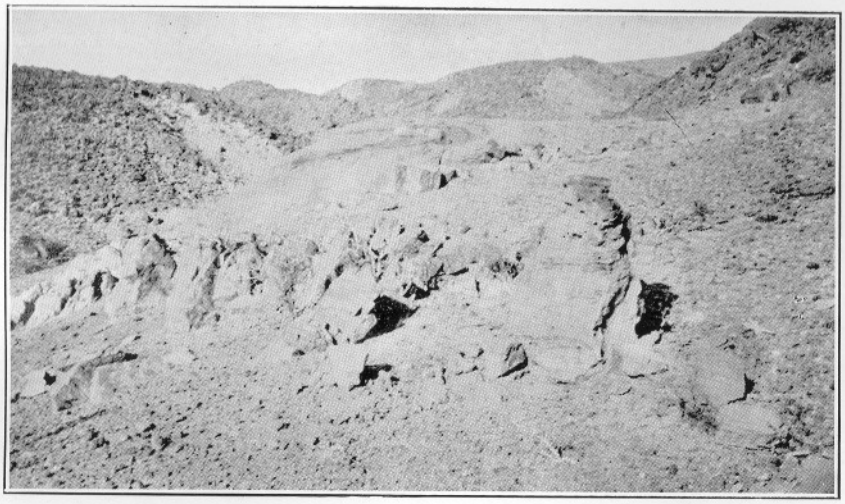
Traversing the Lorigu Plateau.



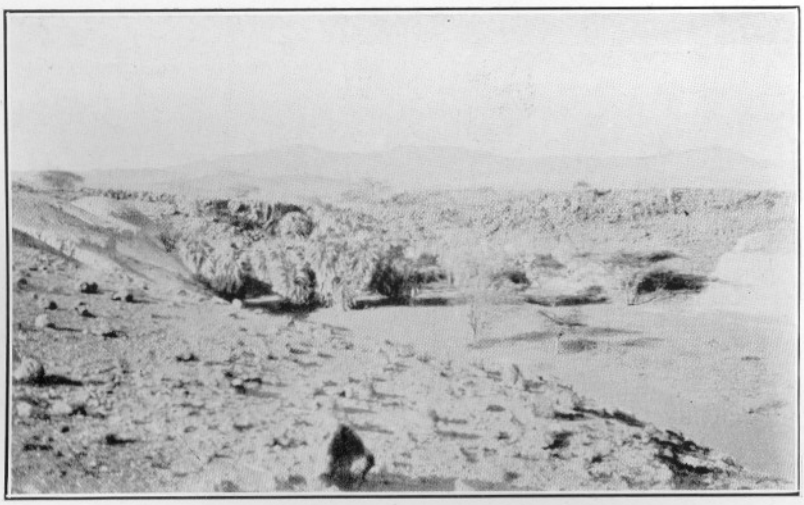
The Likaiyu or Andrew Volcano with the shattered cone in front and the Suguta Valley in the distance.



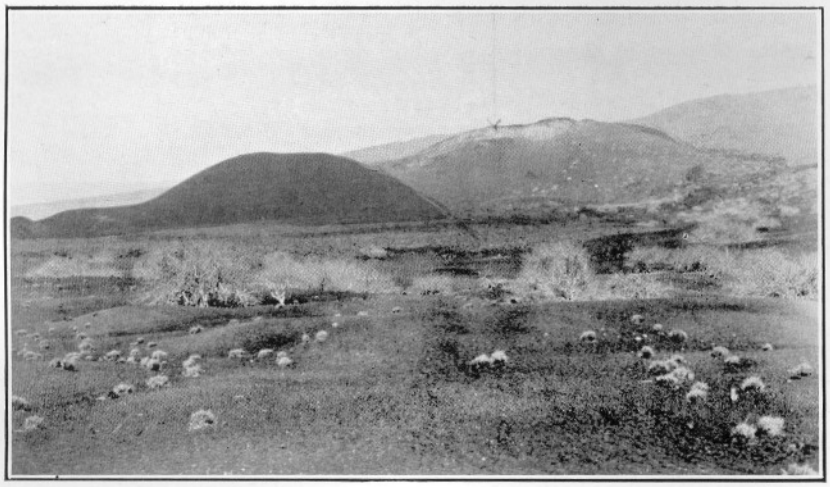
On the lip of the Likaiyu Crater. Lava field in middle and Suguta River in far distance.



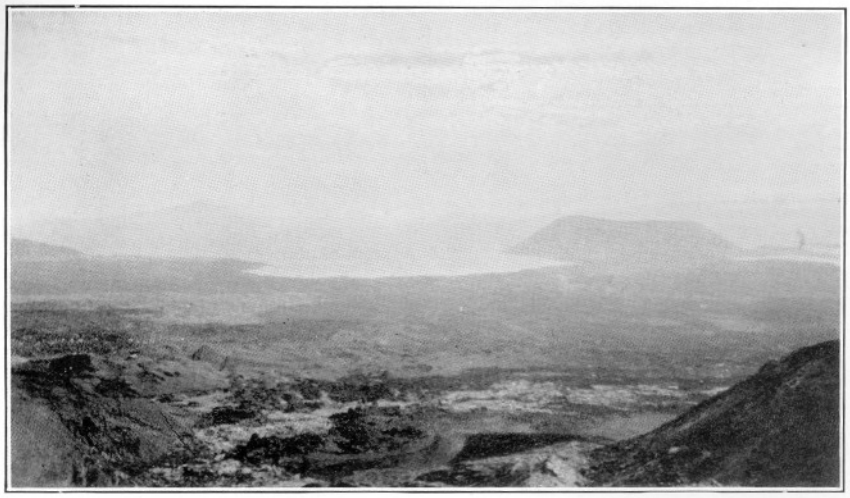
The raised beach 310 fet above present Lake level on the escarpment bordering the S.W. side of Lake Rudolf.



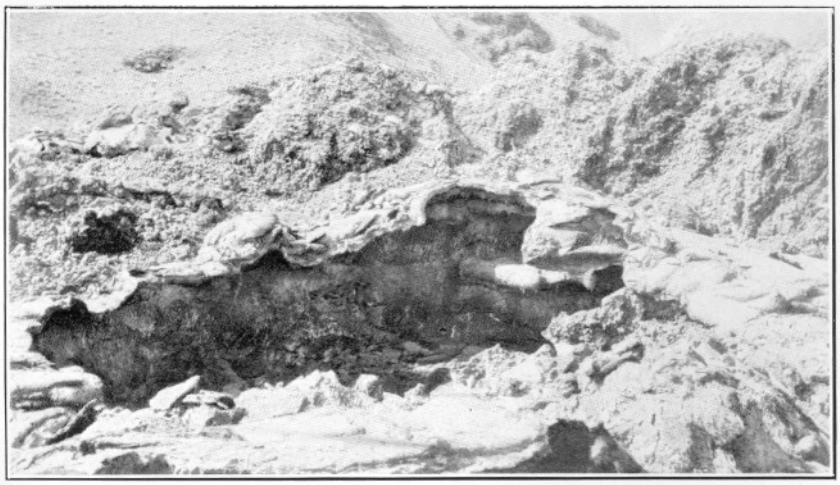
The lava flow blocking the channel of the Neangoil River.



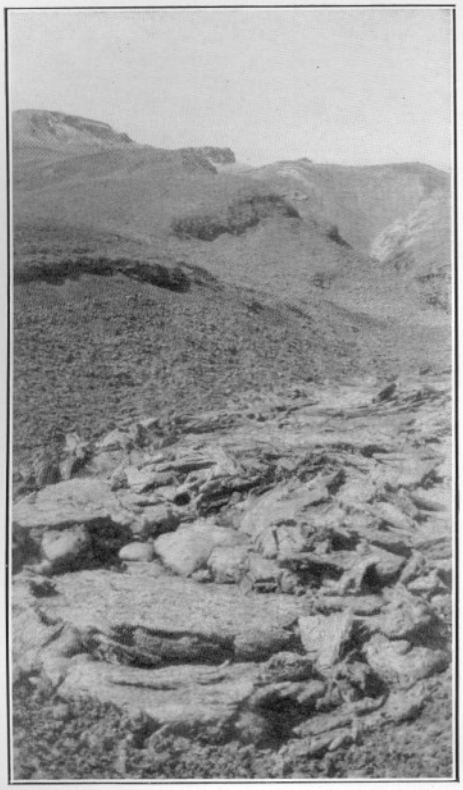
The Teleki Volcano from the west. Main crater marked by arrow.
The dust-covered hill to the left. Foreground grey cinders.



View from the summit of Teleki's Volcano. The most recent lava flow showing light in foreground, Nabuyalom in middle, and Von Hohnel's Isle in far distance.



An exposed steam hole in the most recent lava flow.



The most recent flow of lava, with Teleki's Volcano in the distance, showing the double rent down the centre of the summit and the crater on the right.

The pipe or throat of the main crater of Teleki's Volcano. Note how the opposite side is polished by the passage of ejecta. The portion out of focus in the foreground is the tip of the crater.

the volcanic rocks on the Samburu side would be enlightening: in fact, one may assume that further evidence only awaits discovery.

The Teleki and Likaiyu Volcanoes are perhaps but the dying remnants of an activity greater than any now existing in this region or elsewhere, but of which we have unmistakable proofs in many of the older mountain masses of Kenya. It would, however, be injudicious to assume that they are now extinct.

It is possible that activity has been prolonged by the continued sinking of the floor of the Rift Valley (e.g. the displacement along a line twenty miles in length from Solai to Baringo during the earthquake in 1928), causing a pressure on the magma below. This, as we have seen from an examination of the lava fields, has a high steam content owing perhaps to the percolation of lake water, which in contact with the internal heat of the earth and molten rock, renders the magma below particularly explosive. The superficial evidences of this power have been described as throwing bombs, cinder, and dust to a considerable height into the air. This relief is effected from time to time at points of weakness or least resistance in the earth's crust. These occur naturally along the tectonic lines of the Rift Valley and the orientation of these and other centres of present and past activity in relation to its general trend is very conspicuous. It is certainly no cause for surprise, for throughout Kenya volcanic piles such as Menengai, Longonot, and Ol Doinyo Nyuki (Suswa) are to be found on the floor of the Great Rift, and more often than not in close association with large expanses of water.