J. A. Emmer jr. -

Vol. II.

CHAPTER VI

IN THE VOLCANIC REGION

THE Virunga volcanic group rises up like a mighty barrier 4,500 metres above sea-level, from the bottom of the great Central African rift-valley, that vast depression which stretches from the southern end of Lake Tanganjika over Lakes Kiwu and Albert Edward to Albert Nyanza. There are eight gigantic volcanoes, or earth upheavals, which bear testimony to the mighty subterranean forces concealed in the womb of the earth. Dauntlessly their colossal forms tower up to the skies, and not infrequently one sees the dazzling snow on their highest peaks gleaming under a tropical sun.

The summit line of the volcanoes forms the natural northern boundary of the German province of Ruanda, and it is to be hoped that before long, and definitely, it will also mark the political boundary between this part of German East Africa and the neighbouring Congo State. German enterprise and German exploration work have opened it up to the civilised world. It was for the sake of the Virunga volcanoes that Count Götzen undertook his expedition right across Africa in 1893, and this journey led, as mentioned in the previous chapter, to the discovery of Lake Kiwu, and also brought us the first accurate information concerning the volcanic area in its northern section. Our knowledge of this part of the country has since been increased and supplemented by the work of the German Congo Boundary Expedition (in which undertaking Captain Herrmann represented Germany's interests), by Dr. Kandt's meritorious exploring work, and by the journeys of investigation made by German officers like Bethe, von Beringe, von Parisch, and others.

Yet the Virunga volcanic region still remained a *terra incognita* in many respects, and it was not possible that it should be otherwise. The animal and plant world, and more especially the geological conditions, concealed many problems not yet solved. And thus a great deal of work had been left here for our expedition to accomplish. We now set ourselves to attempt a solution of these open questions, by thorough expert investigation and systematic work.

I must decline in this place to handle exhaustively the subject of the results of our explorations in the volcanic territory. They may be left for discussion in scientific treatises. The chief object of the following pages is to present to the reader in broad and general outlines an intelligible picture of the volcanoes and of their neighbouring territory round Lake Kiwu, and to afford him an impression, if only a fleeting one, of the mysterious sway exercised by the subterranean powers visible in the great Central Africa rift-valley, without doubt one of the most stupendous excavations in the earth's surface that is known.

A glance at the map shows that the Virunga volcanoes may be separated into three clearly distinct groups: a western, a middle, and an eastern group. The western group, by far the most interesting, is the scene of the most recent volcanic outbreaks, and comprises Mounts Namlagira and Ninagongo, which are still active. The eastern and central groups, on the contrary, are each composed of three extinct volcanoes. The middle group contains Mikeno, Karissimbi and Wissoke; whilst the eastern one is composed of three volcanic cones, Sabinjo, Mgahinga and Muhawura, the last of which is visible in clear weather as the most eastern extremity of the Virunga, and can be seen as far away as Karagwe and Ankole.

The nearest volcano to Kissenji is Ninagongo, the base of which may be reached in a three-hours' march. The way thither is not particularly charming, as it winds through an unbroken line of fields. At the foot of the mountain their number was still so large that we had trouble in finding a free spot in which to pitch our tents. But Kissubi, the black guide, who attached

AT THE FOOT OF MOUNT NINAGONGO

VIRGIN BUSH FOREST IN AN OLD CRATER

NINAGONGO SEEN FROM MIKENO AT A HEIGHT OF 2,000 METRES

himself to us, knew his business and conducted us to a spot where other tents had stood before ours. Since the first ascent of Ninagongo by Count Götzen in the year 1894, Kissubi's services have often been requisitioned. The proximity of the military post of Kissenji on German, and of Ngoma and Bobandana on Congolese, territory has brought about a relatively frequent ascent of the mountain.

The principal peak soars up in strong relief against the cloudless heavens, blunted at the top and typically conical in character, and is flanked on the north and south by lower-lying craters. Whilst the northern and southern craters have long been extinct, and are wooded to the top, the main middle cone gives unmistakable appearance of activity. The vegetation does not reach quite up to the summit, while beyond is barren lava and ashes, which in the course of time has developed into calcareous tufa.

The ascent was carried out with a limited number of carriers only. The little caravan toiled slowly along the narrow paths and through a growth of vegetation, which Captain Herrmann has termed virgin bush forest. It consists of a thicket of shrubs and trees of medium height, and is in places almost impenetrable. The lower part is dominated by a growth of even-branched acanthus bushes, about six metres in height, bearing large, soft leaves, belonging, perhaps, to the genus *Mellera*. Further up Mildbraed observed a small bush-like *dracæna* appear very frequently. Great trees with tall trunks grew isolated here and there.

After passing the forest we reached a region of cammock. A mass of bushes and shrubs, hardly the height of a man, with rod-shaped branches, grow crowded together. The very uniform style of this rod-like growth creates a somewhat monotonous impression, in spite of the wealth of species met with. It is worthy of mention, as Mildbraed points out, that here the heaths do not play so important a part as usual in African brushwood. On the lower line of the region *Erica arborea* are found, and on the upper *Philippia Johnstonii*; but the greater portion of the

vegetation consists of senecio and conyza species, with grey-green foliage. The bushy *helichrysum*, with yellow-white and silvery pink immortelle blossoms, adorned the entire formation in profusion. In places where the bush grows less densely a lot of low shrubs have sprung up, which belong in part to species often met with at home: small blackberry bushes, clover, violets, and the umbella, *Sanicula europæa*. Then there are several genuses of common orchids reminiscent of species found in our meadows.

Above the brushwood, which is representative of the sub-alpine region, come the "alpine" growths, with the most noted and characteristic plant of the East African Alps, the arborescent *Senecio Johnstonii*. Yet the specimens on the Ninagongo cone do not attain large dimensions, the better trees being found singly only lower down. They are strange growths. Imagine a stem about twenty centimetres in diameter, repeatedly bisected and trisected so as to form a crown built up candelabra fashion, and place at the ends of the heavy branches bunches of luxuriant, fresh-green, shaggy-haired tobacco-like leaves, the older of which hang down brown and withered. Then picture to yourself great pyramid-shaped panicles of yellow blossom-heads about a metre in height, and resembling somewhat the *Senecio paluster*, growing out of the clusters of leaves, and you may, perhaps, gain some idea of these senecio trees, which attain a height of six metres. On the Ninagongo cone these trees are only some two metres high, and decrease in stature as the summit is approached. A small kind of everlasting *Helichrysum Newii* and a beautiful ground-orchid, with dark rose-red blossoms, grow fairly high up. The lava in the upper part of the crater cone is as hard as iron, and has nothing but mosses, liver-wort and lichens to offer amongst its rifts and fissures.

The most characteristic point, according to Mildbraed, about the Ninagongo vegetation lies in the fact that all the formations are still in a state of development. The virgin underwood is still young, and will, some time or other, doubtless be supplanted by bambubaceous and other foliaged trees. The *ericaceæ*

CLOUD FORMATION ON THE SUMMIT OF NINAGONGO

may, perhaps, later oust the smaller senecio and conyzeæ species, whilst the *Senecio Johnstonii* may spread over the whole cone up to its summit. Later on the larger stalked lobelia may make its appearance.

After a toilsome ascent of three hours' duration, we set up camp about 500 metres below the peak, in the saddle between the middle and the south crater. We were surrounded by a dense mist, which obscured our view of the summits. We had hardly fixed the last tent when a storm broke over our heads, accompanied by a tremendous shower of hail, which quickly transformed the aspect of the scene into one of winter. The temperature sank correspondingly rapidly, and the cold was so severe that the poor carriers crowded into the cover of the tents for protection against it. Then the heavens suddenly cleared, and the summit of the volcano stood out in splendid relief, like a dark silhouette against the passing clouds. We had profited by our rest to make a scanty meal, and at once set about attempting the ascent to the summit. The slope rises at an angle of 35 degrees, and the climb was rendered exceedingly arduous in consequence of the slight foothold afforded by the stony ground. Moreover, the unaccustomed rarity of the air made itself oppressively felt, so that one was compelled to stop still nearly every hundred paces and breathe heavily, whilst one's heart beat audibly. Had we conceived any idea of the picture awaiting us, however, we would have hurried more. For in a few moments we were gazing down speechless into a colossal arena indescribable in its grandeur.

The flattened summit of Ninagongo is almost entirely occupied by a mighty and nearly circular eruptive area, the Count Götzen crater. I christened it thus in honour of its intrepid discoverer. The inner walls fall away steep below and terminate in an almost level lava bottom, in the centre of which two steep-walled eruptive shafts have been blasted out; these lie in juxta-position, giving the appearance of a very large and somewhat flattened figure 8. The measurements taken by Lieutenant Weiss will best give an idea of the enormous dimensions of the Count

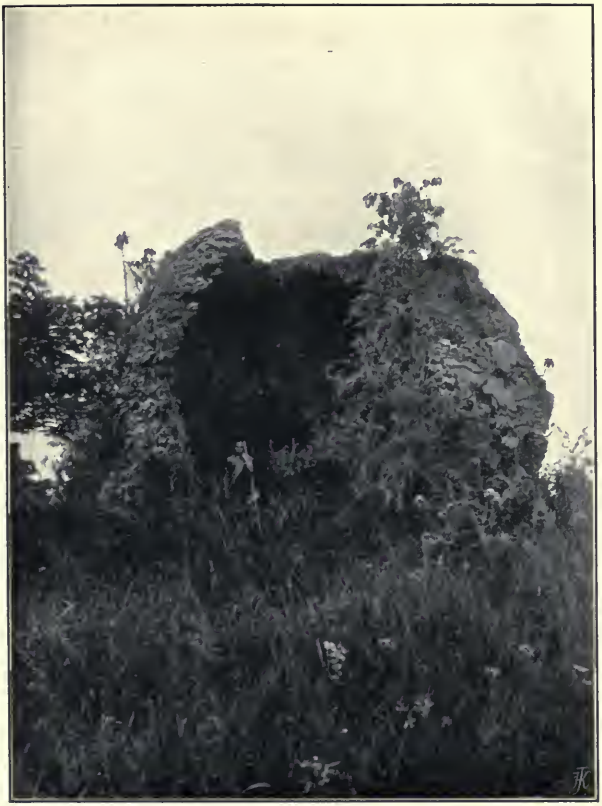
Götzen crater. According to these, the diameter measures 1,251 metres, the depth 155 metres, and the diameter of the two eruptive shafts 336 and 459 metres respectively. The spectacle presented by this gigantic crater is simply stupendous.

In Count Götzen's time, in 1894, Ninagongo was still in full activity, evidences of which were observable up to the year 1906. At the time of our visit the two shafts were perfectly quiet and peaceful. The numerous clefts and fissures on the floor of the crater, from which steam escaped, alone reminded one of the volcanic powers slumbering in the depths below. These may awaken to action any day, for, in Kirschstein's judgment, the apparent calm of the mountain in no way justifies the assumption that Ninagongo is to be counted amongst the extinct volcanoes.

The mountain is held by the natives to be "*wasimu*" (bewitched), and their legend has it that any who ascend it must perish. Only very few of the enlightened natives believe otherwise. Our Kissubi preferred to avoid risking the anger of the spirit of the mountain, and remained behind in camp. It was only later, when Kirschstein made the ascent, that he reluctantly decided to accompany him to the crater's edge. Yet Kirschstein was still to experience how far justified were the honest fellow's dread. He himself writes:

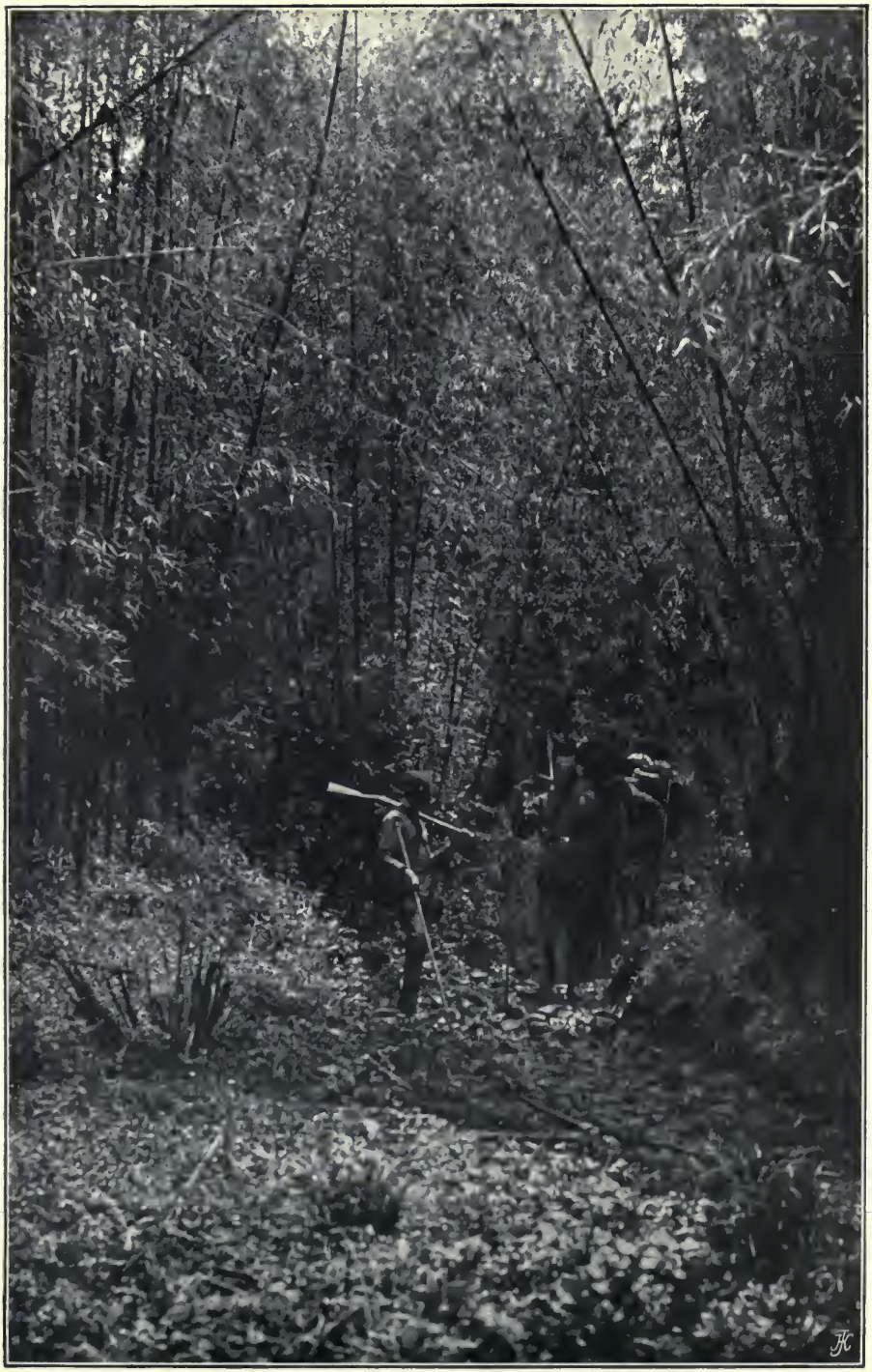
". . . Anyhow, I have quite spoilt things with Kissubi. My amiable Ninagongo companion, Dr. Breuer, of Usumbura, must bear the blame, as it was he who inveigled me into firing off my gun, as he did himself, to test the remarkable echoes. It was in vain that Kissubi warned us that we would awaken the mountain spirit's vengeance. We laughed at him and his mountain goblins. A few weeks later I suffered the loss of half my caravan whilst ascending Karissimbi in a snow-storm. That, said my black carriers, was Ninagongo's vengeance. . . ."

The echo of a shot fired breaks—as I have myself experienced—a thousandfold against the rocks, and it appears as if the sound were raging round and round the crater walls incessantly, unable to discover a way out. No wonder, then, that the spirit of the mountain waxes wrathful. His name is Gongo. He is the chief



SLAG "CHIMNEY" IN A LAVA FIELD, SOUTH OF NINAGONGO

BANANA LEAVES FOR CATCHING RAIN-WATER, NINAGONGO



IN THE VIRGIN BAMBOO FOREST

of all the spirits; the souls of all the dead go to him, and he allots them a permanent dwelling in the volcanoes. With Gongo live also the spirit Liangombe, his mother (Nina Liangombe), his father (Bawinga), and his grandfather (Njundo). Liangombe controls the souls of those who have wrought evil; he binds them and beats them. Namlagira and Mikeno are the sons of Gongo. Namlagira is said to have dwelt with his brother at first, but was driven out by him because he carried fire along, and thereby annihilated the water that existed on the mountain. Namlagira is stated, also, to have been at deadly feud with his father, Gongo. For a long time an indecisive battle raged, but Namlagira succeeded at length in cutting off Gongo's head at one blow, and that accounts for the flattened top of the mountain. According to a communication made to me by Captain von Beringe, from which I quote, every one of these spirits possesses his own priest, who lives at the foot of the mountain, receives the devotees, and communicates to them the spirit's will. The captain was informed that the position of such a priest was a very lucrative one.

We had hardly returned to camp when dusk fell, and heavy rain set in. So we had to make the slippery descent on the following morning with a temperature of only eight degrees. The peaks of Karissimbi and Mikeno, however, rose up resplendent through the veil of mist that hung over the valley and stood out in strong relief against the blood-red rays of the rising sun, gleaming and glistening in the newly-fallen snow.

At the beginning of September, Raven, Wiese and I, who had been joined by Grawert and Knecht, set out for the extensive district lying in front of the southern volcanoes, which is connected with them geologically.

On the next day, following a winding path, we reached the bamboo forests. Roaming for the first time in these forests has a peculiar charm of its own for a new-comer. These immense grasses which throw up their stalks, as thick as one's arm, to a height of seventeen metres, and which differ so utterly from our own vegetation, create such a strange impression that, at first,

new to such phenomena, we hardly observed the discomforts attending our march. We became aware of them before long, however, and the charm we had at first experienced was soon dispelled. The stalks are overgrown with long lanceolate leaves almost from the roots, which thicken up so much towards the top that the sun's rays can scarcely penetrate them. The ground remains so moist and slippery, in consequence, that travelling is rendered exceedingly arduous. In fact, after heavy rain, it is hardly possible to clamber up and down the steep slopes, the soil is so soaked and slippery. The safest way of reaching the valley is to set about it in the same way as the ski-runner does when rushing down to the bottom of a slope. Supported at the back by a long alpenstock, which may be cut from any neighbouring bamboo bush, and with feet placed parallel to each other, you travel down the mountain side, on what is at best a cattle-track, with horrible celerity. Herds of long-horned Watussi cattle, with their drovers, are constantly encountered in the forests, for the young bamboo shoots form the main nourishment of the beasts. They are either driven along daily from the neighbouring village, to graze there, or they remain for months at a time in the depths of the forest, in kraals specially constructed for the purpose.

After leaving the bamboo zone, on the 8th of September, we met with a charming travelling companion in the person of Rudolf Grauer, the Austrian explorer, with whom we were destined to pass through many a joyful and sorrowful hour. His name is familiar in connection with the earliest discovery of the Ruwenzori chain of mountains. He had arrived at Bukoba a few weeks before us with the intention of reaching Lake Kiwu by a different route from the one we were intending to take. His valuable collections, which were limited at first to ornithological material, extended later to the mammals. In fact, he was successful in securing twelve gorillas, which had been captured by the natives in the marginal mountains of Lake Tanganjika.

As Grauer was also contemplating pitching camp, we marched on a little further over the jagged, difficult lava which covered

LAVA CAVES

SENECIO, ERICACEÆ, AND IMMORTELLES ON NINAGONGO

MOUNTAIN FOREST AT KAHAMA
HAGENIA IN THE FOREGROUND

the whole district, and encamped in the neighbourhood of Lake Karago, in the province of Kahama.

The lava crust on which we were advancing originated from the volcanic eruptions of comparatively earlier times, but is not so old as to have fallen into complete disintegration, as it has done in many other parts. Where this, however, has happened, the ground has been rendered exceedingly fertile through the formation of vegetable soil, and is most industriously cultivated by the natives. *Shamba* after *shamba* are to be seen in unbroken succession, on which bananas, negro millet (*mtama*), sweet potatoes, maize, peas and beans are grown. In Kahama one could clearly discern the detached lava streams and the manner in which they had once poured themselves devastatingly over the land.

Spacious caverns formed under the crust of the lava streams, and have remained to the present day. We searched around for them, and crept into some of them so as to inspect the interiors. The entrances mostly lie concealed under shrubbery, and it occasionally takes a long time to find an opening. These caves served the Wanjaruanda * not seldom as secret lurking-places. Even as late as 1906 Captain von Grawert had arrows showered upon him from the mouth of one of these caves whilst engaged on a punitive expedition in those parts in consequence of rebellious conduct. The hostile demeanour of the people has now given way to one more peaceable, and since then these cave formations have but rarely been used as entrenchments.

Having separated again from Grauer, who proceeded on his way to Lake Kiwu, we crossed a few heights and made some steep descents on our way to the old lava streams, which were visible far away. The journey was, if possible, still more difficult and disagreeable than that of the previous day, as the lava had in parts congealed in a most serrated and jagged fashion. The sharp edges and pointed ends were particularly disastrous to the carriers. Their wounds had to be treated, and this delayed the marching to such an extent that the caravan became quite

* Inhabitants of Ruanda.

broken up, and took seven hours to reach its destination, arriving in a completely exhausted condition. The position of our haven of rest, however, soon made us forget the discomforts of the forenoon, for a few paces from where the tents were pitched we discovered a mineral spring oozing in beautiful little bubbles from the earth. Only those who, for months at a time, have had to drink water of dubious character, which has to be boiled or filtered daily, or who have manufactured a more than questionable preparation with the aid of a gasogene, can form any idea of our delight on finding this crystal-clear beverage. Everyone flew to enjoy it, and we could hardly drink enough of it. At first the "boys" and carriers regarded it with rather a sceptical gaze, but after we had given it a trial they imitated our example with avidity.

As the spring was situated a very little distance away from the mission station of Ruasa we had the pleasure next day of seeing Dr. Czekanowski, who had been working there for some time and had learned of our arrival. He came by way of the heights which bound the valley in the east, accompanied by Brothers Dufays and Loupias. Soon afterwards Lieutenant Knecht also came in and joined us for the further march to Lakes Luhondo and Bolero.

We started next morning whilst it was still dusk, and as the rim of the sun's orb peeped curiously over the edge of the mountains we suddenly caught sight of the deeply indented fiords of Lake Luhondo gleaming in the early light of dawn and wrapped in a light fog.

Higher up to the north-east lies Lake Bolero united to its sister lake by a splendid cascade which tumbles down with a rushing fall over the steep mountain wall from a height of over a hundred metres. The banks of both lakes are thickly populated, and agriculture is diligently carried on in every direction. We also saw once more a great number of banana groves, a sight we had missed since leaving Kissenji.

The two lakes are of interest zoologically in the fact that no fish at all exist in the upper of the two, and only barbel an

A ROUGH WAY OVER THE LAVA

LAKE BOLERO

THE MKUNGWA CASCADE

inch or so long can be found in the lower. On the other hand clawed toads (*Xenopus spec.*) are uncommonly numerous in both lakes; they serve the people as food and are to be met with in large quantities in all the huts, packed into baskets, alive and dead. I found, too, a heap of wooden staves, about half a metre in length, between which the toads were squeezed to dry them, lying under one another, parallel, in twenties. Near by I found a busy hive of snare-basket makers fashioning pots for catching prawns. These little crayfish (a species of *caridina*) are found in large numbers in the lower lake, and the lake-dwellers have a great partiality for them. Lake Luhondo abounds in reeds and rushes, and its surface is enlivened by a large variety of ducks.

As we stayed there for several days we had some time to devote to ethnographical study, and were able to supplement our Ruanda collection very considerably.

The inhabitants on the borders of both lakes are of a fractious disposition and give the Residency a good deal of trouble. The Resident, therefore, has to keep a watchful eye on this district, and has often been compelled to resort to energetic measures in order to maintain the authority which it is imperative to uphold.

The boats used on the lake are built very low, and are very fragile, with practically no gunwale. Great care is therefore necessary to retain the balance. Raven met with a very unpleasant experience in this respect. Whilst shooting at a duck he lost his equilibrium, and capsized with his gun, cartridges and oarsmen. His rain-cloak, however, which was made of "continental" balloon material, kept him afloat on the water, and blew out like a bell. The rifle, which lay softly embedded in the slimy bottom, was brought to light from the watery depths with miraculous swiftness by the skilful diving of his oarsmen.

Unfortunately Grawert took his leave of us here in order to return to Usambura on receiving news of the illness of one of his officers. It was with deep regret that we saw him depart.

The support he had afforded us, the solicitous care with which he had smoothed our way, the circumspection with which he had provided for our commissariat, had conduced in no small degree to lighten our laborious task and to promote the success of our expedition.

Soon after, we paid a visit to the mission station at Ruasa, which impressed us as being very well cared for, cleanly kept and tastefully laid out. We were received in a very friendly manner and treated to such excellent dishes and beverages that it needed some little effort to make our way back to the camp along by the pretty falls of the Mkunga.

Knecht having returned to Kissenji, we turned to the north with the purpose of fixing some settled quarters on the high-lying saddle between the volcanoes of Sabinjo and Mgahinga. We followed a long upward inclining road. The temperature, which had been high at the start, sank gradually as we ascended. Ever since noon a pelting rain had been pouring down, which turned the path into a mountain torrent, and at the finish it grew so cold that we were well-nigh frozen.

As we did not know where Weidemann—who had marched here with reserve stores direct from Kissenji—had pitched his camp, a patrol was despatched to search, and to advise us by signal gun when the camp was sighted. The rest of us, when we had reached the thickly wooded saddle, crowded together, black and white alike, around a smouldering fire until the appointed signal relieved our suspense. A further march of half an hour brought us to our destination.

Weidemann had been encamped for two days in a forest glade, and had already had the foresight to erect a protecting *banda* (roofing) of bamboo, which proved of great service to us, for during the following days the thermometer never indicated more than 13 degrees Celsius, even at the warmest hour of the day, and sank at night to one degree or even to freezing point. In addition to this a cutting wind whistled through the valley, chilling us to the marrow, and one night even swept Wiese's tent away. We were at an elevation of 2,600

THE MKUNGWA FALLS

ANOTHER VIEW OF THE MKUNGWA FALLS

metres, and the white frosted meadows in the early morning conjured up the vision of a German autumnal landscape. At the evening meal we always appeared in thick coats and turned up collars, and with steaming glasses of grog in our hands we resembled a polar expedition rather than a party of African travellers.

Among other zoological investigations the task which mostly engaged our attention was to find and, if possible, to kill an anthropomorphous ape. Up till then there had been only one species of man-ape known to have been secured from the Kiwu district, the one killed by Captain von Beringe on Sabinjo, which the Berlin Zoological Museum pronounced a gorilla. It was obvious, therefore, that the capturing of further specimens would be of high scientific value in settling the question as to whether still further species of the anthropomorphous ape existed in that part.

The forests round us consisted mainly of bamboo, which may be met with up to an altitude of 3,400 metres. The gorges and ravines clothed with foliage and brushwood are the lurking places in which that rare and much coveted wild creature, the gorilla, makes his lair. It is an extremely difficult matter, and occupies a great deal of time, to get to such spots, and entirely excludes any other object from our expedition. We did not have the good fortune to fall in with the desired prize although we found droppings and fresh tracks.

Farther on we came across many elephant trails, up to astonishing heights, and this fact gave reason to suppose that we had struck a new species of genuine mountain elephants. The natives confirmed our views, assuring us that the elephants thereabouts always kept to the mountain slopes and never shifted their quarters down to the plains. We tracked them to heights of between 2,200 and 3,400 metres. On one excursion to the Mgahinga crater we, in fact, espied five of the pachyderms crossing a bare part of the forest below us. This troop approached our camp in the evening in the full moonlight and startled us at our meal. We heard the cracking of the bamboo

stalks getting gradually nearer, and expected every moment to see the elephants appear in the clearing, but in vain. During the night, however, one of them burst noisily past the camp not a hundred paces away.

I determined to try my luck the next morning. Setting out, clad in a thick hunting jacket, I found the grass again frosted, and it required a very short search to locate the fresh tracks of the elephants in the long meadow grass below the camp.

What contrasts life offers us! An elephant hunt on frozen ground! My mind carried me back to a day, almost to the exact time of the year, when I had hunted a fine rutting stag amidst the September scenery of Hungarian mountains, accompanied by similar cold.

We now picked up the trail on the frosted, crackling meadow, and it led us, without perceptibly rising, to the southern slope of Mgahinga through a glorious leafy wood where the morning sun's rays played on the tree tops, and the long drooping creepers lost themselves in the underwood.

From a little distance away we heard the chewing of the browsing beasts. The brushwood where the herd had passed was trampled down in broad tracks. This served as a sure sign that the elephants, who were still busy feeding, moved along but slowly. We crept on now with hearts beating somewhat higher and with extreme caution, avoiding every thorn and sprig and clambering noiselessly over broken boughs and twigs. The elephants could scarcely have been fifty paces away from us. Suddenly something crackled at my side, and stepping out from behind a bush I almost knocked up against an elephant, but alas! going straight away from my gun. He must have noticed something, for turning sharply round he fled. My eye was soon searching for a good place to hit him and for rear and fore-sight of my rifle, and as the colossus, with his tremendous ears flapping, trotted across a small glade, I fired a ball obliquely, just behind the ear. He fell without uttering a sound, and hurrying up I found that he was dead.

Whilst still lost in contemplation of the mighty creature,

WATERFALL BETWEEN LAKES BOLERO AND LUHONDO

ERECTING QUARTERS ON THE PLATEAU BETWEEN SABINJO AND MGAHINGA

I heard a sudden noise close behind me. All my followers immediately fled behind the protecting bushes. I naturally followed the new *tembo* (elephant) on the fresh trail. As, however, he appeared to be rushing on ahead and I anticipated a lengthy chase, I left the further pursuit to Weidemann, a guide and an Askari. I then sent word to the camp for carriers to come along and cut out the tusks and carry back the flesh of the dead animal for our people. Then I turned back for my prize, but, strange to tell, I could not find him. My "boy" and a carrier searched in conjunction with me in vain for nearly two hours, although it subsequently proved that several times we were close to him. The similarity in the vegetation and the many fresh tracks always led us round in a circle. Realising the futility of this wandering I sat down on a fallen tree trunk and was devouring my breakfast, when I heard eight shots fired in quick succession in the direction of the last trail. It turned out that Weidemann had come up with his elephant, which had joined the herd, and had laid it low. It was a fine bull.

When the carriers arrived from the camp I set them skirmishing in all directions, and so at last we contrived to find the spoil for which we had been searching so long. Later on the skulls of both the elephants were carefully prepared and found their way to Germany, as well as a perfect hide. These trophies were the first evidences of the elephant race in volcanic regions which found their way to a German museum.

The bigger animal showed a height, measured from the back, of 3.05 metres, a meagre measurement in comparison with the powerful elephants of the plain who attain nearly four metres in height. The comparatively powerful tusks, which were 2.05 metres long, and the worn grinders pointed to a fairly good age and strengthened the view that smallness is a characteristic of the mountain elephant.

Amongst other animals found at the foot of the volcanoes, the lion is occasionally met. These, however, appear to be specimens that have wandered from the Rutschuru plain. Apparently, too, there are two species of leopards of different

sizes to be found. We caught one large specimen in a trap and discovered it to be identical with the species discovered by the Duke d'Abruzzi on Ruwenzori. Then there are wild cats and different kinds of long-tailed monkeys, of which the most common is the fine red and grey-green coloured *Cercopithekus Kandti.* We also found quite a new sort of bush-buck, one of which I shot in a forest glade close to swampy ground.

The natives' talk ran a good deal on a beast of prey said to be something midway between a lion and a leopard, and which the people called "kimisi." Up till now no European has sighted this creature: it would probably be some kind of large-sized wild cat.

Whilst in the district, Lieutenant von Wiese, accompanied only by an Askari and a native, achieved the distinction of being the first European to climb Mount Sabinjo. It is probable that no man had trodden the summit before, for Captain von Beringe, who in 1903 reached to within 150 metres of the peak, had to turn back owing to the steepness of the rock, whilst his companion, Dr. Engeland, had stopped at an altitude of 3,150 metres on account of an attack of vertigo. It would never enter the head of a native to undergo such a seemingly purposeless fatigue, which, according to his faith, would serve only to draw down the wrath of the mountain spirits. Kirschstein also ascended Sabinjo later, right to the summit. On that occasion he established the fact that the geological character of the mountain had up to that time been entirely misunderstood.

"Sabinjo," writes Kirschstein, "is not, as reported by von Beringe and Herrmann, the jagged remains of the wall of a crater which has been torn up in the east and west, but rather an old peak of trachytic-andesitic stone formation, deeply eroded—a homogeneous lava cone. In contradistinction to the stratified type of volcano, made up of overlying layers of ashes and lava masses, like Ninagongo, with broad crater summits, no loose volcanic matter plays any part in the creation of such masses as Sabinjo. Sabinjo owes its existence solely to a consistent flow of lava. The viscous fluid, a stony, yet paste-like

THE CRATER OF MGAHINGA

SABINJO, FROM THE SOUTH

mass gushes out of the earth, and, flowing from the eruptive funnel, cools and congeals into a cone-shaped, craterless lava mountain. What Beringe and Herrmann doubtless took for crater walls are the broad V-shaped clefts, 'barrancoes,' as they are called, formed by erosion, which in the course of time cut deep into the core of the volcano. The gnawed appearance of the mountain has doubtless given it its name, for in the Ruanda tongue 'Sabinjo' simply means 'tooth.'"

After one more day's sojourn we bade good-bye to these cold but beautiful mountain regions, and descended valleywards. The lower we got the more noticeable became the heat, to which we had now become unaccustomed. Then we had to get used again to the heavy marching over the ragged lava, which caused many a sigh. Generally speaking we followed the course of the Mkunga, which flows later on into the Kagera, the chief river of Lake Victoria. The march through this valley offered us quite a pleasant change from the toils of the past week, and the merry singing of the carriers showed that they fully appreciated it. Well-cultivated plots covered the country round, provisions were in abundance, and the demeanour of our over-fatigued followers soon altered for the better. We could hardly gaze enough at the glorious scenery. In the early mornings and late in the evening, when the vapours and mists floating down below us had dispersed, the peaks of the volcanoes, amongst them the snow-capped head of Karissimbi, stood out clear and sent a farewell greeting through the valley which lay shut in by the surrounding high mountain tops. The only difficulties which we encountered, and which considerably impeded our progress, were the number of marshy, boggy watercourses which we continually had to cross, and in which the animals sank knee deep.

We were not destined, however, to enjoy comfortable marching in the level valley for long. We had arranged a rendezvous at the Muhembe with the head of the Njundo Mission Station, Father Superior Barthélemy, who was intimately acquainted with the inhabitants and, in consequence of his long activity in

the land, had almost become their confidential friend. Barthélemy desired to escort us to the little tribe of Batwa in the Bugoie virgin forest. To accomplish this we had to traverse the perfectly unknown territory of northern Tschingogo, which was only indicated on the map by dotted lines in accordance with general conjecture. We had to select one of the large printed letters on the blank expanse shown on the map to mark our proposed meeting place.

As the course of the little river Mtashe appeared to run closely in the direction in question, we followed it up. This meant climbing over the western mountain margins of the valley. We came to a thickly populated, undulating hill country covered with luxuriant fields. The presence of Juwanese and Cambojano, the Watussi chieftains lent us by Msinga, inspired the inhabitants with confidence, so that we had no trouble in connection with the commissariat. Marching at the head of our caravan, their wide-ringing cries "*masimano, masimano, masimanoeee*"* resounded in the hills and valleys, and were immediately answered by larger or smaller troops of natives who willingly brought along supplies.

Our calculations proved correct, for Mount Mhungo, where we pitched our camp, was, as a matter of fact, only a matter of two hours' distance from our comrade. On joining him we marched on at once to the edge of the forest, the exploration of which was the main task before us.

Anyone who is already acquainted with the flora of the country can, with the help of field-glasses from an elevated position, determine the character of the trees without any difficulty. We could discern the giant bamboo, the *Podocarpus usambarensis pilger*, called "umufu" or "musi" by the natives, and the sapotad *Sideroxylon Adolfi Friederici Engl.*, the "mutoie" of the natives. The podocarpus shoots up its straight, pillar-like stems to an immense height, particularly on the hill ridges, with a crown of knotted branches of picturesque beauty,

* *Masimano*, bring food!

SABINJO, FROM THE NORTH-EAST

BATWA, BUGOIE FOREST

BATWA HUTS ON THE MARGIN OF THE BUGOIE FOREST

bearing narrow, pointed, leathery leaves. The colossal stems of the *mutoie* are only seen on the valley slopes, reaching to a circumference of some five metres. At a considerable height they split into branches which bear a rich epiphite flora. The tops are of a peculiar brownish colour as the leaves have a rusty reddish felt-like surface. A stately specimen of this kind was pointed out to us as the "sleeping tree" of the tschego or chimpanzee. The most common tree is, perhaps, the *Polyscias polybotrya Harms.*, belonging to the araliaceæ, the "umungu" of the natives. Then there are also *Macaranga kilimandscharica Pax* —"mlala"—belonging to the euphorbiaceæ, and *Cornus Volkensii Harms.*

The tiny Batwa tribe live in this mountain forest, small in respect to physique, but not as regards their powers of propagation, for they populate the whole forest zone. In the territory traversed by the expedition three different families of Batwa became known to us. Besides those dwelling in the Bugoie forest, a second on Kwidschwi, the largest island of Lake Kiwu, and a third described by Dr. Czekanowski in the Ruwenzori chain.

At first all the Batwa were looked upon as belonging to the race of pygmies, but any general acceptance to this effect would be an error. "Mutwa" in the singular, "Batwa" in the plural, appear from Dr. Czekanowski's exact investigations to be the common designations for small men.

Measurements taken by Raven and myself, and others taken later by Czekanowski, of the Batwa in the Bugoie forest showed an average height of 1.60 metres. Some attained a height of 1.70 metres. A people possessing such an average height cannot therefore be esteemed pygmies. Czekanowski designates the Batwa of the Bugoie forest simply small negroes. In his opinion it is not exactly probable, though quite possible, that the ancestors of the Batwa were pygmies, and that their development has been influenced by intermarriage with the negro tribes. Reasoning from impressions received in a general way, I am inclined to support this theory, for the Bugoie tribe is entirely different from

the genuine pygmy. To anyone who knows both races, to confuse them would be out of the question. The Batwa of Ruwenzori and of Kwidschwi are entirely different from the Batwa of the Bugoie territory. Czekanowski holds that the former are identical with the true pygmies, and I would maintain that this opinion should also apply to the Batwa of the island.

The Batwa of Ruwenzori and of Kwidschwi possess a height of about 1.42 metres, which they share with the pygmies of the Congo forest. Further, they show the typical distinctive marks of true dwarfs—the round head, the peculiar, penetrating, and unusually large eyes, and the very broad root of the nose—which betray to the expert their membership of the dwarf families.

The pygmies of the primeval forest differ from those of Kwidschwi only in the colour of their skin. Whilst the former are exceedingly light in colour, the Kiwu dwarfs have the dark complexion of the negro. Their complexions, however, may possibly be influenced by their different habits of life. The natives of Kwidschwi expose themselves a great deal more to the sun than their fellow-tribesmen of the Aruwimi and Uelle basins, who never leave the darkness of their native forest, and are therefore fairer in complexion.

The Ruwenzori Batwa, says Czekanowski, as also the pygmies of the Uelle and Ituri basins, speak the Balese language, and maintain that they possess none other. The Batwa of the Bugoie forest are conversant with the language of the Wanjaruanda.

The weapons of the latter race, which chiefly interests us at present, consist mainly of spears. They also use bows and arrows, the bow-strings being frequently made from the filament of the rotang palm. Like the pygmies, the Batwa exist almost exclusively by hunting and plundering caravans, and do not cultivate the soil. They claim to be very brave hunters, and to be able to spear without fail the buffaloes that lie in the bush after they have been stalked to within a few paces. They appeared to consider it a very impressive pose, just before we crept up to one of the very numerous buffalo herds, to plant one foot

PYGMIES OF THE CONGO VIRGIN FOREST

PYGMIES OF THE CONGO VIRGIN FOREST

MUTWA WOMAN MARANGARA

BATWA OF THE BUGOIE FOREST

forward and shake their lance, which they hold pressed against the ground to test its elasticity. The nearer we approached to the buffalo, however, the lower sank their courage; and as soon as the herd—invisible even at a few paces distant, on account of the dense undergrowth—began to move, and the cane cracked all around us, the brave fellows vanished instantly out of sight and hearing. Some sought cover in the bushes, others bounded up aloft with the greatest agility, seized hold of a couple of bamboo stalks, and swung in the air with legs extended, graciously permitting the attacking buffaloes an easy passage below them.

The skill and celerity with which the Batwa can wind their way through thicket and creepers are amazing, and it is an exceedingly fatiguing task to attempt to follow them along elephant tracks and to the haunts of the buffalo. Their apparel—if it can be called such—a simple apron of beaten fibrous bark, offers no hold to the thorns, as the clothing of the European so constantly does. They are invincible opponents in the forest, their real home. Whilst marching out a little distance from the forest zone one day searching for fresh camping quarters, the Batwa suddenly declared that they could no longer follow us. No sooner said than done; they disappeared back into the forest, and we saw them no more till we again pitched our camp in the forest.

The chief leaders of the two tribes with whom we came into contact were Sebulese and Gunsu. On Raven's first visit the former had shown himself friendly, but Gunsu would not allow himself to be talked over even by Barthélemy. Gunsu had the reputation of being an exceedingly adroit caravan robber, and his people in consequence spoke of him in terms of great respect. A successful raid which he had carried out shortly before seemed to burden his conscience, and the mistrustful old fellow no doubt connected our visit with it. So we caused a message to be shouted through the forest that no harm should come to him, that we desired only to shoot buffaloes, and that their meat should be the spoil of him and his people. With the design of fathoming our intentions, he sent along his son into our camp, and his report

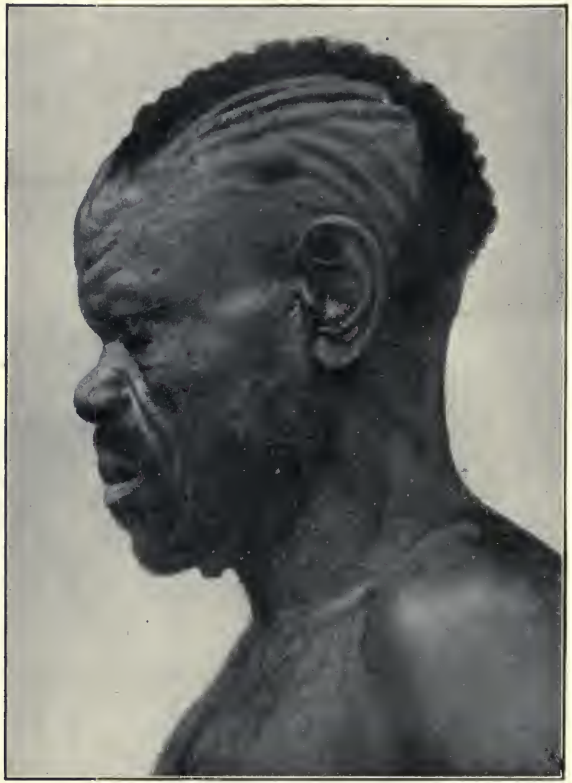
concerning us must have been favourable, for one day he put in an appearance himself, and thus for the first time came into close contact with white men.

The Batwa are anything but agreeable to associate with. Their indolence is sufficient to make anyone despair. Whilst later on the pygmies of the Congo forest were ready to act as guides at the slightest nod, the greatest exertion and sometimes forcible methods were necessary to get the Batwa away from their cooking-pots every morning. Contrary to the pygmies' custom, they never camped with our carriers, but built themselves huts at a little distance off.

The body measurements which Raven and I took were obtained with the greatest difficulty. The superstitious people almost trembled with fear when we fitted up our burnished measuring instruments. I believe that Barthélemy's presence alone prevented them from flight. The poor fellows almost thought they must die. "You won't die at all," intimated Barthélemy to them; "just come along." Then to prove the truth of his words I allowed myself to be measured by Raven. Seeing that I survived the ordeal, they appeared to grow more composed, yet I was not able completely to allay their mistrust.

The Batwa sat round resignedly. None of them came willingly, but every one had to be led singly by the arm to the "slaughtering" bench, the chest on which the measuring took place. At length came the turn of Gunsu's son. The poor fellow suffered tortures. He hesitated, but at last he stepped forward resolutely, and sat down on the chest with the words: "Well, then, it's all one if needs be that I die to-day!" But what a marvel! After the measuring was over, he stepped back safe and sound to his place. . . . So it was obvious that measuring was not fatal, but there must be something else. What are the *wasungu* (whites) writing down there? And what was one of them continually muttering, and what was his neighbour answering? Did the spell lie in that? Because it was quite clear that there must be some spell. Yes, it was certain that their lives were forfeit, and lay sealed in the white men's books and at

NATIVE LEOPARD TRAPS



BATWA CHIEF, SEBULESE

their sovereign will and pleasure. This view obtained credence more and more, and took such firm root in their minds at last that I feared that they offered up sacrifices of atonement to their deities for weeks after, so that they might be freed from the spell. This mad idea subsequently caused Czekanowski a great many difficulties when a special sociological investigation was undertaken.

Before closing these remarks on the Batwa I would like to mention a few of their names, which sound curious when translated. These are some of the meanings attached to them as Barthélemy told me: "Gunsu," for instance, is the name given to a species of jackal; "Sebulese" means foster-father; "Semisse," father-of-the-liane; "Luhango" means that he-is-born-from-the-river; "Bigirimana," he-is-with-the-deity; "Bitahungo"—a son of Gunsu—means I-do-not-flee; and "Semabi"—another of Gunsu's sons—his-father-is-dirt!

As already mentioned, amongst the larger mammals of the Bugoie forest besides the elephants there are buffaloes, the western variety with small horns lying back, which Schubotz also came across in the Rugege forest south of Lake Kiwu. Only Raven was successful in killing a specimen. Although I came within a few paces of them at least ten times, without however seeing a hair of them, I only once managed to get in a shot. In spite of a lengthy pursuit, I had to give up the chase. All further attempts failed, although we scoured the neighbourhood from six to eight hours daily for a fortnight. These excursions, at the heels of the nimble Batwa guides, over summits of some 2,500 metres in height, over slippery ground and through the difficult underwood, were about the most exhausting of our efforts during the whole expedition. Twice I had to take in a hole in my belt, which, as a rule, was fairly tight.

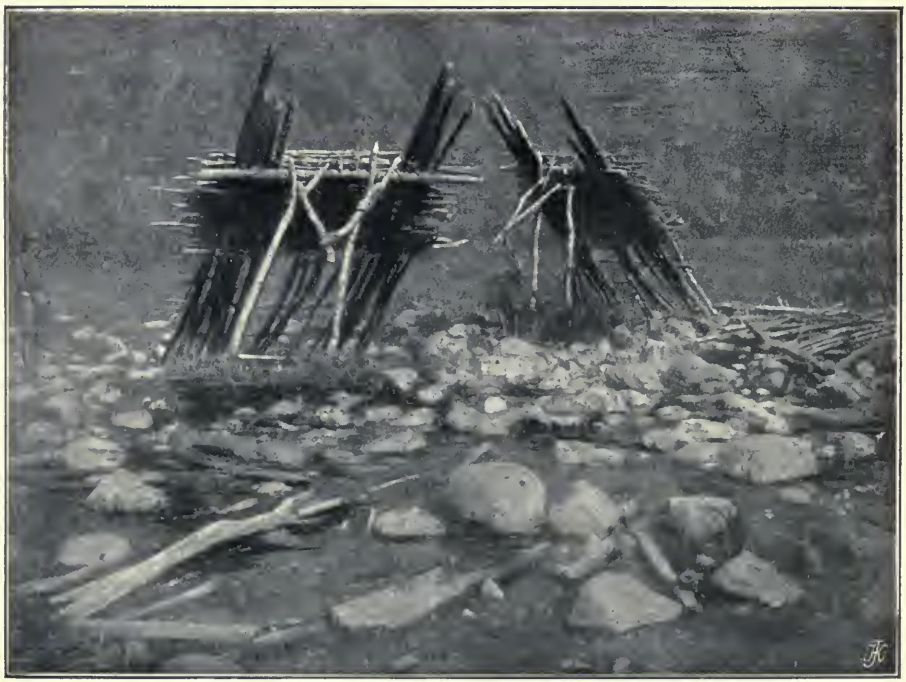
The Batwa knew the favourite haunts of the beasts, or generally found them very quickly, and watching scouts informed each other loudly through the forest of the buffaloes' exact location, without in the least appearing to disturb them. A favourite way that the Batwa have of capturing these animals is to trap them.

Great wooden frame structures weighted with stones are set up at a spot where the buffaloes go to drink, in such a way that when the buffalo touches the water a piece of wood is loosened, and the trap falls over and kills him. This method appears to be very successful.

I would like to mention one perilous adventure with a "mountain elephant," the killing of which would have formed such an important zoological specimen to our collection of the district.

It was the 4th of October. Raven and I heard the trampling of elephants in a marshy meadow through which a small river ran, and we quickly followed. The wind was unfavourable to us, and so it was not possible to avoid detection. Suddenly, trumpeting was heard, and the elephants broke away. The immediate crackling of canes all around apprised me that I was in the centre of the herd. Then all at once, twenty paces off, I perceived the grey back of one of the animals. In spite of its closeness it was useless for me to shoot until I was able to distinguish clearly the vulnerable part of the head, denoted by the upper half of the ear. Immediately I could do this I took aim, but being under the impression that the fatal point for the bullet was situated deeper, I lowered the muzzle of my gun a little and let drive. The elephant swung round like lightning, splintering the bamboo with his head, and made for me. As the dense brushwood obscured the view, I jumped aside, crashing through the cane into the shrub whilst the beast rushed past. The troop of elephants, some of which had been behind me, were attracted by the shot, and circled round me trumpeting. The whole forest was in an uproar, and I saw bulky grey masses rising up all round me. Shooting was not to be thought of, for it was impossible to distinguish particular parts of the monsters' anatomy whilst they were thus waltzing round. The turmoil approached in my direction, and evidently the whole herd was close at hand. The ensuing moments have no place in the agreeable reminiscences of my travels! A young animal with bad tusks, and not worth shooting, came right up to my position, remained standing five paces in front of me, and then passed me

AT THE NJUNDO MISSION STATION



BUFFALO TRAPS IN THE BUGOIE FOREST

so closely that I could have touched him by stretching out my arm. Suddenly he caught the scent, and tore away trumpeting, taking the others along with him, and the whole herd rushed madly past.

Wiese had in the meantime gone back to Kissenji on urgent business, and letters called for my return there also. So we shifted our camp in the direction of Kissenji, into the domain of the chieftain Chuma.

The motive that led us just there was principally the assertion of the Batwa that it was the haunt of the *impundu*, the name by which the gorilla was known at Mgahinga. The truth of this peculiar story had, of course, to be tested. It was important to determine whether the *impundu* was another form of gorilla, or whether it was another breed of the anthropomorphous ape. I may state straightaway that the latter was the case, and it proved to be a large kind of chimpanzee, the tschego. So the name *impundu* served for both.

We found by observation that the *impundu*, gorillas as well as tschegos, haunted the margins of the upper forest. At Mgahinga we found fresh droppings, and trails on the margin of the bamboo and upper forest boundaries, though in the interior we never observed any signs of their existence.

Little is known so far as to the habits of the tschego. We were able to verify with certainty its custom of using trees for a sleeping place at night, and that the favourites were the lofty podocarpus—the *umufu* and the *mutoie*—which are free from branches up to the crown, obviously because they afford an extensive view and also the greatest safety. In the morning the tschegos, who live in families of five to eight, leave their sleeping-trees somewhere between seven and nine o'clock, letting themselves down to the ground with the greatest nimbleness, to feed on young bamboo shoots. The tschego is not exactly fastidious in his food. The Batwa told us that he is fond of leaves, fruit-skins, blossoms, and tender tree-shoots, though as far as my own observation went, he confined himself to the sapotaceæ (*mutoie*).

The individual families have a particular range, or parish, which they are unwilling to leave. Early at sunrise, and in the evening when dusk is approaching, their clamour is heard far away, setting in faintly but swelling gradually and terminating in shrill screechings, which last only a few moments. This is repeated at irregular intervals, and the Batwa attribute the outcries to dissensions and quarrels amongst the "family." Such moments are opportune for the hunter to step in and attempt to get close to them.

A broad, deep ravine yawned immediately below our camp, at the bottom of which rushed a spring, which separated us from the mountain slope opposite, and from which we used to hear most of the screeching apes.

An attempt made by me one evening by failing light to stalk up close to a sleeping-tree I had to abandon as impracticable, as the almost impenetrable brushwood could only be crawled through on hands and knees, and this took so long that darkness set in. So I had to wait until the morrow.

Next morning before daybreak the three of us sat ready outside our tents, each with our guide, awaiting the first screechings of the creatures. I had picked out a Mutwa as my only companion. He had raised difficulties at first, for, unfortunately, it was just the *impundu* that the Batwa had selected for their *umuzimu* or totem. However, on my representing to him that he would take no part himself in the killing, but that that would be entirely my own business, and that all he had to do was to lead me to the right spot, he eventually agreed to be my assistant.

It now grew gradually lighter. Certain parts of the forest gorge began to be visible through the breaking dawn, but dead silence still prevailed everywhere. Soon the first call of a waking bird could be heard here and there. Then, at last, when the glorious red of the morning sky heralded the rising of the sun, a flight of grey parrots flung themselves with a stiff flapping of wings shrieking on to the branches of a neighbouring tree. As by a stroke of magic, everything grew alive all round us. The birds began to chirp and twitter louder and louder with the

IN THE FOREST REGION OF MIKENO

VISIT OF THE BELGIAN OFFICERS (IN DARK UNIFORMS) TO KISSENJI

coming day, and as the first rays of the sun threw bands of light through the tree tops, the sounds we were waiting for so eagerly were heard coming faintly across the gorge, and we could see the resting place of the game we were coveting.

Our council of war was soon over. Raven on the left in case the *impundu* should break out on that side, the Father Superior on the right, and I in the centre. The forest soon swallowed us up, and then the fun began.

The small, supple body of the Mutwa slipped through the incredible maze of creepers, bamboos, and thorns with admirable dexterity, whilst the European in his clothes had to maintain a steady battle with the thorns, which continually impeded his progress. A well-meant suggestion on the part of my Mutwa that I should divest myself of my clothes and hunt in his own costume did not appeal to me, as I had some personal regard for my skin. Having reached the bottom of the hollow and crossed the stream, we started climbing the slope, so as to reach the spot before the apes left the tree from which we had again heard their screaming, a sound which impresses itself indelibly upon the memory. Once they got to the ground they would be lost so far as we were concerned.

If it had been difficult to get down, we found it almost impossible to climb up again. Our hands were covered with rents and scratches, our bodies were dripping with perspiration, when at last our arrival at an old elephant haunt brought some relief. It was now past seven o'clock, and we calculated that we must be close up to the tree in question. It was impossible to see through the dense brushwood.

My guide stood still listening, with his head bent forward and his eyes on the ground. Then slowly raising his arm and pointing upward with his fist—to do so with a finger spelt bad luck—he whispered: "*Wanakula*" ("they are feeding"). So thus far all was well. We crept on further with the very greatest care, anxiously putting aside every twig and dried leaf with our hands. A quarter of an hour elapsed. Once again we stopped and listened. Not a sound was to be heard. Our prospects

grew worse as the sun rose gradually higher. Undecided whither exactly we should turn next, we slunk along further for a few steps when suddenly the screeching burst out again in our immediate vicinity almost right over our heads. We used the noise as a cover, and rapidly advanced a little further till a wall of thorns, through which it was impossible to work without making some noise, arrested our progress. The slightest sound now would have been fatal, so with knees raised and on the tips of our toes we moved a little sideways. It was labour lost! No sight of our quarry to be obtained from any point; a mere confusion of foliage above and all around us. The situation was critical; for at any moment the chimpanzees might leave their tree. Finally, I reached a spot where there was a slight break in the leafy roof, and through this aperture I perceived an immense ape standing on the bough of a lofty *mutoie*, perhaps sixty metres up. In a flash my rifle was at my shoulder, and the noise of the shot rattled and reverberated through the forest with resounding echoes. A heavy fall and wild bellowing followed. At the same moment I caught sight of a second ape, apparently younger, through the circle of the small aperture, and the dull thud of the bullet convinced me that I had hit again. We now worked along as rapidly as we could manage it to the trunk of the tree, to which a fresh track of blood guided us until it was lost again in the shrubs. Here we heard the chimpanzee, evidently badly injured, fleeing down the slope amongst the rustling foliage only a few paces in front of us. But to catch up with an ape, even a wounded one, in a forest thicket is a hopeless task for any European. So I soon gave up the chase. At the sound of my firing, however, a few of my people who had followed up behind now came up with me. The promise of a large baksheesh spurred them on to renewed efforts. Without a moment's consideration they glided down after the game, following the trail. A few anxious moments of breathless suspense followed, and then I heard faint, subdued cries, which filled me with an indescribable feeling of satisfaction. The old fellow, who was badly hurt, had stood up against my people down in the gorge, and they had

CULTIVATED LAVA FIELDS NEAR THE VOLCANOES MIKENO AND KARISSIMBI

finished him with a spear thrust. As the men declared they could not carry up the heavy booty alone, I returned to the camp and despatched an Askari with a few carriers to their help. Two hours later the slain quarry was brought in triumphantly hanging on stout bamboo poles. In spite of strongly marked blood-tracks the younger chimpanzee could not be overtaken.

The next day brought a piece of hunters' luck to the Father Superior. After further and similar exertions he succeeded in reaching another sleeping-tree, from which he shot down a young chimpanzee. As he rapidly approached the dying creature the bush became animated, and, fifteen paces off, there appeared the head and gnashing teeth of a little old male (they often accompany the families at a distance, but keep to themselves), who seemed not indisposed to attack him. But receiving a bullet in the breast, he also succumbed in a few minutes. In spite of all this, however, the troop did not abandon the field, and the agitated trees and bamboo proved the proximity of the furious animals for a considerable time afterwards.

The skin of the old one was covered with greyish-yellow hair; the hands and feet, like those of my specimen, were a deep black, while the younger animal had a far lesser length of body, with deep black hair and yellow face and hands.

Thus our arduous time in the Bugoie forest was eventually crowned with some measure of success, and brought us the solution of some few zoological problems. I had at least the good luck to be the first European to capture specimens of a hitherto unknown race of man-apes and to observe their habits.

Our task here was now completed, and our stay was soon brought to an end. We descended into the valley of the Sebeja, bade farewell to Barthélemy at Njundo, and, accompanied by Czekanowski, who met us here as agreed upon, we arrived on the evening of the 11th of October at Kissenji. The place had been gaily decorated in honour of my birthday, which was the day before our arrival, and at the entrance to the town we were met by Knecht, Grauer, and the other members of the expedition. For the purpose of holding serious council together, I had begged

the various members of the expedition to interrupt their labours for a little while and to meet together at Kissenji.

In the meantime Derche, the Belgian commandant of the Russisi-Kiwu territory, which we should have to traverse after leaving our protectorate, had arrived at Ngoma with his staff, and came over to Kissenji to greet us. His visit gave a welcome opportunity of discussing a number of pertinent questions, as we were about to cross into the Congo State.

The days which now followed were very strenuous, for in consequence of the various separate journeys to Lake Lukondo-Bolero, to Bugoie, to the Rugege forest, and to the larger islands of Lake Kiwu, and also to northern Kiwu, a considerable collection of ethnographical, zoological, botanical, geological and topographical material had amassed at Kissenji. All this had to be sorted out and duly labelled, so that it could be despatched without delay to Europe. Further, a large number of photographic plates had to be developed so as to test the reliability of the apparatus, which had suffered a good deal from exposure and damp within the last few weeks. For this purpose we erected a dark-room of bamboo, so heavily thatched with grass that no ray of light could pierce through, even when the sun was at its brightest.

Added to all this work, there was a huge mail to be got ready and despatched to Europe. As a matter of fact, we only met together at the common meals in the officers' mess. Weiss started away again on the 18th of October to continue the interrupted topography of the volcanic region. On the 21st a caravan comprising seventy loads of scientific material was sent off under the leadership of two Askari to Bukoba, to be forwarded thence to Berlin and Leipzig. Before we departed we duly celebrated the birthday of Her Majesty the Empress. I gave an address to the Askari and the population of Kissenji and ordered a march past of the troops. A few days later we set out for the Congo State territory.

Keeping to our principle of divided marching, it was arranged that Schubotz and Mildbraed should first visit Bugoie, and then

SUMMIT OF MIKENO

undertake a searching zoological and botanical investigation of the whole volcanic chain. After paying a visit to the Batwa, Czekanowski was to follow our route via Busuenda.

Kirschstein's special work was also now commencing. Wiese, Raven, Grauer and I wished to accompany him in the ascent of Mikeno and Namlagira, to proceed later to the Belgian station of Rutschuru, and then on to Lake Albert Edward. We hoped to establish friendly relations there with the Belgian officers, and thereby smooth the way for those following us. Our meeting point later on was settled for Kasindi, at the northern end of Lake Albert Edward, on Christmas Eve.

It was a curious coincidence that a few days earlier Lieutenant Knecht, the meritorious chief of the Kissenji station, should have received his recall home. His relief had already arrived in the person of Lieutenant Keil. So we had a general leave-taking at the border of the Kissenji district, everyone wishing everyone else a prosperous journey and happy return home.

At the top of the pass we turned and sent a farewell greeting to this ideally situated spot of German territory where we had spent so many memorable hours, and then marched forward into the Congo State.

Wiese, Raven, Kirschstein, Grauer and I, as well as Weidemann and Czeczatka, to whom the supervision of the caravans at the camp was made over during our excursion on Mikeno and Namlagira, pitched our tents at Burunga, a "permanent" Belgian post at the foot of Mikeno, a halting-place on the great Uvira-Bobandana-Rutschuru road. These Belgian *étappes* are most comfortably organised. There are thatched roofs resting on four corner posts under which the tents may be set up. They afford coolness in great heat and form a perfect cover in a downpour of rain. At one end of the quarters there is an elevated *banda* for meals, the position being so chosen that a splendid view may be enjoyed. There is even a tariff-table of food and beverages, which may be obtained from the camp-

orderly. As a matter of fact, these consist mainly of mutton, goat-flesh, poultry, milk, eggs, sweet potatoes, tomatoes, mangoes and *papaya*.

As the rain was coming down in torrents the ascent of Mikeno promised to be very difficult in consequence of the slippery state of the ground. So we decided to take only the most absolute necessities with us, and thus limit the escorting caravan as far as we possibly could. However, we took reserve carriers with us to relieve the bearers of the heavy tent loads.

Kirschstein declared Mikeno, like Sabinjo, to be a volcanic mass consisting essentially of lava discharges pouring one over the other. Captain Herrmann's declared supposition that Mikeno was possibly the remainder of an imposing crater wall is therefore hardly confirmed.

Early on the morning of the 6th of October our party was pushing its way towards the small, circular, marshy plain which lies at the foot of Mikeno. A narrow path leads for some distance thence up the mountain slope. This path, which had been made by the missionaries of Njundo when attempting the ascent, at least indicated the way for us, although it was scarcely recognisable, and bearing this in mind Barthélemy had given us his former guide for a help. The latter, however, lost his way quite at the start and it was a considerable time before he became aware of the fact. We were forced, therefore, to retrace our steps downward from the height we had so laboriously climbed, until we regained the marshy plain. After a little while we struck the proper road.

At first we passed through bamboo, but this soon gave way to a lighter tree zone. The road was very steep, and the innumerable roots that covered the slippery path hindered us so that we progressed but slowly. Stops were rendered constantly necessary. After ascending for some hours we reached a height of 3,000 metres, and by that time the carriers were utterly exhausted and we had to camp. There was not a single spot where a tent could stand, for the mountain side showed an incline of thirty degrees all round. Further progress was out

BREAKFAST ON MIKENO (AT A HEIGHT OF 3,700 METRES)

BLOCK LAVA BETWEEN NAMLAGIRA AND NINAGONGO

of the question; a remedy had to be found somehow. There was nothing for it but to dig out a rough terrace and build some kind of platform for the tents. This we did, but it must be confessed that they stood quite crooked and unsteady, and it required some art to keep one's equilibrium, or even, in fact, to sleep in them, for the bedsteads glided down the slanting surface, and in the morning several of our company found themselves in quite different places from where they had been when they laid down to rest.

Next morning a new difficulty arose. There was no water. We sent out a scouting party, but it returned at noonday having met with no success. As, however, water was an absolute necessity for the carriers, and as it was certain that conditions would not improve as we got nearer the summit, we had no other choice but to conclude the day as inactively as we had commenced it. We remained in camp and sent all the carriers back with their calabashes to the watercourse at the foot of the mountain, so as to establish a kind of depot in case we did not find any water on our way to the summit. The carriers set off discontentedly on their toilsome descent, and it was growing dusk before they returned with their filled vessels.

From our camp we had a splendid view of Ninagongo, whose peak rose up imposingly from a sea of cloud. Down below, the cloud masses, driven by the air currents, chased over the plain. Above these the outlines of the mountains stood out sharply defined in the rays of the sinking sun, which bathed the surrounding scenery in most wonderful tones of colour, almost like the northern lights. I sadly regretted the absence of a painter in our party, for the scene would have formed a subject worthy of an artist's greatest skill.

The air grew icy cold as night fell. A violent breeze sprang up and gave our unprotected tents such a shaking that Grauer, for one, capsized with his bed whilst reposing in his "Tower of Pisa"-like tent. The poor fellow crept out of the entrance shivering with cold and calling for assistance. Dense layers of fog crept across the mountain slope and swept over our heads.

This continued during the early morning, so that we could see but little in ascending. A trifle higher up the air grew clearer and at moments we obtained through the driving clouds glimpses of the rugged rocks at the summit.

The vegetation also changed. The forest region ceased. Tall bushes of heath appeared with thick branched boughs and gnarled trees five metres high. Long beard-mosses, typical features of the Alpine world, hung down from the branches.

We advanced higher up on the south-east edge of the abyss and the way grew steeper. The thick carpet of moss covering the ground yielded to our steps, causing some of the carriers to slip and fall, and here and there a heavy load went rolling down into the depths till it stuck on some projection or hung on a heath bush. It was necessary, on reaching an elevation of 3,700 metres, to take another lengthy halt for the sake of the fatigued carriers.

As the caravan was impeding our ascent Wiese remained behind to control it, whilst we hastened forward. The incline was so steep at times that we had to use our hands in climbing.

After a time we caught sight of an extended narrow ridge which looked a likely place for camping. The whole of the vegetation at this point bore quite a decided Alpine character. The slopes were covered with a broad belt of *Senecio Johnstonii*, and tall lobelias, mingled with immortelles, extended to the almost perpendicular rocks of the summit, which stretched up another four hundred metres in front of us. The sun emerged from the clouds and diffused a comforting warmth for a few short moments, whilst our eyes roved enchanted over the glorious prospect, which included two-thirds of Lake Kiwu.

Our patience was severely taxed whilst waiting for the caravan, which arrived late in the afternoon, everyone being thoroughly exhausted. The ridge on which we were forced to camp was hollowed out by atmospheric influences, and it was so narrow that the edges of the tents reached beyond it and it was hardly possible to fix the pegs. The soft ground, moreover, offered insufficient security. So it was with troubled and

NAMLAGIRA, FROM RUTSCHURU

anxious gaze that we viewed the black cloud-banks on the horizon which foretold bad weather during the night. Our fears proved well-formed. The weather changed very quickly. Mist rose and enveloped the camp, and as darkness fell our thermometer sank to one degree Celsius. Howling gusts of wind, which rose to a furious gale during the night and pitilessly pierced the flimsy sides of the tents, swept full over the ridge. Everyone who owned a thick suit put it on: no one thought of sleep. Wrapped round with blankets we listened to the raging of the storm, expecting our tents to collapse every moment. At midnight Grauer's flew away; being the largest it offered the greatest surface of resistance to the wind. The others remained standing, it is true, but the pegs worked loose, the awnings were soon flapping about in the wind, and there was a general shouting for "boys" to go and fasten them. The wind increased steadily all the time. Towards morning the heavy clouds emptied themselves in violent showers of hail which rattled down upon the roofs of the tents, and covered everything around with a white mantle.

The morning dawned on a wintry scene. Our tents and the whole region around us were covered with snow. Otherwise the situation remained unchanged: impenetrable fog, wind and cold, with the thermometer, indicating the same temperature as the evening before. An ascent of the peak under such conditions could not be entertained for a moment, as there was no path of any kind and it was impossible to find our bearings in a heavy mist which prevented our seeing farther than twenty metres before us. As there was nothing to be done, we congregated in Grauer's "salon" by the dim light of a lamp, closed in the tent against the cold, and played "nap." Now and again a stiff glass of grog served to keep up our spirits. Thus we hung on for more favourable weather, and this came towards three o'clock in the afternoon. The fog dispersed and the summit was clear again.

Wiese, Grauer and I prepared to ascend at once. First we had to pass through the senecio forest, which is very difficult to

negotiate as the moss-covered ground and the vegetation are always dripping wet. The shrubs attain a height of three metres, and their branches close in together so thickly that it is difficult to see the sky. Thus the ground hardly ever thoroughly dries up. We met with a good many more or less deep gullies, along the bottom of which ice-cold streams flowed, and these we had to scramble through. Whoever tried to gain a hold by catching on to the senecio bushes, pulled them out and began to slip, which was all the more unpleasant as the moss beds on the sloping surfaces would not bear a man's weight. It took us two full hours to reach the rocks at the peak although we had believed them to be quite close at hand.

On the top we found a deep chasm which led down into the rocks. We followed this, going over shingle till we struck hard frozen snow. This was rather too much for our "boys." They tiptoed over the cold subsoil uttering the most singular sounds. Finally, they sat down, crowded closely together, on a mass of rock and "would have nothing more to do with it."

All around us there rose steep smooth walls of rock. It was soon evident, therefore, that an ascent to the summit was out of the question unless we had mountaineering outfits, or made a careful investigation of the northern side. To accomplish this object we would have been compelled to stay up in that frosty region several days longer, and for this we were not adequately equipped. We had no rope of sufficient length to make such an ascent possible. In addition we were unable to light any fire in our kitchen, everything being in a soaked condition. Our followers were almost frozen and so pinched with the cold that they could hardly move their numbed fingers. In Kirschstein's judgment nothing of geological importance would be gained by the ascent, and from a sporting point of view we were not justified in endangering the health of our carriers. We therefore resolved to remain in camp till the next morning, to see if we could essay the climb in clearer weather. If it proved to be foggy we intended to set out on the return march.

THE CRATER OF NAMLAGIRA

It was high time to return as hastily as possible from the snowfield to camp, as thick layers of fog were beginning to rise up from the valley. So on a jutting mass of rock we carefully laid down a preserved meat tin containing our names as a record that, so far, this was the highest point on Mikeno which human foot had ever trod. On getting down we were again enveloped in fog, and it was with some difficulty that we succeeded in groping our way back to camp. Our frugal evening meal consisted of a few boxes of herrings and a tin of fruit. The night corresponded to the preceding one. The wind heightened to a gale, and shook our tents, and the pegs kept loosening. When morning drew near the mountains were again covered with a white cloak, and the fog had grown denser. The loads were strapped up and we began the descent to Burunga. The faces of our sorely-tried carriers lightened up, and they even attempted to strike up a song with their weak throats. Soberly we set out for the camping place lying deeper below, hurrying ahead of the caravan. Arrived there we made a light meal and gave the carriers a rest, and in the afternoon we were back in Burunga once more. The carriers came in singly and at long intervals, completely exhausted. Some even remained to rest on their way and did not reach Burunga until night. By a judicious distribution of extra baksheesh they were, however, soon restored to good humour.

On the first of November we set about making the ascent of Namlagira, whose eruptions have ceased of late, but from whose broad crater at that time we daily saw the vaporous clouds ascending.

Namlagira is separated from Burunga, as also from Ninagongo, by an extensive lava field which evidently emanates from the subsidiary craters on its southern slopes. The lava strata lie over one another about a foot in thickness, and pile themselves like ice-floes at a river's mouth. These had to be clambered over, and where broad fissures appeared long alpenstocks had to be used to leap the yawning clefts. These lava drifts are interspersed with jagged points of block lava. The latter

are very brittle and porous in nature, offer very little foothold, and cause a good deal of sliding and stumbling. The edges are as sharp as knives, and cut and tear one's boots and clothes in a terrible fashion.

The entire lava field is grown over with a species of lichen which has a whitish appearance in the sunlight, and gives the exact impression of an immense ice-field or glacier, an impression which the use of long alpenstocks rendered still more realistic. It naturally followed that in surmounting the obstacles of this difficult journey everyone had to find a path for himself, and before long we were so widely separated from one another that recognition of the individual khaki-coated figures popping up and down among the lava blocks was only possible by the aid of a telescope. As I had good going I arrived first at the southern slope of the mountain. At this spot a chain of eighteen parasitic cinder craters rise up like pearls on a chain, in a crevasse running from north-west to south-east. The lowest of them opens out in a wide semicircle to the south-east, and the spot where the lava stream makes its egress can be distinctly seen. A second one, apparently of more recent date, higher up the slope of Namlagira, has broken through the common wall of the crater chain and has taken a south-westerly direction. It originates from a steep-walled shaft of only a few metres circumference, from which a heavy white vapour with a sulphurous acid smell poured out incessantly. The Askari looked into the smoking depths with manifest distrust, and a man from the Burunga neighbourhood, whom we had taken with us as a guide, could not be persuaded to approach anywhere near in his tremendous awe of the *scheitani* (devil) who without doubt dwelt there.

Dr. von Raven and von Wiese came up soon after, whilst Grauer and Kirschstein, who were lower down, hungrily awaiting the arrival of the luncheon basket, put in their appearance later. We at once commenced the ascent to the summit of the crater, and proceeded without very great difficulty. Certainly a way had to be cut through the bush region with axe and knife, but

ERUPTIVE SHAFT IN THE CRATER OF NAMLAGIRA

CAKE LAVA AT THE SOUTHERN FOOT OF NAMLAGIRA

this work did not cause much trouble and hindered our advance but little. A good many elephant trails were seen right up to the vegetation limit of 2,700 metres. Keeping a moderate climbing pace, and striding over bare lava at the finish, we reached the crater in two hours. This ascent was the first undertaken from the southern side, whilst Lieutenant Schwartz, who was appointed to the German Congo Boundary Expedition, made his first ascent from the eastern side in 1902.

Namlagira is a flat volcanic peak with a very gentle slope traversed by broad longitudinal and latitudinal rifts and, like Ninagongo, possesses a very typical broad explosive crater. The latter, in fact, is larger than the Graf Götzen crater, the diameter, according to Kirschstein's measurements, being close on two kilometres! Although we had already received many memorable impressions of the grandeur of the African volcanic world, we were, nevertheless, taken aback at the spectacle of this colossal crater. Its walls fall almost vertically to the depths, and end in a kind of terrace which encircles the crater and which in its eastern part has a ledge projecting towards the centre. This is the remainder of an old and much riven crater-floor which was once blown up by an exceedingly violent eruption. The terrace falls away steeply to the actual floor, which is perfectly level like that of the Graf Götzen crater. Smoke of a sulphur-yellow and chalky-white colour issues from a large number of cracks and fissures. Terraces and crater-floor are formed of congealed lava, and are covered, in places, with still smoking layers of cinders and lapilli. These spring from the more recent outbreaks of Namlagira, not from the crater proper, but, as Kirschstein will prove later on, from an eruptive flue blasted up through the terrace projection just mentioned.

We had gone without food since six o'clock in the morning, and our hungry stomachs were insistently demanding their rights. So at four o'clock in the afternoon we began the descent over smooth lava, and before very long we found a favourable spot in the vicinity of a small stream. We encountered some difficulty in driving our tent pegs into the cracks in the lava, and

were not without fear of the tents collapsing. Finally, however, we sat down to do full justice to a smoking dish of *Busi* (goat-flesh), and to discuss the various incidents of a very eventful day.

As Wiese, Raven and I had to push on farther north in order to establish friendly relations with the Belgian officers who were awaiting us at Rutschuru, we bade good-bye to Kirschstein and Grauer, the latter of whom contemplated returning to Kiwu, whilst Kirschstein prepared to devote himself to the special task of investigating the geological conditions of the volcanoes, a matter for which I had granted him a few months' time.

During a period of over half a year of strenuous activity, during which he successively ascended all the eight mountain summits, Kirschstein thoroughly explored the Virunga volcanoes and elucidated the conditions of their subsoil and their tectonic and geological formation. I trust that this, the first expert geological investigation of the practically inexhaustibly rich and interesting field of the volcanic region at Lake Kiwu, may yield some valuable new material for professional colleagues at home.

Although we were not privileged ourselves to see anything in the way of a notable eruption during our stay at Namlagira, Kirschstein, who was compelled by his researches to remain several weeks longer, had the good fortune to witness at close quarters quite a number of outbreaks from this volcano. I append a brief description of one such event in his own words:

"I was awakened, whilst lying in bed early one morning, by a singular uproar which sounded something like the crashing of breakers on a distant shore. I tore aside the tent hangings and feasted my eyes on the magnificent view of an eruption of Namlagira. Surging and swelling violently, and sounding something like the variable roar of an immense, invisible furnace, white clouds of steaming vapour, resembling monstrous cauliflower heads in appearance, issued continuously from the crater, forming over our heads a mighty pine-like canopy, spread out like a fan at the top. It seemed to grow in the clear morning air to

A PEEP INTO THE CRATER OF NAMLAGIRA

simply endless dimensions. Then a strong rush of brownish exhalations mingled with the gleaming white. A broad fiery stream shot up suddenly into the air . . . then followed a second . . . a third. . . . It was as if gigantic hands were incessantly and indefatigably hurling up untold bucketfuls of glowing ashes from the deep throat of the crater to the light of day. Simultaneously a dense lapilli shower descended from the eruptive cloud. A rain of finest scoria, cooling rapidly in the air, was swept by the east wind that prevailed over many kilometres of the western edge of the Central African rift-valley. In the meanwhile the pine cone, which had previously gleamed white, assumed a deep black colour in its lower part. The uppermost parts of the cloud masses, lying towering over one another like tremendous balls of cotton wool, alone retained their whiteness. . . . After about an hour the vehemence of the outburst abated appreciably. The rain of lapilli ceased. Singular exhalations shot up in the eruptive cloud, which had now turned pure white again but was much less distinct in form, and were accompanied by sharp detonations. The roaring in the depths swelled with a rattling noise as of hundreds of hammers forming one powerful chord, but it lasted only a few seconds, and then sank away again to a steady, hardly perceptible murmur, and finally ceased. In another half-hour all was over, and Namlagira lay reposing peacefully before our eyes. Only a faint cloud of smoke remained hovering around the bare summit."

Altogether Kirschstein observed eleven such violent gaseous and cinder eruptions of Namlagira, and he photographed the greater number of them. He writes: "At night the eruptions from the volcano presented a picture of thrilling beauty. The columns of vapour, illuminated as if by a smelting furnace, shot up from the broad mouth of the crater like pillars of fire to the heavens, gleaming blood-red, and then fell down to earth again, sparkling and scintillating in a glorious rain of glowing ashes. It could be clearly perceived that the greater portion of the volcanic sputum fell back again into the crater. It was so light around that in the camp at the southern foot of the mountain

I was able to read off the barometer, or the time, without the aid of any lantern." The eruptions were always alike in character, and consisted of an immense mass of aqueous vapour, no discharges of lava making themselves apparent.

Some of the eruptions observed by Kirschstein were surveyed at the same time by Lieutenant Wiese with the photo-theodolite, from a greater distance. The pictures measured later with the stereo-comparator showed that in one case (the eruption of the 17th November) the vaporous pine-like formation measured no less than nine kilometres in height, whilst it attained a breadth of nearly nineteen kilometres in the uppermost fan-shaped parts. These figures assist one to form an idea of the immense area occupied by these gaseous vaporous masses during an eruption.

It may be deemed worthy of mention that Kirschstein, who ascended Namlagira before, during, and after the eruption, four times in all, also ventured to effect a descent to the crater of this active volcano for the purpose of elucidating manifold and diverse geological questions. With regard to this decidedly daring experiment he shall speak for himself:

"I essayed the descent," reports Kirschstein, "in clear weather on the 5th of December with a few specially picked followers on whose trustworthiness and cool-headedness I thought I could implicitly rely. Quite suddenly in the middle of the crater we were enveloped in a dense mist and a fine drizzling rain. The fog was so thick that we could hardly see five paces in front of us, let alone discern the edges of the smoking jaws of the volcano. One false step and we should have vanished irrevocably for all eternity in the sinister yawning depths. At the best there was the danger of being lost in the dense fog. In these circumstances I decided to await a change of weather on the spot itself. For two hours we waited, glued to the same position. Then, suddenly, there came a dull rumbling from under our feet like subterraneous thunder. First gently, resembling thunder at a distance. Then again. Finally swelling distinctly from minute to minute. . . . Cold sweat bathed

CINDER CHIMNEYS AT THE SOUTHERN FOOT OF NAMLAGIRA

ERUPTION OF NAMLAGIRA, NOVEMBER 12, 1907

ERUPTION OF NAMLAGIRA, NOVEMBER 17, 1907

my forehead. There could be no illusion, the mountain was awakening to fresh activity! Aware of the terrible position in which we were placed in the centre of the crater I immediately gave orders to march back. And indeed it was high time, for the lapilli was already beginning to rain like hail upon our heads; the volcanic fumes stifled our lungs and oppressed our chests; our breath grew shorter and shorter, and we could almost hear our hearts beating. We groped our way forward in silence, but the heavy fog prevented us from ascertaining our position. My people, too, had entirely lost their heads. They charged me with having brought down the wrath of the *scheitani*, or devil, of the mountain upon us through having photographed him in his dwelling-place, and denounced me for having led them to their destruction. In short, after wandering aimlessly around step by step, we continuously found our way barred by the steeply rising crater walls, whilst the dull rolling thunder momentarily increased in volume. It was a highly disagreeable, indeed, a highly critical situation. I could feel the blood throbbing in my veins. Unless we found our way out of the mouse-trap very quickly we were utterly lost. . . . Luckily for us the thick veil of fog lifted. Only for a moment though. Yet it sufficed. I had noted the position on the crater walls where we might find our way out. A few moments later we were standing up above on the edge of the crater, and a loud hurrah sprang from our throats. We were saved from our peril. My black followers skipped about for joy. Now, of course, not one of them had entertained the slightest fear of the *scheitani*. They were, naturally, far too enlightened for anything of the sort, was the opinion of one of my Askari. . . .

"I repeated the descent on the 15th of December. The weather was clear and sunny and so I was able to make the circuit of a large part of the inner crater-terrace, besides taking some observations of much value to me. I also succeeded in getting some capital photographs. The vapour formation was of an extremely slight character, and a thorough examination of the different parts of the crater was possible. Besides the chief

eruptive canal I discovered two further flues running down vertically into the earth, which like the main one, had burst out from the encircling terraces (not from the crater-floor proper) and were smoking faintly."

During the whole of his sojourn at Namlagira Kirschstein kept a regular record of the meteorological conditions; made scientific investigations into the relations of the parasitic craters; determined their exact shape and position, and carried out a great many further tasks. These dealt chiefly with the manifold volcanic phenomena encountered in the comparatively recent lava field piled south of Namlagira. Besides characteristic volcanic cinder chimneys, "hornitos" as they are called, and the singular lava cloaks on charred tree trunks, there was a long lava tunnel (155 metres), very typical in feature, and in many respects instructive, which particularly arrested our attention. As is well known, lava tunnels of this description are formed by the stream of lava cooling off very quickly on the surface whilst the fiery stream continues to flow on beneath the congealed outer crust, leaving the latter finally in the shape of a hollow tube, often a kilometre in length. In the one we investigated (see illustration) the end part of the tunnel was quite intact and merged into an open cavern. Further on, however, the tunnel had caved in so that it formed a lava fissure running in a direct line from north-west to south-east, four metres in width and seventeen metres in depth. It may be questioned whether a large proportion of the gaping lava rifts found in other volcanic regions, and which are attributed to tectonic action, may not have arisen in the same way.

There was another interesting result of Kirschstein's investigations in the Namlagira district. He was successful in discovering a series of those most primitive forms of manifestations of volcanic forces which Branca first described with any accuracy as occurring in the neighbourhood of Urach in Swabia, and introduced to science under the apposite title of "volcanic embryos." These are steep-walled eruptive canals, sometimes only a metre in breadth, which have been blown up through the

A BOULDER OF LAVA ON THE ADOLF FRIEDRICH CONE

SCORIA CRATER, WITH GROWTH OF LICHEN

COATING OF LAVA ON A DECAYED TREE TRUNK

outer crust of earth in consequence of an explosion of the gases pent up in the subterranean centre, without any loose or solid volcanic sputum having amassed around the mouth of the shaft. Consequently no volcanic cone has formed, and so, to some extent, these explosive products are the youthful stages in the life of a volcano. For if it is assumed that every eruption is introduced by volcanic explosion, the existence of an explosive canal under all the burning mountains of the earth, whether extinct or still active, must be taken for granted.

So far as the eruptive shafts in the vicinity of Namlagira, which were investigated and accurately surveyed by Kirschstein, were not choked up by the stone, rock and rubble scattered by the explosion, they proved to be extremely deep. In any case, the hundred-metre rope used by Kirschstein did not suffice to probe their depth, and on throwing largish stones down, the rumbling and rattling could be distinctly heard for at least ten seconds.

The results of his other researches may here follow in his own words:

"It matters not whether we proceed on our way over the lava fields of Namlagira or, standing on the summit of Ninagongo, we direct our gaze over the gaping depths of the Graf Götzen crater, the knowledge that we have newly-formed volcanic soil under our feet remains. There is a feeling of surprise that the earth does not suddenly begin to quiver and tremble. In truth the possibility of any surprises of such a nature is not altogether excluded. This is shown by the new volcanic formations found at quite a recent date in the western group of the Virunga volcanoes.

"Thus a small volcanic cone formed itself suddenly one day in the month of May, 1904, to the south of Namlagira, and spouted out a stream of lava 250 metres broad as far as to the northern end of Lake Kiwu. The glowing river buried trees and bushes in its course, and hurled lava blocks and bombs, six feet or so in height, as far as the lake, ten kilometres away. When Weiss and I visited the newly formed, and until then

nameless, volcanic cone in October, 1907, being the first Europeans to do so, and definitely determined its position cartographically, we christened it, in honour of his Highness, the Adolf Friedrich Peak. The cone itself is formed of quite loose eruptive material, innumerable heaps of scoria which had massed themselves over one another. There is no crater perceptible. The point of egress of the lava stream, the eruptive flue, is buried under the mighty masses of ashes and thus remains invisible. The cone, however, is traversed in parts by cracks and rifts which steam vigorously and on the edges of which the scoria are coloured in hues varying from sulphur-yellow to dark red-brown. It is not requisite to be endowed with the delicate sense of smell of a chemist to recognise the gases which issue from the depths. The prickling smell of sulphurous acids, with which in places muriatic acid fumes are mingled, may be detected for miles around. Sulphuretted hydrogen and carbonic acid gas also play a prominent part.

"A second and smaller volcanic cone of the same type as the Adolf Friedrich was formed in the autumn of 1905, to the east of Namlagira. The natives called it *Kana* maharage*, which means 'the master who loves beans.' This was the name given by the natives to Lieutenant Pfeiffer when living, who came to grief whilst elephant-hunting, and whose spirit they believed to have flown into the hill which had suddenly risen up from the level ground to an accompaniment of fire and thunder. Like the Adolf Friedrich, the *Kana maharage* cone consists mainly of loose volcanic scoria, and differs only from the first-named in that it possesses a visible summit crater, with a diameter of about seventy-five metres at the top. When I visited the *Kana maharage* in December, 1907, my attention was attracted by a large number of places on the surface of the lava stream, in the near vicinity of the cone, which smoked in parts and were multifariously coloured, chalky-white, brick-red, dark-brown. The impression given was that a person had got hold of an inexhaustible paint-box and casually daubed the greyish-black

* *Kana*, incorrect Wanjaruanda pronunciation of *bana* ("master").

ON THE ADOLF FRIEDRICH CONE

SUMMIT OF THE ADOLF FRIEDRICH CONE

CENTRAL GROUP OF THE VIRUNGA VOLCANOES

lava with prodigious smudges of colour in the most prodigal fashion."

After exploring the active western group of the Virunga volcanoes, with their floods of recent lava, Kirschstein turned his attention to the middle group. This has probably been extinct for a considerable time. In addition to Mikeno, steep, jagged and weather-worn, the ascent of which I have already described, Karissimbi with its elevation of 4,500 metres is also noteworthy. It is the highest of the Virunga volcanoes, and at the same time is doubtless one of the most stupendous volcanic mountains in the world. Kirschstein in his report writes as follows:

"Karissimbi towers above the landscape, its mighty western plateau crowned by a cone of comely shape. With its solid, massive bulk, its gigantic proportions reaching up into the sky, it overwhelms the observer. The summit is very rarely clear, and a dense layer of clouds nearly always envelops it. When they disperse, perhaps for a few moments only, and hover like a white cap over the head of the peak, the glittering snowy splendour which reveals itself to the eye is a magnificent spectacle. A very characteristic view of Karissimbi can be obtained from the north, either from Wissoke or from the Belgian military post of Rutschuru.

"The principal cone rises up from the plain in a remarkably regular way, tapering off to the peak, whilst a long ridge extends along the eastern flank. Many travellers have maintained that this part of the mountain is the remainder of an ancient crater wall, but this is hardly correct. Incidentally I have ascertained that the so-called ridge is an extended and almost level plateau in which a tremendous hitherto unknown crater is buried, more than one and a half kilometres in breadth, and which I have named the Branca Crater. Karissimbi has a second crater almost direct south of the main cone. This is the Hans Meyer Crater. The summit itself has no crater. Bare rocks, broken up into a chaos of loose blocks, meet the eye. Ice lies in the cracks and clefts of the rock."

Karissimbi was climbed by Mildbraed, Schubotz and Kirsch-

stein successively. Mildbraed reports the vegetation as standing out in harsh contrast with that of Ninagongo.

"On Ninagongo," he writes, "everything was in the process of formation. Nothing had matured. The flora of this mountain offers no rich booty to the botanist, but yet it is imposing by very reason of its monotony. The enormous base of the volcano is covered with a pure bamboo vegetation up to a height of some 3,000 metres, and this extends in broad bands as far as the mixed bamboo forests of the Bugoie mountain land. From a botanical point of view the bamboo forest is uncommonly monotonous. Generally speaking nothing but scrubby undergrowth flourishes. The deep black vegetable soil is often covered by a carpet of small *selaginella*. Small ferns grow in it, different shrubs related to the stinging nettle (*Fleurya*, *Pilea*), and occasionally a pale pink balsam (*Impatiens Eminii*). Rarely, but more often in such spots where the bamboo is in any way impeded in its development, woody plants are to be found sprinkled here and there. Amongst these the often-mentioned *Hypericum lanceolatum Lam.*, takes the first place. I measured stems of two metres in circumference, on the whole, the sturdiest that I had met with during the expedition.

"Up beyond the bamboo on Karissimbi a vegetation exists which, perhaps, has not its like on any other African mountain. Even from the lava plains below one can see it gleaming out from between the trees like luxuriant alpine meadows clad in freshest green. Having passed the monotonous bamboo, one is amazed at stepping into quite a strange open wood formed almost entirely of extremely old hagenia stems. One measured 6.45 metres in circumference. They looked almost like huge blocks of rock, divided at a short distance above the ground into gigantic overhanging boughs covered with thick mossy cushions, and unravelling in light branches bearing silver-grey, hairy pinnæ, slightly reminiscent of the well-known tanners' sumac (*Rhus typhina*). The undergrowth is composed of the pretty shrubs of *Hypericum lanceolatum*, a beautiful vernonia of tree-like growth, and there is a fine sort of blackberry bramble which

THE KANA MAHARAGE

BAMBOO FOREST AT THE SOUTHERN FOOT OF KARISSIMBI

KARISSIMBI, SEEN FROM MIKENO AT AN ELEVATION OF 3,900 METRES

SUMMIT OF KARISSIMBI, THE HANS MEYER CRATER IN THE FOREGROUND

carries blossoms of the size and colour of *Rubus runsorensis Engl.*, The undergrowth, however, which forms the 'green meadows' which one sees from below, is a real wilderness of great African shrubs of which the most important are the umbelliferæ (*Anthriscus silvestris* (*L.*) *Hoffm.*, and *Peucedanum Kerstenii Engl.*), as also a sorrel (*Rumex Steudelii Hochst.*). The soil is rich, soft and heavy: the foot sinks deep into it at every step.

"The heath region at Karissimbi is not particularly noteworthy. It is true that the *Philippia Johnstonii Engl.* attains stately, tree-like dimensions with very broad, dense crowns, comparing very favourably with the *ericaceæ* of Ruwenzori, but it is limited to the margin of the Hans Meyer Crater, an altitude of 3,800 metres, and only forms a streak amongst the senecio growth which starts lower down.

"The *Senecio Johnstonii* is extraordinarily developed at Karissimbi. It begins below the so-called south cone at an elevation of about 3,400 metres as a candelabrum-branched tree about ten metres in height, and extends up the cone for another thousand metres, of which it is the sole inhabitant. In the lower region it is interspersed with the mighty stalks of *Lobelia Wollastonii Sp. Moore*, which look like immense gun swabs. There were few blooming plants to be found in November; there were mostly withered stems or young plants with great shocks of leaves. One withered stem measured 5.50 metres in height, of which the blossom-spikes took up 2.50, the circumference of the hollow stems in the leafy region being 50 centimetres. It is the same genus which is characteristic of the alpine region of Ruwenzori. In this vegetation the ground is covered with a semi-shrublike *Alchemilla cinerea Engl.*, which spreads almost all over the great mountain cone like a perfect grey-green carpet. It is excessively fatiguing to climb in it, especially in the lower part, where one sinks in up to the knees. Below the summit it gives way to mosses, liverwort and lichen, but we came across it again near the highest point in the shape of a few dwarfed specimens amongst the snowflakes and the storm-tossed lava fragments which were studded with ice crystals at an elevation of 4,500 metres."

Unfortunately this colossal volcanic giant was not fated to be conquered without loss of human life. Kirschstein and his caravan were overtaken by a terrible catastrophe on Karissimbi. When I received the following letter from Kirschstein I was filled with deep pity for the poor fellows who, whilst faithfully fulfilling their duty, had fallen victims to their superstitions:—

"My labours at Karissimbi were for the most part concluded by the 26th of February. My frozen followers had held on for a full seven days with me in the airy heights without grumbling. Added to the unwonted cold we were suffering from shortness of provisions. I therefore resolved to begin the descent. It was a bright sunny morning when we struck camp on the eastern edge of the Branca Crater, where for the time being we had pitched our tents. It never entered our heads then that in a few short hours we should be brought face to face with grim death. . . .

"As we had to return by the southern side of the mountain on account of its being an easier descent, I selected the shorter cut right across the Branca Crater instead of making a circuit of it, which would have meant a journey of two or three hours longer. The imposing, broad, flat surface of the crater forms a great moor, from the centre of which a small, irregular volcanic cone rises up. On the cone there is a beautiful clear lake encircled by very steep walls. A few other lakes, shut in partly by low hills, lie to the south-east and north-west of the otherwise perfectly level and spongy floor of the crater.

"We had safely traversed the first half of the moor when we were suddenly assailed by an extraordinarily violent shower of hail which came down from an almost bright sky, whilst a dense fog gathered at the same time. The temperature sank to zero, and then a snowstorm of such fury set in that, if I had not myself been a witness of it, I should have deemed it impossible in equatorial Africa. My carriers had scarcely perceived the snow when they threw away their loads, lay down on the ground, and with wails declared that they must die. It was in vain that I urged them to pursue the march. I made it quite plain to them that lying down on the icy cold, swampy ground,

ERICACEÆ, WITH BEARD MOSS, KARISSIMBI

LOBELIA WOLLASTONII, SENECIO JOHNSTONII, AND CAREX RUNSSORENSIS-BÜLTEN, KARISSIMBI

without even the shelter of trees or the possibility of making any fire, would only mean certain death for all of us, whilst the crater-edge with its tree and plant growths would vouchsafe us shelter and succour. I insisted upon their standing up again. All in vain! To no purpose! Nothing sufficed to awaken them from their lethargy.

"All my persuasion, insistence and even threats brought no result. '*Amri ya mungu*' ('It is the decree of the gods, we must die') was the only reply that I could elicit. What was to be done? The will power and the intelligence of the European were powerless here against the fatalism and stupid apathy of the negro. Summoning up all my remaining strength of will I fought my way, wading up to my knees in icy cold water, accompanied by my two Askari and a very few followers, through the storm and snow straight to the edge of the crater. Arrived there we contrived to erect a temporary camp in the shelter of the trees and made a fire. Time after time, accompanied only by the two Askari, I penetrated the pathless swamp, and so brought one hapless native after the other to the warm camp fire. I ordered my men to leave the loads where they were so long as they rescued the people. But even our own strength failed at last. 'Master, if we have to go out again, we shall never return alive; we can do no more!' declared the Askari, and their looks corroborated only too well the truth of their words. These brave fellows had really done all that it was possible for human power to do. They had come to the end of their strength. The closing darkness, too, made any further attempt at rescue hopeless, as the nearly rigid and numbed unfortunates, who were invisible to us through the tall reed-grass, appeared to be unable to reply any longer to our calls. There was therefore nothing else to be done but to leave them to their fate until the morning.

"Absolutely drenched through, without any tent, limbs shivering from emotion and cold, and wrapped in a blanket only—that is how we spent the sleepless night round the camp fire, only to have to resume our work of exhumation again with

the first grey light of morning. *Exhumation*, not rescue, for what remained to be rescued was heartrendingly little. Very few of the luckless ones, of whom my carrier-leader Salim was one, showed any trace of life. All the rest, twenty in number, and nearly half my caravan, lay corpses in the snow. Frozen under a tropical sun! Faces horribly distorted by the death agony, fingers scraping deeply into the snow, so they lay! A terrible spectacle for us who had arrived too late to save them.

"One thought alone possessed me—Away! away! as far as ever possible from the abode of death! The loads had, of course, to be abandoned, amongst them my scientific collections and the whole of the valuable photographic material—the work of many weeks. Who would drag them along? We ourselves were half-dead. We could only take the most absolutely necessary things with us. Arrived at the lower Karissimbi camp I collapsed. When I returned to consciousness two days later I found that my people, or at least the strongest of them, had so far recovered that we could turn our attention to the task of unburying the loads which had been left behind. By good fortune they were all regained, not a stick was lost."

This most regrettable episode offers a very striking example of the fatalism, and the lack of energy engendered thereby, in the negro during dangerous situations, where a rapid apprehension of the position and cool-headed independent action would save him. "*Amri ya mungu*" is the watchword with which he confronts all the arts of persuasion. "*Amri ya mungu*"—it is the divine will that we are to die, so let us die. One might imagine this to be truly pious resignation and subjection to the divine power, but that is not at all the case. The formula so used is purely a phrase heard from youth up and handed down from father to son, in which the stupid apathy of the negro evinces itself. That it would be possible to overcome this by an appropriate method of treatment, by which I mean severity tempered with justice, is proved by the model behaviour and energetic conduct of the two Askari. Taken altogether, I could adduce many a fine instance of cool-headed and courageous action in

THE SUMMIT OF KARISSIMBI WITH NEWLY-FALLEN SNOW

MGAHINGA AND MUHAWURA, FROM THE SOUTH-WEST

the face of peril on the part of most of the Askari who formed our escort for the better part of a year.

In spite of the severe catastrophe on Karissimbi, Kirschstein successfully completed the geological survey of the volcanic region, and amongst other achievements he was the first European to climb Wissoke, which belongs to the middle group. It would, however, lead me too far were I to enter into the details of his special investigations. I will content myself in this place with quoting a few of his observations concerning Muhawura, the easternmost of the Virunga volcanoes:—

"My researches on Muhawura, which is 4,165 metres in height, led to the establishment of the fact, which is as noteworthy as it is surprising, that this mountain, generally believed to be extinct, has had lava floodings at a comparatively recent date, which have streamed away over its eastern and north-eastern slopes. Thus the theory that the furnace of the volcanic forces in the interior of the Virunga mountains has travelled from east to west, and that therefore the older volcanic creations are to be found in the east and the younger in the west is confuted. For Muhawura, which is the most easterly, would in that case be the most venerable and longest extinct of the Virunga volcanoes; this, however, is not the case.

"The conviction at which I have arrived, based on the geological traces, of the relative youth of Muhawura finds support in the vegetation of the mountain, whose east to north-eastern slope is remarkable inasmuch as the flora bears the distinct stamp of the incompleted, one might say of debris: a mazy chaos of herbaceous growths, but no tree, only indications of bamboo, no *ericaceæ*. Mildbraed is also of the opinion that lava streams have flowed down this side of Muhawura at no very distant date. On the other hand, the senecio region at the summit is developed quite typically in places which have been spared by the recent lava floods. Here again, as in Karissimbi, one finds the conjunction of *Senecio Johnstonii*, *Lobelia Wollasitonii sp. Moore* and *Alchemilla cinerea Engl.* The senecio, indeed, forms a belt-like zone, a real primeval forest of such density and

amidst such a jumble of timber covered with dripping wet moss cushions, that one can only work through it with considerable difficulty, often sinking up to the breast in the overgrown clefts and hollows.

"Finally, many of the native designations indicate that eruptions of Muhawura have occurred within their memory; whilst, on the other hand, they have no knowledge that Sabinjo or the volcanoes of the middle group have ever been 'fire-mountains.' Thus, for instance, an eruptive flue on Muhawura bears in the native tongue the name 'Kabiranjuma,' that is to say, 'the last bubbler' or 'last boiler,' whilst the land lying to the north-east of Muhawura is distinguished by the title 'Ufumbiro,' which means the smoker.

"The natural forces here have not had the complaisance to proceed exactly in the routine manner desired by man. The volcanic energy has certainly not worried itself much as regards the nice divisions into eastern and western groups, but has asserted itself quite independently. Muhawura is by no means the oldest extinct volcano of the mountain world around Lake Kiwu. So far as the degree of disintegration and other geological indications are concerned, Sabinjo in the eastern and Mikeno in the central group must be regarded as the most ancient of the Virunga volcanoes, or at least those which have been quiet longest."

By the end of March Kirschstein had finished his labours in the volcanic region. As a result of his activity it was possible, through the kind offices of the White Fathers at Ruasa, to send off to the coast no fewer than seventeen loads, with lavas, scoria, bombs, sublimation products, etc., from the Virunga volcanoes, as well as two double loads of photographic plates. He himself wended his way over Ufumbiro and the lava fields lying to the north of the volcanoes, towards Rutschuru.

ALPINE MOOR WITH SENECIO JOHNSTONII, KARISSIMBI

CROSSING A RIVER ON A LAVA FIELD, MUHAWURA

VIEW OF THE CRATERS, NORTH-EAST OF MUHAWURA

CHAPTER VII

TO LAKE ALBERT EDWARD

OUR sojourn in a land like the Congo State which forms a centre of international interest, and into the administration of which we were privileged to obtain a glimpse, naturally calls for a review of some sort, or at least a comparison with the conditions and institutions of other African territories which are under foreign rule. The reader might expect that at the beginning of the chapter which deals with our stay in the Congo State the questions of greatest interest, such as the administration of the country, the exploitation of its products, or the native question, would be fully entered into. I crave his indulgence if I do not fulfil his anticipations. Firstly, any attempt to deal with such questions would far exceed the limits of a simple narrative of travel, and, secondly, I would not presume, after a stay of only seven months in a country, which it would take years to know well, to form any conclusive judgment concerning it.

One idea that has become general, however, I will most firmly oppose, namely, that the policy of the Congo State is only concerned in depriving the population of its rights and depleting it for sordid mercenary gain. It is true that there have been isolated instances of cruelty, and cases where officials lacking in understanding have misused the powers confided to them by excess of zeal, or in an attack of "tropical frenzy," and this is not denied by the Belgians; but these are things which happen in the colonies of every nation. It is impossible to prevent their occurrence in countries where the indolence and the behaviour of the people necessitates the strictest discipline to promote the development of the countries' great wealth. The natives of the

Congo State are certainly treated with an extremely firm hand, but they are not overworked. Even in the great rubber districts where the inhabitants are hostile, the reason is not to be sought for in oppressive conditions of labour. The daily work of an artisan in Germany far exceeds that which is turned out by the negro. The true reason of the antagonistic attitude must be looked for in the inborn dread of any compulsory, steady bodily exertion, which is a cause of resentment with most negro races, as well as with the dwellers in the virgin forest.

I should like to record here that we met with many exemplary institutions in the Congo State in comparison with which the excesses of one or two individual officials are of no importance whatever. The treatment of the natives might in many cases be termed too humane, so that it often heavily handicaps the administrative officers. An officer of a *safari*, for instance, may only punish with castigation the people who are in his permanent pay (Askari, "boys," etc.); he is powerless as regards the carriers. He is even bound to report any offence committed by a carrier in the first instance to the proper *Chef de zone*, or chief of the station, who again must employ a European and not a coloured man to bring in the offender. If a native is to be arrested at a European outpost and he happens to be on the spot, he may not be detained there. The punishment usually consists of detention in irons or imprisonment; the flogging of non-employees is prohibited.

Now it is sufficiently well known that travelling in Africa is impossible without the maintenance of the strictest discipline and the use of flogging as a punishment for disobedience. This is the experience of all those who have travelled with a large *safari* for any length of time. Where severity is not combined with justice and fairness, where the European after full inquiry is not empowered to punish the offender as he merits, there the discipline which is absolutely imperative in any caravan, as well as the authority of the white man, speedily disappear. The negro respects only the man who proves stronger than himself. Power impresses him, not mildness or clemency; the latter only

A SOLDIER OF THE
CONGO STATE

SOLDIERS OF THE CONGO STATE

excites his contempt or scorn. It is only the white man who has never travelled alone with a large caravan, absolutely dependent on his own force of will, that can fail to recognise this fact.

Is an official to blame who, where driven to desperation by the insubordination of the carriers, and fully familiar with the punishment laws, breaks senseless injunctions in the full knowledge of the irregularity he is committing?

As the reader may already be aware, the entire Congo State is divided into a number of districts, the largest of which are subdivided into zones and *secteurs*, the smaller into *secteurs* only. They are governed by Belgian officers, or by officers of other nations who have entered the Belgian service, and who are employed in the civil administration. The military, again, are subordinate to special officials.

Of the many institutions in connection with the administration of the État Indépendant du Congo with which we became acquainted, I will make brief mention of the system of taxation only:

The amount of the poll tax is determined by the *Chef de secteur*. The ordinary rate amounts to one franc in the month, or twelve francs per annum. In cases of non-payment, which constantly occur, a monthly labour liability of four days (forty hours) comes into force. Every worker, however, is compensated with twenty-five centimes. Payment is tendered in beads or cloth. Coin is unknown.

The black understands quite well how to clothe himself with the stuffs received. The hands employed permanently at any station go about chiefly in wide trunk-breeches made of very elegant check stuff. A blue jacket is usually worn, and the head gear consists of a thick, heavy straw hat with a very broad brim and a high crown tapering off towards the top.

The troops are recruited from all parts of the State, and are stationed as far as possible from their homes. They consist throughout of powerful men of a good appearance, the best types coming from the Uelle territory. The men wear a serviceable uniform, consisting of a short blue, red-piped jacket and

wide knee-breeches held up by a red sash at the waist. A red fez decorates the head.

The soldiers are armed with a type of rifle once used by the Belgian army, but now obsolete, called the Albini. The shooting capacity of this weapon is so faulty that it is perfectly excusable to miss an elephant at fifty paces. Contrary to the usage of German native troops, these men go barefoot both on parade and whilst on service. It is only on the march that a kind of sandal shoe is worn, which is fastened over the instep by a leather strap, and allows free ingress and egress to water.

The troops are trained at three great camps on the Congo, which we visited later on; and there, too, the recruits receive their military education. Under the direction of European (mostly Scandinavian) officers, about a thousand men are drilled into serviceable soldiers in a one to one and a half years' course, whereupon they are apportioned to various stations in the interior. The camps present an almost painfully clean appearance, and the care shown for the men is most exemplary. As an instance, every soldier—nearly all are married—dwells with his family in a small house of his own.

The term of service is seven years on active service and five years in the reserve.

Contrasted with the coolness of the Ruanda climate, and the cold of the volcanic region, which had greatly eased our arduous marches, we found the sudden heat very oppressive when we descended to the Rutschuru plain, which lies sheltered north of the western group of the volcanoes. From high-lying positions averaging 1,600 metres in altitude, the agreeable coolness of which we had enjoyed for the past few months, we descended to an altitude of about 1,000 metres.

The path brought us before long to a fairly thickly populated district in which agriculture was carried on. At Busuenda, Lieutenant Vériter, who had been appointed to us for the time being as escort, reported himself to me.

Busuenda lies tolerably high. On clear days one can discern

THE MARGINAL MOUNTAINS AT MAJI JA MOTO

CROSSING THE SEMLIKI AT MAJI JA MOTO

CANÔN FORMATION AT MAJI JA MOTO

with a glass the glistening surface of Lake Albert Edward, five days' march distant, and the outlines of the snow mountains of Ruwenzori some hundred and fifty kilometres away. From here the path drops steeply down into the Rutschuru plain. The lower one descends, the more luxuriant grows the grass between the villages.

At the foot of the hill, where the post of Rutschuru lies, we crossed the wild-rushing River Rutschuru over a passable bridge —the only one I had seen until then in the Congo State. A broad road led up to the post, at the entrance to which we were received by the Commandant Supérieur Derche and others, and a company of soldiers some 150 strong, who, then and also later in the march past, made an excellent impression.

Rutschuru consists of a small fort with walls and moat, the Askari village, 300 metres away, and a few thatched European houses. It is the seat of the *Chef de zone*, Captain Baudelet at that time, and the *Chef de secteur*, whose functions during our visit were fulfilled by Lieutenant Spiltoir.

We passed two or three days in most friendly and agreeable hospitality, and then we were obliged to push forward in the little-visited district of the northern Rutschuru valley. By easy marches through the perfectly level plain we arrived at Maji ja moto ("Hot water"), which owes its name to the hot springs which gush out of the rocks. The water is exceedingly hot, the highest temperature taken by Kirschstein being 90 degrees Celsius. According to our analysis it appeared to be a fairly pure carbonate of soda water with a slight alkaline taste. A smell of sulphuretted hydrogen was very noticeable. Ferrying over the Semliki was not devoid of danger, for the current rushed along so furiously that it was impossible to keep a boat in position. We were consequently compelled to fasten long ropes to the nose and the stern-post of the dug-out and construct a sort of flying ferry. The pressure of the water against the side of the boats was so great that they often lurched dangerously and were in peril of capsizing; each contained about six people and their loads.

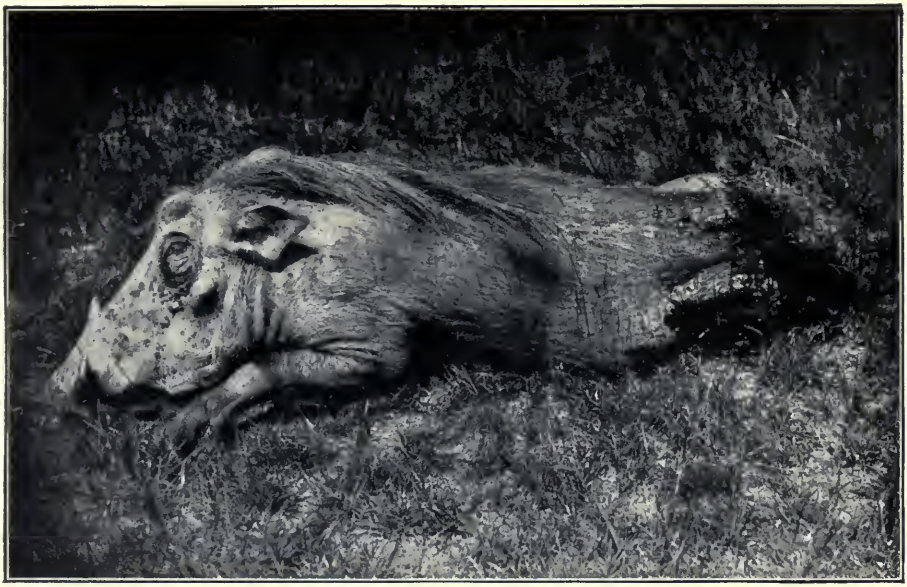
The camp was encircled with a stockade to form a protection against lions, which were fairly prevalent, and it was therefore very cramped. Our stay was in consequence hot and anything but agreeable. The fence had proved itself necessary, however, as lions had previously broken in and destroyed human life. The audacious marauders had not been daunted by a leap of more than three metres over the high hedge. Only a month before I arrived, a sentinel on duty at the exact spot where my tent stood was seized by one of them. He only owed his life to the fact that the lion, frightened by the screams in the camp, abandoned his victim and, springing back over the fence, fled away.

We came across fresh tracks which led close along by the fence, and we several times heard roaring. As we intended to shift our camp to the steppe as quickly as possible, turning off in an easterly direction, the abundance of lions in this region suited us very well. The whole Rutschuru plain from Maji ja moto to the southern end of Lake Albert Edward simply swarms with game. Wherever one looks the plain is covered with immense herds of antelopes. Yet, as in the whole of Central Africa, the number of species met with is fairly limited. The chief are the water-buck, moor-antelopes, reed-buck, duyker-buck and jimära (lyre-antelope). Buffalo may be seen daily in great herds in the bush, which concentrates into a forest-like growth towards the lake. We also often observed the ugly forms of dicotyles. They prefer the neighbourhood of swampy places and river courses, although they are also encountered in the middle of the wide plain. As the dicotyles are accounted a particular delicacy by the lion, their presence partly explains the considerable number of lions in the district.

The Belgian officers, generally speaking, hunt very little, and, indeed, the only game shot is used for commissariat purposes, so that there does not appear to be any immediate danger of these shooting-grounds being depleted. The Rutschuru steppe is a bare, level track, broken by light acacia growths. It was covered with low grass reaching to the knee at the time of our

WATER-BUCK (FEMALES) ON RUTSCHURU PLAIN

MOOR ANTELOPE



DICOTYLE

LION KILLED AT MAJI JA MOTO, NOVEMBER 16, 1907

visit. The steppe is intersected longitudinally by a broad, deep ravine, at the bottom of which flows a shallow watercourse. This brook is overrun by a palm thicket, and is a favourite haunt of beasts of prey, particularly lions and leopards. It was there that we proposed to fix our headquarters.

Long-sustained roarings, disturbing the nocturnal peace, raised hopes in Vériter's and my own breast that some of the beasts might be visible when we tramped through the dewy grass at daybreak. And we soon had the good fortune to have our expectations realised. As the red disc of the sun shot out its first rays to greet us, I saw the dark form of an immense male lion slouching through the grass straight ahead of me, the tips of the great mane and the line of the back showing up strongly against the light. Having stalked him for some distance, it was not difficult to bring him down. At the first shot he wheeled round growling; at the second he lurched sideways and fell into the grass. Whilst inspecting the spoil, casually raising our eyes to the west we saw the beginning of a violent eruption of Namlagira. The column of smoke, wonderfully illuminated by the morning light, worked its way upward in massive rolling clouds, and, widening out as it rose, was dispersed in ever-increasing circles.

This single hour made amends for many a hunting failure. To have shot a lion whilst in view of an active volcano! Not many persons have had such an experience. To attain the victory over the mightiest beast of prey with the mightiest spectacle which Nature can offer as witness—was there ever such luck?

Having skinned our prize, we proceeded further in the direction of the ravine, and took no further notice of the numerous game all around us.

This gorge proved to be one of considerable difficulty for a caravan to cross, and we had to construct a special road. A steep path was struck through the brushwood to the bottom, and was made passable for the load carriers in the swampy places by heaping up palm branches. This work finished, we lay down to a well-earned rest, expecting the caravan to arrive

in about an hour's time, under the conduct of Raven. Suddenly we heard shots in the distance, and, jumping up, we made out Raven and Weidemann, accompanied by two Askari, climbing down the opposite side of the ravine with their guns in readiness, some 300 metres from where we lay. I snatched up my gun and rushed to the scene.

"What's the matter?"

"Lions!"

"Where?"

"In the gorge."

"How many?"

"Three; here are their tracks. One is wounded, for there's blood here."

I signed to three Askari and we occupied the edge of the ravine on our side to prevent the beasts escaping. As further search proved useless for the time being, we decided to continue it in the afternoon, and set up camp scarcely 400 metres north of the edge of the ravine. Unfortunately I was obliged to forgo further participation in the hunt as some very pressing correspondence confined me to the tent. In any case, I entertained no further hope of success; I did not think for a moment that it was possible for the two unhurt lions to be still in the vicinity. But I was mistaken; for hardly were the two Askari whom I had sent to spy out the land and bring back any news, out of sight, than one of them, the Masai, Abdullah, came flying back making signs in the distance. Now or never! Pen and paper were thrown aside. Jamming my hat on my head, I snatched up my rifle and loaded as I ran. In the meantime Abdullah had reached me. "Quick, quick, *bana*; there are two big lions lying there and sleeping, *karibu sana*—quite close."

Two minutes later I examined the perfectly fresh tracks and the warm place where the two maned lions had been surprised in their sleep at fifty paces by the Askari. In fact the bushes had scarcely ceased shaking at the places where the beasts had vanished in the thicket. That wretched scrawling business! The reader must forgive me if my hunting ardour conquered the

BUSH-BUCK

LIEUT. WEISS WITH A LIONESS KILLED AT MAJI JA MOTO

interests of science at that moment. Three lions ought to have been recorded in our shooting book on November the 14th!

The next morning quite fresh tracks were recognised in the wet grass in this memorable ravine, which we, of course, followed up. After three hours' stalking we sighted the quarry at 200 paces, although the tall grass gave only very fleeting glimpses of the beast. I levelled and aimed, but could not fire as he kept diving down into the grass. As he appeared to be escaping altogether, I fired at last, trusting to luck, and—missed!

I was, however, more fortunate the next day. We had found by experience that the rapacious creatures were in the habit of visiting the ravine at early dawn, after their nocturnal prowls. The place fell away in terrace formations from the east, and as it was chiefly from that direction that we heard the roaring at night, we took up our position to the east of the ravine. Raven, Vériter and I spread out, the Askari between us and within sight. As the country in front of us could be overlooked far and wide, no animal could enter or leave the gorge without being observed. Further, a particular signal was agreed upon with the Askari, so that in case of a lion being sighted the nearest marksman could be apprised without delay. I had not waited long at my post at the right end of the deep gorge before I heard the deep growl which had become so familiar to me, at first in the distance, then growing nearer. I decided to climb through the gorge and, if possible, advance to meet the lion. I had hardly reached the other side when a repeated roaring advised me of the right direction, although it was seven o'clock and quite light. Suddenly I saw my fine fellow trotting along through the grass about 300 metres in front of me. I ran towards him as fast as my legs would carry me, accompanied only by my boy, Almas. This manœuvre succeeded. The lion also started running, and as I caught sight of the upper half of his body, I potted him at 120 paces, causing him to reel to the side for a pace or so, snarling irascibly. I then fired another shot at his rear, which must have penetrated him nearly longitudinally. Badly wounded and almost breaking down,

he dragged himself some thirty paces further to some bushes, where he fell. Approaching nearer to give him his quietus, I found this to be unnecessary, for the lion was dead.

When I sighted this animal there was plenty of wild game near, yet I did not notice that the proximity of their enemy caused them any uneasiness. I therefore do not share the view that the small game disperse in wild flight when a lion appears. On many occasions I have from a distance observed a lion moving round in the grasses of a plain abounding with game, yet I only noticed signs of uneasiness amongst the antelopes stationed immediately in the marauder's path or browsing near. Animals further away contented themselves with merely a careful glance. But I have never seen the creatures excited on hearing the roar of "the king of beasts."

I do not desire to put my readers' patience to too great a test, and so will mention briefly that on the next day some of the carriers, whilst searching for wood in the immediate neighbourhood of the camp, came across three lionesses and four big cubs sleeping in a gully of the gorge already mentioned. Unfortunately, the man who brought me the news arrived at the very moment that I bagged a reed-buck for our larder, and though I was on the same side of the ravine as that where the lions lay, I was quite unconscious of their presence. The camp was immediately in commotion, and everyone was gazing attentively towards the spot where the lions, roused by the shot, were fleeing.

Again my mood was hardly of the merriest, for had the man reached me a few seconds before I fired my shot at the reed-buck, I should without doubt have easily got within good shooting distance. As it was, I only succeeded in hitting a young lioness after a lengthy chase, who, injured by a wound in the intestines, concealed herself in a thicket, and was found dead the following day.

Returning from the search for her body, I shot a leopard, the only specimen I have ever encountered in Africa by daylight. This little incident was not without a trace of piquancy, for,

BUFFALO COW KILLED AT THE MOUTH OF THE RUTSCHURU

A BUFFALO KILLED ON THE RUTSCHURU PLAIN

having followed the blood trail, I espied the spotted skin of the dangerous cat gleaming through the foliage of a bush, and as I took aim it sprang out at me like a flash of lightning. A very lucky snap-shot, which pierced its neck, settled the matter, and it rolled dead almost at my feet.

We now shifted our camp further north. In order to reach the spot, Vériter and Weidemann had occupied themselves with the Askari for a few days previously in throwing a bridge very dexterously over a small but very deep tributary of the Rutschuru. This had proved itself to be necessary for the conveyance of the loads. Shortly before, Raven had been compelled to reach the further bank by swimming.

The landscape to the north of this small river had something of a park-like character about it. We pitched our tents very widely apart under some fine old acacias, and connected them by narrow paths which we cut through the knee-high grass. Light groups of acacias dotted about almost conjured up visions of some fine old English park.

The land became more densely overgrown towards the eastern side. Near the Sultan Kikamero's village the vegetation at times assumed the character of a forest preserve. In these places we often caught sight of hamlets encircled by barricades of thorn. In earlier days the western margin of the steppe is stated to have been much more thickly populated; and it is said that the lion pest drove the people away. As a matter of fact, we passed by many places where potsherds and fragments of all sorts lay scattered around, and where the ground plan of a former village was still recognisable in spite of the choking brushwood.

Towards the north the ground, which is much riven with clefts, falls away gradually to Lake Albert Edward, and there again assumes the aspect of the steppe. Numerous shell remains indicated that we were on the ancient sea-floor, and that the waters of the lake must at one period have completely covered the district. From here we could already recognise the sparkling surface of Lake Albert Edward, and, aided by a telescope, we could descry the vast hosts of pelicans which inhabit the white

islands and the sand-banks at the mouth of the Rutschuru, or swim around and fish in great flocks.

Bush-buck and buffalo were strongly represented. The species of buffalo that we saw almost daily on the open steppe, or chanced across in the light bush, showed some similarity to that of the Kaffir buffalo. The horns had strong projections, but were rather more compact than the East African variety, and the points inclined more upwards. One fine creature killed by Schubotz in the course of an afternoon's "saunter" in the neighbourhood of the camp had a breadth of horn over the forehead of 33 centimetres and a span of 106 centimetres.

Generally speaking, the colour of the buffalo we found in the Congo State was dark. The smaller western breed, with horns lying over towards the back, formed in the main no exception to this rule, though a lighter colour was much more common here than amongst the Rutschuru animals. Mildbraed sighted a herd of some forty buffalo later on the eastern margin of the great forest near Kifuku, which gave a variegated and chequered impression through its mixture of shades. As the lighter coloured ones were mostly smaller than the darker, it might, perhaps, be correct to assume that the lighter coat indicates the young of the herd. For this reason I doubt the accuracy of the designation "red buffalo" that is frequently applied to the western type.

This abundance of big game was most lucky for us, for our scanty stores of provisions was noticeably diminishing, and the fresh meat of these large animals enabled us to eke them out. We had had no sugar or milk for some ten days, and our tins of preserves had greatly dwindled. The supplies for our carriers, too, were in rather a critical condition. It was quite out of the power of the natives of the few inhabited spots on the eastern marginal mountains to supply us with stores, and as the nearest depot was at the northern end of the lake, nothing remained but to strike camp and advance at a somewhat quicker rate.

During the last night of our stay we were treated to a

BANKS OF LAKE ALBERT EDWARD AT ANGI

genuine African farewell concert of such power and grandeur that our regret at departure from a country that had so much to offer was greatly increased. Five lions howled and roared the whole night long outside our camp, so that sleep was out of the question, and we sat up on our couches listening. Then when the piercing cries of a trapped hyena, almost human in tone, rang out, there was such a scene that I rushed from the tent into the bright moonlight in order to make sure that no human life had been sacrificed.

I could not deny myself the pleasure of one little excursion in the vicinity of the nocturnal concert. Following up three new trails we had our lions before us before an hour had passed. Whilst two of the creatures rapidly fled, one lioness ensconced herself in a ditch grown over with tall brushwood. Shouts and stones proving equally futile to induce the beast to leave her lurking-place, we had recourse to a well-tried expedient which never fails—we fired the bush. Some commotion amongst the foliage followed. The shaking of the leaves and furious growling showed plainly how unwilling the brute was to leave her hiding-place. Not until the fire, which was burning badly in the damp atmosphere, had almost scorched her hide, did the lioness appear. She leapt out of the shrub, but, struck by my bullet, toppled over like a hare the next moment and lay still. Before she could rise again a final shot in the neck terminated her predatory career.

Returning to the camp, I found Czeczatka and the Belgian non-commissioned officer Dewatt, who had come over from the Vitschumbi station at the southern end of Lake Albert Edward. Czeczatka had been commissioned to march direct to Vitschumbi with all superfluous loads, and to set out from there to find us. Dewatt brought fresh vegetables, and Czeczatka had a case of stores, which happily put an end for the time being to our most pressing needs.

Gradually getting into lower altitudes, we reached the southern banks of Lake Albert Edward on the 28th of November. The nearer one reaches the lake, the shorter grows the grass and

the greater become the deposits of debris and shells, evidences that the country was formerly under water.

The plains gradually dip into the watery surface, from the slimy subsoil of which thickets of reeds and rushes shoot up and border the southern parts of the banks as with a broad ribbon.

The ornithological wealth of this part of Africa is amazing. Pelicans move about in thousands on the southern banks of the estuary of the Rutschuru, and sport peacefully amongst the numerous hippopotami in the narrow dry places. The hoarse cry of the heron is intermingled with the dull tones of the bittern, or mire-drum, and the snow-white plumage of the *ardea nobilis* contrasts effectively with the dark green of the reeds. The swarms of marsh and water-hens are indescribable as they flit light-footed to and fro on the water grasses and fearlessly suffer the approach of our folding boat, whilst the air is filled with immense hosts of white and grey gulls. Wild duck and geese of the most varied species rush through the air with whistling and flapping of wings. There is a twittering and chattering of innumerable little songsters amongst the reeds, and on the margin the rosy tantalus ibis, in company with the marabou, fishes warily for his sustenance in the shallow water.

Picture to yourself the evening scene: The yellow steppe covered with sappy-green trees surrounded by mountains shadowed by black clouds, which rumble and flash; then suddenly the blood-red sun shoots forth, and illumines the whole, painting the cloud-edges pink. The beautiful tints of a rainbow suddenly gleam out. Gazing at all these splendid tones of colour, which are reflected again on the water, one doubts whether the richest palette which painter ever held could reproduce such magnificence.

Thanks to the courtesy of the Belgian officers, the two Congolese Government steel boats stationed on the lake were placed at our disposal for our journey across. A number of native boats also awaited us. As they were only able to take a small part of our loads, Weidemann was commissioned to conduct the main caravan along the east bank to Kissenji, which we hoped to reach

MOOR ANTELOPES

THE SOUTHERN END OF LAKE ALBERT EDWARD AT KATANA

after a boat journey of two days. Dewatt wished to accompany Weidemann thither. Czeczatka was instructed to set out on the difficult march by way of the western marginal mountains to Kasindi. Weidemann and his caravan were compelled to make long detours because the road to the south-east of the lake was closed by extensive swamps, which swarmed with hippopotami. All things considered, this march promised to be far from enjoyable, as the surface of the lake had risen through frequent downpours of rain during the last few days, and had overflowed the banks. No choice was left, however, and the caravan set off on its journey, accompanied by the somewhat ironical good wishes of those who remained behind.

Next day, as our small flotilla glided along the eastern banks, we passed great herds of hippopotami lying lazily in the hot sun on the sand-banks or stretching their coarse heads out of the water, puffing and snorting noisily.

As all the boats have to be propelled by means of long poles, we always kept in the shallow water close to the banks. The fishing folk venture very reluctantly into the middle of the lake, and with good reason, for the squalls which frequently rise churn up the water into large waves, which seriously imperil the fragile and usually leaky boats. The boats on Lake Albert Edward were of a very different type from those which we had previously met with. Isolated specimens of dug-outs are occasionally seen, but the majority of these craft are fashioned out of thin planks joined together with bast fibre. As this primitive method of boat-building is very inadequate, the water sometimes streams through the side planks in heavy jets, and has to be bailed out constantly during a journey.

We landed at the small village of Katanda after a voyage of five hours in the glowing heat. The construction of the place afforded quite a new and remarkable sight to us, for resting on rafts, it floated in the centre of a creek of the lake abounding in reeds and rushes. Unfortunately the population had fled in fear at our approach. No human being could be seen; only a few hungry dogs howled dismally from the roofs of the huts. As we

entered the village the ground rocked at every step, and at the edge even sank below the water line. In the centre it was stable. As the inhabitants, who belonged to the Wakingwa race, had nearly all their household effects with them, we came across little worthy of mention excepting some beautiful plaited work. As there was no one from whom we could make purchases, we left everything standing in the huts as we found it.

Hot as it had been during the first days of the journey, we were to experience cold later. A few minutes after our departure from the floating village a torrential storm of such violence broke over us that further progress was impossible.

Being unable to make any headway against the storm, or to see ahead of us on account of the streaming rain, the boats were soon piled on the shore, with their bottoms turned towards the slant of the rain. So we remained sitting in our boats with the waves splashing up over the gunwales. We had to sit still until the raging gale subsided, for no human efforts were of any avail in the face of such an outburst. The storm, as usual, did not last long, but a fine rain kept drizzling on for some time, which sufficed to chill us in our thin clothes, which were wet through in spite of our mackintoshes.

Presently a small boat propelled by two men with long poles came swiftly towards us. "*Barua, bana*—letters, master," they cried. A heavy bag was handed over and immediately opened. It was the European mail, greetings from home, which reached us there in so strange a fashion. They shortened our lengthy journey in a most agreeable fashion, for it was four o'clock in the afternoon, after ten hours' travelling, before we sighted the huts of the small hamlet of Kissenji lying ahead. There we landed, glad to be able to stretch our stiffened limbs.

We remained one day for Weidemann's caravan, which we had arranged to meet here. It came along late in the evening in a perfectly exhausted condition. They had had a hard time of it. The floods had assumed unexpected dimensions. For hours the men had been forced to wade along in water up to their thighs, and in places even up to their necks; the mules and dogs had to

THE FLOATING VILLAGE OF KATANDA, LAKE ALBERT EDWARD

INTERIOR VIEW OF THE FLOATING VILLAGE OF KATANDA

swim. Ropes had to be stretched across the deepest places, by aid of which the carriers, who could hardly touch the bottom, had to feel their way. Occasionally they floundered into holes, and momentarily disappeared with their loads under the surface of the water. Although the memory of this very unpleasant march will doubtless long remain with them, none of them, fortunately, sustained permanent injury.

I profited by the day's rest we allowed ourselves to make a little excursion into the interior, but found nothing of remarkable interest. After going over a terrace-shaped formation we reached a high-lying plain, where we came upon some straw mattresses, bearing witness to the activity of the English Boundary Survey Commission, which had been working there about six months previously. The question at the time had been a re-examination with respect to the thirtieth degree longitude, which marked the boundary between the Belgian and the English territories, as some dissension had arisen between the two countries with regard to its true position. The British as well as the Belgian Commissions entrusted with the work had meanwhile moved further north, and were quartered on the River Semiliki in the neighbourhood of Ruwenzori.

The population there is fairly large. Agriculture and the breeding of small stock are the chief pursuits. The natives know how to make the latter pretty lucrative, as the prices for sheep and goats often run exceedingly high. Whilst we only had to pay very moderate prices in German territory, the prices here rose to two or three *doti;* that is, four to six arm-lengths of stuff, three to five rupees in value. This rise in prices is increasing constantly in districts inhabited by Europeans. Thus, for instance, at Stanleyville and also on the Aruwimi a sheep costs twenty-five to thirty-six francs, a fowl or duck five francs. As such high prices would have ruined our treasury, and as we could not take a herd of small stock with us, the feeding of our caravan followers became a difficult question. Lieutenant von Wiese endeavoured here, where the prices might still be called moderate, to acquire a small stock, which would provide us with meat until we reached

the Aruwimi district. The shyness which the people of Waronda and Wasongora first exhibited made this awkward to arrange. However, on our putting the matter before Sultan Kasigano at Ruisamba, where we arrived the following day, he was persuaded to send us a few animals.

Ethnographical material was scanty and of little interest. This district forms, as it were, the boundary of the eastern and western types and languages. We therefore met again many people with whom our stay at Lake Kiwu and Uganda had made us familiar both with their forms and language; but we came across a few special peculiarities.

The Wasongora just mentioned should really be called Bakondjo, for according to Czekanowski's researches Wasangora is a common designation for people with pointed teeth. *Kusangora meno* simply means "pointing the teeth"; and Usongora would be the land where the inhabitants chip their teeth to points by means of an iron chisel, a habit frequently met with among the Bakondjo. Now, as the pointing of the teeth is a typical feature of all tribes who indulge in cannibalism, we may not be far wrong in assuming that the Bakondjo were formerly addicted to this ghastly practice, even if they have now abandoned it. This is all the more probable, as cannibalism is still in full swing in some parts, as, for instance, in the entire region of the primeval forest.

The pest of gnats and flies at Kissenji and on the steep banks of Lake Albert Edward was simply dreadful. Myriads of tiny, little insects buzzed in the air the instant the dawn broke. They appeared in such hosts and covered the tables, the tents and their inner sides in such dense masses, that my pencil was continually rubbing the creatures into the pages of my diary and making the writing quite illegible. At supper time we were always compelled to set up the lamp on cases ten paces away in order to protect the soup from the crowd of descending insects. The tents had to be pitched close to the edge of the water, almost touching the reed masses, on account of the swampy ground; and such an unpleasant smell made itself apparent that our stay became utterly intolerable.

A CANNIBAL FROM THE BORDER MOUNTAINS OF THE CONGO STATE

At Ruisamba a number of boats were lying on the beach, and these we requisitioned for the passage across the elongated arm of Lake Albert Edward. But out of the large number of craft there were very few capable of reaching the opposite banks without first going under. Most of them proved to be so leaky, that it was impossible to put loads into them. Thus our transit in the few intact boats lasted some hours. In consequence, we set up our camp quite close to the shore on a high-lying plateau, which commanded a splendid view over a wide part of the lake. We were not left long in the enjoyment of the fine prospect, for soon the lowering clouds rolled themselves together threateningly, and a storm of hurricane nature swept down over the lake, lashing and churning its waters. It rushed over the camp, threatening to upset all the tents, and ended by ripping off the roof of our mess-tent and carrying it high into the air.

Travelling by way of Njama Kasana—where elephants were once numerous, but latterly have retired more to the Semiliki plain—Kasindi was reached on the 6th of December after we had passed through a broad euphorbiaceous steppe. Monsieur Boisac, the *Chef de poste*, received us at the top of the terrace-shaped formation on which the village is situated.

Kasindi is quite a recent and but a temporary station. The houses are built of a light material—*matete**—and had fallen badly into disrepair in consequence of the violent storm. In parts they had to be kept from falling down by strong beams. Vermin of every description housed there, the rats whisked about the place as we messed, and their feet could be seen in the canvas cover spread as a canopy, like those of rope-dancers in a net.

The station itself lies on a desolate, treeless steppe, and is just an hour's distance from the lake, which can be overlooked for miles around. A small wood of acacias, which is a frequent haunt of elephants, extends from below the station to the shores of the lake. Away over the ranges of low hills which close Kasindi in on the northern side, the snow-capped summits of the Ruwenzori chain, which may be seen for a few moments in the

* *Matete*, elephant grass about ½ inch thick.

early morning hours, formed the sole point of attraction for the roving eye.

The force stationed at Kasindi consists of about a hundred men, who are quartered in a special village (Askaridorf) near by. We only saw a small number of them, as the remainder had been despatched to re-erect the St. Gustave Mission Station, which lies a few hours away to the north.

As we had some time in hand before our conference with the other members of the expedition at Christmas, and as reports and mail matter had been attended to, we used the few days at our disposal to make excursions on the Semliki. From reports of the natives of "many sick people" and of the tsetse-fly being prevalent, we expected to find many cases of sleeping sickness, and resolved to devote our outing to an examination of the blood of the inhabitants of the Semliki valley.

As we also hoped to come across a good many elephants and much game, we took a sufficient number of test tubes with us, such as are used in medicine, for collecting specimens of blood from cuts or wounds for microscopical examination.

It was very important that we should use all the means in our power to examine the blood of any elephants we might kill, and discover whether it contained the germs of sleeping sickness. Through Raven's efforts, ably assisted by Weidemann, many hundreds of the shore dwellers on Lake Albert Edward, particularly on the Semliki side, were subjected to examination. Indications of *trypanosomæ*, however, were not discovered. Unfortunately we were unable to carry out the examination of the elephants, as Raven met with an accident just as he was about to begin the microscopic investigation, and was confined to his couch for months.

There can be no doubt as to the activity and danger of the sleeping sickness in these districts, for in an isolated little house in Kasindi there were two patients, husband and wife, whom we visited daily and in whom Raven interested himself a good deal. The wasting effect of the terrible disease could be clearly observed on this couple. When we first arrived the patients were able to

THE WESTERN MARGINAL MOUNTAINS AT AMAKOMA. LAKE ALBERT EDWARD

move about and cook their provisions without any assistance, but after ten days such a change for the worse set in that they simply sat in their huts absolutely inert and helpless, with staring eyes and limp hands. As we were unable to aid them, they grew rapidly worse, and in fourteen days they succumbed to the disease.

This terrible evil, the spread of which has only been checked in a limited degree by the use of atoxyl, claims a vast number of human victims annually in the Congo State. The Government endeavours to suppress the malady with all the means at its command. The praiseworthy intentions of the State are, however, terribly handicapped by the apathy of the natives, who will not place themselves in the hands of the white man. Although later on we saw some excellently organised infirmaries in the Congo territory, they are only as a drop in the ocean, and the number of their inmates only forms a fraction of the sick population wasting to death far from human help in the dark depths and damp decay of the virgin forest.

The sport in the valley of the Semliki can hardly be compared to that of the Rutschuru valley, yet water-buck, moor-antelope, and reed-buck may often be seen. The abundance of elephants, on the other hand, exceeded all expectations. I cannot remember a day on which I did not sight one. At night time we could often hear them tramping round in the vicinity of the camp and the peculiar noise they make in browsing. In the morning we frequently discovered fresh traces left by them during the night in immediate proximity to the camp. Yet we did not even take the trouble to follow them up, but simply made for the clearer places in the acacia forest on the open bank, where they used to congregate rather later in the morning. Occasionally we met troops of four to eight, and sometimes herds of forty to fifty.

The Congo State endeavours as far as is possible to protect its enormous stock of living ivory, its main export. To this end it has created great reserves, in which the capture and killing of the animals is prohibited. On account of the difficulty of control, particularly in the vast forest districts, such prohibition is

constantly set at nought. Yet these reserves are of use, for the natives know that they will be heavily punished in cases of infringement of the laws should they be detected. Those elephants which make serious havoc in the banana fields may be killed by special permission. European hunters are not allowed to enter the Congo territory without producing their licences from Brussels, and even then special sanction is needed for the killing of an elephant. A departure from this rule was made in favour of myself and the members of the expedition in a very obliging manner, so that we were enabled to devote a few exceedingly pleasant days to hunting the most mighty beast existing.

From among the many exciting incidents and interesting episodes which occurred, I take the following:

At daybreak on the 18th of December Vériter and I proceeded to the farther bank of the Semliki in order to enlist as guide the youthful chief of a settlement which lay in a deep gorge. We were going after a herd of elephants that day, expecting to find them five hours' journey farther northwards, where they haunted the banana plantations of a hamlet lying close to the river. The animals were so daring, that they not only destroyed the banana trees in the front of the village, but even attacked the huts. A man told us that he had had to fly from his dwelling whilst an elephant was tearing off the thatched roof. When we arrived the animals had left the immediate neighbourhood of the village, but our guide soon brought us in sight of the herd. We observed seven animals, one of whom, to all appearances a very powerful bull, detached himself from the rest and made rapidly for the protecting forest. Pursuit was useless, so we let him go. We then turned to the six others, whose massive, colossal bodies stood out in marked relief against a broad grass patch, which had been burnt away the day before and was now coal-black. As the scene made a splendid picture for the camera, I stalked up with that only in my hand, my boy with my gun close behind, to a bush near the elephants, when the pachyderms caught our scent, trod uneasily to and fro, and then lumbered off amidst a cloud of dust towards the Semliki. Two

WOUNDED ELEPHANT ON THE SEMLIKI

LAKE ALBERT EDWARD AT NJAMA KASANA

shots hurriedly discharged at the hindmost animal caused it to circle about twice, but were not enough to upset it; then it joined the troop and fled with them. We followed at the double as far as a terrace-shaped declivity, where the steppe ended at the river, whose bank was overgrown with dense reed and swamp grass. Here we came upon the troop again, which had waded into the river, but apparently could not make up its mind to cross it.

The animal, which had previously been wounded, was unable to follow with the troop, and as Vériter, who had kept his wind best, came up and gave him another bullet through the head, it collapsed and lay as if dead. A carrier rushed up overjoyed, and with one cut divided the tail from the body. The hairs of the tail of an elephant are much prized by the natives; ornaments of all sorts, bracelets, neck adornments, etc., are fashioned from them. At the moment, however, that the carrier flourished the severed trophy in the air the supposed dead elephant furiously rose up and perceived his assailant. I arrived just in time to obtain a photographic picture of this indescribably comical scene, this abrupt transformation of the joy of victory into deadly fear. Whilst the carriers scurried away in all directions, Vériter stood in perplexity before his opponent, searching all his pockets in vain for cartridges, with which he had thoughtlessly provided himself too sparsely. But the elephant was so injured that no further danger was to be apprehended from him, and on receiving a further shot from my rifle in the shoulder he rolled slowly over on to his side and expired.

I then followed up the remainder of the herd, and soon caught sight of a fine bull, who had already received a few bullets from me, standing alone and badly hurt at the edge of a small island in the river. First I took a couple of snapshots with my hand camera at about 120 metres' distance, and then I fired at him again. The elephant first advanced a few steps up on to the island, and then proceeded slowly through the tall reed-grass invisible to me, and through the stream on to the bank, where, after passing through some more grass, he finally reappeared at a considerable distance away. As a broad swamp now separated

us, I essayed in spite of the distance to bring him down with a bullet. This, however, only resulted in his spreading his enormous ears after each shot and throwing back his trunk aggressively. As he then threatened to vanish in the reed-grass, I decided in spite of the unfavourable wind, which carried my scent towards him, to cross the swamp till I got near and could venture a finishing shot. The way through the morass was terribly difficult, and we frequently got stuck up to our knees, in addition to which a fire which had raged round that part not long before had covered everything with a thick layer of soot, so that we were, or, rather, I was, soon unrecognisable with dirt, for my sole followers, the Askari, Abdullah, and my boy Mambo, were very little altered by the addition of the soot.

We finally worked our way through, and felt firm ground under our feet once more; but we had got into a belt of *matete*, which shot up nearly twelve feet high and prevented our seeing any distance in front of us. Nothing was to be seen of the elephant. In order to get a better view I climbed on to Abdullah's shoulders. But although a voice at my rear warned me, and a man on the terrace-sloped bank signed to me with his hands that the elephant was close by, I could only perceive a slight movement amongst the tops of the grasses. Believing the elephant to be badly hurt, I decided to approach closer. We had not gone many more steps when we became aware of rustling, crackling, and trampling sounds in the bushes, and knew that the creature had scented us and was preparing to charge. Unable amongst the tall *matete* to discern anything, we retraced our steps somewhat in order to get into freer ground. My two followers, however, lost their heads in the presence of the approaching danger, and instead of following me they decamped as quickly as possible, reaching a spot where they found their further passage barred by the stout stalks of the tall grasses. Here they got entangled, and in a desperate attempt to free themselves Mambo fell and carried Abdullah with him. At the same moment the mighty head of the elephant appeared with trunk extended. Perceiving the imminent peril, Abdullah put a leaden

ELEPHANT KILLED ON THE SEMLIKI, DECEMBER 15, 1907

THE SEMLIKI AT ITS POINT OF ISSUE FROM LAKE ALBERT EDWARD

THE AUTHOR WITH THE TUSKS OF THE ELEPHANT KILLED ON THE SEMLIKI, DEC. 15, 1907

HEIGHT OF TUSKS - 2·53 AND 2·51 METRES (8 FT. 3½ IN. AND 8 FT. 2¾ IN.)

WEIGHT - 98 AND 94 POUNDS

bullet through his forehead at a distance of one pace only, which, however, only caused the elephant to kneel down and try to bore Mambo with his tusks. Unsuccessful in this, he seized the youth by the straps of the cartridge pouch, and tossed him high into the air.

I was unaware of these proceedings, as in my attempts to let the elephant pass I had slipped aside and fallen in the swampy ground again, where I stuck fast and could not move. I heard the cries and whimpers of my boy, and naturally struggled with all my might to free myself from the sludge and run to his aid. At the same moment the colossal form of the elephant burst crashing out of the *matete*, making straight for me. Fortunately a small shrub concealed me from his view; but to my dismay, lying on the elephant's tusks and held firmly by its rolled trunk, I observed a black body covered with torn-up reeds and grasses, and saw in a flash that Mambo was in a desperate fix. We were both in a most perilous position. If I succeeded in giving the elephant a mortal wound, and it fell to the ground, my boy's body would invariably be crushed. I had seen this occur in the case of a female elephant and her young. Should the elephant not succumb, he would doubtless first kill the boy and then me, as in my helpless condition I was practically at his mercy.

All these considerations flashed through my brain like a streak of lightning, but the elephant anticipated my conclusions, for when he was only five paces distant from me he seized Mambo firmly, and threw him some yards away into the tall grass, where the unfortunate wight lay groaning. Then, extending his ears wide, he rushed madly past me, a small bush alone dividing us, and disappeared in the *matete*. Mambo owed his life solely to the fact of the creature being badly injured, as, if the elephant had been in the possession of his full power, he would have not omitted the practice of his kind of trampling his enemy to death.

These last efforts had no doubt overtaxed the severely wounded animal. A little later we heard it collapse and succumb with long-drawn, wailing sounds.

Having at length succeeded in extricating myself from the

swamp, I contrived to get the almost unconscious Mambo into a place of safety. The poor fellow was in sorry plight. He had sustained a number of contusions, and was unable to walk. With great difficulty we carried him through the swamp on to the firm ground, and there we prepared a stretcher, on which we laid him. I collected my guns, camera, and cartridges, which lay strewn about; the stock of the gun was splintered, but luckily the camera had not suffered much; even the plate (facing page 186), which shows the elephant before the attack, had not suffered by the flight through the air. The next thing to be done was to cut out the tusks, a task which made no small demands on our time and strength. Late in the afternoon we were able to think of getting homewards, and reached the camp at length in perfect darkness after an uninterrupted march of five hours along the banks of the Semliki and after an absence of fourteen hours, during which time we had not rested for a moment. Two hours later the ambulance came in with Mambo. The negro's strong constitution brought him through; he progressed towards recovery every day, and after the lapse of a week he was able to resume his duties.

On the evening of the day after the hunting incident just related we were witnesses of a most thrilling display of natural fire-works. A steppe fire of unusual dimensions spread over the whole horizon, and traced out the contours of the mountains in an unbroken fiery line against the heavens.

In this district the natives kindle fires in order to clear the ground of the older grass-growths, and so make room for the fresh luscious young grass which game find so appetising. The latter, particularly the elephant, stand in no fear of fire, but assemble gladly at such spots to graze on the tender new shoots.

Generally speaking, the steppe fires are of an absolutely harmless nature, but once, on Christmas Eve, they nearly proved fatal to us. An immense line of fire rolled over the mountain ridges, making direct for the thatched roofs of Kasindi. The phenomenon being an everyday one, we took no notice at first, but

SALT LAKE AT KATWE

suddenly we observed that the flying flames were only a few hundred metres distant from the dwellings. We summoned the Askari and carriers in furious haste, and started out to meet the sea of flame. After two hours' hard work we succeeded in beating out the heart of the conflagration. The two long tongues on either side, however, darted raging along to the right and left of the station.

On the 24th of December all our members, excepting Kirschstein, whose work in the volcanic region had rendered an extension of leave necessary, gathered together at Kasindi for a Christmas festivity. Christmas Eve passed very pleasantly. We Europeans met together at a common repast, and spent the remainder of the evening with a gramophone accompaniment beneath the lights of a Christmas tree fashioned by von Wiese out of the boughs of an acacia. A few glasses of grog assisted us to conjure up the festive spirit of Christmas, which it was difficult to realise amidst the green environment and the soft summer air.

And so, after a few days of zealous industry, the New Year drew near. We were able to look back full of gratitude on the year that had passed, and to anticipate the coming one full of hope. Each of my fellow-workers could gladly testify that, although labouring under many privations and the severest self-restraint, he had been successful in solving various new problems and in winning fresh fields of investigation for German science.

On New Year's Day Schubotz and I undertook an excursion, which was intended to extend over several days, to Njama Kasana for the purpose of fishing for plankton, dredging, and generally devoting our attention to the fauna of the lake. We only took a very small number of followers to erect the tents, one boy each and a cook, so that we were able to enjoy an undisturbed time without being subjected to the worries which are inseparable from travelling with a caravan.

From there we visited Katwe, a place of particular interest, which is situated on a salt inland lake, and is only divided from

Lake Albert Edward by a narrow, steeply rising neck of land. At first sight the place offers an extraordinary aspect. The wonderful wine-red colouring of the water spread out at our feet like a sea of blood, the blue canopy of the heavens, separated by the yellow sand dunes from the ruddy water, presented a curious contrast such as we were hardly likely to meet with again.

The volume of water in the lake is considerably less than it was at one time. This can be seen at once from the salt deposits, which cover the banks to the height of several metres. The depth of the water does not amount even to a metre. This retrogression appears to have a close association with the steady diminution of the water of Lake Albert Edward, the two lakes being connected by subterranean confluents. As the bed of the salt lake lies considerably higher than that of Lake Albert Edward, its entire evaporation within a measurable space of time is quite conceivable. In consequence of the retrogression and the steady evaporation of its surface water, thick deposits have accumulated on its bed, which in the course of time have consolidated into a thick encrustation of salt. The salt is simply gathered up by a number of men, who enter the water absolutely naked and wade about collecting it. It is then packed on sledge-shaped boats, which are drawn up on to the land by other workers. Here powerful arms seize upon it, sort it out, and heap it up in pyramids of a metre high. After being broken into very small pieces it is stored in small sheds thatched with straw till it is ready for exportation.

The following method is also adopted: On the two sides of a small ditch, flat basins, or troughs, of three to five metres square are fashioned by heaping up sand and clay. These are filled with about a foot of water taken from the ditch by means of a scoop or by hand. The power of the sun causes the water in the various divisions to evaporate so rapidly, that after the expiration of six days only a salt residue remains at the bottom. The salt thus obtained is finer and whiter than that which is broken away from the bed of the lake, and therefore commands a higher price. The quantities obtained are very considerable, and not

SALT PYRAMIDS AT KATWE

SALT PANS AT KATWE

only supply a great part of Central Africa, but also find their way to the west coast of Lake Victoria, to Entebbe, and to Bukoba.

From what I have just described it will be seen that Katwe is a place of great commercial importance, so that it was no cause for surprise that some difference of opinion should have arisen as to the position of the thirtieth degree of longitude, which passes directly through it, and forms the boundary line between the British territory and the Congo State. Before the discovery of this valuable spot the meridian ran by it on its eastern side, so that its incorporation in the Congo State was undoubted. Yet after its discovery the British Colonial Office came to the conclusion that a very grave error in surveying had been committed. A very clever astronomer then succeeded in shifting the longitudinal degree to the west of Katwe, so that the town fell into British territory. On this justifiable doubts arose in the minds of the Belgians concerning the accuracy of the latest survey. In order to arrive at a final settlement of the matter, Belgian and British Commissions were again sent out, and their labours were just concluding when we arrived on the scene. These two commissions had transferred the seat of their energies to the north of the Semliki, but we were privileged a little later on, shortly before they returned to their homes, to be entertained in both their camps in the most cordial and hospitable manner.

At present the monopoly of the salt industry lies in the hands of Sultan Kasakama of Toro, though after the question of its national incorporation has been settled once and for all, the administration of Katwe will probably pass into more expert hands.

We returned to Kasindi on the 5th of January, and there took counsel together as to the division of work for the coming months. Czekanowski was to travel round to the eastward of Ruwenzori, touching at Toro and Unyoro. Raven was to go to the south of these mountains, to undertake special work in the land of the Wasongora. We others intended to follow closely the course of the Semliki to Beni. We looked to the western slopes of the

Ruwenzori range as well as to the eastern margin of the vast virgin forest, which reaches nearly as far as Beni, to open up new fields of exploration to us.

During the past few days large collections had been ticketed, recorded, and packed ready for despatch. About a hundred loads lay ready in Kasindi. The carriers who had brought up fresh stores and were returning home were employed to transport our treasures to Lake Victoria. As the imposing caravan disappeared down the valley we turned our faces to the north, towards new paths and fresh aims.

A CONGO SOLDIER FROM THE UELLE

NATIVES CARRYING PROVISIONS