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PEOPLE, PLACES, AND PROSPECTS IN BRITISH EAST AFRICA.

By C. W. HOBLEY, Assoc. M. Inst. C.E.

DURING about three and a half years of service with the Imperial British East Africa Company, I travelled over a considerable portion of their territory, some of it comparatively new ground, and I have now been asked to lay before the Society a few particulars of my observations.

I will in the first place deal with sundry notes made during a voyage of exploration up the river Tana in the stern-wheel steamer *Kenya* in 1891.

The first point that strikes one about the Tana is the bar at its mouth, and the peculiar way in which the river runs nearly parallel to the shore for some distance before emptying itself into the sea. Probably the Tana formerly debouched into a wide estuary which ran back many miles inland, but since then the whole coast-line has been raised, and monsoons have piled up the great series of sand dunes which fringe the coast, and of which the Kitanga Tanga Hills, a few miles up the river, are only examples of a little earlier date; so that it is a continual fight between the tidal currents and monsoons which choke up the river mouth, and the ebb tide and current of the river which try to keep the passage clear. The fringing coral reef which runs up and down the coast protects the loose sandy material already piled up. The mouth of the river is almost indistinguishable from seawards; the only thing that gives one a hint of its location is a large fan-shaped body of yellowish muddy water which stretches two or three miles out to sea, and if tasted will be found nearly fresh.

Immediately behind the sandhills there occurs a considerable tract of low-lying swampy ground covered with mangrove forest and very rank vegetation, studded with several salt lagoons.

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The mangrove, or boriti timber, as it is locally termed, is very fine in this lower portion of the river, and being so near to the coast ought to be of great value. It is used principally for building purposes, its principal feature being the straightness of the spars, the evenness of the grain, and it is, moreover, proof against the white ant; straight spars of 50 or 60 feet in length are easily obtained.

The tidal influence is felt to a distance of about 12 to 15 miles up the Tana. There are evidences that the Ozi and Tana mouths were both originally outlets for one big river, and the area between being a sort of delta of alluvium. Dr. Gregory observed on Kenya evidences of a much more extensive glaciation in past times, which would lead one to infer either that the mountain was much higher then, or the climate was much colder; it is possible that this increase of the ice-cap occurred during that great oscillation of the pole which caused the glacial age. But to whatever cause due, the melting of this enormous quantity of ice would account for the presence of a vastly larger quantity of water in the river in past ages.

The valley of the Tana, throughout the whole of its navigable length, is of enormous width, the river flowing through this vast plain, and generally confined by low banks, so that after the rains it floods the country on either side, thus providing a perennial fertilizer.

Owing to the excessive winding, the river has formed what are called on the Mississippi "cut-outs;" these phenomena occur when the winding is so acute that a piece of the river takes the form of a loop, and in time the neck of the loop gets worn through, and the waters rush through the opening with the force due to the fall in the whole distance round the loop, and the force of this current soon carves a wide channel through the neck. The swampy lake of Ashakubabo, near Ngao, is a fine example of the formation of a lagoon through the agency of one of the "cut-outs" previously referred to, the river having formerly flowed round the head of this lake; a "cut-out" has then taken place, and the two ends of the bend have been gradually silted up, the water of the lake being annually replenished at flood-time.

The action of the river in carving away its banks goes on at a very rapid rate, as is demonstrated by the deserted French mission at Ndera. This house was built on the concave side of a sharp bend, and the river has eaten away the bank so rapidly that although the place was only built about the year 1889, half the house has now been washed away by the water, which is carving away the bank at the rate of nearly 3 feet a year.

The absence of tributaries is rather a striking feature in the lower part of the river, but it is partly due to the enormous width of plain on either side, and there is no decided drop in any one direction, so the rain-water sinks in generally all over the surface, only collecting a little in shallow lagoon-like pools, which all evaporate in the dry

season; moreover, as far as our observations extended, they seemed to show that the rainfall is much slighter in the steppes of the Tana valley than at the coast, or in the mountainous regions like Ukambani.

There is a large district at the mouth of the river up to Ngao, and across to the Ozi, where the country is flooded on either side for miles at the season of high river. The proportion of this tract at present under cultivation is a very small fraction of the area, and there is here ready at hand a large area eminently suited for native agriculturists for the production of rice, the Tana being on one side and the Ozi on the other in direct communication with the sea, which is only about 12 or 15 miles distant; although the Tana mouth, it is true, is crippled to a certain extent by the presence of a bar. On account of this, a work that would help greatly the development of the region would be the widening and deepening of the Bellazoni canal. This canal was dug by the former Sultan of Witu, Fumo Bakari, by means of slave labour, in order to provide for the passage of canoe traffic between the Tana and Ozi. It is now only a mere narrow winding ditch, along which canoes can barely pass; if it could be straightened and widened so as to provide a permanent waterway between the two rivers, the benefit to the Tana trade would be incalculable; the material to be excavated is only black alluvial earth.

From Ngao to Ngatana is a very thinly populated region, and large tracts on the right bank are well suited for rice cultivation; but from Ngatana to Ndera the banks are lined with villages, and a great proportion of the land is under cultivation for rice and bananas. Beyond Ndera, between that place and Kinakombe, there is a considerable amount of cultivation, but it is interfered with in a great measure by long stretches of thick woods; the lazy Wapokomo do not care for the labour of clearing away the woods in order to make plantations, and native tools, too, are very inadequate for work of this sort.

Above Kinakombe there is very little cultivation on the left bank on account of the raids of the Somalis. Nearly every year in the dry season, about February and March, when the river is very low, they come down to the river and carry off the Pokomo women and children for slaves, and the Pokomos never dream of offering any resistance; this proceeding naturally has a blighting influence on the people, besides robbing the country of its working population. The Pokomos were also worried by the ruffianly marauders from the Witu district, who came up in canoes, cheated the natives out of their ivory, and stole their produce. This went on on a large scale until the Witu defeat in 1890; since then it has been greatly reduced, and, with an efficient administration on the Lower Tana, it can be entirely stopped with comparative little trouble. The Somali-raiding is a far more serious trouble, of which it is not easy to see a solution. These raiding bands sweep down through the dry steppes which bound the Tana valley, and appear

unexpectedly in the Pokomo villages and plantations, seize all the women and children they can lay hands on, and disappear once more. The sphere of their raiding stretches from about Ndera, right up to Korokoro. During our stay at Hameye, a band of Somalis came down and carried off several Galla women from the villages about two days below the station.

A few miles above Kinakombe, on the left bank of the river, there is a high bank on the concave side of a bend of the river; this is a very favourite spot for the Somalis to strike the river. It is called Gubaida, and a Somali path comes right down to the river here. Possibly an outpost at this spot might have a beneficial effect in checking the marauders.

Some distance above Gubaida is Koni, which is the centre of a prosperous district. A good deal of grain is produced, and a considerable amount of orchella-weed occurs in the woods, fringing the river around this place.

From Koni upwards as far as Sissini the population is rather thick, but they cultivate very little more than is necessary for their own requirements; in fact, in places considerable difficulty was experienced in feeding our caravan. Above the Malalulu district the population rapidly begins to thin, with the exception of a thick cluster of villages around Ripa and Masa, and continues to do so until Kidori, where it practically ceases. Ripa and Masa were, I believe, according to Denhardt, formerly supposed to refer to the same place; but we found that Ripa was to the south, Masa being 2 or 3 miles further north. In this district many fine trees are found; they are known to the Swahilis by various names, viz. Mvule, Mfuni, and Mparaumsi; they have a straight stem about 3 to 4 feet in diameter, and run to a height of 80 or 90 feet; they have a cream-coloured bark, no lateral branches, but a large umbrella-shaped mass of foliage at the summit. The wood is light-coloured and regular in growth, easily worked, and is consequently much prized for canoe manufacture. The natives tell you that it is the only tree the snake is unable to climb.

Kidori may be called the boundary of the Lower Tana, for here the Pokomo population entirely ceases, and consequently all cultivation; for the natives, instead of showing signs of spreading northwards, seem to be decreasing in numbers.

Leaving Kidori, you enter a new region with magnificent unbroken forest on either bank, occasionally coming across a few rough huts belonging to Wasania hunters, who lead a sort of nomadic existence, being usually right away in the steppes elephant-hunting, and in times of scarcity of water coming down to live by the river. We steamed for four and a half days through this uninhabited region, and the belt of forest on either bank is very dense throughout. There are few spots, very few, where the line of forest is broken for a hundred yards or so,

and the dry steppe land runs down to the water's edge; it is at these spots that caravans, marching parallel to the river, can come down and get water. There are long lines of trees very like the English poplar, and as large; they fringe the river nearly continuously throughout this district, and onwards at intervals until Hargazo is reached, where a little beyond the falls they entirely cease. These forests are so extensive, and contain such fine timber, that they are worthy of some attention; and as the demand for timber on the coast increases, a lumber trade on the Tana ought to prove a financial success; the logs could be fastened together into rafts, and so floated down the stream.

Emerging from this region, the Korokoro district is reached, and one or two scattered Galla villages. The head Galla chief Sadeh lives in the lower part of this district, near Odo Borruruva. In a deserted Galla village near this spot, a curious relic of Peters' expedition was found, namely, a couple of solid drawn loaded cartridges with steel projectiles for Peters' Hotchkiss cannon, evidently stolen from his camp by the Gallas. At the upper end of the island of Odo Borruruva, at a place called Galanabe, the main Galla settlements are now situated; the reason for their moving to this spot being the near proximity of some large swamps, where they and the Wapokomo flee upon the approach of raiding bands of Somalis or Wakamba. The entrance to these retreats is artfully concealed; it consists of a very low passage in thick foliage just high enough to admit of a small dug-out canoe, the occupants of which have to lie down and work themselves along the passage by means of the boughs above. The Wapokomo in the Korokoro district are very different from those of the lower river; and, although not so nominally, they are virtually slaves of the Gallas, and a great proportion are half-caste Galla and Wapokomo.

About a mile above the settlements of Galanabe is the site of the station built by Mr. Pigott at Bokore. This is now entirely demolished, with the exception of a flag-staff, probably destroyed by Gallas or Wakamba. Opposite Bokore is the embouchure of a small arm of the river, which forms a low-lying island, stretching several miles, similar to that which forms the island of Odo Borruruva. A good day's steaming above Bokore brought us to Balarti, the Company's station, which is situated about 12 miles below Hameye or Baza, the residence of the old Pokomo chief, Eribaidima. This village forms the extreme limit of Pokomo occupation on the Tana. The site of the Company's station Balarti is a very pleasant one, situated high above the river, and quite dry at all seasons; and east and west of it are fine stretches of land capable of cultivation, and even at highest flood it has uninterrupted access to the steppe land at the back.

The climate at Balarti is very pleasant, but of course, our observations only extending over a little more than three months, they cannot be taken as a yearly average. The temperature was very moderate. There

were pleasant breezes both by day and night, and there was no dew. The average barometrical pressure and temperature during the period of about three months, from June to August, was as follows :—

	6 a.m.	12 p.m.	6 p.m.
Average barometrical pressure	29.89	29.87	29.79
Average temperature in shade	69.0°	84.0°	81.5°

It is to be regretted, however, that we had no instruments with us with which to obtain results as to the moisture of the atmosphere. During the whole of the time a south-west monsoon blew strongly every day. The weather was fine, but occasionally cloudy.

A thoughtful observer standing on the banks of the river at high flood, and watching the powerful turbulent chocolate-coloured stream rush by, cannot fail to be struck with the terrible amount of waste going on—waste of water and power which might be used for irrigation, and waste of a vast amount of fertilizing material, both things of golden worth in a tropical land. If this turbid torrent could be made to deposit its mud upon the flat steppe lands of the valley, instead of going to form a fan-shaped sedimentary deposit in the sea about the mouth of the river, the benefits would be incalculable. At present the muddy waters of the river discolour the sea for some miles away from the mouth, and some thousand tons of rich fertilizing material must be deposited yearly around the mouth of the river, choking up its exit, instead of transforming many square miles of barren land into a fertile, productive, and remunerative tract.

With regard to the irrigating power of the river, it is at present entirely uncontrolled; at one time there is too much water and at another time too little, but by suitable engineering works it might be properly regulated and its influence immeasurably extended. The height of the station at Korokoro is 460 feet above sea-level, and a barrage or dam in this neighbourhood, raising the level of the river at least 30 feet, would enable several hundred square miles of country to be irrigated. Below Korokoro the construction of a dam would be a matter of great difficulty, owing to the absence of stone, but great results might be achieved by the proper utilization of the water-power of the river. It could be easily employed to raise water, which could be stowed in large reservoirs, and thence led over the country to assist the culture of rice and cotton. These improvements once carried out, one could safely prophesy that the prosperity of the Tana valley would exceed that of any other area in our East African possessions.

We will now deal with the tribes inhabiting the Tana basin. All tribes of this part of Africa may be divided into two classes, pastoral and agricultural. Pastoral tribes, from the fact of their having to follow the pasture necessary to graze their flocks, are more or less nomadic. Agricultural tribes, on the other hand, always inhabit a fixed location. Pastoral tribes, whenever they become degenerate, or

in any way worsted in the struggle for existence, take upon themselves the habits of an agricultural tribe; the converse is never the case. With regard to the Tana, the tribes met with from the mouth of the river up to Hameye, are the Wapokomo, Gallas, Waboni, and Wasania. The Wapokomo are essentially an agricultural tribe. They inhabit the river on both sides, and are never found living away from the immediate vicinity of its banks. They belong to the Bantu race, and are closely allied to the tribes which inhabit the east coast immediately behind the coast-line from Lamu down to the river Rufiji, and of which the Wanyika, Wagiriama, Wadigo, and Wazaramu are collateral branches. Living on the river for generations, these people have made it their high-road, all their internal communications being carried on by means of canoes. Nearly every family in every village possesses one or more canoes. These canoes, which are often 30 or 40 feet in length, and seldom more than 2 feet in width, are very skilfully made, being hollowed out of the solid trunk of a tree by means of very primitive tools. They are very skilful boatmen, are all very expert swimmers, and are the only tribes I have seen who do not fear the crocodiles, with which the river abounds; one of their great sports being crocodile and hippo hunting. Although they have no very big chiefs, there is usually in each district a headman in one village, who commands a certain amount of respect throughout that district. The chief Nife of Ndera or Kosi is an example of such a man. The majority of the Wapokomo have adopted the Moslem faith, but a great deal of savage superstition still survives amongst them. For instance, in all villages there is a sort of shed under which the elders sit and discuss matters; the innermost part of this shed is partitioned off, and only the grown-up men are allowed to enter; all young men upon attaining manhood have to be initiated into the mysteries of this inner chamber. There is one curious superstition, that of the "Golahoi," which is found among the people of the lower river. There are certain stretches of forest between Ndera and the coast which this creature is said to inhabit. The story is that a man walking alone through these woods will sometimes meet a strange creature in the form of a man bearing a pot of honey. He will ask the man to drink, and if the native does so, while the native is raising the pot to his mouth, the Golahoi, seizing him by the throat, strangles him. If a strange noise is heard coming from the depths of the woods the Wapokomo are generally very frightened, and will tell you this is the Golahoi calling.

The Wapokomo have also another series of ceremonies, about which they are very reticent. Certain of the headmen construct an instrument of the nature of a powerful drum, and this instrument is secretly taken away into the woods. They there stay for some time performing a vigil with this drum, and fasting the while. At certain intervals the drum is sounded, and when they hear this, the Wapokomo all retire

to their huts, and dare not emerge until all is again quiet. It is very difficult to obtain a detailed and accurate account of these ceremonies without long residence among the people, as they at once become very suspicious if a European tries to investigate the subject.

Whilst speaking of these matters, I may mention a curious legend the Wapokomo possess relative to their origin. It is to the effect that in ages past a great giant, named Fumo Liongwe, lived at Kipini and possessed the whole country-side, particularly the Tana valley. One day in his wanderings he entered the Wanyika country, and carried off a man and woman of this tribe; this couple he took away to some place on the Lower Tana, established them there, and gave them orders to cultivate the banks, to build canoes, and row people up and down the river. This they did, and hence sprung the Wapokomo tribe. They live in dome-shaped thatched huts about 10 feet high and from 8 to 10 feet in diameter; these huts have a floor raised about 15 inches from the ground, made of a lattice of strips taken from the midrib of the leaves of the wild date. Lattice-work stages 6 feet in height are to be seen in most of the villages. When the floods are very high they retire to these stages, and live up there entirely until the floods subside.

The products of the Wapokomo are principally rice, bananas, and maize; there is very little rice grown above Subakini. In the Korokoro district rice is hardly grown at all; it is there a great rarity. Besides these products, a certain quantity of manioc, sweet potatoes, pumpkins, sugar-cane, tobacco, koonde, and chiroko or pojo, are grown; the two latter being a small variety of bean. A small grain called wimbi is also grown, for the purpose of manufacturing an intoxicating beverage. The Wapokomo also farm bees to a great extent. They take a piece of wood about 12 inches in diameter and 4 feet in length, and hollow this out till it is a mere shell, fill up each end with the exception of a small hole, and sling it up in a tree; this forms a hive for the wild bees. There are thousands of these hives to be seen as you proceed up the river. The natives do not eat much of it as honey, but use it principally for the manufacture of a fermented liquor. To ferment this it is necessary to obtain a rather peculiar kind of fruit; this fruit is about 1 foot long and 3 inches in diameter, composed of a hard fleshy substance; it is suspended by a single thin cord from the parent tree. This fruit is dried and cut up into pieces, and placed in the liquor required to be fermented. The best honey is quite colourless, and is equal in flavour to good English honey. The Wapokomo have no idea of the value of the beeswax, which is at present entirely wasted. The Tana tobacco is of good quality, and if skilfully dried it would be fit for the European market. At present the natives simply plait the leaves into a sort of rope and dry them in the sun. The Wapokomo possess a considerable amount of ivory, obtained second-hand from the Waboni.

The dress of the Wapokomo is very simple, consisting of a coloured

cloth round the loins, and sometimes a piece of plain cloth thrown over the shoulders; they wear round the neck numerous thin chains of brass or iron; they also wear brass armlets. The hair is laboriously twisted up into innumerable little tufts with oil and ngeo—ngeo being red oxide of iron powdered. This mixture of raddle and oil is also smeared over the neck and shoulders; this process is only adopted by the young men who desire to attract admiration. The Wapokomo are armed with two spears, with small oval blades like Somali spears, one of which has a long shaft of 8 or 9 feet in length, this spear being solely used for spearing crocodiles and other objects in the water; some of the older men carry bows and arrows. The women are dressed in a sort of kilt from the waist to the knee very similar to that worn by the Wanyika; they also wear anklets, and belts embroidered with beads, and numerous bead necklaces. The women, like the men, are very expert in managing canoes. In many places, especially in the upper river, there are large groves of the *Borassus flabelliformis*. From the sap of this palm the Wapokomo make a sweet intoxicating drink. The estimated number of the Wapokomo is from ten to fifteen thousand.

Let us now briefly refer to the Gallas. The Tana Gallas are an example of a pastoral tribe, worsted in their struggles with their enemies, abandoning pastoral nomadic life and taking up quieter agricultural pursuits. They are a branch of the great Galla tribes situated in the south of Abyssinia, which in former times burst their bounds, spread south as a great wave of invasion, and eventually settled down and formed the three sub-tribes—Boran, Randili, and Barraretta Gallas. The Randili and Boran tribes still flourish, but the Barraretta tribe, which inhabits the Tana valley, was some twelve years ago almost crushed out of existence by an organized raid of the Ogaden Somalis, the Somalis having been paid by the coast Arabs and Swahilis. Since this blow they have never regained their lost power. Their principal settlements at the present day are at Kitumbini, near Kau, on the river Ozi; Borobini or Golbanti; a few scattered villages back from the river opposite Ngao, and a few others in the neighbourhood of Merifano. Above this exceedingly few are seen until the district of Korokoro is reached; in the Korokoro district they people a stretch of about 60 miles of river.

As the characteristics of this tribe have been already dealt with in the report of the expedition, *Proceedings R.G.S.*, August, 1892, I will only give a few additional facts. The Gallas are monogamists, but they often possess Pokomo slaves as concubines. The men's dress is practically the same as that of the Wapokomo, but the women are usually dressed in tanned skins; their houses are the ordinary thatched domes. Besides their spears, they carry a small circular shield about 16 inches in diameter, usually made of giraffe hide, almost identical to those used by the Somalis. The male members of the tribe on their decease are

buried close to the cattle-sheds; this is a relic of their old pastoral days, their love of cattle still being intense. The Korokoro Gallas will often travel away to near the mouth of the Tana to buy cattle, and should they survive the risks of the journey, the cattle are usually carried off by the Somalis before many months have elapsed. Many of the Gallas are capital hunters, and at the proper seasons they will go right out into the steppe land and camp at a couple of days' distance from the river, obtaining water by digging in the sand of a dry torrent-bed. They have at these camps a large breed of roughly trained dogs, which they use to bring an animal to bay, thus enabling the hunter to run in and spear it; they are very successful in obtaining giraffes by this method. They also set a kind of snare, by which they are very successful in catching big game. They bend down a bough of an overhanging tree, to which they attach a tough rope made of aloe fibre; in this rope there is a noose, the bottom of this noose being pegged down to the ground. The site of this trap is usually fixed upon a well-worn game-track, such as is used by animals travelling to drink at the river. The largest animal I have seen caught by this method being the buffalo, will give a good idea of the strength of one of these snares. They also use to a less extent covered game-pits. When a man has killed an elephant, he is allowed to wear an ivory ring on his left arm; likewise, when a Galla has killed an enemy, he is allowed to do his hair into a little topknot. Unmarried women among the Gallas have their heads shaved into a tonsure, and upon marriage this tonsure is allowed to grow. The Gallas' food consists of flesh, curdled milk, and maize. They are not so drunken in their habits as the Wapokomo. The women are very clever at all sorts of plaiting work. Amongst other things, they turn out beautifully made vessels for holding milk; these are flask-shaped, and entirely constructed of plaited fibre, and yet are perfectly watertight.

There are two small tribes remaining to be mentioned, namely, the Waboni and the Wasania. These two tribes are practically one and the same people. The Waboni acknowledge the Gallas as their masters. They are entirely a nomadic tribe of hunters, very retiring in their habits, and seldom seen in the haunts of men; they are armed simply with bows and arrows; their dress is similar to the Gallas; they have no tradition of their origin.

The Wasania occupy a precisely similar position to the Waboni, and are practically indistinguishable from them, the only difference noticed between the individuals of these two tribes being that the Wasania are usually taller than the Waboni; but it is extremely difficult to pursue any systematic comparison of these two tribes without a long residence in their vicinity, leading as they do an almost solitary, wandering kind of existence. The Gallas told us that if a Msania wishes to marry, it is necessary for him to buy permission from the Galla

chief, to whom he is subject, by means of a tusk of ivory; he then has to buy the woman of her parents with another tusk; a quantity of tobacco and honey are formally presented to the woman, who is then declared as his wife. One section of the Wasania tribe is said to be subject to the Somalis, who probably employ them as spies upon the Gallas, to obtain information as to good opportunities for raiding.

The Waboni, Gallas, and Wakamba, when out elephant-hunting, live largely upon the hard fruit of the *Hyphæne thebaica*, which palm abounds along the Tana banks and also fringes most of the dry torrent-beds which join the river. Some of the northern tribes utilize the kernel of the nut as cattle-food, but none of the East African tribes are aware of its utility, being unable to break the shell.

On proceeding upstream, and leaving behind all the Galla and Pokomo settlements, it is necessary to carry about twelve days' provisions in order to reach the next food-supply. Leaving the Company's station Balarti, a good day's march brings us to the southern edge of the flat steppe land which has bordered the river from its mouth. We then enter upon a new phase of scenery, that of the great area of metamorphic rocks, which occupy such a vast extent of country in East Africa. The river gradually rises in a series of steps formed by rapids or falls; every few miles great ridges of hard granitic gneiss cross the country at right angles to its general course, the river having carved its way through these obstructions, leaving perpendicular cliffs on either side, and furiously rushing along at the bottom with the aspect of a mountain torrent. A few small tributaries begin to appear; these streams are four in number, the first being the one called Salt river, so named from the fact that during the dry season, when it has dwindled to a narrow rivulet, it becomes rather brackish. It has a storm-bed nearly 100 yards in width, but usually covers a very small portion of this width, and for some miles along its course it is thickly fringed by groves of hyphæne palms. Two days beyond this is the tributary named Mackenzie river by Mr. Pigott; this is much larger and more constant in its flow than the former one, and has an average width of about 50 yards, and is about 3 feet 6 inches deep at average low water; this river is also fringed with groves of *Hyphæne thebaica*. Just above where this river joins the Tana, it comes dashing down a fine waterfall of nearly 50 feet, having carved a passage through a nearly vertical field of the hard hornblende schists which occur at this spot.

Near the entrance of this tributary the banks are very high and rocky, and progress is very difficult for caravans. The large veins of gneiss are very marked; they run due north and south, and on the opposite bank of the river their course may be traced by lines of cairn-like tors, which crop up at intervals along their course. It may be here remarked there seems to be a very close connection between the folding of these rocks and the occurrence of waterfalls and rapids. The

strike of the rocks generally is north and south, while the course of the river is east and west, and in all places where the folding of the rocks becomes very severe and steep, either a fall or a stretch of rapids is formed. It may be that where this folding becomes so intense, shearing and over-thrust faulting may have taken place, and raised the general level of the country to the westward.

Along this stretch occur at intervals flat tracts of alluvial deposits; the river banks of hard metamorphic rocks appear to recede some distance from the river, their place being occupied by a flat plain covered with dense green vegetation. At one spot between Mackenzie and Salt rivers, there is a deep depression with a perpendicular drop of 50 or 60 feet, semicircular in shape, and about 2 miles in diameter; the whole area covered with the densest jungle. These phenomena are simply records of changes of the course of the river from time to time—the deep depression, for instance, being a beautiful example of alteration of course due to a cut-out; but some of the more extensive stretches are possibly raised beaches, formed at a period when the sea formed a vast estuary, stretching up nearly to the boundary of the Thaka country.

Beyond Mackenzie river are two other small tributaries. The first of these, like Mackenzie river, enters the Tana by means of falls; it is, however, much smaller than Mackenzie river. These last three tributaries all take their rise in a prominent range of mountains to the north, these being, I imagine, the mountains named by Peters the Kaiser Wilhelm Range, although wrongly placed by him in relation to the river; the native name is Janjai.

Near the last tributary is a ford in the river; this is the point at which the Swahili trading route crosses on its way from Ukambani to Mbe. The river is here cut up into numerous islands; most of its branches are fordable, but one on the south side is crossed by means of a rude bridge. This ford, I believe, corresponds with Krapf's crossing of the older maps. Two and a half days further on, following the north bank through the densest of thorn-bush, a large tributary is reached, and this tributary is the eastern boundary of the Wadthaka tribe. This tributary was (at the time of our visit) about 120 yards wide and about 3 feet 6 inches in depth at its junction with the Tana; at this point in the Tana itself are the largest falls seen during the expedition. The river divides itself into several streams, and falls sheer over a cliff of about 60 feet in depth. Viewed from the opposite bank, the upper course of the river is not seen at all, but the water seems to spurt out from a perpendicular cliff, which is crowned with a tangle of *Raphia* palms and other vegetation. A coast trader who has travelled through this district many times, tells me that the tributary comes from east of Kenya, from a lake called Kilikoka; this may correspond with the lake Abayila of Ravenstein's map. At the time I was in hopes that the discovery of this tributary would solve the question of the destination of the waters

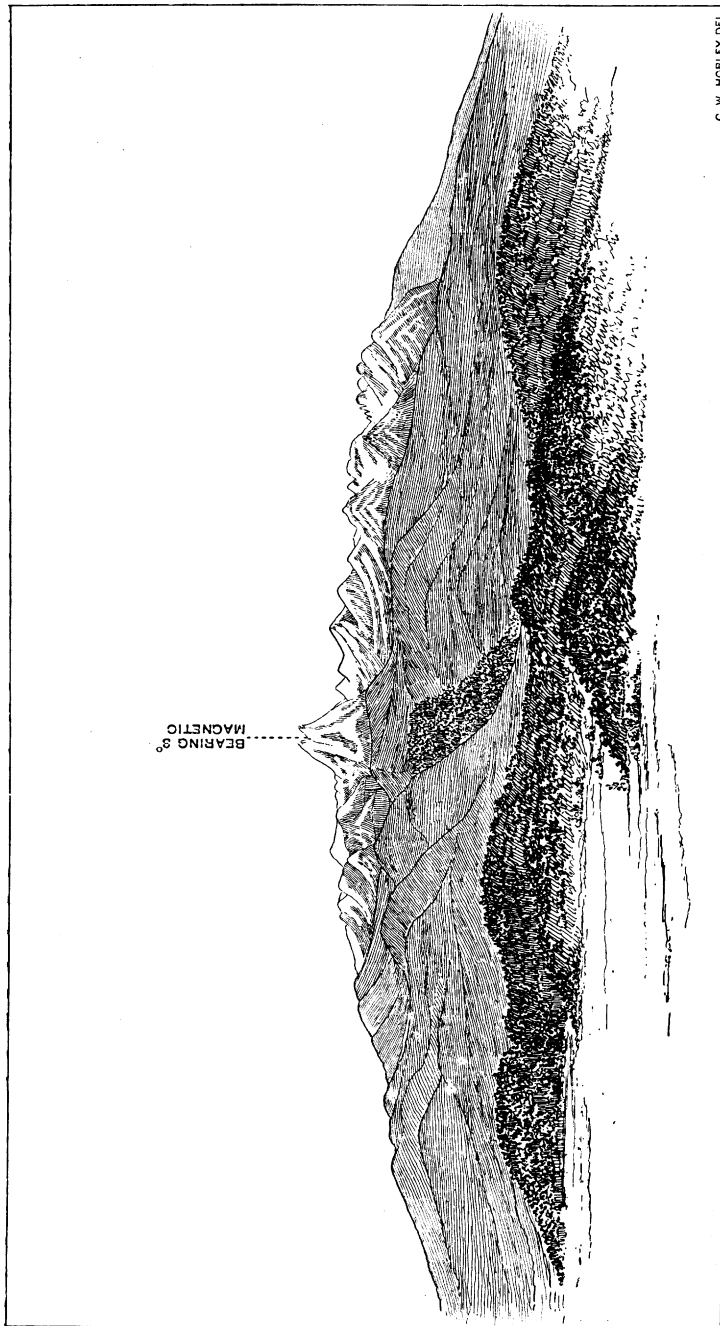
of the Guaso Nyiro, but have recently heard that subsequent explorations of Lieut. von Höhnel have proved the Guaso Nyiro to enter Lorian swamp as originally supposed; no mention is made of an outlet from the east side of Lorian in the direction of the Juba river or elsewhere. Crossing this tributary, we at once enter the cultivated country of the Wadthaka. About 3 or 4 miles back from the river run a chain of mountains, and on the slopes of these the Wadthaka villages are situated. The river here rapidly bends to the south, and after about two days' march in a south-westerly direction we arrive at another large tributary, which forms the southern and westerly boundary of the Wadthaka. This tributary is about 90 yards wide at its embouchure, and about 3 feet 6 inches deep. The current was very strong, the rapidity being due to a fall of about 20 feet in the stream some 300 yards above our ford.

The dimensions given to these rivers may be taken at a fair average, as we passed through this country in October, being some little time after the great rains had ceased, and before the small ones had commenced. Overlooking this tributary to the north-east is a peculiarly shaped ridge, the outline of its summit being as flat as if artificially levelled. As we climbed this its structure became self-evident. The face of the slope was strewn with a talus of basaltic lava, while the ordinary grey schists peeped through *in situ* at intervals. The last 40 feet or so of height consisted of a lava cap which probably covered a large area of plain in former times, but is now denuded down to a mere ridge. As evidence of its original greater extent, I may note the existence of a recent conglomerate composed of volcanic rocks of the same character which occurs some miles from this spot on the opposite side of the river; the ridge was very narrow at the point crossed by us, but widens near the river; there was no evidence to show whether it formed part of an enormous lava flow from Kenya, or whether it is due to a fissure eruption contemporaneous with the volcanic activity of that mountain. Another day's march along the river, through thick mimosa thorns or woods, brings us to another tributary, and to the confines of the territory of the Wambe. This tributary also proceeds from Kenya.

Mbe is a thickly populated fertile area, lying as a rule somewhat back from the river. Near this spot the river was left, and a route taken across country in a due westerly direction. Rounding the slopes of a flat-topped mountain, called Albert Mountain by Krapf, one passes through a rolling plateau surrounded by an amphitheatre of mountains. The main route for Kikuyu passes over a dip in a mountain range to the west, and from the summit of the pass, looking west, a glorious panorama of Kikuyu is unfolded to the gaze, stretching away in a vast plain intersected by innumerable watercourses all running south to join the Tana, whilst to the north the enormous outline of Kenya is just visible through the shrouding masses of cloud. Descending the western slopes

of this range, numerous plantations are passed through, and in about an hour and a half's marching the boundary of Wambe is crossed. Curiously enough, this boundary coincides with the junction-line between the volcanic rocks of the Kenya area and the great metamorphic series to the east; the actual boundary-line is on the west side of a well-marked valley, in which is a small stream overgrown with sedges. Beyond this stream one enters a splendid park-like, gently rolling country, thickly studded with small trees, undergrowth being rare; numerous game abounds, as there is plenty of water in most of the valleys. A march of about 9 miles through this sort of country brings one to another rapid flowing stream of about 50 yards wide and 3 feet deep, which runs south to join the Tana; crossing this, in a short march one arrives at the boundary of the Kikuyu plantations.

Kikuyu might be described as the land of wild flowers and sweet-smelling grasses. One marches through a wonderful variety all day long, and growing as they do in kind of hedgerows between the paths and plantations, it reminds one forcibly of English lanes; there is, however, very little waste land, as almost every acre is cultivated and occupied. Near all the villages are open patches of close short turf, with clover just like English grass; and if not for the banana groves, one might imagine one's self in Kent or Surrey, for the vikwa (large potato-like tubers of the yam family) are trained up on poles just like hops. As the lower slopes were gradually ascended, large patches of bracken and fern were seen on the hillsides, quantities of mignonette, a kind of dandelion and other wild flowers, many very like the English species. The villages of the Wakikuyu are never found above an altitude of 6000 feet. Beyond the last plantations, large areas of bracken fern 6 to 7 feet in height are seen; intertwining with this, common English bramble is found, and ripe blackberries can be gathered. Passing the bracken, one enters forest; and a more tangled mass of virgin forest it is impossible to imagine. Large numbers of the trees were of gigantic dimensions, being 6 and 7 feet in diameter at a man's height from the ground, and rising up to a height of about 150 feet; some of them are a variety of juniper. The trunks of these big trees are one hanging mass of ferns and lichens, these plants and mosses also forming a carpet under the trees. In the ravines are clumps of tree-ferns which mingle with the other trees, and a view from the top of one of these ravines presents a scene of marvellous beauty. These ravines are often more than 300 feet in depth, with sides as steep as 45 degrees. One day's march took us through this forest, after which we reached continuous woods of bamboo cane. We followed an elephant track, but even then progress was very slow owing to the overhanging canes which impeded the track. These bamboo-cane forests on Kenya are worthy of note; they are, I believe, peculiar to the Kenya region, the area called Mianzini in Masailand, and one or two localities on



G. W. HOBLEY DEL.

VIEW OF MOUNT KENYA FROM CAMP IN NORTH-EAST KIKUYU.

BEARING 8°
MAGNETIC

Mau escarpment. The lower limit of growth is very sharp, the change from the ordinary woods into the cane-woods taking place within 100 yards; their lower limit is at an altitude of a little over 7000 feet. The canes grow to a height of 20 to 25 feet, sometimes more, and often at a diameter of 4 to 5 inches. Large numbers of elephants seek out these woods for the sake of the tender upper shoots of the canes; you may see where the canes have been pulled up quite by the roots and broken down in every direction by the elephants.

We were not able to proceed beyond the bamboo forests owing to an unfortunate shortness of food, which prevented us attaining a greater height than 8700 feet, although physically there was nothing whatever to interfere with our advance; from our last camp a distinct track was seen steadily ascending, following the axis of one of the ridges. It is not an easy matter from below to realize the extent of the undertaking involved in the ascent of the mountain, for if you ascend from the south and make a direct line to, say, the double peak, you have to cross innumerable ravines, of the existence of which you have no idea when at the base of the mountain. I would not assert for a moment that the ascent of the mountain is impracticable from this side, but the work would be heavy. Any future expedition working on the mountain should have the bulk of the men in a secure camp some miles to the east of our starting-point in a good food district; they should not start with less than ten or eleven days' food, and as small a party of men as possible should be taken. These precautions would, I believe, bring an explorer up into the smaller peaks to the east of the double *spitz*; then, by extended investigation amongst the smaller peaks, a better idea of the structure of the mountain would be obtained than by single route up to the base of the almost perpendicular double peak. During the climb it would also be well to blaze one's track; this would enable a relay of men to follow up with more food, at an interval, say, of five days; these men could relieve the original body of carriers. A plan of this kind is necessary if any lengthened stay is made at a high altitude, because native carriers are physically unable to withstand protracted exposure to cold.

Numbers of apparently English species of plants were observed on the mountain. At 8500 feet were observed dog-violet, thistle, dock, nettle, forget-me-not, and a plant very much like nightshade; between 6000 and 7000 feet the begonia, bramble, nettle, and oxalis were noticed; numerous European ferns were also seen in the juniper forests, bracken, the common English fern, parsley fern, hart's-tongue, blechnum, polypody, and the royal fern *Osmunda*. In the valleys on the lower slopes of the mountain occasional specimens of the wild banana (*Musa ensete*) are seen; the hard black seeds are much prized by the natives for making necklaces and for decorating war-dresses. At about 6000 feet it is noticeable that the white ant entirely disappears, and gives place to the earth-worm.

Kikuyu is sometimes visited by numbers of locusts, which at times do considerable damage to the crops, but, as far as I could find out, they never appear in dense swarms as they do in the northern parts of Africa; they are fried and eaten with great relish by the inhabitants.

We will now give a little attention to the tribes whose habitat lies between Hameye and Kenya. To commence with the Kikuyu people. As these people have been often referred to elsewhere, I will confine myself to noting only a few details. In most tribes the women do the whole of the cultivation, but the Kikuyu men work in their fields quite as much as the women. Where the main trade route from the coast to Uganda passes through Kikuyu, the natives are famed for their pugnacity and treachery, but south of Kenya, where they have little or no communication with the coast natives, they do not seem to have developed these hostile characteristics; for during our visit to the mountain we left the bulk of our goods in a camp among the Kikuyu villages, simply in charge of the Swahili headman and quite a small body of porters, and the natives made not the slightest attempt to molest our men or carry off any of our goods. They, however, show very great dexterity at petty thieving. In the daytime they would come and sell to a porter a bundle of tobacco, and at night, the porter, knowing their thievish habits, would put it under his head for a pillow, and in spite of this precaution it would nearly always disappear during the night; in fact, their own headmen would tell us that if we saw any of his people prowling about at night, we might know they were thieves and were at liberty to shoot them. The food of Kikuyu consists of bananas, maize, mtama, or millet, sweet potatoes, vikwa or yams, koonde, a kind of haricot bean, maweli and kimanga, which are small kinds of grain—the latter being, I believe, similar to the massango of the Zambesi basin, which is a variety of *penicillaria*. The majority of the bananas are used in a green state, but a few are allowed to ripen as fruit, and are large and of a delicate flavour. Red pepper is also grown to a small extent, and the castor-oil plant. There is also a succulent vegetable called mayugwa; it has a large heart-shaped leaf, and grows to a height of about 3 feet; when the leaf is cooked it eats like spinach. The root is also edible; it is, however, necessary to soak it in water before cooking, to take away its strong pungent property, which otherwise would render it very unpalatable. The plant is a variety of *colocassia*. Tobacco is largely grown in Kikuyu for smoking and snuff-taking; the plant here is larger than I have seen elsewhere, probably from the fact that Wakikuyu manure it with cow-dung; they are the only tribe in the interior that I have seen who appreciate the value of manures in agriculture. The Wakikuyu possess numbers of cattle, sheep, and goats, principally the latter. They are in daily terror of the Masai raiding parties, which were very frequent about the time of our visit, because

the anthrax scourge was killing off nearly all the cattle in Masailand, and they were raiding to increase their stock. One old Kikuyu native came two days' journey to obtain from us magic medicine to stop the Masai raids, to prevent his cattle dying, and also to bring on the rains. The hill-slopes in Kikuyu are, in my opinion, most admirably adapted for growing English wheat; the rich red volcanic soil, the frequent showers, and the sun too, of nothing like tropical heat, would, I believe, suit corn to perfection; in fact, barley has been already tried and grown with success at the Company's fort in Western Kikuyu.

During our stay in this district we saw some individuals of the mysterious tribe Waruguru, as was described in the *Proceedings*, August, 1892. When we were on the mountain we looked out in vain for traces of the habitations of these people, but at a considerable height among the bamboo forests we saw elephant traps, which had been set by members of this tribe. These traps consisted of a heavy log of wood about 4 feet in length, in the base of which was fixed a large poisoned dart; this log is slung up into one of the large trees to a branch overhanging an elephant track; near the point of suspension a trigger catch is devised; from this catch a cord is carried down the trunk of the tree and across the path. An elephant coming along the path runs into the cord, the catch is released, the log falls, and the poisoned dart strikes the elephant in the region of the spine; if not killed immediately from the shock, he soon dies from the effect of the poison. I have since met an Arab trader who has also seen these Waruguru people, and he confirmed all that I had previously heard and seen of them, and he told me that they do not cultivate, but simply live on game they kill, and hunt elephants for ivory. With regard to their origin, the only suggestion I can make is that they are an isolated offshoot of the Suk tribe, which inhabits a district to the south-west of the Lake Rudolf, and who are characterized by their hirsute appearance.

We next came to the Wa-Mbe, a quiet, peaceable, agricultural tribe, who occupy only a limited area on the north bank. This tribe suffers a great deal from the scourge of Masai raiding-parties. I have often heard people recommend the despatch of a strong punitive expedition against the Masai. This, I think, would not likely be of much avail; with their great knowledge of the country and rapid movements, they would easily evade any large force that might be sent out against them; for in East Africa we have not the advantage of mounted troops as in the south. Moreover, the task of crushing the Masai is one hardly worth attempting, for they are not by any means a united tribe, governed by one individual; thus an attack on one section does not mean that the other clans of the Masai would come out and take the field against one. I, however, submit that the best policy is, by occupying the surrounding countries and assisting the people raided upon to hold their own, thus to confine the Masai to the proper limits, and curtail the area available

for raiding; in time, under these conditions, they might prove most useful allies to the administration.

Adjoining Mbe on the left bank of the river comes the Wadthaka country. As this tribe has already been described in a previous communication, I will not deal with it at great length. We may here remark that Peters' name of Wadsagga for this tribe is not at all correct, and his explanation, showing their relation to the Wachagga of Kilimanjaro is, I think, entirely without support. The derivation is simply this. The word "Thaka" is Kikamba for "wilderness," and they call themselves Wadthaka, "Wa" being simply the Bantu prefix for "people." This word Wadthaka, very softly pronounced, might easily be mistaken for Wadsagga. They are industrious cultivators, producing more than they are able to consume. They grow millet, maweli, chiroko koonde, sweet potatoes, manioc, castor-oil plant, and a few bananas; also pumpkins, and excellent tobacco. They are very keen traders. The Wadthaka men all carry small iron tweezers, with which they carefully pull out their eyebrows and eyelashes. They have also adopted the peculiar method of partial circumcision similar to that customary among the Masai. They carry rather peculiar throwing clubs. These clubs have light wooden shafts, but heads of stone, covered with skin. The Wadthaka smelt iron to a small extent for their axes and spears, the ore used being a decomposition product of some of the schists, which contain a considerable quantity of iron locked up in the more basic mineral constituents. Some time in the near future an outpost in this country may be of considerable use to the administration, for Machakos station in Ukumbani can be reached in ten or eleven days from here, and the station near Hameye in about the same time. It would thus complete the chain of communication between Machakos and Hameye, and if ideas are ever entertained of tapping the great ivory districts east and north of Kenya, this would prove an excellent starting-point for subsidiary caravans working these regions.

Between the Wadthaka country and Hameye on the south side of the river, opposite the tributary called the Salt river, are found a certain number of kraals belonging to Wanderobbo, but very little is seen of the inhabitants. The older members of the community and the women are constantly roaming about, seeking change of pasture for their flocks, while the younger members are nearly always absent elephant-hunting. The Wanderobbo are nominally serfs of the Masai, like the El-Konono; the former being hunters, and the latter being iron-workers and makers of tools and arms. These Wanderobbo on the Tana are, however, so far removed from the Masai that I doubt whether their serfdom is more than nominal; it may be that amongst these tribes of hereditary serfs, the Wanderobbo, El-Konono, Waboni, Wasania, and Walungulo, we may be able to discover the survivors of the original inhabitants of the country in far distant times before the Bantu wave came from the

south, the Masai wave swept down from the region of the Nile valley, and the Gallas from southern Abyssinia.

The Wanderobbo often cross over to the north side of the river for hunting, but they leave their kraals, flocks, and herds on the south side; they were heavily raided by Peters, and when we passed they turned out *en masse*, informing us that the last white man who passed (Peters) had carried off their cattle and goats, consequently they did not wish to hold any communication with us; whereat we passed on our way.

We may here remark that there is one domestic process amongst all these tribes which unconsciously acts as an index of the kind of country the tribe inhabits; I refer to the processes used in the manufacture of flour. The Wapokomo, Gallas, Wanyika, and Wadigo break up their corn by means of a pestle and mortar, the mortar being a hollowed-out log of wood shaped like the dice-boxes of a backgammon board, and the pestle being a pole of hard wood; but the Wadthaka, Wamba, Wakikuyu, and Wakamba all grind their corn, using a slightly hollowed-out slab of hard rock, in which a smaller piece is rubbed along. This is a never-failing index of the structure of the country; for in the lower Tana valley, where there are nothing but alluvial sands and gravels, the natives are unable to obtain rock to make their handmills, but in the metamorphic region further west suitable slabs of gneiss or hard schist are everywhere at hand.

I shall now give a few details of the country between Hameye and Machakos. Opposite Balarti station the river is hemmed in by a thick belt of forest, which runs uninterruptedly for some distance either way. The forest belt is about 7 miles thick, and this area being flooded at high river, the growth is of the densest character. When we crossed over from the station to proceed to Ukambani, it took us about $5\frac{1}{2}$ hours to cut our way through this into the open steppe-land beyond. We then marched along parallel with the edge of the forest, expecting to find a break through which we might gain access to the river. No break could be found, and after being about 24 hours without water, both the natives and their leaders began to show great signs of exhaustion; fortunately, however, after a few hours' more suspense, a little water was obtained by digging in the sand of a dry stream-bed, and this it was that undoubtedly saved the lives of a good many of the men, as the sufferings of some of them were already rather severe. We followed the upward course of the river on its south bank until opposite the Salt river, when fortunately, having found a good Mkamba guide who had come across to the Tana, elephant-hunting, we struck across a flat dry plain in a south-westerly direction, with the object of reaching Ngomeni. At this time, about the middle of November, one could not fail to be reminded of the fact that spring was near at hand, for within a week or so all the thorn trees burst out into full leaf, nearly every bush having its flowers, the whole air being laden with the sweet scent of the blossoms, especially those of

the mimosa camel-thorn. About 22 hours' hard marching through a trackless, waterless extent of thorn-bush brought us within sight of the mountains of Ukambani, in the vicinity of Ngomeni, and about another hour and a half's marching brought us to a bare rock, near Ngomeni, around which the Wakamba had dug deep pits, these pits receiving the drainage of the rainfall which fell on the bare non-absorbent gneiss. This was the first occurrence of permanent water since leaving the river. A march of a few miles then brought us to the foot of Ngomeni. Ngomeni is a fine, castellated-shaped rock rising precipitously to a height of about 500 feet from the plain. It is a fine example of a mass of mica-schist thrown up into an irregular anticlinal, the axis of which is about north and south; it exhibits in places very complex minor folding. The population immediately around Ngomeni is very dense, villages clustering all round the base of the rock, and up the rock where it is not too steep. In the vicinity of every village the ground was strewn with hundreds of skeletons of oxen which had died from disease a short time previously. In many places they had piled up the carcasses as a wall round the villages, being unable to transport such numbers to a distance; the air was laden with the unwholesome effluvia. Out of all the enormous herds in the Ngomeni district, only some twenty or thirty beasts had survived.

Leaving Ngomeni, and proceeding nearly south-south-west, we touched the mountains of the Kitui district, which is very fine from a scenic point of view, and every hour's marching brought into view new features of the mountain ranges which surrounded us on all sides. A great deal of the country is covered with thick woods, mainly composed of a green-barked sponge-wood tree, but the Wakamba are gradually extending the area under cultivation, clearing away thick woods in a most patient and persevering manner. The Kitui mountains divide themselves into two ranges, running north and south, at a distance of some 8 miles, and between them is a wide fertile valley down which runs the small river the Nzio. The soil of the valley is deep alluvial, and formerly was nearly all cultivated by the Wakamba; but since some extensive raiding by the Masai a few years back, it has been entirely deserted, with the exception of small patches near the hills. Leaving this valley, we crossed the western range of the Kitui mountains, and, proceeding south-west for a day and a half, marched through a region having an altitude of about 5000 feet, at intervals obtaining glimpses of the snow-peaks of Kenya, which, from this point of observation, must have been quite 80 miles distant. Leaving these high lands, we began gradually to descend into the wide stretch of plain-land which contains the Athi valley. For about two days we marched through a park-like region with fine grass and thin mimosa scrub; but as we proceeded westward the trees became fewer, and at last disappeared, and stretches of miles of open

grass-land were visible from the tops of the ridges, with hardly a tree to be seen. Before reaching the river Athi we arrived at the base of a steep cliff some 200 feet in height, and ascending this found ourselves upon a plateau about 2 miles in width, and running indefinitely north-west and south-east; this proved to be one of those peculiar larva-caps similar to that seen to the north of the Tana, near Mbe. On the western side, this plateau ends abruptly in a steep cliff about 400 feet in height, and about a quarter of a mile from its base runs the river Athi. The river here is about 50 yards wide and 4 feet deep. Crossing to the western side and proceeding about south-west by west, a day's further march through a fine open rolling park-land, thickly wooded and covered with good turf, brought us to the edge of the Wakamba settlements of Western Ukambani. Another day's march through a closely cultivated fertile country in about a westerly direction brought us to the Iveti mountains, and rounding the spur which forms the southern end of the range, we arrived at the Company's fort of Machakos, on the main trade route to Uganda.

The Wakamba of Eastern Ukambani differ very little from those of the western division of the country; but before the cattle disease they kept far greater herds of cattle than their neighbours in the west. As the land rises from Ngomeni till one reaches the highlands of Kitui, the prevailing crops naturally vary according to the altitude; for instance, in the Ngomeni district the principal product being millet, and in the fertile valleys of the Kitui highlands, around the base of the Chandula mountains the prevailing crop is manioc. They also grow a certain amount of maize, koonde, and the usual various small grains; sugar-cane is largely grown, principally for chewing and making a beverage, and in the valley of the river Nzio they grow it in circular pits 3 or 4 feet deep. There is not enough moisture in the ordinary soil, but by digging these pits the plant gets the moisture which filters through the subsoil. The Wakamba are a very friendly people, keen in trade, intelligent and energetic; and this tribe is, I feel sure, destined to play a great part in the future history of the country as a source of labour. They have for a long period been in communication with the coast; large bands of them periodically setting out for Mombasa, carrying ivory or driving herds of cattle and flocks of sheep and goats for barter with the Swahilis, the meat supply of Mombasa being almost entirely dependent on the Wakamba. They are the most musical tribe I have yet seen, their favourite instrument being a pipe, which sounds exactly similar to the chanter of the bag-pipes. You hear the sound of these pipes continually as you march through their country. They are played by the young men when out tending their flocks.

I will now briefly speak of the fauna of the districts already described, commencing with the Tana basin. Upon entering the river, the first animals that attract one's attention are the baboons, which are nearly

always seen on the sea-beach about this point. They belong to the genus *Cynocephalus*, and often attain a height of 4 feet 6 inches.

In the early reaches of the river, numerous crocodiles also abound; but above this, from Charra up to Kidori, they do not occur in large numbers, this being the most thickly populated stretch of the river, and the Wapokomo thinking the crocodile meat a great delicacy, they are unsparingly hunted. In the forest stretch, between Kidori and Korokoro, they are numerous; but it is in the uninhabited stretch, between Korokoro and the Wadthaka country, they occur in the greatest numbers and attain the greatest size. At low water the sand-shoals are seen to be tenanted by swarms of these creatures, lying there basking in the warmth of the sun's rays. At the time of high river very few are visible. Two kinds were observed—one, the ordinary greyish, muddy-coloured variety; the other, of a pale greenish tinge, the latter being much rarer than the former.

The fish of the Tana are extremely numerous, but very poor in species. Most noticeable is a large fish of the Siluroid kind, which often attains a large size, as much as 45 lbs. in weight. It is, I think, similar to what is known as the cat-fish at the Cape. The skin is devoid of scales and rather slimy, the head is flat, and the mouth of enormous width. The upper part of the head is hard and bony; from the lower lip there are pendant strings of skin. They are very unpalatable and strong-flavoured. This fish is the staple food of the crocodile.

There is another fish, not unlike the common dace, which is very good eating. It has scales of a greyish silvery colour, and is of very slim proportions; it is seldom found over 3 lbs. in weight. There are also small kinds of minnow-like fish in great numbers. On one or two occasions I have seen in the Tana a black water-snake. This was never above 2 feet in length; it is said by natives to be very poisonous.

Among the larger mammalia are the elephant, hippo, rhino, buffalo, giraffe, zebra, and the various kinds of antelope. Then come the carnivores, such as the lion, leopard, hyæna, etc. The elephant has an extremely wide but a very uncertain range; he is often seen near the coast in the game country behind Golbanti, but when his tracks are noticed, the native hunters are out immediately, and the elephant at once retires to more unapproachable districts. The only parts in which you can always rely upon finding elephants are the steppes which border the upper river on both banks above Masa. At Korokoro they are fairly numerous, and although the Gallas are always hunting them, they will at night come down and destroy the maize plantations, and by dawn they are miles away in the bush. Above Korokoro they are constantly hunted by Wanderobbo and the Wakamba, and cannot be said to be very numerous. Westward through Ukambani the presence of a population precludes the occurrence of this timid animal.

Near the mouth of the river a considerable number of hippos are found, but, like the crocodile, owing to the presence of the inhabitants, are very seldom seen above Charra, and thence we do not find them again until past Korokoro; but beyond this point they are found in great numbers. The largest number ever seen together was at a point beyond the Mumoni range. There are here a large number of small tree-clad islands, and at the foot of one of these, protected by the island from the force of the current, lay a herd of about twenty-five hippos, with their heads above water, resting on each other's backs.

The rhinoceros is not found in the lower river; in fact, its occasional occurrence may be said to commence about Ndera. Above Ndera it is sometimes seen, but never in great numbers; it attains its greatest frequency of occurrence in the open plains east of the river Athi.

The buffalo is first seen in the swampy flat country between the Bellazoni Canal and the coast, and in similar country at the back of Golbanti; thence onwards it occurs, but rather rarely until we reach the last villages up the river. Beyond this it becomes fairly common, but the ravages of the disease of the latter half of 1891 decimated their numbers, and this species must have run a great risk of becoming extinct; during our march to Kenya we saw the carcasses of several thousand buffaloes in all stages of disease and death.

The giraffe and zebra were first observed at Merifano, near Ngao, and are then found at intervals along the whole course of the river, the giraffe becoming very common beyond Korokoro. Both these animals are gregarious, but large herds are seldom seen along the river. Large herds of zebra, numbering more than fifty, were seen in the Athi plains. They are invariably striped down to the heels. They are *Equus Burchelli*, var. *Chapmani*.

The antelopes and gazelles observed in this area were the tope, *Alcephalus Senegalensis*; Coke's hartebeest, *Alcephalus Cokei*; the water-buck, *Kobus ellipsyprimna*; the mpala, *Melampus mpala*; the oryx, *Oryx beisa*; the wildebeest, *Connochætes gnu*; lesser koodoo, *Strepsiceros imberbis*; *Gazella Walleri*, *Gazella Grantii*, *Gazella Thomsonii*, and various other species similar to the steinbuck and duiker, also *Neotragus Kirkii*. With regard to the distribution of these species, those of the Tana valley are tope, water-buck, oryx, Coke's hartebeest, lesser koodoo, mpala, *G. Walleri*, *G. Grantii*, *G. Thomsonii*, and *N. Kirkii*. The tope, or Senegal hartebeest, was first observed at Merifano, and after this at intervals on both banks up to near Korokoro; after this not a single specimen was seen, although I have heard they reappear near the Sūk country. The water-buck is very common throughout the whole length of the river; the oryx was not seen until Korokoro was reached, and even then it was rare. Coke's hartebeest is not found in the whole of the lower and middle river, its first occurrence being on the north bank in the stretch of park-land lying between Mbe and Kikuyu. The lesser

koodoo is not very common, but occasional herds are seen on the upper river. The mpala was not seen in the lower river, but around Korokoro it is common, and the specimens obtained were larger than those seen in any other part of the territory. The *G. Walleri* occurs in the lower river; it attains its greatest frequency in the region of Korokoro, especially on the north bank of the river; about half-way between Korokoro and the Wadthaka country it disappears. *G. Grantii* is found in the lower river, but was not observed north of Merifano. *G. Thomsonii* was observed in the Korokoro district on the north bank of the river. *N. Kirkii* occurs in great numbers throughout the whole length of the river; there are, I believe, two varieties of this species,—those in the rocky districts of the upper river have long hairy crests, in those of the lower river this crest is hardly visible.

The new antelope, *Damalis Hunteri*, was not met with during the whole expedition. In the large open plains between Eastern and Western Ukambani, the wealth of game is very great, the principal antelopes in this plain being Coke's hartebeest, Wildebeest, *Gazella Grantii*, and *Gazella Thomsonii*. Near the Athi the water-buck is abundant.

There are two representatives of the hog tribe found in this area; the wart-hog, *Phacochoerus Æthiopicus*, is the commoner, and is observed at intervals over the whole of the district, both in the bush country and in the open plains. The other kind, the reddish-brown bush pig, *Sus larvatus*, was only observed in one place—on the left bank of the river at Gubaida; it inhabits the thickest bush. There is one small kind of hare found in this area; it is never very common; it has a greyish mottled-brown colour, dirty white underneath, probably *Lepus saxatilis*.

Lions and leopards are found throughout the whole of this tract, but cannot be said to be common or troublesome at any point. Of the smaller cats the *serval* was observed. Hyænas are very common; only the spotted variety was seen. The civet cat was occasionally observed on the north bank of the river near Korokoro. There is a small jackal found in the Korokoro district, probably *Canis lateralis*; it is always solitary in its habits. Between the Tana and Ukambani the wild hunting-dog was met with; it was of a blackish colour, with white on its tail and feet, possibly *Canis simensis* (?); it is often found in packs of thirty or forty. The presence of porcupines may be often inferred from the occurrence of loose quills, the porcupines themselves being very seldom seen. This remark also applies to the scaly ant-bear, *Orycteropus* sp. (?); its burrows are continually seen among the bush, but I myself have never seen a live specimen, the nearest approach being a skin in the possession of a native.

Among the smaller quadrupeds may be mentioned the tree-hyrax, which is found among the big forests of Mount Kenya. When camped

upon the mountain the forest at night used to re-echo with the human-like shrieks and calls of this creature, hidden on the tops of the huge trees,—it had a most weird and uncanny effect. I did not see the animal, but from the natives' description it is probably *Hyrax Brucei*. The small mongoose is found in the dry steppe-land. Myriads of small monkeys also tenant the bush bordering the river in many places,—they belong probably to the genus *Cercopithecus*; and many large specimens of the varanous lizards, often miscalled iguana, but really the *Monitor niloticus*, are seen. Snakes were not common. A thin, small, green, harmless variety was sometimes observed, and specimens of the deadly puff-adder were occasionally met with. On the Athi escarpment a snake about 10 feet in length, very thin, of greyish colour, was seen; it was of a much lighter colour than the python. It showed fight, but was fortunately killed before doing any harm.

Of the birds, the ostrich, *Struthio danaoides*, was first observed at Merifano, and occasionally after that in the lower river, not being met with at all in the upper river; it was, however, seen in great numbers on the Athi plain.

The greater bustard, *Otis kori*, may be next mentioned. This magnificent bird was only seen in two places—once in some open ground in the Western Wadthaka country, on the south side of the Tana, and again in some old deserted plantations near Ngomeni; at the latter place a specimen was obtained which weighed about 50 lbs. The flesh on the breast of a bustard is quite equal to that of a turkey.

The spurwing goose, *Plectropterus gambensis*, was seen in the upper river, but never in great numbers. It is always found in pairs. A small black duck was also found in limited numbers along the river. In some of the reaches of the river above Kidori, enormous numbers of pelicans, cranes, storks, and ibis were seen. At some distance beyond Korokoro their occurrence almost ceases. Two varieties of guinea-fowl are found—the crested and the vulturine, together with various kinds of partridge, grouse, and francolin. Among the birds of prey observed might be mentioned the buzzard, vulture, and marabou stork. The first is everywhere, but the vulture and stork do not appear till some distance from the coast. There are two species of vulture—the greater and smaller. The marabou stork, *Leptoptilus crumeniferus*, was not seen at all until Korokoro was reached, and even then was not found in great numbers. A large brown mottled-plumaged owl was seen near Hameye.

The study of the structure of the country from the Tana valley westwards, that vast area covered by such a medley of metamorphic rocks of all kinds, is very instructive; but to understand the problem properly one has to look further afield, and to commence with the broader aspect of the question. Thanks to the researches of Heim in Switzerland and Professor Lapworth in England, it may now be said to be a well-demonstrated fact that the shape of all the continents and

oceans, and the relative areas of land and water, are determined by the axial direction and length of the great earth-folds which traverse the surface of the globe.

Africa is no exception to this law, and there is the general central arch, with corresponding low-lying plains on either side. Taking the region of the equator, this central arch is marked on one side by the elevation of Kenya and Kilimanjaro, and on the other by the great masses of Ruwenzori, Gordon Bennett, and Mfumbiro; but being of such great width, it has sagged in the middle, forming lines of depression—the great depression upon the line of Rudolf, Baringo, Naivasha, and Natron Lake; the great trough of the Victoria Nyanza, and then again the depression marked by the Albert Nyanza, Semliki Valley, and Muta Nzige. These are the features generalized, but locally the phenomena are complicated greatly by tangential pressures at right angles to these folds, and thus it is that the main folds often become themselves twisted and folded, giving rise to the occurrence of the granitic domes so notable in great metamorphic areas, similar to that described in this paper lying to the east of Kenya. The most perfect examples of these domes are two hills on the south side of the Tana, near Hargazo; they stand out 300 feet above the plain, are of bright pink gneiss, bare of all vegetation, and very regular in outline. There are numerous other examples of the same structure in this region, and near the coast.

Between this dome structure on the one hand, which is the result of the most complex series of forces, and the regular mountain chain running in a meridional direction, which is the simplest form of earth-crumpling, we may find all degrees of transitional and intermediate forms, the one type passing into the other without any break, and as examples of these intermediate forms we may mention the precipitous masses of Ngomeni and Kisigau. And even in the most perfect truly folded mountain chains, like some of those in Kitui, we see the upper outlines of the range rising and falling in a series of peaks, these rises and falls being the resultant of comparatively weak waves of force at right angles to the main wave-motion which has elevated the mountain mass.

WANDERINGS IN THE HINTERLAND OF SIERRA LEONE.

By T. J. ALLDRIDGE.*

I do not propose dwelling upon the many remote parts of the colony I have visited, but simply upon those hitherto unknown localities at the back of the Sherbro or south-eastern district of Sierra Leone, to which may be given the general name of Mendi-land, although it includes several other countries; and which, on behalf of the Colonial

* Map, p. 192.