are not of much importance. The only export worth mentioning, besides the silver of Caracoles, is the nitrate of soda, which exists in several places, the principal being Las Salinas, where the "caliche" is of excellent quality, ranging from 30 per cent. to 80 per cent of nitrate, and is in some places 12 feet in thickness.

It is found in a bed extending over the ground and following all its undulations, generally covered with a crust containing a large proportion of sulphate of zinc and common salt, which varies in thickness from 1 to 6 feet. Guano, birds' feathers in excellent preservation, and even some skeletons of birds are found in the caliche, sometimes at a depth of 10 or 12 feet from the surface of the ground. These things, and many others too numerous to mention, lead me to support the theory advanced by the best chemists on the coast, that the nitrate of soda has been formed from a mixture of guano with seaweed when this part of the country was at the sea-level. As the deposits of Las Salinas are 4000 to 5000 feet above the sea, this must have been many thousands of years ago.

There is no *fresh* water south of the river Loa, so that all the water required both for men and animals has to be distilled from the sea or from water obtained in wells. Even that used in the locomotive engines of the Railway Company is distilled from the sea in Antofagasta, and carried all the way (80 miles) to Las Salinas for the double journey.

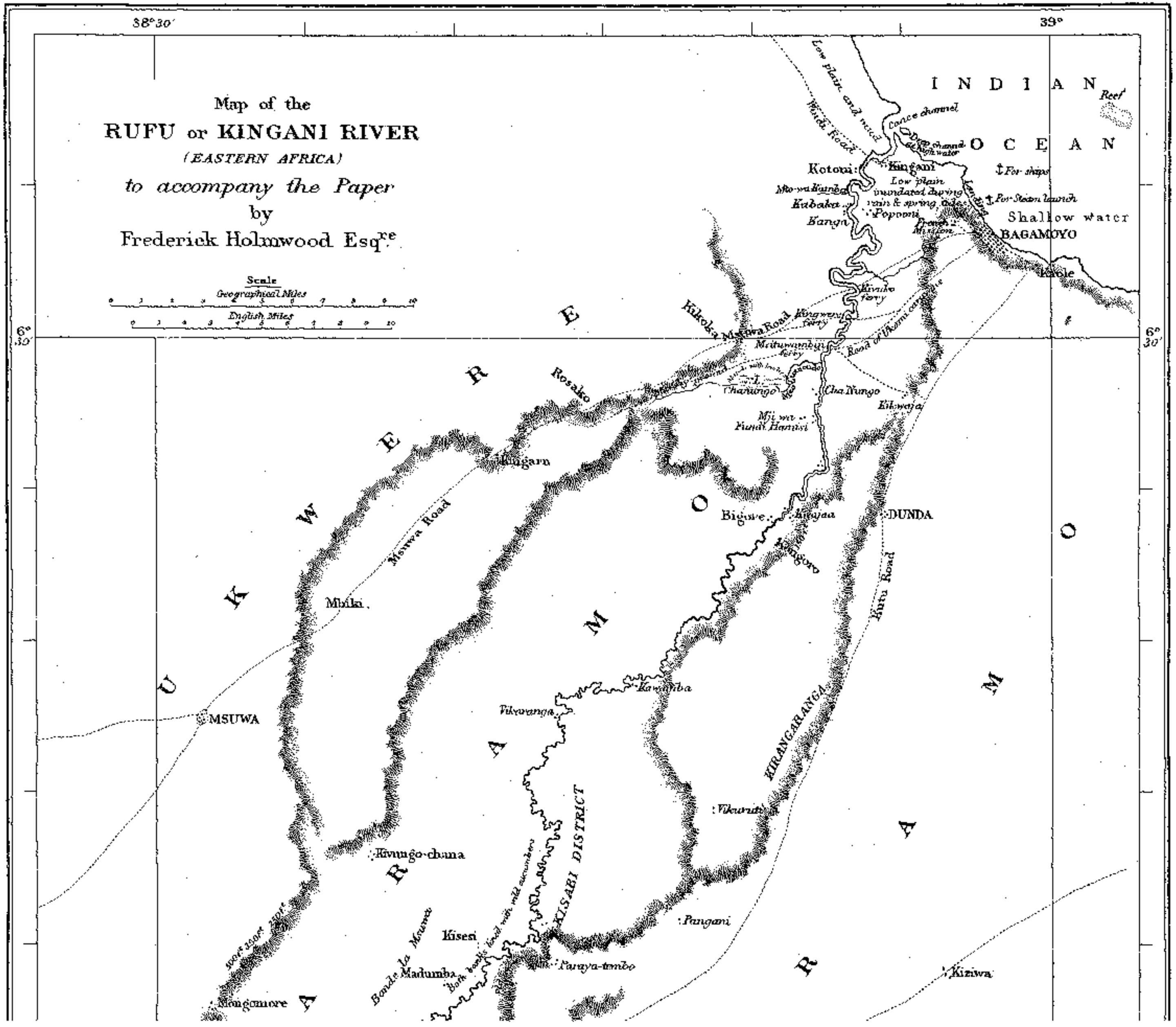
This part of the desert, excepting the town of Cobija, has been populated within the last nine years.

The figures on the map give the heights in feet above sea-level. Dry lake-beds are coloured brown.

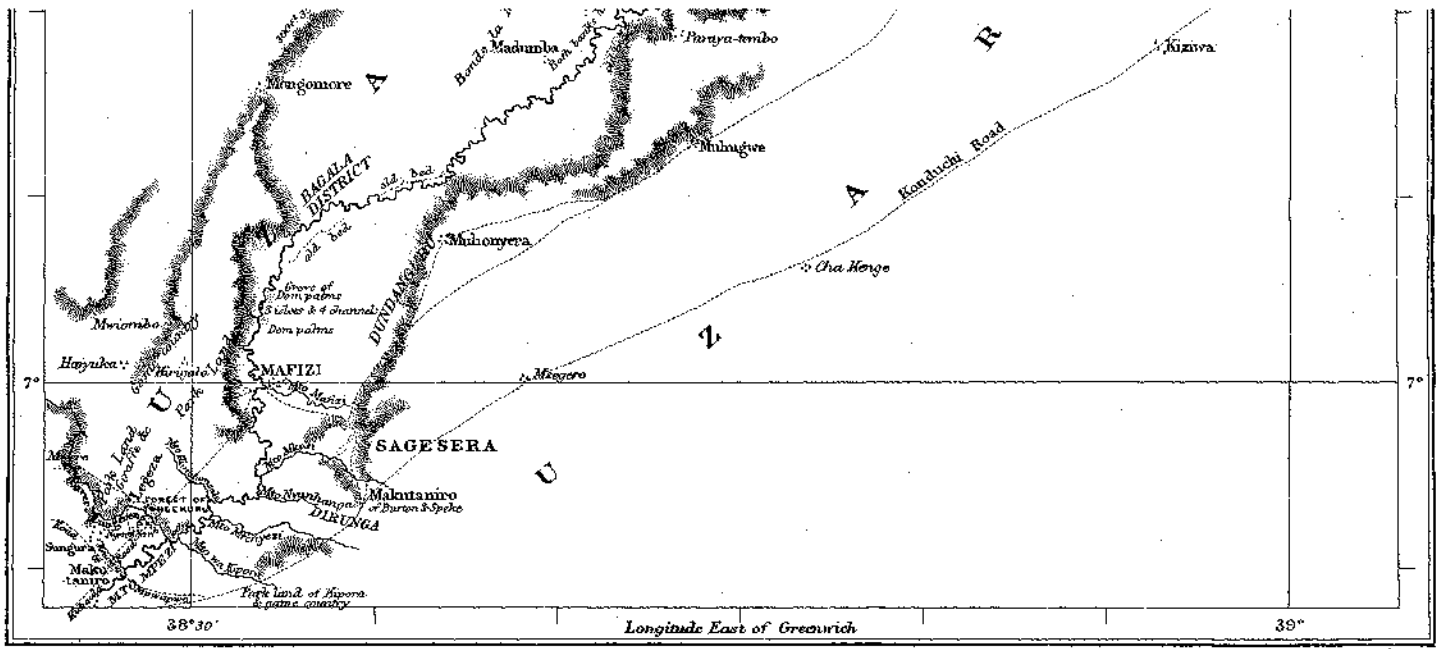
XII.—*The Kingani River, East Africa.* By FREDERICK HOLMWOOD, Assistant-Political Agent, Zanzibar.*

THE Rufu, or Kingani, had long been classed among those hopeful-looking East African rivers which it was trusted might become highways to the interior, but like the Rovuma, the Wami, and others of these streams that have been explored, it has been found—though not absolutely unnavigable—not to

* Mr. Holmwood's observations on the Kingani, from another Report written by him, appeared in the 'Proceedings of the Royal Geographical Society,' vol. xxi., p. 499, in a paper read by Mr. Edward Hutchinson.



Map of the
RUFU or KINGANI RIVER
(EASTERN AFRICA)
to accompany the Paper
by
Frederick Holmwood Esq.re
Scale
Geographical Miles
English Miles
38°30′
39°
6° 30′
INDIAN OCEAN
Reef
Canoe channel
Low plain and mud
Windi Road
Kotoni
Kingani
For ships
For Steam launch
Shallow water
BAGAMOYO
Landing
Low plain inundated during rain & spring tides
Popooni
Kabaka
Kanga
French Mission
Kaole
Kivuko ferry
Kingwere ferry
Kikoka
Msuwa Road
Road of Ukami caravans
Matuwambili ferry
Charungo
Cha Nungo
Kikwaja
Mji wa Fundi Hamisi
Rosako
Kingaru
Bigwe
Kiuyaa
Kangoro
DUNDA
Rutu Road
Msuwa Road
Mbiki
MSUWA
Kawamba
Vikuranga
KIRANGARANGA
Vikurutu
KISABI DISTRICT
Pangani
Paraya-tembo
Kiziwa
Kivungo-chana
Kisesi
Madumba
Bonde la Mnuma
Mongomore
U K W E R E
U K W E R E
O M A R A
O M A R A



Published for the Journal of the Royal Geographical Society by J. Murray, Albemarle Street, 1877.

Edw.d Weller

fulfil the expectations inspired by the appearance and extent of its waters.

The following brief summary from notes made respecting this river during the three weeks occupied in ascending about 120 miles of its serpentine windings, is forwarded at the special request of Lieutenant Shergold Smith, R.N., the leader of the Nyanza and Uganda expedition, who had been instructed to make the exploration of the Kingani himself, but was prevented from doing so by fever, and who begged me to send my map and account of the journey, which I undertook for him, to the Royal Geographical Society.

The map, though made with the utmost care, pretends to be nothing more than a sketch by dead reckoning, the only point fixed by observation (namely, the junction of the Lungérengère) showing an error of about 4 miles in my reckoning, at that station.

Our party, consisting of Mr. Mackay, mechanical engineer to the Uganda Expedition, Mr. Hartnell, mate and coxswain, and myself, accompanied by twelve natives under the veteran Bombay, left Zanzibar in the Church Missionary Society's yacht, *Highland Lassie*, on the 6th of July last, having in tow the steam-launch *Daisy*, in which we were to ascend the Kingani. Anchoring for the night just outside the harbour, we ran across to Bagamoyo the next day, and met with the usual kind reception from Père Etienne and the French missionary fraternity at that place, who, moreover, obtained for us the services of a Mkami and Mzaramo, who professed to have some knowledge of the higher part of the river we were about to explore.

Just now, when interest is being directed in a special manner to East Africa, and plans are likely to be formed for improving the communications with the interior, a few remarks on the town of Bagamoyo and the two main caravan roads which end there, after skirting the respective banks of the Kingani for a considerable distance, may not be out of place as prefatory to the main subject of this Paper.

Bagamoyo is situated on the mainland nearly opposite the city of Zanzibar, in lat. 6° 26′ S., long. 38° 58′ E. It has been for many years the starting-point and place of arrival of the Unyamwezi caravans, and also of the several expeditions organised at Zanzibar for the exploration of Central Africa.

The town has rapidly increased of late, and now has a population of about 10,000 inhabitants; but, like many of the coast towns in the Zanzibar dominions whose sites have been selected only for their convenience with reference to some caravan route, the place is particularly unsuitable in other respects for a commercial port. It has no harbour, and the roadstead affords by

no means convenient anchorage. Ships must lie about 1½ mile from the shore, and even boats cannot approach within half a mile except at high water, the beach at low tide being a flat expanse of adherent mud, interspersed with jagged rocks of dead coral and patches of decaying mangrove-root.

Both the town and adjacent country are particularly unhealthy, owing to the immense expanse of low plain and mangrove swamp, always more or less inundated, stretching for miles on both banks of the Kingani, which enters the sea 4 miles N.W. of the town. The miasma from these Kingani swamps is peculiarly virulent, and bilious-remittent of a special type is prevalent in the neighbouring districts during a great part of the year.

Two main caravan routes enter Bagamoyo, known as the Kutu and Msuwa roads; both have been fully described by Burton, Speke, Cameron, and Stanley. The former, however, owing to repeated acts of robbery and violence on the part of the Wazaramo, through whose country it passes, was virtually closed soon after Speke's last journey; and although the power of the Wazaramo, as a nation, has, since the last Maviti invasion, sunk to the lowest pitch, a bad repute still attaches to the country, and few Unyamwezi caravans have returned to this route since they left it for the Msuwa road, which has become an established highway.

The Kutu road is still that of the Urore caravans, and that branch of it leading to Konduchi and Dar-es-Salaam is also used by occasional traders; but the country of Kutu itself, including the town and district of Zungomero, was some years ago almost totally destroyed and depopulated by the Maviti, and a small number of caravans suffice for the present trade with the more remote district.

There have been difficulties lately with chiefs on the Msuwa road, but this highway is far too profitable to them to be lightly closed to travellers, and it is much more likely to fall into disuse through European exploration and enterprise opening up better routes.

Whilst the Msuwa road traverses the low hills bounding the valley on the left bank of the Kingani, gradually leaving them where they intersect those forming the valley of the Lungérengère, the Kutu road follows those on the right bank, which in many places approach the river itself. This road does not leave the neighbourhood of the river until it stands off to the Mgeta stream, about 70 geographical miles rectilinearly from Bagamoyo.

It was as a substitute for that portion of these two roads which, passing through a low maritime region, is both difficult

marching and dangerous camping-ground, that the water-routes of the Wami and Kingani were proposed by the liberal and public-spirited promoters of the Uganda expedition, who had a costly steam-launch constructed especially for their examination: and it seemed clear that if both or either of these rivers should prove to be navigable even for 100 miles, they would become most useful adjuncts to the route to Unyanyembe and the interior generally; the saving of property—and probably life—which would be effected by transporting (as was proposed by this Society), some 500 porters with their loads and their six English leaders by water over the most unhealthy and difficult portion of their journey; and moreover their conveyance, without fatigue, past about fifteen marches, and those the first from home—always the most trying for both men and leaders—would alone much more than repay a large outlay for suitable steam vessels, more especially as this was not to be an isolated expedition, but the advanced guard of an enterprise which would always have to keep in view the establishment and maintenance of communications with the coast.

Lieutenant Shergold Smith, R.N., ascended the Wami for about 40 miles, but found that river impracticable for any useful purpose, as Dr. Kirk had long before foretold would be the case, from observation of the lower stream at different seasons.

The Kingani was known, however, to possess some important feeders, and it was long supposed that the Mukondokwa, which has been observed as an important stream close to Mpwapwa, added its waters to this river—some even supposed it to be the parent stream,—whilst the Mgeta, entering some 30 miles higher on the right bank, had been reported on by Burton, Speke and Grant as a considerable influent.

From the instructions received by Lieutenant Smith, it was evident that, though geographers had now come to the conclusion that what had been thought to be the Mukondokwa was probably the Lungérengère, which was also known to pass Simbamweni, on the main road to Mpwapwa, they were still of opinion that this would probably be found to be the main river; and it was this that made me hopeful of finding the Kingani of practical value if it proved navigable, having no idea then of its extremely serpentine course.

It now only remains to give an account of the Kingani and Lungérengère rivers as far as explored, and a summary of information, derived directly from the natives, respecting that portion unvisited; and as the accompanying sketch-map is a faithful representation of what was seen, little more than a brief description of it need be added.

Unless the wind be high, there is no difficulty in dhows or large steam-launches entering the Kingani at three-quarters high water by the channel indicated in the map, the entrance to which is about 3½ miles N.W. of the landing-place below the French Mission, one long reefy point marked by stunted mangrove-bushes, about 2 miles N. of the anchorage, having first to be rounded. If there is much wind, an hour before the top of the tide should be chosen, and even then only good sea-boats should attempt the passage; and the channel being narrow, a pilot should be employed under such circumstances.

After entering, the first reach of the river is very broad and shallow, but the channel is fairly indicated by the colour of the water. After this the average depth is 18 feet for the first 20 miles, and there is a sensible rise and fall for 10 miles further, the depth averaging 12 feet at low water. The breadth soon diminishes to 250 yards, and it averages about 200 yards up to the first ferry (Kivuko), and 150 yards up to Kingwere ferry. The banks are generally low and interspersed with mangrove swamp, and the adjacent country is one vast plain more or less inundated. At low water a steep slant of black slimy mud, in which one sinks beyond the knees, testifies to the nature of the soil, and large deposits of decayed mangrove-roots emit a fœtid odour only too suggestive of the virulent fever of the Kingani. At its fourth reach the river intersects the Windi road, and here on the right bank is the village of Kingani, the remains of what was once a trading station under an independent chief. In the times when the constant raids of the Washenzi kept the inhabitants of Windi, Saadani, &c., in perpetual alarm, the river protected them from these assaults, hence the old Swahili word, "Kinga" (a shield), was applied, to which the natives here universally ascribed the name: but whether this part of the river was called after the old town, or the town took its name from the river, could not be ascertained —in fact none had the faintest idea. It is only in this district and sometimes at Bagamoyo that the river is so called; its general name as high as the junction of the Lungérengère is "Rufu," or "Lufu," though in some of the Uzaramo districts it is pronounced "Rufúu." It was impossible to get from the people the derivation of this name. It may be mentioned that the Mfúu is the one tree everywhere present on its immediate banks. I am, however, inclined to think that "fúu" is merely a dialectic form of the Swahili adjective "ku," or "kúu," great or chief (e.g. *njia kúu, the chief or main* road).

Ascending to the first ferry, a few dhows are passed loading red mangrove-poles (Zanzibar rafters), or white mangrove-logs for burning lime. At the ferry, probably one or more caravans

will be seen crossing, those outward-bound carrying principally cottons, beads, and wire, each sort being made up into burdens of a special form, those coming from the interior bringing chiefly ivory. This is the shorter path to Bagamoyo, but Kingwere ferry, 2½ miles higher up, is narrower, and is equally patronised by caravans.

About two miles beyond this the ferry of Msituwambiji is reached. This is the route of the small Ukami caravans which, for the sake of avoiding as many of the Ukwere villages as possible, take the muddy road through the valley of the Vitomondo, passing through the marshy ground bordering the small lake of Chanungo, which swarms with leeches, instead of the high and comparatively dry route *viâ* Kikoka, Rosako, &c. They march at a long swinging pace, and generally accomplish the distance between Bagamoyo and Msuwa—about 40 miles—in two days. They bring principally salt. Here the hippopotamus, which has been seen in most of the reaches, seems to have made its special haunt, and unless careful to keep near the bank or in shallow water, a small boat is very likely to be upset by some furious rogue bull or frightened cow, and a steam-launch to get a severe shock and possibly have a plank staved in or bitten through by one of these animals. Here the river is 70 yards broad and about 12 feet deep, but it begins to become obstructed by snags and sunken trees, which leave only very narrow passages through which the water rushes like a sluice. Still more dangerous are these obstructions if they are altogether below water, and not near enough the surface to show any indication of their presence. On one such we struck at Cha-Nungo, and though the tide rose nearly a foot, we had become so fixed that it was a day and a half before we were able to proceed, as we had to remove everything from the launch, and to make water-tight a plank in the engine compartment which had been split by the concussion. This delay afforded an opportunity for giving the men a little target practice; but if a report of the scores made at 50 yards had been sent up the country, it would almost have invited attack, there being only one hit made during the day, and that a bull's-eye by the steward, who had never fired a gun before. The remainder of the time was occupied in endeavouring to ascertain the course of the Vitomondo stream; the only path, however, was a hippopotamus track through tall spear grass, crossing every few hundred yards a marshy bottom, swarming with leeches. Eventually the lake was reached, but little of it could be seen, and every effort to reach the low hills, which evidently form the valley of this stream, was frustrated by impassable marshes. My guide having long since declined to proceed, the attempt

was abandoned, and a tall tree, on a little knoll, proved the only available point from which a rough sketch of the adjacent country and a few compass bearings could be obtained. The next reach beyond Cha-Nungo may be considered the ordinary tidal limit; the highest springs reach Dunda, however.

Two miles above Cha-Nungo is the hamlet of Fundi Hamisi. Here the river narrows to 60 yards. Up to this the people on both banks are Swahili, or slaves cultivating rice for their masters at Bagamoyo. The first sign that we had entered Uzaramo was the appearance on the banks of small groups of women and children, attended by a few more than half-naked savages, each carrying a bow and two poisoned arrows in hand, with a leather quiver of the same at the back. These warriors generally knelt in the tall grass or behind a bush, until the women reported there was no danger. They have the head hideously thatched with a mixture of black clay and oil, with beads or drops of the same at the ends of the rat-tail shaped points of hair which fringe it; their legs and arms are encircled with heavy brass and copper rings, a few ornaments of beads or white shells adorning their ears and necks.

Both bows and arrows are most workmanlike in make and finish; the poison extends for about 4 inches below the barb; when fresh it is of a bright red colour. They told me it is prepared from the giant euphorbia, and that their medicine-men provide them with an efficient antidote; but I failed to learn the nature or procure a specimen of this compound. Many of the children are got up in the same manner as the men, carrying, however, miniature bows and arrows; the latter tipped with hard wood points, and the shaft stained red where the poison should be. They have no idea of practising their weapons on birds and small animals, as the Wanyika children do.

But this warlike appearance seems only a keeping-up of the customs of a generation now rapidly passing away. On closer acquaintance, these fierce-looking persons were found to be generally of a timid disposition, and by no means prone to an indiscriminate use of their weapons. Whenever a herd of hippopotami in the channel rendered it necessary to sound the steam-whistle, or the donkey-engine was turned on, they instantly fled for the nearest cover, or carefully got the women and children between themselves and the supposed danger; and they rarely showed again, unless the boat stayed a time for wood or provisions, when they were the last to draw near. The women and children were, as a rule, much less timid; they are mostly fairer than the Swahili, and they have few

traces of the negro type. They wear less clothing and fewer ornaments than the men.

A little higher up, the character of the people changes so far, that, being all busily engaged in profitable agriculture, few find time to get themselves up in war paint. Instead of being afraid of the white man, they think only of how much they can make out of him; but the inordinate love for a hard bargain, natural in the Wazaramo, causes them to be so over-reaching, that we found it generally impossible to conclude a purchase unless we were prepared to pay two or three times the proper price. If we had relied upon the country for our provisions, as a caravan must do, delays would have constantly occurred, and the chiefs would have virtually collected hongo, by ordering their people to add it on to the price of provisions. In these agricultural districts the people more generally wear a ridge of muddy hair down the centre of their heads, as being less trouble to manage than the thatch. Some of the men who have made trips to the coast to dispose of their grain, have, however, turned Mohammedans; and there is little doubt that this religion will soon spread through the country.

The undulating swellings, rather than hills, glimpses of which had lately appeared to us, here approach the right bank. They generally run from 40 to 60 feet high only, but now and then may attain 150 feet; and are more or less in the nature of spurs, from the main line of rising ground running generally a few miles back, and following more nearly the direction of the river than this rolling ground. The latter, however, is rarely sufficiently defined to form ravines; and, moreover, such depressions as exist are seldom at right angles to the river. It was impossible, therefore, from the boat, to sketch them with any approach to accuracy, or give anything more than what was actually visible from the river. The course of the wavy depressions, however, undoubtedly trends towards the river; but their absence of character is shown by the fact that they do not contribute a single feeder, or even a waterway, that would become so during the rains. The consequence is, that this region continues damp and unhealthy long after the rains have ceased.

The general course of the rising ground over which the Kutu road principally runs, and that flanking the valley or depression on the left bank, was sketched from two low hills which were ascended during delays for cutting fuel, the only stoppages that could be afforded. The latter are much more deserving of the name of hills; they gradually recede towards Msuwa, leaving the valley on that bank an average breadth of 7 miles. The nature of the country appears similar to that

already described on the right bank, only more marked, owing to the greater height of the hills, which are generally also densely wooded. On most parts of this rising ground the copal-tree is found; and wherever the soil is red and sandy, deposits of fossil copal may be expected. We saw some fine trees near Dunda, and underneath, numerous pits, from which the fossil gum had been dug. The tree was also seen at our other landing-place on the right bank, a hill abutting on the river not far from Paraya Tembo; but here there were no diggings.

At Kawamba, about 20 miles above Dunda, the breadth of the Kingani has decreased to 40 yards; and here the current is 2½ miles an hour. After this the Kisabi district is entered. This is a wonderfully fertile country; the river winds and bends in an extraordinary manner, irrigating the land, which is always very low on one side, sometimes on both, for many miles; and the soil being suitable, an almost unlimited supply of the finest rice might here be grown. There is, indeed, much pains taken in the cultivation of this district; and the quality of the grain, some of which I had cleaned, is very superior. On the drier slopes, Indian corn, millet, and tobacco, are largely grown; and a considerable trade is carried on with the coast, but nothing compared with what would be the case if there were any other means of conveyance than porterage by the people themselves. There is not, however, an ox or even donkey in the country; and canoes are only used for ferrying purposes. The Mzaramo seems never to take kindly to the water; probably the swarms of crocodile and hippopotami, and the long flood season, may have much to do with this.

The people of this and other low districts are compelled to retire to the hills for the rainy season; there they store their grain, &c., for consumption and next season's sowing; and the men, who are very clever at making fish-traps of various descriptions, cover the adjacent low country with weirs, stake-traps, and long lanes of reed fences leading up to them. At this time the river is always more or less in flood, but after each special rise and inundation, large quantities of fish are taken in this way. The Kingani abounds with fish of many descriptions, some being quite equal in flavour to the average sea-fish of this coast; and one, the mzozo, of a firmness and fine flavour not surpassed by any fish found in the tropics.

The mzozo in general appearance exactly resembles a river carp, but on examination is found to possess a single row of very fine sharp teeth. There is also a roughness of the skin below the gills, not found in vegetable-feeding fish. They

would doubtless take a fly, for in the course of an hour, whilst passing a very narrow part of the river, three of them, each weighing between 3 lbs. and 4 lbs., jumped into the launch.

Beyond Kisabi, the low banks for about 7 miles on either side are completely covered with a wild cucumber, the leaves and blossom of which are similar in appearance to the ordinary European variety; but the fruit is smooth, about a foot in length and 1½ inch diameter. My specimens were all lost in an accident to the boat, so I can only say, with reference to this plant, that the natives do not use the fruit as food.

Soon after this the hills of Muhonyera district again approach the river on the right bank, and here a succession of narrow stretches of water, called by the Wazaramo "kipanga," traces of which had before been observed, commenced first on the left bank, then on the right. Their connection with a former bed of the river is evident; and whilst some bear traces of recent formation, others again are hemmed in with a network of shrubs and tangled creepers of several years' growth. I traced one of these kipanga, and found it to form a regular chain of ponds of about 4 miles; and the natives assured me this was, some six years ago, the bed of the river. In another place there were two long deep cuttings, which were only divided from the river by a bank of sand about 10 feet thick, but bound together by a few large uprooted trees, which had been brought down by a late flood. Evidently these had been parts of the river's course before the last rains.

In other districts the process of formation of new channels was clearly evidenced, and in many places it was apparent that the next flood would more or less alter the course of the stream. The natives declared that these kipanga were to be found several miles distant from the present banks; and though unable to verify this assertion, it was impossible to doubt, from what was actually seen, that where the adjacent country is flat and the soil loose and sandy, most rainy seasons effect important changes in the bed of this river.

A few miles further, the spurs from the Msuwa hills approach the left bank, and beyond this the extensive district of Dundanguru is entered. On the left bank the undulating country, interspersed with ebony and hard-wood trees, mingled with mimosa and various thorns, which has aptly been described by Burton, Speke, and others, as *park-land*, here commences. On the right bank, after passing several groves of the Dom palm (Mvuno), the picturesque village of Mafizi is reached; and having had to stay here for two days, considerable information was obtained by mixing with the natives, who proved very friendly and intelligent.

Mafizi is a collection of small hamlets situated on the banks of the Kingani and Mto Mafizi, about 30 feet above the river. The Mafizi is a mere brook, except during the rains. It rises in the Dundanguru hills, a few miles north of Sagesera, and is one of numerous similar watercourses which now, from both sides of the valley, begin to find their way into the Kingani. Sahale, the chief of Dundanguru, came down to see us; his young daughter carrying his gun across her shoulders, and holding it at both ends behind her neck. He assured me this was the only firearm in the district, which is very extensive, extending from Sagesera, which place has never been reoccupied since the Maviti destroyed it and killed the chief, to Muhonyera, and for the same distance on the left bank. He stated, however, that the Wazaramo chiefs had ceased to hold any real authority, except over their own villages; and that only in event of war could they now give any order to the elders of other places within their districts. He confirmed what everyone had acknowledged respecting the total loss of power and influence by the Wazaramo as a nation since the last Maviti invasion, and showed me the sites of numerous villages which had been totally destroyed, with their inhabitants, on that occasion on the left bank. His own people having received warning before these savages reached them, fled, together with the people of Mafizi, to the jungle, and returned to rebuild their villages when the invaders retired. The people of Mafizi have no occasion to remove during the rains; their huts are remarkably clean and well constructed, and the place is very healthy. This is the last of the fine grain districts, and large flocks of sheep and goats are kept; in fact, the people are altogether a well-to-do and well-regulated community.

A few miles further up, Sagesera district is reached. It is now a wilderness, and a most unhealthy region, the Mkosi stream which runs through it being extremely marshy and choked up with rank vegetation. The site of Sagesera village is now jungle, but the Konduchi road is still open and meets the Kutu road a few miles south; but the village of Makutaniro has been removed to the other side of the river, the numerous cross roads which made this a convenient caravan stage having fallen into disuse, and being completely overgrown, while new roads have been opened and all meet at the new Makutaniro, as will appear hereafter.

A few steep low hills with dark ravines between being passed in the district of Dirunga, a few small feeders enter the Kingani, of which the Kimalamsale on the left and Kipora on the right bank are the principal.

Here the game country approaches the river on both sides.

On the left bank the gnu, waterbuck, and buffalo in the lowlands, and the rhinoceros on the stony hills at the back, are plentiful; while on the right bank is the district of Kipora, described by Burton and Speke, and shot over by Grant.

The Lungérengère is now reached; the mouth being well wooded is hardly visible, and we were surprised to find on approaching that this somewhat celebrated river was a mere stream, evidently rapidly drying up. The mouth is divided by a grassy mound, which may any day be swept away; one entrance being ten feet across, and the other about double that width. It was, however, impossible even for a canoe to ascend; in fact, a few hundred yards up, the stream is banked up by sand into separate runnels, interspersed with little pools artificially constructed for catching fish.

There are several villages near the mouth of this affluent. The principal one is named Ngérengère, and has a regular boma or stockade, with a high, arched gateway.

We spent two days here, and Mr. Mackay took the greatest pains in obtaining observations. These observations have been sent by him to the Church Missionary Society of London. He, however, worked them out himself, and gave me the result, as below;* and I have no doubt this is fairly accurate, although the observations were taken under great difficulty, owing to an accident to his pocket sextant, the only instrument we had.

I was only able to spend one day on the Lungérengère. I found it averaged 20 feet in breadth and two feet in depth. Its course through a narrow cutting in the park-land above described, averaging about 25 feet below it, is not so tortuous as the Kingani. I found it everywhere fordable, but in most places the trees on either bank met over-head, and natural bridges were constantly formed by vines and creepers. These were generally the means adopted by the natives for crossing the stream, as the crocodiles render the fords dangerous.

In crossing the fine undulating plain from Legeza to Mwere I came upon waterbuck, brindled gnu, and an antelope I had never seen before, also wart-hog, and passed four large herds of giraffe. Although not able to devote sufficient time to enjoy shooting, I could not resist the temptation of stalking the last herd and shot the leader, who gave a few bounds, ran two hundred yards, and fell dead. Having got some of the natives up from the village of Mwere, I cut off his head, tail and feet, and returned to the boat, but had to regret my having been carried away by love of sport, for during the remainder of our journey we not only had to put up with the smell of very

* Mouth of the Lungérengère at junction with Kingani, 7° 0′ 39″ S., 38° 28′ E.

high giraffe meat, but also with the laziness of the men who were always gorged with flesh, which they ate half raw and half burnt, being unable to cook it properly on board the launch.

The next day we ascended the Kingani for a few miles, but found the difficulties too great to warrant our spending any more valuable time over the exploration. The river in no way altered in its general appearance, being from 25 to 40 yards wide, and about 8 feet deep in the channel; but the obstructions in the deep water became more numerous, and the breadth of the channel sensibly contracting, we decided on returning.

Above the junction of the Lungérengère the Kingani is called the Mpezi; and as the natives persist in declaring it to be a separate river, and cannot be made to understand any civilised notions on the subject, it is apparent that nothing but what a traveller actually sees can be adopted as fact, and it is for this reason that in concluding this Paper I shall be very brief on the subject of the upper portion of the river not visited.

About three miles beyond the junction of the Lungérengère is a large village called Sungura, on a stream—the Visungura—which runs into the Kingani. Near this I got a good view of the country from a low hill, and satisfied myself that there is no other mouth to the Lungérengère.

From this point, Kidunda was seen about 15 miles due s.w., and Ndege la Mhora about 10 miles s.w. by s. On the opposite bank was the district of Tunda, through which a path leads to Ndege la Mhora and the ford over the Mgeta.

The new village of Makutaniro is at the cross roads near Sungura. From this is a road to Simbamweni, and the direct road to Mpwapwa, through Kidunda. Many other roads also meet here, but as the districts from which they lead are unknown at present, I shall merely refer to the accompanying map for a general idea of this place, which was the furthest point reached.

As regards the Lungérengère, though a deep and rapid torrent during the rains, it is practically useless, being unnavigable at all times, even by canoes; and its only interest lies in the great extent of its course and the effects of its violent floods. It dries up in September.

The natives of the last few villages through which we passed are of very mixed nationalities. Every one contained people of Ukami, Usagara, and Ukutu, besides of Uzaramo; and they speak a dialect very different to Kizaramo, and containing many Kisagara words. But I found Kiswahili was spoken fluently by several men in each village, and we therefore experienced no difficulty in respect to language.

The river above Kidunda was described by several natives

who were perfectly acquainted with it, and there was no substantial variation in their descriptions.

After passing Kidunda, the river passes through a more hilly country, and the hills appear to be composed of a hard and dark-coloured rock, with which the channel becomes choked and divided into numerous rapids. It was considered just possible that with good luck we might reach the Mgeta in June or July, but I am inclined to doubt this, as the people admitted many canoes were lost in attempting the passage through these boulders. I saw some of this stone, which is very hard, and is used for sharpening their arrow-tips and hoes by the natives.

The Wakutu, who inhabit the districts between Kidunda and the source, which is said to be in the Usagara hills, not far from Zungomero, were more reduced by the last Maviti incursion even than their neighbours; in fact the country is said to be nearly depopulated. The Mgeta, though a larger stream than the Lungérengère, is equally unnavigable.

The climate of Ukutu is described as extremely deadly. Even the natives are subject to malarious fevers throughout the year.

Much interesting information respecting the adjacent country was noted; but being of no practical value, it is omitted from this Paper.

Our descent of the river was full of difficulty, the stream constantly taking the boat out of all control; but luckily we only experienced one bad accident, when the branch of a sunken tree went through the bottom of the engine compartment, whilst we were being shot through a narrow rapid. We had, in consequence, to run her ashore, and were delayed for two days, losing and spoiling much property.

In conclusion I can only express my belief that the Kingani, as a navigable river, is practically useless.

With rice in such demand as it is in the island of Zanzibar, the Kisabi country would provide remunerative work for more than one steam-launch; and if the natives could be prevailed on to cultivate for the express purpose of export, a large grain trade would soon spring up: but as a highway to the interior, it cannot, I think, ever compete with the Wami.

I am convinced that the only healthy route to Unyanyembe is by the Saadani road; and as the country is now found by the Rev. Roger Price to be practicable for waggons as far as Mpwapwa, I believe it will prove the most economical route, and the one that will doubtless eventually be adopted. Saadani, however, will never do as a commercial port, but it is by no means certain that there is no fairly convenient anchorage within a reasonable distance of that town. If not, the mouth

of the Wami could readily be improved, and I believe that the river could be made fairly navigable for at least 40 miles.

If the movement that has commenced in Europe for opening up the interior of Africa bears fruit of a practical kind, I would strongly recommend the route I refer to through Useguha being thoroughly tried as the road to Unyanyembe and Ujiji; for though I have always been of opinion that Mombasa will eventually be the coast depôt, or port for those districts, the time is still distant for opening the route from that station, owing to the nature of the tribes living thereon.

As regards the Nyassa country, Dr. Kirk, whose opinion on these subjects is entitled to more weight, perhaps, than any African traveller now alive, has always considered that the Zambesi and Shire is the natural highway to it; but to introduce his conclusive reasoning on this subject would be here irrelevant, and I merely refer to it as my reason for remaining silent respecting various paths which the Wazaramo assured me were short cuts to the north of the Nyassa Lake, but of which the utility will not probably be tested till the other routes referred to have long been regular highways. The Lufiji is now the only river in the extensive dominions of Zanzibar, south of the equator, remaining unexplored. It is probably, with the exception of the Zambesi, and perhaps the Juba, the largest on the east coast of Africa, and it is to be hoped we shall not long remain ignorant as to its extent and utility.

XIII.—*Geography and Resources of Newfoundland.*

By ALEXANDER MURRAY.

IT is not a little remarkable that the oldest colony of Great Britain, and the nearest to her, should be the last, or nearly the last, of which anything beyond the mere sea-coast (and that but indifferently) is known. Until within the last few years, the whole of the vast interior of this great island was as much a "terra incognita" to the exterior world and even to the residents (who occupy the coast only) themselves, as it was in the days of Sebastian Cabot or Jacques Cartier; and it is difficult even now to persuade many people, even amongst those who have lived in the country all their lives, that it is anything more or better than a vast fishing-rock, enveloped in everlasting fog, placed in an Arctic position in the Atlantic Ocean. Many circumstances have combined to produce the most unfavourable impressions as to the climate, soil, and capabilities of Newfoundland; and representations have been