

Journey from Mozambique to Lakes Shirwa and Amaramba.

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Map, p. 758.*

PART II.—EXPLORATION OF THE NORTHERN AND NORTH-EASTERN SHORES OF LAKE SHIRWA, AND DISCOVERY OF THE LAKES AMARAMBA AND CHIÛTA, THE TRUE SOURCES OF THE LUJENDA RIVER.

SOME months before I left Mozambique on my present journey, I had been collecting information respecting the line of route along which I intended to pass, more especially with regard to the eastern and northern shores of Lake Kilwa, or Shirwa, and the supposed connection of this lake with the Lujenda river. My inquiries, made from sources I had no reason to discredit, resulted in my receiving a great deal of information which contradicted in many main particulars that which has been hitherto accepted respecting the northern limit of this lake and the sources of the Lujenda. When sifted, the chief points in which my information differed from that by which we have, up to this, been guided, were the following :

1. Immediately north of Lake Kilwa, it was reported to me, there were two smaller lakes called Amaramba and Chiûta.
2. The Lujenda river was said not to approach Lake Kilwa, but to commence at the northern extremity of Lake Amaramba, of which it was the outlet.
3. Between lakes Kilwa and Chiûta there was said to be a distinctly elevated ridge, across which the waters of Lake Kilwa never passed.
4. From information I received a little later, I was also led to

* The map is based upon seven detached topographical sketches, the diary, and the numerous astronomical observations of Mr. O'Neill. Information from other sources has been introduced sparingly. In laying down Mr. O'Neill's route we have adopted the whole of his observed latitudes, that for Namlugu alone excepted. "Namlugu" is probably an error, as an inspection of the inset map, showing Mr. O'Neill's route from Namlugu to Egwoli shows, and the observation was perhaps made at the camp, a couple of miles to the south-east of Egwoli. All longitudes, up to Shalawe, and all those beyond, being the means of lunars and chronometer observations (Mkuburo alone excepted), have been adopted. Najiwe (Nambewe) and Yano, depending upon the chronometer alone, have been shifted five miles to the east, whilst Makanyero, derived from six lunars, has been shifted as much to the westward. The longitude of Nawaruma, derived from no less than 45 sets of lunars, unfortunately reached us too late to be utilised in the compilation of the map. The whole of the route from the coast to the lake had then been plotted and placed in the hands of the engraver. Nawaruma, on our map, however, occupies its true position relatively to the Namuli Peaks. The adoption of the longitude resulting from these lunars would necessitate the rejection of all observations for longitude to the northward and westward of it, and would have completely deranged the topographical features of the country, as they appear upon Mr. O'Neill's own sketches. The 45 sets of lunar observations are, however, reported by Mr. Coles to be perfectly satisfactory and the new position for Nawaruma (lat. 15° 41' 22" S., long. 37° 5' 34" E.) correct. The present map must be considered, therefore, as provisional only.—[E. G. RAVENSTEIN.]

doubt if the lake extended so far to the north as it was usually represented upon our maps.

My informants were chiefly natives of the district of Mungao near Cape Delgado, who had traded up the valley of the Lujenda and in the Kilwa district. They were therefore better able than most to inform me correctly.

I may perhaps as well say at once that a personal exploration of the district has resulted in my being able to confirm, in every particular, the information I have quoted above, and to show that I was truthfully and accurately informed. However, before this second stage of my journey commenced, the above reports only served to whet my curiosity, and I felt a great anxiety to settle the doubts raised by them.

After despatching a mail, viâ Blantyre, to England, announcing my arrival at Lake Kilwa from Mozambique, I accordingly left Mkanyea for the north of the lake. At a risk of being considered tedious I shall describe this journey minutely, so that each successive step taken by me to discover the exact relation that exists between Lake Kilwa and its supposed outlet, the Lujenda, may be clearly seen.

Oct. 7th.—Leaving four men at Mkanyea, we started from camp at 6 A.M. for the northern extremity of the lake. At 7.30 crossed the river Mchimasi, a sluggish stream 15 to 20 yards broad, flowing west into the lake. Our path led us parallel to the lake, skirting the broad fringe of mud and swamp that forms its eastern shore. The country to the east, and in the vicinity of the lake, is of a most tame and uninteresting character, almost a dead level, and devoid of any conspicuous feature. It has the appearance of a vast sea of grass and stunted shrub, at this season without even the redeeming feature of freshness. Over this flat a few isolated clumps of trees are scattered, like islands in a sea of grass. At these clumps will almost invariably be found a few huts; for the inhabitants of this shadeless region value their trees. 10.30 A.M. arrived at a low hill, or rather large boulder, 50 to 60 feet high, from which I took a round of bearings by prismatic compass. An hour after leaving this our path began to wind round to the north-west, and at 3.30 we arrived at an encampment called Masabango (meaning "water-holes"), having rounded the north-eastern extremity of the lake. The waters of the lake were not visible from this point; but judging from the commencement of the reeds, I should say the lake shore was from 1 to $1\frac{1}{2}$ mile south of this.

This spot, which forms a regular encampment for parties passing to and fro from Mkanyea, is about 30 to 40 feet above the level of the flat at the head of the lake, and is selected for the purity of the water which filters up through the sand into a few natural wells. The water of the lake appears to be avoided, even by the natives, and I tasted some that was so brackish as to be almost undrinkable. Latitude of Masabango, by meridian altitude of stars north and south, $14^{\circ} 57' 26''$ S.

8th.—Left Masabango at noon, and marched $2\frac{3}{4}$ west, a little northerly. Passed the encampment of Kiromoni, and camped about two miles west of water supply, leaving five men to bring up water. Tried the water in some shallow pools in the flat that extends to the south towards the head of the lake, and found it quite undrinkable.

9th.—Guides and carriers commenced to give much trouble, declaring that their journey to Amaramba was beyond their original agreement, and that now I was extending it by going round the head of Lake Kilwa. I was soon able to see that they were combining to break this journey. To-day my head guide presented himself, with some others, and declared that only two days' food was left, adding that there was great scarcity—almost a famine—in the neighbourhood of Lake Amaramba, and at the north-west of Lake Kilwa no food could be obtained except at Kavinga's on Chikala Hill, where our guides from Mkanyea durst not go in consequence of a quarrel between the two chiefs. Although I knew much of this was false, I at once told off six men to return to Mkanyea with a supply of cloth and bring up food. At the same time I warned them we should continue our march in the morning.

10th–13th.—To-day my guides found themselves woefully foiled. Starting at 6 A.M., I walked on ahead of my party, and after four hours and twenty minutes' steady walking arrived on the banks of a small stream, where very fair water was to be obtained. It was amusing to see the pretended indignation of my head guide, who now turned round and laid all these falsehoods at the door of the guides we had obtained at Mkanyea. As a sort of last desperate effort to prevent my getting on, the men carrying food had thrown down their loads and returned to Kiromoni. I am now told that food may be obtained at a village called Nambasi, two or three miles south-west of this. The stream on the banks of which we are encamped is the Mikoko. The inhabitants of this place tell me it flows *into*, not *out of*, Lake Kilwa.

From Masabango to this point, we have walked almost due west along the southern foot of a ridge that I estimate to be 15 to 30 feet above the level of the lake. This ridge is well wooded and has a thick undergrowth of large shrubs and woody creepers, and nowhere does it bear any trace of the waters of the lake reaching even its foot. If, then, what is told me is true, there would appear to be no connection between Lake Kilwa and the Lujenda drainage system.

14th and 15th.—Struck my tent and took up a position on the outskirts of Nambasi village. About $1\frac{1}{2}$ mile W.S.W. of Mikoko I crossed another small stream, the Nkande, said also to flow into the lake, but, like the Mikoko, it was impossible to detect its current, as, in this the last of the dry season, it consisted only of a succession of pools. I have now completed the circuit of the northern extremity of the lake. The northern face of Chikala Hill is distant from this point certainly not more than four miles.

16th.—To-day I crossed the stream Nambasi and walked to within 1 to 1½ mile of Chikala in order to get a round of bearings from a point close to the foot of that hill.

Up to this I have stubbornly refused to credit the assertions made by all the dwellers upon or near to the shores of this lake—as at Chigwadu, Mkanyea, and Nambasi—that Kilwa has no regular outlet to the northward. The evidence on this point has been so varied and the statement that “Lake Shirwa discharges into the Lujenda” has been so often repeated and so generally accepted, that I felt that nothing but a close personal examination of the whole northern shore of the lake, confirmed by the evidence of those who were living on the spot, would be sufficient to contradict it. I can, however, now say with confidence that Lake Kilwa has no regular, constant outlet to the north, and that it does not discharge into the Lujenda river.

Chikala Hill bounds the lake to the west and almost reaches the parallel of the northern extremity of the lake. It turns off then abruptly to the W.N.W. (by compass) and continues in that direction for ten or twelve miles, where it appears to meet another range of hills lying approximately north and south. Its northern face rises precipitously to a height of 2000 to 2500 feet above the plain.

It forms the natural fortress of a chief called Kavinga, who this year has done the excellent service of defeating and turning back the Makwangwara, who were ravaging the country upon a raid southward and had approached dangerously near our Blantyre Mission.

17th.—Started at 6 A.M., our path leading north-easterly and at the back of the ridge that shuts off Lake Kilwa to the northward. 8 A.M. crossed the Mtorandenga swamp, and shortly after the Namiguru river to which it gives rise. Lost our path amidst the number of game tracks and hunting paths, and therefore turned eastward, and made for Nafisi Hill. After four hours' rough walking over a country literally honeycombed by the footmarks of elephant, hippopotamus, and other large game, made in the wet season, we struck the path leading from Masabango to Amaramba. Camped at 2 P.M. by some pools of stagnant, impure water.

18th.—Made an early start and crossed at 7 A.M. the Sangwi river, which has its source in the Inyango Hills and, flowing eastward, enters Chiuta Lake. At 7.45 crossed Nkakugunda river which also rises in the Inyango Hills and flows into Chiuta. At 11 A.M. arrived on the banks of the Lifune, which forms here some curious deep, large pools, beautifully shaded by overhanging trees, and giving deliciously cold, pure water. This river is also a feeder of Chiuta. Rested and started again at 2.30 P.M., camping at 5 P.M. on the river Masimayela (lit. “the river of white water”), the Kumbanga Hills bearing west (by compass) three to four miles.

19th.—Our course to-day led us parallel to the river Msambiti which

connects the lakes Amaramba and Chiuta. The country passed over yesterday and to-day is of a much more interesting character than that bordering Lake Kilwa to the eastward. The hills of Inyango, Kumbanga, and Kipani, which really form a single range, are within a short distance, and the country inclines gradually down to the bed of the river. The banks of the river are fringed with reeds, and swampy; but the country over which we walked was perfectly dry and lightly wooded.

Four hours' walking brought us to the extreme south of Lake Amaramba, and at 1.30 P.M. we camped at the village of Chemina from three to four miles further north, and upon the western shore of the lake.

20th-26th.—From what I have seen and heard since I have been here, I can have no doubt that Lake Amaramba was the lake visited by the Rev. Mr. Johnson in the beginning of 1881, and mistaken by him for the northern extremity of Lake Kilwa. I had been much puzzled by the apparent contradiction between Mr. Johnson's statement that Lake Kilwa discharges into the Lujenda, and my own observations at the head of that lake. In reply also to careful inquiries made at Mkanyea, Mikoko, and Nambasi, I had been everywhere assured that I was the first European who had visited the northern extremity of Lake Kilwa.

All this apparent contradiction now admits of any easy explanation. Upon arrival here I was at once told that an Englishman had visited the lake two years ago from the westward, and the point at which he had reached it was shown me as opposite the village of Chengogwe, $1\frac{1}{2}$ or 2 miles south of Chemina. At this point the breadth of the lake is about 600 to 800 yards, and it was said that he wished to cross it, but that the canoe men refused to carry him across. From what I saw of these gentry, and the exorbitant charges they made for ferrying my party across, I can quite understand that Mr. Johnson, who travelled with only five or six men, and therefore with only a small stock of supplies, may not have been able to agree with them on this head.

In concluding, however, that Mr. Johnson arrived at Lake Amaramba and not at Lake Kilwa, I do not depend merely upon the statements of the inhabitants of the shores of these lakes. A number of other independent circumstances incline me to this belief.

1. Mr. Johnson tells us that looking eastward, "only a few detached rocks are visible." Now looking eastward from the north-west of Lake Kilwa, you see, not "a few detached rocks," but a continuous line of hills lying nearly north and south, which form the eastern limit of the plain of the Shirwa, and which were crossed by me at Chigwadu.

The appearance of the country east of Lake Amaramba is, however, perfectly described in Mr. Johnson's words. The isolated hills Mitumbi, Mero, Mangombo, Chikalulu and Lipembegwe, widely detached from each other, rise out of a level or gently undulating country, and form the only conspicuous features visible.

2. Mr. Johnson tells us nothing of the three separate streams Mikoko, Nkande, and Nambasi, one or two of which he must have crossed or seen, had he reached the north-west of Kilwa.

3. Had Mr. Johnson visited the north of Lake Kilwa he could not fail to have told us of the hill of Chikala and its abrupt termination, as the hill rises there precipitously to a height of 2000 to 2500 feet, and he would have been under the very shadow of it.

4. Mr. Johnson has said that Mangoche Peak was seen by him towering above all others to the north-westward. Now Mangoche is not visible from the north-west shore of Lake Kilwa. I believe it might be seen on a clear day if one ascended Chikala Hill, but this Mr. Johnson did not do, for the simple reason that Chikala was not to be seen from the point on Lake Amaramba which, I am of opinion, was really the point reached by him.

But apart from these considerations, there is really no reason to discredit the statements of the natives of Nambasi and Mikoko that no European had been seen there until my arrival, or of the people of Lake Amaramba, that an Englishman had visited them a couple of years back from the westward.

The northern shore of Lake Kilwa never having been explored and its character being unknown, and it having been so often asserted that the Lujenda has its source in this lake, and, moreover, the latitude at which Mr. Johnson struck Lake Amaramba being only a little to the north of that laid down on our maps as the northern limit of Lake Shirwa, it was most natural that Mr. Johnson should have concluded that Lake Amaramba was the northern termination of Lake Kilwa.

I hope it is unnecessary for me to say that it is in no captious spirit I bring forward these arguments in disproof of the statement that Mr. Johnson visited Lake Shirwa and "traced the source of the Lujenda to that lake." I am sure Mr. Johnson would be the last to accuse me of this, and the first to agree with me that it is necessary to the right solution of an interesting geographical question that such a mistake, as I feel convinced has been made, should be placed in the clearest light.

Lake Amaramba lies fairly regularly N.N.E. and S.S.W. by compass, and extends between the parallels of $14^{\circ} 19' 15''$ S. and $14^{\circ} 32'$ S. Its greatest breadth is from $1\frac{1}{2}$ to 2 miles. There are nine villages and hamlets upon its shores—five upon the eastern, three upon the western, and one at its northern extremity. These are all named after their chiefs, viz. Napulu, Chemlola, Chekungwa, Chemaunda and Chengogwe, upon the eastern shore; and upon the western shore, Akumhumbwa, Chemina and Chemataka; and at the northern extremity of the lake, Akamtundu.

Although most of these are Ajawa, I am told those upon the western shore owe allegiance—rather feeble, I suspect—to the powerful chief

Ngambi, situated a little west of this. Those upon the eastern are subject to Napūlu, who is a Maravi chief, and the oldest settler upon the lake. This chief bears the reputation of being a hard fighter. I heard that within the last two years raids for slaves had been made upon him by the people of Mohemela and Maua, and that in both cases he had successfully defeated them.

Both shores of the lake, opposite these villages, are lined with huts built upon piles; but these huts are more storehouses for food and places of refuge in time of war than residences in time of peace. The country on both sides of the lake appears to be well cultivated, and huts neatly erected will be seen scattered thickly over the shambas.

This lake would form a more healthy spot for the residence of a European than the eastern shore of Lake Kilwa, as it is almost completely free from the unhealthy swamps that border the latter lake, and the ground rises at once from its shores.

On the morning of the 25th, at 5.10 A.M., I started to endeavour to reach the north end of the lake, and the Lujenda river. As I saw no chance of extending my journey to the north end of this lake owing to the discontent and obstructive spirit shown by guides and carriers, I have done my best to measure its length, north of the point at which my latitude observations were taken, by dead reckoning. From 5.10 A.M. we walked steadily along a good path that ran parallel to the lake. At 7.50 halted to breakfast. Started again at 8.50, and arrived, at 10 A.M., at the northern extremity of the lake, and upon the banks of the Lujenda river. During the whole of this walk the path was good, and the pace not less than 3.25 geographical miles an hour. Deducting from this .75 for the winding of an African path, we have 9.34 miles in a straight line for the whole distance of 12.45 miles of ground covered during three hours and fifty minutes' march.

The longer axis of the lake is as nearly as possible N.N.E. and S.S.W. by compass. This corrected for variation $15^{\circ} 30' W.$, will give N. $7^{\circ} E.$ as the true direction of its longitudinal axis. Entering the traverse table with 9 miles as distance, and N. $7^{\circ} E.$ as course, we have a difference of latitude of 8.9 miles, which if the excess of .34 be applied will be more correctly computed as 9.2 miles. The latitude of Chemina being $14^{\circ} 28' 4'' S.$ (mean of eight observations), the north extremity of Lake Amaramba and commencement of the Lujenda river may therefore be placed in $14^{\circ} 19' 55'' S.$ lat.

The Lujenda river, at its commencement at the northern extremity of Lake Amaramba, is a narrow swift stream, flowing between stiff perpendicular banks, 12 or 15 feet above the level of its waters, when I crossed the river at the last of the dry season. It was then flowing with a velocity of not less than $2\frac{1}{2}$ or 3 knots, and its average breadth was not more than 10 to 12 yards. This breadth it appeared to preserve as far as the eye could follow it.

In order to assure myself that Lake Amaramba had no other outlet, I crossed the river at a ford close to the lake, where its depth was only four to eight feet, and rounding the northern extremity of the lake, took a round of angles from its eastern shore. From my point of observation the north end of the lake bore W.N.W., and upon that line of bearing its width was from 600 to 800 yards. Unlike the southern end, therefore, it suddenly contracts, and discharges its waters in the swift, narrow stream I have before described. Between one and two miles below the foot of the lake the Lujenda receives the waters of the Mandimba river, which is said to have its source in the hills around Mangoche Peak. A little below that, again, the Lukono river, flowing from the eastward, is said to unite with it. The latter river is reported to pass north of and close to the hill of Mluli.

Shortly after noon we commenced our return, and arrived in camp about 5 p.m., pretty well done up, but thoroughly satisfied with the results of the day's work. My dead reckoning places Lake Amaramba rather to the eastward of Lake Kilwa; but 44 lunars taken on the nights of the 20th, 21st, 22nd, and 24th, may, I hope, fairly correctly fix the longitude of this lake.

Like "misfortune," African travel sometimes "makes strange bed-fellows." I had been observing the greater part of the night of 22nd, and on the afternoon of the next day had lain down to rest. I had not slept for more than an hour, when I was awoke by a curious entwining sensation about the leg. Feeling instinctively that something was wrong, I jumped out in hot haste, shaking off my leg as I did so, a snake rather over three feet long. The reptile had crawled up the legs of my "Paragon" bedstead, and liking the warmth of my blanket had crept into it, and by way of placing itself further at its ease, had entwined itself round my leg. We soon after unearthed it from amongst the goods stored in my tent, and despatched it. Its bite, I was told by the natives, was not deadly, but a limb, if bitten, swelled considerably, and took some time to heal.

26th.—Hired four canoes at a point one mile south of this, where the lake is about 1000 to 1200 yards broad, and crossed my whole party by 7 A.M. Without any further delay we then turned south and left for Chiūta. Our path this day led us over a dry and lightly wooded country. It lay at some distance from, but was apparently parallel to, the river Msambiti, which connects the lakes Amaramba and Chiūta, and glimpses of this stream were obtained at intervals throughout the day. At 3 p.m. we opened out the north extremity of this lake, and an hour after camped on the banks of a small stream, the only evidence met with of drainage from the eastward into the lake. The drainage from the westward into Chiūta is abundant, as a glance at the number of rivers crossed upon the opposite side, when *en route* to Amaramba, will show.

27th–31st.—Chiūta was to me very disappointing. I had formed

an exaggerated idea of its size, being told that it was much broader than Amaramba, and had several islands in it. None of this was actually untrue; but its shores are of the same character as those of Lake Kilwa, and as its waters would recede and advance to a considerable extent, the lake probably presents very different aspects in the wet and dry seasons. Seen as I saw it, at the last of the dry season, it would, I think, more correctly be called a huge swamp, which opens out here and there into large sheets of clear water, forming a succession of small lakes and large ponds, several of which may cover two or three square miles.

Amidst this confusion of swamps and ponds, and islands of tall dense reeds, arise five small hills (of precisely the same formation as Kitongwe and Kisi of Lake Kilwa) which are practically islands, unapproachable except by water, although when seen from a distance and in the dry season, several appeared to be situated upon a dead flat of long reed grass. Whilst encamped further north I tried to get a canoe to cross over to the island abreast of which I was, but failed.

I cannot lay down with certainty the size or form of the southern part of this lake, as I passed some distance to the south-east of it. I could only see, distant from me some four to five miles, an open sheet of water, about three to four miles in length, the direction of which was approximately E.N.E. and W.S.W. (by compass).

Although, as I have said before, Chiūta does not possess the distinctive lake character of Amaramba, I do but follow the custom of the natives in terming it a lake. Kilwa, Chiūta, and Amaramba are, with the natives, all "Nyassas" or "lakes," whilst Tambo, Mtorandenga, and similar swamps are all termed swamps.

31st.—We started to-day for Masabango without a guide, and straying fell into a path which led to Chigwadu. Consequently I lost the opportunity of tracing the south-east shore of Chiūta. When we recovered our right path we were well to the south of the lake; but I could clearly see the large sheet of water which I have mentioned above. Between us and the lake there was a vast flat, the greater part of which would probably be under water after the rains.

We now commenced to cross the ridge that shuts off Lake Kilwa from Chiūta, and which at this point is between two to three miles broad. Again straying, we had a tiresome search, and only reached our former encampment as darkness set in.

Starting the next morning at daylight, a brisk walk of sixteen miles brought us to our old camp on the Mnembo river, where we found our sick recovered, and letters, accompanied by a welcome supply of stores, from the Blantyre Mission.

I cannot conclude without saying a few more words respecting the connection of Lake Kilwa with the Lujenda drainage system. Having carefully examined the whole northern shore of this lake, and inspected

the streams at its north-western extremity, the only point at which any connection is possible; having also passed over the country between that point and the swamp Mtorandenga—the first source from which flow continuously the waters which give rise to the lakes Chiūta and Amaramba; I am personally convinced that the true source of the Lujenda river must be looked for, not in Lake Kilwa, but in the lakes Amaramba and Chiūta, or if we go back still further, in the swamps Mtambo and Mtorandenga and their connecting stream the Namiguru.

I do not wish to be understood to say that Kilwa never connects with this system of drainage, although I was told on the spot that it had not done so within the memory of any one living there at the present day. The difference in levels is so slight, and the country between the Mikoko river and the Mtorandenga swamp so nearly upon the same plane, that, in opposition to what I was told and in confirmation of the previously accepted theory that "Lake Shirwa occasionally overflows into the Lujenda river," I believe very unusually heavy rains and an extraordinary overflow would so inundate the banks of the Mikoko and the adjoining streams the Nkande and Nambasi, as to cause a connection between the waters of Lake Kilwa and the swamps that give rise to the lakes Chiūta and Amaramba.

It seems to me probable that this connection was more frequent in former times than at the present day. Speaking at Nambasi with some old men, long residents of the place, they told me "the waters of Kilwa were not always as they are now," and that formerly the level of the lake was much higher than it is at present. At one time, they said, the broad fringe of swamp and reeds that now skirts the shores of the lake did not exist. All this strengthens the probability that at a former period the overflow of Lake Kilwa to the northward was much more frequent than at the present day. In any case it is incorrect to say that it discharges into the Lujenda river. That it occasionally overflows into the swamps that give birth to the lakes Chiūta and Amaramba is, I am convinced, as far as we can go in confirmation of the statements that have connected Lake Kilwa with the Lujenda river. Assuming, however, this occasional connection to exist, can it in accuracy be said that Lake Kilwa is the true source of the Lujenda? Can it strictly speaking be called its source, when it may be entirely disconnected from it for perhaps many successive years? Is it not more correct to say that the true sources of the Lujenda river are in the lakes Amaramba and Chiūta?

This connection between the lakes Kilwa and Chiūta is, I believe, year by year being more decisively severed, by the action of two opposing forces of drainage from off the north-east face of Chikala Hill and the hills that lie, roughly speaking, parallel to the ridge that shuts off Lake Kilwa to the northward. The same action that has, I think, silted up this ridge in the past, is now continuing its work in a north-

westerly direction, or upon a line of bearing that is nearly at right angles to the drainage from off the northern face of Chikala Hill. The ridge that shuts off Lake Shirwa to the northward lies across the head of the lake with curious and unbroken regularity. To what does it owe its formation? I think its very regularity may be taken as part proof that it has been water-formed.

There appears to me to be a similar formation in process now along the longer axis of the Lake Kilwa, a description of which will, I believe, explain the formation of all.

The general conformation of Lake Kilwa may be described as that of a basin of oblong, or rather of rhomboid, shape, uptilted upon its western or mountainous side. Upon its eastern a broad flat, from 10 to 12 miles in breadth, extends to the feet of some low hills that bound it in that direction. Through this flat the drainage is weak and sluggish, a few streams wend their way through it, with so weak a velocity that when I crossed them their course was only just distinguishable.

Upon the western side, on the other hand, the drainage is strong and active. Innumerable mountain streams, freshets in the rainy season, run off the eastern face of Chikala Hills, which rise abruptly to a height of 2000 to 2500 feet, and extend to the northern extremity of the lake. These streams rush into the lake with a considerable velocity, heavily laden with particles carried off from the mountain sides on which they have their source. Their velocity, together with the shape and direction of Chikala Hills and the absence of any outlet to the lake, either north or south, causes a set of its waters to the eastern shore. Upon approaching the eastern shore this set encounters the ridge that forms the islands Kisi and Kitongwe—the longer axes of both of which lie at right angles to this set—and meets also with the more sluggish opposing force of the drainage from the eastward into the lake.

Checked by these counter forces, the velocity of this current or set is diminished, and the deposit carried by it is cast down at the foot of the islands Kisi and Kitongwe, or upon a line that lies nearly north and south, and is, roughly speaking, equidistant from both shores. It is to this action I think is due the long, low ridges, now merely sandbanks, but which already form small islands, that extend north and south of the islands Kisi and Kitongwe and the line of sandbanks that lie off the eastern shore north of them. Behind the latter, vegetation is, I observed, growing on apace, and their junction with the eastern shore is only a matter of time.

Looking eastward and remembering that the same forces have been in operation for countless ages past, we have, I think, the true explanation of the vast flat that here meets the eye. The whole of this flat bears the appearance of having been at no very remote period—using this expression of time in a geological sense—under water, and I believe it once formed a part of the bed of Lake Kilwa. But the same causes

that are now at work throwing up sandbanks and shallowing the bed of the lake, have gradually and during the lapse of ages caused a silting, up of the eastern shore, until it has been raised to its present level above the waters of the lake.

In conversation with a native of Nambasi, an argument was brought forward by him as telling against the reported connection of Lake Kilwa with the Lujenda drainage system, which seems to me worthy of mention. "If," he said, "the waters of Lake Kilwa mingle with those of Chiūta, how is it that there is so great a difference between them? The water of Chiūta is perfectly sweet and drinkable, whilst that of Kilwa is so salt as to be avoided by all who live on the shores of the lake." As I remained some days on the shores of Chiūta, I can answer for the truth of his statement as to the sweetness of its waters.

The western portion of Lake Kilwa is now so shallow, that two or three years ago, during an exceptionally dry season, I was told a man might have walked from Kisi Island to the mainland, and that the natives were only deterred from doing so by the soft muddy character of the bed of the lake and the fear of crocodiles. A servant I despatched with letters to Blantyre assured me the depth between those two points nowhere reached the height of a man.

I cannot but regret that I have been unable—owing to the fact of my arriving at the northern extremity of Lake Kilwa in the last of the dry season—to settle conclusively the question of its outlet. I hope, however, it may be settled soon by some member of the Blantyre Mission, who may visit it during or after the rains.

Before concluding, I must say a few words respecting the advantages the country on the northern shore of Lake Kilwa and further north in the neighbourhood of lakes Amaramba and Chiūta offers to sportsmen as a good game country.

To any true sportsman I feel I can safely recommend it. It is unquestionably the best game country I have passed in East Africa, not excepting the valley of the Kingani river, which is, I think, looked upon as the best shooting country on the mainland in the neighbourhood of Zanzibar. I saw herds of buffalo and antelopes of many different species. Of the latter I saw on several occasions eland, and what I believed to be—judging from its great size and the shape of its antlers—Nyala, both rare sport, I think, now-a-days. Of the smaller kind of antelope I noticed many different species. Troops of zebra also and giraffe I saw on several occasions. A species of wild pig, of which my men shot several and which made very good eating, was very common.

Of elephant I saw none, but the country about the swamps Mtorandenga and Tambo was literally cut up with spoor of large game, such as elephant, rhinoceros, and hippopotamus. To the English sportsman this is a virgin country, and I should say well worthy of a trial.

I am now on my way to the coast by a more southerly route than that by which I came, and if successful I shall be able to lay claim to having opened up two new routes from the Mozambique coast to the Lake district. The route sketched out for me by my guide is one by which I am told I shall cross all the principal rivers between the Mluli or Angoche river and Quillimane.

PART III.—RETURN JOURNEY FROM LAKE SHIRWA TO THE MOZAMBIQUE COAST AT ANGOCHE, NOVEMBER 1883 TO JANUARY 1884.

On the 3rd of November we left Mkanyea for Nangoma, from whence it had been arranged I should strike southward down the Likugu valley, as I was most anxious to learn something about that river.

Four hours' walk brought us again to the village of Chigwadu at the western foot of the Luasi Hills.* In crossing these hills, which are here six to eight miles in breadth, I saw several spots that seemed to me well adapted in every way for the establishment of a mission, should the Mission Committee of the Scotch Established Church be disposed to extend their work to the eastward of Lake Kilwa. One valley in particular, watered by the stream Makomba, and at an altitude of, approximately, 2500–3000 feet above sea-level, appeared to me to be especially suitable. A mission established at such a point would have the advantage of being within easy communicating distance of headquarters at Blantyre, as, provided a good sailing-boat was kept for crossing Lake Kilwa, the journey might without difficulty be accomplished in a couple of days.

I could not recommend the selection of a site nearer to Lake Kilwa than this, not only on account of the extreme unhealthiness of the flats to the east of that lake, but also because both the chiefs Chigwadu and Mkanyea are strongly under the influence of slave dealers. At the village of the former I saw large barracoons that were being filled with slaves, and spoke with some of the dealers, who told me that they were from Kissanga and had been four months located in that district. And amongst the Maravi hamlets I passed through in the Luasi Hills, one was pointed out to me as being peopled entirely by refugees from the district of Mkanyea. There are many hamlets of the Maravi tribe amongst these hills, the people of which I cannot but think would gather round a mission if one were established amongst them. A mission station here might also be the first step towards a second in the healthier and more attractive locality of the Namuli Hills.

From Chigwadu to Nangoma our path led us over the same ground

* I have called these the Luasi Hills for want of a more suitable name. None is given to the range by the natives, and as the river Luasi seems to be the chief river that has its source in them, I have named the hills after it.

as that we before traversed, except that Mrieku Hill was crossed and the circuit before made south of Matakawe avoided. A fine view was gained of Namuli and its fellow peaks in crossing these hills.

Three days were passed at Makanyera in the hope of obtaining lunars to fix the approximate longitude of Matakawe and the Luli (Lusi) river, but only six distances could be obtained on account of the unfavourable weather. On November 10th we took up our old encampment at Nangoma.

At this point I parted from my head guide. He desired to accompany his party to the coast by the route we had before taken. I wished to take a different and more southerly route. His readiness to fall into my views and the ardour with which he set about to procure me guides rather astonished me. I very soon, however, received a reason which explained it all. His headmen had been collecting slaves during our absence, and as I was not exactly the person a slave trader wished to see attached to his caravan, more especially when he was bound for the neighbourhood of Mozambique, he naturally was most desirous that our paths should diverge.

A very short delay was made at Nangoma, and on November 12th we recommenced our journey to the coast. Our first day's march was a long and hard one, leading amongst the hills in almost a due southerly direction. Many villages were passed, most of which are named in the accompanying map; and two affluents of the Likugu, the Namwilasi and Mwitwiwe, crossed before a halting place for the night was reached. This was at the village of a chief called Mwanamchepesi, situated at the eastern foot of the hill Mrietu and overlooking the Likugu valley.

We were now leaving the Mihavani district and again entering the country of the pure Lomwe. The district of Mihavani, the eastern limit of which we had now reached, is bounded on the south by the hills Mrupa, Mirigwi and Marata, three fine hills of considerable altitude, which are conspicuously visible from this point and about 15 miles to the southward.

From what I could gather of the origin and formation of this branch of the Lomwe tribe, it appears that when this portion of the Lomwe country was overrun and conquered by the Maravi who had fled from their own country to escape the irresistible Mangoni, one powerful chief ruled over the whole country from Matakawe to Marata. This chief had eleven sons, to each of whom, when he died, he bequeathed a portion of his country, and thus it came about that Mihavani was split up into a number of petty chiefdoms. Nangoma, Makanyera, and Namusula all told me that they were descendants of this chief.

Although the people of this district form undoubtedly a branch of the Lomwe tribe, they are in many respects distinct from and seem to consider themselves superior to them. The mixture of Maravi with Lomwe