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PROCEEDINGS
OF THE
ROYAL GEOGRAPHICAL SOCIETY
AND MONTHLY RECORD OF GEOGRAPHY.

Lake Nyassa, and the Water Route to the Lake Region of Africa.

By JAMES STEWART, C.E.

(Read at the Evening Meeting, March 14th, 1881.)

Map, p. 320.*

ABOUT two years ago a paper was read before this Society, by Dr. Stewart, on the second circumnavigation of Lake Nyassa, and on the same evening extracts were read, by Mr. Stevenson, from a report by Dr. Laws and myself of our journey of exploration of the previous year, along the coast of the lake.† The paper, which I have now the honour to submit, will describe the remainder of the west coast, as well as give an account of my journey across the district lying between the two great lakes Nyassa and Tanganyika.

I will first mention the advantages and facilities we have at Livingstonia for the prosecution of geographical research. We have in our own station, and in the immediate neighbourhood, a number of natives, who for the last five years have known us personally and have worked for us; who have been in the habit of looking up to us for advice and assistance, and who, we believe, hold us in some esteem and regard. These men we can count upon to go with us wherever and whenever we choose, and to abide by us in all circumstances; men who are accustomed to the country, who can readily fraternise with all the people they meet, whose wants are few and easily supplied, and whose scale of wages is wonderfully low. Figures will best explain this. The total cost of my expedition of last year to Lake Tanganyika, extending over three months and ten days, was 87*l.*, not of course including my own time, or somewhat less than 30*l.* per month. This sum is so small that I trust to be in a position frequently to make such journeys. But against all these advantages are the claims of other work, which prevent us from engaging in extensive explorations. What we have

* See also Maps in 'Proceedings,' vol. i. p. 352, and vol. ii. p. 464.

† 'Proceedings,' vol. i. p. 239.

done in the past, has been in a manner forced upon us, certainly not against our will, but it has been rendered necessary by the gradual expansion of our work, and by the desirability of obtaining a general view of the whole of the Nyassa district, before deciding on the system and the scope of our future work there.

In Captain Elton's journals notice is taken of the want, or rather of our ignorance, of safe harbours on the lake coast. This ignorance has now passed away. Besides the bay at Livingstonia, we have found that there are no fewer than ten good harbours or anchorages on the west coast. The first is north of Mount Rifu; the second at Kota-Kota; the third at Unaka; the next at Bandawe; then at Ngkata; then at Kuta Bay; the next at a nameless bay 10 miles further north; then Deep Bay; then the Kambwe lagoon; and lastly the Rombashe river at the north end of the lake. On the east coast we know of three good anchorages, so that we have now seldom to face, in the open, the pitiless storms which are so common. There are two convenient wooding depôts, at which we are seldom delayed more than a day. This increased knowledge of the lake we now possess, has reduced to a fortnight or three weeks the time required for the voyage round the lake, which used to be about six weeks.

Remarks have been made here and elsewhere about the mountains of Lake Nyassa. Some have even refused to call them mountains, and prefer to call them an escarpment of the great plateau of Central Africa. I do not agree with them. There is a well-defined range of mountains along the whole of the west coast, appearing even from the upper plateau as mountains. Numerous peaks and mountain spurs rise 2000 and 3000 feet above the general level of the plain. At the northern end this is very marked. Maliwandu's village, whence a clear view westwards can be had, nestles at the base of lofty mountains, which lie between it and the lake. But by none of the routes to the highlands has the full height of the mountains to be overcome. The passes open out on the plateau, while still on either hand mountain masses rise high overhead. On the eastern side, the Konde or Livingstone range rises 6000 feet above the lake, or at least 2000 feet above the general level of the plateau. Mr. Thomson, whose paper I listened to with much pleasure some months ago, prefers to call Konde a plateau. I cannot look upon it as other than the continuation of the Livingstone range, which, beginning in lat. 11° S., extends, as Mr. Thomson describes it, "round the north and east sides of Lake Nyassa half-way to Tanganyika, and round Lake Hikwa or Leopold." The difficulty in identifying the Konde Mountains with the Livingstone range was perhaps due to the strange configuration given to the north end of Lake Nyassa by its first circumnavigator, Mr. E. D. Young. In my last visit to the north end I was able to eliminate the error. The last 50 miles of the lake trend north-west, and the Livingstone range takes the same direction, turning more and more to the westward as it stretches north. I have no hesitation in accepting

Captain Elton's description of the Konde Mountains as crossing his route at right angles, or from east to west, nor have I any in connecting them with the Livingstone range which bounds Lake Nyassa on the north. The mistake in longitude which Mr. Stevenson referred to two years ago, I now correct by placing the mouth of the Rombashe river in E. long. $33^{\circ} 50' 30''$ and S. lat. $9^{\circ} 34' 30''$.

A short account of the seasons and the weather on Lake Nyassa may be useful. The year can be divided into only two seasons, the rainy and the dry. During the last week of October, when the sun is vertical, a few days of rain may be expected, but this is not the beginning of the rainy season. The rains usually begin about the 1st of December on Lake Nyassa. Further north, and at Pambete on Lake Tanganyika, they begin a month earlier, if my experience in 1879 was a usual one. Perhaps there the October rains really mark the beginning of the wet season. The rains last till April, sometimes even into the month of May. At Livingstonia, on Cape Maclear, the average rainfall is about 30 inches. Lying on a promontory jutting northwards into the lake, it is disadvantageously situated to catch the rain. Frequently heavy showers are seen passing down the east and west shores of the lake, while Cape Maclear receives not a drop. At our sub-station at Bandawe, two degrees further north, as much as 86 inches of rain have been registered, and that in a season which the natives complained of as being too dry. Between May and October there very seldom is any rain. The soil gets dry and parched; the rank grass withers up and assumes the appearance of golden grain in England in July, only, however, to fall before the fiery storms which sweep across the country in September. This want of cold weather rains is a serious hindrance to agricultural operations. European cereals and vegetables cannot be raised without irrigation. In the dry plains of Northern India, Christmas rains and rains in February may be confidently looked for, and on them depends the success of the great wheat crop of the Punjab. Nothing corresponding to them is found in the Nyassa region of Africa.

With the change of season a change in the direction of the wind occurs, or more correctly the latter is the cause of the change of weather. Winds from the north prevail from November to May, bringing with them the moisture-laden clouds from the Indian Ocean, while during the whole of the dry weather southerly winds prevail. The constancy of those winds is a source of trouble and expense to us. In May, for instance, it is easy and pleasant sailing to go to the north end of the lake, but to return in the same month requires a constant fight with the elements for ten days or a fortnight, taxing our courage as well as our seamanship.

It is well known that the barometer in tropical countries is not subject to such rapid changes as in northern latitudes. At Livingstonia the annual range is only about half an inch, or from 28·20 inches in

November to 28·70 inches in June. The diurnal variation is rarely more than twenty hundredths of an inch. The barometer is therefore of little use as a weather-glass, but on the other hand it is more serviceable for geographical work in the measurement of mountain heights.

The temperature on Lake Nyassa is very equable. The average midday temperature of the hottest month, November, is 85° F., and the average night temperature of the coldest month, May, is about 60°,—a range of only 25° throughout the year. Occasionally, however, we have days at 95°, and even 100° has been registered once or twice. At the other end of the scale 54° has been the lowest. As a general rule, the wet-bulb thermometer stands at 10° below the dry bulb throughout the dry months of the year.

The system of languages spoken in the lake region presents a wide field for philological work and research. Lake Nyassa is about 350 miles in length, yet in that comparatively small district of Africa, no fewer than seven different languages are spoken on one side of the lake only. These I believe all belong to the great Bantu group of languages, which prevails from the Cape of Good Hope to nearly as far north as Zanzibar on the eastern side of the continent. These languages, however, are so different from each other, that natives even, from the south of the lake, cannot understand the language spoken at the northern end. These languages do not present any particular difficulty of construction, beyond a peculiar system of concords, by which noun, adjective, pronoun, and preposition are supplied with a certain prefix, which may follow the rules of one or other of seven different cases of concord. The language is liquid and musical, as the syllables invariably end with a vowel, and almost invariably are of the one uniform length of two letters. It therefore will lend itself readily to music, this difficulty only being found, that in speaking the emphasis almost always falls on the penultimate syllable. Africans are commonly supposed to be a musical people. This can hardly be said of the Nyassa people. They have indeed a good ear for music, and many of them have fine voices, but their musical taste has not been cultivated. They have no musical instruments worthy of the name, and no tribal songs or airs, as far as we have yet been able to discover. Over their camp fires one of them will often lead in a recitative chant describing the events of the day, while the audience joins in a refrain or chorus, which is all the better appreciated if it contains a joke or a hit at any member of the party. For instance, one song they used to sing at their work at Livingstonia when Mr. Young was there, ran thus:—

“ We bring chickens here for sale,
And yet he makes us work so hard;
We bring bananas here for sale,
And yet he makes us work so hard.”

This song must not be taken as indicating any real grievance.

The language which is now most widely disseminated through the country to the west and north of the lake is the Kafir language. It is not, however, the most generally spoken. The Kafir or Mangone invaders have wandered over the whole of the district, and wherever they have been, they have left a knowledge of their language among the residents of the country, many of whom they had subjugated and enslaved during the period of their occupancy. Such men were frequently my interpreters in the highlands of Mambwe and Maliwandu. This language has for years past been reduced to writing. The Scriptures and other books have been translated into it, and newspapers are now published in it, at the Missionary Institution at Lovedale. This fact facilitates our work among them very greatly. None of the other languages, however, have been reduced to writing, they contain no store of information, they have no history or poetry laid up in them, so we have chosen English as the classical language of the educated native of the future. Already some progress has been made in this. Not a few of our pupils are able to read an English book for themselves, and some of them can render a simple account, of work done or payments made, in English figures.

Our work in the past has been a good deal confined to two portions of the lake shore. We are arranging now to extend our operations to several new localities and to tribes that we have visited in our journeys, and who we know are prepared to welcome us. Since this extension has been determined on, large contributions have come in for the work; a total of 11,000*l.* having been promised within the last three months.

The best season for travelling throughout the Nyassa country is from July to November. Earlier than that the rank vegetation is a serious hindrance to marching, and by concealing the view, greatly perplexes the traveller in forming an accurate idea of the lie of the country. Before the grass is thoroughly dried up, heavy dews fall every night and load the tall feathery grass with countless drops of water, which the luckless traveller receives on his neck and shoulders, much to his discomfort and indeed to his danger, as before the physical energies have been called into play in the morning by continued action, the system is peculiarly liable to chill, and to its accompaniment—fever.

To make a short digression, I think travellers may well take a hint from the native practice of never bathing in the morning. The English plan of having a morning tub is quite unsuited to the country, and is highly dangerous. The better way is to do as the natives do, and wait till the sun is high in the heavens, and the day's march finished or nearly so, before plunging into water.

After July the vegetation is burnt up, the road is clear, and the view open. The intense cold in the mountainous districts is passing away as the sun returns southwards; the swamps and sponges are drying up,

and the rivers are easily fordable. Later than November, on the other hand, the annual rains may be expected.

These months therefore I chose for my journey in the end of 1879. The plan I laid out for myself was to start from our sub-station at Kaningina, march to Karonga's village on the Kambwe lagoon, and thence, time permitting, to cross to Pambete on Lake Tanganyika. Owing to many circumstances, the start was delayed longer than was desirable; but on September 10th I left Livingstonia in the *Ilala* with thirty natives, some of whom were to act as guard, and the rest as ordinary carriers. Chimlolo, one of our most faithful men—and an adherent of the Universities' Mission in 1863—acted in the same capacity as in the previous year as sergeant and caravan leader. On the 13th I reached Bandawe, and there I found Mr. John Moir who was to accompany me. On the 15th we landed at Ngkata Bay, having brought on six of Mr. Moir's carriers and four new recruits. On the 17th we reached Kaningina; then making our final arrangements, and taking William Koyi, Kafir evangelist from Lovedale, with us, we proceeded on our journey. Our road led over the highest point of Mount Kaningina, about 5000 feet above sea-level, and was very rough and steep. We camped on its western side, and at midday on the 19th reached Chipatula's village, the first of the Mangone villages, and were received by him in a most friendly manner. I told him of the endeavours that Dr. Laws had made in the colony to obtain teachers who might be stationed among them, and of the great interest that his account of them had created among their fellow tribesmen there, who were both willing and anxious to give expression to that interest by sending some of their educated youth to reside with them and be their teachers. It may not be generally known to this Society, that the Mangone or Maviti tribe is identical in blood and in language with the great Zulu tribe of the south, our gallant foes of two years ago.

Chipatula begged me to go on and see Mombera, the paramount chief, to give him the same account; and though I had not intended to do so, I consented. The next day, Saturday, we reached Mombera, but when I inquired for the chief I was told he was "not at home." It was soon evident that he was either designedly absent, or that he simply denied himself. We saw only inferior headmen, who expressed dissatisfaction that we had not come to settle among them, and said they did not understand why we should visit other chiefs before doing so. I have no doubt that they were sincere in their desire to make friendship with us; but an exclusive alliance only would suit them. They have lost both power and prestige within the last two years, and may now be resolving to attempt to regain both. I heard later that there are two parties in their council. Mombera and Chipatula and their headmen are desirous of peace, and are willing to invite us to come among them; while Ntwaro and Mperembe wish to keep us at a distance, and to

recover their power by force of arms. It was in deference to the wishes of this party that Mombera would not see me. Two months afterwards Ntwaro broke the peace, and attacked and burned two Atimbuka villages, killing the inhabitants.

Mombera's territory is in the Kasitu valley. It is a gently undulating country, flanked by hills on all sides, and cut up by several water-courses, dry except in the rains. The Kasitu itself is the only perennial stream. The land, though poor, is cultivated to a considerable extent. Maize is chiefly grown, though in an experiment a year ago they got a small patch of wheat to ripen. Trees are few and of stunted growth. On Monday, September 22nd, we left Mombera's and marched down the Kasitu valley, the road leading nearly due north. We passed no villages till we came to Mount Bwabwa, on the east slope of which is Ntwaro's village, and camped in the Mpopomo district. Mombera's headman here received us civilly, and we obtained twelve new carriers from him, who behaved in a most exemplary manner throughout the whole journey.

On the 23rd, 24th, and 25th we passed through a deserted country, which, however, in places bore remains of old villages and gardens, with patches of cotton, castor oil, and mustard, but as a rule the soil is poor. The district is named Henga, and at present is a no man's land. On the evening of the 25th we reached the junction of the Kasitu with the Rikuru, which last is the larger stream, and comes from the west through a wild and mountainous country. The people here and in the valley whence the Rikuru comes are Atimbuka. The principal chief, whom I did not see, is named Mwendera, and lives to the west. The chief in the district we passed through is named Kanyole. We saw him, though we did not halt long at his village. He met us in a friendly manner, and we obtained abundant supplies of food, which is the best evidence of goodwill that these people can give. They are much oppressed by the Mangone, and hold them in dread. Though we could not communicate with them, friendly relations were soon established by the exhibition of some of our curiosities, which sign of goodwill was responded to by a present of pombe, in greater quantity than I felt disposed to permit my men to accept. The valley of the Rikuru north of its junction with the Kasitu is named Ntanta, and is the most fertile valley I have seen. It is some six or eight miles wide; the middle portion near the river is a swamp in the rains, and is covered by long grass, the abode of elephants, buffalo, and zebra. The western side is extensively cultivated, producing abundantly all that the natives require. It is watered by many streams of clear cold water, some of which are used for irrigation. The elevation of the valley is about 3700 feet above sea-level. The climate is cool and pleasant, and I have no doubt healthy, notwithstanding the marsh in the middle. Here I noticed an important change in the geological formation. The granite and quartz which prevail throughout the whole country from the Murchison Cataracts on the

Shiré river to Lake Tanganyika, give place to soft shale and clay schists. Taking into consideration the lie of the country, and the straight range of hills parallel to the river, and the position of the Kasitu, it is probable that the river forms the geological boundary, and that it runs in the trough of some great fault or nonconformity in the formation. The shale is very dry, and crumbles in the hand into small angular fragments. The schist is soft and micaceous. Ten miles further north I came on regularly stratified beds of hard, dark grey sandstone; dip, 1 in $2\frac{1}{2}$ west and by north. The beds are two or three feet thick, but under heavy blows can be broken into thin laminae of one-quarter of an inch.

The Rikuru valley, which I thought would have brought us gradually down to the lake-level, is at its north end blocked by hills forming the lake coast, and the river flows through winding precipitous valleys, falling 2200 feet in the last 15 miles of its course. The water, which enters the gorge clear and sparkling, leaves it heavily laden with bluish clay silt, by which its course in the clear waters of the lake is distinctly traceable for some distance. The Rikuru valley, as I have said, is the most fertile I have seen. Before the Mangone invasion, cattle were plentiful, though now there are none. It used to be thickly populated, and would be so again if peace and quiet were thoroughly established.

On Saturday, September 27th, we came down to the lake shore, to the mouth of the Rikuru, in south latitude $10^{\circ} 45' 15''$. The descent to the lake is a most trying one. In two places the road is almost precipitous. In one place is a rapid fall of more than 1000 feet; it then rises again, and in the last three miles near the coast the descent is 2300 feet. The river loses much of its water by percolation before it enters the lake. Inside the bar it is in places more than five feet deep, but on the bar not more than two feet. On the 29th we marched northwards along the coast, reaching, after three miles, the stream in which is the coal discovered by Mr. Rhodes. The coal lies in a clay bank tilted up at an angle of 45° , dip west. It is laid bare over only some 30 feet, and is about seven feet thick. It hardly looks as if it were in its original bed. The coal is broken and thrown about as if it had been brought down by a landslide, and traces of clay are found in the interstices. Yet the bed is compact and full of good coal. I traced it along the hillside for some 200 yards, and found it cropping out on the surface here and there. It is 500 feet above the lake-level, and about a mile and a half from the shore. I lit a good fire with it, which burned up strongly. The coal softened and threw out gas bubbles, but gave no gas jets. It caked slightly, but not so as to impede its burning.* It is found in the main gorge of the Chisindiré valley.

* Having submitted a specimen of the coal to Mr. Carruthers, F.R.S., Keeper of the Botanical Department, British Museum, this eminent authority has sent me the following note of the results of his examination of it:—

“The coal has the appearance of a good specimen of English coal. The lines of

Three miles further on we crossed the Rumpé river, a large stream 30 yards across, and knee-deep in the dry weather.

On the 30th we halted for a day, as an elephant had been shot, but my chief object was to climb Mount Waller. This hill is a remarkable one. The lower 900 feet is composed of sandy schists and hard and soft shales. From 900 to 1200 feet there are three bands or horizontal ribs running along the whole length of the mountain. These are of coarse, gritty sandstone, of mixed round and sharp grains, up to the size of a bean. Much of it is very soft. Over these ribs is a plateau three or four hundred yards wide, and in the middle rises the precipitous hill. Up to 2300 feet are shales soft and crumbly, then rises the cliff up to 3100 feet above the lake, or 4700 feet above sea-level. The cliff is composed of clay-slate of a dull straw colour, compact and hard, resembling Turkey whetstone, but devoid of cleavage. The beds are horizontal, ten or more feet thick, with intervening beds of crumbly shale, which, decomposing, let the hard cliff break off and fall.

On the 1st of October we marched round Mount Waller, and struck inland at nine miles, and crossed a ridge running east and west, 800 feet high, and then descended into a marsh, which extended from the hills to the lake shore and several miles to the north. The road kept well to the west, and for four days we did not touch the lake shore. The district is sparsely populated. Spots here and there have been selected and occupied by a few people, who grow bananas chiefly. Several streams run down to the marsh, and possibly do not reach the lake in the dry weather. On the south side of this marsh the people are Atimbuka, and on the north are Bachungu. As may be seen on the map, the lake trends due north from Mankambira's Point to near Deep Bay, in lat. $10^{\circ} 27'$, and thence turns fully 30° to the west, as far as to Kambwe lagoon, in lat. $9^{\circ} 55'$, running parallel to the range of mountains which, from Mount Waller, stretches to the north-west. All the country, from Mount Waller to the Kambwe lagoon, is very poor indeed; swamp and hard clay plain, broken here and there by dry gravel ridges, and occupied chiefly by large game.

At Karonga's we found some of Mr. Rhodes's men, with letters from Mr. Thomson, of the East African expedition sent out by the Geographical Society. We then heard of Mr. Keith Johnston's death, and learnt that Mr. Thomson had been at the Rombashe river, and had left for Tanganyika on September 29th.

I spent some time in inspecting the Kambwe lagoon. I am sorry stratification are indicated by their films of anthracite or 'mother coal.' The general form of the minute tissues are preserved in the 'mother coal.' I have observed fragments of scalariform vessels, and in sections of the coal prepared for the microscope I have found the macrospores of Lycopodiaceous plants, which I cannot distinguish from similar bodies in the coal of England. After combustion, only 1·8 per cent. of ash remains. I have no doubt that the specimen from Lake Nyassa is of the same age as the coal of England.—W. CARRUTHERS."

to say it is not a good harbour. It is perfectly safe when the steamer is once in it, but it was with difficulty that I found a six-foot channel over the bar, and inside the depth is not much greater. The river Rukuru, which until last year flowed through it, has changed its course, and now enters the lake a short distance south. Its former channel is quite silted up, and is now actually higher than the general level of the ground, so that there is no hope of its ever returning to the lagoon. It may seem strange that the river-bed should be higher than its banks. I account for it thus:—in the rains the whole country is flooded for some miles, so that the river flows in its course, marked out by thick reeds, and has for its banks the standing water of its own overspill; the heavy sand is rolled down this channel, and deposited over its whole length, till it is raised to such a height that the current is forced to leave it. On inquiry, I found that in Karonga's boyhood, say sixty years ago, the river flowed to a point some three miles to the south. That point is now being rapidly worn away, and the debris scattered along the coast. It is evident that the conditions of the coast-line are at present unstable, and that the Kambwe lagoon may be silted up and lost as a harbour very soon.

I had arranged with Dr. Laws that the *Ilala* should meet us here with fresh carriers and stores, so we waited a few days for her. On the 11th she arrived with Dr. Laws. After making all necessary arrangements, and promising to be back on December 1st, Mr. J. Moir, William Koyi, and I started on our journey to Tanganyika on October 14th. Our first day's march of 11 miles led us due west to the foot of the hills, across a dry plain, much of which, however, is under water in the rainy season. Near the coast it is fairly populous, but inland not so. We camped by the Rukuru river, at the village of Karamba. Next day we kept up the valley of the Rukuru, marching north three or four miles, and passed a few Chungu villages, which, I may state, are kept remarkably neat and clean; a space around is carefully swept, and the banana groves add their refreshing shade to make them picturesque and inviting. We then left all villages behind, and struck into the hills, marching west. Two nights we camped in the bush; and on the fourth day after leaving the lake, we reached the village of Maliwandu; elevation, 3900 feet above sea-level. The road for two days was certainly rugged and steep, but much less so than one would have expected. Having now traversed several of the passes from the lake to the highlands, I can say that this is the easiest of them all, and in prospect of a road being made here, that such a work is quite practicable, though of course presenting difficulties here and there. At Maliwandu we were quite across the hills, and had a view over a level plateau as far as the eye could reach to the south and west. To the north-west, in the direction we wished to take, were some hills. Maliwandu received us frankly and kindly. We exchanged presents with him, and he promised us guides.

Here, unfortunately, Mr. Moir and I were constrained to part company. He had suffered a good deal from blistered and swollen feet, and one sore was, we thought, a deep-seated abscess, which it turned out to be. We halted three days, and then agreed that it was better that I should push on alone, and that Mr. Moir, when able to walk, should return to Nyassa. It was fortunate we came to this conclusion so soon, as Mr. Moir was confined to his tent for ten days more. Leaving with him a few men to carry his baggage and stores, I proceeded on October 21st. I marched west for 13 miles, and then entered a valley stretching north, and camped at a stockaded village called Mpoko. The villagers were very suspicious at first, and shut the gate of the stockade, but ere long they came out to see us. Next day we reached Chiwinda's village, a few miles south of Mount Lireche, the most prominent hill in the district. Chiwinda is a well-known and influential chief. He received us politely, but I had not much talk with him. He possesses cattle and sheep and goats in considerable numbers. The soil here in parts is very good, but most of it is poor. The natives cut down branches of trees and collect them in a large heap, perhaps two feet high and extending over half an acre. This they burn, and then hoe the ashes into the soil for their gardens. The trees are thus all pollarded, as mentioned by Livingstone. The lower three or four feet of the trees are blackened stumps, while the upper branches are fresh and green. Chiwinda's village is on the Songwe river, which I followed for two days more. It flows to Nyassa. Upwards the valley trends north-west, flanked on the west by a straight range called the Awiwa hills. In the south, near Chiwinda, they are high and well defined; in the north the range slopes down and merges into a high plateau, which I had to cross. On the east side of the valley the hills are irregular and, excepting Mount Lireche, are of small size.

On October 25th I left the Songwe valley, which is occupied throughout its entire length by the Chungu tribe, and ascended to a higher plateau, the edge of which is a continuation of the Awiwa range. I found the Bachungu everywhere well disposed. In the hills they clothe themselves decently, and cloth is pretty abundant among them.

The next day's march brought me to villages of the Anyamanga tribe. Chikanamlira is the principal chief. At his village I came on the track of Mr. Thomson, and thence followed him to Tanganyika, overtaking him rapidly. At Miluma I heard that the emissaries of Mapunda, Kasanga, and Mpanga, chiefs near Livingstonia, had been among the Babemba tribes to the south, and had prompted them to make a foray against the Anyamanga. Miluma's village and four others were broken into, and women and children enslaved. These Babemba are the disturbers of the peace in this district. They occupy the country three or four days' march to the south of Chikanamlira's. Mtuka, otherwise Chitimkuru, is their principal chief just now. Three

years ago he got a decided repulse at Chikanamlira and also at Mambwe, but he is still the terror of the country.

On the 28th of October we camped by stream Mera, which flows southwards to the Chosi, and then joins the Chambeze river. This stream may be regarded as one of the most remote of the head-waters of the Congo.

On the 30th we reached the head village of Mambwe. In the evening the chief came to see me. I put him down at first as a Swahili, but afterwards found that he was a native of the district. He is a young man of about twenty years, intelligent and quick, very inquisitive, and a great beggar. He was dressed in Arab fashion from head to foot in clean, fine cloth, and though young has quite the bearing of a chief. I gave him a good present, but he did not feel inclined to show his friendship by giving one in return, though he was in our hearing prompted to do so by some women. He is very nervous, and felt by no means at his ease when at his request I showed him my guns. Opening the breech or a click of the locks was a signal for a start, and he nearly ran off when he saw a rifle loaded in a second or two. His own name is Nsokolo, but he is usually called Mwini Mambwe, or Chief Mambwe. His father, lately dead, was the first of his dynasty. He had long been in league with the Mangone, while they dwelt among the Fipa Mountains, by whose aid he was able to keep the Babemba in check. I here got some further notes of the history of the Mangone tribe. A few years ago (the exact time I could not arrive at), they dwelt at Fipa, which is described as being a beautiful and fertile country. Then the tribe or tribes, which are now broken up and separate, lived together. Pisani seems to have been the most powerful chief. Under him were Chipatula (the old man, not the present), Mombera and his brothers, Mperembe, Chiwere, Tabeni, and the Gangwara tribe. Mperembe quarrelled with Tabeni, but was beaten by the latter, who then with his retainers went north along the west side of Lake Tanganyika, where he is now peaceably settled. Pisani and his followers then attacked the Babemba, and for a time were victorious, but ultimately were driven back. They all then went to the present Gangwara country, when the Gangwaras detached themselves and drove the others back. Then Pisani went south to the Rikuru valley, and ultimately to the Kasitu valley. Mperembe and Pisani then quarrelled. Pisani and Chiwere went further south and settled; Pisani to the west, and Chiwere to the south-west of Kota-Kota, where they still are. Mperembe made a second raid against the Babemba, and was assisted by Mambwe. He was soon driven back, and is again settled in the Kasitu valley near Mombera. It is said that this assistance given by Mambwe is the ground of the present enmity of the Babemba. The people of Mambwe say that they would welcome Mperembe among them again, as he treated them better than the Babemba now do. It has been this system of family quarrels and internecine war that has sapped the power of the Mangone tribe.

On November 3rd, after ascending for two miles, we began the descent to Lake Tanganyika. The district I passed through between October 21st and November 3rd, may be described in a few words. Four marches led through the open valley of the Songwe, and then the road passed on to a high level plateau, across which I could see hills over Lake Tanganyika. Mambwe's country, and especially Chirundumusia's village, occupies the highest part of it, and from many points a most extensive view is obtained. In many places the soil is very good, especially on the Tanganyika side. I have no doubt that many European food plants would grow. The average elevation is about 4700 feet above sea-level. The rainfall, I was told, is large, and, as I found, began a month earlier than on Lake Nyassa. The climate is cool and bracing, and I have no doubt healthy. Cattle I found at almost every village, and sheep and goats are kept in large numbers. The tsetse fly, that insignificant yet most formidable enemy, is not found anywhere between the shores of Lake Nyassa and the last stage before reaching Lake Tanganyika, though on the shores of the latter lake they are very numerous. The route through the country that I followed is a remarkably easy one. It gradually rose from 3900 feet at Maliwandu's to 5400 feet at the ridge overlooking Tanganyika, and throughout the whole of it there is not one difficult ascent. Undulations of course there are, but they will be no obstacle to the construction of a road. Water is plentiful even in the dry weather. Good timber is, however, scarce, and this is the greatest drawback to the country. I may here say that I have quite failed to see the fine forests described by some travellers. The whole country is indeed tree clad, but large trees are conspicuous by their absence.

The inhabitants of this district are to all appearance a peaceable and industrious people. As they told me, they desire only to cultivate their gardens and to work their iron. All the way between the basins of the two lakes I found traces of ironstone, and in places old workings. On one hillside in Mambwe I counted eight smelting kilns in good order, within a few hundred yards of each other, and doubtless there were many more. These kilns are larger than those used by the Ajawa and Manganja. They stand about nine feet high, are five feet in diameter at the base and three feet at the top, and are built of clay plaster four or six inches thick. They will contain nearly half a ton of iron ore. Charcoal is used for smelting. The description of ore is the brown hæmatite; it is very hard and compact, and is found in solid beds of four or five feet thick. I found one small piece of coal not very far from Maliwandu's, but failed to discover it *in situ*.

Near Maliwandu's, at the end of November, the trees were thickly covered with large caterpillars, three or four inches long, and as thick as the forefinger. The natives were gathering them in great numbers. They disembowel and roast them, and preserve them for food. One kind

is of a light pea-green colour, the other dark, with white spots and sharp spines on the back.

The descent to Lake Tanganyika occupied two days only. The first day we passed villages of Masumba, Mpembe, and Chikomangombe, and camped at Zombe. Descent was gradual and generally smooth. Walking was quite easy. I did not see Zombe; he was absent from his village, but I left him a present. I noticed here three human skulls, stuck as trophies on the stockade over the principal entrance.

On the 1st, 2nd, and 3rd of November we had heavy rain in the afternoons.

November 4th.—After a descent, generally easy, of 2100 feet in 14 miles, we at last reached the shore of Lake Tanganyika, after a march of 243 miles in seventeen days from Lake Nyassa. My first view of the lake was by no means an attractive one. It will be remembered that Mr. Stanley, in his last visit to Ujiji, found that since his previous visit the waters had risen considerably. There is evidence of this at the southern end of the lake also. The lake shore for miles is fringed by a belt of dead trees; many of them are still standing, and are swayed to and fro by the wind and waves, while others, fallen and waterlogged, are beat and broken by the restless sea. The decaying vegetable matter pollutes the water, which is dirty and insipid. The account of the rise of the lake is as follows:—Four years after Dr. Livingstone's visit in 1869, the waters rose in one rainy season to a point where my camp was pitched in Pambete, or about nine feet above the level of November 6th, 1879. In the dry season it fell, but not to its original level; and every rainy season since, it has risen to a point some 2 feet 6 inches lower than the maximum, or 6 feet 6 inches above the level when I saw it, according to evident marks on the trees. Large trees, still erect though dead, are standing in three or four feet of water 200 or 300 yards from the shore, on what must quite recently have been dry land. The waters have thus gained at least ten feet on the land within the last few years, not reckoning the first high flood. When I saw the lake, however, the waters had doubtless already begun to subside. I am anxious now to learn if during the last rains the waters attained to a height at all comparable to that of the preceding three or four years.

I first touched the lake shore at the southern end of the most easterly bay. The next day I crossed Molitonga Cape, River Lonzua, and Cape Chikala, and reached Pambete. The total distance from the Kambwe lagoon on Lake Nyassa proved to be 254 miles, inclusive of windings. At Pambete I had the pleasure of meeting Mr. Thomson, of the Royal Geographical Society's expedition. He had arrived only the day before, and was much surprised to find a fellow-countryman walk in upon him. He had not heard of my approach until I was in the village, though I had heard from the natives, days before, that he knew of my coming and was expecting me. I have heard Mr. Thomson, in describing our meeting,

speak of me as that "ubiquitous individual, a travelling Scotchman." I do not know what I have done to deserve such hard names, and think I am quite justified in using the retort "tu quoque."

The next four days were pleasantly occupied in comparing notes with Mr. Thomson and hearing about the country and tribes that he had passed through. I was delighted with the success that had attended his bold resolve to push on, and carry out the objects of the expedition; that notwithstanding the death of his friend and leader, he had succeeded in conducting the whole of the caravan to the shores of Lake Tanganyika. Since returning to this country I have already had an opportunity of congratulating him on the termination of his work.

These days were spent with Mr. Thomson, and the nights in great measure with my sextant and note-book. After a good deal of labour, I at last succeeded in taking a set of lunar observations, which satisfied myself at the time, and on the accuracy of which I had the pleasure of being complimented by Mr. Coles after my return to this country. The result of these observations is to fix the longitude of Pambete at $31^{\circ} 21' 20''$ E. This result is a very good mean between the positions assigned to Pambete by Messrs. Stanley and Thomson, and may, I believe, be accepted as approximately accurate. I was also able to verify the height of Lake Tanganyika as fixed by Dr. Livingstone, at 2624 feet above sea-level.

My maps of the district now described, were published in this Society's 'Proceedings' of July 1880, in which was also represented a section of the route I traversed between the two lakes.

My return journey to Lake Nyassa was uninteresting. It was saddened by the death of one of my men, and by the illness of several more. On the 3rd of December, or two days after the time appointed, I again reached the shores of Lake Nyassa at the Kambwe lagoon. The total distance traversed between the two lakes I found to be, as measured by pedometer, 243 miles on the outward journey, and on the homeward journey 222 miles.

I believe I need hardly inform this Society that my object in making this journey was not solely the interests of geographical knowledge.

Two years ago the chairman of this Society said, "Much doubt still existed as to the exact longitudinal direction of the Lakes Tanganyika and Nyassa, and the width and nature of the intervening land between the northern end of the one and the southern end of the other. In connection with the idea of forming a line of communication, chiefly by water, between the mouth of the Zambesi and the Victoria Nyanza, and so to the Nile, it was naturally important, in view of the portage here required, to ascertain whether there was a wider or a narrower belt of country between Tanganyika and Nyassa. A great deal depended upon

whether the northern part of Nyassa lay a little more to the east or to the west. If, as had been contended, Nyassa at its northern end approached a good deal nearer to the southern extremity of Tanganyika than was formerly supposed, the difficulty of communication between the two would be materially diminished."

This geographical problem the Society had even at that time taken steps to solve, by organising their East African expedition. Whilst in Africa my thoughts also had been directed to this question, and the consequence was, that in the end of 1879 I was engaged in friendly rivalry with the Society's expedition, as to who should have the honour of solving the question. If Mr. Thomson beat me in the race by a day, I can at least lay claim to having achieved the practical result, in fixing the positions of the north end of Lake Nyassa and the south end of Lake Tanganyika, and in discovering the practicable route between them. I went with the distinct purpose of surveying the route, in order to report on the feasibility of constructing a road between the two lakes. My description of the country will have prepared you to learn that I have reported in favour of such a scheme, and have recommended that it be carried out. There are some men in Glasgow who for several years back have been anxious to receive such a report, and who are willing to carry out the work. The scheme which appears most practical and practicable to them is the following. It requires that three separate associations combine their energies to do the work, and thereafter make it serviceable in the cause of Christianity and civilisation. First (and on this first all the rest depends), that the London Missionary Society will adopt permanently for the future, the Shiré and Nyassa route to their mission field of operations on Lake Tanganyika. Second, that before long, they send out to Lake Tanganyika a steamer, and that they maintain a station, say at Mambwe, on the line of road between the lakes. Third, that the Free Church Livingstonia Mission establishes and maintains a station, say at Maliwandu on the same road; and fourth, that the Livingstonia Central Africa Trading Company extends and develops its mercantile operations as far as to Lake Tanganyika.

One gentleman in Glasgow has formulated these conditions and has offered, if they be accepted, to provide for the expense of constructing the whole road. This gentleman, Mr. James Stevenson, a member of the Royal Geographical Society, has offered to provide no less than 4000*l.* for this work, 3000*l.* of which is a free gift. The Free Church and the Trading Company have already signified their acceptance of those terms, and their readiness to do the portion of the work that lies to their hands. The question is still pending with the London Missionary Society. I sincerely hope that they will see their way to the adoption of this route, which I am convinced would be of great advantage to their mission, and of unspeakable advantage to the country.

The actual execution of this work will likely fall to me. I have the prospect before me of shortly returning to Africa with a couple of artisans, to commence the construction of the road, and the building of our station at Maliwandu. The work will doubtless occupy me at least two years. The construction of it alone will act as a powerful civilising agency. It will accustom the people to the use of calico and other European articles, and when the time comes for the London Missionary Society's steamer to be transported over it, there will be a sufficient body of trained workmen in the neighbourhood to undertake its carriage. I have already said that the first 40 or 50 miles alone present any difficulty of construction. Considerable excavation in sidelong ground, and breaking and removal of rocks will be necessary, but throughout the rest of the way there will be little trouble. When the work is done, or at least well advanced, the transport of the steamer will cause us little anxiety. By means of our present steamers and barges, and with the help very likely of Jumbe's dhows from Kota-Kota, the pieces of the steamer will be conveyed from Quillimane to the north end of Lake Nyassa; for I need not say that though the steamer will belong to a different Missionary Society, we of Livingstonia will be delighted to render them every assistance in our power.

This steamer then will not require to be put together for any portion of the journey. It will be built for the first time, and once for all, on the shores of Lake Tanganyika, and once there it will command the navigation of the whole of that magnificent lake for 400 miles to the north. This will be the completion of the water route to the lake region, a route of fully 1400 miles in a nearly straight line, with only 275 miles of land carriage throughout the whole of it. It begins on the sea-coast at the Kongoni mouth of the Zambesi river, thence by the Zambesi and Shiré rivers the navigation is open as far as to the Murchison Cataracts, or 300 miles from the coast. There the water route is broken, but a road of 65 miles in length has already been made to overcome the obstruction, and which with a very little more expenditure could be made fit for waggon traffic. The difficulty here will never be overcome by a canal. The total fall is about 1200 feet, and the cost of such a canal, if it ever should be made, would be not much less than a million sterling. It would be much cheaper to carry the traffic by road in perpetuity for nothing, than to make such a canal. Above the Murchison Cataracts communication is open to the north end of Nyassa, or 800 miles from the sea. So far the work has already been successfully done. To link on to this route the whole length of Lake Tanganyika is my object now, and to divert the commerce of that lake into the line that we have opened up, and so throw work into the hands of those whom we are educating and civilising.

The completion of this work has been my dream since I went to Africa. It has also been in Mr. Stevenson's mind for doubtless a much
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longer time. Having set his hand to the work, he is not the man to let it lag long in execution. I trust that he or his representative will within three years be able to announce to this Society the completion of this great work.

On the conclusion of the above,

The CHAIRMAN (Sir Rutherford Alcock) said they had all listened with very great interest to Mr. Stewart's practical and instructive paper. The author had made a humorous reference to his fellow-traveller's allusion to him as "that ubiquitous individual, a travelling Scotchman," retorting the *tu quoque*; but many would wish to have deserved and obtained the honour of such work as had been accomplished by the two travelling Scotchmen in question. He hoped they would hear much more of and from them yet, for friendly rivalry, such as they had shown, would always be to the advantage of civilisation and progress.

Mr. HORE said he had spent nearly four years in Central Africa, the principal part of that time on the shores of Tanganyika. On first going out to Africa in connection with the pioneer expedition of the London Missionary Society, his time was to be especially devoted to geographical work; but owing to the death or return of most of his comrades, the whole of the mission work ultimately fell on his shoulders. He was therefore unable to devote much time to the specially geographical part of the work. However, he hoped before long to be able to put together such information as he had gathered into an intelligible form, and to read a paper which he hoped might be interesting to the Society. The river Lukuga had been referred to—first discovered by Lieutenant Cameron in his journey across Africa. Lieutenant Cameron reported that there was a slight trickling of the waters of the Tanganyika through the Lukuga creek, which could scarcely be then called a river. Mr. Stanley, however, who was the next to make observations in that locality, pronounced that it would eventually become the veritable outlet of Lake Tanganyika. Two years afterwards on his (Mr. Hore's) arrival at Ujiji, he was informed that the waters of the lake had already broken through the barrier observed by Stanley, in exact accordance with his prediction to that effect. He accordingly lost no time in making his way to this, the most interesting spot on the Tanganyika shores. He steered, of course, for Lieutenant Cameron's Lukuga, and found the entrance exactly as it was indicated. Steering into the river, he found himself quite helpless to control the movements of his boat. His men were panic-stricken, and the boat was swept into the river at the rate of eight or nine miles an hour, plainly indicating that this was an outlet of the Tanganyika. The boat was carried at least a mile into the river before he succeeded in bringing her to shore; and it took him three days to get out of the river again. He was then perfectly satisfied that that was really the outlet of Lake Tanganyika. Mr. Thomson had the honour of tracing that river further westward. With regard to the possible action of the London Missionary Society, as referred to by the author of the paper, he was not able to give them much information, not being on this occasion the representative of the Society; he could, however, assure them that they would not be behindhand in any schemes for opening up Africa. The directors would shortly consider this matter very seriously; they would look at it fairly in all its bearings, both with regard to its general importance in the opening up of the continent, and especially as a route for the conveyance of their goods. He hoped that ere long the London Missionary Society would be able to combine with the other efforts as to which they had received information that evening, so that they might be strong in unity in this great work in Africa.

The CHAIRMAN said it was a question which would be the best line of route to the lakes—that which Mr. Thomson traversed, from the sea-coast at Dar-es-Salaam,

or that by the Shiré river and the Zambesi, the route advocated by the Free Church Missionary Society. By the latter route there was no doubt the advantage that they had at once water-carriage from the entrance, with only some 65 miles of portage, which was already under the control of the Mission on Lake Nyassa, and no doubt would be made a very practicable road. The other 220 miles between Nyassa and Tanganyika would have to be traversed in any case. If the Missionary Societies, with the aid of that munificent promoter of African exploration and civilisation, Mr. Stevenson, should really determine upon that route, there was no doubt there would then be a magnificent line of communication from the Zambesi to the northern end of Lake Tanganyika, extending over upwards of 1400 miles, with only some 270 miles of practicable land route. With regard to the Lukuga, he thought it was perfectly settled that that is an outlet of Lake Tanganyika, and an outlet under certain circumstances with a very powerful current and a great body of water. He would ask Mr. Thomson, who was present, to give them his experiences with regard to that river.

Mr. THOMSON said with regard to the journey from Lake Nyassa to Tanganyika, there had been nothing of the nature of a race between him and Mr. Stewart, or if so it was a one-sided race, for although Mr. Stewart knew that he was in front of him, he (Mr. Thomson) certainly did not know Mr. Stewart was behind. Mr. Stewart had referred to his (Mr. Thomson's) views regarding the Konde Mountains. He did not object to the name Konde, but he did object to calling them a mountain range. It was altogether an illusion. Sailing up the lake Mr. Stewart saw what appeared to be a range of mountains rising rapidly up to 4000 or 5000 feet, and he assumed that on the other side there was a slope of somewhat equal extent. That was not the case. Following the plateau from the east towards Lake Nyassa they would find that it rose to 6000, 7000, or 8000 feet, and then appeared as an escarpment or edge round Nyassa, but there was certainly nothing like a range of mountains; the land rises abruptly to a great height from the side of the lake and presents the appearance of a range, but that is simply an optical illusion. He could verify Mr. Stewart's remarks about the country between Nyassa and Tanganyika. His experience of the chief of Mambwe was exactly like Mr. Stewart's. He did not bear himself like a chief in any respect. He showed him his guns as Mr. Stewart did, and found that they had the same effect. With regard to the Lukuga, he believed that, at any rate since the Arabs arrived at Ujiji, no outlet had existed until within the last three or four years. Captain Burton arrived there (and no man was better able to collect information) and described routes which crossed the present channel of the Lukuga to Urua, and yet he never mentioned its name. Dr. Livingstone arrived there and passed the very mouth of the Lukuga, camping close to it, and yet he heard nothing of it. Neither of these travellers mentions any alteration in the level of the lake. When Lieutenant Cameron arrived at Ujiji he heard from the Arabs that such a place as the Lukuga existed, and in passing down the east side of the lake his boatman pointed out the place and described it as the outlet. He sailed round the south end of Tanganyika, up the west side, and arrived at the Lukuga. He found it to be a long creek, and trying to ascend it came to what appeared to be a barrier of weeds; he saw some straws drifting towards the barrier, and immediately concluded that there was a current, and without further examination threw up his cap and declared the drainage problem solved. In another year Stanley arrived at Ujiji and heard a different account from the Arabs. They told him that there was no such thing as an outlet called the Lukuga; there might be a place called Lukuga, but no river or outlet. Hearing that Cameron had described it as the outlet of the lake, he determined to examine it carefully, and his account was that no outlet then existed. He was fully convinced that Stanley gave a most correct

account of the Lukuga as he then found it, and that there was really a barrier existing at that time. But they both noticed that the lake was rising, and about a year after Stanley's visit it rose very rapidly according to all accounts, and swept away the barrier. The lake had now fallen some 8 or 10 feet, and the volume of water flowing out was gradually becoming less. He (Mr. Thomson) noticed a difference in two months in the volume of water flowing out, and a sill was then beginning to form at the mouth of the Lukuga. His view of the origin of the Lukuga was this: that in ordinary seasons evaporation and rainfall balanced each other, but that during some years there might be an excess of evaporation, which was a very likely thing to happen in such a country, and consequently the lake would fall in level. This clearly accounts for the intermittent character of the drainage. There had been a period of very dry seasons, probably before this century, in which the level of the lake was lowered, so that no water went out by the Lukuga. Gradually a change took place; the rainfall became more abundant, and the water gradually rose until the barrier was swept away and an outlet once more formed for the surplus water of the lake as they now had it. That seemed to be the most reasonable theory that could be formed of its origin. Mr. Hore had suggested that the earthquakes with which he had become familiar at Ujiji might have had something to do with it; but he thought it would hardly be established that a small district on one side of the lake had been raised or lowered in that manner. He wished to express the pleasure with which he had listened to Mr. Stewart. Curiously enough, they met in London exactly on the anniversary of the day on which they met at Lake Tanganyika, he not knowing that Mr. Stewart had then left Africa. They were both about to proceed again to that country, and he hoped they might once more meet in Central Africa.

Sir FOWELL BUXTON said that for the last three or four years attention had been drawn very strongly to the line of road which had now been indicated. The prospect of uniting Nyassa by road with Tanganyika, afforded undoubtedly the best prospect of commercial access to the interior of Africa. It was the case that when much less was known about that route, and the difficulties of the rapids on the Shire, and the difficulties of navigating the Nyassa were more manifest to them, it did appear to some that an advantage would be gained by endeavouring to open means of reaching the north end of the Nyassa. Mr. Stewart had already alluded to Glasgow men: one of them, Mr. Mackinnon, and others, endeavoured to construct a road from Dar-es-Salaam in that direction, 75 miles of which was completed. It was now a question whether, until we obtain increased knowledge of the geography of these parts, it would be best to continue that road further. So far as it had gone it had penetrated the more unhealthy and difficult part adjoining the coast, and had reached a higher point where possibly the climate was better, and the country more level and less swampy. For the present any operations in that direction had been brought to an end, and it was possible that with the greater means of access that had been indicated that evening, it might be better for a while that nothing more should be done in that direction. He felt very great interest in what they had heard concerning the outlet of Lake Tanganyika, and hoped that travellers who had been there and who perhaps would find themselves there again, would endeavour to obtain still further information which might tend to the elucidation of that problem. It must have been very astonishing to residents in those parts to find that torrent suddenly descending upon them, and probably some traditions of their feelings on the occasion would be an indication of its suddenness and unexpectedness. He could not but hope that those who were proposing to go there again would endeavour to obtain some information upon it and possibly to throw light upon what might prove to be a very curious geological phenomenon.

The Rev. HORACE WALLER said there was one subject connected with the paper which they must steadily bear in mind, and that was Portuguese obstruction, against which Livingstone and others had so often done battle. He was, however, thankful to say that better counsels had prevailed of late years, and that the Portuguese had now opened the rivers. At that present moment the Chambers of Lisbon were sorely exercised on this very subject of using these rivers and extending civilisation to the interior of Africa from the Portuguese seaboard. He thought this was an exceedingly happy moment to recognise the great advance which Portuguese good fellowship had made in contributing to ease the burden which formerly rested on travellers and on explorers. In times gone by, he had felt it his duty to point out as vigorously as he could that the great barrier was Portuguese disinclination to Englishmen opening up that country; but now that it was removed, he could only hope that this energy ready to spring forward and vouched for by Mr. Stewart, would be spoken of very opportunely in Lisbon and justify those ministers who at present were most anxious to add to what had been done within the last two or three years, and literally to open up Africa to them with good fellowship. He was glad to see Sir Fowell Buxton present, because he had a message to him from his coadjutor in making the Dar-es-Salaam road. Dr. Kirk had recently been over 40 miles of the road made by Sir Fowell Buxton and Mr. Mackinnon, and having had the pleasure of our excellent consul's acquaintance for many years, and monthly correspondence with him, he did not know that he had ever known him write so forcibly about anything as he had about this very road. He said now that he had been over it, he was astonished at its extraordinary effect upon the people; that formerly no man could have gone over those 40 miles without a very strongly armed retinue, but now any man could pass there without any weapon at all. Civilisation was extending in a marvellous way, the land was cultivated on each side, and as a philanthropic object it was successful to the last degree. This augured very favourably for this projected road between the two lakes, which would not only do all that Mr. Stewart and Mr. Thomson, and others who had been there believed, but a great deal more; for when the natives saw peaceably disposed, earnest men passing to and fro, all their prejudices would be melted down and all hearts opened towards them. A tribute of gratitude was due to Mr. Stevenson. Mr. Stevenson crossed swords right manfully with one or two of them over this geographical problem some years ago, and it was ultimately admitted that he had pushed the Nyassa too near to Lake Tanganyika. But how nobly had he atoned for that mistake! He had offered literally to pave the odd miles with gold, and it was by such splendid benefactions as this that Africa had been opened out. Mr. Thomson had rather cooled them down for a little time by stating that he had not found any great store of iron in that country. He was very glad to hear what Mr. Stewart had said upon that subject, because although it might be looking ahead a little too far, the day might come when they would want railways there. He hoped when they had had the great advantage of Mr. Thomson's further skilled exploration, they would find that he had come across large beds of iron. As possibly there might be some embryo explorers present, he wished to emphasise 'one thing which Mr. Stewart had said, namely, that for 35*l.* a month he travelled in that part of Africa. Let the Geographical Society think of that, after what they had spent in times gone by! He was sure the good men who were already on Lake Nyassa would welcome any further explorers. There was Lake Bangweolo to the west. Why not go to Livingstonia and fit out expeditions, headed by such fine fellows as old Chimlolo to go out there? He believed there would not be the slightest trouble about it, and two or three successful explorations of this kind would be of very great advantage.