

honour would be inscribed upon his monument, so do I hope, that those who survive me will not fail to have engraved on my tombstone the record of which I may well be proud—that by the goodwill of my associates I served for twenty-seven years as a Member of their Council, and was during seven of those years the President of the Royal Geographical Society.

## PROCEEDINGS

OF

# THE ROYAL GEOGRAPHICAL SOCIETY OF LONDON.

SESSION 1858-9.

*Thirteenth Meeting, June 13th, 1859.*

THE EARL OF RIPON, PRESIDENT, in the Chair.

ELECTIONS.—*Captain Richard F. Burton (Bombay Army); Lieutenant-General Peter De la Motte, C.B.; Professor Hind (of Canada); Captain W. Fraser Tytler; John F. Bateman, C.E.; A. Benson Dickson; Christian Hellmann; Henry Johnson; Coleridge J. Kennard; Daniel A. Lange; Walter D. Leslie; F. Butler Montgomerie; W. Moon; Stephen W. Silver; and Edward W. Stafford, Esqrs.; were elected Fellows.*

EXHIBITIONS.—Specimens of the weapons, manufactures, and natural productions brought by Captains Burton and Speke from Eastern Africa, and of woods from the Zambesi brought home by J. Lyons M'Leod, Esq., F.R.G.S., late Consul at Mozambique; also several maps of the seat of war in Italy, &c., were exhibited.

The PRESIDENT.—Ladies and Gentlemen: I understand that it is not the custom on these occasions to offer any general observations, except such as may be connected with the Papers immediately in hand, otherwise I should have felt it my duty to express my thanks to you at greater length than I shall now do, because I am most anxious to preserve intact the ancient practices of this Society. I should have felt it my duty to express my warmest thanks to the Fellows of the Royal Geographical Society for placing me in this Chair. But I apprehend a more fitting opportunity for so doing will be afforded me on a future occasion, of which I shall most gladly avail myself. It will, therefore, be hardly necessary that I should detain you a minute from listening to the Papers which will be read on that most interesting expedition, the exploration of Central Africa, by Captains Burton and Speke. Their steps during that arduous undertaking have been watched with interest by every person in this country attached to geographical science, and every Fellow of this Society is aware of the importance of the inquiries which they went out to institute. What we shall hear from them will give us an idea of the difficulties, disasters, and privations they endured, and I think we shall be able to draw from their narratives—though they will not dwell on it themselves—with how much spirit, courage, English pluck, and enterprise, they overcame those difficulties. Captain Speke, who penetrated in a different direction somewhat farther than Captain Burton, who was prevented by illness from following him, is decidedly of opinion that he has established the point whence the Nile takes its rise.

You will hear what he has to say on this subject, and no doubt there will be some discussion upon it afterwards; but I feel quite convinced that whatever differences of opinion may arise on that particular point, though I think the arguments which Captain Speke adduces are of very great weight and importance, every one who hears the accounts to-night will feel that most valuable and important information has been obtained—information not only important in a geographical point of view, but valuable also as having no small bearing on commercial and industrial questions. I think we should never lose sight of the importance which the labours of this Society possess in respect of the industry, manufactures, and commerce of this country. I will not detain you any longer from the extremely interesting narrative of Captain Burton, who will now proceed to read his Paper.

The Papers read were—

*Explorations in Eastern Africa.* By CAPTAINS R. F. BURTON, F.R.G.S., and J. H. SPEKE, F.R.G.S.

1. CAPTAIN BURTON, late Commandant of the East African Expedition, read out a general account of his proceedings subsequent to the tentative journey to Fuga and Usumbara, which appeared in the 28th Vol. of the Journal of the Society.

The Paper contained a description of the personnel of the East African Expedition when leaving the coast for the purpose of exploring the "Sea of Ujiji." The difficulties of departure and the severe trials of patience on the road were then dwelt upon. At length, however, the travellers reached Unyanyembe, the capital of the "Land of the Moon," and experienced from the kindhearted Arabs the warmest welcome, for which, however, they were not a little indebted to the introductory firman furnished by H.H. Sayyid Majid, Sultan of Zanzibar and the Sawahil. Captain Burton then briefly described the trying and dangerous march during the rainy monsoon from Unyanyembe to Ujiji upon the Tanganyika Lake, and his exploration in company with Captain Speke of the northern waters of that sweet sea, which saw for the first time the union jack floating over its dark bosom. Want of supplies prevented the travellers penetrating farther into the interior, and concluding the Periplus of the Lake; they reluctantly bade adieu to Ujiji, and on the 19th of June, 1858, re-entered Unyanyembe.

After about six weeks, during which Captain Speke, having traversed the unexplored length of Usukuma, laid down the southern limit of the Nyanza or Ukerewe Lake, which had been heard of from the Arabs of Unyanyembe, the expedition marched eastward, intending to make the coast *viâ* Kilwa. Again, however, they were doomed to disappointment. The African Pagazi, or porters, could not be persuaded to deviate from their normal line. The explorers

were not less determined, and the consequence was that they were abandoned by their men *en masse*. The necessity of awaiting the arrival of some down-caravan that would convey their collections to the coast delayed them for some time at Zungomero, a province lying at the foot of the East African Ghauts, known by the name of Usagara. They did not arrive before early in February, 1859, after a journey of four months from Unyanyembe, at the little maritime village of Konduchi. There they dismissed their guides, porters, and Beloch guard; and having been supplied from Zanzibar, by Captain C. P. Rigby, H.B.M.'s Consul, with stores and a Battela or native craft, they sailed for Kilwa (Quilwa) with the intention of exploring the yet unvisited Delta of the Great Rufiji River. Once more they were thwarted by circumstances. The cholera, which had travelled slowly down the eastern coast of Arabia and Africa, had committed such ravages at Kilwa that the people stunned by their imminent danger would offer no assistance. In the short space of three days the travellers lost half their crew, and of their private servants one died and a second was rendered useless. After a cruize to Kilwa Kisiwani, or the ancient settlement upon Kilwa island, they returned to the mouth of the Rufiji, found the stream in flood, and were soon made aware of the fact that the Hindú traders would, unless controlled by an especial firman from Zanzibar, oppose indirectly, by means of the savage tribes on the river-banks, an exploration of the rich and copal-bearing lands lying along its course. The rainy monsoon being imminent, and scant prospects of overcoming the scruples of the Banyans presenting themselves, the travellers turned the head of their Battela northward, and on the 4th of March, 1859, landed, after an absence of nineteen months, upon the island of Zanzibar.

The Paper concluded with an allusion to the political difficulties which have beset the little state since the division of property consequent upon the decease, in 1857, of our old and valued ally H.H. Sayyid Said, popularly known as the Imaum of Muscat. He had bequeathed his Arabian territories to his eldest son Sayyid Suwayni, and the island of Zanzibar and that portion of the East African coast which has acquired the name of "Sawahil" or "the shores" to a cadet, Sayyid Majid. The former prince, under pretext of recovering a subsidy or tribute from his younger brother, had prepared a semi-piratical expedition, with which he threatened the coast and island of Zanzibar. The report spread terror among the wealthy Arab clove-growers, and the European houses established in the island suffered severely from stagnation of business: the representatives of the different governments were divided in opinion concern-

ing the justice of the claim: the slaves were all armed, and the town of Zanzibar was thrown into a state of excitement and suspense. After a fortnight of confusion, it was officially reported that H.B.M.'s steamer *Punjaub*, under orders from H.E. the Governor of Bombay, had met Sayyid Suwayni's fleet off the eastern coast of Arabia and had persuaded it to return.

After a courteous dismissal on the part of H.H. Sayyid Majid, to whom the travellers had every reason to be grateful, Captains Burton and Speke bade farewell to Zanzibar. Having engaged a passage in a clipper-built barque, the *Dragon of Salem*, they quitted East Africa on the 22nd of March, and arrived at Aden in the middle of April, 1859. Their explorations, dating from the time of their leaving Bombay, had been carried on for two years and about three months; and their discoveries will appear in detail at a future time in the Journal of the Society.—R. F. B.

The PRESIDENT.—As the two Papers are intimately connected with each other, I will call upon Captain Speke before inviting discussion on the Paper you have just heard.

2. THE region traversed by Captain Burton and myself is divisible into five bands. They all run parallel to the coast, and each of them is characterised by special geographical features. The first is the low land between the coast range and the sea. Its breadth is about 120 miles, and its average slope not more than 2 feet per mile. Forests of gigantic trees, and tall grasses, cover its surface. The second band is the coast range of mountains. These are hills in lines and in masses, intersected by valleys, through which the rivers of the east coast find their way. This range is easily crossed, and nowhere exceeded 6000 feet, adjacent to the line of road taken by our travellers. It is capable of cultivation, though neglected, because the slaving forays to which it is subjected drive away the inhabitants. The third band reaches to Unyanyembe. It is a dry plateau, with a slight inclination toward the interior, and ranging in height between 3000 and 4400 feet. Tributary streams, running southwards to the Ruaha, intersect it. The fourth zone is a continuation of the above, but it is better watered, and is studded with granite hills. Here is the water-parting between the streams that run eastward to the Indian Ocean, and westward to the Tanganyika Lake. The Nyanza Lake is situated in this band. The fifth band is a remarkable slope, that inclines to the shores of the Tanganyika. It sinks no less than 1800 feet in 45 miles; it is exceedingly fertile, but harassed by marauders of the Watuta tribe.

On arriving at Ujiji, the party found that the only boats to be had were wretched canoes; while the troubled state of the country rendered it unsafe to explore the lake unaccompanied by a large escort. There was, however, a small sailing craft belonging to an Arab, on the other side of the lake, which would be large enough to contain the entire party; and Captain Speke started with seventeen savages, as a crew, and four of his own men, to hire her. He first coasted to Kabogo, a bold promontory usually selected as the starting point, when the lake has to be crossed, and reached it in five days. He describes the shore as wild and beautiful, affording many convenient harbours, and requiring but a little art to make it quite a fairy abode. There were no inhabitants, but an abundance of game,—hippopotami, buffaloes, elephants, antelopes, and crocodiles. The passage across the lake, a distance of 26 miles, was made rapidly and safely, and Captain Speke was cordially welcomed by the Sultan of the country on the opposite side. The owner of the sailing boat was there also, and was ready to afford every assistance; but he himself was on the point of starting on an ivory expedition 100 miles into the interior, and the crew of his sailing boat were, at the same time, his armed escort: he could not therefore spare them. What made the disappointment doubly vexatious, was that this Arab desired Captain Speke's companionship in his intended journey, and he promised the boat on his return. Had Captain Speke been unfettered by time, this would have been an excellent opportunity of farther travel. As it was, he was obliged to go back to Ujiji without the sailing boat, and proceeded with Captain Burton to a more extended exploration of the Tanganyika Lake, which lasted a whole month. The mapping of its southern portion depends on information given by this Arab.

On returning to Unyanyembe, Captain Burton's continued illness again made it necessary for Captain Speke to proceed alone to the northward to explore the Lake Nyanza. He went with 33 men, through a line of populous country, less visited by strangers than that which he had hitherto travelled on. There were numerous petty sovereigns who were hospitable enough, but very troublesome. The view of Lake Nyanza, with its numerous islands, reminded Captain Speke of the Greek archipelago. The islands were precisely like the tops of the same hills that studded the plains he had just travelled over. In fact, the lake had the features of a flooded country rather than those of a sheet of permanent water, with well marked banks. Its water is sweet and good: those who live near it drink no other.

Captain Speke's explorations did not extend beyond its southern shores. The more northern part of his map is based on native information, especially on that of a very intelligent Arab, whom he had previously met with in Unyanyembe, and whose data, so far as the shores of the lake, were found by Captain Speke to be remarkably correct. This Arab had travelled far along its western shores. In 35 long marches he reached the Kitangura river, and in 20 more marches, Kibuga, the capital of a native despot. Between these two places he crossed about 180 rivers, of which the Kitangura and the Katanga were the largest. The former is crossed in large canoes; the latter, though much larger and broader, is crossed during the dry season by walking over lily leaves; but in the wet season it spreads out to an enormous size, and is quite unmanageable. The rainy season is very severe in these parts. No merchants have gone farther than Kibuga; but, at that place, they hear reports of a large and distant river, the Kivira, upon the banks of which the Bari people live. This river is believed by Captain Speke to be the White Nile.

The PRESIDENT.—Gentlemen, I am sure you will agree with me that the Papers we have just heard are full of the greatest possible interest. The country which has been explored by Captains Burton and Speke is a most important one in a geographical point of view, being connected with what I trust may be ultimately established to be the solution of that most ancient problem of the sources of the Nile. The arguments adduced by Captain Speke, I think all will admit, are of very great weight, although probably some gentlemen here may be inclined to question them. No doubt his conclusion cannot be taken as absolutely established until farther explorations have been made, which I hope will be carried on under the same excellent explorers: and I trust such fresh discoveries will bring forward complete evidence of the fact, or rather support that which is now only a matter of opinion. This, at least, is clear. These gentlemen have obtained for this country the great scientific honour of having been the first to explore these regions, and they have also been the means of clearing up many questions relating to lakes and mountains in that district about which there has been a large amount of controversy hitherto. So important a subject as this certainly invites discussion, and I will, therefore, take this opportunity of requesting Sir Roderick Murchison to give us his opinion upon the Papers which have been read. It will be in the recollection of most present that Sir Roderick had a great deal to do with the origin and fitting out of this expedition—one of the most important, I think, ever conducted under the auspices of the Royal Geographical Society, and I am sure it is most fitting that he should open this discussion.

SIR RODERICK MURCHISON, V.P.R.G.S., *etc.*—My Lord: In the first place allow me to congratulate your Lordship on occupying the Chair which I have recently vacated, upon the occasion of the reading of a Paper of as great importance as any that has been communicated to this Society since Dr. Livingstone emerged from Africa, and described the southern portion of the continent from shore to shore. It is only necessary to point to the two large maps before you to see what Captains Burton and Speke accomplished. There *was* our knowledge (pointing to the old map) a year ago—there *is* our knowledge now (pointing to the new map). They have, by means of astronomical observations,

fixed the position, the longitude and latitude of these two great lakes, and have shown you that whilst one is like other lakes, of which we had previously heard, situated on a great plateau, the other is situated at such an elevation that, as Captain Speke has explained to you, it may very possibly be found to feed the chief sources of the Nile. I will not now argue that difficult question, because I am quite sure there is one gentleman here, if not others, who may dispute that inference. I will, therefore, first call attention generally to the great importance of these discoveries. My friends here have not only traversed the district and furnished us with a good picture of the manners and customs of the inhabitants, but have also brought home rock specimens which enlighten us as to the fundamental features of this country; and to these rocks I will for a moment advert. Captain Burton placed before me this morning certain specimens which show me that at an elevation of upwards of 3000 feet above the sea and towards the interior there are fossilized land shells, showing that from very ancient periods the lands have maintained their present configuration. These deposits, whether purely terrestrial or lacustrine, have been consolidated into stone, and show that the existing internal condition of Africa is that of ages long gone by, as I took the liberty of pointing out to the Society some years ago, when treating of Livingstone's first explorations. Another striking feature in connection with this great zone of country is this. You will observe that our friends spoke of remarkable herds of oxen on the banks of the lake Tanganyika, and tribes of people between that vast lake and the coast range, who are a thriving, peaceful, agricultural population, whilst the adjacent districts in the north and south are frequently disturbed by wars for slave-hunting purposes. This is a great fact as indicating a broad line of route by which we may hope hereafter to establish intercourse with the interior country. There is another important fact, though I do not think Captain Speke alluded to it, namely, the absence of that great scourge of parts of Southern Africa, the *Tsetse* fly. With regard to the physical geography of the country, it is remarkable that all the adjacent rivers fall into the great Tanganyika lake, which was formerly supposed, on the contrary, to afford the sources of the Zambesi river. All theory, therefore, on this subject is now set at rest. Lastly, we come to the subject which is likely, as I said, to give rise to much discussion, and that is the theory upon which I think my friend Captain Speke may rest his claim to our most decided approbation. On my own part I am disposed to think that he has indicated the true southernmost source of the Nile. Now, in saying this I do not mean to deny that the great mountains flanking the lake on the east, of which a point or two only is marked on the map before us, do not afford the streams which flow into this great lake. That must probably be the case on the east, just as Captain Speke ascertained from the Arabs that the so-called "Mountains of the Moon" feed the same lake from the west by other streams. You must here recollect that the same Arab sheik who gave him the information which turned out to be correct concerning the existence of the lake Tanganyika also told him of the existence of the Nyanza, which lake was found to be exactly in the position indicated. As Captain Speke has determined that this great lake Nyanza is nearly 4000 feet above the sea, it may well, indeed, be the main source of the White Nile. Everything (as far as theory goes) being in its favour, this view is farther supported when we reflect on the fact that the tropical rains cause these upland lakes and rivers to swell and burst their banks at a period which tallies very well with the rise of the Nile at Cairo. These, then, are grounds which I think must go to strengthen the belief of Captain Speke, and I may, therefore, repeat what I stated at the Anniversary, that highly worthy as Captain Burton was to receive a gold medal, not only on account of this great expedition which he led, but also for his former gallant and distinguished expeditions, Captain Speke, who now sits at your Lordship's left hand, is also entitled to a gold medal of the Royal Geographical Society.

MR. MACQUEEN, F.R.G.S., said he rose with great reluctance to express an opinion contrary to the views propounded by Captain Speke as to the sources of the Nile. He did so with more hesitation, because he had listened with the greatest pleasure to the Papers which had been read, and which he considered, in other respects, to be most interesting and valuable. He had really felt much edified by the documents read by both gentlemen, and he hoped they would not feel offended with him if he differed with them as to that lake being the source of the Nile. Mr. Macqueen then, interrogating Captain Speke, wished to know whether the vegetation on the south of the Nyanza was Tropical or not?

CAPTAIN SPEKE, in answer, asked Mr. Macqueen to specify what he meant by the difference of vegetation?—We are now engaged within the Tropics. There are palm-trees, acacias, and forest-trees—the forest ones are tall and slender, and are well branched on their upper extremities, like young oaks or elms. There are also large lays of tall grass, of a very rank order; but at the time I was travelling there it was the dry season, and consequently all herbage had dried up, and was otherwise, in most places, burnt.

MR. MACQUEEN had referred specifically to the Paper on that subject previously given to the Society. He concluded by requesting the President to oblige the Society by using his personal influence to obtain accurate accounts of the two Egyptian expeditions ordered by Mahomet Ali, the ruler of Egypt, in 1839-40 and 1840-41, to explore the White Nile, conducted by very able officers, in several sailing vessels, and which they on the first voyage effected as far as 3° 30' N. lat. and 31° E. long. These exploratory voyages were certainly the most important of the kind that had ever been undertaken. The Egyptian Government would no doubt readily give them through the influence of our Foreign-Office and our Consul in Egypt. Care, however, must be taken that the whole are carefully and correctly copied from the originals, and not from mutilated and garbled documents that may have been made.

The PRESIDENT said he was well aware of the importance of having authentic information on the subject, and he would give his best attention to the point. He then called upon Colonel Sykes, who was the Chairman of the Court of Directors when this expedition was sent out, to make a few remarks.

COL. SYKES, V.P.R.G.S., said that he was scarcely prepared to respond to the noble President's call, as he had already commented upon the discoveries of Captains Burton and Speke at the last meeting of the Society, and had little to add. He might say, however, that the views enunciated by Captains Burton and Speke are those which he had ventured to put forward some years ago, in a Paper on Zanzibar, published by the Society, as likely to result from an inquiry as to the sources of the Nile. It seemed quite natural that the Nile should issue from the Nyanza Lake, and that the lake itself should be supplied from the chain of mountains which runs parallel to the east coast, through several degrees of latitude; also that the lake itself might have its outlet to the north. We have analogous cases in our European system of rivers. For instance, the Rhone, which has its origin on one side of the Furca in Switzerland, runs down into the Lake of Geneva, and out of the Lake of Geneva to the Mediterranean Sea—a precisely similar instance. We have also the Rhine rising on the other side of the Furca, and running into Lake Constance, and thence into the North Sea. The Ticino flows from the Lago Maggiore down to the Po, and the Adda runs out of the Lake of Como; but the real sources of the two Italian rivers are not in either of the lakes, but in the water-parting of the Alps, which supplies the water with which the lakes are fed. The Nile and the Nyanza Lake may be in the same category. The elevation of the Nile at the highest point to which it was ascended by the French expedition, and the greater altitude of the lake, strengthen the supposition that the river flows from the

lake. A difficulty, no doubt, presents itself in the fact that the Nile, in Lower Egypt, begins to rise in June, and continues rising until September, the water being supplied therefore by a summer monsoon coincident with that of Western India; whereas Captains Burton and Speke represent the monsoon they experienced to have commenced in the autumn—a monsoon that could not produce a rise of the Nile in June. However, it has to be determined whether or not the monsoon of the north of the Equator, in Eastern Africa, is or is not simultaneous with that of the Malabar coast; and the monsoon of the south of the Equator similar to the N.E. monsoon of the Coromandel coast, which begins in October. These questions now become of high interest, as touching the connexion between Captain Speke's lake and the Nile. We know that the Nile begins to rise in June, and that that rise must either be owing to a monsoon supply of water, or to the melting of snows. We know that in the case of the Blue Nile, in Abyssinia, the rising there is not occasioned by the melting of snows, but by the monsoon, which is coincident with that of Western India in the months of June and July. The question is, does that monsoon extend southward as far as Captain Speke's lake, and contribute to the rise of the White Nile as it does to the rise of the Blue Nile, in Abyssinia? The solution of this question alone is worthy of the labours of another expedition; but a great many other questions also suggest themselves. The work is only half accomplished, and the reputation of our country demands that it should be completed. My own opinion is, that independently of any commercial advantages or sordid considerations, the Society ought, for the simple investigation and verification of physical truths, to use its best endeavours to induce the Government to send out a second expedition. For the good name of England, let us have the doubt before us removed. We have an inkling of the truth; let us have the whole truth. Pliny was aware of the western source of the Nile, and said that it issued from lakes lying below the Mountains of the Moon. Now it is a singular fact, that the people in the neighbourhood of Captain Speke's lake call themselves Mnyamuezi—men of the moon; muezi also signifying the moon. And this association may have given rise to Pliny's account, that the Nile took its origin from the Mountains of the Moon. Colonel Sykes concluded with again urging the Society to address Government in the strongest manner to renew the geographical researches in Eastern Africa.

MR. GALTON, F.R.G.S.—Before making a few observations that occur to me on the subject of the papers before us, allow me to remark how closely analogous the gallant exploration of Captains Burton and Speke is to that which was undertaken thirty-seven years ago in the north of this same continent. It was in 1822, when Lake Chád, the populous Sudan, and the course of the Niger were only known to the European world through unsatisfactory and conflicting testimony of pilgrims and traders, that Captains Denham and Clapperton made their famous descent from the north, right through the Sahara, to the populous regions of Negroland, and the shores of Lake Chád, and by their momentous journey we reaped the first fruits of that considerable knowledge that is now possessed of those extensive regions. It is no small credit to our associates Captains Burton and Speke that they should henceforth take rank as the Denham and Clapperton of Eastern Africa.

However, in that part of the map before us which has been filled in from native testimony, there are some serious anomalies, which make me hesitate in accepting it on the evidence we now possess. In the first place, the Lake Tanganyika is represented as having no outlet, but as receiving more than one considerable river, and the drainage of a highly inclined basin, whose area can hardly be less than eight times its own. Not only this, but I am also assured by both Captains Burton and Speke, that its level is reported to be unchange-

able, and that it appeared to them to be so. On the other hand, the rainy season experienced by our travellers on its shores was one of remarkable violence. The sky was perpetually overcast, drenching rains were constantly occurring, evaporation was *nil*, nothing could be kept dry, and a green mould settled upon almost every article. I cannot see any reason for estimating this rain-fall at less than the tropical average of 8 feet; and it is scarcely possible to imagine that less than four times the amount of what fell on the lake itself was added to its waters by drainage. We thus obtain a probable access to its contents of no less than 40 feet in altitude during the wet season, yet no alteration of level is found to exist. Again, a drought that would evaporate 40 feet of water during the six dry months of the year would assuredly reduce the land to aridity, but the country is thickly inhabited by peasant negroes, who are scattered widely over its face. I can see no way of explaining these matters from the information before us, except by concluding that our travellers were misinformed, and that the Lake Tanganyika has an outlet. I should remark that the drought of the desert of Ugogo is in no way incompatible with the fact of heavy rains visiting the lake district. It appears that the rain-bearing wind of these quarters is the east wind, and it is obvious that the moisture of its lower strata must be condensed against the eastern face of the plateau of Ugogo, which faces the sea like a wall, and consequently that the wind which passes over the plateau will be a dry wind. But as it passes on to the west, the upper undrained strata of the air will have time to mix with the lower ones, and to supply fresh material for the formation of rain-clouds.

Next, as regards the Lake Nyanza. I will pass over the strange fact that the boiling-water observations of Captain Speke give a constant *rise* from Unyamwebe to the surface of this lake amounting to no less than 300 feet, because that altitude is within the limits of possible error of observation; but I am particularly struck with the difficulty of accounting for the escape of the large quantity of water which is said to be poured from the lake into that river, which is commonly accepted as the true White Nile. We hear from M. Brun Rollet of its being crossed by means of a fallen trunk of a tree, at about 60 miles distance from the point to which he ascended, while the Lake Nyanza is described as receiving in that one small part of its circumference of which we have any information no less than 180 streams, of which two are considerable rivers. Mr. Findlay has suggested—and I quite concur in his view—that the waters of the lake may, in truth, be the head-waters of the Nile, but by means of some other channel than that of which I have just spoken, and for which there is an abundance of room, and also the existence of a native report, to the westward of M. Brun Rollet's river. Be this as it may, it is quite clear that Captains Burton and Speke have not only brought back a vast amount of solid fact, and given us a sound geographical basis upon which we can fit such native testimony as may reach us, but they have also opened out a most extensive field for future research—where future explorers, and I hope themselves, may proceed in various directions with the certainty of bringing back a rich harvest of geographical results.

MR. H. DANBY SEYMOUR, F.R.G.S., was understood to ask whether there were any rivers on the eastern side of the Nyanza Lake to account for the passage of the water?

CAPTAIN SPEKE replied that he knew of none; but that at the northern extremity of the lake the Usoga people talk of one, the Kivira River, the right bank of which is occupied by the Bari people. These people were evidently the tribe among whom Mr. F. Werne arrived only a few years since. When communicating with their King Lakono, Werne was assured that the branch of the Nile which he was exploring came from a distance of 300 miles due south of Bari: a point directing him to the exact position in which he,

Capt. Speke, had discovered the Nyanza; at any rate the rising of the Nile is very considerable at the Mission Station, Gondokoro, in lat.  $4^{\circ} 40' N.$ , and is very broad. These waters must come from some considerable source. He considered the Nyanza to be the true source of the Nile, and the point at which he reached it to be the most extreme from the debouchure of the Nile at Alexandria. Even supposing that there does not exist any overflow of the lake at the northern end, which might probably be the case in the dry season, he believed that it will bear the same relation with the Nile at Gondokoro that the Parung La Tso (River) does with the Sutlej. There is no overflow from the surface of the Tso Moriri (Lake), yet it is the principal source of that branch of the Sutlej River which the Tibetans call the tributary Parung La Tso, after the Parung La (Pass), which also receives the Tso Moriri waters by percolation. The Tso Moriri waters filter through spongy bogs for a short distance, and then collecting, taper off in small channels to the Parung La Tso.

The PRESIDENT then invited Captain Burton to give some information respecting the native manufactures and productions.

CAPTAIN BURTON, F.R.G.S.—The finest copal in the world is exported from the Coast. These regions also supply the largest, whitest, and softest ivory. The other exports are chiefly rhinoceros horns and hippopotamus teeth. Cotton is found in every part of the country where the water is near the soil and where the country is marshy; it grows in great abundance round the Lake Tanganyika. Here is a specimen of cloth made in Unyamwezi, the "Land of the Moon" [the cloth was produced.] The natives, however, prefer the American fabrics on account of their being closer and lighter. Iron is found throughout the country in great abundance. Coal may exist [the Captain exhibited specimens of native iron]. Copper is only to be found in the country of the Kazembe, so frequently visited by the Portuguese traders. Coffee is not cultivated, and therefore is not of use in commerce. There is a particular kind of frankincense found in all the countries about the dry tablelands beyond the mountains. The palm-oil tree grows almost wild; I have brought home a specimen used by the inhabitants. The great want of the country is the facility for carriage. A tramroad from the coast to the Lake would materially increase the commerce, and it could be laid down at comparatively very little expense. Hides are procurable in any quantity, and there are many other sources of wealth which are comparatively useless on account of the difficulty of transport. Rice and grain might be grown in great quantities. Horses will not live eight months in the country. Asses are found to be of very little service; they are not strong, and people will load them too much. Independently of their load, we found that one died simply from the fatigue of walking down to the coast. Oxen do not thrive in some parts of the country, owing, it is supposed, to a poisonous grass. In some parts, especially in Karagwah, Ujiji, and the whole of that district, there is a large dun-coloured animal; the numerous wars, however, tend greatly to diminish the cattle. Almost all the wars are on account of cattle or of slaves. Generally speaking, a tribe does not sell its own children, except for powerful reasons. The usual course is to obtain supplies for the trader by attacking and plundering their neighbours. There are two kinds of slave-trade: the external domestic slave-trade, carried on by Arabs with great difficulty (this will be in the course of time put down), and also the internal slave-trade, which demands still more strongly the attention of Europe, for nothing but the development of the commercial resources of the land can affect it.

The PRESIDENT.—As the usual time for adjournment has arrived, there is only one other duty which remains for us to perform this evening, namely, to vote our cordial thanks to the gentlemen who have submitted their papers to us. After the very full discussion which has taken place, I will not detain you with any farther observations of my own. I would merely say that,

while we must admit the very great importance of the information we have received from these papers, we cannot but contrast the knowledge which we now possess with that which we enjoyed before this expedition went forth.

*Fourteenth Meeting, June 27th, 1859.*

THE EARL OF RIPON, PRESIDENT, in the Chair.

PRESENTATIONS.—*S. W. Silver and Christian Hellmann, Esqrs., were presented upon their election.*

ELECTIONS.—*The Earl of Airlie; Major Henry Cracroft; the Earl of Elgin; Captain Philip D. Margesson, R.A.; the Hon. Robert Marsham; the Duke of Newcastle; Sir Hercules G. R. Robinson (Governor of Hong Kong); and George Barclay; Frederick W. Bigge; H. Austin Bruce, M.P.; R. A. Osborn Dalryell (Consul at Erzerum); George H. Fitzroy; William Fryer; Charles P. Grenfell, M.P.; W. Vernon Harcourt; and William H. Smith, Esqrs.; were elected Fellows.*

EXHIBITIONS.—Several drawings and photo-lithographs illustrating the scenery and physical geography of the highest parts of the Himalayas, by the Messrs. Schlagintweit; and a Mechanical and Magnetic Compass, invented by Mr. N. D. Maillard, were exhibited.

ACCESSIONS.—Sir John Rennie's work on the 'Plymouth Breakwater,' presented by the author; Humboldt's 'Travels,' 'Cosmos,' and 'Aspects of Nature, etc.,' presented by H. G. Bohn, Esq., F.R.G.S.; Dr. Lange's Map of the Mediterranean, and Stanford's Library Map of Australasia, were among the late accessions to the Library and Map Rooms.

The Papers read were—

1. *Notes on a Voyage to New Guinea.* By ALFRED R. WALLACE, Esq., F.R.G.S.

THERE is only one place in New Guinea where the natives have become accustomed to the presence of European and Mohammedan traders. This place is Dorey, and it was there that Mr. Wallace has been residing for three months. He describes the whole northern peninsula of New Guinea as exceedingly rugged and mountainous. A continued succession of jagged and angular ranges stretches away far into the interior; while an unvarying forest of somewhat stunted appearance spreads over the whole country. He considers there are absolutely no other inhabitants than Papuans in the main island. During Mr. Wallace's stay at Dorey there was almost continual

rain or drizzle. When these were absent there was often a dull haziness in the air, very different from our usual notions of the sunshine of the tropics. The last month of his stay was nominally in the dry season, but the rain-fall was in reality increased. The winds also were abnormal. According to theory, he would have gone to the island in the west monsoon and returned in the east; but, each way, the winds were contrary, and interspersed with dead calms. Dorey is not a good station for starting on excursions into the interior. It is also very unhealthy: Mr. Wallace and his servants suffered constantly from fever and dysentery, and one of them died. The Dutch Government has taken possession of New Guinea up to 141° E. long. from Greenwich. An active and exclusive trade is carried on between that coast and the Moluccas, under their flag. The beautiful series of maps of the Dutch possessions in the East, by Baron Melville von Carnbee, are particularly remarked by Mr. Wallace. A Dutch steamer was surveying the coast of New Guinea while Mr. Wallace was there, in search of a good place for a settlement. He understood that Dorey would, probably, be preferred on account of its harbour and naval position, though in other respects unsuitable.

MR. J. CRAWFURD, F.R.G.S.—I have never visited the island of New Guinea, but I have paid much attention to the subject, and ought to know something about it. It is a monster island, and, although beyond doubt God created nothing in vain, it appears to our narrow view that New Guinea was created for no earthly good purpose. It is nearly twice the size of the United Kingdom, is universally covered with forest, and inhabited throughout by a peculiar negro race—a race which commences at that island and extends all the way to New Caledonia and thence up to the Fiji Group, where it ceases. This race strongly resembles the African negro, but still it is not the African negro: it differs very materially from it. It has the general African features, but the hair, especially in its texture, differs in a very singular manner. Instead of being woolly, like the head of the ordinary African, it grows in tufts so long that it stretches out to an enormous extent—two or three feet right across—a circumstance which has obtained for the Papuans the name of "mop-headed Indians." Everywhere this race is intellectually inferior to the brown-complexioned people, as I am afraid it must be said of the negroes of Africa, that they are inferior to all the fairer people in their neighbourhood, even those on the continent of Africa itself. A remarkable example of this inferiority is given in Dorey Harbour and a considerable part of the coast in its neighbourhood. The people are subject to the government of a very small island, a mere rock in the sea—the island of Ternate, containing a comparatively active and industrious population of the Malay race, who, in consequence, have been put in early possession of some wealth and power, and been enabled to conquer and hold in subjection a considerable portion of the population of New Guinea. The inhabitants of New Guinea are in a very low social condition, inferior, indeed, to that of any other people that I know of, except perhaps the inhabitants of the Andaman Islands. New Guinea produces some very remarkable objects. It produces the true aromatic nutmeg, some very singular birds, and, among these, the Birds of Paradise, which are peculiar