

ments which had always been so prominently felt in Scotland. He had no doubt the result of Sir Bartle Frere's visit would be the furnishing of sufficient funds to meet any of the expenses of the Relief expeditions. With regard to Livingstone himself, the stories that had reached England about his arrival on the West Coast of Africa had proved entirely false. Dr. Bastian, the late President of the Berlin Geographical Society, who had recently visited that coast, had proceeded up the Congo to Embomma, and satisfied himself that the whole account was a fabrication. It might be taken for granted that the first intimation of Livingstone's being on the West Coast would reach England through the Society's emissary, Lieut. Grandy, who, by the last accounts, had passed up from San Salvador to the Congo, which he hoped to strike above the Rapids. He had sincere pleasure in being able to make an announcement which would be most gratifying to the meeting. Mr. Young, the liberal friend of Livingstone, who had already contributed 2000*l.* towards the expenses of the West Coast Expedition, had now informed the Council that he was prepared to take on himself all further outlay in regard to that expedition. Nothing could exceed the handsomeness of such an offer. The Council had unanimously passed a vote of thanks to Mr. Young, but he (Sir Henry) thought it would be still more gratifying to that gentleman if the present meeting would supplement that vote.

This having been done by the cordial expression of the feelings of the meeting, Sir Henry continued :—

With regard to the East Coast Expedition, Dr. Kirk, who was on his way home to England, had recently reported that it had reached Unyanyembe, and was about to proceed onwards with every expectation of passing through the intermediate country and reaching Ujiji in safety. At Ujiji they hoped to get some information about Livingstone's movements, that they might direct their steps either to the south of Tanganyika or across it to the country of Manyema, so as to intercept him and furnish him with the requisite supplies at the earliest possible moment. They were not likely to obtain any certain intelligence from Livingstone until Lieut. Cameron, or some of his party, fell in with him. Nothing direct had been heard from him since he left Unyanyembe in August 1872 for the south of the lake; but he had probably proceeded from that point to the source of the Lualaba, from whence he would ascend the river towards the great equatorial lake, and somewhere in Manyema, or in the vicinity of that lake, he ought to be first heard of either by Lieut. Cameron or Lieut. Grandy's expedition.

Sir HENRY then introduced the first communication to be read, by saying that Mr. Douglas Forsyth had been deputed by the Government of India to conduct a mission to the Court of the Atalik-Ghazi, the ruler of Kashgar and Yarkund. His journey hitherto had been very successful, but the results which were expected in the future would in all probability far exceed in importance those which had already been achieved. The letter was addressed to Sir Bartle Frere, and contained an account of his journey as far as the frontier station of Shabidulla. No direct information had been obtained of his proceedings beyond that point until this day, when his brother, Mr. W. Forsyth, *q.c.*, received a letter from Yarkund, containing some very interesting details. That letter would also be read to the meeting.

The following letter was read by the Secretary, Mr. R. H. Major :—

"DEAR SIR BARTLE FRERE,

"Shabidulla, 18th October, 1873.

"In the Annual Address of the President of the Royal Geographical Society I observe that reports of the progress of the Mission now entering

Yarkund are looked for by the Society, and I have great pleasure in responding to their wishes. The best way of supplying information appears to be in the form of extracts from a Diary which contains all the careful observations made by Captain Chapman, B.A., Dr. Bellew, and Nani Singh, the chief of Major Montgomerie's pundits. This Diary, which has been kept by Captain Chapman, refers at present only to the route taken by me from Leh to Shahidulla. Captain Trotter, B.E., took the Changchemno route from Leh, and is at the present moment engaged in surveying some peaks not far from this, and prefers waiting till his arrival at Yarkund, before compiling a paper from his notes for the Royal Geographical Society.

"The whole question of routes to Yarkund is still under consideration, and, until I have completed my enquiries, it would be unwise to form a decided opinion: but, as I understand that English traders are already beginning to think of trying this market, it would be as well for me to give a few general hints.

"In one of the Society's Reports of Proceedings I see it stated that Mr. Shaw has discovered a way of avoiding the Karakorum. I am not aware what way is there alluded to, but lest English traders should receive the impression that all the difficulties of the Karakorum can be avoided by taking another line over the Himalayas, I will give a short account of the only routes at present known to be practicable.

"Commencing from the east, one line goes from Leh over the Chang La Pass, 18,368 feet, then along a valley to the Panggong Lake (13,900 feet) over the Masimik Pass, 18,540 feet high, into the Changchemno Valley, which it leaves by a pass 18,800 feet high, and enters on the Lingzi Thang and Thaldat Plains, which range from 17,700 to 15,500 feet, for five marches. The route then strikes the Karakash River, descending which the traveller reaches Shahidulla in 26 marches from Leh. Along the route grass and fuel are scarce for 10 marches, and absolutely wanting for 8 marches. Water, too, is not procurable, except of the filthiest description, and most scantily on the high plains first mentioned. This route was but little known to Europeans till M. Schlagintweit crossed it in 1858-59. Mr. Johnson of the G. T. Survey has the credit of first thoroughly exploring and mapping it, and in 1868 Dr. Cayley travelled over it as far as the Karakash to ascertain its practicability as a trade-route. In consequence of his enquiries the Yarkund envoy, who was then returning from Cashmere, was induced to take that route, and Messrs. Shaw and Hayward followed in his wake; Mr. Hayward making at the time a really important discovery, that the head-waters of the Karakash took their departure from the Karakorum Range, and not in the direction supposed by Mr. Johnson. Mr. Hayward made another discovery on his return to India from Yarkund, which led us to the second route, which I shall presently describe, after disposing of the first route. For camels this route might be used as it was in 1870, by one Gool Morad, a Yarkundee trader, who brought 15 camel-loads of merchandise to Ladak with perfect safety; but mules or horses would suffer fearfully from the want of water and fodder.

"The second, or middle route, leaves the Changchemno Valley by a north-western pass, and crossing the Lingzi Thang Plain at its head, where it is only a few miles wide, enters the upper Karakash Valley, and, following that stream for about 70 miles, ascends a side valley across a very easy pass to the Karatagh Plain, and joins the Karakorum route at Aktagh. The merit of discovering this route belongs entirely and solely to Mr. Hayward, and he thought so highly of it that he strongly urged me to take it on my way to Yarkund in 1870. As, however, the information we then possessed was not sufficiently complete, Dr. Cayley undertook to make a thorough exploration, and he left my camp at the Changchemno Valley, and followed the Karakash

River along its course to Shahidulla; then returning by Karatagh he sent us a very carefully drawn sketch-map of the route by the upper Karakash to the Changchemno. By the aid of this map, and by his active assistance in sending out supplies along this line, I was able to bring back my camp in comparative comfort. Mr. Shaw accompanied me as far as the Lingzi Thang, and then branched off to discover, if possible, a shorter line. The result of his exploration has been laid before your Society, and, as he himself reports, he was not successful in opening out a better route.

"This second, or middle route, is 2 marches shorter than the first one, and 3 marches longer than the old Karakorum route. The pass leading out of the Changchemno is somewhat steep, and for one march on the other side the road runs along a ravine filled with sharp stones, which are most trying to horses, and would, I fear, be fatal to camels. As Captain Trotter has very carefully surveyed this route I will not anticipate his report, but, as it may be brought into general use, I am anxious that the credit of its discovery should be attributed to the proper persons. Dr. Cayley is too modest to put forward his own claims, but I think that he deserves much more credit than he has yet received for his exertions in the cause of science and commerce. In the present generation M. Schlagintweit was the first European to penetrate Eastern Turkestan, but he fell a sacrifice to his zeal, and the result of his explorations was lost to the world. Messrs. Shaw and Hayward visited Turkistan at a more favourable time, and to the former we are specially indebted for the tact and wisdom with which he conciliated the present ruler of the country, and the favourable impression he gave of the English character. Too much praise cannot, I think, be awarded to both these intrepid travellers for their pluck and perseverance; but I hope that equal praise may be given by your Society to Dr. Cayley for his successful explorations.

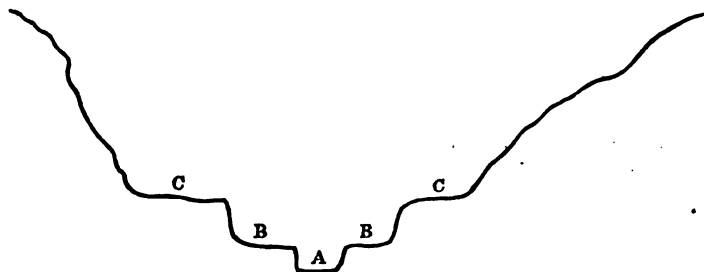
"I now offer some remarks on the much abused Karakorum route, regarding which I, in common with others, had fallen into error. In 1870, when Mirza Shadee, the returning envoy, accompanied me by the eastern route, he stoutly maintained that the Karakorum line was far easier; and I now find that he was not so very far wrong. The fact is that, *per se*, the Karakorum Pass is the easiest of any between Leh and Yarkund, the real difficulty lying on the passes which, by the summer route, have to be crossed between it and Leh, and which are avoided by the winter route.

"Looking at the question as one of gradient, and not considering the height, the ascent and descent of the Karakorum Pass are remarkably easy, and, as for the height, the passes leading out of the Changchemno Valley to either the first or second route are about 500 feet higher, and if the route down the Shyok River, which at present is only taken in winter when the river is frozen, could be made practicable for all seasons, this would, unquestionably, be the preferable route. Taking the present summer route, by which my camp has just travelled, the Kurdoong Pass, immediately after leaving Leh, is exceedingly steep, and has hitherto been impassable for laden horses, all merchandise having to be conveyed on the backs of yaks. This year, however, the Maharaja of Cashmere has greatly improved the road, and I took over my whole party, including large horses belonging to my cavalry escort, without any loss. The next pass, the Sasser, is a more formidable obstacle, and the description of the glaciers given in our journal will, perhaps, sufficiently explain the difficulties to be encountered. Even here, however, the Maharaja has effected great improvements, and, as yaks are always available to transport merchandise from the Nubra to the Shyok Valley, I think that the horror with which this route has hitherto been viewed may hereafter subside. And there is this great advantage, that by the Karakorum line the traveller is far less exposed to encampments at great heights, and the distance between Chang Lung, the last habitation on the Ladak side, and Shahidulla, is only 11 days;

whereas the distance between Tanksé, the last village on the Changchemno route and Shahidulla, is 20 days.

"I do not wish to underrate the difficulties of the Karakorum route. At best, it is fearfully trying, and there is a ghastly spectacle all along the line of dead horses, and sometimes of human skeletons. Not that it is absolutely necessary for this waste of life to occur. Out of some 550 animals which accompanied the two divisions of my camp, the loss of life has not exceeded twelve horses from exhaustion. But, then, traders do not proceed on the same careful principles which guide an expedition of this kind. Supplies not being procurable for many marches, it is an object with a trader to get the largest amount of goods conveyed across as cheaply and as rapidly as possible. To do the thing properly, no horse or mule should carry more than two maunds (equal to 160 lbs.), and should the animal become at all galled or distressed he should be relieved at once, otherwise the exhaustion and cold will soon kill him. But a Yarkundee trader proceeds on the assumption that each horse can carry three maunds (equal to 240 lbs.), of merchandise. He begins by covering him with thick felt clothing, on which a heavy pad is placed; then on this comes the ordinary three-maund load, and perhaps he adds a few clothes of his own, a heavy tea-pot, cooking-pot, and not unfrequently I have seen him jump on the top 'to steady the whole.' Long marches are then taken, and scanty food is supplied. Can we wonder, then, if the unfortunate animal succumbs? There is a horribly cruel practice, too, of which these men are guilty. Ascending great heights, the poor animals often become almost suffocated from want of proper breath, when the traders have an idea that the remedy is to enlarge the passage of air through the nostrils, and this they effect in a barbarous fashion. Throwing the animal down they cut a hole in the cartilage of the nose, to which they fasten some hairs of the tail, then letting the head go, and giving the animal a sharp cut with a whip, it jumps up, and the whole cartilage is torn away by the tail!

"To turn to a pleasanter subject, the Karakorum route offers to any one interested in the subject ample opportunity for forming theories on the action of glaciers. When travelling to Yarkund in 1870, I was much struck with the appearance of the Changchemno Valley. Evidently it must at some period or other have been a wide lake, and yet, so far as one could see, there was no point of contraction, where the mountain sides, closing together, could have confined the waters above. I give, from recollection, a rough sketch of the section of the valley.



"A represents the present course of the river; B and C are the beds of former fluvial action of some kind. From the appearance of an ice-bed I then saw in the Karakash, and from the absence of any dam to explain the stoppage of the waters so as to cause a lake, I had conceived the idea that C C must have been at one time an enormous ice-bed, which, melting away, had formed the

second bed, B B, and finally had melted away into the river-bed A. But Dr. Stoliczka, the eminent geologist, whom I rejoice to have as one of my companions, has pointed out a great error in the idea, and one which I find Professor Tyndall, in his valuable work, 'Forms of Water,' also disposes of, viz., that the action of a glacier is not smooth and equal in all its parts, and the surface of C C would not be so smooth as it is, nor would the sides descending to B B be so straight, had there been glacial action at work. I have now been led by further observation to a different explanation.

"As we travelled up the valley of the Nubra River we observed, on the sides of the very wide valley, marks, hundreds of feet high, on the mountains, of water, as if the river had at one time flowed so high. The valley is very broad, and there was no appearance of the mountain sides ever having approached near enough to each other to form a lake.

"When we crossed the Sasser, and came to the glaciers mentioned in the Diary of 9th Oct., I think we found the true explanation of these ancient lakes. There we found an enormous glacier many miles long, which had slid down from peaks 26,000 feet high, and had crossed the valley at right angles, choking it up entirely. In the valley above we saw distinctly the high bed of the lake which had been formed. This glacier came down only about ten years ago, and there are plenty of eye-witnesses to the formation of the lake, and to the subsequent subsidence of the waters by the bursting through of the glacier. In course of time, perhaps 200 years hence, this glacier will have disappeared, and future travellers will then find a state of things similar to what I recollect seeing in the Changohemno or in the Nubra Valley.

"We remarked in the Nubra Valley the existence of numerous moraines, or rather the evidences of such shooting across the valley, and possibly each of these at some former time was a fallen glacier, which had stopped up the waters.

"Perhaps some future Tyndall may think it worth his while to visit these regions, and, if so, I can promise him a grander field of observation than any that can be presented in Europe, or at least in the Alps. The appearance of the Kurmadan glacier is extraordinary. A mass of icebergs, 150 to 200 feet high, appear to be joined together for miles; and, having passed this as a unique wonder, we journeyed on to find the same repeated on a larger scale and in great abundance. The view from Gepshan is truly sublime. Looking up a wide gorge to the north-west we saw three enormous glaciers stretching back for perhaps twenty miles, and ending in peaks 26,000 feet, and the highest 28,000 feet.

"I hope to have the pleasure of sending you further information from time to time.

"I am yours, very truly,

"T. DOUGLAS FORSYTH.

"*Right Hon. Sir Bartle Frere, K.C.B., G.C.B.,*

"*President of the Royal Geographical Society.*"

Extracts from a second letter, received only the previous day, were then read by W. FORSYTH, Esq., Q.C. :—

"Yarkund, November 12th, 1873.

"After all the prophecies of evil to our expedition I am truly glad to be able to address a letter from this place, which we have reached in perfect safety, to all my party, and since we have entered the dominions of our host we have been treated with the utmost attention and politeness. In fact, our progress has been a perpetual feast, and we have been fêted as if we were princes. At Karghalik, the first large town we reached, we found an entirely new set of

quarters built for us, and made most comfortable with Khatesa (like Turkey) carpets, chairs made according to their ideas of English fashion, and glorious fire-places which don't smoke. Here our reception by the Governor has been quite in keeping with our expectations, and the utmost freedom is allowed us. Yesterday we wandered about the bazaars—the first Englishmen who have ever done so. The bazaars and streets are just like those in Stamboul. There is an idea in some people's minds that the Yarkundees are savages whose luxuries are not equal to what would be considered necessities by an Indian coolie. I wish such people would visit the city and be convinced to the contrary. The restaurants and the cookery there would put to shame anything we saw in Stamboul. In the streets numbers of barrows are wheeled about, for all the world like a pie-man's cart in London, on which very clean and excellent toasted patties, bread, cooked vegetables, &c., are sold, and confectionary is hawked about just as at home. Then in the matter of candles we find excellent ones, made to burn, and not to sell only, as we find our supply from India to turn out to be, and we are using them instead of our own. Some of our party have been out to-day shooting, and have come back with woodcock, snipe, and wild duck, and we have had some English-looking pheasants. So much for the comforts of the flesh. As regards the objects for which I have come, everything looks promising, and I have had a very friendly letter from the Atalik (or Ameer, as I suppose in future he will be called). We shall remain here probably for ten days or so, and then I expect to be summoned to Kashgar, to present the Queen's letter, and after transacting business there we shall, I hope, accompany the Ameer to Aksu. But on this point I can only express my hopes, for the King does not make known his wishes or his orders till it suits his Royal pleasure to do so. We had a very severe time crossing the last Pass. I dare say some account of it will find its way to England before this reaches you, so I will not repeat the account. We have experienced intense cold at times, and even now in Yarkund we find the thermometer go down to 10° Fahr., and are told that winter has not yet begun. But with fur coats, caps, and boots for outside work, and with good large wood fires in our rooms, we have nothing to complain of as yet. My Highland piper excites great attention and amusement. The Dadkhwah, when he saw him, thought he had forgotten to put on his breeches. The scientific members of my party are daily getting a mass of information, which will, I hope, afford satisfaction to the different societies at home. Of course I have plenty of bother at times, for it is difficult to keep 131 men in good humour and good order at the same time, when away from their own country and amid such cold. But, on the whole, everything goes smoothly, and I have seldom to exert my authority. I am singularly fortunate in my officers; one and all are most active and zealous."

Dr. LEITNER said he was glad to find that Mr. Forsyth had given due credit to Schlagintweit, who was the first European who crossed the frontier and visited Yarkand. He hoped that Mr. Forsyth would try to find some more records of Schlagintweit. He himself had recovered a map which was drawn up under Schlagintweit's directions by Mahommed Amin, his trusted companion. Of course that map was very much inferior to what might be expected from Mr. Forsyth and his party, but still those who gave their lives to explorations, and laid down the first rough sketch, should never be forgotten. When at Yarkand, Schlagintweit stayed at the house of the Yarkandi whom he (Dr. Leitner) brought to England in 1869, and from him they learned that there were banks in Yarkand, and that financial operations were carried on by means of paper, very much as in this country. The Yarkandis were evidently a people who would be quite ready to take advantage of an opening for trade. It was intended that Mr. Forsyth should return through Badakhshán. He

(Dr. Leitner) had always contended that the main road from India to Central Asia was by Chitral and Badakhshán, and he believed, if Mr. Forsyth returned that way, he would find that the portion of that route that branches off to Yasin and Ghilgit was so good that any traveller might go over it. He hoped that in passing along that road Mr. Forsyth's attention would be drawn to that extraordinary race the Siah Posh Kafirs, one of whom had accompanied him (Dr. Leitner) home to England. They were a race whom some supposed were descended from people left here by Alexander the Great, on his invasion of Northern India.

The CHAIRMAN observed that if Mr. Forsyth succeeded in reaching Aksu he would perform a feat superior to that of any traveller who had yet ventured into the wilds of Central Asia. The very old travellers, such as Rubruquis, went far to the north, while Marco Polo and Benedict Goes went far to the south. If Mr. Forsyth was able to visit Askú, and to fix its position, he would be entitled to the thanks of all geographers. The route which Mr. Forsyth proposed to take on his return to India, by the Chitral Valley, was undoubtedly the natural high-road between India and Tartary, if only the tribes would allow it to be followed. He must, however, raise his protest most determinately against the notion that the Siah Posh Kafirs had anything to do with Alexander. They were a good old race, and of course it was very interesting to get any details with regard to them, but no ethnologist of the present day believed that they had anything to do with the Greeks, or showed any trace of Greek civilization.

The Paper of the evening was the following, read by the author :—

*On the Geography and Resources of Paraguay.* By Prof. LEONE LEVI, F.R.G.S., F.S.A., F.S.S., of Lincoln's Inn, Barrister-at-Law, Doctor of Political Economy, Professor of Commercial Law, King's College, London, and Consul-General for Paraguay.

ALTHOUGH the Southern Continent of America, and especially the basin of La Plata, has been sufficiently explored, and its geography is well known, it is much to be regretted that but scanty information exists regarding the many States therein constituted, and more particularly respecting the limits and resources of the Republic of Paraguay. Its inland position, the revolutions and wars by which it has been agitated, the exclusive policy which its former rulers, Dr. Francia especially, for so many years maintained, and its almost dramatic history, have tended to restrict the amount of communication between the Republic and the outer world, and to retard considerably its economic progress. But a new leaf is about to be turned; the nation has learned, by sad experience, what it is to oppose those natural and economic laws which an allwise Providence has established for the welfare of man, of whatever race or clime, and I trust that a brighter future may be yet in store for a country which is universally described as fertile in resources, as she is interesting for her history and associations. It is indeed a good omen of happier days to come, that, by the authority of the