

The PRESIDENT called attention to the geological portion of the work, as communicated by Mr. Oldham, the superintendent of the Geological Survey of our dominions in India. He was associated with Captain Yule in surveying the country, and the concluding part of the volume contained a great deal of important information with respect to the structure of the country, the rocks, and all their relations. The work was rendered additionally valuable from its observations on the statistics of the productions of the country, including the mineral productions with the observations of Mr. Oldham.

MR. CRAWFURD.—He ought, in justice to the nobleman who obtained this annexation of Aracan and Pegu, to mention an important fact respecting them. It was well known that Bengal—rice-producing Bengal—was a densely peopled country. The consequence was that the price of rice had been constantly rising. Aracan and Pegu were countries of a totally different description. They were unpeopled. Captain Yule did not estimate the population at above 25 inhabitants to the mile, whereas there were some portions of Bengal which contained 600 to the square mile. There was a great abundance of fertile land in the valley of Aracan. The price of corn and rice was regulated by the quantity of land of the first quality, capable of producing it. All the land at present in use in Aracan for the production of rice, was of the first quality. The result was that the export of rice from Aracan alone, though a country of but 10,000 miles in extent, was greater than the exports from all Bengal together. In former times the settlements to the eastward—Penang, Singapore, and all the countries in that direction—used to be supplied by Java. The policy of the Dutch, by displacing rice and encouraging other productions less profitable to the people, had been such as to enhance the price of rice to such an extent that these districts were now supplied from Aracan. A very large amount of the rice of Aracan was also exported to Europe, to the value of one million sterling annually, as he had been informed by a merchant connected with the trade. These facts showed that our Burmese possessions were likely to become important countries.

3. *Journey across the Kuen-luen from Ladák to Khotan.* By the Brothers SCHLAGINTWEIT.

Communicated by Col. W. H. SYKES, V.P.R.G.S., etc.

PROCEEDING from Ladák, through Nubra, to the Pass of Karakorum, we were able to pass the frontier of Ladák, and to extend our observations over very nearly the whole breadth of the Kuen-luen Mountains. We estimate (not yet having reduced our astronomical observations of latitudes and longitudes) the distance we travelled in Turkistan, before returning again into Ladák, to be very nearly 300 English miles.

We left Ladák July 24th, 1856, went by Laoche Pass (17,600 feet*) to the valley of the Shayuk and Nubra; from Nubra we crossed the Sassar Pass, about 17,500 feet. We stayed two days on the Pass itself to make magnetic observations and to enable us to

* All the heights in this Report are only approximately correct. Very good corresponding observations were taken at Ladák, but we have not yet found time to make the necessary calculations.

reach the summit of the Sassar La—20,000 feet—from which we had, as we anticipated, a very extensive and interesting view of the large groups of glaciers surrounding the Pass, one of the largest accumulations of glaciers in the Kuen-luen.

From the Sassar Pass, our route brought us to the large plateau to the south of Karakorum, the mean elevation of which reaches 17,000 feet. On the 9th August we crossed, without any difficulty, the frontier of Turkistan.*

We were accompanied by Mani, the Putwaree of Nilum; by Marshoot, a former servant of Moorcroft; and by Mahomed Amir, an aged Turkistani, whom we found particularly useful on account of his general knowledge of the country.

We had besides, six horses for ourselves and servants, thirteen for baggage, five Yarkandis, and some fifteen sheep and goats.

The Yarkandis, with horses and provisions, we sent on, and we only met them by chance at Nubra.

Our servants from the plain, accompanied us as far as Sassar, from whence we travelled dressed as Yarkandis.

The day before we passed the Karakorum, at 18,300 feet, we met a large caravan of merchants from Yarkand, to whom we gave out that we intended to march on the Yarkand road, but, as soon as we had passed Karakorum, we left this road and went to the east of Kizilkorum, 17,400 feet, the high-water parting between Yarkand and the Karakash river. In one day we crossed four passes, exceeding 17,000 feet above the sea, but only slightly elevated above the surrounding plateaus.

From Kizilkorum, we followed the direction of the principal chain of the Kuen-luen, now turning to the south-south-east, till we reached a lake, Kiuk-kiul, slightly salt, situated at the northern foot of the Chanccumo.

Up to this point, our route had chiefly led us over extensive plateaus 16,000 to 17,000 feet above the level of the sea, of a much greater extent than those to the south of Karakorum; but from the lake we followed the valley of the Karakash river, to the right of which there are no plateaus, while to the left they extend as far as Suget.

The sterility of the plateaus to the north of Karakorum, as well as of the Karakash Valley, is quite surprising; and without the frequent, though not very abundant showers, chiefly caused by the

* See Journal of the Asiatic Society of Bengal, No. IV., 1856, p. 344, for Travels in 1852 from Cashmere through Yarkand, Kokan, Bokhara, and Cabul, in search of Mr. Wyburd.—ED.

great elevation of the ridges, these plateaus would be complete deserts.

In a march of 18 miles, we only met with four species of plants ; for many days grass was exceedingly scarce, while for several days we had absolutely none, the grass round the Kiuk-kiul Lake being the only exception. We had taken comparatively a small supply of grain, anticipating in some degree the sterility we met with, which saved our horses from absolute starvation ; nevertheless they suffered dreadfully, the more so as the scarcity of grass compelled us to make long marches of 20 to 24 miles a day. Close to the Kiuk-kiul we met with a very interesting group of more than fifty hot springs, chiefly containing muriate of soda and a great quantity of carbonic acid ; their temperature varied from 77° to 120° Fahr.

We had already met, in the Valley of the Nubra, with two other groups : the one near Panimik (hottest spring), 78·1° (= 172·6 F.), the other near Changlung, 74·1° (= 165·4 F.).

After a march of 70 miles in four days, we came to Pumgal, where a route branches off by the Valley of Bushia to Elchi, the capital of Khotan.

From Pumgal a road branches off, as mentioned above, to Bushia and Elchi ; and as there was some hope of procuring at these places fresh horses or yâks, as well as food, our men were easily persuaded to proceed towards them. We started August the 22nd, with only two laden horses, and had to cross a glacier pass of 17,000 feet, where, at 10 A.M., we were overtaken by a violent snow-storm, lasting till 6 P.M. The road was extremely difficult for the horses, on account of the number of fissures in the glaciers.

In Bushia, which we reached two days later, on the 25th August, we met with a very cordial reception from the inhabitants, and got horses, yâks, sheep, and provisions, on the promise of payment in Pumgal.

These people—half-nomadic Tartars—appeared very honest, and the prices they asked were certainly moderate. They inhabit caves, fitted up like houses in the cold season, and tents during the rest of the year. The height of Bushia is 9200 feet. We had taken the precaution of dressing ourselves like the inhabitants, and had also learned the necessary forms of salutation, for the people here are far from being savages, but are, on the contrary, very ceremonious. They took us—never having seen any Europeans—for what we represented ourselves to be—merchants from Delhi. Elchi, the capital of Khotan, was only two days' journey distant, but we found the people very reluctant to accompany us thither (for they feared the Chinese soldiery stationed not far from Bushia) ; besides the

time was far advanced for our intended tour in Cashmir. The distance from the northern foot of the Kuen-luen was one and a half day's journey. Already at Bushia the Alpine character of the central Kuen-luen had disappeared, the height in the environs of Bushia not exceeding 11,000 feet. We left Pungal on August 29th, and followed, for three marches, the valley of the Karakash river, which flows from Pungal to Suget in a westerly direction, then takes a sharp turn to the north, and then flows for the most part in an east-north-easterly direction. We met on this road with very large quarries and mines, from which is dug the Yashen stone, and which are resorted to by people living at great distances. We were enabled to procure, for future analysis, a good supply of this stone, which is very much valued throughout Central Asia.

Suget, a halting-place on the winter-road to Yarkand, is six ordinary marches distant from Karakorum; from Suget to Karakash, another town of Khotan, is six marches.

After due deliberation, we started, on the 1st of September, with Mohamed Amir and only two laden horses, leaving everything we could do without, including our little tent.

Some instruments, blankets, furs, and provisions were all our baggage.

We succeeded in making in twelve days about 220 English miles across the central parts of the Kuen-luen (25 marches of the Russian itinerary route from Yarkand to Leh). We reached Leh in the evening of the 12th of September. The country between Suget and the Karakash Pass was new to us; we had here a very good opportunity of examining the plateaus above mentioned and determining the mean elevation. We had also, before we reached the Pass, a very extensive view of the highest central peaks, which we tried to draw on the scale of 1 degree to 1 centimetre.

From this point we wished to follow the Shayuk river, as the route would have taken us through country new to us. We also met, amongst many others, a caravan with fourteen dromedaries, not unfrequently used for carrying loads on the Yarkand road; they are the produce of a singular cross between yâks and kiangs (*sic*), and inhabit heights of 16,000 to 18,000 feet. We succeeded in getting two of them (remarkably docile animals), expecting to find them particularly useful in crossing the frequent rapids in the Shayuk river, as well as the glaciers and rocks so common in these parts. But, notwithstanding the height and power of these animals, we found it impossible to go down the Shayuk valley. The river had much subsided, compared with its height when we crossed in the

beginning of August, but it was still far from passable, as it is from the end of October to the end of March.

We were obliged, therefore, to leave the road down the Shayuk valley at Sultan-Chushun, and go up the valley to Sassar, and from thence follow our old route. We had to cross the Shayuk river, not without difficulty, five times in one day before we reached Sassar. During our absence from Leh, our native doctor Shir-kishin had made meteorological observations, and—what was especially valuable to us—detailed barometric and magnetic observations; had completed a plan of Leh, 11,000 feet, the chief points of which had been laid down before our departure; and had sent collectors to different parts of Ladak to complete botanical and geographical distributions. We found all our orders had been carefully executed.

Our horses and luggage left behind at Suget, not arriving for thirteen days after us, Sept. 25th, we had time, besides finishing our plans and drawings, to make numerous casts in plaster of Paris* of individuals of different tribes, as we had already done in different parts of India and the Himalayas.

The PRESIDENT expressed the thanks of the Society to Colonel Sykes. The brothers Schlagintweit were well known to geographers and naturalists for having distinguished themselves in the survey of the Alps, and in various communications published in Germany. Baron Humboldt had always had the highest estimation of their capacity and talents. They were now employed in surveying, under the patronage of the East India Company, those distant regions into which few travellers had been. The paper contained evidence of talent, and he had no doubt there were some valuable observations with respect to the mineral springs of the country, an important point in the geographical feature of that region. It was a point to which Baron Humboldt called attention that the Kuen-luen was of volcanic origin, of which these hot-springs were the only active remains.

Mr. W. J. HAMILTON, F.R.G.S.—Although he had no knowledge of the country itself, he could not resist rising to express the satisfaction with which he had listened to the communication. He had the pleasure of knowing these distinguished German brothers previous to their departure from this country, and it was with the greatest satisfaction he had listened to the statement of the progress they were making in the investigation of the physical features of this interesting district. From the opportunity which he and many members of the Geological Society had of appreciating the talents, energy, and zeal of these travellers, he was sure they might look forward to receiving much valuable and interesting information from them. The extracts which had been read contained but a small portion of the information which they had sent home. When the whole paper was published, he had no doubt it would be found to enter into many interesting details on other points.

* We were obliged to H. Longden, Esq., superintendent of the 'Secundra Press' at Agra, for a very precious supply of plaster of Paris when our own stock was nearly exhausted.