

life. I fancy the spot where Livingstone died is about $11^{\circ}25'$ S. and 27° E.; but, of course, the whole of this is subject to correction, and, although I have spent many hours in finding it all out, the Doctor's diary may show it to be very imperfect.

"I fear you will find this a very unconnected narration, but my apology must be that the Consul-General is not well, and the other Assistant absent on duty, and there is much work for me to do. Mr. Arthur Laing has been entrusted with the charge of the remains and diaries, which latter he has been instructed to hand to Lord Derby.

"Trusting that you are in the enjoyment of good health, and with great respect,

"Believe me, dear Sir Bartle,

"Your most obedient servant,

"FREDERICK HOLMWOOD.

"To the Right Hon. Sir Bartle Frere, K.C.B., G.C.S.I., &c., &c.,

"President of the Royal Geographical Society."

Mr. A. LAING (who accompanied the remains from Zanzibar to Suez) said he had had many opportunities of conversing with Jacob Wainwright, one of the Nassik boys sent up by Stanley from the coast to meet Livingstone, and his story confirmed what Mr. Holmwood had written. Jacob Wainwright said that the Doctor paid great attention to his boys, and was very much beloved by all of them. When any of them were sick, he would wait a day or two until they were able to move on; but, when the boys saw that he was failing, he would not allow them to wait for him, but, at first, rode on a donkey, and, when unable to undergo even that fatigue, was carried in a kitanda. Jacob Wainwright writes and speaks English very well, and has kept a full diary from the time of Livingstone's death to the arrival of the body at Zanzibar.

The following paper was then read by the author:—

2.—*On the Valley of the Ili and the Water-System of Russian Turkistan.*

By ASHTON W. DILKE.

THE shape of the valley of the Ili, like that of the present Khanate of Kokan, which it resembles very closely, is eminently calculated to make it play a very important part in the development of Russian Turkistan. At present the political situation of the country prevents the Russians from paying such attention to it as they probably will when some arrangement has been made with the Chinese; for, as yet, the Russians only consider themselves as holding Kuldja with the view of restoring it to the Chinese, if the latter ever regain their footing in Kashgar or the neighbouring parts of Mongolia, which is very doubtful. The natural frontier seems to be the watershed of the Ili, which is one of the Seven Rivers which give their name to the country, and which is cut off from the remainder of

China by extremely abrupt mountains, and opens out only in the one spot where the Ili finds its outlet to the Balkash. I was unable to find any accurate maps or measurements of the district of Kuldja, but I saw enough to be convinced that all our present maps are exceedingly inaccurate, especially in the point of representing the breadth of the valley too great in comparison with its length. The valley rises in a gentle slope from the Ili, which flows nearly in the centre of it, to the mountains on either side, which are not more than 50 miles apart, while from the commencement of the valley at Altyn-Emel to Old Kuldja, the chief Russian post, is a distance of about 170 miles, according to the distances in the postal register; and from the latter town the mountains to the east can only be seen in bright weather at sunrise or sunset, which, calculating as usual in this dry air, gives a distance of about 120 miles, making the total length of the valley nearly 300 miles, or about six times its breadth. The mountains to the north of this plain rise to a height of some 12,000 feet, and are tipped with snow in July. There are two main roads across them: one from Old Kuldja direct to Djin-Ho, about 160 miles, but with a waterless passage of nearly 70 versts in the centre; the other is the old Chinese post-road, from the ruined capital of New Kuldja, through Soudoun, one of the other Russian posts, to the valley of Talki, up which it runs a distance of 20 miles to Lake Sairam-Nor, which lies at a height of over 7500 feet. The road was evidently kept in excellent repair by the Chinese, as the remains of bridges and post-stations, which are frequently met with, prove. It is now only used by the Kirghis, who live in summer in the mountains, and by an occasional caravan going to Manas or Urumtsi. Sairam-Nor lies in extensive pastures, which are watered by the melting of the snows in the mountains on the western side, though as the lake never rises or falls, in spite of the considerable mass of waters which it receives, the Kirghis have invented the usual theory of a subterranean outlet, which nothing seems to justify. Standing on the southern side of the lake, where the Talki Pass comes on to it about 500 feet above its level, we see the openings of three valleys: the first, beginning from the right, is that of the Kizim Tchik, a narrow and very lovely ravine, running down to Mongolia on the northern side of the mountains which separate Kuldja from Djin-Ho, nearly up to this latter place; then, still on the right or eastern side of the lake is a valley along which the Chinese road finds its way—a broad waterless valley, only marked on the latest Russian map as a “Dry Valley.” It runs parallel to that of the Kizim Tchik, and leaves the mountains not far from the spot where the latter also does, close to the little town of Takianzi,

and within sight of Djin-Ho. Exactly opposite the entrance of the Talki Valley on to Sairam-Nor is a break in the mountains, about 20 miles distant across the lake and close to its shore, which allowed me to catch a beautiful glimpse of the long chain of the Northern or Tchungurski Alataon, close to Lipsa, across the deep valley of the Baratola, which gives the idea of some unfathomable gap between the nearer dark mountain-range and the bright peaks beyond it. The mountains are almost everywhere 3 or 4 miles, and in some places recede 10 miles from the lake, which is about 60 in circumference, and the effect of its blue depths, set in green meadows, with the black forest-clad mountains all round running up to snowy heights beyond, is extremely lovely.

The valley of the Kizim Tchik, which I descended, is either very narrow or very broad, as it may be taken—*i. e.* the distance between the snowy peaks on either side is considerable, as we saw whenever we got a glimpse out of our prison below; but the little stream itself is blocked in a ravine full of the most luxuriant vegetation, from which cliffs, in many places 1500 feet in height, rise perpendicularly, and effectually bar the view. The valley at length grows broader and the cliffs become bare masses of brown sand, quite abrupt and of some elevation, but bare of vegetation, and terrible reflectors of the scorching sun. Phalangas and tarantulas swarm. At length, after about 80 miles, the valley opens out into the plain. To the south, not far off, are the snowy mountains between the upper valley of the Ili, or rather that of the Kash, and Djin-Ho: the latter town appears under a promontory of the mountains as a mass of green reeds, and to the extreme left I thought that I could distinguish the Lake Ebi-Nor, though the haze and mirage may have misled me. The Kizim Tchik River, here about 15 yards in width and 4 feet deep, makes a sudden bend to the north, and either loses itself in sands, or, when full of water, reaches the Baratola in a marsh, when the latter is almost indistinguishable from the Ebi-Nor. The lake is extremely salt and bitter, very shallow, so that it is possible to ride out some distance in it, and surrounded by beds of salt and reeds, musquito- and fever-haunts. Though it receives the Baratola and the Kar-Kara-Ussu, two large rivers, the natives assert that it is drying up rapidly, as, in fact, all the salt lakes here are doing, the Balkash and Ala-Kul having been connected no long time back. The valley of the Baratola is formed by the union of three considerable rivers, which rise in the corner of the Alataou, near Kopal, and flow nearly 130 miles before falling into the Ebi-Nor.

Returning to the valley of Kuldja, I may briefly mention that it is intended to introduce two little steamers on to the Ili this year

in all probability, though the distance from Semipalatinsk, on the water-system of Siberia, to the Balkash, is so great as to make it doubtful whether anything would be saved by them. The wealth of coal in the valley is immense, and the Chinese are known to have worked silver and gold with great profit; but it must be remembered that they had the advantage of slave labour, and that capitalists will be chary as yet of embarking in ventures on the Ili. I had no less than three offers made to me, in my quality as an Englishman, of untold riches and gold mines of fabulous extent, if I would only find the capital.

The Ili, which opposite Kuldja is about a quarter of a mile in breadth, and both swift and deep, is formed by the union of three main tributaries, the Kash, the Kunges and the Tekes. The Kash joins it not far above Kuldja, near a high butte or isolated hill, which forms a landmark for the whole plain: it flows from east to west, as does also the Kunges; but, in spite of this, the Tekes, being the most considerable of the three, is generally considered as the upper Ili. It rises not far from Issyk-kul, between that lake and the Musart Pass to Aksu, which lies under Khan-Tengri, the highest peak of the Thian-Shan, and flows nearly due east for about 100 miles, bending to the north round the last spurs of the Trans-Ilian Alataou about 70 miles from Old Kuldja, at its junction with the two above-mentioned rivers. The valley of the Tekes is uninhabited, except by a few nomad Kirghis and Kalmucks, and by panthers and wild boars, with occasional tigers, who find shelter in the enormous reed-beds which border the river. The valley is, on an average, about 40 miles in breadth, but decreases very rapidly near the Musart, where it enters the mountains.

In passing from the Tekes to Issyk-kul I crossed the watershed of the Tcharyn, which flows through a break in the Trans-Ilian Alataou into the Ili, which is here only some 70 miles distant in a straight line, and further on an abrupt ridge of rocks divides this again from the basin of Issyk-kul. The first view of this lake is very magnificent. The mountains rise from its very waters on every side; the Alataou to the north at a height of about 15,000 feet, and the Thian-Shan to the south about 18,000 feet, form two almost unbroken walls which reduce the immense breadth of the lake, nearly 40 miles, to nothing when seen from this elevation. The mountains at the other end of the lake, 110 miles away, show their peaks above the horizon of the waters so clearly outlined as to make them look within a few hours' ride.

Issyk-kul, the "hot lake," lies at a height of over 5000 feet above

the sea, about 60 miles from Vernoe at its nearest point, and about 250 from Kashgar. It is called Issyk-kul, or hot lake, from its never freezing, which fact is accounted for by the number of hot springs in it, making it impossible even to bathe in certain places, according to my informants. The water is very clear but slightly salt, though drinkable; it swarms with fish, which form the chief article of food for the Russian peasants who have colonized the valleys of the streams running into it. From Karakol, the chief Russian settlement at the east end of the lake, a little-known pass runs to Kashgar across the mountains; but the pass through the fort of Naryn, which is passable by the native carts, is universally preferred to it. Before the Russians occupied the Musart, the trade between Kuldja and Kashgar, to avoid Russian interference, went over that pass, which is so difficult that the horses have to be let down tied with ropes over one place; but now that the Russians have seized all the passes, the natives prefer the easier one through Fort Naryn. So unbroken is the chain of this huge range that the passes from Tashkend to Manas may be counted on one's fingers; only two, that from Aulie-Ata to Kokan, and from Vernoe to Kashgar through Fort Naryn, being fit even for the 9-foot wheeled arba, or carts, of the Sart traders.

In connection with Issyk-kul a very ingenious, and probably correct theory, has been made by Colonel Tchaikovski, of Samarcand. At present the Tchui—a swift and deep river which flows in a bed much larger than its present size would seem to allow it—passes close to Lake Issyk-kul, divided from it only by a narrow ridge. Issyk-kul, as we know from the Chinese records, was formed by some convulsion of nature about 150 years back. The valley appears to have been thickly populated, judging from the remains of villages which are clearly to be seen under the water in several places, and from the fact that money and bones are not unfrequently washed up to the shore. Even a Spanish gold piece was once found in it. The depth of the lake is immense, judging from the inclination of the shores and the few soundings which have been taken, and the body of water in it must be enormous. The Tchui, after leaving the ravine of Buam near Issyk-kul, flows through miles of steppe and sand, and loses itself in the Lake Saimal-kul, which is only a few miles from the Djemman-Daria, part of the Syr-Daria. The formation of this marsh—for it is now little more—indicates that the Tchui once must have flowed on into the Syr-Daria. Now, from the opposite side of this dried-up lake on the Syr starts the old course of the Syr, called the Yani-Daria, which on most maps is only marked as reaching about half-way

to the Amu-Daria, but which was traced by the late expedition for the whole distance between the two rivers. This, again, falls into the Amu, almost exactly opposite the spot where the old course of that latter quits it for the Caspian. It will be seen that if the course of the Tchui be prolonged, following the curve of its course from Issyk-kul to Saimal-kul, it would follow exactly the course which I have pointed out. May we not, therefore, conclude that not long ago the waters of Issyk-kul overflowed into the Tchui, and that that river, swollen to many times its present size, formed, together with the Syr and Amu, a stream sufficiently large to reach the Caspian. This theory disposes of the idea that the Amu by itself has not enough water to reach the Caspian, which has been urged against the scheme of turning the river into its former bed. The more I have thought over this idea, the more the simplicity and probability of it has forced itself into my mind, and an examination of the land between Saimal-kul and the Djemman-Daria showed distinct traces of water upon it at a period not far back. All this strip of land is lower than the adjacent country, covered with marshes, half-dried pools, which any rain turns into lakes and reed-beds, bearing witness to the fact that a great river once flowed here. To drain Issyk-kul would be a task beyond almost any Government, not to speak of one so feeble as Russia in Turkistan, and to regulate the outpour of its waters into the Tchui would be almost impossible.

I did not myself pass through the ravine of the Tchui near Lake Issyk-kul, but all the persons with whom I spoke agreed in saying that it has no connection with the lake. I knew that in many maps a little junction was marked, but knowing also how frequently it happens that, when a river passes close to any lake, some adventurous geographer inserts a connection which does not, in reality, exist, I considered that it must have been so in this case also. I now, however, find in Colonel Wirgman's translation of Von Hellwald's work the following passage:—"It (Issyk-kul) was long considered as the original source of the Tchui; but only a small *affluent* of the Tchui, the Kutemaldy, flows *into* this mountain-lake." I do not know whether the mistake is that of the author or of the translator; but, even allowing that "out of" should be read for "into," he would contradict himself by saying, as he does, that "a small plain, gently sloping towards the *east*, lies between the lake and the Tchui," in which case this supposed affluent would flow up-hill. If the words are correct, the Tchui would divide into two branches, one falling into Issyk-kul, and the other passing on to the plain below, which, I believe, never

happens,—never, at all events, with a stream so swift as the one in question.

I need hardly point out the importance of this to the Central Asian question. The turning of the Amu-Daria has often been mooted, and the chief reason against it has been the want of water to allow its navigation from the Caspian: whereas, if this volume of water could again be poured into it, we may consider that it would, at all events, be sufficient for floating rafts, or the little steamers which on the Syr-Daria now cross places less than 4 feet deep. The superiority of such a route over the present roads, or even over the projected railway, would be considerable, as the native merchants care very little for speed of traffic, and a great deal for its cheapness.

Another fact that I would wish to call attention to is that Russia has it in her power at any moment, without sending a single man beyond her frontiers, to make all Bokhara perish miserably. At the present time the authorities of Bokhara send occasional statements to the governors of Samarcand as to the quantity of water which is required in Bokhara, acting on which the governor orders the aryks or irrigation-canals in the district of Samarcand to be opened or shut for so many days. By turning the Zarafshan into these canals, a step which could be taken in two days, not a drop of water would reach Bokhara.

The PRESIDENT said the Society was greatly indebted to Mr. Dilke for his lively and interesting paper. The heart of every householder must have been moved when he alluded to the price of coal at Kulja. He (the President) regretted the absence of Sir Henry Rawlinson, who probably knew more of Central Asia than any other man living, but who, he hoped, would, on some future occasion, favour the Society with the results of his reading.

General GORLOFF said that Kulja was not taken from the Chinese, between whom and the Russians the best relations had always existed, but from the Tararchees. The Dungans overthrew the Chinese, and then the Tararchees rose against the Dungans; but, when their power was established, they, together with the Kirghis, commenced depredations on the Russian territory, and these increased to such an extent that they could no longer be endured, and Kulja was, therefore, occupied.

Mr. T. SAUNDERS said he could not agree with Mr. Dilke that the position of Kulja, as regards the River Ili, and the outfall of that river into the Balkash, at all qualified it to be a Russian more than a Chinese town. Although the Ili really falls into the low plain occupied by the Russians, yet it comes from a plateau of considerable altitude, and has to break through the range of mountains connecting the Thian Shan with the Altai Mountains, before reaching the Russian frontier. He could not see that the possessors of a great plateau should be called upon to surrender its possession simply because the rivers from that plateau fall into a plain below. Neither was there anything to warrant the conclusion that it would be better for the inhabitants to exchange the Government of the Chinese for that of the Russians. Mr. Dilke stated that the magnificence of the roads astonished him, that he found coal worked there, and that there were other evidences of the development of industry

under the Chinese; but he corrected his statement by associating these works with slave-labour. It should, however, be remembered that it was the chief seat of the great caravan establishments of the Chinese in that region, and the so-called slaves were, in fact, servants transported thither by the Chinese, just as England used to send her convicts to Australia. Further than this, Mr. Dilke thought it would be in the interests of commerce that Bokhara should be occupied by the Russians; but England had an indirect interest in this matter; and just so far as the Russian frontier line extended, so far was the trade of all the other European nations curtailed. It need not be the fashion to obscure that fact by raising the military hobgoblin with regard to the invasion of India by the Russians, but it might be safely said that the Russian advance to the southward of the Syr-Daria had been a matter of very serious import to the trade of all the maritime countries trading with the shores of Asia. From all the shores of Western Asia a considerable trade had been carried on by native carriers with the centre of the continent; but so far as that trade passed through Bokhara, and Samarkand, and Kokan, it had been stopped by the Russian occupation of the countries to the south of the Syr-Daria. The proper relations of the Kutemaldy to Lake Issyk and the Tchui rivers was long ago described by Russian writers. It is merely an overflow canal, and the lake is not usually connected with the Tchui.

Mr. DILKE said that General Count Gorioff's statement with regard to the occupation of Kulja was perfectly correct, and the Russians are only holding Kulja until the Chinese claim it; but it seemed very doubtful if they would ever do so. The Taranchi Government in the district of Kulja lasted four years, and the Russians were perfectly justified in driving them out, as they inveigled a considerable number of Russian subjects over to their side. Mr. Saunders had spoken of the Ili breaking through the mountains, and leaving a plateau; but he must have been misled by the maps. The breadth of the valley, at the place where the Ili leaves the mountains, must be quite 60 English miles, and the height of Kulja is very insignificant, for the fall of the river from Kulja to the Balkash is not more than a few hundred feet. The district, therefore, belonged to Russia quite as fairly as the Seven Rivers district, of which it formed a part. Ili was certainly a Chinese penal colony; but it was a sort of Siberia, where the people were not made to work as slaves in mines, but were allowed to carry on business in the towns. The Taranchis were quite a different race; they were the slaves of the Chinese, and were not rewarded with any wages beyond a certain quantity of land. He had no doubt that Mr. Saunders' explanation of the Kutemaldy was correct, because it satisfied all the conditions. The natives of Samarkand, though they knew that he (Mr. Dilke) was an Englishman, assured him that they preferred Russian to English goods; for, though the English goods were better than the Russian, the manufacturers in Russia knew how to suit the native taste better than the English manufacturers.

Mr. ROBERT MICHELL expressed a hope that Russia would, ere long, see fit to withdraw the prohibition against English travellers in the Russian territories of Central Asia.

The PRESIDENT thought that the difficulties to be encountered in visiting those regions must be somewhat over-estimated. Not long ago Khiva and Kulja were places no European could show his face in without the risk of losing his head, but recently Mr. Dilke had returned in safety from Kulja; Mr. Robert Michell had also travelled in that direction, and Mr. McGahan, who was present at the meeting, had been to Khiva and back.