

The Secretary read the following letter from Mr. G. W. Hayward :—

“ MY DEAR SIR,

“ Murree, Punjab, September 11, 1869.

“ I have the pleasure to forward to your address the accompanying maps and reports of Eastern Turkistan, from where I have lately arrived.

“ The papers are far from being so complete as I could wish them, since of necessity they have been made out somewhat hurriedly, as opportunity offered at various times, for the most part during my stay at Yarkand and Kashgar.

“ The accompanying map is on a scale of 16 miles to 1 inch, and a larger map on a scale of 8 miles to the inch is in course of construction.

“ No attempt, as you will observe, has been made to fill in the details of country situated at any distance from the line of route which has not been personally explored and surveyed. The map has, therefore, a somewhat incomplete appearance, but at the risk of its being thought so, I wish to be able to maintain its general accuracy, in preference to filling in uncertain details of country, which might be found incorrect by future explorers.

“ The instruments used during the exploration are those which were supplied to me by the Society. The mountain part of the work may be considered to be the most reliable, as here I was able to use instruments as I wished. After entering the plain country, however, I could not survey openly as before, for I need hardly say that amongst such a suspicious race as the inhabitants of Eastern Turkistan, the open and repeated use of scientific instruments would have been highly dangerous, if not fatal to the success of the enterprise. Here I depended greatly on observations for latitude, and the distances and bearings of the different points and places.

“ All observations of the sun's meridian altitude at Yarkand and Kashgar, &c., have been recorded in a table accompanying this paper, with the view that the data furnished may be *accurately computed* for the latitude of these places. This is a subject of so much interest, that I may be excused if I request that no values of the positions of these cities be published until the data have been worked out by Captain George, or other competent person deputed by the Society's Secretary.

“ The heights above sea-level have all been calculated from Casella's Tables for hypsometric measurement. They are subject to correction, for which purpose the boiling-point of water at the different places of observation has been given in a list attached to the Meteorological Observations sent herewith, to which is added a list of the towns and villages visited or noticed in Eastern Turkistan, the main routes from Ladak, &c., and a sketch plan of the forts of Yarkand and Kashgar.

“ I would draw especial attention to the new trade-route discovered during my exploration of the Karakash River. This line of communication is from Chang Chenmo, *viâ* the upper valley of the Karakash and Aktagh, the valley of the Yarkand River, and across the Kuen Luen Range by the Yangi Pass, to Yarkand. The natural advantages are great, and the road perfectly practicable for laden horses and camels, and might be made so for two-wheeled carts and conveyances, as well as for the passage of guns.

“ I must not fail to make favourable mention of the small artificial horizon, the invention of Captain George, supplied to me by the Society. I have found this little instrument to be invaluable. It has been objected to as being, perhaps, somewhat too small; but apart from the inconvenience of carrying an average sized apparatus amongst peaks and glaciers, it must be remembered that to carry an ordinary sized artificial horizon attached to the waist-belt without attracting attention is impossible, whereas this little instrument can be carried ready for use, and, in case of interruption when taking an observation, the cover

can at once be screwed on, and the instrument placed in the pocket or belt, which would be impracticable with an ordinary sized horizon.

"I must beg of you to be good enough to make my excuses to the Council of the Society for any delay in hearing from me ere this. Had I even had the opportunity of transmitting papers or news from Turkistan it would have been most impolitic to have made the attempt, for in the eyes of the natives correspondence is conspiracy.

"I have been much disappointed in not being able to effect my original intention of returning to India from Yarkand *via* the Pamir and Chitral. I found every effort to get away in that direction quite useless, and no alternative remained but to retrace my steps to Ladak, and essay some other route.

"I am now about starting to explore the Pamir Steppe and the sources of the Oxus, by the way of Gilgit and the head of the Chitral Valley; and if successful, I venture to hope that on return to England I may be enabled to add to the work already done, and complete a very fair map of this part of Central Asia.

"Although I can hardly expect the Council of the Society to fully appreciate the dangers and difficulties which a European must have to contend with when entering such countries, with the exception of those who may know perhaps from personal experience what the Central Asiatics are, yet I feel sure they will do me the justice to believe that I have undertaken this exploration with a thorough liking for the work in hand, and a determination to do my best; and though it must necessarily be many months ere they can hear of me again, they will rest satisfied that I am still endeavouring to do good work in so interesting a field as the *terra incognita* of Central Asia.

"GEORGE W. HAYWARD.

"TO SIR RODERICK I. MURCHISON, BART., K.C.B.,
President of the Royal Geographical Society, London."

The following paper was then read:—

Journey from Leh to Yarkand and Kashgar, and Exploration of the Sources of the Yarkand River. By G. W. HAYWARD.

[EXTRACTS.]

I ARRIVED at Leh, the capital of Ladak, on the 21st of September, 1868, having left Murree in the Punjab on the 26th of August.

From Leh to Yarkand there are three routes open to the traveller to choose. The first is the Zamistánee, or winter route, which from Leh crosses the Digur Lá Pass, and ascends the valley of the Shayok River to near the Karakoram Range. The second, the Tabistánee, or summer route from Leh, crosses the Kardong Pass, 17,574 feet above the sea, and the Shayok River at Suttee; from whence, ascending the Nubra Valley, it crosses Karowal Pass, and then the difficult Pass of Sasser, 17,972 feet above the sea, joining the former route at Moorghoo.

The third route from Leh is *via* Chang Chenmo and the Chang Lang Pass, 18,839 feet above the sea; and crosses the series of high plains lying between Chang Chenmo and the Kuen Luen

Range, below which it enters the valley of the Karakash River, and conducting down that valley joins the Tabistánee route at Shadula.

The distance from Leh to Yarkand by the Zamistánee route is 530 miles, by the Tabistánee some 480 miles, while by the Chang Chenmo route it is 507 miles. Shadula being distant from Leh by this latter route 316 miles; from whence it is 191 miles to Yarkand.

The great desideratum to insure an increasing traffic with Central Asia, is the opening out of a shorter and easier trade-route, leading direct from the North-west Provinces of India to Yarkand. A good road, avoiding both Kashmir and Ladak, would offer greater facilities to the Yarkand traders for reaching India direct, and have the desired effect of insuring an easier transit, as well as doing away with the difficulties, both political and geographical, which attach to the old Karakoram route. The desirability of such an event was so evident, that the ascertaining if such a route existed was one of the main objects kept in view by the present expedition.

Intending to proceed by the Chang Chenmo route, we got off from Leh on the evening of the 29th September, and made a short march to Tihsee, a village situated in the valley of the Indus. At 20 miles from Leh the road leaves the Indus Valley, and turns to the north up a ravine, to the village of Sakti, where yaks can be obtained for crossing the Pass into Tanksee.

The descent on the north side is at first steep, and the road conducts down a ravine to Seeprah, a Bhoot encampment in the valley. Tanksee, 12 miles distant, is reached early the next day. This village, which is 49 miles from Leh, is the last place in the Maharaja of Kashmir's territory where any supplies can be obtained. With the exception of a few stone huts near Chang Chenmo, no habitation is met with, nor can any supplies be obtained until reaching Turkistan, 400 miles away. A delay of two days here was therefore unavoidable, in order to make the final arrangements for the long journey before us. Four Bhoots, or Ladak villagers were engaged to accompany me to the borders of Turkistan, and their yaks laden with grain for the horses.

Chang Chenmo is a district lying about 50 miles north-east from Tanksee, from which it is reached in three or four days' journey.

Chang Thang, with Rudok, lie more to the eastward. The greater part of the Chang Thang district contains salt-mines, from which the whole of Ladak and part of Tibet are supplied with salt, while a large traffic is also carried on with Kashmir. The salt is brought down from the mountains on sheep, which are extensively used

throughout Ladak and Tibet for carrying light loads. I met a flock of several hundreds coming down the Chang Lá Pass, and laden with salt, placed in small bags across the back, the average weight which one sheep will carry being about 30 lbs. The wool of these sheep is considered to be excellent, and is in great demand at Leh for transportation to Kashmir, besides which the valuable wool of the shawl-goat, abounding in Chang Thang, is the main article of traffic sent to Kashmir.

Leaving Tanksee on the 5th October, we proceeded towards Chang Chenmo, marching that day to Lukong, a place consisting of a few stone huts, situated at the end of the Pangong Lake.

Already, thus early, we had warnings of the inclemency to be expected from the lateness of the season, for a snow-storm came on towards evening, during which we wandered from the track, and, not at once regaining it, did not reach Lukong until late at night. Between here and Chang Chenmo, another high pass, the Masimick, has to be crossed. It is nearly 18,500 feet above the sea, and is generally covered with snow.

Crossing the pass, we encamped that night at Rimdee, 2 miles below, at an elevation of 17,200 feet. The cold was severe, the thermometer, at 7 A.M. the next day, marking $3\frac{1}{2}^{\circ}$ Fahr.

Having marched from Pumsul, we ascended the Kugrang Valley with the intention of crossing the range at its head and following the stream rising there, which is represented on our maps as the Yarkand River, down to Aktagh. The pass at the head of the valley was found to be a very practicable one; but no feasible route into the valley of the supposed Yarkand River was discernible. We therefore returned down the Kugrang Valley, losing a horse from cold and inflammation on the way, and camped at Gogra for a few days previous to going on up the Chang Lang Valley on our way to Turkistan. More supplies were got up from Tanksee and farewell letters written to England, as all communication between civilisation and the wilds of Central Asia was about to be severed.

We left Gogra on the 25th of October, making a march to some hot springs in the Chang Lang Valley. These springs are at an elevation of more than 16,000 feet above sea-level, and gush out from orifices in the summits of these rocks situated in the bed of the stream which flows through the valley. The whole ground is white with incrustated saltpetre, while a fantastic pile of earth indicates the position of an old spring, now extinct.

From hot springs to the Chang Lang Pass the road is up the bed of the stream, which, frozen over, had to be crossed several times. The ascent to the pass lies up a ravine filled with loose stones and

débris, and is very gradual and easy to within 500 feet of the summit. This pass, which is at an elevation of 18,839 feet above the sea, is generally known as the Chang Chenmo one, and is said to be the easiest of all the passes leading across the Karakoram and Hindu Kush ranges. It is quite practicable for laden horses and camels, and would offer no great impediment to the passage of artillery; indeed, the ground is so favourable that a little labour expended on the construction of a road up the Chang Chenmo Valley to the pass would render it practicable for two-wheeled carts and conveyances. Geographically the pass is remarkable as being across the main range of the Karakoram, forming the watershed between the Indus and the Turkistan rivers, and constituting the natural boundary of the Maharaja of Kashmir's dominions to the north.

The road from the pass is level and good down the open valley between the low hills to Nischu, where we camped without finding grass or fuel, or even water, so late in the year. The cold was intense, the thermometer at 7 A.M. marking 11° below zero. I found it most difficult to keep anything liquid without being lost. Everything froze at once and burst the bottles. Trying to paint in water-colours was out of the question. Water, brushes, and colours all froze together, and the enamel on the tin paint-boxes cracked from the intense cold. The country beyond the pass until the Luigzi Thung Plains are reached consists of low hills and broken ridges of sand and clay formation. It is evidently covered with snow during the winter, since the surface of the ground shows signs of the action of running water from the melting of the snows.

Some 16 miles from the pass is the descent to the Lingzi Thung Plains, which are nearly 17,000 feet above sea-level, and extend for 40 to 50 miles from north-west to south-east. Their breadth is some 25 miles, being bounded on the south by the Karakoram chain, and on the north by a somewhat irregular and lower range, called the Lak Tsung Mountains. They are covered with snow during the winter, and in the summer many lakes and pools of water must be formed by its melting. At this time of year, however, not a drop of water was to be found, all the pools having dried up or infiltrated into the sand.

The wind blowing across these elevated plains was intensely cold; and directly after leaving the low hills the full force of it was felt. My servants complained most bitterly, and seemed to be quite incapable of doing anything. The weather was generally fine, with a clear sky, during the months of October and November, but the wind, which came on to blow daily from noon until sunset,

was most intensely cold. The only way to cross these inhospitable regions in any comfort is to bring wood and water from the Chang Lang Valley; and this we failed to do, as the Bhoots, with the usual obtuseness of Ladak villagers, never mentioned the total absence of these requisites until after we had crossed the pass.

Beyond the Lak Tsung Mountains is a second series of plains with low ranges running through them, extending up to the spurs of the Kuen Luen range. They are similar to the Lingzi Thung, but some 1000 feet lower. Late in the evening of the day we entered them we arrived at Thaldat, where is a frozen lake and spring. The water here was very brackish, but the animals drank it eagerly, being the first they had had for four days. There was no grass, however, at Thaldat, but the day we left the place some was discovered in a ravine lying west of it, about a mile away.

As I had failed to find a pass from the head of the Kugrang Valley into the valley supposed to contain the head source of the Yarkand River, I determined to attempt a route across the mountains from Thaldat, though, from the probable absence of grass and water, it was a somewhat hazardous undertaking for our animals so late in the year. At some 50 to 60 miles' distance direct north, I knew we should strike the valley of the Karakash River below the Kuen Luen range, and the route which I intended to explore might lead us anywhere. When I gave orders to strike the camp and prepare to march, the Bhoots and my own servants were anything but pleased at going off to explore a new route. I had this morning ascended the ridge lying west of Thaldat and obtained a good view of the country around. Looking north was seen the lower range of the Kuen Luen with its highest peaks glistening in the morning sunlight, while eastward stretched the wide expanse of desert known as the Aksai Chin. In many places the appearance of a mirage indicated the position of a former lake, the water of which had now evaporated, leaving an extensive saline incrustation, while a large lake was distinctly visible to the south-east. Beyond this again some high snowy peaks occurred, but whether situated in the main chain of the Kuen Luen or in a secondary spur of that range could not be determined with accuracy. The impression at the time favoured the supposition that the main chain of the Kuen Luen terminates as such somewhat abruptly to the eastward, and at about the 82° meridian radiates in lower spurs running down into the high table-land of the Aksai Chin, or White Desert.

A high range, in which are peaks of upwards of 20,000 feet above sea-level, bounded the view at the distance of 80 miles to the south-

east. This range, either the continuation of the main Karakoram chain or a spur from it, was visible, stretching from the head of Chang Chenmo, and trending with a direction of E.N.E. towards the spurs of the Kuen Luen to the eastward.

Looking to the west, it was evident that a journey of 25 to 30 miles in that direction would strike the head-waters of the supposed Yarkand River, if an easy pass could be found across the range forming its east watershed. A valley running westward appeared to offer the best route, and, getting into this, we went up to its head, and crossing a low ridge descended into a wide sandy valley flanked by irregular detached ridges. We encamped here for two days in order to give the animals a rest, as, fortunately, there was a little grass and fuel obtainable, and I went off alone to explore the country ahead. The features of the mountains about here are irregular and broken ranges of red clay and sand formation, while the valleys and ravines are filled with sand and conglomerate. No water was to be seen in any of the valleys or ravines, excepting in one or two places where a deeper depression in the valley had accumulated a little water which was now one mass of ice. It was gratifying to find a very easy pass across the range, beyond which should be the valley of the Yarkand River; and all the animals were safely got over across the watershed into a branch valley late on the evening of the 4th of November.

The pass was found to be 17,859 feet above the sea by the temperature of boiling water, and is a mere ascent of a few hundred feet from the valley below, with an equally easy descent on the north side. It is hardly worthy the name of a pass in the general acceptation of the term; still no less is it across a watershed into the head of one of the Turkistan rivers. I then discovered that the direct road to come from Chang Chenmo to this pass would have been direct from the Chang Lang Pass, skirting the Lingzi Thung Plains, and that a valley across from there direct was shorter and easier than the one which we had followed from Thaldat.

At 10 miles below the Kizil Pass we struck the junction of a large valley coming in from the south-west, in latitude $35^{\circ} 16' 25''$ N., and camped here, calling the place Kizil-jilga. This was evidently the upper waters of the Karakash River, now nearly frozen over. At the time I imagined this stream to be the main branch of the Yarkand River; which it should have been were our present maps correct, but eventually by following this river down to Shadula, it proved to be the real Karakash, which, instead of rising in the Kuen Luen Mountains, has its source where the Yarkand River is represented as rising, in the valley lying west of the range border-

ing the Lingzi Thung Plains in that direction, which range forms its east watershed.

The next day we made a long march down the main valley, which runs north-west, and is wide and open, and the road excellent. Again the wind came on to blow, and surveying was certainly accomplished under difficulties. When on some high ridge of mountain, after taking the bearings of the different peaks around, it was often difficult enough to write down the observations legibly in one's field-book. Notwithstanding the extreme inclemency of the weather, I enjoyed the exploration thoroughly, for all this country was totally unexplored; and it was interesting in the extreme, since at the time I did not know what river it was that we were following; and, furthermore, the road was so good and quite practicable for laden horses and camels that it was probable I was then traversing what in future would become the main trade-route between India and Eastern Turkistan.

Six miles beyond the hot springs the river suddenly turns to the north-east, and from this bend resembled a frozen lake for 3 miles, of about half-a-mile in width. The journey was here over the ice, since the steeper sides of the mountains and the rocky ground rendered a road along the bank more difficult than one over the frozen river.

The river diverging at this point to the north-east was at first unaccountable, since, if it were the Yarkand River, its course from here should have been north-west; yet it was soon evident that this could not be the Yarkand River, but the real Karakash. It was now optional to follow the river along its downward course, or attempt a route across the Karatagh range into the basin of the Yarkand River to the westward, and join the regular road from across the Karakoram Pass at Aktagh.

The latter course would be desirable, as proving the feasibility of a trade-route in that direction or otherwise; while the former offered the greater inducement of exploring the course of the Karakash down to Shadula. It seemed certain that a road conducting up the ravine, joining the main valley at this bend, or one ascending the wide valley noticed just above the hot springs, would lead across the range bounding the Karakash here on the north, and named the Karatagh, and join the Karakoram route near Aktagh, which place lay at a distance of 36 to 40 miles in a direct line from this point. Judging from the configuration of the country, the pass across the Karatagh would probably be found to be a very easy one, and assuredly not more difficult than the famed Karakoram Pass, which, notwithstanding its notoriety, is a very easy

one, although at the high elevation of 18,317 feet above the sea. The interest attaching to the course of the Karakash, however, prevailed, and I determined to follow the river downwards to Shadula.

Some 12 miles below Mulgoon the river suddenly turns to the north-west, and runs through the valley of Sarikee to Shadula. The name Sarikee is applied to the valley of the Karakash from here downwards, which is evidently the Sareka of Moorcroft and the Chinese itineraries.

We were now under the Kuen Luen range, some high peaks in which rose immediately to the north-east; and coming in at this bend is a valley from the south-east, down which the road from Thaldat conducts, which route we should have followed had we not diverged from there. I had now proved the river we had been following to be the real Karakash, and thus to have its rise not in the Kuen Luen range, but in the main chain of the Karakoram. The valley effecting a junction here from the south-east has hitherto been represented as containing the main branch of the river; and the error has apparently arisen from Mr. Johnson not having seen the point of junction of the real stream when he crossed this valley on his way to Khotan in 1865. Mr. Johnson, it is known, went into the valley of the upper Karakash, but never so far down the river as to be able to see its upper course for any distance. Had he done so, any observations for altitudes would have shown that this could not be the same stream as that which passes Aktagh, on account of the difference in the elevations of the several places. Any one not following the river downwards would probably make a similar mistake; for the configuration of the country, as seen from a distance, would lead one to suppose that the river continued the general direction of its upper course in the same line as far as Aktagh.

From this point the Karakash runs, with a general course bearing w.n.w. to Shadula, some 75 miles distant; and skirting the southern base of the Kuen Luen, which rises in a high rugged range to the north, some of the higher peaks attaining to an altitude of 21,000 and 22,000 feet above the sea.

We reached Shadula on the 20th November, and found the fort occupied by a Panja-bashi (sub-officer) and some dozen soldiers of the Yarkand ruler.

As I had come openly as an Englishman, the news that I was on my way to Yarkand had reached there many days before; and the time that had elapsed in following the Karakash River down to Shadula had given the guard ample opportunity of making arrangements to allow me to proceed or stop me here, according to their orders.

Arrived at Shadula, I found that Mr. Shaw, who had travelled up from Kangra with a large caravan of tea and other goods, had reached here by the direct Chang Chenmo route a few days earlier. The guard would not allow us to communicate in any way, and it was at once evident that they were immensely suspicious at the almost simultaneous arrival of two Englishmen. Unfortunately, Mr. Shaw and myself had been in ignorance of each other's intentions and movements, and were, therefore, unable to combine our plans and act in concert. After some conversation with the Panjabashi by means of an interpreter, I began to perceive how matters stood, which may be thus explained. A Moghul at Yarkand, who had lately arrived from Ladak, had spread there a report that fifty Englishmen were coming, and that he had seen them himself! Consequently, the greatest amount of suspicion prevailed in Yarkand, whence messengers were daily despatched to the King, at his camp beyond Kashgar, where, it was reported, he was holding the Russians in check on the northern frontier of Turkistan. Some Punjabi merchants arriving a few days later had greatly relieved the fears of the suspicious Yarkandies, by assuring them that the report about fifty Englishmen coming was entirely false; and the Moghul who had caused the alarm was at once imprisoned and would probably be executed.

Still their distrust, so easily aroused, was not to be at once allayed, and an extra guard was immediately despatched to Shadula with strict orders to stop any one there coming from Ladak. On my expressing a wish to the Panja-bashi to have a letter sent off to the King, asking permission to proceed, he ordered a mounted sipahi to be in readiness; but as none of the men could write, and of course English was unknown in Turkistan, a difficulty presented itself. This was at length got over and arranged by my writing a letter in English to the King, and giving to my interpreter to take, accompanied by the sipahi. A horse was also provided for my man, who had strict instructions as to what he had to say: that I had travelled a distance of 8000 miles, occupying six months; and now, having arrived on the borders of Turkistan, sent forward, asking permission to enter his country and have the honour of an interview.

An answer to my application could not be expected to arrive within twenty days; and during the next few days I considered what other plans lay open to me to endeavour to carry out, should permission to enter Turkistan be refused. To return to Ladak across the mountains in December would be sufficiently unpleasant; but as the Zojji Lá Pass into Kashmir would be closed by the snow,

there would remain the only alternative of wintering in Ladak, and in the spring endeavouring to penetrate to Turkistan and the Pamir Steppe by some other route. The idea of passing a winter in Ladak doing nothing was not to be entertained, and to be turned back now, after having travelled 800 miles from our own frontier, would be most unpleasant.

Having discovered the source of the Karakash to be where all our maps make the head-waters of the larger river—the Yarkand one—to have their rise, it was most desirable to ascertain the real course of the Yarkand River, as being the chief river of Eastern Turkistan. I was, therefore, most anxious to undertake this expedition, knowing the time could not be better employed while awaiting the return of my messenger from Yarkand. The difficulty in accomplishing it lay in the close *surveillance* of the guard of Turki sipahis, which rendered any attempt at getting away on an exploring expedition unlikely to be successful; and if the sipahis suspected my object, they would be sure to accompany me, in which event using surveying instruments openly would be out of the question, and any exploration further than two or three days' journey also impossible. There was a chance that I might be able to get away for the day for the purpose of shooting without being accompanied, and this seemed to be the only way of shaking off the guard. The men with me at this time, besides my own servants, were the Bhoots who had accompanied me from Ladak. They were awaiting my interpreter's return from Yarkand, when, if I was allowed to proceed, they would be dismissed to their homes, or else accompany me back to Ladak, should I have to return. They regarded the Turki sipahis in no very friendly light, and were, therefore, not likely to disclose my plans, which were carried out successfully.

Leaving my own servants in charge of camp, and taking three of the Bhoots with a week's supply of provisions, we started from Shadula at the first streak of daylight on the morning of the 26th November, without the guard being aware of our departure. Marching up the valley leading to the Kirghiz Pass, beyond which lies the valley of the Yarkand River, we encamped that night at Kulshishkun, a famous place for wild yak, but this day found without any large game upon it. From Shadula the road runs up the right side of the stream, and is gradually on the ascent to Kulshishkun, which is 13,965 feet above sea-level, or some 1800 feet higher than Shadula, from which it is 15 miles distant. To the north of the valley, the western Kuen Luen range rises into lofty peaks; while to the south it is bounded by a long spur from

the Aktágh range, across which lies the Sooget Valley. In order the better to distinguish the geographical features of the great Kuen Luen chain of mountains, it has been divided into eastern and western ranges from where the Karakash River pierces the chain on the meridian of Shadula. Any remarks on the Kuen Luen, therefore, will be understood to apply to that division of the range as it bears relatively eastward or westward from Shadula.

The road continues over the more even ground on this side the valley, and skirts the long spurs of the Aktágh Range on the left, after it has crossed the stream. Approaching the pass the valley bifurcates, the northern branch containing the main source of the stream which rises under a large glacier lodged at the head of the ravine, between two high snowy peaks in the Western Kuen Luen. The Kirghiz Pass, 17,093 feet above the sea, lies at the head of the western ravine, up which the road winds with a gentle ascent to the summit. The pass commands an extensive view of the country far and near, and I was able to fix the bearings of some of the highest peaks in the Eastern Kuen Luen, lying 90 miles away, which had already been mapped in, and thus ascertain the value of my survey up to this point, as these peaks are visible from the southward on entering the Lingzi Thung Plains, at a distance of upwards of 100 miles.

The Karakoram and Muztágh mountains, with the range of the Western Kuen Luen, were in sight to the westward, and one was at once struck with the very wild and rugged scenery in this direction. Amongst the interminable mass of precipitous ridges, deep defiles, and rocky ravines, it was difficult to distinguish the exact course of the Yarkand River; but its general direction could be easily determined as flowing through the long longitudinal valley between the two main ranges. Not a tree, bush, or shrub met the eye anywhere; it was solely a magnificent panorama of snowy peaks and glaciers, as the last rays of the setting sun tinged their loftiest summits with a ray of golden light.

It was dusk as we commenced the descent down the lateral ravine leading from the pass. The road, a mere track, winds down the steep side of the ridge to the head of the ravine, the bed of which is blocked up with *débris* and rocky boulders, while the stream in it was entirely frozen over. We were now in the basin of the Yarkand River, since the Kirghiz Pass leads across a depression in the Aktágh Range, immediately below its point of junction with the main chain of the Kuen Luen. Marching up to nine o'clock by moonlight, we got down to near the valley of the Yarkand River. The spot chosen for our camp for the night lay in the gorge of a lateral defile, where

running water was found, while a few stunted bushes which fringed the stream were soon appropriated and kindled into a cheerful blaze. We had descended nearly 3000 feet from the summit of the Kirghiz Pass, since our camp lay at an elevation of 14,225 feet above sea-level. Starting early the next morning, we continued down the narrow ravine to its junction with the valley of the Yarkand River, which was struck at a distance of 33 miles west of Shadula. An observation obtained one mile lower down the valley showed the latitude to be $36^{\circ} 22' 7''$ N. The river here comes down from the south, winding between precipitous spurs of the Karakoram and Aktâgh ranges, the valley being here much confined, and varying from 300 to 500 yards in width.

Below Kirghiz Janjal, where the elevation of the valley is 13,684 feet above the sea, the river turns to the westward, and continues with a general course in this direction towards Sarikol. The valley, from here downwards, is full of low jungle, grass, and herbage, which become more profuse as the elevation decreases, while saltpetre and rock-salt occur in many places. Deep long ravines between the high spurs, running down from the Karakoram chain, come in from the south, while the shorter valleys of the Western Kuen Luen, to the north, narrow as they reach the crest of the range, and are closed in by rocky heights and glaciers.

At 14 miles below Kirghiz Janjal is a camping-ground, called Koolunooldee, where the road leaves the valley of the river and ascends a confined, somewhat difficult, defile, leading to the Yangi Pass. It is practicable for laden horses and camels throughout, and there can be no doubt that this is by far the easiest and most direct route from across the Karakoram into Eastern Turkistan. Kugiar is reached in five days' journey from Koolunooldee, and Yarkand in from seven to eight days. East of the Yangi Pass, on the northern slope of the Western Kuen Luen, rises the Tiznâf River, which joins the Yarkand River to the east of where it is crossed on the road between Karghalik and Posgâm, and is one of its principal tributaries. The Yangi Pass leads across a remarkable depression in the Western Kuen Luen Range, and is about 16,500 feet above sea-level in elevation.

I did not reach the summit of the pass, since it was out of my line of exploration; but, when returning up the river, I ascended the Western Kuen Luen, and attaining to a station on the range at an elevation of nearly 19,000 feet above the sea, commanded a full view of the pass below me. A long spur running down from near the pass bounds the ravine, up which lies the road, to the westward, the prevailing features of this ridge being red earth, sand, and shingle.

The west side of the ravine itself rises in successive terraces and platforms of conglomerate, one above the other, presenting a steep scarp to the eastward.

Continuing down the main valley we left Koolunooldee behind us, and walking up to dusk, reached to near where the Muztâgh Pass stream joins the river. The Yarkand River from here bears somewhat more to the south, and skirts the precipitous and rocky spurs running down into the valley from a group of high snowy peaks in the Western Kuen Luen. The highest peak in this group was found to attain to an elevation of 22,374 feet above sea-level. It may here be mentioned that the heights of inaccessible peaks were calculated from the angles of altitude found with sextant and artificial horizon at two stations fixed by triangulation, the peak also being fixed by triangulation, and the heights of the stations known from observations of the temperature of boiling water. They have no pretension to being very accurate, but are fairly approximate, and may be considered to be within 300 or 400 feet of true altitude.

Arriving at dusk at the junction of a large stream coming in from the south, we prepared to halt for an hour. This stream, of considerable size, is one of the largest of the upper branches of the river flowing from the northern slope of the Karakoram Range. Its banks are very precipitous, and the continued action of the water on the beds of pebbly conglomerate which fill the exit of the valley has abraded their sides, until a series of caverns have been formed extending far under the bank. Immediately beyond the mouth of this valley we came upon the fresh tracks of camels and horses, which indicated Kugiar men being about, or perhaps Kunjooties. It was necessary, therefore, to proceed with caution, since if seen down here by even the harmless Kugiares, the report would spread like wild-fire that another Englishman had turned up in these valleys, and cause the suspicious Yarkandies to believe that the original rumour of fifty Englishmen coming from Ladak was, after all, correct, and, if Kunjooti robbers, to be carried off by them and sold into slavery would most effectually put a stop to further exploration. Halting beyond this we lighted a fire, taking care to choose a favourable spot, from where it could not be seen by any one, if about; and as soon as a full moon rose above the mountains, and was shedding her silvery light far down the valley, we went on again down the left bank of the river for about nine miles, until stopped at a place where the stream runs deep and strong, under a high bank to the left of the valley. We wasted an hour trying to invent something on which to cross; but the long poles cut from the jungle close by, with which we endeavoured to form a temporary bridge, were washed away at

once. Going back for a mile, we climbed the steep slope of the hill above the river, consisting of loose sand and shingle—the ground that gives way and lets one down about as fast as one progresses upwards. At length, descending again to the bank immediately above the river, we were arrested again a short distance further down, where a stream comes in from the south. This stream has carried into the main valley immense quantities of earth and *débris*, and now flows down out of sight between precipitous and over-topping banks, as if split by an earthquake. Steep heights enclose the valley on either hand, while above, to the north, rise the lofty snow-capped group of peaks in the Western Kuen Luen. The valley, some 2000 yards in width, was here found by observation of the temperature of boiling water to be 12,130 feet above sea-level. This was the furthest point down the Yarkand River which was reached. There was every probability that the guard of Turki sipahis would follow us from Shadula, and arriving at the junction of the Kirghiz Pass valley before we could return, thus cut me off from going up the river to its source; consequently, I determined to march back up the valley during the night. Retracing our steps, we reached the spot where we had lighted a fire the evening before, and as soon as day broke started back again up the valley. Crossing to the north side, I left the men with me at the foot of the mountain, and commenced the ascent of a steep spur of the Kuen Luen. It was evident that a station on this range would command an extensive view, and what appeared to be the most accessible point was fixed upon for the attempt. The steep slope of the mountain, covered with loose shingle and sand, was most unfavourable for climbing, and very different from the Kashmir mountains, which, although steep, afford firm footing on the grass and rocks. When the crest of the ridge, however, was gained, the difficulty decreased, and though the higher slope was steeper, the ascent was more rapidly and easily accomplished. After five hours' hard climbing, I reached the summit of the mountain in time to fix the latitude of the range by the sun's meridian altitude.

The magnificent view which this station commanded was an ample reward for the toil of the ascent. Far away to the south and southwest stretched the high peaks and glaciers of the Karakoram and Muztâgh Range, some of whose loftiest summits attain to the height of from 25,000 to 28,000 feet above the sea. One peak, situated to the east of the Muztâgh Pass, reaches the stupendous elevation of 28,278 feet above sea-level, and is one of the highest mountains in the world. Beyond where the river sweeps out west the snowy peaks above the Kunjoot country were in sight towards Sarikol.

East and west extended the whole chain of the Kuen Luen and the Kilian mountains, the last range to be crossed before the steppes and plains of Turkistan are reached, while immediately below lay the confined ravine up which the road ascends to the Yangi Pass, now full in sight beneath me. The extent of view of the main Karakoram or Muztâgh chain comprised a length of 200 miles, stretching from near the Karakoram Pass to the head of the Tashkurgân territory north of Hunza and Nagar.

The valleys that traverse the mountains between the crest of the chain and the longitudinal valley of the Yarkand River appear to narrow into ravines towards the head of the range, and are filled with glaciers; and the whole surface of the ground, to the north of the chain, is probably more elevated in its average altitude than the mountain system embracing the southern slopes of the range in the watershed of the Indus.

The cold at this elevated station, nearly 19,000 feet above the sea, so late in the year, was very severe, the thermometer sinking to 5° Fahr. in the shade, notwithstanding it was mid-day and a bright sun was shining. I had reached many higher altitudes, but never any commanding so extensive a view of such a stupendous mass of mountains; and it was with a feeling of regret that one turned to leave a spot from which the peaks and glaciers could be so well seen, stretching far away on every side in their solemn grandeur.

Descending into the ravine beneath, I went on down its rocky bed, and at four miles below again struck the valley of the Yarkand River, and being joined by the men who had awaited my return, ascended the valley to our camp near Kirghiz Janjal, from where we had started the morning of the day before, having walked incessantly since that time a distance of more than 55 miles.

On the next day, the 1st December, we went 16 miles up the river, thus getting above the junction of the Kirghiz Pass valley, and found that no sipahis had as yet followed us from Shadula. I sent off one of the men by this route to Shadula, with orders to my servants there to send provisions for us to a camping-ground called Aktâgh, some 50 miles further up the river, as the supply with which we had originally started was nearly consumed. This place, Aktâgh, is the third stage from the Karakoram Pass, on the Turkistan side, where the Shadula route separates, and the Kugiar or Zamistânee one conducts down to Kufelong, and thence down the valley of the Yarkand River. We were now on this road, and never doubted but that we should reach Aktâgh in three or four days at the latest. Keeping on up the valley we encamped that night at an elevation of 13,882 feet above sea-level. From here, ascending the

river, the road is up the right bank skirting the steep spurs of the Aktâgh range. It then crosses to the left bank and goes over the spur of a hill round which the river winds. Continuing up the left bank, the road is good, the valley again widens, and the slopes of the mountains are more gentle and less precipitous. Keeping on up the valley, and mapping the whole way, on the morning of the 4th December, we arrived at Kufelong, where the Karakoram Pass stream, passing Aktâgh, joins the main river. At this place, Kufelong, which is in lat. $36^{\circ} 4' 48''$ N., long. $77^{\circ} 57'$ E., and the valley here 14,340 feet above sea-level, the main river comes down from the south-west, and the Karakoram Pass stream, much smaller, and now entirely frozen over, joins from the south-east. The latter stream is represented on some of our maps as the head of the 'Tiznâf River, and on others as the Yarkand River, whereas the real main stream of the Yarkand River is not down on the map at all. From Kufelong I followed the main stream up to its source, but, at the time, was not aware that Aktâgh lay up the valley to the south-east, on account of the error on the map, imagining it to be on the main stream as represented.

Thirty miles ahead, up the main valley, the snow-covered spurs of the Karakorum were in sight, and the foot of these was reached on the evening of the day after we had left Kufelong. On the evening of our second day's journey from Kufelong we encamped in a wide part of the valley opposite to the entrance of a deep narrow ravine, effecting a junction from the south-west. At the head of this ravine a pass leads across the Karakorum Range into the Nubra Valley, in Ladak, and to Chorbut, in Baltistan.

The main valley here turns, and the river comes down from the south-east. Skirting these high ranges, our road lay up the open valley, through the wildest and most desolate country, where nothing but snowy peaks and glaciers, and the barren slopes of the mountains, met the eye. Not a blade of grass was to be seen; and it was with difficulty sufficient "boorsee" could be collected wherewith to light a fire. The valley again turns to the south; and we were now evidently near the source of the river, since it was rapidly decreasing in size and nearly entirely frozen over as we ascended.

On the afternoon of the 8th December, I reached the source of the Yarkand River. This is in an elevated plateau, or basin, surrounded by high snowy peaks, with the ravines at their base filled with glaciers. The centre of this plateau forms a depression of about $2\frac{1}{2}$ by $1\frac{1}{4}$ miles in area, which must contain a lake when the snows melt and drain into the basin, in which the little water now accumulated was a solid mass of ice. The outlet is to the west, in which

direction the stream, issuing from the basin, runs through a narrow ravine for 2 miles to the head of the open valley, where, joined by two other streams from the high range lying west, they form the head-waters of the Yarkand River, commencing here and flowing with a course of nearly 1300 miles into the great Gobi desert of Central Asia. I found the source of the river to be in lat. $35^{\circ} 37' 34''$ N., and, by its distance and bearing from the Karakoram Pass, to be in long. $77^{\circ} 50'$ E., while the mean of three observations of the temperature of boiling water gave an elevation of 15,656 feet above the sea.

The cold in this inclement region, in the depth of winter, was most intense, the thermometer, at 8 o'clock the following morning, showed the mercury to have sunk to a level with the bulb, or some 18° below zero.

By exploring the country eastward, I ascertained that I had reached to near the summit of the main range of the Karakoram, and west of the Karakoram Pass.

After exploring the country at the head of the Yarkand River, it only remained for us to make the best of our way back to Kufelong; and, as Aktâgh lay up the branch valley joining there, we had thus missed the man sent off to Shadula to bring supplies for us. The only yak with us had succumbed from hard work and the want of grass half-way up the valley, and the Bhoots had killed him for food, as we were quite out of provisions. The weather had been threatening snow for the last few days, and an immediate return was imperative. Already heavy clouds were banking up amongst the high peaks of the Karakoram, obscuring their summits, while the sun set angrily and threw a lurid light through the higher masses of thick clouds, as we returned to camp on the evening of the 9th December. It commenced snowing as we started at dusk and retraced our steps down the valley, marching up to midnight through the falling snow.

On the evening of the 10th December we reached Kufelong again. On the following morning we started for Aktâgh and Shadula.

Coming into Aktâgh we met two of the Turki sipahis who had been sent out to search for us from Shadula. From what I could understand, I gathered from them that permission for me to proceed to Yarkand had arrived, and that no slight disturbance had been caused by my sudden disappearance; that the Panja-bashi, in despair, had sent out all the sipahis to search for us in different directions, who had never reached to within 50 miles of where we were, being themselves obliged to return after consuming the little provisions they were able to carry.

Fording the Karakash River twice, Shadula was soon in sight—a dreary and desolate place at any time, but it appeared almost charming just then.

As I rode up to the fort the Panja-bashi and sipahis were waiting to receive me, and seemed to be in utter astonishment at my sudden re-appearance. They had quite concluded that we were lost amongst the mountains, or had gone back to Ladak, for the sipahi who had come on in the morning had fortunately arrived just in time to prevent their starting without me for Yarkand. They had everything ready for the march, horses and yaks even loaded, when he came in, so thoroughly convinced were they that we should never return; and in dreadful fear lest the King should visit on them his displeasure for their remissness in allowing me to get away on an exploring expedition unaccompanied. They were delighted, therefore, at my re-appearance; and equally pleased was I at the prospect of seeing Turkistan, although the fact could not be ignored that hitherto it had proved to be to others “the country from whose bourne no traveller returns.”

We had been absent from Shadula just 20 days, and during that time had traversed more than 300 miles of mountainous country.

The result of the expedition was very satisfactory, from having determined the geographical features and relative bearing of the Karakoram and Kuen Luen chains of mountains, as well as the true course of the Yarkand River.

We immediately prepared to start for Yarkand. As we rode away from Shadula every one was in high spirits at the prospect of leaving these inclement mountains, the sipahis testifying their joy by firing at a mark as they passed it at a gallop. I had given a pistol to the Panja-bashi, and we each followed with five barrels from a revolver. It was amusing to witness the delight and wonder of the Turkies at inspecting a revolver. They could not understand how a small weapon could shoot so many times in rapid succession; and they were never tired of looking at European firearms and expressing their desire to possess such weapons.

Our road from Shadula lay down the left bank of the Karakash River, which here runs with a northerly course piercing the main chain of the Kuen Luen. The mountains on either side the valley are consequently very high and precipitous, and many glaciers and moraines occur at the heads of the steep ravines.

Leaving the valley of the Karakash River, we proceeded up the narrow ravine leading to the Sanjù Pass, the stream in which was quite frozen over, while our journey lay between rocky precipices,

towering above the narrow defile. As no wood for fuel is obtainable near the pass, it was necessary to load one of the yaks with wood gathered in the lower part of the valley; and grass for our horses was also carried by the Kirghiz who accompanied us. We encamped that night at 2 miles below the pass, at an elevation of 14,474 feet above the sea. The last part of the way was over some difficult ground, where the ravine is much contracted, and the road over the frozen surface of the stream. Our camp for the night was formed under some over-hanging rocks in the defile well sheltered from the wind; and the Panja-bashi at once commenced dispensing Turki hospitality, by spreading out a "dastarkhan" of bread, dried fruit, and cakes, as we sat by a blazing fire. Already the Turkiies had impressed me with a favourable opinion of their good intentions towards their visitor; and from their frank and courteous, yet independent, bearing, I was inclined to regard them in a most friendly light. We went on again up the pass at daylight, the last part of the ascent being very steep and over rocky ground, but the yaks we were riding carried us well right up to the summit, which is 16,612 feet above the sea. From the summit of this, the last pass into Eastern Turkistan, the country on the north side lies far below. Looking back are seen the sunny peaks of the Kuen Luen, beyond the Karakash River, and the Sooget Hills beyond Shadula. I was disappointed in my expectations of being able to see the plains of Turkistan in the distance, since a haze overhung the lower country, and light clouds, drifting over the intervening mountains, obscured the view. Down the north side of the pass the descent is very steep, and many accidents occur from horses slipping on the ice, which lies during winter on this side the summit.

When the merchants cross this pass with their caravans, they are obliged to obtain yaks from the Kirghiz to carry their goods over; and thus often experience serious delay in procuring them at once. The Kilian Pass is quite as, if not more difficult, while the Kullik Pass is even more so. They are all simply impracticable for laden horses and camels, and for any animals except yaks; and there can be no doubt that the true road into Eastern Turkistan is that conducting down the valley of the Yarkand River, and across the Yangi Pass to Kugiar, Karghalik, and Yarkand.

Mounting the yaks below the pass we again rode on down the valley, and striking the head of the Sanju River, continued down it to a Kirghiz encampment, at 14 miles from the pass. We had been descending rapidly the whole way, as this place is at an elevation of 9123 feet above sea-level, the lowest altitude which I had reached

during nearly four months' wandering, having for that time lived at elevations varying from 13,000 to 17,000 feet above sea-level. We were now evidently nearing the plain country, since the mountains here slope rapidly to the north.

On the 21st December we arrived at Sanju, a district containing some 3000 houses, comprised in several villages, situated on each side of the stream in the Sanju valley. Ilchi, the capital of Khotan, lies east from here, at the distance of some 66 miles, or three days journey.

The day we entered here was "Du Shamba," or Monday, on which day the bazaar or market is held. Each town and village in Turkistan has its fixed market-day once a week; and the Sanju one being on a Monday is called the "Du Shamba" bazaar. The place was therefore more astir than usual, and we passed many villagers riding in with their country produce. They all wore the costume peculiar to the agricultural classes throughout Turkistan, consisting of a round cap lined with sheep or lamb's wool, a loose "choga," a description of loose coat, confined by a roll of cloth to the waist, and lined with wool or sheepskin; and felt stockings, with boots of untanned leather. Their costume is nearly all of a gray or drab colour, but on the occasion of some festivity they perhaps don a more gaudy coat, and wear a turban of white or coloured material.

On the 25th December, Christmas-day, I had hoped to have reached Yarkand, but we did not enter the capital of the Moghuls until two days later. On Christmas-day we arrived at Karghalik, situated 79 miles from Sanju, and 36 miles from Yarkand. This is a large town and district, comprising 20,000 houses, and possessing a large bazaar and several caravanserais; and is a place of considerable importance, from being situated at the junction of all the roads debouching across the Karakoram Range into Turkistan from Kashmir, Ladak, and India, as well as the Khotan road through Guma.

I was conducted to a most comfortable serai, and immediately afterwards the chief official of Karghalik, a fine-looking old man, by name Ibrahim Beg, came to an interview. The "dastar-khan," which he sent was most profuse, and exhibited the most unbounded hospitality; it comprised two sheep, a dozen fowls, several dozens of eggs, large dishes of grapes, pears, apples, pomegranates, raisins, almonds, melons, several pounds of dried apricots, tea, sugar, sweet-meats, basins of stewed fruits, cream, milk, bread, cakes, &c., in abundance. In fact, it was enough to feast thirty or forty people; and although there is a saying in Turkistan "that whoever has once tasted Turki hospitality, is so charmed therewith, that he never wishes to leave the country afterwards"—which means that he is

not allowed to—still one could not but confess that however treacherous the Atalik Ghazee might be, he certainly had no intention of killing his guest by starvation.

The following morning, after receiving Ibrahim Beg's profound salams, and being the observed of all observers, as we rode through the bazaar of Karghalik, we proceeded on to Yarkand.

The whole country from Karghalik is profusely irrigated by the Yarkand and Tiznaf Rivers, and is well cultivated and thickly populated. Large villages are seen on every side, embosomed in fruit-trees of every description while the road itself is flanked by mulberry and poplar trees. Rice, wheat, barley, Indian corn, carrots, turnips, clover, &c., are grown in great abundance; while cotton is largely cultivated. Flocks of sheep and goats are everywhere seen, and the quantities of fowls and pigeons are very great. I noticed a very few ducks and geese, but quantities of wild fowl in the streams and rivers. The sheep are all the broad-tail species, and one specimen was seen which was quite a curiosity. This is a species of sheep with four horns, one pair curving backward like an ibex's horns, and the other pair forward over the ears. The cattle appeared to be small and indifferent, and in colour mostly black and red. 11 miles beyond Karghalik we crossed the Tiznaf River, in lat. 37° 51' 35" N.

Continuing our journey the road passes the villages of Khojerik, Alamakun, Boghorlok, and Meklah, immediately beyond which is "Yak Shamba" Bazaar, a large market, and, as the name implies, crowded by the country people on Sundays. Beyond this is the town of Posgam, at a distance of 21 miles from Karghalik. It is a large place, and, with the immediate suburbs, comprises some 16,000 houses, with a long bazaar and a large caravanserai. The town is watered by the Beshkun Canal, cut from the Yarkand River, a wooden bridge crossing this canal in the centre of the main street leading through the bazaar.

A considerable amount of traffic appears to be carried on. As we rode through the main street it was crowded with people hurrying through the bazaar, while articles of merchandise were being carried in every direction, laden on horses, camels, and donkeys, which latter animal abounds in Turkistan; and is made use of for carrying everything transportable.

The main street, or bazaar, is covered over with a rude roof of matting, which affords a shelter from the sun. On each side the way the shops are placed, consisting of mere booths, ranged in front of the houses, and generally mixed up with no particular regard to the distribution of wares. Butchers and bakers, silk

and cap vendors, vegetable and fruit sellers, all ply their several vocations together, amidst the din and hubbub peculiar to an Oriental mart. After passing through part of the bazaar, the road runs up the right bank of the canal to the caravanserai, situated on some slightly elevated ground. The Serai itself is a large open enclosure, flanked by rows of trees, and surrounded by long sheds for stabling horses; while the east side of the enclosure is occupied by buildings containing several comfortable rooms for travellers.

The plain country, extending from Karghalik to Yarkand seems to slope very gently to the banks of the Yarkand River. Observations of boiling water showed the elevation of the town of Karghalik to be 4570 feet above the sea; that of Posgâm, 4355 feet; and the bed of the Yarkand River near Posgâm, 4180 feet.

On the 27th December, I entered Yarkand, the capital of Eastern Turkistan, so long deemed unapproachable and impracticable to Europeans.

The city itself lies in the form of a parallelogram, being some 2 miles in extent from north to south, and $1\frac{1}{2}$ mile from east to west; the walls thus embracing a circumference of nearly 7 miles. They are from 40 to 45 feet in height, of great thickness, with bastions at each corner, and intermediate flanking defences, and run nearly parallel with the four points of the compass. The city contains some 40,000 houses, and not less than 120,000 inhabitants. It is entered by five gates, from the entrance of the one in the west wall the main street runs nearly due east to the Aksu gate in the east wall. This street is very narrow, being not more than 12 feet in many places. There are 160 mosques, many schools, and twelve caravanserais, which are always crowded with merchants from every country in Asia.

Both the city and fort are supplied with water from several tanks, into which it is conveyed by canals cut from the river. These are frozen in the winter, and the supply is then stopped, but the tanks contain sufficient water for the consumption of the inhabitants until the regular supply is renewed in the spring.

As we rode up the main street, or bazar, the place was crowded with people—sipahis leading their horses out to exercise, merchants passing to and fro from the city, women closely veiled walking or riding on horseback, while a lively traffic appeared to be carried on in the shops on either side of the way. Near the centre of the street we passed several guns drawn up in regular order on the south side of the road. They consisted of five long swivels, two small mortars, and five apparently 4-pounders, all mounted on carriages, with their ammunition-waggons drawn up in rear, and ready

for instant use. The gunners on guard pacing in front of them were immediately recognised as Hindustânees, nearly the whole of the Atalik Ghazee's artillery being served by natives of India. I afterwards conversed with several of these men, and heard related their antecedents and adventures. Many had come round from Peshawar to Cabul and Bokhara, and thence to Khokand and Kashgar, serving the different rulers of those countries, and then changing their allegiance, as fate or fortune ruled for or against them. Several of them had come over to the Atalik when he captured Khotan in 1866 from Habibula Khan, whom they had accompanied from India on his return from a pilgrimage to Mecca, and a few, no doubt, were escaped mutineers of 1857.

Dismounting immediately beyond the guns, I was conducted up a long open passage to the door of the court-yard of the house prepared for my reception, or confinement, as it may be termed, since during a stay of two months in Yarkand I never went outside of the garden attached to the house I occupied excepting when proceeding to interviews with the Governor, and on one occasion when I rode round the fort. I entered the house and found it to consist of two rooms, small but very comfortable, and the floors covered with excellent Khotan carpets. Shortly afterwards the "dastar-khan" of Mahomed Yanus Beg, Dad Khwah, the Shâghâwal or Governor of Yarkand, was brought in by the Mahrum bashees sent from the palace. It was very profuse, and I returned my best thanks, and sent to request the honour of an interview, which was accorded. Having dined and dressed in appropriate Oriental costume, I started for the "urdo," or palace, escorted by a person of rank. At the distance of about 150 yards from the entrance to the passage of the house I occupied, the main entrance to the place of residence of the chief authorities is reached. The road to it is a prolongation of the main street of the bazaar, and passing through the gateway, a guard-house is first noticed. A covered verandah occupies the front of the guard-house, and extends over the way to the outer wall. Some twenty Turki sipahis were pacing the raised platform under the verandah, or were lounging about in different places; and preciseness and military order were at once apparent, as exhibited by their neat and soldierly bearing, and the display of their arms and accoutrements.

Passing from under the covered entrance the visitor finds himself in a large open enclosure, comprising a garden and tank of water, flanked by rows of trees. The enclosure is subdivided by an intermediate wall, through which lies a way leading to the Kashgar gate immediately opposite. From this enclosure the inner side of the defences is seen. The main wall is crowned by a parapet, below

which a broad way runs all round the fort. Steps at the corners and several gateways lead to the summit of the wall, while higher flights of steps conduct from the walls to the watch-towers at each corner. Facing the embrasures in the flanking defences, or bastions, is situated a row of wooden huts, formerly used as a shelter and cover for their guns by the Chinese. A second gate and guard-house conduct to a paved court of about 50 yards square, surrounded by a verandah, passing across which an inner court of the same size is reached. This second court is surrounded by a verandah on three sides, opposite to the entrance to which, under the verandah on the west side, are the rooms of reception. Not the least elegance or display appeared, but the place seemed to be excessively clean and neat. The official who escorted me stopping at the entrance to the inner court, a Yusawal bashee, dressed in scarlet silk and embroidery, came forward, and, wand in hand, led the way across the court and up the steps of the verandah to the door of the reception-room. With the exception of two or three Mahrum bashees (pages) the inner court and verandahs were quite empty, and a deep silence reigned around. The room, to the entrance of which I was ushered was a long plainly-decorated apartment, with a bright fire at the further end, in front of which two carpets were spread, covered with scarlet silk cushions. On one of these was seated a little man, plainly yet splendidly dressed in green silk cholah, lined with fur, and a high fur and velvet cap. This was the Dad Khwah, Shâghâwal, who rose and came forward as I advanced, receiving me very graciously and shaking me by both hands. Motioning me to be seated, I assumed a sitting posture on one of the carpets, while he resumed his own, and an interpreter was summoned. This man just entered the doorway and bowed towards the Governor to the very ground, the utmost fear being depicted on his face. By means of this interpreter and my knowledge of Persian we carried on a conversation; and before leaving, after half an hour's conversation, I concluded that the Shâghâwal was a very pleasant, agreeable, and well-informed man. He was evidently well read, while his fund of anecdote was inexhaustible, and he appeared to be very keen and eager to acquire information regarding India and Europe in general. Tea, fruit, and sweetmeats were then brought in by a file of Mahrum bashees, and shortly afterwards I asked permission to leave. As I rose a "killut," or silk dress, from Khokand was brought forward by an attendant, and in this I was enveloped. I then took leave, again shaking hands, and was conducted back to the house I occupied by the official who had escorted me. Before leaving, I had presented the Governor with some firearms, ammunition, &c., and

shortly afterwards a second "dastar-khan" from him arrived, and I was informed that provisions for myself, servants, and horses, would be supplied regularly every day.

By the 1st of January, a few days afterwards, it was evident that I should be well treated, and was in no immediate danger; but although not officially informed that I was not permitted to go about, the presence of a guard or escort outside the house was a sufficient hint, and I determined to wait a few days and see what would come to pass. My servants were allowed to proceed to the bazar in the fort to purchase anything required; but not until after they had been nearly a month in Yarkand were they permitted to go outside of the fort into the city. On asking to go about on horseback, accompanied by an escort, I was told that it was not the "custom of the country"—the "Andijāni rusmee," the "more Usbeco"—to be allowed to do so until an interview with the King, who was at Kashgar, had taken place. The confinement was excessively irksome after such an active life amongst the mountains; but it was in vain to urge the plea of exercise being needful.

During my stay in Yarkand I succeeded in obtaining eleven observations for the latitude of that city, the mean value of which gave a resulting position of $38^{\circ} 21' 16''$ N. and long. $77^{\circ} 28''$ E., while several observations of the temperature of boiling water showed an elevation of 3830 feet above the sea. These results all closely coincide with the values obtained by Major Montgomerie's unfortunate explorer, Mahomed Hameed, who died in Ladak on his return from Yarkand, under somewhat suspicious circumstances. The position of Yarkand, as deduced by Major Montgomerie from papers of Mahomed Hameed's, was given as in lat. $38^{\circ} 19' 46''$ N., long. $77^{\circ} 30'$, and an elevation of 4000 feet above sea-level.

I had several interviews with the Dad Khwah, and at length got off for Kashgar on the 24th February. An escort accompanied me under the command of Mahomed Azeem Beg, an Uzbek who had followed the fortunes of the Kush Begie since he had left Khokand. I found this man very communicative, and he never tired of relating their late campaigns and extolling the military prowess and bravery of his leader and ruler, the Atalik Ghazee. Passing along the north wall of the fort, the storms of war and siege which the ill-fated Chinese underwent have left their traces in the marks of bullets and cannon-balls with which the wall is perforated.

From here the Kashgar road bears away west, passing the village of Karakoom and Bigil, to where at 4 miles from the city it crosses the Urpi Canal by a wooden bridge. The road is deep in dust, and the traveller is covered with it as it is kicked up by the horses.

The road to Sarikol, and thence to Uakhan and Badakhshan lies up the left bank of the Urpi Canal. It is regularly traversed by Badakhshi merchants residing in Yarkand, who yearly take their caravans of goods across the Pamir Steppe to Badakhshan. Tash Kurgán (or Stone Fort), the capital of the Sarikol district, lies in a w.s.w. direction from Yarkand, at about 175 miles' distance; while the total distance to Fyzabad, the chief town in Badakhshan, is some 460 miles. A journey of from seven to eight days to Tashkurgan, and of eighteen days to Badakhshan, is considered very rapid travelling; but the caravans of the traders seldom accomplish the whole distance under the period of one month. The road traverses a plain country for nearly 70 miles from Yarkand, and then crosses a low range into the Sarikol district; and, ascending the valley of the Charling River, crosses the Chichiklik Pass, leading across a high spur of the main Pamir range into the Tashkurgan valley. From Tashkurgan it crosses the pass at the head of the Sarikol territory, and conducts through Pamir Khurd into the valley of the Oxus. The road is practicable for laden horses throughout, and for camels as far as the foot of the Chichiklik Pass from the Turkistan side, and from Badakhshan up to the head of Pamir Khurd from the westward.

We remained five days in Yanghissar, living in a most comfortable serai, which the Atalik has lately had built for his own especial use, since he is in the constant habit of visiting Yanghissar from Kashgar. This was by far the most picturesque place which was seen in Turkistan: the great cause of its attraction being the magnificent view of the lofty Kizil Yart range of the Pamir, which is full in sight, lying south-west and west. Contrary to the usual supposition, that the eastern crest of the Pamir slopes down very gradually into the high plateau of Eastern Turkistan, or the high plain country of Central Asia, the range forming its eastern crest rises into a chain of lofty peaks of 20,000 to 21,000 feet above sea-level, the spurs from which run down most abruptly into the high table-land below. The range thus presenting a steep face towards the plains of Eastern Turkistan, the slope of the watershed will be found to be very gentle, and sloping to the westward: while the waters issuing from the lake-system of the Pamir must, of necessity, drain into the basin of the Oxus. The Kizil Yart range is crossed by high passes leading on to the true Pamir, and it is exceedingly unlikely that any of the Pamir lakes drain to the eastward into the Kashgar River and its tributaries. A high peak in this range, known by the name of Taghalma, lies at the distance of 63 miles w.s.w. from Yanghissar. This Taghalma peak is the most con-

spicuous of any in the range as seen from the eastward, and its approximate height was estimated by observations to be 21,279 feet above the sea.

The town of Yanghissar was found, by observation of the sun's meridian altitude, to be in latitude $38^{\circ} 52' 3.4''$ N; and by triangulation, and from its distance and bearing from Yarkand, the meridian of $76^{\circ} 18'$ E. has been assigned for its longitude.

The day we reached Kashgar I proceeded to a caravanserai, lying between the fort and old city, and situated on the right bank of the river, and the following morning went to an interview with Mahomed YakooB Beg, the Atalik Ghazee and ruler of Eastern Turkistan. Passing through the north gate into the fort, a body of Tungani soldiers, armed with long lances, were first noticed, drawn up on each side of the way; while a guard of Turki sipahis, in scarlet uniform and high sheepskin caps, were grouped around some few pieces of artillery in position near the main entrance. It was evident that the Kush Begie had ordered an extra gathering of his followers in some sort of review order, with a view to exhibiting a military display. Dismounting at the entrance of a large courtyard, I was conducted by the Yuzbashee across this enclosure to the gate of an inner court, where a Yusawal bashee, dressed in the costume and chain-armour of the Egyptian Mamelukes, came forward to say that, if I would sit down for a few minutes, the Atalik would be prepared to see me. I accordingly waited until he returned and ushered me across the second court, which, with the first, was filled with men all dressed in silk and armed. Nothing could be more picturesque than the gaudy display, showing the outward glitter of Oriental pomp and splendour, in the courts where but lately all the horrors of siege and starvation had been endured by the ill-fated Chinese. Their Moslem conquerors had however, effaced all traces of the tragedy; and if cruel and merciless in their religious fanaticism to their foes, their frank and manly courtesy and warlike bearing, contrasting most strikingly with the degenerate and effeminate Chinese, win the good-will as well as excite the admiration of the stranger. Arrayed in every variety of coloured costume, with bright arms and studded accoutrements, they sat or stood in rows under the verandahs as I passed to my interview with the King. Having reached the entrance of the innermost court, I found it to be quite empty, save a piece of ordnance in position, with muzzle pointed towards the entrance-gate. At the farther end of this court, sitting under the verandah in front of his apartments was the Atalik Ghazee himself; and here, as at Yarkand, no display or decoration appeared in the plain

and unadorned buildings of his palace. As if scorning any costliness but that of military display, everything about him is in keeping with his simple and soldierlike habits. Never so happy as when living the hard life of the soldier in camp, or assisting with his own hands to erect forts on his threatened frontier, it is not too much to predict that, were Asia alone in the hands of its native rulers, he would prove the Zenghis Khan or Tamerlane of his age. But, with more sagacity and foresight than those conquerors, he admits the inevitable contact of the strong European races, and bends himself to the overpowering force of circumstances.

The Yusawal bashee who escorted me retiring, I advanced alone, bowed, and then, shaking hands, sat down opposite to the Atalik. He was dressed very plainly in a fur-lined silk choga, with snow-white turban, and in the total absence of any ornaments or decorations presented a striking contrast to the bedecked and bejewelled rajas of Hindustan. I was at once favourably impressed by his appearance, which did not belie the deeds of a man who in two years has won a kingdom twice the size of Great Britain. He is about forty-five years of age, in stature short and robust, with the strongly-marked features peculiar to the Uzbegs of Andijân. His broad, massive, and deeply-seamed forehead, together with the keen and acute eye of the Asiatic, mark the intelligence and sagacity of the ruler; while the closely-knit brows and firm mouth, with its somewhat thick, sensuous lips, stamp him as a man of indomitable will, who has fought with unflinching courage, and, never sparing his own person, has, in the hour of success, been alike stern and pitiless in his hatred to his foes. Although an adept in dissimulation and deceit, the prevailing expression of his face was one of concern and anxiety, as if oppressed with constant care in maintaining the high position to which he has attained. His manner was, however, most courteous, and even jovial, at times. If report speaks true, his bed can hardly be one of roses, as it is said that the danger from some secret assassin's hand is so great that he never remains for more than one hour in the same apartment during the night. The few presents which I had brought for the Atalik were delivered, and a man was summoned to interpret, who remained standing at some short distance, on the ground below the verandah. The conversation was at first the usual Oriental etiquette; and shortly afterwards the Atalik Ghazee expressed a hope that the English would in future visit his country, as hitherto they had been prevented from entering Central Asia by the Bokhara tragedy, when Colonel Stoddart and Captain Conolly were murdered by the Ameer of Bokhara in 1842. He then pro-

ceeded to say that another European—meaning Schlagintweit—had also been killed in this very place, Kashgar, by a robber named Nullee Khan, who, relying on his spiritual influence as one of the seven Khojas, overran the northern provinces of Eastern Turkistan with a wild rabble of unscrupulous followers in 1857 and 1858, executing and murdering the most innocent people for the mere sake of shedding blood. The Atalik, however, never mentioned that he had himself involuntarily avenged the murder of Schlagintweit; and this he might have averred, for he cut Nullee Khan's throat two years ago. After a short conversation, I took leave, and was conducted to the house of the Yusawal bashee, in which quarters were assigned to me during my stay in Kashgar. It is almost needless to say that the same strict *surveillance* was exercised here as at Yarkand, and I was not permitted to go about. This was more especially the case when staying in the larger towns; but when on the march, and moving from place to place, the *surveillance* of the escort somewhat relaxed, and greater liberty was enjoyed. I remained in Kashgar for upwards of a month—from the 5th March to the 13th April—and during this time took observations as opportunity offered. The resulting position obtained for the fort was in latitude $39^{\circ} 19' 37''$ N.: and by its distance and bearing from Yarkand it was found to be in longitude $76^{\circ} 20'$ E.; while the elevation of 4165 feet above sea-level was determined from observation of the boiling-point of water. The position of the city of Kashgar, lying directly north from the fort across the river, was estimated to be in latitude $39^{\circ} 23' 9''$ N., and in the same meridian of $76^{\circ} 10'$ E.

I left Kashgar, on the return journey, as the sun rose on the morning of the 13th April. It was one of those perfectly clear days so characteristic of the climate of Eastern Turkistan; and, in the grand display of the mountain masses around, offered an ample compensation for the long detention and delay which had been experienced.

Lying north, immediately beyond the Kashgar River, appears a low undulating ridge of ground, from which the transverse slopes run down very evenly and gently into the level plain beyond the river. Beyond this, again, an irregular rocky range occurs, presenting a steep face to the south, an opening in which admits the exit of a stream flowing with a south-easterly course to its junction with the Kashgar River. A road conducts up the valley to the village of Tajend, beyond which is situated the fort of Aksai, commanding the route debouching across the Snowy Range to the north by the pass of Tailáh. To the north-east, in the far distance, appear the slopes

of the Artush Range, branching from the great Thian Shan chain of Central Asia, while, conterminous with the horizon to the north, this Snowy Range stretches with an even crest at nearly 70 miles' distance from Kashgar. The direction of the range is from w.s.w. to e.n.e., while the spurs slope evenly, and with a regular alternation, to the south and east. The Artush Valley is seen throughout a considerable portion of its length to where it deflects to the northward.

The stream rising in the pass at its head has at first a course to the south-east and then to the southward, and again flowing eastward after leaving the lower hills, forms one of the tributaries of the Kashgar River. But very few peaks in the Snowy Range appear to attain to a greater height than 18,000 to 19,000 feet above the level of the sea; and the crest of the chain, as before mentioned, presents no alternate lofty summits and deep depressions so remarkable in the chains of the Kuen Luen and Karakoram. The appearance of the range, as seen from the southward, is somewhat desolate, since no forests occur to break the interminable view of the bare slopes of the mountains with their snow-crowned summits. Although forests are found on the northern slopes in the basin of the range, yet no trees are visible from the south, or, at any rate, no timber of sufficient height to be seen at the distance of Kashgar. It is not known with any degree of certainty to what altitude the passes across the range attain; but if the mean elevation of 15,800 feet is assigned to them, this measurement is, in all probability, sufficiently accurate for an approximate calculation.

Looking west and south from this point of observation is seen the whole Kizil Yart Range, forming the eastern crest of the Pamir, surmounted by snow-capped peaks and glaciers. It would be impossible for any scene in nature to surpass the vast grandeur of these mountains, as seen towering up like a gigantic wall with the well-defined outline of their lofty summits cutting the clear azure of the sky. The lines of Pope at once occur to the observer with striking appropriateness:—

“Eternal snows the growing mass supply,
Till the bright mountains prop the incumbent sky,
As Atlas fixed each hoary pile appears
The gather'd winter of a thousand years.”

It was a scene that could not fail to be indelibly impressed upon the memory; and the more so from the circumstances under which it was beheld. The Russians, our friendly rivals in the noble science of geography, had already reached to the crest of the range now in sight to the north; and here, in the very heart of Central

Asia, it was gratifying to know that at length, through the medium of British enterprise, had been determined the much-veiled question of the position of Kashgar.

From here again was noticed the very abrupt and rugged declivities of the lofty Pamir Range, which, trending northward to its junction with the Artush, was visible at the head of the open valley, through which flows the Kashgar River. The point of junction of the two chains could not be seen at such a distance, but some lofty isolated peaks were discernible towards the Terek Pass as the rays of the morning sun lit up their sunny crests.

The thermometer at Yarkand rose from a temperature of 23° Fahr., at noon, in the commencement of January, to 71° and 72° Fahr., at the end of May. As the mercury probably indicates a temperature of 82° or 85° during the months of July and August, which is undoubtedly the hottest time of the year, Eastern Turkistan thus experiences alternate periods of great heat and excessive cold. And as in countries where ranges of mountains intercept the course of the prevalent winds, being enclosed on the north, west, and south by lofty chains of mountains, a peculiarly dry climate is here met with.

We remained another month in Yarkand, since all the passes on the southern frontier were reported by the Kirghiz to be impracticable up to the end of May. The welcome news at length arriving that the Sanju Pass was practicable for laden yaks, we bid farewell to the Dad Khwáh, the courteous and hospitable Governor of Yarkand, and started on the return journey to Ladak on the 30th May.

A cursory glance at the map suffices to show that the most direct route from the North-West Provinces of India to Yarkand must, after reaching Chang Chenmo, cross the main chains of the Karakoram and Kuen Luen, and the intervening high land of Aktágh, in a general direction bearing N.N.W. I have endeavoured to show that the true road into Eastern Turkistan from Aktágh is down the valley of the Yarkand River and across the Kuen Luen Range by the Yangi Pass, and it remains to point out the most direct route by which Aktágh can be reached from Chang Chenmo. This is the route we followed on our return; and from the Chang Lang Pass, leading across the Karakoram Range, traverses the western side of the Lingzi Thun Plains, and entering the upper valley of the Karakash River, conducts down that valley and across the Karatágh Pass to Aktágh.

This would certainly be the direct road for a caravan to follow coming from Upper India, and wishing to avoid Kashmir

and Ladak; and, having traversed it myself, I can vouch for its excellency and perfect practicability for laden horses and camels. Indeed, the natural advantages of this line are so great, that, from Chang Chenmo to Koolunooldee, in the valley of the Yarkand River, a distance of 240 miles, a little labour expended on the construction of a road up the Chang Chenmo Valley would render it practicable for two-wheeled carts and conveyances. There are, too, the immense advantages of grass and fuel obtainable all down the upper valley of the Karakash, so that this line not only avoids the difficult passes of Sasser and Kardong, on the Ladak side of the Karakoram, as well as the Karakoram Pass, but possesses the great desideratum of affording grass and fuel on that portion of the route where it is most essential.

It is desirable to draw especial attention to this line of communication, since what is capable of being converted into an easy trade-route may be made equally available for military purposes.

The memoir will be published entire in the 'Journal,' vol. xl., with the author's map.

The PRESIDENT spoke as follows:—"This is a communication of the very highest order of merit. The author, under the greatest difficulties in the wildest and most inaccessible of countries, inhabited by Mussulmen, many of whom would have put him to death had they detected him making astronomical observations—had succeeded in admirably unravelling the natural features of a region hitherto most imperfectly known, and has fixed the latitude and longitude of places never before geographically surveyed, and never before visited by an Englishman.

"Who, for example when our medallist Dr. Thomson first traversed the Karakoram chain in 1848, or subsequently (between the years from 1854 to 1858, when the brothers Schlagintweit traversed that same chain (one of them, the adventurous and unfortunate Adolphe, having even reached Kashgar), who, I say, could then have thought that the day would soon arrive when these savage territories, extending northward from the frontiers of Kashmir, would be so thoroughly explored and surveyed as they have now been by Mr. George Hayward, who has determined their true topography by numerous astronomical observations. We must indeed admire the courage and great ability displayed by Mr. Hayward in having thus so successfully carried out (certainly beyond my anticipations) the mission which we had entrusted to him; and I confidently believe that if his life be spared, he will terminate his researches by a thorough delineation of the geography of the wild Pamir Steppe, in which the rivers Oxus and Jaxartes take their rise in that lofty plateau which was explored by our honoured medallist Lieutenant Wood, I.N., in the year 1839, when he performed, for the first time in modern history, a pilgrimage into these wild countries of the Kirghis, and visited the sources of the Oxus. But if Mr. Hayward should add no more to our knowledge than that which he has given to us in this one communication, he has already entitled himself to receive the highest honour we can bestow upon him. We now see that his scientific observations are enhanced by most exquisite artistic sketches, which are now brought before us in various coloured landscapes, re-

presenting these grand and hitherto inaccessible regions. And we also feel that his pen is that of a ready and attractive writer.

"There are many collateral circumstances which invest Mr. Hayward's memoir with surpassing interest; for, now that we have before us his graphic pictures of this large portion of Eastern Turkistan, we know that these also are the very tracts which recently have been opened out to commercial enterprise by our associates Mr. Douglas Forsyth and Mr. Shaw, who have indeed done good international service in bringing about the most friendly relations between the powerful ruler of Eastern Turkistan, the Ataligh Ghazee, and our countrymen in British India. Nay more, I happen to know (and I relate the fact with great satisfaction) that our rivals in the extension of geographical knowledge, the Russians, who have recently done more than all other people in delineating the true geographical features of Central Asia, view this opening out of Eastern Turkistan to our commerce with no jealous eye; but, on the contrary, are quite content that we as well as themselves should trade with this new native power, which has consolidated itself since the Chinese have completely abandoned it. Nay more, I know from Mr. Douglas Forsyth, that the Russian authorities, including even his Imperial Majesty and his minister, Prince Gortschakof, have assured him in a recent journey to St. Petersburg, that so long as the Ataligh Ghazee (Yakoob Kooshbegi) confines his rule to the country lying between the Thian Shan and the British territories or Tibet, they will not interfere with this Eastern Turkistan, which is now entirely independent of China. Thus, we may hope that these vast intermediate tracts may prove to be a prolific source of commerce both to the Russians, who have long traded with them, and to ourselves, and be the means of bringing about again the most friendly relations with our old allies.

"But passing from this important international consideration, to which, as most of those present know, I adverted in several of my anniversary addresses, I must say that, in a purely geographical sense, the researches of Mr. Hayward and their results have given me the sincerest gratification, inasmuch as they have to a great extent sustained the broad views of the late Alexander von Humboldt. In the 'Asie Centrale,' of that illustrious geographer, his sagacity and learning brought out in 1843 a general sketch-map of all Central Asia. And in it we see that those great salient features by which the Kuen Luen Mountains are laid down as a distinct chain, separated from the Himalayan and Karakoram chains on the south as from the Thian Shan on the north; whilst, in their western prolongation, these chains are traversed by the Bolor, of which the high Pamir plateau forms the eastern edge.

"In mentioning this happy confirmation of the original views of my illustrious and lamented friend by the actual researches of Mr. Hayward, I beg to remind the Society that M. Pierre de Tchihatchef is now preparing a new edition of the 'Central Asia' of the illustrious Prussian geographer, in which he will sketch, with his well-known perspicuity, all the highly important additions which have been made by the Russians in their advance over Western Turkistan, which, whether in their occupation or under their influence, promises to become a fruitful source of industry and commerce as soon as order is introduced into countries which have for many ages been a scene of turbulence and warfare."

Sir H. RAWLINSON said Mr. Hayward's travels afforded another proof that geographical discovery was not a mere dilettante amusement, but was intimately connected with the public interest. Since the expulsion of the Chinese from Kashgar and Yarkand commercial intercourse between Turkistan and India had been suspended, except a small traffic carried on by Kashmires. This infrequency of communication, and the tendency to exaggerate remote dangers, had created mysterious rumours in India with regard to Russian designs beyond the Himalaya. The explorations of Mr. Hayward

and Mr. Shaw had restored commercial confidence, and shown that the Russians were still a thousand miles from Kashmir, and had no intention of making any forward movement. All the country, from the Punjab frontier to the confines of Eastern Turkistan, was dependent upon the Maharajah of Kashmir, the ally of the British Government. From the outlying villages beyond Leh to the frontier of Turkistan, a distance of about 400 miles, there was not a single house, hut, village, or other inhabited place—the country was a howling desert; and it was over this region that Mr. Hayward had passed. The Himalaya branched off into two main ridges extending north-west and south-east; the southern of these ridges was called the Karakoram Range, and the northern the Kuen Luen. Notwithstanding what had been said about the facility with which a Russian force might cross to India by the Chang Chenmo Pass, the fact was that beyond that pass lay the more formidable obstacle of the Kuen Luen chain. Until recently it was believed that there was only one pass over that lofty range, and that that was impracticable to laden cattle; but the great point of Mr. Hayward's discoveries was that he had found another pass—the Yangi Pass—which was much easier than the Sanju Pass. Still, owing to the attacks of the Nagayr robbers, the easier pass was not much used, but the establishment of a fort there would open up a really good commercial route. Baron Humboldt had always maintained that there were two great chains running through this part of Asia, and that where they approached each other they were connected by a transverse chain. Mr. Hayward had fully established the truth of that view, and had also shown that the rivers rising to the west of the transverse chain flowed towards the Oxus, while all those rising to the east flowed towards the centre of the Chinese empire. From 1759, till about six or seven years ago, the country through which Mr. Hayward had passed belonged to China, but, owing to the disruption of the Chinese empire, the Tunganis rose in rebellion and took possession of Yarkand. These Tunganis, themselves a foreign race, had since been driven out by the people of Kokan, under the Ataligh Ghazee, who now held sway. The opportunities which the visit of Mr. Hayward and Mr. Shaw to Yarkand had given of establishing commercial relations between India and Turkistan had not been overlooked by Lord Mayo, who had directed the Governor of the Punjab to enter into arrangements with the Maharajah of Kashmir for surveying the routes and opening them to traffic.

Mr. WYLIE observed that, whereas he had formerly felt bound to look askance at Mr. Hayward's and Mr. Shaw's expeditions as involving a certainty of great perils out of all proportion to the possible profit, he now felt that arrears of credit were due from him towards those enterprising gentlemen. Their safe return had practically disposed of his misgivings. He congratulated them most cordially on their grand success.

In reply to a question from Mr. George Campbell,

Sir H. RAWLINSON said that, though Mr. Hayward had not actually ascended the Yangi Pass, he had seen it and conversed with those who had done so with laden mules.

Dr. LEITNER explained the use of several articles of Yarkandi manufacture, and the meeting was adjourned to the 10th January, 1870.
