

Mr. Markham then read the following Paper :—

Report of the Mirza's Exploration of the Route from Caubul to Kashgar.

Drawn up from his original Journals, &c., by MAJOR T. G. MONTGOMERIE, R.E.

[EXTRACTS.]

THE explorer, designated in the report as the Mirza, was directed to carry on an exploration in Central Asia. After several unsuccessful attempts and many delays, he finally started for Badukshán on the 10th of October, 1868. He crossed the Hindoo-Koosh range by the Hajiguk, 12,000 feet above the sea, and passed on to Bamian and Khulm. From Khulm he proceeded to Rostak, and thence to Faizabad. Faizabad is the capital of Badukshán; it runs for about a mile along the right bank of the Kokcha River, and is nowhere more than half a mile in breadth; it has no walls, and its inhabitants are chiefly Tájaks and Turks, but they have not Tartar features. Here the Kokcha River has a rocky bed and a deep rapid stream. It has three sources, the 1st from the Hindoo-Koosh mountains above Zebak; 2nd, from the Jerm Valley; and, 3rd, from the small lake of Bazghiran. The combined stream falls into the River Oxus (the Amoo Darya) about 35 miles west of Rostak, at a place called Dast Tārā Tuppa. The trade in slaves is still very great in and around Faizabad, the serais and houses being full of slave girls, who have mostly been procured from Chitrál; horses and goods are given in exchange for them.

The inhabitants are skilful in smelting iron, and they send a number of cast-iron pots, pans, ornamented lamps, &c., to the market.

The Mirza stayed at Faizabad a short time in order to take his observations, and at the same time to change his ponies, arrange as to guides, &c. His men were very unwilling to assist, the stories they heard as to the Khirghiz robbers and the cold of the Pamir Steppe making them very averse to a further advance. The Mirza however, persisted. He applied to the Meer or ruler of Badukshán for permission to go by Koláb; but he refused to give it, as the road, though the snow had melted, was still very unsafe. The Meer, however, said he thought the Mirza might now be able to go by the Pamir Steppe, and if he wished to do so would recommend him to the protection of the Governors of Punja and Sirikul whilst in their territory. Hearing that the Khirghiz hordes had probably withdrawn from the Pamir Steppe, the Mirza determined to accept the offer.

The present Meer of Badukshán, Shandar Shah, is about forty years of age; he has decidedly Tartar features, with small eyes and a scanty beard. He is given to drinking, and allows his petty officials to do very much as they like: he is consequently unpopular.

The Mirza found that, although he had the Meer's permission, his difficulties as to starting were by no means at an end. Throughout his journey various individuals had pretended to be acquainted with him, to know what he was going to do, &c.; and at Faizabad he had to quiet one man who threatened to denounce him as an infidel (Kafir) that was spying out the country for the Feringees, &c.

After a great deal of delay and anxiety the Mirza succeeded in starting on the 24th of December, 1868, and followed the right bank of the Kokcha River. The road was very bad and mostly unfit for riding, but the country round about was very well cultivated and evidently fertile. After five marches they reached the small village of Zebak, from whence there is a road to Chitrál. This route is said to be dangerous on account of the inroads of Siyaposh Kafirs; but still a considerable traffic is carried on by this route between Badukshán and Chitrál. The Mirza heard a great many stories about the Siyaposh and other Kafir tribes, agreeing generally with the former accounts given of these strange people, who have succeeded in maintaining their independence in spite of their warlike neighbours in Afghanistan, &c. Though the children of the Siyaposh Kafirs are in great demand as slaves, and many are carried off by force, whilst others are sold voluntarily, still the number of these people does not seem to have diminished, and it must be concluded that the percentage carried off is not very great. At Zebak the Mirza parted with his guides, as he found they were constantly trying to frighten his men with stories as to the dangers and difficulties of the road. Abdul Wahab, whom he had made Kafilá Bashi, said he could get on quite well with his own men, and the Mirza left Zebak on the 1st of January, 1869.

After crossing a pass, and subsequently a river coming from the Chitrál direction, he reached Aishkasim Fort on the Punja or Upper Oxus River. Aishkasim may be considered to be the beginning of the Wakhán (or Wakáh) Valley. The country round about is very fertile, and crowded with villages.

From Aishkasim to Punja the road was but a badly defined path, running up and down the intervening ridges—a route difficult in every way. Several villages were, however, met with, and the party got over it without much difficulty, though suffering a good deal from the cold. The Upper Oxus River was frozen so hard that it could be crossed at any point. The river is said to be in this state

from December to March, and during the rest of the year it is dangerous to ford. This latter circumstance is undoubtedly one of the main reasons on account of which the winter is often chosen by merchants for crossing from Badukahán to Kashgar, and *vice versa*; the other cause, and possibly a more potent one, being that the snow and cold induce the Khirghiz hordes to remove their cattle and sheep to lower ground, and there is consequently less chance of a Kafila being plundered.

Having completed his preparations, the Mirza left Punja on the 8th of January, 1869, and marched on to Patoor, the last village of the Sarhad Wákhán or Wákhā Valley. At Patoor it is necessary to purchase supplies for the onward route, not a thing being procurable for the next eight marches, whether the Kashgar or the Kokan route is taken; any neglect as to a proper supply of provisions is likely to be fatal. The road to Patoor was a bad one, running through a very narrow defile crossing the frozen Oxus several times during each day's march. In summer this route is said to be impassable. As far as Patoor, for 42 miles from Punja, the country, though not very fertile as to crops, is well peopled, and there is no difficulty about good halting-places near villages. The extreme cold was the only hardship.

The Sarhad Wákhán Valley is bounded on the north and south by high ranges of hills, and up as far as Patoor the lower slopes were still covered with flocks and herds.

Ten miles beyond Patoor, near Lungur, the high hills gradually close in and soon leave but a very narrow gap for the passage of the river; farther on, the high northern hills merge into the comparatively low hills or knolls of the Pamir Steppe. The wealth of the Wákhán Valley mostly lies in live stock in sheep, cows, goats, ponies, and yaks: the wool from these animals is worked up partly for domestic use, but mostly for export, being exchanged for other goods. The people all wear thick woollen chogas and trousers, the cold being intense. Their houses are built of stone and mud with a flat roof. Each house has a large stove, or oven as the Mirza calls it, in one corner, in order to keep it warm, and this it does thoroughly. The houses are generally built touching one another.

The inhabitants of Wákhán are generally Shiá Mohamedans, looking to Agar Khan of Bombay as their spiritual guide. They are said to pay him annually one-tenth of their income. The Mirza says that they complain very much of their own chief's oppression.

On arrival at Patoor the Mirza's first care was to make sure of the services of the new guide, Peer Ali, who had been ordered by the Meer to take him across the Pamir Steppe: this he succeeded

in doing by making the man a present of a good warm choga, and by giving his small son a handsome present in money. The Mirza then proceeded to lay in provisions to carry his party over the Pamir Steppe. Nothing in the shape of butter (ghee) could be got, so he bargained for and bought some fat sheep of the doomba or large-tailed kind; these he had killed, and the carcasses were carried on the ponies just as they were, to be expended as required, the extreme cold being sufficient to prevent all anxiety as to the meat keeping. Some flour and a few smaller things were added; a supply of dried fruits and sugar-candy, &c., had been laid in whilst in Badukshán. Everything being ready, the party resumed its journey: starting during a heavy snow-storm, they trudged along up the Wákhán Valley. The wind was so piercing, even after the snow stopped, that the men had frequently to get on the lee side of their horses, so as to keep it off a little. For the first three marches the path ran between a number of villages; the lower part of the river-banks being covered with a dense growth of stunted willows, as the Mirza calls them—most probably the *Myricaria*. At the fourth halting-place a road strikes off to Chitrál by Mustúch (or Mustuj).

Mustúch is said to be a valley draining into the Chitrál or Koonur River; the road to it from Wákhán is said to run for the most part through well-peopled mountains. The route is a short one, being about 15 marches to Chitrál, and, though much snow falls on the pass, the traffic along the route is considerable. Mustúch lies to the south of Wákhán; it is nominally independent, but its chief has to send an annual tribute of slaves to Badukshán—a fact which shows that the communication between the two countries is tolerably good. At this same halting-place a more direct road leads over the mountains to Lungur by what is called the Marpech, or zigzag road.

The Mirza avoided the Marpech road, as it was pronounced to be very difficult and dangerous during the winter, though it is used in the summer when the road along the river is impassable owing to the floods. The Mirza pushed farther on up the branch of the Oxus, for 4 miles; the path was either on the frozen river or on its bank, passing through a very narrow ravine walled in on either side by stupendous and all but inaccessible mountains. These mountains were very imposing, being clad with snow almost down to the river, and leaving hardly 10 yards of level ground on either side.

The real difficulties of marching across the Pamir Steppe may be said to commence on the fourth day beyond Punja; the marches are long, and there is no shelter of any kind to be got except the

dry stone walls, which previous travellers have run up in order to keep off the piercing wind. On the sixth evening the party arrived at the halting-place called Lungur, from whence a road strikes off to the Kunjüt or Hunza territory, which lies to the south-east. Lungur is considered to be the beginning of the Pamir Steppe; the halting-place has the usual dry stone walls, but they, unfortunately, had been taken possession of by the camp of an agent or vakeel of Shandar Shah's, who was going on some business to Kunjüt. Seeing that the only shelter available was occupied, the Mirza only stopped a few hours at Lungur, to collect fuel for the forward march. Having laden their ponies heavily, they started on again, but were not able to make much progress before evening; they halted near an isolated rock, which afforded a little shelter from the wind. The whole party suffered a good deal from "Dum," as the Mirza calls it—*i. e.*, shortness of breath, &c.—the usual effect at great altitudes. The natives generally consider this to be caused by a noxious wind. Some of the men became nearly insensible, but soon got over it when they had eaten a little dried fruit and sugar, which the Mirza served out as soon as he saw the state of affairs. The night spent at this sixth halting-place was a miserable one, owing to a fall of snow, and in the morning the men literally rose out of a bed of snow. The great cold had made both the men and ponies very sluggish, and the horses were several times affected by shortness of breath; the Wākhanis, however, soon relieved them by bleeding at the nose. The next march brought the party to the ruins of what had formerly been Khirghiz huts, which had been abandoned in consequence of incursions made by Kunjüti robbers. From this point there is a good road to Gilgit and Kunjüt. The night at this halting-place was, if anything, more trying than the last. The next morning they started early, and, relying on Abdul Wahab's two young men, they trudged along for 9 miles, and were then suddenly brought to a standstill, owing to their having lost the track, which had been obliterated by the fresh snow.

The mountains from Lungur had sloped off into rounded hillocks, and generally became so open that the travellers were not at all certain as to the route they ought to take. The party now found themselves in an open valley some 4 or 5 miles wide. In it the Mirza made out a small frozen lake, which he estimated to be about 2 or 3 miles in length; but owing to the snow it was, of course, difficult to decide exactly as to where the lake ceased and the land began. A frozen stream issued from the western end, being, in fact, one of the sources of the Punja branch of the Oxus.

The small valley was bounded on the north and south by craggy hills, rising up suddenly from the level ground. These hills are the summer haunts of both the Kirghiz and the Kunjüti robbers, who have temporary huts concealed in various places. It was a great trial to the party to be in doubt about their road in such weather and such a desolate place ; the men scattered to search for the track, but the fresh snow made it a difficult task. The men's boots, made of thin, spongy leather, had sucked up the moisture and then had frozen, thus making all walking about very trying.

The men had to lie down in the snow, passing another wretched night. The party marched on again the next morning as soon as they could see. For about 3 miles the track appeared to run along a frozen stream that issued from the east side of the lake, and to flow in an easterly direction. Owing to the snow, the Mirza is not quite certain of this, though positive that there was, at any rate, no perceptible rise to the east of the lake. Daylight enabling the Mirza to look about him, he saw that he had at last reached the crest of the Pamir table-land, or, at any rate, of that portion called Pamir Khurd (Little), which is the name of this part of Pamir. The guides said the name of the lake was Pamir-Kul, sometimes called Barküt Yassin, after the halting-place near the lake. The mountains close at hand were comparatively not very high, but further to the north higher peaks were visible, as also to the south in the direction of Yassin and Kunjüt ; but the path itself passed out between endless hillocks, and at times there was literally nothing to guide the eye as to which line to take.

The Mirza was now on the backbone or watershed of Asia, the streams to the west flowing into the Sea of Aral, and those to the east into the Yarkund River, and finally into that remarkable depression in the centre of Asia called Gobi, or Lob Nor. He was now at an elevation of about 13,300 feet above the sea. The scene, according to his account, was the most desolate that he ever saw—not a sign of man, beast, or bird, the whole country being covered with a mantle of snow. Though the Mirza and his men were all well supplied with warm clothing—their bodies being encased in woollen ohogas and sheepskin posteens or coats, their heads in fur caps, and their feet in two pairs of long woollen stockings, and their boots filled with wool—they nevertheless felt the cold very much. The Mirza, indeed, says that the intensity of the cold was extreme whenever the wind blew, and that they then felt as if they were going to lose their extremities ; the glare from the snow was very trying to the eyes, all suffering from snow-blindness ; their breath froze on their moustaches ; and every one, moreover,

had to walk in order to keep some warmth in the body. The ponies were in a wretched state; for the last few days the poor beasts had to go without water, and to quench their thirst by licking the snow. After a most toilsome march of about 20 miles, the Kafilā Bashi chose a halting-place near a frozen pool, hoping to get water out of it both for the men and the ponies; but when a hole was broken in the ice the ponies could not be induced to drink at it, and they had to take to the snow again. Soon after they halted a furious storm of wind set in, and prevented the party from lighting their usual fire, and they could not even make their tea or cook their food, and consequently spent another very wretched night.

The next morning the party followed the Kafilā Bashi down the stream, which was now of some size and clearly flowing eastward into Turkestan; they then ascended to the crest of a low spur, from which they had a good view over the great expanse of the Pamir Steppe, which appeared to be a sea of low rounded hills one behind the other, but nowhere rising to any great height above the more level ground. Descending from this commanding point, called Aktāsh, or White Stone, they encamped near the stream. This last march had been a great improvement on the former one; the snow had retired further and further from the track, and they saw signs of animal life in the shape of a herd of some kind of deer which crossed the path: these deer and other game are said to be very numerous in summer. The next day the party again followed down the stream, which was now hemmed in by cliffs on either side; they encamped in a low willow (*Myricaria*) jungle, and were able to get both wood and grass, and to make themselves and their ponies tolerably comfortable again. The next day, after marching 3 miles, they caught sight of the fertile valley of Sirikul, and, pushing on, were soon under the walls of the Tashkurgān Fort, having spent twelve miserable days between it and Punja.

The party pulled up near a deserted house. They had hardly settled themselves when a number of the Atalik Ghazi's Kirghiz soldiers came and joined them, with a view to find out who the Mirza was; when told that he was a merchant going to Kashgar, they evidently did not believe the story, and soon afterwards went away.

Late in the evening the Mirza was summoned by the Governor of Sirikul, and he accordingly went with the Kafilā Bashi to the fort. He found the ramparts and bastions all in ruins, and, after tumbling about in a rugged narrow passage, he was ushered into a very small dark room. Here he had to wait for some time, in no

little apprehension as to what was to be the result of this visit. At last the Governor came in with lights, and the Mirza found himself in the presence of a hale man of about sixty. After the usual compliments, and the discussion of tea with very hard wheat-flour cakes, the Governor proceeded to ask a few questions; and, having heard the Mirza's story, he said he would like to have all the Mirza's khurjins, or packages of merchandise, opened in his presence, so that he might see what the nature of his goods was. The Mirza was greatly alarmed at this request, lest his concealed instruments should be found in the search. He had fortunately brought some presents with him to the fort, and he at once proceeded to offer them to the Governor, saying that they were specimens of his goods for his acceptance, and that he hoped he would not have the whole of his packages opened out, as he wished to dispose of their contents in Kashgar, where he was taking some things for his friend Nubbi Buksh, a jemadar in the Atalik's service. The presents, and the fact that Nubbi Buksh was in great favour with the Atalik for his military services, made the Governor decide to forego a search. After consideration, the Governor, who is a brother of the Atalik, said he would allow the Mirza to go on to Kashgar, under the escort of a Kirghiz chief called Abdul Rahman; but, in spite of all remonstrances, he would not allow the Mirza to go by himself, still having suspicion of his real business. With this order as to escort, and the return present of a poor choga, the Governor dismissed the Mirza, who went back to his quarters in great anxiety.

Sirikul is a valley bounded on the north by the Chickhik-Dawan mountains, on the east by the rugged chain called Kāndār, on the south and west by the last spurs of the Pamir mountains. The level ground runs from east to west for 30 or 40 miles, with a breadth of 12 to 18 miles. In the centre stands the old fort of Tashkurgān,—a celebrated place, now in ruins, said to have been built by Afrasiab, the conqueror of Persia, as a safe place to deposit his treasure, which is still supposed to be buried within the limits of the fort. The fort formed an oblong, about one mile in length by a quarter of a mile in breadth; the towers and ramparts, of rough stone, were all in a ruined state, and the houses inside were mostly unroofed. Tashkurgān commands the roads from Badukshan and Chitral to Kokhān, Yarkund, and Kashgar, and is still considered a place of importance, the more especially as it gives a control over one of the chief outlets used by the robber hordes of Kunjūt when they issue from their narrow glens.

The valley is watered by the Sirikul River, the main branch of

which is said to come from the direction of the Karakul Lake, or from the lake itself. It is joined by the stream on which Taskurgān stands, about 5 miles to the north of the fort and some 30 miles farther down by the Kunjūt River, at a place called Charsuton, and a little further on by the river which drains the northern face of the Karakorum Mountains, the combined stream forming the great Yarkund River.

Sirikul, when the Mirza entered it, had been deserted by the greater part of its native population. The hereditary ruler of the country, Alif Beg, whom the Mirza met near Punja flying to Badukshan, had left as the Atalik Ghazi's troops began to take possession. The Atalik Ghazi had directed all who were attached to Alif Beg's rule to be removed to Kashgar and Yarkund, and this included nearly every inhabitant; their place has been supplied by Kirghiz, who seemed to like the change. The former inhabitants were of the Tāj race,—a tall, strong-built set, with good features and fair complexions.

The valley is elevated, Tashkurgān being 11,000 feet above the sea. It produces wheat, Indian corn, &c., which are said to grow well. The whole valley is studded with small square forts, now held by the people of the Atalik Ghazi. The whole valley is well irrigated from its own rivers.

On the 27th January, 1869, the Mirza resumed his march towards Kashgar. At 5 miles from Tashkurgān the path crossed the main branch of the Sirikul River, flowing from the west; though 50 paces wide, the stream was frozen hard. Up-stream, the flat part of the valley appeared to be very narrow; while to the east it was broad and open, evidently very fertile, and extending for a long way down the stream.

After crossing the main stream on the ice, the party followed its bank for about 5 miles more, the road running through swampy ground. Five miles farther on they passed a deserted Kirghiz village, the houses of which all had dome-shaped roofs; near this place the Kirghiz chief Abdul Rahman had taken shelter in the tent of one of his horde. The tent was of the usual Kirghiz kind, called "kappa," made with a portable wooden frame, covered with felts,—a comfortable enough protection in the winter, but not well adapted for resisting rain, which it lets in at every angle.

Abdul Rahman was of pure Kirghiz breed, a square strong built man with a round head, and small blue eyes, without eyebrows, broad flat nostrils and a little stunted hair for a moustache above a bare projecting chin; fortunately he was good natured and anxious to be as kind to the Mirza as he could: he was the chief of a large

horde, and said to be able to muster about 3000 armed horsemen. He and his horde owned great numbers of sheep, goats, yaks, horses, and double-humped camels, which are grazed in different places, according to the season, going wherever the grass is best. The Kirghiz men and women both wear loose wollen chogas and trowsers, with high thin leather boots. The men are ugly, the women somewhat better looking. They are Mahomedans, but not rigid observers of that religion. Snow fell all night, but the tent was so comfortable that the Mirza did not wake till the call for morning prayer was given: he then found the Kirghiz men all sitting round the fire, sipping gruel made with flour; they offered him a share, but he was not hungry enough to try it. The chief rode on ahead, and left a man to guide the Mirza.

As soon as the chief had collected his tribute the party marched on again, the road and country being very much as on the previous day. At the seventh mile the stream which they had followed from the Chickik-Dawan diverged to the south to join the Yarkund river. The road turning to the north led up by a steep slope, then across tolerably level ground, and, descending again, passed a domed house in ruins, called Chahilston, supposed to be on the boundary between Sirikul and Yarkund. Farther on there was a still steeper ascent to a ridge covered with huge masses of rock, then another descent, which finally, after trudging for 23 miles, brought them in sight of a beautiful valley called "Keen," or the Bride, from its general fertility, being a wonderful contrast to the desolate barren tract the party had just traversed. The sight of this valley, with its easy slopes and stream of flowing water, quite put the Mirza and his men into good spirits, and they looked forward to their chances at Kashgar with less gloomy forebodings than they did whilst in a half-frozen state. The country looked altogether more civilized, and the Kirghiz families passed were generally busy spinning wool or weaving.

After leaving this valley the road turned to the north-east over a stony pass, enclosed by great cliffs, then down the ravine coming from the valley, crossing and recrossing the stream repeatedly until the men and horses were fairly tired out, their limbs being stiff with the cold and hard exercise they had been undergoing.

At 28 miles from Keen, or 98 miles from Sirikul, the party got clear of the rugged country, and, turning more to the east, came upon a fort called Karawal at the entrance of the Chichik-Dawan valley. This was a strong place, completely commanding the road, the ramparts being built on the edge of the cliffs in such a way as to appear inaccessible on all sides except by the eastern and

western gates. The fort appeared to be about a mile in circumference, including a number of deserted houses, only a few being occupied by about 200 of the Atalik's troops, who seemed to be badly supplied, and had the credit of plundering every one that was without a pass from the Atalik or his officials.

Soon after passing Karāwul the hills receded to the west and south, opening out a distant view of the Kashgar and Yarkund territory. The Mirza, following the stream for a time, found himself in a fertile country, all but flat, covered with villages and forts each embedded in large orchards of fruit-trees. Finally he crossed over the Yangi-Hissar River on the ice near the junction of the stream which their road had led them along; the river was about 100 paces in width, and in the summer can only be crossed by the bridge.

Late in the evening the party entered the town of Yangi-Hissar. The Mirza was taken to a house and at once presented with a muslin turban and a pair of boots: when he objected to receive them, the chief said it was the custom of the country, being a mark of hospitality.

The next day (the 3rd February), after passing over two moderate-sized streams, the Mirza, at 13 miles, crossed the great Turwaruk River, with a bed 150 paces in width, by means of a wooden bridge; entering the Yangi-Shahr, or new town of Kashgar, 3 miles beyond the bridge, being 5 miles short of the old town of Kashgar. Between Yangi-Hissar and Kashgar the country was studded with villages, and every piece of available land was carefully cultivated. Shops were met with on the road every now and then, where travellers could buy refreshments in the shape of ready made bread, boiled fowls, hot tea, sherbet, and sour milk, which were always ready at the smallest shops. Every thing was very cheap. Along the road, at intervals of about $4\frac{1}{2}$ miles, the length of one tash (tash meaning a stone) a board was fastened to a pole to indicate the distance from Kashgar to Yarkund. Orchards of fruit-trees, and groves of mulberries, occupied a large portion of the land, which is generally level, the hills in the distance making but little show, except near Yangi-Hissar, where high mountains were visible to the west and south-west, while to the east nothing in the shape of a hill was visible.

The Jemadar soon afterwards rode off to report to the Atalik Ghazi, and before long returned to inquire whether the Mirza had any letter, and the usual presents for the Atalik with him. The Mirza said he had nothing of the kind, and that he was not a vakil, &c., but all in vain: the Jemadar said he must show his baggage,

and forthwith had everything opened out. Having appropriated whatever he fancied, he directed the Mirza to take up his abode in a neighbouring house in the same fort which afforded but miserable quarters, already partly occupied by some Afghans, who had been directed to watch the Mirza closely: there the Mirza passed the night in great anxiety, not knowing how the Jemadar would behave. Next morning the Mirza was taken over to the large fort, and introduced to the presence of the Atalik: he passed a large open building filled with some hundreds of people who were eating, and was then ushered into a small room, where he found the ruler sitting on a carpet, with two or three chiefs around him. The Atalik received the Mirza much more graciously than he expected; welcomed him to Kashgar, asked him a few indifferent questions, and then requested him to go and breakfast with his chiefs in the outer house, where they were all seated round a fire. The Mirza found these officials talking about two English officers who had lately entered the Kashgar territory; they asked the Mirza if he knew them, but he said he did not: they did not speak much, but allowed the Mirza to eat without interruption.

During his residence at Kashgar the Mirza was called before the Atalik on several occasions, in order to ask questions as to Hindustan, Badakshan, and Afghanistan, and also to find out who the Mirza was; but the Atalik did not speak much. At other times the Mirza saw him passing towards the Artush Ziyarat, called Khoja Affak, where he generally went every Friday.

The Mirza describes this remarkable man as being a devout and strict Mahomedan. His name is Mahomed Yakub Beg, a native of the village of Pishkadh, between Tashkend and Kokhan: he is of the middle size, dark complexion, and is now about fifty years of age. His father was a petty farmer or small zemindar, and he himself started in life as a Peshkhidmut, a sort of private upper servant, or one of the body guards of the Khan of Kokhan: half a soldier, but bound to give personal attendance to the Khan at table, during dressing, while mounting his horse, &c.; his emoluments at that time probably not amounting to more than Rs. 100 a month, paid by the assignment of the revenues of a small village, and by perquisites in the shape of clothes, horses, arms, and so on. From Peshkhidmut he rose to be Dadhkwah, or Governor of Ak-Musjid, a post which he held for about three years, nearly up to the time the Russians occupied that place. He has the credit of having allowed the Russians to settle near the Ak-Musjid fort without the knowledge of the Khan; when this became known to the then Khan, Yakub Beg is said to have run off to Bokhara, the Russians taking the

place soon afterwards. Bribery is supposed to be at the bottom of this transaction; but however that may be, he remained away about three years in Bokhara, and was then taken into favour with the new Khan of Kokhan, Mola Alum Khol, who had lately succeeded to the Musnud, and was made one of his Durbar chiefs, and had the revenue of two or three villages assigned to him. He has received no education, can neither read nor write, though his people declare that at the age of forty-five he learnt his letters sufficiently to read the Koran, which he is said to study every morning: he is very strict as to all rites of the Mahomedan religion, and forbids wine, opium, and smoking; females are not allowed to go about unveiled, and every one is ordered to pray five times a day.

He is a Tajuk, and his native language is Persian, though he now seldom speaks anything but Turkish. At the time of his return to Kokhan he was in no great favour; but on the representation of Walli Khan Tora (one of the chief men at Kokhan), the Khan sent him to assist in driving the Chinese out of the Kashgar territory. Whilst Yakub Beg (now styled Atalik) was engaged on this expedition, Walli Khan Tora tried to set up for himself in Kashgar, but owing to the Atalik's intrigues, was forced to fly to the mountains, where he is said to have been murdered by some unknown person: a fitting fate for the scoundrel, who, besides having the unfortunate M. A. Schlagintweit murdered, was noted throughout Turkestan for various other atrocities.

Yakub Beg, however, was successful in driving out the Chinese; but the Khan in the mean time had his own difficulties in Kokhan, and could exercise but little control over the Kashgar expedition. Yakub Beg (Atalik) was consequently very much his own master, and when he finally heard of the Khan's death in action with the Russian troops, he decided to make himself independent of Kokhan; in consequence of this there is great enmity between him and the present ruler of Kokhan.

The Mirza found the Atalik courteous: he appeared to have simple manners, but he has the credit among his people of being very suspicious, and is known to have his spies all over the country. He has a violent temper, and his ordinary expression is a threatening one, insomuch that the people who meet him do not care to look him in the face; nearly every one looks down as he passes. When anything angers him he becomes exceedingly abusive, and is apt to take summary justice: the Mirza on one occasion saw him try to cut a petitioner down, the man only escaping by getting between some guns.

He and his son are always armed ; he takes great precautions to prevent his officers holding general meetings, and he is more especially afraid of being murdered by some of the Kipchak-Kirghiz—a strong horde who opposed his rise to power. Very little talking goes on in his durbar, the conversation being chiefly confined to answering his questions, the officials all looking down as if they were afraid to look about them, and generally there appeared to the Mirza to be very much less freedom than is usual in a Central Asian durbar. He is noted for his generosity, dividing the horses, clothes, &c., which he receives as taxes, amongst his adherents ; he gives a meal to some three or four thousand people every morning after prayers. The people respect him for being religious, and for what he has done in the way of making roads, bridges, schools, caravan-serais, mosques, &c. He encourages the wealthier people to follow his example. He has collected a number of women in his harem, a large proportion being the wives and daughters of the Chinese whom he turned out of the country. He is said not to spend much of his time among these women.

According to the Mirza, the greatest defect of his government is in the revenue system for the collection of taxes, &c., his territory being divided out amongst his relations or friends. These officials are allowed to take whatever they like, no accounts are kept, and as long as the Atalik is paid his dues he takes no notice. The consequence is, a large amount of discontent, which is said to be shown by the greatly increased number who make the pilgrimage to Mecca, hoping that they may be less oppressed when they return as Hajis, that title generally being a safeguard against anything of the kind. Some, however, are said not to return at all, but to emigrate for good to Constantinople, &c. The taxes are paid in produce—officials having to make a yearly present in addition of large silver pieces, called yamu (160 Rupees) each, and of horses, chogas, &c., according to their rank.

On the whole, the Mirza thinks neither the people nor his officials like him ; the latter secretly hate him for his harshness, and more especially for the irregular way in which they are paid. One of his rules against his own countrymen returning to Kokhan is particularly disliked. He is said to be a good soldier, exceedingly vigilant as to every movement either in his own territory or beyond his frontiers.

His army is said to consist of about 20,000 men, with 70 guns of various calibres, mostly small. In emergency it is supposed that he could muster 20,000 men more from among those Kirghiz hordes with whom he is on good terms. The soldiers consist of Sirbazi,

Tafarchi, and Sowars. The Sirbazis are armed with a matchlock and bayonet; uniform of quilted red Russian cloth, with long boots, supplied by the Government twice a year. They are drilled every morning by Affghans and Hindustanis, after the English fashion. The Tafarchis number about 2000; they are armed with very long matchlocks, taking three or four men to work them; they are mostly Chinese, who became Mahomedans when the Chinese Government came to an end. The Sowars form a very irregular cavalry. There were about 7000 soldiers in and about Kashgar itself. The guns are all brass, mostly cast by Nogai Turks, who consider themselves subjects of Russia. Some have been cast by men from Turkey (Rum), and others by Hindustanis—those by the two latter being considered the best. The guns are said to work well up to about 1500 yards. Spite of all this show the Mirza does not think the troops are at all reliable, the people generally not having much taste for fighting, and no doubt the Atalik relies mostly on his own Kokhanis.

Owing to the restraint that was put upon him, the Mirza was unable to visit the Russian frontier himself, but he made friends with a Lohani merchant who had lately arrived from Tashkend by the Naryn Valley. This man visited him very often and gave him information as to the Russian posts, and the following route, viz., from Kashgar to Kürbashi, 3 days' march, thence to Chädur 3 days, and to Zertash one day, all through country infested by wandering Kirghiz subject to Kashgar. From Zertash to Togia, a Russian fort, two days' march; Togia is said to be garrisoned by 400 Sappers. After two marches more the route crosses the Naryn River, over which the Russians have built a bridge, protected by a fort with 500 men. From the Naryn, at a distance of ten days' march, is Takmäk, garrisoned by 100 men and four mountain guns, thence ten days' march farther on Allay, garrisoned by 2000 men and eight guns. The Russian garrisons increasing rapidly in proportion to the distance from Kashgar, the Lohani probably wishing to impress the Mirza with the wonders he had seen.

The Mirza's long detention and want of funds made his men mutinous again, and he was puzzled to know what to do. He first of all asked to be allowed to return by Badukshan, but the Jemadar opposed this, and said the Mirza might return with the two English gentlemen then in Kashgar, and ended by preventing him from doing either the one or the other. The Mirza had hoped that he might get some assistance from these gentlemen, and perhaps be able to assist them; but he had great difficulty in communicating with them, and the Jemadar so constantly misrepresented his

actions, that he was forced to give up the idea. He was much dispirited when these gentlemen left. Funds were his great difficulty; but he was at last relieved by meeting an Afghan prisoner who had been in the Kashmir Maharaja's service, and who was anxious to send money to his home. He offered to lend the Mirza money on the condition that it was repaid to his family in Kashmir. Having taken a small loan from this man, the Mirza was eager to be off; and finding that the Jemadar would in no way assist him, he at last in despair said he would appeal to the Atalik in person. This alarmed the Jemadar so much that he at once went and asked leave for the Mirza to return to his country. The Atalik sent for the Mirza and received him graciously, ordering him to be given a dress of honour, and gold dust worth 60 Rupees, in order to buy a horse for himself. Permission to return by the Yarkund route to Ladak was given, with a passport describing him as a Kabuli traveller. This passport bears the Atalik's seal, and the Mirza holds it as a proof that he assumed no official character while in Kashgar territory, as at one time supposed.

The city of Kashgar is built in an angle between two branches of the Kazul River, which join one another a few miles east of the city. The Kazul, or Kazul Yaman, comes from Mosh (a ruined place towards the Tarik Mountains), its other branch, the northern one, is called the Toman. The united stream flows eastward, passing at 40 miles a small town called Faizabad, and after receiving the Aksoo stream joins the Yarkund River. During the winter both branches of the stream are frozen, and the Kashgar people can cross anywhere on the ice; in the summer they cross by two bridges lately built or rebuilt by the Atalik, so as to be fit for carts; these carts are drawn by two ponies or mules, and sometimes by three, arranged unicorn fashion. The city is built on an easy slope; it is surrounded by a high wall with towers at about every fifty yards; the wall is a thick one made of sun-dried bricks, and has three gateways with large wooden doors protected by iron plates. The streets are very irregular, the houses are built with sun-dried bricks and flat roofs, and touch one another. Every house has its own fireplace and chimney, where the cooking is carried on inside: the houses are generally kept very neat. The poorest houses have felts and carpets for the floors; in the better houses benches and beds are used. The bazaars are large and wide enough to allow the carts to pass one another; the shops are well stocked with native and foreign goods. The city is well supplied with water, both by canals from the rivers and from springs. There are no buildings worthy of note, the mosques and schools

(madrussa) being only a little higher, and differing in no other way from ordinary houses except in having painted doors. There are eight colleges, eleven caravanserais, and a mosque in every street, where the people are forced to say their prayers five times a day. The streets of the chief bazaars are covered in with rough timber and mats, to keep off the sun in summer, and the snow in winter.

The number of families in the city were reckoned at 16,000 in the time of the Chinese, but since their time the numbers have fallen off very much, many people having emigrated. The population is very mixed, the men comprising Turks, Tájuks, Tungānis, Badukshānis, Andijānis, Afghans, Kashmiris, Hindustanis, and a mixed race descended from foreigners and the women of the country. Tartar features and complexion predominate. The people generally are a profligate set, and, though good humoured, are crafty and inhospitable. They are generally opium eaters, and are much given to dancing or singing, though the Atalik has forbidden everything of the kind. The only musical instrument in use is a sort of harp, like the Hindustani sitara. Both sexes wear the same shaped chogas, long loose quilted cloaks of coarse cotton cloth over a tight-fitting jacket buttoned at the side; trowsers of long cloth and various coloured silk, and a cap lined with inverted lambskin, with a turned-up border completes the costume in winter. The border of the cap is sometimes made of "sugbao" or "sugābi" (otter) skin from Kashmir or Hindustan, but the skins from Russia are preferred. The crown of the men's caps is generally made of plain Russian broadcloth: the crown of the women's caps is generally of Benares brocade (kinkab), cloth embroidered with gold thread. In the summer these caps, lined with lambskin, are changed for others made of cotton cloth fitting to the head, the caps well starched so as to preserve their shape. Those worn by the women are of a different shape, the women of the richer classes using Benares brocade, or a cloth embroidered with twisted silver thread got from Russia. Both sexes wear long high-heeled boots, those worn by the women being shod with iron, those of the men having no iron; the leather is generally native, made from goat-skins dyed red, or pink; the richer people occasionally using Russia leather. The boots of the women look very gay, being ornamented with red or yellow silk, &c. The women do not wear many ornaments, beyond a few rings, and three or four heavy silver or gold buttons of an almond shape worn in the body of their dresses. They are fond of flowers, and wear them in their caps: a few flowers are grown in the court-yards of each house. They do not darken their eyelids with antimony, but instead paint a dark line

so as to join the two eyebrows. They wear two long plaits of false hair which hang down their backs. They are not seen much in public, as whenever they go out they are obliged to wear a large black or white "burkha," a sort of sack, which covers them from head to foot, a piece of muslin with eye-holes being used as a cover for the face. This is a new custom in Kashgar, introduced by the order of the Atalik, which the women particularly dislike.

Level ground extends to about 40 miles south of Kashgar, 30 miles to the west and 15 miles to the north, while to the east there are very extensive plains. To the west and northwest there are high mountains connected with the Pamir, which enclose the Alai Tarik and Naryn valleys: they appear to be distant.

Kashgar is said to be very healthy; in winter the climate is dry, and so cold that fires are required in every house: rivers, tanks, and canals all freeze, and water is only got from the four springs, which seldom freeze hard. Snow falls very often, but seldom to a greater depth than a foot; it moreover soon melts: the river remains frozen till the end of March, and no snow is seen after that till December or January. In the spring the weather is very stormy, and the wind so strong sometimes as to blow down the Khirghiz tents that are pitched in the neighbourhood. The stormy winds are invariably accompanied by a hazy atmosphere, sometimes to such an extent that lights are required in the middle of the day. This is supposed to arise from an impalpable dust. The Mirza says that during the four months he was in Kashgar, he could never see the sun clearly until some hours after it had risen; it was always more or less obscured by a sort of dust or haze, and only three or four times really clear: The sun always had a sort of pale red colour for three or four hours after it rose.

At length, after a detention of more than four months, the Mirza was allowed to start for Yarkund on the 7th of June, 1869.

He crossed the Karakoram Pass in safety and reached Leh, the capital of Ladak, during August; thence he made his way to Kashmir and back through the Punjab to the Head-quarters of the G. T. Survey, having been absent on his expedition nearly two years.

The Report will be published entire, with Major Montgomerie's Memoranda and map, in the 'Journal,' vol. xli.

The CHAIRMAN said that the great interest which was taken in the country over which the Mirza had travelled was due to the fact that it was intermediate between the Russian territories and our Indian possessions. Sir Roderick Murchison had often impressed on the Society his conviction that although the question of the Russian approach to India was of great interest,

it was one which we might look steadily in the face without any sense of danger, and he (the Chairman) coincided with Sir Roderick in this view. He thought, in fact, that the nearer England and Russia approached each other in Central Asia, the more advantageous it would be in some respects for both nations, inasmuch as it would remove impediments to free communication, promote trade, and put an end to the anarchy and disorder which were at present rampant throughout the country. It was not generally known that Russian and English explorations had now actually approached within 20 miles of each other; yet such was the case. Baron Osten-Sacken's expedition had penetrated from the north, as low down as Artush, while Hayward and the Mirza, proceeding from the south, had taken observations as high up as Kashghar, the distance between these points being something under 20 miles. Indeed the gorge in the hills which had been reached by the Russian expedition could be seen from the town of Kashghar, and, as far as scientific results were concerned, the two lines of survey might be considered therefore to have coalesced.

He would now refer to the Mirza's journey somewhat more in detail. The most interesting portion of his line of route was that which followed the valley of the Upper Oxus, from the junctions of the two arms of the river at the fort of Penja to the source of the left branch in the Pamir Lake; he then crossed over the watershed to Tash-Kurghan, and from that town pursued an entirely new track to Yengi Hissar, and so on to Kashghar. The route along the Oxus was not absolutely new to geography, although Major Montgomerie seemed to consider it so; as he would now undertake to show. As far as the fort of Penja, Lieutenant Wood and the Mirza had followed the same track; but at that point the routes divided,—Wood having traced up the right arm of the river, and the Mirza the left. Marco Polo, however, more than six centuries ago, had probably taken precisely the same route as the Mirza, in passing from the Oxus across the Pamir plateau to Kashghar, and a still more detailed account of the line was to be found in the *Tarikh-i-Rashidi*, where Mirza Hyder, a cousin of the Emperor Baber, described his march from the Karakoram Pass by *Itaskam* and *Tagh dum bash* to Pamir and Vakhán. This Persian history further contained much valuable information about the mountains and rivers of Kashghar and Yarkund, which agreed in all essential points with the Mirza's discoveries. The next authority in point of time was the Register of the Jesuits, who in the middle of the last century had, under the Chinese Government, pushed their researches as far as Sarik-kul, on the extreme western frontier of the empire: the observation which they took for latitude at this point agreeing within 3 miles with the position assigned by the Mirza to the town of Tash-Kurghan, which is the capital of the district. After the Jesuits came Macartney, who, in 1808, at Peshawur, must have received from Indian traders an itinerary of the whole line from *Sirhad Vakhán* (where the Chitral route debouches on the Oxus) to Yarkund, as the stages named by the Mirza and others are given in the Map to Elphinstone's 'Cabul' with perfect regularity; though, as Macartney's informants were unable to supply bearings, he has laid down the itinerary from south to north instead of from west to east. Of late years, again, there has been a native traveller, Mahomed Amin, who must have frequently crossed the Pamir from the Upper Oxus Valley to Yarkund and Kashghar. Mr. Davies's 'Report on the North-West Boundary' contains a series of routes supplied by this traveller across the Pamir; and one of these routes must have been the exact line followed up by the Mirza, though strangely enough the particular lake of Pamir-kul or Berketi-Yassin is not named in Mahomed Amin's itinerary. This last named traveller was not, it is true, a scientific explorer: he was unable to use instruments or take observations; but his general descriptions were interesting and accurate, and for a long time supplied our only reliable information regarding the Upper

valley of the Oxus. Mr. Hayward it was expected would have resolved all difficulties regarding the hydrography of the Pamir plateau, but he had been murdered (as Sir Henry reminded the meeting) at the threshold of his discoveries; and although another native explorer of the name of Ibrahim Khan had been sent by Mr. Forsyth from Cashmere, in anticipation of Mr. Hayward's visit, and had actually made the detour by Gilgit, Yassin, and the Darkút Pass to the valley of the Oxus, which was contemplated by the English traveller, rejoining the head-quarters of the Mission at Yarkund, the details of his journey, which would form an important link in uniting the Surveys of Mr. Hayward and the Mirza, had not yet been received in England.

It was thus shown that the line of country along the Upper Oxus was not absolutely unknown, as Major Montgomerie seemed to think; but, at the same time, he (Sir Henry) admitted that the Mirza's journey was by far the most important that had been undertaken along that particular track, being in fact the only journey which supplied materials at all fitted to the scientific requirements of the age. The most important result of the journey was the determination of a great feature of Physical Geography, which was entirely opposed to Humboldt's theories, but which Major Montgomerie now recognized as an undoubted fact. This was the discovery that the Pamir highlands were not, as had been supposed, a transverse range joining the Himalaya with the Thian Shan Mountains to the north, but were, in fact, a prolongation of the axis of the Himalaya. The watershed between the Indus and the rivers of Turkistan was found to commence at Kailás, near the sacred lake of Manasarowar, and to run from that point in a north-westerly direction to the Kara-koram and Muztagh passes, continuing on almost in a straight line along the crest of the Pamir Plateau, where the Oxus, however, instead of the Indus, took off the western drainage, until it finally received the water-system of the Jaxartes. The paragraph in which Major Montgomerie announced this important discovery in Physical Geography was well worthy of being quoted. He says:—
 "The Mirza's route gives us another determination of the great watershed which separates Eastern Turkistan from the basins of the Indus and the Oxus, viz., the Pámír-kul Lake, which comes between the Mustagh Pass (the most westerly point actually on the watershed determined by my survey operations) and the Sirikul Lake of Wood; and this new determination confirms the opinion that I have held for many years, that the said watershed continues to run north-west from the Mustagh,—a conclusion which I came to from the positions of many gigantic peaks fixed by the survey to the north-west of the Mustagh, which peaks, though probably not on the watershed, doubtless indicate its general direction. From the Changchenmo east of Leh to the Mustagh the general line of the watershed is about 35° north of west, from the Mustagh to Wood's Sirikul it is about 38° north of west, and the same line would run nearly through the Pámír-kul. Further to the north I am not inclined to think that the general direction of the watershed alters very rapidly."

Sir Henry went on to say that although the precise line of the watershed had not been traced across the Pamir plateau, he was satisfied that Major Montgomerie was right in assuming it to follow the same general direction of about $w. 40^\circ n.$, until it met the Alai Mountains, forming the southern boundary of the Jaxartes Valley. Another rectification of Physical Geography which was due to Major Montgomerie's researches referred to the general law affecting the lines of watershed. Explorers, he showed, who merely took the angles of high peaks from a distance and fixed the watershed of the range accordingly, were almost always in error, because the culminating peaks were usually on transverse ridges, far in advance of the line of drainage; the rivers flowing down the ravines from the great range in rear, and passing at the side of the peaks which were supposed to be on the watershed.

The hydrography of the Pamir was still involved in much obscurity.

Lieutenant Wood had discovered one lake upwards of 30 years ago, and the Mirza had now discovered another lake somewhat more to the south; but neither of these explorers could be said to have discovered the real source of the Oxus. The name of *Penj*, which was given to the Upper Oxus, showed that the river was formed of five distinct branches, as the Oriental geographers always admitted, and Mahomed Amin had further named and described the five lakes from which these five branches flowed; the most distant and most extensive of these lakes being the famous Karakul, or "Dragon Lake" of the Chinese, which had, accordingly, the best claim to be regarded as the true source of the river. It was quite certain now that the name of Sirikul, which Lieutenant Wood had applied to the lake discovered by him in 1838, was a spurious title. The defile which Lieutenant Wood followed up from the junction of the two arms of the river at Hissar, was, no doubt, called the *Dereh-i-Sirikul*; but that name was given it, not from the lake by which the road passed, but because the road led to the district of Sirikul, just beyond the watershed. The true name of this district, the capital of which was Tash-Kurghan, was *Sárik-kul* (or the Yellow Lake), as it appeared in all the Oriental authorities, being so-called probably from a lake in the vicinity of Tash-kurghan which had since disappeared. Tash-Kurghan itself was a very remarkable place, and Major Montgomerie had particularly drawn attention to the Mirza's description of it, a description which closely tallied with Mahomed Amin's published account. He (Sir Henry) was disposed to identify it with the famous "Stone Tower" of Ptolemy, where the trading caravans rendezvoused before crossing the great desert to China. The literal meaning of Tash-Kurghan was the "Stone Fort," or "Stone Tower," and there could be no doubt, from the character of the masonry of which the works were composed (large blocks of hewn stone), that the fort was very ancient, and of great importance in early times. On many old maps this town was called *Karshu*, which means a "Palace," or "large building;" but he had never found such a title applied to a place in the district of *Sárik-kul* in any Oriental author, nor could he trace it earlier than the time of Petit de la Croix. It was certainly quite unknown in the country at the present day, and ought to be expunged from the map of Central Asia. The Mirza's description of the rivers of Kashghar and Yarkund was very valuable, because it nearly coincided with the statements left on record by Mirza Hyder in the *Tarikh-i-Rashidi*, and in that respect seemed to be more accurate than the statements of our recent English travellers. Sir Henry explained the discrepancy between Mr. Hayward's account of the hydrography of Kashghar and the Mirza's, by observing that it was very difficult to distinguish between the rivers and the canals, inasmuch as the latter contained far more water at the present day than the former, and were thus very liable to be mistaken for them. The Mirza, however, did very accurately discriminate between the canals which were narrow, but full of water, and the old river-beds which were nearly dry, but which measured 150 yards across; and his definitions, which did, no doubt, indicate the true hydrographical features of the region, were more in consonance with the relative position of Mirza Hyder's rivers than were Mr. Hayward's names and distances.

The only other point requiring notice referred to the longitudinal position of Yarkund. Nothing had been hitherto more confused and unsatisfactory than the longitudes of places in Eastern Turkistan. There was, indeed, a variation of no less than 4° in the position assigned to Yarkund; and as this point ruled all the other longitudes, the maps were contradictory, and really possessed no authority. The Schlagintweits, who professed to connect their line of projection with the Trigonometrical Survey of India, placed Yarkund in $73^{\circ} 30'$, while Major Montgomerie, having compared the Mirza's results with the work of all previous travellers, decided that the true latitude of the

Southern Capital of Turkistan was $77^{\circ} 30'$, and constructed his map accordingly. This result we had been quite prepared at the Geographical Society to accept as certain and determinate, having full confidence in Major Montgomerie's careful analysis, of which a very interesting account was given in his preliminary Report; but at the last moment we had found it stated in Mr. Forsyth's Report of his Mission to the *Ataligh Ghazi* that Mr. Shaw, who had used instruments throughout the journey, had ascertained the longitude of Yarkund to be only 76° . Now as this discrepancy of $1\frac{1}{2}^{\circ}$ between Major Montgomerie and Mr. Shaw threatened again to throw the map into confusion, they had thought it as well, in anticipation of this evening's meeting, to send the register of Mr. Shaw's lunar observations at Yarkund to Greenwich to be worked out, so as to set at rest for ever this disputed question of longitude. The Greenwich Report had been now returned, giving from a series of lunar observations a mean result of $77^{\circ} 15'$ for the longitude of Yarkund, so that Major Montgomerie's calculation from the Mirza's data was shown to be nearly correct, and Mr. Shaw's reported determination of a longitude of 76° to be a mistake.

In conclusion, Sir Henry said that, in bearing testimony to the Mirza's services, we were really expressing our obligations to Major Montgomerie himself, as it was to him we were indebted, not only for this particular journey, but for the introduction of the system of educating natives of India for geographical exploration,—a system which had already led to such important results, and to which we must wish every success in future.

Sir ANDREW WAUGH said, it would be universally admitted that this exploration makes a very useful addition to our geographical knowledge of the hitherto unknown region, between Badakshan and Eastern Turkistan. We are much indebted to Major Montgomerie, our Gold Medallist, for this as well as his former explorations, which have rendered our knowledge of this part of Central Asia accurate and precise for practical purposes. The great uncertainty that formerly prevailed in the position of most important places in Central Asia was shown in a table by Major Montgomerie. The Schlagintweits placed Kashgar some 250 miles too far west, and Yarkund 200 miles, to the great despair of our geographers, who could not reconcile these enormous discrepancies. Humboldt's discussion of the Jesuits' work, was also inaccurate in result. It had remained for Major Montgomerie to produce order amongst all this chaos.

The reason why the Major's operations had turned out so well, was, that they have been conducted on systematic principles, instead of being desultory, partial, and incomplete. His surveys have always started from a known point of departure, and closed on a known point, so that the error generated between has been ascertained. The routes have, further, been tested as often as practicable, by astronomical observations and by combination with other routes. Great skill has been shown in ascertaining the probable value of the itinerary measurements, according to the character of the ground. In his printed reports, the Major has discussed the Mirza's routes in a very masterly manner; analyzing carefully their relative and general values. All the credit of originating and systematizing these interesting and most difficult explorations was due to Major Montgomerie; and he (Sir Andrew) must admit that his agents have succeeded, in a most marvellous manner, in carrying out a work beset with formidable difficulties. He recollected warning the Schlagintweits that, if they were not careful, they would get all abroad in their longitudes; and sure enough, after going a few hundred miles, they got 3 degrees out, as shown in Major Montgomerie's Table. They considered it quite an easy matter, and took no precautions in consequence. Hence all these errors and confusions were of a preventible character, and not at all inherent in the nature of mountain operations, if systematically conducted.

The Mirza's results had been tested very often by comparison with other routes, and always met that test well. It was a difficult matter to explore such regions. It was like surveying over the tops of the Alps, without the advantage of such comfortable places as Interlaken and Chamouni below to take refuge in. The poor Mirza must have had a very hard time of it, crossing the Pamir range in midwinter; but rigorous as the climate was, it would have been worse for him to have attempted it in summer, as then he would have been most likely robbed and murdered. The rivers in summer would have been full of water and difficult to cross. The Mirza is entitled to great praise for the enterprise, pluck and endurance he exhibited, as well as for the professional skill he displayed. He deserved full credit for the excellence of the results.

Colonel WALKER said he thought Mr. Shaw was quite right in saying that the Karakorum range was no range at all. At certain points its watershed is very low, and very easily crossed. He believed that a counterpart to this would be found in what is called the Hindoo Koosh range, and he felt assured that there is no well-defined range where the Hindoo Koosh is represented to be. He had recently sent an officer—Capt. Carter—up to the Peshawur frontier for the purpose of ascertaining whether that lofty watershed really existed. The British frontier does not extend very far into the hills, and the peaks have ranges immediately to the north of them which cut out all view of the very distant ranges; but to the south of the Peshawur Valley, in the Kuttuk Hills, there are points from which a person can see across the Peshawur Valley in the direction of the so-called Hindoo Koosh range. Captain Carter remained on those points for several weeks, watching for opportunities of catching the peaks of the Hindoo Koosh range. He fixed about one hundred peaks in all, but none of them fell on a continuous range. He therefore believed that the watershed was occasionally very low, and that there was really no continuous range at all. What had been said about the facility of crossing from the Oxus into the valley of the Chitral River corroborated this view. It was quite impossible to employ European surveyors to explore these countries, though one—Mr. Johnson—had successfully gone to Ilchi and come back, to the astonishment of everybody, with his head upon his shoulders. The difficulties were so great that even the Pundits of the survey could only go into a Buddhist country, while for Mahomedan countries it was necessary to employ Mahomedans, generally Pathans. The Trigonometrical Survey had experienced great difficulties in training their agents, and met with many disappointments. Out of six or eight men that they had spent years in training, only two or three had turned out to be first-class men. The very first man sent out died under very suspicious circumstances on his return to Leh. The next man they sent out was a Pathan of the Native Sappers and Miners—a very intelligent man indeed, and one who promised exceedingly well. He had been trained for a year, and was sent off into the country immediately to the north of Peshawur, to explore up towards Chitral and the regions on the borders of the Indus, of which less is known than of districts further away. It happened, unfortunately, that this man, being a Pathan, had a blood feud in his family, and no sooner had he got out of British territory than the avenger of blood went after him and murdered him. He had been travelling six weeks, and obtained a little information; and when the officers of the Survey heard of his death, they were very much afraid that it was caused by the people of the country, but afterwards it was ascertained that he had been very well treated by the people. His papers were all collected and sent back by no less a person than the Akhoond of Swat, who was supposed to be one of the most bitter foes of the British Government. The next explorer was also a Pathan. For mountain regions inhabited by a treacherous Mohammedan population, men of great physique, great courage and considerable intelligence, are required;

and Pathans, as a rule, have lots of pluck and nerve, but ninety-nine out of a hundred do not know how to read and write. It is, therefore, particularly difficult to make a beginning with them. This man was taken from the Quarter-Master-General's department, and was being trained by one of the Pundits, who had a watch which had been presented to him by the Royal Geographical Society. Unfortunately, the Pathan coveted that watch, and instead of waiting and trying to get a watch from the Society by his own honest, straightforward exertions, he thought the simplest plan would be to appropriate the Pundit's watch,—which he succeeded in doing, but so very cleverly that the theft could not be legally proved against him, though there was no doubt that he was the thief. The last thing heard of him was, that he had attached himself to the unfortunate Mr. Hayward; and it was believed that he was murdered with Mr. Hayward; but if not, it is not improbable that he had a hand in the murder of that gentleman. The officers of the Survey are careful not to teach these men too much, simply the practical details of what they have to do, because implicit trust could not be placed in their honesty and veracity. They are taught to observe, but not to reduce their observations, which is invariably done by their officers after their return to head-quarters. They were marvellously accurate observers, and would go out one evening and sit patiently and watch the stars as they culminate one after the other, and wait for hours getting all the data necessary for the accurate determination of the latitude; but without the faintest notion of how to deduce the result—which the officers take very good care not to teach them. Unfortunately, by their observations only one of the two co-ordinates of position are obtained; the other—the longitude—is very difficult to determine, and is far beyond what can be expected of the native explorers: to obtain this, men of far higher intelligence and better education would be required, and they would probably be too clever to be trusted. On their journeys the explorers take bearings in the direction that they are going, and measure the distances in paces. They carry with them beads, and in a Buddhist country they tell their beads just as a rosary might be used in a Roman Catholic country. At every 100 paces they drop a small bead; at every 1000 paces a larger one; and so a strict reckoning is taken of the distances they walk, and every now and then they take the bearings of the line of route. The observations have to be made without attracting attention; for if the men were seen constantly making notes on paper, suspicion would be aroused. In the exploration of Thibet it was found convenient to give the explorer a prayer-wheel, into which he inserted his compass and the memoranda of the day's distances and bearings, and he would go about twirling this round and round, after the manner of the religious people of the country, and thus preserve a character for respectability. The traverses are eventually computed out by the method of rectangular co-ordinates, parallel and perpendicular to a given meridian. The differences of the distances on the meridian are checked by the corresponding differences of the astronomical latitudes, which serves to show whether any accidental gross error has been committed, and to furnish a correction for the value of the length of the pace,—the unit of measure which is used in the calculation of the traverse. The value of the pace of course differs in different countries: in a very hilly country a man's pace would be short; over smooth and level country he would step further. The corrected value of the pace is applied to determine the difference of longitude on the perpendicular. This is a rough and ready way of reducing the work; but, considering the class of men employed, it is the best—in fact, the only one—that could possibly be attempted.