CHAPTER I

RÉSUMÉ OF CENTRAL ASIAN EXPLORATION

A new era is approaching in the historical development of geographical discovery. The pioneers will soon have played their part; the "white patches" on the maps of the continents are gradually decreasing; our knowledge of the physical conditions of the ocean is every year becoming more complete. The pioneers of the past, who cleared the way through increasing danger and difficulty, have been followed by the explorers of the present day, examining in detail the surface of the earth and its restless life, always finding new gaps to fill, new problems to solve.

Although many regions have already been the object of detailed investigation, there are several still remaining in which the pioneer has not yet finished his work. This is particularly the case with the interior of Asia, which has long been neglected. Immense areas of the almost inaccessible Desert of Gobi, and endless wastes in the highlands of Tibet, are to this day as little known as the Polar Regions.

It was with the view of contributing my little to the knowledge of the geography of Central Asia that I set out on the journey which this book describes. I had prepared myself for it by years of work in my study; and in 1890–91 I made a reconnaissance into Russian Turkestan and Kashgar, in order to examine the suitability of those territories as a base of operations for exploring unknown country.

After my return from Kashgar, my chief concern was to procure the necessary means for carrying out my undertaking. To His Majesty King Oscar of Sweden and Norway I accordingly addressed the following particulars of my plan, which I give here, as they will best show how far and in what
manner I succeeded in fulfilling the task I set myself. Some­what abbreviated, my memorandum ran as follows:

In the heart of Asia, between the two highest chains of mountains on the earth, the Kwen-lun and the Himalayas, is the most stupendous upheaval to be found on the face of our planet—the Tibetan Highlands. Its average height is 13,000 feet, and in the north it attains as much as 15,000 feet. Its area, therefore, of 770,000 square miles (two and a half times that of the Scandinavian peninsula), is on a level with the highest peaks of the Alps. According to the Chinese maps, its northern parts, which constitute one of the least known tracts of Asia, appear to consist of a system of unin­habited lake-basins possessing no outflow. Farther south the Tibetan and Mongol nomads lead a wandering shepherd life; and it is only in the extreme south of the region that there is any population.

Tibet lies aside from the great highways used by travellers of the nineteenth century. Only a few of the more advent­urous Europeans have done their share towards collecting the scanty material upon which our present knowledge of the country is based. Its desolate scenery, its lofty, inaccessible mountains, and its extreme remoteness, situated, as it is, in the heart of a vast continent, have deterred travellers, and driven them to find scope for their activity in other parts of the world—in the Polar Regions, among the oceanic islands, or where the coast has provided a certain point of departure to unknown regions lying within comparatively easy reach. And yet there is scarcely any part of the world in which the explorer is so richly rewarded for his pains, or finds such an inexhaustible field for observation of every kind, as in Tibet—the country whence the light of holiness streams forth upon the world of Lamaism, just as its waters, in the form of mighty rivers, stream forth to give life and nourishment to the countries which surround it. Many important problems in physical geography still await their solution in Tibet and in the Desert of Gobi, each of which would be a distinct gain to science. In a strictly geo­graphical sense, Tibet is one of the least known regions
in the world. Even the maps of Africa cannot now show a white patch of such vast extent as occurs under the name of Tibet on our maps of Central Asia. In this respect the Polar Regions alone are comparable with Tibet. The itineraries furnished by the Roman Catholic missionaries, at a period when the country was more easily accessible than it is at the present time, cannot be followed on the map with absolute certainty, and from a geographical standpoint are often of little value.

But even this country, jealously closed as it is by fanaticism, has been compelled to open its doors to the persistence of European inquiry. The western and eastern parts, in particular, have been traversed by English, Russian, and French travellers. In modern times the only explorers who have gained entrance to Lhasa (Lassa) have been a few Indian pundits, trained by British officers. The jealous apprehensions of the Chinese Government, the religious fanaticism of the Tibetans, and the wild nature of their country—these are the factors which have kept Tibet in isolation longer than any other country in Asia. At a time when the influence of neither Russia nor England was so great as it is now, more than one European succeeded in crossing the country, and even in reaching the capital. The first European to enter Lhasa was a monk, Odorico di Pordenone, who travelled from China to Tibet in the first half of the fourteenth century. In 1624 the Spanish Jesuit Antonius de Andrade went from India to Tibet; and in 1661 the two Jesuit missionaries, Grueber and D’Orville, made their remarkable journey from Peking to Lhasa by way of Koko-nor (Koko-nur), Tsaidam, and the country of the Tanguts. They remained in the capital for two months, and then returned by way of Nepal to Agra, and thence to Europe. In the eighteenth century the mysterious city was visited by several missionaries. Desideri lived in Lhasa from 1716 to 1729, and Della Penna from 1719 to 1735, and again from 1740 to 1746; they, however, have left no writings, except a few letters. Between the years 1729 and 1737 the bold Dutchman Van
der Putte travelled from India, by way of Lhasa and Koko-nor, to Peking, whence he returned through Farther India to Lhasa. On his return home he burned all his papers, under the impression that nobody would believe his wonderful narrative. In 1811 Manning reached Lhasa; and in 1845 the two French missionaries, Huc and Gabet, made their celebrated journey from Peking by way of Koko-nor, Burkhan-buddha, and Tan-la to the capital of Tibet, a journey which Father Huc described in an interesting book. Since then no European has succeeded in penetrating to Lhasa. Every subsequent expedition which started with that city as its goal has been compelled to turn back, its mission unaccomplished.

As I mentioned before, the outlying parts of the country have been visited by several European travellers, not all of whom, however, have done scientific work or brought home valuable information. The extreme west of Tibet was explored in 1856 and 1857 by the brothers Schlagintweit, in 1865 by Johnson, in 1868-70 by Shaw, in 1868-70 by Hayward, and in 1870 and 1873-74 by Forsyth and his many associates, in 1885-87 by Carey and Dalgleish, in 1888-90 by Grombtchevsky. Kishen Singh, an Indian pundit, who was a member of Forsyth's expedition, succeeded in penetrating somewhat farther into the country than the others. One of the most remarkable journeys ever made in Tibet was that of the pundit Nain Singh, who had taken part in Schlagintweit's and Forsyth's expeditions, and was sent by Captain Trotter, in July, 1874, from Leh in Ladak to Lhasa. His caravan consisted of twenty-six sheep, carrying light loads. Only four of them survived the journey, which extended to a thousand miles and lasted four months. The animals subsisted on such herbage as they were able to find on the way. At the town of Niagzu, on the boundary between Ladak and Tibet, they met with both forest and pasture. The tract east of Lake Panggong was uninhabited, except by a few shepherds and their flocks. The natives called themselves Changpas or Northmen; but to the inhabitants of Turkestan they were known as Taghliks or Moun-
taineers. The Tibetan plateau stretched away east for 800 miles, to the sources of the Chinese rivers and the Burkhan-buddha Mountains. As far as eye could reach, it appeared to consist of a grass-grown plateau region diversified by hills and valleys, with snow-clad mountains in the distance. Occasionally a shepherd’s tent was seen; and antelopes, wild asses, and wild sheep abounded. The results of the journey were 276 determinations of latitude, the mapping of 1200 miles of unknown country, 497 observations for altitude with the boiling-point thermometer, and a series of meteorological observations.

Among those who have travelled in Eastern Tibet the Russian General Przhevalsky (Prjevalsky) ranks first. The 17th (29th) November, 1870, he started from Kiakhta with three Russian followers, and passed through the Desert of Gobi by way of Urga and Kalgan to Peking. After a trip to Dalai-nor, he left Kalgan, in May, 1871, and travelled west, through the mountain-chains of In-shan and Muni-ula, then up the Yellow River (Hwang-ho) until he reached the country of Ala-shan, and its capital Dyn-yuan-in. He afterwards returned to Kalgan. Then, after a good rest, he went back to Dyn-yuan-in, where we find him in June, 1872. Here began the most remarkable part of his travels, the country which he next traversed being little known. He first explored the highlands of Kan-su, a well-wooded mountain region lying northeast of Koko-nor; then, having made the circuit of the lake, and crossed the Southern Range of Koko-nor, the expedition reached the great swamps of Tsaidam, whence it ascended into the higher regions of Tibet, the home of the wild yak. Several of the mountain-chains of the Tibetan highlands were crossed on the way to the Yang-tse-kiang, which was reached on January 10th (22d), 1873. Although it was Przhevalsky’s intention to penetrate as far as Lhasa, which he approached within twenty-seven days’ journey, he was constrained to abandon the plan, owing to his caravan animals becoming exhausted and his provisions running short. Przhevalsky’s first journey terminated at Irkutsk in Siberia, at which place he arrived on October 8th, 1873.
For three years the expedition had struggled against difficulties which seemed almost insurmountable; had defied the summer heat of the Mongol desert, the winter cold of the Tibetan highlands; had spent months in a small, frail tent, often at a temperature of forty degrees below zero (Fahr. and C.), living on game killed by members of the expedition. The energy and endurance which Przhevalsky showed are worthy of every admiration. It is evident he was swayed by a clear understanding of the great importance of his undertaking. Although surrounded by a hostile population, and exposed to every kind of danger, he disregarded both, and, amid the pestilential smoke from the argal (dry dung) fire in his tent, went on working out his memoranda and sorting his collections. It was a geographical achievement which has rightly placed Przhevalsky's name in the forefront of Asiatic exploration. The most wonderful thing is that this journey, which amounted to 7350 miles, cost very little more than 6000 roubles (say £600), a proof that it is possible to travel inexpensively in Asia, if you only know how to set about it.

Przhevalsky's second journey lasted from August, 1876, to July, 1877. Although it extended to less than 2650 miles, the cost was more than 19,000 roubles (or about £1900); but this time his equipment was more complete and his escort more numerous. The results of this journey also were of extreme importance. The region which he added to the domain of geographical knowledge was one of the least known in Central Asia. Previously our sole conceptions of its nature were derived from hearsay, from Chinese maps, and from tradition.

From Kulja his route led through the Ili valley to Yulduz, afterwards south by way of Korla, and, along the lower Tarim, to Lop-nor (Lob-nor) and the Altyn-tagh. When Przhevalsky saw that it was impossible to reach Tibet, and particularly Lhasa, the object of his desire, by way of Lop-nor and the desolate region south of the Altyn-tagh, he determined to try what he could do by way of Gutshen and Khami; but he was taken ill on the road, and was constrained to return to Russia.
The crowning feature of this expedition was the discovery of the new Lop-nor, and of the great chain of mountains Altyn-tagh, which has so greatly altered the appearance of our maps of Central Asia. He also discovered the existence of the wild camel, a discovery afterwards confirmed by other travellers—viz., Carey, Younghusband, and others.

Przhevalsky’s third expedition lasted from March, 1879, to November, 1880, and covered some 4750 miles. On this occasion he was accompanied by twelve natives, and had a sum of 23,500 roubles (£2350) at his disposal. He chose Sai-sansk on the Russian frontier as a point of departure, and travelled, by way of Bulun-tokhoi and the Urungu River, through Dzungaria to Barkul, and thence over the Tian-shan Mountains to Khami. After that he crossed the Desert of Gobi, touching his former route at a couple of points. This time he penetrated much farther to the south—namely, across the Yang-tse-kiang and the Tan-la Mountains as far as 32° N. lat.

Przhevalsky’s fourth and last journey began in October, 1883, and ended in the same month two years later. With twenty followers, most of them Cossacks, he accomplished a distance of 4850 miles; the cost of the expedition being 42,250 roubles (£4225).

From Kiakhta he crossed the Gobi by the same route he had taken on a previous occasion, and went on farther through the highlands of Kan-su as far as the two lakes of Tsaring-nor and Oring-nor, the twin sources of the Hwang-ho. This was the culminating-point of the fourth journey. After a deviation to the Yang-tse-kiang, he continued on through Tsaidam, thence over the Altyn-tagh to Lop-nor and Khotan, at the northern foot of the Kwen-lun Mountains, and finally down the Khotan-daria and over the Tian-shan Mountains.

The extensive journeys in 1878–82 of the intrepid Indian pundit Krishna, commonly called A—K, were of the greatest importance for the geography of Northern Tibet. In the spring of 1878 he was ordered by the Indian Government to explore the territory bordered on the north by Przhevalsky’s journeys, on the east by the routes of the
French missionaries Desgodins and Durand and of the Englishman Gill, on the south by the Sang-po (Brahmaputra River) and the Himalayas, and on the west by the meridian which runs through Lhasa and Lop-nor. In more recent years this region has only been crossed by Huc and Gabet, and by Bonvalot and Prince Henry of Orleans.

Disguised as a merchant, and provided with plenty of money and instruments, A—K went, by way of Sikkim, to Lhasa, reaching that city in September, 1878. There he stopped for a whole year, waiting to find a large and well-armed caravan with which he might travel northward, as the Tangut robbers make the roads in that direction very unsafe. On September 17th, 1879, a Mongol caravan arrived. A hundred of its members, Mongols, with a few Tibetans, were going back at once. All were mounted and all armed with spears, swords, and fire-arms. A—K seized the opportunity. Great caution was observed during the march; patrols were sent on ahead, and a watch kept at night. The route which was followed at first coincided with that of Nain Singh in 1875, when he journeyed from Tengri-nor to Lhasa. South of Tan-la, A—K touched the route taken by Przhevalsky on his third journey. The highest pass in the Tan-la, 16,400 feet, marked the water-shed between the upper Mekong and the Yang-tse-kiang. After five months on the plateau he reached the Anghirtakshia Mountains over a pass 15,750 feet in altitude. A halt was made at Tenghelik in Tsaidam; but just as the caravan was on the point of starting again it was attacked by two hundred robbers, who relieved A—K of all his goods and baggage animals. He managed, however, to retain his notes and instruments, and in spite of his reverses determined to persevere with the solution of the problems which had been set him. He wintered on the western shore of the Kurlyk-nor until March, 1880. Thence he intended to steer his course towards Lop-nor; but his Indian servant deserted him, carrying off most of his possessions. He himself was obliged to take service with a Mongol, who was going to Sa-chow. There he was well treated by a lama, but was compelled by the Chinese governor to turn back.
This turning-point is of importance. It was from that region Przhevalsky made his journey towards Tsaidam and Tan-la in 1879–80; and in the same quarter Count Széchenyi's expedition through China came to an end. With one faithful follower, A—K started on his return journey, but was again compelled to take service with "Chinese Tatars." Finally, however, he reached Darchendo (Tatsien-lu) in safety, and at the mission-station there received every help from the bishop; and thence returned by way of Batang and Darjiling to India.

In 1888–89 the American Rockhill made a journey into Eastern Tibet. Starting from Peking with only one follower and a few horses, he proceeded to the Koko-nor and Alakanor, crossed the Yang-tse-kiang, and eventually got back to Shanghai. He could speak Chinese and Tibetan, and travelled in disguise. He did some first-rate mapping, measured heights, made notes, and says that previous European maps are incorrect and unreliable in respect of both orography and hydrography.

Several other travellers, induced by the desire for research or by ambition, have of late undertaken journeys into inner Tibet and towards Lhasa. Many have failed, while others can show good results. The most successful expedition was that of Bonvalot and Prince Henry of Orleans, which crossed Asia from northwest to southeast. The expedition followed Przhevalsky's route along the Tarim as far as the Lop-nor and the Altyn-tagh. On November 17th, 1889, they set out from the Lop-nor, and on the 23d crossed the Altyn-tagh, leaving Przhevalsky's and Carey's routes behind them. They then struck a direct course to the south, across unknown country and without guides. This march lasted till February 17th, 1890, and extended to two days' journey south of the Tengri-nor. The Tibetan plateau, on which they were travelling for three months, nowhere falls below the altitude of thirteen thousand feet. Some of the mountain-chains of the Kwen-lun system were crossed by passes at more than 18,000 feet in altitude, and numerous lakes were discovered. The country was barren in the extreme, totally devoid of trees or bushes; it did not even provide sufficient provender
for the camels and horses of the caravan, which, in consequence of the fatigue, the privations, and the severe cold, gradually died off until very few were left. From December 4th to January 30th not a human being was encountered. Two days' journey south of the Tengri-nor the expedition was stopped by the Tibetans, and in spite of negotiations lasting nearly seven weeks it failed to obtain permission to continue its march to Lhasa. The travellers were therefore obliged to make a considerable circuit, and reached Tong-king in September.

In May, 1890, the Russian Captain Grombtchevsky endeavored to penetrate into Western Tibet from Polu, but, being unsuccessful, he turned aside to Khotan, and spent July and August in exploring the Tisnab valley, the upper Yarkand-daria, and the water-shed between these two rivers. After a visit to the Pamirs, he proceeded, by way of Kashgar, to Tashkend (Tashkent), where I met him at the end of the same year. He had covered a distance of more than 4700 miles, and his researches form a connecting link between those of Kuropatkin (1877), Forsyth (1873-74), Przhevalsky (1885), and Pievtsoff (1889-90). He met the last-named in Niya, where the two travellers were able to compare notes and place-determinations.

In 1889 and 1890 General Pievtsoff, accompanied by Przhevalsky's companions, Roborovsky and Kozloff, and by the geologist Bogdanovitch, made a journey into East Turkestan, crossing the Tian-shan Mountains, proceeding up the Yarkand-daria to Yarkand, thence to Khotan, and wintered at Niya. From the northern foot of the Kwen-lun Mountains they made several expeditions on to the Tibetan plateau, and explored, in particular, that part of it which lies to the north of the Arka-tagh. The return journey was by way of the Lop-nor, Karashahr, and Dzungaria. Pievtsoff's journey is one of the most important that has been undertaken in these parts, and no traveller has made such reliable place-determinations as he.

In the Altyn-tagh and the tracts south of them Przhevalsky's route in his fourth journey was crossed at several points
by that of the Englishman Carey. Accompanied by Dalgleish, who was afterwards murdered, Carey crossed the Altyntagh, the Chamen-tagih, and the uninhabited plateau between these two ranges of mountains, before he was able to reach the Kwen-lun proper and the Tibetan highlands. He passed over these chains at a point rather more to the west than that chosen by Przhevalsky, and afterwards intersected Przhevalsky's route on the plateau between the Chamen-tagih and the Kwen-lun Mountains. Carey afterwards proceeded to the east along the foot of the Kwen-lun, went a short distance between this range and the Koko-shili, and crossed the pilgrim road from Mongolia to Lhasa immediately south of the point where it climbs over a pass in the Kwen-lun Mountains. At the river Ma-chu he turned northward and traversed a portion of A—K's route. This journey took place in 1885-87.

Captain Younghusband, whose name is well known for his travels in the Pamirs, travelled in 1888 from Peking, via Barkul, Ak-su, and Kashgar, to India; and Captain Bower, between June, 1891, and March, 1892, crossed Tibet and China from Leh to Shanghai.

The expeditions which I have here summarized are the most important within the regions which I propose to visit. It would lead me too far were I to endeavor to render an account of the great problems that still await solution in the interior of Asia. The discovery of new chains of mountains, lakes, and rivers, of the traces of an ancient civilization, of antiquities which might possibly throw light on the great migrations of the races through Asia, the identification of old, disused caravan roads, and, finally, the mapping of an entirely unknown region—all this possesses an irresistible attraction for the explorer; but I can only touch upon one or two questions of peculiar interest.

In the Asiatic highlands the geologist has unique opportunities of studying phenomena of the greatest possible interest, interesting not only on account of the processes of evolution which the mountain-chains are actually undergoing there, but also for the reason that those mountain-chains
themselves are so little known. The table-land of Tibet rises like an enormous platform up to a mean height of thirteen thousand feet above the lowlands of Hindustan on the one side and the desert of the Tarim basin on the other, the latter being one of the lowest depressions in the interior of any continent. Lake Lop-nor has an absolute altitude of not more than two thousand five hundred feet, and at Luk-tchin, south of Turfan, a depression has been found which actually lies a considerable distance below the level of the sea. On the side next the Tarim basin the Tibetan highlands are bounded by the Himalayas and the Kwen-lun, whose western extremities meet in the Pamirs and the regions south of it. While the older geographers and discoverers bestowed their attention upon little else save the topographical appearance, or at most the surface elevations, of a country, modern geographical discovery claims from its surveyors reliable knowledge of the original causes of the present condition of the surface of the earth, and the genetic connection, origin, age, and relation of the mountain-chains to each other. There are important questions still to be solved in High Asia on these points, and a long period of time must necessarily elapse before these problems can be brought within measurable distance of solution. During the last twenty-five years only four geologists of standing have devoted any attention to the region of the Kwen-lun system—namely, Stoliczka, Von Richthofen, Loczy, and Bogdanovitch.

But vast gaps still divide the regions which they have severally investigated. It is my intention during this projected journey to contribute as far as lies in my power to the filling in of these gaps, where every observation, every contour-line, is of the utmost value.

Another problem of intense interest is the Lop-nor question, which was raised by Baron von Richthofen. I will mention here some of the points set forth in his article entitled "Bemerkungen zu den Ergebnissen von Oberst-lieutenant Przewalski’s Reise nach dem Lop-noor und Altyntagh" (Verhandlungen der Ges. für Erdkunde, V., 1878, pp. 121 et seqq.).
Marco Polo was the first to make the Lop desert known to Europeans, and on D’Anville’s map of Asia Lop-nor with its rivers is found for the first time, though in latitude 42° 20’ N. Shortly before Przhevalsky’s journey the lake was supposed to be situated in an enormous basin, and at a greater distance to the south than to the north of the mountains which bounded it. Przhevalsky, however, found that the lake lay much farther south than was supposed from the maps and Chinese accounts, and the result of this and his other expeditions was that the maps of the interior of Asia came to present quite a different appearance from what they had heretofore. The territory between Korla and Altyn-tagh was quite unknown; as was also the fact that the lower Tarim ran for such a long distance in a southeasterly direction. The discovery of the Altyn-tagh possessed equal importance as a contribution to the knowledge of the physical geography of Asia as for the comprehension of the position and direction of the ancient trading-routes. It now became clear why the ancient silk caravans from China to the West kept so near the south of Lop-nor, necessitating their passing through the much-dreaded desert between Sa-chow and the lake.

Basing his deductions partly on certain geological laws, and partly on a large map of China and Central Asia published in Wu-chang-fu in 1862, Von Richthofen says:

“The most remarkable thing about Przhevalsky’s Lop-nor is that he discovered a fresh-water lake where we are constrained to assume the presence of salt water. It is an absolute impossibility that a lake-basin, which for a series of geological periods has acted as a reservoir for the deposition of salt from a great river, should contain fresh water and be the resort of fish. This would be inconceivable even though the whole course of the Tarim lay through regions which in the general estimation were quite free from salt. But as a matter of fact, all the regions whence the lake gathers its drainage are so saline that fresh-water springs are quite an exception, and occur only close to the foot of the mountains. Now the water of the Tarim must contain a greater quantity of salt than almost any other large river in the world. The
concentration of these saline ingredients by evaporation must take place to a very great extent in the last reservoir of the Tarim, and the continuation of the process from time immemorial must therefore have caused an unusually large deposit of every kind of steppe salt. From the remotest ages the Chinese have called Lop-nor 'the Salt Lake.' . . . Contrary to all theoretical conclusions and historical accounts, we now have from the first European eye-witness, who is furthermore gifted with uncommon powers of observation, the distinct assurance that the last basin of the Tarim is a fresh-water lake. There must therefore exist peculiar circumstances to account for this apparent contradiction."

It might perhaps be supposed that during the winter, when the evaporation is slight, the fresh water rises and spreads above the salt water; but the inconsiderable depth of the lake sufficiently nullifies this supposition. Another explanation is that the Tarim, which often changes its channel, has abandoned its former reservoir in favor of another, the present one, which is supposed to be of comparatively recent formation.

The most probable explanation is that, besides the two reservoirs visited by Przhevalsky (the Kara-buran and Kara-kurchin—i.e., Kara-koshun), there is yet a third, into which an arm of the Tarim debouches. No Chinese map shows a southern branch of the Tarim, but a large lake is indicated in latitude 41° N.—i.e., in the direct line of any continuation of the Tarim—and is called on the maps Lop-nor. The circumstance, among other things, that Przhevalsky did not find the name of Lop-nor in use also points to the same conclusion. On the other hand, he did hear the name in use for that part of the Tarim which lies east of where the real Lop-nor should be.

Another important argument is implicit in the fact that the Tarim, at its confluence with the Ughen-daria, has a breadth of three hundred to three hundred and sixty feet and a strong current; but below the junction of all its various tributaries a breadth of only one hundred and eighty to two hundred and ten feet, and a slow current. It is possible
that when Przhevalsky journeyed among these tributaries, or rather anastomosing arms, the most easterly branch discharged a part of its water eastward through another and separate channel into the inaccessible salt desert, and that the traveller overlooked this channel. Von Richthofen concludes his investigation with the words, "However highly we may value what Przhevalsky has done towards the exploration of the Lop-nor, we cannot consider that the problem, for the sake of which he underwent such great hardships, is as yet definitively solved."

The three expeditions of Carey and Dalgleish, Bonvalot and Prince Henry of Orleans, and Pievtsoff, each of which has visited Lop-nor since Przhevalsky, have not added to our knowledge of this remarkable lake, for the reason that they all followed the same route that he took.

The solution of the Lop-nor question is still a desideratum for all who are interested in the geography of Asia. The future traveller to Lop-nor must not content himself with proving the existence of the basins discovered by Przhevalsky; he must make a systematic and accurate investigation of the districts north of them in order to try and find the lake into which the Tarim, according to Von Richthofen, empties a portion of its waters. This lake, too, is marked on the Chinese maps, which as a rule are remarkable for their great topographical accuracy.
CHAPTER II

THE PLAN AND OBJECTS OF MY JOURNEY

For several years I have been occupied in studying the geography of Central Asia, partly at home and partly at the University of Berlin, under Baron von Richthofen, the celebrated authority on Chinese geography. I have also prepared myself by two journeys to Persia and Central Asia, in the years 1885-86 and 1890-91 respectively, the latter after the conclusion of Your Majesty's mission to Shah Nasr-eddin of Persia. During these journeys I had the opportunity of becoming accustomed to Asiatic travel, to association with the natives, and of learning one or two of the most important languages. In the hope of being able to make these preparatory studies of use in the cause of science, I have ventured to seek Your Majesty's protection and support for the execution of a scheme which, if all goes well, will reflect honor on our country and contribute to disperse the clouds which still rest over a great part of Central Asia. An expedition into that part of the world which was the cradle of the Aryan race, and from whose dim interior the Mongols streamed out over the whole of Asia and part of Europe, and where there is such a host of geographical questions still awaiting solution, is one of the most important undertakings within the domain of geographical discovery. The object of my prospective journey is to traverse Asia from west to east, from the Caspian Sea to Peking, and in particular to explore the intermediate regions which are least known.

The Swedish expedition should, if possible, leave Stockholm in the month of May of the present year (1893). Its equipment should be completed in Turkestan and Ladak, and nothing need be taken from Stockholm except instru-
ments and fire-arms. Accompanied by one assistant, whose duty it would be to take astronomical observations, I propose to travel through Russia to Baku, across the Caspian Sea to Usun-ada, and thence by rail to Samarkand. It is my intention to drive through West Turkestan in a tarantass by way of Tashkend, Kokand, Margelan, and Osh, and thence over the pass of Terek-davan—all places well known to me—to Kashgar in East Turkestan, the termination of my former journey in 1890–91. In Kashgar I shall hire a horse caravan to take us, by way of Yarkand and the Karakorum pass, to Leh, where there are an English agent and English merchants. The journey to Kashgar will take two months to accomplish, thence to Leh one month, so that, if all goes well, the beginning of August should see us in Leh.

It was also my intention originally, from the region around Lop-nor, to try and penetrate over the Kwen-lun Mountains into Northern Tibet. But in December of last year, while on a visit to St. Petersburg, I met General Pievtsoff, who in 1889–90 made the expedition previously mentioned into East Turkestan. General Pievtsoff advised me against attempting to carry out my plan along the lines which I then unfolded to him. He had had unfortunate experience of the difficulties which travellers encounter in those regions, having endeavored unsuccessfully to penetrate into the country with horses and camels. Train animals perish in great numbers, owing to the difficulties of the country, the inclement weather, the rarefied air, and the almost entire absence of pasturage. General Pievtsoff advised me to make Leh, in Ladak, the starting-point for my proposed expedition into Tibet. There one can procure not only the necessary provisions and articles essential to an adequate equipment—such as tents, saddles, furs, felt carpets, household utensils, boxes for collections, etc.—but also reliable men, natives of the adjacent provinces of Tibet. Above all, he told me that tame yaks were also procurable at Leh, animals to which the rarefied atmosphere is natural, and which find their way with inconceivable sureness of foot in places which seem quite impassable. In regions which to all appearance are absolutely barren,
they are further able to find mosses and lichens, which they lick from the rocks. The expedition will require a caravan of fifteen yaks, and an escort of six well-armed natives.

According to Pievtsoff, the autumn is the best time of year for travelling in Northern Tibet. The expedition ought therefore to leave Leh in the middle of August, and strike an east-southeasterly line towards the lake Tengri-nor, about the same direction as that taken by the pundit Nain Singh in 1874. Somewhere north of Tengri-nor, in an uninhabited tract, I propose to encamp, and, disguised and accompanied by one or two followers, endeavor to penetrate to Lhasa, returning thence to the chief encampment at Tengri-nor. This somewhat adventurous method of trying to enter the capital of Tibet I shall naturally not resort to unless circumstances are favorable and the reaching of Lhasa seems likely to prove of undoubted value in the interests of geography. From Tengri-nor we shall strike through Tibet and endeavor to reach East Turkestan over the Kwen-lun Mountains; the town of Cherchen would then be our nearest goal. And there we ought to arrive in February of next year.

After exchanging the yaks for camels, we shall proceed northward through an entirely unknown part of the Desert of Gobi, until we reach the course of the river Tarim. In the desert there are no roads and no springs, nothing but barren, moving sand-hills. The inhabitants of the Niya oasis on its southern confines, however, told Przhevalsky that in the winter it is possible to traverse the desert, for there are in that season occasional falls of snow, which render it possible to procure water. It is my intention to study the aspect of this desert and the movements of its sand-hills.

We shall then follow the east bank of the Tarim in order to discover whether the river does or does not send off a branch to the east, so as to form a lake in 41° N. lat., to the north of Przhevalsky's Lop-nor. The investigation of the Lop-nor problem should be completed by June, 1894, and our expedition will then have accomplished its most important as well as its most difficult objects.

From Lop-nor we shall steer a direct course to the east
and proceed through the unknown portion of the desert known as Kum-tagh; then go on by way of Su-chow (Su-chau) to Ala-shan, where we ought to discover inscriptions and memorials of the earliest times of the Uigurs; then across the Yellow River, through Ordos, where we shall keep north of the Great Wall, and finally through the two northern provinces of China, Shan-si and Pe-chi-li, to Pe-king, where we ought to arrive in November, 1894.

It is easier to devise a scheme of this character at one's writing-table than it is to carry it out. My programme must therefore be regarded as the ideal which I shall endeavor to attain. If the whole plan cannot be realized, still I will hope that at least I may have strength and energy to execute a considerable portion of it. It is evident, especially in a land so little known as Tibet, that it is impossible to determine on a particular route beforehand, as unforeseen circumstances must inevitably arise, and perhaps necessitate a radical change in any predetermined scheme.

In Peking the expedition may be regarded as at an end. From that city I shall send my Swedish companion home with the collections, notes, and general results. Should my funds hold out, I shall probably seize the opportunity to make acquaintance with southern Mongolia and the Desert of Gobi proper. I propose, therefore, to return home by way of Khami and Turfan, as in any case I should be responsible for the safe return of my followers to their own country.

The expedition, starting from Osh, in Fergana, where Russian means of communication cease and caravans have to be resorted to, will, I reckon, cover a distance of about 5300 miles. The cost of the whole expedition I estimate at about 30,000 kronor (£1670).

The scientific work which should be done may be comprised under the following heads:

1. The construction of a topographical map of the entire route traversed. The determination of geographical latitudes and longitudes wherever possible. The determination of fixed altitudes with the hypsometer or boiling-point thermometer and three aneroids, and the indication of them on the map.
2. Geological investigations, the sketching of profiles and contours, and the collection of petrological specimens.

3. Anthropological researches and measurements among the peoples we come in contact with. The photographing of various racial types. Study of the religious beliefs of the semi-savage tribes, and their mode of living, etc. Linguistic studies.

4. Archæological researches. The description, measurement, and sketching of the ruins of noteworthy towns, burial-places, etc.

5. The photographing of towns, places of geological interest, etc.

6. Meteorological observations. Periodical determinations of the temperature of the atmosphere of the earth, and of river and lake water; ascertaining the amount of moisture in the atmosphere, the direction of the winds, etc.

7. Hydrographical investigations. The depth of lakes, the volume of water in the rivers, together with their variations at the different seasons of the year, the velocity of currents, their direction, etc.

8. The collection of plants, particularly algæ.

9. The keeping of a diary during the entire period of the expedition.

This was the scheme which I laid before the King, and which was stamped with his approval. Now that my work is at an end, and I am able to compare the journey I planned with the real journey I carried through, I congratulate myself that on the whole the two routes coincided fairly well across East Turkestan, Tibet, and Mongolia, although there were noteworthy deviations, caused by the course of events. In the first place, the route I actually followed was much longer than the one projected, and included regions which I at first considered altogether inaccessible. Furthermore, I altered my plans at the very outset, and instead of crossing over the Caspian Sea, which I already knew well, I went from Orenburg through the Kirghiz steppe. The Pamirs, which were not included in my original programme, became
the object of three extended excursions, during which the eastern, or Chinese Pamirs, in particular, were explored in many directions. The Takla-makan, the great western extension of the Desert of Gobi, was crossed in two directions; and there I had the great satisfaction of making important archaeological discoveries. Finally, I made several expeditions into the country between Kashgar, Ak-su, and Khotan.

After the expedition through the desert to the Tarim and Lop-nor, and back again to Khotan, there only remained one of the chief objects of the programme—namely, Tibet—unaccomplished. Then I heard of Dutreuil de Rhins's and Littledale's expeditions to pretty nearly the same parts as those I intended to visit, and that both had tried to reach Lhasa and failed. I therefore thought it would be better to work those parts of Northern Tibet which were still a complete terra incognita. Everywhere there, with the exception of the point where I should intersect Bonvalot and Prince Henry of Orleans's route, I should be the first European pioneer, and every step would be an accession of geographical territory, every mountain, lake, and river a discovery.

After I had successfully accomplished this undertaking, although not without great difficulty, instead of following the route I had mapped through Mongolia to Urga, I preferred to strike a more southerly line—namely, through Tsaidam, the country of the Tanguts, the territory of Koko-nor, and the province of Kan-su, where, on several occasions, I could not help following or crossing the routes of other travellers. In Ala-shan I chose a route which had not hitherto been travelled over, and it was not until I reached Ordos, Shan-si, and Pe-chi-li that I entered regions which have long been well known. Between Peking and Kiakhta I travelled through Mongolia proper, and afterwards hastened homeward through Siberia.

Of other discrepancies between my original plan and my journey as actually carried out, I will only mention that at the last moment I decided to go alone. This was partly for the sake of economy, and partly because I did not like the idea of being involved in dangers and hardships, which I
could endure myself, but in which a companion might not have cared to risk his life.

Moreover, instead of making one continuous journey, as I had originally intended, I found it advisable to break it up into several expeditions. This was rendered possible through the boundless hospitality shown me by the Russian Consul-General in Kashgar, Mr. Petrovsky. He has since been specially honored by the King of Sweden and Norway for his invaluable services to my undertaking.

After crossing the Pamirs in the winter and spring of 1894, I employed the summer and autumn for a new expedition into the east and middle Pamirs, Kashgar being my point of departure. In the spring and summer of 1895 I traversed the Takla-makan Desert and the north of East Turkestan; and finally, in the summer and autumn of the same year, I made a third excursion into the southern Pamirs. In the same way I subsequently made Khotan a new base of operations, leaving there in the beginning of 1896 for my long journey round East Turkestan to Lop-nor. It was only when I left Khotan in the end of June, 1896, that I really burned my boats behind me, cutting off every connection with the West until I reached the extreme East—Peking. This arrangement made the journey longer both as regards distance and time; but, on the other hand, the results were much greater, and after each expedition, thanks to the Russian post, I was able to send home my collections. I do not think I am wanting in modesty if I say that I now look back with satisfaction on the many important geographical discoveries made during this journey, and on the solution of problems which had long been the subject of controversy among geographers.

The breaking-up of my journey into several shorter expeditions was a happy thought. After each such expedition I was able to rest, and recover strength necessary for a new campaign. I also worked out the results of my journey provisionally, and prepared for the work awaiting me during my next expedition; and each time I started off with new interests and new points of view.
In this account of my travels I have aimed to depict the reminiscences and impressions which I gathered during my long and lonely wanderings in the heart of Asia. It is clear that the results of a journey which occupied three and a half years are too voluminous to be comprised in a single book; and I have thought it wiser to separate the scientific data from matter which is of more general interest. I propose, therefore, to give a description of the journey, the countries I passed through, the peoples with which I came into contact, and the adventures I and my men experienced in unknown and uninhabited regions. The scientific results, which require a longer time for their working-out, and which are of more special interest, will be published separately at some future date.

Thanks to King Oscar's protection and generous aid, I had no difficulty in raising the 30,000 kronor, or £1670, I required. More than half the sum was given by the King, the Nobel family, and friends of geography in Gothenburg through Mr. Westin. The other half was contributed by Baron Åkerhielm, a former minister of state, and Messrs. E. Cederlund, Treschow, Andersson, J. Bäckström, C. von Platen, Carl Lamm, Sager, and Davidsson, and Mrs. Emma Benedicks and Mrs. Clara Scharp.

Five of these are no longer living; but to the others I desire to take this opportunity of expressing my sincerest thanks.

On my arrival at Peking I was, however, obliged to borrow 4000 kronor, or about £220; so that the cost of the entire journey, instruments and equipment included, amounted to 34,000 kronor, or rather less than £1900.

Among other contributions I must mention a Husqvarna double-barrelled rifle from Mr. W. Tamm, an express carbine from Consul-General J. W. Smitt, an aluminium craniometer from Professor G. Retzius, and an artificial horizon from Baron Nordenskiöld.

My luggage from Stockholm was not very great, as the bulkier part of my outfit was to be obtained in Asia. I had the following instruments: a prismatic circle (Wegener) with
two horizons, two chronometers (one Frodsham from the Royal Academy of Science in Stockholm, and one Wirén from the observatory in Tashkend), three French aneroids, a number of thermometers and other meteorological instruments from Fuess in Berlin, among them black-bulb insulation thermometers, psychrometers, spring thermometers, maximum and minimum thermometers. I also took with me a plane-table with stand, together with compasses, a camera by Watson, and a kodak by Eastman, with a complete supply of films and plates, chemicals, and other necessaries. Furthermore, I took two ordinary watches, a field-glass, and a small aluminium telescope; about forty pairs of glasses and snow-spectacles; finally, geologists' hammers, metre measures, a water-color box, drawing materials, and a number of sketch-books and note-books, etc.

My weapons consisted throughout the entire journey of the two above-mentioned rifles, a Russian Berdan rifle, a Swedish officer's revolver, and half a dozen other revolvers, and two cases of ammunition.

The library was naturally reduced to the smallest possible compass, and consisted only of a few important scientific books and the Bible. On the other hand, I took with me a very complete collection of itineraries laid down during the last ten years in the interior of Asia; and also Russian and English survey maps of the Pamirs, maps of the Desert of Gobi and of Tibet.

Thus equipped, and provided with a Chinese passport, I left my dear old home in Stockholm on October 16th, 1893; and on board the *Von Döbeln* steamed eastward towards my unknown fate.

It was a cold, dark, autumn evening, such as I shall never forget; heavy rain-clouds hung over the city of Stockholm, and her lights soon vanished from sight. More than a thousand and one nights of loneliness and longing were before me; everything I held dear was behind me. Yet that first night was the bitterest of all; I never suffered so much from homesickness again.

Only those who have left their country for a lengthened
period, and with the clouds of uncertainty before them, can conceive the feelings which such a break occasions. But, on the other hand, the whole wide world was before me, and I determined to do all that lay in my power to solve the problems which I had set myself.
CHAPTER III
ACROSS RUSSIA TO ORENBURG

An unbroken railway journey of 1400 miles, the distance which separates Orenburg from St. Petersburg, is hardly an unmixed pleasure. Still less is it so at a period of the year when rain, snow, and wind take away all desire on the part of the traveller to while away the time of waiting by promenading the platform; while smoky or overheated stoves make it unpleasant to remain in the carriage.

The four days and nights which it takes to cross European Russia in this manner are, however, neither long nor dull. After leaving Moscow there is always plenty of room in the train. You can arrange your corner of the carriage as comfortably as circumstances will allow, and let your gaze wander away over the endless fields and steppes of Russia. You may smoke your pipe in perfect peace, drink a glass of hot tea now and then, trace the progress of your journey on a map, watch how one government succeeds another, and while away the time generally in conversation. In the dominions of the Tsar it is considered the most natural thing in the world for every one to address his fellow-passengers. If no other pretext presents itself, you may always begin a conversation by asking your neighbor's destination. My fellow-travellers, in most cases, were going to places in the governments of Ryazan, Penza, and Samara. When they asked me, in return, where I was going, and were told in answer "Peking," they were not a little surprised, and often were not quite clear where the place was.

Endless steppes, arable land, bearded peasants with fur caps and long coats, white churches with green onion-shaped domes and surrounded by rustic houses, wind-mills, which
now, at any rate, had no need to complain of want of wind—these were the chief objects to be seen from the carriage windows. Hour after hour, day after day, the same picture was unrolled before our eyes. The only tract of forest we passed through was in the east of Tamboff, but the trees were all low, except an occasional pine, which lifted its head above the rest.

On we hastened eastward through the governments of Ryazan, Tamboff, Penza, Saratoff, and Simbirsk, until at last we reached the greatest river in Europe. We crossed it at Syzran by one of the longest bridges in the world, 1625 yards in length. The Volga resembled a large lake rather than a river. The opposite bank was lost in the mist; the muddy, brownish-gray masses of water rolled sluggishly on under the vast span of the railway bridge, every whit as lifeless as the landscape through which they flowed. Two or three rowing-boats and a paddle-steamer moored to the bank were the only signs of life we saw. Then on again we were whirled across the never-ending steppe. On the boundary between the governments of Samara and Orenburg we began to detect signs of the proximity of the southwestern extension of the Urals. The country became more broken, and the railway often curved in and out between the hills. For considerable distances the line was bordered by wooden palings intended to protect it from the snow. The farther east we travelled the more desolate became the landscape. We never saw human beings except at the stations. The steppe was occasionally dotted with herds of cattle, sheep, and goats. The sky was gray and dull; and the fields had the yellow tint of faded grass. Such were the border-lands between Europe and Asia.

At the end of four days of railway travelling I arrived, considerably shaken and jolted, at the important town of Orenburg, situated near the point where the Sakmar joins the river Ural. The town was not very interesting. Its low stone houses are arranged in broad streets, unpaved and full of choking dust, and overtopped by neat churches, of which the still unfinished Kazansky sobor (Kazan cathedral) is the largest.
The outskirts of the town, however, were not destitute of artistic sights; for there the Tatars and Kirghiz held their mart, partly in the open air, partly in low wooden sheds. In one place were sold all kinds of carts and conveyances, tele-gas and tarantasses, brought the most part from Ufa; in another, vast quantities of hay, piled up on carts, drawn by teams of four Bactrian camels; in another, horses, cattle, sheep, fowl, geese, turkeys, and various other live-stock. Of the 56,000 inhabitants of Orenburg, 8,000 were Mohammedans, the greater number being Tatars, the rest Bashkirs and Kirghiz. The principal mesjid (mosque) of the Tatars was particularly beautiful, having been built at the expense of a rich merchant. Among the Mohammedans there were a number of merchants from Khiva and Bokhara, who sold cotton imported from Central Asia.

In time of war Orenburg furnishes eighteen, and in time of peace six, Cossack regiments of a thousand men each. The regiments take it in turn to serve, so that in time of peace each six regiments serve for three years. Sometimes the men of the other twelve till the land which the Crown
grants them in exchange for their services. As a rule, the government provides them with nothing more than a rifle; horse and uniform they have to furnish themselves. The six regiments on service are usually quartered at Tashkend, Margelan, Petro-Alexandrovsk, Kieff, Warsaw, and Kharkoff. The Cossacks of Orenburg always amount to a considerable force, and are only exceeded in numbers by the Cossacks of the Don, and by the Kuban Cossacks. The Ural Cossacks, at the time of my visit, had only three regiments on duty, one in Samarkand and two on the Austrian frontier. The men are well-to-do, as they own the exclusive right of fishing in the lower Ural River, while above their chief town, Uralsk, they have built dams to prevent the sturgeon from going up to Orenburg. The Cossacks' chief bears the title of "Ataman." The Ataman of the Orenburg Cossacks was at that time General Yershoff, the governor of Orenburg.

In conclusion, if I add that Orenburg is situated on the threshold of Asia, at the extreme east of Russia; that it can boast of barracks, a hospital, a poor-house, schools, and hotels, of which the best was significantly called "Europe"; that it has a theatre, in which the plays of Turgenieff and Ibsen have the best "runs"; that it is the seat of the governor and vice-governor of the government of Orenburg, and that the military governor of the province of Turgai (between the Ural River and Lake Aral) also resides there, I think I have mentioned all that is of importance with regard to this town.

Its climate is essentially continental. In summer the heat is dry, close, and oppressive, and the atmosphere is filled with dust. In winter the thermometer often falls forty degrees, Fahr., below zero; the cold, however, is not particularly noticeable, as the atmosphere is usually still. From time to time snow-storms choke the streets, and as the snow, which falls in vast quantities, is not cleared away with any great expedition, it is often impossible to go out for a whole day at a time. But, the bulk of the snow removed, the sledding is perfect; the handsome black horses trot briskly along the streets, their bells jingling, and the sledge gliding easily over
the surface. During spring and autumn the climate is very variable, and when the thaw sets in the streets become veritable swamps.

The distance between St. Petersburg and Orenburg is 1400 miles, and between Orenburg and Tashkend 1300 miles, so that I now had before me a drive nearly as long as the four days' railway journey. Thirteen hundred miles in a tarantass, in the month of November, across steppes and wastes, over roads probably as hard as paving-stones, or else a slough of mud, or impassable from snow!

I did not look forward to the prospect of driving a distance farther than from Stockholm to Rome, or than from Berlin to Algiers; but I had already (1890-91) made the railway journey to Samarcand, and wished to take this opportunity of seeing the boundless Kirghiz steppes and the Kirghiz Karakum Desert (the Black Sand) in order to compare it with the desert of the same name in the Transcaspian region.

It is possible for those who prefer it to travel by the post. But this means a change of conveyance at every station; and as there are ninety-six stations, the inconvenience and waste of time caused by the repeated unstrapping and rearranging of one's luggage may easily be imagined. It is better to buy your own tarantass at the beginning of the journey, stow away your baggage once for all, stuff the bottom of the conveyance with hay, and make it as comfortable and soft as possible with cushions and furs—a tarantass has neither springs nor seats—and only change horses at the stations.

Before starting, a stock of necessary articles, notably provisions, has to be laid in, for as a rule nothing eatable is to be obtained at the stations. On payment of fifteen kopeks (kopek=¼d.) the traveller may demand the use of a samovar, and sometimes a piece of black bread may be bought. In addition to provisions, you should always be provided with rope, twine, nails, screws, etc., so that you may be able to repair any damage that may happen to the equipage, and, last but not least, cart grease, for at every third station the process of greasing the wheels has to be gone through. Upon quitting Orenburg you leave behind every trace of civiliza-
tion; you plunge into tracts of absolute desolation, and are entirely dependent upon yourself.

For the first 180 miles we were still on European soil, through the government of Orenburg; the next 330 lay through the province of Turgai, and the remainder of the distance through the province of Syr-daria, alongside Lake Aral and the Jaxartes or Syr-daria (river). The road passed through six small towns—namely, Orsk, Irghiz, Kazalinsk, Perovsk, Turkestan, and Chimkent—and many villages; but as a rule the white-painted station-houses, with their square court-yards for horses and vehicles, stood quite isolated in the desert, their nearest neighbor being probably a Kirghiz winter aul (tent-village). In the heart of the steppe some of the stations were primitive in the extreme, the station-house being merely a Kirghiz yurt (tent), surrounded by a hedge of rushes laced through branches of trees. But even these, like the rooms in the better stations, were embellished by a portrait of the Tsar, as well as provided with a leather sofa, chairs, and a table. In one corner hung an ikon (sacred image), with its censer, and there was a Testament on the table for the edification of the traveller. Every station between Orenburg and Orsk possessed a copy of the Bible, presented by the great traveller Przhevalsky.

The master of the posting-station, staresta or starshina, also called piser, or clerk, is always a Russian, and spends his life with his family in a state of terrible loneliness and isolation. The only break in their solitary existence is the advent of the post-courier, or when some traveller comes rolling along in his tarantass. But this touch with the outer world is short-lived. The traveller's one thought is to get away from the lonely house as quickly as possible. He orders fresh horses, drinks his glass of tea while they are being put to, and hastens away as fast as he can drive. The staresta receives from one hundred and fifty (£15) to two hundred and eighty (£28) roubles a year in salary, and has under him four yamshtchiks, or drivers, nearly always Tatars or Kirghiz. Neither is their lot to be envied; for they have to be ready to climb into their seats in all weathers and at all times, and
through Asia

They drive their *troika* (team of three horses) over the same road, which in rain or darkness, in scorching heat or wind, in cold and snow, they have traversed a thousand times before. They undoubtedly have a habit of dropping asleep as soon as they get well started; but in so doing they only follow the example of their passengers, and it is easy to forgive them. Each yamshtchik receives from sixty (£6) to sixty-five roubles (£6 10s.) a year, and a monthly allowance of fifty-four pounds avoirdupois of bread, and half a sheep. Provisions, and everything else that may be wanted at the station, are brought at intervals by a special messenger, whose chief occupation it is to travel up and down the whole long line of posting-stations.

The whole of the posting-road between Orenburg and Tashkend is private property. No *gosudarstvenny sbor*, or "fee to the Crown," is paid at any of the stations between Orenburg and Orsk, for the station-masters own their own horses and vehicles. For a part of the road between Tokan and Terekli, which is owned by a merchant of Orenburg, Miakinoff by name, a fee to the Crown of ten kopeks (2½d.) per horse is demanded for each stage. Payment of the entire distance to Terekli is made in Tokan. From Terekli to Tashkend a merchant named Ivanoff, belonging to the latter place, is the owner of the post-road. He pays the station-masters and yamshtchiks, and provides horses and vehicles, receiving payment for the entire distance at either of the terminal stations.

Everywhere I went people talked of the good old times when this road was the only road leading to Russian Turkestan; when numbers of travellers were continually going backward and forward; and when every station had its nine or ten troikas (some thirty horses). General Skobeleff's campaign against the Turkomans, and Annenkoff's railway to Samarcand, introduced a new order of things. The mail-post to Tashkend, and the large majority of travellers prefer the new route, because it is shorter, cheaper, and more convenient, and the days of the old posting-road through the Kirghiz steppe are numbered. Travellers are now a rarity.
towns have lost both in importance and size. The once flourishing vehicular traffic between Turkestan and Russia has been diverted to other routes. The caravans which carried cotton and wool to Orenburg have grown fewer and fewer. The local post, combined with political and strategical interests, alone prevents this road from becoming entirely disused.

During my short stay in Orenburg the vice-governor, General Lomachevsky, placed at my disposal an honest old chinovnik, Solovioff by name, who had seen forty-five years’ service in the town. With his help I was able to procure everything I required both well and cheaply. I bought a perfectly new tarantass, roomy and strong, and provided with thick iron rims round the wheels, for seventy-five roubles (£7 1s.); I subsequently sold it in Margelan for fifty (£5). It was an easy matter to stow myself and my luggage (about six cwt.) away in it: and for nineteen days and nights without a break it was my only habitation.
CHAPTER IV

ACROSS THE KIRGHIZ STEPPES

On November 14th a buran (snow-storm), the first of the winter, raged in Orenburg, and the thermometer at mid-day sank to 21.2° Fahr. (-6° C.). As everything was ready, however, I did not postpone my departure. My trunks and ammunition-cases were all sewn up in matting, and lashed with strong rope on the back of the tarantass and in front of the driver's seat. Bags which were likely to be in constant use, cameras, and boxes of provisions, together with carpets, cushions, and furs were all crammed inside. The wheels were well greased, and the first troika of horses harnessed. It was, however, evening before everything was quite ready for a start. General Lomachevsky and the inmates of the hotel kindly bade me God-speed. The heavy carriage rolled through the gates of the court-yard, and its jingling bells began to echo merrily through the streets of Orenburg. Before dark we reached the edge of the barren steppe. The wind howled and whistled round the hood of the carriage, and drove clouds of powdery snow in our faces. By degrees, however, the wind went down, and the stars came out and lighted up the thin mantle of snow with which the whole country was covered.

In Neshinka I was overtaken by the post, which goes to Tashkend twice a week. As it only conveys the local mails, there were but two troikas; the mail-bags, however, weighed in the aggregate between 16 and 17 cwt. The first postilion only goes as far as Orsk. From that place another courier conveys the post to Irghiz, a third takes it to Kazalinsk, a fourth to Perovsk, a fifth to Turkestan, and the last to Tashkend. We joined company as far as Orsk, and shortly after-
ACROSS THE KIRGHIZ STEPPES

wards our three heavily laden troikas set off from the station-house. The road to Kamenaya Osernaya was hilly and heavy, but later on the country became leveller, the snow-storm abated, and the road was often bare. On the way to Gherial we met the first wayfarers we had fallen in with—namely, a caravan of a hundred camels or so, conveying bales of cotton from Orsk to Orenburg. The train with its Kirghiz attendants made a very picturesque appearance in the desolate landscape. About this time the axle of one of the post-telegas came to grief, and the vehicle had to be left behind. My luggage, too, owing to the incessant chafing and shaking, got loose, and had to be refastened. The sky was cloudy; it was blowing, but not snowing. The temperature was $27.5^\circ$ Fahr. ($-2.5^\circ$ C.). The river Ural was not yet visible, but we crossed several of its tributaries by means of small wooden bridges. There were numerous small stanitsas (forts) in the neighborhood, garrisoned by Orenburg Cossacks.

At Krasnogornaya, which we reached at daybreak, we stopped for breakfast. The postilion, a stalwart, shaggy old Russian, bemoaned that it was a fast day, when all flesh, with the exception of fish, is forbidden. Great, therefore, was his surprise and delight when I offered him a tin of preserved sturgeon. He made alarmingly short work of it, and consumed eleven glasses of tea in a quarter of an hour. He told me that during the past twenty years he had made the journey to and fro between Orenburg and Orsk (175 miles) thirty-five times a year—that is to say, a distance which exceeds the space between the earth and the moon by more than six thousand miles.

In Verkhne Osernaya, a large village, with a church in the middle, prettily situated near a ravine, the women were offering for sale shawls woven of goats' wool. They resembled Kashmir shawls, and could be pulled through a ring.

Steppes! Nothing but steppes, though there were mountains in the distance. The road follows the frozen, snow-sheeted river Ural. Except for an occasional Kirghiz yurt (tent), the landscape was desolate in the extreme, and the distances between the stations long. But the incessant jolting
over the hard-frozen ground and the monotonous jingling of the horses' bells had a somnolent effect, and time after time I dropped off to sleep.

At Podgornaya the country became more broken. Our next stopping-place was in the Guberla Mountains. There

I took a four-in-hand (*chetvorka*) and drove up hill and down dale, twice crossing the broad river Guberla. Along this stage an accident once happened to a Russian officer, his driver being killed; since then railings have been put up at all the more dangerous places.

At some of the better stations we met great droves of cattle, chiefly oxen, being driven to Orenburg, and thence farther on into Russia. After forty-eight hours' travelling we eventually reached Orsk, a place of 20,000 inhabitants, situated on the left bank of the river Ural and on the right bank of the Or. It stands therefore on Asiatic ground, and
ACROSS THE KIRGHIZ STEPPES

is entered by a narrow wooden bridge thrown across the majestic stream of the river Ural. The houses cluster round an isolated and commanding hill, crowned by a clock-tower, from which a watch is kept at night in case of fire. The view is very extensive. Low mountains are visible in the vicinity. The country is only flat towards the southwest, where runs the road towards Tashkend. The sobor (governor’s house), institutions and schools, post, telegraph, and bazaars are situated between the river Ural and the hill; there, too, the merchants and burghers have their houses. On the south side of the hill dwell the poorer classes, the peasantry, Tatars, and Kirghiz.

It was intended to erect the chief church of the town on the top of the hill, and the foundations are even partially laid; but the necessary funds were not forthcoming, and the work was discontinued. The church would have been visible for many a mile in both Europe and Asia.

During the spring the Ural rises to a great height, and sometimes inundates the lower parts of Orsk, as well as forms vast lakes in the vicinity. The inhabitants then climb their hill to admire the transformation of the steppe into a sea. When the ice begins to melt in the spring it destroys the bridge, which is simply built on poles, so that it has to be rebuilt every year. At such times the post is carried across the river in boats.

Between the river Ural, the Caspian Sea, Lake Aral, the Syr-daria, and the Irtysh stretches the vast level of the Kirghiz steppe. Thinly inhabited by Kirghiz nomads, the steppe is also the home of a few species of animals, such as wolves, foxes, antelopes, hares, etc., and there, too, certain prickly steppe plants struggle against the inclement conditions of the region. Where there is sufficient moisture, kamish, or reeds, grow in great quantities; and even the driest sandy wastes are diversified by the tufted bushes of the saksaul (*Anabasis ammodendron*), often attaining six or seven feet in height. The roots, which are excessively hard, provide the chief fuel of the Kirghiz, and are collected during the autumn for winter use. At nearly every aul (tent-
village) you see big stacks of them, and we frequently met large caravans conveying nothing else.

Every now and then the steppe was traversed by water-courses, although at this season of the year they were generally dry. They ran into small salt lakes, on whose shores innumerable birds of passage congregate in spring and autumn. It is by the side of these streams that the Kirghiz pitch their auls, consisting of black tents (uy) and sheds made of kamish. Their winter auls, on the other hand, are huts built of clay or earth. In the summer they move northward, with their herds of cattle, to escape the oppressive heat, and to find pasturage which is not scorched up by the sun. Many Kirghiz own as many as 3000 head of sheep and 500 horses, and are then considered to be in very good circumstances. The winters in northern Turgai are bitterly cold. During the months of January and February snow-storms rage with unmitigated violence; the Kirghiz then seek their old winter settlements, and protect the sheep in pens hedged round with reeds. In a word, the climate is typically continental.

The Kirghiz are a half-savage people, but capable, healthy, and good-natured. They love to call themselves Kaisak—i.e., brave fighting men—are content with their lonely life on the steppes, worship freedom, recognize no authority; and despise those who live in towns or labor at agriculture. In the struggle for existence their lot is a hard one. Their herds are their chief means of subsistence, providing them with food and clothing. The scanty vegetation and the soil itself furnish materials for their dwellings. The long, glowing roots of the saksaul protect them against the cold of winter. Their language is not very rich; when they talk together they eke out mutual comprehension by very vivacious gestures. They cherish a devoted love for their desolate steppe, where their forefathers lived the life of freedom, and find it beautiful and varied, although the stranger seeks in vain for an object on which to rest his eye. It is true that, like the sea, the steppe is grand and impressive; but it is utterly monotonous and melancholy. I drove across it, day in, day out, at a giddy speed; but the landscape always remained the
same. The tarantass was always the centre of a vast expanse without boundary or horizon, so vast indeed that it seemed almost possible to discern the globular shape of the earth. Spring is the only season in which it can afford the stranger any pleasure to visit these regions. The air is then perfumed with the delicious scent of flowers; for vegetation develops with incredible rapidity, in order to make the most of the short space of time before the burning sun of summer comes to scorch everything up.

As might be supposed from the physical conditions of the region in which they live, the sense of locality and power of vision displayed by the Kirghiz are developed to a high degree of keenness and exactitude. In a country across which the stranger may travel for days and days without, so far as he can perceive, anything to vary its uniform flatness, and across which there is not the slightest indication of a road, the Kirghiz finds his way, even at night, with unerring certainty. Nor do the heavenly bodies serve him as a guide. He recognizes every plant, every stone; he notices the places
where the tufts of grass grow more thinly or more closely together than usual. He observes irregularities in the surface which a European could not discover without an instrument. He can discriminate the color of a horse on the horizon long before the stranger, with the best will in the world, is even able to discover its presence; and he can tell whether a cart, which when seen through a field-glass appears to be a mere dot in the distance, is advancing or receding.

At Orsk my vehicle was well greased, the baggage restowed, and I again crept into my moving domicile. The driver whistled to his horses; the troika set off with lightning speed southward, and—farewell to Europe! At the first station, Tokan, I paid forty-four roubles (£4 8s.) to defray the cost of the entire journey of 320 miles to Juluz; after that I had only to show the receipt. Between Orenburg and Orsk (175 miles; thirty-four roubles, or £3 8s.) each stage was paid for separately.

From Orsk the posting-road followed the right bank of the river Or, through an almost imperceptibly diversified country, to the station of Buguti-sai, near which there was a Kirghiz village. The inhabitants did not seem to be particularly charmed by my visit, as I had my two cameras with me. They kept asking me if the bigger one was a gun; and nothing would induce them to group themselves in front of it. I did, however, succeed in getting some of them to sit to the smaller one.

After a long rest at Buguti-sai, we finally left the valley of the Or. The moon threw a silvery glamour over the lonely steppe, sheeted here and there with snow, but there were neither people nor settlements to be seen. The silence was unbroken except by the sound of the horses' bells, the shouts of the driver, and the crunching of the snow as the wheels of my heavy tarantass pounded over it.

The station-houses were all exactly alike—plain wooden houses, generally painted red, with a flight of steps in the middle of the front wall, leading up to the principal door. On one side of the steps was a pole for a lantern, and on the other a sign-post giving the distances to the two nearest
stations. From the entrance-passage you passed into the station-master's room on the right, and on the left into the parlor for travellers. The latter was furnished with two sofas, two tables, a mirror, a good many chairs, and a large stove, in which the dried roots of the steppe plants were always burning. The fuel was kept piled up by the side of enormous hay-stacks, a short distance from the house. In the large square yard at the back were a number of carts and sledges; and there also were the stables and a room for the drivers.

At the station of Tamdi I rested for some hours during the night, and in the morning saw on the ice of the Tamdi stream the tracks of a number of wolves, which had been bold enough to enter the yard and steal three of the staresta's geese. The thermometer showed 4.1° Fahr. (−15.5° C.), and the thin snow crackled under the wheels of the tarantass when we drove off in the early morning. Every blade of grass was feathered with hoar-frost, and it was bitterly cold.

The first Russian "town" we passed on Asiatic soil was Kara-butak, which, like Rome, is built on seven hills, though

THE "TOWN" OF KARA-BUTAK
it is somewhat smaller than the latter, as it only consists of thirty-three houses, inhabited by thirty odd Russians, about a hundred Tatars, and a few Kirghiz. The only claim which Kara-butak possesses to notice lies in the fact that it is a small fort, erected twenty-five years ago by General Obrutcheff, to keep in check the Kirghiz, who were then harrying the Russian frontier. The vayenny natyalnik, or commandant, in command of eighty-four men, told me that his life there was no better than transportation, and that he could not endure it for longer than one year. His only distractions were reading, shooting-matches with the soldiers, and sport. It had been very different in the days when there was a daily post. There were several large Kirghiz settlements in the vicinity, and several others all the way to Irghiz, but south of that place they became rarer and rarer, until they ceased altogether on the border of the Desert of Kara-kum.

The road to Irghiz ran for the most part close beside the Irghiz River, at that time of the year almost dried up. We crossed it between the stations of Kum-sai and Kara-sai. On we went day and night across the monotonous steppe, drawn by the swift post-horses. By this time I had become so used to travelling in a tarantass that I found no difficulty in sleeping at night, rolled up in my rugs and furs at the bottom of the vehicle, and only awoke when we suddenly pulled up before a new station-house. Having shown my receipt to the staresta, and put to fresh horses, we were soon on the road again. An awakening of this kind in the middle of the night, with the thermometer only 5° Fahr. above zero (−15° C.), is anything but exhilarating; you are stiff and bruised and sleepy, and long for a glass of tea. At last the sun rises above the horizon, floods the steppe with its golden rays, melting the rime-frost which during the night has decked the grass with its delicate white down, and driving the wolves from the posting-road.

A few more stations and we reached Irghiz, standing on an eminence overlooking the river of the same name, west of the point where it runs into the salt lake Chalkartenis. Irghiz is a ukreplenie (fort), and its commandant a uyasdný natyalnik,
or chief administrative officer of the district. The place has a small church, and about a thousand inhabitants, including the garrison of a hundred and fifty men, of whom seventy were Orenburg Cossacks. The greater number of the inhabitants were Sart merchants, who come there periodically to barter with the Kirghiz. They bring their wares from Orenburg, Moscow, and Nizhni-Novgorod. Irgiz was founded in 1848 by the Russians, and, like Kara-butak and Turgai, is entirely Russian. It was one of the forts erected immediately after the occupation of the steppe, in 1845, for the pacification of the Kirghiz. At first the whole of the steppe region was subject to the governor-general of Orenburg, but afterwards was divided between the provinces of Turgai and Syr-daria, at the same time that Ordenburg was made a "government." Before the Russian occupation Irgiz was called Yar-mollah (the Holy Grave on the Terrace), and was merely an unimportant Kirghiz burial-
place and resort for pilgrims. After the Russian conquest of Turkestan, this place, like others in the same region, increased in importance, and the larger caravans began to make it a halting-place. Fewer caravans visit it now; still there were some lying outside the village. The reason why we never met with them on the posting-road was that they take shorter and quicker routes. The traffic with the Kirghiz flourishes more particularly at Troitsk and Uralsk, for it is in the neighborhood of these towns that the richest nomad auls exist.

Off we went again with our four-in-hand. The sun set about five o'clock; and as he lingered for a moment, like a fiery cannon-ball, on the distant horizon, a subdued purple radiance was diffused across the steppe. At that hour the light produced very extraordinary effects. Having nothing with which to make comparisons, you are liable to fall into the strangest blunders with regard to size and distance. A couple of inoffensive crows hobnobbing together a short distance from the road appeared as large as camels, and a tuft of steppe grass, not more than a foot in height, looked as big as a vigorous tree. After the sun disappeared, the purple tints changed to violet and light blue; and in a few minutes these gave place to still darker shades, which finally merged into the darkness of the night. The night, however, did not get very black, for the air was pure and clear; the stars shone out like electric lamps, and the moon poured her silver glamour over the scene.

At Ak-sai, at 1 A.M. on November 21st, I noted the lowest temperature, \(-3.1^\circ\) Fahr. (\(-19.5^\circ\) C.), we had during the journey. The countless facets of the hoar-frost shimmered in the moonlight, and the windows of the station-house were transfigured with the lacelike trees and flowers of frost.

The stage to Terekli was the longest of the whole journey, amounting to 22\frac{1}{2} miles; in the course of it we crossed the boundary between the provinces of Turgai and Syr-daria. At Juluz, the first station belonging to the merchant Ivanoff, which had a comfortable room for travellers, I paid twenty-five roubles (\£2 10s.) for the 150 miles to Kazalinsk.
CHAPTER V
FROM LAKE ARAL TO TASHKEND

Four miles north of Terekli we plunged into the Desert of Kara-kum (the Black Sand). Vegetation grew scantier and scantier, and in a short time we were immersed in an ocean of sand. This region was at one time covered by the waters of the Aralo-Caspian Sea, a fact evidenced by the prevalence of shells of Cardium and Mytilus, which are said to have been found far in the desert.

It was a moonlight night when I arrived at the little station of Konstantinovskaya, where the travellers' "room" was merely a Kirghiz kibitka (tent), not very inviting at that period of the year. From this place to Kamishli-bash, a distance of eighty miles, Bactrian camels are generally used, as horses are not strong enough to drag the conveyances through the barkhaus, or sand-hills, which occur along that portion of the route.

I had not been waiting many minutes at Konstantinovskaya when I heard a well-known gurgling sound, and the fantastic silhouettes of three majestic camels became visible in the moonlight. They were harnessed all three abreast to the tarantass, and, when the driver whistled, set off at a steady trot. Their pace was swift and even, and they often broke into a gallop.

Ere long I noticed that the surface gradually sloped towards the southwest. A thick bank of vapor hung over Lake Aral in the same direction; while in the north and east the sky was clear. Between the stations of Alti-kuduk and Akjulpas the road ran close by the side of the lake, often not more than half a dozen paces from it. The fine yellow sand was so hard and compact that the camels' hoofs left scarcely
a perceptible trace; but farther up it rose into sand-hills, and there the tarantass sank in up to the axles.

Lake Aral lies 157 feet above the level of the sea; and its area is 27,000 square miles, ten times the size of Lake Wener, or nearly the same size as Scotland. The shores of the lake are barren and desolate, its depth inconsiderable, and the water so salt that it cannot be used for drinking purposes except at the mouths of the rivers; but far out in the lake there are said to exist certain fresh-water belts. Close to the shore at the northeast end is the station of Ak-julpaz, and near it a low ridge of sand, on the top of which the Kirghiz have made a burying-place, with square tombs built of slabs of stone. Eight years ago the station stood on the actual shore. But at certain seasons it was threatened by inundation and became entirely cut off from the posting-road; it was therefore moved about half a mile farther inland. When there is a high wind from the southwest the water is driven up the bay towards the desert, and overflows the shore for great distances, filling up all the hollows and depressions of the ground. In these pools sturgeon and other fish may be caught with the hand. At the time of which I write, the bay was frozen over, and at a distance of some miles from the shore I saw a caravan crossing the glassy ice. The
same passage is also used in summer, for the water is then extremely shallow, not more than seven feet at its deepest, and in most places only two or three feet. During the warm season of the year, when the sand is dry, it is blown by the wind in the direction of the lake, continually changing the coast-line, filling up the creeks, and forming sand-spits, islets, and sand-banks. The coast is bordered by a number of salt lagoons, called by the Russians solonets, which, however, are generally dry in summer. They are former creeks or bays which have been cut off from the great lake by the drift-sand. The fishing in these lagoons is first-rate; the Ural Cossacks, who engage in it, lay their nets at a distance of ten or a dozen miles from the shore. When the water is frozen they use sledges or camels to reach their fishing-holes in the ice; at other times they row out in boats of a moderate size.

The climate in these tracts is good. The summer heat is tempered by the proximity to Lake Aral, while in the winter
the cold is seldom severe; but, on the other hand, rain and thick mists are common phenomena. At the time of my visit it rained continuously, so that in many places the road was covered with broad pools. The water splashed and spouted up as the camels tramped through it; the conveyance threatened every moment to stick fast in the moist, tenacious sand; and the rain pattered ceaselessly on the tilt.

When, at nine o'clock on the evening of November 23d, the temperature rose to 31.1° Fahr. (—0.5° C.), the air seemed to be quite warm.

As a rule, the camels were obedient and docile, and the driver was able to keep on his seat; but one or two of the teams became cantankerous, and insisted on going their own way, so that the postilion was obliged to ride the middle animal. The reins are fastened to a piece of wood inserted through the nostrils, and in this cruel manner the beasts are compelled to obey.

Strange as it had been to drive with camels, it was with a feeling of relief that I again saw three black horses being
harnessed to the tarantass. My joy was short-lived, however; for before we got half-way to the next station the vehicle stuck fast in a salt marsh, and, in spite of our utmost exertions, could neither be dragged backward nor forward. The driver shouted and lashed with his whip, the horses flung out, and stumbled, and broke their traces. But it was all no use. The driver had to unharness one of them and ride back to the station for help.

After a couple of hours' waiting in the rain, wind, and darkness, wondering whether the wolves would come and pay me a visit, I was joined by a couple of Kirghiz, who harnessed two fresh horses in front of the troika, thus making a *patyorka*, or team of five. Their united exertions at length succeeded in extricating the vehicle from its sandy bed, into which it had sunk deeper and deeper. When at last we got under way again and rolled off across the steppe, large cakes of wet sand and clay hung dripping from the wheels.

At Yunyskaya, the last station before we reached the Syr-daria, I stopped awhile during the night of the 24th; but as I was drinking my tea a violent buran (snow-storm) came on, smothering everything in fine, driving snow. The tarantass was covered over with tarpaulins, and there was no alternative but to wait till daybreak. The road was so bad the last two stages before reaching Kazalinsk that I was obliged to drive after the patyorka and engage an extra man to ride on the near leader.

Kazalinsk stands on the right bank of the Syr-daria, 110 miles by river and 50 miles by road, from Lake Aral. It consisted of 600 houses, of which 200 were inhabited by Russians, and had 3500 inhabitants, of whom 1000 (their families included) were Ural Cossacks. The rest of the population was made up of Sarts, Bokharans, Tatars, Kirghiz, and a few Jews. The richest merchants were natives of Bokhara; the Kirghiz, on the other hand, being poor. Their more wealthy kinsmen live on the steppe, and derive their riches from their herds. In the month of May, when the pasturage is good, countless sheep are driven to Orenburg to be sold.
At the time of the Russian advance upon Khiva, Kaza­
linsk had a certain claim to importance as a depot and for­
tified place. The Lake Aral fleet of five small steamers made
this place their station, and the garrison consisted of a whole
battalion. The town has now a garrison of only twenty-four
men and two launches, the other vessels having been moved
to Charjui on the Amu-daria. There is no longer any life

MY TARANTASS DRAWN BY A PATYORKA (TEAM OF FIVE HORSES)

or movement in the place. The whirring sails of the wind-
mills and the numerous fishing-boats on the lake were the
only objects which gave relief or color to the monotony of
the scene. The streets of the town were at that season of
the year impassable, even to the wearer of water-proof boots
reaching to the knee. The Russian houses were built of
bricks, and were low and white; those of the Sarts, Bok-
harans, and Kirghiz of dried clay, and were gray and dilapi-
dated, and often surrounded by long and dreary-looking
walls. There were two schools, a church, and some public
buildings, the residence of the chief of the district (uyasıdny
natyalnik) being the most important. Each was surrounded by a grove of fine silver poplars, in the tops of which a host of crows kept up an incessant chatter.

The Ural Cossacks have the exclusive right of fishing in the river. They confine themselves principally to its estuary; the previous year (1892) they had taken 14,000 sturgeon. At the time of my visit the river was expected to freeze every day; and as it often becomes frost-bound in a single night, the fishermen had already beached their boats. Higher up, the adjacent land does not rise much above the level of the current, so that a hard, frosty night often inundates extensive tracts of country. The water, flowing over the ice, freezes again thicker than before, and so compels the stream to find another course. Sometimes this puts a stop to traffic, for the inundated tracts can be crossed neither on horseback nor with arba (cart), and the post-troikas are compelled to make long détours into the steppe.

Accompanied by seven Cossacks, I made a short excursion for the purpose of examining the current, etc., of the river. Near the fort, on the right bank, we found a depth of not less than forty-nine feet. The volume of water was just now the lowest that had been observed for fifteen years. In the months of July and August the stream is highest, and it gradually sinks during the autumn. The water was a yellowish-gray color, but good to drink.

The climate of Kazalinsk is also influenced by the proximity of Lake Aral, although in the winter the thermometer sinks as low as from $-22^\circ$ to $-31^\circ$ Fahr. ($-30^\circ$ to $-35^\circ$ C.). The snowfall is inconsiderable, and the snow disappears quickly; for this reason sledging is not common. At the time of my visit there was a good deal of mist and fine rain. I paid forty-nine roubles (£4 18s.) there for the 240 miles, and for four horses, to Perovsk; and in the latter town, for the 385 miles and for three horses to Tashkend, sixty-one roubles (£6 2s.).

As I had nothing further to do in Kazalinsk, I continued my journey up beside the stream with the patyorka. The alluvial soil of yellow clay was as flat as the top of a table,
and at short distances clay mounds, with a bunch of kamish (reeds) on the top have been built to guide the yamshtchiks (post-drivers) in the winter, when everything is buried under the snow, and it is impossible to discern any trace of the road. These mounds are the beacons and sea-marks of the desert ocean. The scene was as desolate as ever, neither

people nor habitations being met with during the whole day’s journey, except a couple of Kirghiz on horseback, driving a hundred camels or so into the steppe. The noble Syrdaria was the only other object which arrested the attention.

The road followed the bank of the Jaxartes (Syr-daria) as far as the unimportant garrison town of Karmakchi, generally called by the Russians Fort No. 2. It consisted of seventy Mohammedan (native) and nine Russian houses. At this place we again turned into the steppe, to make the détour round the extensive marshes of Bokali-kopa, which are annually inundated by the Syr-daria. In this region we passed the two poorest stations of the whole journey—namely, Alexandrovskaya and Semionnovskaya—each consisting of not more than three Kirghiz yurts—one for the staresta, one for
travellers, and one for the post-drivers and their families. The former place contained also four-legged inhabitants—a number of big rats running unconcernedly backward and forward across the felt carpets. The station was surrounded by a reed wall, outside which tarantasses and telegas stood in a row.

For several stages the road had run through a barren waste, where nothing grew except a few thinly scattered saksauls. We now entered a region which bore traces of recent inundation, and where the kamish (reeds) grew high and thick.

All the way from Fort Perovsk—which is situated on the bank of the Jaxartes, and in every way resembles Kazalinsk, except in being cleaner—to the station of Chumen-arik, vegetation was very abundant. It consisted of kamish, saksaul, and prickly shrubs, which grew in thickets, forming a veritable jungle, and through which the road often wound in a sort of narrow tunnel. This was a favorite haunt of tigers, wild boar, and gazelles; and there were geese, wild ducks, and, above all, immense numbers of pheasants. These last were so bold that they sat by the side of the road and calmly contemplated the passer-by; but the moment we stopped to fire they rose with whirring wings. Their delicate white flesh was indeed a welcome addition to my bill of fare, the more so as my provisions, so far as delicacies were concerned, had very nearly come to an end. The Kirghiz shoot the pheasants with wretched muzzle-loaders, and sell them generally for six (1½d.) or seven kopeks (1¾d.) apiece. They charged me, however, ten or twelve (3d.) kopeks. In Orenburg a pheasant costs as much as a rouble and a half (3s.); in St. Petersburg, two or three. Officers and lovers of sport from Tashkend often visit this sportsman's El Dorado, and always return with a good bag.

The station-house at Julsk was built only ten yards or so from the river-bank, and is annually threatened with inundation. Between that place and Mesheh-ulí the country was rather broken. We crossed some narrow sand-belts, then some canals and dried-up watercourses by means of wooden
bridges. All this part of the road was strewn with dried reeds, to prevent vehicles from sinking into the mud during the rainy season. At the time of my journey the ground was hard and lumpy, owing to the frost. Here the Kirghiz again became numerous. We frequently passed their auls, and saw their herds grazing among the thickets.

A MISERABLE STATION NEAR THE SYR-DARIA

On November 29th the sunset was very beautiful. The heavens in the west glowed as from the reflection of a prairie fire, and against it the gnarled and tufted branches of the saksaul stood out in inky blackness. The whole steppe was lit up by a magic, fiery glow, while in the east the sombre desert vegetation was bathed in gold.

A railway journey is certainly a very much more convenient mode of locomotion than driving in a tarantass. In the former you have no need to trouble yourself about the friction of the wheels or the safety of the axles; in a tarantass, on the contrary, you must always be prepared for contingencies of the kind, and be continually inspecting the vehicle. My astonishment may easily be imagined when, on examining the carriage at Mesheh-uli, I found that the front axle was snapped right across, and only held by four screws.
The staresta gave me the comforting consolation that I should find a blacksmith at the town of Turkestan, about 120 miles farther on, and he thought that the evil moment might be postponed if the driver went very slowly downhill.

Yani-kurgan, a Kirghiz village, with a caravanserai and the ruins of an old Kokand fortress, was situated immediately on the bank of the Syr-daria. The road in places was miserable, and I sat on thorns, expecting the axle to give way every minute, which would have been anything but pleasant in the middle of the steppe. The endless monotony of the landscape was at this stage somewhat relieved by the Kara-tau Mountains, which became visible on the left, looking like a low wall.

At Tash-suat, where the Syr-daria flowed in a broad, stately stream, visible to a great distance, we left the river on the right hand, and directed our course for the old city of Turkestan. The vegetation once more became extremely scanty; but along the hard, level road, which not even the continuous fall of rain had succeeded in spoiling, we met a number of caravans travelling at a steady pace.

At last we came within sight of the gardens of Turkestan, with its tall poplars, long, gray, clay walls, in part new, though mostly old and ruinous, and its magnificent saint's tomb dating from the time of Tamerlane (fourteenth century). We were soon driving through the empty bazaar—it was a Friday (December 1st), the Mohammedan Sabbath—to the station-house, where a Kirghiz smith at once set to work to mend the broken axle of the tarantass.

Turkestan, which was conquered in 1864 by General Chernyayeff, is at all times a ruinous and uninteresting town, but in the rain and mist it became actually disagreeable. The only object that could at all justify a delay of a few hours is the colossal burial mosque, erected in 1397 by Tamerlane in memory of a Kirghiz saint, Hazrett Sultan Khoja Ahmed Yasovi. Its pishtak, or arched façade, is unusually high, and is flanked by two picturesque towers. The mosque is further embellished by several melon-shaped domes. All the tiles have fallen off the façade, but on the
longer wall and the back wall of the rectangular building, they are still intact. Their iridescent shades of blue and green resemble the tiles one sees at Samarkand. The mosque abuts upon the quadrangular clay fortress wall, which Khodiar Khan caused to be built; and within this also the Russian barracks are situated. Guided by some Sart boys, I threaded my way through a labyrinth of narrow lanes, and up the dark, chilly staircase leading to the summit of one of the towers, whence there was a splendid view over Turkestan and the neighboring country. In my case, however, it was considerably veiled and restricted by the heavy rain that was falling. The usual melancholy impression of the East made itself felt even here. The monuments of ancient architecture fettered me by their beauty and impressed me by reason of their age; but the modern houses were nothing better than miserable mud huts, with flat roofs, divided from each other by narrow, crooked lanes.

As I said before, it was the Mohammedan Sabbath, and I went to see the mosque just as service (namaz) was about to begin. Numbers of Sarts in gay-colored coats and white turbans gathered outside; then, removing their hard, clattering, heavy boots at the entrance, they solemnly filed into the huge mosque. The middle of the floor was occupied by a large copper bowl, flanked by a number of tuhgs—*i.e.*, tufts of black horse-hair on long sticks. The walls were plastered white, and inscribed with proverbs. I was politely motioned out by an old akhun (attendant) when the summons to prayer was called at the entrance; but I went up into one of the galleries, whence, unseen and unsuspected, I could observe the long rows of kneeling and bowing Sarts—a striking picture, which put me in mind of the nights of Ramadan in Constantinople.

The first two stages from Turkestan were extremely dirty and rugged; it was without comparison the stiffest piece of road on the whole journey. Between Ikan and Nagai-kura we literally stuck fast in the mud. I am not superstitious, but it was the thirteenth stage from Tashkend, and we had still thirteen versts (8¾ miles) to Nagai-kura. It was impos-
sible to move the horses. The shaft-horse reared and became unmanageable; while the other two had apparently made up their minds to kick the tarantass to pieces. It was midnight, and pitch dark. There was nothing for it but to send the yamshtchik back to Ikan for a couple of extra horses. Meanwhile I went to sleep and slept for three hours, only awaking when the "five-in-hand" were hard at work hauling us out of the mud. It had taken us 6½ hours to do a paltry fourteen miles.

The country from Aris to Buru-jar was very much broken, and it was considered advisable to keep on the team of five. The pace downhill was terrific; the horses fairly laid themselves flat with the ground, so that the air whistled past our ears. Now and again we sped past a village, a horseman, or a caravan, or a big lumbering arba (high-wheeled Turkestan cart) with its wheels literally fast embedded in the mud.

At intervals along the road there were small pyramids of sun-dried clay, intended to serve as sign-posts in the winter. You would suppose that the telegraph-posts would be sufficient for that purpose; but the road wound now to the right, now to the left of them, and after a heavy fall of snow they are altogether buried from sight. The post-couriers, therefore, who are not under any circumstances allowed to stop or wait, often have an adventurous time of it when crossing the steppe in a snow-storm. From one telegraph-post it is often impossible to discern the next, and they may easily lose their way while going from one to the other. It not infrequently happens that the post-troikas, when overtaken by a snow-storm, are forced to spend the night in the snow-drifts and wait till the storm abates or day breaks.

The Aris is quite a respectable river. It was formerly crossed on high-wheeled arbas; but a few weeks before my arrival a ferry had been started. The equipage with its patyorka was placed on long boats lashed together, and was hauled across the river by the ferry-men pulling at a thick rope stretched from bank to bank.

Beyond Buru-jar numerous ravines and steep slopes were encountered. Going downhill the yamshtchik held in the
middle or shaft horse as hard as he could, for on that animal rested the entire weight of the carriage; but as soon as it became too much for him he let him go, and the momentum carried down the tarantass at a terrific pace, so that it was as much as ever the horses could do to keep their feet. The other two horses, which were harnessed in front of the troika with loose traces, had to keep a sharp lookout so as not to be run into by the shafts; if the near horse, with its rider, had gone down, he would almost certainly have been run over by the heavy tarantass.

All went well, however, although our lives often seemed to be in jeopardy; the horses were sure-footed and the men reliable and careful. At one of the stations one of the side horses of the troika became unmanageable, kicked and reared, and would on no account let himself be harnessed. It took six men to hold him—two on each side, one at his head, and one at his tail; and when at last he was harnessed and let go, he started off at a furious pace, so that his eyes blazed and sparks flew from his hoofs. Just as darkness was coming on we reached the town of Chim-kent, the first place that was familiar to me from my former journey. The streets were silent and deserted; everything was quiet, although lamps and candles were shining through the windows.
We were now nearing Tashkend (Tashkent), where the governor-general of the province resides. Two more long stages, through mud a foot deep, and there was only a short piece of the road left. The way seemed to be endless, although the road was now very good. I had had enough of tarantass driving, and it was with a feeling of real pleasure that I turned into the streets of Tashkend, shortly after midnight on December 4th, and secured a couple of comfortable rooms at the Ilkin Hotel.

Thus ended my nineteen days' drive, in the course of which I had covered 1300 miles and passed over 11½ degrees of latitude. I had watched the days growing longer, although midwinter was approaching, and had left behind me a region that was swept by snow-storms, and where winter was in full career. At the beginning of the journey the thermometer was three to four degrees below zero Fahr. (—19.5° C.), and I had now reached a land where spring seemed to be approaching, for the soft, balmy air made it a pleasure to be out-of-doors, and the thermometer showed 50° to 55° Fahr. (10° to 12° C.).
CHAPTER VI

FROM TASHKEND TO MARGELAN

I spent nearly seven weeks in Tashkend; but as I have already described the town in my former book, I will only record here one or two special reminiscences. The governor-general, Baron Vrevsky, received me with boundless hospitality; I was his daily guest, and enjoyed the opportunity of making acquaintances who were of great assistance to me in my journey across the Pamirs.

During Christmas and New-year I was a guest at many festivities. Christmas Eve, the first and pleasantest during my travels in Asia, I spent at the residence of Baron Vrevsky in almost the same manner as at home in the North. Many of the Christmas presents laid out awaiting their future owners were accompanied with French verses; and in the middle of one of the rooms of the palace stood a gigantic Christmas tree, made of cypress branches, and decorated with a hundred tiny wax candles. We spent the evening in the customary way—in conversation, by a smoking samovar in the drawing-room, which was tastefully furnished with all the luxury of the East. Portraits of King Oscar, the Tsar, and the Emir of Bokhara, each signed with the autograph of the original, adorned the walls. The fair sex could not have been represented more worthily than by the Princess Khavansky, the governor-general’s charming daughter, who did the honors at all entertainments, private as well as official, with grace and dignity.

Christmas Eve was kept en famille; but for New-year’s Eve Baron Vrevsky invited some thirty guests to his house. As midnight approached, champagne was served round, and in silence and with uplifted glasses we awaited the striking
of the clock. As the New-year came in, the words "S' novom godom!" ("A Happy New-year to you!") were spoken to right and to left by each person.

On January 2d the usual official dinner was given in the banqueting-hall of the palace. The guests were all civil and military officials of high rank, the emissary of the Emir of Bokhara, the three chief kadis or judges of the Sarts in Tashkend, and so forth. Every year the Emir of Bokhara sends a special emissary to convey to the governor-general the compliments of the season. This year it was the handsome, black-bearded Tajik, Shadi Beg Karaoal Begi Shigaol, whom the Emir sent to welcome me when I crossed the frontier between Samarkand and Bokhara two years previously.

According to custom, Shadi Beg brought with him presents amounting in value to over eleven hundred pounds. In this case they consisted of eight horses, with handsome saddle-cloths of red and blue satin embroidered in gold and silver, carpets, cloths, ornaments, and several hundred costumes, chiefly from Bokhara, but some also from Kashmir and China.

Among the guests was a man who had played a prominent part in the modern history of Central Asia—namely, Jura Beg. When a young man he was in the service of Emir Nasrullah of Bokhara, and on his death had seized the native province of Shahr-i-Sebs, the ancient Kesh, where Tamerlane was born. There he ruled as beg for some years, but was ousted by a rival and thrown into prison. The people, who were not satisfied with the rule of the new beg, liberated Jura Beg and reconstituted him their prince. When the Russians, under General Kaufmann, took Samarkand in 1868, Jura Beg hastened with a considerable force to the relief of the famous city, and besieged it obstinately, reducing the Russians to great distress, from which they were only saved at the last moment by a relief expedition. General Kaufmann thereupon made a compromise with Jura Beg, by which the latter was to retain his position as beg of Shahr-i-Sebs, upon his pledging himself not to
molest the Russians. When, however, a few years later, some Cossacks were killed on his territory, he was treated so harshly by General Kaufmann that he was constrained to flee from Shahr-i-Sebs, where he had ruled for ten years. He then wandered about in the mountains, with his friend Baba Beg, and finally went to Kokand, to seek aid and hospitality from the last khan, Khan Khodiar. The latter, however, took him prisoner, threw him in chains, and sent him to his enemy, General Kaufmann.

Kaufmann received him with kindness, but kept him under military surveillance. The Russians in Tashkend treated him in a manner befitting his dignity, and he enjoyed comparatively a large measure of freedom. When General Skobelev initiated his campaign against the Khanate of Kokand, Jura Beg, who knew the country and hated Khodiar Khan, offered his services. During this campaign, which proved the death-blow of Kokand, Jura Beg greatly distinguished himself, and was made a Russian colonel, and given the order of the Cross of St. George. He is now,
in manner and speech and dress, completely Russianized, lives in a well-appointed house in Tashkend, receives a yearly pension of £300 from the Russian government and £500 from the Emir of Bokhara, who, however, is his sworn enemy. He leads a life of ease and leisure, studies learned Oriental works, and is content with the great change which has taken place in his existence. But the story of his adventurous and exciting life, which he told me during the evenings I spent at his house, is indeed pathetic—a powerful Asiatic prince to become a Russian colonel!

To return to the dinner. It was truly sumptuous, with glittering candelabra and resplendent, star-decorated uniforms. The only thing that served to remind the stranger that he was in Central Asia was the presence of the Oriental guests in their costly gay-colored khalats (coats) and turbans. When the champagne was served, the governor-general rose and read aloud a telegram from the Tsar, and proposed his health. Standing, and with their faces turned towards the Tsar’s portrait, all the guests listened to the Russian national anthem. Baron Vrevsky then proposed the health of the Turkestan army and the Emir of Bokhara, and was himself the subject of a speech by the governor of the province of Syr-daria.

It was not, however, social enjoyments which kept me so long in Tashkend. I was busily engaged the whole time with preparations for the continuation of my journey eastward. I worked off large arrears of correspondence, took a number of photographs in the Sart quarter of the town, adjusted my instruments at the observatory, and collected a good deal of information, both written and oral, regarding the Pamirs. All my instruments were in good preservation, except the quicksilver barometer, which had come to grief on the journey from Orenburg, and had to be thoroughly repaired by the German mechanic at the observatory. The only other thing which was the worse for the continual jolting of the tarantass was the ammunition. When I opened the two cases in which it was packed, a sorry sight met my eyes. The paper cases of two or three hundred cartridges
were ground to powder, and the tin boxes in which they had been packed were crumpled together like paper. That none of the many sharp corners had struck a cap and caused a serious explosion was little short of a miracle; my journey would then have had a speedier conclusion and a different termination. Having put the ammunition in order again, and made it up to the original amount, I had it all repacked.

Lastly, I had a great deal of shopping to do. I laid in a stock of tinned provisions, tea, cocoa, cheese, tobacco, etc., sufficient to last several months; I also bought sundry small articles, such as revolvers, and the ammunition for them, clocks, compasses, musical boxes, field-glasses, kaleidoscopes, microscopes, silver cups, ornaments, cloth, etc., all intended as presents for the Kirghiz, Chinese, and Mongols. In the interior of Asia textiles almost take the place of current coin; for a few yards of ordinary cotton material you may buy a horse, or provisions to last a whole caravan several days may be bought. Finally, on the special recommendation of the governor-general, I was enabled to purchase the latest and best ten-verst maps of the Pamirs, a chronometer (Wirén), and a Berdan rifle, with cartridges and twenty pounds of shot.
When at length my preparations were all completed, I bade farewell to my friends in Tashkend, and started again on January 25th, 1894, at three o'clock in the morning.

I had not got farther than Chirchick—where I had to pay 37 roubles (£3 14s.) for the ninety-odd miles to Khojent and for eight horses (for two carriages were now necessary)—when I was delayed for want of horses. There was so much traffic that, although the stations keep as many as ten troikas, they are often short of horses; and when a traveller is unfortunate enough to clash with the post, for which the station-masters are responsible, there is nothing for it except to possess one's soul in patience.

It had turned considerably colder again, and at nine in the morning the thermometer registered only 12.2° Fahr. (−11° C.). The face of the country was hidden under snow; but the road was hard and lumpy, and made the tarantass shake to such an extent that it was more like an instrument of torture than a means of locomotion. The quicksilver barometer was again in the utmost danger, and to protect it I was obliged to lay it on a cushion on my knees and nurse it like a baby. Through the thick, chilly mist, in which everything was enveloped, I caught occasional glimpses of the camel-caravans we met or overtook.

The town of Biskent possesses a certain interest in the recent history of Central Asia, as being the birthplace, about the year 1825, of Yakub Beg, who in 1865 conquered the whole of Kashgar. He was one of the most remarkable rulers that have ever lived; and his memory in the interior of Asia, where he is usually called "Bedawlet," or "The Happy," will long remain green. Ever since he was murdered in Korla, in the year 1877, the country has been in a state of great confusion. His son Hak Kuli Beg marched with his father's army, which was fighting against the Chinese, to Kashgar, where he too was murdered, according to report by his brother, Beg Kuli Beg. The latter still lives in Biskent, where he owns several houses and farms, and draws a Russian pension. He is a strong, shapely man, fifty years of age or so, with a jet black beard and hard features. Surrounded by
his eight sons, he is awaiting with impatience the first sign of dissension in Kashgar, when he will hasten thither to take possession, if possible, of his father's throne. At least, that is what he told me himself. Poor fellow! long may he live on in that hope, for he does not know what great political changes have taken place in East Turkestan since the days of Yakub Beg!

After several delays, caused by want of horses, I at last, on the 27th, reached Khojent, where my sole errand was to take measurements of the Syr-daria.

I shall say a few words about these further on; of the town itself I have already given a description in my former book. Suffice it, therefore, to say a word or two only about the large bridge which spans the Syr-daria. It is divided into two parallel roadways for the convenience of traffic, is provided with a black railing, and is built on piles resting on three wooden caissons filled with stones.
The owner, who is a private person, made a profitable contract with the government for thirty years. During the first twenty he was to be allowed free possession of his bridge; but for the following ten he was to pay 3000 silver roubles (L300) a year to the government. Of these ten years six have still to run. The cost of building the bridge was put down at L5000; but it has had to be rebuilt twice. When the ten years have run out, the bridge is to be handed over to the government in good condition.

Of Kokand, which I reached on January 29th, I am now able to add a few details, for the completion of my former description. There are thirty-five madrasas, or Mohammedan theological colleges, in the town. I mention in particular the madrasa Hak Kuli, which was founded in the year 1221 of the Hejira (1806). The madrasa Khan has eighty-six rooms and three hundred pupils. The madrasa Jami, with its large quadrangle shaded by poplars, willows, and mulberry-trees, its minaret, its beautiful cloisters, with varicolored paintings on the checkered ceiling, and its carved wooden pillars, between which a number of young mollahs (theological students) were sitting reading, likewise has eighty-six rooms, but only two hundred pupils.

I also went to see the Hakim Ayim, which was built twenty-three years ago by Khodiar Khan's mother; it has a library with a picturesque balcony or kitab-khaneh within the quadrangle. She gave land and gardens at the same time, the income from which amounts to 1500 tillahs (about L560) yearly, and is devoted to the maintenance of the college and the students. The madrasa Sultan Murad Beg was built by Khodiar Khan's younger brother, and has ninety-nine rooms and a hundred and fifty pupils. The Madrasa-i-Mir is the oldest college in Kokand, having been founded by Narbuta Khan and restored in the year 1212 of the Hejira (1797); it has fifty-seven rooms and one hundred and forty pupils.

At the time of my visit there were five thousand students at the different madrasas in Kokand maintained by donations, while three hundred were living at their own expense. Besides the institutions which I have just mentioned, there
were, connected with Mohammedan instruction, forty-eight mekteb-khanen, or schools, for six hundred boys and two hundred girls, and thirty kharik-hanen, or schools founded with money left for the purpose and situated near the testators' graves. In these some three hundred and fifty pupils are educated. Finally, there were three Jewish schools, with sixty pupils. The population of Kokand was about 60,000, of whom 35,000 were Sarts, 2000 Kashgarians and Taran-chis, 575 Jews, 500 Gypsies (Lulus), 400 Dungans, 100 Tatars, 100 Afghans, 12 Hindus—as usual, money-lenders—and 2 Chinese. To this add 350 Russians and a garrison of 1400 men. The rest were Tajiks. A dozen or so of Chinese are in the habit of visiting the place every spring with carpets from Kashgar. The town consisted of 11,600 houses, and possessed nine cotton factories. During the last few years Kokand has shown a tendency to prosperity; the Russian quarter in particular has increased steadily. In addition to the Russian administration, there is also a native administration for the maintenance of order. The burgomaster is called kurbashi, and under him are four aksakals, each of whom has the supervision of a "large" quarter (katta-mähälläh); under them again there are ninety-six allik-bashis, each presiding over a kishkintai-mähälläh, or "little" quarter.

In Kokand I visited a couple of hammam (hot baths), naturally without making use of them; for they offered the opposite of what we understand by a bath, and were rather hot-beds for the propagation of skin diseases. They were entered through a large hall, with carpet-covered benches and wooden columns; this was the room for undressing in. From that you passed through a number of narrow, labyrinthine passages to dark, steamy, vaulted rooms of different temperatures. In the middle of each there was a platform on which the bather is rubbed and washed by a naked shampoorer. A mystic twilight prevailed in these cellarlike crypts, and naked figures with black or gray beards flitted about through the steam-laden atmosphere. The Mohammedans often spend half their day in the bath, smoking, drinking tea, and sometimes even taking dinner. The moral condition of
the town is terribly degraded; the female dancers, who perform at weddings and other ceremonies, contribute to this in no small degree.

Instead of driving direct by the post-road to Margelan, I chose the détour of two hundred versts (130 miles) by way of Chust and Namangan, so as to obtain further opportunities of completing my soundings of the river Syr-daria.

After sending my baggage direct to Margelan in a couple of arbas (carts), I left Kokand on January 30th, in my old tarantass, and directed my course northward to Urganchi, a largish kishlak (winter village), where the fair was in full swing and the streets full of people. The road led through an unbroken succession of villages, and on either side of it were ariks, or channels, tributaries of the irrigation system which waters the oasis of Kokand. At the village of Gurumserai wayfarers are ferried across the Syr-daria in a large boat. Thence a miserable road leads by way of Pap to the little town of Chust, whose only claim to importance lies in its cultivation of cotton, rice, and grain. After that the road passed over small hills composed of yellow loess and conglomerates. The going was now first-rate everywhere, and we made good progress. At Tura-kurgan we crossed the stream of Kazansai, which in summer brings down great quantities of water from the Chatkal Mountains; though it never attains the volume of the Syr-daria, as the water is distributed through a number of ariks which irrigate the rice-fields.

Namangan is surrounded by villages and gardens, and is the residence of a uyäsdy natyalnik (chief of a district). The Seid Kuli Beg, Khoja Ishan, and Serdabi madrasas were the only buildings in the town of even passing interest to the traveller. The square market-place, Ispar-khan, which extended in front of the madrasa last named, was the rendezvous for the smiths and venders of hardware.

It was no easy matter to get out of Namangan. Through the frozen mud of the streets the wheels of a thousand arbas had cut two deep ruts, which we had no choice but to follow. We had to drive slowly all the way to the Naryn, the source proper of the Syr-daria, jolting and shaking the whole time.
The Naryn was crossed close to the confluence of its principal tributary, the Kara-daria, by a simple wooden bridge, which is destroyed every summer by the rising of the waters, and has to be rebuilt annually. From the village of Balikchi, on its left bank, the driver took me to Min-bulak on the Syrdaria. Somewhat higher up, this river sends out a curious bifurcating arm, the Musulman-kul, and this again forms a reed-grown marsh, Sari-su, which was entirely frozen over, the ice being covered with snow. The landscape was still desolate, but somewhat diversified in places. Occasionally I saw a flock of grazing sheep, but what it was they were eating I could never quite make out. On February 4th, via Yazauan, I reached Margelan, the chief town of Fergana, where the governor, General Pavalov-Shveikovski, received me with great courtesy. During the twenty days I spent in his house, occupied in completing the last preparations for my journey across the Pamirs, he showed me the greatest kindness and gave me much valuable advice.
CHAPTER VII

THE SYR-DARIA

But before I leave Fergana and set forth on the adventurous winter journey across the Pamirs, I will give a short summary of my survey of the Syr-daria River.

The first series of soundings, which I made on November 25th, 1893, at Kazalinsk, gave a volume of 20,000 cubic feet in the second; the depth of the river varied between 6½ feet and 10 feet; the average depth being 8 feet, and the average velocity 2 feet 6 inches in the second. The temperature of the water was 31.3° Fahr. (0.4° C.). The air was quite still, and the observations were made from a boat at six points in a direct line across the river, the boat being anchored for each sounding and measurement.

Two months later, on January 27th, 1894, I make a similar series of observations at Khojent. The temperature of the air at 1.30 P.M. was 26.8° Fahr. (−2.9° C.). A slight wind was blowing from the east, and in the water the thermometer showed 32.9° Fahr. (0.5° C.). Along the right bank there was a thin sheet of ice 9 or 10 yards wide; under the left a belt 18 yards in width; both had formed in the shelter of the bridge. Above and below this there was no ice to be seen, except a few small flakes drifting on the water, which was much clearer here than at Kazalinsk. Thanks to the bridge, which was 574 feet in length, of which 114 feet were over dry land, it was easy to get the width of the river—namely, 430 feet. The observations were made, like those at Kazalinsk, at six points, from a boat which was kept in position 65 yards below the bridge by a rope. The depth was measured with a pole 20 feet long, and the velocity, as usual, with a stationary and a free float.
As might be expected from the rugged character of the Fergana valley, the greatest depth, and consequently the greatest velocity, of the river were not far from the right bank, where there is a steep, detached mountain ridge; whereas the left or south bank is comparatively low. All the same, it is sufficiently high above the current to make it difficult for the inhabitants of Khojent to get their water-supply from the river when the little stream Ak-su, which flows through the town, fails.

The mean depth was 12 feet 8 inches (maximum, 18 feet 11 inches); the area of a vertical section, 1720 square feet; the mean velocity of the current, 2 feet 6 inches (maximum, 3 feet 1 inch) in the second; and the volume, 12,900 cubic feet in the second. The space between the bridge and the surface of the water was 20 feet 3 inches; but on the piers there were marks which showed the water to have been nearly 14 feet 9 inches higher the previous summer.

It may seem remarkable that I found upward of 7000 cubic feet less water at Khojent than at Kazalinsk; but this fact admits of a natural explanation. In the first place, the river Chirchick, near Tashkend, had at its lowest level a volume of 3500 cubic feet; then, farther down, the Syr-daria receives several tributaries from the mountains Kara-tau and Talas-tau, one of which, the river Aris, being, as I have said before, of very considerable size. Finally, it must be borne in mind that the river is deprived of very little water for the irrigation canals during the winter, that the evaporation during the cold season is inconsiderable, that at its lowest level little or no water is absorbed by the marshes at the sides of the river, and that, finally, the observations at Khojent were made two months later than those at Kazalinsk.

The Syr-daria has never been sounded during the summer; but we may fairly conclude that at that season of the year the conditions are reversed; that is to say, that the volume of water at Chinaz (near Tashkend) is considerably greater than at Kazalinsk.

In January, 1891, on my return journey from Kashgar to Issyk-kul, I had an opportunity of observing what enormous
masses of snow accumulate during the winter on the mountains south of Issyk-kul. When these masses melt in the spring and summer, the Naryn becomes a large river, foaming torrentially along its rocky bed down to the valley of Fergana. The Kara-daria also becomes a river of considerable dimensions, although the snowfall in the part of the Tian-shan Mountains where its sources are situated is not so great as in the tracts south of Issyk-kul. Like the Chirchick, the Kara-daria also contributes a large volume of water to the Syr-daria, so that at Chinaz the latter is a noble river during the spring and autumn months, though it does not outrival its sister river, the Amu-daria. It rolls swiftly through the heated steppe, and empties its waters into Lake Aral. The whole of its water does not, however, reach the destination which the formation of the country would naturally seem to prescribe for it. Chinaz lies 610 feet above the level of Lake Aral; but from that point the river flows a distance of 882 miles, and the fall is, therefore, only 8½ inches in every mile. The water has plenty of time to evaporate, a process which takes place the more rapidly as during the summer the air is excessively hot and dry. But other factors are at work to despoil the river. Part of the water is absorbed by the soil; another part is used for irrigation; a third, and very considerable portion, leaves its bed and forms, particularly on the right bank, extensive swamps and lakes. The largest swamps extend between Kazalinsk and the mouth of the river. Others occur east of Perovsk; more particularly between Perovsk and Karmakchi, where the reed-grown Bokali-kopa is nearly 2000 square miles in area. In this way, then, the river loses much of its flood; hence it may easily be conceived that in summer the volume of water is much greater at Chinaz than at the mouth of the river.

Between Min-bulak and Khojent the Syr-daria was crossed by fifteen ferries, the traffic being conveyed across by twenty-seven barges hired from a Russian. The greatest amount of traffic crosses at the Shakhand ferry; there the earnings in summer amount to 1200 roubles (£120) a month; but in winter to only 300 or 400 roubles (£30 to £40). An arba
(cart) laden with goods pays twenty-five kopeks ($6\frac{1}{2}d.$), a loaded camel fifteen ($3\frac{3}{4}d.$), a horse five ($1\frac{1}{2}d.$), and a foot-passenger two ($\frac{1}{2}d.$).

At Gurum-serai, one of the most important of the ferries, I made another series of observations. The sky being clear and the atmosphere still, the temperature of the air at 4.30 P.M. was 23.2° Fahr. (—4.9° C.), and the mean temperature of the water 35.4° Fahr. (—1.9° C.). The width of the river, which was measured trigonometrically, was 640 feet. The right bank was low and flat; the left very steep, 10 feet high, and much excavated by the current. The greatest depth—viz., 9 feet 5 inches—occurred at a distance of only 33 feet from the left bank; but, remarkably enough, the greatest velocity (4 feet 1 inch in the second) occurred at a distance of only 16 feet from the right bank. In the middle of the river there was a sand-bank, over which the velocity was inconsiderable. But on both sides of it—that is, between the sand-bank and the river-banks, where the deeper places were—the velocity was much greater.

The mean depth was 5 feet 3 inches; area of vertical section, 3070 square feet; mean velocity, 2 feet 7 inches in the second; and volume, 7850 cubic feet in the second. The great difference of 5050 cubic feet between Khojent and Gurum-serai is striking, particularly as the river just at this part does not take up any tributary worth mentioning; but, as I shall point out shortly, this is explicable from modifying conditions of temperature and rainfall.

On the way from Namangan to Margelan I crossed the lower Naryn at the kishlak (winter village) of Jidda-köpö, and the lower Kara-daria between the two villages of Chuja and Balikchi. Respecting the two tributaries of the Syr-daria, it is generally stated that the Naryn is the more voluminous and the Kara-daria the swifter. In point of fact, the Kara-daria is always the swifter, for within a distance of ninety-one miles from Usghen (3220 feet) to Chuja (1310 feet) it falls 1910 feet, or 21 feet in every mile. The Naryn, on the other hand, in a distance of eighty-seven miles—that is to say, from a point near the ruins of the fortress of Ketmen-
THE SYR-DARIA

Tube (2800 feet) to Jidda-köpö (1310 feet)—falls only 1490 feet, or 17 feet in every mile. Although these differences in altitude are not very great, they are so far appreciable that the Kara-daria, even in its lower reaches, is somewhat swifter than the Naryn. The other assertion, on the contrary, is not always right, for during the winter the Kara-daria is always much larger than the Naryn, sometimes even twice as large. This is due to the fact that the Naryn flows through a more northern and colder tract, and because it is on all sides surrounded by chains of high mountains, in which severe cold obtains; while the Kara-daria has a more southerly course, through the eastern extension of the Fergana valley, where the winter temperature is considerably milder, and high mountains protect it from the cold north winds.

The volume of the Naryn diminishes also owing to a large quantity of its drainage supply being locked up in the form of ice. This is particularly the case with regard to the small streams and tributaries which flow through the high side valleys. In the tract through which the Kara-daria flows, the winter temperature, on the contrary, is not so low, and the river, therefore, receives during the cold period of the year a comparatively large quantity of water, although here again the snowfall is less. The Kara-daria is thus deprived of a smaller quantity of its water through the formation of ice than the Naryn. In the spring, as soon as the ice and snow on the mountains surrounding the Naryn begin to melt, the river rises, and in a short time becomes much larger than its sister stream, which has not been able to collect any great provision of ice and snow within its bounds during the winter.

The pile-bridges that the Sarts have built across the Naryn and the Kara-daria greatly simplified the task of sounding those two rivers. On February 2d, at two in the afternoon, the weather being favorable and the temperature 21.9° Fahr. (—5.6° C.), I made the following observations in the Naryn:

The mean depth was 5 feet 10 inches (maximum, 8 feet 7 inches); the area of the vertical section, 840 square feet;
mean velocity, 3 feet 8 inches (maximum, 4 feet 6 inches); and the volume of water, 3070 cubic feet. The greatest depth and the greatest velocity occurred on the right side of the river; and there, too, the stream was loaded with large quantities of packed ice. The greatest quantity of drift-ice I found in a current only 12 yards from the right bank; thus it did not follow, as might be expected, the swiftest current, which was 25 yards out from the same bank.

About one mile to the south I crossed the Kara-daria, about a couple of hours later, and I then made the following observations in that river: mean depth, 5 feet, 3 inches; maximum depth, 10 feet 11 inches; area of vertical section, 1220 square feet; mean velocity, 3 feet 10 inches (maximum, 4 feet 6 inches); volume of water, 4700 cubic feet.

Together, therefore, the Naryn and the Kara-daria carried 7770 cubic feet of water, or almost precisely the quantity I found in the Syr-daria at Gurum-serai.

Comparing the two streams, it will be found that the Kara-daria is 9 feet broader than the Naryn, but as a rule is shallower, while the maximum depth is greater. In both rivers the maximum depth is near the right bank, and in both the greatest velocity of the current occurs to the left of the greatest depth. In both the right bank is much more eroded than the left. It is also higher and steeper; the left bank sloping up gently and gradually from the water's edge. The same thing is true of the Syr-daria at Khojent.

These conditions seem to be dependent upon the tendency which the river shows to shift its channel to the right. In 1892 there was unmistakable proof that the Naryn in its lower reaches also exhibited the same tendency. Nearly seven miles above Utch-kurgan the Naryn quits its transverse valley and flows through the level valley of Fergana. As soon as the river leaves its deep, sharply defined, rocky bed, it becomes broad and shallow, and is filled with shoals and islets of sand, and only confines itself to one bed for short distances, and that when the water is lowest.

About a mile below Utch-kurgan the Yanghi-ariik, the largest irrigation canal that carries water to the rice-fields of
the district of Namangan, branches off from the right bank of the river. At the same time the Naryn itself shows a tendency to break through and join the Yanghi-arik, which, if accomplished, would naturally prove very disastrous to the agriculturists in that fruitful region. To prevent this, the Russian government in 1893 built four dams in the river, at right angles to the right bank, so as to force the water back to its proper channel. The highest dam up the stream was 141 feet long, the lowest 942 feet; the first three were 33 feet broad, the fourth and lowest 20 feet. They were all constructed of piles, stones, and fascines. The work was done in two months by a Russian officer with 200 to 400 Sart workmen, and cost about 18,000 roubles (£1800). In the dead water below each dam large quantities of sand and mud quickly accumulated, in places to such a degree that it was possible to plant trees, with the view of imparting a greater power of resistance to the structure. This fact plainly shows that at this point the river manifests a strong tendency to trend to the right.

On the way from Min-bulak to Margelan I observed in several places traces of former river-beds. The largest was the Sari-su, which flowed into the reed-grown marsh of the same name. At the time of my visit it was entirely frozen, a sheet of glittering ice. It is very probable that the continuation of the Musulman-kul arik, farther east, is an old bed of the Syr-daria.

South of the Syr-daria, between the meridians of Kokand and Margelan, there is an unbroken string of marshy lakes—Atchi-kul, Dam-kul, and Sari-su. In the spring these are fed with water from the river through the old discarded river-beds; the surplus water from the ariks (irrigation canals) of Andijan also flows into them. South of these marshy tracts stretches the desert. North of the Syr-daria, on the other hand, there are no swamps or ancient river-beds; though in the lower course of the river there are marshes and lagoons, for the greater part situated on the right bank. Here again we find plain indications that the river is trending to the right or northeast. For a distance of close upon
400 miles, from Kazalinsk to Tash-sułat, the post-road runs close beside the right bank. Several station-houses, which were originally built at a certain distance from the river, have now been reached by it, and some of them have had to be abandoned and new ones built at a greater distance from the bank.

On further comparison between the Naryn and the Kara-daria, I found that the Naryn carries a large quantity of drift-ice; while in the Kara-daria, on the contrary, there is not a trace of it. The water of the Naryn was almost clear and transparent; that of the Kara-daria turbid and impure. The water of the Naryn had a mean temperature of 32.2° Fahr. (0.1° C.); in the sister river the thermometer showed 37.9° Fahr. (3.3° C.). The quantity of sedimentary matter is, naturally, partly dependent on the varying nature of the country through which the rivers flow, partly on the volume of the streams and their rate of fall, possibly also on the temperatures of their waters.

Finally, I must add a few words as to the influence which the volume of water in the Naryn and the Kara-daria had on the Syr-daria at Min-bulak, Gurum-serai, and Khojent. I wished to take another series of soundings at Min-bulak; but unfortunately the ferry was so arranged that it was impossible to keep the boat still on the river. The width was 590 feet. Eleven yards from the left shore the depth was 4 feet 11 inches, and the velocity of the current not less than 4 feet 10 inches in the second; 22 yards from the right bank the depth was 4 feet 9 inches, and the velocity only 1 foot 10 inches. In about the middle of the river the depth was 8 feet 2 inches.

The differences of temperature and color of the water in different places furnished materials for some interesting conclusions. On the right bank of the Syr-daria the thermometer showed 34° Fahr. (1.1° C.); sixty-five yards out, 34.7° Fahr. (1.5° C); sixty-five yards from the left bank, 35.8° Fahr. (2.1° C.); while close under the same bank it was 36.1° Fahr. (2.3° C.). Here the river was steaming at 11 A.M., the temperature of the air being 14.5° Fahr. (−9.7° C.). That is to say,
thick columns of vapor rose into the air; and the ferry-man told me that early in the morning the mist is so dense that the ferry-boat vanishes from sight a few yards from the shore. The phenomenon appeared to be very common at this time of the year. On the right bank, where the cold water flowed, the river did not steam at all. There, on the contrary, a strip of water 16 yards in breadth was of the same clear, light-green color as the water of the Naryn; but outside this belt the water suddenly became muddy, and continued so right across to the left bank—exactly as in the Kara-daria. This proves that at the distance of 4½ miles below their confluence the two currents have not commingled, or rather that the warm muddy water of the Kara-daria spreads over the cold clear water of the Naryn, except for a narrow belt near the right bank. The fact that lower down the latter increases a whole degree in warmth in such a short distance is naturally due to its close contact with the warmer water of the Kara-daria.

At Gurum-serai the temperature of the water, as I mentioned before, was everywhere 35.4° Fahr. (1.9° C.), and the same muddy color prevailed across its entire breadth; moreover, the river was quite free from ice. Even without the aid of calorimetry these phenomena prove that the current of the Kara-daria is more powerful than the current of the Naryn, and that in the intervening 55 miles all the drift-ice has time to melt. That the conditions were the same on January 30th and February 2d is proved by the volume of water being the same in both cases. At Khojent, on the contrary, the conditions were very different. In the first place, the volume of the water was 5050 cubic feet greater than at Gurum-serai. The temperature of the water was only 32.9° Fahr. (0.5° C.); that is to say, more than two degrees and a half colder than at Gurum-serai, which is 110 miles distant from Khojent. Finally, the water was much clearer than at Gurum-serai, and carried a not inconsiderable quantity of drift-ice. For this reason the bulk of the current flowing through the bed of the Syr-daria at Khojent on January 27th consisted of Naryn water; for it possessed
generally the same characteristics as the latter—it was cold, clear, and charged with drift-ice.

Shortly afterwards the temperature of the air sank. On January 30th, at nine in the morning, at Chust, I read 11.7° Fahr. (−11.2° C.). At Namangan, on February 1st, at eight in the morning, 14.9° Fahr. (−9.5° C.); and the following day, at the same place and time, 12.9° Fahr. (−10.6° C.).

The temperature had, without doubt, fallen in the mountains, and to a very great extent. The tributaries of the Naryn, and even the Naryn itself in part, began to freeze; the river was thus much reduced and became less than the Kara-daria. The Syr-daria dropped rapidly, and at Gurumserai its volume was 5000 cubic feet less than on any previous day.

It is no doubt astonishing that the volume of a river can decrease to so great an extent in such a short space of time; but it is a common phenomenon, and admits of easy explanation. The chief of the district of Namangan told me that the Naryn often rose there ten feet during the course of five days, and fell again afterwards just as rapidly. This phenomenon always takes place after violent and continuous rain in the neighboring mountains. As I have mentioned previously, it cannot be affirmed positively that the Naryn is always the larger of the two rivers, for their respective volumes change with the seasons—i.e., with the changes of temperature and the rainfall in the country through which they respectively flow.

The Syr-daria does not freeze at any point of its course through Fergana; but at Chinaz it often forms ice so thick that it will bear the post-troikas.
A WINTER JOURNEY OVER THE PAMIRS
CHAPTER VIII

UP THE ISFAÍRAN VALLEY

On the borderlands between East and West Turkestan the earth's crust is thrust upward into a lofty plateau or mountain-knot of gigantic dimensions. From it radiate some of the most stupendous mountain-ranges in the world, eastward the Kwen-lun, southeastward the Himalayas, and between these two the Kara-korum Mountains, stretching into Tibet. From the same elevated region the Tian-shan highlands branch off towards the northeast, and in the opposite direction, towards the southwest, the Hindu-kush Mountains. It is here that several authorities place the home of the first parents of our race. The traditions of a dim and distant antiquity declare that the four sacred rivers of Paradise, mentioned in the Bible, had their origin in these sublime altitudes. The people of High Asia still revere the Pamirs, calling them the Roof of the World, and regarding them as the coign of vantage from which the towering mountain-giants look abroad over the whole world.

Until quite recently the Pamirs were, politically, subject to the Khans of Kokand. But when Khodiar Khan, the last ruler of the country, was deprived of both kingdom and crown by his powerful neighbor on the north, Russia, she also laid claim to the sovereignty of the Pamirs. For some time, however, as they were both difficult of access and almost uninhabited, she bestowed but little attention upon them. This indifference on the part of the Russians gave encouragement to the adjacent states to annex one portion after another of the former territories of the Khans. The Afghans occupied Badakshan and Shugnan, overran Roshan and Wakhan, and in the last-mentioned district built
strong posts of observation all along the river Pānj. The Chinese took possession of the frontier districts on the east, and the British established themselves in Chitral and Kanjut. But the Russians were not unobservant of what was going on. In the year 1891 Colonel Yonnoff, with a force of something like 1000 Cossacks, and a long train of pack-animals, carrying commissariat and ammunition stores, and even machine-guns, started from Margelan, and marched right over the Pamirs to the Hindu-kush, as far as the Baroghil pass, where he came into collision with a small Afghan outpost. A short time afterwards he built, on the river Murghab, the fort Shah Jan, a name which was subsequently changed to Fort Pamir. There he left behind a permanent garrison of two or three hundred Cossacks to watch over the interests of his country.

This was the origin of the Pamir Question, the subject of so much animated discussion in the immediately succeeding year. And thus the region of the Pamirs, hitherto shrouded and almost forgotten among the arctic-like severities of the heart of Asia, became the object of the liveliest interest, the focus of political and strategic movements of a momentous character.

Certain portions of the Pamirs were, however, left unclaimed, abandoned to the few Kirghiz who were content to stay there and struggle for existence against the bitter cold. These nomads acknowledged no man’s sovereignty and paid no tribute; although each of their neighbors around them laid claim to it, and possessed frontier garrisons strong enough to enforce their claim. But they were all fully conscious of the fact that a movement in that direction by any one of them would be the signal for hostilities; and though all the three powers were ready to fight, none wished to incur the grave responsibility of taking the first decisive step.

During the course of my stay with Baron Vrevsky, governor-general of Russian Turkestan, we had many conversations together about the Pamirs, the outcome of which was that I conceived the idea of crossing that region on my way to Kashgar. But no sooner did I mention my purpose than,
almost with one accord, wellnigh every voice was raised to dissuade me from it. The officers who had taken part in Colonel Yonnoff’s reconnaissance across the Pamirs prophesied that I should have a dangerous journey, and advised me to wait two or three months longer. One of these gentlemen, a captain, who had spent the previous winter on the Murghab, earnestly represented that I should be exposing myself to the greatest possible dangers, and running a grave risk from the severities of the winter climate. Nobody, he said, not even a native of the Far North, could form any conception of the intensity of the cold and the fury of the snow-storms which rage on the Pamirs in the depth of winter. Even in the middle of summer, during a snow-buran (hurricane), the thermometer frequently drops to 14° Fahr. (—20° C.). In the winter of 1892–93 the temperature fell to —45.4° Fahr. (—43° C.) in the end of January, and snow-storms were an every-day occurrence. These burans or snow-hurricanes come on with startling suddenness. One minute the sky will be perfectly clear; scarcely one minute later, and down swoops the storm. In an instant the path is obliterated. The atmosphere grows dark with whirling snow-flakes. It is impossible to see a yard before you. All you can do is to stand perfectly still, wrap your furs about you, and thank God if you escape with your life.

One piece of advice the captain insisted upon above all else—that I should never on any account separate myself from my caravan during the march. If at such a moment a buran were to sweep down upon me, I should be hopelessly lost. It would be impossible to get back to my followers, even though they were no more than a dozen paces away. The air becomes thick and black with blinding flakes. Nothing can be seen—nothing; you have hard work to see even the horse you ride. To shout is useless. Not a sound can be heard, not even the report of a rifle. All echoes are completely drowned in the roar of the hurricane. The unhappy traveller who has the ill-fortune to be thus caught alone, without tent or provisions, furs or felts, may resign himself to the inevitable—his fate sealed. Neither Colonel...
Yonnoff nor Captain Vannofsky envied me my journey in the smallest degree; and yet both were experienced travellers, well acquainted with the fascinating perils of travel on the Pamirs. Both were of one mind in warning me to prepare for a hard campaign.

And yet there were two men who did not see my project in such dark colors—namely, General Vrevsky and Major-General Pavalo-Shveikovsky, the governor of Fergana. Instead of throwing cold water on my plan, they encouraged me in it, and promised to do all that lay in their power to render it as practicable and as easy as possible. Both kept their promise in a most gratifying way.

A week before the day I had fixed for starting from Margelan, the governor of Fergana, at the suggestion of Baron Vrevsky, sent jighits (Sart couriers) to the Kirghiz who were wintering in the valleys of the Alaï Mountains, commanding them to give me a friendly welcome, to provide yurts (tents) at certain places and times arranged for, to furnish me with supplies of food and fuel, to send people on in advance to clear the road through the snow, and hew steps in the ice which coated the narrow and dangerous mountain-paths of the Alaï Mountains, and in general to render all needful assistance in guiding the caravan and getting forward the baggage from station to station. Mounted messengers were likewise despatched to the Murghab; besides which I also carried letters to the commandant of that post, and to the Chinese officer at Bulun-kul near the frontier. The jighits were further directed to accompany me the whole way. In a word, I met with nothing but the most generous assistance at Margelan in completing the equipment of my caravan, and in making preparations for my journey.

The route which I mapped out before starting led over the Alaï Mountains by the pass of Tenghiz-bai, then up the Alaï valley alongside the Kizil-su (river), climbed the Trans-Alaï range, and went down by the pass of Kizil-art to the lake of Kara-kul, over that lake, through the pass of Ak-baital, and so on to Fort Pamir on the Murghab. The en-
tire distance amounted to over 300 miles, and was divided into eighteen short days' marches, with five days extra for rest, as set forth in the subjoined table:

<table>
<thead>
<tr>
<th>Location</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>From Margelan to Utch-Kurgan</td>
<td>23 miles</td>
</tr>
<tr>
<td>To Austan</td>
<td>15</td>
</tr>
<tr>
<td>Langar</td>
<td>26½</td>
</tr>
<tr>
<td>Tenghiz-bai</td>
<td>17</td>
</tr>
<tr>
<td>Daraut-kurgan</td>
<td>16</td>
</tr>
<tr>
<td>Kizil-unkur</td>
<td>14½</td>
</tr>
<tr>
<td>Kur-gur (Kashka-su)</td>
<td>17</td>
</tr>
<tr>
<td>Jipptik</td>
<td>16½</td>
</tr>
<tr>
<td>Archa-bulak</td>
<td>13</td>
</tr>
<tr>
<td>Bor-doba</td>
<td>18</td>
</tr>
<tr>
<td>Kok-sai</td>
<td>18</td>
</tr>
<tr>
<td>Kara-kul (north shore)</td>
<td>16½</td>
</tr>
<tr>
<td>Kara-kul (south shore)</td>
<td>13</td>
</tr>
<tr>
<td>Mus-kol</td>
<td>18</td>
</tr>
<tr>
<td>Ak-baital</td>
<td>12</td>
</tr>
<tr>
<td>Rabat No. 1</td>
<td>15</td>
</tr>
<tr>
<td>Chicheckli</td>
<td>16½</td>
</tr>
<tr>
<td>Fort Pamir</td>
<td>17</td>
</tr>
</tbody>
</table>

At each of the stations—Austan, Daraut-kurgan, Archa-bulak, Kara-kul, and Rabat No. 1—I proposed to rest one day, so as not to overtask the horses. This programme was carried out on the whole with tolerable fidelity. A few deviations in points of detail, rendered necessary by circumstances, were the only changes that were made.

I hired horses from an old Sart trader at the rate of a rouble (about 2s.) a day for each—seven baggage animals, and one saddle-horse for myself. It would have come cheaper to buy them, and sell them again in Kashgar. But, according to the agreement I made, I incurred no responsibility for loss or injury to the animals, and was under no obligation in the matter of feeding them or attending to them. These duties were performed by two men, who took with them three additional horses carrying supplies of forage. A jighit named Rehim Bai, an active, weather-beaten little fellow, who had braved wind and sun and cold throughout many a long journey in Central Asia, was appointed my
right-hand man. In addition to his experience of Asiatic travel, he was an excellent cook and spoke Russian. I gave him twenty-five roubles a month, together with rations and "lodging." He had to provide himself with a horse and winter felts. But on this journey he came near to losing his life, and left me at Kashgar.

When Rehim fell ill, his place was taken by one of the two horsemen who accompanied him, Islam Bai, whose home was at Osh, in Fergana. Islam proved the better man of the two, and throughout the entire journey served me with a fidelity and devotion which merit the warmest praise. The following pages will best show how great is the debt of gratitude I owe to this man. When he first came to me I was a perfect stranger to him, and he had no conception of the real object of my journey. Nevertheless, he willingly left his peaceful home in Osh to share with me all the dangers and perils of a protracted journey through the heart of Asia. We travelled side by side through the terrible Desert
of Gobi, facing its sand-storms in company, and nearly perishing of thirst; and when my other attendants fell by the side of the track, overcome by the hardships of the journey, Islam Bai, with unselfish devotion, stuck to my maps and drawings, and was thus instrumental in saving what I so highly prized. When we scaled the snowy precipices, he was always in the van, leading the way. He guided the caravan with a sure hand through the foaming torrents of the Pamirs. He kept faithful and vigilant watch when the Tanguts threatened to molest us. In a word, the services this man rendered me were incalculable. But for him I can truthfully say that my journey would not have had such a fortunate termination as it had. It gratifies me to be able to add that King Oscar of Sweden graciously honored him with a gold medal, which Islam Bai now wears with no small degree of pride.

I left behind at Margelan a quantity of stores and equipments for which I had no further need, including the venerable Orenburg tarantass, which I had hitherto used, and my European trunks. In place of these last I bought some Sart yakhtans—that is, wooden boxes covered with leather, and so constructed that they could be conveniently slung on horseback like a pair of panniers. I purchased the needful saddles, furs, and Pamir boots made of felt and untanned leather, and laid in a stock of extra provisions. I also took with me two steel spades to dig out the snow with when putting up the tent; and ice-axes and pickaxes to help us up the steep ice-coated precipices. When we crossed over the frozen lake of Kara-kul, I intended taking soundings, and for this purpose provided myself with a new hempen cord, 500 yards long, with ten-yard lengths knotted off, and a sinker at the end. The plane-table stand was so constructed that, with the addition of a Caucasian burkha (cloak or mantle), it could be converted into a temporary tent in case we were surprised by a snow-storm.

On February 22d, 1894, the string of horses started in charge of the jighits for Utch-kurgan. One horse was laden with photographic materials, packed in two yakhtans
(boxes); a second carried my topographical and other instruments, books, and the medicine-chest; the third, the ammunition-chests; the fourth and fifth, the commissariat supplies; the sixth and seventh, my weapons and personal belongings. Last of all, at the tail-end of the caravan, were the three horses carrying forage for the others, one of them almost buried from sight under two enormous bags stuffed with straw.

Two guides on foot went on first, and directed the horses wherever necessary. The jighits rode. As the long, imposing-looking caravan filed away out of the yard of the governor's palace, I stood and watched it with not a little pride. I did not accompany it, but spent that night at Margelan, the last I was to see of European civilization for many a month to come. That evening everybody in Margelan assembled within the governor's hospitable walls to bid me farewell. What a contrast to the evenings which immediately followed!

At eight o'clock on the following morning, after a last word in dear old Swedish with General Matveyeff and Lieutenant Kivekas, both light-hearted sons of Finland, and a hearty send-off from the hospitable governor and his charming family, I said good-bye to Margelan, and cantered away after my caravan. I caught up to it at Utch-kurgan. The distance was only 23 miles; and yet even in that distance the contour of the ground rose 1100 feet, up to an altitude of some 3000 feet above sea-level.

Uutch-kurgan is a large village picturesquely situated on the river Isfa'iran, at the point where it emerges from the northern declivities of the Alaï Mountains. I was received with a flattering welcome. A mile or two outside of the village I was met by the volastnoi (native district chief) of the place, accompanied by his colleague, the volastnoi of Austan, a place higher up in the mountains. The former was a Sart, the latter a Kirghiz. Both wore their gala khalats (coats) of dark-blue cloth, white turbans, belts of chased silver, and scimitars swinging in silver-mounted scabbards. At their heels rode a numerous cavalcade of attendants.
These dignitaries escorted me to the village, where a large crowd had assembled to witness my entry and enjoy the rare pleasure of a real tamashah (spectacle). After dastarkhan (refreshments) had been offered round, the caravan started again, escorted by the troop of horsemen.

The valley of the Isfairan grew more sharply contoured as we advanced, and narrowed at the end to a width of only a few hundred yards. At the same time the path ascended, following in part the bed of the stream; though in places it ran along the face of steep, wellnigh precipitous slopes. The river has cut a deep channel through the coarse-grained conglomerates, and its waters, dark green in color, but clear as crystal, danced merrily along among the bowlders.

A few hours' ride brought us to our second halting-station, Austan. There the volastnoi of the place had got ready for us a comfortable yurt (tent) of white kashma (thick Kirghiz felt), decorated on the outside with broad strips of colored cloth, and furnished inside with Kirghiz carpets and—a crackling fire. Having rigged up a temporary meteorological observatory, and piled the baggage outside the tent, the men tethered and fed their horses, and then gathered round a fire in the open air. Here Rehim Bai got the first opportunity to exhibit his skill as cook. By the time I had completed my observations daylight had gone, and I set about arranging my bed for the night—not a very irksome task, however, seeing that the bed consisted simply of a piece of sacking stretched upon two poles, the ends of which rested on a couple of yakhtans (boxes).

The next day was dedicated to rest. The Kirghiz kishlak (winter village) of Austan, numbering about a hundred uy (tents), lay about three-quarters of a mile higher up the valley, surrounded by clumps of stunted white poplars. But the day was not spent in idleness: I made a short excursion from camp, and carried out several scientific observations. The Isfairan brought down a volume of 280 cubic feet in the second. The temperature of the air at seven o'clock in the morning was 31.1° Fahr. (−0.5° C); maximum during the day, 51.1° Fahr. (10.6° C). The boiling-point of the water was at
206.3° Fahr. (95.7° C.); consequently, the altitude above sea-level may be taken as 4510 feet.

In the hurry of my departure from Margelan I had forgotten one thing—namely, a watch-dog, to lie outside the yurt at night. The oversight was made good in a curious way. On February 25th, while we were doing the next stage to Langar, an expansion of the valley 26½ miles farther on, a big Kirghiz dog, yellow and long-haired, came and joined himself of his own accord to our troop. He followed us faithfully throughout the whole of the journey to Kashgar, and kept grim karaol (watch) outside the tent every night. He was christened Yollchi, or "Him who was picked up on the road."

Immediately after leaving Austan the track climbed steeply up the left side of the valley. The horses clambered up one after the other in a long string. Ere many minutes were passed we had ascended so high that we could hear nothing of the brawling torrent below except a soft lisping murmur. The path was very tiring; it wound in and out of the heaps of mountain detritus, squeezing itself through the narrow passages between them. Sometimes it skirted the edge of a terrace which swung back round a side glen. Sometimes it threaded its way between gigantic fragments of rock. Every now and again it ran steeply down the side of the valley, and for a little distance followed the bed of the stream; then up it would suddenly mount again as abruptly as it had plunged down.

The parallel ridges of the Alaï were cleft transversely by the deep valley of the Isfâirân, so that the ruptured ends abutted upon it en échelon, like the side-wings of a stage-setting. The scenery was both wild and grand. Gigantic talus-slopes, or landslips, resulting from the action of wind and weather upon the more friable rocks of the mountains above, stretched down to the bottom of the valley. The course of the stream was marked by a few scattered trees and bushes growing close to the margin. Up on the mountain-sides above many a venerable and stunted archa (Asiatic juniper) hung its shaggy head over the yawning precipices.
Time after time we had to cross over the stream on wooden bridges which sagged and swayed at every step we took. One of these was known by the significant name of Chukkur-köpriuk—that is, the Deep Bridge. Seen from the lofty crest along which the path ran, it looked like a little stick flung across the narrow cleft far down below. Headlong down the mountain-side plunged the track; then over the bridge, and as steeply up again, zigzag, on the opposite side. At every ten or a dozen paces the panting horses stopped to catch their breath. Again and again their burdens fell forward or backward, according as they descended or ascended, and had to be hitched right again. The voices of the men urging on the horses and shouting warnings to one another echoed shrilly among the hollows of the precipices. In this way we made our way slowly and cautiously along the narrow, breakneck path.

Shortly after crossing the Deep Bridge the road became paved with ice-slides and bordered with snow-clad slopes, which terminated a little lower down in a vertical wall, at the foot of which the clay-slates cropped out in sharp-edged slabs or flakes. The first horse of the string, the one which carried the bags of straw, together with my tent-bed, was led by one of the Kirghiz guides. But, despite the man's care, when he came to this spot the animal slipped. He made frantic efforts to recover his feet. It was in vain. He slid down the declivity, turned two or three summersaults through the air, crashed against the almost perpendicular rocks which jutted up from the bottom of the valley, and finally came to a dead stop in the middle of the river. The bags burst, and the straw was scattered among the rocks. Shrii1 shouted pierced the air. The caravan came to a stand-still. We rushed down by the nearest side-paths. One of the Kirghiz fished out my tent-bed as it was dancing off down the torrent. The others encouraged the horse to try and get up. But he lay in the water with his head jammed against a large fragment of rock, and was unable to respond to their exhortations. The Kirghiz pulled off their boots, waded out to him, and dragged him towards dry land. It was, however, wasted labor. The poor
brute had broken his back; and after a while we left him ly­ing dead in the middle of the river, whither he had struggled back in his dying agonies. The straw was swept together, sewn up again, and packed on one of the other horses, which carried it till we reached our night-quarters at Langar.

As soon as we got back to the track we went to work with spades and axes and cleared away the ice, and then strewed sand over the place from which we had cleared it.

The horses were led across this dangerous spot one by one, and with every precaution for their safety. I need scarcely say that I traversed it on foot.

Before we reached the end of our day's journey we were suddenly overtaken by the twilight. The shades of night crept thicker and thicker together in the deep, narrow gorge, choking it with gloom. But after a while the stars began to peep forth; and their keen glitter, piercing the obscurities of the ravine, gave us a faint light by which to continue our perilous journey. I have encountered a fair share of advent­ures and dangers in High Asia; but the three hours' trav­elling which still lay before us till we reached Langar were, I believe, the most anxious of any I had hitherto experienced. The first ice-slide was merely the forerunner of others to come. They now followed one another in quick succession, each more perilous than the last. Thus we walked, and crept, and slid slowly on, beside the black abysses gaping for their prey. This occasioned innumerable delays, for many and many a time we had to stop to cut steps in the ice and strew them with sand. Each horse required two men to get him over these places, one to lead him by the halter, while another hung on to his tail, ready to lash him if he stumbled or slipped. Notwithstanding this, several of them did fall; but luckily they managed to recover their feet. One fell and slid several yards down the snowy slope, but fortunately stopped in time. His pack was loosened and carried up the path; the animal was helped to get back, and his burden was once more lashed tightly on his back. I myself crawled several hundreds of yards on my hands and knees, while one of the Kirghiz crept close at my heels and held me in the more
perilous passages. A fall in any of those places would have meant instant death.

In a word, it was a desperate journey—dark, cold, awe-inspiring. The only sounds that broke the unearthly silence of the gorge were the piercing screams of the men whenever one of the horses fell, their shouts of warning when they drew near to one of these perilous passages, and the constant roar of the torrent, which churned its way down through the foam-white rapids. It was an Asiatic river-spirit dashing a storm of music from her quivering harp!

When we at length arrived at Langar, weary, frozen, hungry, we had been toiling through the snow for twelve hours at one stretch. How welcome the two tents we found ready pitched for us there, with a brightly blazing fire in each!
CHAPTER IX

OVER THE TENGHIZ-BAI PASS

From Langar we travelled almost due south towards the pass of Tenghiz-bai. But before I go on to relate how we surmounted it, I must say a word or two about the principal passes which connect the valley of Fergana with the valley of the Alaï. There are five of them—namely, these, going east to west:

<table>
<thead>
<tr>
<th>Pass</th>
<th>Altitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>Talldik</td>
<td>11,605</td>
</tr>
<tr>
<td>Jipptik</td>
<td>13,605</td>
</tr>
<tr>
<td>Sarik-mogal</td>
<td>14,110</td>
</tr>
<tr>
<td>Tenghiz-bai</td>
<td>12,630</td>
</tr>
<tr>
<td>Kara-kasik</td>
<td>14,305</td>
</tr>
</tbody>
</table>

This gives a mean altitude of 13,250 feet for the Alaï passes. It is noticeable that their absolute elevation increases as the chain advances westward; the difference in altitude between the passes and the valley, or the relative altitude of the passes, likewise increases from east to west.

The easiest of these passes is the one mentioned first—namely, Talldik. It has recently been levelled, and is now practicable for carriages and artillery. But it is closed by the snows the greater part of the winter. The second and third are very difficult, chiefly because of the avalanches, the violent winds, and the furious hurricanes of snow. The depth of snow on Tenghiz-bai varies very greatly from year to year. In normal seasons it does not amount to any great quantity, and for this reason it is the pass that is mostly used during the winter. It is the route followed by the post-couriers (jighits) who carry the mails between Margelan and Fort Pamir. Nevertheless it is no unusual thing for the
Tenghiz-bai pass to be closed during the last two or three weeks of February. In 1893 it was only closed for ten days. In 1892 it was impassable for a period of two whole months. And in 1891 the depth of the snow was so great, though for a shorter period, that junipers twelve or thirteen feet high were completely buried from sight in the snow-drifts.

February is the month in which avalanches fall and snow-storms rage with the greatest frequency. At that season the boldest Kirghiz hesitates to put foot inside the pass unless the weather is perfectly still and serene. All the same, hardly a winter passes without a fatal mishap of some kind. The numerous skeletons of horses, and even of human beings, which litter the track, might serve as mile-stones during the summer months.

The Kirghiz of the aul (tent village) of Daraut-kurgan, in the valley of the Alai, told me a pathetic story of a man who came to that place from Utch-kurgan early in the year 1893, in order to spend Ramadan (the Mohammedan month of fasting) with some friends. On the way home he was overtaken, on March 23d, in the pass mentioned, by a violent buran (snow-hurricane), and was forced to stay there four days and nights squatting on the ground, with no other protection than his sheepskin coat. His horse died. His provisions gave out. When the snow-storm ceased, he found the way blocked in both directions. Nevertheless he pushed on, and, by dint of creeping, climbing, and wading, came, after two days and two nights of terrible labor, to the district of Karakiya, where he fell in with some of his own countrymen, who took charge of him, and fed him and nursed him. As soon as he had recovered a little he continued his journey to Utch-kurgan. But he died the very first night after getting home, overcome by the hardships and privations he had undergone.

I was also told that a caravan of forty men was overwhelmed that same winter in the Terek-davan pass by an avalanche, and killed to the last man.

On the night of February 26th I sent eight Kirghiz on in advance into the pass, with spades, pickaxes, and hatchets,
to hew a road for the horses. The caravan followed up after them early the next morning. The first difficult place we came to was at Kara-kiya. There we found the Kirghiz hard at work hewing steps—actual steps—in the ice; for the last fall of snow, which lay on the surface, had melted during the day, and then frozen during the following night.

The mountain horses or ponies of the Kirghiz are truly wonderful little animals. Their ordinary load is usually about thirteen stone (180 pounds). With this load on their backs they are able to slide great distances down the mountain slopes. They climb like cats up the steep declivities; and although the narrow, slippery mountain-paths are generally coated with ice, and run along the edge of precipices, they balance themselves on them with almost inconceivable sureness of foot. The name Kara-kiya, meaning the Black Gorge, is a very appropriate name for the place. It is a narrow tunnel or pass, shut in by perpendicular walls of rock, and shrouded in the deepest shadows. Into those cavernous depths no ray of sunshine ever penetrates. At this spot the Isfāiran was spanned by two bridges. Underneath the upper one the torrent plunged with the force and noise of a thundering cascade. In this region the hand of Nature has worked with sublime effect. Landscapes alternately wild, awe-inspiring, and full of romantic charm followed one another in quick succession. The eye commanded a truly wonderful perspective both up and down the glen.

Above the bridge of Haidar-beg the valley bore the name of Chettindeh, and the stream was spanned by four small wooden bridges. The last of these was a miserable contrivance. Its supports were so rotten that my men were in a state of the greatest anxiety as they carefully led the horses across it one by one. A short distance farther on the glen was completely choked by a newly fallen kutshka (avalanche or snow slide), which blocked both stream and path. The former came boiling from underneath the ice like a river emerging from an underground tunnel; while a new path, or rather staircase, had to be hewn across the sloping talus of ice-blocks. As luck would have it, we chanced at this very
spot to meet a dozen or so Kirghiz from Kara-teghin, travelling on foot to Kokand and Margelan in search of work. They stopped and helped us to repair the road. But even then, after all our efforts, the path was so steep that each horse had to be actually pushed up by half a dozen men.

The glen narrowed rapidly towards its upper end, rising with extraordinary steepness and becoming indistinguishable from the mountain slopes. At the same time the relative altitudes decreased in proportion as the absolute altitudes increased. The last portion of the way was tough work; avalanche succeeded avalanche at short intervals. Almost every horse in the string fell once, some of them twice; and as they were unable to get up again in the snow with the loads on their backs, the baggage had to be taken off them and then lashed on afresh. In this way we were delayed time after time. The last ice-slide we encountered was so difficult to cross that the horses could not by any possibility get over it loaded; accordingly the Kirghiz unloaded them and carried the baggage across on their own backs. Indeed, they carried it all the way to Rabat (Rest-house)—a little hut built of stones and timber overlooking the glen below. There also a uy (tent) had been pitched. I had walked the greater part of the day, and was thoroughly tired. The altitude was 9350 feet; and during the night I began to feel the symptoms of mountain-sickness—a splitting headache and an acceleration of the heart's action. These symptoms, which were caused by the sudden change from a relatively low to a relatively high altitude, continued all the following day; but passed off after about forty-eight hours, leaving no ill effects behind them.

On the following morning the Kirghiz road-makers and Jan Ali Emin, aksakal (chieftain) of the Kara-teppes, who had been in charge of the work, returned to Rabat. At the same time I and my men, fully realizing the risks of the undertaking, started on our journey up the pass, which was now buried deep in snow. The difficulties of the road were almost inconceivable, and our labors trying in the extreme. But by dint of persevering we managed to surmount all ob-
stcles, and came to a trough-shaped depression on the sum-
mit of the range, where the snow was fully six feet deep. A
deep and narrow pathway had been trampled through the
snow-drifts. But it was like a shaking bridge laid across a
bog. One step off the path, and the horses plunged up to
the girth in the snow; and it took all our combined efforts
to dig them out again and get them back upon the "bridge."
All this occasioned serious loss of time.

We now became aware of a group of sombre-looking
peaks, split and weathered by wind and frost, towering above
the eternal snows away in the southwest. It was a detached
spur of the Kara-kir, pointing the way like a sea-beacon up
to the dreaded pass of Tenghiz-bai. The track mounted up
to the last summit by an endless series of zigzags, putting
the horses' strength and climbing powers to the severest
proof. But at length we reached the top of the pass safe
and sound, and with all our baggage intact. There we
rested an hour for tea, made meteorological and other ob-
servations, took photographs, and admired the entrancing
scenery.

The spot at which we rested was shut in on every side by
snowy crests, with bare, black pinnacles protruding here and
there through their mantles of snow. Looking northward,
we had the valley of the Isfairan below us. We turned
towards the southwest, and a magnificent panorama fasci-
nated the eye. In the far-off distance were the sharply ac-
centuated crests of the Alai Mountains, and on the opposite
side of the valley the system of the Trans-Alai, its summits
melting into the clouds, its flanks glistening with snow-fields
of a dazzling whiteness.

The mountain saddle upon which we stood formed the
water-shed between the basins of the Syr-daria and the Amu-
daria. After recovering our breath in the clear, rarefied
mountain air, we started to make our way at a leisurely pace
down into the region where the head-streams of the latter
river have their origin. The descent on this side was every
bit as steep as the ascent had been up the northern face.
The path was smothered under innumerable landslips and
avalanches. Some of them had carried down with them in their fall vast quantities of earth and débris; so that we did not perceive them until the horses suddenly dropped up to the girth in the soft and treacherous ground. I measured one of the largest of these avalanches, which had fallen the day before. It was a quarter of a mile across, and had a depth of nearly seventy feet. The Kirghiz were not slow to congratulate one another upon having so fortunately escaped its clutches. The gigantic ice-slides rush down the mountain-side with such overwhelming force and momentum that, under the enormous pressure, their lower strata or under-surface become converted into ice, and anything living which should have the misfortune to be buried under it would be literally frozen fast in the middle of a block of ice as hard and as vitreous as glass. Once clasped in that icy embrace, a man would be hopelessly doomed. But in all probability the unhappy wretch who was thus swept away would be stunned by the fall, and would freeze to death before his consciousness returned.

Thoroughly exhausted by the exertions of the day, we halted in a little side glen called Shiman. Here the snow was several feet deep, and the Kirghiz were obliged to clear a space before they could get the tent erected. We passed the night hemmed in by a high breastwork of snow.

The next day we continued our march down the glen of the Daraut-kurgan. Every ten minutes or so we forded the stream, which raced along under arches and bridges of snow. Each time we did so, the horses were obliged to leap down the perpendicular bank of ice into the water, and then leap up again on the opposite side. Every time they did this, I was in a fever of anxiety lest any mishap should befall the animals which carried the ammunition and the photographic apparatus. However, everything passed off all right. The only incident was one of the commissariat horses plunging down a steep snow-slide, and rolling into the torrent. But we followed him down, unloaded him, hauled up the yakhtans with a rope, reloaded the animal, and then ploughed slowly on through the snow-drifts till another horse stumbled and fell.
At mid-day it began to snow. A thick mist came on, hiding everything from view, and preventing us from seeing where we were going to. One of the Kirghiz went on first and sounded the depth of the snow with a long staff, as sailors do when navigating unfamiliar waters. But there was this difference: whereas sailors aim to avoid the shallows, we sought for them, and for the firm ground under-

neath them. Several times our guide dropped out of sight altogether in the snow, and had to crawl out, and try again in another place.

The glen we were following emerged into the valley of the Alaï near the spot where Khodiar, the last independent Khan of Kokand, had built the fort of Daraut-kurgan, a building with low clay walls, and a tower at one corner. Another hour's travelling brought us to the Kirghiz aul (tent-village) of Daraut-kurgan, consisting of about a score of tents (households) under the authority of the hospitable chieftain, Tash Mohammed Emin.

The origin and meaning of the name Daraut-kurgan are differently explained by different Kirghiz. Some maintain that it is composed of three words, darah, utt, and kurgan, the
first common to both Persian and Kirghiz, and meaning "valley," the other two, both Kirghiz words, meaning "grass" and "stronghold" or "fort" respectively. Others declare that the name is a corruption of the Persian dar-rau, meaning "immediate" or "make haste on the road"; and go on to explain that Daraut-kurgan is intended to warn the traveller to make haste and get through the dreaded pass as quickly as he can.

To add to our difficulties, it began to blow a gale from the west. The snow still continued to fall, and the mist did not lift. The Kirghiz said that a violent snow-storm was raging up in the Tenghiz-bai pass; we might thank our stars we had got through it in time. And indeed it was a stroke of fortune to escape in the way we did. A day earlier and we might have been crushed under the avalanche; a day later and we might have been annihilated by the buran (snow-hurricane).
CHAPTER X

UP THE ALAI VALLEY

Before I proceed with my itinerary I should like to say a few words about the Alai valley, the huge troughlike depression which separates the Alai chain from the Pamir plateau. Bounded on the north by the Alai Mountains, and on the south by the Trans-Alai, it is terminated at its eastern extremity by the massive mountain-knot of Mus-tagh-tau. Thence it stretches seventy-five miles westward, and is continued in the valley of Kara-teghin. Its breadth varies from three to twelve miles; the altitude sinks from 10,500 feet in the east to 8200 feet at Daraut-kurgan in the west. It is drained by the Kizil-su, which traverses it throughout its entire length, gathering up on the way the rainfall of the surrounding mountains. After quitting the Alai valley, the river enters the valley of Kara-teghin, winds through it under the name of the Surkhab, and finally joins the Amudaria, bearing a third name, the Wakhsh, at the point of confluence. The volume of the Kizil-su amounted to 780 cubic feet in the second at Daraut-kurgan. Add to this the volume of 175 cubic feet in the second contributed by its affluent, the Kara-su, and we get a total volume of eighty-two and a half million cubic feet in the twenty-four hours. The volume is greatest in the middle of summer, when the snows melt at the fastest rate. Indeed, for about six weeks at mid-summer the flood is so powerful that it is impossible to ford the river at Daraut-kurgan. During that time all communication between the auls on the opposite banks is completely interrupted.

The volume of the stream is very much greater during the night than during the daytime. This is owing to the fact
that the water from the snows, which are melted by the sun
during the day, do not get down to the valley before dark­ness sets in. The flood begins to rise at about eight o’clock
in the evening. At six in the morning it begins to fall again.
It reaches its lowest level at eight, and maintains the same
level all day long. In March, when I saw it, the water was
as bright and as clear as crystal. But during the summer it
is tinged a brick-red color by the sands and clays it passes
through in its upper course. It is from this circumstance it
gets its name of Kizil-su, which means the Red River. A
similar circumstance has given the same name to its neigh­
bor over on the other side of the mountains—namely, the
stream which flows from the Terek-davan pass eastward to
Kashgar and Lop-nor.

In the northern, middle, and eastern districts of the Pamirs
—the districts through which my route ran—the downfall of
snow is very unevenly distributed. Three sharply separated
zones, dependent upon the configuration of the surface, may
be distinguished. (1.) In the north, the valley of the Alaï,
which becomes filled every winter with enormous masses of
snow. (2.) In the east, the region of Sarik-kol, which re­
cieves a very much less quantity of snow. (3.) Lying be­
tween these two, the tract around the lakes Kara-kul and
Rang-kul, neither of which has any outflow; there the snow­
fall is almost insignificant. It may be assumed that, as a
general rule, the moisture-laden winds, which blow towards
the lofty plateau of the Pamirs, discharge the greater portion
of their precipitation upon the border ranges before they
reach the central parts of the region. In these tracts it is
only in sheltered spots, where the force of the wind is broken—
for example, close to and around the passes—that any great
quantity of snow falls. In all other places the thin, dry snow
is quickly swept away by the wind.

One immediate consequence of the unequal geographical
distribution of the snowfall is the unequal distribution, as
well as the unequal size, of the rivers and glaciers. Both
occur only in those regions where there is a plentiful snow­
fall. In the central parts of the plateau they are few and of
inconsiderable dimensions. Taking the results of my observations and measurements as a basis, I calculate that on an average one cubic yard of snow out of the total quantity on each square yard of land-surface goes to feed the rivers in the form of water. The snow as it lies is of extraordinary density, and only about one-fourth of its volume melts and becomes converted into water. If we estimate that the aggregate snowfall of the Alai valley and the mountain-slopes which surround it covers 2,870,000,000 square yards, we may reckon on the aggregate volume of water which they yield at 19,500,000,000 cubic feet, or a solid cube of water measuring 2700 feet on each of its sides. This estimate can scarcely be considered excessive, when it is borne in mind that the volume of the river during the period of high flood, in the middle of the summer, is out of all comparison greater than during the colder seasons of the year. If we assume a volume of 880 cubic feet in the second as the mean for the whole of the year, the figures work out at an annual aggregate volume of close upon 27,800,000,000 cubic feet. A calculation made upon such insufficient data can obviously be nothing more than an approximation. It is self-evident that the excess precipitation must be set down to the summer rains.

During the winter violent westerly winds blow up the valley of the Alai with great constancy and regularity. Easterly winds also occur, but are very rare. The high mountain-chains on the north and south of the valley shelter it against northerly and southerly winds, although it does occasionally blow from the southeast. During the summer the air is stiller, and the wind blows seldom, and then with but little force. The west wind is called Kara-teghin khamal, the east wind Irkestam khamal, and the southeast wind Murghab khamal, after the various districts from which they blow.

In the valley of Fergana the spring rains come in the middle of March. In the Alai valley, on the other side of the mountains, the same month is the season of the sarikkar or yellow snow, the name given to the last of the winter snows. Why it is so called the Kirghiz were never able to explain satisfactorily. But it is a fact that the name is in
common use all over the Pamirs. The most probable explanation is perhaps this: By that time, in certain quarters, the snow has already melted, exposing the surface of the ground. The dust which rises from those places is probably caught up by the wind and blown upon the freshly fallen snow, staining it a dirty yellow color.

I need scarcely add that the beginning of the winter snows, and their disappearance in spring, vary in the various districts. * In the higher regions it snows all the year round. In the Alaï valley the first snow falls in the end of October, and the last traces disappear about the middle of April.

But to return to our journey. During the night between February 28th and March 1st the wind howled and whistled through the tent hour after hour, and at length rent several narrow slits between the separate pieces of felting. In the morning, when I woke up, the floor of the tent was braided with ribbons of drifted snow; one of them ran diagonally across the pillow on which my head rested. But what cared I about wind and snow? I slept like a bear in his winter lair. The storm continued to rage all the next day. The wind, which blew from the west, whirled thick clouds of snow as fine as powder past the yurt (tent) from morning till night. In fact, every minute the tent itself threatened to
go, although we lashed it down with extra ropes, and supported it with additional stakes.

On March 2d we travelled as far as the winter village of Gundi. But before starting in the morning we took the precaution to send men on in advance to clear the path and trample a passage through the snow-drifts. And fortunate we did so, for the old track was completely obliterated by the storm. We kept as close to the southern foot-slopes of the Alaï Mountains as we possibly could, because in many places on that side the snow had been swept clean away.

At Gundi we met with a misfortune. We had just got the tent pitched and arranged, and had carried in the yakhtans, and the more perishable portions of the baggage, when

Rehim Bai managed to give the quicksilver barometer a knock, which smashed the delicate glass tube and set the glistening beads of quicksilver rolling along the ground. My costly and sensitive instrument, which I watched over as tenderly as a mother watches over her infant, alas! it was now useless, and might just as well be flung into a snow-drift. I could no longer record its readings three times a day, as I had conscientiously done hitherto. Rehim Bai was
dismayed at what he had done; but, as he really was not to blame for what had happened, I let him off with a mild wiggling. What was the use of heaping reproaches upon him? That would not mend the barometer. Besides, I still had three other aneroid barometers and hypsometers.

With the idea of affording me some consolation for my loss, the men arranged a concert for the evening. One of the Kirghiz came into my tent, and squatting down began to play the kaumuss, a three-stringed instrument played with the fingers. The music was monotonous and of a melancholy cadence; but it harmonized well with the surroundings and the moods they inspired. In a word, it was typically Asiatic. I sat and listened to it with pleasure, giving my imagination captive to the music, the soft moaning of the night wind, the gentle crackle of the fire. How many and many a night did I not spend thus during the long years that followed, listening to the dreamy sounds of that primitive Kirghiz instrument! How many a dark, solitary winter afternoon did I not while away in this foolish fashion! In course of time I grew accustomed to the kaumuss, and derived as much pleasure from it as the Kirghiz did themselves. In fact, I grew fond of it. Its soothing music carried my mind away into the fairy realms of day-dreams; my thoughts flew far away to my home amid the dark pine woods of Sweden. And how sweet and pleasant a thing it is to dream yourself back among those who are near and dear to you! Many a night I was lulled to sleep by the measured tones of the kaumuss, played as an accompaniment to some melancholy Asiatic song.

March 3d. The storm had subsided, though the sky was still enveloped in clouds. The peaks of the Trans-Alai range shimmered with the loveliest tints of gray, and white, and pale blue. Two hours of travel brought us to the little aul (tent-village) of Kizil-unkur, and another two hours to the pass of Ghaz, a low saddle among the southern spurs of the Alaï Mountains. All the way, even as far as Kashka-su, the river Kizil-su flowed close to the foot of the Alai, as far from the Trans-Alai as it could get. Our path lay close
alongside the right bank of the stream, which boiled along at torrential speed in a sort of narrow cañon, now forcing its way between mounds of red sand, now cutting a deep trench through the conglomerate strata.

Then we gradually worked away from the Kizil-su. The farther we advanced towards the east the deeper lay the snow. The track was entirely blotted out by the latest storm, and the snow-drifts were so thick that all day long four camels went on in front to trample down a path, or rather a furrow, through them, along which the horses toiled at a painfully slow and heavy pace. The wind continued to sweep down on us in furious gusts, frequently smothering the whole caravan in dense clouds of driving snow.

At length we came to the little brook of Kashka-su, on the other side of which was the aul of the same name. To get to it we had to ride over the torrent on a bridge of ice and snow. There we found awaiting us a most comfortable yurt (tent). Not only were Kirghiz carpets spread on the ground, they were also hung round the walls; while the fire which blazed in the middle of the tent scattered showers of sparks in every direction, and crackled and shot out chips
of burning wood to such a degree that a man was told off to watch lest it should burn holes in the carpets.

On March 4th it snowed all day long. The landscape was shrouded in a thick mist, so that not a single feature could be seen. Sky and earth were one indistinguishable veil of white haze. The only relief to the eye was the long dark line of the caravan, shading off to a dull gray towards the head of the column and gradually fading away in the distance. Two camels led the way, their riders being instructed to find out where was the firmest ground. Ac-

![CAMELS TRAMPLING A PATH THROUGH THE SNOW](image)

cordingly they cruised up and down every rise and swelling of the path. But the snow was so deep that several times they dropped into it till scarce a vestige of them could be seen. Then, having scrambled out, they tried another place. The horses struggled on as best they could in the track of the camels, their packs and stirrups jolting and trailing against the banks of snow on each side of them.

At length we caught sight of a yurt on a hill-side—a black spot amid the universal whiteness. A short distance farther on we saw men engaged in putting up another tent. They were only about two hundred yards distant; but between us and them there was a ravine into which the snow had drifted to the depth of eight or ten feet, and it took us more than an hour to get all the baggage-animals safely over. The first which ventured to try to cross dropped through the treacherous surface, and was near being smothered in the deep snow.
It was as much as ever the men could do to free the horse from his packs and haul him back again on to firm ground. Then they set to work to dig out a path; but the snow was so deep that they were unable to get through it. At length the Kirghiz hit upon an ingenious device for overcoming the difficulty. They took the felt coverings of the tent and spread them over the snow. But there were not sufficient pieces to stretch right across, so, after a horse had advanced as far as he could get, the felts were lifted from behind him and laid down again in front of him. In this way, but at the cost of extreme labor and great waste of time, we managed to get all the animals safely across.

That district was called Jipptik. But the aul (tent-village) of that name was two miles farther on, and the tents had been shifted solely for our accommodation. Notwithstanding that, it was anything but a comfortable camp. The fuel was insufficient in quantity, and, worse than that, damp, so that the tent was filled with eddies of pungent smoke. The tent itself was very speedily surrounded by high ramparts of snow.

March 5th. The night was bitterly cold. The thermometer registered a minimum of $-4.9^\circ$ Fahr. ($-20.5^\circ$ C.); close at the head of my tent it was $14^\circ$ Fahr. ($-10^\circ$ C.) at eight in the morning. Everything inside the tent was frozen—canned provisions, milk extract, ink. Outside the tent the poor horses, which had passed the night in the open air, hung their heads dolefully, and tried to scrape away the snow, which crackled in the frosty air every time it was touched. The day, however, was fair, and about one hour before noon the sun peeped through. Then the majestic outlines of the Alpine Trans-Alai began to glimmer through the fast vanishing mist, the topmost crests being still wreathed in gauzy veils of cloud. Every now and again we caught a glimpse of Kaufmann Peak (23,000 feet high), a pyramidal summit which glittered like silver in the sunshine, and appeared to be overtopped by scarce any of its neighbors.

We waited some time for a band of Kirghiz, who, it had been arranged, should come to meet us from Archa-bulak and clear a track for us through the snow. But after wait-
ing some time and seeing nothing of them, our friend Emin, chief of the Kara-teppes, rode on in advance to see what had become of them, as well as to reconnoitre the ground. I confess it was not an encouraging sight to see his horse floundering through the snow-drifts, his flanks decorated with fringes of rime, while the breath gushed from his nostrils like light puffs of steam. For an hour and a half we watched him creeping like a black speck across the endless sea of white snows. Most of the time nothing was visible except the rider and the horse’s head.

After an absence of a couple of hours Jan Ali Emin returned, and reported that it was impossible to advance farther; the snow was many feet deep, and his horse had been down several times. We held a consultation, as the outcome of which Emin and Rehim Bai rode over to the aul of Jipptik to beg assistance. The rest of us stayed behind in camp, literally snowed up on every side. At length, after some further waiting, we perceived a long string of horses and camels approaching from the north, the direction of the foot-hills of the Alaï. They were people from the aul, bringing us hay and fuel. When they came up, they strongly advised us to remain where we were till the following morning.

Early on March 6th we began to make preparations as
if for a military campaign. Before daylight four men started on camels to trample a path through the snow-drifts. The Kirghiz told me that some winters the snows were a great deal worse than they were that winter. Sometimes they were piled up higher than the top of the tent, and intercommunication between the auls had to be kept up by means of yaks specially trained to do the work of snow-ploughs, in that with their foreheads and horns they shovel narrow tunnels or passages through the snow-drifts.

The task we had immediately before us was to cross the river Kizil-su—by no means an easy thing to do. Except for a deep, rapid current in the middle, about ten or a dozen yards wide, the stream was sheathed in ice, and the ice covered with heavy masses of snow. Moreover, the edges of the ice were unsafe, being greatly eaten into by the water. It was not at all a pleasant sensation to sit on my horse's back when he came to the edge of the ice above the ford and gathered himself together for a leap into the water. If he slipped or fell, I felt I was certain to get a cold bath, which in the temperature that then prevailed would have been anything but agreeable; worse than that—it would have been dangerous, seeing that I was hampered with thick, heavy furs, which were a great impediment to freedom of movement. And even when the horse had made the leap in safety, and was wading through the ford, I only just escaped being seized with giddiness, for
the river boiled and foamed about him, and raced along so swiftly as almost to lift the animal off his feet. Unless I had kept a firm hand on him, he would have been swept off the ford into deep water, where he would have lost foothold and

been carried away by the current. Nevertheless, it is generally in the summer that mishaps of that sort occur.

Once over the Kizil-su, we struck obliquely across the valley towards the outer slopes of the Trans-Alai Mountains, leaving the river behind us on the left. The ground was difficult travelling, owing to the great number of natural springs which gushed up in every direction. The water which oozed from them was partly frozen into huge cakes of ice; and where the temperature was somewhat higher, it trickled away unfrozen underneath the snow. This gave rise to soft, treacherous expanses of snowy brash, into which the horses sank at every step. From the character of the echo given by their hoof-beats we were able to tell what sort of surface was hidden underneath the snow. A dull, heavy sound meant hard frozen ground; a clear metallic ring indicated firm ice; while a muffled, hollow sound told us that we were riding over cakes or arches of ice.

Gradually as we advanced the surface became more uneven. We entered among the low foot-hills of the Trans-Alai range, leaving the pass of Talldik behind us on the north. The snows grew deeper and deeper. After march-
ing ten hours we decided to halt, although the region around
was desolate in the extreme — not a blade, not a living crea-
ture to be seen. The men cleared the snow away from the
side of a low hill, and there stacked the baggage for the
night. The camels that were bringing the yurt from Jipptik
lagged behind on the road, and we had to wait a full hour
till they came up. In the mean time we kindled a fire, and
gathered round it close together in a circle, and tried to
warm our frozen limbs with tea. There were 47° of frost
Fahr. (—26° C.), and the least touch made the snow crackle
like parchment. I did not get under the shelter of the tent
until late that night.

I have already said that the governor of Fergana had sent
orders to the Kirghiz to have a tent and fuel prepared for us
at each stage of our journey against the day fixed for our ar-
river. The reason there was no tent ready for us when we

reached Urtak, as this particular place was called, was due to
the following untoward circumstances. Khoja Min Bashi,
volastnoi (district chief) of Utch - teppe, which belongs to the
administrative district of Osh, had intended to meet me him-
self, and with that end in view set out to cross the Alai
Mountains. But in the pass of Att - yolli, near Talldik, he
had been overtaken by a snow - hurricane, and so prevented
from continuing his journey. In the same storm forty sheep were buried in a snow-drift, their shepherd narrowly escaping with his life. When he found himself stuck fast, the volast-noi managed to get six other men sent forward in his place with the tent and fuel. But they had had hard work to force their way through the pass, and after nine days’ toil, and the loss of one horse, were compelled to abandon both tent and fuel. Four of them, struggling on, succeeded at length in getting through to Jipptik, where they borrowed another tent and fresh fuel from the chieftain of the Kirghiz of that place. When we at last met them in Urtak, they were very uneasy about the two comrades they had left behind. One of the four had got a frost-bitten foot, while another was suffering from snow-blindness. He had been walking for three days through the dazzling snows, and consequently had overstrained his eyes. His companions did their best to screen their eyes with tufts of horse-hair stuck between their caps and foreheads, also with pieces of leather strap through which they had cut narrow openings. Both invalids were tended with the greatest care, and at the end of a couple of days were all right again.

It was unusually late that night before we got to bed—fully an hour after midnight before all sounds were hushed in camp. At that time the thermometer registered \(-25.6^\circ\) Fahr. \((-32^\circ\) C.). It was my usual practice to sleep alone in
the tent, as it was not altogether pleasant to have the Kirghiz too close: they are seldom the sole occupants of their furs or felts. But intense cold is a pretty effective safeguard against the inconvenience I am alluding to. With such a low temperature I had not the conscience to let the men lie under the open sky. Accordingly, as many of them crowded into the tent and stowed themselves away on the carpets as could possibly squeeze in, till we lay as tightly packed as herrings in a barrel. Notwithstanding this, the temperature inside the tent sank to $-12.6^\circ$ Fahr. ($-24.8^\circ$C.). The minimum during the night was $-30.1^\circ$ Fahr. ($-34.5^\circ$ C.). The next morning when we woke a shower of ice flowers and icicles fell over us from the tent-roof. But I never saw the stars glitter with such matchless brilliancy as they did that night.
CHAPTER XI

OVER THE TRANS-ALAI

It was eleven o'clock in the day when we got started on March 7th. We were all exhausted by the toilsome march of the previous day, and it was late when we turned in. Everybody therefore was glad to wait till the sun warmed the air before we set off again. Our Kirghiz guides led us through a series of low hills close alongside the Kara-su. This river gets its name of the Black Water from the circumstance that it has its origin, not in the snows of this highland region, but in natural springs; besides which, its water was so clear that in its deeper reaches it appeared to be almost black. We crossed over the stream two or three times on the brittle ice crust which spanned it from side to side. Underneath us we could hear the water gurgling and gulping with a clear metallic sound. There were not above two or three places where we could see the river flowing unhindered between the stones with which its bed was encumbered.

The snow-drifts grew deeper and deeper; so that the caravan could only make its way through them at a painfully slow pace. Towards the east we could see the termination of the Alaï valley, where the offshoots of the Alaï and the Trans-Alaï Mountains met together above a trough-shaped depression. The outlines of the latter chain now stood out in sharper relief, and its crest flashed back the dazzling coruscations of light which played about its snow-mantled shoulders. The chief tints were white and blue; and far, far above it sparkled the pure turquoise blue of the Asiatic sky. White gossamer clouds like bridal veils hovered about the summit of Kaufmann Peak and the
neighboring altitudes. But what icy cold—what frigid brides!

The horses toiled on through the snow. The men had to be constantly on the alert, for the packs were always slipping round underneath the horses. Very often every man in the company was wanted to lend a hand to get them put straight again. At the more difficult places the characteristic cries of the Kirghiz—"Bismillah!" (In God's name!) or simply "Haidah!" (Get on!)—rang out shrilly upon the mountain air.

Our canine friend Yollchi thoroughly enjoyed himself. He tumbled like an acrobat over the snow-drifts. He rolled over and over in the snow, thoroughly cooling his thick, shaggy hide. One moment he would playfully catch up a mouthful of snow, the next he would race off swift as an arrow ahead of the caravan. The creature was half wild when he joined us; and I never succeeded in making him properly tame. Having been reared among the Kirghiz, he could never by any bribe be induced to come inside my tent. For the Kirghiz are Mohammedans, and look upon the dog as an unclean animal. The very dust off his feet would pollute the inside of a tent. I tried my best to wean Yollchi from such superstitious notions. But, do what I would, I could not get him past the tent door—neither by fair means nor foul. He had never once in his life set foot inside a tent, and obviously had made up his mind that he had no manner of business in such a place.

The climate in that part of the world is not without its peculiarities. While the sun is wellnigh burning one side of your face, the other side will be freezing. At noon, if the sky is clear, and there is no wind, it gets so hot that you are glad to fling off your sheepskins. But the moment the sun gets behind a cloud, or the shadow of a mountain comes between the sun and yourself, you begin to shiver with cold. After shedding your skin once or twice, your face gets as hard and dry as parchment, and you turn as brown as a Hindu. At noon on March 5th the thermometer registered 14° Fahr. (—10° C.) in the shade, while the black-bulb insolation thermometer showed 125.6° Fahr. (52° C.).
It began to darken while we were still two hours from the next camp. The horses travelled so slowly, and my back ached so from the heavy furs I wore, that, bidding Min Bashi accompany me, I left the caravan, and set off in the darkness to make my way as best I could over the pathless country. Min Bashi went on first. I followed in the track, or rather furrow, which his horse ploughed through the snow. It was a wearying ride, and, but that the stars shone brightly, would have been as dark as pitch. At last, however, we came to the solitary little hut of Bor-doba. Had there been a worthy Boniface in charge he would have been vastly amazed to hear two snow-smothered horsemen ride up to the door at that late hour of the night, fasten their horses outside, stamp the snow off their clothes and boots, and without further ceremony march into the house. To prevent any misconception as to the style of "house" it was, I will state at once that this rabat (rest-house) was merely an earthen hut, with a wooden roof supported by rough beams, and that the only provision for sleeping was a square bank of earth in the middle of the floor. This and a few similar huts have been put up by the direction of the governor of Fergana for the convenience of the mounted post-messengers who travel backward and forward between Margelan and Fort Pamir. This particular hut stood at the foot of a desolate hill, and from that circumstance gets its name of Bor-doba, a corruption of Bor-teppe, the Gray Hill. We both dropped straight off to sleep, and slept until the bustle and noise caused by the arrival of the caravan awakened us. Then we had tea made, and warmed ourselves over a glorious fire.

On the way to Bor-doba we saw the tracks of eight wolves, which had crossed over the valley in a scattered troop from the Alaï Mountains to the Trans-Alaï. Farther on they all struck into our track, which led through a narrow opening between two hills. The Kirghiz told me it was an old and well-known wolf-trail. The next morning at daybreak, when my men went out to see after the horses, they caught sight of seven wolves sneaking away in the direction of Kizil-art.

Wolves are very common in those regions. During the
summer they haunt the Alaï valley, and levy tribute upon the Kirghiz flocks of sheep. The Kirghiz sheep-dogs can see them more than a mile off; but are frequently outwitted by the wolves, who will hang about a flock for weeks at a time, persistently spying out for a favorable opportunity to seize their prey. They are extremely bloodthirsty and murderous; and if by any chance they light upon an unprotected flock, will kill every sheep in it, leaving not a single animal alive. Not many weeks previously a single wolf had in the course of one night bitten to death 180 sheep belonging to a Kirghiz of Utch-teppe. But woe betide the wolf that has the ill-luck to be wounded by the Kirghiz, and falls alive into their hands. They force open his mouth, thrust a short, thick piece of wood between his jaws, and lash them all firmly together. Another heavy piece of wood is fastened to one of his feet, to prevent him from running away. Then they torture him to death. On one occasion I was instrumental in putting an end to a horrible scene of this kind.

When the great winter snows fall in the Alaï valley, the wolves go up to the Pamirs, and range the districts around Lake Kara-kul, preying principally upon the magnificent ark-hari or argali (*Ovis Poli*)—i.e., the wild sheep of Central Asia—as well as upon the *kiyick* (goat) and hares. In hunting the
wild sheep the wolves display remarkable craft and intelligence. Having enclosed the sheep in a wide ring, they begin to howl, so as to make their presence known, and gradually close in upon their prey. When they get near enough, they cut off two or three of the sheep and force them to take refuge on a narrow, outjutting crag, from which there is no return except into their jaws. If the crag is too steep for them to scale it, they patiently wait at the bottom until the wild sheep’s slender legs become numbed from sheer weariness, and they roll down the precipice into the jaws of their ravenous persecutors. In the vicinity of Kara-kul we often saw flocks of arkhari quietly grazing a couple of miles from us. The Kirghiz used to discover them at a marvellous distance, so far off in fact that I, with my most powerful field-glass, could only just discern something of their movements. In various parts of the Pamirs travellers come across their skulls, bleached by the sun and still adorned with their huge curled horns. These are no doubt the sole remains of wolves’ feasts.

According to the Kirghiz, two wolves can sometimes be dangerous to a solitary man. They told me many blood-curdling stories about wolves and their depredations up in those lofty regions of Asia. A few years ago a man was attacked and killed by wolves in the pass of Talldik, and when a day or two afterwards the Kirghiz went to fetch down his body, there was nothing left except the bare skeleton. On another occasion a Kirghiz perished in a buran in the Kizil-art pass. A week later the man’s corpse was found in the snow; but the horse which he rode had been entirely devoured by wolves. Only the previous winter one of my Kirghiz guides and a jighit (Sart messenger) were surrounded by a dozen wolves. Fortunately they were armed, and shot two of them. These were immediately devoured by the rest, after which they all took to flight.

At Bor-doba we rested a day. I employed it in making scientific observations. For one thing, we cut a vertical section three feet deep through the snow, and found it was deposited in six separate layers, showing different degrees of
purity and consistency. The bottom layer was 8 1/4 inches thick, of a dirty appearance, and almost as hard as ice. The top layer, 17 inches thick, was soft and pure as wool. It is reasonable to suppose that the different layers or strata of snow corresponded to different periods of snowfall, and that those which lay underneath were pressed together by the weight of the superimposed layers; so that during the winter of 1893-94 about six vertical feet of snow must have fallen in the place where we made our section. The temperature of the air at three o'clock in the afternoon was 7.5° Fahr. (—13.6° C.); the black bulb insolation thermometer gave a reading of 115.9° Fahr. (46.6° C.). Nevertheless, at a depth of 1 1/4 inches in the snow the temperature was only —8.5° Fahr. (—22.5° C.). This tends to prove that the differences in the daily range of temperature were scarcely sensible at even that slight depth, or distance, from the direct action of the sun's rays. (The minimum of the preceding night was —18.8° Fahr. or —28.2° C.). As we went down towards the surface of the solid ground—that is, deeper—measuring from the crust of snow, we found that the temperature gradually increased. For instance, at a depth of 17 inches it was 12.2° Fahr. (—11° C.); at 23 inches, 17.6° Fahr. (—8° C.); at 25 1/2 inches, 18° Fahr. (—7.8° C.); at 27 1/2 inches, 21.7° Fahr. (—5.7° C.); and on the ground, or at a depth of 36 inches, 24.1° Fahr. (—4.4° C.).

The ground was frozen as hard as a stone. But with pickaxes and hatchets we made a hole two feet deep and put down a thermometer; it registered 30.4° Fahr. (—0.9° C.). Taking the whole series of observations together, I came to the conclusion that the solid earth freezes to a depth of a little over three feet and a quarter; which agrees with the results I obtained in other parts of the Pamirs. From what the Kirghiz told me, I inferred that the frozen ground thaws through to the bottom during the summer.

On the morning of March 9th all the Kirghiz fell upon their knees in the snow and prayed to Allah to vouchsafe them a safe journey through the dreaded pass of Kizil-art. I fully prepared myself for a terrible journey, for in the pass
of Kizil-art the snow-hurricanes are wont to swoop down upon the unsuspecting traveller out of a perfectly cloudless sky; but to my surprise I found it much easier than the pass of Tenghiz-bai, especially as we were favored with the best of weather. Bor-doba lies at such a great altitude that the climb thence to the pass, which crosses the highest ridge of the Trans-Alai, was not especially steep. The torrent which races down from the pass in spring and summer was now frozen up, and its bed choked with sheets of ice, which, being polished bright by the wind, reflected the blue sky like a mirror. For the most part the range consisted of reddish sandstones and clay-slates; the former varying from brick color to blood-red in tint, the latter being dark green, light green, and gray. The bottom of the valley was thickly strewn with débris and disintegrated rocks, brought down from the higher regions of the mountains.

The gradients grew steeper as we approached the summit of the pass, and the snows lay deeper. But we reached the top (14,015 feet) without any mishap; though when we got there we were assailed by an icy northern wind, which penetrated sheepskins and felt boots alike.

On the very highest point of the pass stood the burial-cairn of the Mohammedan saint Kizil-art, a mound of stones, decorated with the religious offerings of pious Kirghiz—namely, tughs (i.e., sticks with rags tied round them), pieces of cloth, and antelopes' horns. Arrived at this shrine, my men again
fell upon their knees, and thanked Allah for having pre­served them on the way up to the top of the dreaded pass. They told me that Kizil-art was an aulia or saint, who in the time of the Prophet travelled from the Alai valley to the countries of the south to preach abroad the true faith. In the course of his journey he discovered this pass, to which he gave his own name. He is said to be now buried on the highest point of it. Others of the Kirghiz gave a much more probable explanation of the name—namely, that the cairn has simply been built in commemoration of the saint. Further, they fully believe that, if the holy Kizil-art had not discovered the pass, it would be impossible, even at the present day, to travel across the Pamirs from this direction. Tradition has also preserved the memory of his six brothers, all of them holy men like himself. Their names were Must-art, Kok-art, Khatin-art, Kolun-art, Ghez-art, and Ak-art. The suffix “art” is one out of several Kirghiz words meaning “pass,” and each of these six names is applied to a pass in the mountains of the Pamirs.
CHAPTER XII

LAKE KARA-KUL

On the southern side of the range there was at first a good deal of snow; but it soon began to get thinner. At the end of a march of eight hours' duration we came to the little caravanserai of Kok-sai. The name of this place is indelibly engraven upon my memory. It was there I recorded the lowest temperature it has been my lot to observe in the course of all my journeyings through Asia. The quicksilver thermometer fell to $-36.8^\circ$ Fahr. ($-38.2^\circ$ C.), that is, almost as low as the freezing-point of mercury.

South of the pass of Kizil-art the landscape changed its character entirely. There was a far smaller quantity of snow. Over large areas the surface of the earth was bare and exposed, in others buried under sand and the débris of disintegrated rocks. The mountains were softer and more rounded in outline, and their relative altitudes were less; while their several ridges or crests were separated from one another by broad, shallow, trough-shaped valleys. The region around Lake Kara-kul, between the passes of Kizil-art and Ak-baital, possesses no drainage outlet towards the Amu-daria; and the products of disintegration are not carried away by the streams, but remain and help to level up the natural inequalities of the surface. In other words, the distinction holds good here which Baron von Richthofen lays down as obtaining between regions which have no drainage outlet and peripheral regions which have a drainage outlet.

All day long on March 10th we rode towards the south-east, crossing in the early part of the day an open trough-shaped valley, girdled by low, snow-clad mountain ridges of
moderate height. In the valley itself there was very little snow. What there was lay in thin, scattered patches. Before us on the right the valley opened out wider, and swelled up into a series of low, rounded hills. On the left a spur ran out southwestward across the valley, terminating in a single isolated cone. Continuing on up this gradually rising ground, we came, at the end of another four hours' march, to the little pass of Uy-bulak, from the summit of which we had a grand panorama towards the southeast. Far down under our feet we could see the northeast corner of Great Kara-kul, caséd in a panoply of ice and mantled with snow. All round it stood a ring of giant mountains, draped from head to foot in one unbroken garment of dazzling snow. Within the pass the snow was once more 15 to 16 inches deep, and coated with a curiously hard, dry crust, tough as parchment, and so strong that the horses frequently went over it without breaking it. It was just as though we were travelling over a huge, tight-stretched sheepskin.

From Uy-bulak and the foot of the mountains a broad steppe sloped downward at an almost imperceptible angle towards the northern shore of the lake. Except in a few places, it was almost entirely covered with snow, which, under the force of the prevailing westerly and northwesterly winds, had assumed a strangely odd appearance. It resembled a number of small parallel dunes, or the wrinkled folds that come into cream when it is poured out on the ground and left to freeze. Several clumps of teresken, a hard, dry, scrubby shrub which yields excellent fuel, were scattered about the steppe.

The sun set at six o'clock. At the moment of his disappearance the shadows of the mountains on the west side of the plain raced across it so swiftly that it was difficult for the eye to follow them. Then they slowly mounted up the flank of the mountains on the east side, till nothing but the topmost pyramidal peaks were left glowing in the evening sunshine. A quarter of an hour later, and the entire region was dimmed with the twilight. The mountains on the east stood out like pale, chilly spectres against the background of the
rapidly darkening sky; while those in the west were like a black silhouette thrown upon the brighter—light blue and mauve tinted—atmosphere behind them.

We halted not far from the shore of Great Kara-kul, taking shelter in an earthen hut, where we passed the night in warmth and comfort.

On the morning of March 11th I set off to cross the lake towards the southwest, taking with me a specially selected portion of the caravan—namely, two Sart jighits, two hardy Kirghiz—all of us being mounted, with two pack-horses carrying the baggage. We also took with us provisions and fuel to last two days, as well as a teghermetch (a small conical Kirghiz tent), an iron bar, axes, spades, and the sounding apparatus and line. Before leaving the rest of my people I arranged with them to meet us at the next camping-station, not far from the southeast corner of the lake.

Kara-kul is a saline lake, with an area of 120 to 150 square miles, and is shut in by mountain-chains of considerable elevation. But on the north, east, and southeast the mountains recede sufficiently far from its shores to leave room for a strip of steppe-like plain, two or three miles in breadth. Its Kirghiz name, which means the Black Lake, is so far appropriate, in that in summer its waters do appear dark when contrasted with the mountains which hem it in, for even in that season broad patches of snow often continued to lie on the ground. Its maximum length is about twelve miles; its maximum breadth about ten. A peninsula jutting out from the southern shore, and an island lying almost due north of the peninsula, divide the lake into two basins—an eastern, which is extremely shallow, and a western, much the larger, and going down to abysmal depths. The object of my first day's investigations was the eastern basin.

About two and a half miles from the shore we came to a halt. The iron bar and axes were immediately brought into requisition. It cost us an hour's hard labor to break through the ice, for it was pretty nearly three feet thick. The ice was hard and transparent, and brittle as glass. The last stroke of the iron bar made a hole through which the water
gushed and boiled up till it filled the pit we had made in the ice to within an inch or two of the top. It was clear as crystal, but of a greenish-black color, and bitter to the taste. We let down the sounding-cord, which was divided off into lengths of ten yards. But very little more than the first length passed my hands. With the help of the measuring-tape I found that the lake had a depth of nearly 41½ feet. The temperature of the water was 31.3° Fahr. (−0.4° C.) in the hole, and 29.8° Fahr. (1.2° C.) at the bottom of the lake. As soon as we had finished the hole, which was nearly four feet across, the ice began to crack in every direction all around with loud reports, while a series of curious sounds issued from underneath it in quick succession.

We went on another two and a half miles, and made another sounding-hole. Then we struck across the ice towards the little island I have mentioned, hewing a third hole on the way. We landed beside a narrow creek, and rode across the island till we found a suitable camping-ground. The Kirghiz said the island had never before been visited by human beings. We pitched the small yurt (tent) we had brought with us, and immediately in front of the entrance made a fire of teresken fagots. Then, having taken our supper, we spent a raw, cold, disagreeable night, with the temperature down to −20.2° Fahr. (−29° C.), at an altitude of 13,000 feet above the level of the sea.

We woke up early the following morning, frozen, numbed, and out of humor. We rode across the ice about three miles due west from the island, then stopped and set about sounding the depth of the western basin. The normal tension of the ice was of course the same in every quarter. Our riding over it naturally disturbed the equilibrium by increasing the downward pressure. As we moved along, every step the horses took was accompanied by peculiar sounds. One moment there was a growling like the deep bass notes of an organ; the next it was as though somebody were thumping a big drum in the “flat below”; then came a crash as though a railway-carriage door was being banged to; then as though a big round stone had been flung into the lake. These
sounds were accompanied by alternate whistlings and whinnings; while every now and again we seemed to hear far off submarine explosions. At every loud report the horses twitched their ears and started, while the men glanced at one another with superstitious terror in their faces. The Sarts believed that the sounds were caused by “big fishes knocking their heads against the ice.” But the more intelligent Kirghiz instructed them there were no fish in Kara-kul.

Then when I asked them what was the cause of the strange sounds we heard under the ice, and what was going on there, they answered with true Oriental phlegm, “Khoda billadi!” (God alone knows!) Anyway, if the faithless Lady Ran* were hatching mischief against us, she strangely miscalculated her power. The ice did not break; it would have borne the whole of the city of Stockholm.

That day too we were favored with splendid weather—not a speck of cloud, not a breath of wind. There were nearly three inches of hard snow on the ice, which prevented the horses from slipping. How different all this was from the discouraging accounts given me in West Turkestan. There they told me that Kara-kul was never free from snow-

* The goddess of lakes in the old Scandinavian mythology.
hurricanes, that every flake of snow which fell was instantly swept away, and that I might look to have the entire caravan blown bodily across the glassy surface of the lake. Besides all this, they assured me I should have to put up a tent and hew my sounding-hole inside it; instead of which we did the work in the open air and in bright sunshine.

During the course of the day we rode across the lake from the north side to the south, making four other holes on the way.

The results of the soundings are embodied in the subjoined table; the Roman numerals indicating the bore-hole, the first column the depth of the lake in feet, the second and third the temperature at the bottom of the lake on the Fahrenheit and Centigrade scales respectively, and the fourth the thickness of the ice:

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These figures show that the eastern basin is shallow, while the western is very deep. A glance at the map, or better still at the lake itself, suggests that the contour of the lake bottom and its shores should be what the actual measurements proved it to be. The eastern basin is bordered by a tract of steppe-land, which slopes gently down towards its shore. The western basin is overhung by high, steep mountains. The lake is fed by several small brooks, which have their origin in natural springs in the vicinity, and from the melting of the snows on the mountains around. The springs are especially plentiful at the eastern end of the lake, and form large pools or marshes. One other deduction may be drawn
from the table given above, though it is so self-evident as scarcely to need particularizing. It is this: with every increase in the depth of the lake, the temperature rose and the ice grew thinner.

Shortly after passing a little promontory, we saw before us the long fjord or gulf which cuts deep into the southern shore. It presented a striking picture; for, while the declivities came down at an angle of twenty degrees on the west, there was on the east a flat shelf sloping up gently towards the foot of the mountains, and in the background, at the head

A SMALL ISLAND IN LAKE KARA-KUL

of the fjord, a semicircle of the snow-clad giants of the Pamirs. Judging from what I could see of the configuration of the ground, I hardly think that the southern half of the fjord can exceed 160 feet in depth.

We cut our last sounding-hole right in the middle of the mouth of the fjord. As soon as we got through the ice, three of the men begged to be allowed to ride on in advance with the horses to Ak-tam, the place near the southeast corner of the lake where we had agreed to spend the night, so that they might get the tent ready against my arrival. I and the jighit Shir remained behind to take the soundings. By the time we had finished, it was dark; yet not so dark but that we could see to follow the trail of the other men who had gone on to camp. We tracked them obliquely across the fjord, but lost the trail when we touched the shore. We rode a long time across the peninsula, which I have mentioned before, scram-
bling over sand and stones and other products of disintegra­
tion. In a little the crescent of the moon appeared above
the horizon, and shed down its cold, pale beams upon the
desolate scene. And desolate indeed it was—not a sound
to be heard, not a vestige of a living creature to be seen.
Every now and then we stopped and shouted—no answer.
Once we came across the trail in a scanty snow-drift. But
the next moment the moon was shrouded in the night-mist,
and we lost it again. After riding for fully four hours, we
came to the shore of the eastern basin. But we saw no sign
of horsemen, no signal-fire, no appearance of a camp.

The other men had, it was evident, travelled another way.
The question was— which way? We rode on another hour,
trusting to chance to guide us. But it was all to no pur­
pose; we could not find those we sought. We determined
therefore to halt for the night. The spot where we came to
this resolve was a level expanse of sand, dotted with thin
patches of snow. We tethered the horses together by a
halter to prevent them from running away. The poor creat­
ures, which had had no food all day, hungrily scraped at the
sand with their hoofs; but they found nothing except the
tough, hard roots of teresken. At these they tugged greedily.
Having made the best preparations for spending the
night that our resources admitted of, we sat close together,
and talked till an hour after midnight, firing one another’s
fears with gruesome wolf stories. Shir said, however, that if
danger threatened us from that quarter the horses would be
our best protectors, as they would be certain to give us
warning.

Having thoroughly tired ourselves with talking, we squatt­
ted down Kirghiz-fashion in our sheepskins—i.e., on our
knees, with our backs to the wind. I made a pillow of the
portfolio or satchel which contained my maps, sketch-book,
thermometers, and so forth. But I was not a Kirghiz. I
found it impossible to sleep in that attitude. Every now and
then Shir dropped off and began to snore; but I could not
sleep a wink. I tried the position we Europeans are accus­
tomed to, but was soon chilled through by the cold, and had
to rise and move about to get warm again. From time to time the horses nuzzled against us, as if to remind us that we had forgotten to give them their supper.

Fortunately for us the night wind was not too fresh, and the temperature only fell to 4.1° Fahr. (—15.5° C.).

About six o'clock in the morning day broke, and we mounted into the saddle, hungry and stiff with cold. We rode southward for an hour, till we came to a place where there was a little scanty yellow grass, left by the last flock of sheep which browsed over the spot in the autumn. While the horses grazed for an hour or two, I and Shir got a good sleep, for the sun was up and kept us warm.

Having mounted again, we pushed on still towards the south. On the way we met a solitary Kirghiz, travelling on foot from Rang-kul to the Alaï valley. As with most of his race, his eyes were as sharp as a hawk's; he had discovered us nearly two miles before meeting us. I and Shir found our comrades at the end of another hour's riding. Our first concern was to thaw our stiffened limbs and warm ourselves with hot tea; then, while the horses were eating their fodder, we despatched our breakfast, consisting chiefly of mutton and tinned provisions.

March 14th. The country rose from the Kara-kul very
gradually towards the south. Before we had travelled far, we rode into a broad valley, stretching between two parallel mountain-ranges, which ran north and south, and were sheathed in snow. As a rule, a larger quantity of snow falls every year in this valley than around Great Kara-kul, though the depth seldom exceeds four inches. Thick clouds hung about the mountain-tops; everywhere else the sky was perfectly clear. About noon, however, the wind got up, and it soon blew with great violence. For close upon five hours we rode steadily towards the south-southwest; but coming to a bifurcation of the valley, we turned to the left and struck out towards the south-southeast. Just where the valley divided, we saw, conspicuously crowning a low hill, the masar or tomb of the Kirghiz saint Oksali, built of slabs of stone and decorated with horns and tughs (sticks with rags and pieces of cloth tied round them).

The valley into which we turned was the valley of Muskol, which led up to the pass of Ak-baital. There was but little snow on the ground; but as we advanced, the surface became more and more thickly strewn with disintegrated débris.

Upon my arrival in camp I was met by four Kirghiz, wearing their gala khalats (coats). They had been sent from Fort Pamir to welcome me, and had been waiting five days, with a tent and supplies of food and fuel. They told me that my long delay had begun to make the Russian officers at the fort uneasy. As a matter of fact, we had been seriously delayed by the enormous quantities of snow we met with in the Alai valley.

The word Mus-kol signifies “ice valley.” Soük-chubir, the place where we encamped, might very well mean Cold Siberia, for the usual name for that region in Turk is Chubir (Siberia). Whether this last interpretation is correct or not, and it is not quite certain that it is, both names may with good show of reason be said to be appropriate. For the region thereabouts is characterized by an excessive winter cold; while the valley is distinguished for a remarkable natural phenomenon, which I will now proceed to describe.
The little stream which traverses the valley of Mus-kol has its origin for the most part in natural springs. During the winter the water gradually freezes and spreads across the valley in huge "cakes" or sheets of ice. They resemble small frozen Alpine lakes, and their surface is so glassy bright that it reflects every dimple of the sky and every angle of the mountain crests. In certain seasons these ice-sheets do not entirely melt away during the course of the summer. The largest I saw was nearly two miles long and more than half a mile broad. We rode half way across it in order to examine its thickness. The lateral strain upon the ice, and the pressure of the water from beneath, give rise to long narrow ridges, which are sometimes thrust up to the height of several feet, and are cleft by fissures going right through them from top to bottom. With the axes and iron bar we cut a transverse section through one of these ridges, and found it was merely a crust about eleven inches thick. Below it was a hollow arch, $9\frac{1}{2}$ inches in height; and then came the water, three feet deep, going down to the sandy floor of the valley. The water was clear as crystal and of a light-green color; the thermometer gave its temperature as $31.6^\circ$ Fahr. ($-0.2^\circ$ C.). Looking down through the open section we made, I perceived that the still, transparent water was arched over in both directions by a long tunnel, and that the under surface of the ice-arch was decorated with frost-work, crystal pendants, and stalactites, all shimmering with the loveliest hues of blue and green.

There were three of these ice-lakes. On the edge of the smallest of the three, close beside the spot where we pitched our camp for the night, were two typical ice-volcanoes. Two springs gush out of the level ground. Late in the autumn, when the temperature permanently falls, the water which wells from them freezes. Meanwhile the springs continue to bubble up all the while the water continues to freeze. In this way two cones of ice are formed. One was $16\frac{1}{2}$ feet high, and had a circumference of 225 feet; the other measured $26\frac{1}{2}$ feet and 676 feet in height and circumference respectively.
Four deep fissures radiated from the crater of the smaller volcano, which was about fifty-five yards distant from the other. At the time of our visit they were all half filled with ice. The cone was built up of an innumerable number of thin layers of light-green ice, each layer representing a separate freezing. The mouth of the crater was closed by white ice, full of air-bubbles; but there was not at that time the least sign of water oozing out. It was an "extinct" volcano.

The larger volcano consisted of a double cone, one superimposed upon the other. The bottom one, which was built up entirely of white ice, was low and flat, its sides inclining at an angle of not more than five degrees. The upper cone, which was a dome of pure, transparent ice, rising at an angle of 30 degrees, and measuring 70 feet in diameter, was seamed throughout by a net-work of intersecting fissures, some concentric, others radiating from the centre outward. Here again the mouth of the crater was frozen over, compelling the water to seek a new outlet through a side-fissure or "parasite" volcano. Although the water trickled out at a lively rate, it gradually froze before reaching the ice-lake, and so became set into a sort of "ice-flow." Its temperature was $31.5^\circ$ Fahr. ($-0.3^\circ$ C.).

In the small ice-lakes it begins to freeze in the very beginning of November, and the last of the ice does not thaw and get down to Lake Kara-kul before the middle of June. In one of them it never does melt entirely away, being favored by a shady, sheltered position; so that when the new ice begins to form in the end of September some of the old ice is still left.

We were surrounded on all sides by glacial landscapes; only, unfortunately, mists and snow-storms prevented me from taking photographs of them. Looking towards the west, along the longer axis of the ice-lake, it was easy to imagine we were gazing down a narrow fjord or sea-gulf; the horizon was wreathed in mist and seemed to lie at an immense distance away. To right and left were mountain-chains; but it was only the slopes nearest to us which emerged out of the haze.
On March 15th we rode all day long up the valley of Muskol, traversing it right through from one end to the other. At its upper extremity, to which the ascent had been very gradual, we halted for the night, close to the northern entrance of the pass of Ak-baital. The next day brought us a hard climb of ten hours' duration right over the pass, which rises to the pretty respectable altitude of 15,360 feet. A sharp snow-storm, waxing for a time into a hurricane, gave us a chilling welcome in the pass. The ascent was tough work for the horses, chiefly in consequence of the extreme rarefication of the air. They had to exert themselves to the uttermost, and frequently stopped to gasp for breath; and despite our utmost care often fell. The pass consisted of two distinct ridges, separated by a stretch of almost level ground, which took us a good half-hour to ride over. It was covered with snow to the depth of 12 to 16 inches. On the summit of the pass we rested a short while, although there was a keen sou'wester cutting through it. The temperature
there was 12.2° Fahr. (−11° C.), and water boiled at 184.3° Fahr. (84.6° C.).

The caravan started down the eastern side of the pass, which was at first extremely steep, in a thick mist. But, the steep upper slope passed, the country fell away at an easy gradient all the way to Kornei-tartì, our next camping-ground. In the Ak-baital pass another of our overworked horses fell dead. One of the Kirghiz bought the skin from Islam Bai, the leader of the caravan, for two roubles (4s).

Kornei-tartì, meaning “the Trumpet Blast,” is a narrow glen, half choked with detritus, partly products of denudation, partly large stones and rocks, through which meandered a little brook; though at the time of my journey this last was covered with a hard crust of ice. The bottom of the glen was one unbroken expanse of snow; but on the mountain-sides there was little, except in the declivities which faced north. Of vegetation there was not a trace. We went on steadily steering for the southeast and east-southeast, the country retaining the same characteristics as before. At Ak-gur (the White Grave), where a conspicuous spur jutted out into the glen, we were met by Kul Mametieff, a Tatar, whom the commandant of Fort Pamir had sent to act as my interpreter. He was dressed in full uniform, and wore half a dozen medals on his breast, and brought with him a letter
eloquent of friendly greetings from his master. We con­tinued to ride on till we came to Togolak - matik (Round Caldron Valley), or the junction of the valley of Rang-kul with that of Ak-baital.

On the 18th we accomplished the last stage of this portion of our long journey—namely, the lower extremity of the valley of Ak-baital, and the part of the valley of the Murghab which we had to traverse to get to the Russian outpost on the Pa­mirs. The first thing we noticed, upon catching sight of the fort at a distance, was the Russian flag flying from its north­west corner, proclaiming the sovereignty of the Czar over the “Roof of the World.” When we drew nearer, we saw that the ramparts were beset with soldiers and Cossacks to the number of 160, drawn up in line. They gave us a cheer of welcome; and at the main entrance I met with a hearty re­ception from the commandant, Captain Saitseff, and his offi­cers, six of them in all. They conducted me to the room in their own quarters which had been ready for me a whole week. A yurt was set apart for the use of my men.

As soon as I got my baggage stowed away, I went and had a good bath, and then joined the officers at mess. It was a meal not soon to be forgotten. I delivered the greet­ings I had brought from Margelan. I had a thousand and one questions to answer about my adventurous ride across the Pamirs in the middle of winter. Then, when the Cos­sack attendants served round the fiery wine of Turkestan, the commandant rose, and in a neat speech proposed the health of Oscar, King of Sweden and Norway. If ever a toast was responded to with real sincerity and gratitude, it was when I stood up to return thanks for the honor done to my king. If ever there was a place where joy reigned supreme, it was surely here on the “Roof of the World,” 11,850 feet above the level of the sea, far removed from the bustle and noise of the busy world, in the very middle of Asia—a region where our nearest neighbors were the wild sheep of the mountain crags, the wolves which prowl over the snowy wastes, the imperial eagle which soars through the endless spaces of the sky.
CHAPTER XIII

POPULATION OF THE RUSSIAN PAMIRS

The greater part of our route across the Pamirs led, as we have seen, through uninhabited regions. The Russian districts of the Pamirs had in October, 1893, a population of not more than 1232 persons. But the Alai valley and the valley of Sarik-kol possessed, relatively speaking, a denser population. Administratively the Alai valley is divided into two portions, the western half belonging to the уйяд (district) of Margelan, the eastern half to the уйяд of Osh. The information which I derived from the Kirghiz chiefs who dwell in those regions is not perhaps absolutely reliable, but it is sufficiently near the truth to deserve consideration.

Scattered through the Alai valley there were, they told me, fifteen kishlaks or winter settlements, aggregating a total of 270 yurts (households or families), who in part remained there the whole year through, in part migrated to the higher regions during the summer. The number of tents in the larger auls was estimated as follows: in Daraut-kurgan, 20; Kok-su, 120; Kizil-unkur, 50; Altyndarah, 5; Tuz-darah, 45; Kashka-su, 20; and Jipptik 10. Ethnologically the inhabitants of these settlements were said to fall into the following groups: Teit-Kirghiz dwelt at Daraut-kurgan, Altyndarah, and Tuz-darah; at Kashka-su, Teit and Chal-teit; at Jipptik, Choy-Kirghiz; at Kok-su, Naiman Kirghiz; in Kara-teghin, Kipchaks, Naiman Kirghiz, and Kara-teit. The greater portion of these people migrate every summer to the neighborhood of Lake Rang-kul, where, after the snows have disappeared, the grassy steppes furnish good pasturage for their sheep. A portion of them also winter, as we have seen, in the Alai valley. There too, in the end of May or beginning of June.
the prosperous Kirghiz of Fergana bring their flocks to graze on the plentiful grass which springs up along the borders of the Kizil-su. They pitch their yeylaus or summer camps on the banks of the river, and amuse them-

selves with their baigas or games on horseback, feast, marry —in a word, make summer holiday. The greater portion stay only a couple of months, none longer than three months. The rest of the year they spend in their kishlaks or winter-
quarters in Fergana. During the summer there are about 150 yurts at Kashka-su.

The Kirghiz who go up to the Pamirs from Osh and Andijan travel by way of the Talldik and Jipptik passes; those who belong to Margelan and Kokand prefer the pass of Tenghziz-bai. This last is also the route which nowadays is chosen by the large number of Tajiks who travel on foot every summer to Fergana in search of work. The Alai valley is also an important link in the chain of communication which connects East Turkestan with Kara-teghin and Bokhara, and so with the pilgrim road to Mecca and Medina; so that during the warmer months of the year many a trading-caravan and pilgrim-train passes up and down the valley.

The portion of the Pamirs which belongs to Russia is divided between two volasts (arrondissements) embracing in all seven eminstvos (communes):

1. The volast of the Pamirs consists of five eminstvos: Kara-kul, with 131 inhabitants in October, 1893; Murghab, with 253; Rang-kul, with 103; Ak-tash, with 239; and Ali-chur, with 256.

2. The volast of Kuh-darah includes only two eminstvos—namely, Sarez, with 95 inhabitants, and Kuh-darah, with 155. The inhabitants of the volast of the Pamirs were almost exclusively Teit-Kirghiz; of Kuh-darah almost exclusively Tajiks. The total population, grouped by sex and age, embraced 320 men, 369 women, 342 boys, and 201 girls—a total of 1232.

These statistics were given me by Captain Saitseff. His predecessor, Captain Kuznetsoff, took a census of the district under his authority in October, 1892, with the following result:—a total of 1055 people—255 men, 307 women, 299 boys, and 194 girls. Captain Saitseff's figures thus show an increase of 177 during the year. But the increase was partly due to immigration. The Kirghiz who dwelt on the other side of the Chinese and Afghan frontiers were attracted into Russian territory by the improved conditions of living, the result of the Russians' wise and humane treat-
ment of the native populations of Asia. The regions most frequented during the winter months were those around Rang-kul, Kosh-aghil, and Ak-tash. There were also several auls (tent-villages) in the Alichur Pamirs, some even in the Pshart valley, south of Kara-kul. The little aul of Murghab lay a short distance east of the fort.

Captain Kuznetsoff estimated that the 1055 Kirghiz occupied 227 yurts (tents), and that their live-stock consisted of 20,580 sheep, 1703 yaks, 383 camels, and 280 horses. The Tajik population of the western Pamirs he estimated at 35,000.

The eastern slopes of the Pamirs—that is, the tracts lying east of the Sarik-kol range—belong to China. With regard to them, there exist of course no reliable statistics. The beg of Su-bashi (south of Little Kara-kul) told me that in the environs of that lake there were some 300 Teit-Kirghiz dwelling in about 60 yurts. He himself was chief of 286 yurts, most of which, however, lay on the east of the great mountain of Mus-tagh-ata. All the Kirghiz of the Pamirs,
irrespective of the tribe to which they belong, are called by their kinsmen in Fergana by the one common appellation of Sarik-kolis, or people of Sarik-kol.

The statistics which I have just given demonstrate how thinly the Pamirs are inhabited. Nor could anything different be expected, considering the characteristics of the region—the intense cold, the frequency and fury of the snow-storms, the few pasture-grounds and their scanty supplies of grass. Of the two self-contained internal drainage-basins, Kara-kul and Rang-kul, the latter only has a settled Kirghiz population. The Kara-kul Kirghiz are true nomads. At the period of my visit to the lake their tents were pitched some little distance away on the south and southwest; its shores were entirely unoccupied. The grazing-grounds in the vicinity are frequented during the spring, summer, and autumn. But there is no grass during the winter; it is cropped too close by the sheep in the latter part of the autumn. Sometimes the Kirghiz from Rang-kul migrate to the steppes round Kara-kul for the summer grazing.
CHAPTER XIV

GEOGRAPHICAL SUMMARY

Baron Von Richthofen divides the whole of the Asiatic continent into three distinct regions of very unequal extent—the Central, in which the rivers drain into inland lakes; the Peripheral or border lands, in which the streams make their way down to the seas which wash the coasts of the continent; and the Transition or Intermediate tracts, which partake of the characteristics of the other two. The subdivision also holds good when applied to the Pamirs. Here, too, there are three similar geographical districts—a central district draining into lakes Kara-kul and Rang-kul, a peripheral draining to the Amu-daria (and so into Lake Aral) and to the Tarim (which empties into the lake Lop-nor).

The most remarkable feature in the region of internal drainage is the process of levelling-up which goes on unceasingly. The detritus which results from the disintegrating action of the weather, and the more or less mechanical agency of wind and water and gravity, is constantly being carried down from the mountains all round its borders towards the lower parts of its depressions, and being deposited there. In this way the natural inequalities in the configuration of the ground are being gradually smoothed away. Although, broadly speaking, this process is going on in the tracts around Lake Kara-kul, it is also true that there are very great differences in the relative altitudes in that same quarter. For instance, the lake lies at an elevation of 13,000 feet above sea-level. It has been sounded to a depth of 756 feet—a remarkable depth, considering that Kara-kul is a saline lake in the centre of Asia. And near its western margin the mountains tower up to an altitude of 4000 feet above the sur-
face of the lake. Here there is an enormous field for the process of levelling-up to work in. But the soundings which I took in the lake proved that it is also operative there, for the bottom was covered with fine mud.

The mountain-chains which encircle the depressions of Kara-kul and Rang-kul attain to relatively great heights, and the passes which cross them are seldom much lower than the crests. The pass of Kalta-davan, for instance, has the same absolute altitude as Mont Blanc—namely, 15,780 feet; the pass of Kizil-art is 14,015 feet; of Ak-baital, 15,360 feet; and Chuggatai, 15,500 feet. The lake of Rang-kul, which lies 12,240 feet above sea-level, marks the lowest point of the depression. The area which falls between the passes just named amounts to about 2100 square miles, an area which is approximately equal to that of the basin of Issyk-kul.

The traveller who journeys from Fergana to East Turkestan cannot help observing that the character of the country which stretches from Kizil-art on the north to Ak-baital on the south, and is bordered by the Chuggatai range on the east, is totally different from the tracts which immediately surround it. It is not a highland region; but a high-level plain, bounded on the north and south by latitudinal chains, and on the east by a meridional chain. Surveying the region from the summit of the Kizil-art pass, I was struck by the low angle of inclination and the soft, rounded forms of the mountain-slopes; and noticed that the hills which diversified it were piled up, as it were, on the level ground, instead of striking off as sharply defined ranges in definite directions. The entire region bears witness to the enormous power of the forces of denudation exercised unceasingly over a vast period of time. Débris and fragments of rock, from the size of pebbles to the largest bowlders, strew the ground in every direction. The lower flanks of the mountains are buried under detritus and mounds of disintegrated materials. On every hand, in fact, I saw convincing proofs of the destructive power of frost and rain and snow. Hard bare rock was nowhere visible, except near the crests of the ranges, in places where the wind is able to work unchecked.
The valleys of this high-level plain or plateau are broad and almost level. They rise at such a gradual inclination towards the outer ring of mountains that they often seem to be perfectly horizontal. Each of them is as a rule traversed by a little mountain-stream, which is fed partly by natural springs, partly by the melting snows, and which empties itself into one of the two lakes, Kara-kul or Rang-kul. The scenery is frequently grand, but always depressingly monotonous, more especially in winter. In that season there is not a living creature to give animation to the desolate wilderness. A powerful field-glass will sometimes enable you to see a distant flock of arkhari (wild sheep) or kiyick (goats). Of human beings or human dwellings there is not a glimpse. Pastures are few, and the grass scanty. In a word, the landscape, with its barren, naked surfaces, puts you in mind of a typical lunar landscape.

Unlike similar tracts of Asia which possess no drainage
outlet, the depression of Kara-kul does not suffer from accumulations of sand. The explanation of this, no doubt, is that the finer products of denudation are swept up by the constant violent wind-storms which prevail in that region, and are carried away to be deposited in parts of the continent where the atmospheric conditions are permanently calmer. Sand-storms and dust-storms are indeed by no means a rare visitation of the Pamir plateau. It is very probably to them that the so-called "yellow snow" owes its origin; for an examination of the snow-drifts to which that name is given reveals the presence of extremely fine particles of yellowish soil.

The most powerful agencies of disintegration in this part of the world are the winds and the enormous and sudden variations of the temperature. I saw striking evidences of their power on the little island in Lake Kara-kul, in huge blocks of syenite and clay-slate ground, scooped out, polished into the most fantastic shapes. The variations of temperature are enormous, not only in winter, but also in summer. At Fort Pamir, at seven o'clock in the morning of January 11th, 1894, the thermometer recorded a temperature of —36° Fahr. (—37.8° C.); one hour after noon it was 53.6° Fahr. (12° C.) in the sun—a difference of nearly 90° Fahr. (50° C.) in the course of only six hours! The amount of radiation is almost inconceivable. At a time when the temperature of the air was just at the freezing-point, the black bulb insolation thermometer actually registered 133° to 136° Fahr. (56° to 58° C.). These stupendous forces labor on unrestingly century after century, wearing down the solid structure of the continent—in this an imperfect image or analogue of the earth itself, which is but the last surviving wreck of substances which have been in process of formation and re-formation through countless æons of time.

This region of exclusively internal drainage is girdled round by a zone of what Von Richthofen calls Transitional areas. On the north it is bounded by the Alai Mountains, on the east by the chain of Sarik-kol, on the south by the Hindu-kush, while its western limit is marked by the line of 73° E. long. According to Von Richthofen, the definitive char-
acteristic of a region belonging to the Transitional zone is the fact that the erosive power of the water, and the resultant action of the violent alternations of temperature, have in more recent times broken a new path for the drainage streams, so that instead of seeking an interior, landlocked basin, they are now able to find an outlet to the rivers which eventually discharge into the sea; or, *vice versa*, they cease to send their waters oceanward, but turn them instead towards an interior basin which makes no contribution to the seas around the continent. A Transitional region is therefore one which retains the typical features of the region to which originally it definitively belonged.

The Transitional zones of the Pamirs bear a very close general resemblance to the self-contained drainage-basin of the Kara-kul. Erosion is not yet sufficiently far advanced to enable the streams to carry off all the products of disintegration which cumber the valleys, the contours are soft and rounded, the valleys themselves broad and shallow. The tendency of the active disintegrating forces operative in the Pamirs is to convert it into a Peripheral region. For instance, in the southwest the little brook of Kok-uy-bel, a feeder of the Murghab, which in its turn goes to augment Lake Aral, has extended its remotest arteries to within about six miles of the brook of Mus-kol, which discharges into Lake Kara-kul. The springs which give origin to the Kok-uy-bel lie only a trifle higher than the level of the lake; so that, geologically speaking, the Kok-uy-bel may perhaps to-morrow be converted into an outlet from the lake, through which its waters would gradually flow away till it became empty. Simultaneously with this change, the Kara-kul depression would begin to lose the characteristic features of an independent area of internal drainage, and would gradually assume those of a Peripheral region.

A typical Peripheral region is one which through the agency of erosion has lost its former character of a high-level plain or plateau, and assumed the more definitely marked aspect of a region in which Nature's fingers have carved and moulded with powerful effect. Its outward contours are very
much steeper and wilder; the relative altitudes greater; the plateau is cleft almost to its foundations by gigantic trenches or fissures radiating outward; the valleys or glens which cut into it are deep and narrow, revealing the internal structure of the mountains; while along their bottoms the torrents foam and race through confined, gorge-like channels, over huge bowlders of stone which have crashed down from the heights above.

On the west side of the plateau the turbulent head-streams of the Amu-daria—namely, the Murghab, Ghunt, and Pānj—in many places force their way between vertical walls of rock, as though they were traversing a tunnel through the mountains. Such places are absolutely impassable except to the native inhabitants of those regions—namely, the clever Tajiks. There are places above certain of the streams where these people have driven wooden pegs into the sides of the perpendicular crevices, and with the sureness and nimbleness of apes clamber up from peg to peg, bearing heavy burdens lashed upon their backs. It is surprising what skill they show in availing themselves of every jutting piece of rock, every ledge and cornice, every crack and chink in the precipitous cliff-wall.

The border regions of the Pamirs are distinguished for the striking geographical homologies they present. On the north the river Kizil-su flows between the two parallel mountain-chains of the Alai and the Trans-Alai. On the east the Sarik-kol valley, between the Mus-tag and Sarik-kol ranges, is traversed by the Ghez-daria and the Yarkand-daria. On the south the Wakhan is hemmed in by the Wakhan chain and the Hindu-kush, which both run in the same direction. The Pānj too on the west likewise flows between parallel ranges of mountains, though they are of a less imposing altitude. The valleys through which these several streams descend from the Pamirs to the lower regions exhibit features of a Transitional character. On the one hand, while they resemble the deeply trenched valleys on the outer borders of the plateau, with their large rivers in full flood all the year round, on the other hand they possess many features in common with the level plains of the central areas of depression. Although
strictly speaking, according to Von Richthofen's definition, the Ghez-daria and Yarkand-daria belong to the central area of depression, the districts through which they flow, and which their muddy streams to some extent help to mould and level up, exhibit the characteristics of a Peripheral zone. The drainage-basin of the Ghez-daria embraces four lakes, the two largest being Bulun-kul and Little Kara-kul. The Ghez-daria, as well as the Kara-su, an affluent of the Yarkand-daria, are fed principally by the snows and glaciers of Mus-tagh-ata; so that in spring and summer their currents swell to streams of very respectable dimensions. On April 28th the Ghez-daria had a volume of 850 cubic feet in the second, and we had some difficulty in crossing it. Later on in the summer it cannot be forded at all. These two strong torrents have made an irresistible assault upon the Mus-tagh range; both have cut their way through it. The Yarkand-daria is the chief contributary of the river Tarim; indeed, it furnishes the greater portion of the volume of its waters.

Summarizing in broad, general terms, we may say that the Pamirs may be grouped in two sharply contrasted divisions—an eastern half, which is principally a plateau-land such as I have described, and a western half, consisting of a system of latitudinal mountain-chains disposed parallel to one another. There can be no doubt that at one period the entire region was strictly a plateau, and that it is being rapidly broken down by the agency of erosion. Indeed, it is not more than a generation ago when the Pamirs were universally considered to be a plateau pure and simple. We know now that they form a gigantic quadrilateral, embracing within its confines surface configurations and types of scenery of the most diverse description.

On the Pamirs, as in other parts of the world, the boundaries of different climatic regions are determined by the outstanding physical features. Over the central areas of the region the amount of snowfall is exceedingly small; but the cold is intense, the night temperatures being below freezing-point all the year round, with the exception of a couple of weeks in the middle of summer. In the Alaï val-
ley, on the contrary, the climate is relatively milder, but at
the same time the snowfall is enormous. Even in the valley
of Sarik-kol the quantity of snow which falls every year is by
no means inconsiderable. It follows therefore, as a direct
consequence of the unequal distribution of the snowfall, that
the rivers of the Pamirs carry down very unequal quantities
of the drainage-water. For instance, at the time of my
journey the Kizil-su had a volume nearly four times as great
as the Murghab (or Ak-su), the chief head-stream of the
Amu-daria; besides, the measurement of the latter was
taken a month later than the measurement of the former.
The volume of the Kizil-su was 950 cubic feet in the second;
the volume of the Murghab only 250 cubic feet.

The ethnological and linguistic divisions of the Pamirs
coincide pretty accurately with the physical divisions. The
population of the plateau proper are almost entirely Kirghiz,
relatively few in number. Farther west, the Peripheral dis­
tricts of Darvaz, Roshan, and Shugnan are inhabited almost
exclusively by Tajiks, and the population there is relatively
much denser. Nor is this a merely accidental difference.
The Kirghiz are nomads. Their wealth consists of flocks
of sheep, yaks, camels. As the seasons change, they move
from one pasture-ground to another. Hence they naturally
prefer the level stretches of the plateau to the deep, narrow
glen's and steep mountain-sides of the Peripheral regions.
The Tajiks, on the other hand, are a settled population,
their conditions of life being totally different from those
under which the nomad Kirghiz live.

The separate linguistic areas are almost necessarily coin­
cident with the ethnological areas. The Kirghiz give their
own Turki names to the geographical features with which
they are brought into relation. The Tajiks call the same
objects by names borrowed from their language, which is
Persian. By way of illustration I may mention that nearly
all the rivers which flow towards the west are generally
known by their Kirghiz names in the upper part of their
course, and by their Persian (Tajik) names in their lower
course. Thus we have the Ak-su known lower down as the
Murghab, the Gurumdi known as the Ghunt. In one district there are two small streams flowing together side by side. One has a Kirghiz (Turki) name—Kok-uy-bel, because the glen through which it flows is frequented by Kirghiz. The other bears the Persian name of Kuh-darah, because there is a Tajik village close beside the entrance to its valley.
FROM this brief geographical summary I pass to the little Russian outpost of Fort Pamir, and a brief account of the very pleasant time I spent there between March 19th and April 7th, 1894.

Fort Pamir, situated on the right bank of the Murghab, at an altitude of 11,800 feet above sea-level, was built as a check upon Chinese and Afghan aggressions upon the territories of the former Khans of Kokand. Although the Russians conquered the khanate in 1875 and 1876, for some time they bestowed but little thought upon the region of the Pamirs. It was only thinly populated and very difficult of access, and possessed nothing to invite attention. General Skobelev, for as far-sighted as he was, never seems to have given it a thought. But when the neighboring powers began to stretch out their hands towards it, Russia awoke to the necessity for energetic action. Colonel Yonnoff's famous expedition was the first result of the change of policy on the part of the St. Petersburg authorities. It was an expedition which opened up political questions of a grave and delicate character; which, however, were satisfactorily terminated by the labors of the Anglo-Russian Boundary Commission in the summer of 1895.

As regards Fort Pamir, I may mention that it was built by the men of the fourth battalion of the Russian army of Turkestan in the year 1893, between July 2d (O.S.) and October 30th. The outer wall, which forms an oblong, was constructed of sods and bags of sand, and encloses a fair-sized court-yard, around which are ranged the officers' quarters, and a long earthen structure, covered in with
beams, and containing barracks, kitchens, hospital, bath­rooms, workshops, and so forth. The commissariat stores and ammunition are kept in yurts. There is also a little meteorological station, where observations are taken three times every day. In the corners of the longer side which faces the north are two platforms, each furnished with a bat­tery of Maxim-Nordenfeldt machine-guns. The fort occu­pies a commanding position on a terrace of conglomerate, which overlooks, but at some distance away, the right or northern bank of the Murghab. Between the two extends a marsh or morass, out of which gush a great number of springs of clear water. Fort Pamir is a striking testimonial and proof of the energy and spirit of the officers who built it. For it was anything but an easy task to erect such a structure at that high altitude and at such an immense dis­tance from the resources of civilization. Every inch of tim­ber and every ounce of other building material had to be transported on horses’ backs all the way from Osh in Fer­gana, pretty nearly by the route I have described. The months in which the work was done were unusually stormy; furious hurricanes of blinding snow, mingled with fine sand, being of frequent occurrence. Part of the time both officers and men dwelt in Kirghiz yurts, which were again and again blown over by the wind.

Within the last few years a new route has been opened to Kashgar, and the merchants of that town now resort to the southern Pamirs, where they traffic with the Kirghiz, barter­ing the wares they bring with them for sheep. They then drive the sheep down to the market-towns of Fergana, where they make a good price of them; and so return home to Kashgar by way of the passes of Terek-davan and Talldik, with a substantial profit in their pockets.

The commandant of Fort Pamir, Captain V. N. Saitseff, was a settler of long standing in Turkestan. As aide-de­camp to General Skobeleff he took part in the campaign against Khiva in 1873, and in that against Kokand in 1875-76. Besides being commandant of the fort, he was also governor of the Kirghiz population of the Pamirs.
Of Fort Pamir I have none but the happiest recollections. I reached it at the end of a long, toilsome journey through an uninhabited and difficult mountainous waste, and was received in that little outlying fragment of mighty Russia with open arms, more like an old friend or long-standing acquaintance, by a group of officers who, I have no hesitation in saying, were as amiable, as courteous, as generous a set of men as it is possible to meet with. And, without undue self-love, I can flatter myself that my arrival formed a not unpleasing diversion in the lonely and monotonous life which the garrison of the fort are compelled to lead during the greater portion of the year. For all winter through, ever since September of the previous year, not a soul had been near the fort except the Kirghiz. As soon therefore as the Russian officers learned, from the mounted couriers I sent on in advance, that I was approaching, they hurried up to the battery platforms, armed with every field-glass that could be got in the fort, and swept the horizon northward until my caravan came into sight. And when I rode in through the gate, I was received with the warmest of welcomes by every man of the garrison.

Fort Pamir often reminded me of a ship at sea. The outer walls might be likened to the bulwarks; the wide, open, sweeping valley of the Murghab to the sea; and the court-yard to the deck. Up and down this latter we used to walk day after day, stopping every now and again to gaze through our powerful field-glasses towards the far-distant horizon—a view which never varied in its dull lifelessness except on one day in the week. That was Tuesday, when all eyes were early on the alert for a single, solitary horseman, the post-courier (jighit), who brought the eagerly expected mails from far-off Russia. His arrival was the great event of the week.

When his horse trots in through the gate, every man of the garrison hurries out to receive him. The commandant's adjutant makes haste to open the mail-bags. Everybody stands around in anxious expectation. The adjutant draws forth the letters, newspapers, post-parcels from those they
love, now, alas! so far off. He distributes them to the happy recipients. Joy reigns supreme, except in the bosoms of the unhappy beings for whom this Asiatic Father Christmas has brought no heart-warming gift. For three post-days in succession I was counted among the unenvied ones. This was because of the alteration in my route. All my letters were sent on to Kashgar, with the result that for a period of four whole months I never received a single letter from home. The contents of the mail-bags distributed, the rest of the day is spent in greedily devouring the welcome home news. Evening comes. Officers and men meet for dinner, each in their own quarters. But all alike pursue one common topic of conversation—the events which have been happening recently in the great world of politics and human action from one end of the world to the other.

Our day was generally spent in the following manner: Every man had tea (first breakfast) in his own room. At noon precisely a signal by roll of drum called us all together for a substantial breakfast. After that we had tea again in our private quarters. At six o’clock a fresh drum-signal reminded us that dinner was ready. After dinner we broke up into little groups, to each of which coffee was served round. We then talked until late into the night; and towards midnight I and the commandant used to have a snack of supper.

Drill filled up most of the morning hours. The soldiers and Cossacks were also during the course of the day instructed in certain of the sciences which have a bearing upon military matters. But my time was for the most part occupied in more peaceable pursuits; for one thing, photography. In the evening, when I developed my plates, I was usually surrounded by half a dozen closely interested spectators, who never tired of watching how as by a wizard’s “pass” the frigid mountain scenery and its half-wild inhabitants imparted life and meaning to the photographic plates.

Among other things we measured the volume of the water carried down by the Murghab, and set up a gauge-post in the
river, upon which one of the officers might observe the rise and fall of the current during the coming spring and summer. We also measured the depth to which the crust of the earth is frozen in winter; and industriously compared notes upon what we had seen and observed. The soundings I made in Kara-kul awakened the liveliest interest. Nobody had expected that the lake would go down to anything like a depth of 756 feet.

One of my friends in Margelan told me that Fort Pamir was an earthly paradise. I asked him "Why?"

He replied, "Because there are no women there!"

Although I am very far from sharing his opinion, I am bound to confess it would not be easy to find a circle in which contentment, cheerful spirits, and the tone of light and easy comradeship are better preserved than they were at Fort Pamir. Nobody cared a rush about appearances. The officers went about in threadbare uniforms and with their boots unpolished. Nobody wasted time on the niceties of the toilet. Directly we heard the dinner-bell, or rather drum, we went straight into the mess-room without stopping to don such superfluous articles as collar and cuffs. No need to furbish up all the pretty sayings a polished man of the world feels it obligatory upon him to whisper in the ear of the lady he takes in to dinner. In a word, everybody at Fort Pamir was perfectly free, subject to no irksome social restraints. Cossacks prepared and cooked the food we ate. Cossacks waited at table. Cossacks rubbed us down in the bath-room, acted as house and chamber maids, even washed our dirty linen. There was not the faintest glimpse of a petticoat to be seen inside Fort Pamir. The only creatures of the female sex within its walls, so far as I was able to ascertain, were a female cat, a couple of bitches, and some hens. But to call Fort Pamir a paradise because no woman brightened it with her lovely smile—that is a doctrine I certainly cannot subscribe to.

Captain Saitseff enjoyed the full sympathy and esteem of his officers, and maintained the strictest discipline and good order among the men under his command. The long
dreary winter, during which the little garrison had been straitly shut up within the walls of their fort, like a band of Polar explorers compelled to winter in their ice-bound vessel, had not occasioned the least slackening of discipline, the least indifference or discontent among either officers or men. Nevertheless the immediate approach of spring, which was indicated by the increased warmth of the sun's rays, by the melting of the snows on the mountains, and of the ice on the lakes and rivers, seemed to reawaken several dominant interests. It was a season when every day brought fresh opportunities for scientific observation. Already the birds had begun their summer migrations. Small flocks of ducks and geese of a great variety of species were on the wing from their winter-quarters in India to their summer haunts in Siberia. The Murghab was apparently one of their favorite resting-places, where, alas! several of them entered upon a rest that was destined to prove unexpectedly long. The Cossacks spread their nets in the river. Others
of the garrison took their sporting-rifles and stalked the wary arkhari or wild sheep (*Ovis Poli*), and not seldom brought home a pretty well filled bag.

The relations between officers and men were in all respects excellent. On one occasion, when thirty time-expired men were setting off to return to their homes in Osh, it was quite touching to see how, in orthodox Russian fashion, their superiors kissed each man three times on the cheeks. Their rifle on their shoulder and their knapsack on their back, the men set out right cheerfully to tramp the long 280 miles which should bring them to their more genial homes in the warm valleys of Fergana.

Sunday was given up to all kinds of games and dancing. The music was but poor, being limited to a concertina, two drums, a triangle, and a couple of cymbals; but the performers went to work with a will, and made the very most of their resources, while the cleverest of the Cossacks danced their national kamarenks with such spirit that the dust

THE CONGLOMERATE TERRACE ON WHICH FORT PAMIR STANDS

whirled up around them in clouds. Then, when the sun set, and the west wind, which at regular intervals during the day had swept past the fort with an angry howl, subsided, there rose upon the rarefied mountain air a succession of Russian
songs, sung by some seventy fresh, strong voices. They were partly folk-songs with a melancholy cadence, partly soldiers' ditties of a livelier character. The last Sunday of my stay at Fort Pamir was closed by a musical evening of this kind. The atmosphere was still and calm, the air cold;
THE MUS-TAGH-ATA AND ITS GLACIERS
CHAPTER XVI
FROM THE MURGHAB TO BULUN-KUL

On April 7th, 1894, after partaking of a substantial breakfast, I bade adieu to Fort Pamir, though I was escorted a good distance on my way by the commandant and his officers. Arrived at the little torrent of Ak-baital, we found some of the Cossacks awaiting us with tea. Then, having thanked my Russian friends for the splendid hospitality they had shown me during those never-to-be-forgotten days—a last shake of the hand from the saddle, a last wave of the cap, and away I spurred towards the north, followed by the interpreter of the fort, the Tatar, Kul Mametieff, whom the commandant sent with me as a guard of honor.

Just as daylight was fading we came to the twin lakes Shor-kul and Rang-kul, which are connected by a narrow sound. There we took up our quarters for the night, camping in a yulameika, a tall, conical tent with no smoke-vent. Meanwhile my right-hand man, Rehim Bai, had fallen ill, and all the way to Kashgar was totally unfitted to discharge his regular duties. We had to transport him thither like a bale of goods on the back of a camel. His place was taken by the man of whom I have spoken before—Islam Bai; and it was during this part of my journey that I first learned to know and value that excellent man's many excellent qualities.

The snow lay in scanty patches; but both lakes were sealed with thick sheets of ice. Strange to say, however, the sound between them was open water, and swarmed with wild duck and wild geese. The configuration of the ground—grassy plains sloping gently down towards the lakes—suggested that the lakes themselves were shallow.

Next day I sent the caravan by the nearest road to the lit-
tle fort of Rang-kul, while I myself with four men started across the ice of Rang-kul to take soundings. We only chopped out two holes, and found that the lake was as a matter of fact extraordinarily shallow, the two measurements giving 5 feet and $6\frac{1}{2}$ feet respectively. The ice, on which was a thin sprinkling of snow, was 3 feet and $3\frac{1}{2}$ feet thick where the two sounding-holes were hewn. There was a small open channel close alongside the shore. The temperature of the water in the sounding-holes was $31.6^\circ$ Fahr. ($-0.2^\circ$ C.); at the bottom, which was covered with loose slime and mud, mingled with decayed vegetable matter, it was $37^\circ$ (2.8° C.). The vegetable matter consisted almost exclusively of algae and sedges. The word *ranga* is used to indicate the sedge *Carex physoides*. All the same, it is more likely that the lake derives its name from the wild goat which frequents that region, and which is known as the *rang* and the *kiwick*.

The word Shor-kul means "salt lake," and its waters were both salt and bitter. It was pretty evident that, while Rang-kul was fed by fresh springs and streams, Shor-kul derived its supplies from Rang-kul through the little sound already spoken of; and that evaporation went on to a very much greater extent in the former, leaving the saline concentrates behind it. In the eastern end of Rang-kul there was a long narrow island, barely a dozen feet high, but with perpendicular shores of soft, grayish-blue clay, much eaten into by the waters of the lake. Vast numbers of wild geese are said to breed there every spring as soon as the ice melts.

The soundings taken, we rode straight across the lake, and on to the fort, garrisoned by about twoscore Cossacks under a commandant. We stayed there two days. We left the fort on April 11th, riding almost due east towards the little pass of Sarik-gai, which crosses a spur of the northern mountains. On the west side of the hill we were approaching, the wind, mostly coming from the west, had heaped up enormous masses of sand, shaping them into gigantic dunes or billows with a slightly corrugated surface. On the other side of the pass we descended into the broad, open, level valley of Naisatash, in which were two Kirghiz auls (tent-villages). We
took up our quarters in the one which stood farthest east. It consisted of five yurts (tents), occupied by nineteen individuals of the Chighit tribe, ten of them being men. They spend the winter and summer beside Lake Rang-kul; but cross over into the valley of Naisa-tash for the spring grazing. Their wealth in live-stock embraced 400 sheep, 40 yaks, 7 camels, and 3 horses.

On the following day, April 12th, we were to cross the provisional frontier-line between the Russian and Chinese Pamirs. Ever since we left Rang-kul we had seen glittering immediately ahead of us the snowy crests of Sarik-kol. That lofty range we had to climb over. Out of the several passes which lead over it I chose the one known as Chuggatai, 15,500 feet in altitude. We struck off towards the northeast. The inclination increased the farther we advanced, until at the foot of the pass it became very steep and difficult. The track too was not at all easy, being strewn with large blocks of gneiss and clay-slate, still draped for the most part with snow. On the summit of the pass, which had a high, sharp pitch like a house-roof, we halted to rest; and while resting were surprised by a violent hail-storm which came out of the southwest. The temperature was 5° Fahr. below freezing-point (−2.8° C.).

The descent towards the north, on the other side of the range, was equally as steep as the ascent had been; and it cost us a wearisome march to reach the first aul of Chuggatai—a little collection of four yurts with twenty-four inhabitants. But we pushed on to another aul of six yurts a short distance lower down. There we made our first camp on Chinese territory.

I speedily learned that all sorts of wildly extravagant rumors were flying about the neighborhood concerning me. It was said that I was a Russian, coming, at the head of three-score Cossacks armed to the teeth, to make a hostile raid into Chinese territory. My arrival had therefore been looked forward to with not a little apprehension. But when the Kirghiz saw me ride up alone, accompanied by only a small band of their fellow-believers, their fears quickly subsided, and they
gave me a very friendly welcome. All the same, they lost no
time in sending off a mounted messenger to Jan Darin, com-
mandant of the little Chinese fort of Bulun-kul.

The next morning, therefore, I was not surprised to see
the emissaries of the Chinese officer ride up, bringing greet­
ings of welcome. They were also charged to find out who I
was, and what was my business. The head of the "embassy"
was one Osman Beg of Taghdumbash, a fine-looking Kir­
ghiz, with a handsome, intelligent countenance. He com­
manded a *lanza* or troop at Bulun-kul. His companions were
Yar Mohammed Beg, chief of the frontier-guard stationed at
Kiyak-bash, and a mollah or priest. All three wore white
turbans and parti-colored khalats (long Kirghiz coats). Their
mission accomplished, they rode back to Bulun-kul to make
their report.

The aul (tent-village) was situated near the junction of the
Chuggatai and Ak-berdi valleys. At that point the stream
has cut its way to a great depth into the thick conglomerate
strata, so that the huge bowlders of coarse crystalline rock,
which overhung the current, threatened every moment to top­
ple down the precipitous banks into the river. The valley of
Ak-berdi was also eroded to a great depth, and was obstructed
with blocks of conglomerate. Consequently, agreeably to what
I have said above, the chain of Sarik-kol forms the boundary
line between two widely differing areas of physical confor­
mation. On the inner side it is flanked by a region of Cen­
tral depression, with broad, shallow, level valleys, possessing
no drainage outlet towards the ocean. On its outer side—
that is, towards the east—it overlooks a Peripheral region,
where the valleys are deep and narrow, and the effects of the
erosive action of the outward-flowing streams assume gran­
diose proportions.

On April 13th we made only a very short stage, as far as
the point where the valley of Ak-berdi runs out into the
valley of Sarik-kol. The accommodation provided for me
there consisted of one miserable yurt, covered with ragged
felts. For precaution's sake it was put up at a distance of
three *kitchkerim* or "shouts" (i.e., the distance to which the
FROM THE MURGHAB TO BULUN-KUL

human voice can be heard when raised in a loud shout) from the fort. We had scarcely got our baggage stowed away in something like order when a yuz-bashi (chief of one hundred men) came to announce that the acting commandant of Bulun-kul, the Kirghiz officer, Tura Kelldi Savgan, together with Chao Darin, his Chinese colleague of Tar-bashi, a little fort at the mouth of the Ghez valley, were on the way to pay me a visit. I had barely time to get outside the yurt when up they trotted with half a score Chinese soldiers at their heels. A gay spectacle they made, too, with their gray trousers, shoes, and scarlet tunics, decorated with large Chinese ideographs (language signs) in black. Every man was armed with a rifle, and rode a white horse, bearing a red saddle and big stirrups which rattled noisily. I invited them to step inside the tent, and bade my men serve round an extra dainty dastarkhan (lunch), consisting of sardines, chocolate, preserved fruits, sweet cakes, and liqueur—delicacies which I had brought with me from Margelan specially to tickle the Chinese palate. Chao Darin conceived a particularly strong affection for the liqueur, and inquired how much a man could drink without getting intoxicated. My cigarettes too met with much appreciation; although my Chinese friend Chao Darin preferred his own silver-mounted water-pipe.

Conversation was carried on between myself and the mandarin under considerable difficulties. At that time I was not sufficiently master of the Kirghiz tongue to be able to speak it fluently. I therefore expressed myself to Kul Mametieff in Russian. Kul Mametieff conveyed my meaning in the Turki language to the mandarin’s interpreter, a Sart from Turfan, and he in his turn passed on the message in Chinese to Chao Darin.

Tura Kelldi Savgan was a pleasant man, with a good deal of vivacity of manner, at once a smart and cautious diplomatist. As soon as they learned of my intention to make an attempt to climb Mus-tagh-ata, they objected to Kul Mametieff going with me, on the ground that he was a subject of Russia. But when I showed them my pass, and the letter I
carried from Shu King Sheng, the Chinese ambassador at the Court of St. Petersburg, addressed to the Dao Tai of Kashgar, they withdrew their opposition, but stipulated that, immediately we came down from the mountain, Kul Mame-tieff should take the shortest road back to the Russian Pamirs. On the other hand, a Kirghiz allik-bashi, a non-commissioned officer who nominally commanded fifty men, was bidden to go back at once, having no pass. I then proposed to send Rehim Bai on a camel direct to Kashgar, for his illness was assuming a critical phase, and he was in urgent need of rest and comfortable quarters. But to this Tura Kelldi Savgan would not agree; for if, said he, Rehim Bai were to die on the road, his death would involve the Chinese authorities in difficulties. It was only by promising to return to Bulun-kul when I came back from my ascent of Mus-tagh-ata, and not make for Kashgar by any other route, that I finally succeeded in overcoming the last of their scruples. Even then I had to leave behind in their hands one of my men as a hostage, together with one-half of my baggage. This compact made, I announced that it was my intention to return their visit without delay; but both officers declared that they had no authority to admit a European inside the fort in the absence of the commandant, Jan Darin, who had gone to Kashgar. But Jan Darin would soon return, they said.

In this laborious way we parleyed backward and forward for five mortal hours. When at last they rose to go, I thought to make a good impression upon them by presenting them with a Tula kinshal (dagger) and a silver drinking-cup. They protested, it was not at all the right thing for me to offer them presents after such a recherché dastarkhan; that it ought to be the other way on, seeing that I was their guest. But in the end they suffered themselves to be persuaded, saying they hoped to have an opportunity to return my presents when I came back from my trip up the Mus-tagh-ata. Having taken their leave in due form, they galloped off in a whirlwind of dust, through which their white horses, their scarlet uniforms, their glittering weapons were
for a long distance dimly visible. And we never saw a glimpse of the gentlemen again; although they indicated their presence by forbidding the Kirghiz of the neighborhood to furnish me with supplies of mutton, fuel, and other necessaries.

The rest of the day was spent in making preparations for the ascent of Mus-tagh-ata. I decided to take only four men with me—namely, Kul Mametieff, Islam Bai, and the two Kirghiz, Omar and Khoda Verdi. Four pack-horses were got ready to carry the necessary baggage—provisions, bed, furs, presents, medicine-chest, photographic apparatus, scientific instruments, and several other indispensable articles. Everything else was left behind in the care of Khoja, the Sart, who was also charged to look after Rehim Bai. The more comfortable quarters I succeeded in getting for the invalid had done him no good. The winter journey over the Pamirs had completely broken him down. His cheeks were white and hollow, his eyes big, and with a vacant, glassy stare in them. His friends would scarcely have recognized him, he was so changed. He offered a he-goat to Allah, and declared that he felt a little better in consequence.

In the evening we were honored with a visit from some of the Chinese soldiers from the fort. They begged to be allowed to peep into one or two of my commissariat boxes and yakhtans (packing-cases). We afterwards learned that up at the fort they believed all my boxes were packed full of Russian soldiers, who in that way were being smuggled across the frontier. The fact that each and every trunk I had was only capable of holding at the most about one-half of a soldier did not in any way help to allay their suspicions. I opened two or three, and after that they appeared to be easier in their minds. During the night the Chinese placed sentries all round my tent; but they had the good feeling to post them at a distance and out of sight. It was plain they had received orders to keep us under surveillance, and find out what was my real purpose in visiting this remote corner of the vast Chinese empire.

Whichever way we turned, we had a magnificent view be-
fore us. Due east, on the opposite side of the little lake of Bulun-kul, rose the sublime snow-clad mountain mass of Ak-tau, the "White Mountain," the northern continuation of Mus-taght-ata. On the left of it was the beginning of the Ghez valley, and on the right the broad trough of Sarik-kol. In the near foreground, and only a short distance from our camp, was the little Kirghiz aul of half a dozen yurts; while the mountain-slopes around were dotted with long-haired yaks, grunting as they grazed. To the south lay the beginning of the narrow glen called Kum-yilga, the "Sand Ravine."
CHAPTER XVII
MUS-TAGH-ATA

It was April 14th when we set off to climb the great Mus-tagh-ata. Immediately after we started we were met by a violent storm from the east, which drove clouds of fine drift-sand straight into our eyes. Having passed the two little lakes of Bulun-kul and taken a distant glance at the fort, we turned up the broad valley of Sarik-kol. For fully an hour we were followed by a big black yak. We wondered whether he was trained to play the part of spy; but eventually he grew tired of keeping up with us, and stopped.

The valley of Sarik-kol is a gigantic trench, piercing to the heart of the stupendous Pamir plateau. Sometimes narrow, sometimes expanding to a considerable width, its bottom is littered with huge bowlders of gneiss and other rocky débris, all polished smooth by the action of water. At one place we came to a colossal erratic block of gneiss split clean in two, in such a way that we were able to ride between the two halves as though we were going through the gateway of a mediæval town. The valley itself was hemmed in on both sides by lofty mountains, the flanks of which were thickly strewn with crumbled and disintegrated rocks. Scantily supplied with pasture-grounds, it was uninhabited except for a single, solitary yurt. On the whole it sloped up gradually and easily towards the foot of Mus-tagh-ata.

We soon perceived that we were no longer travelling in the Russian portion of the Pamirs. When we came to the end of our day's march, we found no yurt ready pitched for us by Kirghiz sent on in advance. We were now, plainly enough, on the Chinese side of the frontier. We were no longer to be indulged with such luxuries and comforts. How many a
night after that did we not sleep under the open sky! Such was our fate on this the first night of our trip. We endeavored to make the best of circumstances, by looking about for a hollow that was in some degree sheltered from the wind. We found one in a part of the valley called Kayindehdala (the Birch Plain). A singularly inappropriate name, for the ground was stony and barren, and there was not a single specimen of the graceful green lace-work which drapes the birch to be seen. Very possibly, however, the name is a survival from a time when those trees did grow in the locality.

We encamped under the shelter of a huge block of gneiss, which leaned over a little towards the south. Round the front of it somebody had built up a low wall of stones, which afforded some measure of protection against, at any rate, the worst of the wind. We piled the baggage all round us, spread out our carpets, and made our camp as comfortable as we could; and when shortly afterwards our ears were greeted with the bubbling of the soup over the fire of teresken fagots we were as happy as kings. But the wind whistled in through the crevices between the stones, and dust and sand kept swirling round us in eddies, so that our teeth gritted every time we took a mouthful of food. Once during the evening it snowed a little, but about ten o'clock the weather changed with marvellous suddenness. The atmosphere became calm, and the sky clear. Then the moon came forth and poured her light into our grotto, and lit up the desolate scene, deepening the oppressive silence and making the valley appear ten times more dreary and awe-inspiring than it was before.

April 15th. The farther we went towards the south the more broken grew the surface. We came to the little Alpine lake of Bassyk-kul, with its fantastic shore-line, leading me to think that its deep inlets must have been carved out by the most capricious of the brownies. The middle of the lake was crusted with ice, brittle and porous; but close in beside the shore we saw open water. It was pure, limpid, and sweet to the taste. At a short distance from the lake I observed an old Chinese inscription, engraved on a block of gneiss that
was deeply embedded in the ground and surrounded by a rough wall of stones. Close by were two other gneiss boulders, both bearing signs of having been subjected to the smoothing, polishing action of glacial ice. On one of them I just discerned traces of an inscription similar to that on the stone already mentioned, but most of the lettering had been obliterated by the wind and its powerful ally, the drift-sand. The place where the stones were was called Tamga-tash, or the Signet Stone.

A low hill in the vicinity gave us a distant view of the Little Kara-kul, a beautiful Alpine lake imbosomed in deep mountains, whose reflections played upon its surface, constantly changing its waters from blue to green and from green to blue. The ice was all gone, except for a small strip near the southern shore. A fresh breeze was blowing off the lake, ruffling its surface with foam-tipped waves, which chased one another in endless succession, and finally broke against the shore with a rhythmical and harmonious murmur.

The path gradually approached closer to the lake until it was only separated from it by a chain of low hills, the surviving remnant, as I discovered on a second visit, of an ancient moraine. That I should come back again to that lake, I little dreamed at the time I first saw it; and yet I did come back, and its lovely shores grew dear to me! How many a lonely evening did I not lie and listen to the mysterious tidings which those melodious wavelets whispered, and which there was none to interpret! And how many a time did I not feast my eyes upon those giant mountains, which mirrored their snowy crests in the transparent waters of the lake of Little Kara-kul! But I shall have occasion to relate my recollections of the place in a subsequent chapter, and therefore I hasten on with my journey.

In some places the cliffs, along which the path ran, had crumbled away, and we were obliged to scramble down as best we could, and ride through the water along the ridge of commingled débris and gravel. On the south of the lake we struck into the broad valley watered by the stream Su-bashi,
where large herds of shaggy yaks were busy plucking the young spring grass. In the mean time the wind had quickened up into a veritable storm. Dense clouds of dust and sand, and even fine particles of abraded rock, blew straight into our faces, with such violence that we were sometimes compelled to stand still and turn our backs to the storm. When we came to the fort that guards the valley, we found the Chinese as busy as bees unpacking and inspecting a fresh consignment of stores which had just come in for the garrison. But we were met by a stalwart horseman, Togdasin Beg, chief of the Kirghiz of Su-bashi. He received me politely and in a friendly spirit, and conducted me to his large and handsomely appointed yurt. This man subsequently became one of my best friends among the many I made in Asia.

As soon as we got our tent in order we were honored by a stream of visitors, who kept coming all the evening. First there were all the Kirghiz of the neighborhood. Then we had the Chinese soldiers of the garrison, among them some Dungans (Chinese Mohammedans). All the sick too of the valley came to me begging for medicine. One old woman said she had the Kokand sickness. Another patient suffered from toothache. A third had a pain in his nose. One of the Dungan soldiers experienced an uncomfortable feeling in his stomach when a storm was blowing. And so they went on. I treated them one and all in the same simple fashion, by prescribing for each alike a small dose of quinine. And on the principle that the bitterer the remedy the more efficacious it is—a principle which is thoroughly believed in by all Asiatics—they went away universally satisfied.

The next day we were entertained at tea by the notables of the Kirghiz auls and by certain of the Chinese soldiers. In the evening Togdasin Beg came to my tent by invitation, and was entertained with a liqueur and the harmonies of a musical-box, which so enraptured him that he declared he felt twenty years younger. He said he had never enjoyed anything so much since the days when the great Yakub Beg ruled over Kashgar. Somewhere about twenty years earlier,
he told me, the Sultan of Turkey sent a large musical-box as a present to Yakub Beg.

Ever since I left the Alaï valley my thoughts had been constantly running upon the ascent of Mus-tagh-ata, and I neglected no opportunity of gathering from the Kirghiz all

the information I could at all bearing upon the project. But every man I talked to, without exception, assured me that it would be utterly impossible to reach the top. The precipices and yawning chasms would prove insuperable obstacles to progress. The flanks of the mountain were sheathed in ice as bright and smooth as glass. On them and on the summit storms roared without cessation; and if I were so venturesome as to defy the giant, he would bid the winds sweep me away like a grain of sand.
But Mus-tagh-ata is truly a magnificent mountain. Whenever the Kirghiz pass it, or first catch sight of it in the course of a journey, they fall upon their knees and say their prayers. They declare that it is the abode of threescore and ten saints. Nay, they assert that it is one gigantic masar or burial-mound of saints. Within its interior dwell, among others, the souls of Moses and Ali, the son-in-law and nephew of the prophet Mohammed. When Ali lay at the point of death he prophesied to those about him that as soon as the breath was gone out of his body a white camel would come down from heaven and carry him away. As he said, so it came to pass. When he was dead the white camel appeared, took the holy man on its back, and hastened with him to Mus-tagh-ata. The Kirghiz are firmly convinced that Moses' soul also abides in that mountain; and for that reason they sometimes call it Hazrett-i-Musa, or the Holy Moses.

The Kirghiz of Su-bashi told me this story about the holy mountain: Many hundred years ago an aged ishan (holy man) went up the mountain by himself. And when he came a certain way up it he found a lake and a little stream, with a white camel grazing on the shore. There was also a large garden planted with plum-trees, and under the plum-trees there walked to and fro a number of venerable old men dressed in white garments. The holy man plucked some of the fruit and ate it. Then came one of the venerable inhabitants of the garden and said to him that it was well he had done so; for if he had despised the fruit, as all those aged men had done, he would have been condemned like them to stay on the mountain, walking up and down the garden, to the end of time. Then came a rider on a white horse and caught up the holy man, and galloped with him down the steep mountain-side. And when the ishan came to himself he found that he was down in the valley, and could only remember dimly all the marvellous things he had seen.

There is also another legend associated with this part of the world, dating from the time when the famous Khan Khoja ruled over all the lands that lie between Kashgar and Manas, in Dzungaria. The Chinese sent two emissaries to Khan
Khoja, offering him peace; but he refused to accept it. One of the emissaries he killed, and cut off the ears and nose of the other, and so sent him back to the Emperor of China. This put the Emperor beside himself with rage. He bade his men fill three big cooking-pots with nails. Then he had the nails counted, and took a vow that he would send against Khan Khoja as many soldiers as there were nails in all three pots. Khan Khoja had an army of 70,000 men, and for one whole month he lay encamped near Manas over against the innumerable host of the Chinese. But at last battle was joined, and Khan Khoja was defeated with the loss of 38,000 men; whereupon he marched back to Kashgar with the remnant of his army, and from Kashgar pushed on to Bulun-kul, where another battle was fought. Again the Khan was defeated, and again he retreated, going as far as the lake of Little Kara-kul. There he was once more hard pressed by the Chinese; but at the critical moment, when things again began to look desperate for him, a band of forty horsemen, giants in size and mounted on raven-black horses, galloped down Mus-tagh-ata, and, flinging themselves upon the Chinese, decided the battle in Khan Khoja's favor.

Now there was in his army the palevan (hero) Chum Kar Kashka Bater, and he was counselled by his master never, so long as he was engaged in fight, to look behind him. If he obeyed, he would always be victorious; but if he disobeyed, he would perish. In three fights Chum Kar obeyed his master, and so overcame his adversaries; but in the fourth he glanced behind him, and in the moment he did so was struck by an arrow and slain. The hero's masar, or tomb, stands on a dominant buttress of the west flank of Mus-tagh-ata. One of the glaciers of the mountain commemorates the hero's name to the present day.

But the Chinese soon gathered another army, numbering as many men as the stars in the sky, and came and fell upon Khan Khoja near the lake of Little Kara-kul. Thereupon the forty horsemen withdrew and rode back up Mus-tagh-ata—an ending, by-the-way, strangely at variance with all the imaginative tales I am acquainted with! Khan Khoja's evil star
still remained in the ascendant. He was worsted again, and fled to Rang-kul and Kornei-tarti. But the Chinese pursued after him and compelled him to give battle once again. His army was routed and scattered like chaff, so that at last the Khan was left alone with none but his trumpeter to bear him company. Then the Khan bade the trumpeter sound his trumpet. Instantly the scattered fragments of his forces were gathered around him. But they were far too weak to stand against the Chinese, who drove them before them, pursuing them over hill and valley until they had slain nearly all of them. When Khan Khoja at length came to Yeshilikul (the Green Lake), he had but fifty faithful followers left. There he went up alone into a high mountain; but when he looked down his men were surrounded by their enemies, the Chinese. Khan Khoja gave them a sign with his hand, and they flung themselves into the lake. Then, lo and behold! a new marvel happened. They would not sink, and the Chinese shot at them as though they had been shooting wild duck or other game. But Khan Khoja took up a handful of dust, muttered a prayer over it, and cast it over the lake. In a moment the heroic fifty disappeared beneath the waves. The Khan himself fled to Badakshan; but the shah of Badakshan cut off his head and sent it to the Chinese. His body was taken possession of by certain of his friends, and by them sent to Kashgar, where it lies buried in Hazrett-Apak.

The Kirghiz tell further, that on the top of Mus-tagh-ata there exists an ancient city named Janaidar, which was built in the days when universal happiness and universal peace reigned throughout the world. But since that time there has been no intercourse between the people of Janaidar and the inhabitants of the earth. Consequently the former still enjoy an existence of unblemished happiness. In the city of bliss there are fruit-trees which bear magnificent fruit all the year round, flowers which never wither, women who never grow old and never lose their beauty. The choicest pleasures of life are as common there as bread; death, cold, and darkness are banished from its confines forever.
In a word, Mus-tagh-ata resembles Mount Demavend in Northern Persia, and other strikingly conspicuous mountains, in being invested with a halo of mystery and made the centre of a tissue of fantastic legends and stories. The half-wild Kirghiz look upon it as a holy mountain, and regard it with profound reverence and fear. No wonder, then, the European does not escape the magic glamour of its spell!

Mus-tagh-ata, the loftiest mountain of the Pamirs, and one of the loftiest mountains in the world, towers up to the height of 25,600 feet, and like a mighty bastion overlooks the barren wastes of Central Asia. It is the culminating point in a meridional chain, the Mus-tagh or Ice Mountains, a chain that is worthy to rank with the stupendous ranges which converge upon the Roof of the World—the Himalayas, Kwen-lun, Kara-korum, Hindu-kush. The unchallenged pre-eminence of Mus-tagh-ata over the peaks which cluster around it is proved by its name, which means the Father of the Ice Mountains. And the name is very appropriate; for truly, like a father, it lifts its white head among its children, which in their turn are all clad in white robes of snowy purity and sheathed in breastplates of ice. The silvery sheen of the great mountain flashes like the gleam of a light-house to a vast distance across the desert ocean. Many a time have I gazed wonderingly upon it from afar off. Many a month have I wandered on its rugged flanks. Many a night and many a day have I been, as it were, spellbound by the weird mystery of its fascinations.

Upon questioning the Kirghiz of Su-bashi as to the possibility of climbing the patriarch of the snows, I found they were not so discouraging in their opinions as were their kinsmen in the inner parts of the Pamirs. They were all quite willing to accompany me, and ready to further my purpose to the utmost of their ability. All the same, they prophesied that the attempt would be a failure. Hunters who had lost their way while pursuing game into the higher reaches of the mountain had become giddy through breathing the "heavy" air. Even the agile and sure-footed wild sheep had been known to recoil in terror from the brink of
the icy precipices when driven out towards them by a posse of hunters. Nor was the imperial eagle able to swing himself up to the topmost pinnacles; his wings grew numb before he could reach them.

As a consequence of all this we planned a formal and elaborate campaign against the giant, and resolved, cost what it would, to conquer him. Our plan was to lie in ambush and keep a close watch upon him, and seize the first careless moment—i.e., take advantage of the earliest favorable days as regards weather—to deliver our attack. We decided to establish a third depot at the highest possible point, and therefrom make our reconnaissances and take measures for advancing farther.
CHAPTER XVIII

AN ATTEMPT TO CLIMB MUS-TAGH-ATA

In the course of a long exploring journey the traveller's plans are often upset by annoying difficulties and hinderances, causing him to deviate from the route he laid down beforehand, and compelling him to abandon objects which he had set his heart upon attaining. I encountered a reverse of this character in my attempt to scale Mus-tagh-ata. It was my desire, as it was also my intention, to climb to the summit of the mountain, examine its geological structure, its coat of ice-mail, and the gigantic glaciers which plough their slow way down its rugged sides. But alas! Instead of carrying out this plan, and achieving the proud consciousness of standing far above the heads of all peoples and princes in the world, and having five continents under my feet, with only a few Asiatic mountain-peaks above me, I was compelled to return, with my strength broken and my eyes bandaged, and seek a warmer climate.

However, on the morning of April 17th I found a picturesque troop awaiting me when I stepped outside my yurt. It consisted of half a dozen weather-worn Kirghiz, enveloped in sheepskins and carrying alpen-stocks in their hands, with nine yaks—big, black, good-natured, phlegmatic creatures—and two sheep. Some of the yaks were loaded with the needful provisions—spades, a pickaxe, hatchets, ropes, furs, felts and felt carpets, the photographic apparatus, and other stores. The indispensable scientific instruments and field-glasses were carried by the Kirghiz in satchels. The remaining yaks bore saddles on their backs. As soon as we were mounted, and had taken leave of Togdasin Beg, the caravan put itself into motion, and slowly began the ascent,
in a south-southeast direction. The yak is guided by means of a cord drawn through the cartilage of the nose. All the same, the animal goes pretty much his own way, no matter how strongly his rider may protest. It is his wont to march doggedly on, with his muzzle close to the ground, breathing so hard that you can almost imagine your ears are buzzing with the sharp drone of a steam-saw tearing its way through timber some distance away.

At a place called Kamper-kishlak, or "Old Woman Village," we passed a glacier, with light-green ice in its crevasses, and a gigantic bowlder of gneiss, split in two, immediately underneath its terminal moraine. According to tradition, the place derives its name from the fact that once when the Shah of Shugnan waged war against the Kirghiz, the latter all fled, with the exception of one old woman, and she hid herself between the two halves of the huge piece of rock.

The ascent was very steep, and nowhere afforded firm footing, the slopes being thickly strewn with gneiss blocks of every conceivable size and shape. The mountain is indeed built up almost exclusively of gneiss and crystalline slates; although in the mounds of detritus higher up I picked out fragments of black porphyry and micaceous schists, the latter showing signs of having been subjected to great pressure. I also found the last-mentioned rock in solid masses at the altitude of 16,500 feet.

Coming towards evening to a place that was free from snow, as well as sheltered from the wind, we halted there at an altitude of 14,560 feet, and pitched our simple camp. It consisted merely of a few felt carpets, supported by the alpen-stocks and tied with a rope. Then one of the sheep was slaughtered, while the Kirghiz prayed "Allahu akhbar, bismillah errahi man errahim!" (God is great. In the name of God the Merciful, the Righteous!) and before the flesh was cold it was plunged into the melted snow which filled the cooking-pot. The fuel with which our fire was made was nothing better than yak-dung. But later on in the evening we were joined by another Kirghiz, who brought us two yak-loads of teresken, and then we very soon had a
splendid fire roaring away. Around it we gathered to eat our plain evening meal. The lively flames darted backward and forward like a giddy dancer, now skimming the lips of one of the spectators with a coquettish kiss, now singeing the beard of this or the other frozen Kirghiz, in a way that gave rise to a good deal of merriment. The moon rose from behind the shoulder of Mus-tagh-ata encircled by a bright halo; the fire gradually died down; and we slept the sleep of the just under the open sky on Hazrett-i-Musa's (Holy Moses') mountain.

The following day, April 18th, the weather was unfavorable, the sky being wreathed in clouds; besides which, it was cold and windy. Nevertheless, we made up our minds to go on. The Kirghiz preferring to walk, we took only three yaks with us to carry our belongings. By innumerable sharp zigzag curves we worked our way up the mountain-side, which grew steeper and steeper with every yard. The yaks kept
plodding on, showing extraordinary sureness of foot; but their halts were many and long. At length the clouds lifted, and revealed to our gaze a panorama for which the only appropriate epithet is magnificent. The valley of Sarik-kol lay spread out before us like a map. To the north we caught a glimpse of Little Kara-kul and Bulun-kul. On the southwest the view was shut in by the mountain-chains on each side of the Murghab; while far down underneath our feet, towards the west, the tomb of Chum Kar Kashka crowned what appeared to be a little knoll of insignificant height, though we knew that, seen from the valley below, it was in reality a big mountain.

At length we came to the glacier of Yam-bulak, and there made halt to rest a while. We were then 15,900 feet above the level of the sea, and consequently stood higher than the tops of all the mountains of Europe. The glacier moves with the majesty of a king out of its castle portals—that is to say, a deep, wide dislocation of the strata; but no sooner does it get plenty of open ground before it, than it spreads out to twice or three times its former width, at the same time growing of course thinner. All its moraines—terminal, lateral, new and old—together with the glacial stream, and its deposits of steely blue mud—from the splendid coign of vantage we occupied we had a bird's-eye view of them all.

Having attained the altitude of 17,500 feet, we found water boiled at 180.5° Fahr. (82.5° C.), that the aneroid indicated 15.6 inches, and the thermometer read 23.9° Fahr. (—4.5° C.). There we were overtaken by a buran so furious that we were compelled to stop where we were for several hours. Even when we did venture to make a fresh start, we were obliged to proceed with the utmost caution; for the freshly fallen snow completely hid the treacherous cavities and projecting rocks which diversified the surface.

When, after sundry hardships and adventures, we at length returned to camp, we found pleasing evidence of Togdasin Beg's friendliness; for he had sent us a yurt, together with a fresh supply of provisions and fuel.

April 19th we were visited by a snow-storm, even at the
altitude of our camp. Since, then, it was evident, we might possibly have to wait some time for favorable weather, I sent Kul Mametieff down into the valley to bring up a sufficient supply of provisions to last us several days.

Meanwhile, taking Islam Bai and two of the Kirghiz with me, I made a little excursion to the edge of the Yam-bulak glacier. The rest of the Kirghiz, who the day before had complained of a splitting headache and feelings of nausea, were allowed to stay behind in camp and rest. It was altogether a most interesting and instructive trip. We obtained an accurate topographical chart, profiles, various measurements, and a dozen photographic views. Armed with rope, ice-axes, and alpen-stocks, we started from the side of the glacier, and ventured some 350 yards across its surface, until stopped by a crevasse sixty feet deep. I inferred from certain protuberances of the ice about 100 feet in height that the minimum vertical thickness of the glacier was probably 150 to 170 feet. During this venturesome expedition we leaped over several yawning crevasses, though not without observing the well-known precautions of ice-craft.

That evening I determined to move the yurt round to the southern face of the mountain, and make another attempt to get to the top from that side. But my plans were unexpectedly thwarted; for, like an evil spirit, my old inflammation of the eyes (iritis) suddenly seized me, causing me excruciating agony. I applied the remedies I had with me, but all to no purpose. The next day the pain was so intense that I was obliged to leave my men and ride down to Su-bashi. Thus ended my ambitious hopes. The members of the expedition were paid off, and the company dissolved. And Mus-tagh-ata, which glittered in the glorious sunshine, a magnificent sight for those who had eyes to see withal, was for the time being left to enjoy his solitary state in peace.

But despite the warmer climate and the rest I granted myself, the inflammatory symptoms rather increased than got better; so that at the end of a couple more days I decided it would be wiser to go back to Bulun-kul, where I had left the half of my baggage, with six horses, in charge of two men.
When I set out from the aul I was followed by the sincere sympathies of all its inhabitants; nay, even some of the Chinese soldiers came to express their sorrow at my ill-fortune. As the caravan filed off, they all stood silently by, as though assisting at a funeral. And this melancholy impression was still further deepened when at the end of about an hour we were overtaken by a band of soldiers, who had been prevented by their military duties from coming to see me off. They now wished me *bon voyage*, and escorted me on my way for about half an hour, singing songs in my honor, but songs of such a doleful character that I really began to fancy the caravan was a funeral procession, and that the singers were the hired mourners and I myself the corpse.

And in truth it was a melancholy journey—that which we began on the morning of April 25th. I had taken strong doses of salicylic acid and morphia, and felt both deaf and brain-sick. My left eye was covered with a bandage totally impervious to the light; while my right eye, which was well, but extremely sensitive to the light, was protected by glasses doubly darkened. In spite of my condition, by dint of riding ten hours at a stretch, we accomplished the entire distance to Bulun-kul in one day. Upon reaching Little Kara-kul we were assailed by a snow-storm, which continued to increase in violence as the day wore on, so that by the time we arrived at Bulun-kul it was not only quite dark, but the country was again clothed in its winter vestments. Without a moment's delay I despatched a messenger to Jan Darin, who had now returned from Kashgar, begging him to oblige me with a decent yurt. The answer brought back was, that Jan Darin was drunk, and could not be disturbed. I had, therefore, to make the best I could of the miserable yurt of which I have before spoken, although the snow swirled in through the holes in the sides. Notwithstanding this, I intended stopping there two or three days, because the inflammation continued to get worse.

But my plan was roughly knocked on the head; for about noon on the 26th a messenger came from Jan Darin, saying that if I hadn't gone by an early hour on the following
morning he would help me on my way with his soldiers. We had no choice, therefore, but to obey orders. But I will hasten to add, in exculpation of the Chinese, that throughout the whole of my journey, this was the solitary occasion on which I met with insolent treatment at the hands of a rude and unpolished mandarin, for during the course of the suc-

ceeding years I saw the Chinese character from a very different side, and found them a truly amiable race of men.

On April 27th I sent Kul Mametieff back to Fort Pamir. He was subsequently honored with a medal by King Oscar of Sweden and Norway. In addition to that, His Majesty paid a similar compliment to more than one of the Russian officers stationed at the fort, in recognition of the distinguished services they had rendered me; so that it would scarcely surprise me to learn that the Russians take me for a prince in disguise!

At Tar-bashi (the Head of the Narrow Passage) we turned off eastward, so as to descend the deep valley of the Ghez, which eats its way far into the heart of the Mus-tagh chain. I am sorry to say I know little about the road we followed, for I rode with my eyes almost completely blinded by bandages. I can only say that we reached our first night’s station, Utchkappa (the Three Stone Huts), down steep, break-
neck paths. The next day we had to traverse an extremely
difficult gorge of the Ghez-daria. The current was very
strong and clung close to the foot of the high crags which
shut in the valley on the right. The path wound down the
face of the almost vertical cliffs, being protected on the outer
or river side by a breastwork of stakes and poles latticed to­
gether with withes. My men thought they would prefer to
go down by the bed of the stream. But the leading horses
came within an ace of losing their foothold in the deep, swift
current; and that sent the men back to the path. On we
struggled, slowly, contending against serious difficulties, until
two of the horses stumbled and refused to advance another
step. This compelled us to return once more to the river-
bed. We proceeded with the utmost caution, and finally
succeeded in getting through the gorge.

I judged it wisest to trust my packing-cases only to the
best of the horses, and this necessitated unloading and load­
ing up again, which wasted a good deal of time. Each pack-
horse was taken through by two mounted men, who held
themselves in readiness to whip him on if he happened to
heel over. It was a very queer feeling came over me when
I moved down into the turbulent current, neither seeing the
bottom, nor yet knowing whether it was covered with loose
gravel or big cobble-stones, whether it was deep or shallow.

One thing, however, was imperative—namely, to keep fast to
the ford, or I should get a bath; and a bath in such a place,
seeing that I was riding with my feet in the stirrups, would
have been dangerous, for only a few paces distant the cliffs
closed in upon the river, and drove it plunging down a
cataract.

From that point onward we crossed and recrossed the
stream several times, sometimes wading through fords, some­
times being obliged to trust ourselves to bridges of a more
or less precarious character. One of these bridges formed
the prominent feature in a very picturesque piece of scenery;
for one end of it rested on a big round bowlder which choked
the bed of the river. The valley descended at a very steep
inclination, and the river tumbled down one cataract after
another. But as we went down, the narrow passages of the gorge, such as the one I have already described, were choked with thick mist, completely shutting out the prospect, although the bare cliff walls gave back the echoes with a singularly penetrating sound. The ground was extraordinarily rough and stony. Gigantic blocks of gneiss were half embedded in the stupendous conglomerate precipices which overhung the path; but so loosely fixed, that every moment I fancied they must break away and crash down upon our heads. In truth, I was considerably relieved when we had passed the last of these perilous places.

By this the temperature had completely changed. We now perceived for the first time that the season was spring. The minimum during the previous night was 31.8° Fahr. (−0.1° C.). At mid-day it was 46.4° Fahr. (8° C.); by two o'clock in the afternoon it had risen to 52.9° Fahr. (11.6° C.); by three o'clock to 55.4° Fahr. (13° C.); by four o'clock to 58.1° Fahr. (14.5° C.); and by eight o'clock in the evening to 59° Fahr. (15° C.); the temperature steadily rising as we descended. We rested for a while at Köüruk-karaol (the Bridge-Watch), where on April 29th the minimum was as high as 39.2° Fahr. (4° C.).

The district which we had now reached was in ill-repute, because of the Chinese and Kashgarian robber-bands, which
infested it. I therefore judged it prudent to post sentries
during the night, with orders to keep an eye especially on
the baggage and the horses. My men advised me to have
my weapons handy and ready for use. But the night passed
as quietly as other nights had done; the robbers did not
molest us.

The following day we again had a difficult crossing. One
of the pack-horses, ridden by Khoja the Sart, stumbled and
died, and narrowly escaped drowning. In a moment every
man of my company was in the water, heedless of clothes.
But it cost them a vast amount of labor to rescue the animal
and the stores it carried. Khoja went head over heels into
the water, and got an involuntary bath. As on the previous
day, we were obliged to cross the stream time after time,
sometimes by means of fords, at others over what were in
many cases dangerous bridges. At length, however, the val­
ley began to widen out, and as it did so we began to come
across patches of scrub. At noon the thermometer showed
66.2° Fahr. (19° C.). We were getting to lower elevations
and a warmer climate. Everything was shrouded in a thick
yellow mist; moreover, my eyes pained me a good deal, so
that I saw but little of the picturesque country we were pass­
ing through.

April 30th was the last day we spent among the moun­tains. Before the morning was over they began to decrease
rapidly in elevation, till they were little better than insig­nificant hills, and finally they fell away and became lost in
the distant haze which hung over the trumpet-shaped en­
trance to the valley. The surface grew leveller, and yielded
a good supply of grass, which caused the horses to lose all
sense of discipline. The poor animals, whose bellies had
been sadly pinched during the journey across the snowy
mountains and barren wastes of the Pamirs, snatched greed­
illy at the appetizing pasture as they went along. We crossed
three more small bridges, the last of them a particularly dan­
gerous one. We narrowly escaped losing one of our horses
there, which put its foot through the thin planking. The
baggage having been taken off the animal's back, all hands
set to work to haul him up again. That done, the men mended the bridge by filling up the hole with turf. After that we left the Ghez-daria on the left, and travelled on to Tash-melik (more correctly Tash-balik—Stone Fish), where there was a small Chinese fort, the commandant of which would not allow us to proceed until he had first seen and examined my pass. The last night of our journey was spent at the village of Terem (Arable Land), and on the evening of May 1st we reached Kashgar. There I was warmly welcomed by my old friend Mr. Petrovsky, Russian consul-general, and his secretary, Mr. Lutsh.
I remained fifty days in Kashgar, waiting till my eyes got well. This time I employed in working out the results of my journey up to that point, in arranging and tabulating my observations, and plotting out my maps. The rest was indeed very welcome—in fact, absolutely necessary. I thoroughly appreciated the hospitality of my friend’s house, where I was surrounded by all the comforts and conveniences of civilization. Consul Petrovsky is the most amiable man in the world, in every way a right excellent host. His intellectual conversation was as instructive as it was elevating. For he is a thorough man of science to his finger-tips. During the years he has been stationed at Kashgar he has made many discoveries and observations of the greatest value for history and archaeology. Some day he intends to publish them to the world. His library contains a selection of the best books that have been written on subjects connected with Central Asia. He has also a laboratory fitted with the most costly instruments and scientific appliances. It would be absolutely impossible to have a better base than Mr. Petrovsky’s house for a series of exploring journeys in the interior of Asia.

I have already described Kashgar and the vicinity in my former book, *Genom Khorasan och Turkestan*. Suffice it, therefore, to say here that the old town stood there on the banks of the Kizil-su, every whit as gray and solitary as when I first saw it in 1890. I add, however, a few words about the Europeans and Chinese with whom, during this visit, I was brought into contact.

The members of the consulate embraced Mr. Petrovsky
and his wife, his secretary, two military officers, a revenue officer, and a troop of half a hundred Cossacks.

Adam Ignatieff, a Roman Catholic Pole, who went out to Kashgar ten years ago as a missionary, was still there, a standing guest at Mr. Petrovsky's table. He was a fine old man, with a smooth-shaven face and snow-white hair, was dressed entirely in white, wore a rosary round his neck with a cross dependent from it, and looked like a cardinal out of office. We used to rally him over the dinner-table; but he met all our allusions, even the most embarrassing, with a jovial smile, and resented nothing so long as he got his full number of drams. The only person who put faith in his pretensions to missionary zeal was himself. For during all the ten years he had been in Kashgar he had not made a single proselyte; indeed, he had made no serious attempt at conversion. He boasted that he had converted one old Sart woman on her death-bed; but the malicious declared that the old woman was already dead when he converted her.

During the following winter Adam Ignatieff often used to visit me in the evening; and many were the lonely hours he thus helped to shorten by his conversation. We would both sit over the fire till well on into the night, and he would relate to me the various episodes of his adventurous life. He told me how, during the Polish Rebellion, he had helped to hang a Russian priest; for which deed he was banished to Siberia, and remained there about thirty years. He was of noble blood, and belonged to the family of Dogville. But he was then living half a wastrel in Kashgar, a lonely man, forgotten, friendless, with none to care for him or take any interest in him, with none to shed a tear over his grave when the end of his days should come. Nevertheless, he was always cheerful, always friendly and jovial, perfectly contented with his lot. And so we used to sit, talking over the fire, like a couple of hermits.

I also found in Kashgar another old friend in Father Hendricks. He was in all respects a remarkable man, who had been domiciled in the town quite as long as Adam Ignatieff. A Dutchman by birth, he had been twenty-five
years in Asia, spoke twelve different languages, and followed closely and with interest the affairs of the world; he was, in short, a man of wide culture, endowed with no small share of talent—in this respect the exact opposite of Adam Ignatieff. He made his home in a Hindu caravanserai, a miserable hovel without windows, and lived in a state of the greatest poverty, apparently long ago forgotten by his friends in Europe, for it was seldom, if ever, that he received any letters. It was, however, a real pleasure to talk to him. He was both amusing and ready witted, sang French songs with the same verve that he recited his Latin masses, and was a thorough original, if ever there was one. To see him striding at a smart pace through the Mohammedan bazaars, with his long cloak, his broad-brimmed hat, his staff, his long beard, and his big spectacles, always put me in mind of a gray-friar monk. Solitary, solitary, solitary—such was the burden of his life's song. A solitary man, he recited punctually every day the masses which none came to listen to; solitary he sat on the platform beside the door of his hovel and read, heedless of the bustle of the caravans that came and went; solitary he dressed the scanty fare which his poverty permitted him to eat; solitary he wandered about the roads of an evening—always and everywhere a solitary, lonely being. It was always a pleasure to me when I fell in with him. Many an hour we sat together philosophizing over life, for I too was just as lonely a man as he.

There was also a third missionary in the town, a Mohammedan, who had been converted to Christianity and baptized by the name of Johannes, or John. He had studied the Koran in Erzerum, in Turkish Armenia, and from the minarets of that city had cried to the faithful, "La illaha il Allah, Mohammedeh rasul Ullah" (There is no God but Allah, and Mohammed is His Prophet). After being converted to Christianity, he spent two years at a mission school in Sweden. At the time of my visit to Kashgar he chiefly occupied himself with translating the Bible into Turki and the dialect of Kashgar, and with playing Swedish psalm tunes on a violin in the evening.
Such were the happy destinies of the champions of the Cross in that remotest of Chinese cities! I felt truly sorry for them. Their energies were wasted, their labors fruitless, their lives empty, hard, and of no account.

During my first visit in Kashgar, I had the good fortune to come in contact with two pleasant English gentlemen—the famous traveller Captain Younghusband, and Mr. Macartney. The former had in the interval returned to India. The latter still dwelt in Kashgar, occupying a comfortable house in a splendid situation close to the garden of Chinneh-bagh. On more than one occasion he entertained Father Hendricks and myself with splendid hospitality. Mr. Macartney was the Agent of the Indian Government for Chinese affairs in Turkestan. He had had a first-rate training, and spoke fluently the principal languages of Europe and the Orient, being especially distinguished in Chinese. In fact, he was too good for his post. He was capable of rendering his country substantial services in a more distinguished sphere of action.

I will now turn to the more eminent of the Chinese with whom I had relations during my stay in Kashgar.

The highest official in each of the nineteen provinces of China is the governor; and with him are associated the vice-governor, the head of the provincial treasury, the judge, and the procurators. Now, whereas the first four exercise authority over the whole of the province, the functions of the last official, the procurator or Dao Tai (the Man who Shows the Right Way), are limited to a smaller district or subdivision of the province. For instance, in the province of Sin-chiang (Sin-kiang), which embraces the whole of East Turkestan, Ili, a part of Dzungaria, and a part of Gobi, there are several dao tais. Urumtchi, the capital of the province, has one; Ak-su has another; there is a third at Kashgar; and so on. The dao tai's sphere of authority is therefore less extensive than the spheres of his colleagues; but within his own sphere his actual authority is in several respects superior to theirs, seeing that he enjoys the power to check and regulate their action, as well as to make representations to the central government, if he considers them lacking in the performance
of their duty. The position he occupies is in many ways similar to that which was occupied by the Russian provincial procurators in the time of the Empress Catharine II.; but with this fundamental difference, that, whereas the functions of the Russian procurators were limited to protesting, the Chinese dao tai possesses, under certain circumstances, the power to command.

My friend Shang, Dao Tai of Kashgar, exercised authority over a very extensive region, stretching northeastward towards the boundary of the procuratorship of Ak-su, and embracing Kashgar, Maral-bashi, Yarkand, Khotan, Keriya, and Cherchen. His duties are principally civil; but they also extend into the domain of military affairs, in that he acts as paymaster to the troops and inspector of commissariat. The district of Sarik-kol, on the Eastern Pamirs, is administered, like the similar frontier districts of the Russian and Afghan Pamirs, by military officers. The Dao Tai of Kashgar is able to exercise a certain measure of influence upon the conduct of affairs in Sarik-kol; for he is authorized to give advice and furnish intelligence, but is not allowed to issue direct commands.

When a young man, Shang was nothing more than a simple clerk to a mandarin; but having distinguished himself at the time of the first revolt in Dzungaria (1864), he rapidly mounted the ladder of promotion till he attained his present high position. Although no Adonis, he was from top to toe a thoroughly high-principled gentleman. On ordinary days he was wont to flit his saffron yellow body about in a little blue cart; but for ceremonious occasions and functions of high solemnity he came out in magnificent attire—namely, a robe of blue and black silk, in the ample folds of which golden dragons played hide-and-seek, while golden lions of fantastic shape climbed up a bewildering tangle of interlaced garlands. A mystic button on his silk skull-cap proclaimed that he was a darin or mandarin of the second class. To complete his gala costume, he wore round his neck a long chain of hard fruit-kernels, polished and carved on the outside.
Upon arriving in Kashgar, one of my first duties was of course to go and pay my respects to this high and influential official. He received me in a singularly polite and cordial fashion. He lived in a straggling yamen (official residence), consisting of a labyrinth of square court-yards, with mulberry-trees planted in the middle, and wooden verandas running round the sides. The pillars which supported the verandas were decorated with Chinese ideographs, and the walls of the building with mural paintings, representing for the most part dragons and other fantastic animals. The Dao Tai himself received me at the first door, and with an affable smile conducted me as far as the audience-chamber, where we took our seats on opposite sides of a little square table, and drank tea together and smoked out of silver pipes. Soldiers, armed with long-shafted halberds, kept watch beside the door, and a group of respectable yellow-skinned functionaries, with well-preserved pigtales and buttons in their black silk caps,
stood like a circle of lighted candles all round the room, keep­
ing as silent and motionless as statues all the time the audi­
ence lasted. The Dao Tai himself wore the insignia of his
lofty dignity. With the view of repaying honor with honor,
I had put on my best “dress” suit of broadcloth, and went to
his palace riding a horse as white as fresh-fallen snow and
escorted by a troop of Cossacks.

For two hours we conversed together, or rather competed
which should excel the other in paying compliments. The
Dao Tai asked me how I liked his tea. I answered “Choa”
(good), that being the only Chinese word I knew. Thereupon
he clapped his hands and said, “By the memory of my fa­
thers, what a marvellously learned man my guest is!” A lit­
tle later he told me that the river Tarim, which flowed out
of Lop-nor into the desert, reappeared again several thousand
li (quarter of a mile) distant, and formed the great river
Hwang-ho of China. At this I gave him as good as I got:
“What a well-informed man Your Excellency is! You know
everything.”

But I also let him hear a little plain truth as well. I told
him how I had been received at Bulun-kul, the first place I
entered on the Chinese side of the frontier; expressing my
astonishment that I should have been treated with such dis­
courtesy in face of the pass and letters of introduction I car­
rried, and declaring my intention of making representations
on the subject in higher quarters. Upon hearing this, the
Dao Tai’s face clouded, and with some show of emotion he
begged me not to lodge a complaint; he would himself teach
Jan Darin a lesson. I promised, therefore, that for that once
I would let the matter drop; for of course I never had any
intention of doing what I said. But I have found that the
only way to deal with the Chinese is to be positive in your
statements and peremptory in your demands if you wish to
avoid being made ridiculous by their fantastic exaggerations.

Towards the close of our interview the Dao Tai reminded
me that Kashgar possessed two chiefs—himself and the Rus­sian consul-general. The Mohammedans declare that Mr.
Petrovsky is the true successor of the Jagatai Khans (who
ruled over Kashgar from the death of Jenghiz Khan to past the middle of the sixteenth century). He pointed out that, since I had taken up my quarters for a time with the Russian chief, it would only be right that I should also grant his Chinese colleague the honor of entertaining me for, at any rate, a few days. I thanked him very, very much for the honor, but declined.

The next day the Dao Tai returned my visit, coming with all the pomp and circumstance of Oriental display. At the head of the procession rode a herald, who at every fifth step sounded a gigantic gong. He was followed by several men armed with switches and whips, with which they dusted the jackets of everybody who had not the good sense to get out of their way. The great man himself rode in a little covered cart, with three windows and two high wheels, drawn by a mule, which was shaded by an awning, held up by rods fixed to the shafts. On both sides of this state chariot walked attendants bearing huge parasols and lemon-colored standards, inscribed with Chinese ideographs in black ink. The rear of the procession was brought up by a troop of soldiers, mounted on beautiful white horses, but wearing such fantastic uniforms as would have astounded even Doré.
I cannot part from my Chinese friends in Kashgar without adding a brief account of a Chinese dinner-party which I shall never forget. I had scarcely recovered from dining at the house of Tsen Daloi, a kind of mayor of the city, when I had the honor to be invited, along with the staff of the Russian consulate, to a similar function at the palace of the Dao Tai.

I recollect something about an ancient Greek deity who swallowed his own offspring. I have read in Persian legend about the giant Zohak, who devoured two men's brains every day at a meal! I have heard rumors of certain African savages who invite missionaries to dinner and give their guests the place of honor inside the pot. I have been set agape by stories of monstrous big eaters, who at a single meal could dispose of broken ale-bottles, open penknives, and old boots. But what are all these things as compared with a Chinese dinner of state, with its six-and-forty courses, embracing the most extraordinary products of the animal and vegetable worlds it is possible to imagine? For one thing, to mention no more, you need to be blessed with an extraordinarily fine appetite—or else be a Chinaman—to appreciate smoked ham dripping with molasses.

When a Chinaman issues invitations to dinner, he sends out one or two days beforehand a tiny card of invitation contained in a huge envelope. If you accept the invitation you are supposed to keep the card; if you have not time—that is, if you decline—you are expected to send it back. If the banquet is appointed for twelve o'clock, you need not go before 2 p.m. Should you, however, appear punctually, you will
find your host taking his mid-day siesta, and see neither guests, attendants, nor signs of dinner. When things are sufficiently advanced in your host's house, he sends off another messenger, who comes and shows you his master's calling-card. This is to be interpreted as a signal that you may now begin to dress yourself, though you need not bustle about it.

We too of the consulate made a truly gorgeous show as we rode in procession to the great man's palace. The place of honor at the head of the procession was filled by a Sart from West Turkestan, the aksakal (chief) of all the merchants, subjects of Russia, who dwelt in Kashgar. He wore a red velvet khalat (coat), decorated with two or three Russian gold medals. Close behind him rode a Cossack, carrying the silk banner of the consulate, red and white, with a little blue cross stitched diagonally across the corner. Consul-general Petrovsky and I rode in a sort of landau, escorted by two officers and by Adam Ignatieff, in the long white coat with the cross and rosary round his neck. Last came a dozen Cossacks in white parade uniforms, curbing in their snorting horses with a tight rein.

Thus arrayed in holiday magnificence, we rode, under a broiling hot sun, at a gentle pace through the narrow, dusty lanes of Kashgar, across the market-place of Righistan, with its hundreds of tiny stalls, shaded by thatched roofs, each supported by a slanting pole, past mosques, madrasas (Mohammedan theological colleges), and caravanserais, across the "flea" bazaar, where old clothes are on sale, coming occasionally into collision with a caravan of camels or a string of donkeys laden with small casks of water, and entered at length the Chinese quarter of the city, full of quaint shops, with up-curling roofs, painted dragons, and red advertisement signs. Finally we drove in at the great gates of the Dao Tai's yamen (residence), and were there received by His Excellency in person, surrounded by a band of beardless and wrinkled military attendants dressed in their gayest attire.

We had not got further than the preliminary "appetizer" when the presence of Adam Ignatieff started His Excellency
off on the subject of the missionary activity of Europeans in China. He spoke in terms of great admiration of the Christian missionaries, praising their self-abnegation and disinterested zeal for the well-being of their fellow-men; but, speaking with marked emphasis, he went on to add that he felt bound to look upon them as the authors and instigators of discord, setting members of the same family at variance, undermining the time-honored ordinance of domestic subordination, dividing the population into two hostile camps. I ventured to remind him of the murder of two Swedish missionaries in Sung-po, of which I had just heard; but the Dao Tai professed total ignorance of the affair.

Our host then conducted us and his Chinese guests to a little pavilion in the garden, where dinner was to be served. Chinese etiquette prescribes that the host shall touch his forehead with the cup each guest drinks out of, and thereupon present it to him; similarly with the chopsticks each guest eats with. The Dao Tai also shook each chair, to prove that it was in a sound condition, and passed his hand over the seat as if to brush away the dust. This performance over, we took our seats round the big, red, lacquered table. Next came in a string of servants, each bearing a little round porcelain dish with some preparation of food upon it. They put down the dishes along the centre of the table. There were dozens of them; and the first supply was followed by others, time after time. In front of each guest stood still smaller dishes, containing spices, sauces, and soy.

If the guests neglected to help themselves, the host occasionally sent them portions of the delicacies which lined his own dishes—such as the skin, fins, and cartilage of different varieties of fish found in the seas and rivers of the Chinese empire, fungi, salted mutton fat cut into long strips, lizards (salamanders), ham with a great variety of widely different adjuncts, besides a multitude of strange preparations, the real constituents and names of which remained mysteries to me. As for tasting them, I really had no confidence in their suspicious appearance, still less in the rancid odors they gave off. The culminating triumph of the feast was smoked ham in
molasses, washed down with tea and Chinese brandy, strong and boiling hot. The greater part of the numerous dishes served at the banquet had been brought from China proper, and consequently, owing to the vast distance, at a very considerable cost. Evidently His Excellency, who at ordinary times lived very plainly himself, was desirous to show us every mark of respect. But I am sorry to say we scarcely did justice to the skill of the Chinese cuisine, although a Brillat-Savarin would no doubt have gone into raptures over it.

The only person who worthily upheld the honor of Europe was Adam Ignatieff; but he did wonders, exciting the amazement of the rest of us, and even the admiration of the Chinese themselves. With punctilious conscientiousness he partook of every one of the forty-six courses, and, with the rosary still round his neck and the cross on his breast, drank seventeen cups of brandy, stuff which to my throat was as hot and burning as sulphuric acid poured upon iron-filings. And at the end of the three hours that the banquet lasted he rose every whit as sober as when he took his seat at the beginning.

The conclusion I came to about Chinese state banquets was that you require a certain amount of time to become accustomed to the many unfamiliar dishes which are put before you. All the same, several of them were excellent, some even quite delicious. Undoubtedly the most delicious of all was the soup made from the edible nests of the swallow, or, more correctly, swiftlet—a dish which is seldom served in this far-off region because of its extremely high price.

On one of the walls there were painted two or three black flourishes. I inquired what they signified, and was told they meant “Drink, and tell racy stories.” There was no need for any such admonition, for the spirit which reigned over the company was so hilarious, and we transgressed so wantonly against the strict rules of Chinese etiquette, that the Dao Tai and his compatriots must surely have blushed for us a score of times had not their skins been from infancy as yellow as sun-dried haddocks.
We were entertained all through the dinner by the melodies of a Sart orchestra, consisting of drums, flutes, and singers; while the monotonous music was occasionally enlivened by a couple of dancing boys, as though we were not dizzy enough without their gyrations.

As soon as the last of the six-and-forty courses had disappeared, the guests, following the rigorous law of custom, instantly rose to take their leave. That moment was one which I had long been anxiously waiting for; for I was dying for a cigar and a glass of sherry with iced water, to banish the recollection of one of the most extraordinary banquets it has ever been my lot to be present at.

As we drove home, the streets, the market, the bazaars were silent and empty. The only persons we saw were a few solitary wanderers—a dervish or a leprous beggar. The sun set behind the airy contours of the Terek-davan pass. The twilight lasted only just long enough to make the bare announcement that a new night was approaching. Then the Orient lay down and dreamed again on its own grave.

I shall not easily forget the many happy hours I spent in Consul Petrovsky's society. It is always a pleasure to me to go over them again in my thoughts. For, as I have already said, he was really an extraordinary man, both in the matter of experience and general culture. I owe him a very deep debt of gratitude, not only for his unstinted hospitality but also for the extremely valuable advice he gave me, drawn from the storehouse of his wide experience. He has lived twelve years in Kashgar, and no man possesses a more intimate knowledge of that region than he does. To many it may seem like transportation for a well-educated man to have to spend so many of the best years of his life in a place like Kashgar. But it was nothing of the sort to Mr. Petrovsky. He had learned to like the place; and he had an inexhaustible fund of interest in its historical and archaeological treasures which he had unearthed. There was one thing about Mr. Petrovsky which had for me an especial attraction. He was always cheerful, always in excellent good humor; for, when
you come to think of it, what is there that can give greater
or truer pleasure than to associate with people who see life
and the world in bright colors, and are perfectly contented
with the lot destiny has shaped for them? At the same time
he was both philosopher and critic. With biting wit and
scathing irony he would lash the minor follies of the world,
more especially everything that savored of toadyism and
servility. Throughout all my travels I have met no man
who made a deeper or more real impression upon me than
Mr. Petrovsky; nor is there any I would so gladly meet again
and yet again.

In a word, I had a splendid time of it in Kashgar. I was
quartered in a cosey little room in a pavilion in the consulate
garden, and after breakfast used to stroll backward and for­
ward under the shady mulberry and plane trees, along a ter­
race which commanded a wide view of the desolate regions
through which I was shortly to journey on my way to the Far
East. I had constant company in a colony of swallows, which
had built their nests under the projecting eaves, and which
were quite at home, flying freely in and out of the open doors
and windows, for, the summer air being warm, the doors and
windows stood wide open all day and all night long. On
Easter morning I was awakened by the clear, melodious echoes
of a church bell, which the day before had arrived from Na­
rynsk, and was hung in the chapel of the Russian consulate.
I spent my time there working all day, and wrote two or three
geographical papers. Altogether, it was in every way a de­
lightful existence, and just suited me down to the ground. I
heard the wind whispering in the tops of the plane-trees.
What it really said I knew not; but I loved to dream that it
was bringing me greetings from home. Little did I know
then that I had still three whole years of hard travel before
me in the heart of Asia!

My life was, however, anything but solitary. Apart from
the staff of the consulate, the place swarmed with Orientals
—Sarts and Kirghiz—who came in and out on business or
pleasure. Then there was a crowd of Mohammedan ser­
vants, and a Chinese interpreter, to say nothing of hens and
chickens to the number of three hundred, turkeys, geese, and ducks, a monkey, four parrots, and more than a dozen dogs. I was on good terms with the whole menagerie, with the sole exception of the monkey. His favor I could not succeed in winning, even when I resorted to such tempting delicacies as apples and pears.

During my seven weeks' stay in Kashgar I often discussed my plans of travel with Mr. Petrovsky, especially how my

![Garden of the Russian Consulate in Kashgar](image)

journeys ought to be arranged, so that I might visit each region in the season most favorable for reaping a successful harvest of observations. The result of our conversations was a total alteration of the original idea with which I left Europe. Instead of exploring all the regions I had set my mind upon in one continuous and unbroken journey, as I had at first intended, I decided to carry out my purpose in a series of longer or shorter expeditions, all starting from Kashgar as a centre. By that means I should be able to carry my observations to a place of safety as I made them, to develop my photographic plates, pack and send off home my collections,
as well as have an excellent base at which to make preparations for each fresh expedition.

I intended my first journey to be to Lop-nor, that being the object upon which my heart was most set. But in the beginning of June the weather underwent a sudden change. Summer—the Asiatic summer—was upon us almost before we were aware of it. The sky glowed like a gigantic furnace. The temperature rose to 100.4° Fahr. (38° C.) in the shade; the black bulb insolation thermometer showed 150.8° (66° C.). The queen of the night was powerless to infuse coolness into the superheated atmosphere of East Turkestan. And every afternoon the desert wind blew in across the ancient capital of Yakub Beg, dry, burning, impregnated with fine dust, filling the streets with a stifling, impenetrable haze. And as the summer advanced, the heat would increase, as well as grow more intense the nearer we travelled towards the middle of the continent. I thought of the superheated atmosphere, heavily charged with dust, vibrating above the dunes of drift-sand; I thought of the whirlwinds which every afternoon drive up and down the banks of the Tarim; I thought of the 1000 miles of long, difficult marches across the unending, waterless deserts, and—I shuddered. It was only the other day, as it were, that I had been living in nearly forty degrees (Fahr. and C.) of frost high up on the Pamirs. I should be all the more sensitive to the burning heat of the desert. At the eleventh hour, therefore, I resolved to spend the summer in the higher regions, and continue my observations in the Eastern Pamirs, and wait for the winter or the spring before starting for Lop-nor.
CHAPTER XXI
FROM KASHGAR TO IGHIZ-YAR

We left Kashgar on the evening of June 21st, 1894. The caravan consisted of half a dozen pack-horses, laden with provisions, instruments, khalats (Kirghiz coats), cloth, colored handkerchiefs, and bag-caps, intended as presents for the Kirghiz; these articles being valued among them almost as much as money. Besides these things, I had my tent-bed, winter clothing, felts, weapons, and ammunition. The only reading I took with me consisted of certain scientific books, and half a year's issue of a Swedish journal, as old as the hills, but none the less delightful on that account, when every line conjured up dear old Sweden before my mind's eye.

My companions were the Evangelical missionary Johannes; Islam Bai, from Osh in Fergana, the successor of Rehim Bai; the Taranchi Daod (David) from Kulja, who acted as my interpreter of Chinese; and Ekbar-khoja, caravan bashi (leader), from Fergana. It was from the last named I hired my horses. In addition, I was to be provided every day with two Kirghiz guides, to point out the road. The Dao Tai's good offices exceeded all expectation. Not only did he give me two big bright-colored letters of introduction of a general character, he also supplied me with an official proclamation to the commanders of Sarik-kol and Tagharma, to the effect that I was of a rank equivalent to a mandarin of "the second button," and was accordingly to be received and treated as such. In sharp contrast to their former behavior towards me, the Chinese local authorities were now anxious to do all in their power to serve me.

The sun's rays were still very hot, although it was nearing sunset, when the caravan moved off between the poplars and
willows which line the broad high-road, one of the great public works of Yakub Beg. It being market-day, the road was enlivened with a brisk traffic. There were mandarins of different "buttons," driving along in their little blue carts, each drawn by a mule bedizened with trappings and bells; there were small troops of Chinese officers and soldiers in gay uniforms, all mounted. But not the least striking features were the huge, picturesque arbas (carts) crowded with Sarts or Chinese on their way to Yanghi-hissar or Yarkand. Each vehicle was arched over with a tunnel-like roof of straw, and drawn by four horses, hung all over with bells of various sizes; one horse being harnessed between the shafts, the other three a considerable distance in front, pulling by means of long, roughly made ropes. These clumsy but serviceable vehicles are the diligences of East Turkestan. By them, for the extremely modest fare of ten Kashgar tengeh (about 2s. 3d.), you can ride all the way from Kashgar to Yarkand, a distance of four long days of travel. We met one caravan of merchandise after another. Along the sides of the roads were swarms of beggars and cripples of every kind and degree, water-sellers with their big earthen-ware jars, bakers and fruit-dealers displaying their wares on tiny stalls; while a swarm of sun-browned urchins paddled in the muddy water that stagnated in the ditches by the road-side. We passed a line of saints' tombs; the monument which the Russian consul-general, Mr. Petrovsky, erected in 1887 to the memory of the murdered Adolf Schlagintweit, now undermined by the spring floods; and Yakub Beg's ruined castle of Dovlet-bagh (the Garden of Riches). We crossed the Kizil-su, a reddish-brown mud stream, crawling underneath the double-arched bridge. Finally, leaving the Chinese town, Yanghi-shahr, on the left hand, we struck the desolate, lifeless country, which stretched away southward and eastward, flat and boundless, as far as the eye could see. By that time, nine o'clock in the evening, it was quite dark. We therefore stopped in the village of Yiggdeh-arik, and rested and took our suppers, till the moon should get up. It was two o'clock in the morning when we arrived at Yappchan, the object of our first day's march.
On June 22d the temperature was so high (91.6° Fahr. or 33.1° C., at 1 p.m.), that we preferred to stay in the shade; but towards evening it grew cooler, and we resolved to start again. We had not advanced very far when we were met by a beg, followed by two attendants. He had been sent by the amban (Chinese governor) of Yanghi-hissar, bearing greetings from his master, with expressions of welcome into his district. He was at the same time ordered to furnish me with provisions, and do everything that lay in his power to help me in my journey. After escorting us a piece of the way, the beg rode back again, in order to find out and get ready a suitable place for tea. The avenues of trees and cultivated fields became more and more interspersed with belts of sand as we advanced. Two hours after leaving Yappchan I saw sand-dunes nearly twenty feet high. They stretched from northwest to southeast and from north to south; but were so overgrown with vegetation that they offered no impediments to traffic.

After stopping a short time for tea in the village of Soguluk, where a party of Chinese were making a fearful hubbub, we continued our journey in the dark towards Yanghi-hissar, and arrived there early the next morning. An apartment had been allotted to us in the Hindu caravanserai; and the caravan created quite a commotion when it filed in at the gate, for all the guests of the "hotel" were sleeping in the court-yard under the open sky.

Later on that same morning, June 23d, I was awakened by a mandarin of inferior rank, who brought fresh greetings and protestations of eternal friendship from the amban, together with a sheep, two pullets, a sack of wheat, another of maize, a bundle of grass, and a fagot of firewood. All day long I had three begs sitting outside my door, ready to run my errands at the slightest hint. And in this friendly spirit I continued to be treated by the amban during the whole of the forty-eight hours I remained in his town.

In return for his obliging kindness, I presented him with a revolver and a knife. Thereupon he sent me a complete Chinese dinner, consisting of a number of remarkable but
delicious dainties, arranged on dishes and in tiny cups, grouped round a whole roasted pig, which was placed on a big tray with a leg to it. At the same time he expressed his regret that, being indisposed, he could not give himself the honor of helping me to consume the good things he had sent. This message furnished me with the welcome opportunity to reply that, as I was quite unable to do justice to such a bounteous spread all by myself, I felt called upon to send it back to him. For I strongly suspected that all these unusual attentions were merely an artifice to put me under such strong obligations of gratitude towards the astute amban, as almost to compel me to conform to his wishes. His real object was to turn me aside from the route I had chosen for getting up to the high plateau—namely, the glens of Keng-kol and Tar-bashi. That route lay through his district; and it ran counter to the wishes of his worship the amban that I should travel through the country over which he exercised rule. He feared, and with justice, that I should map it out, and so open it up to European travellers, from whose presence it had hitherto been tolerably free. Indeed, he directly advised me to follow the route via Yarkand, alleging that the mountain-torrents were now so greatly swollen that I should run very serious risk, and if my baggage were to suffer injury or get lost, he would be held responsible for it by the Dao Tai.

Meantime I had learned from other quarters that donkey-caravans had actually crossed the torrents. Moreover, the time of year was the reverse of favorable for going all the way round by Yarkand, where pestilence always rages in the summer. When the amban learned that it was still my intention to pursue my original plans, he sent offering to supply me with guides. Then, finding no other pretext for keeping up communications with me, he inquired the best way to proceed in order to make water run uphill for purposes of irrigation. I replied to his inquiry by making a paper model of a windmill, and adding explanations of its purpose and the way to use it.

On the outskirts of Yanghi-hissar I noted the first indi-
lations of the proximity of a mountainous country, in cer-
tain minor irregularities of the ground. For example, a
narrow ridge, about half a mile long and from 60 to 80 feet
high, stretched away eastward from the town. It was so
evenly and regularly formed that it might easily have been
mistaken for an old fortified wall or rampart had it not been
built up of sand and conglomerate. On the north of this
ridge lay the greater part of the town, with its houses and
bazaars embowered in gardens. On the south of it there
was nothing more than a single row of clay huts with low
flat roofs. Along the foot of the ridge was the cemetery,
every tomb being surmounted by a small dome. When the
sun was at its fiercest, the place gave off the offensive smell
of a charnel-house.

But the prospect from the town was both fine and exten­
sive. Mus-tagh-ata shut in the southwest like a steel-blue
wall, its white battlements inviting us to cooler climes. Be­
tween Yanghi-hissar and Mus-tagha-ata the face of the coun­
try was dotted with low hills. But in the opposite quarters—
that is, towards the east and north—there was nothing but
the desert, as level and unbounded as the ocean. The town
possessed nothing whatever to interest a stranger, its few
mosques and madrasas (theological colleges) being totally
destitute of architectural pretensions. One of the latter was
built, I was told, sixty years ago by Halim Akhun. Its fa­
cade, ornamented with blue and green tiles, and flanked by a
couple of small towers, overlooked an open square with a
muddy pond in the middle. There was also a typical Cen­
tral Asiatic mosque, small in size, with a colonnaded veranda
along the front, showing simple decorative designs, painted
inscriptions, and streamers; and associated with this was the
masar (saint's tomb) of Kara-chinak. The court-yard of the
mosque was planted with venerable poplars, with stems of
a mighty girth. By an ingenious contrivance one of them
was made to do duty as a sort of minaret. Lastly, I will
merely mention the masar of Supurga Hakim; it had a
green cupola and four small towers.

On the whole, the town was a rural sort of place, abun-
dantly filthy, its streets narrow and dusty, its bazaar protected against the burning heat of summer by wooden roofs and straw mats. The men went about for the most part naked from the waist upward. The small boys were entirely naked. The little girls had their heads and feet bare, but wore one garment—a bright red skirt. The women, who seldom go veiled, frequently sat at the stalls in the bazaars, or in the open squares, with baskets of fruit at their feet. As a rule, they were not blessed with good looks. Like their sisters in other parts of East Turkestan, they wore their black hair in two long thick plaits.

The Chinese quarter of the town, which, like the Chinese quarter of Kashgar, was called Yanghi-shahr (the New Town), lay close beside the Mohammedan quarter, and was defended by a lofty crenellated wall with towers and a moat. It was there that the amban of the town had his yamen (residence), with its train of bareheaded Chinese in long, white tunics and wide, blue trousers.

The Indian caravanserai, where we put up during our stay in the place, was built round a square court-yard, with a pillared veranda along each of its sides. Its principal inhabitants were half a score Hindus from Shikarpur, importers of cloth from India by way of Leh, Karakorum, Shahidula, and Yarkand. But their chief business was money-lending; and by exacting exorbitant rates of interest they had so completely got the people into their power, that the greater portion of the proceeds of the harvest flowed into their pockets.

But I must not linger longer in Yanghi-hissar. The mountain-breezes are wooing me; and there is a great deal to do before I can permit myself to indulge in rest. I was unable to persuade our host, Odi from Shikarpur, to accept any return for the hospitality he showed me. But I in some sort satisfied my conscience by making him a present of the amban's sheep and firewood, together with a knife which I added out of my own stores. Kasim Beg escorted us as far as the canal of Mangshin-ustang, which has a volume of 280 cubic feet in the second. There he dismounted, bowed, and took his leave; his place being taken
by another beg, Niaz, who accompanied us throughout the whole of the journey. About six o'clock in the evening we were assailed by an extremely violent whirlwind, which came out of the northwest, and filled the air with dense clouds of dust and sand. The gust only lasted five minutes, and was shortly afterwards followed by a heavy pelting rain, which wetted us to the skin before we were able to reach shelter in a hut by the road-side. But it brought a compensating advantage in that it purified the air and settled the dust.

From the village of Kara-bash (Black Head) we directed our march due south, leaving on our left the high-road to Yarkand. For a pretty considerable distance eastward the country was diversified with ranges of low hills of sand, clay, and conglomerate. The route we followed was excellent riding, being a perfectly level steppe, diversified by a few scattered knolls. We rested two hours in Sughet (the Willow-Tree), then started again in the night; but it was so pitch dark that we had to be guided through the narrow lanes of the village by a man carrying an oil-lamp. It was about two in the morning when we arrived at the kishlak (winter village) of Ighiz-yar (the High Terrace). There we took up our quarters in a finely situated court-yard.

The amban of Yanghi-hissar had despatched a man on before into the mountains to prepare the way for us. We met this man, Emin Beg, on June 25th, returning with the intelligence that the torrents had really become much swollen during the past few days, but that nevertheless they were not so high as to offer any serious impediment to the progress of the caravan. As a reward for his welcome news I invited him to take tea with me, and let him enjoy the rare treat of listening to a tune on the musical-box. One of the inhabitants of the place strummed a setar (zither), and a mollah read aloud passages from the Koran to a group of the faithful.

One task (five miles) south of the village there is an iron-mine known as Kok-bainak. The ore occurs in strata of loose earth or clay, and is dug out and carried to Ighiz-yar to be smelted. Both the appliances and the process of ex-
traction are of the most primitive description; the furnace being only about six feet high, with three feet interior diameter. It is housed in a little hut built of planks and sun-dried clay. After the furnace is half filled with charcoal, the ferruginous earths are thrown in, till they cover the charcoal to the depth of six or eight inches. The fuel is then lighted, and half a dozen men squat on their haunches in front of as many holes made near the bottom of the furnace, and blow into it with goat-skin bellows, in order to intensify the draught. They keep up at that nearly all day long, from time to time examining, by means of an iron rod inserted through a hole in the side of the furnace, how the smelting is progressing. Towards evening the molten metal comes running out at the bottom of the furnace. After every burning the furnace of course requires to have the slag and ashes raked out, so that it may be clean and ready for a fresh batch of ore. The metal thus obtained is of such a miserably poor quality that it cannot be forged. It is only fit to be converted into the more primitive agricultural implements. It is no use for horseshoes. One entire day's smelting yields 5 cháreck, which are sold in Yanghi-hissar for 30 tengeh (6s. 8d.). One cháreck is equal to 12 jing; and one jing equals 1½ Russian pounds or 1¼ pounds avoirdupois. The owner of the furnace, the yuz-bashi (chief of one hundred men) or village chieftain of Ighiz-yar, manages the business himself, personally superintending the smelting, and paying each of his seven work-people at the rate of only six da-tien a day; the da-tien being a Chinese bronze coin equal to less than half a farthing in value.
CHAPTER XXII
THROUGH THE GORGE OF TENGHI-TAR

Our spirits were high when we left Ighiz-yar early on the morning of June 26th; for immediately before us we saw the valley of Tazgun opening its arms to welcome us. The mountains themselves, now brown, now gray, were barely visible, their contours being blurred by the great amount of dust which obscured the atmosphere; but at their feet we could just discern two of the kishlaks or winter villages, snugly ensconced amid groves of green trees. But as we drew near to the entrance of the valley the outlines of the mountains gradually came out more distinctly into view, at the same time seeming to creep closer together. The valley of Tazgun is very narrow, so narrow even at its entrance that it could easily be defended by the little fort of Ighiz-yar-karaol, with its garrison of only twenty-four men. On the other side of that post the population are exclusively Kirghiz nomads, who climb up to their summer grazing-grounds on the plateau by paths which strike upward from several of the side-glens of the Tazgun valley. Passing one of these glens, Mahmud-terek-yilga (the Glen of Mahmud's Poplar), I caught a glimpse at its head of a mountain covered with glittering snow. The air was pure and mild; so we pitched upon a shallow grotto in the syenite cliffs of Tokai-bashi for our camping-ground for the night.

Our camp was near the junction of two glens, Käptch-kol and Keng-kol. We struck up the latter; and as the torrents which coursed down both glens contributed about equal volumes to the river Tazgun, we now had to deal with a current only half the volume of that in the Tazgun valley. The glen of Keng-kol (the Broad Glen) did indeed contract as we
advanced; yet not so much but that there was space for several small meadows and pasture-grounds, frequented in summer by the Kipchak Kirghiz, who spend the winter lower down near the entrance to the valley. There were still a few isolated poplar-trees to be seen, for the vegetation was by no means meagre. The cliffs on each side of the glen consisted of syenite, porphyry, and black clay-slates, very much weathered, so much so indeed that in many places the bottom of the glen was completely covered by their débris. Otherwise the surface was soft soil.

At the aul of Keng-kol (11,000 feet) we were hospitably received by the aksakal (white-beard—i.e., chieftain) of the place, Abdu Mohammed, who gave up to me a portion of his own large yurt. We were detained at that place all day long on June 29th by violent showers of rain. The aul (tent-village) numbered twenty-one inhabitants, who spend there the three summer months of every year. Every evening the sheep and goats are driven to the aul to be milked; and are then shut up for the night in large fenced-in folds, guarded by fierce, long-haired dogs, to protect them from the wolves, which abound in that district. Whenever the dogs bark during the night a man hurries out towards the point where danger threatens, and by loud shouts endeavors to frighten the wolves away.

About noon a troop of men and women, dressed in holiday attire, came to the aul. They were on their way to the funeral of a boy in another aul lower down the valley. But some of them thought they would have a pleasanter time of it with us; and therefore stayed behind when their companions continued their journey. The company in my host's yurt was thus augmented by a dozen men, eight women, and seven children; and yet it was so roomy that we were not at all crowded. They were a lively set of people too, as a single picture will show. One man played the dutara (a two-stringed instrument of music); others sat about in little groups chatting. Some of the women, wearing enormous white head-dresses, ate bread and drank milk out of big wooden bowls. The children ran about and played. Our hostess was engaged in suckling her infant, a boy of about one
month old, leaning over his cradle to do so. The head of the family, old Abdu Mohammed, was the only individual who heeded the obligations of religion. He alone punctually observed the hours of prayer. None of the rest heeded them, but went on laughing and talking. There was the usual fire in the middle of the tent.

There was a good deal of humus and luxuriant herbage in the vicinity of the aul of Keng-kol, which was situated on the right bank of the stream. Immediately opposite to it, on the other side of the river, the bare rock cropped out in several places, consisting of clay-slates, alternating with a hard species of crystalline rock. The stream was at that time very insignificant; but the water was limpid, cold, and wholesome. In consequence of the recent rains, it was expected to rise soon to flood-level. The rainy season in that valley is coincident with May and June. Snow never falls except during the four winter months.

During the following days the ground became more broken and variable as well as wilder in character. Our route led out of the glen of Keng-kol into that of the Charlung, one of the tributaries of the Yarkand-daria. The pass connecting the two glens, like the two streams which flowed down from it in opposite directions, was called Kashka-su (the Many-colored Stream).

The little glen, which led up to the pass out of the Keng-kol valley, was extremely narrow, and rose at a steep angle. Owing to the great variations in the contour of the ground, I was obliged to take frequent measurements, in order to calculate our rate of marching and the distance marched. I found that, to ascend this glen, it took the pack-horses 4½ minutes to climb a quarter of a mile; and our day's march varied from 12 to 20 miles.

Although the black clay-slates cropped out visibly on both sides of the pass, on its culminating ridge there was not a trace of bare rock to be seen. The contours were, on the contrary, gently rounded off, the ground being covered with humus and luxuriant grass. At the time of my visit the latter was being grazed by large troops of horses belonging to
Sart merchants of Yarkand. The top of the pass afforded a splendid view of the deep-cut glens on both sides of the ridge, and of the snow-clad mountain-peaks in the far distance. The two streams which carried off the rainfall on each side of the watershed were about the same size. The feeders of both have eaten their way deeply into the flanks of the mountain, giving origin to many fan-shaped corries or gullies. The altitude of the pass was 13,000 feet above sea-level.

The path on the other side of the pass went straight downward, due south, towards the little aul of Koi-yolli (the Sheep-Path), consisting of six yurts, and so on to the karaol (watch-house) of Chihil-gumbez, a collection of stone and clay houses, stables, and yurts, besides a cemetery with a small chapel crowned with a cupola (gumbez). The inhabitants numbered only 13; and, like those of Keng-kol and Charlung, were Kipchak Kirghiz. The watch-house stood at the junction of three routes—those, namely, which come from Yarkand, from Keng-kol, and from Tagharma. A great many caravans and mounted men pass the place in the course of the year; indeed, I was told that the daily average of travellers was ten.

On July 1st we went over another pass, Ter-art (the Leather Pass), 13,250 feet, which closely resembled Kashkasu, except that the ascent and descent were even steeper. On the crest of the ridge the clay-slates stood out almost vertically in sharp fantastically shaped snags, flakes, and slabs. The spaces which intervened between the separate summits were frequently filled with mounds of detritus, which in their fall had exposed the planes of fracture of the inky-black argillaceous rocks. The descent on the other side was through a remarkably wild and striking ravine, traversed by a little rippling mountain-brook. Its sides were walled in by bare clay-slates; the bottom littered with huge masses of conglomerate, consisting of broken schists and white, coarse-grained syenite, embedded in yellow soil and sand, through which the torrent had carved out a deep channel for itself. Rushes and grass grew between the blocks of syenite. Another rivulet came down a side glen,
Borumsal, greatly quickening the vivacity of the Ter-art. Eventually the glen widened out; but after it did so, became every now and again almost blocked by terraced ridges of conglomerate several hundred feet thick. About three o'clock in the afternoon the southwest wind brought up a slight mist; this gradually thickened, and towards evening changed into a drizzling rain, which searched through everything, so that we were glad to find shelter in the aul of Pasrabat (the Low-lying Station), a place of three yurts 9460 feet above sea-level, inhabited by 13 Kessek Kirghiz.

But although so small, Pasrabat is so far important that it lies on the road connecting Kashgar, Yanghi-hissar, and Yarkand with Tash-kurgan, the principal Chinese stronghold in the Eastern Pamirs. For this reason it boasts of a small fort. The stream of Pasrabat runs into the Taghdumbash-su, which in its turn becomes an affluent of the Yarkand-daria.

Several times during the night I was awakened by the rain, which beat with a loud pattering upon the roof of the tent, and occasionally came through upon me, sprinkling me all over. The next morning the neighboring glens were again shrouded in thick mist. As soon as I got up I had an animated discussion with the Kirghiz, as to whether we should go on or stay where we were. They advised me to push on, being afraid that if the rain continued, though only one day longer, the mountain-torrents would rise so high as to be impassable. But my karakesh (owner of horses) was of opinion that the day was already too far advanced; we should not get to the biggest stream we had to cross between Pasrabat and our next station until after dark. Accordingly we decided to remain where we were.

This gave me an opportunity to take certain observations as to the volume of water carried down by the stream. By this the rainfall of the past day or two had begun to come down from the mountains, and the flood had already risen very considerably. Yesterday it was clear as crystal; today it was gray and muddy, and boiled along tumultuously among the stones. The breadth of the torrent increased to
53 feet, its depth to a maximum of 21.6 inches, its volume to 250 cubic feet in the second. At mid-day the temperature of the water was 50.9° Fahr. (10.5° C.). The variations which the current underwent during the course of the day will show how sensitive these mountain-brooks are to precipitation and temperature. By three o'clock in the afternoon the water had sunk .6 of an inch. This was owing to the fact that the highest rills which fed the stream froze during the night. But at five o'clock, by which time that morning's rains had got down to Pasrabat, the stream rose 1.38 of an inch. At seven o'clock it was 6.3 inches above the height of my first measurement; but in consequence of the steepness of the banks, the breadth had not increased more than about 3½ feet. The noisy brawling of the current, now of a brownish-gray color, sounded duller and heavier than in the earlier part of the day; for the stones and pieces of rock which protruded above the surface in the morning, checking the flow of the water, and causing it to splash up into the air, were now entirely submerged. Now that the outpour of the rains had got down as far as our camp, the volume was more than twice as great as in the morning, being 495 cubic feet in the second. At the same time the temperature was 49.5° Fahr. (9.7° C.). By eight o'clock the current had risen yet another .8 of an inch, and the temperature had fallen to 48.9° Fahr. (9.4° C.); another hour later the figures were .4 of an inch and 48.4° Fahr. (9.1° C.) respectively. All this goes to show that, as the volume of the water increased, it took a proportionally longer time for it to attain to the temperature which prevailed in the lower valleys.

At seven o'clock next morning the flood stood at about the same level as when I took my first observation; but during the night the temperature had fallen to 45.5° Fahr. (7.5° C.).

That day, July 3d, we had an unusually trying day's march. At first the glen was of medium breadth, and tolerably rich in grass, bushes, and willow-trees. Every now and again the conglomerates stretched pretty far up the mountain-sides, forming rampart-like walls, with covered galleries,
excavations, and grottos, but so precipitous that they looked as if every moment they would crash down into the glen. But after we passed the end of the side glen of Yam-bulak (the Grotto Spring) the main glen became very narrow, and its bottom choked with disintegrated débris. The torrent too dwindled a good deal, having lost two or three of its principal contributaries.

At Yam-bulak there was a hut by the way-side, and our eyes were charmed by the sight of the fresh, white flowers of the wild-rose. Beyond that point the glen was called Tenghi-tar, a very suitable name, although a pleonasm; for tar means "narrow" and tenghi "narrow glen-path." Here the coarse crystalline rocks predominated again; the sharp pinnacles and needles of the mountains in the argillaceous formation being replaced by more rounded domes and flattened tops. The glen was, as I have said, choked with débris, nevertheless vegetation thrived; the beech, wild-rose, and hawthorn being the most noticeable species.

Finally the glen contracted to a wedge-shaped trough, carved, as it were, out of the mountain-side. The path grew more and more difficult. We wound a hundred, a thousand times in and out round the fallen bowlders; and every now and again crossed the stream, its water once more clear and limpid. The glen was closed by an upheaval of gneiss, overlain sporadically by conglomerate strata. At a spot appropriately named Issyk-bulak, a triple hot spring gushed out from beneath a large block of conglomerate. The water, though not particularly copious, burst forth with a splash, and had a disagreeable sulphurous odor. It colored the stones upon which it fell brown and yellow; nevertheless, luxuriant green grass and other vegetation grew only a little way lower down. A column of steam rose above the springs, the water having a temperature of 127° Fahr. (52.8° C.) at the point where it emerged. The torrent, which raced down the glen, passed within eight yards of the springs. Ten yards above them its water was 54.5° (12.5° C.); but ten yards below them as much as 66.2° (19° C.).

Two minutes farther up the glen we discovered another
hot spring, very similar to the first, except that it was much smaller and its temperature 125° (51.7° C.). Above this spring the temperature of the glen torrent was only 54° (12.2° C.). My reason for quoting these trivial details of varying temperature in the stream is this. In winter the torrent never freezes below the hot springs all the way to Yambulak; while above them it always freezes.

Above the hot springs the glen contracted still more, and at length became a veritable ravine, only a few yards wide, the air cold and clammy as in a cellar, the rocky sides perpendicular, the stream filling up nearly its entire width dash­ing itself against the bowlders, flashing up above them in spray, plunging down small waterfalls. Near the entrance to the gorge lay the carcass of a dead horse, a warning to us to keep a watchful eye upon our own animals. And indeed there was need of it; for the ascent was painfully steep. But, as some compensation for that, the scenery was grand and wild. When we shouted, and we had to shout pretty loud to make ourselves heard, the echoes were dashed from side to side against the hollow cliffs. Above our heads there was only a narrow strip of sky visible. Every minute almost the gorge appeared as if it would come to a sudden stop, the cliffs seemed to meet and join. But no; it was only a fresh bend in the glen. We turned the corner, and lo! another splendid prospect opening itself out before us. And so this remarkably picturesque gorge went winding on, a narrow, sinuous gap excavated through the granite and quartzite rocks by the furious little torrent.

It was anything but an easy task to get our heavily laden pack-horses safe and sound through this long and difficult defile. For the greater part of the way we were obliged to ride up the bed of the torrent; and the tossing spray prevented us from watching the horses' feet. The inhabitants of the district had filled up the lowest pools with blocks of stone, large and small, thus making a sort of bridge or causeway. But at the best, these pieces of road-making were only so many new pitfalls of peril. The water had scooped out and carried away all the smaller, softer materials which had
been used to fill up the spaces between the bigger blocks; so that the causeways were now full of gaping holes, into which the horses frequently slipped and nearly broke their legs. Two or three of them actually fell off the causeways. Then away dashed the men into the stream to get them up again and rescue the cases and bales. All the way up my heart was in my mouth, for fear the horse I rode should give me an unwelcome bath. One spot in particular I recollect quite well. It was a very ugly place. A number of big round stones, with brightly polished, slippery surfaces, formed a kind of sill stretching obliquely across the bed of the torrent. A couple of men climbed up each on to a large boulder, and, seizing hold of the packing-cases and hauling away at them, helped the horses to clamber over.

At length, however, the path grew better. For at a spot called Tarning-bashi-moynak (the Pass at the Head of the Gorge) the glen was divided into two widely differing halves by a mountain-spur, which projected from the left. At its foot the torrent shot down to such a great depth that it was quite impossible to advance. We therefore climbed up and over the crest of the projecting spur, getting a magnificent view of the glen both ways, up and down, from the top. In striking contrast to the deep narrow gorge we had left, the glen ahead of us widened out into a broad, level valley, with gently sloping hill-sides and rounded eminences above them, plenty of vegetation, and a practicable path alongside the stream. A little higher up the rock formation on the left hand was again conglomerates; but on the right syenite, its surface so smoothly polished that I could not help fancying it had been worn away by water or glacial ice. Upon looking back, I perceived that the spur before mentioned was overtopped by a double-crested mountain, covered with perpetual snow. The Kirghiz called it Kara-yilga-bashi (the Head of the Black Valley). The portion of the glen above Tarning-bashi-moynak was called Tar-bashi (the Head of the Narrow Gorge), showing how sharply the Kirghiz are wont to discriminate between regions of dissimilar formation and character.
CATTLE AND SHEEP NEAR RARAVELA

[Image: A picture showing cattle and sheep near Raravela.]
By this we had nearly reached our camping-place for the night, Bulak-bashi (the Head of the Springs). The yuz-bashi (chieftain) of the place, an old beg, received us with the friendliest courtesy, and at once ordered a comfortable yurt to be got ready for our accommodation. At this place I observed a very remarkable phenomenon in connection with the stream of Tar-bashi. When we arrived, its current was low, and perfectly limpid; but at half-past three in the afternoon we suddenly heard a distant rumbling sound. The noise grew rapidly louder and louder. Then, foaming like a white surf-roller, down rushed the flood, born of the melted snow and ice in the higher altitudes, and of the recent rainfall in the lower. How lucky we had got through the gorge! Otherwise the whole caravan would infallibly have been swept away. But we only just cleared it in time! This was what the Kirghiz were anxious about at Charlung.

Since leaving Ighiz-yar we had crossed over the broad, far-stretching easterly spurs of the Mustagh range—a confused jumble of crests, peaks, and intervening valleys. From the valley of Keng-kol we had crossed over into the glen of Charlung, and from the glen of Charlung into the glen of Pasrabat, climbing up and down two passes of relatively minor significance on the way. At the place where the Tenghi-tar, one of the head-feeders of the stream which descended the glen of Pasrabat, broke obliquely through the crystalline mountain-chain, we had traversed an extraordinarily romantic gorge, which, having cut out its channel to a great depth, recalled the characteristics of the typical Peripheral region of which I have before spoken. Above the gorge the glen had widened out; the enclosing mountains assuming at the same time a gentler inclination and falling to a relatively lower elevation—a typical Transitional region in miniature. We now began to enter upon a typical high-plateau or Central region. I had ascertained that the volume of water in the mountain-streams generally increased towards four o’clock in the afternoon, and went on increasing until well on in the evening; proving that the snows which are melted by the mid-day sun do not get down to the glens until several hours
later. The streams were lowest about noon and a couple of hours afterwards, and attained their maximum during the night. But these general variations are subject to irregular oscillations, caused by the irregularity of the rainfall. It is these deluge-like floods which do the real work of erosion, a fact evidenced further by their thick, muddy-looking water. During the early part of the day the stream gradually deposited the detritus it caught up on its way down, and so became clear again.

Bulak-bashi was a place of six yurts, inhabited by thirty Kessek Kirghiz. They are stationary there all the year round, being commissioned to keep karaol (watch) upon the passes, to lodge and help Chinese travellers journeying over them, and to carry to and fro the Chinese post. Both at Bulak-bashi and at Pasrabat there were therefore three postmen stationed, each three being paid 25 chäreck (nearly 6 bushels) of wheat from Yanghi-hissar and 20 chäreck (nearly 5 bushels) from Tash-kurgan. Since leaving Yanghi-hissar we had passed six watch-houses—Ighiz-yar, Tokai-bashi, Kashka-subsashi, Chihil-gumbez, Pasrabat, and Bulak-bashi. Two of the men belonging to the aul last named were looked upon as bais—i.e., rich men; each owned about one thousand sheep, two hundred goats, one hundred yaks, thirty horses, and the same number of camels. The winters were said to be very cold in that glen; and while the head-feeders of the stream remain frozen, which they usually do for two or three months, the stream itself dries up. Snow falls during five months in the year, but seldom lies more than knee-deep. The rainy season, properly so-called, begins in the middle of May; there is rainfall also in the summer and autumn.

July 5th was one of our heavy days: we crossed over the main chain of the Mus-tagh system. The night before was still and sparkling bright. The thermometer dropped below freezing-point; and even at a late hour in the morning the edges of the brooks and pools of stagnant water were fringed with ice. The upper extremity of the glen widened out more and more. The mountains which fenced it in, outliers of the principal crests we had on both sides of us, grew flatter and
flatter. The gneiss rarely cropped out in continuous masses. The little brooks came rippling down the glens on both sides of the valley one after the other, as though emerging from the side wings of a stage. The valley stream, being at this point nearer its sources, attained its greatest volume about noon, and its waters were not yet muddy. As we passed several of these small side glens, we saw at their upper ends the main mountain-ranges, clothed with glittering mantles of snow. The only places immediately overlooking the valley itself on which snow still remained were the slopes which faced north, northeast, and northwest. The floor of the valley was in great part a carpet of luxuriant herbage, on which several herds of yaks were grazing, and in part was littered with débris and fragments of rock from the mountains above.

A short time afterwards we came to an oval, caldron-shaped valley or cirque, surrounded by a ring of mountains partly covered with snow. Immediately ahead of us rose a ridge of considerable altitude; and soon, to the north, we perceived the pass of Yanghi-davan (the New Pass), which leads to Yam-bulak, but is only used when the Tenghi-tar route is impassable. In the middle of that open, dish-shaped valley lay two small lakes, each about 500 yards long. They are fed by the melting of the snows around, and their waters, clear as crystal, are the source of the Chichekli-su, a little brook which runs down into the glen of Shindeh, and so on to Pasrabat and the Yarkand-daria. The name Chichekli is likewise given to the low saddle which serves as the watershed between the glen of Tar-bashi and the glen of Chichekli.

From the caldron-shaped portion of the glen the track swung up a relatively easy slope to the pass (15,065 feet) of Kityick-kok-moynak (the Little Green Pass). A little farther on was another pass, the Katta-kok-moynak (the Big Green Pass), equally easy, although it attained 15,540 feet in altitude. Between the two a small fan-shaped valley gathered up a number of mountain-rills, and out of them formed an affluent to the Chichekli-su. Both passes were on the top of low, rounded domes, where, except for a few scattered patches of gneiss, the bare rock was not visible, being effectually covered with humus.
CHAPTER XXIII

THE PLAIN OF TAGHARMA

The passes just mentioned formed the culminating points of the route. On the other side—that is, towards the west—the path descended very abruptly, going down alongside a little brook, which, like the Tenghi-tar on the east side, has excavated a deep, narrow passage through the solid rock. It cost us an hour's hard work to get down. The more sheltered spots harbored patches of ice and snow, across which we sometimes rode. The glen, which was called Därshett, gradually widened out, and at last we perceived the end of it—a rocky gateway giving access to a broad plain. Against the far-off background of the plain stood out in clear relief a bluish-white mountain-wall, denticulated at the top. It was the Mus-tagh chain. But we still had a detached spur of no great elevation to surmount. On the other side of it there burst upon our view the wide, level plain of Tagharma, deliciously green, and bathed in the brilliant afternoon sunshine. On our right lay the Chinese stronghold of Beshkurgan (the Five Forts), surrounded by a rectangular wall, and garrisoned, it was said, by a *lanza* or troop of 120 men. As soon as we had crossed the river Tagharma, we were met by the begs and yuz-bashis. They greeted us politely, and told me they had been directed by letters from the Dao Tai to place themselves at my disposal.

The plain of Tagharma is in reality an elevated steppe, carpeted with the greenest of green grass, and abundantly watered by running streams, which gather their water from the snow-fields on the mountain summits around, and unite to form the Kara-su (the Black Water), a tolerably large stream, or the Tagharma-su (the Apple-Mountain Water),...
THE PLAIN OF TAGHARMA

which effects a junction with the Yarkand-daria by way of Tash-kurgan. A large number of Kirghiz dwelt on the plain; the yeylaus (summer camps) of the district enjoyed an excellent repute.

July 6th was a day of rest. The heat was very oppressive at noon, the thermometer registering 89.6° Fahr. (32° C.) inside the tent, and 127.4° (53° C.) outside in the sandy soil. The black bulb insolation thermometer rose as high as 160.4° (71.3° C.). Not only does the plain itself, in virtue of its great extent, absorb an enormous quantity of heat, it is also open towards the south and slopes in that direction. The sky was as pure as crystal, except that a very few light, fleecy clouds hovered about the mountain-tops. The atmosphere trembled and vibrated with the heat that was radiated upward. A fine gossamer-like haze hung over the surface of the ground. Our camp was situated at an altitude of 10,620 feet.

The rainfall in the plain of Tagharma presents a strong contrast to the rainfall in the glens by which we had penetrated through the mountain-spurs of the Mus-tagh. In the former the quantity of rain which falls is inconsiderable. When it does rain, it comes in gusts lasting about a couple of hours at a time. The season for it to come is the spring. The amount of snowfall is also small, and is spread over barely three months. The winters are extremely cold; but, owing to the clear, dry atmosphere, the newly fallen snow disappears very quickly.

The great amount of radiation, and the plenteous natural irrigation, foster vegetation to an extraordinary degree. The plain was carpeted with luxuriant grass, thick in bottom growth, diversified by moist, verdant tussocks, and enlivened by the music of running brooks and springs. Herds of grazing yaks and sheep roamed all over it; and here and there the eye caught glimpses of the cosey Kirghiz auls. In the valleys farther east we had experienced frost at night. On the plain of Tagharma even the nights were warm. And not warm only: they were also silent and tranquil—not even the soft whispers of the brooks reached our ears. But the
mosquitoes were very troublesome, keeping us awake a long

The Kirghiz, who inhabit the plain of Tagharma, remain there winter and summer alike. They counted eighty yurts, fifty being occupied by Kessek Kirghiz and thirty by Teit Kirghiz. On an average there were four persons to each yurt. Besides these, there were twenty families of Tajiks at Besh-kurgan and Sarala. But the majority of the Kirghiz were poor. All together, they owned scarcely more than 2000 sheep and 200 yaks; several of them possessed barely half a dozen sheep, some none at all. On the other hand, the Tajiks were reputed rich. These people are not nomads, but permanent dwellers in houses of clay. Their chief occupation is agriculture; their principal crops being wheat and barley. At the same time they breed sheep and other domestic flocks, a single individual frequently owning as many as one thousand sheep. The Kirghiz say they were much better off a score of years ago, when Yakub Beg was ruler in Kashgar. In his time they enjoyed much greater freedom, and were allowed to drive their flocks and herds westward to the grazing-grounds on the Pamirs; whereas now the Chinese jealously forbid them to cross the Russian frontier. Our host, Mohammed Yussuf, was beg of all the Kirghiz of Tagharma.

Wild animals were numerous in that region, and embraced the wild goat, hare, and other rodents, the wolf and fox, the partridge, wild duck, wild geese, and several species of Nata-
tores and Grallatores.

On July 7th we continued our journey, aiming west and northwest for the foot of the Mus-tagh-ata massiv, having on our right hand that part of it which is called Kara-korum (the Black Stony Region). Our route lay alongside the Kara-su, which derives its waters from glacial streams and natural springs combined, and, after gathering up the drainage of the plain of Tagharma, effects a junction with the Yarkand-daria. We passed the ends of several old moraines and a great many erratic blocks of gneiss, proving that glacial action was once far more prevalent in this region than it is at the present time.

In the middle of the plain, at a place called Gedyäck (the
Violin), there was a picturesque tu—that is, a mound of stones, with a branch of a birch-tree fixed in it and hung round with the skulls and horns of wild sheep and tekkes (wild goats), the tails of horses and yaks, pieces of white rag, and other religious offerings of the Kirghiz. Several smaller birch poles were stuck into the stone heap round about the larger one; and the whole vicinity was littered with horses' and antelopes' skulls. Immediately in front of the mound was a fair-sized block of gneiss which had been hollowed out by water or ice. The cavity was black with smoke; and the explanation given me was that pilgrims were in the habit of leaving in it offerings of lighted candles or oil lamps, when they came to the tu to repeat their prayers. In that same spot too a little side glen, called Kayindeh-masar (the Holy Tomb of the Birch), opened upon the plain from the west. The name is derived from the burial-place of an important saint, situated in the middle of a little grove of birch-trees. It is also one of the principal burial-places of the Kirghiz; a legend running to the effect that it was the resting-place of the hero Khan Khoja in one of his warlike excursions. The tu has been built in the middle of the public road, as an intimation that there is a burial-place in the vicinity; also as a sign that the great saints' masar of Mus-tagh-ata rears aloft its snow-white head immediately above it.

Away to the right we now saw for the first time several of the glaciers with which we were to become more intimately acquainted during the course of the summer.

On July 8th there remained but one day's march between us and Su-bashi, our first goal. After that we proposed to surmount the easy pass of Ullug-rabat (the Large Station), which divides the valley of the Sarik-kol into two portions—a northern, which sends off its drainage waters to the Ghez, and a southern, which drains into the Yarkand-daria. It was a splendid day. The mountain-peaks on our right stood out bold and clear-cut, their glittering snow-fields contrasting sharply against the limpid, light-blue sky; the only flaw upon its pearly purity being a few light feathery clouds far off towards the south. In a word, the still, soothing peace of
the Sabbath rested upon the whole face of the country, so that it was pure joy simply to sit still in the saddle and quietly observe it.

We reached the summit of the pass at one o'clock, and from a cairn of stones there (13,875 feet altitude) were able to get a general survey of our surroundings. The large glaciers radiated westward from the central névé, the ice at their fractured edges and in the crevasses glistening a beautiful translucent blue. The spaces between the glacial arms were filled up with stupendous crags and pinnacles of rock, coal-black in color below the snow-line. We were too close in to the mountain to be able to see the majestic dome which crowns it. That can only be seen to advantage a long way west of the place in which we were then; for instance, its noble proportions can be seen clearly and distinctly from the Murghab. There was an almost equally fine view to the north, where the valley of Sarik-kol inclined a little towards the northwest, so that the Mus-tagh chain shut in the view on that side. The dominating feature on the south and west was the Sarik-kol chain, curving in towards the Pamirs; but in certain places it was obscured by the undulating country between—a country diversified by knolls of sand, gravel débris, and earth, gradually merging one into the other, overgrown with scanty patches of tussock grass. In the immediate foreground, on the north, was the tolerably level plain of Subashi, having at its upper end the karaol (watch-house) of Irik-yak, garrisoned by seven Kirghiz, whose duty it was to watch the two passes Mus-kurau and Tock-terek. The latter possessed two approaches, in one of which, that called Karatock-terek, there was an isolated hill of fine-grained granite, which has been subjected to great pressure, and showed a fluidal structure, interspersed with veins of pegmatite or coarse-grained granite. The glacial current, which came down at the same point and flowed into the Tock-terek, was very turbid, owing to the quantity of detritus and glacial mud it held in suspension. It had also a bigger volume than the stream it joined. The latter, not being of glacial origin, was clear.
At the bottom of the northern slope of Ullug-rabat we came upon an aul of nine yurts, and shortly after that upon another of five, both standing on the brink of the stream, and both owning large flocks of sheep pasturing in the neighborhood. At the first aul (tent-village) I was met by Togdasin Beg, who gave me a flattering welcome. He led me to his own aul, where the yurt I occupied before still stood in the same place; at the moment, however, it was occupied by nearly a dozen dirty, ill-smelling Chinese soldiers, who gaped their fill at me, shouted, laughed, and touched and poked their fingers at my several packages. Then came the secretary of Shi Darin, the commandant, requesting to see my passport. He saw it, and was satisfied. Thereupon I invited him to partake of tea. He did so, and made himself tolerably agreeable.

Togdasin Beg asserted that the garrison numbered sixty-six men, but I question whether there were more than a dozen; at any rate, I never saw more, and if there had been more, they would certainly have come to my yurt, for their curiosity was insatiable. Togdasin had simply counted the horses, and then jumped to the conclusion that there was a corresponding number of men. But in that part of the world the Chinese have a most extraordinary way of enumerating their troops. They are not content with counting the soldiers only, but reckon in also their horses, rifles, shoes, breeches, and so forth; so that the resultant total is a long way above what it ought to be. They apparently go on the supposition that the rifle is at least as valuable as the man; and by an analogous train of reasoning they argue that a man is of little use if he has to travel on foot, that he cannot go about naked, and so on. Hence they count in the whole kit, rifle, breeches, and all. By this peculiar process of arithmetic they fancy they deceive the credulous Kirghiz, as well as the Russians on the other side of the frontier, into believing that their garrisons are very much stronger than they are in reality. Woe to the Kirghiz who should presume to count the soldiers of the Celestial Empire by the same common rule as that by which he counts his sheep! A short time before my visit in that
quarter a Kirghiz yuz-bashi (chief of 100 men) was asked by Mi Darin, commandant of Tash-kurgan, how many men there were at Su-bashi. The chief replied, "Thirty." Thereupon Mi Darin wrote to his colleague, Shi Darin, asking if the statement was correct. Shi Darin promptly sent for the yuz-bashi, and beat him, asking him how he dared to count the garrison, or even presume to think about its size.

The Chinese troops at Su-bashi were armed with half a dozen English rifles and an equal number of Russian; except for these, their principal weapons were Chinese bows and lances. The European rifles were in bad condition, not having been cared for. I myself saw two or three of the troops stick their rifle-barrels downward into a muddy brook and use them as jumping-poles to get across with. Less than a dozen of their horses were really serviceable animals; the others were nothing better than sorry caravan horses. Drill, rifle-practice, or other military duties are seldom performed. Togdasin told me that the entire garrison, the commandant included, spend days and days smoking opium, gambling, eating, drinking, and sleeping. These frontier garrisons are relieved at irregular intervals from Kashgar, Yarkand, and Yanghi-hissar; and three or four times a year are supplied with provisions by means of caravans from the same towns. The Kirghiz pay no taxes to them, but are under the obligation to supply half a dozen sheep every month, for which the Chinese pay at the rate of about one-half or one-third of their real value.
CHAPTER XXIV

AMONG THE KIRGHIZ

I gradually learned to have much sympathy with the Kirghiz. I lived among them for four months a solitary European, and yet never once, during all that time, felt lonely. The friendship and hospitality they showed me never wavered. They shared with willing pleasure in the hardships of my nomad existence; and some of them were at my side in every sort of weather, took part in all my excursions, all my mountain ascents, all my expeditions across and to the glaciers. In fact, I won a certain measure of popularity in the valley of Sarik-kol. The people came from far and near to visit me at my camping-stations, bringing me presents of sheep, wild ducks, partridges, bread, yaks' milk and cream. And almost invariably, when I drew near to an aul, I was met by a troop of horsemen and escorted to the beg's yurt, given the place of honor near the fire, and offered dastarkhan (refreshments).

But the little ones entertained me most. Many of them were such sweet, pretty little things, as they ran about with a colored cap on their head, and not a stitch else on them, unless it were their father's huge skin boots, that I sometimes found it hard to tear myself away from them. At the first glance of such a strange apparition as my spectacles and my strange clothes they generally fled and hid behind their mothers, or concealed themselves in their favorite hiding-places in the yurt; but the offer of a lump of sugar quickly won their confidence. On their part, too, the Kirghiz soon understood that I regarded them as friends, and felt at home among them. I lived constantly in their yurts, ate the same food they did, rode their yaks, wandered from district to dis-
trect as they did—in a word, became to all intents and pur-
poses a full-blooded Kirghiz. They often used to say to me:
“Siz indi Kirghiz bo oldiniz” (You have become a Kirghiz
now).

Three months earlier I had experienced nothing but kind-
ness at the hands of Togdasin Beg, chief of the Kirghiz of
Sarik-kol, and their intermediary with Jan Darin at Bulun-kul.
On this the occasion of my second visit he welcomed me like
an old acquaintance, showing me every attention, and honor-
ing me with the choicest delicacies of the Kirghiz cuisine.
He asserted that a day or two’s rest in his yurt was absolutely
indispensable for me before I went on to visit his neighbor,
Mus-tagh-ata, a chieftain who from a sublimer tent commands
authority over a greater race of subjects. I was very glad to
accept his insistent hospitality, for I wanted to engage men
and yaks for the summer. For July 11th my host planned a
grand surprise. Being anxious to show me the full glory of
Su-bashi and the neighboring yeylaus (summer camps), he
made arrangements for a baiga, or “mounted games”; which,
although as but a drop in the ocean when compared with a
parade of imperial troops, nevertheless, for romantic and
fascinating effects, probably exceeded anything household
troops can produce.

During the course of the morning the flower of the man-
hood in the district rode towards the higher-lying auls in the
plain of Irik-yak, where the games were to take place. On
they rode, troop after troop. Towards noon I too went in
the same direction, escorted by a body-guard of forty-two
Kirghiz wearing their best khalats. And what varieties of
color! Khalats of every conceivable shade, check girdles,
daggers and knives, baldrics with jingling vade-mecums—a
piece of steel for striking fire, an awl, tobacco-pouch, etc.,
head-coverings of every variety, mostly, however, small, round,
black, close-fitting caps (calottes), embroidered in red and
yellow and blue. Closely surrounded by this gay holiday
throng, I involuntarily felt, in my plain gray travelling-suit,
like a dervish among better folk. The sole ornament which
gave a little brightness to my outward man was my compass
KIRGHIZ MOTHER WITH HER BOYS
chain, which, without much stretch of the imagination, the Kirghiz might easily have taken to be pure gold. Of the elders none made such a brave show as Togdasin Beg and Togda Mohammed Beg, chieftain of the Kirghiz who dwelt on the east side of Mus-tagh-ata. The former wore an orange yellow gala khalat, edged with gold brocade, which I had brought him as a present from Kashgar the day before. Chance seemed to have played the chief part in determining the choice of attire in the case of the latter; for the colors were decidedly loud—a long navy-blue khalat, girdled by a broad light-blue sash, and a violet bag-cap with a gold ribbon round it. The wearer was a tall and strikingly typical Kirghiz, with oblique, narrow eyes, prominent cheek-bones, thin black beard and coarse mustaches, and rode a big coal-black horse of some foreign breed. Add to this the scimitar which dangled at his side in a black scabbard, and you have a picture of a true Asiatic Don Quixote.

We drew near to the upper villages, in and about which the bands of horsemen grew thicker and thicker. I was conducted to the place of honor in the middle of the plain, where I found awaiting me Khoat Beg, a fine old chieftain, one hundred and eleven years old, surrounded by five of his sons—gray old men they were, too—and a score of other horsemen. Although the aged patriarch's back was a little bent under the burden of his years, he nevertheless sat his saddle with as firm a seat and as proud a bearing as any among them. He wore a violet khalat, lined with fur, brown skin boots, and a brown turban. He had striking features—a large Roman nose, short white beard extending under the chin, and deep-sunk, gray eyes, which seemed to live more in the memories of the past than in the actual observations of the present. His people manifested the greatest veneration towards him, some of the begs hastening to throw themselves from their horses in order to pay their respects to him—all which he took with the imperturbable majesty of a god. The old man had formerly been Chong Beg (principal chieftain) over the Sarik-kol Kirghiz, a dignity which had passed from father to son in his family through seven generations before
him, partly as independent chiefs, partly under foreign domi-
nation.

When not absorbed in his own meditations, the old man
was very talkative, and plainly enjoyed telling what he could
remember of past times and his own family circumstances.

He had seven sons and five daughters, forty-three grand-
children, and sixteen great-grandchildren. Nearly all of them

A KIRGHIZ BAIGA

lived together in one community, a large aul (tent-village),
which in summer was pitched beside Lake Kara-kul, and in
winter near Bassyk-kul. His eldest son, Oshur Beg, an un-
usually facetious old man, who gradually attached himself to
me, told me that his father, Khoat Beg, in the course of his
long life, had had four Kirghiz wives, two of whom still lived,
old women of ninety, besides one hundred Sart wives, whom
he bought at different times in Kashgar, and whom he suc-
cessively discarded when he grew tired of them.

Khoat Beg took such a strong fancy to my spectacles that
he asked me to give him them; but as I could not do without
them I told him that, as he had managed to get along without
such things for one hundred and eleven years, I thought he
might do without them a little bit longer. I afterwards made him presents of cloth, caps, and handkerchiefs. Later on in the autumn the old chief was to go with one of his sons to Yanghi-hissar, climbing a pass which came within about 350 feet of the altitude of Mont Blanc. He was going to look at some land he owned there, as well as to indulge in a little merrymaking before the beginning of the long winter sleep.

A he-goat, in the literal sense of the word a scape-goat, was dragged in front of us. A Kirghiz sliced the animal’s head off with a single sweep of his knife, and let the blood flow until it ceased of itself. The carcass was, so to speak, the prize of the subsequent mimic warfare, the object of the contestants being to obtain possession of it.

A man came forward, caught up the sheep across his horse, and rode away with it. We waited a few minutes. Then we saw a troop of horsemen approaching at a furious gallop. Eighty horses’ hoofs rang on the hard ground—the grass gnawed off to the very roots by the sheep. The din was deafening. Wild, shrill shouts mingled with the jingling of the stirrups. On they came, enveloped in a cloud of dust. The foremost horseman flung the dead goat immediately in front of my horse’s fore-feet. Like a horde of Huns or a band of robbers they dashed past us, away across the plain. But wheeling smartly round, they were soon back again at the spot where we stood. The person who is thus honored with having the dead goat flung down before him is expected to testify his sense of the favor conferred in some tangible fashion, either by offering dastarkhan—which is what the Kirghiz usually do—or by the present of a handful of silver teneh (about 2½d. each), which was what I offered on this occasion.

We had barely time to draw back before the wild troop were upon us again. They flung themselves upon the still smoking carcass of the goat, and began to struggle for it as though they were fighting for a bagful of gold. All I could see of them was an indistinguishable confusion of horses and men enveloped in a cloud of dust. Some of the horses fell;
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others reared; others shied. Holding fast to their saddles, the riders leaned over towards the ground and snatched at the carcass as they swept past it. Some fell off and were nearly trampled under foot. Others clung underneath their horses' bellies. All grasped at the goat, tugging and hauling in the wildest disarray. The stragglers in the gallop, the new arrivals, all plunged headlong into the mêlée as though they would ride right over the mass of struggling horsemen. The men shouted. The horses whinnied. The dust rolled up in clouds. The contestants were allowed to practise certain artifices, such as pulling at another man's bridle, striking his horse over the nose with his whipstock to force him back, or even dragging one another out of the saddle.

The confusion was still worse confounded by a couple of champions who rode yaks with sharp horns. As these strong-necked animals pushed their way into the mêlée, they kept tickling the horses with their horns. This made the horses plunge and kick. The yaks, irritated by the kicks, thrust themselves in all the more stubbornly, till the contest began to look remarkably like a bull-fight. At length one of the men got a firm hold upon the goat's skin. He snatched the body up, clasped it tight between his knee and his saddle, and, bursting out of the throng, galloped away like the wind, describing a wide circle round the plain. Hard after him raced all the others. They disappeared from sight in the distance. Two or three minutes passed. Again the dull thud, thud of scores of horses' hoofs beating the ground. Straight down upon us they charged, oblivious of all hindrances. Another moment and they would have ridden over us and crushed us. We could not get out of their way. But when within two or three yards of us they wheeled sharply off, still going at a headlong pace. Once more the goat, now bruised into an indistinguishable mass of flesh, was flung at our feet, and then the struggle began again. This went on time after time.

I remarked to Khoat Beg that it was a good thing for us old folk to be safe outside the scrimmage. The old chief
laughed and said he fancied it must be wellnigh a hundred years since he was my age. I let him surmise that, in point of fact, he was nearly four times as old as I was.

Meanwhile Togdasin Beg became so excited by the mimic battle that he flung himself into the thick of it, and actually succeeded in gaining possession of the goat, and made his horse leap to one side. But getting a few Chinese hieroglyphics wealed across his face and nose in crimson, he became as quiet as a lamb, and, pulling his horse in beside ours, was content to sit still and remain an onlooker.

While the sport lasted most of the participators in it took off their khalats; indeed, some of them had the right side of the upper part of their body naked. With but very few exceptions every man came out of the contest with some sort of wound or scratch. Several of them had their faces so bloody that they rode off to the nearest brook to wash themselves. Nor were limping horses a rare sight. Caps and whips lay scattered all over the ground, and, the game at an end, I saw their owners wandering about over the battle-field looking for them. To tell the truth, it amazed me there were no serious mishaps. The reason of there being none is that from their earliest years the Kirghiz grow up on horseback, and so become habited—become skilled in all that belongs to horsemanship. This exciting and dangerous sport being concluded, the chief men present were invited to dastarkhan in the tent of the nearest beg. There we were entertained by the musicians of the neighborhood to a "chamber concert."

I had been obliged to dismiss my interpreter, the Taranchi Daod. He turned out to be a self-willed individual, and was not very accurate in his Chinese interpretations. Immediately after arriving at Su-bashi he added to these accomplishments by beginning to gamble with the Chinese, and in one day lost 40 tengeh. When, therefore, I sent back the kara-kesh (horse-owner) I hired at Kashgar, together with his horses, Daod received his orders to go with him. Thus of the men who left Kashgar with me the only one remaining
was my faithful Islam Bai. I now further engaged two trustworthy Kirghiz—namely, Yehim Bai and Mollah Islam, both of whom did excellent service during the journeys of the summer. In addition to these men, I employed others for shorter periods, as well as horses.
CHAPTER XXV

LITTLE KARA-KUL LAKE

I had chosen Little Kara-Kul lake as a suitable starting-point for my summer's cartographical labors and excursions, and accordingly journeyed thither on July 12th, to take possession of a yurt which had been put up by agreement on its southern shore.

On the way, near a few small auls, we witnessed another baiga, which was, if possible, more turbulent than the previous one. A rider came tearing past with a live goat on his saddle, chopped its head off at one blow, and with the dripping body dangling against his horse's side began to career wildly round the auls. Hard after him followed the rest. But the man had a first-rate horse, and it was not until the third round had been completed that he was caught, and the goat taken from him and dashed at my feet, raising a cloud of dust. One or two of the men got ugly tumbles, and a yuz-bashi scraped his face against the ground, but went on, however, scarred and bloody, as if nothing had happened. After taking dastarkhan (refreshments) we rode down to the lake, followed by the tumultuous troop, who still continued their mimic contest; and we were not sorry when soon afterwards they disappeared, and we were left to settle down in peace in our lonely tent.

This was pitched close to the shore, and in front of it spread the blue waters of the little lake, disappearing in the mist. Togdasin Beg and a few other friends came with us and were invited to tea. They stopped until it began to grow dark; and the festive feeling was enhanced by a musician, who performed on a stringed instrument called a kau-muss. The victor of the baiga came to see me, and pre-
sented me with a can of kumiss (fermented mare's-milk); it was sour and cold, and tasted excellent. The only drawback to our camping-ground was the myriads of mosquitoes swarming over the flat shore of the lake, which was intersected in all directions by pools and arms from the glacier stream.

July 13th was our first working-day by the lake. As we found that the south shore, permeated as it was by stagnant water, would probably be unhealthy for a lengthened stay, we decided to move to a suitable spot on the east side; and accordingly the next day the men packed up our goods and chattels, and we moved over. I myself took a couple of Kirghiz with me and mapped the outline of the lake with the plane-table and diopter, continuing the work till I reached the new camping-station. On the way I paid a short visit to old Khoat Beg, who was encamped there with six yurts.

At the southeast corner of the lake, in a narrow opening in the rock, we saw the Sarik-tumshuk-masar (the Saint's Grave on the Yellow Cape), decorated with yaks' tails and rags. A clear spring gushed out at the base of the steep schistose rocks with a temperature of 47.1° Fahr. (8.4° C).

Our steps now bore directly along the shore, where the ruptured ends of the stratified schistose rocks fell sheer into the lake, often necessitating our riding in the water.

On our left stretched the lake, its surface varying from a pretty light green to deep navy blue, blotched here and there with streaks of dirty yellow mud brought down by the streams. On the west shore rose the huge rocky wall of the Sarik-kol chain, with its out-jutting promontories just visible through the hazy atmosphere.

When I arrived at the new camp, everything was in order; the yurt had been put up close to the shore, on a little patch of luxuriant grass between it and the mountain, and there our horses were contentedly grazing.

Yolldash (the Travelling Companion), a wretched Kirghiz dog, which, like the late Yollchi, had joined our expedition as a volunteer, and was greatly valued by my men, had already made himself at home and was guarding the tent. When we first made his acquaintance, he was travelling with
some Chinese horsemen, who had visibly reduced him to the brink of starvation. However, when the dog saw us he thought that, no matter who we might be, we should surely be better than the Chinese, so he turned back with us. I thought the creature so starved and miserable that I wanted to send him away. But my men begged so hard for the new member of the expedition that I gave way; and he followed us faithfully for a long while. He had a fine time of it now, ate as much as he liked, and enjoyed the sole right to the remains of our meals. He soon picked up, and grew into an unusually good and handsome dog. He was the best of watch-dogs and the best of companions, and when, later on, we made a second visit to the Russian Pamirs, he became a great favorite among the officers on account of his liveliness. By degrees he grew to be such a companion to me that I could not do without him, and when, about a year later, he died of thirst in the Takla-makan Desert, the parting was really bitter.

We bought a sheep, which we now proceeded to kill, and all had a good meal. Islam roasted a *chisslik* (steak or chop); the Kirghiz provided us with yak's milk; rice and tea we had ourselves, so that we could not have fared better.

That evening the sunset was beautiful, and threw a peculiar light on the clouds and western mountains, which were illumined with various shades of gray and yellow. The wind had been in the north, but towards evening went round to the east; and the waves, which broke against the stony beach with a sleepy, melodious murmur, were crested with dancing white horses. The moon soon rose over this beautiful picture; and, the temperature being pleasantly warm (62.6° Fahr. or 17° C.), we were able to enjoy our new camp, which was called Yanikkeh, to the utmost.

The following is a series of notes from my diary just as I wrote them down:

"July 14th. After the first meteorological observation of the day had been taken, we made a little botanical trip in the neighborhood and collected algae from two or three lagoons along the shore."
About one o’clock a violent squall passed over the country, with sharp gusts of wind and rain, which, however, did not last long. The white-crested waves were driven up to a considerable height, and dashed noisily against the beach. The sky was heavy and black with rain-clouds, chasing each other to the south. During the forenoon the mountains had been shrouded in the usual dust-haze, but the rain cleared the air, so that we could now see the white snow-fields of Mustagh-ata shining through the broken clouds with dazzling brilliance. The surface of the lake passed through the most won-

![West Shore of Little Kara-Kul](image)

derful changes of color; near the western and southern shores it was such a bright green that the boldest impressionist would not have dared to paint it as it actually was. Farther out it was striped with violet, while near the eastern shore the water was dark blue. Gray and gloomy stood the mountain giants, keeping guard over the little Alpine lake which lay cradled between their lofty crests. There was a flat stretch of fine pasture along the south shore, but on our side, with the exception of the little meadow where we were encamped, the mountains rose sheer from the lake.

“"It was not till the afternoon that the weather permitted a short topographical excursion in the neighborhood; even then we were overtaken by sharp showers of rain, and heard
the thunder rumbling among the clefts of Mus-tagh-ata. We wandered through a typical moraine landscape, where wide tracts were strewn with mounds of grit and boulders of all sizes; nearly all the latter being of different kinds of gneiss and schist, chiefly crystalline mica-schist.

"These collections of gravel and grit sometimes formed continuous ridges, sometimes isolated cones. Not seldom they formed cirques, fifty to two hundred yards in diameter, with a rampart round, the last sometimes completely closed, sometimes with a single opening. Some of these cirques had a cone, others a cavity, in the middle.

"Several boulders were very highly polished, or striated; and everything tended to show that we were in a tract from which a glacier had once receded. One of these boulders particularly attracted my attention, and was chosen as a topographical fixed-point on account of its dominant position. Its surface, two yards long and one broad, was smooth and polished, and on it was roughly but characteristically depicted six tekkes (wild goats). The brown gneiss rock had been scratched away with a sharp stone, or perhaps an iron tool, and the design stood out in relief in dull gray. The Kirghiz could tell me nothing about the picture, except that they thought it was very old.

"We discovered that the north end of the enormous moraine fell sheer down to a river, which was almost entirely fed by the melting of the glaciers and snow-fields. The stream was called the Ike-bel-su (the River from the Two Passes), and flowed through the Sarik-kol valley, then broke through the Mus-tagh chain, and under the name of the Ghez-daria (as I have already mentioned in a previous chapter) reached the plains near Kashgar.

"From the summit of the moraine we had a splendid view over the upper reaches of the river, rolling down its current as if issuing from a rocky portal between the lofty snow-covered mountains. On through the valley it wound, sometimes narrow and foaming, sometimes calm and broad, with grass-grown banks, on which were two or three Kirghiz auls.
"When we again returned to camp over another part of the moraine-ridge, we found that the Kirghiz had procured another big yurt, and in it my men settled down with the kitchen paraphernalia.

"Immediately southeast of the camp there was a dominant mountain of black schist, called Kara-kir (the Black Peaks); and as it seemed to promise a splendid point of vantage for surveying the neighboring country, I wished to ascend it as early as possible, which we did on July 15th.

"The panorama which unfolded itself to my view when we reached the top exceeded my most sanguine expectations. The long moraine-ridge, with its labyrinth of cones and grit-mounds, appeared from that elevated point of view to dwindle to insignificance, and the green-banked ribbon of the Ike-bel-su winding through the gray scenery formed a particularly marked feature in the landscape. But the sublime grandeur of the Mus-taght-ata, whose white crests were visible between the clouds, completely dwarfed everything else. Fantastic, inky-black rocks broke up through the expanses of snow, some attaining an altitude of 20,000 feet; and above them again towered the spotless dome. The east side of the mountain was so precipitous and irregular that I perceived at once from its shape it must be quite inaccessible. The northern versant presented a confused medley of rocks, snow-fields, and glaciers. On the other hand, the western declivities were particularly even and rounded, towards the summit the angle being only twenty-two degrees; while on the east side the inclination varied from thirty to forty-eight degrees.

"The Tegherman-tash-su (the Millstone Brook), which fell into the Ike-bel-su, was divided at its mouth into five arms, flowing over a talus slope or sort of sloping delta, partly formed by its own glacial débris and mud.

"In the southwest we saw the broad, level valley of Sub-bashi, with its river also forming a delta, and its marshes and innumerable miniature lakes laced like beads on a mat.

"In the west also there was a grand panorama. The bright surface of Little Kara-kul, lying between the massive mountain-chains, immediately underneath our feet, appeared quite
small in comparison with their overwhelming masses. Its light-green surface contrasted forcibly with its own dark-green grassy shores, and with the gray mountain-walls broken here and there by moraine deposits. Sometimes the grass trenched a little upon the lake; but it was nowhere broad, except on the southern shore. The light fleecy clouds were reflected in the water as their shadows glided over it. The turbid yellow flood of the Su-bashi, which debouched on the south, wound through the lake like a dirty ribbon. Immediately in front of us, near the west shore, there was a little island, the only one in the Kara-kul, if we except a few small green plots which have become detached from the grassy southern shore. On the other side of the lake the Sarik-kol chain faded away towards the north and west.

"The northern shore of Little Kara-kul was a moraine wall, a continuation of that already described; that is the reason why the outline of that shore was so very irregular. The moraine was intersected by a stream which issued from the lake, which was also conspicuous from its green grassy banks; farther down it united with the Ike-bel-su. In the northwest, beyond the Kara-kul, we could see the two basins of Bassyk-kul.

"About mid-day we were again overtaken by a storm of rain and hail, but continued our way till we were sent home by really bad weather. I now felt that I had pretty well taken my bearings; I had my programme clear, and knew how and on what plan the mountain should be attacked.

"Every evening after dark I held a levee in my tent. The Kirghiz came from far and near, and always brought with them welcome gifts of sheep, partridges, new bread, fresh yak's milk and cream; in return for which they received money, pieces of cloth, caps, knives, etc., which I had brought from Tashkend for the purpose. In a short time we had a whole circle of friends, and felt quite at home in the place. During our later excursions we never passed an aul without going into one of the yurts, and we were always pretty sure to find one or two old acquaintances. Our chief friend and protector, however, was Togdasin Beg, who often came to see
us, and procured everything for us that we wanted, such as yaks, horses, tents, and the like.

"The whole day on July 16th there was a thick fog. In the morning the lake presented a curious sight, as the mist completely hid the farther shore from view, and we seemed to be standing on the brink of a boundless sea.

"I bade a couple of my Kirghiz undress and wade out into the shallow water, to collect some of the algae which grew along the shore. Yolldash was also carried out, and given a thorough and much-needed bath. The water was not so cold but it could be used for bathing purposes. At one o'clock it was 63.7° Fahr. (17.6° C.), but it cooled off considerably during the night. At seven in the morning of the same day it was 53.2° Fahr. (11.8° C.). On clear days the water soon became warm in the shallow places, though naturally only the upper layers. By mid-day on July 16th, for example, the radiation rose to 138.2° Fahr. (59° C.), although the atmosphere was not clear; but at the depth of 4 inches the water was only 82.4° Fahr. (28° C.), which shows how impervious even such a thin layer of water is to the direct heat of the sun.

"We made an excursion to the confluence of the Kara-kul stream with the Ike-bel-su. At the north end of the lake we found a large semicircular creek or bay. It was shallow, and grassy near the shore, although the moraine came down to within 50 or 100 yards of it. Near the mouth of the river the grass was broader and more luxuriant; but the mosquitoes swarmed over it in thick clouds, by no means enhancing our comfort.

"The Kara-kul stream issued from the lake through a trumpet-shaped creek, studded with erratic blocks projecting above the surface of the water; shortly afterwards it widened out into a small basin, called the Su-karagai-kul (the Water-Pine Lake). North of this, but not connected with the river, was another small sheet of water called the Angher-kul (the Duck Lake). Both basins were bordered with grass and marsh-land, interspersed between the moraines through which the river cut its way.

"A little farther on the gradient suddenly became so steep
that the river broke into cataracts over the stony débris which littered its bed, though its banks were in places still lined with narrow strips of grass. On it foamed, its channel becoming more and more deeply eroded, until it emptied itself into the Ike-bel-su. Near its mouth the velocity decreased all of a sudden, as if the river had encountered a serious check. Sometimes its water was as clear as crystal, sometimes foaming white, sometimes deep blue, until finally it mingled with the main stream, which was turbid and gray from the glacial mud, and possessed twenty times its force. The bed of the Ike-bel-su was excessively deep, the river having energetically carved its way through conglomerates 150 to 300 feet high. It was absolutely impossible to cross it. I put down the breadth at 27 yards, and the velocity was 5½ feet in the second.

"A deafening roar echoed between the perpendicular walls; the water dashed a yard into the air every time it encountered an obstructing stone, and the spray rose in clouds; but the foam was hardly distinguishable, being as gray as the flood itself.

"A few yards below the confluence of the Kara-kul, its clear blue water, which was pressed towards the left bank, totally disappeared. Its effect was only visible a short distance, while its foam disappeared at once. With such violence and momentum did the enormous masses of water plunge on their way that we could feel the ground vibrating under our feet.

"The Kara-kul river had a temperature of 61.9° Fahr. (16.6° C.); the Ike-bel-su of 57.9° Fahr. (14.4° C.). Thus the water which came direct from the glaciers was four or five degrees colder than that which lingered in the lake under the sun's rays, although the lake itself received similar cold glacial streams. After depositing its glacial mud in Lake Kara-kul, the stream became perfectly clear.

"Between the two water-courses the great moraine-bed sent out a tongue, thickly studded with chains of hills, ranged sometimes in rows, sometimes in circles, crescents, and amphitheatres. They belonged to the terminal moraine, which
was still standing, showing how far the tongue of the Ikbel-su glacier, which has now disappeared, reached at one time.

"On my return I had a visit from Oshur Beg, Khoat Beg's son, who brought me two live wild geese caught at Bassykkul, and bread, milk, and butter.

"July 17th. There was a south wind blowing this morning, and the water on our shore was not quite clear, the waves having brought sedimentary matter from the mouth of the river. The beach round the creek exhibited plain indications of the effect wrought by the waves under the influence of the south wind. The water washed up an even wall of sand all round the creek, leaving also a belt of dry seaweed. We started out on an excursion, but were overtaken by such a violent north-northwesterly gale that we were obliged to turn back. This region is notorious for its winds. Those which come from the north and south are the most violent, as they sweep unhindered through the meridional valley. In accordance with the configuration of the country, the east winds are
more irregular and squally, while from the west, or Pamirs, it seldom blows at all.

"Yes, indeed, the wind often put our patience to the test; it curtailed or prevented the carrying out of many plans, and the whole summer long we were very much dependent on the caprices of the weather. On unfavorable days there was nothing for it but to sit in the yurt and write, or work out my sketch-maps. It was always refreshing to hear the monotonous song of the waves on the beach. To-day, too, the lake was greatly perturbed; long white-topped waves crossed it diagonally, and cast up sand and seaweed on the beach, so that the water was muddy for ten yards or more out into the lake, before the fresh green-blue color supervened again. A thick mist came on by degrees, enshrouding the Kara-kul, so that nothing except the two points on either side of our creek were visible, and they seemed to be much farther off than they were in reality. When one white crest after the other came rolling in from out of the mist I had the feeling of standing by the open sea.

"Along the beach, near our camp, there were two small lagoons, one behind the other. The outer lagoon was connected with the lake, whence a deep narrow channel conveyed water to it every time the waves broke. The inner lagoon was separated from the outer by a strip of land six or seven yards broad, intersected by a narrow but deep channel, so that even there the water was churned up by the wind. The outer lagoon was separated from the lake by a grass-grown wall of earth a yard in height, which threatened to give way under the continual beating of the waves. It was evident that the lake had at one time overflowed our present camping-ground. The bottom of the lagoon was covered with fine sand and algae, and in its sheltered waters were tadpoles and water-spiders.

"In the afternoon it rained hard, but about six o'clock suddenly cleared. All at once we heard a rushing sound, as if a gale of wind were approaching from the northwest. The noise grew louder and louder, came nearer and nearer. On the now calm and shining surface of the lake a dark blue
band became visible on the opposite shore. It rapidly ap­proached our side. The wind howled and lashed the water, and the next moment a hail-storm broke over us. It only lasted a few moments; but the ground was white with hail­stones a quarter to half an inch in diameter. They soon melted in the sharp shower of rain which followed.
"It was not necessary to stay long by the Little Kara-kul to perceive clearly its geological formation. I soon saw that it was a moraine lake, formed by the damming of the valley by the moraine of the Ike-bel-su glacier, the remains of which are now pierced by the rivers that issue from the lake. The basin, or part of the valley dammed by the moraine, is filled with glacier and spring water, which bring down with them large quantities of sediment, and this, in conjunction with the drift-sand, is gradually choking the network of lake streams. The day will no doubt come when they will be effaced altogether, and the Kara-kul river will flow through the valley in a continuously eroded bed. The lake was undoubtedly much larger at one time, when the river flowed at the top of the moraine, and had not yet succeeded in digging down through it. The number of boulders still cumbering the bed of the river and lying in its broad mouth—fragments of the former medial moraine—testify to this; as do the lagoons just described. That the whole valley was once cut off by the now defunct glacier we have unmistakable proof in the number of gravel-mounds, ridges, and boulders which lie scattered about on every side.

"The material, consisting of fine-grained mica schist, crystalline schist, pretty, fine gray gneiss, coarse-grained gneiss with felspar crystals, and red varieties of the same, etc., is similar to that which I found in the higher regions of the Mus-tagh-ata. The gneiss boulders, which are spread over large areas, could only be brought thence, and the force which brought them such long distances from the solid mountain
could only be ice. Indeed, they exhibit unmistakable signs that this was the case: they are rounded or hollowed out like bowls, and are much striated or polished by attrition.

"July 18th. I had now completed my work on the east shore of the Kara-kul, and determined to move on to another camping-ground. I therefore ordered the men, under Islam Bai's supervision, to break up camp, and move the tent and baggage to a suitable spot on the shore of the lake Bassykkul. Meanwhile I myself went on a topographical trip, accompanied by one of the Kirghiz, intending to make for the new camp in the evening.

"We crossed the bed of the moraine higher up than formerly, and then went down to the aul of Keng-shevar, a place of four yurts, lying on the left bank of the Ike-bel-su. The tents were surrounded by splendid pasturage, and several of our friends lived there and received us with great cordiality. According to custom, the oldest inhabitant of the aul came forward to meet the guest with both hands to his forehead, and then showed me the way to his yurt, which had been hastily set to rights. A piece of carpet and one or two cushions were placed on the seat of honor, opposite the entrance, and there I was invited to sit down by the fireside. The other inhabitants of the aul dropped in one by one and seated themselves round the fire, on which was boiling an iron pot containing tea. Tea and milk were served in bowls of wood or Chinese porcelain, and conversation was soon in full swing. Sometimes the men's wives, with their high, white, turban-like head-gear, and some of the young girls, were also present; but they did not take part in the conversation. They only affected importance with regard to the fire, which they fed with tesek (dried yak-dung), and attended to the management of the household generally. These visits were always pleasant, and had, further, the great advantage that I was able to glean valuable information as to ways and tracks, climate, the migrations of the Kirghiz, their manner of living, and the like.

"Our hosts told us that they spend the summer only at Keng-shevär; in the winter, this part being exposed to wind
and snow, they move on to the Shuveshteh kishlaks (winter villages), which are situated farther up and are more sheltered from wind and weather.

"The Ike-bel-su presented quite a different appearance seen from this little tent-village to what it had at the outlet of the Kara-kul stream, being 200 feet broad, and the velocity about three feet in the second. At the only place where it was possible to ford it, we let a Kirghiz ride over, and found that the maximum depth amounted to $\frac{3}{4}$ feet; but the bed was tolerably level and did not vary much. The volume was 2440 cubic feet in the second, which is remarkable for a river chiefly fed by glaciers. The water was said to be lowest about four o'clock in the afternoon; but it rises towards evening, as the glacial streams, which do not reach the river before that time, then give up their tribute. There were several low islets in the river, more or less grass-grown, of which one divided it into two arms. In winter the bed is dry, or has, at most, a few narrow rivulets of frozen water; but by the beginning of August the stream falls so considerably that it is possible to ride over it at several points without danger. A little way below the aul a projecting spur of the moraine forces the river to make a sharp bend to the right. The result of this is a little lake-like basin, into which the water eddies; after that it continues its way in a deep, wide channel, breaking through the moraine-wall with a roar that can be heard at some distance.

"Opposite Keng-shevar, on the other bank, there was an aul with seven yurts. As its inhabitants pastured their sheep during the day on the left bank, the animals had all to be brought back across the stream in the evening, and it was very amusing to see what a difficult business it was. A number of men on horseback took each a couple of sheep across their saddles and rode in a long string through the river; but, as there were many sheep, it took a considerable time before the whole flock was safely landed on the other side.

"But we had to think of getting back before dusk came on and put an end to our map-making. We therefore set our course over the moraine, where we again found many pretty
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cirques with vegetation in the middle. In such situations grass grows comparatively well, as it is sheltered by the ring-like formation of the moraine, which also retains any rain that may fall. We reached the new camp on the shore of the Lower Bassyk-kul by way of the Angher-kul. In the middle of the former lake there was an island, with a moraine cairn sticking up in it. Our two yurts were pitched on a patch of grass, and around us lay a new domain to be explored.

"Our first day at Bassyk-kul was anything but a success. The wind blew; it poured with rain from morning till night, the heavy drops pattering incessantly on the tent-covering. Open-air work was out of the question; but happily I had so much back work to make up that the involuntary confinement was rather welcome than otherwise. Togdasin Beg paid me a visit, and was regaled with tea and Chinese brandy, the latter specially brought for such occasions, and was furthermore entertained with tunes on the musical-box, which never
failed to arouse the Kirghiz' intense astonishment and liveliest interest. Our mountain friends were most impressed, however, by the Husqvarna rifles. They found the mechanism so complicated that they declared no human hands could have constructed it, and that it must have been made by Allah himself.

"Togdasin Beg told me that the Chinese garrison in the Sarik-kol valley was following all my movements with some uneasiness, and was kept informed daily by Kirghiz spies of what I was doing and where I was going. They wondered, if I were an oruss (Russian) or Ferenghi (European), how long I meant to stay, what my real motive was in making maps, and why I hacked pieces of stone out of the rocks. They had been ordered to watch the frontier towards the Russian Pamirs, and now a stranger, whom they supposed to be a Russian, had made his appearance, and was proceeding, unhindered, to find out how the land lay. Thanks, however, to the passport which the Dao Tai had given me, they never molested us.

"Heavy blue-black rain-clouds swept down the many lateral valleys which strike off from the Sarik-kol chain towards the open country, in which were the two Bassyk-kul lakes. Everything was enveloped in a thick Scotch mist, darkening the otherwise magnificent landscape with gloom. Every now and again a fragment of the glacier or mountain-side became visible through the mist, which clung to the surface of the ground and drifted off to the south. The Kirghiz assured me that such continuous rain as that of to-day was unusual. The patch of grass on which we were encamped was transformed into a swamp, and we were constrained to dig deep ditches round the yurt, with branches running towards the lake, to protect ourselves from the wet. In the evening it cleared up, and the atmosphere became perfectly still. The lakes lay like dark mirrors in which all the fantastic projections of the mountains were clearly reflected.

"During the ensuing days I explored the country round our new camping-ground, and mapped the west shore of Little Kara-kul. First of all we followed the shore-line, and
where the rocks fell sheer into the lake we rode through the water, on the disintegrated terraces at their base. Then we made short excursions from the lake to the neighboring mountains, where we often had decidedly disagreeable passages to traverse. There was one point which was especially favorable for studying this remarkable and beautiful Alpine region. Each of the twenty-one glaciers of the Mus-tagh chain was visible with the field-glass, clearly lit up, so that every detail was distinct. The slopes of the chain were draped with dazzling white snow except the rocky pinnacles which projected highest. In places, however, particularly in the lower regions, the snow was tinged a dirty yellow, due to dust brought thither by the wind. On the summits the snow formed a continuous covering, closely following the relief of the underlying mountains; but in several places its lower edge was broken, the snow having slid down over the precipices. Otherwise the tendency of the snow is to gravitate towards the gathering-basin of the glaciers, whence it is gradually dispersed by the ice-streams. These are sometimes narrow and compact, sometimes hive-shaped, sometimes thin and spreading, but always covered with gravel and bowlders, which rest on the belts of ice between the transverse crevasses and give the glaciers a striped appearance. Some of the ice-streams are so covered with moraines that it is only with difficulty they can be distinguished from their surroundings.

"A trip to the isthmus between the two small lakes showed that they were separated from each other by a decayed, and often broken, moraine-wall, beside which we found erratic gneiss blocks, measuring as much as 1000 cubic meters or 35,300 cubic feet, and with beautifully polished surfaces. It was plainly the oldest of the terminal moraines of the former Ike-bel-su glacier.

"On one occasion when we were returning from a trip of this kind, Yehim Bai, who was carrying the topographical instruments, lost a brass diopter, and I gave him to understand that if the missing instrument were not found he would be in disgrace. He forthwith started off to go over the ground again, and see if he could find it. An acquaint-
ance, whom he eventually met, told him that an extraordinary metal thing had been found and taken to the Chinese commandant, Jan Darin, at Bulun-kul, who thought he could put a spoke in my wheel by retaining it. I sent off a messenger at once to inform Jan Darin that he would have to settle the matter with the Dao Tai if he did not return me the instrument. I received the diopter back immediately.

"I spent a whole day in investigating the country between the Lower Bassyk-kul and the Ike-bel-su. A small stream issued from the lake, and flowing through fairly luxuriant grass-land, littered with fragments of the moraine, joined the main stream a little way north of the river Kara-kul. The Ike-bel-su had decreased considerably in volume the last few days, owing to the fall in the temperature; but here, too, it raced between perpendicular or oblique conglomerate walls, in the sides of which round gneiss blocks were partially embedded, looking as if every moment they would topple down into the river.

"On July 24th examined the upper basin of the Bassyk-kul. About the middle of the south shore a promontory, formed by a spur of the mountain, fell almost sheer into the lake so that none but foot-passengers could get round it. We, being mounted, were obliged to make our way through a pass over the ridge.

"This little pass, called Bassyk-kulden-kiasi-davan (the Mountain-Path Pass of Bassyk-kul), was situated not more than two hundred feet above the lake, but had steep approaches, and its summit commanded a fine view. At our feet basked the little lake, washing the promontory on three sides; we also saw its small islands and shoals, its submarine moraine elevations and erratic blocks, still half immersed in the water, and the small deltas which form at the mouths of the streams that entered it from the western valleys. On the isthmus between the lakes was the crumbling moraine-wall, in the middle not more than eight or ten feet above the level of the water. Just at that low spot there was a marsh; nevertheless, all visible connection between the two lakes was en-
tirely wanting. The Kirghiz told me that even in the spring and summer, when the increase of water from the western valleys is sometimes considerable, the rise of niveau is never very perceptible, and no water ever flows over from the upper to the lower basin.

Hastily surveyed, it might be supposed that the lake possessed no outlet, and that it was therefore salt. The water, however, was perfectly fresh and clear. A glance at the map reveals a satisfactory explanation of this. The lower lake, it is true, does not receive any visible affluent, but out of it flows a tiny stream. The lake must therefore receive an invisible influx, and this naturally comes from the upper basin, whose surplus water percolates under the isthmus moraine to the lower lake, and thence finds its way to the Ike-bel-su. Bassyk-kul was situated 12,221 feet, and Little Kara-kul 12,201 feet, above sea-level.

“Several subsidiary chains branched off from the main Sarik-kol range, and their yilgas or side-glens all opened towards the lake. The most important were the Kara (the Black), Yellang (the Bare), and Khamaldi (the Gusty) yilgas. The
last-named has its own stream, running into a creek; while the streams from the first two united with several other small watercourses, and formed one, which again, just before reaching the lake, divided into two arms with a delta between. The sediment brought down by these several streams has been deposited in long narrow tongues and islets of mud; and beyond them again lay a group of moraine islands.

"In the three glens which I have just mentioned there was more or less good pasturage; the yaks, however, have to put up with the inferior qualities, as the better grass is reserved for the sheep. Here the Naiman Kirghiz of Khoat Beg's aul spend the three coldest winter months. Through the Kara-yilga a path leads up to the Sarik-kol pass, Kokala-chukkur (the Green-Chequered Depths), and thence to Lake Rang-kul. It can, however, only be traversed by yaks or by people on foot, and is seldom used, except occasionally by Kirghiz going to the Russian Pamirs, without permission from the Chinese authorities.

"At 4 o'clock it again began to rain; and the wind blew from the north. We rode back towards the west shore of the lake by following the little Kara-yilga stream, which was now dry, with the exception of small pools in the deeper holes. An hour and a half later we observed a most extraordinary phenomenon. A slight rushing sound was heard from up the bed of the stream. Then a brownish gray wave of water appeared suddenly round a bend, and foamed down among the stones, first slowly and gradually, filling the deeper parts, and winding between the steep excavated banks, along which there was a narrow belt of vegetation. This onrush of water takes place regularly every evening at this time of the year; it is glacier water from the Sarik-kol chain, which only reaches the lake towards evening.

"On July 25th we broke up camp at Bassyk-kul and went to Keng-shevar, whence I intended beginning the exploration of Mus-tagh-ata. On our way thither we passed an unusually fine circular moraine, about a hundred yards in diameter, situated on the south shore of the Bassyk-kul. In the middle there was a tiny round pool, surrounded by a ring of white
salt deposit, which in its turn was girdled by a belt of vegetation; outside of all was the moraine-wall, with its one opening towards the lake. Although the pool was on a level with the lake, and quite near its shore, so that it was fair to assume a subterranean connection between them, the water in the cirque, which was called Shor-kul (Salt Lake), was absolutely salt. The Kirghiz told me that sheep which drink of it get cramp and die.

"At Tamga-tash we met Togdasin Beg, bringing me a sheep and a can of yak's milk as presents. He accompanied us to Keng-shevar, and stopped the night there. The sheep was killed in the evening, and the inhabitants of the aul were invited to the feast; but we were disturbed during the proceedings by a violent whirlwind, which threatened to carry away the yurt. All the guests scrambled to their feet and seized hold of the tent-poles, while two or three other men anchored the tent with ropes and supports."
CHAPTER XXVII

AMONG THE GLACIERS OF MUS-TAGH-ATA

The following day we rode up the northern flank of Mus-tagh-ata, and crossed the huge ridge on the left side of the Ike-bel-su. The gradient was steepish before we reached the top, which rose and fell in long, sweeping undulations, but otherwise was fairly level, the surface being covered with sand, gravel, and small bowlders, with here and there a few tussocks of grass and clumps of Ranunculaceae. On the other side of the summit we again reached the Kara-kul watershed, whence a brisk little rivulet from the glen of Köntöi flowed down to the lake through a broad, shallow bed. Beside this stream, at a height of 13,530 feet, were the Kotch-korchu yeylaus (summer grazing-grounds), which we chose as our first starting-point for exploring the glaciers.

The Kirghiz belonging to the aul had come there three months previously, and intended to remain three more; the six winter months they spend in the Köntöi-yilga. There exists among the Kirghiz a traditional agreement by which each family or clan possesses its own kishlaks and yeylaks; a rule which cannot be broken without a general convocation being held. The inhabitants of this place, like most of the Sarik-kol Kirghiz, belonged to the Kara-teit tribe. Their aksakal, or chief, Tugul Bai, was ninety-six years old, sound in mind and body, and with pleasing manners. The active life they lead in the open air hardens the Kirghiz to such an extent that as a rule they live to a very great age.

To-day again there were torrents of rain and the thunder echoed among the mountains. Shortly afterwards we heard a rushing sound, which our host explained was always audible
after heavy rain; it was the rain-water streaming over the precipices.

My first business at Kotch-korchu was to pay and dismiss the two Kirghiz, Nur Mohammed and Palevan, who had done good service hitherto, but knew nothing of the glacier world up above, neither had they any yaks. In their stead I engaged a couple of Kirghiz belonging to the place, and had their yaks out on parade in the evening; yaks being the only riding animals which can make their way at all in these high glacial regions.

On July 27th, mounted on a splendid black yak and accompanied by a couple of Kirghiz as guides, I steered my course eastward towards the first glacier to be explored, Gorumdeh. We rode quietly along over country sloping towards the north, and cut through by three small glacier streams. Leaving on the right some angular, inky-black rocks, we discovered behind them a small glacier, excessively steep at its upper end, but of no very great extent. Farther to the east there were several similar prominent outcrops of rock, huge ragged masses of mountain, between which the glaciers thrust out, their finger-like projections towards the north. The largest of these was called Gorumdehning-bashi (the Head of the Stony Tract); its stream, which gathered up glacier water from all the other brooks, flowed through a deeply excavated channel and farther down united with the Ike-bel-su.

I contented myself with mapping the left lateral moraines of the Gorumdeh glacier while riding up. For this purpose I only used the compass now for mapping. The distances I measured by adding up the yak's steps, allowing for the errors due to our irregular course, and after having previously measured how many steps on the uneven ground corresponded to a hundred yards.

The lower part of the Great Gorumdeh glacier was so encumbered with gravel and other detritus that it was often difficult to distinguish it from the neighboring rocks. How steep this stream of ice was will be understood when I state that the point of the tongue inclined at an angle of fully nine degrees. But after that the slope of the glacier-trough de-
creased considerably, and the large full-flowing stream that issued from underneath the terminal moraine, meandered fairly quietly down, often without forming cataracts.

The Lesser Gorumdeh glacier was divided into two branches by an island of rock, the outer branch being hedged on the left by eight or ten more or less parallel lateral moraines. Between the outermost of these, which was thirty to forty-five feet high, and the soft grass-grown ridge on which we were riding, there was a stream, which higher up traversed a small triangular lake between the ridge, the moraine, and the solid rock of Mus-tagh-ata.

The right-hand wall which bounded the Lesser Gorumdeh glacier on the west was crowned with extensive snowfields, which from time to time slip down to its foot and there form new miniature glaciers. In this way they have heaped up a remarkable terminal moraine, about forty-five feet in height, at the base of the mountain. From this also a stream finds its way down the northern declivities to Little Kara-kul.
On our way back to the yurt we were in several places astonished by the brilliant coloring of the Alpine flora. The flowers seemed to flourish in spite of the niggard soil of the moraines, and were conspicuous by their almost glaring hues. The higher we ascended the purer and more vivid the coloring. No doubt the slight absorption of light by the atmosphere at those lofty altitudes has a direct influence on vegetation.

Another day was devoted to the Great Gorumdeh glacier. From a grassy ridge we rode our yaks out over the rugged moraines, and terrible difficulty we had to get across them. Rock succeeded rock, and the yaks often stepped through the holes between them, though luckily without falling. I could not help admiring the cleverness of these animals in picking their way; though riding them is by no means pure enjoyment. You require some practice before you feel thoroughly at home in the saddle. One moment the heavy animal balances himself on the sharp edge of a rock; the next he jumps incontinently over a yawning chasm, and somehow manages to secure a foothold on the opposite side. Sometimes, again, he pulls himself together, and with rigid, immovable legs, proceeds to glissade down a precipitous gravel slope, where a two-legged being would inevitably come to grief. Riding a yak, however, in spite of the animal's undeniably good points, is a trial of patience, by reason of his absolute sluggishness of temperament. He often comes to a dead stop, and has to be reminded of his duties with a cudgel. To any application of the whip he is absolutely insensitive, while he looks upon a moderate blow as a sort of caress, and answers it with a cheerful grunt. Nothing short of a bludgeon would convince the beast I rode that we were not out on a mere pleasure trip. In spite of blows he plodded on at his usual phlegmatic pace.

I now ascertained that the moraine belt on the left side of the Great Gorumdeh glacier was much broader than I had thought yesterday, and for a couple of hours we rode over a succession of broad ridges. Finally we reached a little moraine tarn, with green, muddy water, into which flowed a
many-branched babbling brook that came foaming down one of the outermost moraines, forming a delta of sediment and débris at its foot, over which its arms again divided.

This stream seemed to issue from one of the smaller glaciers; but although its volume was as much as 70 or 100 cubic feet in the second, the tarn had no visible outlet, nor did it rise above a certain level, as the surplus water that issued from underneath the moraines flowed into the general glacier-basin. The tarn could not exist at all between moraine-walls of such coarse material were it not that the sedimentary matter which it brings down itself forms a sort of foundation for the water to rest upon.

From the tarn we rode up in a southerly direction, between two gigantic moraine-walls. The trough between them was overgrown with sparse tufts of grass, wild rhubarb, and other plants, and was well named Gultcha-yeylau (the Pasture of the Wild Sheep); for here, and far out on the glacier, we found the tracks of wild sheep.

As the moraines farther on became worse and worse, consisting exclusively of cyclopean blocks of naked rock, we left our yaks and made our way on to the glacier on foot. After passing the last lateral moraine, which, by-the-by, was still in course of formation, we reached the firm ice. At first it was covered with gravel and boulders to such an extent that the clear ice-pyramids only peeped out at intervals. The lateral moraine, carried on the back of the glacier, was 500 yards in breadth, and ceased somewhat abruptly where the white ice began. This formed a chaos of pyramids and mounds, which, however, had no sharp edges, but were much rounded, and caked with a layer of soft, wet ice, chalky white and resembling snow. This was, of course, the result of ablation, or the destructive influence of the atmosphere and warmth upon the ice, which was then working everywhere with great activity. The sound of trickling, dripping water was audible in all directions among the boulders and stones, in the crevasses, and in small pools on the surface of the ice. The glaciers rumbled and cracked; every now and again we heard the ringing echo of smaller boulders and gravel falling into
the gaping fissures, and in the distance the rushing sound of the glacial torrents, which, now that the sun was high, were fed abundantly from every side. The material brought down from the mountain consisted for the most part of the same gray gneiss which we had previously observed down by the lakes. Gigantic blocks such as those that lay beside the Bassyk-kul were, however, absent. The smaller fragments of stone, by reason of their greater power of absorbing heat, had sunk down in holes in the ice, and lay at the bottom in a little pool of water. The larger blocks, on the other hand, protected the underlying ice from melting, and therefore formed glacier tables resting on platforms of ice.

A glance northward, that is to say, down the glacier, showed us, to the left, the gray masses of the lateral moraine, with only occasional glimpses of the ice showing through; to the right the white corrugated surface of the naked glaciers, with the two medial moraines gradually merging into one, the biggest I saw on the Mus-tagh-ata; and in the background the deep depression which marked the continuing line of the glacier, and through which probably the Gorumdeh formerly streamed to the Ike-bel-su glacier, although the old terminal moraine has been entirely swept away by the glacier-stream. Lastly we went down to a place near the tongue of the glacier, which was split into two portions by a small lake of clear water. The highest altitude we reached on the glacier was 14,700 feet above sea-level.

To the south was the vast firn or root of the glacier, a gathering-basin into which the snow slid down from the surrounding precipices, leaving step-like platforms behind it.

On July 29th we again broke up camp and got under way for a new base of operations—namely, a spot more conveniently situated for the investigation of the glaciers which streamed out towards the west.

We started in a south-southwesterly direction, and made our way up the grass-grown slopes. The weather was cold and misty, with an occasional snow-storm. At length we reached the pass of Sarimek (the Pass of the Yellow Elbow), an important feature in the country, as it forms the passage
over a gigantic spur of the Mus tagh ata which stretches to
the northwest, dividing the glaciers and streams of the north­
ern declivities from those of the western. The pass was
strewn with gravel and small bowlders, and on its southern
face were fissured rocks of an unusually hard, dark crystalline
schist inclined at an angle of thirty-eight degrees to the north.

If, standing on this pass, we turned towards the massive
knot of Mus tagh ata, the following picture from left to right,
or from north to south, unfolded itself to view: First of all,
the rocky buttresses, foreshortened, with a small snow clad
glacier; then, between two arms of the mountain, both in
part thickly carpeted with snow, there was another small glac­
ier, fairly clean at the top, but at its lower extremity strewed
with fine gravel, so that the blue ice in the fissures was only
visible here and there. In the middle of the glacier trans­
verse crevasses predominated, at its lower end longitudinal
crevasses. The tongue of the glacier was girdled by gigantic
moraines crumpled up into several ridges. Between the third
rocky buttress and that part of Mus tagh ata which we were
on in April, and high up on the mountain-side, there was a
deep gorge, into which the Sarimek and Kamper-kishlak
glaciers poured their streams, while they in their turn were
separated by a huge snow-clad wall of rock. The former
glacier was encumbered with moraines; the latter was shin­
ing white. Finally, in the south, the pass of Ullugrabat; and
in the west the entire Sarik-kol chain, with its thinly scattered
snow-fields. It was partly hidden by particularly beautiful
white cirrus-clouds, which contrasted strikingly with the steel­
blue, wintry sky over the Pamirs in the background.

The descent from the pass was very steep; we rode down
the gully of a stream which issued from the right-hand side
of the Sarimek glacier, and raced merrily along its stony bed,
tumbling down falls and cataracts as it went. We left the
terminal moraine with its imposing front, crossed some streams,
and reached a small patch of water-soaked greensward, where
I collected several new species of plants. A herd of kiyick,
or wild goats, were peacefully grazing there; but upon catch­
ing sight of us, instantly sprang up the mountain-side. We
then crossed five more brooks, fed with glacier water. Between them low elongated ridges ran down to the Sarik-kol valley, forming black and gloomy continuations of the rocky buttresses which, like radii or ribs, divided the glaciers one from another.

Some of the men, who had gone on ahead with the cara-

van, were already camped when we arrived, having chosen a piece of lush, well-watered grass, that afforded splendid pasturage for the yaks.

That evening it snowed hard, and the next morning the mountains were covered with a thin sheet of snow. The Kirghiz said that winter was already coming in the mountains, and that it would get colder and colder every day.

On July 30th winter was upon us in full severity. It snowed the whole day, heavily and ceaselessly; sometimes the entire landscape was enveloped in dense clouds of driving snow, so that not a trace of the mountains, or of the valley lying deep
down below them, was to be seen. It was dark, cold, and gusty, and the inhospitable mountain received us at Yambulak-bashi much as it had done the April previously. There was no prospect of any excursion that day, for we could not see many steps in front of us for the snow-storm, and my winter wardrobe, consisting of a sheepskin coat, fur cap and waistcoat, and valenkis (Russian felt boots), was not yet unpacked. In order not to be hampered with too much paraphernalia, I had this time only brought a small yurt with me; and in this I sat the whole day, writing and drawing, with a cup of hot tea every now and then to keep me warm. The men crowded together in their great sheepskin coats, and sat crouched under the shelter of a block of gneiss, listening to Mollah Islam, who was reading aloud out of an old book of tales. As the snow-storm increased in violence, I made them come into the tent, and let them continue their reading. Towards evening it ceased to snow; but heavy gray clouds swept through the deep valleys, trailing their long fringes and draperies behind them. Every now and again flying fragments became detached from them, and sprinkled the rocks with their white powder. In the evening we had a visit from the aksakal of the aul of Yambulak, and half a dozen other Kirghiz, who came to bid us welcome, and brought a sheep with them as a present. They were regaled with tea and bread, as usual, and were given an equivalent for their sheep.

When the weather eventually cleared, all the mountains reappeared in a garb of dazzling white, and we were surrounded by a thorough winter landscape. The white mantle, however, did not reach down to the bottom of the Sarik-kol valley, because at this time of the year the snow changes to rain at a lower altitude.

The weather being favorable on July 31st, we were able to start on our scramble over the Yam-bulak glacier. Its surface was perfectly white, being covered with soft, wet, sticky snow. Small glacial streams, with a temperature of 31.5° Fahr. (0.29° C.), rippled cheerily over the ice. We struck a south-south-easterly direction across the uneven ice-sheet towards the
right-hand lateral moraine, which was from three to seven feet thick, and sent out long crescent-shaped offshoots towards the central parts of the glacier. There were also a few small glacier tables, or ice-pillars, 14 inches in height; and a crevasse, 6 feet wide and 32 feet deep, which would have put an end to further advance had it not hung so far over at the edges that we were able to get across it. The ice in its sides was of the purest blue, and heaps of snow lay at the bottom. The glacier was for the most part covered with a thin layer of soft, wet slush, caused partly by the newly fallen snow, partly by the destructive agency of ablation. The beautiful transparent blue ice was only visible in the fissures, and in the channels where the small glacial streams flowed over the surface of the glacier. These streams, with their delightfully babbling, crystal-clear water, were none of them large; for usually they were soon swallowed up by some gaping crevasse.

After we had advanced some 440 yards on the glacier, probably a third of the whole way across, the ice became per-
fectedly impracticable, a maze of hummocks and pyramids, crevasses and streams, these last running in deep trenches sunk between the irregularities of the ice and partly hidden by snow-bridges.

Looking upward from this point towards the rocky part of the mountain situated between its perpendicular buttresses—i.e., towards the east—we perceived even then that the glacier trended in three different directions—namely, to the east, the south, and the west; or, in other words, forward and to both sides. Immediately after leaving the upper reaches of the

mountain it streamed over a fairly steep fall, and then across broken ground. Its lower part was therefore excessively cut up and fissured by transverse crevasses. The offshoots of the right-hand moraine, consisting of gneiss and innumerable varieties of schist, reached as far as the spot where we were standing. There, too, we again found some glacier tables, one on a pillar nearly four feet high and leaning over very much to the southwest, where the sun, as usual, had most
power to undermine it. There also, from a very narrow outlet, a glacier stream issued. We heard the water purling softly at the bottom, fifty feet or more down.

On our return to the moraine, where we left the yaks tied to the bowlders, we came across a place where the marginal moraine was broken off, so that the edge of the glacier lay naked and flayed, so to speak. Its sides rose up to a height of forty feet, at an angle of sixty-four degrees, and down the glassy face ran numerous tiny streamlets, the head-waters of the Yam-bulak-bashi. In a couple of small moraine-pools at the edge of the glacier the water was a gray-green color, and had a temperature of 31.2° Fahr. (0.46° C.).

Our expedition proved that the glacier differed very much in appearance from what it was in April. The crevasses were not so deep, being partly filled with material which had fallen in; nor were their edges so sharp; while the surface was in general softer and more rounded. Shortly put, everything tended to prove that the glacier was in a condition of great activity, and that all the agents of ablation were at work to level down its outer form and fill up its depressions.
We afterwards followed the right lateral moraine to the tongue of the glacier; but had not reached it when a violent gale sprang up from the south, accompanied with hail, which stung us in the face, and compelled us to seek shelter under some overhanging rocks. The hail was followed, as usual, by torrents of rain, and it was only after waiting an hour that we were able to proceed.

Immediately in front of the tongue of the glacier we made a halt. It was a confused jumble of pyramids, ridges, and huge fragments of ice, all greatly weathered. The face resembled four icebergs, two large ones in the middle and two smaller ones on either side, separated from each other by crevasses, and set up, as if on purpose, facing the southwest sun, which beats on them and destroys them. From the right-hand side a little stream flowed through a glacier portal only 24 inches high, which, at a distance, looked like a narrow fissure between the sill or ground-moraine and the ice. The water in the stream was gray and muddy from the abraded materials it held in suspension. It foamed and bubbled along the ice and among the moraines. Here, too, a number of small brooks and streamlets assembled on their way down to the glacier river, and fell in cascades of perfectly clear water not broader than a man's arm. They spurted out from the top of the glacier-wall in veritable fountains and waterfalls, the fine spray which streamed off them being colored with all the tints of the rainbow. One of the small terminal moraines seemed to indicate that it had advanced since our last visit in April.

In the evening the sides of the mountain were lashed by a violent hail-storm, which pelted the roof of the yurt, and compelled us to shut the smoke-vent and put out the fire. The hailstones were about a quarter of an inch in diameter, and as they were followed by snow, which fell in big, close flakes, the slopes and the moraines were soon covered again with their wintry mantle. Yolldash, who was guarding the entrance of the tent, howled dismally out in the cold. The bad weather continued the whole of the next day, August 1st, though mostly in the shape of rain, so that the snow quickly
disappeared; but it was a day lost, and there was nothing for it but to stick to the tent and work out my last sketch-maps.

August 2d was devoted to the Kamper-kishlak glaciers. The smaller of these ended at a considerable altitude, and had piled up in front of itself an enormous terminal moraine, 750 to 1000 feet in height. This bore rather the appearance of a huge mound of gravel, for the material which resulted from attrition gradually fell and slipped down the steep mountain-sides. The moraine mound inclined at an angle of thirty-five and a half degrees.

It was now a question of getting up on the top of the great Kamper-kishlak glacier, the left side of which we were following, though riding on the moraine. The ascent was so steep that we were obliged to leave the yaks and proceed on foot, till we reached the solid mountain—hard crystalline schist—on the left side of the rocky buttresses. The sky was entirely clouded over; but the usual hail-storm did not
whiten the ground, as the hailstones rolled, hopping and
jumping, into the numberless crevasses of the moraine, and
when the shower cleared off the wet bowlders quickly dried
in the arid air.

The glacier extended down its bed in the shape of a long,
flat, narrow spoon, turned alternately up and down, and sur­
rounded on all sides by moraine-ridges. On the whole, its
surface was level, with elongated, flattened undulations. No
transverse crevasses were seen; but, on the other hand, there
were two or three very long narrow ones running lengthwise
down the middle of the tongue, and the whole of the left side
of the ice was jagged by small fissures set close together at
the edge. When we got down upon the ice it became clear
to me at once how the lateral moraine had been formed.
Had I taken but one step, I should have slid twenty through
the loose débris, which continued falling, like a landslip, down
upon the lateral moraine.

Once over the fissures at the edge, it was an easy matter
to walk on the ice, which was sheeted with a thick layer of
snow. This, however, sometimes concealed longitudinal cre­
vasses, which we had to feel for with our alpen-stocks. A
block of gneiss, some 140 cubic feet in extent, had dropped
through the ice by reason of its weight, instead of forming a
glacier-table. After we walked about six hundred and sixty
yards across the glacier (its full width was some three-quarters
of a mile), farther advance was cut off in every direction by a
deep crevasse, a dozen feet wide and forty-five in depth. Its
sides were a deep blue, and from them hung long icicles.

On August 3d we started on a new excursion, namely, back
again to the Yam-bulak glacier, to put in rods, by which, after
a certain time had elapsed, we could tell at what rate the ice
was moving. It was by no means easy to find a stick long
enough for this purpose, for there was not a tree or a bush to
be found in the whole of the Sarik-kol valley, except half a
dozen stunted birches at Kayindeh-masar, which, of course,
could not be touched, as they were growing on holy ground.
At length Yehim Bai succeeded in finding a bundle of oks, or
poles used to support the dome-shaped roof of the yurt.
Equipped with these, we succeeded in getting nearly 580 yards across the ice, and putting in nine poles, some in small moraine-ridges, others in the ice itself, and their position was marked on a map drawn to the scale of 1:4480. It would have been better to have placed them in a straight line across the glacier; but this was impracticable, as the whole of the left side was absolutely inaccessible, and formed a projecting hump as compared with the right side. This is because the left half of the glacier is completely shaded by the mountain crests to the south of it during its entire passage between the enclosing walls of rock. Not a ray of sunshine, therefore, reaches this part of the glacier until after it has emerged from the mountain's arms. The right half, on the other hand, even when in the gorge, is exposed to the direct rays of the sun, and therefore melts incomparably the quicker. This fact was plainly perceptible in the shape of the glacier, even after its issue from the passage, as the right half was about 130 feet lower than the left. After it emerged, the glacier tongue spread out to two or three times its previous breadth, and became correspondingly thinner, so that the process of melting goes on over a more extended surface, and the tongue soon shrinks to a comparatively narrow point.

The inevitable hail-storm came on at four o'clock. First of all, in the deep valley below us, we saw light clouds, like
smoke, hurrying before the north wind. Then they swiftly ascended the mountain-side, and before we knew where we were had enveloped us in their disagreeable vapor. It grew dark and cold. The hailstones rattled on the ice, and we could do no work, only seat ourselves under the shelter of a lofty ice-pyramid, and wait. When we got back to the tent a long time afterwards we were very tired and half frozen.

The new day which broke promised fine weather by way of a change, and we had a glorious trip to the Kamper-kishlak glacier, the right side of which we had still to examine. On that side the glacier sent out a massive "spine," which almost touched the left flank of the lateral moraine of the Sarimek glacier. It consisted of a sheet of ice, nearly 100 feet thick, broken off almost perpendicularly at its face, and on the whole was remarkable for its great purity. There were no moraines on the front wall of the glacier worthy of the name; but there were occasional blocks of gneiss and mica-schist, the largest measuring as much as 850 cubic feet. This rudimentary terminal moraine was fed in a niggardly way by the fragments of rock we had seen scattered about over the surface of the glacier.

At the base of the glacier-wall there was a large grotto, a dozen feet high and nearly as many deep, which had manifestly been caused by the relative warmth of the earth. Four small glacial streams and several little rills dropped from the edge of the ice in pretty cascades. The largest had a fall of sixty feet, and had eaten into the edge of the ice, so that it did not come all the way from the top. Another had cut nearly twenty feet into the ice, and as the brash had got heaped up on top of it, the streamlet resembled a spring issuing from a hole in the level wall. It was a beautiful sight, to stand underneath the big waterfall and watch it shoot out into the air as if from the gutter of a house, split into a thousand drops that glittered like pearls in the sun. The ice was everywhere as soft as a sponge, so that we could actually make "snowballs" of it. Water was dripping, trickling in every direction; no matter which way we turned we heard the sound of bubbling and running water. The ice
was courting destruction in venturing down to tracts whose climate it could not endure. Beneath the face of the glacier were large detached blocks and heaps of extremely rotten ice, which had broken off and were melting rapidly. When the grotto, just mentioned, has become sufficiently hollowed out, and the superincumbent mass of ice too heavy, the latter will crash down, and contribute to the more hasty decay of the glacier.

Keeping immediately alongside the ice, we then rode round the face of the glacier, and continued up its right side. At one point at the foot of the glacier, where a cascade splashed noisily into a pool of its own making, the Kamper-kishlak approached so close to the lateral moraine of its neighbor, the Sarimek glacier, that we could scarcely get through the narrow passage.

The surface of the glacier sloped at an angle of twenty-five and a half degrees, and was thus extraordinarily steep, as compared with the glaciers of the Alps, which often have an inclination of less than one degree in their lower regions. The two contiguous glaciers of Sarimek and Kamper-kishlak approached each other at right angles, and between them, near the rocky spine which divided their common névé-basin, a brook issued and helped to fill up the intervening space with mounds of gravel and patches of grass. The latter, however, was only in demand by the wild goats of the mountain.

We found that the left half of the Kamper-kishlak glacier, like that of the Yam-bulak, was much higher than the right half, and was further encumbered with huge moraines, while the right side had hardly any. This circumstance shows plainly that the stream of ice was trending towards the left wall of rock, where it pressed close against the foot of the mountain and derived its moraine material from near at hand. On the left side the ice lay underneath the moraine; while on the right the moraine lay underneath the ice.