

# The Geographical Journal

Vol. LX No. 2

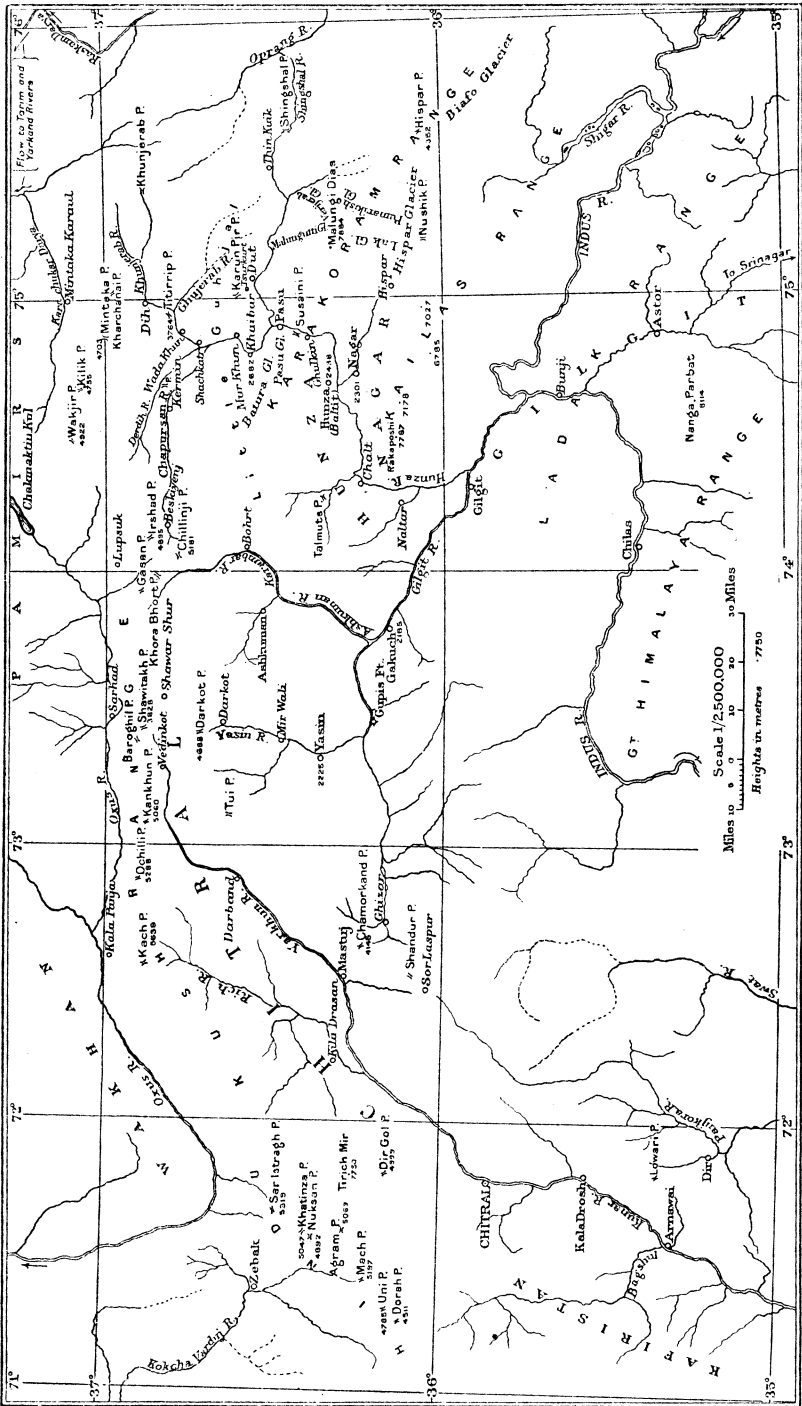
August 1922

## BYWAYS IN HUNZA AND NAGAR

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*Read at the Meeting of the Society, 6 February 1922.*

MY purpose to-night is to describe to you some of the lesser-known valleys of Hunza and Nagar. It is nearly thirty years since I visited them, and I should not have faced the difficult task of recording impressions formed so long ago but for two reasons. The first is that it was under our President's direction that my explorations were undertaken. Since he thinks an account of some of them might be of interest to you, it is naturally the greater pleasure to me to speak in his presence and under his presidency. The second reason that prompts me to give this lecture is that I am anxious to draw attention to the fact that there is still a large unexplored area in and about that portion of the map of Asia lying between  $35^{\circ} 15'$  and  $37^{\circ} 15'$  lat. N. and  $71^{\circ} 15'$  and  $75^{\circ} 45'$  long. E., the lines which mark the limits of my work in this region. It is here that the Himalayas, and the parallel ranges known as the Ladak, Kailas, and Karakoram, meet the Hindu Kush almost at a right angle. This sharp turn in the line of the vast mountain chain corresponds with a similar turn in the course of the river Indus. The axis of the great bend seems to lie between two points which are themselves of some geographical interest: Nanga Parbat to the south, where the great Himalaya is supposed to end; and, to the north, a point about 6 miles west of the Kilik pass, which also happens to be the apex of the pyramid formed by the basins of the Oxus, Indus, and Tarim. East of this axis, between the upper Indus and the Karakoram and parallel to them, one may distinguish a number of great troughs. They lie mainly in Hunza and Nagar and drain into the Hunza river. One of them, the Hispar Valley, is filled with the longest glacier in the world outside the Arctic regions. West of the axis, between the Indus and the Hindu Kush and parallel to the course of the Indus below its great bend, lie other troughs, not perhaps so well marked, but, as I think, practically continuous with the former. These latter valleys lie in Chitral. Most of them I have seen, but I have no time to describe them this evening. I must confine myself here to saying that it is possible to follow an almost continuous trough, that traces a bold curve extending north-west from near the Shingshal pass



Sketch-map to illustrate General Cockerill's paper on Hunza and Nagar.

in the east, where it is called Ghujerab, westwards by the Chapursan, Upper Karambar, and Upper Yarkhun valleys, and then south-west as far at least as the Ishpirin defile (Darband) and perhaps to Chitral, and even to Jelalabad. Through and across this and its parallel concentric valleys great radial fissures appear to have opened at the bend, just as the bark cracks when you bend a green sapling. One such fissure opens south from the Darkot pass. North of this pass bifurcating glaciers run north-east and north-west to Shawar Shur and Vedinkot; south of it are precipitous cliffs and gorges, through which the Yasin river flows down to join the Gilgit river. Another fissure is that through which the Karambar river drains south to the Gilgit. A third is that through which the Hunza river, in a series of stupendous gorges, bursts in succession through the Karakoram, Kailas, and Ladak ranges on its way to the Indus.

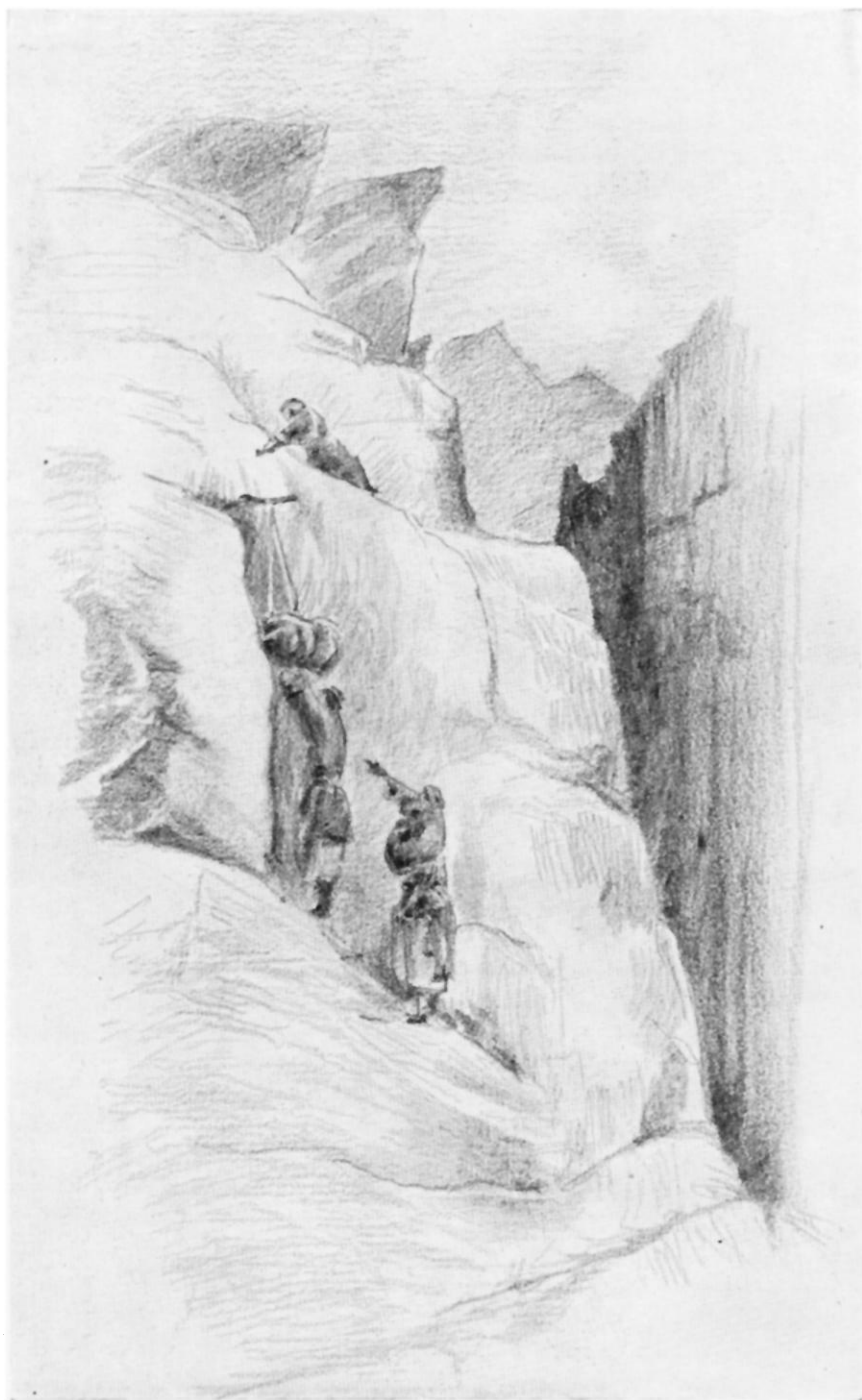
It was in the summer of 1892 that I received orders to proceed to Gilgit and to undertake the fuller exploration of the eastern Hindu Kush region. I followed the usual route by Srinagar, across the Wular lake and over the Tragbal pass to Gurais, and thence by the Burzil pass and Bunji, in the valley of the Indus, to Gilgit. This road has often been described to you, and I need say little about it. It was, at the time I speak of, just being made. I have memories of the most appalling heat in the gorge through which the Astor river cuts through to the Indus, a gorge appropriately called Shaitan Nara, or the Devil's Gap. I still see the vision of the great snow mass of Nanga Parbat rising sheer beyond the Indus. I remember, too, the kindly hospitality of the officers at Bunji. They induced me to stay and dine with them, telling me the road ahead was very simple. I crossed the Indus by a new bridge; was overtaken by a violent thunderstorm, and shortly afterwards found a line of stones apparently intended to close the path. To my right there was a precipitous descent, which proved impassable in the dark, so I turned back and tried the main road again. I had gone but a few hundred yards, when suddenly my horse again refused to move. I could see nothing but blackness. There came a flash of lightning, and I found myself standing where the half-finished road ended in space.

Arrived in Gilgit, I was at once ordered to Hunza, where I stayed for a few weeks, raising and training Hunza levies. These men afterwards did gallant work in the relief of Chitral. Then I received orders to reconnoitre the Shingshal route to Raskam and Sarikol. Our President, Captain Younghusband as he then was, had visited the Shingshal pass from the Sarikol side of the watershed, but, as he was anxious to visit the Khunjerab pass as well before proceeding to Hunza by the Mintaka, he had necessarily to turn back from the Shingshal. My orders were to proceed from Hunza up the Shingshal river to the point where he turned back, and so to complete his work. The road north from Gilgit through Hunza is really a main road from Kashmir to Kashgar. The road east and west from Gilgit to Mastuj is also of great importance. In

the long-distant past it formed the means of communication between the Tibetans and the Arabs when waging a joint campaign against China. Of these routes I had an excellent map. Colonel Lockhart's mission had passed through the country, and Colonel Woodthorpe, who accompanied it, produced a map which, checked long afterwards with the triangulation series, which was made through Hunza in 1913 in order to connect the Indian and Russian Surveys, proved perfectly accurate. It is a remarkable piece of topography. It was my task to fill in many of the gaps which, through lack of time, Colonel Woodthorpe had had to leave unsurveyed. Without his map, I should have found my task impossible.

I left Hunza on 2 November 1892. In addition to eight or ten coolies who carried my baggage, my party consisted of three sepoy of the Kashmir Regiment to which I was then attached, a Hindustani cook and a Hunza man, named Abdulla, who spoke Hindustani as well as his native tongue of Burishaski, and who understood the language spoken in Gujhal. He was a man of splendid physique, and a wonderful cragsman. About 7 miles from Hunza there is the débris of a vast landslip hundreds of feet high, which, when it fell, choked the gorge. The mass stood firm for six months. When it gave way the flood swept through Hunza, widening the ravine which separates that state from Nagar by many hundreds of feet, and bringing annihilation upon the fields and orchards. Just above this slip the Hunza river cuts through the Karakoram range. Precipices of gneiss and granite rise to an appalling height, and the river takes a sharp turn. This gorge forms the boundary between Hunza proper and Little Gujhal, or Hirbar, to give it the native name. The Hunzakuts south of the gorge are of the Burish stock, speaking the Burishaski language. The tillers of the soil are known as Birchik, but men of position among them are called Kanjutis both by the Gujhalis and the Chinese. In Yasin, too, such tillers of the soil as are of Burish stock and speak the Burishaski language are called Warshik. More attention might well be paid to this language, and to other languages spoken in this part of the world. There are some which bear a strong resemblance to the Gipsy language (Romany) if my information on this point was correct.

Proceeding north, I skirted the great Pasu glacier and camped at Pasu, where I found the son of the Mukaddam of Shingshal awaiting me with two or three Shingshalis. I asked if I could take a horse with me to Shingshal. "No!" "Could I take my dog?" I received the sinister reply that I could not take a goat by the road by which we should travel. The next morning we left Pasu and proceeded north for some 2 miles, and then turned east to enter the narrow forbidding Shingshal gorge. It is strange how every traveller who has been along the main route has expressed the wish to explore the valley beyond, but no one before, or, so far as I can learn, since, has had time even to enter the gorge. At every step it grows narrower, and the gloom deeper and deeper. After 4 miles we had to send our ponies back. Behind us the



THE SHINGSHAL GORGE



LOOKING TOWARDS HISPAR PASS FROM ABOVE SHINGSHAL RIVER

river was a deep and rapid stream, gliding silently over a stony bed. In summer the whole of the gorge is filled with a tumbling mass of yellow, mud-laden glacier water. In November the volume was less but still formidable. In front of us the cliffs of fine-grained, pale grey limestone rose precipitously to a vast height on either hand, and the space between narrowed to less than 50 yards. This was filled by a chaos of huge boulders, piled in the utmost confusion at the foot of the cliffs. The roar of the waters, as they crashed foaming from rock to rock, woke a thousand echoes in the precipices above. With this deafening din in our ears we stumbled slowly through the trackless waste. At length we came to an abrupt standstill. On the far side a buttress of rock rose to a height of about 700 feet. The torrent was absolutely impassable. The only path lay along the cliffs on the right bank. These had been ground and polished by the action of the summer floods, but some 15 feet above the point we had reached a narrow ledge could be seen leading to higher ledges. I was wondering how we could climb this when one of the guides doubled a rope and threw it over a tree branch fixed in a narrow cleft between two shoulders of rock nearly level with the ledge above. Up this rope first one and then another clambered, and loads were drawn up by the same means. Pushed from below and hauled from above I went up in much the same way. The next 50 yards we followed an ever-narrowing ledge of rock over which the cliff bent closer and closer, until forced to our knees and then compelled to wriggle like serpents, until finally we dropped feet foremost into a little rocky cup formed by a summer waterfall, and from thence on to further ledges from which at last we reached the river-bed again. In no other valley of the Hindu Kush is anything wilder or more desolate to be found. Not a gleam of sunshine reaches the bottom of the gorge; the river-bed is choked with boulders of enormous size, and two, leaning one against the other, form a cave which could shelter forty or fifty men. Here we spent the night.

For 8 miles the character of the gorge remains unchanged. Occasionally side streams flow in through clefts only 2 or 3 yards wide, riven sheer through the cliffs for 1000 feet. Then the valley opens a little, and here, at the place called Dut, which means a rope and basket bridge, the summer road into the valley comes in from the north. I shall speak of this later. Beyond Dut we had to climb a spur 2700 feet above us, and night fell before we reached the top of the ridge. We made a terrifying descent down the other side in the dark. My only bottle of whisky had been broken the previous day, and here, I remember, we lost the whole of our small store of flour as well. One of the coolies dropped the bag, and we heard it bounding from rock to rock as it fell into the dark void below. Without whisky and without bread we camped in the river-bed opposite a shrine. No native would cross the river, since it meant death within the year. Even the cliff was said to be sacred, and flood water powerless against it. Just as I was being told of this, a great bit of the

sacred cliff came tumbling down into the river, and was carried away by the impious stream !

The next day we passed round the snout of a great glacier called Malungutti. This comes down to the very edge of the river, from which it rises sheer: an ice-wall of wonderful colouring—below of deepest green, but graduating to an ethereal tone of emerald above—and surmounted by fantastic spires and pinnacles of every form and size. "Looking up the valley from which it issues one sees a great double-headed mountain, extraordinarily bold and massive, which the natives call Malungi Dias. The Malungutti glacier, as far as I could tell, does not descend from this mountain, but, rising far to the south of it, sweeps round its base. The two peaks, whose altitude can scarcely be less than 24,000 feet, are connected by a ridge, in height hardly inferior. For grandeur of form and prominence of position, there is no feature in the whole Shingshal valley more striking than this magnificent mountain." So I wrote in 1894. Some twenty years later the surveyors, who made the connecting link between the Indian and the Russian triangulations, fixed the position of this mountain, which they call Dumáta. The corrected position is within 5" of latitude and 18" of longitude of the position fixed by me with a cavalry sketching-board. Its height is given as 25,868 feet. It thus proves to be higher than any fixed peak either in the Hindu Kush or the Karakoram range west of K<sub>2</sub>. It is clearly shown in the photograph taken from Tomtek, 18,600 feet, at a distance of 60 miles. My view is from the same angle, but only from 15 miles.

The Malungutti glacier has in the past filled in the whole valley and blocked the Shingshal river. The river now cuts sharply through the old moraine, and through the old bed of the lake that formed above it. Above the glacier the road is much easier. The village of Shingshal lies at a height of 10,000 feet on the left bank of the river in a crescent-shaped bay, 1500 yards long by 600 yards wide, nearly the whole of which is cultivated in terraces with barley and buckwheat. Above Shingshal the path remains easy. The summer path, which lies over four passes of about 14,000 feet, turns off to the left up the Zardigarbin stream, and about 4 miles east of Shingshal the Shingshal river swings round to the south-east; at the bend a gorge, so narrow that it is scarcely visible, comes in from the north-east. This stream is called Tang, and near its head lies the Shingshal pass. There is at first no path in the gorge, and a rough scramble up cliffs on the left bank brings one to a broad open plain, much scored with the tracks of game. From this a good view is obtained of the Shingshal valley to the south-east. The Verijerab glacier, the cause of the disastrous floods that years ago swept down the Shingshal river and destroyed much of the village, is seen at a short distance protruding from a steep ravine. It stretches nearly to the opposite bank. Beyond it a snowy peak blocks the view, but the valley seems to sweep round to south, and, somewhere near the Hispar pass, is lost amid the snows.



Crossing the plain the path gets worse. Here a single gnarled tree branch projects from a seamless cliff, here a fragile wooden staircase descends dizzily. Finally, after reaching a height of 12,000 feet, the track plunges down precipitous rocky faces to the very edge of the Tang stream. The gorge here is but 15 yards wide, a mere rift in the black rock. We scrambled over great boulders, past frozen waterfalls—the water pouring through a sheath of ice—across ice bridges, and forded the torrent fourteen times till we reached a place called Thin Kuik, which means “Hot Spring.” The Shingshalis were much tickled at my being able to pronounce “Thin,” which their neighbours called “Din.” The temperature fell to 7° Fahr. and the night was bitterly cold. With me was the son of the Mukaddam of Shingshal, who I found was one of the party of Kanjutis who had confronted Captain Younghusband at the Darband on the far side of the Shingshal pass, when he visited the pass from the east. Taking him and Abdulla, my faithful Hunza servant, with me, I started out the next day to reach the point where Captain Younghusband turned back. We had to traverse a rotten cliff where a tree-trunk thrown across a chasm often formed the only path. Then came a very stiff climb of 1000 feet to a broad shelving plain, over which, for 2 or 3 miles, the path is so good as to almost deserve the name of a road. Here at the edge of the cliff which overlooks the right bank of a ravine was a cairn of stones, which I was assured was built by the men who had accompanied Captain Younghusband, to mark the farthest point he reached. I should have liked to go on to the actual crest, but I had orders to return by the Murkhun or Karun Pir pass, which is the only summer road into the Shingshal valley. The season was also very late. The weather, which had hitherto been bright and fine, was changing, and clouds were gathering. The first fall of snow would, I knew, close the pass, and my work would be incomplete. So, rather reluctantly, I felt it my duty to turn back. Before doing so my men built a second cairn to show that no portion of the road from Shahidulla to Hunza remained untrodden by an Englishman.

We returned immediately to Dut, which we reached on the third day, and then, turning our backs on the Shingshal river, faced the Karun pass in front of us. We had forded the river seventy times in all, in water always icy cold, often frozen top and bottom, and in a depth varying from 18 inches to nearly 5 feet. We had had enough of it. The path up to the Karun pass ascends at a terribly severe gradient for 1500 feet, through clay and gravel cliffs, overhanging schistose rocks, clearly marking the limits of an ancient lake-bed, or perhaps a pamir. Here I deciphered an inscription written in Persian on the cliff, a couplet from Saadi, cursing the difficulties of the road. We camped at a place called Tsurkurt, where there was a spring 3000 feet above the river. Next day we crossed the Karun pass. There is no gap in the ridge, and the rock is weathered into dome-shaped mounds of schist. There were 3 feet of snow on the

north side, the height being a little over 16,000 feet. There was a little glacier below, descending to which the laden coolies had to exercise care. But the snow was hard and the slope steep, and so some of us enjoyed a glissade to the bottom. Halfway down a sharp turn was necessary to avoid a rock, and one of the men, losing his balance, did the rest of the journey head-foremost, ending, amid much laughter, in a snowdrift. After a weary stretch of 3 or 4 miles through soft snow we reached a smiling little alp called Pariar, where the stream flowed through grass meadows, and the Murkhun shepherds bring their flocks to graze in summer. To eyes grown weary of the barren cliffs and gorges of Shingshal it seemed lovelier than it doubtless is. From there to the Hunza river at Murkhun the descent grows steeper and steeper, the last few miles through a very narrow gorge.

As the weather had cleared, I now decided to attempt to explore the Khunjerab valley leading to Sarikol. I took with me on this occasion a larger tent, and a table and chair, having found by experience in the Shingshal that there is nothing more trying to the temper, after a long and dreary trudge, than sprawling on one's bed while writing up a diary and making a map. Indeed, when the ink in the stand is frozen and every nibful has to be thawed in the flame of the candle, the work becomes interminable. I need not speak of the route up the Hunza river; its terrible gorges have often been described. We soon turned up the Khunjerab river, and the laden coolies followed a difficult footpath up the right bank. Being mounted I kept to the river-bed and forded the stream a dozen times or more. Even in November I found the fords none too easy; in places the water was over my saddle. Just below the confluence of the streams from the Kilik and Khunjerab passes, the river flows in a true gorge, very narrow but not very deep. Then to avoid this gorge the path crosses the Luwarchivech spur. We marched for two days up the Khunjerab valley, which rises at a very steep gradient. At Shachkatar, where I camped, the river cuts through a mountain wall and flows in a true gorge, the cliffs rising sheer to a vast height. They were "alive" that night, and times without number I was awakened by the din of falling rocks, which at first I mistook for peals of thunder. In the morning we had a chase after a little animal which appeared to have its home among the loose rocks at the foot of the cliffs. I thought at first it was a leveret, but think now that it was what I have since seen described as a "mouse-hare." It had large round eyes, a small round body with ample mouse-coloured fur, and it dodged very actively in and out among the freshly fallen rock débris.

At Wadakhun, where we camped the following night, the Khunjerab valley runs east and west. To the north the hills recede in the form of a crescent. Girt round by this half circle of hills lies an elevated alluvial plateau through which the river has threshed its way to a depth of more than

1000 feet. About a mile to the east is the confluence of the Ghujerab from the south-east. This river drains a valley which is much broader and more extensive than the valley of the Khunjerab above the confluence. Its volume of water is far greater than that of the Khunjerab, and since the Khunjerab is a larger stream than that which flows down from the Kilik it follows that at the head of the Ghujerab valley, somewhere near the Shingshal pass, lies the true source of the eastern branch of the Hunza river. During the night we spent at Wada Khun heavy snow fell, and in the morning the ground was thickly covered. At the request of the coolies I stored the greater part of my baggage in my tent, which I left standing, and proceeded on the way to the Khunjerab encumbered with as little baggage as possible. Our route lay over easy slopes, gradually ascending for about 2 miles across the eastern horn of the crescent already described. It terminated to our right in a low flat-topped knoll, beyond which the cliffs fell precipitously to the river 2000 feet below. In front of us the track crossed the spur and then plunged, at an appalling gradient, down a rocky gully and out of sight. From the spur we could trace the course of the valley for miles, and below us, like a silver thread, we could see the stream winding through narrow strips of jungle, now hidden by a projecting cliff, reappearing again straight below us, and finally vanishing in the deep gorge to the right.

This pass, called Titirrip, approximately 12,350 feet high, is held by the Guhjalis to mark the boundary. In winter one cannot get horses across the pass, or even laden men, as I soon found. In summer you cannot get them beyond the pass owing to the depth of the water in the river. On the other hand, the higher valley is easily accessible from Sarikol, and in places there are traces of Kirghiz colonization. In fact, the water-parting between the Indus and Tarim basins is not always locally accepted as the boundary. The Shingshal people regard the whole of the Shingshal Pamir as far as Darband as belonging to them, and assert their right by grazing their cattle on it. I found afterwards that the Indus-Oxus watershed is not regarded as the boundary either. Thus the Ishkumman people use the grazing grounds beyond the Khora Bohrt as far as Ab-i-Wakhan. On the other hand, the Wakhis claim and use the splendid pastures of the Upper Yarkhun valley.

When we reached the Titirrip pass we found the descent impossible. I had stayed behind on the pass to do a little plane-tableing, and, hearing considerable commotion below me, hurried down the slope to overtake the coolies. The path was at first easy, but where it became steeper I found them all huddled together, none of them anxious to follow the hasty lead of one who had slipped and fallen, but by good fortune had been brought up suddenly on the very edge of the precipice. Their leather foot-gear could get no grip on the icy slope, and after several had had very severe falls it became obvious that I must cut steps for them. There were no ice-axes; nothing, in fact, except my alpenstock and the

heel of my heavy boots. I, however, went in front. So long as the ground was not rocky I had little difficulty in cutting steps which were at least sufficient for my own wants. But by this time the coolies had lost their heads and the younger men were in tears. Nearly every one expected me to help him, and I had to help with the loads as well. When we reached the ice-covered rock surfaces, the difficulties increased. Progress was painfully slow, and after an hour's toil it became obvious that we should never reach the bottom of the slope before nightfall. The path had become really dangerous, and it seemed likely at any moment that a coolie would fall and break his neck. I therefore decided to return and to put off the further exploration of the Khunjerab valley till the spring. When, five months later, I revisited the place and viewed the whole descent from top to bottom, I saw no reason to regret this decision. Snow fell all that day and all the next. No survey work could be done, and the ill-clad and ill-shod coolies suffered severely.

I therefore returned to Hunza. The route down the river is well known. The Hunza river makes a big bend through a deep gorge at Khaibar at a level of about 8500 feet, between two peaks 4 miles apart, both about 18,000 feet high. This may be the real axis of the northern Karakoram range.

I started north again five months later. Experience taught me to replace my local coolies by carriers from Baltistan. These men I equipped as well as I was able, and they remained with me for two months and did extremely well. During the winter, too, thanks to our President, my stock of surveying instruments had been largely augmented. Besides my cavalry sketching-board and an aneroid, which were all I had in Shingshal, I now had a 3-inch mountain theodolite, a 6-inch sextant, a subtense instrument with a 10-foot rod, and two hypsometers. Colonel Woodthorpe had used the subtense instrument with Lockhart's mission of 1885-1886. He generally worked the traverse himself, and entrusted the plane-plotting to a native surveyor. To the latter he gave the bearings and distances obtained, and in this way they did as much as 19 miles of a good route traverse in one day. On the other hand I had no one to help me, and I had no tables by which to find the distances. I had to calculate each distance from formulæ. I then plotted them on a large scale and reduced them, replotting them on the plane-table, and then worked in the topography. In the Khunjerab the gorges are so narrow and so tortuous that I had to observe at very frequent intervals. I took the mean of three to five observations of each distance, and all this consumed a vast amount of time. Working ten and eleven hours a day I never did more than  $12\frac{1}{2}$  miles, and averaged not more than 8 or 9. So far as my work has been checked by the trigonometrical triangulation conducted up the Hunza valley, it appears to have been more accurate than I could have hoped. Occasionally I got a bearing to fixed peaks, which, with very careful observations for latitude, helped me greatly.

My party, beside the Balti coolies, my Hindustani cook, Abdulla, and myself, consisted of a Pathan orderly, another Hunza man to carry the 10-foot rod, and a guide. We reached the Titirrip pass again on April 26. The descent was at first easy, but presently the path plunged abruptly down a rocky gully for some 1200 feet, and then down broken detritus slopes steeply to the river-bed. The total descent proved to be 1950 feet in 1300 yards, or exactly 1 in 2. Beyond this pass the path lies in a gorge. At Dih a considerable tributary flows in from the north-west, a fine open valley wooded with willow and a kind of poplar. It is a favourite haunt of ibex, and the stream abounds with fish, which we found very excellent. A little above Dih the Karchenai gorge enters from the north, over which there are glacier paths to the Tagdumbash Pamir. The valley narrows again until Barakhun is reached, where the valley bifurcates, one stream coming from snowy peaks to the north-east and the other coming in from the south-east.

Up this lies the path to Khunjerab. It presents no difficulties, but about 4 miles from the pass it rises sharply, leaving the valley, where the stream can be seen rising in glaciers to the south-east, and crosses some very tiresome stony slopes until it emerges upon a broad upland. The descent on the Sarikol side appeared equally gentle and easy, but a range of mountains almost parallel to the range on which we stood quickly closes the view to the east. As we turned back the snow began to fall and continued throughout the day.

During the next month I visited the Mintaka and Kilik passes. They are both well known and need no description from me. I may mention that the Hunza people call the Mintaka Kirisht. Mintaka means "many sheep," and Kirisht means "a sheepskin." I saw plenty of *Ovis poli* and some ibex with very fine heads, but had no luck with them; their womenfolk were too watchful. There were the tracks of a bear and of a wolf crossing the pass, apparently in company. Pigeon and hares were seen at the foot of the pass, and a red-breasted bird, about the size of a thrush, on the very summit.

South-west of the Kilik pass there is a fine snow peak which lies about 6 miles due south of the actual water-parting of the Oxus, Indus, and Tarim basins. I observe that, in the Indian Survey 4-inch map of Hunza published in 1915, the range on which this point is situated, and which is crossed by the Kilik, Mintaka, and Khunjerab passes, is called the Sarikol. If this is the last word in mountain nomenclature, I would suggest that the range crossed by the Irshad pass, and forming the water-parting between the Oxus and Hunza rivers, should be regarded as part of the Hindu Kush.

My next work was to visit the Irshad pass. Leaving the Kilik valley I entered the Derdih valley, and thence crossing the Kermin pass (13,050 feet) dropped down into the Chapursan valley. No Englishman had

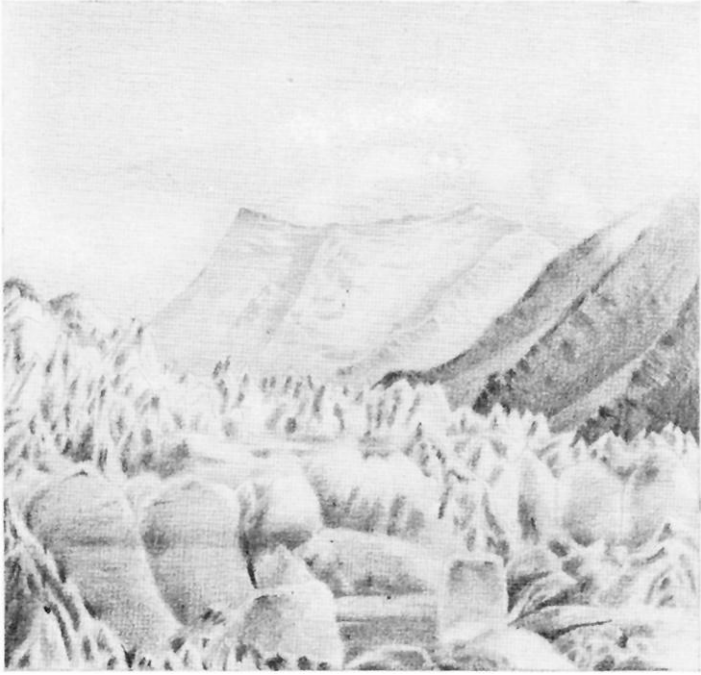
followed this route, though Colonel Grombchevski entered Hunza by it in 1888. The Derdih valley is far more extensive than had been previously shown on any map. The Chapursan valley had not been seen or mapped west of the Kermin pass. But since my time it has been crossed by Sir Aurel Stein, and I believe he has described it here. The bed of the valley must once have had the character of a pamiir, and, if I am not mistaken, there are traces of alluvium on both banks at very high levels.

At its head lies the difficult Chillinji pass, by which the Karumbar valley can be reached. The actual point of crossing seems to differ in different seasons. The natives truss themselves with long poles, one under each arm, and one over the back and chest, and so trussed laugh at the crevasses. The Mir of Hunza told me that he once crossed the pass without ropes or any of the usual precautions. "How did you do it?" I asked him. "It was very simple," he said; "I put a man in front, and, where he did not fall in, I followed." More than one life has been lost on this road, which only saves one march and is seldom used. It is a curious characteristic of the lateral valleys which join the upper Chapursan valley that they descend gently until they overlook the main valley, and then fall very abruptly to the lower level. It is as if they had lost their way and had come out 1000 feet higher than they had intended. The main valley seems to have eroded very much more rapidly than its tributaries.

The Irshad pass, or rather passes, for there are two of them, lie at the head of a side valley about 6 miles long which joins the Chapursan river at Beskiyenj opposite a great glacier that comes in from the south. I had a horrible time getting to the pass, as there were 3 feet of snow frozen on the top but not hard enough to bear my weight. The hillsides had been swept by occasional avalanches, which we welcomed, as they cleared the snow for us. We found 3 feet of soft snow very tiring at an elevation of 16,000 feet, and took turns in leading. Eventually we cut through the overhanging cornice and reached the summit. From the pass one looks down a narrow rock-bound valley which can be traced for some 10 miles as far as Lupsuk, where the Khora Bohrt pass joins in. Facing the south-east one gets a magnificent view of the peaks, nearly 23,000 feet in height, which separate the higher snowfields of the Batur glacier from those of another glacier which trends west. These glaciers have never been explored, but I believe that that visible from the Irshad pass is the main source of the Bar glacier which drains into the Hunza river near Chalt.

Returning from Irshad I saw a magnificent avalanche fall into the valley behind us, taking its start from a very lofty peak on our right and falling right across the path which we had just traversed. This was the only one I saw or heard, but the route is reputed to be very dangerous owing to avalanches.

In returning to Hunza I crossed the great Batura glacier, which we



MALUNGI DIAS AND MALUNGUTTI GLACIER



TITIRIP KOTAL, KHUNJERAB



LOOKING S.E. FROM GHARAJAR, VERIJERAB GLACIER



found fairly easy and practicable for laden animals. I also crossed the Sasaini glacier. Whether we missed the right track I cannot say, but we were suddenly confronted by a series of profound crevasses, the ice being heaped up and contorted into the most extraordinary forms. It was no easy matter, in a gale of wind, to clamber along knife-like ice-ridges over yawning chasms. It took us an hour to reach the very pretty village of Ghulkin. The next day I crossed the Baskuchi pass. It is an upper road, crossing a spur in order to avoid the gorge at the great elbow of the Hunza river. It is a horrible path, very steep to the top of a dry gully, and then an awful precipice, a sheer wall of rock down and across which a narrow cornice, scarcely more than 12 inches wide, has been bracketed to the face of the cliff with really marvellous skill. Two turns in the perilous gallery makes the passage hazardous for animals. The river-bed, though 2500 feet below, seems, as one stands on the cornice, to lie beneath one's feet. I could never have believed it possible to take a pony across it, had I not been told by the Mir of Hunza's brother that he brought his own across it not ten days before, and had I not seen the marks of hoofs along the track.

Towards the end of that year, 1893, I made many minor explorations of which I have no time to speak. Among others I explored the Daintar valley, at the head of which there is a V-shaped depression, filled with ice and heavily corniced. Lieut. (now Field-Marshal Sir William) Robertson, who had visited it, reported it to be impassable. I confess that I did not like the look of it myself, the rock wall at the end appearing very steep and formidable. When I asked my guides if they had ever crossed it they replied, "God forbid." But our President made light of it when he made up his mind one day to see where it led. I myself found a pass, which had not been crossed before, leading south over a spur which may prove to be a continuation of the Kailas range. It lies between the Daintar and Naltar valleys. The elevation of the pass is 15,210 feet, and there are glaciers on both sides. The rock dips almost vertically to the south, so that the top of the ridge scarcely affords room for a plane-table. Crossing into the Naltar valley I found myself in the most exquisite highland scenery.

Another time I had the pleasure of climbing a steep valley in Hunza, in the company of Charles Bruce, who is leading the expedition to Mount Everest, which we all hope will prove successful. We spent a night at the head of the valley, and from our camp looked right up the great Hispar glacier. Bruce cooked a wonderful dinner for us both, and the next morning gave me an ice-axe and a rope, and my first lesson in using them. I well remember being let down a steep rock face with one end of the rope about me and turning like a joint on a spit in a vain endeavour to get a foothold as I descended. When I reached the glacier Bruce threw me the rope and in half a minute stood beside me. How

he did it I do not know to this day. I may mention that I spent the whole of 1894 in exploring the Hindu Kush and the lateral valleys of Chitral. In the course of my work I discovered and crossed a score of glacier passes, but feared to use the rope, and my steps were not always very well cut. For example, there is a pass called Dir Gol which crosses a range just south of Tirich Mir. The pass is over 16,000 feet high. It is a fissure in a razor-like splintered ridge of porphyritic granite, which here forms the watershed. The descent lies down an almost perpendicular couloir, over rotten rocks, for 100 feet or more, and then for another 60 feet down a steep ice slope. As we crossed this, one of my amateurish ice-steps gave way beneath my Ghurka orderly, who, followed by my dog, went flying downwards. At the foot of the slope there yawned a great crevasse, but he struck it where it happened to be crossed by an ice-bridge, and swung right out on to the glacier.

As might be expected, earthquakes in this part of the world are frequent and severe. One perhaps deserves more particular mention. I was waiting for a missing pony, and was standing on a small stretch of level ground across which the path ran before entering a narrow gorge beyond. Suddenly I saw the steep mountain slopes on both sides of the gorge grow "alive" (as it is called), and huge masses of rock fell crashing into the valley, wholly obliterating the path, as I subsequently discovered. Great clouds of dust rose high into the air, and as I watched, astonished at the sight, from out of the gorge appeared as it were a succession of billows, like great Atlantic rollers after a storm. In another moment they were upon us; the earth heaved and rocked, and among men and animals all was temporary confusion. I remember it gave me a queer sensation such as one gets on a swing or an anchored boat. There were not, I think, more than a few waves, at most a dozen, and I could form no accurate estimate of their height from ridge to furrow.

Before leaving Hunza and Nagar I wished to see every village in Nagar, as well as Hunza, to complete my work. Crossing to Nagar, which is very prettily placed on a ridge beside a lake, I camped at Hupar, and reached Hispar the next day, crossing the Bapur glacier and the Rashtanni pass. The Hispar river is crossed twice by very frail bridges. Just above the Hispar village lies the snout of the Hispar glacier, which, as you all know, unites with the Biafo glacier to make the longest ice pass in the world outside the Arctic regions. The map of the Hispar-Shingshal watershed is still far from complete; indeed I doubt its accuracy. It is certain that about 6 miles above Hispar a great glacier, called Lak, joins the Hispar glacier from the north, but there is considerable doubt as to the proper position of Hispar. Surveyors with the Bullock-Workman Expedition place it 6 or 7 miles to the west of the position found by me ( $36^{\circ} 9'$  lat. N.,  $75^{\circ} 4'$  long. E.).

Sir Martin Conway places it between the two positions. I may state

that I surveyed the route between Nagar and Hispar in exactly the same manner as elsewhere, and I made Hispar 20 miles as the crow flies south-east of Nagar. The Mir of Hunza calls it 29 miles by the track, and my route traverse made it about the same. The Bullock-Workman surveyors experienced great difficulty in identifying the two survey peaks, Kanjut No. 1 (25,460 feet) and Kanjut No. 2 (24,580 feet), and throw doubts on Godwin-Austen's map work. But Godwin-Austen's work ends a little to the west of Nushik La. He mentions that his view north was obscured by the high ridge between the Haigatum and Hispar glaciers. This is undoubtedly the fact. A close comparison of Godwin-Austen's map with those of Sir Martin Conway and the Bullock-Workman surveyors (which differ a good deal in detail) convinces me that, so far as Godwin-Austen could see, he mapped this region with his usual care and accuracy. If the Workman surveyors were, as I think, 6 or 7 miles out in longitude, they would naturally experience difficulty in identifying the fixed peaks. Hunza peak No. 2 is clearly at the *head* of the Pumarikish glacier, and the Lak glacier lies to the west of it; but how far west should it be placed, and how far north does it go? Looking at the photographs taken by the Bullock-Workman surveyors, I seem to see in the shape of the mountain mass that closes the Lak glacier towards the north-east a very strong resemblance to the great double-headed peak, Malungi Dias, which I discovered and whose position I fixed in the Shingshal valley. That peak cannot be more than 12 miles from the trough of the Hispar glacier. Godwin-Austen stated that some of these glaciers seem to run back 10 or 12 miles, and in this part of the world a glacier of 12 miles in length can only be described as one of moderate size. I am inclined, therefore, to believe that Malungi Dias drains south-west into the Lak glacier, and is thus on the main Hispar-Shingshal watershed. Probably the head of the Malungutti glacier lies near the peak Kanjut No. 1 (25,460 feet).

The whole region north of the Hispar pass is of great interest. The head of the Shingshal valley is unsurveyed, as also is the head of the Ghujerab valley. South and south-east of the Shingshal there is a wide area which may contain high mountains still uncharted. In this direction, too, there is reputed to be a pass leading from a point east of the Shingshal pass up a tributary of the Oprang valley into Baltistan. I think the great Hispar glacier has proved too strong a lure to travellers in this part of the world. It has diverted attention from mountains and valleys in the vicinity that deserve to be more thoroughly explored. I shall feel deeply gratified if my lecture to-night induces some competent person to undertake an expedition to the north of the Hispar. I am convinced that there lies in that direction a field for exploration worthy of any traveller, however distinguished.

Before the paper the PRESIDENT said: I have great pleasure in introducing to you Brigadier-General Cockerill, who years ago was with General

Bruce and others here to-night serving on the Kashmir frontier, which is so well described in Mr. Knight's book 'Where Three Empires meet.' When the Russians were advancing towards our frontier, General Cockerill made most interesting journeys into that still relatively unknown country and discovered a very high mountain which apparently nobody has visited since, though its height has been fixed by the Survey of India from a distance. I will ask General Cockerill to give us his paper on these journeys.

*General Cockerill then read the paper printed above, and a discussion followed.*

Sir HENRY MCMAHON: I can add very little to what has already been said, but as you have asked me to speak I welcome the opportunity to pay my tribute of thanks to General Cockerill for the most delightful and interesting paper we have had from him this evening. It has been a great pleasure to me personally, for I was in civil charge of that country for some years, and these pictures have recalled many familiar scenes and faces. I was helped a very great deal in finding my way about the less-known portions of that country by the very able and valuable reports which General Cockerill had written and left behind. I would like to endorse what has been said by General Cockerill to-night, that more men ought to visit and work in this country and fill the many unexplored and unsurveyed portions that still remain. The beauty and grandeur of the scenery, and the friendliness and charm of the people who inhabit this remote corner of the Earth, will amply reward them for their efforts.

The PRESIDENT: I should like to see, as a result of this evening's paper and discussion, parties sent up to complete the work commenced thirty years ago and bring us back thoroughly good maps and still better photographs. It is a most wonderful region, and even if travellers cannot go out from England, I hope that officers will go from Gilgit and carry on General Cockerill's work of thirty years ago. I know you all wish me to thank General Cockerill for his interesting lecture this evening.

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## THE KLAGENFURT PLEBISCITE

Roland L'Estrange Bryce

*Read at the Meeting of the Society 8 May, 1922.*

I MUCH appreciate the honour which your Society has paid me in inviting me, as Secretary-General of the Klagenfurt Plebiscite Commission, to give you some account, under the heading of Political Geography, of one of the many "children" of the Peace Conference. This account I shall more or less strictly confine to a description of the organization and methods with which the Plebiscite was conducted. The geography of the plebiscite area is simple and does not call for any detailed description, and, as events shaped, the purely technical geography of the plebiscite, as distinct from its political side, is comparatively unimportant; but this might not at all have been the case had Zone 1 of the Plebiscite area voted for Yugoslavia and Zone 2 for Austria, which would in all probability have necessitated certain geographical adjustments of the Line of Demarcation between the two zones, to include the