

## VI.

---

*An account of a Tour made to lay down the Course and Levels of the River Setlej or Satúdrá, as far as traceable within the limits of the British authority, performed in 1819.*

---

BY CAPT. J. D. HERBERT, 8TH REGT. N. I.

---

IN 1819 in the course of the survey operations in which I was then engaged I traced the River Setlej to the confines of the British authority. Having drawn up a short account of this journey soon after my return I have thought that imperfect as it is, it might be acceptable to the Society. The only apology I can offer for the meagre nature of this communication (which indeed is little more than a description of the road travelled) is the constant occupation which my duties as Surveyor gave me and the long marches it was necessary to make on account of a deficiency of supplies. These two circumstances left me little leisure for observation or enquiry.

The Setlej has been lately known to derive its source, if not from the lake Ráwan Hrad, or the neighbouring one of Mansaróvar, from the high ground on which they are situated. From the source however, which by Capt. Hearsey's map, is in  $31^{\circ} 46'$  Lat.  $80^{\circ} 43'$  Long. to Ropur in  $30^{\circ} 58'$  and  $76^{\circ} 31'$  a distance of upwards of 400 miles, little was known concerning it, or the

country it flows through, till the expulsion of the Gorkhas gave facilities to research which had before been wanting: the existence of a WESTERN BRANCH of this great river *beyond the snowy chain* was not even suspected, and to our ignorance of this fact may be attributed some errors which could be pointed out in maps very recently published. Of the actual direction of its course an equal ignorance prevailed, or it could never have been made a question, whether the BHAGIRATHI had its source *within*, or *beyond*, the snowy chain. We were equally ignorant of our proximity to the Chinese dependencies; to Ladhak and to Tibet the country of the Shawl goat; and of the fact of a constant communication being kept up between these countries and the newly subjected mountain provinces, by a route penetrating through the hitherto reputed insuperable barrier of the HIMALAYA. These, with some other less important particulars established in this journey, are new to Indian Geographers, and as such may be not unworthy of record.

The object of the tour was to explore and lay down as much of the course of this river as might be accessible. From the jealousy of the officers on the frontier, however, the survey necessarily terminated at the limit of our authority. At Shipki, the first village of Chinese Tartary, I was compelled to retrace my steps. From Roper to Shipki is about 250 miles, the whole line being through a mountainous country, at first easy of access and of inferior elevation, but afterwards approaching the limit of perpetual congelation and increasing in difficulties. The last 50 miles, comprehending the Pergunnah of Kanauwer, is within the chain of the Himalaya and forms the route above alluded to. It is to this portion of the survey, I have chiefly confined myself in the following narrative.

On the 1st September, I quitted Kotgerh\* cantonment, accompanied by

\* Kotgerh is on the left bank of the Setlej. It is in Lat.  $31^{\circ} 18' 40''$  long.  $77^{\circ} 28'$  the elevation is 7783 feet above the sea. The climate is similar to that of the south of England, or perhaps a little more mild.

Lieutenant Patrick Gerard, of the 8th Regiment, then doing duty with the Nassiri Battalion of Gorkhas. We chose a circuitous route for the purpose of laying open a part of the survey not then visited. As little of interest however occurs in this early part of our journey, in which we passed through the lower mountains, I shall be rather brief in my notice of it. Our route lay in the first instance to the southward, crossing the Nagkunda pass, elevated 9800 feet. This ridge seems to be composed of clay slate passing into mica slate and quartz. It divides the supplies of the Setlej from those of the Giri river, which falls into the Jumna. A few miles to the east of the pass, is the fort of Whartu, if two guard houses built of unhewn stones deserve the title of fort. It is elevated 10,000 feet above the sea, and is therefore considerably colder than Kotgerh. The filbert and the sycamore (the former producing excellent nuts) were found here. The ascent was very steep, but there has been lately constructed an excellent road for horses, and a bungalow erected by Government, on the summit of the ridge, for the convenience of travellers.

After crossing the pass, we proceeded down the Salar stream, a feeder of the Giri, and crossed the latter, which is amongst the largest of the mountain rivers that have not their origin immediately from the snowy chain. We were now on the right bank of this river, and in the hill state of Kyunthal. Hence our course lay S. S. E. to Chepal Fort in Júbal, crossing two of the principal feeders of the Giri and their separating ridges, and latterly the great back, of which the Chúr is the principal peak, and which separates the river vallies of the Giri and Tonse. This ridge is a ramification from the snowy chain. It is of great height and steepness, and may be considered the principal ridge belonging to the valley of the Jumna. The Chúr, the loftiest of its peaks, is elevated 12,149 feet above the level of the sea. Many of the other peaks are not much less, and few of the passes north of the Chúr are under 9000 feet. It is well wooded; though some of its peaks rise above the limit of forest. The juniper, a species of red current, the yew, with all the varieties of pine except that peculiar to the Himalaya,

tract, three species of oak, with a numerous list of alpine plants, are found here. The summit of the Chúr is grey granite of a coarse grain, which lower down is exchanged for mica slate. On that part of the ridge which I crossed as above mentioned, I observed only granular quartz.

On the 12th, we reached Chepal, and hence our route took a turn to the Northward, crossing the Salwe river, (a feeder of the Tonse) and the high ridge which separates its sources from the valley of the Páber. We passed through Deohra, the residence of the Rana of Júbal, one of the secondary mountain states. We crossed the Páber river under Raungerh, an inconsiderable fort, the water of which can be cut off. The passage of the Páber which is a large and rapid river, was effected on a hanging bridge of ropes 123 feet long and 22 feet above the water.

These bridges would seem to be on the same principle as our suspension chain bridges in Europe. Their swinging motion is very disagreeable, and generally gives the unpracticed passenger an idea of danger exceeding the reality. The tread is however a little unsafe, as the footway is quite open, just like a rope ladder, and some attention is required to avoid putting your foot through the opening instead of on the cross piece. The noise and foam too of a mountain river, dashing beneath, are not much calculated to strengthen one's powers of attention. To a novice it is rather a disagreeable mode of crossing a rapid river, but a little practice reconciles it, like all the other difficulties.

Here began our ascent of the Changshel ridge, the separating ground of the Páber and Rúpin, both branches of the Tonse, and both large rivers. This ridge is a ramification from the snowy chain and is of great height. It terminates above the confluence of the rivers, in rather a flat declivity, the less elevated parts of which are cultivated and well inhabited. The sides of this ridge are deeply intersected with large torrents, and in the glens formed by them are several substantial villages. Our path lay along its sum-

mit, latterly above the limit of forest; our camp on the 24th, having attained an elevation of 11,280 feet. Here we found just below our tents, the juniper, and black and red currants; the latter having a sweetish taste. The thermometer did not in the sun at noon rise higher than seventy-nine, and in the shade only  $67^{\circ} 5'$ . The following morning it was forty-one at day break. In proceeding along this ridge we attained an elevation of 13,000 feet. This part of the mountain was of course far above the zone of forest. It was however clothed with a luxuriant pasturage, richly enamelled with a thousand flowers, many of which were familiar to us as the production of Europe. There was very little of rock visible; here and there a patch of quartz of a dazzling white, and mistaken at a distance for snow. As the ridge rose, the shattered tables of gneiss were seen to connect it with the granitic peaks of the snowy chain. Descending from this lofty ridge we reached Dúdú on the Rúpin where we had ordered our supplies to be collected. The village is inconsiderable, and consists of but a few houses. It is chiefly remarkable as the residence of a petty marauder, who, before the establishment of the British authority, had contrived to make himself feared by his neighbours, on whom he levied contributions. From Dúdú, the route descended to the bed of the Rúpin, which we crossed by a *Sanga* of thirty-five feet in length, ascending thence to Kuara, a substantial village of about forty houses. The river was deep and rapid, and the mountains of great height.

On the 28th, we proceeded to Jako, the last village which we were to meet with on the southern face of the snowy range. The path was upon the whole difficult; our rate of progress being little more than a mile an hour. Two miles from Pújali or Kuara, we crossed the Rúpin once more on a *Sanga*, forty-four feet long, and eleven feet above the water. It seemed, even at this advanced point, a large river and the current very strong. After crossing, the ascent continues steep for about a mile, where the Rúpin receives another stream called the Berar, an equal body of water, if it be not (as I thought) the greater. After this, there is a good deal of descent, and

then a level path along the river edge, to the foot of the Tankúl defile, a very difficult and steep ascent to the village, by what might be called a natural flight of steps. The village is not large, and the inhabitants appeared ill looking and dirty. They have little cultivation, and depend chiefly on what they earn as the medium of intercourse between the people of Kanauwer and Chuára, in the exchange which is continually made of their respective commodities. The filbert was met with in great abundance to-day.

Beyond Jako, we were informed, no villages would be met with, till we should reach the inhabited country on the other side of the snowy range. It was therefore desirable to cross the pass if practicable in this day's march. But it was found that the difficulties of the road, and the delay occasioned by the construction of a sanga, on which we crossed the Rúpin for the third time, did not permit such quick progress. The evening was far advanced before we had reached the river head, and as we had now attained an elevation at which fire-wood ceases to be procurable, it became necessary to halt at this place, which had also the advantage of affording a degree of shelter to our followers in some caves and overhanging rocks.

The first three miles being a descent to the river bed, was an extremely bad path with a good deal of difficult descent. Here we were delayed by the construction of the sanga. The river was rapid and wide, and though fordable, yet it was with difficulty, and only by the united efforts of three or four men in a knot, that the current could be stemmed. The temperature of the water was so low as 43° and this added to the difficulty: after a delay of nearly three hours, we were enabled to proceed. The path continues rugged. An ascent arduous at first, afterwards easier, leads along the river bank, while the bed or valley opens a little. At the Sanga, the mountains approach each other so as to form a gorge, in which the extreme narrowness of the opening and the gigantic loftiness of the sides are very striking. Some idea of the place may be formed from the elevation of the almost overhanging crág, taken from the bed of the river, and found

to be 720. Snow beds of some extent were now met with, shewing we were approaching the pass, and the frequent occurrence of the black and red currant, with the birch, indicated an elevation very near the limit of forest, and consequently led us to believe that the river head (judging from analogy) could not be far. We had now proceeded six miles and three quarters, of which the last mile or two had been in the river bed, and the path rather easier: an immense mass of frozen snow which appeared to have fallen into the river, and which was perfectly compact like rock, and not less than fifty feet thick, here excited our attention: the stream had undermined it, and forced for itself a passage, but the superincumbent mass was not the less firm or the more likely to give way: a little beyond this snow bed the path proceeds along a level piece of considerable width, agreeably shaded by birch trees; while the surrounding mountain masses, rising into turret-like peaks, with sides of a mural steepness, and bare, except where a narrow ledge affords nourishment to a few hardy creepers or mosses, and the whole crowned with eternal snows, presented a picture, which though naked and desolate, was by no means devoid of interest. Hence, the path is open, and presents few difficulties, occasionally leading over frozen avalanches, and along the river edge, which here spreads itself through this little valley, meandering with a placid current over a sandy bed. Our expectations of accomplishing the passage of the range, were strengthened a good deal by our meeting here a party from the village of Durgaon, on the Tonse, who were returning with salt from Kamrú in Kanáwer. They had crossed the pass about noon, and reported the old snow sufficiently firm, but the preceding day's fall, which was from two to three feet deep, was by no means so. The salt was carried on sheep, which are, in the upper mountains, universally employed for this purpose; each carries about five seers, and the load, being divided, is fastened on each side, to a little saddle or broad girth that passes round the body, and prevents its incumbering the animal or retarding its progress. Loaded in this manner they will, if the road be good, make marches of ten miles a day and keep in good condi-

on, but then it is to be noted that the hill pasturage is excellent, and improves in luxuriance the greater the elevation, short of perpetual snow.

Towards sunset we reached the limit of forest, which made its last expiring effort in the production of a few stunted creepers of the *Rhododendron* genus. The elevation of the place was 11,281 feet above the sea, which may therefore be considered as the height of this limit: several caves, or overhanging rocks, capable of affording shelter to our followers, induced us to halt here, the evening being far advanced and no firewood procurable a-head. The night was very cold, and in the morning the thermometer was down to  $34^{\circ}$ ; my companion shot here a *musal*, which afforded us an excellent dinner.

As we had a long and fatiguing march before us, we thought it advisable to take some refreshment before setting out. Accordingly, it was near ten o'clock before we were fairly in motion. The narrow valley already described continues for a mile and a half further; the river broad but shallow, and having little current. Fragments of every size, and of every kind of granite or gneiss, were strewed about; amongst them, some very brilliant, if not beautiful, specimens were observed, in which the plates of mica were of an unusual size. The valley was terminated by the ridge, apparently, of the Himalaya itself, rising in front of us, from the face of which, the river appeared to issue in a noble cataract of two falls from 100 to 120 feet each. We ascended by a winding path to the head of these falls, which were supplied by the partial melting of the vast mass of snow that filled the compass of the eye on whichever side it was directed. We were now at the immediate foot of this range, and all before us, to the very summit, was snow. The first part of our progress up this steep ascent, was little impeded by it; it was scanty though soft. As we advanced, it increased in quantity though not immediately in firmness; the ascent continued steep, and the fatigue was much increased by sinking. Here and there in this



immense wilderness, a turret-like peak was observed to break the unvarying whiteness of the picture, its wall-like sides denying the snow to rest upon them, though presenting occasionally a ledge on which a few birds that fitted about might alight; these turret-like masses gave a peculiar character to the scene. As we advanced nearer the summit of the pass, the ascent became less severe, though the fatigue was still great, owing to the softness of the snow, in which we repeatedly sunk up to the middle.

The day was now far advanced; though we had proceeded but five miles; a long and weary way yet remained; and such was the exhaustion occasioned by the repeated sinking in the snow, that it is probable we should not have arrived in any reasonable time, but for a little refreshment which we had with us. At this great elevation, the simplest motion, the mere raising the hand, occasions fatigue, accompanied with a hurried breathing that is very distressing. Even when perfectly still, this latter affection is felt, caused; it has appeared to me, by a sense of suffocation, or rather, by a want of sufficient air. The servants and hill followers began to be alarmed at the length of way, seeing no immediate termination of the wintry horrors that surrounded them. To add to our perplexity, the sky became overcast, black clouds collected overhead, and at one time I even thought I felt a flake of snow, descend upon my outstretched hand.

A fall of snow, if at all heavy, would at this period of our progress, have been the destruction of probably half our followers, fatigued and dispirited as they were, and having five or six miles of snow to surmount whether they went on or turned back. Fortunately the alarm proved a false one; but the clouds continuing to collect and darken overhead, induced us to use the utmost expedition, that, if possible, we might reach the other side of the pass before a change of weather should take place; towards evening we discovered the summit rising in a wall of snow to the height of about

800 feet. To surmount this ascent required the most arduous exertion, and we floundered about till nearly exhausted, in a soft acclivity of snow, lying at an angle of about 30°. In time however, we reached the crest of the Gunás Pass, extremely fatigued, and not a little pleased in thinking we had no more *ascent* before us.

A long and dreary way, however, yet remained : as far as the eye could reach, a dismal expanse of snow met our view ; the sun too was nearly set, and the temperature sensibly decreasing ; except my companion and myself, with one or two servants, none had yet reached the crest of the pass : most of the hill carriers had indeed arrived at the foot of it, but there they stood with despairing countenances alike unwilling and unable to ascend the lofty scarp which still remained to be surmounted. A report, too, was brought us, that one of them was taken ill, and was unable to proceed. It became therefore necessary to abandon the baggage, as giving the only chance of our followers getting over their difficulties before night fall. It was not without some trouble we could get them to understand this measure, so that it was nearly dark before they were fairly across. The moon rose, however, nearly full, and her light, reflected from the expanse of snow, left little fear of our mistaking our way. The snow too was sufficiently hard to render the footing more firm than it had been in the former part of the journey, and being a descent the whole way, there was no cause whatever for apprehension or dismay ; the people were however not the less alarmed, some sat down and cried, others were prevented from lying down in the snow only by threats, and all, with very few exceptions, looked frightened in no small degree. Those who gave least trouble were the Gorkha sepoy, and Musselman servants, from the plains. The lower mountaineers from Jounsar, even though rid of their loads, were not to be encouraged. About eight at night we began to lose the snow, and presently after came to some overhanging rocks, capable of sheltering our followers in case of a change of weather.

A few stunted bushes of dog briar, the only fuel, served to restore some

animation to the people : on enquiry, we found, that three men were still behind. An intelligent non-commissioned officer, accompanied by some of the people from the village Jako, was ordered to return to the pass next morning and seek for them ; they were found on a rock in the snow, but on this side of the pass, and it appeared that they had been much alarmed at the idea of passing the night in such a place, and not a little rejoiced to see the people I had sent for them. They came in in good time, and without having suffered any ill effects from the exposure to the cold. Considering the great length of way we had come over snow, it was very satisfactory to find, that amongst so many only one had suffered, owing to the care which had been taken to make them provide themselves with blankets, stockings, and shades for the eyes. This one man had neglected to defend his eyes from the glare, which, reflected from the snow in so pure and thin an atmosphere, is very great ; the consequence was, that he was perfectly blind, for a day or two ; after which he gradually recovered the use of his eyes.

As by far the greatest part of our baggage was still on the south side of the pass, it was necessary to think of some means of getting it up. On promising a rupee for each load that should be recovered, the carriers set off in high spirits, and in the course of the day every thing was brought in. The day was fine, and we had an opportunity of looking about us and admiring the scene ; a scanty pasturage, on which a few herds of yaks were seen grazing, and some bushes of the dog briar, were all that we saw in the shape of vegetation. The place we were encamped on, called Nuru Bassa, is on the left bank of a stream which has its rise in the snows of the pass we had just crossed ; it runs about north, or little east of north, to join the Baspa nearly opposite Sangla. Above or around us, nothing was seen but huge peaks capped with snow, the lower limit of which was not many feet above our camp. Although the elevation did not much exceed 13,000 feet, so great was the cold even at this season of the year, that all the streams were frozen, and during the evening a heavy fall of snow came.

on, and gave us an opportunity of congratulating each other that we had not deferred the passage of the range. This snow storm interrupted a trip we had contemplated making to revisit the pass, and which we put into execution the following morning. We found the distance about four miles and a half, which occupied us three hours, being continued ascent and rather steep latterly.

Undisturbed by anxiety, we now found ourselves with sufficient leisure to observe and to enjoy this singular scene. Seated on this primæval ridge, which at a distance had been so often the subject of admiration and wonder, it still seemed a matter of surprize to us how we had reached such a spot. Around us, and rising from the platform on which we stood, were seen many of those peaks which form such conspicuous objects from the plains: though elevated nearly 16,000 feet above the sea, we still looked up to those stupendous structures before whose superior height the Andes themselves sink into inferiority. Their nearness and consequent great apparent magnitude, the idea that we were now close to objects so often viewed from great distances, and which had so often exercised conjecture; these and a thousand other circumstances gave an interest to the scene, that it is difficult to communicate by any description. On every side a vast expanse of snow met the view, the eternal abode of wintry horrors, where the animal and vegetable creation are alike oppressed, and nothing is seen but barrenness and desolation; conjecture is lost in attempting to fix the extent, the depth, or the duration of these snows, which belong to a chain at once the highest and the most extensive in the world.

As viewed from this spot, the Himalaya is far from being a regular ridge, or single series of peaks; they are seen in every direction, rising up from amidst the wilderness of snow that extends many miles in breadth. Looking to the north, the eye traces the stream, on the banks of which our camp lay, to its junction with the Baspa, not that the actual waters of either are seen, for they lie far too low for the eye to detect them, but the general run

and junction of the two vallies is distinguishable. Beyond the Baspa, again, appear peaks still higher than those of the ridge on which we stood, from which it seemed as if the range here took a turn, the Baspa coming from the salient angle, and being shut in by an external or double ridge to the southward. It has been thought by some, that the northern ridge is distinguished by the name of Kailas, while the southern retains that of Himalaya, but I have not myself observed any distinction of this kind, made by the mountaineers. It has rather appeared to me, that they, as well as the people of the plains, call every high place by the term Kailas, and apply it equally to the southern as to the northern ridge.

The snow on the pass we found perfectly hard, and having a most beautiful crystallized surface. This peculiarity of appearance I have almost always observed in snow that is situated above the limit of congelation. We endeavoured to guess at its depth, by sounding with our longest sticks, but, though assisted by the whole length of the arm up to the shoulder, we could not touch ground. Indeed as it is hardly to be supposed that this snow melts in any quantity to be compared with what falls annually, it must be considered as the accumulation of ages. It is evident, notwithstanding the elevation, that a small quantity *does* melt, for a thermometer hung close to the surface of the snow, the sun shining on it, rose above 60°: still the yearly supplies must greatly exceed the waste, so that we may, without hazarding an error, well suppose it on the increase. The thermometer in the shade was 37°.

Towards noon we returned to Camp, and the following morning quitted this inhospitable spot. The thermometer at day-break was observed to be 24°; the ground was as hard as iron, and the streams and springs all frozen; our path led down the glen, watered by the united Rakta stream, of which the left bank, or that we traversed, had an easy declivity, occasionally diversified with small flats or level pieces of pasturage in which every production we saw reminded us strongly of Europe. The opposite bank was

steep and rocky, sometimes clothed with dwarfish bushes, but oftener quite bare ; four miles brought us once more within the verge of trees, soon after which we entered a noble deodar or pine forest, in which we observed some productions of uncommon size and beauty ; very little below this point, we found wheat and barley almost ready to be cut. The fields were divided and marked out by what are called stone hedges, and there were small huts flat-roofed for the accommodation of those who had to watch or cut the grain, the village itself (Sangla) being still at a considerable distance. Six miles and a half from our camp, we emerged from the forest, where a scene, beautiful and picturesque in a high degree, presented itself to our view, a broad and rather swift river watered a fertile and green valley of considerable width. On this side, were seen immense forests down to the very edge of the water ; on that, the more open and well contrasted appearance of successive table lands rising from the river bed, cultivated, and their borders shaded by poplars and willows, while in the middle of two of the largest, the eye rested on two substantial villages, containing each not less than eighty houses ; below, every thing was green and smiling, but as the eye rose, it once more encountered the black and naked rocks, and, still higher, the eternal snows of the frost bound Himalaya. We crossed the Baspa, the river above noticed, on a well boarded, and railed sanga ninety-one feet in length, and took up our quarters in the nearer of the two villages, Sangla. The distance was seven miles and three quarters, the whole a considerable, though not steep, descent.

We were now in Kanáwer, a purgunnah of the mountain state Bissahir. Previously to entering into any detail of our journey over this new ground, it may be proper to throw together a few particulars, which though the result of the journey, and consequently not in order here, strictly speaking, may yet render what follows more intelligible.

Kanáwer comprehends the valley of the Setlej and its principal feeders, from lat.  $31^{\circ} 33'$ , long.  $77^{\circ} 47'$ , to lat.  $31^{\circ} 51'$ , long.  $78^{\circ} 42'$ : on the north and

east it is conterminous with the Chinese possessions, and on the west with the Tartar purgunnah of Hangareng, also subject to Bissahir, with Ladak, and with Kúllú, a mountain state situate on the right bank of the Setlej, and now subject to Runjeet Sinh. It may be said to be entirely within the Himalaya range, though extending from north to south forty-three miles; for, on the south, it has the ridge that had been crossed, the peaks of which have an elevation of from 19 to 21,000 feet, while to the north of it is seen the Purkyul ridge, the highest peak of which is near 22,000 feet high. The villages are not numerous, but they are some of them more substantial than are generally seen in the mountains. Kánam and Sunnam are two of the largest, and contain about a hundred families each. The houses are built of hewn stone, with occasional layers of the Deodar pine, which at the corners are fastened with wooden keys. The roofs in the lower part of Kanáwer are sloping, and formed of shingles; in the upper part, where violent winds prevail, they are flat and covered with earth; the former are generally two stories high, sometimes three and even four, with a balcony on one or two sides, in the latter they are seldom more than one. Still farther north of it is Larí, in Ladak; the houses are built of unburnt bricks; the climate being such that little rain or even snow ever falls.

Some of the villages are situated in the immediate *valley* of the river; many in the glens watered by the large feeders which derive their supplies from the snows of the Himalaya; their elevation is generally from 8 to 9000 feet, though some are much below and others much above this estimate. The soil appears to be totally different from that of the southern mountain provinces. The grape cannot be naturalized by any efforts or any care out of Kanáwer (within the mountains I mean;) the Neoza pine, the seeds of which are excellent and form a valuable article of export, is not to be found beyond the limits of this tract. The turnip too attains a perfection in Kanáwer which it wants elsewhere; and the apples are alone those, within the circuit of the mountains, worthy of a comparison with the

same fruit in England. Of grains they have the usual varieties, most of which are mentioned by Mr. Moorcroft. Wheat, barley, chenna, paphro, ora; of these the latter is valuable for its hardiness, flourishing in climates where no other grain will live. Barley is found at great elevations also. Of wheat they do not appear to have much.

The people of Kanáwer are tall and rather handsome, with expressive countenances; they are not, however, so fair as I should have expected to find them in so cold a climate. Their manners are good; they are open and communicative without being deficient in respect. They are almost all traders, and consequently great travellers, visiting Leh, Garu, and the other marts, chiefly for salt and wool. Their exports are grain, much of which they receive from the lower mountains, raisins, neozas, iron, and broad cloth, which they obtain at Kotgerh, &c. They possess a degree of wealth and consequence which no other mountain tribe has attained to; their language is essentially different from that of the Tartars, and has even no affinity with the other mountain dialects; whether it be related to any of the dialects of the south is a point on which I am unable to offer any opinion.

The Rocks of Kanáwer are those of the snowy chain: a large river like the Setlej, penetrating through this chain and with its numerous feeders laying bare the order and varieties of its parts, and displaying so clearly their structure, offers a field for research which promises to repay any Geologist who shall devote his exclusive attention to it. My duty as Surveyor left me little time for attending to these matters, even if my acquaintance with the subject had fitted me for the enquiry. Such obvious appearances as must strike the most unobserving I may mention. On the pass we had crossed, the only rock is a blackish gneiss of a fine grain, and imperfectly laminated. In the bed of the Baspa, rolled pieces of granite of every variety are to be met with; and in the journey upwards, granite occurs frequently, as also gneiss, quartz, and clay and mica slate. At Murang the granite is exchanged for clay slate, which continues for a considerable distance, and to



a great elevation (13,000.) In the bed of the river where this change takes place, mica slate of a dark brown color and horny structure is met with in large masses, and quartz also, both semi-crystallized and perfectly so. The clay slate, which continues from Murang through varying levels, is exchanged for granite again at Dabling, and this further on, for a very fine grained and imperfectly marked gneiss of a blueish grey colour. To the north of Shipki and in the Tartar Purgunnah of Hangarang, the mountains are of a rounded form and apparently composed of clay slate. The specimens which I have the honor to lay before the Society, may perhaps enable some Mineralogist to give a more correct and detailed account of this matter.

Kanáwer is divided into several Purgunnahs, but they are too minute to be worth particularizing. The upper part is divided into two, Süa and Túkba, the latter of which is again subdivided into upper and lower. Süa or Süjang, extends along the right bank of the Setlej, and Túkba along the left, that is the upper Túkba; the lower comprehends the valley of the Baspa, and contains the following villages:

Kamrú or Mohni, about	- - - - -	70 or 80 Houses.
Singla,	- - - - -	70 or 80 ditto.
Chilkul,	- - - - -	4 ditto.
Rakchan,	- - - - -	2 ditto.
Barsini,	- - - - -	1 ditto.

The last three are towards the head of the river; Chilkul being three days march of about seven miles each; Rakchan about seven miles, and Barsini about three miles, or two and a half. There is a pass beyond Chilkul, to Nilang, on the Járanbbi, (a place I visited in August, 1818,) by a route leading up the river bed. A man of the Chilkul village, was pointed out to me who had traversed this pass, he described it as presenting a series of difficulties of the worst kind. He travelled four days (from

Chilkul) before he reached the head of the river, thence ascending the pass he had three day's snow, and lastly two of descent to Múkba on the Bhagirathi; from Múkba to Nilang, his route coincided with mine. Nilang they also call Chúngsa, which they say is the Tartar name.

Salt is in these mountains the great incentive to discovery; it is the want of this necessary that induces them to undertake journies of great length and privation, and it is in search of it, and with the view of shortening as much as possible the route, or of obtaining it cheaper, that these people continually attempt what may be called voyages of discovery. From Nilang they could of course obtain it, did not the difficulties of the road present obstacles in the way of a frequent communication, besides which the people of that village charge more than those of others. At present this part of Kanáwer receives its salt from the Tartar villages of Stang and Bekar, situated on the Setlej, below Cháprang. There are two routes to these villages, the one by Shipki is long but presenting no extraordinary difficulties, and having a succession of villages the whole way; the other is a shorter route, but the difficulties are said to be very great. In this case they go up but half-way towards Shipki, and strike off towards the right or east, leaving the bed of the Setlej, and crossing the main range of the Himalaya they descend on the other side again into its bed. Cháprang is represented to be but six days journey (for loaded sheep) from Shipki; from Nilang they represent it but eight; the nature of the road from Nilang to Cháprang they describe as excellent, and passable for horses the whole way.

A few miles below Sangla, the Baspa river joins the Setlej. Our route crossed the high ridge, which runs down as a ramification from the snowy chain towards the point of confluence. The ascent begins about three miles from the village, which is the length in this direction of the cultivated table land already noticed; at this termination of the flat, the river assumes a new character, and the appearance of its channel is precisely as though it had, after rising to a great height, broken through a natural or

casual barrier that had obstructed its course. A ledge of rocks is still seen to extend across the valley, with the exception of the narrow outlet, through which this hitherto smooth and placid river precipitates itself in a body of foam down a precipice of about fifty feet, and thence is seen to wind its way under the usual appearance of a rapid though obstructed torrent. With the immediate bed, the river valley also alters, from a considerable width with sloping sides, to a narrow steep gorge of great depth. Along the whole line of path which gradually ascends to the limit of snow, about 14 or 15,000 feet you look down upon the Baspa, a fearful depth below. The whole of this part of the distance is extremely fatiguing, the path occasionally bad, and not seldom dangerous. Hárang ki Gháti is the name of the highest point; it is the corner crest of the range rising above the confluence of the Baspa and Setlej. From thence the descent is easy through a pleasant forest of pines, amongst which I observed a species new to me producing a cone, the seeds of which form an article of export, being eaten as almonds; they are called Neozas. The species is, I believe, new to our European Botanists and the trivial name given by Dr. Govan is derived from the name of its seeds.

From Hárang Gháti, the view was tolerably extensive up and down the Setlej. It would have been grand but for the clouds, which seemed to have established themselves permanently on the snowy range, throwing down showers of snow which occasionally descended even to our level. The appearance of the mountains in the valley of Setlej is striking, almost bare, except where a strip of forest, here and there, forms an exception. Rising into snow clad pinnacles, they present a picture of barren desolation, and wintry horrors unmitigated, but for the casual intervention of a village which occasionally strikes the eye, and adds to the wonder that the scenery excites. All around in every direction rise snow bound ranges and peaks in endless confusion, while their slopes, consisting of little more than bare rock, scarcely offer a more inviting rest to the eye than their shattered and rugged crests, the abode of eternal snows. This picture, which how-

ever may have derived some of its sombre coloring from the cheerless nature of the day, I could not avoid contrasting with the picturesque and cultivated valley of the Baspa.

Our next march was to Püari, the patrimonial village of Fikam Das, the Wazir, as the mountaineers style him, of the Raja of Bissahir. It is situated in the bed of the Setlej to which the path gradually descends, not however without passing some very frightful places in which you overlook the river from a height of 4000 feet, the bank or mountain side appearing of a wall-like steepness. These places are all made more secure by the erection of a parapet to conceal from the passenger the naked and frightful depth of the precipice, which without such a cover would be sufficient to shake the steadiest nerves. We passed through Baring, a large village, in which we were agreeably surprized to see luxuriant vineyards; we found the grapes of an excellent quality and still better at Püari, and there is no doubt that from such fruit a very good wine might be made. Indeed, a fermented liquor is manufactured by these people from their grapes, but in such a rude way and by so uncleanly a process, as to bear little resemblance to wine, either in flavor, color, or transparency: they distil a spirit from the husks and stalks. The wild grape was met with to-day; it is said to be common,

At Püari, the Setlej is comparatively smooth and placid, and has a considerable width. There was formerly a bridge across it, similar to that at Wandipur in Tibet of which Captain Turner gives a view in his work. At present only the abutting or end pieces remain, but it was intended to repair it. The village contains about twenty or thirty houses of two to four stories, chiefly built of pine wood. There is a tolerable piece of level ground which is well cultivated; it is covered with vines and corn, besides some fields of excellent turnips, a vegetable which has attained perfection in Kanáwer. The elevation of this village was found to be 6008 feet above the level of the sea, and the river is not more than 200 feet below it. The dis-

tance from Mebar was nine miles and three quarters, and time of travelling six hours and ten minutes.

On account of the deficiency of supplies at the regular stage the next march was a short one, of four miles and three quarters to Púrúú. The grapes were particularly fine at this village also, and in great abundance. The seyana, or headman, was very intelligent, and communicated to us the following particulars. His people were in the habit of visiting Gáru for Byangi wool. They took for barter, iron wrought and unwrought, (the former including horse shoes, swords and matchlocks,) tobacco and raisins. The matchlocks and swords were imported from the plains; the other articles were the produce of Kanáwer. They receive wool, salt, and a few goats and sheep. The Tartars he describes as a nation of shepherds, living in tents. The name of the Gáru Purgunnah is Tokbo; of the country Gangri Majika, of the people Zar or Jar. Gáru is only frequented, he says, by the shepherds during the season of the rains, when the pasturage is good, at which time are stationed there two officers of Usang and two hundred soldiers; at other seasons they remove to such places as afford the best pasturage. The names of the Purgunnahs, most famous for the wool, are, Sagtad, Bamtad, Majin, Súdúr, Chantaling, Mapang. Gáru, he stated to be fifteen days journey hence. At Nilang, on the Jáhnavi is a mine of lead which is productive. From thence, Cháprang on the Setlej is six days journey. A party of Kanáweris visited Nilang on a plundering excursion, but they went by the route of the Baspa, crossing a very high ridge in which for three days they travelled over snow. Thence descending they reached Múkba on the Bhagirathi; two men of the party died owing to the severity of the cold.

Púrúú is rather a large village, the houses are built of hewn stone, with layers of Deodár; the roofs flat and covered with earth. The night was cloudy, and on looking out in the morning, we were surprised to see every thing quite white; a fall of snow had taken place during the night, but it

disappeared long before noon. The elevation of this spot was 7,318 feet above the sea.

To Raba, was a distance of seven miles and three quarters, which occupied us four hours and a quarter. The path was the usual succession of steep ascents and precipitous, and narrow ledges overlooking, from an amazing height, the river, the depression of which was observed  $41^{\circ}$ . Near Raba, we found the rocks felspar, which in many places was in a state of decomposition; in general, and where not otherwise noticed, granite and gneiss are the prevailing rocks. We found here, as usual, excellent grapes, and the tops of the houses were covered with them spread out to dry for exportation. The vineyards were very extensive, and their produce very fine and luxuriant. During the evening much rain fell and the night was cloudy, but there was no snow, although the elevation was 7540 feet.

After leaving Raba, the path gradually descends to the bed of the river which is here of considerable width, at first rugged and difficult, over huge rocks, and latterly along an even and level flat; thence it ascends through rich vineyards to Rispa, a large village, the distance from Raba being five miles and a half. Beyond Rispa it continues high above the river bed, but presenting no difficulties, except the steep and almost perpendicular descent to the Tedang river, which here joins the Setlej, and which is shut in by mountains of great magnitude and wall-like steepness. We crossed it on a sanga immediately above its confluence. The width was forty-two feet, and the depth and rapidity of the current considerable. The Setlej appears here with rather a smooth current and the bed is expanded. It is a large body of water, even at this depth within the snowy chain, and to form an idea from its size its source must be distant. We saw here some very beautiful masses of gneiss of a corneous fracture the appearance was that of a paste containing black prismatic crystals. There was much quartz of a semi-crystallized appearance but we saw no perfect crystals. We had now come within sight of Murang, a division of six hamlets spread out on the

opposite side of the glen. The names of these hamlets are, Gramang, Karjang, Shabeng, Korba, Thuaring, and Kwakba. We passed through Shabeng, along the edge of a small canal aqueduct pleasantly shaded by poplars, the vicinage adorned with luxuriant vineyards, here and there a neat hut peeping out from the freshness of the cool shade, rendered doubly grateful to us from the heat and dust we had endured in a twelve-mile stage occupying us from nine o'clock till sunset. The appearance of this place, green and luxuriant, contrasted well with the surrounding barrenness: below rolled placidly the deep waters of the Setlej; a castle situated on an insulated rock overlooked them, while the lofty peaks of the Raldang cluster clothed in snows crowned the whole, and finished a picture peculiar in itself, and deriving additional interest from the unexpected manner in which it stood forth embodied to our eye,

We encamped in Karjang, and immediately received a visit from the Zemindars, including the Lama with his attendants. This was the first village where we found the Tartar language and superstitions prevail. Hitherto we had been accustomed to brahmins, (of a degenerate race, no doubt,) but still Hindus, but here we had the worship of Budh fairly established. The Lama who resides here is considered the head of that sect; he was an intelligent man, and spoke Hindustani tolerably well. He shewed us some books, in which we recognized the printed or stamped character of the Thibetians, but we regretted we had so little time (having arrived late) to examine them more minutely, and obtain some information relative to their religious opinions and ceremonies. He admitted that the snowy peaks were objects of great reverence; in fact he seemed to believe in a genius of the Himalaya whom he considered as entitled to worship. He called those peaks *Kailas* that rise immediately from the village, and which constitute the Raldang cluster, (visible from Saharanpur.) They are on the left bank of the river, and are of great elevation; I consider them to denote, in this quarter, the position and direction of the chain, one of them, Raldang, is a

point fixed by the trigonometrical operations, in latitude  $31^{\circ} 29' 22''$  and longitude  $78^{\circ} 21' 44''$ ; its height above the sea is 21,251 feet. We regretted much that the arrangements made for the supplies of our numerous followers did not allow us to halt here. We could have been well contented to have taken a day's rest in so agreeable a spot; and besides this object, we should have been well pleased to have cultivated a closer acquaintance with our friend the Lama, who seemed both intelligent and communicative. We had however no choice, and at ten o'clock quitted Murang.

We left Murang at ten o'clock: the first two miles is a steep ascent up the mountain on the declivity of which it is situated. On reaching the crest of the ridge, we met traders belonging to the village returning from Májan, a district of Mahá Chín,\* with eighty goat, sheep, and ass loads of by-angí wool. They had a small shawl goat also with them, and we observed both in this animal and a kid of the same breed (which we had received in a present at Puari) the shawl wool proper lying under its outer and usual coat of hair: a dog too, of Tartar breed, accompanied them, in size and appearance a good deal resembling a Newfoundland dog. They had been three months absent, and seven of their sheep had died on the road, a duty of two pice per load was collected from them at Ritang, where a Chinese Sirdar resides. We had a long journey before us, and were not a little sorry we could not stop to have some conversation with them; but it was now near noon, and we were obliged to push on. We met with the gooseberry here in great plenty, though small and acid, a male yak, † kept for breeding, was seen grazing here. In Kanáwer they cannot keep up the breed pure, the animal degenerating, but a cross between it and the common cow is reckoned by them superior to either. They are of great size

\* The Empire of China.

† Called by Captain Turner the bushy-tailed Bull of Thibet.



and are used in agriculture; they call them Zu (the male) and Zemu (the female).

A little more ascent brought us to the summit of the Childing Kona Pass; here we had an extensive view of the range, and some of the highest peaks appeared sufficiently near: to the north they were of less elevation, and some ranges were distinguished quite bare of snow. No forest however was seen, and their form or outline was rounded, without any of the sharp and shattered peaks of the Himalaya granite. The elevation of the pass is about 12,388 feet above the sea. The ascent still continued; the path leading through rocky defiles, or along the face of clay-slate acclivities, in which the fragments that formed the footing had all the looseness and mobility of ashes. The last ascent was a flight of steps, cut in the rock to the summit of the Kherang pass, which judging by the depression of the one left behind (13°) must be about 1500 feet higher. This estimation of its elevation receives strength from the fact of our finding snow on it, and for several hundred feet down, on the northern face. Hence to Nissang, the descent was continued and steep, but the ascent had been so severe and the path so bad, that it was already late, and we did not arrive at the village till near seven o'clock, our followers all behind, and neither tent nor supplies up. We were so fatigued that we had little appetite, and, contenting ourselves with such fare as the village afforded, were glad to lie down and get some rest. The whole distance was eleven miles,

Nissang is inhabited by sixteen Lamas. It is a poor and inconsiderable village, situated in a most bleak, barren, and desolate spot. It is on the left bank of a stream, up the bed of which is a route to Stang and Beker, two villages on the Setlej, where these people frequently go for salt. The difficulties of the road are great, and the cold suffered, in passing a high ridge covered with snow, intense.

The next village, called Dabling, was represented to be at so great a distance

a-head that it would be necessary to divide it into two stages, in which case we should be obliged to encamp half-way, and would require provisions for one day with us. Having made our arrangements we left Nissang at a quarter to seven, and stopped to breakfast at a quarter to nine, at the last piece of water we were to meet for many miles. The descent from the village to the Tala Khir Nullah is steep but short. The ascent appeared at first difficult, if not impossible, on account of the seeming bareness and steepness of the mountain side. We however proceeded, climbing slowly up an acclivity of loose fragments, which latterly appeared to deviate more from the perpendicular, retiring from the face of the range, between high and projecting walls or cheeks that rose up on each side in threatening array. Every hundred yards we were compelled to take breath, and we did not reach the Geri Púg Pass till noon, a distance of five miles from Nissang. As the path ascended, it retired, and became less steep, and latterly we saw some appearance of forest, particularly several species of juniper in full fruit. It was in fact the projecting crags I have already noticed that, concealing the route, had given us so exaggerated an idea of the difficulties; they were however still great; the ascent may be judged of by the depression of Nissang ( $24^{\circ}$ ), and the elevation of the pass appeared by the theodolite to be the same as the Kherang Pass, crossed the preceding day.

The path beyond this became frightfully bad, and frequently made me pause, familiar as I was with the difficulties of mountain roads. The loose fragments of every size, accumulated against the declivity of hard and bare clay slate mountains over which our track lay, equally threatened us from above and from below. Such was their mobility, that the wind was sufficient to detach them, and once set in motion, even one stone however small, was sufficient to bring down volleys upon us. Again, if the motion began from below, it threatened to carry away the very ground on which we trod, while nothing appeared to obstruct our progress down a de-

cent of some thousand feet to the river edge; not a tree, shrub, or blade of grass, even the rocks, appeared little capable of affording a point of support, for they were loose and crumbly and seemed to require but a touch to detach them. These difficulties continued for about a mile, after which we were much relieved to find matters improve, for a short distance. The descent however gradually increased in steepness, leading down the left bank of the Tomba glen, in which we had new difficulties and dangers to contend with. To have a correct idea of these places it must be borne in mind, that at this time we were proceeding along the declivity of the great snowy range: so lofty a range, it may be supposed, cannot rise from so low a level as the river has here, with the undeviating regularity comprehended in the terms slope or declivity; on the contrary it is necessary to view the Himalaya mountains themselves, those eldest born of creation, to estimate even approximately the gigantic scale on which the furrows or ravines formed by the numerous torrents that spring from their snows, intersect their sides. They indeed look to a spectator viewing them from above, like "the dark unfathomed *bottomless* abyss;" and it is not without awe he resolves "to tempt them with wandering feet."

Of all those glens that I have yet seen, this I think challenges comparison, for its depth, the steepness of its sides, its total bareness, and the great height to which the shattered peaks that crown it rise. From the lateral ridge, where the immediate descent commences, to the stream, is a distance of two miles and a quarter, of this a mile and a half presents no very great difficulties though the path is bad enough, but the last three quarters of a mile baffle description: at the first glance it seems impossible ever to reach the bottom, such is the steepness of this precipice, for it can be called nothing else; a winding path however, requiring the utmost caution in traversing it, is at length discovered; and you go down a hard dry and steep terrace, sprinkled as it were with loose fragments of clay slate of every size. To avoid moving these is impossible; to shelter one's self is equally so, and the only alternative for the people was to go in knots, with considerable intervals

and get over it as quick as possible. The crumbly and loose nature of the little gravel that covers it with the hardness of the subsoil, makes this place as dangerous as the other, for one false step or slip would precipitate one to the bottom. The last piece leads along the edge of a naked and steep precipice, the path being extremely narrow, and strewn as above described with a hard dry gravel. We got safe down however, although we had even then little cause for congratulation, for in the bed of the stream it was impossible to think of remaining. The cave in which the Murang people had the last year sheltered themselves, had disappeared, and instead of it we beheld the fragments of fallen peaks, the ruinous proofs of the vast power of the avalanche. The whole appearance of the place or ground, was insecure: to look up towards the head of the glen gave no confidence, for there you saw similar masses prepared for a similar descent. To ascend the other bank was then our only alternative, and our determination was hastened by the threatening appearance of the weather: a lowering gloom began to envelope the summits of the surrounding peaks, dark clouds collected, and every symptom was discoverable of an approaching fall of snow. We therefore quickly made our determination, and commenced a climb of about a quarter of a mile in which our hands and feet were equally employed. The path then got a little better, and we soon came to a more open place, where we thought there was less danger of being overtaken by falling peaks. The whole distance was twelve miles and a quarter, and we arrived at half past five, having quitted Nissang a little before seven. We had been very nearly ten hours on the road, and eight hours on foot, during which time we ascended and descended not less than 7,000 feet.

Our troubles were not yet at an end; many of our people were behind; it was fast getting dark, and we dreaded, lest not knowing the nature of the road, they should attempt to descend to the bottom of the glen, in which case their destruction we knew was inevitable: all night long a continued shouting was kept up from one side of the glen to the other, which

coming by intervals and in such a scene, had a singular effect. Fortunately they were wise enough to listen to our prohibitions, and to halt on the other side. In the morning they came in, and I was happy to find, notwithstanding the dangerous nature of the road, that there was no accident.

Thermometer at 40, a temperature indicating considerable elevation. We set out a little before seven, but, in consequence of the fatiguing marches of the two preceding days, did not deem it advisable to proceed more than six miles and a half, to Hopeha Wodar, a halting place (no village,) on the banks of a stream. Notwithstanding the early hour at which we set out and the comparative shortness of the stage we did not sit down to breakfast till 1 p. m. The path was in general good, and part of it was excellent and passable for horses: I must except, however, the immediate descent to the bed of the stream where we encamped, which was almost equal to any thing we had yet seen in danger and difficulty. There was not however much of it. We found it very cold during the day, and a high wind served to render it still more uncomfortable. The appearance of the place was bleak, barren, and desolate.

To Dabling, we found a distance of seven miles and a quarter, so that the whole route from Nissang to Dabling, in which no village or habitation is met with, was twenty-six miles. These miles it is to be recollected are however estimated in rather a rough manner, and therefore I lay no great stress on this value of the distance; it is certain that it is not less than twenty. This path presents no difficulties but there is some steep ascent and descent. We observed granite in this march occupy the place of the clay slate which we have had from Murang, I may say. We passed the Pose or Namptu Sanga, a well constructed wooden bridge with railings over the Setlej at Pose. The river has the appearance of having been obstructed by a barrier of rocks, through which it forces for itself a passage: on these rocks, which still narrow the stream, the bridge rests. This bridge, I believe, wants repairs, and as it is in the principal, and least

difficult route leading to or from Chinese Tartary, it would add facilities to the little trade these people have, were it repaired. We were not sufficiently near to speak positively as to its state.

Dabling is more decidedly Tartar than either Murang or Nissang. The head-man, a Lama, came to pay his respects to us in a dress exactly similar to what is represented as the Chinese costume, his stockings were of woollen stuff, sewed, and ought rather from their shape, or want of shape, to have been called bags; his shoes were exactly Chinese, the soles having a spherical shape. He wore also a Chinese skull cap, but the other people in the village went bare-headed, and wore long tails plaited. They were all rather fair, particularly the women who had a fine rosy colour. We were very much pleased with the appearance of the assembled village, and could hardly help thinking we had got on the high road to Peking. The name of this old man was Lama Ring Jing; he was a good humoured talkative man; and, as he was a traveller, we endeavoured to get some information from him; he shewed us a letter written in the Sirma character, from the grand Lama, sending him a sum of money to build temples, which he called Lahrang. He also shewed us a book in the Umma or printed character, in which were a great number of paintings of their deities, &c. neatly executed, but without any idea of perspective or keeping. The book consisted of thick leaves not sewed together; the ground or colour of the leaf was blue, while the letters were yellow; I was very anxious to obtain possession of it but I found no sum of money would tempt him to part with it: he told us he had been in the practice of visiting Cháprang every year for byangí, wool, &c. The journey occupies nine days, or if a horseman travels, five. Under Cháprang flows the Setlej, which the Kanáwarís call Zangtí, the Tartars Lang Jing Kunpa or Kumpa, the latter word signifying river: it is not fordable even at Cháprang; indeed little falling off can be perceived from its size here. It is crossed by a bridge of chains. From Cháprang, Tesu Lumbu is three months journey: Mansarovar is eighteen days journey from Shipkí, a place two stages a-head, and the boundary of our mountain possessions, a horse

man may however travel it in twelve days. There are two routes, one by Cháprang along the river, the other by Gáru, the distance is nearly equal, but in the first, villages are met with, in the latter few, or none. The lake Mapang he describes as either seven or four days journey in circumference according to the season, and he maintains, how much soever questioned, that four rivers originate from it:—1. Tamja Kampa flows through Ussang; 2. Mamja Kampa through Púrang; 3. Lang Jing Kampa through Kanáwer; and 4. Sing Jing Kampa through Ladak.

These he repeatedly asserted he had seen, and says that they proceed from the four opposite corners of the lake. It is very extraordinary what could be his motive for so pertinaciously asserting a fact of this kind, so completely contradicted by Mr. Moorcroft's journey, and which no one can believe to be other than some legend of their sacred books. There is a second lake, close to Mapang called Langa Cho; it is smaller, but in the rainy season they unite and form but one. The Setlej he states proceeds from the great lake, and flows through the small one: a high peak called Gangri, and covered with snow, is much venerated by Hindus.

To Namja, was a distance of eight miles and three quarters, time of travelling five hours and a half. The path is in general free from danger, and not very bad: a mile and a half from Dabling, we passed through Dúbling, a smaller village than the preceding. The gooseberry, raspberry, and dog-rose; the poplar, walnut, and apricot trees were observed. Beyond Dúbling, the path descends to the river bed, along which it proceeds for some distance. We had here an opportunity of observing how little it appeared diminished in size, and of conjecturing the great distance of the source of so large a body of water. The current was, comparatively speaking, smooth, and few rocks obstructed it; the mountains on our side had some slope, they were composed of granite and quite bare, on the other side they rose up in a wall, or scarp, of two thousand feet from the very water edge. The strata had a

most curious and novel appearance, (at least to me ;) they were twisted and waved, and apparently lifted up in different directions: beyond this spot, we observed the river for nearly half a mile collected as in a great lake; the surface smooth enough to reflect the surrounding mountains as in a mirror: it then precipitates itself down a step of rocks with all the foam and impetuosity of a cataract; the fall is however not great, perhaps about three or four feet. The river bed is of a moderate width, and here and there remains a level strand, of fifty to a hundred yards, along which the path lies. In this level piece, we observed frequent cumuli, or heaps of stones; they were built with some care, their length was various, their width about three or four feet, and their height the same; on the top were thrown loosely a number of stones covered with inscriptions, or rather, I should say, with one inscription, for on examining and comparing them, it was perceived that they were all repetitions of the mysterious expression noticed by Captain Turner, Om maw nee put men hoong. The letters were in relief and executed with considerable neatness.

Seven miles and a quarter from Dabling, we came to the confluence of a river of nearly equal size with the Setlej, but could not learn its proper name. The people called it Spiti Maksang. Spiti being the name of the Purgunnah it flows through, and Maksang signifying a river: the left branch, which is the largest, retains the name of Lang Jing Kampa, and is the proper SETLEJ. The Spiti appeared to flow here between two lofty walls of rock, and of great steepness: a small hamlet called Kap, of two houses, overlooks the confluence, and this is the highest place where the grape grows. There are no grapes at Dabling, but Dabling is considerably elevated above the river, though at Poï which is in the bed of the river, there are: the grapes of Kap are scarcely worth cultivating; they do not ripen properly, and are little better than the produce of the wild vine which is found in the lower part of Kanáwer.

Namja is a village of about twenty houses. It is situated in a most bleak,



barren, and desolate spot; a few fields of corn and some apricot trees are all that shew the vicinity is that of a village; the houses are, as always described, flat roofed, being covered with earth. From Murang, we had heard nothing but the Tartar language; here it was in perfection, yet strange to say, the Seyana or head-man's name was *Baliram*. In appearance he was a complete Tartar, and though it is true he spoke Hindustani (for he acted as our interpreter,) yet it was most barbarously, and with a peculiar accent. He had been a great traveller, and we found him very communicative; we determined, as he was the only person we could find capable of acting as an interpreter, to make him accompany us to Shipki; he told us that they trade with Shipki, Meyang and Cháprang, for salt and wool; that Cháprang is nine days journey from Shipki and Mansarowar twenty; on horseback, however, the former journey is performed in four or five days, and the latter in twelve. Meyang is two days journey from Shipki, the Setlej being left to the right; few mountains about it, and a little beyond it is plain country. The country beyond Shipki is called, by the Kanáwaris, Júng, by the Tartars, Galdang Paprang; beyond it is Kamling, and then Gehna.

Latsa is the residence of two officers of the Emperor of China, who receive the revenue; none of which goes to the grand Lama at Teshú Lombú; he is rather a priest than a raja or ruler, but in the former character he has great influence. Teshú Lombú is three months, and Latsa four months journey from Shipki.

In the evening we were much amused with a dance to which these people invited us. I say dance rather than nach, for to the latter it had not the slightest resemblance. On this occasion, the performers were all women, but the munshi who accompanied us, and who had before visited the place, told us the men frequently bore their part. They stood in a semicircle on one side of the room joining hands, and all singing in chorus, and kept time to their song, by swinging from one side to the other with one accord; there

was no motion of the feet, but merely the body was allowed to sway about, first from right to left, and then back from left to right. This was however pronounced by the munshi, to be a very tame exhibition to that in which both men and women joined; but as we had no opportunity of witnessing this kind of dance, our account of it would be but imperfect. On this and other occasions, we noticed the Tartar women to be much fairer than any we had before seen. They had also rosy complexions that might emulate those of Europe, and their countenances, though possessing all the peculiar features of that race, yet exhibited a variety of character and expression which is not to be seen in Hindustan. The women of the lower mountains possess it also, but in a less degree, no doubt owing to the mixture of Tartar blood.

From Namja, our next stage was Shipki, which we feared would be the limit to our travels in this quarter, although at Dabling and at Namja we were strongly assured that orders had been received to conduct us to Gáru. The road to Shipki was tolerably good, with the exception of one very steep and deep descent through a narrow defile, huge rocks, like buttresses or towers, overhanging the path. It is called Lakongma, and is immediately above a stream called Húpsang Túkbo, where travellers generally halt for refreshment; beyond this the ascent is severe, and continued as far as Shipki La, the highest part of the route. Here we had a view up the valley of the Setlej (which suddenly widens) for fifteen or twenty miles, the course from the eastward. No sharp granite peaks were to be seen in that direction, but bare round clay slate mountains, with here and there a slight trace of snow; no forest in any direction. From this point, the most northern the Setlej attains, the river bends off on each side. To the north on the right bank rises up a cluster of snowy peaks, the highest of which is called Púrk-yúl; its elevation must be upwards of 21,000 feet. The descent to the village is easy; the whole distance from Namja is nine miles.

On our arrival, we found the people assembled to receive us; they formed

father a motley groupe; some were bare-headed, some wore caps with flat crowns ornamented with fringe; some had tails which were plaited and descended to their heels; others had their hair close cut; some were dressed in the skin of the shawl goat, the wool inside; others had a coat of red woollen stuff, which they say is manufactured in the interior; almost all wore, what seemed to us, breeches and stockings; the latter it is true were more like bags. Their shoes were quite Chinese-like, those already noticed at Dabling with round soles, such as to us appeared to be a matter of no little skill to walk in. In the girdle we observed stuck a double flageolet, on which they play, but it may be supposed very rudely. A steel tobacco pipe, a bunch of keys of curious fashion, and a steel set in brass to light their pipe. One man, and one only had a sword, in shape and size much like that which the Madras jugglers swallow; they seemed in general a good natured looking people, though not what would be called good-looking; yet some of them had very expressive countenances. We observed a great deficiency of beard, though it was not totally wanting, except in a very few, and these had such smooth faces that we mistook them for women; none of them had much, and we, as well as our Musselman servants, derived not a little credit from our superiority in this respect. The most remarkable feature about them was their excessive filth, to which we had seen nothing equal. As we were a little fatigued and rather hungry, we contented ourselves with this general survey, resolving the next day to satisfy our curiosity more fully.

Thermometer in the morning  $33^{\circ} 5'$ , a cold climate. We were now upon the threshold of the celestial empire, and though in part prepared for Tartar features and other peculiarities, we still found much that was new and striking. The appearance of the place itself is singular in the extreme. To the westward rises a ridge covered with snow, and having an elevation of  $22\frac{1}{2}^{\circ}$ ; several lofty peaks crown this ridge and these were entirely capped with snow. It extends round in a semicircle to the southward, from which it gradually falls off, and is finally lost in the lower and roundish clay slate mountains which are seen to the eastward. In this direc-

tion the view was open for fifteen or twenty miles, to which distance the Setlej was visible. No villages however "embosomed soft in trees," were there; no forests, not even a bush, broke the uniformity of the bare and brown acclivity which rose from the water's edge to heights of 18 and 19,000 feet. To the north was the high peak Púrkyúl, belonging to the ridge which separates the two branches of the Setlej. Here all was rock, bare and steep precipices, with very little snow. This high ground, as far as we could judge, continued up to the north, so that we saw it endwise, and consequently only one or two peaks belonging to it. The village, consisting of six scattered hamlets, is spread out on the flat declivity of the first noticed ridge, which, from the top to the very bottom, appears to be but one uniform scene of rocky barrenness, except where the industry of these people has fixed a few hardy productions, and, with not a little labor, brought some level patches into cultivation. A hedge of gooseberry bushes surrounded the fields in which we were encamped. A row of willows or oziars, which in the day afforded shade to our followers, were the only trees. In front of our tents ran a clear and rapid rivulet, at which might be seen drinking the bushy-tailed yak; at our door lay a flock of Tartar sheep, unrivalled for size and beauty as for fineness of wool. The shawl goat also was there, and the Tartar dog, having like the goat a fine wool under his coat of hair. The picture was completed by an assemblage of Hindustanis, Kanáwaris, and Tartars, seated in groups; the contrast of whose dresses was scarcely less striking than that of their features and of their speech.

On enquiring into the truth of the report of orders having arrived to conduct us to Gáru, it proved (as I had conjectured) to have no foundation; the people were however very civil, and the Seyana offered us a Nezzar of one day's provisions for all our followers. He agreed at the same time to furnish as much more as we might require at a reasonable rate: firewood, (which we supposed would prove a great difficulty,) was also furnished in abundance. When however we talked on the subject of our being allowed to proceed onward, they expressed great unwillingness to admit it;

after much debate, they declared that, though averse to our attempting such a measure without permission from the interior, yet they would not oppose our progress if we chose to insist upon it. They however proposed, that we should write to the Deba at Gáru, and halt five days for his answer; that during those five days they would furnish us with provisions gratis, if we chose to decline paying for them, and that we should be bound by the answer either to proceed or return. To this proposal we willingly agreed, and two letters were written to the Deba requesting an interview, and offering some presents. This letter was immediately dispatched by express. We were given to understand it would be conveyed by horsemen, reliefs of whom, were stationed at each village.

This discussion had assembled the whole village in or about our tents, and we took advantage of the opportunity to put a few questions to them. Bali Ram Seyana, of Namja, was our interpreter, and he was assisted by a munshi who understood a little of the Tartar language; they were so exceedingly curious however themselves as to all they saw about us, that they would much rather have asked us questions than answered those we put to them. Amongst other things we learned the following particulars; Gáru is the grand mart where the productions of Hindustan, of China, and of Ladak, are collected. There is no town, the people living in tents. There are two stations, the Winter and the Summer, which are two days journey distant for a horseman; the distance occupies seven or eight days on foot. The Deba alone has a house, but he has also his tent pitched on the top of it; it is made of coarse cotton cloth, as are also those of the principal Beapáris, but those of the Tartar Goatherds are formed of a blackish stuff, manufactured from the hair of the yak. At Gáru, little shawl wool is produced, but beyond Mansarower the flocks are numerous. Tangshúng and Meyshúng are the names of the places from which the greatest quantity is to be had. It is all brought in the first instance to Gáru, whence the Ladak traders carry it away to Cashmir. It appears that an arrangement has always subsisted between the Latakis and the officer at

Gáru, or rather between the two governments, for the Deba is relieved every seven years. The name of the present Deba is Karma Namdyang.

Leh or Le is the capital of Ladak. It is fifteen or sixteen days journey from Gáru, although on horseback it may be performed in five or six days. From Skalkar in Hangarang there is a nearer road which leads through the purgannah of Spiti in Ladak. Leh is situated about north from Shipki, Gáru about east.

In the afternoon we proceeded to look at the river, the distance of which was one mile and a half in a northerly direction. It is not fordable; the depth being about six feet and the current rapid; the width is sixty-seven feet. There is a jhúla, or suspension bridge, formed of ozier twigs; it measures 115 feet between the points of support. The descent was latterly steep and we found the difference of level as determined from boiling water 1056 feet, so that the river bed here has an elevation of 9107 feet above the sea.

Thermometer as yesterday 33° 5'. A Tartar Beapári was introduced to us to-day who spoke Hindustani, and in conversing with whom therefore we had no occasion for an interpreter. He was of Maryúm, a village four days journey beyond Mansarowar, his name Chang Ring, Jing. Mansarowar, he told us, is a snowy range; the lake being called Matalae, but this must have been a mistake, as Sarowar signifies the same as Talae. However I mention it as it may serve to throw light on the story of the Dabling Lama as to four rivers originating there. This man then who was born and has lived so near the place in question, says that no river originates in the lake, but that from Mansarowar, which he calls a cluster of snowy peaks, proceed four rivers; 1. Lang Jing (Setlej) to west and south; 2. Tamjok to the west and north; 3. Sing Jing (Indus) to Ladak between the two preceding; and 4. Mamjo or Mamjok opposite the preceding towards Gerhwal. The Spiti river, or right branch of the Setlej, he says, rises about eight or nine days journey from its confluence with the left branch,

The Tartar shepherds do not live in villages but in tents; they lead a wandering life, removing from place to place, as the pasturage is consumed. At two year's old the wool is in greatest quantity and perfection, and the rams furnish the best. Lok and Mamo are the names of the ram and ewe, and the wool is called pul or pal, but in this quarter it is termed Changbal, and the mountaineers call it Byangí (ín. What the origin of this term byangí is I could not find. The shawl wool is called Lena: by the mountaineers Pashm. Rabo is the name of the male, Rama of the female. At Gáru, both shawl and byangí wool is collected, and the traders of every quarter visit that place to obtain some; a fair is held during sixteen days, in the month of May. It is called Doa or Dawa Dúmba. The Latakís take the chief quantity of shawl wool, and give in return shawls and specie (Ruppes and Timashis;) they also carry away broad cloth. From the mountaineers they take grain and raisins, and receive in return byangí wool, salt, borax, and a very small quantity of shawl wool.

The districts most famous for shawl wool are, Lodok, Mahjan, Tang Shúng, Meshúng, and Changtaling. The following sketch, of the relative positions of the principal points of communication with the traders, is furnished by this man.

Chamba is a considerable mart for shawl wool, and it appears that they obtain it from the Latakís through Lahu. Núrpúr is six day's journey from Belaspur, Jwálá Mukhi four day's from Núrpúr; at this place is a burning well; the water itself is cold, but there is a flame on the surface. There is a temple and lodging for sixty Gosains who live there. From Jwálá Mukhi to Kote Kangra is one day's journey, and to Rüalsir, five; from Rüalsir to Mandi is one; from Mandi to Suket one, and from Suket to Rampur, six or seven days. From Ger-top to Leh is a journey of twenty days; the distance from Shipki has been already given, and from Shipki to Rampur occupied us in returning about fifteen days; from these some general idea may be formed of the distances.

From Shipki to Cháprang is but five days' journey ; it is on the left bank of the Setlej. There is a fort above the town, which is commanded by a Zumpung ; he is said to be a native of Mahá Chin, and is much fairer than the Tartars, though not so fair our informant said as we. The fort is of stone, and is capable of containing 1500 or 2000 men ; the road is excellent and a horseman might reach it in three days from Shipki. One high peak only, called Sherung La, is crossed, on which lies a good deal of snow. About two or three miles beyond Cháprang is Ling. The road to Gáru from Shipki, is as far as Shangze, the same as the preceding ; at that place it breaks off. At Gáru resides a Gárpan, or governor.

From Gáru to Mansarowar is eight day's journey. Kangrí,\* is the name of the peak from which the four rivers before noticed rise. Chankpa, is the name of the peak giving rise to the Jahnavi river. It is three day's journey west of Mansarowar. The Ling Jing flows to the north of Leh.

Thermometer 35°. A few more particulars were collected from our friend Chang Ring Jing. Gáru, he says, is visited by a race of men called Yarken, who come from a country distant one month's journey. Their dress he describes as similar to that of a munshi who was with us, and to be made of stuffed cotton cloth ; they wear large caps lined with cloth and covered with silk ; these are like their garments stuffed with cotton. By the Gáru people they are called Hor, but by the mountaineers from Kanáwer and Gerhwal, Yarken. They live in villages, and are subject to China ; they eat mare's milk formed into cakes ; they are large men, of a reddish complexion, and have broad faces with little or no beard. The direction of their country from Ladak is north ; their breed of horses is remarkable for size ; they bring ingots of gold and silver, leather of a brown colour ; also the yellow fringe which these people wear attached to their caps. They receive in return red leather, (goat and sheep skins ; ) rice from Chamba and Súket.

\* Mr. Moorcroft mentions a valley of this name, or rather Gangri, but no peak.



Har, a drug, the fruit of a tree, which is found in both the mountains and plains, with some other articles which our informant did not recollect; they do not take any Pashm. This country is without doubt, that of which Yarkand is the capital, and the brown leather is very probably from Russia.

Sambhunáth is two month's journey from Maryúm, his native village. The first half of the road is along a plain; the last half mountainous; several high ranges are crossed, and on descending from Tage La, (La meaning pass,) the first village of Nepal called Kerúng is met with. Maryúm from Mansarowar is five days. It is small, and contains but eight or nine houses.

Adverting to the rounded form and inferior elevation of the mountains to the eastward, I thought it extremely likely that by ascending the snowy ridge to the S. W. I might be able to catch a distant view of the Table Land, and even succeed in observing its depression which would fix, within certain limits, this so much disputed level: the ascent was very steep towards the top; little snow lay on it where I ascended, but to the southward it rose considerably and there the snow covered it. In my ascent I disturbed numberless covies of Chacors, and even some Munals or golden Pheasants. The ascent occupied me four hours, and fatigued as I was, I rushed up the last hundred paces, thinking to see the promised land, but I was disappointed. From  $62^{\circ}$  to  $90^{\circ}$  extended a chain of mountains of smooth rounded form, bare of forest or snow, and clothed with a withered or russet vegetation, but nothing like a Table Land or plain, or even valley of any extent; the lowest of these mountains had an elevation of 13'; this mountain bore  $116^{\circ}$  or  $26^{\circ}$  S. of E. To the north, appeared a cluster of irregular peaks sharp, bare and rocky, but scarcely rising above the limit of snow; the waters of the Setlej were visible for several miles; the depression was at the furthest visible point  $8^{\circ}$  and the bearing  $85^{\circ}$  or  $5^{\circ}$  N. of E; it seemed as far as I was able to judge, from the run of the mountains, to bend round from the southward.

On the evening of the 20th, we heard an account of our Gáru letter which gave us little hope of being allowed to proceed, and as the season was now far advanced, we began to fear we should have little time to take advantage of the permission, even if it should be granted us. The letter had been delivered to the Kardar of the Zumpung of Cháprang who was at Shangze, four days at least would elapse before the Garpang could send an answer, and by that time it would be a question how far we could penetrate before the necessity of return should arise. This being the case, and our hope of obtaining such permission extremely slender, we determined to prosecute our tour into Hangarang.

Shipki produces wheat, barley, and the grain called úd, which to me appears a species of barley, likewise chenna, but no other grain of the mountains. Turnips are a favorite crop, and with reason, for they were the finest we ever tasted; they are called Nyungma by the Tartars, and Shagber by the Kanáwaris. Wheat is sown in April;

A small trade is carried on between this place and the people of Kanáwer; salt and byangí wool is exchanged for several kinds of grain (including rice,) raisins, spirits, iron and specie. The greater part of the traders go beyond Shipki to Meyung, Stojo, and to Gáru, at the fair.

On the 21st we returned to Namja, and the following day crossed the Setlej, and encamped at Tashigang, a small hamlet on the declivity of the Púrkyúl ridge; one mile of descent brought us to the river bed, where we crossed on a very good jhúla or bridge of ropes, which was constructed of twigs of ozier or sallow; it was ninety-nine feet in length, and thirty feet above the water. The river was here obstructed by large rocks, some of which were curiously honey-combed, and had many deep pools in them; it was not fordable. The ascent was most steep, and continued for three miles and a half from the river bed; the difference of level being about 3500 feet. We found the gooseberry here in great perfection, with several new fruits;

the elevation I suppose to be 10,177 feet. The snowy peak Púrkyúl is seen towering high above the village, its elevation 24°. The appearance of the mountain side at a distance, is that of a bare and precipitous waste; but on reaching it, we found a good deal of even ground; some fine pasturage as well as cultivation, and several ponies of a good appearance grazing about. Tashigang is in Túkba, and consequently in Kanáwer. There is a small temple built at the expense of the grand Lama.

We arrived about eleven o'clock, and as we had still Baliram, the Syana of Namja, with us, I made him give some account of the course and origin of the right branch of the Setlej. Beyond Skalkar, he said, whither we were now proceeding, was still another village belonging to Bissahir, called Súmra. Súmra is on the Spiti river, and from Súmra to Larí, the first village of Ladak, is a short march; beyond Larí, about one or two and a half miles, he represented we should meet with Tabo, a small hamlet; then Pokso or Poh, and then the fort of Dankar. The river has at this place two branches, which unite under the fort; the left branch is called Lidang, and the right Spino, which is also the name of the next Purgunnah to Spiti. The following villages occur beyond Dankar, between the two branches, but on the Spino:—Tangtee, Kúng, Kúngrí, Kúlling, Salling, and Baro. Beyond this he said he had no certain information.

On the Lidang, again, which is about half the size of the Setlej, beyond Dankar, these villages are met with:—Lara, Paling, and Rangreh. The Lidang comes from a peak called Kungúm La, about fifty miles from Dankar. The Spino's source he did not know.

From Tashigang to Nako in Hangarang was a distance of ninety-four miles; the road rather rugged upon the whole, though there were few dangerous places. It lies along the face of the range of which Púrkyúl is the high peak; three miles from Tashigang, the valley of the Setlej was left, and we turned up that of the Spiti. This is the highest part of the route,

and to it the path is a continued ascent; the elevation I calculated to be about 11,815 feet, judging from the boiling point. The path improves after rounding the corner, and the appearance of the mountains alters still more. The granitic and high sharp peaks give way to low rounded mountains, with scarcely any snow on them, and still less vegetation; nothing can equal the complete nakedness of this Purgunnah of Hangarang, and it is a wonder how the people contrive to support themselves. Nako contains about thirty houses, and is situated on the western declivity of the Púrkyúl mountain; there are a few apricot trees, poplars and oziers, and barley and wheat, are grown still higher than the village, though its elevation be nearly 12,000 feet.

We noticed a curious appearance in this day's march, which we had afterwards occasion to observe, was very common in this part of the country. It was a conformation of ice, having all the regularity of a vegetable production; it seems to grow from the stalk of a particular plant and from no other, it is fantastically disposed in leaves having various whirls or twists. The leaves as they may be called have a fibrous appearance, but grow (contrary to the habit of real leaves) perpendicularly from the stem, like a pendant on its staff. We observed a great number of these glacial plants, (if they may be so called,) but whence the moisture came is difficult to say, for the ground was gravelly and arid. It is equally difficult to account for the ice assuming that particular form, and growing so as to raise itself several inches above the ground. It may be worth remarking that in every instance, the plant to which it attaches itself, and which is a small leafy shrub, was withered and sear,

The thermometer was in the morning 23° and all the water in our vessels was frozen nearly an inch thick, even inside the tent. From Nako to Chang was a distance of one hundred and five miles; the path is good the whole way, and the ascent which continues the first half, and descent from thence to Chang, are both easy; several flats and hollows are seen in

the vicinity of Nako, and close to the village there is a small lake of considerable depth. The declivity of the ridge is here very gentle, though on the opposite side of the river the steepness is established by the appearance of the road not leading along its face, but over the lateral ridges and descending into the glens. At Chang there is the same flat declivity ; on this side, red hard earth is seen to form hillocks that rise above the surrounding terrain, similar to turrets or the bastions of a fort. Chang is situated in the middle of a little flat, which might be almost called a valley ; it is in some measure, or has been, the bed of a torrent, but the stream now flows deep below and far away to the right. To the left this valley is bounded by a ridge of the hard clay, I have already mentioned, which separated it from the collection of hillocks. Looking up in the direction of the glen, which has a very gradual acclivity, and flat and retiring sides, the granitic peaks with snow on them are again seen, but of an inferior elevation. The village is rather large and like all those in Hangarang perfectly Tartar. The contrast in appearance and language between this race and the Kanáwaris, was made more striking by the arrival of a man belonging to Púrbúnní in Kanáwer, from Ladak, while we were here. He had come from Leh to Larí, a village two or three marches ahead, in fifteen days, and he informed us that Runjeet Singh had established a Wakil at Leh, and that the country was considered subject to him, in the same manner as it had before been to Cashmir.

The appearance of this Purgunnah Hangarang, is most strange and melancholy : mountains bare of forest, but above covered with a little snow, of the rounded form, with gentle declivities, but broken towards the river into abrupt and precipitous abysses ; in the beds of which where fed by a stream, are seen a few trees, chiefly the ozier. The rocks, though still a good deal granitic, and felspar common, yet are verging into clay slate of which there is much about this village ; above Nako, the ridge is of the true Himalaya form, rugged and precipitous, breaking into pinnacles and crags, but bare even of the brown and scanty vegetation that in some measure

clothes the nakedness of these. A furious wind seems to reign here; it blows from about ten till three or four o'clock, when it lulls, but of its force it is difficult to give an idea; in steadiness I may compare it to the hot wind of the plains. A road was pointed out to us, which they said leads to Gáru; the distance a journey of twenty-two days. The road is passable for horses, though not very good.

There is also a road hence to Rúpsho, five day's journey, of about eight or nine miles each. From Rúpsho, Rútoh is twenty day's journey, and Leh ten; from Skalkar represented to be a few miles ahead, Larí is two day's journey, and Dankar fort, five.

Thermometer 26°. To Skalkar fort was only a distance of four miles; the path leading along the river edge, which is here unobstructed by large rocks and has rather a temperate current; we crossed it on a sanga, boarded and railed, but rather rickety; the length of it being ninety-eight feet, and the height above the water twenty-seven. The fort is on the edge of the bank, and may be said to overhang the river; it is built of stone and is small, but from its situation capable of being well defended. One of the Wazirs (as they are called) of Bissahir, lives here part of the year. It was considered by these people a very important post previously to our conquest of the mountains, and it appears that they have had frequent contests with the Latakis for the possession of it. Indeed it occurs to me that all Hangarang must have been formerly a part of Ladak, and wrested from the rajah of that country by the Bissahir government. The separation of the two districts is so decided, and the line which marks it so strong, while from Hangarang to Ladak no difference is perceptible, that I cannot but believe the Hangarang pass was formerly the boundary of Bissahir.

We had now reached the thirty-second degree of latitude, and had left the true Himalaya far to the southward, while a new country of entirely a different aspect lay before us. To proceed still further was of course our most

anxious wish, and it was strengthened by the appearance of the roads, which from Nako had been excellent, and in front seemed still better. Indeed we had been uniformly assured that they were passable for horses and that no difficulty whatever would occur on this head ; but difficulties of a different kind, and less easy to be surmounted, presented themselves in the jealousy of a strange people who owed us no allegiance, and our own want of preparation for such an attempt. The season, too, was far advanced, and it was known that in several parts of Kanáwer snow might be expected to fall daily. The apprehension that we should find some of the passes shut, and the uncertainty under which we laboured as to our being able finally to reach any point where we could winter, induced us at last, however unwillingly, to resolve on returning. The difficulty, too, which we felt on account of provisions, was an additional inducement; and it was determined that my companion should halt the next day, and on the following, commence his return, while I, with a very few followers, should push on to the first Lataki village, from which I hoped by forced marches to overtake him. Lari was represented to be two marches, Súmra being the first, but the road was said to be good, and I thought it desirable to make the attempt, if it were only for the sake of fixing the extent of the frontier. It was determined that my companion should return down the right bank, in which route I was to follow him: we should thus have an opportunity of seeing the whole of Hangarang, as well as some parts of Kanáwer we had not before visited. The latitude of our camp here was  $32^{\circ} 0' 2''$ , the elevation 10,113 feet. The river was 441 feet below.

Thermometer  $29^{\circ}$ . A little after day break I left Skalkar, accompanied by a servant, six carriers, and a guide; a long and laborious ascent, in which however the path was excellent, brought us to the Lipcha pass, a ridge having an elevation of 3123 feet above Skalkar, which I have as above supposed to be 10,113 feet above the level of the sea. So great was the cold, that, at ten o'clock, the ink froze. We had, from this pass, a view

of a part of the river's course which appeared to have here a considerable bend, coming, not from the north as I had supposed, but, from the west. The view also extended up the bed of the Yang Cham river, which joins the Spiti immediately at the turn. It seemed to have a great fall, and to be rather a rapid torrent than a river. On the opposite side of the Spiti, appeared an excellent road, which, I was told, was that leading by Chimarti to Lari, and I resolved to return by it, as it seemed to have fewer inequalities than the one I had chosen. There were no peaks of superior elevation seen in any direction, but the southern; to the east, was seen a continuation of the Púrkyúl chain gradually falling off, and with little snow on it. To the north, the left bank of the river rose into round clay slate ridges, which here and there shewed a solitary peak and some little snow. To the west, were seen black bare mountains too low to retain snow. In fact, it appeared to me, that the great chain of the Himalaya was to the south, and that, in this direction, the falling off had already commenced.

From the pass, the descent was steep at first, afterwards more easy, the path always good, though I think scarcely passable by mounted travellers: after descending to the river bed, it leads along the water edge, sometimes cut out of precipitous crags in the form of a ledge, sometimes supported by scaffolding. This description, however, applies to but a very short distance, and after passing it, the road is again excellent. I arrived at Súmra about half past four o'clock; it is a small village, situated in rather an extensive flat or table land, the foot of which is washed by the river. On enquiring the distance to Lari, I began to think I might reach it with some exertion by night fall, but I learned with considerable mortification that it was on the other side of the river, and that there was neither jhula nor sanga to cross by. On questioning them as to its being fordable, they said it might be, but that the current was too strong, and the water too cold for me to attempt it. My wish however to gain a day urged me to make the attempt, and, with the support of two muscular Tartars, I forded the Spiti river. What made it not a little dangerous was a rapid about one hundred yards below the



ford, and by which, had the footing been lost, one must have been dashed to pieces. The water was a little more than middle-deep, the current strong though not rapid, the width about one hundred feet or more; the round smooth stones which formed the bottom were the chief difficulty, as they afforded no secure footing. The temperature of the water was so low, that I found my limbs quite benumbed, and it was some minutes before they recovered their feeling. With some little delay, my few followers got all across, and we then found an excellent road the whole way to Lari. It lay sometimes in the river bed, and sometimes along a flat in which the river had cut its channel deep and far to the left. The mountains entirely clay slate, and exhibiting in many places a declivity of the most undeviating regularity, formed of loose fragments, which rolling from above had all taken the station assigned to them by gravity. We reached Lari by dark, and were furnished by the hospitality of the people with a house to shelter and firewood to warm us. The distance from Skalkar was seventeen miles, of two thousand paces each.

This village is situated at the southern foot of the ridge, which rises from the narrow plain or valley I have already described, and the width of which here is about one-third of a mile. The white houses of the small hamlet of Tabo are seen about one mile and a half farther up. The cultivation extends the whole breadth of this valley, that is from the village to the river, but not far above or below. The river runs in a channel about 120 feet below this level piece, and from the immediate bed, the mountain ridge on the opposite side rises. I have already described the appearance of these chains, equally bare of snow and of forest, and occasionally having their irregular declivities concealed by the beds of loose fragments that lie against their sides. Here and there, within their recesses, a dry and withered turf affords a scanty and precarious subsistence to cattle, but neither bush nor bramble, leaf nor herb, offers a relief to the eye, fatigued in contemplating the same unvarying bareness. Lari is, in this quarter,

the first village of Ladak. It is small, consisting of not more than eight or ten families; the houses are built of unburnt bricks; such is the extreme dryness of the climate. In fact, scarcely any rain falls; in May and June, a very little, but during the rest of the year the heavens yield only snow; vapour or dew must be totally unknown under a temperature generally below the freezing point.

The shawl goat is said to be bred here. I saw none however, and I rather suspect from their answers to my cross examination, that they were imposing on me. Certainly they are not to be seen in any village to the southward of this, nor has the Bissahír government, however anxious, been yet able to introduce the breed either into Kanáwer or Hangarang. Spiti is the name of the Purgunnah which extends to the Losar village, and Spino is the next Purgunnah. At Dankar, which is a fort, beneath which the two branches of the Spiti river unite, a Kamdar resides, to whom they pay their assessment. Dankar is about thirteen miles from Lari, and in a westerly direction. The left branch of the Spiti is the larger, and comes from the Purgunnah of Spino; the other has its origin near Lossar or Losar; they had not heard they said of the establishment of the Sikh authority; they had never been at Leh, nor did they know how far it was from Lari; they shewed considerable disinclination to answer any of my questions, and their answers were not satisfactory by any means.

I left Lari early in the morning on my return, and got to Súmra by nine o'clock. In fording the river, which I attempted without any assistance, I was very near being carried away by the current, having slipped in placing my foot on one of the large smooth stones with which the bottom was covered. The temperature of the water I found to be  $36^{\circ} 8'$ . By evening I arrived at Skalkar, where I found my companion had marched for Lio. I put up in one of the huts, which I found empty, and attempted to defend myself from the cold by lighting a fire, but the annoyance of the smoke made the remedy as bad as the evil.

From Skalkar, Lío was represented to be a very long march, and the road extremely bad in places, but as I thought I should most probably find the encampment there, I set out early, intending, if possible, to reach it by night fall. The path gradually ascends, for five and three quarter miles, to Chejang Kanka, a pass over one of the lateral ridges which shut in the numerous streams that feed the river. These ridges are all of great height, or rather the beds of the streams are of great depth, and to cross even one of them is nearly the labour of a day; the summit of this pass is a level piece of some extent, and we found some huts and an attempt at cultivation. As it was now noon, I halted to allow the people to take advantage of the spring we found, and make a meal before they attempted the arduous task in front; the descent to, and ascent from, the Yulling river. The steepness of the opposite bank, and great height, seemed to defy all access to it, but the rear of my companion's line of march, which was now perceived slowly ascending it, proved that it was to be surmounted, and gave us hopes of overtaking them before evening. At half past one we proceeded down a most steep and difficult declivity, in which the beds of loose fragments lying at a considerable declivity, afforded a footing as insecure as it was tiresome. A little above the bed of the stream, we passed through some more even ground, which appeared to be cultivated, though at this time there were no crops. The stream is rather large, and occasioned a little delay in fording it: it has its source to the westward from some lofty peaks that were partially seen, looking up the valley. At the place we crossed, a small rivulet joins it, which issues from a rocky cavern in a very picturesque cascade. The waters of this fountain are so strongly impregnated with calcareous matter, as to deposit it on every thing it touches, and the cave is ornamented with stalactites, something similarly to that in the Dún called Sansár Dhára, though it yields to this latter in the number, size, and beauty of them. The rocks in the bed of the river are limestone, and the steep scarp which we had now to ascend appeared to be composed of calcareous earth, of that description found in the plains, called Konkar. Notwithstanding the evidence I had had of this pass being surmountable, when I

came to ascend it, I could scarcely persuade myself that what I had seen was real. In describing the difficulties which a journey through these countries presents, it is not easy to adhere to a just discrimination to give an estimate as it were of the proportional dangers of each difficulty. Even the least rugged of these strange and uncouth scenes, to give a correct idea of it, almost exhausts language. Epithet is heaped on epithet till at length no stores are left to paint the succeeding scene, which rises still higher in the scale of picturesque horror and danger. The continual recurrence, too, of these descriptions, necessarily having a tiresome sameness, takes from the effect. Where all is rugged, a savage feature strikes the less, and thus the greatest difficulties as coming last are thought the least of. I have so often attempted in vain to give an accurate idea of any of these places, that I shall content myself with indicating the observed depression of the ford from the summit,  $35^{\circ}$ ; the difference of level about 1480 feet; the nature of the path a hard and dry earth covered with small fragments of gravel, narrow and open to the left; neither tree, nor bush, nor herb, nor blade of grass, from the summit to the very foot, not even a ledge of rock to check one's fall, but a smooth undeviating declivity, down which we feared every moment to be precipitated, from the narrow ledge that served for a path, and along which it appeared at first impossible to proceed without losing one's footing. In a few words, this was by far the greatest difficulty we had yet encountered, and I am not ashamed to confess that I felt very considerable alarm in ascending it. From the pass, the descent is at first easy, latterly more steep to Lio, a large village situated on an extensive flat at the junction of the Lipak stream with the river. A good deal of cultivation was observed all round the village, and many apricot trees; the whole distance was about fifteen miles. I arrived just at dark, happy to fall in with my tents and people, after even three day's separation.

We had now before us a fairer prospect, and it was with pleasure we heard horses recommended to us for the next stage. We did not accept the offer, but many of our servants mounted themselves; some on ponies,

and some on yaks. The reality did not disappoint the ideas we had formed of the road, it was with very little exception level, and without any exception good, the whole way to Hang, a distance of nearly nine miles. A little beyond Lio, the river valley is quitted, to turn up that of a considerable feeder. The declivities had here a gentler slope, and we were pleased in this march to fall in with a herd of ponies, mules, and asses, grazing on the mountain side; they appeared strong and hardy, particularly the mules; Chulling we passed half-way; it is situated on the right bank of the stream in the bed, or a very little above it. Hang consists of three hamlets or more, the principal of which contains about twelve or fifteen houses. A temple of great sanctity in the opinion of the people, distinguishes this village; it is a large building, and something similar to those of the plains; a strange and mis-shapen red idol is the chief deity of the place; but behind this image, on a kind of altar, or railed platform, are a number of other gods and goddesses, chiefly small figures of copper or bronze; the walls are painted with the most ridiculous and monstrous figures as large as life; and, allowing for the peculiarities of their productions in this way, the artist seems to have been far from contemptible.

The name of this Purgunnah seems to be derived either from this village, or from some circumstance common to both. It is altogether Thibetian in features, dress, language, and customs, such as that of Polyandry, and the societies of Gelums or Monks; the construction of manis or the long benches of stones; and in religion, as the substitution of Lamas for the Brahmins of Kanáwer, the mode of getting through the duty of prayer by turning a cylinder, and the general reverence and devotion with which the mysterious expression, Om mani pad men Hoong, is pronounced. In salutation they incline their heads so as to touch; a ceremony which, assisted by the strangeness of their countenances and dress, has rather a ludicrous effect. There is no distinction of cast, and consequently no fear of defilement. They have no scruple as to food; the manner of preparing it, or the person by whom prepared. Ablution is so far from a duty as with the

Hindus, that it is a matter altogether dispensed with by these people, who have some excuse in the inhospitable nature of the climate. Whatever their national virtues may be, it is certain that cleanliness is not to be reckoned among them. Their women live under no restraint, but freely expose themselves to view, not even deeming it necessary to shroud the face in a veil or cloak. They have rather expressive though peculiar countenances, but their great charm is the ruddy complexion, which distinguishes them from the fairest born on this side of the snowy chain. They perform all the labours of agriculture, except those of ploughing and preparing the ground, and they are nearly as hardy and robust as the men. It is a pleasing sight to a European to see a troop of them going to fetch water from the spring, not in the Asiatic costume with an earthen pot on the head, and their face shrouded by a cloth; but in that of Europe, with ruddy cheerful countenances, unconcealed and unsuspecting, and a wooden pail under the arm. These pails are made of the juniper wood which is found in Kanáwer, though not in Hangarang, and which is in appearance and scent not unlike the American cedar; they are made chiefly at a place called Ropa,

Hangarang produces wheat, barley, öa, pápar, and turnips, but no rice, not even the kind peculiar to high and dry situations. There is but one season; the trees, which are stunted, are only to be seen near the villages or in the beds of streams; they consist of a few apricots and willows, dog-rose, gooseberry, a species of currant, a thorny bush known at home by the name of whin, and two species of shrubs not familiar to me, which produce excellent fruits, the one yellow and acid about the size of a currant, the other red and mawkishly sweet. It contains nine villages, the revenue of which is but 900 Rupees a year; a small trade is carried on with Ladak and Gertop, to both which places there are good roads. From the latter place they bring salt and byangi wool, but no shawl wool, which seems to be all reserved for the Ladak market. From Ladak they bring Pashminas and other manufactures of the shawl wool, but the raw material appears to

be contraband, as the greatest precautions are taken to prevent its being exported. A kind of coarse flannel or blanket stuff is manufactured here and at Chang, probably at all the other villages, but it seems to be in no great quantity. Ponies and mules constitute a great part of their wealth. Upon the whole, the purgannah though barren and naked, poor and thinly inhabited, is no doubt capable of being made something of. It is principally perhaps to be valued as the door of a communication which might be opened with the Latakis and other Tartar tribes.

Our experience of the preceding day's march, and of the ease and quickness with which our mounted followers got on, induced us to accept the offer of two good ponies which was made us here. Mounted on them, we soon reached the summit of the Hangarang pass; an elevation which coincides with the limit of snow, and which is at the distance of about three miles and three quarters from the village. The thermometer at twelve o'clock, in the shade, and defended from the wind, stood at 34°. Hence we had an extensive view; the snowy peaks, Ralding and Zungling, were both visible.

The summit of this pass, which is 14,412 feet above the sea, consists of limestone. This probably is the outgoing of the strata seen in the bed of the Yulling river. It is the only instance in which I have seen limestone at this great height within the circuit of these mountains.

From the pass, the first two miles and a half is very steep descent to a stream, which at one o'clock we found almost entirely frozen. To Sungnam, the remainder of the road is good, the path leading along the bed of this stream which joins the Rushkalang below the village. The whole distance was 103 miles: we found here the principal part of our baggage, which we had ordered back from Dabling in our expectation of being permitted to proceed to Gáru. As this village was large, and there was no

deficiency of supplies, and as we had been making rather severe marches ; we thought proper to give the people a halt.

The Hangarang pass is the boundary of that purgunnah, and in descending from it, we could not but observe how much even the separation of a single ridge can alter the general face and appearance of a country. The naked arid barrenness of Hangarang, was here exchanged for the green and lively picture of a forest of deodars, juniper and walnut trees. The difference was further perceptible in the luxuriant vineyards; the produce of which was presented to us on our arrival, and the advantage of two crops in the year places it in a still clearer light. Wheat, öa, barley, chenna, pápar, ougal, and turnips, are produced; the three last following barley, but wheat and chenna exhaust the soil. Wheat is sown in March, and cut in July.

Sungnam is one of the largest villages in Kanáwer; it cannot contain, I think, less than eighty families. The people are all traders, like the rest of the Kanáweris. Wool they import from Gáru, which they manufacture into Suklath or Sanklath, Doru, pankhis, and caps. Besides wool, they import salt from Gáru; their exports are wooden dishes, iron, horse shoes, tobacco, grain, and raisins. The tobacco and iron they receive from Rampur, with specie also, in exchange for their woollen stuffs.

This village is in Süa or Süang, one of the sub-divisions of Kanáwer. It is situated on the left bank of the Rashkalang, a considerable stream which joins the Şetlej below Chasu; there are also the villages of Gabún, Taling, Chasu and Rupa; the two first are on the right bank, the two last on the left. The source of the river is in the high range called Damak Shú, which separates Kanáwer from Ladak. On this side of the range, Rupa is the last village met with, and on the other side Manes, a village of Ladak, is the first which occurs: from Manes to Dankar, is three day's



journey. This road however is not so good as that by Skalkar and Lari, which is a journey of eighteen days.

We were a little dismayed in the morning, by the appearance of a servant reporting that it had been snowing heavily all night, and had not yet cleared up. On looking about us we found it was but too true, and that the snow lay about half a cubit deep all round our tents, while the surrounding ridges and peaks had all exchanged their hue of green for the more dazzling, though not so pleasing, livery of winter. This was quite an unexpected event to us, though the probability of it had been frequently foretold, but we always attributed their introduction of such topics to their anxiety to see us fairly returning. We were a good deal perplexed, not knowing when it might clear up, particularly as we found there was no low road to Kanam by which the danger of travelling over new snow, should there be a heavy fall, could be avoided. Most fortunately it cleared up about ten o'clock, and the sun then breaking out, soon caused what had fallen to disappear, except on the highest ridges. The thermometer was at 31° during the fall. We immediately determined on taking advantage of this turn in our favour, however distant the probability of reaching Kanam by night fall. The great object, now the winter had evidently set in, was to get beyond the high ridge separating these two villages, after which we should have no very high ground to traverse, and should consequently be more independent of changes in the weather,

The path leads down the Rushkalang for four miles, an easy descent and generally good, it then crosses the river on a sanga, thirty-three feet long and twenty-five above the stream. The ascent of the pass commences immediately from the bridge, and continues most steep to the summit, a distance of three miles. We found a few patches of snow near the summit, soft, but of no depth. The thermometer was 32° and it had begun to snow lightly during the last few hundred paces ; however, we had the satisfac-

tion to see before us a good road, on which we might use the ponies we had brought with us. We reached Kanam by dark, in a heavy fall of snow, which had gradually increased from the pass: our followers did not come up till late at night. The distance was thirteen miles and a quarter.

From Kanam to Jangí was a distance of ten miles. The road good to the commencement of the descent to the Changti nala, which is certainly equal in danger and difficulty, to any thing we had met with. A mile of most steep and rugged descent, in which the nakedness of a rocky scarp was ill exchanged for a hard and slippery gravel, was finished by a regular flight of steps, that led into the bed of the nala. We crossed it on a sanga, not a little pleased we had left behind us this frightful precipice. There are two villages, Osárang and Lipta, higher up this glen, and a road leads by the latter from Kanam by which this last dangerous and difficult descent is avoided: from the Changti nala to Jangí, is easy and moderate ascent; the people of this village trade with Pateala and Ladak; from the former place they import indigo, sal-ammoniac, baftas and spices; from the latter saffron which they call kesarí; ingots of silver, and palhís or timashis of which eight make a sicca rupee. Wool they receive from Gáru, and salt from Hangarang and Gáru.

From Jangí our next march was Rarang, a distance of nine miles; the whole of the way a good path with very little descent or ascent. We had now got back to the region of forest, and the noble pines through which our route lay, at once gave the scenery its principal charm, and afforded us the real advantage of shade. We passed the confluence of the Tedúng, a river before noticed as crossed on the way up. We now learned there was a road up its bed leading to Bekar, and a small hamlet on one of its banks, a day's journey from the Setlej. We passed Rispa also, and Reiba; in the latter, admiring the display of grapes laid out to dry, and with which every house in the village was covered; at Rarang we found the Neoza in great quantities, and of an excellent flavour; the price was ten seers for the rupee. Walnuts also we found very good, but they had been brought from Pangí.

The weather was now extremely pleasant ; the sun not too hot in the middle of the day to take exercise. In the morning the thermometer at this village was  $31^{\circ} 5'$ . The grapes had fully ripened, and we had baskets full offered to us at each village we passed through or halted at.

We proceeded to Pangí, a distance of ten miles ; the path not so good as the preceding day's, though still not bad ; six miles is of a mixed kind, to a stream crossed on a sanga, in the bed of which lies the road formerly noticed as leading from Kanam by Lipta and which crosses the Kasang pass. From this place there is a steep ascent of about three-fourths of a mile, through a deodar forest, in which we found a good deal of snow towards the summit. We overtook here a number of the Hangarang people, proceeding heavily laden to the Rampur fair. The remainder of the road was good and nearly level ; the proper name of this village, which contains about thirteen families, is Thempi ; there are several others close to and the whole collectively have the name of Pangí. We observed, over the door of a temple here, the hide and horns of a curious animal, which had been killed in hunting and which these people called Skin. There were also skins and horns of the War and Ther ; they both go in herds ; the former is something like the musk deer, the face is however that of a sheep ; the hoofs are divided ; the horns are more like those of a buffalo than any other animal. The Ther is supposed to be the Chamois of the Alps ; it is called Sboo or Zboo by the Kanaweris. The musk deer (male) they call Robz, (the female) Bíz ; numbers of them are shot all over Kanawer, particularly in this vicinity.

Half-way, or rather a little more, we breakfasted at Chani, a middling village opposite Barang nearly. We passed through Kashbir and left towards the river side the several hamlets of Dún, Brehle, Yuäring, Sonan, Kúti, Kangi and Fehling. On this side of the river the declivities of the mountains are more gradual, and in consequence not so bare ; for this reason also the villages are more numerous and the cultivation more extensive.

As far as Chani, and even for some distance beyond it, the path had been good, generally speaking; between it and Rogi, however, there are one or two exceptions. The pass called Maning Chi, in particular, is a very rugged looking place, and the path leads along the face of a precipice at a great height above the bed of the river. Several flights of steps, constructed with loose stones and scaffoldings boarded, one of thirty feet in length, render the place passable, which it otherwise would not be. From the summit of this defile is seen a noble view, the principle feature of which is the Raldang Cluster of snowy peaks, which rise above Murang not above ten miles distant. The Harang ridge, which we had crossed in the march from Sangla to Mebar, was observed to be covered with snow to a considerable depth below the pass over it. To the south we saw the inner ridge of the Himalaya, in which are the Ganas, Bruang and Role passes. The main ridge is certainly marked by the Raldang Cluster, and the Setlej may be said to break through it at Murang or below. The latitude of Rogi is  $31^{\circ} 30' 13''$ . The elevation 8551 feet.

Rogi, I consider the southernmost village where the true costume of Kanáwer is to be observed; even there the people are very inferior in all that constitutes the peculiar appearance of the Kanáweris. They are much darker, and not so good looking, and their language is sensibly mixed with the mountain dialect of Hindustani. At Sungnam, Kanam and Raba, the features which distinguish them alike from Tartars and the mountaineers south of the Himalaya are most strongly marked. Kanáwer however as a purgunnah extends much farther down the Setlej. Between Rogi and Meru that river changes its course from a southerly to a westerly one; at the turn it receives the Baspa river, and above the confluence is the village of Bruä or Bruang, from which there is a route by the pass of the same name over the snowy ridge into Chuara.

From Meru to Spara Wodar, an open spot in the bed of the river where we encamped, was a distance of nearly thirteen miles. At Chegaon, rather a

substantial village about half-way, we stopped to breakfast, and admired a handsome temple with its gilt spire. From Chegaon the descent continues, and becomes rather difficult and even dangerous just before leading to the river bed; the path then continues along the level flat a few feet above the river. On the opposite side we noticed the Melang Glen far retired within the snowy range; a considerable stream which waters it joins the Setlej; a pass leads up the bed of it into Chuara, but it is more difficult than either the Bruang or Role passes. With the exception of these deep glens, with which the mountain sides are every where intersected, there is little to admire in the scenery which this part of the valley of the Setlej displays. Naked and lofty precipices, or bare and broken declivities, present little to attract attention, after the first edge of wonder and fear is worn off; and we had seen so much of this kind in the upper part of Kanáwer, that these features had now lost their power over us. We had, in Macbeth's words, "supped full with horror," and "direness familiar to our thoughts could not now start us."

Thermometer 42°. From Spara Wodar the path gradually ascends for about two miles, when there is a steep descent, chiefly by steps, to the bed of the Babe or Wungar river, a furious and rather large torrent, which is crossed on a sanga of about 40 feet in length, and 26 feet above the stream. This scene is really picturesque and romantic in a high degree. A purgunah, called the Babe, extends up the bed of the stream; it contains the following villages: Dútarang, Gramang, Yangpa, Krabe and Kampanang. Immediately below the confluence of this river is the jhúla of Wongtú, by which the Setlej is crossed. There had formerly been a bridge here, the remains of which are even yet visible; it was similar to that at Puari which I before compared to that at Wandipur in Butan, and of which a view is given in Turner's Thibet. On each side are fixed several tiers of strong beams inclining upwards, and each tier projecting about five feet beyond the one below it. When the distance between the ends of these beams is reduced to about 40 or 50 feet, a few planks or spars of that length are laid

across, and the bridge thus appears at a distance to consist of three pieces which meet at an angle. The ingress to, and egress from it, is regulated by a guard house or choki on each side, which fills up the whole of the road way; and thus they serve as points of check to an enemy as well as of communication to friends. This bridge had been burned when the Gurkhas attempted to penetrate here, and though we admired the spirit of the act, we could not help regretting the loss of the bridge, forced as we were to cross a rapid and powerful river on a tar or single rope. We arrived at the jhúla at half after nine a. m. and at half after three p. m. when I left it, there still remained several loads on the opposite side. The distance of Nichar where we encamped, from it was four miles and the whole distance was seven and a quarter. Nichar is situated high on the mountain side, and the declivity is much more gradual, so that the ground is open about it and rather level.

From Nichar our next stage was Trade, or Trandeh, to Punda; the path was tolerably good, with partial ascents and descents, leading sometimes through fine forests of deodar. From Punda the path turns up the Saldang glen, remarkable as forming one of the most romantic and beautiful scenes I have noticed. The river is rather a cataract having a great fall and forming a complete bed of foam; the sanga on which we crossed it was twenty feet in length; besides the main there are two smaller branches. The ascent from it is rather steep partly by steps in the rock. The last mile to the village is nearly level, the path good, passing a pretty cascade which falls from the brow of a rock into a basin which it has worn for itself. Trandeh, or Trade, is a neat village and pleasantly situated. Lofty deodars at once shade and adorn it, and the houses are substantial and well built.

Thermometer  $36^{\circ} 5'$ . Hoar frost on the ground. This was a very severe march to Suran, being sixteen miles and a half, and the road far from good; we did not arrive till after dark. To the Chonda nala is a difficult descent; thence the path is of a mixed kind, occasionally very bad, though with few

ascents or descents of any moment. Half-way the Kandlunullah is crossed, a picturesque spot where we stopped to breakfast; thence is a steep ascent to Manoutí Danda, a ridge which is reckoned the boundary of Kanáwer; here the aspect of the river valley changes in a remarkable manner. The left bank having scarcely any declivity but spreading out in a nearly level expanse for at least two miles down to the water's edge. The whole of the mountain side is well cultivated and at this time presented the golden picture of a plentiful harvest. The hamlets are numerous too, though small, and the appearance of the country upon the whole is highly pleasing. Seran is the summer residence of the Raja of Bissahir who removes here to avoid the heats of Rampur which is in the bed of the river. It is inhabited chiefly by Banias and people about the Raja's person, and is on the whole rather a neat looking place. The Raja's residence is rather well finished and set off with various gilt ornaments; there is also an old Hindu temple of rather a good style of architecture.

Thermometer 35° 8'. Hoar frost. From Seran we proceeded to Gauri Kot half-way to Rampur, a march of 123 miles; we had made these long marches purposely to arrive in time for the Rampur fair which began this day. The road upon the whole is tolerable and the general appearance of the river valley a good deal as yesterday. We breakfasted at Múzúlia which was half-way, and though we made no delay did not arrive at Gauri Kot till after sunset.

Thermometer 44°. A little distance from Gauri Kot occurs a bad place in the road, which on account of its extreme steepness and the slippery nature of the soil (Mica) is rather dangerous. The path then leads along the mountain face, and afterwards descends to Muteli, a small village situated in a retired glen: a little beyond this occurs a most steep and continued descent of two miles and three quarters, very rugged and very fatiguing. The rest of the path is nearly level, leading along the river bank latterly,

to Rampur, the Raja's residence; the distance was nine miles and a half, and we arrived about twelve o'clock. We found the fair nearly full, though there were still every hour Tartars and Kanáwaris coming in with heavy loads chiefly of the byangi or Tartar wool.

Rampur is situated on a strip of level ground by the river side, and is a small town, consisting like Saran merely of people attached to the Raja's person and a few Baniyas; above the town is the Raja's house; rather a mean building of naked stone with occasional layers of wood as usual in buildings in the mountains. The roofs are curved something in the manner represented in Chinese pagodas; some pains have been taken to form and preserve the ground in a tolerably level surface; forming a series of platforms and banked up with stone. On each side of the river (on the town side close) rise lofty and rather steep mountains, which seem to be the cause both of a greater degree of cold and heat than would be experienced were the place more open. The sun at this season of the year is not seen till past ten o'clock, so that the mornings feel insupportably cold, while the afternoons, owing to the reflection of the sun's rays from the mass of mountain so near, and partly perhaps from the effect of contrast, appear to be as much too hot; the day we arrived however rain fell which prevented our feeling the heat. The two following days we were much incommoded by it.

The 12<sup>o</sup> might be called the last day of the fair which had only lasted two days, though three is the term generally allowed. The 13th there were few people and on the 14th they had all disappeared except the fixed residents. The town as I have already remarked is situated along the river bank, on a small level piece, about 400 or 600 yards in length and 100 broad. Here it is the people assemble and range themselves in two rows facing each other, each with his merchandize before him; the wool and salt or Tartar traders, taking one side, and the grain, &c. or lower mountaineers the other. As they do not always understand each other's language, they are sometimes obliged to adjust the barter by presenting a sample of



their own ware and indicating with the hand, how much of their opponents they consider as its price; it is curious enough to see this pantomime. With but little assistance from language, this multitude of people adjust their bargains with wonderful rapidity; the several loads disappear as quick as they arrive, transferred to new hands, so that there is a continued succession of arrivals, and a vivacity and bustle are communicated to the scene that render it highly amusing. The total number of people assembled could have hardly exceeded 3000; of these the Tartars and Kanáweris brought wool and pashm; the latter also woollen fabrics for barter; Sank-lath, Pankhís, Dúris, &c. also raisins and neozas (seed of a pine) and some of them and of the Tartars, Pashmínas from Ladak, a coarse kind of shawl, which costs from eight to forty rupees according to its quality. The lower mountaineers bring grain, iron, spices, cloth, sugar, and other articles; a number of people from Kúllú (a mountain state, separated from Bissahir by the river) also visit this fair. They cross some by the tar or bridge of a single rope (which is here ninety yards in length,) and some on distended skins which would appear to be both a safe and expeditious manner of crossing a river that has not too great a fall.

On the 15th we marched for Nirt; the route lay little above the level of the river and the increasing temperature gave us a sensible proof, how great our descent had been from Seran; the path is generally tolerable and the river appears to flow with a placid current and is little obstructed by rocks. The Naugri river, a considerable stream, joins the Setlej about half-way; it has its source in the falling off of the inner range of the Himalaya which divides the river vallies of the Setlej and Paber. We crossed it on a sanga seventy-two feet long and twenty-two feet above the water, rather narrow and springy; a good deal of flat or table land is seen a little farther on near Dattanger, and a substantial village on the opposite side of the river called Nirmunda. Nirt is a small hamlet situated about a hundred feet above the river bed,

From Nirt to Kotgerh was rather a long march; the distance being about nine miles; we did not arrive till past twelve, and found the ascent from the bed of the river extremely fatiguing, owing to the heat more than the steepness. Our constitutions having been so long accustomed to the bracing air of the Himalaya tract, were little prepared to encounter the heats which even at this season prevail in a river valley, so narrow and so deep as this of the Setlej. The temperature of Kotgerh however which is between 3 and 4000 feet higher, we found agreeable, and a few days after our arrival we had a heavy fall of snow.

From Kotgerh the journey continued along the banks of the river to within a few marches of Belaspur, but as little worthy of description occurred in this part of the route, and as this narrative has already swelled to a size not originally contemplated, I shall conclude my remarks here, referring the reader to the appendix for the few particulars of scientific import collected. In the appendix I have given an idea of the construction of the map and of the methods by which the few points of level fixed were determined. There will be found also two short vocabularies, one of Kanáweri, the other of Tartar words, and some other particulars that were omitted in the narrative. The reader will thus be better able to judge of the value of the few results fixed by this journey, as also what may yet remain desiderata in that interesting quarter of research.

## APPENDIX.

---

THE journey of which I have attempted to give some account in the preceding pages was undertaken as before mentioned, for the purpose of laying down the course and levels of the RIVER SETLEJ. It will be proper therefore now to give an idea of the manner in which these two objects were accomplished and also to indicate some of the results. This account of the operations has been separated from the Narrative as little likely to afford interest to the general reader. A reference to the accompanying Map will render what follows more intelligible.

1. The particulars on which are founded the positions of the principal points in the mountain survey between the Setlej and Alakananda rivers have been detailed with sufficient minuteness in the preceding volume of the RESEARCHES. Of those points however depending on the chain of Triangles, but few offer themselves to the assistance of the Surveyor in his task of laying down the course of this river. A great part of the route described in the preceding pages lies north of the snowy Peaks; and it had not appeared possible at that time to carry any connecting triangles across that range. The points of verification therefore on which the accompanying MAP depends, and the elevations indicated in the SECTION being obtained (with only one exception) by less accurate methods than those on which the southern portion of the Map rests, it is my intention to give a brief but particular account of the data on which they are founded.

2. The first of these (and the most to be depended on I consider) is the latitude of the place. The following Table contains the results of all the observations I made. The instrument was Troughton's Circle, No. 44, mentioned in the former paper. Although it was free as far as I could ever perceive from all collimation, yet, to render the results entirely indepen-

dent of this correction I made it a rule to observe two stars, at least, when practicable. If north and south ; on the same side of Zero : but if both north or both south ; on different sides. This method of observing rendered me also independent of the error in the place of Zero and when the stars were nearly of the same altitude and on different sides of the Zenith ; of any little error, in the adjustment of the glasses, or of the co-efficient of refraction.

## OBSERVED LATITUDE OF PLACES.

Place.	Latitude.	Sun or Star.
Kotgerh Cantonment, - - -	31 18 42	Draconis and Ophiuchi.
Dádú, - - - - -	31 11 05	$\alpha$ Aquilæ $\alpha$ Cygni.
Jako, - - - - -	31 15 45	ditto ditto.
Cave. Head of the Rúpin, - -	31 19 37	ditto ditto.
Núrú Basa (no village,) - -	31 21 45	6 Circum. Meridian Alt. of Sun.
Sangla, - - - - -	31 27 54	Mer. Alt. of Sun.
Púari, - - - - -	31 32 57	$\alpha$ Cephei $\alpha$ Aquarii.
Múrang, - - - - -	31 36 26	ditto ditto.
Camp above Tomba Nadi, - -	31 41 54	ditto ditto.
Dabling, - - - - -	31 44 54	ditto ditto.
Nangia, - - - - -	31 48 30	ditto ditto.
Shipki, = = = = =	31 48 33	ditto and Pegasi.
	51	$\alpha$ Aquilæ.
	33	Circum. Meridian Alt. of Sun.
	23	$\alpha$ Cephei and Aquarii.
	42	do. do.
	37	do. do.
	48	C. M. Alt. of $\alpha$ Cephei.
	47	do. do. $\alpha$ Pegasi.
Tashigang, = = = = =	31 49 59	$\alpha$ Cephei $\alpha$ Aquarii.
Chang, - - - - -	31 58 36	do. do.
Nake, - - - - -	31 52 34	do. do.
Lari, - - - - -	32 04 32	do. do.
Skalkar fort, - - - - -	31 59 56	C. M. Alt. of Sun.
	32 00 09	do. of $\alpha$ Cephei,
Lío, - - - - -	31 52 44	$\alpha$ Cephei $\alpha$ Aquarii.
Hang, - - - - -	31 49 52	ditto ditto.
Sungnam, - - - - -	31 45 20	C. M. Alt. of Sun.
	44	M. A. of $\alpha$ Cephei,
Turn of river between Jangí and } Akba villages, - - - - }	31 35 17	Sun.
Rarang, - - - - -	31 35 54	$\alpha$ Cephei.
Pangi, - - - - -	31 35 04	do. $\alpha$ Aquarii.
Ohini, - - - - -	31 31 36	Sun.
Rogi, - - - - -	31 30 13	$\alpha$ Cephei $\alpha$ Aquarii.
Chegaon, - - - - -	31 31 03	Sun.
Spara Wodar (no village), - -	31 31 51	$\alpha$ Cephei $\alpha$ Aquarii.
Nichar, - - - - -	31 33 28	$\alpha$ Pegasi $\alpha$ Cassiopeia.
Trada, - - - - -	31 33 13	$\alpha$ Cephei $\alpha$ Aquarii.
Majulia, - - - - -	31 29 13	Sun.
Goura, - - - - -	31 28 35	$\alpha$ Cephei $\alpha$ Aquarii.
Rampur, - - - - -	31 26 35	$\alpha$ Pegasi $\alpha$ Cassiopeia.
Nirt, - - - - -	31 22 03	do. do.
Kotgerh, - - - - -	31 18 44	42 Obs. Polar Star } Repeating Circle by
	46	100 Sun. } Dollond.
Súni, - - - - -	31 14 10	$\alpha$ Pegasi $\alpha$ Cassiopeia.
Kúnharsen, - - - - -	31 19 12	2 C. M. Alt. of Sun.

3. The following Table of the local errors on Mean Time of an excellent eight-day Chronometer, by Barraud, is given to shew that no available methods were neglected, but owing to an unexpected irregularity in the rate of the watch, they are not of the value I anticipated. The Immersions or Emersions of Jupiter's Satellites that were observed have been already published, being used to fix the longitude of the FIRST MERIDIAN of the survey. It was considered that the errors of such results as a comparison with the Nautical Almanac could furnish, would be much greater than those even of the imperfect methods finally resorted to.

TABLE OF THE OBSERVED ERRORS (ON M. T.) OF A CHRONOMETER.

Date.	Place.	Slow of M. T.	Slow under 1st Mer.	No. Days.	Rate.
August 10	Kotgerh,	2 11 5			
14	"	2 33 3		4	5 45 losing.
25	"	3 36 1		11	6 71
31	"	4 14 2	4 16 8	6	6 35
September 5	Nagni,	4 40 7	4 48 3	5	6 3
27	Dádú,	9 53 7	7 33 1	22	7 95
October 1	Núru Basa,	11 00 5			
12	Dabling,	14 11 3			
15	Shipki,	15 08 1			
16	"	15 17 9		1	9 8
17	"	15 25 4		1	7 5
19	"	15 42 2		2	8 4
25	Skalkar,	15 37 2			} Mean 8 52
31	Sungnam,	16 29 6			
November 13	Rampur,	13 26 0			
14	"	13 32 9		1	6 9
17	Kotgerh,	13 09 8			
19	"	19 4		2	4 8 losing
21	"	27 7		2	4 1
24	"	41 1		3	4 5
December 1	"	14 09 7		7	4 1

4. The four following positions which are to be found amongst those derived from the Triangulation detailed in the preceding volume are used to determine certain stations whence they were visible.

	Lat.	Long.	Elevation.
Ralcheng (Snowy Peak)	31° 29' 22"	78° 21' 44"	21 411
Needle (Ditto)	31 19 45	78 18 19	19 044
L. (Ditto)	31 16 04	78 22 25	19 512
Kedar Kanta (Station)	31 01 08	78 09 33	12 689

The stations fixed from these are :

- (a) Dúdú.
- (b) Gúnass Pass.
- (c) Childing Kona Pass.
- (d) Hangarang Pass.
- (e) Tashigang.

(a) At Dúdú, the Magnetic bearing of Kedar Kanta was observed  $150^{\circ} 00'$ . The angle of elevation  $3^{\circ} 15' 45''$ . The declination  $3^{\circ}$  easterly. These data with the difference of latitude  $597'$ , 4 give the longitude of Dúdú  $78^{\circ} 3' 39''$ ; the elevation 8732 feet above the sea.

(b) Gúnass Pass. The three snowy peaks Ráldang, the Needle, and L, were observed here. The angle subtended by the first two was  $44^{\circ} 51' 30''$  by the second two  $13^{\circ} 54' 30''$ . These data afford excellent means of fixing the Pass by using the elegant formula of Delambre. It would however in this case be necessary to calculate the respective distances of the three peaks, on which account, as well as the favorable situation of all three points, I have chosen a less direct method by using the bearings and assuming a latitude for the pass. The place of Magnetic East and West on the Limb was always observed with great care on these occasions, a magnifier being used to observe the coincidences of the Needle (which was frequently made to oscillate) with the line of  $90^{\circ}$  in the compass box. In every case the slow motion screw was used for making the coincidence perfect; and as the same precautions were taken in observing the declination of the Needle, it is evident that the Magnetic bearings for near objects were nearly as good as Azimuths. The true bearings then of these three peaks observed as I have described were  $53^{\circ} 53' 98''$ ;  $44' 30''$  and  $112' 39''$ . The latitude of the pass is assumed to be  $31^{\circ} 21' 04''$ . With these data and the position of Ráldang the longitude is found to be  $78^{\circ} 8' 27''$ , and with this longitude and the position of the Needle the latitude appears to be  $31^{\circ} 21' 03''$ . With the same longitude and the position of L. we shall find the latitude  $31^{\circ} 21' 05''$ . The elevations will be found

From Ráldang (L. of E. 3. 48. 53)	15.557	feet.	}	Mean 15,516
Needle - - -	3. 47. 40	15.492		
L. - - - -	2. 49. 00	15.499		

(c) Childing Kona Pass. This station is fixed from the Magnetic bearing of Ráldang combined with the protracted latitude. These are  $208^{\circ} 54'$  and  $31^{\circ} 37' 16''$ . The longitude of the Pass is found to be  $78^{\circ} 27' 27''$  and from the observed angle of elevation the height is deduced to be 12,860 feet.

(d) Hangarang Pass. Similar Data. The bearing of Ráldang  $200^{\circ} 16'$ . The protracted latitude  $31^{\circ} 47' 34''$ . The longitude is found to be  $78^{\circ} 30' 50''$ . The elevation from an angle of  $3^{\circ} 04' 10''$  14,710 feet above the sea.

(e) Tashígang. Similar Data. Bearing of Ráldang corrected for declination  $215^{\circ} 51'$ . Protracted Latitude of place of observation  $31^{\circ} 50' 05''$ . Angle of altitude  $2^{\circ} 57' 50''$ . Results—Longitude  $78^{\circ} 39' 12''$ . Elevation 12,874 feet. The latitude of the place as derived from observation was  $31^{\circ} 49' 54''$  but as it is close under the great Peak Púrkyúl a projection of which has an altitude of  $19^{\circ}$  or in feet 10,000 nearly, I have allowed myself to increase the latitude  $11''$ , by which means its place is less distorted in the protraction than it otherwise would be. The Peak is to the north of the station and the effect of its attraction must have been a diminution of the latitude.

5. From the five positions of which the above details are given one or two others are obtained in a still less direct manner. At Shipki a small base of 118 feet 6 inches was marked by well defined signals, and the angle which it subtended at a point on the ridge above, was measured by a Theodolite well levelled and found to be  $31^{\circ} 40'$ ,  $30^{\circ} 20'$ ,  $29^{\circ} 30'$ , mean  $30^{\circ} 30'$ . This gives 12,850 feet, as the horizontal distance of the ridge. On this line as a base

Z \*

the great snowy Peak Púrkyúl was determined. The two observed angles were, on the ridge  $61^{\circ} 27'$ , at Shipki  $95^{\circ} 1'$ , concluded angle  $23^{\circ} 32'$ . From these observations the distance of Púrkyúl appears to be (from Shipki) 28,270 feet which, with its bearing  $353^{\circ} 11'$  gives a difference of latitude of  $4^{\circ} 37' 7''$  and of longitude  $47''$ . The difference of elevation deduced from the observed angle of altitude ( $23^{\circ} 9' 48''$ ) is 12,036 feet. The latitude of Púrkyúl is then  $31^{\circ} 53' 17'' 7$ .

Again from the Hangarang Pass the bearing of this Peak was found to be  $62^{\circ} 48'$  correcting for the declination of the needle. The difference of latitude being  $343'' 2$ , the difference of longitude is found to be  $13' 04''$ , giving the longitude of Púrkyúl  $78^{\circ} 43' 54''$ , and that of Shipki  $78^{\circ} 44' 41''$ . In the same way the difference of elevation was found from the observed angle of altitude ( $5^{\circ} 56'$ ) to be 8021 feet giving for the absolute elevation of this peak above the sea 22,731 feet, and for that of Shipki 10,695 feet.

6. We may now compare the above result of longitude with that given by the Chronometer. The rate from Kotgerh to Dúdí 27 days, is seen to be  $7^{\circ} 24'$  losing. At Shipki during four days halt it was  $8^{\circ} 52'$ ; the mean of these is  $7^{\circ} 9'$  nearly. Adopting this as the most probable rate from Dúdí to Shipki we have  $9^{\circ} 55'' 3$  as the error on mean time under the 1st Meridian of the Survey ( $77^{\circ} 28' 30''$ ) 15th October. The difference between this result and the actual error at Shipki ( $15^{\circ} 08'' 1$ ) is  $5' 12''$ ,  $8 = 1^{\circ} 18' 12''$  giving the longitude of Shipki  $78^{\circ} 46' 42''$  or nearly  $2'$  more than the above; the same calculation applied to the returning observations would give a still more erroneous result  $78^{\circ} 53' 10''$  or  $8\frac{1}{2}'$  more than that deduced from Púrkyúl. The change of rate in the watch, which was greater than I had ever known it in the same period, prevents my placing any confidence in either of these results. The detail will have its use if it inspire a cautious dependence on Chronometers, and a salutary suspicion of their results under the most favorable circumstances. No watch that I have



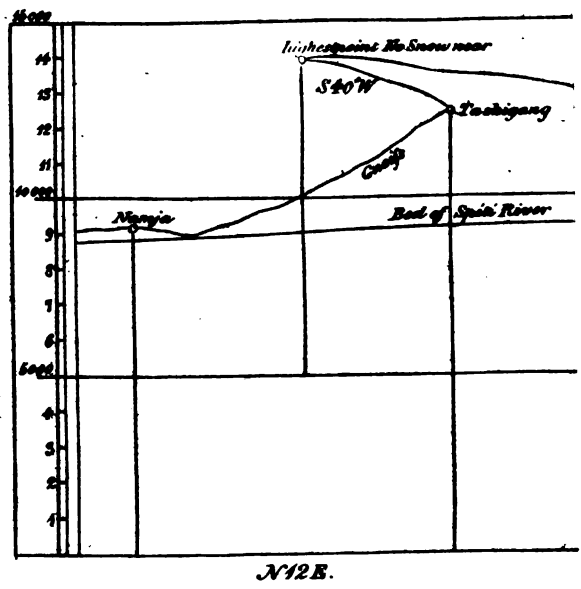
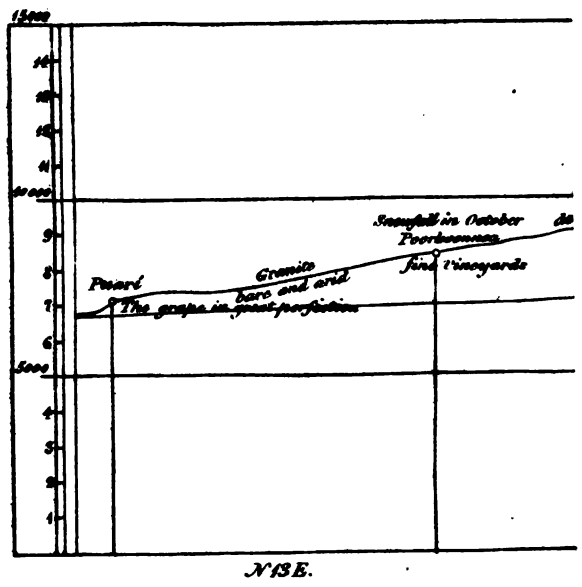
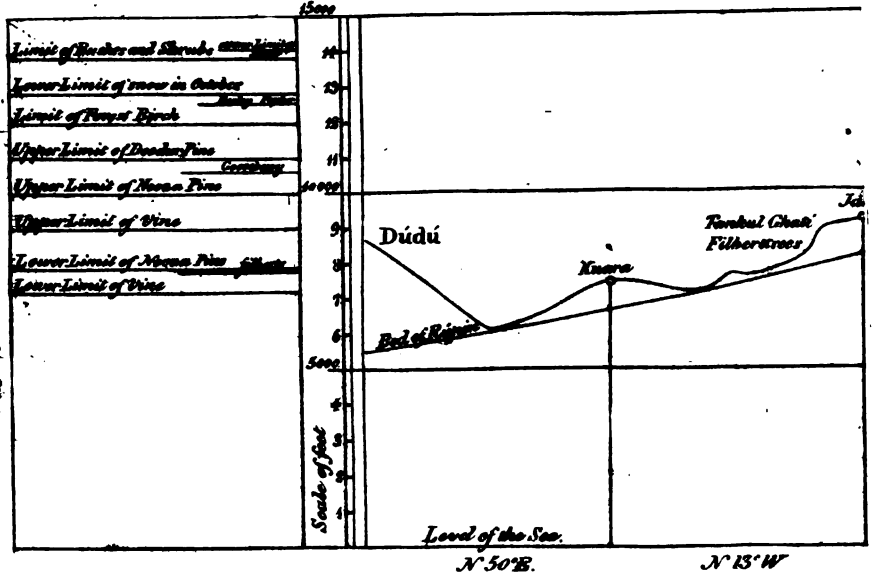
ever seen or read of, had a juster title to confidence than this one; I mean judging from its previous performance.

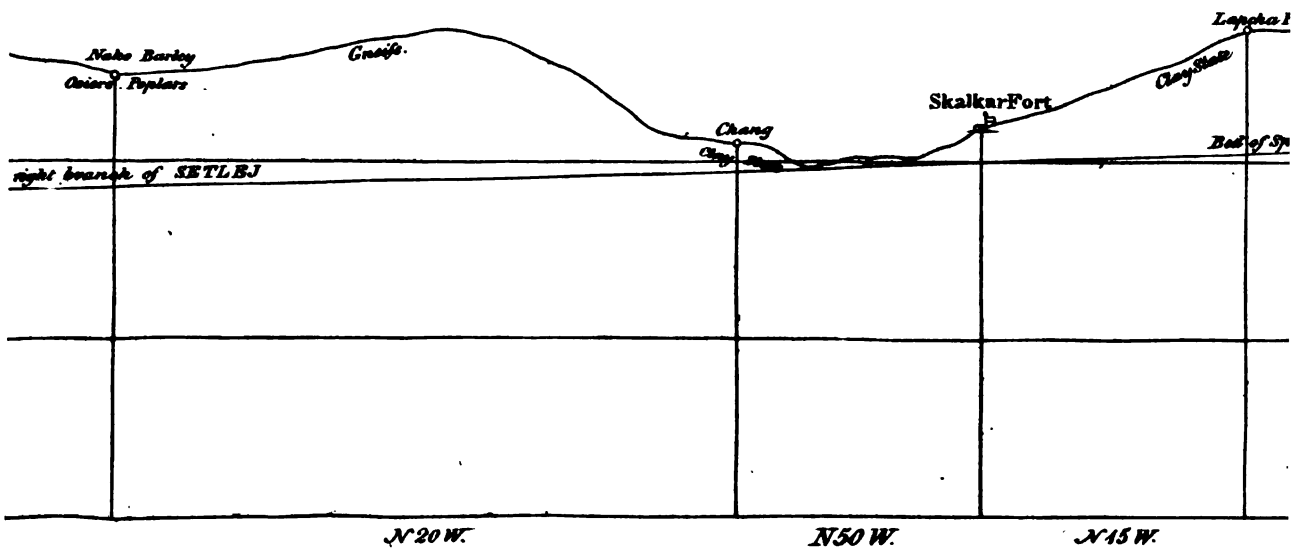
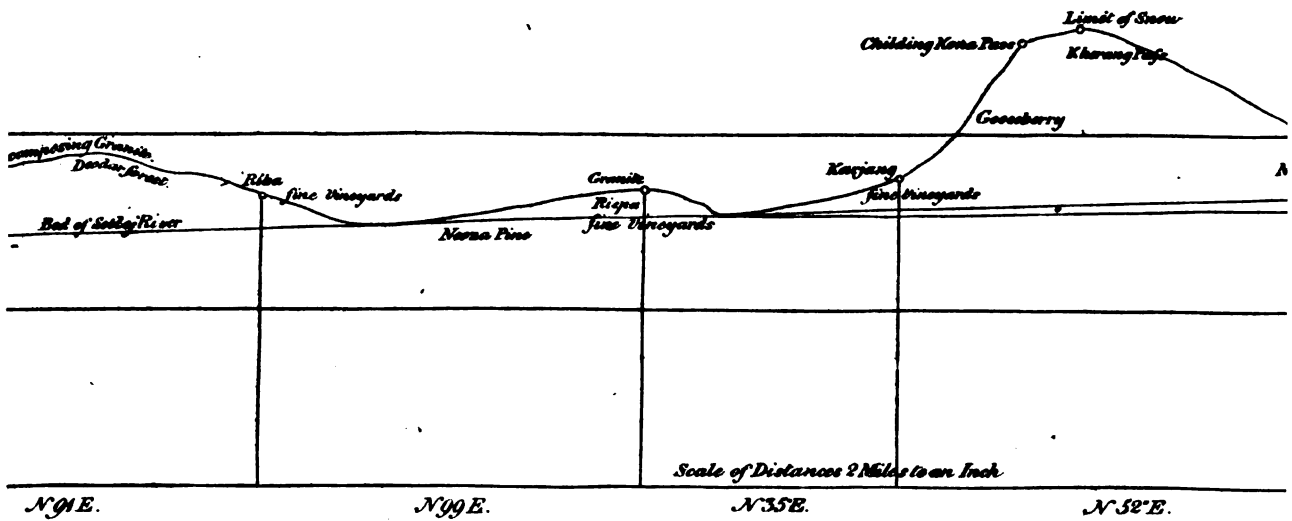
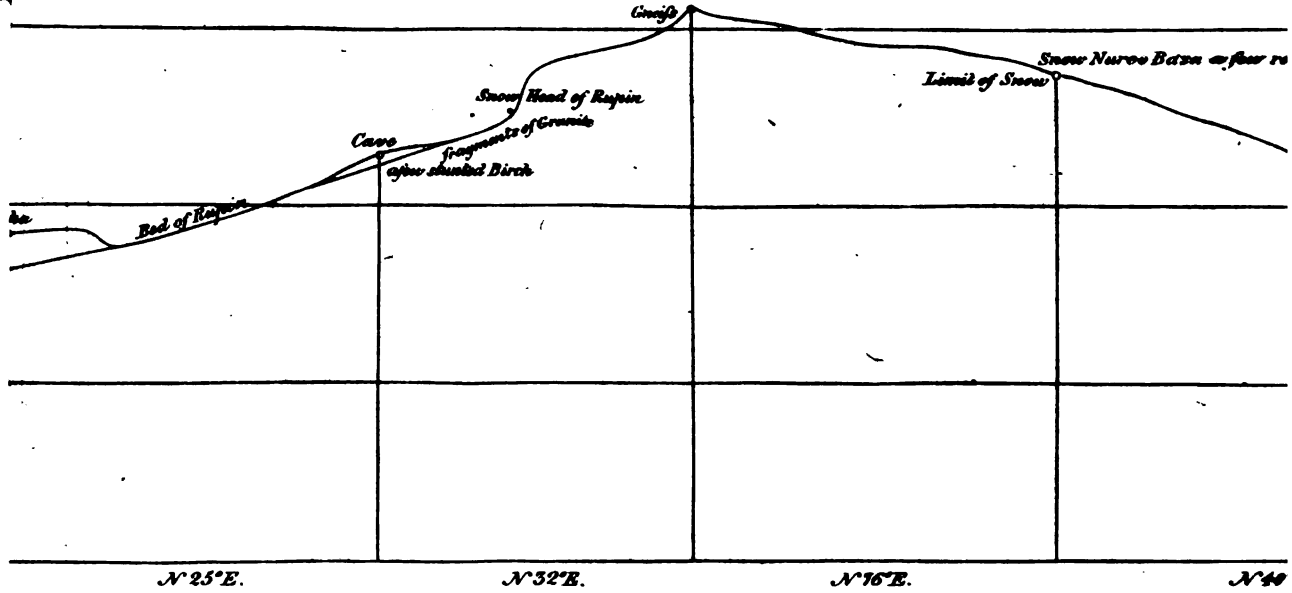
7. A few particulars more remain to be noted, on Lapcha Pass, the bearing of Púrkyúl Peak was observed  $130^{\circ} 54'$  Cor. for declination  $133^{\circ} 49'$ . The protracted latitude of the Pass (from Skalkar) was  $32^{\circ} 02' 56''$  from these data we obtain the longitude of the Pass  $78^{\circ} 32' 07''$ . Some mistake committed in observing or recording the angle of altitude prevents its being used. But from the Snowy Peak Rishi Gangtang (fixed by protraction) and having an elevation of 21,229 feet, as observed from Tashigang, the elevation of this pass would appear to be 13,468 feet. The angle of altitude was  $2^{\circ} 39' 50''$  feet. This result is in some measure confirmed by the angle of altitude of the Pass observed at Skalkar combined with the protracted distance and elevation of that place.

8. In the Survey of the ROUTE an excellent Theodolite was used for the bearings, distant points being freely used as cheeks on the protraction. The distances were determined by TIME. Such a method will be thought perhaps loose and inaccurate and so no doubt it is; but when it is borne in mind that such is the rugged nature of these roads that in whatever manner the measure be taken, it will require to be reduced from  $\frac{9}{10}$  to  $\frac{1}{10}$  before it can be used for protraction, and that this reduction must depend entirely on estimation, there will appear little cause for preferring (except on the score of convenience, any of the three methods which I have been in the habit of employing during my labors in these mountains, viz. PERAMBULATOR MEASUREMENT, PACING, or TIME. I may also add that I had well exercised myself in the number of paces which may be taken within the minute, on every quality of path, and that this number was always inserted in the field book at the time, as was likewise the reduction of the road line to the straight one for protraction.

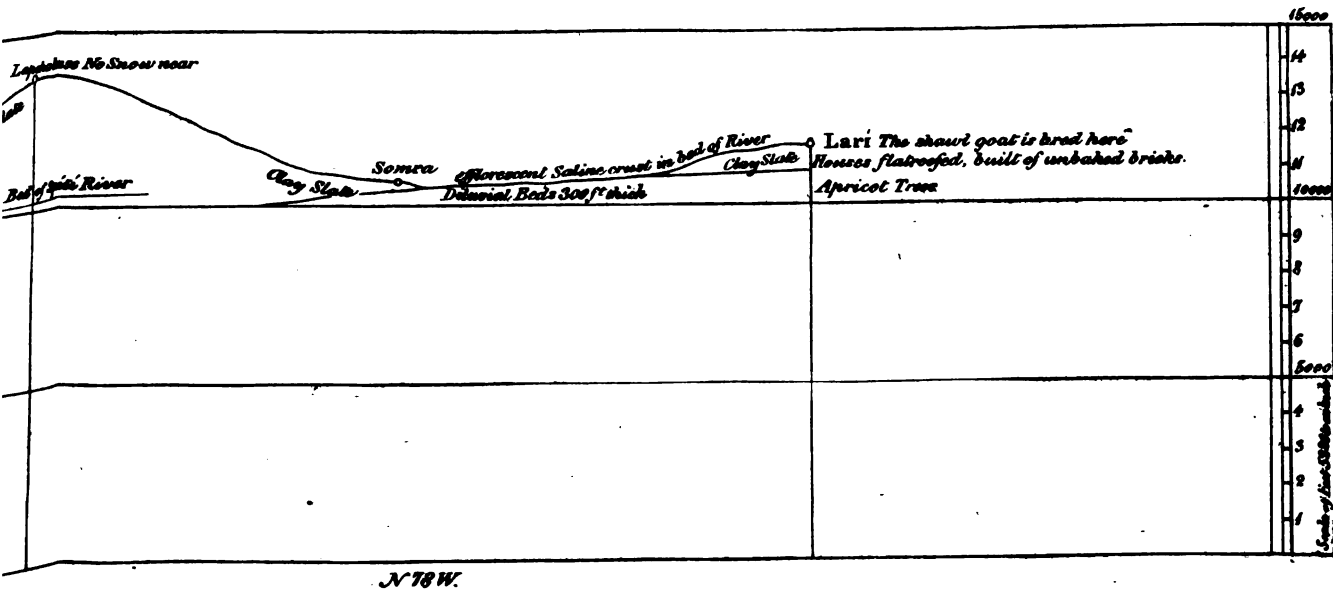
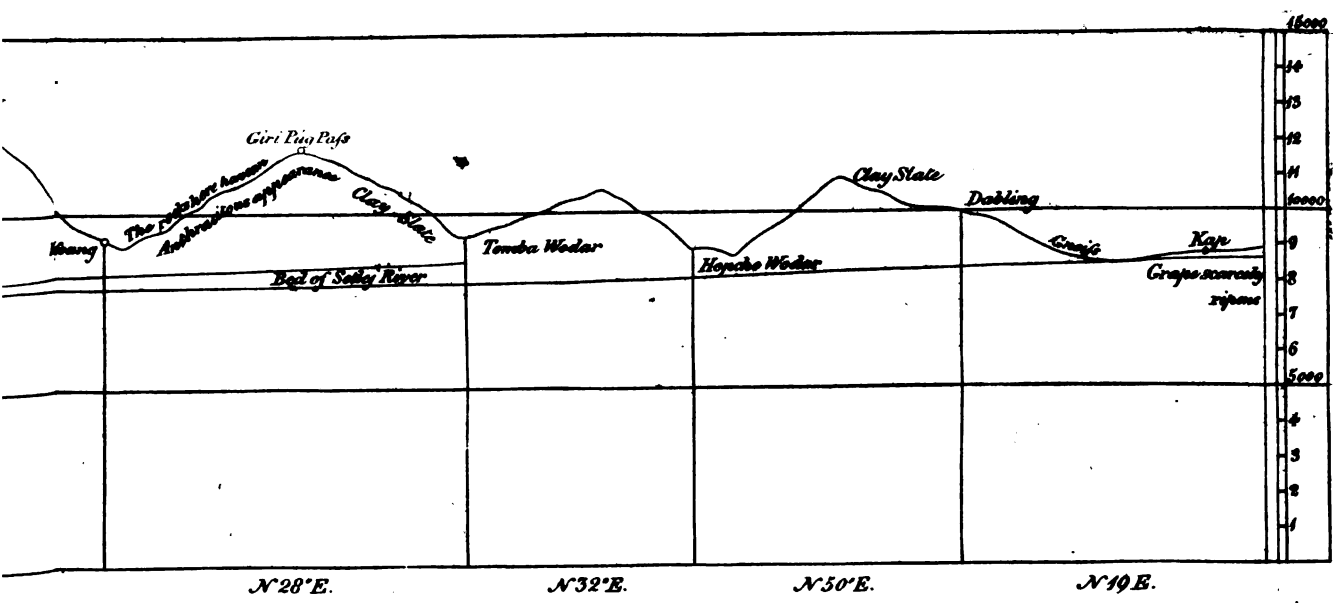
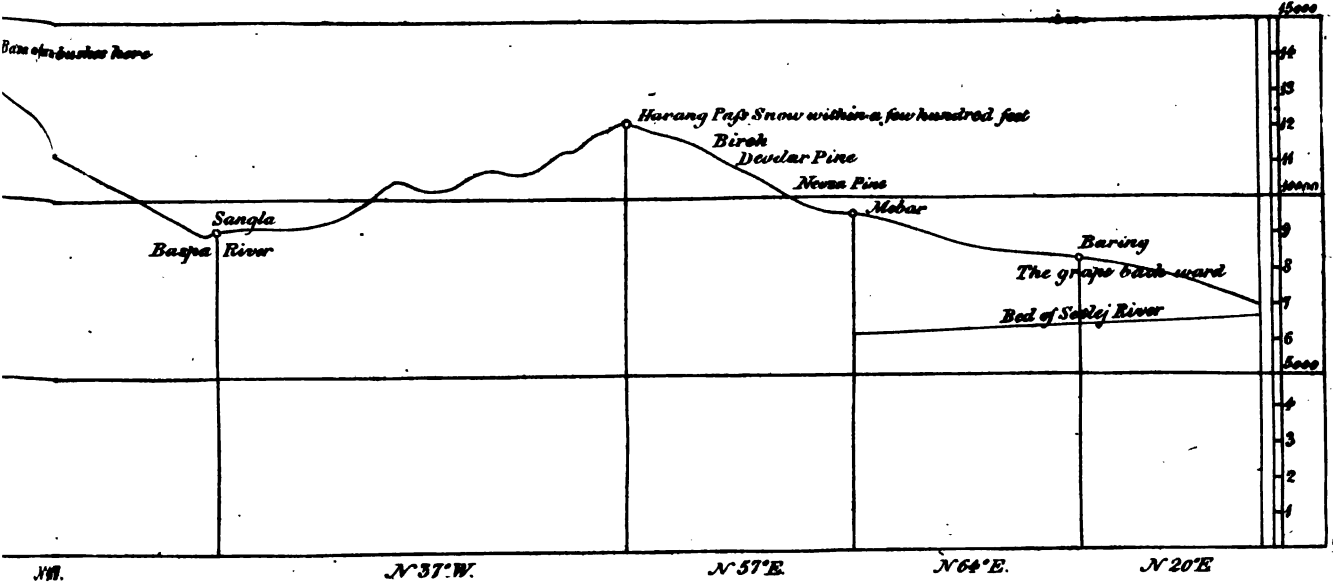
9. With regard to the elevations expressed in the SECTION a few of them rest on Trigonometrical measurement as (already detailed), the others are deduced from the following Table of Observations made of the temperature of boiling water. The Thermometer I used was the largest procurable; it had a scale of  $40^{\circ}$  to an inch. The boiler was a copper vessel about twelve inches in height and two in diameter. It was provided with a false bottom at a height of three inches above the lower one. This was pierced with holes and the water poured in till it reached to about three inches above it. The thermometer was then placed in it so that the bulb was fully covered with water. The reading was made with the assistance of a magnifier of about five or six inches focus which was held quite out of the reach of the steam, the vessel being always open and the steam quite unconfined. I had found that any thing held over the mouth of the boiler even though it did not half close it, had the effect of raising the temperature. But by boiling in the manner I have described I had very consistent results. It will appear perhaps a matter of regret that I had not the THERMOMETRICAL Barometer described by ARCHDEACON WOOLLASTON. This Instrument however is not made of sufficient extent as yet to comprehend within its range the boiling points given in the following Table. I mean without using the method of boiling and tapping as described by the inventor. This method would have been of less easy application in a journey hurried as this necessarily was from want of supplies, than in the easier journies through civilized Europe. I can think of nothing which the common Thermometer wants to render it perfectly adequate to these measurements, beyond some enlargement of its scale, and a division into inches and decimals by a vernier. One-fourth or even one-fifth of an inch to each degree would be amply sufficient.

10. In the following Table I have added a column shewing the corrected result; the manner of obtaining it will be explained a little farther on.



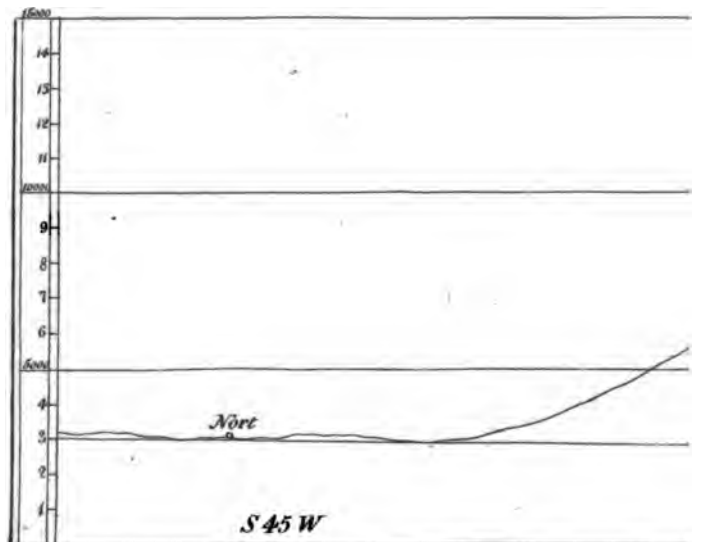
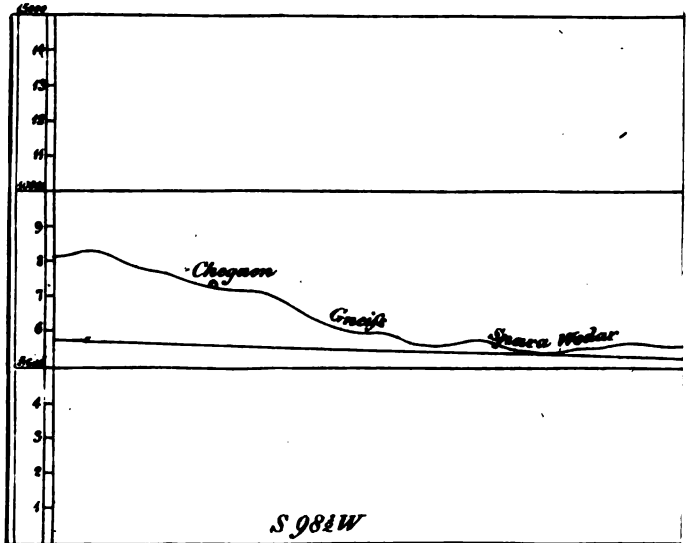
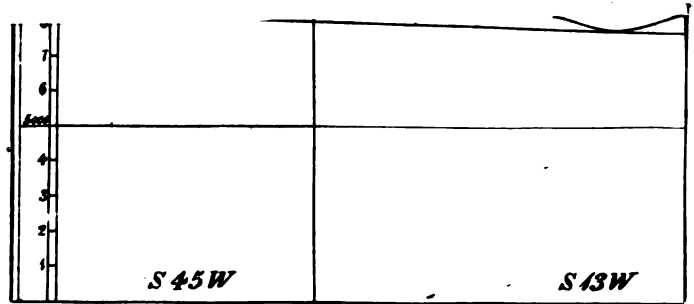


**SECTION of the ROUTE from Dúdu on the Rúj**



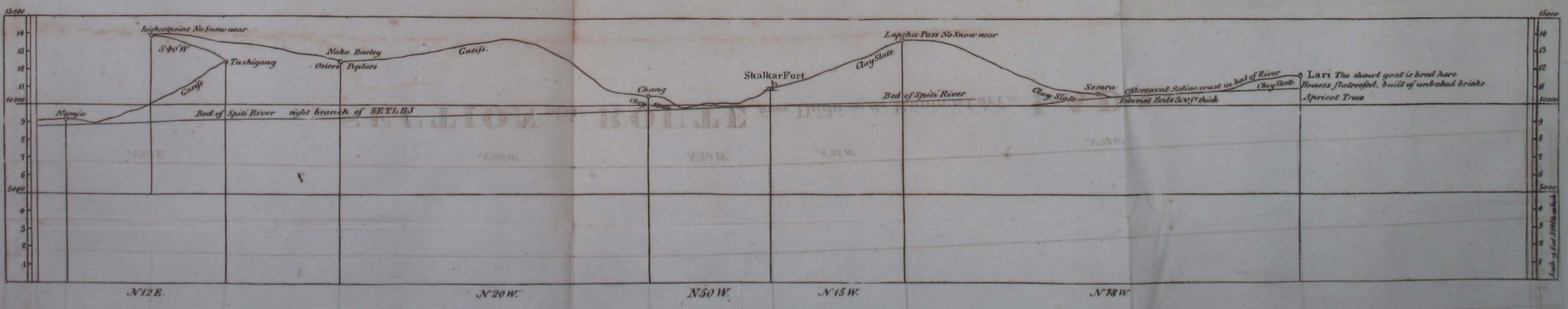
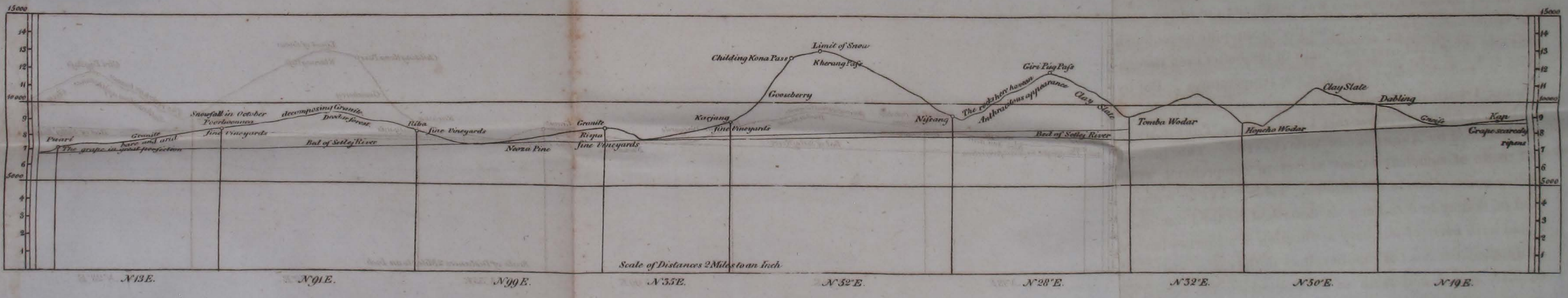
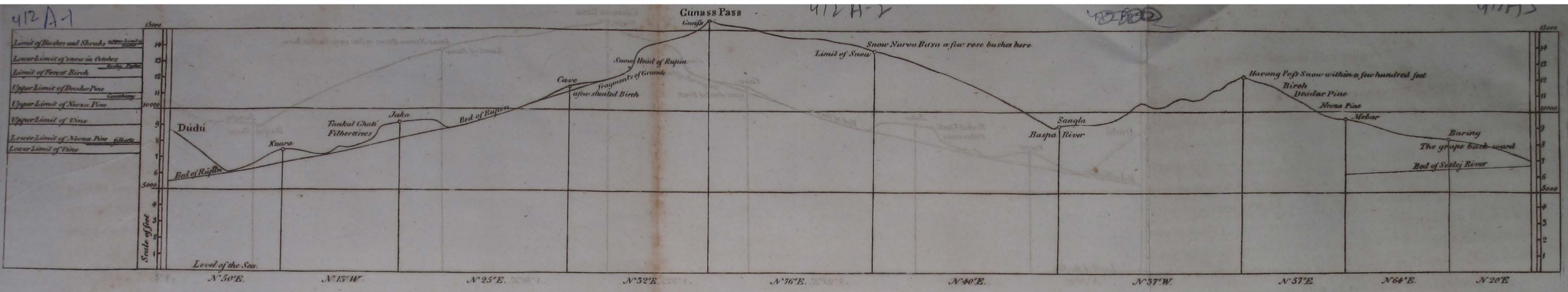
Rupin to Lari in **LADAK.**



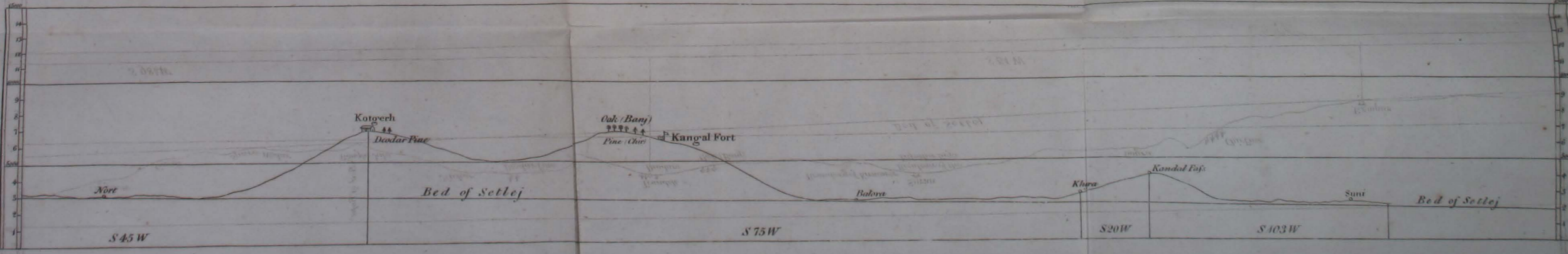
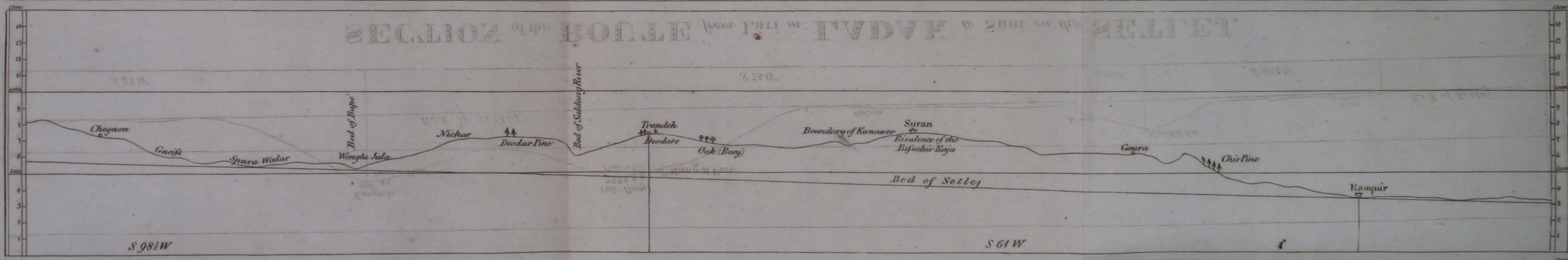
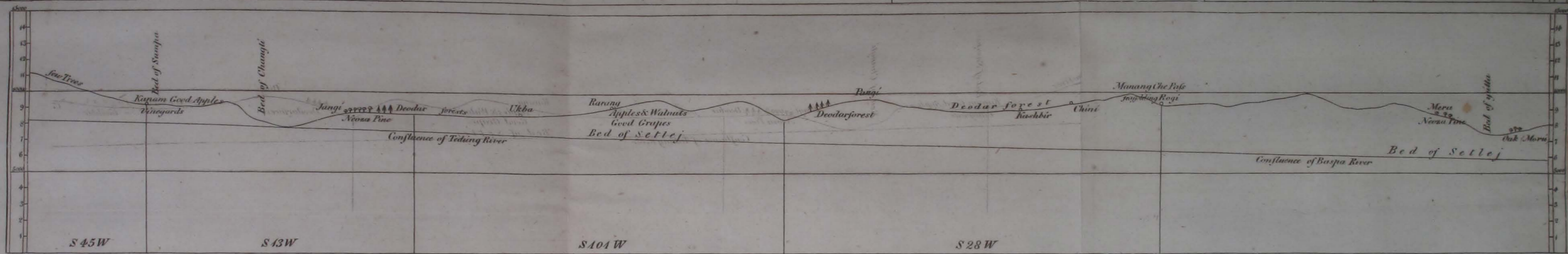
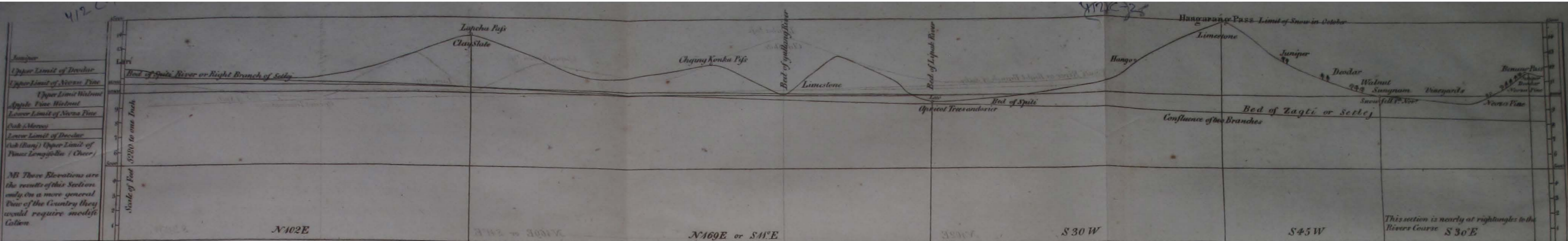


[Faint, illegible text, possibly bleed-through from the reverse side of the page]





SECTION of the ROUTE from Dudu on the Rûpin to Lari in LADAK.



SECTION of the ROUTE from Lari in LADAK to Suni on the SETLEJ.

TABLE OF BOILING POINTS.

Date.	Place.	Bg. Pt.	Temp. of Air.	Corrected Elev. above Sea.	Remarks.
				<i>Feet.</i>	
Sept. 27	Dúdu,	199,00	57,0	8700	
28	Jako,	198,10	46,0	9188	
29	Cave. Head of Rupin,	193,70	38,0	11,826	
30	Snowy Pass. (Gunass,)	187,30	36,0	16,067	
Oct. 1	Núru Basa, (no village,)	191,10	48,2	13,755	} Mean of both Observations.
2	Snowy Pass,	187,00	36,6		
3	Sangla,	198,20	49,3	9178	
4	Mebar,	197,30	46,5	9696	
5	Puari,	201,90	61,3	7033	
6	Párbúnni,	199,80	59,0	8324	
7	Riba,	199,70	55,0	8331	
8	Múrang,	198,00	51,3	8767	
12	Dabbling,	196,95	50,7	9987	
13	Namja,	197,25	49,0	9150	
15	Shipki,	195,30	58,7	11,192	
17	Bed of Setlej,	197,20	61,3	10,005	
18	Ridge above Shipki,	186,30	38,0	16,584	
19	Shipki,	195,40	61	11,192	} Mean of the two 11,180.
22	Namja Jhúla,	198,80	53,0	8854	
"	Tashigang,	193,00	46,5	12,459	
23	Road to Nako,	191,20	50,2	13,735	
"	Nako,	192,90	42,5	12,438	} Barley grows at some height [above this.
24	Chang,	196,00	44,0	10,479	
25	Skalkar,	195,50	55,0	10,998	
26	Lari,	194,25	39,8	11,515	} 450 feet above the river bed.
28	Lio,	197,60	44,0	9471	
29	Hang,	193,65	35,5	11,822	
30	Súngnam,	197,40	50,0	9691	
Nov. 1	Kanam,	198,20	42,0	9060	} Excellent Apples grow here.
2	Jangi,	198,85	38,5	8627	
3	Rareng,	198,20	45,5	9117	
5	Rogi,	198,05	46,3	9226	
6	Merú,	198,80	42,0	8687	
7	Spara Wodar,	204,50	48,0	5386	} Bed of River.
8	Wongtu Jhúla,	204,80	62,3	5289	
"	Níchar,	202,05	47,0	6774	
9	Trada,	201,35	47,3	7200	
10	Suran,	201,10	43,7	7246	
11	Gowra	203,30	48,0	6042	
12	Rampur,	208,05	59,5	3675	
14	Nirt,	208,80	64,0	2970	
16	Bed of Setlej,	209,40	45,0	2652	
"	Kotgerb,	202,38	50,0	6603	} Mean of the Observations.
"	Kúmbarson,	204,60	48,0	5279	
"	Kangal,	203,90	52,3	6311	
"	Batora,	210,0	60	2281	} About 100 feet above the Ri- [ver.
"	Khyra,	209,40	60,7	2613	
"	Súni,	210,00	61	2283	

11. In deducing the Elevations given in this Table I have used the following comparisons made with the same Thermometer and an excellent

Barometer filled with Mercury revived from Cinnabar and well purged of air. These correspondences being compared with Dalton's Table of the force of steam (Thomson's Chemistry, vol. i.) give the errors of the Thermometric scale, and from them the subjoined little Table is calculated by interpolating the intermediate numbers. Using this Table to correct the indications of the Thermometer, the corresponding Barometer is taken from Dalton's Table, and the height deduced therefrom in the usual manner, correcting for the temperature of the air as directed by M. Ramond in calculating single observations of the Barometer. It is known that without corresponding observations, the results of Barometrical measurement are likely to be erroneous. To this error the method by boiling is also subject. But in these climates, where the Barometer is so much more regular in its indications than in Europe, this error lies within a less compass. I find from a register kept very carefully at Saharanpur that the Maximum annual range is only 6 inches and in any one month not more than 4 inches. This error cannot then affect the boilings by more than 300 feet in the extreme case, and generally much less. But they are subject also to their own error, arising as well from the smallness of the scale as defect of observation. Every precaution was taken to reduce this last within as narrow limits as possible. Still I am afraid the error may have amounted in some cases to half a degree. It is hardly credible that both these errors should lie the same way; and yet we see that in the Elevation of the Pass something of this kind must have occurred, for the result by boiling exceeds that of Trigonometrical measurement 551 feet. I need scarcely say that with regard to the purity of the water used I was most scrupulous; I find it difficult therefore to understand the above anomaly, unless it be referable to the uncertainty of the correction for the temperature of the air.

*Table of the Observed Correspondences of the Temperature of Boiling Water with the Indications of the Barometer.*

Observed Hg. Pt.	Observed Barometer	Temp. of Barom.	Bar. reduc- ed to 54°	Bar. Cor. for Diam. Tube	Dalton's Tem, of Steam.	Error of Scale.	Obsd. Hg. Pt. Cor. for error of Scale.
210.00	27.50	85	27.76	27.71	207.95	2.05	207.80
207.38	26.41	82	26.33	26.28	205.28	2.10	205.16
207.25	26.33	71	26.28	26.23	205.19	2.06	205.03
206.50	25.87	79 5	25.80	25.75	204.27	2.23	204.26
205.90	25.60	83	25.52	25.47	203.73	2.17	203.64
205.40	25.25	74	25.20	25.15	203.10	2.30	203.13
204.85	24.86	62 5	24.84	24.79	202.36	2.49	202.56
204.25	24.69	65	24.66	24.61	202.00	2.25	201.94
204.00	24.60	89	24.51	24.46	201.69	2.31	201.69
198.15	21.71	63	21.68	21.63	196.89	2.26	195.72
188.50	17.39	42	17.41	17.36	185.90	2.60	185.95

*Table of the Error of the Thermometric Scale.*

Obsd. B. P.	Error.	Obsd. B. P.	Error.	Obsd. B. P.	Error.
188	2 50	197	2 44	206	2 26
189	2 54	198	2 43	207	2 23
190	2 53	199	2 41	208	2 20
191	2 52	200	2 39	209	2 17
192	2 51	201	2 37	210	2 14
193	2 50	202	2 35	211	2 10
194	2 49	203	2 33	212	2 06
195	2 47	204	2 31	213	2 02
196	2 46	205	2 29	214	1 98

The full amount of the correction due to the temperature of the air has been applied. To obtain the mean temperature of the column, I have calculated that, at the level of the sea, from the observed temperature and the approximate height, allowing a change of 1° for every 300 feet of Elevation. The correction is obtained by the formula  $\frac{T-52^{\circ}}{445 \cdot T} \cdot H$ . in which T. is the mean temperature and H. the approximate elevation.

12. In forming the section, I have been doubtful as to the method I ought to follow, whether to give an orthographic projection of the several points supposed to throw off perpendiculars on a plane assumed in position, or to constitute the several lines of route the intersections of the planes of projection with the surface. Though preferring the former for some reasons needless to mention, I have chosen to adopt the latter as most conformable to the examples hitherto given of sections. My lines

of route are however very short and very variable in direction, a defect of this method as applied in this particular instance. In order however to represent the fall of the river I have supposed it to form an orthographic projection on the plain of section and as this latter is in most cases parallel to the river's course, it will not occasion any considerable distortion. Where however such does occur it is noted in the section.

13. It now only remains that I should notice briefly the principal results. At Shipki the river bed is elevated 10,005 feet; at Namja Jhúla 8854. The mean is 9430 which may be considered the elevation of the intermediate point. At Spara Wodar again the elevation is 5336 feet; and at Wongtú Jhúla 5289. The mean of these, 5313 is taken as the elevation also of the intermediate point. Now the distance by the Map is 60 miles or allowing  $\frac{1}{6}$  for the devious windings of a mountain river 70; the fall is 4119 feet, or 59 feet, nearly, per mile. Again, at Batorah the level is 2181 feet, and at Súní 2083 feet; mean 2132, or below Wongtú 3181 feet. The distance being 53 (or corrected 62) gives a fall of 51 feet nearly. The present survey of the river terminated at Súní but judging from the analogy of other rivers, I infer that it has a further fall of 1000 feet to 1200, before it reaches the plains, in a course of about 56 miles. The total fall from Shipki would then be about 8400 feet. Captain Webb in his visit to the Nítí Pass informs us (Journal of Science, vol. ix.) that the bed of the Setlej has there an elevation of 14,924 feet. This is 5494 feet higher than the level near Shipki. The course of the river would appear to be about 110 miles, so that here also the fall is between 50 and 60 feet per mile. At Shipki the river has a mean width of about 100 feet; the depth I did not measure, but I should suppose it to be about 6 feet. These data, with the above fall, using the Chevalier De Buat's formula would indicate a velocity of about 200 feet in the second, or nearly 12 miles an hour; a result certainly too high. From Larí to the confluence, the fall of the right branch or Spiti River is 2341 feet; the distance being 33 miles or corrected as before 38. Here therefore the fall is 82 feet 5 inches per mile. A course of 50 or 60,

miles above this point reckoning it to have the same declivity, would bring its waters under the influence of perpetual frost.

14. Some differences will be observed between the results given in this paper and those contained in the former. They are generally in the elevations and have been occasioned by the use of Dalton's Table which had not been seen when that was published; one or two have originated in revision. The Gúnas Pass is one of these.

*A Vocabulary of Kanáweri and Tartar (Bhotia) Words.*

<i>English.</i>	<i>Kanáweri.</i>	<i>Tartar.</i>
Man,	Mí,	Mí.
Male,	Changmí.	—
Female,	Chasmí,	Múní.
Father,	Apa,	Owgú.
Mother,	Amma,	Amma.
Son,	Chang, Dekhraj,	Tábú.
Daughter,	Chime, Chiming,	Pomo.
House,	Kim,	Kangba.
Village,	Deshang,	Hyúl.
Fire,	Meh,	Meh.
Bread,	Rot, Lotri,	Dik.
Milk,	Kherang.	—
Butter,	Mar,	Mar.
Salt,	Tsa.	—
Honey,	Was.	—
Tea,	Chá,	Chía.
Dried Grapes,	Dákhang,	Gúndúm.
Wheat,	Jad,	Pakbe.
Barley,	Chak,	Soa.

<i>English.</i>	<i>Kanáveri.</i>	<i>Tartar.</i>
Meal,	Kankang.	—
Cow,	Sang,	Balemg.
Bull,	Damas,	Sangú.
Ewe,	Khas,	Mamori.
Ram,	Húlas,	Ro,ú.
Weather,	Khár,	Khalba.
He goat,	Afch,	Rabo, } This is the Shawl
She goat,	Bakhar,	Rama, } goat.
Dog,	Kíó,	Kí.
Cat,	Púshí,	Píshí.
Book,	Pothí,	Potí.
Paper,	Kaglí,	Shúgú.
Ink,	Seahí,	Naksa.
Pen,	Kalam,	Dingkyo.
Pipe,	Gangsa,	Gangsa.
Flageolet,	Bashang,	Lingú.

These two instruments with the steel curiously ornamented and some keys of a singular fashion, form the personal equipment of a Bhotia. The flageolet is double, but the notes are unisons. The scale seems irregular and uncertain.

<i>English.</i>	<i>Kanáveri.</i>	<i>Tartar.</i>
Sword,	Terwal,	Chipsa.
Cloth, (Calico,)	Kapra,	Ra.
Broad Cloth,	Porin,	Nambú.
Wool (Sheep's,)	Shingcham,	Shing.
Ditto (Shawl,)	Pashm,	Lena.
Tent,	Tamboa,	Gúr,
Water,	Tí, Thí,	Chú.
Snow,	Pom, Kherang,	Kha, Oman.



<i>English.</i>	<i>Kanáveri.</i>	<i>Tartar.</i>
Ice,	Sahang,	Chagrúm, Kyakba.
Hoarfrost,	Págallang.	—
Stone,	Rak,	Deh.
Mountain,	Rang,	La.
Hill,	Daní.	—
Ascent,	Tang,	Kyen.
Descent,	Chor,	Thúr.
East,	—	Sher.
West,	—	Húp.
North,	—	Chang.
South,	—	Lo.
Wind,	Lahn,	Laúta.
Cold,	Liskdú.	—
Heat,	Jángdú.	—
Day,	Laé, Lya,	Ninon.
Night,	Rating,	Sanmori.
Year,	Barsang.	—
Month,	Gol.	—
Road,	Bátang.	—
Bridge of Wood,	Cham.	—
Bridge of Ropes,	Tarang.	Cháyam, Sálam.
Musket,	Túbak.	Túba.
Knife,	Khúr.	Tí.
Gun Powder,	Darú.	—
Eye,	Míkh.	—
Nose,	Stakúsh.	—
Tree,	Botang.	—
Field,	Rim.	—
I, .	Geh.	—
You,	Kih.	—
He,	Núh.	—

The names of the Week in Kanáweri are Hindí with the termination *ang* affixed. The Months seem to be similarly formed thus :—

<i>Hindí.</i>	<i>Kanáweri.</i>
Chyt,	Chetrang.
Bysákh,	Besakhang.
Jyeth,	Jestang.
Ásárh,	Ang.
Sáwan,	Sonang.
Bhádon,	Badrang.
Asin,	Indramang.
Kartik,	Kartang.
Mirgsir,	Mukhserang.
Pús,	Ang.
Magh,	Mang.
Phagún,	Phagoonang.

It is remarkable in the above that the two months in which the Solstices occur have the same name, *Ang*.

The Numerals in Kanáweri and Bhotia are as follows :—

<i>English.</i>	<i>Kanáweri.</i>	<i>Bhotia.</i>
One,	Id,	Che.
Two,	Nísh,	Ní.
Three,	Súm,	Som.
Four	Jin,	Jí.
Five,	Gna,	Gna.
Six,	Túk,	To.
Seven,	Stísh,	Dún.
Eight,	Ru,	Gye.
Nine,	Sguí,	Zú.

<i>English.</i>	<i>Kanáveri.</i>	<i>Bhotia.</i>
Ten,	Saí,	Chú.
Eleven,	Sehíd,	Chokshí.
Twelve,	Sanísh,	Chooní.
Thirteen,	Sohróm,	Choksún.
Fourteen,	Sapú,	Chúbjí.
Fifteen,	Sanga,	Changna.
Sixteen,	Sorúk,	Chero.
Seventeen,	Sastísh,	Chobdam.
Eighteen,	Sara,	Chobgye.
Nineteen,	Saguí,	Chúrgú.
Twenty,	Níja,	Níshú.
Twenty-one,	Níjaíd.	—
Thirty,	Níja Saí.	—
Thirty-one,	Níja Sahíd.	—
Forty,	Nísh Níja.	—
Fifty,	Dhaí Níja.	—
Sixty,	Súm Níja.	—
Seventy,	Súm Níja Saí.	—
Eighty,	Pa Níja.	—
Ninety,	Pan Níja Saí.	—
One Hundred,	Ra.	—
One Thousand,	Hazar.	—

The following sentences will exhibit in a clearer view the total dissimilarity to Hindí of either dialect as well as to each other.

<i>English.</i>	<i>Kanáveri.</i>	<i>Bhotia.</i>
How far is that village ?	Núdeshung tetra warak dú ?	
What is the price of this ?	Zú múllangte ?	
Is it cheap or dear ?	Yú múllang cheradúa teang dúí ?	
Give him a rupee.	Júpang ea rúpí raníng.	

<i>English.</i>	<i>Kanáweri.</i>	<i>Bhotia.</i>
When will you go to Kamrú ?	Mohne terang bite ?	
What is this ?	King cha namangto ?	[ing ot
How far is Gárú ?	Gárú tetra warak dú ?	Gárú obam tagar-
Is the road good ?	Om dam dú ?	Sam páchang ot ?
When shall I arrive ?	Tetrag Púgta ?	Cham la tel ?
How far shall I find water ?	Te warak ti pariato ?	Cham le chú tok ?
Is there much ascent ?	Tang choras ?	Kea mongbo ?
When will you go to Leh ?	Lio terang biti ?	Liro nam dogan ?
What merchandise have you ?	Kinondo teta Sowdato ?	Kyole chang chi chi [hoé ?
Will you sell it ?	Re te yenú ?	Te chángane ?
Come here. :	Júa je.	Dira shoh.
Go there.	Napa bye.	Phala song.
What is your name ?	Kin hamang tedúing ?	Ke min chi ?
Where do you come from ?	Kinna ham chúe ?	Ke kang naúng ?
How many houses are there in this village ?	Jú Deshang teih kin to ?	Dih yúlna kangba [cham hoé ?

These specimens, scanty and imperfect as they are, will tend to give some idea of the nature of the dialects. With respect to the written character in Kanáwer I cannot speak with certainty, but in the Bhotia or Tartar villages they have the Umma and Sirma characters (or printed and written) of Thibet. The general resemblance of the former both in their forms and names to the Sanskrit has been noticed. I have now before me an alphabet (or ka, kha, as he called it) written by the Lama Ring Jing of Dabling, and comparing it with that given in Yates's Sanskrit grammar the resemblance is very striking. There are however differences, chiefly unimportant ones in the manner of forming the characters. This Lama had a book printed in this character, the letters yellow, on a deep blue ground; it was ornamented also with pictures of their gods or heroes, painted with very bright and vivid colors but without any idea of keeping or perspective.

Information was always sought for (when the time allowed it) as to the distances and nature of the road between the different places of note beyond the frontier. The following contain some of the principal particulars collected.

**I. Púrbúnní on the Setlej to Gárú (Gertop.)—The particulars given by Kissam Das Seyana.**

Púrbúnní to Ríchba.

Ríchba to Nissang.

Nissang to Tomba, (no village, fire-wood and shelter.)

Tomba to Dabling.

Dabling to Namgía.

Namgía to Shipki.

Shipki to Stia.

Stia to Sherangla, (shelter and plenty of fire-wood.)

Sherangla to Núgú.

Núgú to Loxo or Núxo.

Loxo to Baú Kúmon.

Baú Kúmon to Rabgealing.

Rabgealing to Choxe Chúrkang.

Choxe Chúrkang to Laling.

From Laling, Gárú is three day's journey. A high range called Dangbo is crossed; some snow on it; fire-wood scanty. The people beyond Shipki are called Jar or Zar and belong to Wassang or Uchang as it is sometimes called. Beyond Shipki the road is practicable for horses. Rabgealing and Laling are both on the Setlej; Cháprang is opposite the former; Mánсаро-  
wer is seven days from Cháprang; Fokbo is the name of the Gárú Pergenhah. Sagtad, Bamtad, Majan, Lédúr, Changtaling, and Mápang, are the districts in which shawl wool is chiefly produced. From Cháprang to Chúnghsa (Nílang on the Jahnavi) six days. A road to Chúnghsa also from Sangla on the Baspa.

2. The Lake Mánsarower.—Particulars furnished by the Lama Ring Jing of Dabling.

It is from four to seven day's journey in circumference, according to the season, and is called by the Bhotias Mápang. There is a smaller lake near it called Lankachu; in the rains they communicate. Out of Mápang proceed four rivers towards the four opposite points, 1. Tamja Kampa flows towards Ussang. 2. Mamjo Kampa towards Púrang. 3. Lang Jing Kampa (the Setlej.) 4. Ling Jing Kampa towards Ladak. He has seen, he says, each of these four rivers, and asserts that each flows from the Lake Mápang. The Setlej flows through the smaller lake Lankachu. Gangri is a Snowy Peak near the lake much venerated by Hindus. Júng is the name of China.

3. Shipki to Gárú or Gertop.—Particulars by Bali Ram Seyana, of Namja.

1. Shipki to Stia.
2. Stia to Meyang.
3. Meyang to Nú.
4. Nú to Klokh.
5. Klokh to Kinípú.
6. Kinípú to Rúkúm.
7. Rúkúm to Shangsi.
8. Shangsi to Shyang.

Shyang to Gárú three and a half stages—no villages; high ground traversed with much snow. Chápang is six day's journey from Gárú. Pel-dong and Ling are two villages on the road.

4. Mánsarower and Man Tulai.—Chang Ring Jing, a Beopari of Maryám, a village one day's journey from the lake gives the following particulars.

Mánsarower is in his opinion a mountain; Mantalai a lake; from the latter no river has its exit but from the former four rivers spring, as follows:—

1. Lang Jing (Setlej) to the West and South.
2. Tamjok, to the East and North.
3. Sing Jing between the preceding and flows to Ladak.
4. Mamjo or Mabjok opposite the preceding towards Gerhwal. Tangshúng, Mehshúng, Lodok, Mahjun, Changtaling are the chief districts for the Shawl Wool. A Zúmpúng or Killedar of Maha Chín (China?) resides at Cháprang. He is of a fair complexion.

5. Gárú to Leh (capital of Ladak.)—Particulars by the above.

No. of days.

- |    |   |
|----|---|
| 1  | 1. Eigong, a village of forty houses, level road and passable for horsemen. |
| 4  | 2. Teshígang, a village of a hundred houses, Gelums or Monks.               |
| 2  | 3. Dumjok, twenty houses, a stream which falls into Sing Jing at Leh.       |
| 2  | 4. Kolok, a village of eight or nine houses.                                |
| 3  | 5. Koígúl, fifteen or sixteen houses.                                       |
| 5  | 6. Múrt, thirty houses.   |
| 4  | 7. Rúpsho, twenty houses.   |
| 3  | 8. Gya, sixteen houses.   |
| 2  | 9. Mírú, eight houses.  |
| 2  | 10. Himmí, a hundred Lamas and Gelums reside here. No farmers.              |
| 2  | 11. Leh, two hundred and fifty to three hundred houses. The Raja            |
| 32 | of Ladak resides here.  |

6. Shipki to Cháprang.—Particulars by Chang Ring Jing.

1. Lopchak, Bank of Setlej, three houses.
2. Tía, ditto, cross on boarded Sanga, eight houses.
3. Myang, opposite (i. e. to Shipki) side of Setlej, twenty houses.

B b b

4. Nú ; Setlej, half a day's journey to right, eight houses.
5. Lúk ; Setlej, still farther, four or five houses.
6. Lakba ; Setlej, not a day's journey, four or five houses.
7. Shangze ; Setlej, about two miles, nine or ten houses.
8. Cháprang, this side Setlej—ford, twenty houses.

A fort above the town or village. It is built of stone and will contain from 1500 to 2000 men. The road is practicable for horses. A horseman can go in three days; a loaded sheep in five. Ling is two hour's journey beyond Cháprang.

7. Gárú (Gertop) to Mánsarower.

1. Túkyú, eight houses.
2. Mensar, twelve houses, inhabited by Lamas, } These are two very long
3. Chúpta, four houses. } stages.
4. Chekúng, two houses.
5. Karlep, six houses.
6. Turjan, twelve houses, inhabited by Lamas.
7. Mánsarower, sixty-four houses, Lamas.

8. Bekar to Shangze.

1. Ríoh, left bank of Setlej.
2. Foshang, ditto.
3. Cháprang, ditto.
4. Rúkúm, right bank.
5. Shangze, ditto.

Bekar is two or three day's journey from Nissang ; the road crossing a very high ridge.

9. Lari to Kúngri.—Balí Ram Seyana of Namja.



1. Tabo, a few miles.
2. Pokso.
3. Dankar, a fort. Muni, a large village opposite.
4. Tangti Konj.
5. Kungri.

Under Dankar two branches of the river unite the Spino and the Lidang so called from the Pergunnahs they flow through. Beyond Kungri are Kulling, Talling, and Baro, on the banks of the Spino which is the right branch. On the Lidang are Laru, Paling and Rangreh. The Lidang has its source in the high range Kungum La; five day's journey from Dankar. Does not know where the Spino springs from.

10. Garu to Chaprang.—Same informant.

1. Shing Lapcha.
2. Tuktag.
3. Largu.
4. Peldong.
5. Ling. A bridge over the Setlej formed of iron chains.
6. Chaprang.

11. Particulars furnished by a Kanaweri Beopari from Leh.

Chang to Rupshe five day's journey.

Rupshe to Rutoh, twenty day's journey.

Rupshe to Leh, ten day's journey.

Lari to Leh, fifteen day's journey.

12. Skalkar to Garu.—By a man of Skalkar.

1. Changar, (no village,) wood and water; a cave.

2. Sagtad, a village of three houses.
3. Champa, village of three houses.
4. Súnegyúl, twelve houses.
5. Súm Lakhar, (no village,) wood and water.
6. Bhutpú Ghatí, source of Yung Chum which joins the Spiti just above Skalkar.
7. Chákara Chang, no village, encampment, tents black, formed of the hair of the yak.
8. Khaurkhíl, no village, water.
9. Kharkhúm Chang, encampment, no cultivation.
10. Dúkbo; one tent, no wood.
11. Shang; encampment, twelve or thirteen tents.
12. Laoche; no village or encampment.
13. Zúnjúng, two tents.
14. Kungya; no village or encampment.
15. Gárú.

At most of these stages wood is not procurable, the only fuel is the dung of the yak. Ranglo is twelve day's journey from Larí. Tangdí, two from Ranglo.

13. From Súngnam in Kanáwer there is a route to Munes in Ladak. Damakshú is the name of the high ridge crossed. It is said to be covered with snow. Munes is three day's journey from the crest and one day farther is Dankar.

14. From Nissang also there is a road to Stang and Bekar, two villages on the Setlej, between Shipki and Cháprang. This route crosses a very high ridge covered, I believe with snow. It leads up the bed of the stream which flows under Nissang.

15. There is a direct route also from Shipki to Skalkar crossing the lower part of the Púrkyúl ridge; it is represented as both difficult and dangerous.