

and Dictionaries and Tales in Urdú, translations from Sanscrit Hindi into Persian and Urdú, and Chaghatáy and Pushtú books.

At the end there will be an appendix of *corrigenda* and *addenda*. If the whole catalogue is completed, it will be an infinitely full and more correct bibliographical work of reference than Hájj Kályfah's Bibliographical Dictionary.

Rev. J. Long's Catalogue Raisonné of Bengáli works has been already adverted to in this Journal, (ante vol. XXI. p. 632). It includes notices of upwards of thirteen hundred works, and we have no doubt, prove a valuable index to the vernacular literature of Bengal.

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*Notes upon a Tour in the Sikkim Himalayah Mountains, undertaken for the purpose of ascertaining the Geological Formation of Kunchinjinga and of the perpetually snow-covered peaks in its vicinity*  
—By Captain WALTER STANHOPE SHERWILL, Revenue Surveyor

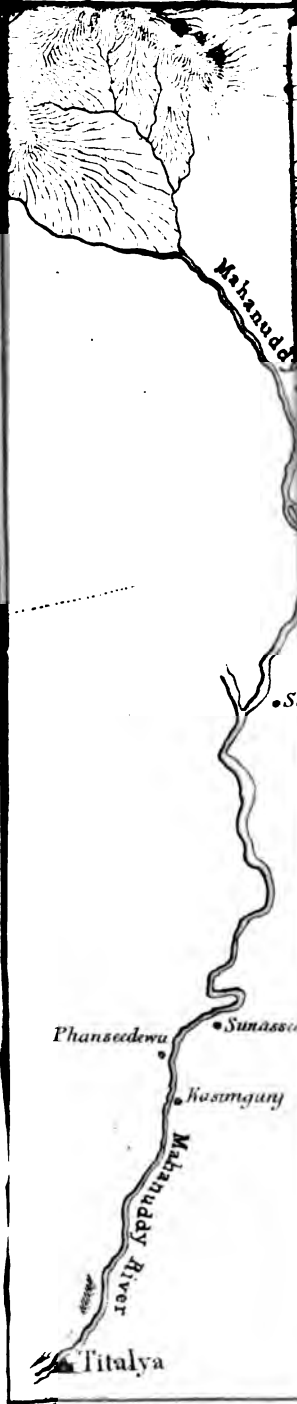
An unusually severe earthquake, that occurred at Darjeeling during the month of May, 1852, threw down several thousand square yards of the South Western face of the perpetually snow-covered mountain Kunchinjinga,\* exposing a dark mass of rock, rendered dark perhaps by the brilliancy of the snow surrounding it. By the aid of a good telescope, the distance being forty-five miles, I could plainly perceive that the geological formation of Kunchinjinga was not of granite, as I had read it was only a few days previous, but of a highly stratified nature, the strata being, by the aid of a telescope distinctly visible. The statement that the snowy-mountains near Kunchinjinga were of granite was published in a Botanical Magazine published in England, Dr. J. D. Hooker being the author

\* For the derivation and meaning of this word I am indebted to Lieut. G. Mainwaring of the 16th Bengal Grenadiers, who, with a praiseworthy industry, has mastered the Lepcha language, and was, in 1852, engaged upon the study of the Tibetan. The word is Tibetan and means,

| <i>English pronunciation.</i> | <i>Tibetan equivalents.</i> | <i>English.</i>    |
|-------------------------------|-----------------------------|--------------------|
| Kon                           | Khng-s                      | Snow               |
| Chin                          | Chha                        | full or covered.   |
| Jong                          | b'jongs                     | Coeval or equal to |

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Height above the sea, 28,177 feet (Waugh), the highest measured mountain in the world.



RANGE, about 27,000 feet.  
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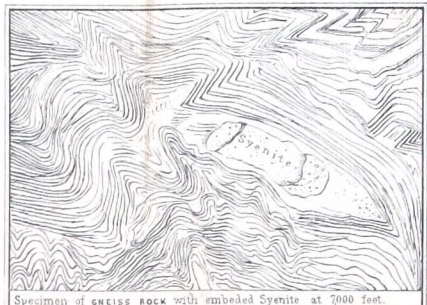
T H I B E T

No. 1



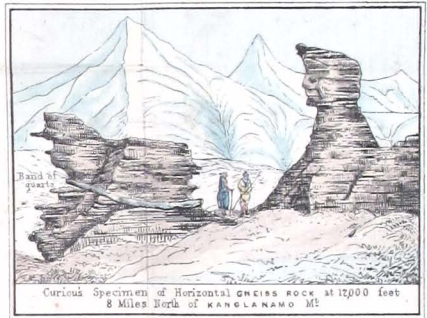
Chomolhari Mountain in Tibet, 22,929 feet above the Sea, as seen from the Tumbok Pass 11,000 feet, bearing N.E. by E. distant 40 miles. 1852.

No. 2



Specimen of gneiss rock with embedded Syenite at 7000 feet.

No. 3



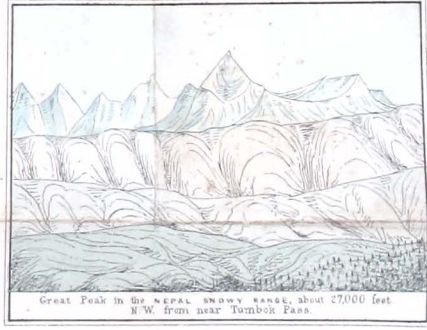
Curious Specimen of Horizontal gneiss rock at 17,000 feet 8 Miles from of KANLANGNAMO Mt.

No. 4



KUNCHINJING Mountain 26,177 feet. Distant 10 1/2 miles. Specimen of GNEISS ROCK showing the Stratification dip N.E. 20°

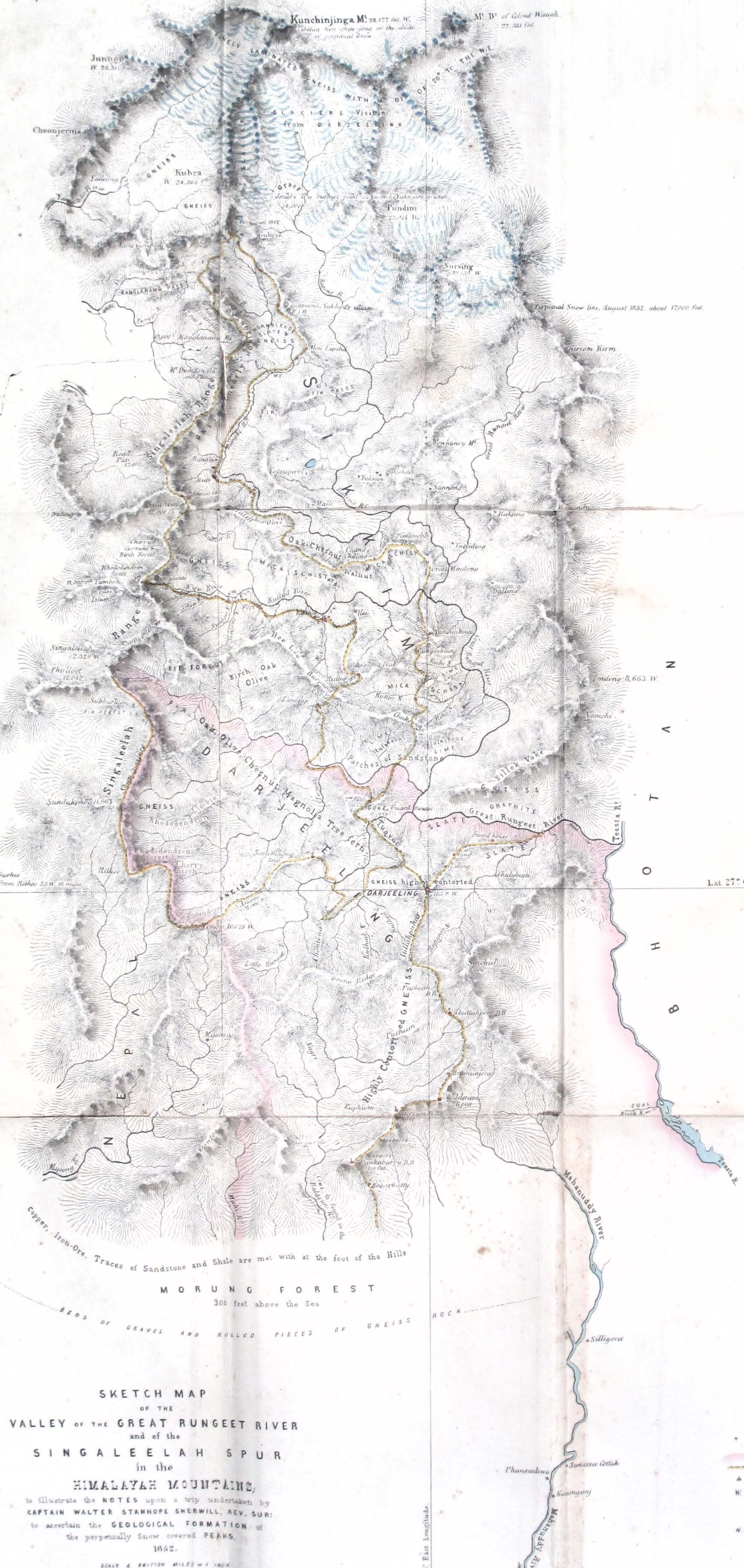
No. 5



Great Peak in the NEPAL SNOWY RANGE, about 27,000 feet N.W. from near Tumbok Pass.

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SKETCH MAP OF THE VALLEY OF THE GREAT RUNGEET RIVER and of the SINGALEELAH SPUR in the HIMALAYAN MOUNTAINS,

to illustrate the NOTES upon a trip undertaken by CAPTAIN WALTER STANHOPE SHERWILL, REV. SUR: to ascertain the GEOLOGICAL FORMATION of the perpetually snow covered PEAKS. 1852.

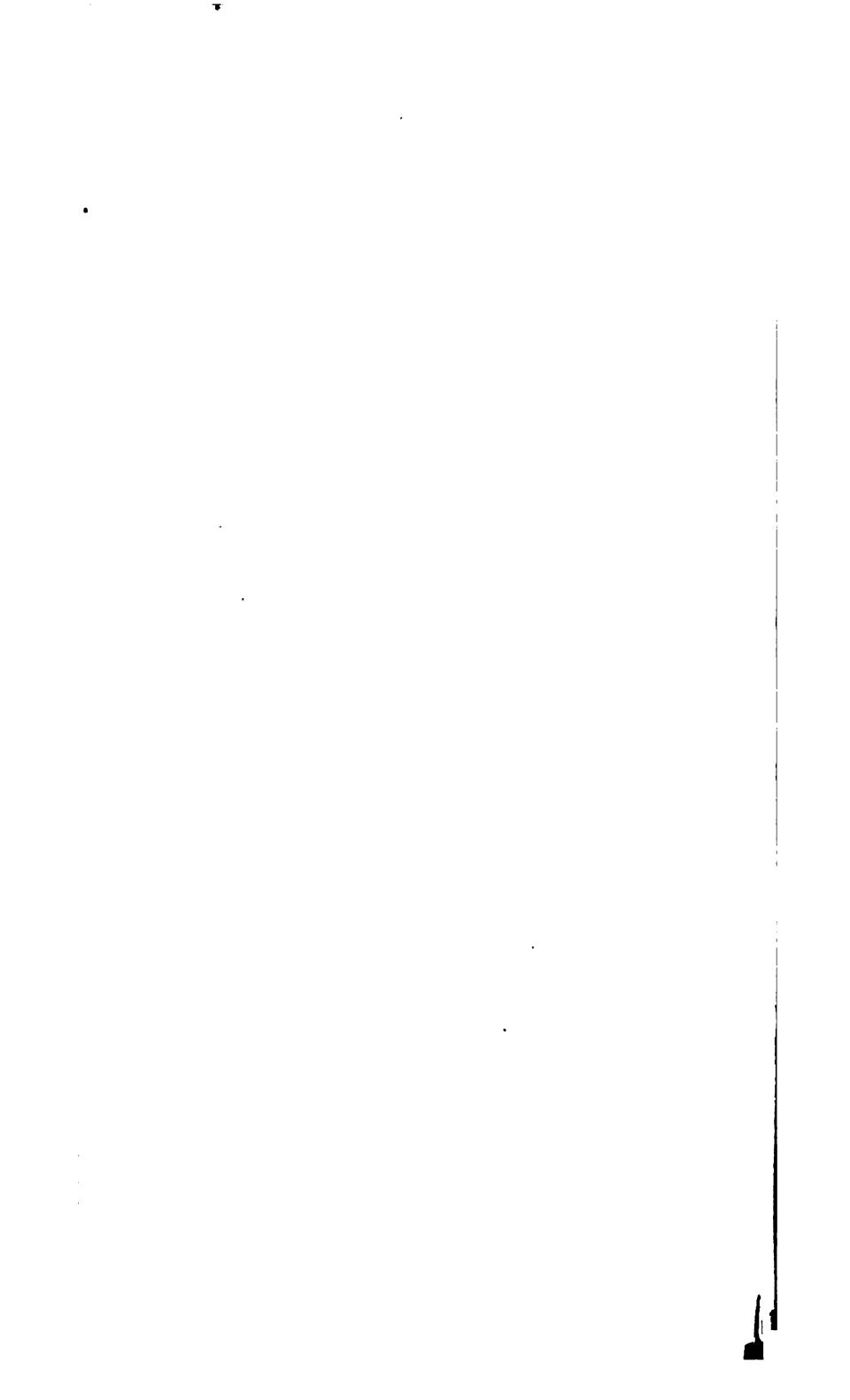
SCALE & BRITISH MILES & 1 INCH

- REFERENCES
+ Gompahs or Lama Monasteries
- British Boundary
- Captain Sherwill's Route
▲ Halting places
W Significant heights ascertained by Colonel Waugh, Surveyor General of India

n.b. This Map is a trace from Deder J. D. Hecher's Map of Sikkim with corrections and additions by Captain W.S. Sherwill.

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the statement. Being anxious to settle the question I determined to travel as far North toward the foot of the snowy range as possible, and thus by diminishing the distance between myself and the exposed flanks of the mountain to obtain a clearer and nearer view of its lithological formation.

Being quite aware from the peculiar shape of the mountain and of its neighbouring peaks, that by advancing towards the snows by the valleys leading up towards Kunchinjinga, I should speedily lose sight of the mountain altogether, I determined to advance along the crest of the great meridional spur Singaleela, which, from Darjeeling, appears to be connected directly with Kunchinjinga. Dr. Hooker's map of Sikkim also leads one to suppose that such is the fact, such however, is not the case as will be shewn hereafter.

2nd August, 1852. Having waited patiently for nearly three months since the earthquake exposed the flank of Kunchinjinga in order to allow the snow to reach its highest summer limit, I started this morning at 8.30 A. M. accompanied by Mr. Robert Smart, my second assistant in the Survey. Having just completed the Survey of the British Hill Territory, and having had several very fatiguing trips in the hills we were both in good walking trim, and had by our former experience learnt to travel lightly.

As we left the station of Darjeeling\* the sun was shining most brilliantly, illuminating the snowy range to a silvery whiteness. As we turned the shoulder of Birch Hill, the most northerly point of the station, a splendid Panorama of all the country to the west and north of Darjeeling lay before us, a scene perhaps unequalled in beauty in the whole world. To the west the Singaleela range with its numerous peaks of 12,000 feet in height, its thousand buttresses composed of swelling mountains clothed with fir and rhododendron forests, shut out our view. To the north and in the centre of the Panorama stands Kunchinjinga, 28,177 feet in height, flanked on either side by numerous peaks scarcely inferior in height. To the east, the snowy range trending away to the south, and which is adorned with many fine bold and imposing peaks, forms the limit to the view. The lower unsnowed but forest-clad mountains Powhunry, Tendong, Pemionchi, Hee, Chakoong, Kirmee, and a hundred others

\* i. e. Dorje the sceptre of the priesthood, "ling," a place, "The holy spot."

all separated by deep valleys, through which flow impetuous torrents, and in one of which was visible the Great Rungeet pouring along 6,000 feet below us, form the most appropriate, because grand and beautiful foreground to the lofty, and perpetually snow-covered Himalayah, some of whose perpetually snow-covered peaks are only thirty miles distant. The air was so pure that the distance appeared reduced to five or six miles, and with a telescope rocks that had been hurled down by earthquakes, were seen reposing upon the green glaciers between Kunchinjinga and Pudeem mountains, doubtless on their way to the Moraines at the foot of the glaciers.

The descent from Darjeeling by the Tuqvor-spur to the little Rungeet river, is by a good Government road, and can be ridden upon the whole way down, which we did passing rapidly through the various botanical regions, or through oak, chesnut, maple, olive, walnut, birch, magnolia, to palms, tree-ferns, ratans: at 5,000 cultivation is met with, comprising barley, wheat, maize, buckwheat, rice, &c. then through Gordonia, pandanus, banian-trees, wormwood, twelve feet in height, to the Little Rungeet river 1,996 feet above the sea, which we reached in two hours and a quarter, having descended 5,169 feet.

The forest at 6,000 is peculiarly beautiful; the oaks, magnolias and other large trees being covered with gigantic pothos, epythital ferns, arums, and enormous creepers resembling ship's cables; the underwood consists of the tree-fern, some of which measure fifty feet in height and fifteen feet in girth at the base of the stem. The gracefulness of this botanical beauty can only be described by the pencil not by words.

Temperature of the air at Darjeeling 65° Faht.; at the little Rungeet at noon 89°; at 2 P. M. 91° 50'; temperature of the water 71°.

The little Rungeet which rises from the mountain Tongloo falls into the great Rungeet, three miles further down, and is here crossed by a substantial cane-bridge. The main chains supporting the bridge are composed of five ratan-canes each; the sides are of split cane hanging from either main chain as loops, two feet apart and three feet deep; into these loops, the platform is laid composed of three bamboos, the size of a man's arm, laid side to side; the section of the bridge resembling the letter V.; in the angle or base of the letter the traveller finds footing. This being a Government bridge

and kept in proper order, the platform or bridge is about a foot in width. Those bridges that are constructed by the natives have only one single bamboo for the feet to rest upon; and across these frail bridges, the most wild and turbulent streams are crossed with safety. Out-riggers, to prevent the main chains being brought together with the weight of the passenger, are rigged out at every ten or twelve feet, in the following manner: under the platform, and at right angles to it or parallel to the stream, strong bamboos are passed, and from their extremities to the main chains, split ratan-ropes are firmly tied; this prevents the hanging loop or bridge from shutting up and choking the passenger. The piers of these bridges are generally two convenient trees, through whose branches the main chains are passed and pegged into the ground on the opposite side.

The bridge over the Rungeet is about fifty yards in span, and fifteen feet above the stream. Across this narrow bridge I was surprised to see a hill dog trot, apparently quite regardless of the raging torrent beneath him.

The water being too rapid for the passage of our ponies, they were sent back from the right bank of the river, and from this spot our wanderings commenced on foot.

At this spot which is twenty-two miles in a direct line from the plains, and nearly 2,000 feet above the sea, I observed termites or white-ants who, under the shelter of their pierced earthen covering, were destroying the bark of an oak-tree. The many varieties of lepidoptera and dragon-flies that were fluttering about the gneiss rocks were remarkable for their great numbers and beauty.

On our way down the hill our attention was markedly arrested by a flock of birds—which our Lepchas described as being about the size of a black-bird and of a black and white plumage, for we did not get a glimpse of them—whose united voices exactly resembled a set of human maniacs screaming and laughing in horrid chorus. I never remember to have heard such a peculiarly wild and attention-rivetting sound as the voice of these birds; it was perfectly startling.

Left the Rungeet at 2 P. M. and ascended to the Goke guard-house, in an hour. The forest is particularly beautiful, the foci on a grand scale being the most remarkable feature in the forest. It is interesting to trace amongst the various specimens of this natural

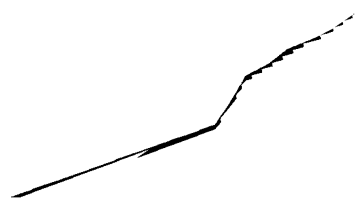
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order; the gradual but alternately certain destruction that they bring upon the largest and tallest trees in the forest. In places the young fig, only a few inches in height, may be seen at the foot of a noble oak as a humble plant; a little further on, it is seen as a handsome creeper embracing the oak with a thousand tendrils, which expanding and thickening with age, at last coalesce, forming a solid mass of wood which speedily strangles its original support; which, by decaying and falling away, leaves the fig standing, a hollow cylinder sixty or seventy feet in height, with an umbrageous crown of leaves and branches, a far more noble-looking tree than the oak it has killed. Others again trust to themselves entirely, and seek no foreign support; this species is met with at 4,000 feet above the sea; very giants in botany; they generally rest upon three, five or more beautifully-arched stems forty or fifty feet apart, which unite perhaps seventy feet from the ground into one common trunk; from this spot the branches spring to about the same height as the point of junction is from the ground. The beauty of these trees is much added to, by being generally covered with the gigantic pothos, or bignonias, or buteas, or with other enormous creepers whose long stems are seen hanging in wild festoons, some like golden threads and others like ragged and frayed cables of ships; some of the finest specimens of these figs are to be seen close to the staging Bungalow at Kursion, on the road up from the plains to Darjeeling.

The Goke spur, wherever the road has laid bare the rocks, is found to be composed of a red micaceous schist, and towards the summit, 2,757 feet, of blue slate highly micaceous and separated from the upper or red schist by beds of hornstone.

At Goke there are eight houses and a guard-house, inhabited by the families of the sepoy on guard at this post. The guard consist of about eight men detached from the sappers and miners at Darjeeling, their duty is to guard the frontier at this spot, and to give the alarm at the approach of any armed men from Sikkim, and to prevent any of the British subjects being taken away as slaves into Sikkim. Similar guards are posted all along the Sikkim frontier, generally at spots where cane-bridges cross the Rungeet and Bummam rivers.

To the north of the Goke spur, and looking down into the valley of the Bummam river, which is seen and heard roaring along its

rocky bed, the eye wanders over a dense and beautiful forest. The huge buttresses thrown down from Singaleelah shut in the view looking up the valley, and on the opposite side of the Rumman, the steep Chakoong gneiss mountain exhibits numerous land-slips of great beauty. Chakoong is noted for its travertine lime deposits, which appear in the small streams flowing from its steep sides. Our entire march for to-morrow is in view, and a formidable-looking route it is. The Burpung mountain on the Heeloo range was pointed out to us as the spot for our next encampment, which cannot be less than 8,000 feet in height and distant five miles; but these five miles we have to traverse in the hot, dark, and miasmatic valley of the Rumman.

In the evening I observed several of those strange insects, *bocy-dium*, that are covered with snow-white and downy quill-like processes radiating in all directions from their backs. Any attempt to secure the pretty creatures for observation, even supposing they did not escape by hopping away, was a failure; as all their beauty was speedily destroyed with even the most gentle treatment, the slightest touch being sufficient to destroy all their snow-white covering.

The noise of the cicadas a thousand feet below us in the hot tropical valleys was quite deafening; their peculiar cry is quite distinct from the cicadas of Darjeeling, being louder, more metallic and of longer duration; much more cheerful and more pleasing to the ear. Two *Buceros* were seen flying over Little Rungeet; these curious birds build their nests in hollow trees, and defend them with great bravery. The *Lepchas* secure the living birds by putting a net over the orifice of their nests, and sell them at Darjeeling.

From the guard-house looking south, a fine cascade is seen dashing down the Tuqvor spur.

Cultivated plants observed at Goke were tobacco, tomato, stramonium, banghun, *sém* bean, Indian corn, red spinach, kuddoo, chillies, and French marigold. Wormwood and black pepper were seen wild. Before the doors of several of the houses were baskets containing the new shoots of the bamboo gathered before they force themselves above ground. The shoots are collected, put into baskets, the mouths of which are laden with heavy stones, and placed in the sun for several days, when fermentation takes place; the shoots are then

eaten as pickles, forming a pleasing acidulous adjunct to the Limboo's simple rice diet. The fresh shoots, which I tasted, resemble a new and sweet walnut.

3rd August, 1852, direction North-west.

At six this morning we descended the steep northern face of the Goke spur by a footpath, along which the Sikkimites attempted an entry into Darjeeling, during the late disturbances. I measured the slope of the path and found it to be  $80^{\circ}$ , a most uncomfortable gradient for a rough and narrow footpath flanked on one hand by a nearly precipitous descent, down which Mr. Smart and myself both rolled, until stopped by the dense underwood. Our road lay through a dark forest of noble trees, principally *Gordonia*, called by the Lepchas "sum brung kun," whose smooth, upright, and perfectly straight stems present fine specimens of forest trees. Most of these trees were encircled at various heights by epiphytical ferns, growing in a crown-like form completely round the stem. Each frond of this elegant fern measures five feet in length, and from the great elegance of its shape serves to adorn the tree that bears it. The underwood was principally composed of the gigantic bamboo, *fici*, *baubiniæ* and ferns; the whole so thick, matted and tangled as to render the forest as dark as late twilight; not a ray of sunshine could penetrate or shine upon us; but I noticed that wherever a stray beam of sunshine did force its way through the tangled masses of foliage overhead, that it tinged the ground with a deep purple or garnet colour. The noise from the cicadas was quite oppressive and wearisome. One was caught and, as I conjectured yesterday, was of a totally different species from those seen at Darjeeling. It had transparent wings, and was three inches in length. On its sides are too long horny plates, and upon pressing these plates whilst the animal continued to cry, a modulation of the extraordinary and wild sound emitted by this strange fly was caused, bearing however no resemblance to harmony. Under skilful hands and by delicate manipulation, a tune might be extorted from this cicada, thus in a measure verifying the old fable of the cicada having been used as a supplementary note to the Lyre.

The underwood abounded with the yellow webs of the large red and black *Epiræ*, or bird-eating spiders, each web containing a spider.

A troop of red monkeys were gambolling and shouting in the trees ; their voice is quite different from that of the common red monkey of the plains.

Three quarters of an hour after leaving Goke we crossed the Teryook stream at its junction with the Rummam river, and after travelling along the banks of the noisy, boiling and foaming Rummam for an hour more, we crossed to its left bank by a very frail and dangerous cane bridge of about 300 feet span, and commenced the steep ascent of Chakoong. We now stood in the Rajah of Sikkim's territory.

The Rummam immediately above the bridge comes tearing round a sharp corner of the mountain, and with one bound dashes over a group of gneiss rocks. The trees dipping their branches into the very water, the lofty forest-clad mountains on all sides, from whose very bosom, the river appears to dash at once, the roar and noise of the water—altogether present as pretty a picture as can be well imagined.

After a toilsome ascent of several thousand feet through forest trees and through several clearances planted with cotton, we reached two Lepcha huts, where we were most kindly received and invited to shelter ourselves from the burning sun, and to partake of the delicious "chee" or acidulous infusion of the Murooa (Eleusine), which is always presented in a joint of a bamboo, from which receptacle it is sucked up through a hollow reed so cut at the sides as not to permit the small grains to pass up into the mouth. The liquor resembles in taste, dilute Hock or Sauterne, and is very refreshing. It is slightly intoxicating, and is seldom seen above 6,000 feet elevation.

The huts of the Bhotia and Lepcha reminded me of the huts of the Rajmahal hill tribes. Having no caste, no great secrecy is sought for in the construction of the house, which consists of one large room thirty or forty feet square, raised upon wooden posts, the walls, roofing, beams, rafters, flooring, and fastenings being all composed of bamboo ; the thatch is of grass. There are generally two or more fire-places in the room composed of loose stones upon a mound of earth, the whole retained in position by a square fender of bamboo.

In the house we visited, there were two women, many children,

and about ten men. Wandering round about the house were cows, pigs, poultry, goats and dogs. In the interior of the house there were two fire-places, at both of which food was being cooked, consisting of rice and tea. Tea in these mountains is drank after the following extraordinary manner. Into a large earthen cooking-pot, full of hot water, a quantity of black tea that has been chopped from the end of a brick of tea, is thrown, together with a little salt, butter and barley-meal; this mess after being well stirred, is served up in a teapot, each partaker of the tea producing his own wooden tea-cup from the bosom folds of his capacious clothes. In various parts of the house, depending from the ceiling were balls of cotton, various little bamboo baskets,—a half-finished woven piece of cotton cloth, earthen cooking pots, gourds, wooden spoons, a cotton-cleaner, a spinning-wheel, several large Chinese hats, nine feet in circumference, fishing nets, heads of millet, a book of Boodhist prayers, a few English bottles, a pair of cymbals, bows and arrows, bead necklaces, large Lepcha knives, or *Bán*, hatchets, a drum, several blocks of wood used as tables, a few bamboo mats and a deer skin:—such is the simple property of a Lepcha, one of the happiest, merriest, and most humane of our species.

Close to our hut we could hear the roar of a cataract, the scenery round about the house was most pleasing.

After reposing during the heat of the day with the friendly Lepcha family, we started and in an hour reached a Lepcha Lama's house or *Goompa*, an immense building divided into two compartments. The Lama being absent, the whole house was delivered up to us; we took possession of one room about thirty feet square nicely boarded with broad and well laid planks. At the East end of the room was an altar, but divested of many of its usual utensils. There were nevertheless many holy-water brass cups, eight books of prayers, in a stand close by the altar, a sacred drum with its curious crooked drumstick, a pair of yak horns, cymbals, brass images representing gods, bells, conch-shells, charms and a *dorje* or the brass sceptre of the priesthood, resembling an English constable's hand-staff, surmounted by a regal crown; besides these articles forming the furniture of a Boodhist altar, there were English Eau-de-cologne bottles, a tea-cup, a blacking bottle, a two-foot ruler, and lastly, a

French deal box, that had once held brandy, and addressed in good English to "Mr. W. Martin, Darjeeling." The usual human thigh bone-trumpets were locked up, they being considered too precious to be left about. These bone trumpets, if possible, are the thigh bones of Lamas, some of them are highly ornamented with brass work brought from Thibet. The two condyles at the extremity of the bone are pierced and the bone hollowed out and when about to be used, a small quantity of water is poured down the bone to make it sound clear. The sound emitted is like that from a brazen horn; and as a small hand drum, with pellets of clay or brass tied upon strings depending from the rim and serving as drumsticks, is generally used in the other hand, the noise produced is stunning. In several Goompas or monasteries, I have requested the Lamas to blow up the bone trumpets, to which requests they have always good-naturedly acceded, terminating their performance with a hearty fit of laughter at their own strange and wild noise.

The whole of the walls of our room were decorated with mystic squares, triangles, and other figures of white, yellow, and black pigments; the door was a block of wood turning on its own heel which was stepped into a wooden socket, the walls were composed of planks and wattles covered with mud and pierced with two windows with sliding shutters. The Lama receives five rupees from the Sikkim Rajah annually.

This Goompa or monastery is situated near the large landslip that is visible from Darjeeling, this landslip, which is several thousand feet in height and one hundred broad, has a pretty stream of water flowing amongst its rocks; when heavy rain takes place the rocks begin to move downwards, causing a low rumbling sound, loud enough to awaken the members resident at the Goompa. The view from this spot looking back upon Darjeeling, only nine miles distant, the deep valleys at our feet many thousands of feet deep, the lofty Tonglo mountain to the South West and the foaming cataract on the landslip, well repaid us for two days' toil and the suffocating heat of the valleys.

Around the neck of one of the Lepcha children, hung as a charm, I observed, the following curious collection of oddities, a leopard's and a barking deer's canine teeth, an ornamented brass bead, a piece

of ginger, a clove of garlic, and the hard seeds of a forest tree, all strung upon a cotton thread. All the men, women and children who could afford it had the small silver current British Government coins, eight, four, and two anna pieces soldered on to brass rings, and worn either on the fingers or round the neck. To those who had no silver coins, I made a present of a quantity.

*4th August.*—Left the Goompa at 6.30 A. M. passed some good Limboo huts and clearances principally sown with cotton and murrooa, and commenced a stiff ascent. On passing the Limboo huts, we found men, women and children all hard at work, husking grain; fine English looking cows, pigs and poultry were lying about or strolling round the neat houses, which are built of split bamboo roofed with the long and broad leaves of the wild ginger and cardamom which abound in the forests at this elevation, the roofs are guyed to the ground with long rope-like rattans, to enable them to resist the powerful blasts of wind that descend the mountains with enormous power, and that without one moment's notice.

The ascent of Syrioong Burpung, such is the name of this portion of the Hee mountain, occupied us an hour; the ascent the whole way being through fine fields of Indian-corn and three kinds of murrooa. On the crest of Syrioong the heavy forest commences, and at this spot is a small cairn of stones, marking the boundary between the Jageer or estate of Lepcha Pongring, who resides at Tullam on the banks of the Rumman, and of the lands of the Rajah of Sikkim. At 10 A. M. we halted to breakfast at a beautiful waterfall, with a fine body of water dashing down the side of the forest-elad mountain by eight or nine leaps. A small portion of this waterfall is seen from Darjeeling as a white speck on the face of the mountain.

After crossing Syrioong the footpath runs through a dense under-wood of rose bushes, stinging nettles, black mud, and running streams, through which we were obliged to wade; our legs and feet getting covered with numerous leeches, and our hands and faces stung by nettles and peepsas.

The peepsa is a small dipterous fly of a black and metallic green colour with spotted legs and a small head. It bites without any pain, attacking any available part of the body, upon which it feeds



for about three minutes, caressing the part the whole time by raising and depressing their delicate fore legs alternately, as if thoroughly enjoying the sanguineous draught; when their bodies are distended with blood, they fly away, leaving a small round purple spot of extravasated blood, very irritating, and, with some people, attended with considerable inflammation. If the fly is disturbed before it has had a full meal, a small flow of blood takes place, and relieves the bitten part. There are several kinds of peepsas, some are so small that they are barely visible to the naked eye; this kind however give a most stinging bite, and, although not seen, are felt in a very decided manner. The peepsas range from 2,000 to 8,000 feet.

A hasty breakfast being despatched, for it was impossible to stand still without being covered with leeches, we proceeded till eleven o'clock, when, being fully drenched by a smart shower, and by crushing through the wet underwood, we halted, lit a fire and dried ourselves; our legs, arms and bodies smarting from leech-bites and from the abundant wounds of the formidable stinging nettles which sting through the strongest clothes.

During our halt, our Lepcha guide made a breakfast of roasted spinach that he had collected in the murrooa fields in the morning. Rolling the spinach up in some large leaves he thrust the bundle into the hot ashes, where it remained ten minutes; he then withdrew the bitter feast and consumed it, adding raw but crushed stinging nettle tops as a sauce to the whole. It would require more boldness than most people possess to induce any stranger in the hills to attempt to put any portion of such a formidable-looking plant as the Sikkim stinging nettle into his mouth for transmission to the stomach. The leaves are armed with innumerable sharp spikes a quarter of an inch in length; not only are they spread over the whole of the upper surface of the leaves, but they also appear on the point of each tooth of the deeply serrated edge of the leaf, and upon the leaf stalks and stem of the plant. Each spike at its base is provided with a small white bladder or gland containing the poison. The plant attains the height of four feet; with a leaf upwards of a foot in length. Their wound causes much pain, and sometimes violent sneezing and fever; one kind in particular mentioned by Dr. Campbell, and named the "mellumba," produces running at the eyes,

nose, sneezing, fever and sometimes death. In addition to the above pungent food, my Lepcha consumed young and tender fern tops, a white fungus found upon trees, a sharp acid plant, and several other leaves and roots. A Lepcha affirms that he cannot starve as long as he is on the hills; this appears to be true, as he makes almost the whole vegetable kingdom subservient to his appetite.

Left the fire at 1 P. M., at 2 P. M. we were on the summit of Rutto, a wooden mountain; after rather a level walk of two hours, we halted for the night at 4 P. M. a few paces from the left bank of the source of the Rishi, which stream falls into the Great Rungeet river. The Barometer gave our elevation 8,080 feet, Thermometer 67° at 4 P. M. or just beyond the region of the leeches. Just as we had got our small tent up, heavy rain commenced to fall which continued during the greater portion of the night, penetrating our small tent and wetting our bedding. A good supper and a sound sleep refreshed us, nor did we much care for the sprinkling we got during the night. Near our tent was a tempting L'hap, or cave, formed by an overhanging mass of gneiss rock; but as it was not found large enough for us and our fifteen Lepchas, we cleared away the jungle, pitched the tent, slung the barometer and turned in for the night. I felt satisfied that our Lepchas were enjoying no worse fare than ourselves; they had two tents furnished by me for their protection; we had no servants to cook for us, no beds, no comforts, beyond a good layer of ferns to lie upon, and a blanket to cover us. A strong decoction of coffee morning and evening, with a handful of bread rusks and a slice of ham or bacon, forming our entire food during the twenty-four hours.

Lucifer matches, flint and steel, and several other modes of procuring fire being utterly unavailing in these damp mountains, the Lepchas were never at a loss to supply us with that necessary element, so conducive to comfort and life; for upon halting, our merry guides and coolies produced fire by causing one vertical piece of dry wood that was sharpened almost to a point to revolve rapidly in a mortise cut in another horizontal piece of wood; both pieces of wood were highly dried and smoked at their homes and exactly resembled two round rulers. The rapid revolution of the upright piece of wood upon the horizontal piece, produces by friction a dry sawdust, which, after a minute's working round and round, catches fire. The

wood resembles willow and is procured from a shrub that grows in the hot valleys and generally from the banks of the mountain torrents. Two men work the upright piece of wood, the other is placed upon the ground, or more generally upon the large Lepcha knife. The upright stick is seized between the palms of the hands, and made to revolve rapidly first to the right and then to the left, the pressure used causing the hands to descend from the top to the bottom of the stick; upon the hands reaching the lower stick, the second man commences from the top; and so on, in quick succession, until fire is produced; one mortise or hole produces fire four times, when a new one is made, the old one being worn through.

5th August, 1852.—Started at 8 A. M. in a North Westerly direction, and in three quarters of an hour we were upon the summit of Heeloo, about 8,500 feet (Heethloo of Hooker's map), at which spot were boundary stones separating two small estates of Sikkim. From this spot we commenced a rapid descent, which soon brought us again upon our tormentors the leeches, which swarmed upon every leaf, upon every stone. In an hour I had received fifty bites upon the ankles and legs; and allowing that only one in ten that managed to get upon my person bit me, I must have had five hundred of these troublesome and loathsome animals upon my person within an hour.

The leech of the Himálayah is first met with at 4,000 feet elevation, it is of a small black species, and, when young, is as thin as a needle and about an inch in length; when full grown it is still very small not measuring more than two inches in length, even when gorged with blood—at 5,000 feet their numbers increase; but at 6 and 7,000 feet up to nearly 8,000, they swarm in myriads, every leaf, bush and stone being covered with these annelides. From 8,000 to nearly 10,000 there is a hiatus, at which elevation these animals are not found, but from 10 to 11,000 feet, another species is found, but not very abundant; it is of a snuff brown colour with a black line down the back and a white stripe down each side of the body. This is not such a blood-thirsty animal as the black one, but is more sluggish.

The Lepchas affirm that the leeches spring from the bushes on to the traveller; this is a mistake, they *fall* upon a passer-by from

boughs over his head, and with the greatest activity cling to the shoe or foot, although only on the ground during the short period required to make a step. We tried tobacco leaves, dried snuff, of which we carried mulls full; we tried having a man behind to watch our naked legs, for it is impossible to keep the calves of the legs covered, otherwise every leech that managed to get upon your person would have a feast; but all to no purpose. The bites were as numerous as ever; although from the effects of the tobacco, I have turned out from my shoes at the end of a day's journey, thirty or forty dead and completely dried up leeches. If the leg is thoroughly protected with leather gaiters, the leech will be driven to bite higher up, and will insinuate itself up the sleeves or down the neck; in fact there is no remedy yet discovered that will keep them off your person. They are not seen during the winter, nor during very heavy rain: between the showers of the rainy season is the period of their greatest activity.

At noon we were a few hundred feet above the Limboo village Hee, having descended 3,000 feet, and now stood opposite to the noble mountain on which are situated the monasteries of Pemionchi and Chanachelling, on the northern side of the Kullait river. The Thermometer stood at 75°, and the power of the sun was so great as to necessitate the use of an umbrella. A pretty Bhootea woman with a child on her back brought us from her house, where she and her husband lived whilst tending a herd of cows, a large bamboo of fresh milk probably holding a couple of quarts, and subsequently she brought us two bamboos of the delicious chee, only to be enjoyed where there is great heat. A present of a quantity of silver two-anna pieces seemed to please her very much, for she ran for her husband, a regular Mongolian with a goitre, who, she assured us, would act as our guide for a short distance.

As dysentery was raging at Hee, our people begged of us not to go to the village, as they believe that the disease is infectious; indeed not one of our Lepchas would have followed us had we insisted upon proceeding in that direction; so having enjoyed the view of the magnificent mountain, and having taken the bearings of the Goompas that were perched 4,000 feet over our heads, our guide led us through the forest in a westerly direction.

Soon after leaving the cow-herd's hut we came upon two upright posts, the height of a man, stuck upon either side of the footpath and connected at the top with a horizontal post, from which depended two bundles of sticks, a foot in length, each bundle containing fifteen sticks; near these bundles were two wooden cudgels, also hanging by strips of rattan—a few feet removed from this group were two other poles erected on either side of the road, but unconnected with any horizontal bar. The meaning of these posts and sticks is as follows:—Any one coming from the direction of the two disconnected poles may pass on free and unmolested; but any one daring to pass from the other side, which points to the infected village, and in this case pointing to the dysentery-infected Hee; would be assuredly beaten with the two pendant cudgels under which he or she passes, and moreover would be fined thirty rupees, the number of pieces of wood tied up in the two bundles. Thus whenever small-pox, dysentery or any other complaint breaks out in a village, a strict sanitary cordon is drawn around the infected village, and no one is allowed to move out.

At 1-30 P. M. halted on the banks of the Mik, a tributary of much beauty to the kullait river, an affluent of the Great Rungeet. Over the Mik is a small bridge of rough trees with a bamboo banister, the stream is twenty or thirty feet broad, and dashes by a series of leaps over a group of gneiss rocks. The noise was deafening, but the scene beautiful.

Just before reaching the Mik, I broke down and secured a large handsome fruit of a cucurbitaceous plant that was twining up a tree, the leaves were palmated, fruit about one foot across, and had the appearance of a musk-melon that had been pressed from both ends until considerably flattened. The Lepchas called it *kuthoor phort*; they immediately, but with some difficulty, dashed the fruit to pieces on the rocks, extracted from the inside five or six large red seeds, two inches in length, which, when broken open, I found to contain a milk-white kernel tasting like a new walnut. The Lepchas put the stones into the fire and, when roasted, offered them to us; they were delicious.

The case of the stones is as hard as a walnut shell, veined with deep sutures like a peach stone, which it resembles in colour.

Having washed all the leeches off our legs, we started and ascended a very steep and rocky mountain, and at 4 P. M. halted at a group of Lepcha huts named Rudhoo at an elevation of 6,517 feet. We took possession of a Lepcha house, the owner of which was absent. The view from this spot is very beautiful; five thousand feet below us the Kullait river, a mass of foam from its headlong speed, was visible, looking both up and down the valley. Immediately to the north of us and shutting out all view of the snowy range, stood the imposing steep and rocky mountain Pemionchi; magnificent forests of oak, chesnut and walnut clothing its steep sides. Immediately opposite to our house, we could see a fine cascade dashing down one of the deep ravines in the face of the mountain. The monasteries on the summit, the Cazi's village and residence near the summit, the numerous deep dells and ravines with which the sides of the mountain are indented, the distant mountains looking towards the East, and Heeloo, over which we had travelled this day, the little village of Hee overhanging the river—all combined to form as pretty a picture as we could desire to look upon. The Kullait river rises from the Singaleela range, flows between the Hee and Pemionchi mountains in a valley with an average depth of 6,000 feet for twenty-four miles, when it falls into Rungeet. Every spur descending from these two fine mountains has a separate name, and the whole of them are cultivated up to 5,000 feet, or 1,500 feet below where we stood, with rice, Indian-corn, and murrooa.

The mountains in the valley of the Kullait are far more grand and steep than any I have yet met with in the lower Himalayah. Pemionchi is composed of a bright and glossy micaceous schist; Heeloo of gneiss.

During this day's march, and as we were proceeding across a hill torrent in a most orderly manner, a young merry Lepcha behind me gave a loud scream, which seemed to electrify the whole of our Lepchas; down went bag and baggage from every shoulder, my guide, who was dressed as a non-working man in scarlet and finery, commenced most irreverently to strip off his finery, and to my horror almost threw my mountain Barometer into the nearest bush—when he had stripped himself he dashed into the stream, and commenced diving his hands under every stone near him or thrusting a

long stick under the more distant ones, whilst the other Lepchas were busy throwing branches of trees and bushes into all the small channels where any animal could possibly find a passage. The shouting and screaming that was kept up rendered it an impossibility to get an answer from any of the Lepchas; at last after my frequent enquiries as to what they had seen, my guide, with open mouth and eyes, told me that it was a fish with hands and legs that they sought; in other words they had seen one of the large brown edible hill frogs which, to judge by the immense sensation caused by its appearance, must indeed be relished by a Lepcha. The search, I am sorry to say, was a fruitless one.

Our homely meal this evening was added to by our Lepchas, who brought us a quantity of the roasted shoots of the young bamboo, which are put into the ashes until thoroughly heated; these shoots, which are conical in shape, and of the size of a man's forearm, or a foot in length and four inches in diameter at the bottom of the cone, are deliciously tender and sweet, resembling an artichoke in tenderness, and a good young cabbage mixed with new walnuts in taste. The only parts that are not edible are the Septa dividing the joints. These shoots and the roasted seeds of the Kuthoor Phort served up upon a large leaf were most welcome additions to our salt supper.

6th August, 1852.—Left our Lepcha hut at 7 A. M. The hut we had slept in had its walls composed of large sheets of bark, some as much as four feet broad and seven in length. This hut and two others constitute the village of Budhoo.

Just as we were starting, the Lepchas of Budhoo brought us as presents a large live cock, baskets of rice and some milk. The latter being very acceptable I took it, making them a present in return; and having given a silver coin to each member of a small troop of children, we proceeded in a westerly direction or up the valley of the Kullait, hoping by this route to reach the summit of the Singahleelah range. Immediately upon leaving the huts, we entered a fine forest of oak, chesnut, walnut, birch, olive and other fine forest trees; our path was about 3,000 feet above the Kullait which we could hear roaring below, as it dashed over the huge rounded masses of gneiss which compose its bed. Numerous kokla or green pigeons

inhabit these forests; their note is like a plaintive run upon a flageolet.

At the entrance to all the Lepcha clearances I observed forked sticks about eight feet in height supporting numerous wooden swords, miniature baskets full of rice, eggs, the crops of fowls filled with rice, little bundles of herbs and flowers, fowls' legs and small baskets of raw cotton; these are offerings made to an invisible being who is said to reside on the banks of the Cholamo Lake in Thibet, whence the Teesta river (Lachen) takes its rise, and who is said to wield a great sword, with which he deals out death and destruction, as well as sickness and famine. The wooden swords are to deprecate his wrath; the productions of the earth and of their farms are offered partly as free-will offerings of gratitude for their abundant harvests, and partly as votive offerings.

At 8 A. M. we crossed a foaming cascade, which was descending over gneiss rocks with a headlong pace down the face of the mountain towards the Kullait. At 9 A. M. we were at the bottom of a deep hot valley, in which flows the Rennier stream, this is a large deep and rocky river flowing from Heeloo. Looking up the valley I perceived that the forest trees, crowning the heights many thousand feet above us, were all leafless, the foliage having been destroyed by the snow. The Rennier is crossed by a large fallen tree thrown from bank to bank, notched to prevent the feet from slipping; with an apology for a bannister, consisting of a few sticks tied together in the rudest manner with creepers, which frail support a Lepcha was obliged to pull quite tight whilst being used, otherwise it would be of little use to a traveller crossing such a boiling, howling chauldron, as raged below us.

The banks of the stream presented hornstone, and in the bed were blocks of a very beautiful gneiss, the component parts of which were intense black mica and pure white quartz.

A little below the bridge there was a strong wooden palisade supporting a quantity of elongated conical fishing baskets and extending quite across the river, destined for the capture of the edible frogs.

At 11.30 A. M. after tediously cutting a path through a regular tropical growth of underwood, we reached a small stone fort prettily perched upon a knoll commanding a complete view both up and



down the valley of the Kullait, a wild and beautiful scene. The fort, which is built of flat slabs of gneiss rock, is fifty feet square with walls eight feet in height, with a square bastion in the centre of each face; the walls are pierced for musketry. Within the fort are two houses the residence of a Bhooteah, by name Cheoong Lethoo, who styles himself the Sirdar or chief of Singaleelah, and of the valley of the Kullait; he receives no pay from the Rajah of Sikkim, but has to collect soldiers from his district, when required, which, I imagine, is not often the case. This little stronghold is surrounded by fields of Indian corn, rice and murrooa. Immediately under the walls were cucumbers and chillies, whilst all beyond this small cleared space is dense forest. The fort was built by the present owner's father, who was a man of note in Sikkim. As we approached the fort, the Sirdar was seen parading up and down upon the top of the walls, gun in hand, his basket hat, which was highly ornamented with sparkling plates of mica, shining like a helmet in the sun. He seemed wonder-struck at seeing our long line of fifteen coolies and two Sirdars, headed by two Europeans, invading his forest fastness, where from the commencement to the close of the year a stranger is never seen. Our presence seemed to distress him very much, and it was some time before he would condescend to answer any of our questions regarding the road up to the summit of Singaleelah. A present of gunpowder, shot and ball for his old English single-barrelled gun seemed to please him, as he soon after volunteered to be our guide to a village where his wife and family were residing a few miles further up the valley, and where we should be obliged to halt for the night. This was most fortunate, as, without his assistance, we never could possibly have found the footpath which crosses and recrosses streams and forest tracts, in some places without a trace of a footpath.

From the fort we descended to the banks of the Kullait, which river we skirted for a short distance until we came upon the spot where the Sungroo and Sungoor streams, both flowing from the south, fall into the Nyu, a feeder of the Kullait, only a few yards from each other. The noise of the three streams, filled as they were by the late heavy rains, can only be understood by a visit to the spot. The roar and confusion caused by the falling, bounding and foaming

water, the forests, the strange attire of our party, every member of which was bleeding profusely from both legs from the leech-bites, formed a strange, unpleasant, though curiously wild picture. Both streams are crossed by trimmed trees; between the two streams a stone wall pierced with embrasures crosses the road, flanked by the Nyu river on one side and by the steep and wooded mountain on the other. This defence was erected by the Sirdar's father to repel the Goorkas, who more than once have threatened Sikkim with invasion, since their great invasion of 1787 A. D.

Close to the stone wall above-mentioned is a Mendong, a solid stone edifice resembling a wall; they are found all over Sikkim; they are generally about twelve or fifteen feet in length, six feet high and two deep, with a centre distinguished by being thicker and higher than the sides; on the faces near the top are inserted large tablets with the mystic words: "Om mane pemi hom," carved in high relief. As the inscription of course begins at opposite ends on each side, the Bhooteahs are careful in passing, that they do not trace the words backwards;\* the left hand is always kept next to the Mendong when passing one.

An hour's walk along the banks of the Nyu river brought us to the ascent that leads to the last houses in the Kullait valley, 6,500 feet above the sea; at the houses we halted for the night, sending our men ahead to clear away the jungle, as the path from long disuse is reported as overgrown and impassable.

The path to-day passed over much gneiss rock, and occasionally large detached slabs of the same rock were seen; some of the blocks have minute garnets disseminated.

We had a neat little granary assigned to us as our quarters; the house stood upon high posts and was well stored with baskets full of ripe barley and wheat in the ear, also cotton; the walls were open mat work, and the heavens were visible through a scanty reed thatch; the whole room was nevertheless comfortable, dry and redolent of harvest. At sunset we had an audience of the Sirdar and of the villagers in general: we sat upon nice soft cushions provided by the Sirdar, stuffed with musk-deer hair and placed upon the bare rocks. We conversed through interpreters for some hours, principally about

\* See Turner's Embassy to Tibet, pages 97, 98.

the unfortunate, because misguided, Rajah of Sikkim, about L'hassa, the grand Lama, the pass of Tumbok into Nepal, which we expected to reach the next day, and upon a variety of other subjects. The Sirdar showed with much amusing importance sundry Tibetan looking letters, stamped with the Rajah's vermilion seal, forbidding Cheeoong Lethoo, Sirdar of Singaleelah, to allow any one to pass either up or down the Tumbok pass; we told him it was impossible to retrace our steps, the fatigue we had undergone ascending and descending the steep mountains, amounting to 10,000 feet of descent and 17,500 feet of ascent in five days, the innumerable leech-bites we had received, amounting to several hundreds on each leg, the intolerable heat of the valleys, and the constant wading through the icy cold streams and from never being clothed in dry clothes had so knocked us up, that we were determined to enjoy a little of the cool breezes on the summit of Singaleelah; we informed him that if we found we could not get along the crest of Singaleelah we would return by the Kullait; this cheered him up amazingly; but when I told him that if I succeeded in cutting my way along the crest I should return by Pemionchi, his countenance fell; he begged of me not to risk my safety in going upon Singaleelah which, he declared, was a land of rocks and desolation, and a spot not fitted for man to wander in. Poor Cheeoong Lethoo sat the picture of despair at our obstinacy, and with the determination of a true Mongol he kept on passing and re-passing over his beardless chin and that with rapidity, a handsome pair of flat brass L'hassa beard-plucking pincers, ornamented with Tibetan characters, a violent jerk now and then proclaiming that a stray hair had actually been secured and rooted out; and to ascertain this comforting fact, the edge of the pincers were passed over his lips; the fact being satisfactorily settled to Cheeoong's satisfaction that he had actually captured a solitary hair, another search was immediately taken in hand.

Amongst his other papers the Sirdar produced a picture about one foot in length, painted upon fine linen. It was from L'hassa, the drawing representing a great number of gods and goddesses, rivers, mountains, and a variety of confused and mystical subjects; on the back of the picture were the revered words "Om, a, hoom" in large bright vermilion letters. The picture, the Sirdar affirmed, cost

£50 sterling (500 rupees), and to it he appeared to attach much value; the mystic words as written

|   |      |                          |           |
|---|------|--------------------------|-----------|
| ॐ | om   | Intelligence, arm, power | } or God, |
| ॐ | ā    | The word                 |           |
| ॐ | hoom | The heart or love        |           |

mean God; or as Le père Calmette in his "Lettres édifiantes," Tome 14th, page 9, says, "voici ce que j' appris de la religion du Thibet; ils appellent, Dieu Koncioser, et ils semblent avoir quelque ide'e de l'adorable Trinité car tantôt ils le nomment Koncikocick, Dieu un; et tantôt Koncioksum, Dieu Trin. Ils se servent d'une espèce de chapelet sur lequel ils prononcent ces paroles; Om, ha, hum. Lorsqu'on leur en demande l'explication ils repondent que 'Om' signifie intelligence ou bras, c'est à dire puissance; que 'ha,' est la parole; que 'hum' est le cœur ou l'amour et que ces trois mots signifient Dieu."

The Sirdar was a boy when Captain Weston came up the Kullait in 1822, to settle the boundary between Nepal and Sikkim at the head of the Kullait valley or at the Tumbok Pass. By the treaty of 1815, between Nepal and Sikkim, a large portion of the Sikkim Hills and Morung that had been ceded to the British Government in perpetuity by the Nepaulese Court, and at the same time made over by the British Government in full sovereignty to the Sikkim Rajah, required to have the boundaries settled.

The Sirdar had also escorted Dr. Hooker from the Tumbok Pass to the Teesta river when returning from his tour in eastern Nepal in 1849, and at last consented to escort us to the summit of the Tumbok Pass.

Towards the close of the long talk, I made the Sirdar a present of money, and to every man, woman and child, amounting in all to thirty individuals, I distributed two, four and eight-anna silver coins; and in return, we were presented with a live kid, bamboo shoots, rice and plantains.

At this spot there are only two houses besides our little granary; in the house of the Sirdar nearly thirty people were accommodated during the night with food and lodging, men, women, and children all sleeping in the one room that constitutes the entire house.

Two miles north from the Sirdar's house, and several thousand feet below us, the Nyu and Kullait rivers unite, our route lay up the Nyu, the true Kullait valley from whence the river rises being too precipitous to attempt to reach Singaleelah by.

*7th August, 1852.*—Started at 7.30 A. M. up the valley of the Nyu with Cheeong Lethoo, Sirdar, and an old merry Limboo with a long white beard, as our guides. The ascent was very steep, and the path had to be cleared the whole way, not having been used for three years; the principal underwood was ferns, polygona and a plant whose leaves are eaten as a spinach by the Lepchas. At 9 we reached a spot in the forest where stood the remains of an old guard-house built by our Sirdar's father, for the purpose of watching the movements of the Goorkas. From this spot, the greater part of the valley of the Kullait is visible: as we stood to take breath, the merry old Limboo, who was armed with a bow and quiver full of arrows and a very long and handsome knife, presented me with a pinch of snuff deliciously scented with pounded cloves, and contained in a neat horn mull. At 9.30 we entered a fine open forest of noble birch trees, the ground was free from underwood and nearly level. At the foot of many of the trees we saw the marks of wild hogs, deer, bears and wild dogs; green pigeons (koklah) we heard cooing overhead in the trees, and high over a neighbouring mountain a black eagle was seen soaring, and beneath him numerous swallows were flitting to and fro. In this forest we passed the remains of a hut in which Dr. Hooker had put up for the night in 1849, and close to which is another stone breastwork thrown right across the road. The denseness of the foliage of these forests, may be imagined from the fact that although a fine clear sun was shining overhead, not a ray could reach the ground along which we were travelling.

Our road now lay along the banks of the Nyu, a feeder of the Kullait, which rises at the Tumbook Pass, a foaming hill torrent about fifty feet broad with a cataract or miniature waterfall every twenty paces; the earth literally shook beneath the weight of the falling water.

Crossed the Tiksee at its junction with the Nyu, fording it with much difficulty from the fearful rapidity and strength of the descending water. The method of crossing these rapid streams, is to

send some of the steadiest and strongest men into the stream, who by the aid of poles manage to steady themselves and form a line completely across the stream with their faces towards the source ; in front of this living barricade the weaker men, those heavily laden and travellers are passed safely over. At 12.15 P. M. crossed in a similar manner the Sikna ; also at its junction with the Nyu, and at 12.45 P. M. crossed over to the left bank of the Nyu by a fallen tree.

Halted here for half an hour ; the Barometer gave an elevation of 8,321 feet, Ther. 62° in the shade.

The rocks in the bed of the Nyu were almost entirely composed of gneiss of great beauty and fineness, consisting of white quartz, white, pink, green and rose felspar ; golden, silvery and black mica ; garnets, and in one specimen some beautiful actinolite of a pale green colour. At 4 P. M. we entered the region of Rhododendrons, associated with which I noticed tea trees in blossom, maple, *Buccinum hypericum* in full blossom, *Hydrangea*, *Daphne* or paper-tree, numerous flowering shrubs and an underwood of the cheem bamboo of whose roasted tops, our Lepchas gave us a delicious feast in the evening. We pitched our tents in the Rhododendron forest on a small piece of level land named Tumbok, from whence the name of the Pass a few thousand feet above us. Our elevation was 9,660 feet, Ther. 67°, we have ascended 3,160 feet since the morning, leaving our tormentors, the leeches, at 7,000 feet. Few people who have not travelled in the forests of Sikkim can imagine the perfect repose we enjoyed when we got beyond the region of leeches ; the incessant watching for these tormentors, the impossibility of standing still, or of even walking slowly when amongst them, is fatiguing in the extreme ; all pleasure is destroyed ; beautiful scenery, plants, flowers all are disregarded, in order to prevent a cluster of these loathsome creatures clinging round your ancles. Watching their movements, brushing them off, the continued sprinkling of dry snuff over the stockings, which is washed off again at every stream, is more than enough for the undivided attention of any one.

By observation I have learnt to save myself many hundreds of bites, but, I am sorry to say, at the expense of those with me ; it is *never to walk behind any one*, but to lead the line, which always travels in Indian file. Immediately a footstep has touched the path

the leeches are roused and they spring up from under every leaf, from under every stone, and after two or more human beings have passed, the leeches are seen hurrying towards the path from the neighbouring bushes as far as eight and ten feet distant. When they reach the foot path they stand up perfectly rigid and quite ready to grasp the first foot that falls near them. A stranger would mistake the rigid little black things in the path for twigs or small pieces of wood. The person leading the line seldom gets bitten, the animals not being roused. During heavy rain, frost or bright sunshine the leeches do not appear; a cloudy or a moderately showery day is their liveliest time.

During the march, our guide took us off the road up a very steep bank to inspect a collection of wild bee-hives. After much scrambling and by the assistance of hooked sticks that were hooked on to the roots of the trees overhead, we managed to reach a narrow ledge with a deep valley in front of us. Immediately on our left and separated from us by a deep chasm, was a perpendicular wall of rock, over which a fine waterfall was pouring its full stream; almost within the reach of the water was a cave formed by an overhanging rock, from the roof of which depended twenty flat and black looking combs, three feet in length, covered with innumerable bees busy manufacturing their honey, while thousands were on the wing going and coming. The sight of these insects, only a few feet removed from where we stood, made me shudder; as it painfully brought to my mind a mad race, I was once made to run for miles down hill after having inadvertently disturbed a nest of these pugnacious little creatures. Besides being covered both on the head and hands with wounds, I had upon that occasion twenty-four stings removed from merely round my eyes. I therefore hastily made a sketch of the curious group, and descended from the ledge as fast as possible. These bee-hives are the property of the Sikkim Rajah; the wax is taken once a year by smoking the bees out, and yields him a revenue of ninety rupees per annum. The honey is eaten by the wax collector or thrown away.

8th August, 1852.—An hour and a half of sharp climbing carried us to the summit of Singaleelah\* where the Tumbok Pass leads

\* Means "Birch tree."

from Sikkim into Nepal. Barometer gave an elevation of 10,792 feet, Thermometer 64°.

On our way up we were shown two rocks between which the narrow footpath runs; and where our guide informed us that a stout Nepalese Soubah, who was travelling in this direction, was unable, without great manœuvring, to force his portly personage, much to the merriment of his followers and of Cheeoong Lethoo Sirdar, who related the story, as we halted for breath, with great gusto.

At 10,000 feet we fell in with the pale-coloured leech that inhabits this elevation, but, as they are scarce and sluggish, we paid little heed to them.

The Tumbok Pass is a depression in the Singaleelah range flanked on either side by high mountains, that to the south "Melido" or "Singaleelah" is four miles distant and rises to 12,329 W. feet;\* that to the north, distant two miles, is nameless and is about 12,000 feet in height. The immediate summit of the Pass is destitute of trees, the forest being for two or three hundred yards on each side of the footpath replaced by grassy banks and slopes covered with a bright assemblage of purple geraniums, white roses, primrose, everlasting chrysanthemum of a buff colour, lily of the valley, forget-me-not, thistle, numerous pretty wild flowers whose names I am unacquainted with, a large white Passion flower-looking creeper, hemlock, holly, raspberry, arums, campanula, two kinds of buccinum, ferns, lichens, mosses, grass, carex, fennel, dock, ranunculus, anemone, a shrub bearing an elegant cluster of red bells, and a delicate lily-of-the-valley-looking plant bearing a pink or white cluster of minute bells. The trees near at hand were arboreous rhododendron, maple, a mimosa-looking tree, bearing a cluster of brown berries (*Pyrus Americana*?) and several others; wild garlic grows in great abundance with a very beautiful purple flower; this herb was gathered in large quantities and consumed by the Lepchas.

A few feet below the summit of the Pass on the Nepal side, there is a deep black looking tarn surrounded by such deep forest that we could not conveniently get to it. The Sirdar and coolies all held

\* W. When applied to heights, indicates heights ascertained by Colonel Waugh, Surveyor General.



up their hands in the attitude of prayer when they saw the water, and remained in that position muttering to themselves for several minutes.

The Sirdar after showing us the cairn of stones erected by Captain C. T. G. Weston in 1822, (?) and having shown us the boundary between Nepal and Sikkim, took his leave and returned home, taking with him as presents a pair of scissors, a sharp scalpel, a penknife, a quantity of gunpowder and shot, and a bottle of brandy.

On the cairn of stones are three carved slabs of gneiss, the carvings representing Boodh in the attitude of meditation, and several other Hindoo gods and some very indistinct figures, none of which were visible until I had destroyed, with boiling water, a very tough and flat lichen, that had spread over the whole of the slabs.

On a slab of flinty slate, we engraved our names and date of visit.

The view looking into Nepal is extensive and very beautiful, the spurs of almost all the mountains up to 5000 feet being much more cleared and cultivated than those in Sikkim, bespeaking a denser population. The grandeur of the view, looking back the way we had come or to the east, can hardly be described in words. The eastern snowy range was out in all its glory; there was not a cloud to obscure a single peak. Gipmochee 14,509 W. was bare of snow; Cholah 17,319 W. was covered with snow for about 1000 feet; further north all was one wintery scene of snow, and the lofty Chumalari 28,929 W. distant 80 miles and far in Thibet, towered over all the peaks in advance of him. I have given a slight sketch of this mountain upon the accompanying map, as it appears from the Tumbok Pass. To the north, nothing was visible but the sharply pointed and snowy peak, Nursing 19,139 W. distant 23 miles and covered with perpetual snow, the higher crest of Singaleelah shutting out our view to the north.

The valley of the Kullait from its great depth appeared bathed in a cobalt tinge; Hee, Tendong and many other fine mountains seen from Darjeeling were now seen in flank by us; and on our right a fine waterfall, the source of the Nyu, was dashing down the fir clad Melida mountain which is 12,829 feet in height.

Our tent was pitched upon a bed of geraniums in full flower, thousands of whose pretty blossoms were trodden under foot. Gad-

flies of a large size were very abundant, but they gave us no trouble beyond an occasional bite.

As we had had only a very short march and intending to remain all day on the Pass, the Lepchas commenced playing hop-step and a jump; running races, jumping distances and playing all sorts of tricks, like so many good-natured school-boys; whilst the Nepalese Hindoo coolies shrunk away to sleep under the trees.

The Lepcha is a most desirable companion in travelling, neither heat nor rain nor cold, nor any thing else appears to ruffle his even temper. I have travelled with them in the height of the rains when for fifteen days they never had a dry stitch of clothes on their backs, and yet no word of murmur was ever heard from their lips. They travelled the whole of these days through drenching rain, carrying heavy burdens; and at night often in vain endeavouring to dry their clothes, their legs streaming with blood, they would without a murmur, but with much laughing and joking, lie down on the wet ground under a cotton covering, stretched upon two poles, and sleep till the morning.

During the night I heard the hooting of owls; bats and shrews were also heard. I procured a very handsome speckled crow with a white and black tail; small birds were very scarce.

9th August, 1852.—Direction north along the crest of Singaleeah. The morning was most lovely, the air pure and transparent and the temperature delicious; although this trip has been undertaken in the height of the rains, we have as yet only had a few showers since leaving Darjeeling.

The same beautiful view that we had sat for hours enjoying the evening before was still before us; Ohumalari towering over every thing. This singular, isolated mountain was recognized this morning by several of my Lepchas who had been to Phari at its base.

As we proceeded we noticed a bank of snow-white clouds twenty miles in length and twelve thousand feet in height, impelled by the full force of the most southwest monsoon rolling up the eastern flank of the eastern snowy range, and as the clouds poured over the western side upon the lower hills of Sikkim, it had the exact appearance of an extensive cataract pouring over the mountains into the deep valley of the Teesta river; a cataract twenty miles long and 12,000 feet in height; it was a glorious sight.

As we ascended the grassy knoll that overhung our tents, the snowy range of Nepal was revealed to our sight, with all its attendant beauties of deep valleys and blue mountains for a foreground. For three and a half hours we had to cut our way through a forest of rhododendrons, red currant trees in full fruit though not ripe, maple, juniper, birch, white rose, cherry trees in full fruit, with an underwood of *Aconitum palmatum* or bikh, the root of which is a deadly poison, and of which our Lepchas dug up a quantity; a purple-flowered garlic, many beautiful flowers, the forget-me-not, the poppy-like garnet-coloured and yellow *mecanopsis*, and a great variety of wild flowers. The roots of this deadly *aconitum* are collected by the hill-men (Puharias) I believe in the spring, and exported to Calcutta and to other places, where it sells for one rupee the seer. Its uses were laughingly described to me by my merry Lepcha guide, as "useful to sportsmen for destroying elephants and tigers, useful to the rich for putting troublesome relations out of the way, and useful to jealous husbands for the purpose of destroying faithless wives."

Its poisonous power is so great that a Lepcha died at Darjeeling, some months ago, who when crossing the hot valleys had allowed the root which was carried across his shoulder in an open cane-basket, to rub against his moist naked body; during this time he imbibed through the pores of the skin sufficient of the poisonous principle to cause his death.

At 10 A. M. we arrived at a grassy spot, where the remains of a Gurung's house stood. The Gurungs are a pastoral race of Hindus residing in Nepal, who, during the summer, drive up to the base of the snows large flocks of sheep, where they depasture the grass found as high as 14,000 feet, and gradually retreat to lower elevations as the summer draws to a close.

From this spot we found a good footpath leading along the crest of Singaleelah; we had passed over five high peaks and now stood upon a very high one with immense blocks of moss-capped gneiss protruding through the soil; which latter was a carpet of beautiful flowers, the pretty *Veronica* predominating. Halted an hour to breakfast and to rest and at 11 A. M. commenced the ascent of Sugho mountain, passing through a forest of small rhododendrons

of many kinds, only one of which was in blossom, bearing a small purple flower three quarters of an inch across, and with a leaf only one quarter of an inch in length, I also saw a quantity of a bright yellow heartsease. Reached the summit of Sughoo at noon, from whence we commenced descending, and halted for the night under some fine large cherry trees at an elevation of 11,458 feet, Ther. 65°, 1 P. M. Sughoo is the culminant point of the great Pemionchi spur that ends in the great Rungeet, and which spur is sixteen miles in length from west to east. Its western extremity being 1,200 feet above the sea, and its eastern extremity about 2,000 only.

We were now sixteen miles from the perpetual snow line, but could see nothing, as we were enveloped in a thick cloud.

(To be continued.)

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*Note on the Ruins at Maunkyala,—by Major JAMES ABBOTT,  
Boundary Commissioner, Punjab.*

My tent being pitched at the tope of Maunkyala on 7th April last, I set out to examine more particularly the village and its neighbourhood. For although I had previously visited the spot more than once, I could learn of the villagers nothing confirmatory of the report, which places several smaller topes in that neighbourhood, and which would make it the site of a city that has since disappeared. During the morning several zemindars came to visit me. They, as usual, denied the existence of any other topes than the principal; but allowed that near the village of Maunkyala, building stones occurred in great number at the depth of from three to seven feet. My first object was to visit one of the diggings for such stones. It occurred on the south-west of the village, distant from it about one hundred and fifty yards. The depth at which the stones occurred was about five feet, the super-incumbent soil being a sandy clay, manured from the village. I was informed that the same occurs on digging at any portion of the village glacis; by which I mean that land which is manured from the village.

The village, as at present it exists, contains about eighty houses closely congregated together, and built entirely of the debris of the

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*Notes upon a Tour in the Sikkim Himalayah Mountains, undertaken for the purpose of ascertaining the Geological Formation of Kunchinjinga and of the perpetually snow-covered peaks in its vicinity.*  
—By Captain WALTER STANHOPE SHERWILL, Revenue Surveyor.

(Concluded from page 570.)

August 10th, 1852.—Direction north, still along the crest of Singaleelah; started at 7 A. M. on a beautiful sunny morning, the weather delicious and the air very pure, of which I took advantage, and obtained the following bearings; Tassiding Goompa east, Darjeeling south-east, the houses being quite distinct and visible, and only twenty-four miles distant by direct distance, but these twenty-four miles have cost us seven long and laborious marches, or at the very lowest computation, one hundred and forty-five miles of windings and twistings of ascents and descents. Tendong\* mountain E. 11° S. The survey Flag Staff on the Tonglo† mountain S. 11° E. Sundhukphoo mountain S. 11° W.

To the south-east the Teesta river was distinctly visible in the plains south of the Morung Forest. To the north Kunchinjinga towered over the high peaks of Singaleelah.

Looking to the west, the snowy range of Nepal, grander in its proportions, if any thing, than the Darjeeling range, Kunchinjinga always excepted, and the cultivated valleys of Nepal and some very remarkable rocky and sterile peaks standing between the perpetual snows and the upper limits of vegetation, presented us with a view

\* Ten "permanent," Dong "resting-place." † Tonglo "Cotton tree."

that very speedily made us forget all the labour we had gone through the previous week. As we proceeded we looked down into the deep blue valley of the Bungbi, which at this point is about 10,000 feet deep. The eye, in looking down these stupendous valleys, wanders from the tough arctic lichen and snow rhododendron at the observer's feet over fine forests of fir trees, rhododendron, birch, oak, on the slopes of the mountains, down to the tropical trees and plants, plantains, bamboos and gigantic grasses in the valleys. The scenery was now rapidly changing; instead of the suffocating heat of the valleys with their abundant tropical vegetation, we were breathing a bracing pure air, with the Thermometer standing at  $41^{\circ}$ ; the trees were small; of soil there was but a very scanty sprinkling under our feet, and looking either to the east or the west a wild confused snowy scene, treeless mountains, rocky peaks destitute of vegetation, bare precipices and deep—profoundly deep—valleys had replaced our hitherto confined view.

At 8-30 we arrived at a foot path descending towards Nepal; at this spot were the remains of a Gurung's hut and a small shallow pool of water measuring 150 by 30 feet.

At this spot I measured a cherry tree and ascertained it to be twelve feet in circumference. Plants and trees met with this morning were rhododendrons of many kinds, from the rhododendron with a leaf fourteen inches in length with a deep ferruginous tinge on the under side of the leaf to the small aromatic rhododendron with a leaf only  $\frac{1}{4}$ th of an inch in length, bearing a purple flower; yellow hearts-ease, rose, hypericum of several kinds, one thorny with a yellow flower, thistle, hemlock, yellow-flowered potentilla, dock garlic with a pink flower, and many others.

The sheep track to-day was almost entirely over bare gneiss rock, in which were fine crystals of schorl.

During this march we passed several caves in the gneiss called by the Lepchas, L'haps, into which they, with solemn faces assured us, their Lamas can with a lighted candle in hand, travel subterraneously from one mountain to another—no one besides the Lamas possessing this faculty.

At 11 A. M. we came upon the tracks of the Sippiyook or wild sheep, an enormous animal judging by his foot-print, at a spot where

the ridge of Singaleelah is split into two ridges, the whole being composed of precipices and naked masses of gneiss rock affording in its crevices a place for a sweetly scented rhododendron, a pretty white primula and a large ox-eye looking compositæ flower growing upon a long stem. For half an hour after leaving this curious spot, our track lay under a vast precipice of gneiss from which the earthquakes, which are so frequent in these mountains, have hurled down large masses of rock, and in this dangerous spot the Gurungs have ventured to erect their huts even under the most dangerous and incoherent rocks. The whole face of the precipice is split into cuboidal masses, piled one upon the other and which threaten hourly descent. In one of the detached cubes of gneiss I noticed a band of greenstone six inches in width extending for sixty feet along the front of the rock. Under this insecure-looking rock were the remains of a Gurung encampment. This mountain is the Dumdongla of Hooker; a footpath leading from Sikkim towards Nepal, here crosses Singaleelah and is called the Dumdongla pass.

At 2 P. M. we again regained the crest of Singaleelah, where we saw an old spring set for the capture of pheasants; a few minutes afterwards a covey rose close to us, from which I managed to bag a brace; of these welcome birds our Lepchas made us a delicious curry in the evening, the first hot meal we had had for nine days.

Encamped for the night at the southern foot of Kanglanamo mountain at an elevation of 12,317 feet in a dense fog which during the night condensed into heavy rain. At the foot of this mountain the Lepchas collected a quantity of a white lichen which grows in long white filaments; they called it, Búkh; it is used as incense to burn before their gods.

*August 11th, 1852.*—A most lovely clear morning, the perpetual snow is only eight miles ahead of us; the air very cold, Thermometer standing at 41° at sunrise; half an hour's walking brought us at 7.45 A. M. to the base of the conical-shaped Kanglanamo, and three quarters of an hour more and we stood upon the summit at about 13,000 feet elevation towering over every peak to the south. At the base of the mountain there are quantities of a dark and glossy hornblende slate mixed with the gneiss apparently split and fractured by the snow and frost of winter. In Hooker's Map of

Sikkim, Kanglanamo is made to appear covered with perpetual snow; this is a mistake, as I found the following plants on its summit and no snow; yellow and purple aromatic rhododendrons and another kind, rose, pyrus americana, and many small flowers.

The stratification of the gneiss at this elevation is perfectly horizontal, and in no way contorted, as it is at 7,000 feet and lower—associated with the gneiss on Kanglanamo is much hornblende and a black micaceous slate, green felspar, veins of snow-white quartz and masses of black mica.

The view from the summit of Kanglanamo is very extensive, embracing as it does nearly two hundred miles of the Nepal snowy range, and showing the junction of Kunchinjinga with the Nepal range: a sharp peak bearing a little to the north of west, distant 200 miles, that has been visible for two days, but has barely altered its bearing I imagine to be Gosainthan mountain, directly north of Catmandu; so that from Gosainthan mountain on the west round by the Nepal snowy range passing round by Kunchinjinga, Pundeem, the eastern snowy range down southward to Cholah—we had a glorious panorama of three hundred miles of perpetual snow, peak towering above peak, all approach to which appears guarded by steep, precipitous and bare rocky mountains. Looking to the south the plains of Bengal appear but a very few miles distant, although sixty miles removed, and on a very clear day the Rajmuhul Hills south of the Ganges distant 165 miles must be visible, as they are from lower elevations. Chumulari could not be seen, though I searched well for him—probably haze or clouds shut him out from our view. On the north-west we could see the Wallanchun and Kanglachema passes into Tibet, forty miles distant. Over these passes salt is brought from the salt lakes in Tibet. The salt is laden first upon men's backs, who with much difficulty convey it over a dangerous portion of the pass, it is then transferred to the backs of sheep who convey it over the narrow footpaths of the great elevations; from the sheep it is transferred to yaks, from yaks to bullocks and eventually, when nearing the plains, it is transferred to carts.

There is a strange prophecy amongst the Bhotias concerning these salt lakes, it is as follows: In the salt lake region there is one large lake from which no salt has hitherto been obtained by reason



of the great quantity of water in the lake; this lake it is prophesied will in time dry up as the others have done, and that when salt can be procured from the lake, it will be carried away over the passes by a white nation who will come from the south, and who will seize upon the lakes as their own.

The lake is said to have commenced drying up lately, and it is expected that salt will be obtainable from it in a few years.

One European and only one (Dr. Hooker) has visited these passes.

One mountain in the Nepal range is a most remarkable object, both for its curious shape and for its immense height, its name none of my party knew, nor have I yet succeeded in obtaining the name. The peak is a hollow crater-like mountain probably 27,000 feet in height with a long table-mountain attached to it, both covered with glaciers. To the west of this great mountain are five distinct peaks separating the large mountain from a hollow shell-like and perpendicular mountain about 26,000 feet in height. The morning sun shining upon this mass of snow, gave it the appearance of a gigantic pearl-shell set upon its edge, the snow on the surface being of a bright pink colour. From the peculiar hollow curved and perpendicular nature of this mountain, it resembles the crater of a Volcano broken down on one side; beneath this range of snowy mountains there is a range of bare mountains of a deep red colour about 19,000 feet in height, broken into thousands of ravines, and totally destitute of vegetation.

At 9 A. M. we got a glimpse of an inhabited Gurung's hut far away upon a lofty mountain in Nepal, the flocks of white sheep looking like small patches upon the mountain side.

At a small trickle of water where we halted to breakfast, long slender and entirely white worms were abundant in the water; they resembled long pieces of white thread. The Lepchas seemed to hold them in great dread, and would on no account touch them. The crest of Singaleelah at this spot is a precipitous jagged and rocky mountain which necessitated us to descend several hundred feet into the Nepal territory. At 11 A. M. the path led us through a swampy tract of country with several pools of good water, numerous streams flowing to the westward over slaty gneiss. On a patch of luxuriant grass near the pools of water, I turned out from under a

slab of gneiss, one of those curious little animals the *Neodon sikkimensis* whose habits and proportions resemble that of the *Arvicola*, but the tail is comparatively short; length from snout to the root of the tail five inches—of the tail  $1\frac{1}{2}$  inch. This genus was discovered by Mr. B. H. Hodgson in Upper India. From amongst the rhododendron bushes, we put up a large number of the beautiful scarlet-legged and three-spurred pheasants, of which I only bagged one; in the marshy ground great quantities of a beautiful primrose were in full blossom—also chrysanthemum, a blue dock, dwarf rhododendrons, grass in abundance, many beautiful flowers and potentilla; as we were admiring these beauties, we heard the deep barking of the Gurung's dogs betokening the vicinity to one of their large flocks. A Nepalese of our party was sent on ahead to have the fierce dogs called off, or the better part of our party would have been torn to pieces by these ferocious brutes. We soon came up to the Gurungs seven in number, fine athletic looking Hindus with very scant clothing. They stood in the midst of their flock of three hundred sheep surrounded by their fine-looking dogs which resemble the Newfoundland breed. These shepherds had pitched their one long mat-hut twenty feet in length upon a grassy knoll under the shadow of some rhododendron trees. They called the country *Is-sunghée*, and said that they were moving downwards, having consumed all the grass nearer the snows. Their sheep, which are of a very large breed, were in excellent condition, and some of the wethers of a size unknown in England; they asked eight rupees for a large wether, from whose carcass twenty men might have been well fed. In the hut we found the Sirdar or chief, *Pahulmun* by name, of *Chynepoor* in Nepal; he told me that he had five brothers each owning a flock of sheep, and that they were all upon the neighbouring mountains. The wool from these sheep is converted into very good blankets, several of which I saw in the tent—the Gurungs appeared to be well fed, their food consisting of mutton and Indian corn, heaps of the latter were being weighed out in the tent prior to being cooked for dinner. The men had an abundance of good brass cooking pots and blankets, and the Sirdar was armed with a handsome silver-mounted kookree or Nepal knife:—snow falls here early in October—elevation about 12,000 feet.

Not being able to come to any terms about the purchase of some sheep, we left the Gurung's hut, and descended a few hundred feet under the guidance of one of the Gurungs to a fir forest, from whence we again ascended and encamped at one P. M. upon a grassy mountain covered with sheep tracks and overhanging the deep valley of the Yung-ya river. We were above the line of firs at 12,109 feet, Thermometer 56°, my breathing was very much affected, and it was with great difficulty I managed the last ascent, and with greater difficulty I managed to bag a beautiful scarlet-legged pheasant. Our Lepchas, who are the most timid of mortals, appeared rather frightened at being in Nepal, especially as the Gurung Sirdar had been questioning them as to the meaning of our party coming into Nepal. He was informed that the rocky nature of the summit of Singaleelah was the reason we were in the Nepal territory, and that had it been possible to have avoided crossing the Sikkim boundary, we would not have done so. The Sirdar said, it was all very well talking, but he knew very well that we had come to examine the boundary, and that he would report our party to the Nepal Durbar, which we suppose he did, as we saw a messenger depart that very afternoon towards the west.

Towards the evening the Gurungs brought some dead sheep for sale that had been killed on account of sickness produced by eating the aconitum. The Gurungs watch the animal that has partaken of this deadly plant, and if they find there is no chance of its living, its throat is cut and the carcass eaten. The wool is first cut off close and the stumps singed until the animal appears dressed in parchment. Strange to say the Lepchas, who will eat snakes, frogs and other extraordinary food, would not partake of these diseased sheep, the two carcasses therefore that I purchased were made over to the Nepalese Hindoo coolies, four in number, who consumed the two sheep in two days.

Across a deep valley immediately opposite or west of our small encampment, was an immense cascade falling by a succession of leaps from upwards of 3,000 feet down into the valley of the Yung-ya river. To our east the ragged and serrated crest of Singaleelah rose some thousand feet above us, the horizontal masses of gneiss being destitute of any vegetation. About 2,000 feet above our camp,

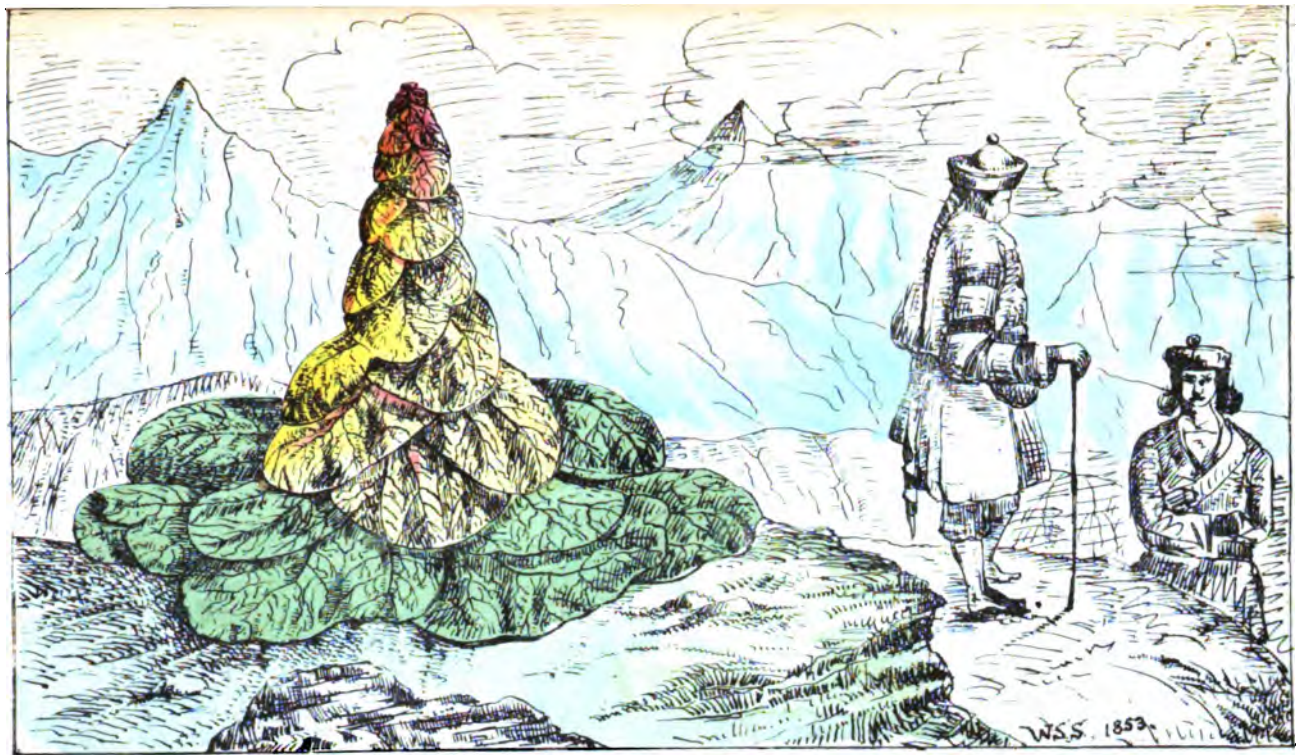
upon the Singaleelah slopes I discerned several white objects like men; I sent off a Lepcha for one, and it turned out to be a mountain rhubarb plant, one of the handsomest botanical objects I ever remember to have seen. It consists of a conical assemblage of buff-coloured leaves of great beauty elegantly crimped, and edged with pink; the whole growing upon a substantial stem, upon which and hidden by the graceful leaves are bundles of flowers and triangular seeds somewhat resembling mignonette—the plant measures forty-five inches in diameter at the base of the cone, and is about the same height. The Lepchas call it "*Chookoor Dong*;" the stem is eaten by the Hill people, it is extremely acid and astringent.

*August 12th, 1852.* Woodcocks were heard overhead at day-break. Further south upon the summit of Singaleelah there are a considerable number of these birds.

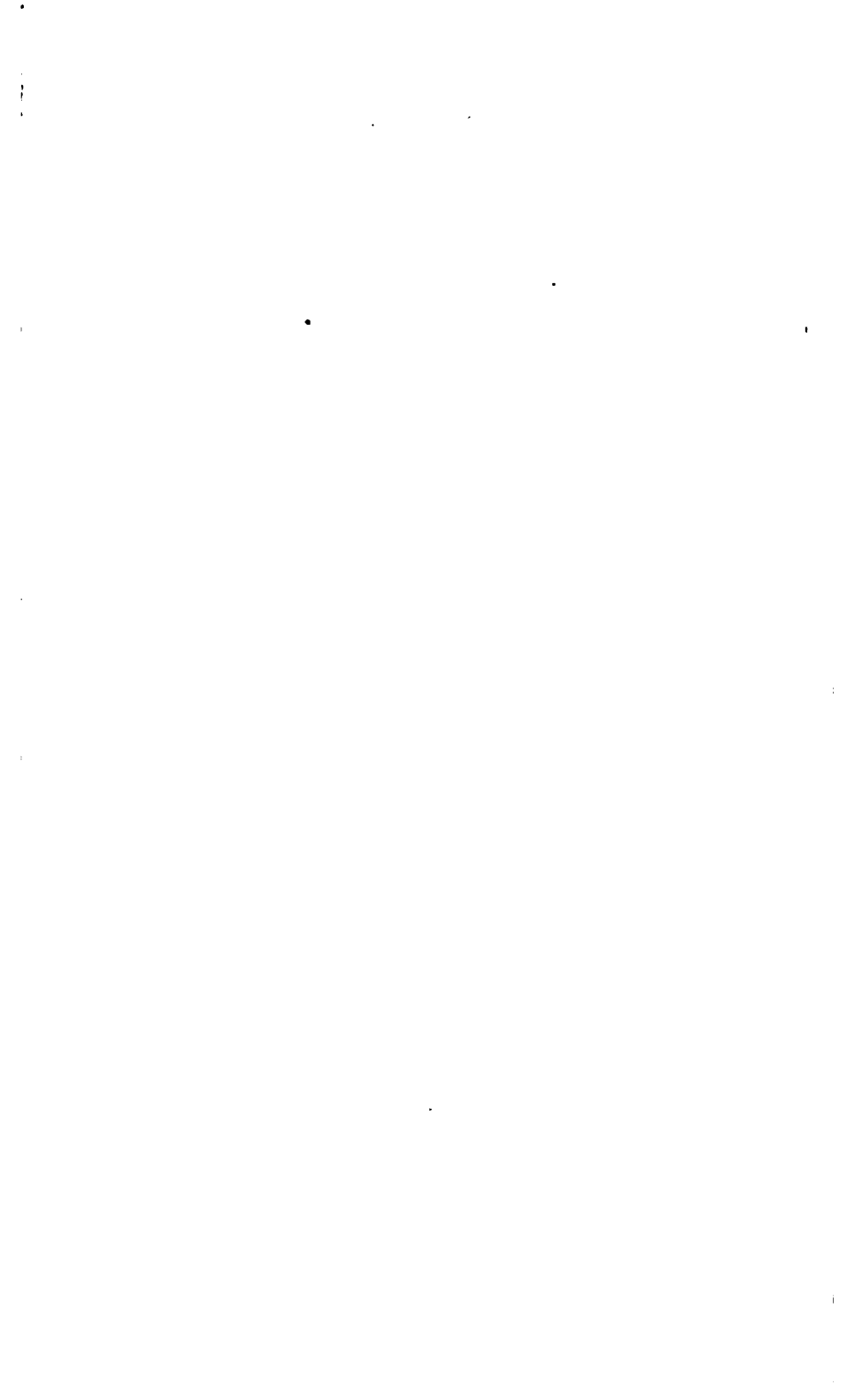
Started at 6 A. M. Thermometer 41°, our road was up a narrow grassy gorge in the mountain; some of the snowy peaks were seen peering over the tail of Kubra on our left, about five miles distant—a few hundred feet rise, brought us to the top of the Kanglanamo pass, a gap in the crest of Singaleelah, affording during the summer months a means of communication between Sikkim and Nepal. This is the pass, so I have been informed, by which Dr. Hooker endeavoured to force his way from Nepal to Sikkim, but was prevented by the deep snow. The pass I calculate to be 12,600 feet, but I did not take the height.

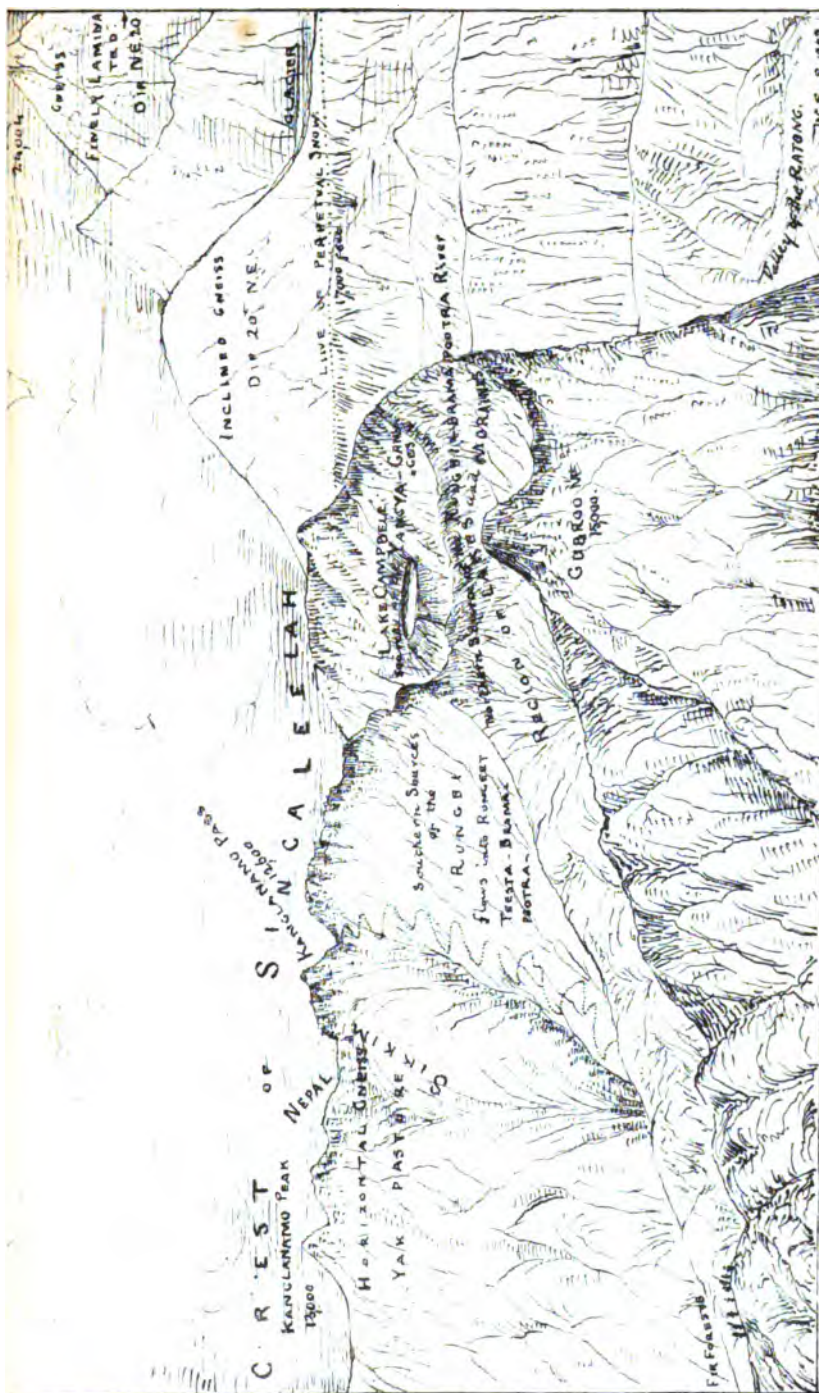
The rocks on the crest of Singaleelah at the pass are of horizontal gneiss, castellated and shattered by the frost, on the right hand side of the pass the rock has been worn into the very image of a man sitting with his hands upon his knees, dressed in a robe and crowned with a Scotch cap with a conspicuous tuft on its top. The whole figure is about fourteen feet in height; the figure by all parties was declared to be the Rajah of Sikkim guarding his boundary.

From the pass, the weather being very fine and the air clear, we had an extensive view of the plains, the Teesta river, the eastern snowy range and of Darjeeling, which latter mountain is a fine object from whatever side it is observed. Darjeeling bore south 22° east, Tendong mountain south-east by east; we were considerably to the north of several of the snowy peaks—we now left the footpath which

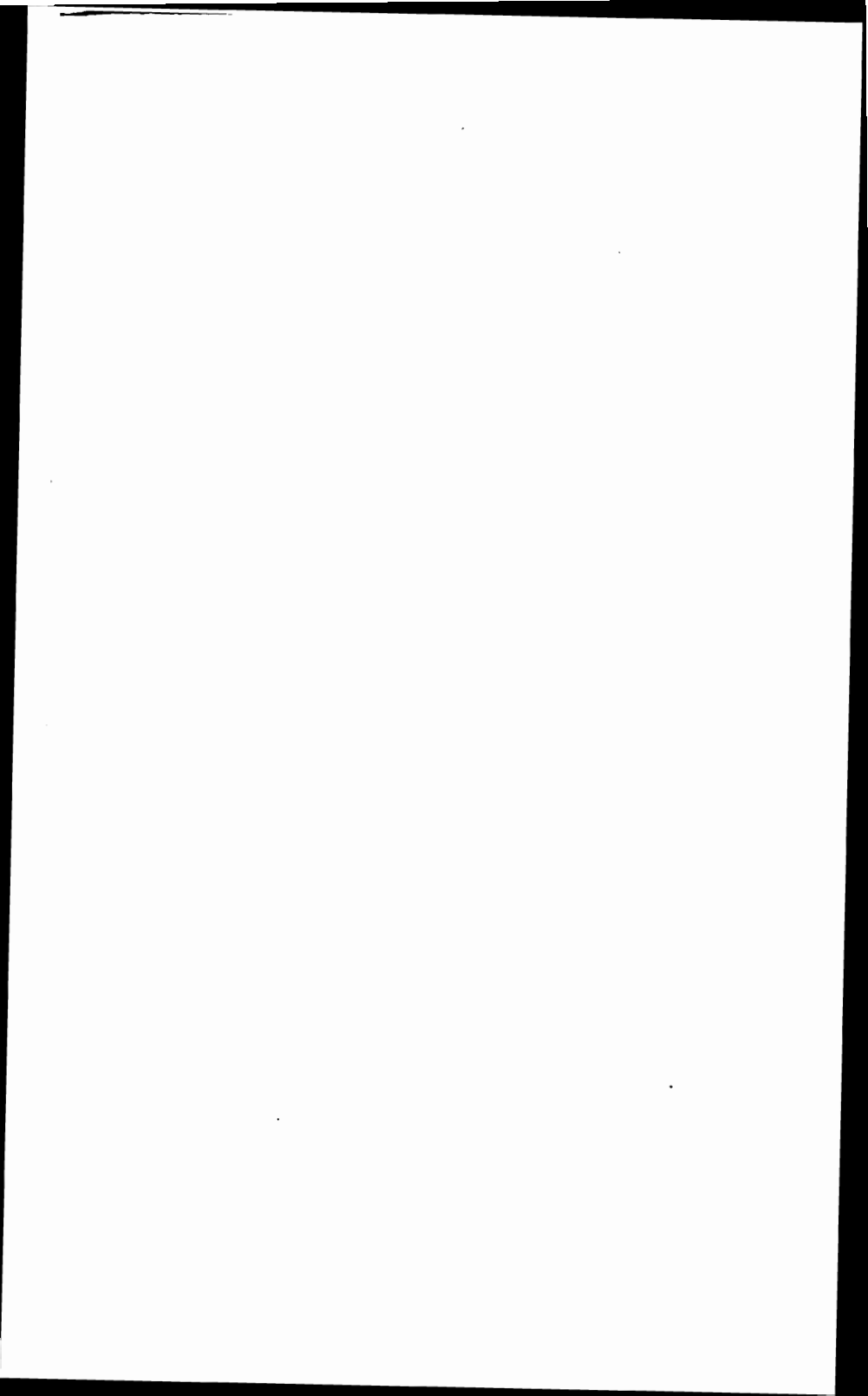


The 'CHOOKOR DONG' or MOUNTAIN RHUBARB, found at 14,000 Feet Elevation.





A DISTORTED SKETCH showing the SUDDEN TERMINATION of the GREAT SINGALEELAH SPUR at foot of the PERPETUAL SNOW.





descends in an easterly direction from the pass, crosses the Rungbi to Yangpoong, to scramble in a northerly direction over naked rocks under the eastern crest of Singaleelah; these rocks have been hurled from the castellated crest by the severe frosts of winter; the stratification of the gneiss being perfectly horizontal, and the individual strat exceeding minute; the Lepchas named the blocks "Lama's books" which indeed they resemble—one of these blocks fifteen feet in height and thirty in length, was traversed by a band of white quartz a foot thick, and being of a less perishable nature than the gneiss, it stood out in bold relief at each end of the block. A thousand feet below us, we saw some pools of water standing in the midst of fine grass pasture land, the property of the Sikkim Rajah, and where his herds of yaks graze in the month of September; several stone huts were scattered about the pasture, where the yak herds shelter themselves during the night. At the present the yaks were five miles to the north at Jongri, immediately under the snow, or three days' journey from this. One mile of this rough and slippery scrambling brought us again to the crest of Singaleelah, where, to my amazement I discovered that the Singaleelah range breaks off suddenly, and that I stood upon the edge of a steep descent several thousand feet deep. Singaleelah at this spot sweeps round to the east by a great bend of one mile, and terminates in a spur that points to the south, separating the two main sources of the Rungbi river. From nearly the centre of the great curve, a narrow wall-like ledge much below the crest of Singaleelah runs to the north, and forms the only apparent connection of Singaleelah with the snows. Looking down into the deep valleys to the right and to the left, whose waters are separated by the narrow ledge above-mentioned, the eye rests upon a curious scene; the valleys, destitute of any vegetation and filled with pools of water, have been scoured from end to end by the action of either heavy masses of moving snow or by glaciers, the loose rocks are piled up in confusion, in some places, to the height of several hundred feet. The whole scene is one of ruin and desolation—not a shrub or a plant is seen, nothing but a region of loosely piled up gneiss rocks. From this spot looking to the north-west or across the deep valley at our feet, a fine lake about a mile in length is seen perched up in a strange position upon

a high level plateau in the mountain. The water, partaking of the colour of the naked rocks that rose behind it for several thousand feet, was almost black; its shores were rocky, dark and gloomy.

From this lake the Yungya, a feeder of the Tambur river in Nepal, takes its rise, and is seen leaving the lake by a fine cascade of 3,000 feet fall. As this lake had never been seen by any European, I have named it "*Lake Campbell*," after my esteemed friend Dr. A. Campbell at Darjeeling.

From this strange spot we descended to the east of the narrow ledge and found ourselves in a deep hollow, full of pools of water, and the whole surface of the valley one large moraine, the rocks of which have been driven about and piled up in wild confusion. Temperature of air at 10 A. M. was 58° of water 52°.

I was enabled this day to make some slight additions to Dr. Hooker's valuable Map of Sikkim—especially as this immediate spot was not visited by that intelligent traveller.

Encamped at 1 P. M. upon moss and lichen covered rocks at an elevation of 14,229 feet—we had been scrambling over these loose gneiss rocks for hours, and as we had splitting headaches, we were delighted to halt, although the poor Lepchas had no wood to cook their food. The rarefaction of the air is beginning to tell upon us; bleeding at the nose, a tightness across the back of the head, is what I most suffer from. The exertion of writing, making a false step amongst the rocks, of addressing any one, stooping to tie the shoe, or performing any act requiring but moderate exertion, is productive of the most distressing symptoms of suffocation, sharp sudden pains in the chest, extreme beating of the heart, and violent action of the lungs, which being fed with a thin and rarefied air, have to work hard to keep the blood purified. I have been so prostrated this day as to be fit for nothing, which is the more strange as our elevation is not a very great one; but from all I can gather from travellers in the Himalayah, I suspect that the sufferings of travellers commencing as they do from this elevation, are more acute and more noticed as being something new and at first very alarming. One of our Nepal coolies is in great agony, moaning in a most piteous manner. During the afternoon, rain and fog shut us out from all the world. In the sheltered spots I found dwarf rhododendron, a few primroses

a butter-cup-like plant, the conical rhubarb, two andromeda, one with a pretty white bell the very image of a true heath—and juniper, a few sticks of which latter tree were brought up from a distance by the Lepchas, and with them water was boiled with some difficulty at 189° 50, or 14,229 feet.

A pheasant got up from amongst the rocks, which I fired at and bagged; the concussion of the air was so intolerable and stunning, and so painful, that I was obliged to lie down for some hours before I got over it.

The fog clearing away we were enabled to see that we were in the midst of a scene of desolation and chaos, ragged rocks, black slate, moraines, land slips and steep cliffs were all that met our view *near* us, but to the south the plains and the intermediate ranges of mountains were all spread out before us. To the east of our encampment about one mile distant, we gradually saw the rounded mountain Gubroo, 15,000 feet, emerge from the clouds. To the north we could see nothing, as we were at some distance from the crest of a high ridge, that leaves the foot of Gubroo and sweeping round to the west, joins the high black mountains on which "*Lake Campbell*" is situated.

Somewhat to our astonishment we found our tent was only a few feet removed from a precipice 300 feet deep, had one of the furious blasts of wind that are common at this elevation descended from the snows, our tent would have been hurled over the precipice and received at the bottom in a deep pool of water a few hundred feet across. Thirty feet from the shore and at the depth of twenty feet I could see rocks around, whilst the water from its great depth was quite black.—A bright sun was shining overhead which would have enabled me to see the bottom perhaps at fifty feet, had the pool been so shallow. These pools during the winter are entirely frozen and covered with snow, one hundred feet deep or more, which is drifted from the heights above—when this large body of snow begins to melt in the spring and summer, the rocks lying under it are pushed along with the descending mass and are heaped and piled up as we saw them. These pools form the sources of the Rungbi river which, after a course of thirty-five miles through deep valleys, falls into the great Rungeet under Rinchinpoong.

August 13th, 1852. Leaving our tents, baggage and people at the encampment we ascended the loose rocky ridge to the north of us, the summit of which, 14,500 feet, we reached in half an hour; the sight that met our gaze from the top was a scene of grandeur I had never expected to see. The whole of the snowy mountains seen from Darjeeling were close to us, Kubra, 24,004 feet in height, appeared hanging over us although two and a half miles distant, but all progress northward was completely cut off, we were on the edge of a precipice many thousands of feet deep, at the bottom of which was a narrow valley running east and west with a handsome lake to the east, the water from which runs round the foot of Gubroo and falls into the Ratong. Across this valley a small ledge of rocks connects the semi-circular ridge of Gubroo with the foot of Kubra. Three similar chasms all running south-east, north-west, separated us from the perpetual snow on Kubra. The sides of the chasms are composed of a dark slaty rock, containing much hornblende, the sides being too precipitous to allow snow to rest upon them. The first and second ridges had no snow on them, the third had patches only of snow, the fourth was covered with perpetual snow, one and a half mile distant from us. These ridges are buttresses, descending from Kubra and terminate in the Ratong valley.

The Thermometer stood at  $34^{\circ}$ ; the air was quite clear and bracing, allowing us a free view of the plains, Darjeeling, Nepal, the eastern snowy range and of the giant peaks to the north of us. *No aid from a telescope was required to show me that the whole of the large snow-covered mountains, Kunchinjinga, Pundeem, Kubra and Junnoo are composed of a finely stratified rock to their very summits.* By the aid of a telescope, the stratification of Kunchinjinga was very distinct, both in the large naked spot, now only ten and a half miles distant, and mentioned in the first page of my diary as having been caused by the earthquake of May, as well as at the very summit which is not covered with snow, but with a pellicle of ice, snow only resting upon the ledges and peaks. The strata, which are very small and minute, dip to the north-east about  $20^{\circ}$ , all the large peaks presented the same appearance. The rocks of the Gubroo range are composed of a hard flinty parallel gneiss intermixed with much black or blue hornblende and micaceous slate, the gneiss everywhere splitting into very thin laminae as thin as roofing slates.

Immediately to the west of Gubroo, the rocks dip to the south-west at an angle of 30°.

The dip of the strata upon the Gubroo ridge being to the south-west, and the northern face of the ridge being nearly precipitous, a great flow of water takes place towards the south, the whole surface of the mountain is divided with numerous steppes, each steppe having pools of water resting upon them averaging from one hundred to four hundred yards broad—and many of them surrounded by steep walls of a fine slaty gneiss composed of hornblende, white quartz and felspar; from these pools there is a constant discharge of icy cold water which flowing away south form the Bungbi river.

From the crest of the Gubroo range, we could see a yak herd's encampment in the direction of Jongri, or north-east of where we stood, many thousand feet below us and separated by several deep valleys.

Kunchinjinga, 28,177\* feet above the sea was 10½ miles distant.

Pundeem, .....22,015\* ditto ditto 7 ditto.

Kubra, .....24,004\* ditto ditto 3 ditto.

Nursing, .....19,189\* ditto ditto 12 ditto.

Tucheam, ...14,000 (?) ditto ditto 27 ditto.

We were six miles north of Nursing; this peak from Darjeeling has the appearance of rather a blunt rounded mountain, but from our position it was an exceedingly sharp pointed peak, run into a very fine point. None of the numerous glaciers that abound at the foot of all the great peaks and in the valleys separating them, could be seen, being completely hidden by the sharp slaty ridges above mentioned.

From the nature of the mountains surrounding Kunchinjinga, I felt convinced that any nearer approach to the great peak would hide him altogether, I therefore determined upon returning. Sitting on the ground with a rock to support my back, I with much difficulty, from the pain I was suffering from the rarefaction of the air, took a sketch of the snowy range from the most northerly attained spot in our journey, and having given one more look round this grand and wintry scene, we turned our backs upon the snow and descended to our tents at which we arrived, very cold, at 7 A. M.

August being the month at which the snow is probably at its

\* Heights ascertained by Lt. Colonel Waugh, Surveyor General.

highest elevation, I was enabled by a series of bearings to lay down a correct outline upon Dr. Hooker's Map of the snow line in the height of summer, and which from careful observations I calculated to be about 17,000 feet; but some of the glaciers are far below this elevation, probably not higher than 12,500 feet. The great glacier at the foot of Kunchinjinga, visible from Darjeeling, is elevated about 16,000 feet.

At 8 A. M. we left our encampment and descended in a southerly direction over the loose rocks, crossing many running streams and pools of water. I particularly remarked, and that after repeated examinations, that none of these pools contained any living animal, either fish or animalculæ, nor had they any weeds, grass, nor indeed any organic matter in them. The only living things to be seen were two minute wrens hopping about the rocks. At 9 A. M. we reached a path, or rather a track marked out by the yak herdsmen by erecting large stones within sight of each other; upon a fall of snow occurring, these form their only guides through this wilderness of loose rocks; to us they were invaluable, as no one of our party had ever been where we were now threading our way, in the midst of a thick fog that obscured everything from our view. From the rocks we commenced ascending the ridge of which Gubroo forms the northern culminant point, and which separates the waters of the Ratong and Bungbi rivers. At 9.30 we reached the summit of the ridge, which to the east is precipitous, descending to the Ratong by a steep fall of about 8,000 feet. Looking back into the rocky basin we had left, and from which the fog had blown off, the view was very wild and interesting. Several landslips have taken place upon Singaleelah, uprooting large tracts of fir forest, some of which trees were seen with their roots in the air, their fine stems shivered and torn by the falling rocks.

We were much disappointed in not being able to see the view from the eastern face of the Gubroo range, as from our position, we should have been enabled to comprehend in one view all the glaciers lying at the foot of Kunchinjinga and Pundeem mountains, probably twelve in number, the nearest being five miles distant, as well as Jongri, situated upon one of the swelling buttresses of Kunchinjinga overhanging the right bank of the Ratong. Jongri

is a yak herd's summer-post, consisting of several stone houses at a probable elevation of 14,000 feet, and is the highest spot in this region where yaks are grazed during the summer months. From Darjeeling I was enabled during some very clear weather in October and by the aid of a glass, to fix the true position of Jongri. In Dr. Hooker's Map, Yangpoong is called Jongri. Perhaps the meaning of the name Jongri applies to both places, in which case Dr. Hooker's Map would merely represent an omission of the site Jongri and not a mistake. From these glaciers flow many streams, the united water of which forms the Ratong, a feeder of the great Rungeet. The eastern face of the Gubroo range is a handsome object in the view from Darjeeling, from whence it is seen as a bare, rocky, precipitous mountain. About 10 A. M. we reached a spot upon the almost bare rocks where there stands a yak herd's stone house composed of large slabs of gneiss rocks, some of the slabs being five feet in length. The house which is in a rather dilapidated condition, was supported by wooden posts, and was surrounded by a low stone wall;—we halted for breakfast;—in amongst the rocks, I noticed rhododendrons, blind nettles, rue, primrose, chrysanthemum, rose, dwarf rhododendron, fennel, geranium, polygona, dock and potentilla. This stone-house is a resting-place for the herdsmen and cattle when on their way from the valleys of Sikkim to Singaleelah.

We now commenced a rapid descent, and at 11.20 A. M. we reached Yangpoong, several hundred feet removed from the crest of the Gubroo range or upon the western slope of the mountain on a level with the fir forest or about 12,000 feet. Yangpoong consists of two large stone-houses covered with shingle, and a ruined house, this latter probably a kraal for enclosing cattle, an extensive mendong, covered with carved slabs and two tall flagstaves, bearing cloth flags covered with printed prayers. The inhabitants had gone to the north or to Jongri, so we examined their houses whose doors were merely tied up with a piece of string. We found the houses large, commodious and well filled with the usual Bhotia furniture, amongst which were some fine drums, trumpets and brass vessels. Though my Lepchas and Bhotias wandered about the houses examining and making fun of everything they could lay their hands upon, nothing was taken away, but my guide begged of me to take a large

pair of yak horns that were nailed to a post in the house. I had shown some desire to take back a good pair with me, but I could not consent in the absence of the owner to remove them, especially as they were evidently prized by the herdsmen from their superior size and shape.

Underneath the houses, which were built after the usual Bhotia fashion, there was accommodation for the yak calves.

From Yangpoong the descent was rapid, in the morning we had stood where nothing grew except a minute golden lichen, we were now at noon in a handsome forest, having passed rapidly through the various botanical grades of lichen, small flowers, juniper, rhododendron, fir, oaks, chestnut, to our tormentors the leeches. At noon we passed a small stone-altar called "*Mon Lepcha*" erected by the Lepchas, in honour of the "principle of evil;" we put up in a yak herd's hut on the left bank of the Rungbi, close to where it is joined by a fine stream flowing from the mountains to the east.

*August 14th, 1852.* Started at 6.15 A. M. in a southerly direction crossing the Rungbi over a handsome bridge close to our encampment. These bridges consist of a few saplings, their thicker ends being stepped under heavy stones, their lighter ends are brought together and form the crown of an arch; from this arch, loops of creepers hang down, into which one single sapling is laid, and forms the platform along which the traveller walks—we were now in a deep valley flanked on the west by the lofty Singaleelah, and on the east by the Catsuperri mountains, our path lay through a heavy forest a few feet above the Rungbi, a fine broad river full of rapids and water falls.

At 11 A. M. we arrived at a small patch of cultivation showing that we had descended 9,000 feet since yesterday morning. At this spot I measured one of the large black epiroc bird eating spiders, and found him to be eight inches across the legs; at 11.30 A. M. we reached Rungbi a Limboo clearance with four houses, near which was a small stone altar and some handsome trees of the fir species with very fine leaves.

In the deep valley of the Rungbi we met a party of Limboos, men, women and children all busy poisoning fish in the stream—our sudden appearance in the narrow path running through a thick tropi-



cal underwood seemed to take them by surprise. One old man carried a pot of tobacco and water in his hand, with which he continually anointed the leeches as they crept upon his naked legs, the first application caused the animals to roll off as if in agony.

At 2 P. M. after a very fatiguing march we arrived at two Limboo huts, perched up about 1,000 feet above the river, and commanding a fine view down the stream, which here turns off the east, flowing between the Pemionchi and Catsuperri mountains. The northern flank of Pemionchi is much less steep than its southern or Kullait river-side. Looking up the Rungbi, nothing is visible but a deep dark forest-choked glen, down which the Rungbi could be heard roaring. Near Rungbi we saw a very beautiful waterfall, the fall was only twenty-four feet in height, but the arrangement of the rocks and forests and the numerous streams into which the fall was broken, quite made up for its small height.

We put up for the night at a Limboo clearance where the Soobah of the Rungbi valley resides, and where, upon our arrival, he was, in honour of the harvest, keeping up great festivities. The whole population amounting to about ten men and four or five women besides children, were all more or less intoxicated; it was a long time before we could get a hearing on account of the music and dancing, shouting and screaming that was going on inside the principal house; at last they all tumbled out, and the soobah, a good-natured creature, at the head of the party, led us away to a nice house, which was forthwith swept out and cleaned and a fire lighted for us. Two bamboos of chee, a fowl, milk and rice were sent from the banquet, upon which we regaled ourselves, our sixteen attendants formed a grand addition to the party who were with much cordiality invited to see the dancing and to partake of chee, which they did with a will; for before midnight the whole of them were fast asleep and very drunk.

I sent my compliments across to the soobah to say I should like to see what was going on; he forthwith came himself, conducted us into his fine house, where there were about thirty men and women sitting on the ground, hot chee was being served round to every one and in the middle of the room a young girl highly excited and most fantastically dressed was dancing to the beat of several drums. The

girl was dressed in a pretty coloured petticoat with two cross belts of cloth covered with cowrie-shells thrown across her shoulders, from which depended on the back two skirts almost touching the ground and fringed with the teeth of the wild boar, deer, and bear, the dried heads and beaks of a handsome bird, of the scarlet pheasant, and other birds heads, seeds, pheasants spurs, and bears claws, and her head was ornamented with long cocks' tail feathers. The dance, which was a slow monotonous shuffle at first, increased in spirit as the drums beat louder, the girl moving gracefully to the time faster and faster until she got into a perfect frenzy, wheeling round the room and the fire places at a fearful pace, the men's heads keeping time to her dance; shouts, and beating of drums increased the girl's pace until unable to controul herself, she dashed into the midst of a large fire that was burning in the middle of the room, and with her naked feet sent the fire flying all over the room, nor were her hands idle, for she commenced tearing down a hanging frame-work upon which all the household cooking apparatus and property is generally slung; the women of the house rushed forward to save their property, the men to put out the burning brands; all was uproar and confusion during which moment we slipped out. The next morning I sent for the little dancing maniac, she came in full dress, but was as demure and quiet as any Limboo damsel possibly could be. I examined her dress, and marvelled how so slight a creature could dance, and at such a pace with the enormous weight of cowries and cloth that encumbered her body.

*August 15th, 1852.*—Four hours' quick walking in an easterly direction through forest, brought us to the summit of the Pemionchi mountain.

At 10 A. M. we reached the monastery of Chanachelling, or as the Lepchas call it Sanachelling. It is a remarkable and curious looking stone building three stories high, pierced with doors and windows, ornamented with paint, horse-hair curtains, hanging balconies and flights of stone stairs. The southern side faces a garden which is enclosed by a stone wall, beyond which are several handsome chaitans or stone monuments. The goompa or monastery is thatched, the edges of the thatch are secured by long ratans being tied to it at all points and pegged into the ground; this is to guard against

the high winds that sometimes sweep across these mountains with resistless force. Chanachelling is a monastery for women, but since the Rajah's disgraceful conduct towards Drs. Campbell and Hooker when travelling in his country—which, together with the Rajah's refusal to deliver up his Dewan, the principal instigator in the outrage, and on which account the two Morung Purgunnahs lying at the foot of the hills and yielding a yearly revenue of 23,000 rupees, and that portion of the hills now known as the Darjeeling Territory, and for which the Rajah received 3,000 per annum from the British Government, were confiscated from the Rajah,—the yearly allowance hitherto granted by the Durbar to the Goompa has been stopped, and we found that all the nuns had gone over the snows to Choombi in Tibet, leaving one Lama in charge of the vast house, its library, images and religious furniture. The interior of the house was as curious as its exterior. The portico at the entrance of the Goompa has the walls painted with a series of figures larger than life in the true Chinese style;—bright colours, bad perspective and extravagant action. The drawings represent Chinese officers of various grades bringing in frantic haste presents, such as strings of precious stones and other rare articles to a group of images in an inner room, the figures are so painted that they appear hastening into the room where a grand idol sits, flanked on either side by smaller images. The eyes of one of the mandarins or high officers were so painted that they really looked as if they were about to spring out of their sockets. The tension of the eye-ball was remarkably well-painted. The flowing drapery, the armour, faces and jewels upon the figures were all very well and minutely painted.

In the praying room up stairs, thirty-six feet long by thirty broad, were arranged round the book-cases for the reception of the books of prayers of which I counted 86 volumes bound in silk and each labelled upon three slips of various coloured Chinese satins. The roof of the room is supported upon six handsomely carved and painted wooden pillars, carved in a truly Chinese manner; down the eastern side of the room were ranged eight curiously carved side-tables behind which in recesses were seated twelve gods, five feet in height and painted so as to resemble life. Immediately to the left of the altar which was divested of most of its ornaments, was a

group of painted figures five feet in height, too indecent to make any further mention of. The altar consisting of a raised platform had upon it a few conch shells—brazen cups with water in them—bells—small brazen images and drums, all of Tibetan manufactory and very beautiful, especially the brass work which is chased and carved in a very minute style. Four heads of Indian corn were also hung up in front of the altar. In one corner of the room stood a prayer-drum five feet in height and supported between strong upright wooden posts. Their drums called “Mane” are found with all sects of Buddhists in or near the Himalayah, they contain painted and written prayers and are made to revolve from north, round by east, the revolving Lama repeating the words “Om Mane pemi hom.” These prayer-drums vary from a few inches in length to several feet in height. The former are turned by the hand, the latter either by wheels or by water power.

The Lama left in charge of the convent could not appear, as he was undergoing either penance or was under a vow not to mingle with the world on this day ; we conversed with him through a door, he speaking in the Bhotia language, our Lepchas interpreting ; he sent us out nice soft rugs to sit upon, and a gallon of tea. He was most anxious that we should stay and sleep at the convent, and have a long talk with him on the morrow ; he said all the brethren had experienced much pleasure from Dr. Hooker’s visit, and assured us that our having come so far to see the convent, was an honour and that we were welcome. The fact is, these monks, perched upon lofty mountains and shut out from all the world, lead a life of monotony ; a traveller breaking in upon this monotony and conversing about the world, its politics and people, is warmly welcomed and treated with great kindness.

A hot walk of three miles along the crest of the mountain brought us to Pemionchi, where there is a very handsome Goompa of three stories ; it is eighty feet in length by about forty broad. As we approached, we saw one of the Lamas, who was dressed in his long garnet-coloured cloth robes, beating a gong to call all the monks to prayers ; we were fortunate in seeing the whole establishment go through a religious performance upon the occasion of the death of a brother monk.

About twenty intelligent looking monks old and young, all dressed in the garnet-coloured flowing robes with under clothes of richly figured Chinese silks and satins, their hair cut short, assembled at the sound of the gong; they received us with great kindness and provided us with seats at the entrance to the Goompa, where the ceremony of chanting prayers for the dead was about to take place. The walls of the vestibule in which we sat were highly ornamented with painted figures as large as life, representing a Tibetan deity on a white horse; a female deity half-woman half-snake; and another deity upon some frightful beast.

Looking through the capacious door or up the body of the temple, the sight reminded me of a Catholic Chapel during the performance of high mass. Three pillars highly ornamented, gilt and painted, stand on either side of the aisle which terminates at the high altar, or rather a deep recess filled with eight or ten strange images as large as life. To the right of the recess there was a square metal tray, containing a hundred lights which shone brightly in the darkened room, the walls of which are painted from floor to ceiling with the likenesses of gods and goddesses, with skulls and tridents, things on earth, and with things that never were on earth, so beautifully confused and confounded that to attempt to analyze or particularize what there was or what there was not, would be a matter of difficulty. The colours were all of the brightest hues and pleasing to the eye.

On both sides of the aisle were ranged felt seats raised a foot from the ground, upon these the twenty Lamas took their seats and opened the ceremony by chanting a hymn, and finer bass voices I never heard; an old Lama sat near the altar on the right hand side and immediately in front of him and standing in the centre of the aisle was a figure dressed in the defunct Lamas clothes, a crash of cymbals, and a loud blowing upon the human thigh-bone trumpets closed each hymn, of which they chanted some twenty; two boys dressed as Lamas, during the whole of the service were very actively engaged in serving out hot chee from Tibetan metal tea-pots to the singers, who each held out his own wooden tea-cup produced from the folds of their capacious robes, and when emptied and *licked* clean, these were put back again into their breasts; near the door and close

to where we stood, incense was burning in a silver dish, a handsome silver flagon containing water also stood close to us, the flagon was of Chinese manufacture highly chased and ornamented, with two hideous Chinese dragons as its handles.

Service being over, we walked round the temple conversing with the Lamas through interpreters, our conversation lasted two hours, during which we were made to drink a quantity of chee and tea, a side of beef was also presented to us, accompanied by plantains, rice and vegetables.

The conversation was principally concerning the Rajah of Sikkim; and of his crippled condition since the British Government had deprived him of his land in the plains, the only land that yielded him any revenue; they deplored the outrage that had been committed upon Doctors Campbell and Hooker at the Cholah pass, and said that it was all the Dewan's doing, but that as the Dewan was intimately connected with the Rajah by marriage, the Rajah could not deliver him up to the British Government, when he was requested to do so. They gave me to understand that the Dewan was now a beggar, that having ruined his master, he was suffering for it. The allowance of 2,000 rupees and various presents that were annually given by the Durbar to the Pemionchi Goompa had been stopped, consequently they would all be obliged to go over the snows into Tibet, or starve. They certainly were very far from the starving point when I saw them, for a more jovial, fat, good-natured set of mortals could not be seen; they were the very pictures of jolly friars.

I particularly asked them if they had any objection to English gentlemen visiting their country and Goompas, their reply was, "None whatever: whoever will honour us with a visit, we will receive them with pleasure, give them food and a house to live in," and begged of us to pay them another visit. They said we were strange people and pointing to our legs that were bleeding from fifty leech-wounds, asked us, why we underwent such trouble, labour and misery when we might sit at home and be comfortable. "Yes" one fine intelligent Lama said, sighing: "we were all happy and at peace amongst ourselves before any English gentleman had penetrated our hills, but since then, all has gone wrong; but strange to say from no fault of yours, but of our own."

The view from Pemionchi, 7,000 feet, commands a fine view of the snowy range and of the greater part of Sikkim. Numerous Goompas perched upon mountains are seen to the east; the Rungeet river is seen 6,000 feet below and Darjeeling to the south—Tassiding Goompa appeared at our feet.

A great portion of the eastern end of the Pemionchi mountain was once encircled with a stone wall, the remains of which are still seen and was the capital of Sikkim. This place was sacked by the Goorkas, and the valuable library burnt in 1787, A. D. when the Goorkas descended the Tumbok pass (Islumbo of Hooker) and ravished the whole of Sikkim.

The summit of Pemionchi mountain is composed of mica schist of great brilliancy, shining in the sun like the nacre of a pearl oyster. The schist is not horizontal, but carved and distorted, presenting in the separation of its strata, huge conchoidal pearl-like surfaces.

Left Pemionchi at 2 P. M. passing several chaitans and descended 2,000 feet on the southern face to the great Gayzing Mendong, which is 615 feet in length, about ten in height, and as many broad; it is highly ornamented with well-carved slabs, the word "Om mane pemi hom" predominating. At the north end there stands a chaitan; and at the south end a tall flat slab of stone nine feet in height and covered with inscriptions, has been erected in a bed of masonry. The slab has had its head snapped off and just below the fracture, the writing commences. I am sorry I did not secure an impression of the inscription, but great fatigue had prostrated my strength, and I was fit for nothing.

Dr. Campbell in his journal of a trip to Sikkim—see Asiatic Society's Journal for May, 1849—mentions that this Mendong is the largest in Sikkim—the labour that has been expended upon this wall is immense, there being no less than 708 stone slabs all elaborately carved with letters five and six inches in length, some of the legends are arranged in circles ornamented with flowers and contain other words than the usual "Om mane pemi hom;" one stone written in the Outza (Tibetan) character had the words "Om, a, húm, túm-phí" arranged in a circle. These phrases appear to have some hidden meaning, but unknown to the generality of the Lamas; however, they say that they all apply to God, each syllable bearing its own

peculiar virtue. An intelligent Lepcha with me who read the inscriptions freely, and also copied some for me, rendered the words "Om mane pemi hom" into the following prayer "Oh God receive me into Thine essence when I am going;" (dying); absorption into the divine essence being the Buddhist's idea of heaven, I have no doubt that the prayer, meaning whatever it may do in strict reality, is used by the Budhists in that sense.

On our descent, we met a slave girl toiling up the steep ascent laden with a large bamboo full of water for the use of the monks. This girl had been kidnapped from Bengal in her infancy and had forgotten her native language, she was in good condition, fat and plump, but with a melancholy expression of countenance, an expression only seen upon the face of a slave. To prevent people being kidnapped from Bengal and from our own hill territory has long occupied the attention of our government; at every bridge leaving the British territory there is a guard; over these bridges a slave is never taken to Sikkim and no slave who may seek shelter from Sikkim is ever sent back again. Slavery and its attendant miseries have in an indirect manner been the cause of the Rajah's losing his country; mild reforms proposed by our government with regard to the existing slave-trade in Sikkim roused the anger of the Sikkim Durbar which led to direct violence offered to the person of our government representative.

*August 16th, 1852.*—Descended to the Kullait river in two hours, the path the whole way displaying mica schist; saw small red monkeys, doves, and green pigeons (koklah) in the forests.

To our annoyance we found that all the cane-bridges over the Kullait had been cut away to prevent any of the people from Hee, and the neighbouring clearances crossing to Pemionchi, the whole of the inhabitants near the southern bank of the river being more or less affected with dysentery, such is the horror and alarm with which that complaint is viewed by these people. Men were sent up and down the river for miles but without success, all the bridges had disappeared and as the river was at its height, very deep and impetuous, we were at our wits end, as I particularly wished to avoid the hot and miasmatic valley of the Rungeet, which appeared to be our only alternative. Men were again sent off down the stream to



see if there was any possibility of crossing ; a spot was at last found half a mile above the junction of the Kullait and Bungeet rivers where some gneiss rocks jutted into the river, diminishing its width considerably. Here our Lepchas, in the space of two hours, threw a strong bridge across the Kullait made of bamboos and saplings retained in position by heavy stones. It was an exciting moment when a man crawling forward upon the supple and bending bamboos overhanging the boiling headlong current below, managed to effect a junction with the opposite bank.

The rocks in the Kullait are a fine gneiss in company with masses of white quartz.

A flock of black cormorants flew up the river, as we were sitting on the rocks, watching the bird-eating spiders letting themselves drop from great heights from the branches of the trees overhanging the water, and seizing insects and flies upon the rocks. The movements of the spiders were exceedingly rapid and precise, seldom missing their prey. From a living specimen I wound off upon a piece of card a good hank of a beautiful golden yellow web, resembling floss silk, which however turned into gum upon getting wet.

At noon we crossed the Kullait and after repeated halts on account of the suffocating heat arrived at a small level clearance near the summit of Rinchinpoong, where there is a Lepcha and Bhotia village of ten houses, at an elevation of about 6,000 feet. The name of the village is Yansúnkúm, the inhabitants of which had an abundance of good cows, pigs and poultry. I was importuned to prescribe for a man suffering from dysentery ; having no medicine-chest with me was no excuse, for I was implored to make some sort of medicine to effect a cure ; I accordingly had a quantity of worm-wood gathered and pounded and stirred up in brandy, to which was added nutmegs, cinnamon, and cloves, all reduced to powder ; doses from a bottle full of this strange mixture well diluted with water were recommended to be taken three times a day.

Here, from sheer fatigue and from severe inflammation of my legs and ankles caused by leech-bites, we were obliged to halt a whole day. Let no one who has never ventured into the Himalayah mountains imagine that travelling in these mountains is anything but downright and real hard work ; it is seldom a traveller is so fortunate

as to have dry clothes on; his food is of the plainest quality and often very scanty. Dr. Hooker was reduced to coarse boiled rice and Chili vinegar; this is poor fare for a man walking up hill and down dale for ten hours a day.

*August 18th, 1852.*—Left Yansunkum at 6.30 A. M. and ascended to the summit of Rinchinpoong, a few hundred feet above the village—saw several chaitans on the road; all the hills near Darjeeling appear to have been, in some former age, much more densely inhabited than they are now, mendongs and chaitans appearing upon almost every ridge and peak of any note.

The rocks still mica schist. Passed the village Nam-gon-kum and commenced the descent of Binchingpoong at 9.15 A. M.; crossed at 10.40, the torrents; Richi flowing from west to east and falling into the great Rungeet, which river we could see turbid and swollen some thousands of feet below us; commenced the ascent of Singrioong at 11 A. M. and reached the summit at 0.45 P. M.; a little to the west of the point of crossing this ridge, stands a conical peak, named Bik-sadong.

At 2 P. M. commenced the descent of Singrioong and by mistake taking the wrong path, we had to return 2,000 feet up a steep ascent. The heat was so overpowering, the jungle so dense, the air so quiet that a feeling of faintness crept over me, which deprived me of all strength; upon reaching the Ruttoo stream at the foot of Singrioong where it dashes over a high rock, I could not resist a plunge into the river. It was late in the day, any more ascent, worn out as we were, was impossible, and to sleep in this deep miasmatic valley was almost certain death from jungle-fever. Fatigue and the sight of the cool-stream overruled all scruples, we slept here. A fortnight subsequently, I was in bed delirious from jungle-fever, but I feel grateful that no one but myself suffered from my imprudence in sleeping in this deep valley.

On the way down Singrioong passed over one of the travertine lime deposits, common upon this spur, and upon Chakoong to the south.

In the Ruttoo are quantities of rolled and water-worn pieces of blue, pink, and other delicately tinted slates. The rock in situ is gneiss.

August 19th, 1852.—Left the banks of the Buttoo at 7 A. M. and ascended Chakoong by a very steep path, reached the summit at 8 A. M., a rapid descent and ascent over several small spurs, brought us at 11 A. M. to the Rummam river, which we crossed by a very good cane-bridge.

Upon the southern flank of Chakoong I saw several large blocks of sandstone, black clay slate and gneiss. The jungle was too dense to allow of any examination of the ground. In the Rummam, gneiss veined with white quartz is the only rock to be seen.

At 1 P. M. we reached the guard-house at Goke by an excellent government road which commences at the Rummam river; four sets of zig-zags and many easy gradients, render the road accessible to horses. The change from steep and narrow footpaths, to a broad road was most delightful. There is much cultivation upon the spur and many substantial Limboo houses. The most remarkable feature upon the Goke spur is the large bamboo forest through which the road has been cut; bamboos ten inches in diameter and a hundred feet in length may be had in any quantities. These bamboos, called by the natives "Choongas," are used at Darjeeling, instead of the common leather-bag (mussak), for holding water for domestic purposes; they are also used as milk-pails, also for holding chee, ghee and other liquids. Amongst these bamboos, I saw the large black squirrel, measuring about three feet six inches from the nose to the tip of the tail. From Goke half an hour's descent brought us to the little Bungeet where our friends had sent us ponies and some bread; a man having been sent on two days ahead to announce our approach; at 4.30 P. M. we reached Darjeeling by the Tuqvor spur, having been away eighteen days, during which we had travelled 360 miles on foot or at the rate of twenty miles per diem ascending 36,000 feet and descending 31,000 feet, to reach an elevation of 14,500 feet distant in a direct line thirty-seven miles from the point of departure. These figures may in a slight measure convey some idea of the labour that has to be undergone by a traveller in the Himalayahs. The longest march made during the trip *in a direct line* was ten miles; the average distance was only five miles, each march occupying eight hours steady walking.

Here I part with my Lepcha guide and Lepcha companions, testi-

lying at the same time to the good nature and good temper of these interesting people, whom no hardship or discomfort appears to ruffle. After travelling for nearly twenty years amongst the "noli me tangere" Hindus, who, fenced about with a cruel caste, refuse all approach to familiarity, sociality, or even kindness with any one, even with one of their own caste, the change to Lepcha followers for Hindus is most pleasing: on one hand there is the brooding, moody Hindu, exchanging no thought with any one; eating his food in silence and alone; his fear lest any one below him in caste should touch him; his dread lest any of the hundred omens observed between his rising up in the morning and his lying down at night should not have been properly divined and acted up to; the cruel bondage to which his every action in life is subservient, makes the unfortunate Hindu any thing but a pleasant companion: on the other hand we have the free, happy, laughing and playful, no-caste Lepcha, a child of the mountains, modest, social and joyous in disposition.

I have watched the Lepchas after a good day's work playing amongst themselves, either racing on foot, playing at hop-step and a jump, quoits, wrestling and jumping; or walking up to a companion and throwing his arm round his neck, a Lepcha will pretend to be asking some question, in the middle of the pretended conversation, his friend receives a violent kick from behind, he turns round to see who is the culprit, no one is there and his friend has disappeared screaming with laughter at the trick he has played a hundred times before; a chase takes place, they run, they double, the culprit is caught, they wrestle and end by rolling upon the sward locked in each other's arms, they rise in good humour and go off to play the same trick upon some one else. I frequently brought these pastimes to a temporary close by offering the Lepchas a plate full of rice, ham, sausages, or perhaps half a raw fitch of bacon; panting from these healthy exercises, they would take the viands, their very teeth grinning thanks, sit down on the grass and divide the mess amongst each other.

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