

supposed by some geographers that at a remote period the Garo Hills were connected with the Rajamahal Hills, the geological formation of the eastern spur on the one side being similar to that of the western spur on the other side, and that they became separated by the action of the Ganges gradually forcing its way through. Whether that theory was correct or not, it was certain that the Garos bore a closer ethnological relation to the inhabitants of the Rajamahal Hills than to the Khasias, who evidently derived their origin from a Chinese source.

General R. STRACHEY said it was a most astonishing thing that in the year 1872, after the British Government had been established in Bengal for more than a century, there should be a district at no greater distance from the capital of British India than York was from London, regarding which nothing was accurately known. The very Governor of the province of Bengal, who of all men in that room ought to be able to give information respecting the Garo Hills, had stated that he knew nothing about them. It was, therefore, evident that Englishmen in India had not attended to the requirements of science as they ought to have done. This was in great contrast to the action of the Russian Government in Central Asia, for although they had only had possession of Samarkand a few months, they had already established an observatory there. How many observatories had the British Government established in India? More was known of the physical character of the most remote parts of the Russian Empire than of many parts of British India which had been under British rule for nearly a century. He did not find fault with people acting according to their lights, their knowledge, or their ignorance, but he hoped that in future a little more attention would be paid to scientific subjects by the Government of India.

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## 2. *The Lushai Expedition.* FROM REPORTS OF THE SURVEYORS.

DURING the cool weather of 1871-72, two survey parties were employed, with the two columns forming the expeditionary force against the Lushais, on the eastern frontier of Bengal. The right, or Chittagong party, advanced from the south, under Major Macdonald; while the northern party, under Captain Badgley, started from Cachar on the north; and both have added much to our previously slight knowledge of this unexplored border-land. Both parties had to overcome great difficulties in forcing their way through dense jungle and over rugged hills, and they succeeded in mapping a vast extent of new country. The two parties, one coming from the north and the other from the south, approached very closely, overlapping each other in latitude; but a gap of 40 miles in longitude was left when the two columns returned.

The southern party, under Major Macdonald and Captain Tanner, were in the field from November 16th, 1871, to March 24th, 1872, when the troops were withdrawn from the country. The region traversed by the southern column consists of parallel ridges, inhabited by the Syloo and Howlong tribes. The most western ridge, called Rhaeejan, is about 3000 feet high; and the ranges

gradually increase in height up to 6000 feet in the Shindoo country. One distant peak, 50 miles away to the east, was found to be 8000 feet high. Major Macdonald describes the whole country, when seen from any commanding point, as looking like a series of great mountain waves in a sea of forest, dotted here and there with broad patches of yellow light, which mark the cultivation. The upper valleys of the Syloo country are drained by the rivers Sub-juck and Kurnafoolee flowing to the south, and the Foot Doong and Kloong Doong flowing north into Cachar. The Kurnafoolee drains the whole south country, and formed the base of communication between the advancing column and the sea, with water-carriage to a point at the foot of the Syloo Hills. The mountains are composed of soft sandstone and clayey loam, cut up by precipitous ravines, with rank and dense vegetation, owing to the country being clothed in mist during many months of the year; while the summits are clothed with forest. The ridges are generally traversed by footpaths of the Kookies and other tribes.

Captain Tanner thus describes the march of the right column up the deep valley of the Foot Doong stream, between two of the parallel ridges:—

*7th February, 1872.* — Accompanied by Mr. Barrett, I marched from Savoonga's village to the Lal Ngor Post. The descent from Savoonga's Hill to the foot of the range is very steep, and it is strange that no attempt was here made to stop our advance when proceeding against that chief in January. From the foot of the hill the track runs for several miles along the rocky bed of one of the feeders of the Foot Doong stream, in which we passed some well-concealed Kookies' ambuscades, whence they had on two or three occasions fired without success on the postal and Coolie escort. The Foot Doong, which has been an altitude of 900 feet above sea-level, is locked in between high and exceedingly steep hills, clothed to the foot with very dense jungle. We noticed several magnificent specimens of the Himalayan tree-fern, some of them from 20 to 30 feet high, besides orchids of singularly luxuriant growth, which appear to thrive particularly well in this damp and secluded locality. The ascent from the Foot Dong to Lal Ngor's village is gradual, the road passing over an ingeniously-made Kookie bamboo-bridge which is thrown over a deep ravine in a very skilful manner. It was at the foot of Savoonga's Hill that we were overtaken by evening when marching against that chief on the 11th of January. The force had toiled along since early morning, making but slow progress over the green slimy boulders, and through the deep pools of the stream in the bed of which for many miles our route lay; and at five o'clock, finding that we seemed to be penetrating farther and farther into the valley, from which there appeared no prospect of finding an outlet, and having as usual but the most imperfect idea of the direction in which to proceed, or of the distance yet to be traversed, the General determined to halt. Our position was most confined: high steep hills rose abruptly from the stream, and appeared to wall us in on every side. The small available space for encamping was literally choked up with a network of canes, bamboos, and creepers. Evening shadows were already creeping up the peaks above us, and deepening the gloom of the thick woods, with which we felt as it were stifled, and which, even at mid-day, scarcely admitted a single gleam of

sunlight. One by one the companies began to arrive, and were halted at the positions they were to clear and occupy for the night. Slowly and without noise the force collected. Little was spoken, for in our marches in these forests, we had, to a certain extent, learnt the value of silence; military words of command had been abandoned for signs, and for orders given in an undertone. The word was presently passed to clear the encamping-ground, and then, suddenly, as if by magic, all was change; nearly a thousand kooleeries, dâhs, and axes, vigorously plied in the jungle, awoke echoes in the woods and valleys which must have been quite sufficient to frighten away any force that Savoonga might have watching us or waiting for us. The canes went down, the huge fallen dead trees were splintered away and carried off for firewood, and the bamboos were quickly formed into huts, which the Sepoys had begun to learn to build from the Burmese and Chukma Coolies. Before an hour had passed we were all housed, and the place lately occupied by tangled trailing vegetation, never before disturbed, had now been transformed into a camp, properly laid out and arranged, and full of life and activity. Our position was damp and dark, it is true, but we made the best of it, and throughout the night, and in the early morning of the following day, when every leaf and branch was dripping with the moisture of the dense mist in which we were enveloped, we kept up the pretence of cheerfulness, which, in our gloomy, cramped position, even the most light-hearted amongst us could not really feel.

The ascent of the surveying party to the Too Rang Peak enabled Captain Tanner to obtain a glorious view of the country; bounded on the east by the great backbone of this mountainous tract, west of the valley of the Irawaddy. He thus describes his trip:—

Colonel Doran provided us with an escort to accompany us to Too Rang Hill Station, where it was necessary to take angles. The road lay through Lal Hoolien's village, which was occupied by us in January. Thence through the deserted site of Upper Holien, a village having an altitude of 4000 feet, which we found that the Kookies had re-occupied, for we here disturbed some men who had evidently taken up their quarters at this place to watch the proceedings of the troops stationed at Lal Shooma's and Lal Ngoora's. We followed their fresh foot-marks all along the path between Upper Holien and my station on Too Rang Hill, towards which they were evidently proceeding, in order to give intelligence of our northern movement to their friends living in that direction. Upper Holien, which was in an unfinished state when we took it on the 31st of December, occupies a strong and highly picturesque position; it commands the only path leading along the Too Rang Range, which is the chief line of communication between the village of Lal Ngoora to the north, and minor chiefs to the south. The place was taken by a small party under Major Mackintyre, of the 2nd Goorkhas, on the 31st December, and was defended by the Kookies after the fashion of the Kookie people, a smart volley being fired on the leading files of the Goorkhas from a well-concealed stockade, after which they immediately ran away by paths which they had previously cut through the jungle for purposes of retreat. They had here an ingeniously contrived trap for us, a tree suspended by means of creepers, which they cut away when we were close up to the stockade. It luckily, however, struck down only one Sepoy, and he was very severely injured. The path from Upper Holien (4000 feet) to Too Rang Station (4875 feet) traverses a long spur of that range through pleasant, shady woods, which strongly remind one of the northern slopes of the Sub-Himalayas. The dense mists which night after night envelope the lower ranges and deep

valleys, are not known at this altitude, consequently the climate is drier, and considerable difference in the vegetation is noticeable. Bamboo almost disappears, and the great creepers and orchids which load the forest-trees below are no longer found, or, at any rate, are not nearly so abundant. From the survey station of Too Rang all the great villages of the northern Howlongs are plainly visible to the eastward, and beyond them, extremely remote, a faint cloud-like mountain-range, the peaks of which have an altitude of between 8000\* and 9000 feet. From information collected from friendly Kookies, I have little doubt that the distant range I now speak of is the great backbone of this mountainous tract, and I believe separates the drainage of the feeders of the Irawaddy from that of the Koladyne and its tributaries.

To the northward the view comprises the valleys of the Toot (Gootur) and Klong Doongs (Dillesur), and the lofty broken range which separates those two streams. The Syual Klang range, which is, I believe, the western limit of the tract occupied by either the Syloos or Sook Pilal, may be traced up to the latitude of 23° 50' running in a direction slightly to the west of Nuth.

The peaks of the Lysral Klang and of the range on the right bank of the Foot Doong, the names of which I have not been able to ascertain, have a gentle slope to the eastward, the opposite face being precipitous. Their appearance reminds me strongly of the lower ranges skirting the Sind Hill districts, for not only in shape and general configuration, but in colour also, they greatly correspond. The southern faces of the slopes and peaks are greatly exposed to the sun, which so far dries up the moisture, that the thin layer of soil which covers them is no longer able to support the forest vegetation of the northern slopes, and is replaced by grass, at this season of the year quite brown and dry.

The view to the north-west from Too Rang Hill is totally different to that of the sea of mountains inhabited by the Howlongs to the east, or of the brown-scarped peaks of Sook Pilal's ranges to the north. Small and insignificant hills, alternating with plains of forest-jungle, stretch away until they are lost in the brown haze which overhangs the Cachar country. It is this region which appears on the maps as a blank, and which is marked "unexplored." I must confess that I believe the accurate survey of such a tract would be no easy task; there are few prominent landmarks, and, I understand, few or no inhabitants, and consequently no roads; the want of the latter being one of the greatest difficulties a surveyor has to contend against when mapping an unexplored forest-clad country.

Captain Tanner afterwards visited a beautiful cascade in the valley of the Kawa Doong River, which he thus describes:—

The waterfall is situated on the Kahoo Doong (or Kawa Doong) stream about 1200 feet below Lall Shooma's village, from which it is reached by an easy bridle-path. Above the fall the Kahoo Doong is a most beautiful stream, flowing placidly between high banks close to the water's edge, with the luxuriant vegetation peculiar to these parts. From the quiet stream above, the water is suddenly launched over a scarp of some 50 feet into a clear pool on a broad ledge of rock, which has been gradually worn away by the action of water to receive it. From this pool the stream then plunges over a second ledge and falls as a sheet of spray and foam into the bottom of an immense amphitheatre of cliffs surmounted on all sides by high forest-covered mountains. The edge of the scarp, the great fissures which rend it from top to bottom, the clefts between the strata, and indeed every available nook and cranny, being fringed with festoons of creepers, ferns and orchids of

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\* 8115 feet, from a mean of observations.

every variety. The height of this second fall is 350 feet sheer drop without break, the view from the sharp edge of the precipice, looking down into the great black rock-strewn basin below, being one of the most striking that can be imagined; and during the wet season, when there is a large flow of water, must be one of the finest waterfalls in India. From the upper to the lower fall the road is precipitous and highly dangerous to any one not accustomed to hill-climbing; the difficulties of the descent being greatly increased by the tangled mass of fallen bamboos and creepers through which it is necessary to force one's way. Standing on the edge of the deep basin, which in the long course of ages has gradually been scooped out below the great cascade, and looking upwards at the descending water, an impression is created that the fall is many hundred feet higher than really is the case. The rock composing the great wall of cliffs is of very dark colour, the sombre hue being deepened by the shadow of the surrounding lofty hills, which shut out all sunlight. High up in the face of this imposing scarp, which in many places is almost left and riven from top to bottom, huge forest-trees have here and there found clefts in which to grow and thrive, receiving their moisture from numerous little miniature cascades and from the sheets of spray from the principal fall; though they are completely dwarfed against the height of the broken dark-coloured background, yet they greatly enhance the beauty of the scene and add much to the general effect. Perhaps the most picturesque view of the fall is obtained some distance down the stream, which is of the clearest sparkling water rushing between ponderous massy boulders which have fallen from the crags above. Here the trees grow to great height, are of every variety of shade and form, and, when lit up by a little sunshine, stand out in strong relief from the dark background; the snow-white cascade in the centre, unbroken in its entire fall of 350 feet, still remaining the chief and most beautiful feature of the picture.

The Sujjuk River is navigable for boats to a place called Vanoona's Ghaut, at which point the column encountered the first resistance from the Syloo and Howlong tribes; and on ascending the ridge beyond the Sujjuk they first realized the difficult nature of the country to be invaded. Captain Tanner thus describes it:—

It was from Vanoona's village that the force first overlooked the territories of the Howlongs and Syloos, and whence we first became aware of the great difficulties which must be overcome before those tribes could be subdued. We were now in the midst of a country of which we knew little or nothing. Of the route by which to march we could obtain only the most unreliable information, and the natural obstacles which we believed we should meet with at every step had been magnified by rumour. Behind us lay the valley of the Sujjuk, a tract generally flat and broken only by insignificant-looking ridges, and yet it had taken several days' hard marching through water and mud, over rocks and abrupt slippery slopes, and through dense interlaced jungle, to reach the spot on which we now were. The country in our rear through which we had hitherto marched was inhabited by a tribe whose sympathies being on our side had been our guides, and yet we had already experienced to a slight degree the difficulties of moving in this forest-clad land. In the great unknown mountain region in our front, high ranges and deep dark valleys, took the place of the insignificant ridges of the Sujjuk, and we were presently to contend with an enemy whose numbers we could not guess, whose fighting qualities were supposed to be rare, and whose mode of warfare we know, from a couple of days' experience, to be of a kind against which we could hardly hope successfully to compete. We had heard of poisoned arrows, of cunningly concealed stake springs, which might transfix

one at any moment when traversing the tortuous forest footpaths; of gigantic noose-traps, which might suddenly hoist one aloft out of reach of friendly aid; of carefully hidden bamboo-spikes set as thick as porcupine's quills around the stockades, and on the only accessible slopes leading up to them; in short, of every kind of trap, snare, and pitfall which an ingenious and cunning savage might be expected to prepare for an enemy unaccustomed to his stratagems and to his country. Such being the case, how could we hope to subdue the people inhabiting the vast expanse of country which from Vanoona's village was spread out before us? As far as the eye could reach to the north, to the east, and to the south-east, on the most remote ridges and on the loftiest peaks, we could discern the numerous and well-populated villages of our enemy who were to attack us by night and by day from the cover of artful stockades, from overhanging and inaccessible cliffs, and from the deep shadows of their trackless impenetrable forests. We were not only to carry on warfare with a people whom we could never expect to meet in open fight, but were led to suppose that even the elements also were to be opposed to us. We might expect deluges of rain before the operations were half over, cutting us off from our supports and from supplies, and exposing us to every inconvenience and hardship that might ensue from inclement weather, with but slight and inadequate means of protecting ourselves therefrom.

It was from our encampment at Vanoona's village that we derived our first impressions of the magnificent scenery of the remarkable country of the Lushai. I have described before the panorama from this point, as embracing an extensive view of mountain and of valley, of serrated ridge-like mountain-chains piled one behind the other, and rising higher and higher towards the east, until the view in the far off distance is backed up by a faint blue mountain range of great altitude;\* of mountains separated from each other by deep land-locked valleys and by streams walled in between high abrupt ridges, and over mountain and valley from the highest peaks down to the very bottom of the dark ravines a clothing of the most profuse vegetation of every hue and colour. The shades which towards evening overspread the valleys, and which gradually creep up the sides of those hills which are not far distant, and the shadows which fall across the ranges beyond, are of the deepest purple-blue; the evening sun at the same time lighting up the more prominent peaks and spurs with a most exquisite rich golden rose. The lovely tints which pervade the landscape on a bracing December evening, when the air is pure and clear, far surpass in vividness anything I have before seen in any part of the world; in no other country has it been my fortune to see such wonderful effect of aerial perspective. Then, too, the foreground is as striking as the rest of the picture; there are long cultivated half-cleared (?) slopes dotted here and there with gigantic forest-trees, which, from their size, have resisted the axe and the fire of the cultivator when preparing his lands for crops. Artistic groups of graceful trees intermixed with bamboo adorn these slopes, and at your feet lie deep gorges, whose sides are clothed with tropical vegetation of the most luxuriant description. Pleasantly situated in the open cultivated spots may be seen the cheerful, neatly-built bamboo-houses of the cultivators, thus giving a finish as it were to one of the most striking pictures that can be imagined.

Such is the view on a clear December evening, but during the night a transformation, almost magical, comes over the scene, and it is difficult to

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\* I have succeeded in measuring one remarkable peak of this chain, which has an altitude of 8115 feet. I believe that some points of the same range to the southward are little short of 10,000 feet, but I could not get sufficiently long bases to fix either their positions or height with accuracy.

Imagine that the change, which is revealed by the early morning light, can be wrought in only a few hours. At sunrise you no longer behold the valleys and the spurs of the opposite ranges which on the previous evening so charmed you with the wonderful colours in which they were bathed. There now lies around you a sea of mist, which ocean-like covers the whole face of the country to the westward as far as the eye can reach. This ocean of condensed vapour is perfectly level, and broken only by rippling wave-like furrows, except where the higher peaks shoot up through it with clear well-defined shores, resembling islands rising up out of a frozen sea. The valleys to the eastward are also full of this dense heavy mist, which pours over the lower gorges and gaps in the opposite ranges like mighty silent Niagaras. The valley of the Kowa Doong stream to the east of Vanoona's village is narrow and backed up by a high-peaked range of hills; it is full of mist, and looks like a great river stretching away to the southward for miles, and receiving at its upper end several of these great cascades of vapour which are so remarkable. These mists lie on the face of the country until ten or eleven o'clock, when they are dispersed by the mid-day heat. It is only at early morning that the wonderful appearance of the heavy stratum of fleecy vapour is seen to perfection, for at that time the sun's rays break through the light clouds and between the high peaks of the eastern horizon, and here and there light up the mist-waves and the upper curves of the cascade of cloud with a most dazzling silvery whiteness, dotting the landscape with patches of light, which are almost luminous.

Captain Tanner, in the end of February, undertook a journey down the Uiphum Range towards the "Blue Mountain" of the old maps, to the south.

*24th to 27th.*—In travelling down the Uiphum range from Demagiri, we found it impossible to make more than 4 miles a day, our time being greatly occupied in cutting our way through the bamboo-jungle, and searching for water in likely-looking ravines. It is needless to describe the different days' march, one being so much like another. The whole of the Uiphum, as far as I have traversed it, bears signs of having been inhabited and cultivated during the present generation. There is little primeval forest, the whole surface of the practicable slopes and ridges being covered with closely-growing bamboo-jungle. It is through such vegetation that when a path has been for many years disused it is so difficult to march with coolies. Wild elephants and rhinoceros appear to abound in great numbers in this tract, and between them they had managed to keep portions of the old deeply-worn Kookie path open, and in such places we found no difficulty, but, where the path happened to take a sudden turn either up or down a half-hidden connecting saddle, we invariably lost the track, and only found it again after struggling and floundering about for hours amidst fallen trees, dead bamboos, and interlaced creepers, which had to be cut away almost at every step. Our encamping-ground was invariably on the most open available spot on the range, generally with a precipitous slope towards the west, and a more gentle one on the opposite face. I had with me about seventy men, inclusive of coolies; and to clear sufficient space to accommodate this number was a work of some little time; the bamboo once cleared away, however, the situation was pleasant, commanding a fine view of the valleys on either side of the range.

*28th.*—Having only two days' provisions left, I was obliged to leave the coolies under a small guard, and proceed with the remainder of the Goorkhas and line-cutters down the range in search of a high, commanding peak, which I had observed from one of my tri-junction stations to the northward. I calculated that I must be within a few miles of the point, and I therefore hoped

to reach it, observe therefrom, and return in one day. At ten o'clock a Goorkha reported from the top of a high tree that the peak was still several miles off; we, therefore, made every exertion to push on more rapidly: the old disused path, luckily, became a shade more open, and by a quarter to twelve we found ourselves at the base of the peak I had been so long making for. Here an unexpected difficulty arose: the hill was so steep and craggy that, for some time, I despaired of being able to reach the summit. The ever-ready little Goorkhas, however, at once came to my aid, and in a short time, by utilizing creepers, roots, and bamboos, enabled the theodolite-carriers to scale the broken scarp. This, however, was not effected without some difficulty, and, perhaps, a little danger; for city-dwelling Punjab calasses, though trustworthy and hardworking, are, nevertheless, quite unaccustomed to crag-climbing. It was now midday, and I had a good walk for four or five hours before me, and besides had to clear the peak and observe before returning; it was, therefore, by the greatest good luck that I found not more than a dozen trees growing on the summit of the peak, which was far higher than any in the neighbourhood, and for survey purposes the very best that could have been selected. The bamboos and the trees were soon cleared away, and by 2 P.M. I had taken my angles and was ready to commence the return march to my camp, which we reached at sunset—all of us quite tired and exhausted. It was from this station, which, in the Kookie language, is called "Thang Sang," the "Commanding Hill," that I made the final observations to Kansa Tong, the "Blue Mountain" of the maps, which is the most north-westerly point of the Akyab District. The view was most extensive, and quite uninterrupted all around. At my feet, to the eastward, flowed the Tooi Chong, which drains the western slopes of Kansa Tong,\* and the eastern ravines of the Uiphum † ranges. The former pretentiously-named hill, which catches every one's eye on the map of the hill-districts, is about 4000 feet lower than the great ranges which lie beyond the Kolodyne, ‡ and which back up the view from Klan Sang in that direction. Looking either north or south, the remarkable parallelism of the ranges in the neighbourhood is very apparent. The Uiphum, Kansa Tong, and Saichal ranges, stretch away for miles to the southward, with broad broken valleys between them. The peaks of the Uiphum, of which Klan Sang is the highest (2600 feet), run in a wonderfully straight line, one plane-table ray cutting all the most prominent points to the southward for very many miles, in which direction the range appeared to die away in altitude. The panorama disclosed from this point is hardly as interesting as any of those I had before seen from other ranges; the hills are so uniform in character and general appearance as to be monotonous, and besides, in point of height, they are in no way remarkable. The whole of the region to the east and south-east is apparently uninhabited, and must have been so for many years. The ranges bordering the Kolodyne and lying between the Kansa Tong and the great mountains to the east of that river, bear no traces of old village sites. It is possible, however, that there may be a few Shendoo villages in the far east which were hidden from me, for I am informed by Ruttun Pooya's Kookies that the Shendoos or Poois (or the Lakirs as they term them) never live on the summits of the hills as the Howlongs and Syloos do, but avoid very exposed situations. At the same time I should doubt there being any inhabitants in the neighbourhood of the Blue Mountain, and think it almost certain that there are none on this side of the Kolodyne.

\* "Tong" signifies in the Mugh language hill or range. In Kookie "Klang" or "Ilang" has the same meaning.

† Uiphum, "Dog's grave" in Kookie.

‡ "Kolodyne" is a Burmese word. I cannot ascertain the Kookie names of the chief branch of this river in the country to the north of the Blue Mountains. The "Tooi Tsang" appears to be one of its largest tributaries.



Since submitting this diary, I have examined the old published and unpublished maps in the Surveyor-General's Office, to ascertain the reason of applying to such an unimportant range as the "Kansa Tong" so high-sounding and inappropriate a name as the "Blue Mountain," which is shown in the latest map of the Chittagong Hill Tracts.

Lieutenant Cheape, Bengal Engineers, who, many years ago, was one of the first to turn his attention to those hills, has distinctly marked the "Blue Mountain" as one of the peaks of the lofty range which stretches nearly from the 23rd parallel of latitude down to Cape Clear in Burmah. He had, however, no means of laying down the mountains in the far east in their true position. Some points of the great range on the left bank of the Kolodyne just alluded to have from time to time been approximately determined; but, until now, the highest of the chain, the "Mul Seelaimon," 7100 feet in altitude, has never been accurately fixed or measured. The "Blue Mountain," a fit name for this high and conspicuous peak, should have been pushed back to the eastward, with the rest of the topography, when the old map of Captain Pemberton was corrected, but this was not done; the *name* still occupies the position it had on the old map, whilst, in moving back the detail, the Kansa Tong, only 3600 feet in altitude, accidentally falls where the Blue Mountain was formerly marked, and consequently it is dignified with a title to which it can lay no claim whatever, and which was certainly intended for the high bold mountain behind it.

From the ranges to the westward, skirting the cultivated country in the neighbourhood of Chittagong, whence I first saw and noted the Mul Seelaimon, the Kansa Tong, if visible to me at all, could only have appeared insignificant when compared with the imposing mass of the Blue Mountain, rising to nearly double its height behind it. It must have been so with Lieutenant Cheape, who would never have marked in his map a broken hill of low altitude like the Kansa Tong, when, from the whole country round the Mul Seelaimon, the highest mountain in that part of the country, the chief and boldest feature in the eastern horizon must have forced itself prominently upon his attention.

Captain Tanner's final expedition was southward to the Jow Pooi Mountains.

15th March.—I started with 20 good men of the 4th Goorkhas, sufficient Coolies, two Howlong guides, and an intelligent interpreter. The road, as usual, followed a ridge, and for a mile or two was fairly passable, but after that we had to commence cutting our way, reaching at sunset an old village site, where, after a long search, we found water. We were now at an elevation of 4500 feet, and to reach my point at Jow Pooi, had still to ascend and travel a considerable distance; we therefore made an early start, and, after leaving the dense high grass of the old village site, we entered a wood with but little undergrowth. We soon lost all traces of cane; the creepers of the lower ranges became more and more rare, and bamboo almost disappeared, till at 5000 feet we found ourselves travelling over a slightly ascending path through a pleasant forest of oak. The oaks of these hills, of which there are two species, are not similar to those of the Himalayas, and are even less like the English tree, and were it not for the numbers of acorns strewing the ground, it would be impossible for any one but a botanist to recognise them as belonging to the genus *Quercus*. At 5100 feet, the trees no longer grew luxuriantly, and I knew that I must be near my point, which I had found previously by computation to be over 5200 feet. The summit was soon reached, and as I have always found, from the situation being so much exposed, the trees were stunted; we therefore soon had them cleared away sufficiently to allow me to commence my work. From this point, which is the highest (5200 feet) reached by any portion of General Brownlow's column, the view was exceed-

ingly fine, embracing the whole of the Howlong and Syloo country, the cliffs of the Mooi Fang Klang being just discernible to the northward. To the westward, beyond a confused mass of unimportant hills, I could distinguish parallel ranges of the Kansa Tang, Uiphum, and Saichal Klangs; with others in the neighbourhood of the sea, faintly visible beyond them. To the eastward, more than 4000 feet below me, the tortuous course of the Kolodyne and its larger tributaries could here and there be detected winding round the hills inhabited by the Southern Howlongs, and beyond them, and distant from me but a few miles the imposing mountains of the Poois or Shendoos, averaging between 6000 and 8000 feet above the sea. In the region occupied by the latter tribes, of whom we have only the most unreliable hearsay evidence, the ranges no longer run in monotonous serrated ridges, but rise gradually and imposingly peak upon peak, in long striking picturesque curves and contours, from the very banks of the Kolodyne, the background to the far east being filled up by the Sang Ow Klang, and farther to the south by the Mul Seelai-mon—the great “Blue Mountain” of the old maps—situated near the north-easterly corner of Akyab. There was only one Shendoo village in sight, which was situated on a peak of the Purun Klang, one of my points 6083 feet above the sea. Other Shendoo villages were reported to be within a day's march; the Howlong guides therefore remained on the *qui vive* during my stay on the hill-top, for between these two tribes the most deadly animosity exists, and for a Howlong to be caught by a Shendoo is certain death or at least captivity for life.

Of the close proximity of the Shendoos there could be but little doubt, for, on yesterday's march, I had passed a strong carefully-concealed block-house, situated in a strong position on the summit of a narrow ridge, thickly set around with sharpened bamboo-stakes. This house commanded the only road leading southward from Saipooga's country towards that of the Shendoos. I was told that the cultivators under Bundoola, the greatest of the Southern Howlong chieftains, are obliged to stockade themselves in their fields in similar block-houses to protect themselves against their powerful and aggressive neighbours, the Shendoos, who occupy the slopes of the hill which arises immediately in front of Bundoola's village, and which, from several points I had noticed, was strongly fortified. I regretted having to leave this magnificent point of view without endeavouring to make a rough sketch of the panorama of Shendoo land, which, without exception, was the most remarkable I had seen in the Lushai country. I had not even time to clear the peak properly, and the jungle still remains standing to the south and south-west. Time was precious, and we had to reach the General's camp before night, so as to march with him on the following morning. This we succeeded in doing, but not without having performed an excessively hard day's work.

With regard to the inhabitants of these hills, Major Macdonald estimates the Syloos at 4000, and the Howlongs at 12,000 people. The villages are always built in or near the summit of a peak or ridge, to obtain immunity from fogs, miasma, and the plague of insects and leeches. Each hut is isolated, consisting of two rooms, with a verandah at the back, and a platform in front; the whole on raised piles. The huts are well built of thick matting made of split bamboos, and thatched with palm-leaves. The Kookees raise crops of rice, cotton, melons, gourds, beans, maize, chillies, and sweet potatoes, by what is called joom cultivation. They are far more civilized than the Bheels, Gonds, or Sonthals, and show signs

of Chinese descent. Major Macdonald thus concludes his account of them:—"I believe no happier people exist in the world. If savage, they are free from the craft of usurers, as well as from the persecution of the police and the love of the law's protection."

The party with the north column left Cachar on the 25th of December. The area triangulated by Captain Badgley lies in the east and south-east part of Cachar, along the Manipur and Cachar boundary, and advances 25 miles in the Lushai country. Five parallel ranges, running from south to north, intersect this country, and, gradually lessening in height, are lost in the plains of Cachar. Between them lie four valleys, broken by innumerable small ridges and swamps, and in three cases drained by considerable streams more or less navigable for boats. The most western range is the Chattarchur, 3200 feet at its highest point, along which the Lushais made their raids on the western tea-plantations. The next range is the Bairabi, only attaining a height of 1800 feet; and between the Chattarchur and Bairabi flows the navigable river Dallesar. The easternmost of the Cachar ranges is the Buban, the highest point of which is 3100 feet; and below it flows the Barah, a fine stream draining all eastern Manipur and the north-east of the Lushai country as far as the Burmese frontier. Tipai Mukh, on the Barak, was the depôt of the column, whence it marched south into the Lushai country, up hill and down valleys, each rise being from 2000 to 3000 feet; a country of steep ridges and narrow vales. Oak is the principal timber, with fir and rhododendron on the highest hills, and many great trees, which Captain Badgley did not recognise; among them, one called *bougpui*. The scenery is very fine, the country healthy, and the climate delightful.

The Looshais are fairer than the Bengalees; about 5 feet 6 inches in height, well made, active, and intelligent. Their figures are splendid, full and muscular, with well formed heads, good foreheads, oblique eyes, and high cheek-bones; depressed noses, large but not thick lips, and scanty beards. A large square cloth or two is their only clothing. Their only ornaments are a tiger's tooth round the neck, and a small tuft of scarlet feathers hung by a string to the ear. They have no temples or images, but their tombs are ornamented with trophies of skulls of animals and feathers.

Their mode of war is by surprises and bush-fighting; and they called out to the Sepoys not to stick like cowards in the open, but to come against them in the jungle like men. They make raids among themselves, as well as on Manipur, for arms, women, and heads. They travel with remarkable celerity, carrying nothing

but arms and enough rice for the journey; a fresh joint of bamboo at each new camping-ground serving every purpose of water-jug or cooking-pot. Their villages are guarded by loopholed pallisades. The products of the country are india-rubber, wax, and ivory. Captain Badgley's party returned to Cachar by the middle of March.

The Government of India have acknowledged the value of the services of both these surveying parties, whose operations were conducted throughout in connection with previous triangulations; and a new general map of the entire eastern frontier is now in course of preparation, showing all these recent additions.

Dr. BRANDIS said he had never been in the hills of Eastern Bengal, but there were many points of similarity between the vegetation and cultivation of that district and the vegetation and husbandry of the wild tribes of Burma. The Youngya or Toon mode of cultivation was a very rude, but, in some respects, a very efficient one. It consisted in cutting down the forest in December or January, and chopping the branches into small pieces, the larger stems and trunks being alone left as too troublesome. In March or April, towards the end of the dry season, the whole was set on fire, and the ground was thus covered with a thick layer of white ashes. With the first rush of the monsoon in May or June the great mass of these ashes was washed down into the valleys by the streams, and then the ground was prepared in an exceedingly simple manner. All that was done was to dibble little holes all along the hill-side with small spades one-and-a-half or two inches broad, and in these to sow the rice or whatever else they wished to grow. To prevent the fires that pass through the forests during the dry season from consuming the portion that was cut down, a fire-path was cleared round it, and this was watched day and night to prevent premature destruction. When the seed was sown it germinated rapidly, and the whole hill-side was covered with vegetation. The only trouble remaining was the weeding, which was done with great care, until the rice ripened in the autumn. This kind of cultivation naturally engendered unstable habits among the people, for the clearing of the forest around a village one year necessitated the removal to another site the next year. The building of one of those villages was, however, a very simple affair. Among the Lushais the custom appeared to be to have a house for each family; but in Burma, among some of the Karen tribes, a whole village would consist of one large building, where each family had but one compartment about 15 feet by 10 feet. Ten to twenty families would thus dwell together. The houses were made of bamboo, which served for flooring, posts, walls, and very often roofs. There was thus no great difficulty in moving a village, and rebuilding it in another place. The result was that these wild tribes were able to provide sufficient rice and vegetables, and very frequently cotton, and silk from mulberry plantations made near the banks of rivers, which they sold, and obtained salt, cloth, and ironware in exchange, by means of the labour of about 100 days in the year. He had lived for eight years a great deal among the hill-tribes of Burma, and upon that experience he had founded his estimate of the time occupied in labour. This, of course, prevented all progress. All that could be hoped of the Lushais was that, now that some of them had been brought under British Government, peaceful feelings might take the place of past hostilities, and that they might progress as favourably as the Karens in Burma, who had made most remarkable progress in civilization, and who for loyalty were distinguished among the numerous nationalities which composed our Indian Empire. This

change was mainly due to the wonderful exertions of the American missionaries, who had practically turned these people from a race of idle drunkards into an exceedingly useful and intelligent nation.

Sir CECIL BEADON said the survey parties which accompanied the late Lushai Expedition had contributed in a very valuable manner towards our knowledge of the geography of Eastern Bengal. Indeed, until eight years ago, the Government of India was absolutely ignorant of the fact that this Lushai country was included in the British dominions. By the treaty of Yandaboo with the Burmese Government, after the first Burmese War, the boundary between Burma and the British dominions was declared to be the Yeoma range of mountains. At one point of that line of boundary lay the little isolated principality of Manipur. The British district of Cachar was bounded on the east by Manipur, while the British district of Chittagong to the south was bounded by the Yeoma range, or Blue Mountains. But there was a considerable intermediate territory between the northernmost portion of Chittagong and the southernmost point of Cachar, and this intermediate territory was supposed to belong to Independent or Hill Tipperah. The chief of Hill Tipperah was a zemindar, who paid revenue to the British Government as an ordinary land-owner; but, in addition to his zemindaree, he exercised a sort of independent sovereignty in Hill Tipperah, where his jurisdiction had never been interfered with by the Indian Government, and it was believed that this jurisdiction extended right away to the boundary which divided the British territory from that of Burma and Manipur. When, however, about eight years ago, the operations of the tea-planters in Cachar began to extend to the southward, up the valley of the Dallesur, and provoked the hostility of the Lushais (though there were other causes in operation at the same time), an expedition was sent to chastise the Kookies, who were concerned in a raid upon some of the tea-plantations in the north, and it was then discovered that the chief of Hill Tipperah never claimed to exercise any jurisdiction whatever to the east of the Chuttachoorra range. Thereupon it followed that this Lushai country, lying between the eastern boundary of Hill Tipperah and the Burmese frontier, belonged to England. It therefore became a desideratum to acquire a more perfect geographical knowledge of the country which constituted the watershed between the waters of the Dallesur and the Barak on the north, and the waters of the Kurnafuolee and the Koladyne on the south. That want had now been, in a great measure, supplied by the labours of the surveying parties who accompanied the expedition against the Lushais last year. The rivers running northward and those running southward were interlaced in a most curious manner, so that the watershed between the two systems was really a zigzag line, and it was owing to that strange conformation that the two surveying parties, proceeding in opposite directions, although they crossed each other in point of latitude, never actually met, but were separated from each other by between 30 or 40 miles of longitude, simply because one party was compelled to follow one ridge, and the other party another and parallel ridge, being separated from each other by two or more ravines, each ravine permeated by a deep stream. Much remains to be done before our geographical knowledge of the country would be complete; but it was difficult of access, and the scientific officers who accompanied the expedition had made the most of their opportunity.

The PRESIDENT expressed the thanks of the Meeting to the authors of the two papers that had been read. He did not think the Society had before received papers on this part of Asia; but, as it formed a portion of British territory, it was of considerable interest. He could not admit that Russia was very much ahead of England in endeavouring to obtain scientific information with regard to its own territories and the countries adjoining. Although an observatory had been established at Samarkand, the knowledge the Russians possessed of the districts recently conquered was still very crude. Geographical

information was not to be obtained in a day, but must be the result of a sustained series of careful observations. He regarded the Trigonometrical Survey of India as one of the grandest geographical works ever instituted in any country or any age. He therefore did not think the Indian Government could fairly be accused of carelessness in the prosecution of scientific inquiries.

*Third Meeting, 9th December, 1872.*

F. GALTON, Esq., M.A., F.R.S., VICE-PRESIDENT, in the Chair.

ELECTIONS.—*Lieut.-Colonel Henry Robert Addison* (Portuguese Vice-Consul); *M. George Artingstall, Esq., J.F.*; *R. Redmond Caton, Esq., F.S.A.*; *Thomas Beath Christie, Esq., M.D.*; *Alfred Dent, Esq.*; *Frederick Drew, Esq.*; *A. Fitzgerald, Esq.*; *Henry Forbes, Esq.*; *Charles Hockin, Esq.* (M.A. Cambridge); *J. R. Longden, Esq.* (late Governor of Trinidad); *Alexander Mackintosh, Esq.*; *William Mathews, Esq., M.A.*; *John McCall, Esq.*; *Mora Diego d'Ukson*; *Francis Parry, Esq.*; *Henry Cooper Rose, Esq., M.D.*; *S. Arthur Sewell, Esq.*; *Henry Sturt, Esq., Jun.*; *Lieutenant Richard Thompson, R.E.*; *John Anderson Willans, Esq.*

PRESENTATIONS.—*William Augustus Mitchell, Esq.*; *John Remfry, Esq.*

ACCESSIONS TO THE LIBRARY FROM NOVEMBER 25TH TO DECEMBER 9TH, 1872.—‘Notes on Natal.’ By J. Robinson. 1872. Donor the author. ‘Droits du Portugal.’ Par le Vicomte de Sa’ da Bandeira. Lisbonne, 1856. Donor Visconde Duprat. ‘Reports on Enke’s Comet, 1871.’ By A. Hall and W. M. Harkness. ‘Papers on the Transit of Venus, 1874.’ Donors the Commissioners of Congress, Washington. ‘The Mormons and the Silver Mines.’ By James Bonwick. 1872. Donor the author. ‘A Journey to the Source of the Oxus.’ By Captain John Wood; with ‘An Essay on the Geography of the Valley of the Oxus,’ By Colonel H. Yule, C.B. 1872. Donor J. Murray, Esq.

ACCESSIONS TO THE MAP-ROOM SINCE THE LAST MEETING OF NOVEMBER 25TH.—4 Sheets of the Geological Map of Sweden, accompanied by letterpress. Presented by the Swedish Government. 9 Maps of various parts of Austria, on 44 Sheets. And a Map of Hungary, on 60 Sheets. Presented by the Austrian Government. (By application.) Geological Map of the Island of San Domingo. By W. M. Gabb, Esq., Chief Geologist. Presented by the author.