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Travel and Ascents in the Himálaya. By W. W. GRAHAM.

(Read at the Evening Meeting, June 9th, 1884.)

I MUST confess that I received the invitation to read a paper before the Royal Geographical Society with considerable apprehension, and that on many grounds. First on the score of my youth and total inexperience in addressing such an audience; again, because to my shame perhaps, I went to India more for sport and adventures than for the advancement of scientific knowledge; and last—by no means least—I am painfully conscious that there are many now present who know much more about the subject than I can hope to tell them. I must not detain you by tracing how the mighty range of the Himálayas forms, after all, only part of the great earth circle of mountains. Rather let me dismiss that in the words of the Hindu poet Kálidása.

“In northern regions, clad in godlike might,
Towers the mountain king, Himálaya light,
Whose giant form, stretching in one vast sweep
Forth from the eastern to the western deep,
Seems, where it joins them, as the measuring rod
O'er the broad earth, laid by its builder God.”

Nor can I enter into any general scientific description of the Himálaya: that would in any case be presumptuous after the elaborate and valuable paper you have lately published in your ‘Proceedings’ from Colonel Godwin-Austen.

The travel I have to describe divides itself into three journeys, i. e. spring in Sikkim, summer in Kumaon, and autumn again in Sikkim. I decided on Sikkim principally owing to the comparative ease of reaching it, and selected as guide Joseph Imboden, of St. Niklaus, whose skill and courage I had frequently seen tried and felt assured of. I wanted to test the so-called winter season, and so started early, landing at Bombay, Feb. 20th, 1883. After a few days at Agra, where I picked up some useful hints from Major Michell, a well-known mountaineer, we went on to Calcutta, and thence to Darjiling. We had no view of the

snows as we went up the wonderful Hill Railway, but instead were treated to a snowstorm and extreme cold. That night I could not sleep a wink. Before dawn I was up and hastened to call Imboden, whom I found in precisely the same state of excitement, and together, we hastened round to the Mall to see the sunrise. Suddenly, far away in the dark and yet incredibly high in the sky, a pale rosy pinnacle stole into light. It was the summit of Kangchinjanga. Downwards stole the first glow, tipping the peaks in succession with a golden glory; then suddenly it vanished, leaving them cold and grey against the dim sky. Presently followed the true sunlight, and again the summits flashed forth their glories as the sun leaped suddenly above the horizon. Only this, only the simple warm red tint, appeared. We did not see, and probably no one ever does see, the atmospheric colouring which is so characteristic of sunrise in the Alps. There were none of those vivid colours, the prismatic green passing to the gorgeous blue, the red to the yellow; no peak gleamed like an opal before the God of Day. Still though a study in a monotone, the view was too noble and grand to do aught but excite admiration in any one beholding it for the first time. Alas! in us it excited something more, and as we turned our lengthening faces from the view we read in each other's eyes "Inaccessible." I was very much surprised, I must confess, as I had been under the impression that the peaks were more remarkable for height than for difficulty. Laden with snow more than their wont, owing to the exceptional winter of 1882-83, they still showed out in all their nakedness huge precipices of black or grey gneiss fringed and bordered with broken and overhanging glacier, that said as plainly as they could speak, "Thus far and no farther."

We were delayed some days, pending the arrival of guns, &c., but managed to get off on the 23rd of March, with a splendid set of coolies, fellows who could carry anything and who simply laughed at the 60 lbs. per man we weighed out for them. The road is fairly good as far as the Ramman, the British boundary, after which it degenerates into what would be flattery to call a track. I will not delay you with our various stages over travelled ground; we made halts at Siriong, Hih, Parmiang-tse, Yoksun, Bora, and reached Jongri on the afternoon of the sixth day. This was extremely fast marching, the distance being 42 miles as the crow flies, and quite double that in actual path; whilst some idea of the road may be formed from the fact that it involves ascents and descents amounting in the whole to 23,000 and 16,000 feet respectively. The last day from Bora to Jongri is very difficult and quite impassable for beasts of burden. We came on snow about 10,000 feet above the sea. Trees grow only to the top of the ridge, rhododendrons, in a thick impervious jungle, even higher. Finally, the ridge flattens out into a rolling table-land, some 14,000 feet above the sea, and here stands a solitary little stone hut, the habitation of the herdsmen in summer.

The next day we took the three best men and proceeded west to

the foot of the Kangla Pass, which leads into Nipal. The summit of the pass is some 17,000 feet, and is crowned by a noble saddle glacier, whilst on either side rises a sharp rock tooth some 1500 feet higher. We turned to the right, to the foot of the glacier which flows in a beautiful stream south-west from Kangchinjanga. Here we encamped on the moraine in one of the grandest amphitheatres imaginable. Due east rose Kabru, 24,015, its western face almost like a wall, corniced with huge masses of glacier and snow, from which thundered an incessant volley of avalanche. North-east rose Kangchinjanga, its grey precipices even now but lightly touched with snow. North, Junnoo showed its awful southern cliff, whilst west rose a great peak of snow and rock, great actually, though small and easy as compared with its neighbours. The night was the coldest we experienced in the Himalaya—8° Fahr. being the minimum reading of the thermometer.

Early next morning Imboden and I started to ascend the peak on our west. It was a hard and interesting scramble of some 5½ hours, rock and snow alternately. Only one place offered any serious difficulty, and at 10.15 we were on the summit. Though the western view was clouded we had a noble view of the north-west of Kangchinjanga. Both by aneroid and by comparison with surrounding peaks we estimated our height as rather over 20,000 feet.* It was too cold to stay long, so we descended, packed up our lightened traps, and returned to Jongri, which we reached after a very long and fatiguing tramp, all very tired. Next day we were off again, this time due north, for the glacier from which flows the Great Rungeet. The descent is steep for about 800 feet, then a steady three miles ascent, over very bad broken ground, leads to the foot of the glacier between Kabru and Pundim. Here we found a series of small lakes, now frozen hard and fast. Up the ice we went till we reached the foot of the Guicho La, the pass between Pundim and the south-east arête of Kangchinjanga. Here we camped amongst a wilderness of huge gneiss boulders. Next morning, after traversing difficult ground, we crossed the pass (rather over 16,000 feet G.T.S.), and descended first to a level bit of grass-land containing five small tarns, and then by a further descent to the great glacier, which flows almost due east from Kangchinjanga. Right above us rose the towering crags of Siniolchum and D₂, behind us lay Kabru and Pundim, so that we were absolutely surrounded by the snowy giants. We thus succeeded in seeing both the northern flanks of Kangchinjanga, and always supposing that the great northern arête can be crossed (which I believe), I should reckon that the circuit of the great peak might be made

* I carried with me an aneroid barometer by Solomons, graduated to 23,000 feet. The heights it gave corresponded, where comparison was possible, within, generally, 100 feet with the G.T.S. heights up to 14,000 feet. Above this, measurements taken with it had only a differential value. It was compared and corrected at Calcutta between each of the three tours here described.

within nine days, at any rate far within the month allowed by Hooker, who, however, based his calculations on known trade-routes. It would involve one pass of 16,000 feet, one double one of 16 and 17,000, and one of nearly 20,000 feet. Snow now began to fall heavily, and we judged it prudent to return at once, reaching Jongri on the next day.

I now considered the expediency of retiring; it was evidently far too early for climbing, the avalanches were incessant on all sides, the cold was intense, and nearly all the coolies were suffering either from frost-bite, snow-blindness, or fever. A straw turned the balance; a cooly, half asleep, from cold, burned my climbing-boots, which I had given him to dry. The next day we started on a retreat almost as precipitate as our advance. One amusing, though somewhat startling, adventure broke the monotony of returning. Imboden and I were on ahead, the ground was deep in snow, though in the forest, and we were shooting small birds. Suddenly, with a crash, a bear broke into the path some five yards in front of us. Imboden, who had the gun, ran up a tree like a lamplighter, whilst I, being unprotected, fairly turned and bolted. Fortunately for me, the bear broke through the snow which bore my weight, and after a chase of about 100 yards, he gave up. When I reached the coolies and got my rifle, we took up the pursuit, but his bearship took refuge in quite an impenetrable cane brake, and we had to relinquish our ideas of vengeance. Nothing more occurred, and we regained Darjiling on the 10th of April.

One cooly we had to leave behind, apparently at death's door with fever. I left him at Hih with some friends, and gave them ample money for him, but could not wait to hear the result. What was worse, Imboden got a touch of fever and diarrhoea, caught in these malarious valleys, and, in addition, became so homesick that I was obliged to send him home.

Then came the difficulty of getting a substitute. I had arranged with Emil Boss, one of the landlords of the *Bär* of Grindelwald, and also a captain in the Swiss Army, to send me out another guide; but at the last moment the men proposed refused or were unable to come alone. In the pluckiest way, Boss himself came at a moment's notice, bringing Ulrich Kauffmann as guide, and a better pair of mountaineers I never wish to meet with.

However, all these preliminaries took time, and it was towards the end of June before the men arrived at Nynsee Tal, whence I proposed to try the Gurhwal range. We started on the 24th, accompanied by M. Décle, a French member of the Alpine Club. As for the first 10 or 11 days we were on a comparatively beaten track, I will hurry over our preliminary marches. Ranikhet, Dourahat, Rawari, Lobah, Narambagar, Nandak Ganga, Ramni camp, Pana, Kuari Pass, Joshimath, being our successive halts. The rains were just beginning and we were much troubled by that awful Indian plague the hill-leech. In length about an inch, and about

thickness of a knitting-needle, the bloodthirstiness of this tiny pest is common. It is no uncommon occurrence to take twenty off at one time, and nothing keeps them out. Décle turned back at Pana, fairly done up by our various troubles, and we went on alone. From Joshimath we went along the Alknanda to Rini, the track in parts consisting of one or two resting on pegs driven into the rock, whilst the water thunders along beneath. From Rini we hoped to attack Nanda Devi, and accordingly proceeded up the Rishi Ganga. After our first march, very short but over difficult and untrodden ground, we were stopped by a very curious phenomenon. A glacier had advanced due north down a lateral ravine from Trisul. It has since retreated, leaving behind a trench worn to the most impassable depth. Five hundred feet is the smallest depth I could give it, and although we very carefully inspected its western side, we could find no way to cross it. Nor was it possible to turn it; and I may here remark on these difficulties in the valleys, before you can get near the peaks, among the most formidable obstacles to Himálayan exploration. Accordingly we had to return, and I then decided to try smaller game, and attempt Dunagiri, 23,186 feet (G.T.S.). We started up the next day, down which flows the Dunagiri Glacier. It is impossible to exaggerate the difficulties of traversing these cañons. After two days along the river we found travelling so difficult that, in sheer despair, we took to the summit of the ridge. After various ups and downs (one ridge we crossed was just 18,000 feet [G.T.S.]) we reached the foot of Dunagiri. We had had some very good sport on the way, especially bagging a snow-leopard, a very rare animal. Here a fresh shock awaited me—the coolies were out of provisions. Although I had supplied them with rations for a fortnight, they had eaten them all in five days. I sent most of them down to a summer village on the north of the ridge, and only retained three with us, one of whom was a little shikari, our local guide.

Next day we took matters very easily, only going to the head of the glacier, where serious climbing began, and camping there. Our height was 18,400 feet (by aneroid and comparison), so I thought it advisable to send the coolies down, an order which they joyfully obeyed. I shall never forget that view. Due south, with the awful gorge of the Rishi Ganga between, rose the Trisuli and Nanda Devi; east was Dunagiri, on whose very flanks we were lying; north stood Kamet with his attendant peaks; whilst on the west towered Gangotri like a wall. Nor was this all, for all these peaks are set with rocky aiguilles, all equally black and all equally impossible. I fear I may be taken to task for using the word "impossible," which some aver should not occur in the climber's dictionary. Still, the powers of man are limited, whilst those of Nature are hardly so. In Switzerland, even, aiguilles, which rarely give more than 1000 feet of hard climbing, long resisted the assaults of the best climbers, and only succumbed after a

long day's toil. What, then, shall be said of these rock-towers, at least equally difficult, and beside which the Matterhorn is a mere dwarf? Many of them show 5000 to 6000 feet of sheer descent, and yet look and are no more than second-class peaks beside their mighty brethren.

The night was comparatively warm, and we rather overslept ourselves, so that it was broad daylight before we had fairly started. Our route lay up the west ridge, and for some considerable distance we got along very well. Then we were forced away from the edge to the southern side of the arête, and here we suffered much from the great heat and the reverberation of the sun's rays from the snow, which took greater effect from the height we had reached. So much did this trouble us that we were all nearly fainting when we reached the summit of the arête.

Kauffmann, who had been unwell at starting, was quite overcome, and utterly unable to proceed. We did not like to leave him, but he begged us not to turn on his account; and as we thought that we must succeed, we made him comfortable, and started by our two selves. We were now on the final slope of the peak, and, though not abnormal, it was a very steep bit of step-cutting. The mist crept up and snow began to fall, and we were thinking of turning, for we had been two hours from Kauffmann, and it was already one. Suddenly the mist cleared away, and we instantly saw the great height which we had reached. Actually below us lay a splendid peak, A_{21} , to which we afterwards gave the name of Mount Monal, 22,516. Over its very summit we saw A_{22} , 21,001, the remaining peak of the Dunagiri chain. We cannot therefore have been less than 22,700, and the summit, not 500 feet above us, was in full sight. We again attacked vigorously, Boss just making notches and I enlarging them to steps. But it was no use; down swept the clouds with a biting hail and wind, and we had to turn. It was with difficulty that we got down again; the mist and stinging of the hail prevented us from seeing the steps clearly, and I fully expected a slip. We picked up Kauffmann and got down with great difficulty, the last part of the way being in darkness. Here another trouble awaited us; everything was soaking wet—matches, food, blankets, and ourselves—whilst the wind cut us like a knife. Boss insisted on our keeping awake, and I have no doubt he was right, but, tired out as I was, it was very unpleasant. Next day we carried our things and got down to our lower camp, to the great joy of our coolies, who had given us up for lost.

As this was the first occasion on which we reached an unusual height, it may not be amiss to give our personal experience. Neither in this nor in any other ascent did we feel any inconvenience in breathing other than the ordinary panting inseparable from any great muscular exertion. Headaches, nausea, bleeding at the nose, temporary loss of sight and hearing, were conspicuous only by their absence, and the only organ perceptibly affected was the heart, whose beatings became very perceptible, quite audible, whilst the pace was decidedly increased.

Unquestionably man's range is increasing. Read any old account of an ascent of Mont Blanc; it was expected that the climber should suffer every possible inconvenience from rarefied air, and the harrowing details were duly forthcoming. Now the ascent is mere child's play, and we hear no more of these agonising horrors. How is this to be accounted for? Many people, friends of my own, have felt various symptoms arising from high ascents; many others, and I amongst the number, have never felt anything of the kind. May it not be that the real strain is on the heart, and that, therefore, those with a weak heart are affected, those with a strong heart escape? I, for one, cannot believe that the air will be a serious hindrance to sound men in the Himálaya, seeing that balloon ascents have been made to 30,000, and even 35,000 feet, and though the aeronauts suffered, it was more from cold than difficulty of breathing. It must be remembered, too, that a balloon ascent is a sudden change, whilst a mountain ascent is made by slow degrees and gradual acclimatisation, and that since half the pressure of the atmosphere is already removed at 18,500 feet, when 24,000 feet has been reached the next 5000 feet will only involve a comparatively small diminution of pressure. Personally I believe that, supposing the actual natural difficulties to be overcome, the air, or the want of it, will prove no obstacle to the ascent of the very highest peaks in the world. I should add that my companions were respectively thirty-two and thirty-eight years of age.

The weather now set in very bad, heavy snow nightly, and we accordingly returned to Rini, and made our preparations for an expedition to Nanda Devi. Profiting by our previous experience, we took the north bank of the river, and in three days of awful weather reached Dunassau. This is a singular little table-land of about 16,000 feet in elevation, and protected on all sides by rocky cliffs from 500 to 1000 feet more. Judging from the shape alone, I should have thought it an extinct volcano, but could find no trace of any volcanic matter. This is used as a pasture-ground in the summer, and we found a flock of beautiful goats, herded by two filthy objects, who were indubitably the lower animals of the two. Here we were fairly stopped by very bad weather, and by violent attacks of diarrhoea, which afflicted both Boss and myself. Our coolies were at least as well or as badly off as ourselves, but they got very frightened, saying that Deva was angry with our presumption, and imploring us to return, lest a worse thing should befall us. Finding us immovable, they cut the Gordian knot, and on the 2nd fourteen of them fairly bolted, leaving us with six in all. We were not going to be beaten, so only taking food and one tent, loading ourselves, we pushed on. For four days we toiled on pretty hard, and reached the foot of the glacier on the fourth day. This was all probably untrodden ground, as we found that the map, part of the Topographical Survey on the large scale of 1 inch to the mile, was highly

inaccurate. I am sorry to have to criticise any work of members of a body from whom I received so much valuable aid and kindness as the Indian Staff, but what can I say when we found one whole range omitted, glaciers portrayed where trees of four feet thickness are growing, and the hill shading generally entirely imaginary? I have the more confidence in this criticism as Mr. Kennedy, who made an expedition with Alpine guides in August last, on the east of Nanda Devi, describes his map, part of the same Survey, as "inaccurate."

The wildness of this gorge is almost indescribable. Some idea of the ground may be formed from the fact that in four days we barely compassed 20 miles. In one place, a peak of 17,056 (G.T.S.) falls almost sheer into the stream, which does not exceed 9000 feet at that spot. In many places it was only by holding on for dear life and using the rope that we could get on at all. At last we were completely brought to a standstill. The river—for even here it is a big stream—comes dashing down a precipice of some 200 feet, and further progress on our side became impossible. Could we have crossed, some three hours would have put us well on the glacier; this, however, was out of the question, for the stream was running with great fury, and whirled away like straws a couple of pines with which we tried to make a bridge.

We had plenty of provisions and sat down deliberately to wait "dum defuat amnis." Luck, however, was against us; the rest of our coolies were frightened by the unusual toil and weather, and bolted, leaving us three alone with one faithful shikari who stuck to us. This was a death-blow to our hopes, and we had to return. It was provoking, for we had been delighted to see that a route was clear and possible to within 2000 feet of the summit. True, the last 2000 feet looked black and threatening, but there is usually a way to be found up rocks when not too lofty. We had to abandon everything but indispensables, and by dint of carrying some 50 lbs. a man, made our way back to the stage before Dunassau. Of course as soon as we got back the weather changed, and we had four most perfect days for climbing. We sent the shikari back to his native village to bring up some coolies, and during his absence made an assault on A₂₁ (22,516). We slept at about 18,000 feet and the next day achieved the ascent very successfully from the western ridge. It was a fair climb, but presented no great difficulties. We called the peak Mount Monal, from the unusual number of those lovely snow-pheasants we saw on it. We then decided to try the third and last peak in the Dunagiri range, A₂₂ (21,001). I had not much hope of success, as it was extraordinarily steep, no snow lying on it. We slept well above the snow-line in one of the most extraordinary places I have seen. We had marked a cavern to sleep in, and when we reached it we found it contained what I can only describe as a miniature subterranean glacier which was fed by an aperture at the back from a small basin of névé above. It was

very curious to see the floor of the cave, about 100 feet by 30, exhibiting imitations of all the usual glacier phenomena, with crevasses, two moraines, &c. The surface, however, was smooth and polished, and did not exhibit the worn and rough appearance produced by exposure to the sun. It differed from the Swiss and Savoy ice-caves described by Mr. Browne, in being fed from permanent snows and not from the drift of winter storms. On the morrow, as I expected, we were defeated. We reached a height rather over 20,000 feet (estimated), but were fairly stopped by the last precipice.

On our return we found the coolies had arrived, so we went back to Rini and thence by stages to Nynee Tal. We returned by the great pilgrim route viâ Nand Prayag and Karam Prayag, meeting many hundreds of the pious on their way to Budrinâth and the sacred shrines. The road, particularly after the rains, was in a very bad state, but this is the normal state of hill-roads, which are usually left to look after themselves till a message arrives that the Governor or some great man is coming along. No particular incident broke the 150-mile tramp, and we got back into Nynee Tal on August 12th, having had a pleasant, if not very successful, trip.

We then prepared for what we intended to be our *pièce de résistance*, i. e. another trip to Sikkim. We made all our preparations in Calcutta, reached Darjiling on the 22nd, and were able to start on the 25th of the same month. I took the same Sirdar as I had before—a sturdy, honest Tibetan, by name Gaga, who had the extra advantage of speaking Hindustani and a little English. This time, however, we were not so fortunate with our coolies. Owing to the abundant employment at Darjiling itself, it was very difficult to get good men, and we were finally obliged to put up with rather a scratch pack, over whom Gaga had little control. We soon found this out, for they took to halting wherever they thought proper, and one deliberately set down his load and bolted. The road was worse than before, owing to the constant rains, and leeches were in swarms. The extraordinary number of insects and their aggressiveness is one of the greatest drawbacks to travelling in Sikkim. Mosquitoes are bad enough, bamboo ticks are worse, but the pinnacle of infamy belongs unquestionably to the “peepsa.” This is a tiny dipterous fly, probably of the genus *Simulium*, whose bite leaves a small spot of extravasated blood under the skin, and whether you open it or leave it alone, the irritation is equally intense. Kerosene oil we found kept them off in some measure, but even that was not of much account. On the other hand, there was something to make up for these little troubles. The jungle was magnificent, creepers, orchids, and the most superb magnolias; whilst the size and variety of the moths and butterflies is almost beyond description. We amassed a little collection of over 200 varieties, and a German collector at Darjiling caught in one year, within a radius of 30 miles, upwards of 800 varieties,

nearly one-half of which were butterflies and more than 100 absolutely new to science.

Our progress was necessarily slow, and we only reached Jongri on the 2nd of September, i. e. in nine days. We found the hut now occupied by a goitrous old woman and her grandson. They were the guardians of the herd of yak which are annually sent up to these rich pastures. A few presents made them readily allow us to share the house, which was certainly better than tents. As a general rule, September is fairly fine in the mountains, but last year (1883) was very abnormal, and, to our horror, the rains set in worse than ever. The coolies became very discontented, and I finally decided to dismiss most of them. As there would be no climbing for at least a fortnight, we sent the Sirdar with four others back to Darjiling to bring up half a dozen more amenable porters, and also a further supply of rice. Two others were sent to bring some rice we had left at Yoksun, two remained with us, and the rest were paid off and dismissed. On the 4th and 5th of September we explored the west side of Kabru and followed the great glacier which descends from Kangchinjanga.

On the 23rd we crossed the Guicho La, purposing to attack Pundim from the north, but, on reconnoitring, we found it quite impracticable. I do not know of any more formidable peak. On the west side it drops sheer, whilst the other three are guarded by the most extraordinary overhanging glaciers, which quite forbid any attempt. We returned on the 26th, the weather being consistently bad, and it was not till the 29th that the break came. That night we had a bitter frost, and the stars flashed out once more. Early on the 30th of September we started for Jubonu, which lies immediately east of our camp. At 2 P.M. we had reached a suitable place, well above snow-line, and camped there. Height by aneroid was 18,300, and, though absolute reliance cannot be placed on such uncorrected observations, I think that at least 18,000 may be taken as correct. We got off at earliest dawn the next day, i. e. at 4.30, and settled down to our work at once, leaving the coolies behind. The snow was in good order, and Kauffmann led the way at a great pace. He is, I believe, generally admitted to be one of the fastest step-cutters living, and this day and afterwards he fairly surpassed himself. The glacier was crowned with steep rocks, which formed the edge of a noble amphitheatre formed by Jubonu and Nursingh. We were now on the peak itself, and proceeded to cut up a steep snow couloir. This gradually got steeper, till we were forced to take to the rocks. With the exception of one place, which greatly resembled the celebrated Chimney on the Broil side of the Matterhorn, we got along very well, till we reached the final crags, which rose some 300 feet above us. We now turned northwards along the slopes of the glacier, which swept down from the rocks. Fortunately there was an incipient bergschrund, and we passed along in this to the north side, whence a short but exceedingly steep slope of

neve led us to the summit, which we reached at 11 A.M. without a halt. This was incomparably the hardest ascent we had in the Himálaya, owing to the great steepness of the glacier work. I consider—and in this I am borne out by both my companions—that glaciers lie at a greater angle in the Himálaya than in Switzerland; and indeed the general slope of the peaks is greater.

The height of the peak is 21,300 or 21,400 feet, according to G.T.S. measurements. In the descent we suffered considerably from the heat, which is felt much more at these elevations than is perhaps generally supposed. On the 3rd we examined carefully the eastern face of Kabru, and made all preparations for an assault. On the 6th we finally started, and made our way up the eastern glacier of Kabru. On its banks we met with immense quantities of Edelweiss, the climber's flower, and success was prophesied accordingly. We climbed up the highest moraine I have seen (fully 800 feet) to the base of the eastern cliff of Kabru. There was only one route to the higher slopes, and that we could not find in the mist. Heavy snow fell, and we camped where we were. Next day we found our opening, and worked up it. We three went on ahead, and pushed straight up the face of the ridge, intending, if possible, to camp on its summit. This we reached at midday, but found that we were cut off from the true peak by a chasm in the arête, so that we were on a detached buttress. We descended, met the coolies ascending, and turned north along the steep snow slope, finding at last a small ledge just big enough to accommodate the Whympertent.

This was, I think, the highest camp we had, being certainly 18,500 feet. I estimate this by aneroid and comparison. The night, however, was mild, and the coolies, who were very tired, preferred to stay up instead of descending as before. We were off next morning at 4.30, and found at once all our work cut out for us. The very first thing was the worst. A long couloir like a half-funnel, crowned with rocks, had to be passed. The snow was lying loose, just ready to slide, and the greatest possible care had to be taken to avoid an avalanche. Then a steep ice-slope led us to a snow incline, and so to the foot of the true peak. Here we had nearly 1000 feet of most delightful rock-work, forming a perfect staircase. At 10 we were at the top of this, and not more than 1500 feet above was the eastern summit. A short halt for food and then came the tug of war. All this last slope is pure ice, at an angle from 45° to nearly 60°. Owing to the heavy snow and the subsequent frost, it was coated three or four inches deep with frozen snow, and up this coating we cut. I am perfectly aware that it was a most hazardous proceeding, and in cold blood, I should not try it again, but only in this state would the ascent have been possible in the time. Kauffmann led all the way, and at 12.15 we reached the lower summit of Kabru, at least 23,700 feet above sea. The glories of the view were beyond all compare. North-

west, less than 70 miles, lay Mount Everest, and I pointed it out to Boss, who had never seen it, as the highest mountain in the world. "That it cannot be," he replied; "those are higher"—pointing to two peaks which towered far above the second and more distant range, and showed over the slope of Everest—at a rough guess some 80 to 100 miles further north. I was astonished, but we were all agreed that, in our judgment, the unknown peaks, one rock and one snow, were loftier. Of course, such an idea rests purely on eyesight; but, looking from such a height, objects appear in their true proportions, and we could distinguish perfectly between the peaks of known measurements, however slight the differences. It has been suggested to me since that we mistook Mount Everest; but this is impossible; for just here occurs the remarkable break in the chain, and there is no snow range at all between Kabru and the group of Mount Everest. However, we had no long time for the view, for the actual summit was connected with ours by a short arête, and rose about 300 feet of the steepest ice I have seen. We went at it, and after an hour and a half we reached our goal. The summit was cleft by three gashes, and into one of these we got. The absolute summit was little more than a pillar of ice, and rose at most 30 or 40 feet above us still, but, independently of the extreme difficulty and danger of attempting it, we had no time. A bottle was left at our highest point, and we descended. The descent was worse than the ascent, and we had to proceed backwards, as the snow might give way at any moment. At last we reached the rocks, and there we fixed a large Bhotia flag on a smooth slab. We then hastened on, the latter part of the descent being made in the dark, and finally turned into camp at 10, having been much helped by a brilliant moon. The ascent was dangerous rather than difficult, but without the new snow the difficulties would have been enormously increased. During the ascent we saw a pair of snow-white hawks at a height of quite 22,000 feet, and their flight did not seem to be in the least impaired by any atmospheric effect.*

We felt, after this success, emboldened enough to try something even more formidable, and having engaged some more coolies from Yoksun, on the 13th we started for the Kang La once more. This time we held on due west and camped at the foot of the glacier. Next morning we crossed the pass, 17,500 (G.T.S.), into Nipal, and I ascended a peak west of the pass of which the G.T. height is nearly 19,000 feet. From this we were able to carefully examine Junnoo, and came to the conclusion that it was too late to attempt such an ascent. We thought that we could again distinguish the afore-mentioned great peaks, but the horizon was not so defined as on our previous view. We accordingly gave up further

* The summit of Kabru is given by the G.T.S., the high accuracy of which is, I believe, undisputable, at 24,015 feet. Our point must therefore have been within a few feet of 24,000 feet.

ascents, and returned by steady marches to Darjiling, which we reached on the 22nd.

One more trip we made, starting on the 29th. We went up the Teesta Valley viâ Tumlong, and Cheungtam to the juncture of the Zemu and the Lachen, where we halted at the foot of D., 19,183. The winter set in with heavy snow before we could recommence climbing, and we were obliged to finally refrain. We returned and reached Darjiling once more, on the 21st, and soon afterwards Kauffmann left for Switzerland, Boss remaining with me for a shooting trip in the Terai.

And here in mentioning them for the last time I must pay a tribute to my two Swiss companions, a tribute the more necessary in one case as the hasty sentences of a private letter have found a publicity and been given a meaning equally far from my intention. Comparisons are proverbially odious; but this I must say that both men are admirable in all the qualities that make the ordinary first-rate Alpine guide. Wherever a strong arm was needed to overcome mountain obstacles, Kauffmann's was ready. It is no disparagement to him to say that Boss was something more. He has that power of pathfinding which is rare equally among guides and mountaineers; he has that still rarer power of being daunted by no unfamiliar obstacle or danger, whether above or below the snow-line, which makes the true traveller. I could say more but that he is present to-night, and I fear to hurt his modesty. I will only add an expression of the pleasure with which I have heard that the Council of the Society has distinguished him by a prize which I am sure he will always highly value.

I may mention in conclusion that I left the corrections we were enabled to make in the maps of the Sikkim frontier, in the hands of the Survey Department in India. I shall not venture into details I can hardly, without the sheets before me, succeed in rendering intelligible. I ought to state, however, that your map-maker has been placed at a disadvantage in preparing the diagrams before you, inasmuch as the sheets of the new survey of Sikkim, on a scale of 2 miles to the inch, which I procured in India, are not as yet to be obtained in this country, and do not even—I believe Mr. Saunders will confirm me—exist in the India Office. The best maps you have in Savile Row misplace some of the main spurs and valleys of the Kangchinjanga group. The new map constructed by Mr. W. Roberts is a work of admirable accuracy up to the snow-line, and covers a district of extraordinary difficulty to the surveyor, owing to the dense jungle and the number of intersecting ridges and valleys.

Previous to the reading of the above,

The PRESIDENT said he had the pleasure of introducing to the meeting Mr. Graham, who had won the distinction of having reached a higher point above the level of the sea, in mountain climbing, than any other living man, except his companion Emil Boss. The subject of the Himálayas was one which was more familiar to the

Society years ago than it had been of late. During the period when the survey of India was conducted by Colonel Montgomerie, our knowledge of the Himálayas—at least of the ranges beyond the Himálaya proper—was immensely extended, as many as 70,000 square miles of the roughest country in the world having been surveyed. But Colonel Montgomerie necessarily had recourse to Indian pundits trained to the work, who penetrated where Europeans could not. They concealed their instruments and passed as merchants, and in this way made known vast tracts of country and the courses of rivers which before were previously unknown. In 1865 Colonel Montgomerie received the Society's gold medal, and in 1872 one of his pundits also received a gold medal for the great services he had rendered in making known the upper course of the Brahmaputra, and his determination of the exact situation of Lhasa. Since then various distinguished travellers, such as Colonel Trotter, Sir Douglas Forsyth, Colonel Godwin-Austen, and others, had visited the trans-Himálayan ranges, and none who heard it could forget the interesting and charming lecture delivered by Sir Richard Temple on the mountain region of Sikkim. He remembered at one of the anniversary dinners hearing a most interesting speech from Professor Huxley, in which he referred to the division of mankind by some persons into two sorts of men—those whom you would like to have with you if you were tiger hunting, and those whom you would not. Now it seemed that Mr. Graham would tell them that he found in Mr. Boss a person whom he would like to have with him in the moment of danger and difficulty, and what Mr. Boss thought of Mr. Graham might be gathered from a letter which the former had written to Mr. Freshfield, and which without any improper breach of confidence, and without causing a blush on Mr. Graham's face, he would read to the Society. It was written in March last from Grindelwald:—"I left Mr. Graham in Madras beginning of February; he intended to see the Presidency and return to England April or May. He was in splendid health, and I have no fear that he will not mind, nor suffer from, the climate, although it began to be rather warm, because I have never seen a man with such a constitution as Mr. Graham's, combined with the power of mind to believe no change can affect one, which does much to keep one in good health. I have enjoyed myself very much indeed during the whole of the trip, thanks to the great kindness Mr. Graham showed me all the time; and though I had left home and business at a time when I ought not to have done so, I must confess that, thanks to him, I *never* regretted it one moment, but would, as I now know him, do so *again* with pleasure any moment that he liked, and wherever he would care to go, because I found him to be the best companion I ever was out on the rough with, and consider him one of the best men I ever met.—Yours, EMIL BOSS."

On receiving the Back prize, one of the distinctions which our Council only bestows on enterprising travellers, Mr. Boss wrote an acknowledgment to Mr. Freshfield, in which he said, "I am very glad indeed to accept the prize you kindly, though undeservedly, bestowed on me, although I now and always shall *think, say,* and *know* that it has been *English* pluck and perseverance that have achieved the results in the expedition." With this preface he begged to introduce Mr. Graham.

After the Paper,

SIR RICHARD TEMPLE wished to offer his unfeigned thanks to Mr. Graham for his interesting paper. He reminded the members of the Society that they had now seen face to face the man who had accomplished the highest ascent on record. He spoke in the presence of the President of the Alpine Club, and might say that the ascent which Mr. Graham had described exceeded by 1700 feet the highest that had previously been accomplished. Though Mr. Graham had modestly said that he

undertook the expedition in search of sport and adventure, he had rendered a great service to science, and had described his adventures with a natural energy of thought and a picturesque originality of diction that were worthy of the occasion. He had had the advantage of reading the paper, and hoped the Society would not be content with having heard it, but would read it in the Journal. They would then find that Mr. Graham had been obliged to omit many interesting passages. They would observe the remarkable geographical acumen with which he had pointed out the configuration of the Himálayan region. He had shown that in reality the true wall of the abode of everlasting snow was a long line of watershed, and that the commonly known peaks of the Himálayas were really great southern outworks of that mighty wall. Had time permitted, Mr. Graham would have read an excellent description of the various outworks, describing the first of them lying north of Kashmir; secondly, the outworks which formed the source of the Gauges and the Jumna; then the outworks north of Kangchinjanga, which he himself said presented the most awful series of impossibilities that a climber could look upon; then the great outworks north of Nipal, with Mount Everest; then the group of Kangchinjanga, north of Sikkim; then the Chimolari, which was long considered the highest mountain in the world; and lastly, the outwork north of Bhutan, which he seemed to think was still involved in obscurity, but he (Sir Richard Temple) had seen that earthwork, which was visible to those who navigated the upper course of the Brahmaputra. The lessons to be learnt from the lecture were four in number. First, the members could not fail to be struck with the remarkable scope which still remained for mountaineering exploration in the Himálayas. Although English surveyors had measured a host of peaks, still vast mountain regions remained unexplored, and he earnestly hoped that the influence of the Royal Geographical Society among other influences would induce the Government in India to give more attention than ever to mountaineering exploration. Still, as an old political officer, he must ask them to bear in mind that the Government of India had great political difficulties to contend with. It was all very well to say that the Russians or other nations had succeeded in exploring certain parts, but they had milder characters to deal with in Mongolia than the British had in the Himálayas; and although he was far from saying that the task of mountaineering exploration in Nipal and Bhutan should be resigned as hopeless, yet premature attempts at exploration might lead to bloodshed and war, and, valuable as geographical exploration was, practical politicians must count the cost. The next great lesson to be learnt from Mr. Graham's paper was the value of what he called icemanship. That was a capital phrase, and he hoped it would sink into the hearts of the people of England and the Government of India; for although our surveyors had done wonders in this line—wonders to which Mr. Graham paid a justly deserved tribute—it must be remembered that they were subjected to the physical depression of the Indian climate, and could not possibly be professional mountaineers. He was sanguine that the President of the Alpine Club would bear him out when he said that mountaineering was a practical art, a profession which absorbed all a man's thoughts and time, and if the glacier world above the line of everlasting snow was to be properly delineated it must be by a staff of trained mountaineers who might be either Englishmen or Swiss, but they must be trained in the Alps. When once such men were set to work in the Himálayas, it would be possible to train the natives of India to follow in their footsteps. The paper had told them how enduring, how resolute, how skilful the native labourers and carriers were, and no doubt they would accomplish a great deal under the training of such men as Boss, Kauffmann, and Imboden. The third lesson to be learnt was that the highest peaks could be ascended by men of strong heart physically with much less physical danger than had hitherto been supposed. It was all very well for Mr. Graham to

say that headache and giddiness and nausea were conspicuous by their absence, but he (Sir R. Temple) could assure him that those phenomena had been observed by others conspicuous by their presence. Those that undertook such a task should be in the highest physical condition, and then they might ascend to the highest peaks in the world. The fourth lesson to be learnt was the great value to science of explorations in the glacier world in those lofty regions. Those who were acquainted with the charming works of Tyndall and others in Switzerland, could readily imagine how much greater the instruction would be if they could explore altitudes 14,000 or 15,000 feet above the summit of Mont Blanc. It was to be hoped that Mr. Graham would be tempted by the happy recollection of his visit to India, and by the cordial manner in which he had been received by his countrymen at home, to repeat his visit to the Himálayas, and see whether the flag which he had put there had been displaced, and whether the bottle had stood the test of time and the wear and tear of the climate in that extreme altitude. Let him remember that he had written upon his banner the motto of "Excelsior." He had ascended Kabru, but still above him the lofty precipices of Junnoo cried "Excelsior"; and when he ascended Junnoo there was Kangchinjanga still saying "Excelsior." He recommended the members of the Society not to trust to the feeble descriptions which were given to them of those mountain regions, or even to the instructive paper which Mr. Graham had read, but to go and visit the Himálayas for themselves. Their countrymen out there would receive visitors with open arms, and the journey might be undertaken far more easily than in former times. Places where he (Sir Richard Temple) had to ride or walk laboriously might now be passed over at full gallop, and besides that, there was the wonderful Hill railway, where a train could be dragged up a mountain side by a powerful chain worked by a wheel at the end. Then, if they got an introduction to the Governor of Bengal, perhaps he would put them in the house where he (Sir R. Temple) used to live, from the bedroom window of which they might see that glorious view which Mr. Graham had depicted just as he used to see it daily from his study. Besides that, they might ride all over the road which he made smooth for the benefit of tourists and politicians, and might ascend to that range which divided Nípal from Sikkim. Then, with one sweep of the eye, they would see two of the great southern outworks of the Himálayas, one of which Mr. Graham had ascended. To their right front would be the whole mass of Kangchinjanga; on the left front, a little in the distance, the whole group of Mount Everest, and behind that peak another higher still. If they did that and watched the glorious sunrise effects upon the altitudes, and then let their eye move down to the depths of the valleys beneath, they would learn that the eye could sweep over an unbroken descent of 25,000 or 26,000 feet, and would return home with a grateful sense to Providence that the British nation had been given empire over such glorious scenes. Their ideas would be brightened, their thoughts elevated, and, in the words of the poet, they would

"Look through nature up to nature's God."

Sir JOSEPH HOOKER said he had great pleasure in congratulating Mr. Graham on his exploits, and all the more because he had long wished that some one who had experience of Swiss glaciers would attempt the Himálayas. He thanked Mr. Graham most heartily for the flattering way in which he had spoken of his (Sir Joseph Hooker's) labours, and for the vivid way in which he had brought before him scenes which had charmed his eye half a lifetime ago. There could be no doubt that he had performed a great feat of ascension, and had so far extended our knowledge of the peaks and glaciers of the Himálayas. There were present, however, some men who, thirty, forty, fifty years ago, described from their own knowledge

the physical features of the Himalayas. Men like Thomson, Waugh, Strachey, Walker, Hodgson, had written ably and well on the features of the range, and of the great peaks on the high land behind. He was sure that Mr. Graham would not claim those discoveries as his own. In the introduction to his paper he had given a very neat sketch of the Himálayas, and it was an admirable foretaste of what was to follow. He wished to ask whether he took the bearings of the peaks he saw to the north of the range between Kangchinjanga and Everest, because he (Sir Joseph Hooker) could not help thinking that he saw them himself and took their bearings from a point some 60 miles north-east of Mr. Graham's position. He also desired to ask what was the state of Mr. Graham's barometers and aneroids, and whether they were tested and compared after he came down. Mr. Graham's statement about the non-effect of great elevations on the human frame reminded him of a friend who declared that everybody who was sea-sick must have a diseased stomach. He himself had spent a good many months at elevations of 16,000 or 18,000 feet, but he never knew what it was to go a few miles outside his tent without feeling great pressure, or to walk up to 18,000 feet without a feeling of having a pound of lead on each knee-cap, two pounds in the pit of his stomach, and a hoop of iron around his head, and he always returned to camp with nausea. He did not think his heart was a bad one, for it had lasted him all his life, but he had experienced the same feelings at lofty elevations in Africa and Europe as in the Himálayas, so that he thought there must be some superiority in Mr. Graham's organisation which was not shared by every one, and upon which he congratulated him.

General WALKER said he had long lived on the outskirts of the Himálayas, but had not had any opportunities of penetrating far into them. In his younger days, when he had to make surveys, political reasons had prevented him going beyond the frontier, and afterwards when operations were being carried on in Kashmir and on the verges of Tibet he was at the head of the Department, and the field work was done by officers under him. Mr. Graham's criticisms of the surveys showed that the English language was very deficient in suitable words to express the ideas that had occasionally to be presented in connection with survey operations; thus there was no more unfortunate word than "survey," for it was applied alike to the general view of a region, as obtained from the summit of a mountain peak, and to the topographical delineation of the region, which was a totally different and distinct thing. Mr. Graham had correctly stated that certain maps of the Himálayas in the Indian Survey Department were very inaccurate, but it should be remembered that these maps were not the result of topographical surveying. In many cases the work by the Survey officers in the Himálayas was merely rough sketching, done often at very great distances. There was present an officer of the Survey Department (Major Hoklich) who had recently ascended the Takht-i-Sulimán and a few other peaks, from which he had, in the common acceptation of the word, surveyed 50,000 square miles, equal to the whole area of England; but if a few years hence some Alpine mountaineers succeeded in penetrating into those regions they would no doubt find that there was a great deal of inaccurate topography, for it was humanly impossible for anybody to make a topographical survey of 50,000 square miles in four or five days, or four or five weeks. Portions of the region recently visited by Mr. Graham had been sketched by the Survey officers at the rate of over 500 square miles in a month, which of course would not permit of accurate topography, or more than rough generalisation. No doubt it would be of great advantage in Himálayan surveys to have more mountaineering, but the Survey work in the Himálayas had not suffered from the officers shrinking at any physical difficulty. They had all ascended as high and gone as far as they possibly could in the short time that the regions were accessible. India was governed by a very practical

government which looked for returns in work of which the value was proportional to the cost. If a party of Survey officers with a detachment of mountaineers from Switzerland travelled in the mountains for eight or nine months, they might bring back tales of hardy exploits which would be most interesting to the Alpine Club and to the Geographical Society, but if they did nothing more, and brought back no topography and only a few barometric measurements of differential heights, he was afraid that the Government of India would not be altogether satisfied with the result. The real reason why peaks higher than 23,000 feet had not been ascended was that there was not a sufficient staff of officers and men to employ upon the task of the topography of the higher regions. Sir Joseph Hooker having spoken of the peak which he saw from the pass at the head of the Donkia, he (General Walker) would point out that Sir Joseph had penetrated further into Tibet half a lifetime ago than any European had since succeeded in doing, and had reached a hill beyond the borders of Sikkim, from which one of the great snowy ranges of Tibet was visible in the distance; but seeing this range from a single point only, he was not able to determine the distances and heights of its peaks. It is impossible to fix distant peaks excepting by observations from at least two, if not three stations situated at some distance apart from each other, the third station being not only desirable as a check on the two first, but often absolutely necessary to prove that the points at each station have been truly identified; for when seen from a distance the peaks of a snowy range look pretty much as alike as the teeth of a comb, and when several such ranges appear simultaneously in the field of view, it is no easy matter to identify at a second station the particular teeth of the comb which have been observed at the first. It is very probable that there are higher points on the Tibetan ranges than the highest yet discovered on the Himálayan ranges; but this question can only be decided—at least from the side of India—by observations at stations situated on the higher Himálayas, as these ranges intercept all view of the Tibetan ranges from the south. Three years ago Captain Harman, who was then employed on the survey of Sikkim, made a daring attempt to fix the peaks of the Tibetan ranges, by observations from several stations on the Kangchinjanga-Donkia range. His first station was over the Donkia Pass, near the position reached by Sir Joseph Hooker; here he saw a grand snowy range in the distance, extending as he estimated 150 miles from east to west. He was overjoyed at the sight, but it was late in the afternoon when he reached his station, and many of the peaks were hidden by clouds. Knowing that they would probably disappear at sunset, he determined to bivouac on the spot for the night. Unfortunately he had not brought sufficient clothes with him, and simply shared a blanket with his two guides. The result was he was badly frostbitten, and he never recovered from the effects of the injuries he then received. If this calamity had not happened to him, no doubt the distant range would in a few days have had all its most prominent peaks fixed from end to end. Captain Harman tried to move about on crutches and carry out his work, but at last he had to give it up and return to Darjiling, and two years afterwards he died. He was a fine, noble fellow, and had he been associated with Mr. Graham, the two between them would probably have obtained most valuable results. He (General Walker) trusted that an opportunity would be afforded for completing the work on the frontier by the combined efforts of skilled mountaineers like Mr. Graham, and skilled surveyors like the late Captain Harman.

General STRACHEY said he would not at that late hour attempt any detailed observations on Mr. Graham's paper, but if his account of what he had seen and done should induce others to follow in his footsteps, his advice to them would be to get ice-manship if possible, and to have a strong heart, but above all things to take with them the lamp of science, which would intensify all their enjoyments, and enable

them to understand what they saw, and to bring back an account of what they had done which would really add to the stock of valuable knowledge which the world possessed with regard to those mountains.

Mr. GRAHAM said the bearing of the high peaks which he saw was almost due north-west, with a trifle west. When he got down he had his instruments compared, and they were fairly accurate. Many of the heights were well known, and the aneroid barometer might be fairly reckoned on for differential measurements.

Mr. FRESHFIELD observed that in one of the surveys published by the Indian Survey Department two peaks with an indication "Very high snowy peaks," were put down on the authority of one of the native surveyors or pundits, "No. 9," to the north-west of Kabru, north of the Arun river, and north-east of Mount Everest, on the real water-parting of the Himálayas.

General WALKER replied that the bearing of those peaks was no doubt all right, but the native explorers had no means of estimating the altitude, which might be anything between 20,000 feet and 30,000 feet.

The PRESIDENT, in proposing a vote of thanks to Mr. Graham, said that gentleman had taken them to one of the most magnificent regions in the world, and considering that he went to India more for sport and adventure than for the advancement of science, he had shown that he was a discoverer of more than ordinary intelligence. If he returned to those regions he would do so still better, supplied with the lamp of science to which General Strachey had referred. It was interesting to note how surveyors and discoverers had discrowned one peak after another from being the highest in the world. In his youth Dhawalagiri was considered to have dethroned the Andes; soon after Kangchinjanga was discovered to overtop Dhawalagiri; then came a great surveyor who dethroned Kangchinjanga in favour of the mountain which now bore the name of Mount Everest; and now, if Mr. Graham was right, and there appeared to be no reason to doubt it, Mount Everest must bow its cloud-capped head. No doubt others would be stirred to rival Mr. Graham, and very soon the mystery would be solved. At any rate, Mr. Graham had made a very interesting addition to the knowledge of this stupendous region, and it must be very gratifying to men like Sir Joseph Hooker, who led the way there, to find that they were followed by youthful adventurers like Mr. Graham.

A Journey into the Interior of Ashanti.

By Captain BRANDON KIRBY.

(Read at the Evening Meeting, June 23rd, 1881.)

Map, p. 488.

THE following is a brief account of a journey I have recently made to the northern limits of what was formerly the Ashanti kingdom. Although many white people have visited Coomassie and the country to the east and west of it, I believe I am the first white man who has penetrated the country due north of Coomassie through Coranza, and who has reached in that district the southern limits of those inland nations who had hitherto been prevented from communication with the seaboard by the formerly impassable barrier of Ashanti power.

I may state that my first introduction to West Africa was in 1881,