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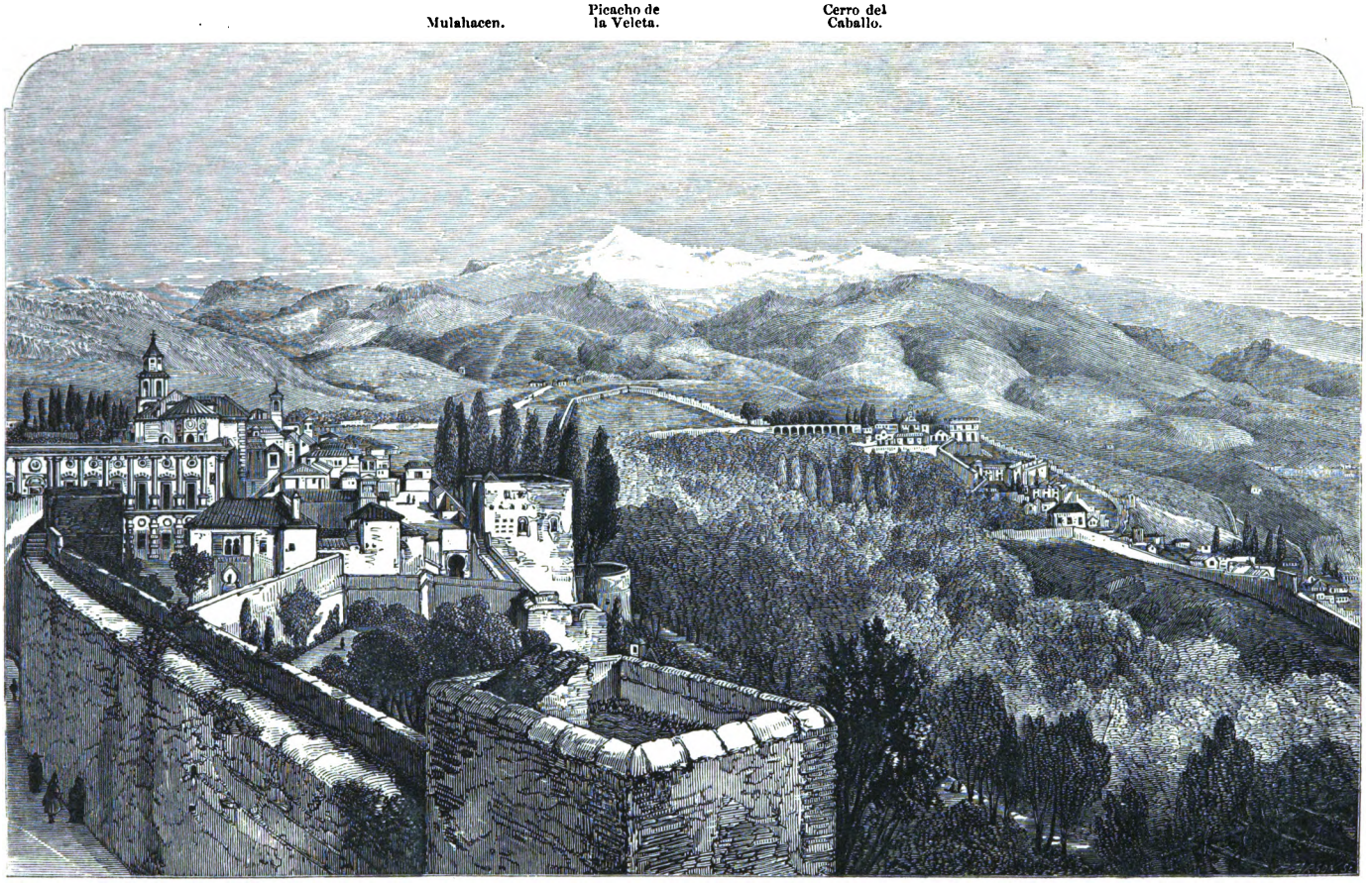

THE SIERRA NEVADA FROM THE TORRE DE LA VELA IN THE ALHAMBRA
(*From a Drawing by* E. W. Cooke, R.A.)

THE

ALPINE JOURNAL:

A RECORD OF MOUNTAIN ADVENTURE

AND

SCIENTIFIC OBSERVATION.

BY MEMBERS OF THE ALPINE CLUB.

EDITED BY H. B. GEORGE, M.A.

FELLOW OF NEW COLLEGE, OXFORD.

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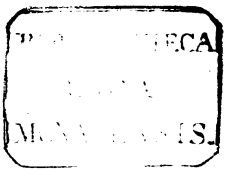

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ALPINE JOURNAL.

The Sierra Nevada. By John Ormsby. Read before the Alpine Club, March 5th, 1867.

In a notice of Mr. Blackburn's 'Travelling in Spain,' which appeared in the September number of the *Alpine Journal*,* it was remarked that there was a difference of nearly 2,000 feet between two statements of the height of the highest point of the Sierra Nevada, and also that there were four peaks represented as exceeding 12,000 feet, an elevation sufficient to give more snow and glacier than that range had been generally credited with; and it was suggested that some member of the Alpine Club ought immediately to go to Spain, and give us more certain knowledge on the subject.

Perhaps it was a fortunate thing for me that I did not see that paragraph before starting for Spain; for if I had seen it I must have either forfeited the friendship of the editor, or taken steps to follow out his suggestion. Of course, the mere laying in of a stock of instruments at Mr. Casella's, and carrying the same wherever I went, as if I were enthralled by a scientific Old Man of the Sea, would have been a pleasure; but I am not so sure what the consequences of such a proceeding might have been. With nothing in the way of apparatus more sinister in appearance than a small pocket telescope, I found myself more than once an object of curiosity, not wholly unmingled with suspicion. The theory that I was in quest of enjoyment was not accepted by the natives with that entire belief I could have wished. The burns, bites, heat, hard walking, and other incidents of travel in these parts, proved to be severe stumbling-blocks to faith in this direction, when the probabilities came to be calmly considered. Whether it was the mining

* *Alpine Journal*, vol. ii. p. 368.

interest, or railway-extension, or sympathy with General Prim, or a harmless form of insanity, that was considered to be at the bottom of my proceedings, I cannot say; but of this I feel sure, that if I had been seen going about with a barometer, thermometer, sympiezometer, theodolite, and those other scientific trinkets which ambitious mountaineers hang about their persons when occupied in settling questions of this sort, I should have heard more about it. I might, perhaps, have managed to satisfy the authorities, though these in Spain sometimes do curious things. But if it had got wind that I was in the habit of performing incantations over boiling water on mountain tops, and setting up graven tubes in lonely places, and repeating mystic formulas in front of them, it is by no means impossible that an ignorant and superstitious peasantry might have taken a bigoted view of my conduct; and that I might have been compelled to swallow the mercury of my barometer, or have had my own boiling-point taken, with more or less accuracy, or suffered some other personal inconvenience or injury to my constitution, for which the scientific value of my observations would not have compensated—at least to me. On the whole, therefore, I am just as well pleased that I was not stimulated to do anything for the benefit of science, and not the less so because of the fact that there was really no necessity to do anything at all. There are no mountains in the world, except perhaps some favoured portions of the Alps, that have been more frequently and carefully measured than the heights of the Sierra Nevada. The first figures quoted in the Journal are those of the Spanish naturalist, Rojas Clemente, who, as he says himself, was the first observer that measured the heights of this range with exactitude. It did not occur to O'Shea or to Ford, when they quoted them in their Guides for Spain, that these figures meant Spanish feet, and were therefore likely to mislead English readers, as the Spanish foot is to the English in the proportion of twelve to thirteen. The other figures come from Edmond Boissier of Geneva, the eminent botanist, who spent a considerable time in the Sierra Nevada, and measured its heights, apparently in the most painstaking way.* His results are of course given in French feet, and therefore fall short of English measure by just about as much as Clemente's exceed it. Besides these, there have been other observers, among whom may be mentioned Señor

* Boissier seems to have been obliged to conduct his experiments with the strong hand. He found it necessary to disguise his barometer so as to make it look like a blunderbuss.

Frank Pfendler d'Ottensheim, a German no doubt by descent, though he writes in Spanish, who gives a series of barometric measurements made by himself in 1847. The results produced by these three agree on the whole more closely than is usual in such cases, and the average of their observations gives 11,723 English feet as the height of Mulahacen, the culminating point of the Sierra Nevada, and 11,518 as the height of the second peak, the Picacho de la Veleta. There are two other peaks, the heights of which are represented by Clemente as exceeding 11,000 feet, the Cerro de Alcazaba, and the Cerro de los Machos; but it is curious that neither he nor the others give any calculation of the height of the Cerro del Caballo, to the eye at least, after Mulahacen and the Veleta, the most important summit of the range, the only one besides these two marked on any map, and certainly a higher point than the Machos.* It may be as well to explain here that *cerro* generally means a round-topped mountain, while *picacho* is a peak. But in the Sierra Nevada district

* The following are the heights, reduced to English feet, of the principal points mentioned in this paper. The authorities are—Edmond Boissier, *Voyage botanique dans le midi de l'Espagne*, Paris, 1839–45; Simon Rojas Clemente, *Paseos de Granada*, and *Ensayo sobre las variadadas de la vid*, Madrid, 1807; Frank Pfendler d'Ottensheim, *Madera, Andalusia, la Sierra Nevada y los Pirineos*, Sevilla, 1848:—

Mulahacen	Clemente	11,781
	Clemente	11,711
	Boissier	11,701
	d'Ottensheim	11,701
Picacho de la Veleta	Clemente	11,597
	Clemente	11,533
	d'Ottensheim	11,530
	Clemente	11,501
	Boissier	11,432
Cerro de Alcazaba	Clemente	11,356
Cerro del Caballo	Estimated	11,200
Cerro de los Machos	Clemente	11,205
Col de la Veleta	Boissier	10,826
Glacier of the Corrál	Boissier	9,585
Sierra Lujar	d'Ottensheim	6,262
Village of Trevelez	Boissier	5,330
City of Granada	Boissier	2,343
Village of Lanjaron	Boissier	2,284

The Cerro del Caballo appears, from both the Veleta and Mulahacen, to overtop the Cerro de los Machos by some few feet, but Clemente's measurement of the latter is probably, as in other cases, slightly excessive.

the latter title is monopolised by the Veleta, on account of its superior sharpness and commanding position: it is always spoken of by the natives as 'El Picacho' simply. Its second title Ford explains to mean 'watch-point,' but the dictionary says 'weather-cock.' Mulahacen is Spanish Arabic, meaning 'the Lord Hasan'; the Hasan in question being Abu-l-Hasan, the father of Boabdil, and last but one of the Moorish kings of Granada. The Sierra Nevada, therefore, has five peaks exceeding 11,000 English feet in height, the lowest of which (by Clemente's measurement at least) is higher than anything in the Pyrenees, and the loftiest nearly 600 feet higher.

Notwithstanding this very respectable show of facts, I am bound to say the first view of the Sierra Nevada from the streets of Granada at the season of the year at which I saw it, is apt to prove somewhat disappointing. Led away by its name, and its rank as the second highest mountain range in Europe, you expect to see a lofty chain of mountains covered with dazzling snow stretching far away east and west. What you do see looks rather like one big brownish-grey mountain, with a sharp culminating peak that does not seem to be half as far off or half as high as it ought to be; and as for the great masses of snow you looked for, there is nothing to be seen in that way but a chain of snow patches, not on the top exactly, but running along just underneath the crest. There are one or two considerations, however, which ought not to be lost sight of. In the first place, the clear dry atmosphere of Andalusia deceives the eye strangely in matters of distance. That peak (it is the Veleta, Mulahacen being all but invisible from Granada) which does not look more than two or three hours distant, is in reality, Ford says, twenty miles off; and having walked the distance, I have reason to know that his estimate is certainly not excessive. Then it should be borne in mind that these mountains are in latitude 37°, only a degree or two north of the Cashmere Himalayas, and just twice as far south of the Pyrenees as the Pyrenees are south of the Alps. In the Pyrenees the snow-line is at least a thousand feet higher than in the Alps and, therefore, if snow-lines were regular in their habits, it should be here at least two thousand feet higher than in the Pyrenees, or somewhere about 11,000; and in fact, except in one instance, I do not remember ever seeing snow at a lower level than this. It is true the main ridge from the Caballo to the Alcazaba is above 11,000 feet, except at one spot, but it does not afford space enough for the accumulation of large continuous masses; and snow, we all know, requires the moral support of large masses to enable it to withstand the influence of the sun. On

the whole, I think it is very creditable to the Sierra Nevada that it contrives to preserve such a quantity of snow as it does through the fierce heat of an Andalusian summer, and I know that after some experience of the power of the sun on the highest peaks, I felt inclined to wonder, not that there was so little, but that there was so much. The glacier part of the question we shall come to presently.

After four or five days devoted to the Alhambra and Granada generally, I began to see about the Sierra Nevada. My original plan was to start in the cool of the evening, sleep somewhere on the side of the Veleta, ascend the peak in time to see the sunrise, and then descend on the south side to the little village of Lanjaron, a place much resorted to by the people of Malaga and Granada for the sake of its mineral waters, and therefore likely to be good headquarters. The commissionaire of the hotel charged himself with the task of providing some one to act as guide and porter. The first candidate had curious views about mountaineering. At the first mention of walking he cried off. The regular way of ascending the Veleta from Granada is to hire horses for self and guide and ride as far as possible, about, I believe, an hour short of the summit (though I suspect a really clever mountain pony might be got to do the whole distance without much difficulty); and this was the only way he recognised. The second consented under protest to walk, but he drew the line at night-walking, and utterly refused to have anything to say to camping out on account of the 'ladrones.' This, as I endeavoured to point out to him, was all 'bosh.' There are no ladrones, that is to say professional robbers, in the parts of the Sierra Nevada I wished to explore, for the same reason that there are no deerstalkers on Primrose Hill or salmon fishers at the fountains in Trafalgar Square. The third agreed with me on this point, and thought that even if we did meet with 'mala gente'—literally, 'bad people,' but in Spain always used to distinguish people with a congenital taste for robbery, from those with whom robbery is a profession and a science—what with his gun and my revolver, we had very little to fear from them; but he distinctly refused to go for less than a week certain, at the rate of a dollar and a half a day. Tired of waiting, I agreed to this, and ordered provisions and wine. But on the afternoon of the day on which we were to start he came to the hotel and pleaded urgent private affairs, responsibilities as a family man, and so forth, and begged leave to propose as his substitute a friend, a 'hombre de confianza' who knew the mountains well. With these remarks he introduced a sprightly youth of about seventy,

who in a quavering voice assured me that he feared nothing, neither the heat by day nor the ladron that walked in darkness. There was a diligence starting that night for Lanjaron, so I sent immediately and secured a seat.

Lanjaron is one of the very loveliest spots it has been my fortune to light on in my walks through 'the wilderness of this world,' as John Bunyan calls it. The village consists of a long street of white, flat-roofed houses, and like all the villages of the Alpujarras, is entirely Moorish in appearance. It is perched on the south side of a steep mountain, with a deep ravine in front, and the narrow shelf on which it sits is one tangle of pomegranates and peaches, figs and oranges. We here, however, have nothing to do with lovely spots or oranges, except perhaps to bear in mind that these Lanjaron oranges are famous throughout the south of Spain, and are an admirable provision of nature for the comfort of the mountaineer in this fiery, thirsty land. Among the attractions of the spot more to the purpose are—a rare thing in Spain, and doubly rare in these parts—a clean and comfortable little inn, and a tolerably efficient guide. The driver of the diligence, who took an interest in my proceedings, said he thought he knew a young man who would answer my purpose, and the young man, as it turned out, did answer reasonably well. In case any member of the Alpine Club should ever go to Lanjaron, it may not be amiss to mention that his name is Juan Estévez, here pronounced Etéve, which I suspect is Alpujarras for Estéban, in English Stephen; a name entirely calculated to inspire confidence on a mountain expedition. He is a thoroughly willing, good-humoured youth, strong, active, ready to walk any number of hours, afraid of nothing, and rather fond than otherwise of camping out. He can be trusted with untold coppers, I know, for he has carried rather more than the change of a pound for me in that form in a satisfactory manner; uncounted cigars I am not quite so sure about, but then everybody in Spain holds liberal views about the rights of property in tobacco. He now knows the Sierra pretty well, and the way to most of the chief points of interest; but I cannot say much for the extent of his knowledge when we started. The chief fault I found in him was a habit of roaring with a view to make himself more intelligible. There is no European language more easy to understand after a little practice than Spanish, provided always that it is regular Castilian Spanish, a deliberate tongue which gives its proper effect to every vowel and consonant. But Andalusian is a corruption of Castilian, dropping some letters, slurring over others, and hurrying on

in a way calculated to puzzle the foreigner; and the Alpujarras dialect is a corruption of Andalusian. I got on, however, with Juan better than I could have expected. On the evening of our third day he told the landlord of the inn that he now could understand everything I said to him, and that he believed I could understand everything he said to me, which is in its way an illustration of what Buckle says about the facility with which mountaineers believe. By starting that night, he said, he thought we could reach the Veleta and return the next evening; so shortly after midnight we began to ascend straight up behind Lanjaron.

I cannot give any description founded on observation of the path or scenery just here, for it was pitch dark; but, from the number of trees I ran against, I judged that we were travelling through a forest, and, if I might trust my own sensations, the route generally lay up a waterfall on the roundest and smoothest stepping stones I ever slipped off. When at last we got clear of the trees and fairly out on the bare mountain side, I fancied we must before long come to the plateau or moderate slope that one usually finds after the first steep ascent out of the valley. But no; on we went up, up, up, as the song says; and I began to suspect that I had wofully underrated the Sierra Nevada. The previous night I had spent in holding on to the top of a lively diligence over a difficult line of country, and though I tried to sleep an hour or two before starting, what with the noises in the inn and the watchman in the street, I could not. This was my first walk for the season, and after four or five hours of this sort of thing I began to have a feeling as if my legs never by any possibility could be straight again; also that it would not grieve me very much if the Veleta were removed to a region the temperature of which would put an end to all disputes about the limit of its snow-line; and finally, that to murder Juan then and there, for chuckling when I referred to 'las piernas,' would be only justifiable homicide. However, a timely halt and an early breakfast worked a softening change, and a couple of hours afterwards I suddenly found myself looking down on a vast plain bounded by distant blue mountains, and Juan said, 'Mire! Granada!' Above us on the right rose a grey dome-shaped summit; beyond it, a jagged peak of nearly the same height; and beyond that, far away, a sharp conical peak much higher than either. I now saw plainly enough how the land lay. The nearest summit was the Cerro del Caballo, the next the Machos, and the distant one the Veleta. Juan had told me he had been once up the Picacho and knew all about it, but I

now began to have my doubts on the matter, doubts which were subsequently confirmed. At any rate, he clearly had not taken the right way: this was, in fact, nothing more than the short cut over the Sierra from Lanjaron to Granada. However, as it turned out, it suited my purpose just as well. It seemed quite possible to reach the Veleta, but it was also possible it might turn out a much longer and more difficult piece of work than it looked, as indeed it afterwards proved to be; and at best it would have been a hurried affair, and I always like to take mine ease on my mountain top. But even before leaving England I had set down the Caballo for an expedition on its own account, as it was the third peak marked on my map, and from its position at the western end of the range, clearly deserving of an ascent. So I determined to make this the Caballo day, and thereby avoid going a second time over ground I had already had quite enough of.

To effect this from where we stood all that was necessary was a tug up some steep slopes of shingle, at an unpleasantly high temperature. The view from the Caballo is, in most points, much the same as that from the Veleta, which we shall come to presently, the only advantage being that the noble mountains overhanging Alhama, the Sierra Tejeda, and the continuation of the range on to the Serrania of Ronda, are more fully seen. From the Caballo the ridge descends rapidly until it reaches the level of the col, about 3,500 feet high, over which the road from Granada to Motril and Lanjaron passes, and which connects the Sierra Nevada with the other links of the chain. This is the spot renowned in romantic history as 'El ultimo suspíro del Moro,' being the point from which Boabdil, surnamed 'the unlucky,' retiring into the Alpujarras after the fall of Granada, took his last view of the towers of the Alhambra. The face of the Caballo overhanging the Lanjaron valley is nearly an absolute precipice, but on the side next the Machos there is a deep basin containing a lake which reminded me strongly of our old friend the Schwartz See, and a rather respectable bank of snow, extensive enough for a glissade—a mode of progression which seemed to afford Juan much amusement as we descended by it. Perhaps it was the first time he had ever seen it, for opportunities do not occur everywhere in the Sierra Nevada. I received here a practical illustration of the nature of the struggle for existence which snow has to maintain in these mountains. Lying in a shady spot by the side of the lake, after a trifling transaction in ham and oranges, an exposition of sleep came upon both of us. I had not had any for forty eight hours, and mine was sound, but

not so sound but that after a while I became conscious of a sensation as if I were pantaloon in a pantomime, and clown were touching me up with his favourite implement, the red-hot poker. The sun had come round the rock under which we lay, and finding a couple of motionless bodies there, was instituting experiments on the combustion of human cuticle with such brilliant success that I lost all the skin off the left cheek and side of the nose, and for nearly a month afterwards carried a mark on the wrist exactly like the sear of a hot iron. Juan's case was worse; for the front of his shirt being open a neat oval patch of skin was raised, just as it might have been by a blister put on for the relief of his chest. The valley near the head of which we were was plainly the route we should have taken, and by it we returned to Lanjaron. It is a fair sample of the lateral valleys of the Alpujarras, basin-shaped, and bare, wild, and savage at the top, then descending rapidly, and as it descends becoming deeper, narrower, and more gorge-like, the lower portion being richly wooded with chestnut and evergreen oak, and in its general features strongly resembling the Italian valleys of the Alps. In fact, but for an occasional aloe or cactus, or other semi-tropical plant, I could have fancied myself back again in the Val Anzasca.

At first sight, from a moderate elevation, the Alpujarras seems a mad jumble of mountains without system or arrangement, a mighty maze, and quite without a plan; but from a commanding height the ground plan of the district is seen to be very simple. It is something like that of the south Tyrol. There is a great primary valley running parallel with the line of the mountain chain, formed by the streams of the Guadalfeo descending from the west and the Rio Grande, the 'great river,' or 'Guad-al-quivir' of these parts, from the east. These two, uniting below Lanjaron, just as the Adige and Eisack unite near Botzen, make a compromise and flow together southwards into the Mediterranean at Motril. Between this line of valley and the sea there intervenes a chain of sierras from 4,000 to 6,000 feet in height; on the west the Sierra Almijarras; in the middle the Sierra Lujar; and on the east the Sierra Contraviesa. The two latter may be held to represent the Dolomite mountains as far as position goes. On the other, the north side of the main valley, there is a series of lateral or secondary valleys coming down at right angles (more or less) between the mountain buttresses that spring from the crest of the chain. From the general survey I made from the top of the Caballo, it appeared that the right route for Mulahacen, and probably the best also for the Veleta, lay up the

next valley to that of Lanjaron on the east. If we continue to describe the Alpujarras in terms of the Tyrol, as a mathematician would say, the Lanjaron valley standing for the Passeyr Thal, and Lanjaron itself for Meran, this valley would represent the valley up which the Brenner road turns at Brixen, and the resemblance is perhaps fortified by the fact that the chief pass from the south to the north side of the mountains lies at its head. I set Juan, therefore, to make the necessary inquiries, and after a day or two at Lanjaron we set out for Capilleria, the highest village; the party being on this occasion increased by the addition of a donkey to carry the provisions, and the indispensable 'bota' of Valdepenas, for it was too great a risk to depend altogether on the resources of a mountain posada, and in this climate if a man carries his clothes, it is about as much as can be expected of him. In the Alpujarras you pass in the course of a day, nay in the course of a forenoon, from African to Alpine scenery. All the way down to Orgiba, the capital, the Botzen in fact of the district, the country had a more thoroughly African look, I thought, than even the neighbourhood of Algiers. The vegetation of Europe, except as represented by the olive, seemed to have vanished and given place to the aloe, prickly-pear, and dwarf-palm. A little further down, I believe, about Motril, the date palm is to be seen, as it is pretty nearly all along the Mediterranean coast from Malaga up to Tarragona. From Orgiba we ascended at first, by the bed of the Rio Chico or 'Little river,' so called from the volume of its waters. It was quite dry, and its bed had the general appearance of an undisciplined moraine; but it would appear that a higher degree of drought than this is possible in the Alpujarras, for somewhere in the vicinity there is a stream called the Rio Seco or 'Dry river.' I wish I had seen this natural curiosity. A tramp of a couple of hours across a burning ridge brought us to the Barranco de Poqueira. Up to this we had been, to all intents and purposes, in Africa; here we were suddenly transported into what might have been a nook in the Val d'Aosta, a deep rocky gorge shaded by beech and chestnut, with a fine lively cascade and a rickety wooden bridge and quaint old mill, above it a succession of steep green slopes with the villages of Pampaneira, Gubbio, and Capilleria, and high up, cutting sharp against the sky, the piebald peak of the Veleta —altogether a view that seemed as if intended for the walls of the Royal Academy. And now for the first time I realized the height of the Sierra Nevada. We had been going steadily up and were here at least 4,000 feet above the sea, and yet we

seemed to have made no impression on it, to be still at its foot. I cannot say much for the comforts of Capilleria. The dirtiest and most ramshackle auberge or wirthshaus any of us ever put up at is a palace to an Alpujarras posada, and the posada here was the turning of a scale worse than usual. In fairness, however, I must admit the transcendent virtues of the snow-cured hams produced in these villages.

We started at daybreak for Mulahacen, taking on a local guide, as Juan at last admitted his total ignorance. Mulahacen, when at length it came in sight, loomed out a big, grey, humpbacked mass, looking like the great grandfather of all our British family of mountains, a complete contrast to the slim peak and sharp lines of the Veleta. Just as we reached the spot where the real tug begins, a very striking but at the same time depressing phenomenon presented itself. Great masses of fleecy cloud came boiling up from the Granada side, rolling over the western shoulder of the Veleta and along the side of the peak, and then, tumbling over a precipice on the eastern flank, disappeared into some mysterious abyss. At this spectacle the local became big with augury, and began to deliver predictions of 'malo tiempo' and 'tormenta.' I have had more than my fair share of bad weather in the mountains, and it seemed very hard to be followed by ill luck into this remote corner of Europe. But I thought it was worth while trying whether I could not cheat the tormenta by reaching the top before it had time to spoil the day altogether, and leaving the two natives to discuss at their leisure the state of the weather—that topic of conversation from Indus to the Pole—I pushed on as hard as I could go. There is no difficulty whatever about the ascent of Mulahacen from this side, and, I need scarcely say, no danger. It can only be described by drawing on the resources of mountain slang. It is simply a long, heartbreaking 'grind.' You have before you a long steep slope of mica schist crowned by a fringe of jagged rocks, one of which you fondly imagine to be the summit. That gained, you find another slope with another fringe of rocks about half a mile ahead, and so on. I think I counted four of these before I caught sight of, nearly a mile away, a rocky pinnacle with something on it, clearly the handiwork of man, which said in unmistakeable language 'top of Mulahacen.' By this time the ominous gathering round the Veleta had quite disappeared, and the sky was once more the usual deep cloudless blue of these skies; but the wind blew a small hurricane, and for the first time for some weeks I felt actually cold. Scrambling up the rocks and ranging alongside of the 'stone man,' as we should call it, a very neat affair

built, I believe, a couple of years ago by Government engineers, I found myself looking down on one of the strangest—I think the very strangest piece of mountain scenery I ever saw.

I remembered having read in some geographical work that Mulahacen and the Veleta were separated by a tremendous chasm. This I had set down as merely a piece of tall encyclopædia talk. But now that I was on the spot, I felt bound to make a mental apology to the writer, whoever he was. There was a chasm after all, and a tremendous one. My first feeling was that at some period the mountain mass of the Sierra Nevada must have been a vast volcano compared with which Etna would be a mere squib, and that here I was standing looking down into its crater. A Pyrenean cirque is perhaps the mountain feature most closely resembling this huge pit; but, in truth, neither the Pyrenees nor the Alps have anything that can be properly compared with it. Its Spanish name conveys a tolerably good idea of its form and appearance. It is called the 'corrál,' from a fancied resemblance to the walled enclosure into which cattle are driven at night in this country, and it *is* an enclosure with only one narrow outlet, shut in by a vast wall of precipice some eight or ten miles in extent, in which the three highest peaks of the Sierra Nevada are points, and which runs round in an almost perfect circle from the north-eastern shoulder of the Veleta to the north-western flank of the Alcazaba. It is as nearly as possible sheer precipice the whole way round; indeed under the Veleta the mountain seems to be actually undercut; in one or two spots, as well as I remember, the base cannot be seen on looking down from the top. The depth of the precipice from the summit of Mulahacen I roughly guessed at about 1,500 feet, and something more perhaps measured from the top of the Veleta, for the floor slopes away rapidly to the north; but on looking into Boissier and d'Ottensheim, I find they agree in estimating it at about 2,000 French feet. The floor is partly a jumble of rocks, partly a mass of snow, the most considerable probably in these mountains, and from its northern extremity issues the one glacier of the Sierra Nevada, and the most southerly glacier of Europe. No glacier could have a grander cradle, no mountain stream a bolder or wilder birth-place. The north face of the Wetterhorn is a pretty good specimen of what people of the gushing school call 'nature in her sternest mood,' but it is soft pastoral scenery compared with the Corrál de la Veleta. I was so taken by the mystery of the spot that I determined when I returned to Granada, from which side it was obviously more easily approached, to devote a day to exploring

its recesses, the glacier, and the 'Barranco del Infierno' or 'Hell gap' which forms the outlet, more satisfactorily than I was able to do with a telescope from the top of Mulahacen or the Veleta. But this from one cause or another I was unable to manage, which I regret all the more as I was told afterwards that there is a very beautiful lake, the 'Laguna larga,' somewhere near on that side. According to Boissier, who examined it closely, the glacier is 9,585 English feet above the sea level, from 200 to 300 feet high, and about 600 paces broad; and presents in miniature all the features of the glaciers of the Alps, crevasses—only however some inches wide—impure ice, moraines at the base and on the sides, and streams of turbid water issuing from small ice caves at its extremity. This is the source of the famous river Genil, or Xenil, which figures so prominently in the history of Granada and the times of the Moors.

It speaks volumes for the attractions of this Corrál de la Veleta that it should take precedence, as it does here, and as it did each time I saw it, of as as fine a panorama as is to be seen from any mountain-top, perhaps, in the world. I had been sitting alone for more than half an hour, very much like Patience, on the monument I have already mentioned, when the others came up, and something was said about the coast of Africa, which reminded me of where I was. Unconsciously I had been slighting one of the four quarters of the globe, by sitting with my back to it all this time. There is so little difference between the view from Mulahacen and that from the Veleta, that I may as well here combine the two. I must remark, however, that Mr. O'Shea is quite wrong when he says in his 'Guide' that the view from Mulahacen is far finer and grander than that from the Veleta. Where there is any difference, it is decidedly in favour of the latter. So high up as this, the two or three hundred feet by which it is overtopped make no appreciable difference in the extent of view, and its position is certainly better. Standing out as it does, and so close, it cuts off Mulahacen from the whole west side of the great plain of the Vega and the mountains that bound it. On the other hand, it is true, from Mulahacen you have a more extended view of the Mediterranean coast, in the direction of Adra and the Cabo de Gata, and of the south-eastern spurs of the Sierra Nevada. But all this, in the other case, is more than redeemed by the view of the intercepting bulk—Mulahacen itself. No man with a well-developed mountain sympathy can help feeling a respect and affection for this mountain, after

seeing it from the Veleta. It has that grand simplicity of character and retiring modesty that accompany true greatness. It is not one of those mountains that are always thrusting themselves into notice. From Granada nothing but the top is visible, and that as an occasional excrescence merely, on the shoulder of the Veleta; and there are very few low-lying spots on the Alpujarras side from which it can be made out. It seems always content to allow the Veleta to carry off the first honours. But when you have ascended his rival, then at last old Mulahacen seems to be put on his mettle; then he comes out in his true proportions, and takes the conceit out of that perky Picacho. The comparison of a mountain to a recumbent lion is a common one; but I have never seen a case in which it is so apt as this. From the Veleta, Mulahacen does look like a lion in repose, with his grim face of precipice turned northwards, his long back on Africa, and his outstretched arms embracing the Corrál, while the peaks of the Alcazaba and Veleta mount guard right and left. Not that the Picacho, as seen from Mulahacen, is not itself a very striking object. There is more snow on this than on the Granada side —indeed on the east flank of Mulahacen, over the Trevelez valley, there is a piece which almost reaches to the dignity of a 'field'—and the peak has altogether more of the character of a snow mountain. The black precipice too, overhanging the Corrál, gives it a very bold appearance, and I can well imagine that on a fine morning in May, before the dog-day heats have changed the brilliant green of the lower sierras into the russet-brown I saw, and destroyed the continuity of snow upon the upper peaks, it must be a magnificent object from the deck of one of the P. and O. steamers below in the Mediterranean, such a spectacle as even our own Alps might find it hard to surpass. Perhaps from no other spot on the globe, except Teneriffe and one or two of the island peaks of the Pacific, does the eye look down so directly on the sea, and take in such a vast expanse of water at a glance. The distance to the coast is over thirty miles, but from this height of near 12,000 feet, it is so foreshortened that the surf beating on the shore away at Adra seems almost at your feet, and the white latteen sails of the fishing boats, and the very curl of the waves, can be seen right over the crest of the Sierra Lujar, which is itself more than 6,000 feet high, and from Orgiba looks well worth an ascent on its own account.

I was not able to make out the African coast satisfactorily from either Mulahacen or the Veleta. The great blue plain seemed to stretch away onward and upward until it melted insen-

sibly into the sky. The coast of Africa is, I imagine, in general visible only in the early morning, but that it is distinctly visible is unquestionable. The distance is not more than about 130 miles, which is well within the range of vision from such an elevation. Mr. Clark, the author of *Gazpacho*, saw it at sunrise from the Veleta, as I did myself from the head of the Lanjaron valley the morning I ascended the Picacho, though I confess if I had been alone on that occasion I might have had some doubts as to whether what I did see were clouds or mountains. Gibraltar, I am inclined to think, is *not* visible from the Sierra Nevada, at least I never could identify the old rock from any point, and I suspect it is hidden by some of the spurs in the neighbourhood of Malaga. At Gibraltar, afterwards, I tried to solve the question, but I neglected to provide myself with the Town Major's pass, without which no civilian is allowed to ascend to the top of the Rock; however, from the highest points which I did reach, there was nothing to be seen of the Sierra Nevada. The coast view, however, in this direction is very fine, and that wild medley of mountains, the Alpujarras, at your feet, and the succession of jagged sierras rising one above the other on towards Ronda, make up a grand panorama. To the south-east and east the view is less striking. East of Mulahacen and the Alcazaba the Sierra Nevada becomes very uninteresting. The mountains, spreading out fan-wise, fall away rapidly in height, and lose all boldness of form and outline. To the north, in the direction of Baza, there are some very striking looking sierras of a light grey rock, on which, the day I was on Mulahacen, I observed those strange tints about which people were so sceptical in the case of Mr. Holman Hunt's Dead Sea Mountains in the picture of the 'Scape Goat.' On the north-west the great attraction is, of course, the beautiful plain of the Vega, dotted with groves of olive, pomegranate, and orange, and laced with a network of little streams whose winding wooded banks look from this height like an embroidery in green silk. In the 'tiempo de los Moros' it was one vast garden, and even Spanish neglect cannot quite rob it of the appearance of a garden now. But more fascinating even than the Vega is that white mass at the very foot of the mountain, like the model of a town carved in ivory, the ancient city of Granada in its nest of red hills and green trees. Though it is twenty miles away, and more than 9,000 feet below, you need no telescope here to follow the windings of its narrow Moorish streets. On the hill just over it, a little to the right, the red walls of the Alhambra rise above the trees, and you look over its belt of towers down into the very heart of the old

fortress, and can trace the walks and terraces in the gardens of the Generalife, its neighbour. The whole thing is so minute, yet so distinct, that it looks like an elaborate toy, or a scene in Lilliput.

The Alcazaba did not seem worth ascending after Mulahacen, nor the mountains on that side worth exploring; but I should have liked to have spent a day in rambling round the Corrál. However, the morning after our ascent of Mulahacen the weather again began to look unpromising, and as I did not relish the prospect of being weatherbound in a place like Capilleria, I returned at once to Lanjaron. It was just as well, for, though no rain fell, it blew a gale sufficiently strong to make mountaineering at any rate unpleasant. A day or two later I started once more for the Veleta. My plan this time was to camp out near the head of the Lanjaron Valley, ascend the Veleta as early as possible, and then descend to Granada alone, leaving Juan to return to Lanjaron. We made our bivouac under the cliff of the Caballo, not far from the lake, and got up a roaring fire, by which, after nightfall, a couple of shepherds were drawn suddenly out of the darkness, like moths, and joined company with their flock and wolf-dogs, noble beasts, big enough to tackle a lion and prepared for all comers with great spiked collars round their necks; for these upper Alpujarras valleys abound with wolves. Their masters proved very good fellows, and were strikingly wild and picturesque to look at. But being clad in sheepskins with the wool and the fleas left on, they were more agreeable from a social and artistic point of view than as bedfellows. Nor is the presence of sheep, except in the form of mutton, desirable in camp. The dogs, too, did their share, for just as I had managed after many failures to fall asleep towards morning, they nosed, I suppose, some wolfish or other intruder, and made, I thought, an uncalled-for fuss about it. Under these circumstances the moment there was light enough to travel I stirred up Juan, and we ascended the head of the valley and came out on the crest a little to the east of the Machos. Here we found ourselves cut off in front by a precipice descending on the Granada side, and with no road open to the Veleta, apparently, except along the top of a ridge of rocks about half a mile long, and in form something like a cock's comb. This, if we had known what we were about, we ought to have shirked altogether by descending on the Alpujarras side, and keeping along by its base. But we did not; and then followed one of those *mauvais quarts d'heure*, which it is the charming privilege of this kind of place to afford; a period of crawling along

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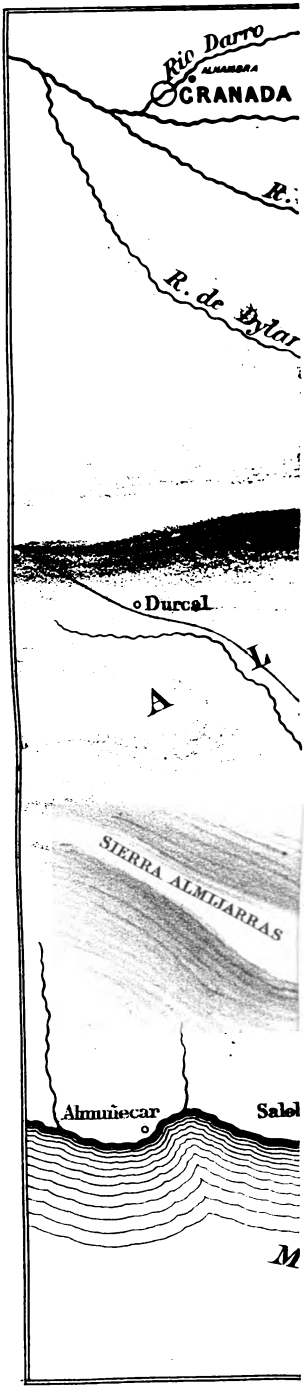

sharp ridges, screwing round pinnacles, worming a way up 'chimneys,' dropping down on hard slabs of rock with a shock that seems to loosen every grinder in your gums, and the other agreeable gymnastics incidental to such a path. As we were here going along on the very sky line of the Sierra Nevada. I could not help thinking, if there should happen to be a powerful telescope on board some Mediterranean steamer just then, and another at Granada, what strong concurrent testimony might be produced of a new fact in natural history, that the habitat of the Barbary ape in Europe is not, as hitherto supposed, confined to the Rock of Gibraltar, two very lively specimens having been observed on such and such a morning on the crest of the Sierra Nevada. At one spot we came to a snow-slope about a hundred yards long by thirty or forty wide, filling up a gully across which we had to get somehow. I naturally looked upon the snow as affording the means of crossing, but in Juan's eyes it was the difficulty, and Juan was right. The slope was steep, the snow was coated with a glaze like a wedding-cake, and was so hard that no punching with a stick made any impression on it; and at the bottom it curved over, and the next thing that met the eye was the basin at the foot of the Veleta. I thought with tender regret of an old Alpine companion, a certain handy little pick, rusting ingloriously in London while it was so much wanted here. And now I had a delightful surprise. Scrambling up by the side of the slope, where it began to grow narrow, I came upon —I could hardly believe my eyes—our old friend the bergschrund. There it was, however; not indeed as large as life, but still there, cut right across the slope from side to side, and at right angles to the surface of the snow, all shipshape and regular. We crossed by means of that bergschrund. It was perhaps twenty yards long, and in some places almost five feet deep, and so wide that our elbows did not touch the sides. It was so unexpected, and apparently so uncalled for, that I could only set it down to a desire on the part of the snows of the Sierra Nevada to preserve all the proper traditions of snow mountains. Therefore let not ambition mock their humble toil, or Alpine grandeur hear with a disdainful smile of the short and simple bergschrund of the poor Sierra Nevada. At last we contrived to get down to the Col de la Veleta at the foot of the peak. This is the lowest point in the ridge between the Caballo and the Alcazaba, and being the only one at which it can be crossed, it is the regular pass between the Poqueira valley and Granada. According to Boissier its height in English feet is 10,826; so it is probably the highest pass in Europe

regularly employed for genuine business purposes. From this the ascent to the top of the Veleta amounts to nothing more than zigzagging up a tolerably steep cone of shale. The view from the Veleta I have already spoken of. On the top of Mulahacen, though we had risen above the current of the gale then blowing, it was bitterly cold; but here it was just sufficiently sharp to make basking in the sun pleasant, and I passed a couple of hours in that form of sensual indulgence, varied by looks into the Corrál, telescopic views of inner life in Granada, and attempts to find a plausible reason for believing a distant bank of clouds to be a part of the coast of Barbary, until Juan at last found it necessary to remind me that if I wished to reach Granada that night unmurdered, I had better look sharp about it. We descended once more to the col, and there separated with mutual regret. If, after a spell, even a week or ten days, of this kind of life, two men who have been constantly enjoying that community of sensations which ought to produce fellowship under such circumstances, who have been cooled by the same breezes, burned by the same sun, disagreed with by the same food, and bitten by the same fleas, are not, when the time comes, rather sorry to part company, there must be a screw loose somewhere. There was none, I am happy to say, in this case. In every respect, except topographical accuracy, Juan was a 'bon garçon,' and I was very sorry to think that our rambles together were over. And he, honest fellow—as the newspaper reporters always say of the gentlemen who return thanks late in the evening at a public dinner—'he was visibly affected.' He kissed me twice, and then came back to repeat the ceremony a third time—I suppose for luck. Of how I came down the Veleta, hour after hour with Granada full in view, but never seeming to get a bit nearer; and how I lost sight of it at last, and straightway began to fancy it was now no distance worth speaking of, and sat down for just one 'puro,' and remained for three, and found the sun on the point of going down behind the Loja mountains, and Granada still a couple of leagues off; and how I lost my way and found it again, and was not robbed, nor yet murdered, as people told me I must infallibly be; these and other incidents, sentimental, picturesque, or comical, of that solitary, but I am bound to say most delightful walk, I might record here if they had any bearing upon our present purpose, and if I had not already occupied too much space.

Ascent of Piz Roseg. By Horace Walker.

THE snow dome which forms the northern and lower, but, as seen from the Roseg Thal, most conspicuous, peak of Piz Roseg, was first ascended by Mr. Bircham in 1863, and in the following year two more ascents were made by Herr Weilenmann and Herr Specht, of Vienna. None of these gentlemen, however, crossed the narrow arête which leads from the northern to the southern or highest peak, and Piz Roseg proper consequently remained unclimbed. The knowledge of this fact was sufficient to induce my friend Mr. Moore and myself to visit Pontresina again, in the hope of being able to finish the piece of work which had been left incomplete by our predecessors.

As we had both paid fruitless visits to Pontresina in former years, we were particularly anxious to accomplish something on the present occasion, and, as a man likely to assist us, had brought with us as guide Jakob Anderegg, a cousin of Melchior. Jakob was at that time comparatively unknown to the Alpine world, having only made his first appearance the previous season, but we had had some experience of his powers, and felt sure that, if success were possible, he would achieve it for us. Indeed, so great was our confidence in him that we determined to dispense entirely with assistance from the local guides, hoping that our success might teach them to set a less preposterous value on their aid than has been their wont, and thereby benefit future comers.

We arrived at Pontresina about midnight on the 26th June, 1865, after a long day from Andeer by the Avers Thal, Forcellina Pass, and a short cut from the top of the Septimer over the ridge connecting Piz Lunghino with the Monte di Gravasalvas—a route I can recommend to any one going from the Splügen road to the Engadine, as the scenery of the lower part of the Avers Thal is not surpassed in beauty by any of a similar kind in Switzerland. I wished to stop at Maria, the inn at which place seemed comfortable, and supplied us with some capital trout; but as Moore, anxious about the weather, would not consent, we drove on that night to Pontresina. I was very glad next day that we had done so, as the weather, which I had considered hopeless, suddenly cleared, enabling us to stroll up the Roseg Thal in the afternoon to the Misauna Alp, where we were to pass the night, with a reasonable prospect of fine weather for the morrow.

After supper we made a careful examination of the arête connecting the two peaks, which affords the only means of access to the summit. The ridge, which appeared to be of ice or snow, with rocks cropping out here and there along it, though not particularly steep, was evidently very narrow, and promised to be a tough bit of work; but, as there was no insurmountable difficulty that we could discover from below, we retired to the hay-loft in a tolerably hopeful frame of mind. As the accommodation at the Misauna chalet is particularly good, Moore and I passed an unusually comfortable night, but Jakob was less fortunate, his slumbers being disturbed by an ominous dream, which he afterwards related to us.

We started next morning at 3.10, and in about half an hour got on to the glacier, after picking our way across the numerous streams which intersect the flat plain lying between it and the chalet. We made at once for the moraine near the left bank, which we followed till past the end of the rocks called Agagliouls, when we took to the ice. The glacier was here perfectly easy, but, being covered in many places with little hummocks like ant-hills, the walking was disagreeable. Proceeding up the main branch of the glacier with Piz Roseg on our left, we had a glorious sunrise on the Capütschin and neighbouring peaks, and our walk was further enlivened by a cuckoo who was singing away most lustily below in the Roseg Thal. As we neared the Sella Pass we made the mistake of keeping too much to the left under Piz Roseg, and in consequence got entangled in some awkward crevasses in the névé; but as at that hour the bridges were firm, we got through them without a great deal of trouble.

At 7 we halted for breakfast near the top of the Sella Pass, at the foot of a small hanging glacier running up in a north-easterly direction to the crest of the great spur of Piz Roseg, which separates the Tschierva and Roseg glaciers. Up this glacier—which, though steep, offered no difficulty—would have been, as we afterwards found out, our best way, but we decided against it for two reasons. In the first place, not being aware how much we had risen, we feared that by taking it we should strike the ridge below the rocks which stopped Moore in an attempt which he made with Mr. George and Almer in 1863 from the Tschierva side, and which would doubtless stop us; and secondly, we understood, from Mr. Bircham's account of his ascent in the Strangers' Book at Pontresina, that it was principally by rocks that he had reached the northern peak.

Owing to the strong north wind the cold was so intense that sitting still, even to eat and drink, was misery, and we

were very glad, after a quarter of an hour's halt, to get into motion again. Crossing a small 'schrund' at the base of the above-mentioned lateral glacier, we made for the rocks on its left bank, which we reached by a few awkward steps. These rocks at first were not difficult, though everywhere steep, and had we gone straight up them we should perhaps have got on better, but almost imperceptibly we bore away to the right, until we were nearly under the lower peak. As we rose the work got gradually more difficult, the rocks becoming smooth and coated with ice, until at last, when about 150 feet from the ridge, we found ourselves at the foot of a tower of rock which effectually barred our further advance. On either side there was a gully; that on the right was inaccessible from our position, while that on the left was little more promising in appearance, but we managed to creep round the base of the tower and descend into it. We turned up it, but were soon stopped by smooth rocks which might perhaps, under ordinary circumstances, have been climbed, but they were now quite impassable, owing to the ice with which they were glazed. We tried all we knew, but the thing could not be done, so we crept cautiously back to the base of the tower, and, after a spirited but unsuccessful attempt by Jakob to climb straight up it, sat down to deliberate.

Our reflections were not of a cheerful nature. Here we were, comparatively close to the top of the northern peak, yet cut off from it by apparently insuperable obstacles, while, to increase our despondency, the wind, which had been steadily rising since morning—so much so that we had more than once discussed the propriety of turning back—was now blowing quite a gale. Though we were sheltered from it, we could hear it howling above our heads, and feel its effects in the snow blown off the ridge, which fell in showers about us, conclusively showing that, even if we could get on to the ridge, there would be no chance of our being able to cross a narrow arête in such a hurricane. Had we at this moment been on the lower peak, as we probably should have been but for our mistake as to the proper line of march, we should certainly have come down unsuccessful.

Jakob selected this moment of gloom to unfold his dream of the previous night, which was to the following effect:—Having with incredible pains and sagacity stalked a magnificent chamois, he had succeeded in getting a very favourable opportunity for a shot, and was about to pull the trigger, when his rifle dropped from his hand down a precipice at his feet. This, if it did not portend disaster to one of the party, so evidently

signified that we should not get up Piz Roseg that he was not at all surprised at our failure. I may take this opportunity of mentioning that, among other patriarchal habits, Jakob is blessed in an eminent degree with that of dreaming. Upon a subsequent occasion, when we were bivouacking at the Kastenstein with designs on the Schreckhorn, which were frustrated by rain, he was again disturbed by a vision of so appalling a character that he woke with a howl, to the utter disturbance of the slumbers of his companions.

Moore and I, not having the same profound faith in omens as our sturdy leader, intensely disgusted at not getting at least as far as other people, and by no means inclined to make our entrance into Pontresina amidst the jeers of the populace, resolved to make another effort to reach the lower peak; we had given up all thought of the higher one, owing to the wind. We therefore descended a little and then turned to the right with the intention of keeping along the face of the mountain as much as possible at the same level, until we should strike the ridge. This operation involved some of the nastiest work I have done in the Alps, the rocks being everywhere smooth and covered with ice, affording "weder Stand noch Griff," as Jakob observed in impressing on us the necessity for the greatest care. I do not believe that any other guide would have gone alone with two 'Herren' in such a place—not that I think him braver or more skilful than one or two others, but at that time, not having been brought up to the profession, he was not hampered by any of its traditions. He went first, Moore and I holding on as hard as we could, and when he was comparatively firm Moore followed, and as soon as he was anchored I moved on. As it frequently happened that we got into places where advance was impossible and retreat consequently necessary, in which cases I had to lead for a few steps, our progress was slow, so that when in the course of our manœuvres we came upon a gully which appeared to lead up to the ridge and looked decently practicable, our satisfaction was considerable. We once more turned upwards, and found the work easier and very much more agreeable than creeping along the face of the mountain, where a substantial icicle to hold on by had been considered quite a godsend. A good scramble landed us at 11 on the wished-for ridge, at a point about midway between the top of the northern peak and the head of the lateral glacier. Our thoughts had latterly been concentrated on the preservation of our footing to the exclusion of all other matters: it was therefore with equal surprise and delight that we now found that the wind, which had so disquieted us, had lulled consider-

ably, and that we might still hope to pocket the actual bonâ fide top of Piz Roseg.

After a short halt we turned up the steep snow slopes to the right and reached at 12 the northern peak to which we had been so close three hours before. There is no denying that, seen from the valley, the beautiful snow dome upon which we were now standing appears to be the real top of Piz Roseg, and it requires a very experienced eye to detect the superior height of the insignificant looking tooth behind it, which would hardly attract the attention of any one unaware of its real claims; but from the top of the dome the relative importance of the two peaks is plain enough. From the northern one, after a trifling descent, an arête of exceeding sharpness rises, at first gradually, then more rapidly, to an apparently acute point, which masks the real 'Höchste Spitze.' The relative heights of the two peaks are, according to the map, 12,885 and 12,938 feet; but we were unanimous in thinking the actual difference to be considerably more than the 53 feet indicated by these figures.

Not knowing how long the formidable looking ridge which separated us from our goal might take us, we went straight on without stopping. A short descent brought us to the commencement of the arête, which proved to be of ice, with some snow clinging to its sides, while here and there some shattered rocks cropped out along the crest. On either hand the precipices were tremendous. On the side of the Roseg Glacier there was no possibility of passing, but above the Tschierva Glacier things were not quite so bad, there was more snow, and keeping generally just below the crest of the ridge, we were able to find footing. Sometimes we were driven to the actual top, and in more than one place straddling, though not absolutely necessary, was considered the most advisable mode of progression. The low towers of rock, which we here and there encountered, were in a most dilapidated condition, and several of them had to be partially levelled before we could trust to them; but on the whole the rocks helped us, giving hold where there would have been otherwise none. For the most part there was just snow enough over the ice to render step-cutting unnecessary, but there was none to spare, and its condition was rather ticklish. The acute point which we had supposed to be the summit, proved to be merely the end of a short and almost level ridge, beyond which was the actual top. There was a cornice to this ridge, and the slopes on the Tschierva side ceased to be practicable, so we were driven over to the Roseg side, and passing with our feet dug firmly into the snow and our left arms over the top of the arête, reached the summit at 1.15 P.M.

The top of Piz Roseg is formed by two principal snow ridges and a minor one, which unite to make a small platform where there is just room for three. Though the view is unquestionably a very fine one, and on that day at all events of extraordinary extent, still, having seen views I prefer, I cannot honestly employ the orthodox formula, and declare that probably no peak in the Alps commands such an admirable panorama as Piz Roseg. I have no note of the particular mountains we saw, but as Mr. Tuckett that same day from the Pizzo del Mare distinctly made out Monte Viso with the naked eye at the extraordinary distance of 210 miles, we must have been able to see almost every peak in the Alps. Our eyes were principally directed to the Monte della Disgrazia, which we hoped to ascend in a day or two, and though we were unable to carry out that plan, we did not regret the attention bestowed on this, certainly the finest near object in the view.

After 15 minutes we turned to go down, having previously deposited a bottle containing our cards on a patch of rocks, a little beyond and below the summit. We reached the northern peak in 40 minutes, with less difficulty than the state of the snow had led us to expect, and instead of following our morning's route, kept down the ridge till we reached the head of the hanging glacier. The snow on this was in a rather dangerous condition, suggesting avalanches, and a few stones, falling from the rocks above, crossed our path; but we got down without any mishap, and at 3.15 reached once more the spot on the Roseg Glacier where we had breakfasted. The ascent of the northern peak by our line of descent would be quite easy, though it might at times necessitate much step-cutting.

In descending the main glacier we kept more in the middle, thus avoiding the crevasses we had encountered in the morning, and also shirked the moraine, keeping to the ice to the very end of the glacier. We got back to the Misauna chalet at 6, and near it found a char waiting for us, in which we jolted down to Pontresina, where we arrived in a state of dislocation at 7.30.

Next morning, before leaving, we paid a visit to Fleury. He was sulky, but civil, and informed us that he had great respect for us—a statement which may perhaps have been true, as he and the other local celebrities assembled in council, after our departure for the Misauna Alp had, as the result of their deliberations, told an English gentleman, who was enquiring as to our chance of success, that if we spent two days in reconnoitring we might perhaps on the third day reach the lower peak, but 'as for the actual summit—bah!'

THE EASTERN CARPATHIANS. By LESLIE STEPHEN, M.A., President of the Alpine Club. Read before the Club on the 5th of February, 1867.

THE audience whom I have the honour to address are of course perfectly familiar with the geography of the Carpathians. I hope, however, that they will pardon me if, for the benefit of the numerous body of intelligent readers who study the interesting journal in which these remarks are destined to be embodied, I venture to recall one or two facts already known to them.

One portion of the Carpathian chain forms a great semicircle sweeping round the north of the Hungarian plain, much as the Alps sweep round the plain of Lombardy. The western horn of this arc rests upon the Danube at Presburg, the eastern upon the north east corner of Transylvania. Transylvania itself is an irregular square. The sides are formed by the continuation of the Carpathian chain, which thus returns upon itself, whilst the interior of the province is chiefly occupied by long spurs descending from the frontier wall of hills. The highest point in the whole Carpathian range is the Lomnitzer Spitz, a little over 8,000 feet in height, nearly at the centre of the great semicircular arc. Mr. Paget, in his work on Hungary, calls this the most beautiful mountain which he had ever seen. He incidentally mentions, a few pages earlier, that he had never seen any mountains before reaching Hungary—a circumstance which somewhat detracts from the value of his testimony. It is, however, inhabited by bears and chamois, and is the only granite peak in the chain, which is something in its favour. On the other hand, we were told that it might be ascended without danger, from which I am I think justified in inferring that it is probably possible to ascend it on a pony, if not with a four-in-hand. I would recommend, however, some zealous member of the club to investigate it for himself. A railway journey from Pesth will take him to within a day's march from a place called Bad Schmöcks. Here he will find civilization, a very interesting population, and a little-known mountain district, to which Schmöcks is the Chamouni. It was always mentioned to us as the 'Sogenannte Csips.' Why the epithet was prefixed I cannot say.

The eastern half of the semicircle, reaching from the Lomnitzer Spitz to Transylvania, gradually sinks into lower hills covered by enormous forests, only traversed, so far as I could hear, by smugglers across the Austrian frontier.

Of these mountains I can only speak from hearsay. The Carpathians, which I am about to describe, are those which form a kind of ring-fence round Transylvania. On the northern and western frontier they never rise above the dignity of hills. The western hill district includes indeed some points of interest. It is the California of Austria, where there are still profitable gold mines and many very curious traces of the old Roman mining works. The show place of the district is a hill called the Detonata—a great mass rising from the summit of a lower down, and formed of basaltic columns like those of Staffa. From their curve they somewhat resemble the ribs of a stranded ship, and I had some thoughts of starting a new theory, in confirmation of the scriptures, reposing upon the probable hypothesis that the Detonata is nothing more than Noah's Ark petrified.

The principal interest, however, for mountaineers will be found on the eastern and southern sides of the quadrilateral. The southern side includes three principal masses, between which the rivers escape from the interior on their way to the Danube. The most easterly of these, known as the Fogarascher range, culminates in the Bucses* (8178 English feet), of which I shall have more to say presently. The most westerly culminates in the Retyezat (8115 feet) which rises above the Hatseger Thal, famed as the most beautiful valley in Transylvania. We were unluckily prevented from seeing it, but it is said to be well worth visiting—amongst other things with a view to chamois. The central mass culminates in the Negoi (8278 feet). We contemplated this mountain from the little town of Hermannstadt in company with an energetic German bookseller named Krabs, and from his explanations we gained our first notions of the difficulties of Transylvanian mountaineering. The base of the mountain is three hours' drive from Hermannstadt. Krabs assured us that the ascent would take three days. The first would be occupied in reaching the mountain, procuring guides, and ascending to a point where we could sleep out. In the second we should reach the summit, and descend to our sleeping-place, and on the third we might hope to return to Hermannstadt.

The principal danger, as he told us, to be anticipated, was from the attacks of the sheep-dogs. These animals scent the traveller from an incredible distance, and rushing upon him

* I have taken the heights mentioned from a map of Transylvania by Franz Fischer, Hermannstadt, 1860, which is clear and convenient for travelling purposes.

with appalling cries, tear him, or at least his clothes, in pieces. My own subsequent experience went to show that Transylvanian sheep-dogs are the veriest curs that ever ran away from a fictitious stone; but as such ferocious beings may possibly exist somewhere, I will communicate to the club the remedy which he described as infallible. No one should venture, he said, upon these mountains without a good supply of fireworks —squibs and crackers, I presume, for the dogs, and rockets for the wolves.

Bad weather, however, prevented us from attacking the highest peaks of the Fogarascher mountains. Our first serious expedition was therefore directed against a mountain on the eastern frontier. A few days after our failure at Hermannstadt Bryce and I were crossing a ridge of hills covered with the dense forest which clothes all the eastern ranges in what is known as the Szeklerland. An open glade on the summit enabled us suddenly to catch a glimpse of a mountain due east, near the Moldavian frontier. The hills amongst which we were wandering had few more distinctive features than the South Downs, although some of them, *e.g.* the great Kelemen, rise to between 6,000 and 7,000 feet. They are covered for miles with monotonous pine forest, above which the loftier ridges swell in long grassy downs. We were therefore delighted to catch sight of a mountain, flanked by real precipices and with something like a genuine rocky peak. We simultaneously exclaimed, 'That's the mountain for us!' As our companions, with one doubtful exception, spoke nothing but Hungarian, we were unable at the time to identify the mountain which had excited our admiration. The same evening, however, we reached a curious little bathing-place called Borszek, celebrated for mineral water resembling that of Selters. It consists of a number of wooden shanties, clustering round an inn (in one of the beds of which I may remark that Bryce slew thirty-five fleas whilst we were getting up next morning), and inhabited by a motley population of Magyars, Germans, Poles, Wallacks, and Moldavians. We immediately became great centres of attraction, and a kind of informal committee, composed of the chief frequenters of the coffee-room, undertook a searching investigation of our plans. From them we learnt that the name of our mountain was Csalho, and that it was beyond the Moldavian frontier. The frontier line, I may remark, crosses the stream which descends from Borszek a few miles down the valley at a place called Tolgyesch. So far as Tolgyesch there was no difficulty, but there was the widest divergence of opinion as to our probable fate after

entering Moldavia. A Hungarian count recommended us to sleep at Tolgyesch. A more sanguine Wallack thought that we might do the whole affair by leaving Borszek after breakfast and returning for supper. A Moldavian, who professed the most intimate knowledge of the district, told us that it was at least a day's drive to the foot of the mountain, and that another would be required for the ascent. We resolved at any rate to make a start, on the afternoon of Sunday, August 26th. A Moldavian boyard gave us a letter of introduction to a friend who lived near the mountain. The bath director gave us letters to the quarantine director at Tolgyesch, and to a Pole who enjoyed the office of forester. We started amidst most affectionate farewell speeches from our new friends, of which the most appropriate was pronounced by a stout hearty little German, who pathetically implored us with many repetitions, to beware of robbers, but especially to beware of '*Illusionen.*' I assured him that we were old enough mountaineers to be pretty well accustomed to illusions; but I confess that I was scarcely prepared for the universal atmosphere of illusion which distorts and perplexes every fact as to time and distance in these beautiful regions. And so we started on our somewhat vague search for a Moldavian mountain, jammed into a bundle of hay which filled the bottom of a springless peasant-cart. It is enough to say of these carts, that they jolt so unmercifully that you may consider yourself to have made a very good shot when on attempting to put your pipe into your mouth you stick it into your eye. I will not go through our troubles at the rambling village of Tolgyesch—a straggling lane of wooden houses in a valley enclosed by forest-clad and bear-haunted hills—further than to say that we were driven an hour out of our way from our total incapacity to speak a word to our driver, and that we were received with the utmost kindness by the two officials to whom our letters were addressed. Next morning we started at eight o'clock, two hours after the time upon which we had agreed,—an approximation to punctuality very unusual so far east. Being still unused to the ways of the country, we were unreasonable enough to be a little put out at the delay. We did not venture to express our feelings to its magnificent cause— the Polish forester — who condescended with great good nature to act as our guide. He was a fine looking man, with a jaunty air, in a smart Hungarian costume, tight pantaloons, and Hessian boots, well adapted to set off a good pair of legs, but not particularly suitable for mountaineering. He was followed by a Wallack peasant with sandalled feet, legs swaddled in ragged bandages, coarse homespun shirt,

secured by a broad leathern belt, a sheepskin cloak, a vast wideawake, and wild black locks floating over his shoulders. This gentleman was supposed to be familiar with all the intricacies of our route. We packed ourselves into the peasant's cart, whose five occupants spoke four different languages entirely unrelated to each other. We were armed with a rifle, a double-barrelled gun, and a pistol, with a view to certain robbers, with whose exploits we had already been frequently entertained.

The Austrian empire may deserve all that is said against it but it also deserves one negative piece of praise, namely that the roads in Moldavia are infinitely worse than those in Austria. As soon as we had crossed the frontier the roads degenerated into mere tracks. Sometimes they crossed the torrent, and sometimes amicably shared its bed. We had to wander vaguely across swampy meadows, or were brought up sharply at the edge of a gaping chasm, where the stream had suddenly cut a deep trench through the former track. I have never seen any more hopelessly poverty-stricken district: the country was naturally beautiful, being a broad rich valley bottom, between picturesque hills, but an infectious melancholy seemed to brood over it; there were a few miserable cottages at intervals, whose inhabitants apparently cultivated some wretched fields of stunted maize, and kept a few curly yellow pigs. It was a feast day—every other day in these parts being apparently a feast of the Greek Church. Such of the inhabitants as we met were consequently lounging about in bright coloured though filthy garments. About one-third of them seemed to be priests, at least equally dirty, though not so brightly dressed as their flock. It made one quite unhappy to think that so fine a country was given up to anarchy, superstition, filth, and cruel poverty. Our horses having a tolerably heavy load behind them could rarely be coaxed into a languid trot along the detestable roads: it was already twelve o'clock when looking up a lateral valley we caught sight once more of the cliffs of Csalho, looking at us (to compare small things with great) much as the Balfrin looks down upon the traveller who has descended the Rhone valley to Visp. We turned up this lateral valley and entered a scene more miserable, if possible, than that which we had left. The road at its best was like the worst of English country lanes, with high round boulders inserted in it like plums in a pudding; at its worst, that is for about three miles in four, it served also as the bed of the stream. Everything else, fields and cottages and natives, fell off in the same proportion as the road. The

hospitable boyard was supposed to live in this neighbourhood, but we saw nothing of him or his house. To lighten the cart, and to get on a little faster, I descended and walked on ahead, Bryce and the Pole rattling, bumping and jolting slowly along in my rear. A party of peasants whom I met regarded me with a vacant stare of indifference, as if it had been an every-day matter for them to meet in the wilds of Moldavia a gentleman dressed in the first style of London fashion. The whole thing seemed uncanny and dreamlike, as if I had been suddenly dropped back into the middle ages. The impression was increased by a curious sight. The road led through a narrow gorge between two forests; suddenly I came upon a little glade of open park-like ground sprinkled with graceful birch trees; behind it rose the great mass of Csalho, his lower slopes covered with pines, whilst above the cliffs rose in picturesque pinnacles of bright white rocks. On the edge of the forest at the foot of the mountain was a little Greek convent, in a position which came up to the highest ideal of monastic seclusion from the world. The buildings consisted of perhaps twenty log huts placed so as to form a little quadrangle. In the centre of this was the chapel, whose three quaint cupolas appeared above the outer buildings. The chapel itself was adorned with paintings, in the traditional Greek style, principally elaborate representations of the tortures of the damned, and was exhibited to us with great pride by the monks. If any one is smitten with a desire for union with the Greek Church, or is anxious to restore the devout mediæval life, he cannot do better than retire to this remote and most picturesque spot. There he may be provided with all the dramatic accessories to a life of religious solitude, which he can possibly require. It is fair to add that he must be indifferent to bugs, and unless our informants were unprincipled slanderers, to the company of as ignorant and filthy a set of old thieves and impostors as ever practised upon the credulity of ignorant neighbours. Of this I cannot speak from my own experience. The chief monk I saw was a tall old man with a white beard, whose sole garment appeared to be a long brown sackcloth article resembling a night-shirt made of an old coal sack, and never washed; I daresay that he would have looked well in the foreground of a landscape, especially as his odour could not be represented. He chuckled over the pictures of the damned, about which he had some unintelligible Wallachian joke, and then begged unblushingly for something to drink.

For the present, however, we saw nothing of these gentry. We picnicked on the grass outside the monastery. The Pole

had shown symptoms of a desire to assume that our object would be accomplished by reaching not the summit but the foot of the mountain. Bryce had rejected this notion with proper scorn. During luncheon, however, there appeared from the monastery an unkempt one-garmented lad, who poured forth a stream of Wallachian; we could only guess its general bearing from its lachrymose tone, and from the gradually lengthening countenance of the Pole. The Pole, however, translated some fragments at intervals, from which we discovered that the dirty boy said that we should take four hours to reach a certain hut which itself was about half-way to the top. This I knew to be a lie, but it was hard to convince the Pole that I knew more about a mountain in Moldavia than those who dwelt at its foot. When Bryce asserted roundly that we could reach the top of the mountain in an hour he smiled at us with an expression of melancholy contempt. The main staple however of the lying boy's observations concerned certain robbers. The Pole treasured up his remarks and favoured us with them at intervals in the gloomier parts of the wood. From what he told us, it seemed that the robbers consisted of twelve soldiers who had deserted with their rifles, and who were supposed to be wandering in the woods. The lying boy asserted that they had been seen that very day, and further informed us that if we were caught we should be stripped naked and thrashed. I knew from long experience that one or more liars of this kind lives at the foot of every mountain, as in moral stories we are told that flatterers are to be found at the court of every human monarch. Still the story was so circumstantial that it made me rather uncomfortable, especially as Bryce and I had all our money about us. It was therefore in a rather gloomy frame of mind that our little procession left the monastery at 2.47 P.M., and entered the depths of the forest. The Pole solemnly loaded, capped and distributed the weapons, and warned us to keep close together, an injunction which was rather vexatious, because it involved our keeping to the rate of progression which the Pole himself affected. He informed us that he was suffering from a heart disease, that he could only walk very slowly, and that he wouldn't quicken his pace if the Archduke Albert himself gave him orders. Accordingly we marched at a funereal pace through the forest, pursued for some distance by the lying boy, and after he had left us, depressed by the gloomy discourses of the Pole upon robbers and upon the extreme folly of what he called the English passion of mountain climbing. It was very sultry, and the poor Pole groaned, and sweated, shouted, and apparently cursed us by all his gods. Singularly enough, however,

there must be even in this benighted country some being with a heart accessible to the charms of mountains. An indefinite boyard had actually made a neat path which wound up through the forests for a great distance, and but for which the Pole would, I am certain, not have persevered. The boyard, moreover, had built a little hut (that to which the lying boy had referred as four hours distant, which we reached in an hour's easy stroll) to cover a clear spring of exquisitely cool and refreshing water. A draught of this improved the Pole's spirits. The path led through an open glade where the air was less oppressive, and afterwards became less steep. Encouraged by this, the Pole now asserted that as it was a Saint's day the brigands would probably be drinking in the village, instead of roaming the mountains, which, as the nearest village must have been several miles off, was certainly encouraging. I had, however, become convinced that these brigands must be more or less mythical. Bryce and I had been so far influenced by the lying boy as to think that we might possibly be doing a very foolish action. However the absurdity of meeting robbers in a mountain where travellers of any kind are about as rare as bishops on Mont Blanc, gradually became so obvious that we resolved to disregard their possible existence. Accordingly on reaching a point where a great shoulder of the mountain first lifts itself above the forest, Bryce and I pushed on, leaving the Pole and the Wallack to follow as fast as a heart disease and a pair of Hungarian tights would permit. Just as we topped the ridge, our eyes were delighted by the sight of a bunch of edelweiss, which I stuck in my hat by the side of some gathered on the Riffel. Directly afterwards, on our turning a corner a magnificent bird soared slowly in a huge circle just above our heads. I unhesitatingly asserted that he was a lämmergeier, and although my assertion was inaccurate, it gave me and Bryce a great deal of pleasure at the time; he was in fact one of the large vultures which are very common in the Carpathians. We were thus in a truly Alpine region, though the form of the great grassy ridge where sheep were pastured earlier in the year was rather disappointing. The rocks which had struck us from below turned out to be masses of white crumbling conglomerate, which formed singular obelisks and walls, but nothing really grand in the way of cliffs. We pushed rapidly onwards and reached the summit with no more difficulty than we should have found in climbing Helvellyn, at 5.7 o'clock. A curious wooden erection on the summit showed that some human being had been there before us, and that he had probably even a scientific turn of mind.

I have been frequently and as I think most unjustly criticized for not inserting poetical passages into my descriptions of mountain scenery. I fear that the club would hardly find such poetry as mine much to their taste; but as the reproach has been made by those for whose opinion I have a high respect, I will attempt on the present occasion to give a specimen of my powers in the department of flowery prose.

The Carpathians closed our view to the west, running north and south in a mighty purple wall. Far above its parapet huge masses of vapour were floating towards us and over us on the wings of a steady-blowing east wind. Where Kelemen lifted his ponderous bulk above his neighbours, they gathered in gloomy wreaths about his brow; elsewhere they formed a wide-spread canopy over a thousand leagues of forest, down, and champaign, pierced through innumerable rents by sickly gleams of sunshine.

No view is more cheerful than that of a wide country chequered by sunshine and flying shadows of cloud. But here the demon of desolation had taken up his abode. Profound melancholy seemed to haunt the hollows of the mountain ridges. Deep pine forests, desolate clearings, spotted with dead trunks of pines that must have committed suicide, long undulating ridges of deserted pasturage, all breathed the very spirit of sadness, from where the forces of the earth had heaved the Carpathian wall highest into mid-air to where the last faint undulations died away in the shadowy plain. A solitary cottage or two, a few wretched fields, and the little convent at our feet, spoke of human life struggling feebly against the gigantic oppressions of nature, and all but stamped out in the struggle. The wolf whose tracks we had marked, the vulture soaring overhead, and the bears whom we knew to be prowling in the secret recesses of the forest, were more in harmony with the country, and their presence was less depressing to the imagination than the miserable human beings, whose labours and even whose own persons seemed to be marked with a curse. The 'still sad music' of the scenery varied only so far as it struck the melancholy notes of utter wildness, or awoke the more depressing melancholy of human degradation. Far away, beyond the utmost gorges of the hills, the broad Moldavian plains stood half revealed through the haze; to us they were but a faint blue mist, with delicate changes in hue where a forest darkened them or a river gleamed feebly across them, fading gradually from the edge of the dreary highlands till they mingled imperceptibly with the shadowy cloudbanks of the horizon. Pine forest and clearing, hill and valley, plain

and cloud, melted strangely into each other, under the sober light of the clouded heavens, as though the sun was gradually growing sick and the universe being veiled in the unutterable sadness of an eternal twilight. The huge circle of country swept by our vision, unrelieved by one bright colour, and all toned down to the faint aerial tint which characterizes vast mountain panoramas, produced an effect more impressive, though unpleasantly impressive, than I have often felt in the sublimest Alps. Something of the same might be imagined in Monte Rosa, if the contrast between rich Italy and the barren snowfields were lowered in its force by laying waste the plains of Lombardy, and spreading pine forest and pasture over the Alpine snowfields. The intensity of the impression was increased by the monotony, though the dramatic effect was lost.

'What is that stream of water, far across the plain?' asked Bryce.

'That,' I said, 'is the Black Sea.'

'Of course it is; I was about to say so,' was the reply; and as Bryce and I regarded each other steadily, a barely perceptible closing of our left eyelids might be observed. I therefore may inform the Alpine Club that from the heights of Csalho I have seen the Black Sea and possibly the Crimea. I leave it to the envious to suggest that the water may have been the river Pruth.

After a stay of a quarter of an hour, we descended the mountain, and before long met the Pole and the Wallack, who were calmly strolling after us. We assumed without difficulty that they did not wish to complete the ascent, and before reaching the bottom they had, according to the usual custom, become fully convinced that they had really been to the top; the Pole was already in the state of high spirits appropriate to a successful ascent. He now became really anxious to meet the robbers, and declared that three brave men need not be afraid of any number of rogues. The Wallack, he said, would in case of danger throw away his arms and take to his heels, but that we three should disperse the miscreants by our simple appearance. I was not yet quite at ease as to the mythical character of the robbers, and felt, I must confess, a slight uneasiness when I found that all the arms had, during our descent, been entrusted to the Wallack whose courage was thus disparaged, and that he had lagged behind to drink at the fountain. The forest was incredibly thick and dark, and there was so little sign of any clearing that it might have been and perhaps was primæval. But for the path which the

mysterious boyard had caused to be cut through it, we should have found it almost impossible to penetrate the forest at all; if any robbers had heard of our ascent, they might have laid a convenient ambush near our path, have easily dispersed the Wallack and bagged the Pole and Bryce and me with the utmost facility. I was glad when the trees began to open out and we came upon the little park-like meadow in which the convent is placed. Whether there are or are not any robbers except in the imagination of the lying boy, who by the way turned out to be a kind of chorister, acolyte or other ecclesiastical hanger-on of the convent, I shall never know. If there are, I should say that it would be better, so far as pecuniary prospects are concerned, to adopt even the profession of a curate in the Church of England.

We reached the monastery at 6.40 o'clock, and started soon afterwards at an even more funereal pace than before. The ponies in spite of their rest were thoroughly jaded with the morning's exertion, and crept painfully along the apology for a road. It was soon a dark night, which made progress still slower. Bryce and I strolled on in front till the point where we reached the main valley. The cart came up to us about 9 o'clock, and after consuming the remains of our victuals we started for our weary drive up to Tolgyesch. The moon soon rose in unusual splendour. I tried to persuade myself that I was admiring the tender light upon the great bank of forest opposite; I thought of the last moon which I had seen shining on Monte Rosa; I endeavoured to work myself up into some kind of poetical excitement; I smoked innumerable pipes; I tried at intervals to get sleep by all the most approved expedients; and at last I resigned myself to the enjoyment of such pleasure as can be derived from dogged ill-humour. The poor little ponies dragged us over the detestable roads at about two miles an hour. Every three or four yards a large boulder or a deep rut sent a jolt through the cart which threatened to dislocate every vertebra in my backbone; I felt like that unfortunate prince in the Arabian Nights who was turned into marble below the waist; for half of my body was jammed into the hay and wellnigh frozen, whilst above I swayed violently to and fro in obedience to every impulse which shook and rattled the ribs of our rickety old machine. I was too chilled and miserable to summon up the energy requisite for walking, and my only real pleasure was when we once or twice lost our way in crossing the fields, or bumped through the deeply cut channel of the brook, or came to some other difficulty which had the effect of rousing Bryce and the Pole.

How they managed to sleep I cannot conceive, but they certainly seemed to snatch a few intervals of repose. I could only hope that their dreams were troubled. It gave me a transient gratification also to reflect that the Wallack was all this time sitting bolt upright on the sharp edged back bar of the cart, a position I imagine of intolerable discomfort.

The only interruptions to our weary drive were once, about 1 A.M., when we knocked up a Tyrolese who had set up a saw-mill in these remote parts, and upon whom, though in a semi-torpid condition, the Pole insisted upon discharging an eloquent narrative of our adventures; and once when we had to corrupt the Wallachian officer at the frontier. We persuaded him to let us pass at 2 A.M. contrary to the regulations, in obedience to which the gates are closed till 6; and at 3 A.M. reached Tolgyesch, where we were not sorry to turn the landlord out of our room, and get to decent beds. The next day we took an affectionate farewell of the Pole and of our landlord, who by the way was an Armenian, and after buying sundry bear-skins started in a cart across the hills. The last warning we received was to avoid a particular piece of road, because robbers had been just seen there.

We passed a few days inspecting the curiosities of the Szeklerland, which is a land flowing with carbonic acid gas and sulphuretted hydrogen. A deep crater, surrounded by woods, and called the St. Anna Lake, is the most picturesque object; the most curious, perhaps, is the Büdös, where there is a repetition of the Grotto del Cane; *i.e.* there is a hole in the ground which emits a horrid stench, and where you may get suffocated if you hold your head low enough—which is an interesting spectacle. To omit, however, such non-mountaineering sights, we found ourselves at the very picturesque old town of Kronstadt, which lies nestled amongst the lower spurs which extend from Bucses. On Sunday morning, September 2nd, we drove over with a large party of hospitable Transylvanians to the old frontier castle of Törzburg. The castle is said to have been built by the Teutonic knights, but is still in perfect order, and presided over by some kind of official who was known to our friends. We joined a pic-nic on Sunday to visit that most detestable of all natural wonders—a cave; and at night the gentlemen had a shakedown in one of the castle garrets, whilst the ladies, children, and babies were entertained below.

Now, on Sunday there arose a difficulty, instructive to the philosophic mind, and which I must therefore explain. Herr von T., the chief of our party, had promised to take

us up the Bucses. But it has been frequently observed that when two races in different stages of civilization are brought into contact, great difficulties are apt to ensue. So, for example, the conflict between the English and Hindoo ideas of landed tenures has produced incessant misunderstandings. In the same way, as I gradually discovered, the English and Hungarian theories as to mountain climbing are radically divergent. To obviate, as far as possible, future misconceptions, I will endeavour to explain their characteristic differences. The English mountaineer holds that the problem before him is not fully solved until he has discovered the shortest practicable route to the summit, and though he does not, as certain maligners have said, think it right to climb against time, he yet takes a pardonable pleasure in a rapid ascent. The Hungarian, on the other hand, has a glorious indifference to all considerations of time. He has no objection to go a mile round to avoid such a slope as that of Holborn Hill. He cares very little about the precise summit, and looks upon the whole performance much as a Roman Catholic looks upon a pilgrimage. There are a certain number of stations to be visited, of which the top may or may not be one. Any amount of time may be spent on the excursion, and if possible, it must be done on horseback.

By the ascent of Bucses, Bryce and I understood going to the top and back by the shortest route, which we calculated, and rightly, would take nine or ten hours. Herr von T. by what he called the '*Bucses partie*,' understood a ramble of three days over the mountain, including a visit to another Greek convent, said to be frowzier, if possible, than that of Csalho. When I pointed to the top, and said that I could get there in five hours, he laughed and said that I didn't know the way. When I asserted that it looked perfectly easy, he said that it was so difficult as to be impracticable without horses. Bewildered by this assertion, I gave up argument, but I was utterly horrified when he pointed out to me the way he meant us to go, and which I can only compare to a proposal to ascend Helvellyn from Patterdale by way of Ambleside. All argument, and we had a good deal, and rather acrimonious argument, was thrown away, except so far as it convinced him that Bryce and I were either idiots or maniacs. Under these circumstances, an idea occurred to me; it is possible sometimes to lose one's party on a mountain. I suggested this fact for Bryce's consideration, and remained, I must confess, in a state of perfectly furious but suppressed ill-temper all Sunday. I ought to explain that in spite of the horrors of a Greek

convent in a cave 6,000 feet above the sea, I would have given in willingly to T.'s plan, but that we had not a day to spare, and that he would not hear of our going alone. At 7.50 on Monday morning our party started, within three hours of the time appointed, in a long procession mounted on scraggy ponies about three feet high, said to be wonderfully sagacious and sure-footed, which reputation I think they deserved about as well as Alpine mules, that is, I had much rather trust my own legs and brains than theirs. Having given a lively representation of Don Quixote to my friends on Sunday during our pic-nic party, I absolutely refused to submit to such torture to-day, and had little trouble in keeping up with the diminutive beasts of burden. At about 10.30 A.M., we reached a little Austrian custom-house station, a dreary hut, high on the mountain side. Our route, which had been the cause of endless discussion, was still undecided. In Magyar, German, and Wallachian, various plans were laid down and again abandoned, every member of a party including, besides ourselves, four gentlemen and six guides, giving his opinion. The main point to be decided was this: a long range of limestone cliffs rose above us, through which a broad gap in our immediate neighbourhood presented an obvious and straight route to the summit. Another gap some miles off was, however, somewhat easier for ponies. The ordinary plan was, therefore, to make what I may describe as an exaggerated zigzag—each arm of which was some miles long, whilst the height surmounted was a few hundred feet. The cliff range separated the two arms, running up into the angle between them.

After lunching at the custom-house, and dismissing the ladies, we started at 11.10 in some uncertainty. The badness of the weather had suggested the propriety of omitting this monstrous circuit, and for once making a straight course to the top—even at the price of omitting the Greek convent, which was near the angle of the zigzag. T., as I understood him, told us that we should probably make an effort at all events to reach the summit that day, and instead of passing the night in the filth of the convent we might at worst return to sleep at the custom-house. He implored us, however, to put faith in a certain ancient and, to us, inarticulate Wallack. This venerable humbug had, I think, an undue influence over him. Let the Alpine traveller who does not implicitly obey his guides cast the first stone! Guided by this hoary impostor we started, and to my disgust I found that we were taking the zigzag. Bryce and I discussed the matter seriously. Of the many contradictory assertions as to the

plans of the party, we thought it safe to select that which suited us best. We assumed then that they would come to the top that night in accordance with T.'s last suggestion. It would evidently do no harm if, without an actual desertion, Bryce and I could reach the top a little before them. No credible accident indeed could lead us into the straight path, which was at right angles to that which T. was entering. But suppose we climbed close to the foot of the long range of cliff? Geologically I pronounced it to be interesting. Bryce thought it might have some botanical claims. It was curiously rent by certain chimneys (ghylls as they would be called in the lakes), through which a direct ascent to the plateau above the cliffs would be possible. If we accidentally ascended one of these we should avoid the terribly long circuit by which the riding party were turning the range; we should thus cut off, as it were, the end of the zigzag, and might, if we chose, wait for them on the top. Bryce and I edged off in an abstracted frame of mind towards the cliffs. Our friends below noticed it, and shouted to us to rejoin them. We explained at the tops of our voices in a high wind that we were only going up to look at the cliffs, but should move parallel to the party. Possibly they heard some of the syllables. After a short climb, part of it through a curiously impenetrable thicket of the dwarf creeping fir, we reached the base of the cliffs, just at the foot of the most accessible-looking chimney. Turning a rock we suddenly discovered that the said chimney was a delusion. The cliffs were perfectly smooth and overhanging, but in front of them there rose a curtain of easily accessible rocks, which from below entirely concealed the true cliff and had produced our delusion. Unless we discovered another chimney we should be forced to keep along the foot of the cliffs, from which a talus of *débris* sloped some hundred yards down to the pony track, and should ultimately rejoin the party at the gap in the cliffs forming the apex of the zigzag. We should thus have ourselves made a long circuit, but should not really have deserted T. We hurried along beneath the cliff, presently catching sight of the others, and communicating with them by shrieks, of which the meaning was, 'We have not deserted you.' We passed chimney after chimney, each more precipitous than its predecessor. At last the cliffs began to sink. We could make out the ponies standing in the gap or angle of the zigzag in front of us, having already got some distance ahead. Suddenly Bryce said, 'Here's a chimney that looks better.' We resolved to risk a trial, and five minutes' scramble placed us on the top of the cliffs, at 12.30,

on the upper limb of the zigzag, and therefore once more ahead of our friends. Their path to the summit, after crossing the gap, would of course lead up to our present position. A question now arose, would T. and Co. really come to the top as they had said, or would they go to pass the night amongst the bugs, fleas, monks, and other vermin. As we were within shout, I thought it would be civil to go back and take counsel with them, or at least to wait. Bryce, with a presence of mind for which I shall eternally honour him, replied to the question with simple scorn, proposing to go on immediately, and to assume that they would of course follow us. Accordingly communicating this resolution to our friends by a few frantic shrieks, we started, and from that day to this I have seen and heard nothing of Herr von T. Our path lay over a monstrous down, heaving its enormous ridges to a height of over 8,000 feet. The view, as limited by huge cloud banks which hung heavily about us, suggested a vast rolling prairie half-way to heaven. It might have served for the happy hunting grounds of Choctaws or other noble savages, but to us was not a little dreary. Some huge flocks of sheep were pasturing upon it, and we held a consultation with one of the shepherds. Bryce, I believe, knows one more word of the Wallachian language than I do, my own knowledge being absolute blank, which enabled him to maintain a lively conversation. A kind of bad Wallachian, I may explain, may be manufactured by spoiling Italian, and chiefly by the conversion of all the vowel sounds into u. Leaving the shepherd, we crossed the grassy slopes of Bucses, rising very gradually towards the summit. The grass, as rich as that of a Swiss alp, continued to the foot of the very last peak. A certain wildness, however, was added to the scenery by sundry vultures, which sailed out from the mountain coves in twos and threes, passing close over our heads, doubtless on the look-out for dead lambs or Englishmen. Their chance of this last delicacy was indeed rather small. The two valleys which radiate from the summit towards the south-east and south-west present in places precipitous walls of limestone rocks; that which sinks in a south-westerly direction is enclosed by a semicircle of precipice forming a fine cirque. The top, which we had not previously seen, was suddenly revealed to us through a gap in the mists on the further side of this cirque. The summit resembles that of Snowdon, or one of the Welsh hills, and the very last slope consists of bare disintegrated rock. The actual top, which we reached at 2.50, is marked by three huge lumps of stone, the highest rising about twenty feet.

We ought, I suppose, to have climbed it, but were content to get under its lee, eat some dry lumps of bread which we had judiciously pocketed at the custom-house, drink some drops from a precious flask carried by Bryce, and then to light our pipes and wait punctiliously till 3.40 for the arrival of our friends. A cold wind was whistling over us and blowing huge masses of cloud from the north. Through the driving mists the neighbouring summits loomed vast and mysterious in our immediate neighbourhood. Looking southwardly along the valleys we could dimly see faint gleams of purple between the iron-grey cloud which represented the distant plains of Wallachia; to the north a long line of cliff running east and west sank precipitously to the pine forests; beyond them was a fine but inferior mass called the Sonnenstein, and further we ought to have seen the lowland country of Transylvania. We could only distinguish occasional glimpses of the plain and of the still more distant forest-covered ridges of the Szeklerland. In fine weather this must be a singularly fine point of view. It commands nearly the whole of Transylvania, a large part of the wild labyrinth of the Carpathians, and the Wallachian plain almost if not quite to the Danube. As it was, there was a not unpleasing feeling of mysterious wildness which the flocks of sheep pastured upon these lofty downs failed to dispel.

Bryce and I held a long discussion as to our plans: to return to the filth of a Greek convent was not to be thought of; on the other hand, a descent straight to Törtzburg would leave T. in complete uncertainty as to our fate, which he would probably suppose to be the slow death which often overtakes bewildered and benighted travellers in bad weather on wild mountains. A middle course was therefore suggested; we might descend to the custom-house at which he might possibly return to sleep, and in the event of missing him there, send him up a message to the convent. The way back over the long grass slopes was indeed long and tiresome, but by descending the valley from the cirque I have mentioned it looked possible to find a more interesting route. After waiting therefore as long as possible and seeing and hearing nothing of our friends, we started and descended into the cirque, pushed rapidly down the valley and entered a gorge which was incomparably the finest piece of scenery which I have seen in the Carpathians. The cliffs which formed its northern bank reminded me strongly of the mighty precipices of the Gasterenthal. They must have descended sheer for two or three thousand feet. They were marked by the courses of some

waterfalls which when there is any water in them must be very beautiful. At present everything was as parched and dry as a limestone district alone knows how to be. The stream in the gorge we were threading, showed nothing but a bare rocky bed; our mouths were themselves as parched as the rocks, and as we descended the heat increased. After a time the gorge opened, and by keeping sharp round to the left we should have reached the custom-house. Tired and dry-mouthed as we were, the way thither seemed most uninviting; it evidently led along the face of steep slopes covered with the dense Transylvanian forest. Scrambling transversely across the face of a slope is proverbially fatiguing; and when the slope is covered with unthinned forest, when there is a chance that miscellaneous crags will require much up and down work to turn them, when the day is late, the legs tired, the tongue like a piece of leather, and nothing to be gained by the operation but the satisfaction of relieving the alarm of your friends, the mere thought of the effort is oppressive. The valley, on the other hand, led straight towards Törtzburg. If we reached that place before sunset, we should certainly get supper, and possibly a carriage to Kronstadt. With a mental struggle which I will not seek to describe, we resolved to abandon T. to his anxieties and make straight running for Törtzburg. We descended the valley rapidly, soon enjoying a delicious drink and wash in the refreshing stream which made its appearance in due time, and found a path leading homewards through the forest. A few perils from sheep dogs were easily surmounted without fireworks, the alacrity of the brutes in running away evading all attempts at vengeance. After a time we reached the mule track, and a steady trudge along it led us back to Törtzburg a few minutes after seven, just before dark. It was impossible to get a carriage, but the ladies entertained us hospitably, gave us supper and beds, and started us next morning to Kronstadt. We explained to them elaborately the story of our mishap, which we had carefully rehearsed during our return. We bewailed our misfortune in missing T., explained that we had waited for him an hour on the top, that we could not understand his failure to follow us, and showed how our ignorance of the country had caused us to miss the custom-house. By our advice, they sent off a messenger with a note stating our safe arrival, which I hope quieted the minds of T. and his party. However that may be we reached Kronstadt early next morning, left it the same afternoon on our return home, and have heard nothing more of our most hospitable

entertainers. I have one regret to express. Herr von T. had not only been put to inconvenience, but probably to some expense in providing ponies, guides, &c. for our expedition. We wrote to him, giving a most lucid explanation of conduct which had a certain superficial resemblance to a base desertion, and asked what was our share of the expenses. To this we have received no answer. I hope that he was not offended. I am certain that we are most grateful to him for the great civility and real kindness with which he treated us.

I have now only a few words to add by way of advice to any one who may think it worth while to follow me. The Carpathians, where I have seen them, form in many ways a very interesting district; there are no real hardships to be encountered; food is good; the fleas, dirt, and such minor grievances are not intolerably great; the higher classes of natives are most hospitable, a stranger is really welcome, and especially an English stranger. German will carry a man anywhere. I do not, however, suppose that anyone will find it worth while to go merely for mountaineering purposes, the mountains being after all, even to the Pyrenees, no more than a hobbledehoy to a full-grown man, if so much. Nor would even the sporting be probably sufficient in itself, although there are occasional chances of bears and chamois. But if anyone travelling for other purposes should like a few mountain excursions, I would venture a suggestion or two. If he has plenty of time he will find it pleasant to join the natives and do as the Transylvanians do; in that case he must be prepared for an utter disregard of punctuality, for provoking waste of time, for consequently spending three days on a hill 8,000 feet high, and to being restricted to going only where a dilapidated pony can conveniently carry him — a restriction, however, which will not cut him off from the highest mountain tops. If he merely wishes to climb Bucses, he might take a carriage from Kronstadt early in the morning to Rosenau or Törtzburg, ascend the hill on his own legs without guides in perfect safety and with no hurry, and return the same evening to Kronstadt; and the other summits might in all probability be reached with equal facility. In short, to a mountaineer accustomed to any really difficult district, they are mere child's play in point of climbing. Their chief interest is derived from their extreme wildness; the huge forests of the Szeklerland, and the long rolling pasturages of the southern mountains, were equally suggestive of remoteness from all civilized life. The stories about robbers were universal and, so far as we could hear, utterly without foundation. Of course, the existence

of professional robbers is out of the question; they would long ago have been reduced to skeletons; but we were frequently told, with great circumstantiality, that there were 'schlechte leute' wandering on the hills, who were hiding from the conscription, and would be glad of a little diversion in the way of robbing travellers. Certainly, the 'schlechte leute' must have have been glad of any little excitement; and we were always told that they had robbed somebody the day before yesterday. But as we met none, I cannot speak with authority. In conclusion, I will mention that the fullest information is to be found in Mr. Boner's work on Transylvania, and Mr. Paget's earlier work on Hungary. Mr. Paget is still a resident in the country. The best mode of reaching Transylvania is by railway from Pesth to Arad or Grosswardein, whence diligences go daily to Hermannstadt and Klausenburg respectively. The latter is by far the shortest journey; but it is to be hoped that both will before long be supplanted by the railways, which are the great need of the country and which appear to be promised by the new Hungarian Ministry.

The Laquin Joch. By C. G. Heathcote, M.A.

WHEN I was at the Hotel Monte Moro at Saas, not long ago, I turned to the visitor's book for amusement and instruction. In its polyglot pages I found an entry which I plead as my excuse for inflicting this narrative on the readers of the *Alpine Journal*. I read there, in the handwriting of one who is eminently qualified to judge of the relative merits of mountain districts, an expression of surprise that the many beautiful scenes in the neighbourhood should be still so imperfectly known and so rarely visited. It certainly seems strange that, while the western side of the valley and the passes leading from Saas to Zermatt are so well known and so often traversed, so few have thought it worth their while to supplement their familiarity with the Mischabel with some slight acquaintance with the hardly less beautiful range which extends from the Monte Moro to the foot of the Simplon, and forms so conspicuous an object from any of the passes from Zermatt to Saas.

It is with the desire of calling the attention of mountaineers to one at least of the passes across this range that I have endeavoured to write a short account of the Laquin Joch. It is true that it lies somewhat out of the track of travellers, but it is a pass which is well worth a slight détour, if indeed

that can be called a détour which is the most direct route from Saas to the Simplon; and uniting in itself as it does almost every attribute which a well-regulated pass ought to possess, I am convinced that it only requires to be properly introduced to become almost as popular as the Adler or the Alphubel.

Now in these latter days of Alpine exploration, when most of the peaks worth climbing have been climbed, and when, from the deficiency of cols properly so called, enthusiastic travellers have been reduced in their pursuit after novelty to effect passes over the tops of high mountains, passes too which in many cases only lead from places which no sensible man would ever be in to others to which no sane man would ever care to go, it was satisfactory to find a real col still untraversed, leading directly from one comfortable hotel to another, capable of being effected within the limits of a reasonable day's work, and promising a view of extraordinary magnificence. Such a col Mr. Robertson and I found in the Laquin Joch. We had met at Zermatt in the summer of 1864, and had spent together a day and a night on the upper half of the Dom, resulting in an expenditure of energy and tobacco utterly disproportionate to the object attained, which amounted to little more than a series of magnificent views of the Weisshorn under the various aspects presented by two sunrises, a sunset, and a cloudless noon. And while I am on the subject of the Dom, I may mention that though, when viewed in a proper light, it does not present any unusual features, it is nevertheless capable, when approached through the medium of a judicious course of persistent mismanagement, of becoming an exceedingly difficult, and rather dangerous undertaking.

We were despondingly, not to say sullenly, making our way from Randa to Zermatt, when the idea of the Laquin Joch flashed across the mind of my companion like an inspiration. It was joyfully entertained, and, as far as will was concerned, a way was as good as found. A difficulty however met us at the outset. Judging from the little we knew of the pass, it was by no means one to attempt with third-rate guides, and it happened that nothing better was at that particular time to be had at Zermatt. We were therefore reduced to trust to what fortune might do for us on our arrival at Saas. She proved on this occasion worthy of our confidence, for she provided us with a leader. We were discussing the subject in all its bearings with Herr Imseng, and had not heard of more than three jägers who were competent to go anywhere blindfold, when Mr. Hayward, who had heard of our intention, very kindly volunteered to place Franz Andermatten at our disposal for a

couple of days. With Franz for our leader we cared little what the rest were like, so discarding an old gentleman who, despite his years, which must have been nearer seventy than sixty, had come to us with the strongest recommendations, we engaged Peter Venetz and Peter Zurbrücken, who with Andermatten made up a very sufficient phalanx of guides. I have not much to say about Zurbrücken except that he did well enough all that was required of him, but Venetz made himself very useful, and indeed led the greater part of the way down. During the arrangement of the preliminaries, it was suggested that our knapsacks should go round by the road; but Franz, taking up the heaviest of them, and tossing it in the air, treated the idea with such contempt, that it dropped like a debate in the House of Lords. I could not help wishing that such willingness to carry weight were more universal.

Accordingly on Monday, August 1, we left the Monte Rosa Hotel at 2.15 A.M., a laudable practice which I have seldom been able to carry into execution. Our lantern (of course we had one) played as usual its rôle of will-of-the-wisp, and as usual also day broke just as we emerged from the forest upon the smoother alp near the Trift chalets. The view from this point is very striking. It should I think be the first object of every visitor at Saas, and I presume that there is a mule-path as far as the chalets, though I saw no traces of it. The view from the Trift Alp has one advantage at least over that from the Fée Gletscher Alp, in that it commands the whole basin of the Fée, while it is at a sufficient distance from the great peaks of the Mischabel to display them to the greatest perfection. To this advantage may be added that of extreme facility of access. Indeed the Laquin Joch itself may be so easily reached from the west side as to be within the powers of a very moderate walker. From the upper end of the Trift Alp a steep rocky ridge runs almost due east between two arms of the glacier till it terminates in gentle snow-slopes. These slopes are surmounted by a cocks-comb of serrated rocks which extend almost the whole way from the base of the final peak of the Weissmies to that of the Laquinhorn. This rather slight indication of the direction to be followed will, I think, be sufficient. Indeed it would be difficult to give one more precise, inasmuch as either from conservatism or want of inventive faculty, the natives of those parts have bestowed upon all the glaciers flowing from the west side of this range the generic name of Trift, a name which for purposes of identification is somewhat too comprehensive. I was still meditating on the monotony of Alpine nomenclature, and

the unadaptibility of milk in large quantities to a too susceptible organization, when we reached the top of the ridge, just to the south as I think of the point marked in the Federal map 3509 metres; and we then turned round, almost for the first time since leaving the Trift Alp, to look westwards; while Franz amused us by tracing out an imaginary, and, as I believed at the time, purely fictitious route between the Dom and the Täschhorn, which I may parenthetically remark is still a col only in embryo. Imseng has, however, more than once informed Robertson that he has reconnoitred the route, and that he thinks that it affords a fair chance of success. The view from this point towards the west is much the same as, though of course more extensive than, that from the Trift Alp. In that direction and overhead the sky was almost cloudless, but towards the east imposing masses of vapour were rolled round Monte Leone and the other high peaks, presenting that perplexing appearance which can always be secured by mixing rock, snow, and clouds in equal proportions and ever varying forms. Above us on the south rose the Weissmies, which Robertson had ascended a year or two previously with Venetz. The ridge leading to it is however so broken and serrated, and the slopes above so steep, that I doubt whether the mountain is accessible from the col.

I had just satisfied myself by a hasty glance downwards to the Laquin Glacier that further progress was altogether out of the question, and was trying to reconcile myself to the inevitable degradation of retreat, when some one suggested a start. Robertson did not seem disposed to expostulate, so without remonstrance we followed Venetz, as he quietly stept over the edge, as it appeared, of a precipice some thousands of feet high, and turned to the left. Volition, or at all events independent action, only returned about three hours afterwards, when we were safely landed at the head of the Laquin Glacier. At the same time I must say that I do not remember any particular difficulty. Nature had so constructed the mountain that the right ledge was invariably in the right place; and once or twice, when we were at fault, some eye more keen than mine detected the faint tracks of chamois which served to indicate the best line to follow. There might perhaps sometimes be a little danger from falling stones; as the Laquinhorn, along the face of which we were slowly winding, is seamed with gullies eminently suggestive of stone-avalanches; but the danger, if it existed, was obviated, or at least greatly diminished by our early start, and by the fine weather which prevailed throughout the month of August in that year. In fact

our progress was uneventful, though there was at all times a possibility of a grand aerocolymbetic descent, which if imported and reduced to a system would draw crowds to Cremorne. There was, however, one amusing incident, when Franz in descending a cheminée was caught by the knapsack he was carrying; and, Absalom-like, might have hung there still but for our assistance.

Shortly after this we finally left the rocks of the Laquinhorn, and reached a remarkable old moraine, very high and very narrow, which is distinctly marked on the Federal map as dividing the Laquin Glacier from a nameless glacier on the north, the head of which lies immediately under the precipices of the Laquinhorn, and which constitutes the approach to the Fletsch Joch. This point commands a wonderful view of the Weissmies, and of the great wall of rock sweeping round the head of the Laquin Glacier to the Laquinhorn. The contrast was remarkable. The Weissmies, as befits its name, was clothed in snow from top to bottom, while there was hardly a white spot visible on the cliffs we had just descended. It was impossible with any certainty to trace our course, and difficult to believe that any one line was less impracticable than another. While we were admiring the view and eating luncheon, nine or ten chamois passed close to us, and we could see them for some distance making their way almost in our footsteps till they were lost to view behind a projecting angle of the mountain. They would have been of considerable service in indicating the way had we been going back to Saas. To any one who may wish to reverse our route the moraine of which I have spoken will point out the direction to be followed. It abuts on a small snow-slope, which was when I was there, and may be generally, the only one visible on that part of the mountain. Immediately above this is the cheminée, and after that he must keep well to the left. As to the moraine itself it cannot be missed, its height and form being so remarkable.

I believe that a cattle track leads from the moraine, or rather from the further bank of the nameless glacier to the north of it, to Simpeln, but from want of local knowledge we wasted much time by endeavouring to descend straight upon the head of the Laquinthal: and on the precipitous buttresses which overhang the valley we experienced difficulties quite as great as any we met with in the course of the day. These may, however, no doubt be altogether avoided by keeping at a higher level. The Laquinthal, considering its nearness to one of the great roads, is one of the most sequestered in

(From a sketch by A. Adams-Reilly.)

Switzerland. It appeared to be inhabited only by charcoal burners, who met our conciliatory observations with a haughty reserve peculiar to charcoal burners all over the world, and Englishmen.

It remains only briefly to compare this pass with the other routes from Saas to Simpeln. More direct than the Thäli Joch, shorter and perhaps easier than the Fletsch Joch, and not much if at all longer even than the Gamser Joch, it can hardly, as far as my experience goes, be surpassed in interest and grandeur by any col in Switzerland. The entire time excluding halts was not much more than ten hours. I imagine that it may also be possible to effect a passage from the Rossboden Glacier, the stream from which flows into the Simplon valley just above Simpeln, to the Fletschhorn Glacier, on the west side of the chain. I am not aware that it has ever been attempted, and if practicable it would probably lead over the summit of the Rossbodenhorn, or close to it; still it may be worth trying. With regard to the pass that I have endeavoured to describe, I may confidently say that, though there is no very striking ice scenery, any traveller who may be induced to cross it will receive three impressions which he will not soon forget—the view westwards from the Col, the view downwards to the Laquin Glacier, and the view upwards from the old moraine.

The Bec de Luseney. By A. Adams-Reilly.

ALMOST in the centre of the triangular block of mountains of which the Dent d'Hérens forms the apex, while Aosta and Chatillon lie at the extremities of its base, a region as yet untrodden by the casual tourist, lies hidden one of the most graceful snow peaks in the Alps, the Bec de Luseney; of no great elevation, indeed, but the highest as well as the most beautiful of this group. From many points in the chain of Monte Rosa and the mountains of Bagnes both Mr. Whymper and myself had been struck by the symmetry of its form, but it had long been a puzzle to us, where or what it was—especially as guides exercised their imaginative faculties upon it in a manner startling and marvellous, and gave it any name that came handy from the Grivola to the Chateau des Dames. By means of a level I had ascertained from the summit of the Vélan that its height was almost precisely the same, 12,350 feet; but it was not until some time afterwards, that, in the course

of a survey of the Valpelline group, I ascertained its real position, at the head of the Val St. Barthélemy.

I had started to explore this unknown region, in company with a Chamouni guide, Henri Charlet, who carried my instruments, and an ancient chasseur of Val Tournanche named Carrel, the only man I could meet with who had, or would even pretend to have, any local knowledge; and when, after exhausting the southern valleys of the chain, I crossed over to the Valpelline, I was delighted to recognise the white snow cone which I had seen from the south, crowning a steep glacier-tail, a little above Biona.

I reconnoitred it from the heights on the opposite side of the valley, the point from which was taken the sketch which illustrates this paper; and I am much indebted to Mr. E. Walton for having kindly clothed my naked pencil outline in the lovely purple tints and gauzy mists which are so characteristic of the Italian Alps, and to which he alone does justice.

This point commands a view of the peak from top to bottom, and its glacier, across which lies a pass to the Val St. Barthélemy, is well seen as it descends into a remarkable gorge running up behind Mt. Gialon. At a considerable height above, just below the final cone, a glacier-tail peeps over the western precipices, lying like an epaulette on the shoulder of the mountain; and as the lower ice-fall was cut off by much *roche moutonnée* we decided to ascend an arête which would apparently bring us up to the shoulder in question, and to touch the glacier first at this point.

Accordingly on Thursday, August 2, we started from Biona at a quarter past two, and after following for some distance the Prarayen road, struck downwards towards the river, which we crossed. We then passed through a little gorge which cuts off a portion of the ridge lying west of the Combe d' Arbien, and after crossing the waste of débris and snow patches which fills that valley, some steep slopes of *gazon* with occasional stony couloirs brought us to the rocks of our arête, where we made our first halt at five. The arête was a wonderfully broken and splintered ridge—excellent climbing, however—and we made our way without difficulty over, and occasionally under, enormous masses of rock piled up into the most fantastic shapes. At length the arête came to an end, and we arrived at a small bed of steeply-inclined snow, at the foot of a precipitous cliff, over which hangs the upper glacier-tail visible from Biona. We had spent an hour in mounting the arête, and a few minutes more placed us on the ice, which we proceeded to cross, intending to regain the arête above it.

We here met with our first delay, for the ice, at first steeply

inclined, was as hard as iron, and as we had to cut steps all the way, much time was consumed before we reached the shoulder, and found ourselves at the foot of the final peak. From this point the northern arête would doubtless have been our shortest route to the summit, but while Charlet was cutting steps up to the rocks, I had set off across the eastern face of the mountain, and when I came in sight of the arête on the other side, which overhangs the Val St. Barthélemy, it seemed so easy to reach, and the rocks appeared so good, that I sent Carrel back for Charlet, and we proceeded to cross towards them. We could not cut upwards, as a large bergschrund lay above us, stretching apparently from side to side of the slope on which we were.

For some distance we got on rapidly, but as we approached the rocks the nevé got steeper and steeper, until at last we struck the hardest ice I ever saw, lying at an angle of about 50°. This caused considerable delay, and we did not get upon the rocks until a few minutes after nine. They were not particularly good, but there was always a way, and we reached the summit at 9.30.

The view is one of great beauty, and of great interest: the Valpelline mountains, of which it is the highest and most central point, form a foreground of rocky peaks, showing every fantastic shape and every delicate tint which rocks can assume. Beyond these lie the Italian Alps, the Combin, Vélan, and the chain of peaks which runs westward from the Dent d' Hérens, above which peer the white summits of the Zinal mountains. As I wished to examine the col which descends to the Val St. Barthélemy, we descended by the same rocks, and then cut downwards to the glacier. I then went to the head of the col, and having satisfied myself that the large couloir presented no difficulties, we turned our backs upon it and rapidly descended the gently sloping fields of nevé to a point somewhat lower than that at which we had quitted the rocks. A few minutes' step-cutting landed us on the arête which we leisurely descended, arriving at Biona at half-past four.

The Bec de Luseney can of course only be called a second class peak, but second class peaks have their value, and the pleasure of an expedition in which guides can be practically dispensed with, is only equalled by its value in putting the mountaineer through the practice as well as the theory of step-cutting or picking out the route up an ice-fall; while of all the impressions ever made on my mind by the delicate loveliness of Alpine scenery, the most vivid are connected with three second class peaks of nearly the same height, Mont Dolent, the Vélan, and the Bec de Luseney.

A WALKING TOUR THROUGH THE HIMALAYAS, FROM HINDOSTAN TO TIBET. By CLEMENT M. SMITH, late H.M.S. 1st Bengal Cavalry. Read before the Alpine Club on June 12, 1867.

IN the memorable year of the Indian mutiny, I had been ordered to proceed to the valley of Kashmir, to afford aid to the European officers doing duty there, or sent there for the benefit of their health. As I reached the capital of the valley (Srinuggur) some months before the usual influx of visitors for the season, I at once determined to trip to the valley of the Wurdwan, famous for ibex (the pride of hill sportsmen), as well as other large game. My trip there, though short, was successful, and, in addition to the sport, I made my first debut in mountaineering, the pass into the Wurdwan being, I believe, 14,000 feet, and at the time I crossed (I was the first European over it that year, May 2), pretty stiff work from the winter's accumulation of snow. A few days after my return to the capital, the astounding news of the outbreak of the native army reached the little community which had assembled during my absence. I had joined a small party of officers for the purpose of discussing our meals in a sociable manner, and on my way to breakfast on May 19 could not avoid noticing gentlemen being assembled in little knots eagerly talking over some unusually absorbing news, which had reached the happy valley with the usual rapidity with which bad tidings travel.

Like magic, our Kashmir gaiety was at an end, and in forty-eight hours scarcely an officer on leave of absence from his regiment was left behind. My appointment being an official one, and there being still a number of men in the trigonometrical survey and civil employ who had to remain on duty, I continued in the valley till the autumn. In October and November, I loitered on my way back to the plains, and had some splendid stag and bear shooting some little distance from Kashmir; when the snow coming down in earnest, I beat a retreat, walking back to my regimental head-quarters, Shubkudur, thirty miles north of Peshawur; the whole distance from Kashmir to my destination being about 300 miles.

I have thus far trespassed on your time in making this little passing reference to a bygone period, in order to explain how I became initiated into hill life. I feel sure I shall not be giving expression to sentiments foreign to the nature of those who now constitute my patient audience when I state that

this trip resulted in an undying desire to return to the wild fastnesses which had held me spell-bound for months, when my freedom gave me opportunity.

I had left my regiment in deplorable health, from fever and ague, for Kashmir, and I accomplished the travelling and sport alone, as regards European society. Many a time, when on a cold hill side, 16,000 feet above the sea level, after ibex, had I to hurry down to my tent, take a huge dose of quinine, and in two or three days crawl out again, weak and weary for a while; but that indomitable love of hill sport rallied me soon again, and the past was scarce remembered in the present. So, in spite of ill health, want of fellowship and its concomitant sympathy, the daily petty annoyances amongst my native servants, miserable diet, and last, not least, fleas and all manner of creeping things, I returned completely and for ever infected with the amiable monomania of mountaineering.

Soon after my return in December 1858, I joined with my regiment Sir Sydney Cotton's force, and after a campaign in the Euzafzaie Hills, to bring some mutineer refugees into some order who had grown cheeky from sufferance, I was posted by Sir John Lawrence to the 1st Punjab Cavalry, and after some exciting life with them, I had my rein arm cut in half with a native sabre, and was sent home at the termination of the mutiny in 1859, with a stiff joint for life.

I had but little noticed before this time, having been absent in the East ten years, the rapid way in which Switzerland had become the resort of the pent-up energies of the Alpine Club; so in due course I was curious to see for myself the mountain scenery which could inspire such a furore.

I am not about to bore you with any of my experiences in your special line of country, for, as you are aware, I crow on quite a different and more exalted hill than that boasted of in Europe. Nevertheless, I may mention that I always felt in the Swiss mountains the want of an exciting inducement to go higher which was invariably present in the Himalayas. There you might hear the sonorous bellowing of the huge *barra sing* (stag) of Kashmir, which would be shortly answered in savage defiance by the lord of the opposite ravine; or the indistinct outline of the noble heads of a dozen male ibex would delight your eye as they loomed above you (cautiously crawling to their leeward side), two hours before the sun rose, and in stalking which not unfrequently you might pass a jolly old bear up a wild fruit tree, who would scan you and your gun-bearers with a curious surprised look, and then tumble down the trunk of the

tree like a thousand of bricks and disappear amongst the scrub. Or you might be startled by the loud whirr of a covey of snow-pheasant (a bird as large as a turkey), as they shot round the edge of a ravine like meteors. Such incidents as these sent a thrill of natural joy through one's whole system, and gave an impetus to the day's work which I am free to admit my blasé nature felt the lack of in wandering over the land of your exploits.

In 1864 I determined on making a sporting tour, not only through the whole peninsula of Hindostan, but also through the Himalayas, Spiti, and Tibet. For this purpose I left England in November of that year, and, having landed in Bombay early in December, I 'made tracks' for the interior, and some few days before the end of the old year was in at the death of my first tiger. Alone I wandered through Kandeish and Bhopal to Central India, where I joined a famous tiger party in April, and with them we scoured the country round covering 500 or 600 miles of ground, making a famous bag. This, you will say, is not hill-work, and you may mutter an impatient growl at the prospect of an Indian tiger yarn. Fear not, I have only thus digressed because my tiger shooting affected my subsequent hill expedition to a serious extent.

I had laid my plans so as to leave the plains early in May for the nearest convenient hill-station, there again to make my preparations for many months' travelling in an inhospitable, dreary, mountain district, where scarce a lichen would thrive; but my plans were somewhat interfered with, for on one occasion, when watching for a lion, seated some height up a forest tree, I was precipitated, tree, rifles and all, into the almost dry rocky bed of a river. Though none of my bones were broken, my whole frame was so fearfully shaken that I never turned out from between my blankets any morning for six months afterwards without being reminded of my disordered anatomy.

Nor was this all; for about a fortnight after this accident, on our breaking up our tiger party, and returning to head-quarters, I was pitched out of one of her Majesty's mail-carts, the wheel having suddenly determined on resolving itself into lucifer matches, and, falling on to my left arm, smashed up my stiff elbow-joint. A month elapsed before I was able to move, when I again made a start, and with my arm in splints travelled from Central India to Simla, reaching the latter place on June 15, instead of at the beginning of May, as I had intended.

In eight days after my arrival at Simla, I had built myself a couple of small tents, one for myself and stores, and the other for my immediate personal attendants. I vainly tried to in-

duce some one of the numerous young officers there present on leave to accompany me, but the attractions of the fair ones, with the prospect of all the coming gaiety of a station, the residence of the viceroy and commander-in-chief, were greater far than any persuasions of mine could overcome; so on June 23, 1865, I started alone. My arm was still in splints; so as sport was out of the question, I determined to push along to Tibet as fast as the roads and the arrangements for relays of porters would admit of.

I covered fifty miles in the two first days, no delays occurring, and the roads being excellent. The scenery was exceedingly lovely on the way. The elevation was from 7,000 to 10,000 ft., and the vegetation consisted of forest trees such as are seen in European climates, oaks, rhododendrons, pines, wild fruit trees of various kinds, such as cherries, walnuts, apple, quince, and some semi-tropical ones. This distance was divided into four marches, at the end of each of which was a tolerably comfortable government house for the use of travellers, who, for a small sum, are at liberty to use them. A certain number of servants are in charge, who are kept by government to cook for and attend on those using the houses.

Nagkunda, the place I have adverted to as being distant fifty miles from Simla, is situated on the crest of a ridge, from whence, for the first time, you can see and hear the roaring Sutlej. It is a mighty river, and its average fall being fifty feet per mile, its current is very rapid.

Nagkunda is between 9,000 and 10,000 ft. above the sea level, and the Sutlej is about 3,000 ft. below it. The scenery here is very grand; the traveller can look back on the mountain country he has passed through and on that he is about to enter on. On the opposite side of the river Sutlej are the snowy peaks of Kulu and Kunawar.

Ladies and gentlemen visiting Simla, when somewhat wearied with the gaieties and conventionalities of existence there, restore nature by visiting Nagkunda for a few days. The climate—for the elevation there is 3,000 feet higher than Simla—is always bracing even in the heat of summer; fires in the evening, even at the end of June, being agreeable, if not necessary. The government guest-house there is capable of holding three or four sets of travellers.

The journey to this place is styled 'going into the interior;' and on my way I met more than one party of ladies and gentlemen of great Indian social rank, carried in litters, or riding, dressed in the height of fashion—kid-gloved and polished-booted.

At this point I had the option of continuing along a high road which runs by the side of the ridge on which Nagkunda is situated, or descending to the banks of the Sutlej—the two roads joining some six or seven marches further on. There was a choice of evils in either case. The latter road was fearfully hot for three marches, whilst the former was delightfully cool, but being much out of repair, government had virtually closed it, by not enjoining the head men of the villages to supply porters for those who, in spite of the warning, persisted in travelling that road. Having been pretty well grilled already, my head having very recently been exposed for months to the sun at a temperature of 140° to 160° from the time it rose till it set, I determined to stick to the upper road and run my chance.

My first march from Nagkunda to Bagee included some of the grandest as well as most charming views of mountain and forest scenery I ever remember noticing. The deodaras were here to be seen in perfection, from the healthy young sapling to the majestic fully-developed giant tree, which, looking like a tower of strength, seemed as though it could last for all time, despite the efforts of wind and weather, were it not that a little farther on lay the prostrate trunk of one lifeless and decayed, which had succumbed to the common enemy of all nature.

At the third march my troubles began. I had thought I could easily obviate the porter difficulty, by offering a pecuniary remuneration for the day's work far greater than they could have expected, but I had reckoned without my host, and made a discovery that circumstances before had withheld from me. Government having withdrawn the obligation for travellers to be able to demand porters, as I have before mentioned, the obstinate rascals would not willingly touch a load, and it was only by ominous threats I was able to push on to the next camping ground, and even then I was obliged to leave my head servant with two or three loads to follow next day.

I have observed that throughout all Asia I have visited, there is a decided repugnance on the part of the natives to perform any sort of labour for, or transact any commerce with, the dominant European; and unless the natives were coerced by rigid laws, every social connection between the two would cease. I could relate numerous instances where I and my followers might have been starved for food when surrounded by plenty, though the ready-money prices offered for various articles were far beyond those they could realize elsewhere. Of course I always took the law into my own hand in such cases, took

what I wanted and paid for it, firmness and fairness preventing any open breach of the peace.

Beyond this fourth camping ground, I was soon made aware I could not continue on the upper road, so I had to descend to Rampore and be roasted. The Rajah of Rampore has built a shed here for the use of Europeans. Rampore is the capital of the rajah's mountain dominions, and a miserable place you would think it, as well as his palace. Some shawls are here made from *pushm*, a very delicate undergrowth of wool lying immediately on the skin, and between it and the ordinary fur, or wool, of all four-footed creatures inhabiting Tibet. This *pushm* is brought from Rampore by the Tibetans to be sold. Sheep and goats are the beasts of burden, and the usual merchandise is *pushm* and borax from Tibet, the traders returning with salt, flour, tobacco, &c. At Rampore I was delayed by my baggage, which the people on the upper road would not forward, so I had to send porters from Rampore to fetch it. Whilst suffering from the effects of impatience, my solitude was relieved by the arrival of an officer returning from some distance on the hills, where he had been sketching, with a very charming collection of water-coloured drawings he had made. In addition to the pleasure of his society, I learnt something of the road farther on for about 100 miles or so.

July 1.—Shook hands with my new found friend, having promised to visit him if I passed his station, a promise I could not carry out, as three months afterwards he travelled to that bourne from which we do not return to record our adventures. I was glad once more to ascend to my next camping ground, which, in addition to being cool, commanded a magnificent view of the valley of the Sutlej, and a nearer and somewhat altered view of the Kulu and Kunawar Peaks, which I mentioned as visible from Nagkunda. At the village of Goomree, where I had halted, I was again subjected to delay on account of the original interruption on the upper road; but on the evening of July 2 my head servant came up with the last of the baggage. So far on my journey I had scarcely looked out for game of any kind, and all I casually had seen were some of the argus and mināl pheasants, the handsomest of all in the Himalayas. However, my head servant, who led my dog, had a curious little adventure with large game, which he had not quite calculated on.

Leopards are very numerous on the hills, and they do great damage; still it is singularly illustrative of their stealthy nature that they are seldom shot by the European sportsman. Now dogs are to them what oysters are to many of us,

a dainty morsel. Of this taste of theirs I was well aware, for on previous occasions I have more than once had a leopard venture into my tent to carry off my dog, who was secure under my bed. On the occasion which has given rise to this digression, my head servant was leading my dog, a powerful rough Russian watch-dog, by a chain, the time being a little before sundown, when a leopard suddenly jumped from the overhanging bank of the hill side at the dog, and seizing it by the hind leg, attempted to tear it away from its protector. There was a general scrimmage, for my servant was accompanied by three or four hill men, and not only was it with great difficulty that the leopard was driven off, but the brute followed his prey for about four miles, making several attempts to carry off the dog, running boldly amongst the men for that purpose, fortunately without success.

Nothing of any interest occurred for three further marches. The road skirted the left bank of the Sutlej, several thousand feet above it. Climate and vegetation were little altered. The monsoon rains had been expected before I left Simla, but, as I was walking away from them, I had the satisfaction to carry with me fine open clear weather. As my business was sport this unexpected delay in the monsoon was indeed lucky, for it is impossible in the hills to shelter your stores from damp. The burdens are increased in weight, the roads are heavier, and guns and ammunition are an incessant anxiety. On July 5, I reached Năchār, a camping place, where I noticed prettily situated on a grassy terrace, surrounded by a grove of noble deodaras, a rough newly built wooden hut, which betokened symptoms of European ingenuity.

I questioned some villagers as to whom it belonged, and they said the officer was the superintendent of forests, and his name was B. I had a shrewd guess that I knew the gentleman, and so walked to the door, and, having sent in my name, and my calves having undergone careful but by no means pleasant inspection by a ferocious bull-dog, was invited in, when of course we embraced and fraternised. In 1859 we had both returned from India, and I could scarcely credit my senses, when I had taken my friend's likeness, that the carefully dressed companion of the Crystal Palace and Italian Opera was the same I saw before me, got up in a hybrid fancy costume more Tartar than English. Government does not build houses for inspectors of forests, as they are officials supposed to roam about; but as my friend ascertained that he was likely to find plenty of work where he was for some three years to come, and was of an easy and comfort-loving dispo-

sition, he pocketed the tent allowance, and built himself this den with the aid of a sledge-hammer and a big chisel.

Ever since Defoe set his mark on me for life, and ruined me for settled domestic bliss, have I been fascinated by the art of making my temporary abode (whether the cabin of a ship, a tent under a tropical sun or on snow-clad mountain, a cave or a hut) as comfortable as the varied circumstances would admit of; so I entered *con amore* into the whole detailed account of how this den had been constructed, and considering the limited tools at my friend's command, I think he deserved great credit for the result. I was persuaded to stay a couple of days here, and as a parting act of mutual friendship we cut each other's hair in this barbarous land. Of my own personal appearance after this operation I have no recollection, but I have a vivid one of my friend's. Being myself a real lover of high art, and B. being physically, if not morally, the exact living representation of old Harry VIII., as depicted by Holbein, I determined on giving the finishing touch to the marvellous likeness, and I succeeded to a hair. I enjoyed the result of my handiwork so keenly that I raised suspicions in the manly bosom of B. as to the justice I had done him, but whether he failed to see the likeness on consulting the mirror, or the limited character of that article, which only admitted of one feature being viewed at a time, prevented the whole picture being comprehended in one view, I know not; but he remained in undisturbed and pleasing ignorance of the cause of my innocent risibility.

On July 8 I again started, descending to the river Sutlej, which is here bridged by the usual structure, which is ingenious in contrivance and sufficient in strength for foot passengers, sheep, and cattle. I reached Rogi in two days. There is a splendid view from this place of the peak of Raldung, situated immediately on the opposite bank of the Sutlej, which is 21,270 ft. high, and which was covered for several thousands of feet by snow at the time I saw it.

On the 10th I reached Pungee. Thus far I had travelled on a made road. This wonderful undertaking, the Hindostan and Tibet road, was commenced by that far-seeing viceroy, Lord Dalhousie, about eleven years ago, after the annexation of the Punjab gave the British the sovereignty over the country through which the river Sutlej makes a passage from Tibet to Hindostan. The object was to facilitate trading between British India and Central Asia. Hitherto the only route by which the commerce of those countries had been carried was by crossing the territory of a third power, Kashmir,

the rulers of which country have not been famous for their liberal views. The imposts exacted by the maharajahs, seconded by those of their officials, almost rendered trade prohibitory; so that if the direct road from Tibet to Simla, and thence to the plains, could be completed, the success would be great and certain. At great cost, and by great engineering skill, the road has been completed as far as Pungee, which is 180 miles from Simla and 230 from the plains. The mutiny arrested the work, and since then the present viceroy, from economical motives I presume, had allowed the project to drop as regards the road's onward development. At Pungee I met a party, consisting of an engineer officer who was superintending some repairs of the road, his wife, children, and two friends. As it was a pleasant break in my journey, and as I was able to make here some little additions to my stock of grain for food, I halted for a couple of days, which were by no means wasted, for having overtaken a day before on my road some porters, who had come from Ghurwal, and a *shikarrie* (native sportsman), I was able to engage their services as my permanent servants. There were ten of them, and a great comfort they were to me, for in addition to the convenience of having porters attached to my camp, it saved the daily nuisance of impressing men from the villages I passed through, a matter which is always accompanied by delay, dispute, and all sorts of vexation. I had not been able to procure any porters from Simla for the trip, in consequence of the number of visitors there giving ample employment for all, with better pay than they would earn in my service. In other hill stations porters can be engaged by the month, and this plan is by far the most desirable one, as well as the most economical.

On July 13, I started on the serious part of my journey, where I might expect matters not to pass so smoothly as heretofore. In order to make up for the time I had halted, and remedy as much as possible the deplorable loss sustained in consequence of my broken arm, I determined to reach Shialker in five days, a distance usually accomplished in nine.

At 3.30 I was awoke by my alarum, and, after a cup of cocoa, was packed and off in three quarters of an hour. I had not proceeded many hundred yards before I felt the loss of a civilized road, that before me occupying the stony bed of a rivulet; this was varied by coasting along the face of a precipitous cliff on the rudest of galleries of split pine, supported in a way I dared not inspect, the planks tilting occasionally in so alarming a fashion as to make one's heart vibrate. Even the luxurious part of the morning's march was of the roughest; but fortu-

nately my knickerbockers were loose, or they had surely been rent by the frequent giant steps, both up and down, I encountered. In five hours I reached Jeangara, a *dogree* of the adjacent village of Parung. A *dogree* is a hill camping-ground, to which the residents of the nearest village bring their herds of sheep and cattle to graze in the summer months. There are usually a few huts made of rude pine-logs as shelter for man and beast, for these *dogrees* being situated several thousands of feet above the villages, journeying to and fro night and morning would be loss of time and labour. It was a chilly spot, but having found a sunny nook, I soon despatched a hearty meal, which being digested partially with the aid of a cheroot, I resumed the march, the roughest part of which, the Pass of Werang, was before me. It was now that I left the Sutlej, that river bending to the north-east, till it reaches Shipki, on the Chinese frontier, when it suddenly again bends down to the south-east, whilst my course lay more northerly.

In two hours I had reached the crest of the pass, which was 13,200 feet. It was a dreary road, and the view was impeded by clouds. From the pass to Leepee is four more hours. The River Asrung is crossed by a wooden bridge immediately at the entrance of the village, and a quaint archway, or porch, is passed through by the traveller, which will at once show he is in the land of Buddhists, for the walls are profusely decorated with gods, dragons, and demons, familiar to you no doubt on your grandmother's valued cracked china. Between Pungee and Leepee the character of the scenery alters in a marked manner. Soon after I had crossed the river, on leaving my friend in his log hut at Nachar, I was out of the influence of the monsoon rains of Hindostan, the numerous ranges between that river and the plains serving to arrest the rainfalls. The country on the right bank of the Sutlej after that becomes gradually denuded of its profuse growth of pines, deodaras, and other trees, and a few scrubby dwarfed bushes only are to be seen after crossing the Werang Pass.

From Leepee to Sungnam the march commences on wooden galleries, which were the day I passed made a trifle more unsatisfactory by a Tibet merchant meeting me with a herd of half-bred yaks. I flattened my person on the occasion as close to the rock as I could, and awaited the event. The leading beast snorted on nearing me, and objected to move past such a strange uncouth individual as myself, but when urged on by the *vis a tergo* he made a rush, followed by the whole herd, and then I wished myself safe in an easy chair in my club, and

held my breath. After four and a half hours' ascent in drizzling rain we reached Kânum, thence to the Ronung Pass, 14,354 ft. There were some patches of snow on the road. Sungnam is distant from the pass about four hours' march. The river Ruskalong is crossed just before entering the village.

From Sungnam to the Hungrung Pass is a pretty stiff ascent of five hours over rivulets, snow-beds, pinnacles of hills formed of conglomerate, and the roughest of roads I think I ever marched over. My friend, poor Speke, a few days before his premature death, gave me some hints about part of my journey, and I find he mentions this pass as 'a tremendous pass,' on account not of its altitude, which is only 14,530 feet, but of the approach to it. From Hango to Leo was an easy march of five hours, and it being the sabbath, I made a sabbath-day's journey of it. We reached Leo about 10 A.M. Tents were pitched in an apricot orchard.

The situation of Leo, which is a large and flourishing village, is a very curious one. It lies in the angle formed by the junction of two rivers, the Leepâk and the Spiti. These rivers would appear to have formed the plateau on which Leo and its cultivation rests, and this extent of land is larger than is usual in hill villages.

Leo is completely shut in by the almost perpendicular mountains surrounding it, the only exits being the passages made by the two rivers mentioned, consequently the temperature is higher here than the altitude of the situation would warrant. After writing up my journal, I inspected my kit, and was horrified to find how much I had used up a pair of new strong boots in twenty days' marching. Having only three pairs, it behoved me to economise shoe-leather. The bovine species being sacred amongst the inhabitants, I could obtain no leather here thicker than that of goats, which was of little use over the ground I was travelling. I therefore ripped off the whole of the heels, and nailed them on to the worn part of the soles, by the aid of some hob-nails I had brought with me.

17th. My next march to Shialker was what the natives call three, and I hardly expected to do it in less than two; however, by forwarding news to the villages for relays of porters to be ready, and with promise of good pay, I experienced no delays, and reached Shialker before dark. The first part of the march was from the village of Leo to the bridge over the Spiti river, and it was here and at the entrances of the villages of Leera and Changa I passed specimens of the structures called *máné*. They consist of two parallel walls of large boulder stones 50 or 100 feet in length, 3 to 6

in height, the surface stones being engraved in Tibetan character by the Lamas; the matter of the writing is, I believe, the reiteration of a prayer supposed to influence by fear demons and such like cattle, and deter them from approaching the villages for harmful purposes.

After crossing the river Spiti, the road was very steep up to Leera. From Leera to Shipki is but a short march. The latter place is the British boundary, beyond which the country is under Chinese government. At one time I had intended to have followed the River Sutlej from Shipki to the plains of Tibet as far as the Niti Ghat, but I ascertained that I should, if not absolutely repelled by violence, encounter such negative resistance as to render sport, if not travel, impossible; I think, however, that the thing might be done by three resolute men. From Leera to Chango is a slight undulation. From Chango to Shialker some unpleasantly steep slopes of small slate shingle have to be passed. This was the first time I had crossed such. The traveller suddenly loses sight of the narrow track on approaching this shingle, and then will look right and left above and below in some uncertainty, and perhaps retrace his steps some distance to discover where the path has been diverted; not finding any such, he will return to the shingle, and on looking closely into it, he will notice some slight impression on its smooth surface suggestive of footsteps; the line of these will carry his eye to the continuation of the track when *terra firma* again appears. This is what I did, and then I ventured a foot on the treacherous, foundationless substance, like a very small schoolboy venturing into the water for the first time, and withdrew it at once; some of the country porters arriving, I watched them and noticed they went over it with naked feet in a springy fashion, like an Irishman over a bog. Of course I plunged into it at once, and though I felt unhappy a little at first, in hearing what I removed my foot from, each step, go tinkling down the steep slope which ended in the boiling, roaring Spiti river, nevertheless I soon became quite accustomed to it.

The Spiti river is crossed again by a very wide and elaborate wooden bridge at Shialker, where I camped. At Shialker there is a commanding hill-fort, and the place from its situation would be easily held by a small party of defendants in case of attack. My nearest route from Shialker was over the Lepcha Pass to Soomra, thence to Lari; but I was informed (and strange to relate, I afterwards found my information was true) that the rope bridge (*julah*) over the Spiti at Soomra, was destroyed, and that a new one would have to be made for me. I therefore

determined on recrossing the Shialker bridge and keeping on the left bank of the Spiti river. My journey was considerably lengthened, but still I did not feel quite certain about the time requisite for making a bridge, and was glad to keep on the safe side of such an obstacle as a mountain river. The road I preferred leads up a steep mountain over a low pass, and then traverses some specially dreary waste till it brings the traveller to the Spiti river again, at the point where it bends suddenly at right angles and flows nearly east and west. The camping ground was indeed a rough spot on the banks of a small river, Parung, which takes its origin from the glacier on the north side of the Parung Pass. Up this river lay my nearest route to the Choomereri Lake, by which I should avoid the Parung Pass; but, unfortunately, but a few miles up the river from where I was encamped was a Chinese outpost, so I was obliged to be satisfied with a long and weary circuit.

My camping ground had been described as a pleasant green spot, with a clear stream of good water running past it. The place was so uninteresting I made up my mind not to pitch my tent. The ground was rocky and rugged, covered knee-deep with sheep-dung, and as for the clear stream it was impregnated so with mud, that I verily believe an inch of earthy matter would have been deposited in a tumbler of water. However, on close inspection I discovered a large cave, and in front of it a small plot of ground encircled by a stone wall. This was cleared and cleaned, and the tent was pitched in it, the tent ropes being anchored to large stones, and I bathed in spite of the mud, and was cool if not clean. The march to Lari is easy, excepting for the frequent occurrence of the very steep and dangerous-looking slate shingle interruptions which I have before noticed. Some few people I met were extra-Chinese in dress and appearance, reminding me of the natives of Canton.

At the entrance of the villages here I noticed cairns of stones, ornamented on their summits with primitive little flags of bits of coloured cloth; the summit and angles of the cairn being covered with the heads and horns of the *burrul*, a large wild sheep common over these hills, killed in the winter when they are driven down near the villages by severe weather. Did the Romans borrow the idea of ornamenting the capitals of their pillars, &c., with rams' heads from this quaint and very ancient custom of uncivilized nations? Afterwards, when in Tibet, I noticed the heads of the giant sheep (Ovis Ammon), and also of his younger brother, the *snapoo* or *ourial*, on these cairns.

In two more marches I arrived at Dunkur, the chief village of Spiti, where the *Nono* or Governor of the district resides. This official was absent at the time, unfortunately, so I was delayed two days, during which time I inspected this village and its immediate vicinity. The place is 12,774 ft. above the sea level, on the left bank of the Spiti, where that river is joined by the Pin or Peeno. The Spiti river flows here in a wide shallow stream, the bed being about, at a rough guess, half a mile in breadth. Dunkur (2,000 feet or more above the river) is fantastically situated on a spur, which, running at right angles between the mountain range and the river, is so precipitous as to render the village only accessible on one side. The composition of this spur is conglomerate of boulder and earth, and much of the latter having been washed away, the summit of the hill is divided into spires. The village has grown up as best it could under the difficulties caused by these natural eccentricities of surface. The materials were huge sun-dried bricks, the roofing of poplar and dog-rose bushes, which are the only vegetable productions the country here affords for building purposes.

After receiving news of the Nono's whereabouts, I proceeded on my route to Kazee (a long march), where he was to meet me with his interpreters. The Nono is a quiet, demure-looking old gentleman, very civil, and desirous to oblige. His dress was simple. One garment, closely fitting at the throat, descended below the knee, being fastened at the waist by a girdle; it was of the colour of turmeric. Clumsy boots with felted soles, and long cloth continuations were secured at the knee. The usual little saucer-shaped apology for a cap, with a knot on its summit, served the purpose of shelter for his head. A number of uncut pieces of amber-coloured stone, cat's eye, and rough, imperfect lumps of torquoise, were strung together and formed a huge sort of necklace, which descended to the waist. An iron tobacco or opium pipe, a long slender knife, and writing apparatus, stuck in his belt, completed this interesting individual's turn out. After a considerable palaver I showed the Nono my kit, including rifles, crystal clock, and blow-out Indian-rubber bath. The clock was handed round as a great curiosity; the bath was, however, a complete mystery. As the swells in the Guards say they don't dance, so don't the Tibetans wash. They assert it would be absurd to do so, since the dirt on their skins is as good as a suit of clothes. No doubt this is the case, but the traveller suffers considerable inconvenience in various ways from this little defect, for their persons taint the air; and as sure as they travel with your camp so certain

are insects to invade your clothing in a way inscrutable, and in defiance of every precaution, and so indestructible are these pests, which attack the body as well as the head, that their larvæ are not to be destroyed by any element but fire. When I had made a few presents of cutlery to the Nono, and for his wives some trifles to win over the sex, the old gentleman granted me the supplies I wanted and an interpreter and porters.

The next halting place was Ki or Kibar, after which I was to pass seven marches, including the Parung Pass, without meeting any village, till I reached Kirghoo at the north end of the Choomereri Lake.

Two long marches brought me to the foot of the pass, elevation about 12,000 feet, where a rough slope was the only camping ground available. In no way could my bed be arranged satisfactorily, so I passed the whole night about as pleasantly and usefully as does Sisyphus his eternity. Barely had I succeeded in making a fair commencement of a night's rest, when I found myself, bedding included, sliding over the foot of my little pallet; this manœuvre I repeated at great expense of temper till early dawn, when all were busy and anxious to lose no time, for the task before us was a rasper.

I fairly saw every man in the camp off the ground before I myself started. The road was easy for some two hours, and in that time I had overhauled the foremost of the party at a spot I was sorry I had not reached the day before; and were I again to encounter that pass, I should make for this spot in two marches from Kibar, instead of to that I had camped on in one; for by so doing the march over the pass could be accomplished with but moderate fatigue. The foremost man I reached was my butler, as they call him, or head servant. I found him crying like a child and completely 'caved in.' The lunatic, spite of my orders, was dressed in the thin, flimsy costume of the plains, for what reason I could not discover. Of course this was no time for wasting breath, so I passed on. I should think at this spot the elevation might be 16,000 feet, there was running water, some scanty vegetation, and the spot for the camping ground I selected in my mind's eye was sheltered by a huge perpendicular spur of rock. After this the march was more severe; huge snow-wreaths traversed the wide ravine leading up to the pass; the scenery was dismal in the extreme, all vegetation had ceased, and snow and Titanic rocks were all that were present to view. The snow passed, the last 1,500 feet were all but perpendicular steps up rough rock. My Tartar interpreter had joined me, and together we worked it. I allowed him to lead, and timed my halts to his;

they were very frequent indeed, the higher we mounted. We reached the summit at about 11 A.M., 18,500 feet.

I had anticipated that from this great elevation I should command a splendid view of the so-called 'Plains of Tibet.' The view north from the pass is, however, shut in by mountains whose elevation is from 1,500 to 3,000 feet higher. The view towards the south was unimpeded, the day was brilliant and the atmosphere indescribably clear, and I only wish some one had been with me capable of doing justice to this truly magnificent panorama. As for me, as I have proved, I am no word painter, and besides, after a short look about me, I had to interest myself about my worldly possessions, the upward progress of my cook, and his little collection of cooking apparatus and eatables and drinkables.

Fortunately for me this interesting individual, whose 'absurd name' was Mookham, was a proved mountaineer, and as I took care the burdens containing the *cuisine* were light and the men who carried them strong, I soon had the satisfaction of a pleasant sniff of good things to come.

From my situation I could observe, by the aid of my binoculars, that the whole party of my porters had subsided about 1,500 feet below me, where I have mentioned the ground being so steep and rough. I induced some dozen Tartars who were with me to go down and help them up, and in about another hour I had the satisfaction of seeing all my worldly goods around me. My head servant was reported to have stopped where I had passed him, and with him a man who called himself head of the porters. This was a bore: I had to dispatch a Tartar with their blankets and some food and cold tea for them.

The wind on the pass was bitterly cold and furious, but nevertheless, with the aid of blankets and a good meal, I succeeded in making the halt pass pleasantly. I lacked very much a companion here as elsewhere on my tour, but I had a new (to me) number of the 'Saturday Review,' some articles in which I chuckled over; by 1 o'clock or soon after we were off again. Some four miles of snow passed, we descended down a glacier. The walking was detestable enough. The sun was powerful, and I was wet up to my middle, but having on native sandals the melted snow water ran out as it soaked in.

The camping ground, Todung, was reached by 7 P.M. The elevation of this spot is about 16,500 ft.; it is grassed and pleasantly situated. To keep up the circulation I busied myself in helping to pitch my tent and arrange its interior. A tin of

ox-tail soup and some port wine restored me to amiability. Before I turned in I found that, besides my two servants who were on the other side, one porter was missing, and another had left the road on the hill. Food was cooked over night, cold tea, stimulants, and some blankets were packed, and I ordered four of the Tartars and my hill sportsman to start off before daylight to help over the cripples. The next day was an anxious one, for I could not but anticipate some serious casualty; however, the missing porter walked in early in the morning, and by sundown the butler was led into camp a melancholy limp-looking mortal. The head of the hill porters would not face the pass at all, but returned home, having borrowed money from my hill sportsman to enable him to do so.

And now, having carried my readers over the Parung Pass into Tibet, I respectfully make my bow, and leave them to find their way back as best they can.

Ascent of the Aiguille Verte. By Thos. S. Kennedy.

AT Easter in 1865, I was visiting the Rev. C. Hudson at Skillington, to arrange a Swiss tour, and we agreed to meet at Chamouni, to ascend the Aiguille Verte, and then to go to Zermatt, to try if we could climb the Matterhorn by its northern arête. The second part of this programme we could not carry out together from unforeseen circumstances. How we succeeded at Chamouni will now be detailed.

On the very day that I entered Chamouni, Mr. Whymper succeeded in making the first ascent of our mountain, with two German guides, but, from various circumstances, of which not the least one was the ill-temper shown by the Chamouni guides as a body to their more fortunate German brethren, a groundless doubt was cast by them upon his success. So our expedition was reduced to making the second ascent of the peak, partly to carry out an original intention, and partly to establish the truth of Mr. Whymper's success by finding a rope which he had buried at the top. I may here state that the Chamouni guides have made at least twenty attempts to scale this peak, of which some were really hard tussles with the mountain, whilst others were merely sham expeditions organized to extort money from their employers, it being well understood amongst the guides that the first difficulty should stop them. Bad weather detained us at Chamouni for several days, but we made one reconnoitring expedition to a point

above the Argentière Glacier, to see if there was any chance of ascending the mountain on that side. It is impossible to say from below if that side will prove to be accessible; at any rate it would be excessively difficult, and we resolved to ascend, as Mr. Whymper had done, from the Glacier du Talèfre, on the southern side of the peak. We were joined in our expedition by the Rev. G. Hodgkinson and his guide Ducroz, Messrs. Birkbeck and M'Cormick being too unwell to accompany us. The party consisted, therefore, of Hodgkinson, Hudson, Peter Perren, Michel Croz, Jean Ducroz, and myself, two porters being hired to carry our tent and baggage to the Couvercle. A pleasant walk from the Montanvert took us to the junction of the Talèfre Glacier with the Mer de Glace; at this point it is necessary to leave the ice and to ascend the rocks called Les Egralets. Formerly there was no difficulty in effecting the passage from the ice to the rock, but of late years the ice has shrunk greatly, and is quite 20 feet lower than it used to be. Consequently an almost vertical wall of rock has been left, and an insecurely placed ladder is the only way up it. For an unencumbered man there would be no trouble in ascending, even without a ladder, but our heavily-laden porters found it difficult. Our guides shouted and pushed at them as an English drover does at a herd of bullocks, and although one man nearly lost his balance round a projecting corner at the top, they all got up safely.

We pitched the tent at the top of the Couvercle; Hodgkinson, Hudson, Croz, and Ducroz could not be persuaded to sleep inside it, for the night was warm and most lovely; Perren, the two porters, and I used it. At 1.30 we rose and made our toilettes, mine taking so long that Croz became impatient and started off alone.

A clear, and, for the early hour, warm atmosphere, made our progress up the hard slopes easy and pleasant. For about two hours we went upwards, always circling round the great basin of the Talèfre Glacier, for this method not only made the route upwards easier, but it also avoided the crevasses in the central portion above the Jardin.

When the day had fully broken, we stood at the foot of a hard frozen snow débris, forming the base of a couloir in the side of the Aiguille Verte. Directly below the mountain, as it were, this couloir seemed to lead almost to the summit, and presented a very obvious point of attack; Hudson and I concurred in thinking that it would be a good route. But Hodgkinson, who had talked with Mr. Reilly on the result of his expedition the previous year, said that these very rocks had

turned out to be difficult to climb, and Mr. Whymper had told us that his successful route lay further eastward, and that there he had found no particular difficulty up to almost the summit of the mountain. So we consulted, and as usual the guides would give no opinion, whilst Hodgkinson wished to go further on along the base before commencing the ascent; but he was overruled by the majority. We decided to go straight up, if only for the sake of novelty, but Hodgkinson was right; the way up the Aiguille Verte by the great ridge of the Aiguille du Moine is one of the most difficult routes up a mountain that has ever been made. Up the débris we went, up to the rocks from it, and then, finding many a broad sheet of most slippery and untrustworthy ice upon the rocks, we turned to the right and descended into the hard snow of the couloir. Perren, Hudson, and I were roped together, and formed the first party; Hodgkinson had for attendants Michel Croz and Ducroz; I told Perren to reserve himself for the hard work higher up, and proceeded to cut away at the steps.

The couloir was steep and straight, the snow hard, and my axe a good one; and, as we happened to be 20 yards ahead of the other party, the blocks cut out acquired a considerable velocity before reaching Hodgkinson, and caused some murmuring from below, and corresponding merriment from above. My little black dog began, as she always does on hard snow slopes, to look unhappy. Although her claws acted in some measure the part of crampons, they were not sufficient to enable her to walk in any but an up-and-down direction, and sitting on her hind legs was manifestly impossible. An hour's work brought us to the head of the couloir, and we ascended through some soft snow to a short secondary ridge, which showed us that we were standing on the crest of a buttress of the Aiguille Verte, down one side of which our couloir fell. We sat down to breakfast, and then turned to the left, climbed some rocks, and found ourselves on the edge of an immense ridge, the connecting link between the Aiguilles du Moine and Verte. And here a grand sight awaited us. Nearly on a level, and about half a mile off, rose the top of the Aiguille du Dru, the great red perpendicular rocks standing up almost terrifically from below, whilst some slight mists curling and waving about lent them a peculiar charm. Far down below was the Montanvert, Chamouni, and all the well-known spots, the clear sharp atmosphere showing every little point with wonderful distinctness. 'They see us at Chamouni,' Perren said; and I imagined that the sound of a gunshot reached my ears, but it must have been fancy, the Chamouni people could scarcely have dis-

tinguished our party from the numberless little projections of the ridge.

Things began to look more difficult above. Great smooth rocks frowned above, and went sloping down from us until they seemed to be lost in the depths. But we set to work to see how far we could get, and so we scrambled up an icy corner, and then went out directly upon the face of the slope, cutting steps in the thin ice which covered the rock. Not even a cat could have got up there, and, whilst we were extricating ourselves from a perilous adventure, a shout from Croz announced that he had discovered an old alpenstock fixed in the rocks, with the remains of a red pocket handkerchief hanging to it. Other evidences of an exploring party having previously attained this height were lying about; we took up the old flagstaff and carried it with us. Croz made a reconnaissance round a corner and shouted to us to follow him; we did so, and then found that Ducroz had detached himself from his party and gone on as an independent explorer. The slopes which here presented themselves were easy, leading up again to the great ridge at a point above the rocks which had proved to be impracticable below. We had now an extended view over the whole mountain side, and we could see that farther to the west the route would have been better. Gaining the ridge again we overtook Ducroz, who had stopped at a point where I think most unattached men would have stopped. The ridge was becoming broken into jagged steps and great protuberances of rock; these were covered with ice or frozen snow, and the greatest caution was necessary upon them. We were forced to cross over to the Chamouni side of the ridge, at this point of fearful steepness, and descending without a break for thousands of feet. Having circumvented the first difficulty, we crossed back again to the less steep or western side. It presented a soft and insecure-looking snow slope with a wreath overhanging at the top; directly below this we crossed it, and something was said about the danger of recrossing such a place in the late afternoon. But our blood was roused now, and we had determined to stop all night at the top if it should be necessary to wait for the night's frost to harden the snow again. Perren complained of fatigue, and asked if Croz might be allowed to take his place. He did so, and Hodgkinson's party went in front, a position which they retained to the summit, and which gave me an opportunity of witnessing the powers of one of the greatest guides that ever trod a mountain top.

We climbed up what seemed to be a little spire of rock rising from the ridge—it was, in reality, the end of a level and very

sharp section of it; along this we balanced ourselves until a projecting piece of stone caused each in turn to embrace it with his arms whilst his body hung in mid-air over the Montanvert, and a precarious footing was gained on the other side. Then up a little gap from which we could see the two ridges or buttresses of the mountain ascending from the Aiguille du Dru and from Les Droites until they nearly met to form the summit. But our own ridge, which formed the third side, concealed the actual summit, and we began to fear lest some great projection or gap in our ridge, of which the difficulties increased at every step, should cut us off from it. We were evidently very near it, and the sight had a magical effect upon Croz. Advancing along a piece of snow, supported upon a jutting rock at some distance below the ridge, he announced that he could go no further. 'Try the Montanvert side,' called out Hudson, but the Montanvert side did not look inviting to our great guide, for he turned back immediately, and, to my astonishment, prepared to pass below the snow and rock which he could not climb. Hudson and I were sitting in the gap and watching the proceedings. 'Dear sir,' Perren said to me, solemnly, 'that is too dangerous, they will all be killed!' Unaided he slid down a snow-covered rock of most precarious footing, and, stooping, passed round a ledge of slippery rock on which lay piled a great mass of snow with depending icicles. No help or consolation would he give to his followers, but 'Venez seulement,' and up a steep icy corner he went, never looking behind him until he had anchored himself securely on a bit of jutting rock; and thus was performed the most daring feat of mountaineering I ever saw. The air was perfectly still, and the quiet fall every few minutes of portions of snow detached by the sun's heat, gave at this time an almost ominous feeling which every climber must have known once or twice in his mountain life. From the jutting stone the three ascended in soft snow, whilst we waited breathlessly for the result of the adventure; they disappeared over the ridge-top above our heads; five minutes more and a loud cheer announced success. In a few minutes we had followed, and were welcomed by Hodgkinson on the top. 'Voilà, messieurs, l'Aiguille Verte entièrement et complétement,' said Croz, who was almost trembling with excitement; and just as we all stood together to give a great cheer and to form a visible group against the sky, a gun, fired from the Flegère, announced our success to the valley of Chamouni.

The day was perfect, a lighted candle might have been held in the air; had it been otherwise, our descent by the steep and very difficult ridge might have proved an awkward matter. But

no such thoughts entered our heads. We seemed to be on the top of the world; the Aiguille du Dru was lost, and nothing could be seen of that pyramid of granite now dwarfed into insignificance. Down the snow it would have been easy to have walked a long distance towards it, and the descent towards the Flegère would have been equally easy as far as the well-known cornice. To the east a great rocky peak of Les Droites rose up solemnly almost to our own height, and our shouts came echoing wildly back from it. The Jardin looked as though a stone might have been flung down upon it, and so far as appearance went, all hope of descent by our ridge was impossible. My little dog was soon fast asleep on a knapsack in the sun, and we set to work to find a rope left on the top by the party who had ascended the week before. We soon dug through the freshly fallen snow, and then, cutting two large trenches crossing one another, we searched in the older and harder snow beneath for nearly half an hour, but without finding it. Then we set up our flagstaff on the very summit, and, a few yards lower down, towards the Aiguille du Dru, we placed the second staff picked up on the mountain side, tied a handkerchief to it, and prepared to descend.

We left the top about 3 o'clock, all tied to one long rope, a mode of proceeding which was certainly not the best one, and we did not regain the Montanvert for eleven hours afterwards. Croz led the way down to the most difficult passage we had to encounter, and Hudson was last of all, just behind me. More than once, as we came to the edge of a steeper place than usual, it seemed to me that we were almost cut off from the world below. But the appearance was worse than the reality; and when actually upon the most perilous spots I did not feel the slightest sense of doubt or insecurity; whilst Hudson, who for a great portion of the time was the last in the line, invariably refused all aid from me after I had securely placed myself. His object was, undoubtedly, to render himself as independent and self-reliant as possible, and in this he had succeeded to an extent greater than I have ever seen in any other Englishman. He was almost as great as a guide. Towards the evening, as we approached the head of the couloir, I seemed to lose the feeling of certainty which enables a man to throw himself carelessly from rock to rock. Hudson, who was anxious to be back in Chamouni before night, to rejoin his friends, saw it, and urged me on frequently, although, being only a follower in the procession, I was not really detaining him. But once in the deep soft snow of the couloir I was again myself. It is astonishing what confidence the deep yielding

snow, however steep, will give to those who are accustomed to it, and who know what great reliance may be placed upon it, if only it be made proper use of. Turning round, I descended precisely as a man descends a ladder. The number of men who had already passed had dragged away the snow in many parts, but it did not signify if no footstep met the descending foot; I knew that in a slide of a yard or more, sufficient snow would gather and ball under my feet and arms to arrest me.

We regained the Talèfre Glacier at the foot of the mountain about nightfall, and an hour afterwards were at our bivouac of the previous evening on the Couvercle. The porters had gone hours before, and had cleared off everything; not even a crust of bread could be found: but I think that with our day's work and our success, we were all too excited to have eaten if we had had anything. We remained about an hour resting, for the night was calm and warm, and at half-past ten we took up our knapsacks, and left for Chamouni. The moon was shining brightly in our faces until we got to 'Les Egralets,' when she became obscured by a peak on the other side of the Mer de Glace, and we were left in darkness, increased by the fact of our eyes being much fatigued, and by our general sleepiness. We got to the top of the rock where the ladder is placed, and a more hopeless-looking place to get down in the dark I do not wish to see; it seemed like going down a coal-pit by climbing down the side of the pit. Perren went down with a rope round him, then Hudson and I, then the little dog had the rope tied round her neck, and was slung down, and then Hodgkinson's turn came. But the effect of the day's glare upon his eyes had been such as to render him nearly blind, and he declared that it was absurd to go down such a place in a state of blindness, and that he should bivouac among the rocks at the top until daylight. It would have been by far the wiser plan to have done so, for to this day it has been a wonder to me that no one of us tumbled down a crevasse on the glacier; but Croz was determined to go on, and partly by persuasion and partly, I believe, by main force, he induced Hodgkinson to go down, and then, unaided from above, the two men came clattering after us amid a shower of small stones and gravel, and a volley of Chamouni oaths. Then began the descent of the glacier in the dark, through a maze of crevasses out of which nothing could have led us before daylight but the perfect local knowledge of our two Chamouni men. It was almost impossible, from the absence of all shadow, to see whether the ice on which we were about to walk was level or not, and many a time we walked against

a small hillock of ice, and tumbled over it, cutting ourselves against the sharp spikes. Hodgkinson was continually obliged to take the arm of some one who could see a little better than himself, and my little dog howled piteously, her bleeding feet would scarcely let her walk, and our progress was slow and weary. But all things have an end; and just as our patience was exhausted we found ourselves upon the moraine, and we soon struck into the little path. Perren and I hurried on as fast as our tired legs would carry us, and at 2 o'clock we got to the Montanvert. Ten minutes hammering brought the people to the door, and the landlord, seeing who we were, rushed back into the house and, bringing out a light, fired off a cannon. Half-an-hour afterwards the remainder of our party came up, a bottle of Swiss Champagne put a little more liveliness into us all, and then Perren and I resolved to sleep until the morning, whilst Hodgkinson and Hudson went down at once to Chamouni with their two men. At 10 o'clock next morning we all met in the Hôtel de l'Union, rid of our fatigues and greatly pleased with our expedition, and we determined to make use of the fine weather by ascending Mont Blanc the next day. So we all went to bed until 3 o'clock in the afternoon, and at 4 o'clock we started for the little hotel at the Pierre Pointue, about three hours' walk below the Grands Mulets, our party consisting of Hudson, M'Cormick, Hadow, and myself, with Croz and Perren as guides. We got there about 7 o'clock; and at 1 A.M. we started up the rocky path to the glacier, our host showing us the way with his lamp as far as the edge of the glacier. Here we took the lamp and went on, reaching the Grands Mulets about 4 o'clock, soon after daybreak. It then appeared that some one had been sleeping that night at the Mulets, and that he had left two hours or so before us for Mont Blanc.

The true British instinct came upon us that he must be caught before reaching the top; so about 4.30 we left the rocks and went upwards in a deep snow-track formed by many successive parties. Soon it appeared that one part of the cavalcade was in better trim, and able to go on faster than the other, and we divided into two parties, Perren leading, with Hadow in the middle, and myself as one party, Croz taking Hudson and M'Cormick. We pushed on as fast as possible, going, nevertheless, with that sweet sense of innate power and endurance which is only attained at the expense of much severe labour. We did not halt until across the Grand Plateau, at the foot of the ascent to the Corridor. By this time we had gained half an hour on Croz's party, and set ourselves hard to work at the

great slope before us. Crossing one or two insignificant crevasses in the slope, we were soon on the Corridor itself, meeting a great mass of white clouds boiling up from Italy, and then at the summit of the Mur de la Côte; and here, for the first time, we saw the party in front about half-way up the Calotte. At the Petits Mulets we stopped to cast off our rope, and to leave my knapsack in the snow; and I asked Hadow how he felt, telling him that this was the point where travellers usually succumbed to the might of Mont Blanc. He only laughed, adding that this was the first glacier mountain he had ever ascended, excepting the Buet; his strength and endurance were extraordinary. We halted for ten minutes on the slope, and about 8.50 stood on the top, a few minutes after the first party. The ascent, therefore, from the Grands Mulets had been accomplished in somewhat less than four and a half hours. About an hour afterwards, just as Croz came up, we started on the downward journey. The snow was very soft, and Hadow, although of wonderful pluck and strength, had not yet acquired sufficient practice to make him quite secure upon his feet. So I left Perren to bring up the rear and afford Hadow support, and went on in front, ploughing downwards up to the knees in soft snow, and above the Grands Mulets nearly disappearing altogether down a concealed crevasse. A desperate struggle extricated me. We went on swiftly, sliding and jumping down the ice-hummocks of the Glacier des Bossons. At the Pierre Pointue we stopped for twenty minutes to pay our bill and to take up our luggage, and before three o'clock we were again in the Hotel de l'Union at Chamouni, having made the descent from the summit in five hours without a single glissade. The next morning my wife and I left for England, and the gallant Hudson drove with us as far as the village of Les Ouches, where we parted with him, little thinking that it would be for ever.

AN EXPEDITION TO HAMMERFEST. Read before the Alpine Club, April 2, 1867. By the Rev. R. ST. JOHN TYRWHITT, M.A.

IT was about July 4, 1866, that we ran out of the Humber on board the little Bergen screw steamer Amicitia. I don't wish to abuse my own country and its institutions, or anybody else's, so I say no more of the steamer or of the town, and refer the club to Coleridge on Cologne and the Rhine, for the proper remarks about Hull and the Humber—though whether

the town dirties the river or the river the town is hard to say; nor does it matter. The main incident on the voyage was, that I met a man who had seen the Sea-serpent with his (the man's, not the serpent's) own eyes. He who had the temporary interview with that coiled snake from the central deeps, was an old Scotch medical officer, high in the Bombay service. As he was of great sense, experience, and evident probity, and as he had two very pretty daughters on board, his statement commanded my attention—in fact, I believed him: and this is what he said. Two days on the homeward run from St. Helena, during tiffin, he was on the poop deck of a large Indiaman, with the captain and the man at the wheel, all passengers being below at their meal. Their attention (his and the skipper's, the man at the wheel had his eye forward, of course) was caught by a strange rippling on the lee beam, like a reef of rocks. Before either had time for a remark, a huge black head and twenty or thirty feet of neck and body rose out of said ripple, about 100 yards from the ship. The head had enormous eyes in it, and what seemed a black shaggy mane; it took a good look at the vessel and then vanished. By the length of its track, it seemed that it belonged to a body which could not have been less than 100 yards long. There were only two to see it, and it was quite momentary, so they could not make much of it to the rest of the passengers; but my informant was quite certain, and a most credible witness, and it is a very good example of the critical question about the value of one competent witness's testimony to an entirely abnormal circumstance, referred to, I remember, in 'Essays by a Barrister.' *

The Doggerbank, over which one runs for a day and a half on the Bergen trip, is a sort of anticipation of the Scandinavian mountains, I suppose. I suppose one may call it geologically an axis of upheaval; at least, almost all the passengers seemed to find it so, though I think their health was a good deal undermined by dirt, discomfort, and the first sight of raw ham and salmon at meals. We sighted Stavanger on Tuesday, spent the day there, and inspected an American Monitor, presented by Ericssen to his native land, and reached Bergen on Wednesday morning. It is exactly one's ideal of an old Dutch town, as described in Knickerbocker's history of New York. Entirely built of wood—very clean, from continual rain and its steep site—painted in uniform red and white; with a busy

* I have since been informed that it must have been a 'Phoca Barbata.'

picturesque fish-market, old women with caps like illuminations in a thirteenth century missal, watchmen with morning-stars, stocks, schiedam, tobacco-shops, and the usual untidily ornamented cemetery, where all the graves are always covered with decaying relics of cut flowers, and where newly arrived strangers generally seem to consider themselves bound to go and sentimentalise. I don't enjoy 'public gardens' in life, or want them over me in death, personally speaking.

Our first expedition was a very easy one, as indeed they all were. I ought to have apologised to the club before for this —'Story! Lord bless you, I have none to tell, sirs'—but I still hope to be able to point out sources from which a good deal of fun may be obtained. As to sport, it is hardly to be had by a tourist; or along the great roads, or near the favourite salmon rivers. There are still plenty of grouse and duck in Norway, but Norway is a wide place, and the conditions of finding game are very different there from here. They are thinning fast too. Game in England is rather an artificial product. I am not going to say anything about the matter. No sane man expects to find 'ripa'-grouse without dogs, or in the same numbers as on a Scotch moor: nor will any wise man be confident about getting a shot at a reindeer more than once or twice in a season. It is better to be lucky than wise in sport, as in anything else. But trout fishing is a certainty, and to any man who likes wild shooting, I have only to say, take a rough strong double gun, and keep it loaded and at hand continually, along the road and everywhere. A whole season might be passed in sketching, observing, fishing, shooting, and ascents of no great height, but sufficient risk and extreme beauty, between the two Fjords, the Hardanger on the south of Bergen, and the Sogne to the north. The latter forms a great part of the direct line of communication between Christiania and Bergen, as the Fille-Fjeld road joins it at Leirdalsoren. Our first point was Odde on the Sör branch of the Hardanger, a most lovely lake, running due south, with hills crested with glacier and capital expeditions to the Folgefond. Then we went north again to Utne, at the point of divergence of the three main branches of the Hardanger. This is the best headquarters, I think, for weaker brethren and vessels. It has the peculiarity (unusual in Norway) of being a station where you can get something to eat. The regulations of the place permit the hens to lay fresh eggs, which appears to be strictly forbidden in other parts. The old hostess took a fancy to my wife, and was herself, with her extraordinary white cap, red boddice, and jolly face, queer raftered and gabled house and belongings,

so very like a first scene in a pantomime, that one always thought she was going to undergo transformation the next minute.

Vik is the next place to visit after Odde. We had a capital expedition to the Voring-foss, one of the great Norway falls. Boat along a small, walled-in, bottomless-looking tarn to Sæbö. It would be rather awkward to be swamped in one of these cold half-glacier lakes, with smooth perpendicular cliffs plunging into the water on each side, and no chance of landing or help. Then a walk of about twenty-five miles (going and coming) nearly due east, rather like the Gemmi, and some short distance over the Fjeld or moor. The fall is difficult to get a fair sight of, as one looks directly into the black pit from a level with its surface, and sees the column of falling water foreshortened, so as to lose much of its height. Next day we went by boat to Ulvick, took packhorses for one stage over the Fjeld, struck a carriole road and station at Vassenden, did our first bit of cooking, and drove to Vossevangen. Thence, next day, a really remarkable drive to Gudvangen, where the road plunges into the head of the valley by the sharpest zigzags I ever saw. Driving one's self down zigzags is a new experience in charioteering. This valley is wonderfully like Lauterbrunnen, and may really be compared with it. The descent into it with its two lovely waterfalls, and the grand amphitheatre at Gudvangen, and round the end of the Sogne Fjord will stand comparison with anything anywhere. The Sogne Fjord alone would employ a painter, or I believe a geologist or mineralogist, for years. The last mentioned would be welcomed by the natives, whose one spark of energy and thought of progress is either in mining, which they don't understand, or in fishing, which they do, as far as cod-lines go. They are good at salmon-netting, and dodge their own laws about small meshes, traps, and stake nets with very sufficient skill. I may mention that a Salmon Act, much like our own, has lately been made law in Norway, and I trust the new inspectors will get it observed a little. The narrow defiles of the inlets of the Sogne Fjord are its great feature. It is more Swiss and less Norwegian than the Hardanger, as its mountains, though steep, are clad with grass and pines like Lucerne, though the Norwegian pine is slenderer than the Swiss, and has not the same spread of arms.

I have spent time, I fear to little purpose, in talking about this expedition round the two Fjords, because so very much may be made of it, and it is so easily accessible. A tent, a gun, and a fourteen-foot rod, with some black, red, and yellow flies

ribbed with silver twist (small *butchers* for salmon) with a good stock of preserved meat and biscuit, would make one independent enough; and very little money and few good words go very far with the natives. They are slow coaches, it is true, and as a rule one can't get much work out of them, and nothing better than oatcake, milk, butter, and coffee is to be had throughout the land. But that is something; and they are stout fellows when on their mettle, and honest all through. It is odd enough that, backward as they look and are, there are four very important matters to this day well worth the trouble of importing from Norway, viz. a horse (under fourteen hands), a cow, a carriole, or a boat. Describing one-horse conveyances in the Alpine Club would be enough to bring St. Martin's Chambers about one's ears; but Norway is literally a one-horse nation, and I could not help just mentioning the name of the national trap.

But the regular Norseman goes by sea wherever he can, and quite rightly, for he has such a system of literally inland navigation provided for him as no other country enjoys. Any one who is not a good sailor may be interested to hear that from the time he enters the Stavanger Fjord to his arrival at Hammerfest, close to the North Cape, he need not be exposed to more than six hours' open sea.

We reached Bergen in about fourteen hours from Leirdalsoren, and just caught the northern steamer. The coast is the Highland rocks over again—I mean in the wilder parts of the Western mainland. Skye, its hypersthene mountains and their unearthly forms, must stand aside for a moment till its turn comes to be compared with Loffoden, which is so exactly a magnified Skye, that one might expect to find rough terriers there of the size of sheep. But if you take any fifty miles of the mainland coast from Argyleshire to Sutherland, you will have a good idea of the Norwegian coast to within a day's run of the Arctic circle, deducting some brilliancy of colour, the heather, &c., and adding considerably to height of cliffs, and sheer downfall of precipice, and general violence of impression. The pine scenery of Norway is wanting on the sea coast, though here and there the inner fjords are fir-clad. But the characteristics of both lands are the same—utter barrenness within reach of the wind, exquisite green in shelter; birches, stunted or luxuriant; *roches moutonnées*, and varied traces of glacier. Granite prevails, yielding to the Sutherland rock from which the Sugarloaf, Quinaig, and other hills seen round Loch Inver are hewn, and which I understand Sir Roderick Murchison to have pronounced the most ancient rocks known.

The bay of Molde is the great panoramic view south of Throndjem, and the mountains between this and Bergen are comparatively unexplored, as in fact they are all the way north to the North Cape, and the highest in Norway. Their type and form, as everybody knows, is not equal to the Swiss, for want of peak. What Mr. Ruskin shows us as Turner's favourite or typical form of lower mountain, that is to say, slope above and precipice below, as all the Staubbach side of the valley of Lauterbrünnen—that is the Norway form. The first two hours of any Norway expedition, from the lake-level to the fjeld, are sharp indeed to a weak goer.

The lions of Throndhjem are its cathedral and its two waterfalls. The former is a heap of ruins, kept up (or rather let fall) much as a population of small farmers and dealers would be likely to deal with such a place, if fully left to themselves, as they are. The falls are fine, and after rain it may be worth while, I think, to take a boat below them, and fish the river over with the big rod and a small butcher, or something with a mallard's wing, silver twist, and golden pheasant's tail, according to weather. At Throndhjem one takes leave of the pretty Lower-Canton-Berne-like scenery of Norway, and about thirty-six hours' run by steamer brings one to the Arctic circle and the beginning of the wildest coast scenery in the world. Not but that there are charming pieces of vegetation in sheltered valleys and low-lying green basins sloping to the sea; but that everywhere there is a background, or distance, or visible presence somewhere, of sheer-down gneiss precipice, crested with snow. Big sunfish go insanely about, with their great stupid back-fins up; whales and porpoises come up and have looks at the steamer; you see distant, clumsy square-sailed 'jagts' standing on their mastheads in the magic calms of refraction; the wind gets colder and colder, and the more it does so, the more you eat and drink; streams of white gulls and black cormorants follow your barque like a clanging rookery; eider ducks and their brood, protected by law, won't get out of your way. You pass the Namsen and the Vefsen, the great salmon rivers, with their pretty pine woods and cliffs, like Ross-shire, and may be aware that now there is nothing inland, that no man, except a stray Lapp or Fin, dwells in the land you have all day on the east, and generally all round. Then the wilder isles begin, and you pass the Seven Sisters, and Torghatten, the granite rock, 1,500 feet high, with a hole right through it, and the Horseman, and the outer isles of Thränen, wild-shaped big stones all alone at sea, and you dive into the channels round Bodö, last nameable town but two of

the civilized world, and there you go ashore, and if you happen to have an old dog with you you may have a very good two or three hours at snipe on the flat moor behind the town; and you may observe the only turnips in Nordland—very fine and successful—and reflect that if the like were grown all up the coast, as they might be, the curse of leprosy would be driven from West Norway, and the price of meat lowered in England as well as in Scandinavia. The fact is, squires of the right sort are wanted in Norway as in the West Highlands. There is not capital or spirited farming anywhere. Fishing and fish diet are everything, and between that, dirt, and hardship, the horrible diseases of the country are a 'caution.'

The finest part of the mainland coast lies between the Hestman or Horseman (a conical rock which Norse sailors say they consider like a cloaked man on horseback) to the point of crossing over the Vest Fjord to Loffoden.

Forbes says he observed some true glaciers near Rodö, opposite the Isle of Thränen on mainland, not nevé, but evidently formed ice, denuded of snow in summer.

Either Rodö, or Bodö, a larger town about 40 m. N., would be in fact the best head-quarters on the coast, unless one established one's self at Balstadt or Steilo, in Loffoden. It takes about four hours in calm weather to run across to East Waagen (pron. Vogen) the nearest of the Loffodens. Hindö is the largest, Moskenos south, Ando most north, West Vaagen to the west. South of Moskenos are Varö and Rost, and it is the sudden upheaval of the submarine peaks of the Loffoden mountains, with the more gradual but still rapid shallowing of the whole ocean, which causes that generally dangerous current between these last islets, which we call the Maelstrom. Nobody ever goes near it, with good reason, said our old skipper; it would be dangerous in bad weather even for a steamer. Edgar Poe's great whirling black funnel is an invention of course, but if there is not that, there is a violent current in which no vessel will answer her helm, a dreadfully violent cross sea, and a certainty of wreck against the rocks of one or other of the southern islets.

There is a scene in Loffoden which struck me as an absolutely perfect one, and the most beautiful place in the world—after Wady Feirân in the Sinai desert (there are lots of places in the Alps quite as good as either, but they compete in one's mind, and drive each other out, and these two are singly perfect). I made an oil sketch which has resulted in Mr. Whymper's engraving, which, I am sure, does it more than justice. It is a very calm, profound, clear green sound,

RAFTESUND—OFFODEN.

(From a sketch by the Rev. R. St. John Tyrwhitt.)

between high sharp-peaked mountains of red granite, clothed with snow and beautiful shell-like (secondary) glaciers—all know their delicate curves. There are endless coves and inlets, *ἀνήλιοι, ἀνήνεμοί τε πάντων χειμώνων.* Great mossy rocks, magnificent granite forms, stick up out of the sea with pretty birches and deep Arctic grass on them, and there is plenty of Scotch fir and birch on the lower hill-sides. There is a perpetual clang of all manner of odd birds as tame as pigeons—porpoises and seals turn up here and there, and over all there is sunset all night long, in that land wherein it seemeth always about 7.30 on a summer evening.

An exploration of the Loffodens would be a work worthy of the Club, in every sense of the words. A good tent would be required, and plenty of eatables—one is very hungry in those parts. Steilo, or Balstadt on the West Fjord, would be the best head-quarters, I should think. Tromsö, close to the mainland about would also be a nice place to settle at—the Lapp encampment, in a wide wet valley about seven miles off, on the mainland opposite is a great sight. They have generally about 2,000 tame reindeer pasturing on the moss and summer grass. It should be remembered that though the summer only lasts two months or so, still there is little or no night, and the unintermitted warmth of the sun makes the grass grow double tides, so that Arctic green is particularly fresh and beautiful when there is any. The Lapps are worthy little Mongolian looking savages, in deer-leather frocks and leggings. The reindeer seemed rather small and over-burdened with their enormous horns. Milking them is an awful sight to any one who proposes to taste the milk; but they make capital venison, with a fine game-flavour. I made some sketches of the glaciers of the Nûs Fjord, represented in Forbes, and also on the Alten and Lyngen Fjords. There are stations on both of the latter where I fancy one might live not uncomfortably; and it is all quite unexplored. One side of the Lyngen Fjord was the most utter Arctic desolation I ever saw—rock, snow, and glacier down to the sea, without a sign of vegetation.

We reached Hammerfest about 10.30, and landed at once to go up the hill, from which one sees the sun turn again upwards, like Whittington, instead of dipping beneath the Northern Ocean. It was cloudy, I regret to say, but both here and at Tromsö the change of light was very remarkable. Most of us feel the difference between evening and morning light, and the sudden transition from fading evening colour to growing morning light, with all its freshness and sparkle, was beautiful. Hammerfest is the metropolis of fish-liver oil;

it is by no means the cod only whose livers become water in our service. Grampus is especially popular. The name of the fish is of no great consequence: a rose, you know, by any other name would smell as sweet; and so would Hammerfest and its chief staple. All scuttles had to be kept close in the harbour, and we smelt the town miles off on the other side of a large headland.

The southern voyage was much like the northern—crossing and recrossing the Lyngen and Alten Fjords, and also another called Ox Fjord, about whose name our Norse friends, who had ascertained some of my antecedents, made various jokes, which seemed to do them good. We reached Throndhjem in a week, and found a little salmon-fishing on the Gula, about forty miles south. But no rain fell above us, and sport slackened, so we drove over the Dovrefjeld to Dombaas, where the north and west roads divide, and then turned west again, and drove down Romsdal to the well-known Aak Hotel, where the proprietor farms his own land, lets his own fishing, speaks very good English, and always gives one enough to eat. The valley is one of the finest in Norway; and here I *did* go up a hill about 5,000 ft. high, on the south side, with a good deal of snow in large patches. There were regularly formed small secondary glaciers, at the same height on the next hill; and the view from the top showed several much larger ones. From the great steepness, in fact perpendicularity, of the lower parts of Norway hills, and from their affecting the form of a high table-land above, there do not seem to be many large moraines, and all the rivers run very clearly, as far as we saw. On the Dovrefjeld we were much struck with the great pine region or belt of original forest, beginning, I should say, at 1,000 ft., and extending over about 1,000 perpendicular feet of hillside. The view over the uninterrupted sheet of spruce firs, reaching to the hilltops, and only broken, if at all, by the last snow-covered rocks, was very striking indeed. All is left to itself. There is no thinning or wood-ranging, and the trees are small and poor in consequence. Sometimes you may see an acre or more of them all dead together, and this makes a strange purple or grey patch among the deep greens. There is very fair trout fishing along the road from the wild and beautiful pass of the Driva, almost all the way to Jerkin—nice thick yellow fish rising to 1½ lb. Capercailzie are now and then to be got in the woods, but all Norsk shooting is growing yearly more uncertain. The Bonders and peasantry go in for utter destruction at all times of the year, and all they say is, that there will always be plenty on the fjeld.

From Romsdal we turned eastward, and drove across to Christiania as hard as we could go, caught the 'Scandinavian,' the most comfortable boat on the line, with a large cabin amidships; and reached Hull in three days in a gale of wind, for which we had been prepared by the appearance of mock suns, or sun-dogs, two smaller lights, one on each side of the afternoon sun. I never saw them before, and at sea I had rather not see them again—and so said all our party.

The Ebnefluh Joch, Schmadri Joch, and Agassiz Joch. By the Rev. J. J. Hornby, M.A.

SINCE the discovery of five great passes over the main chain of the Bernese Oberland, it may seem unreasonable to complain that the mountaineer's choice of routes between Grindelwald and the Æggischhorn is inconveniently limited. Yet probably most of those who have crossed the great mountain barrier once or twice will feel, with the writer, that if these five great passes are the only practicable routes, nature has by no means done all that could be desired for the convenience of travellers. Two of these passes, the Eiger Joch and Lauinen Thor, were found by the excellent mountaineers who first crossed them to be so long and difficult that others have been deterred from following their steps. The Viescher Joch is supposed to be still longer and remarkably tedious; and the Jungfrau Joch, the noblest of passes, must, I fear, be considered often rather dangerous. Thus the mountaineer who devotes much time to the Bernese Oberland, especially if in the prosecution of his plans he is obliged occasionally to cross from the south to the north side of the mountains, is apt to think, in his ungrateful heart, that he is always wasting his finest days in crossing the Mönch Joch, and to entertain rather harsh feelings towards that worthy pass.

This summer Messrs. Kitson, Morshead, Philpott, and I, finding ourselves at Lauterbrunnen, with an unusually strong party of guides, consisting of Chr. Almer, Chr. Lauener, and Jakob Anderegg, determined to devote some time to attacking the few apparently practicable passes over the great barrier which had not yet been traversed. It is hardly necessary to say that we did not expect to find another Mönch Joch, which might be crossed at almost any time in either direction; but we had some hopes of finding some route from the north less dangerous, if not less difficult, than either the Jungfrau Joch, Eiger Joch,

or Lauinen Thor; and one pass from the upper part of the Lötsch Thal, by which, combined with the Lötsch Sattel, or the Beich Grat, Lauterbrunnen might be reached from the Faulberg, or the Bell Alp, in a day. Two of these passes, one between the Ebnefluh and Mittaghorn, and the other between the Grosshorn and Breithorn, had for three years attracted our attention, and Philpott and I had made several visits in successive seasons to Lauterbrunnen and Trachsel Lauinen, in hopes of getting over the mountains by one of these routes; but we had always been foiled by weather. Meanwhile the attention of Messrs. Hawker and Whymper had been attracted to the Ebnefluh in 1865, and it would, no doubt, have yielded to their assault but that, fortunately for us, they were unable to leave Lauterbrunnen till a late hour, and consequently had not time to get further than the bergschrund at the foot of the great ice slope. A third pass, probably the best of all, between the Finsteraarhorn and Agassizhorn, was pointed out to me by Mr. George, who had examined it carefully two years ago, and convinced himself of its practicability. An accident to one of his party prevented his attacking it at that time from the Aar Glacier, as he had intended to do, and last year, being unable to go to Switzerland, he commended his proposed Agassiz Joch to us.

Before the weather allowed us to attempt any of these passes, Mr. Kitson was obliged to return to England; but the rest of the party still hung about Grindelwald and Lauterbrunnen, waiting for a favourable opportunity.

At last, on the morning of July 31, we set out from the little hotel at Trachsel Lauinen at 3 A.M., and crossing the stream by a bridge rather higher up on the Schmadribach route, we began at once to breast the steep grass slopes which lead up to the rocks and hanging glaciers of the Ebnefluh and Mittaghorn. From this point to the top of the pass we went as nearly as possible in a straight line for the col between those two mountains, the whole of our route being in full view from the little hotel at Trachsel Lauinen, as well as from that at Mürren. The grass slopes were succeeded in due time by broken rocks presenting no difficulty, and these again by a steep crevassed glacier, fairly covered with snow, up which we trudged at a steady pace without encountering any serious obstacle, till we reached the foot of the bergschrund. Before quitting the rocks, Almer, pointing to the threatening appearance of the sky to the west, put the question whether we should go on or beat a retreat. The Blümlis Alp and Balmhorn had already taken to themselves very ugly caps of grey cloud,

and the wind had a hollow sound, suggestive of the least pleasant parts of Alpine experience.

The thought of returning to Trachsel Lauinen or Lauterbrunnen for another rainy season was too much for us, and we resolved, in spite of the dismal appearance of the weather, to go on as long as we could. Almer now went to the front, crossed the bergschrund, and began cutting steps in the hard ice above. Though I had often looked at the slope from Mürren and from the valley, I had no idea till now of its great length and steepness. Almer worked indefatigably at the steps, but we seemed to get on very slowly. The wind dislodging the loose snow above sent down long streams of fine snow-dust, which poured over our shoulders, covered up our feet in the steps, and though not heavy enough to be dangerous, or to suggest the notion of avalanches, were about as unpleasant as anything I have experienced in the way of Alpine discomforts. We were making for the nearest rocks, which from the way they cropped out of the steep ice slope were evidently very steep indeed. Still it was a relief to see any prospect of more active exercise and shelter from the snow, and there was considerable satisfaction in getting hold of a firm piece of rock again, and looking down at our long staircase, a satisfaction which before long was considerably lessened on a nearer acquaintance with the rocks. Jakob now took a short turn at leading, but after two unsuccessful attempts to find a route, first along the side of a smooth and perpendicular rock, and then up a most repulsive-looking *cheminée*, which apparently led to nothing, Almer went to the front again, and after considerable difficulty found a practicable, but by no means easy route to the top of the first cliff. As he disappeared over the rocky edge he told Morshead, who was next in the line, to wait where he was and hold fast, as there was a quantity of loose and dangerous snow above which must be dislodged before further progress was possible. For the next quarter of an hour a steady stream of snow, sometimes I should think unpleasantly heavy, poured over Morshead's head and shoulders, and then pattered down on to the ice slope far below. However, it failed to disturb his balance or his equanimity, though it was certainly sufficient to try both severely, as the ledge on which he was standing was of the narrowest, and the face of rock above it about the worst which we encountered during the whole climb. At last, after a good deal of difficult work, things began to mend a little, and a bright gleam of sunshine cheered us during the remainder of our hard work. Another ice slope, at first covered with sound snow,

which however soon became too thin to be trusted, afforded ample exercise for Almer and Jakob. Then more rocks succeeded, not quite so bad as those below, and in places fairly broken. We could now see the shoulder of the Ebnefluh on our left sloping down to the true col. We were just to the right of this, and a little, very little, above it on the shoulder of the Mittaghorn. A *jödel* from Almer, as he stepped from the rocks on to a short snow slope, announced that our work was as good as done, and in a few minutes we all stood together at the top of the mighty wall up which we had been climbing as hard as we could for nearly ten hours. From the time of crossing the stream, which we now saw looking like a small white thread in the deep valley below us, we had made but two short halts. The slope from first to last was extremely steep, and the ice and rock-work in the upper part uncommonly difficult. Accordingly we were not sorry to find, on gaining the ridge, that the descent to the Aletsch Glacier was smooth and gradual, and apparently free from difficulty. We were, however, not deceived by it into giving up the safeguard of the rope, and it was not long before we had reason to congratulate ourselves on our prudence. As we were going along merrily over the smooth snow, Jakob, who was leading, suddenly fell into a concealed crevasse, not as ordinary mortals fall into crevasses, with a more or less prolonged struggle, ending usually in only a partial disappearance—but disappearing instantaneously and completely, without leaving so much as his hat on the surface, as a memorial of his recent presence. We speedily hauled him out, amidst much laughter, as his good-humoured face, well sprinkled with snow, came to the surface; and he soon went to the front again, nothing daunted. This was the only incident to enliven a monotonous and unusually heavy walk down the glacier, which was covered with deep snow down to the Faulberg, and with a pretty good sprinkling of it even lower down. Down this lower part, as soon as we got free from the rope, we ran at a good pace, urged on by a strong north wind behind us, and a wild snow storm, and finally reached Mr. Wellig's hotel, wet through, but well contented with our day's work, at seven o'clock.

On the 2nd of August we crossed by the Beich Grat from the Bell Alp to the Guggi Staffel chalets, hoping to reach Lauterbrunnen on the following day by a very marked but hitherto untried col between the Grosshorn and Breithorn. Our patience was severely tried by wet weather, which detained us during the next day in the Lötsch Thal, and which, in spite of the favourable predictions of the priest at Kippel,

based on the rise of a most untrustworthy-looking barometer, grew worse towards night as we trudged back to our chalet, and had by no means abated on the following morning. We lay gloomily in the hay, listening to the rain and meditating on the delight of crossing the Petersgrat in a snow storm, a fate which seemed inevitable, as we were *due* at Lauterbrunnen that evening and could not afford another day for our proposed Schmadri Joch. We started not less gloomily from the chalet a few minutes before 5, when Almer observing that the rain had stopped in the valley (though the hills all round were covered with dense clouds) proposed that we should at least begin our route in the direction of the Jägi Glacier and shape our subsequent course according to circumstances. We accordingly pressed on in better spirits past the upper chalets, through a little wood, and over some open alps, till we reached the right bank of the Jägi Glacier at a place not far from its lower end, where it is nearly level and free from crevasses. We crossed at once to the left bank, mounted some steep grass slopes, keeping near the side of the glacier, and working upwards till we had gained a much higher level, when we took to the ice again and made straight for the col, or at least for that part of the clouds where we thought the col ought to be. We plodded steadily up snow slopes in rather deep but firm snow, crossing or going round an occasional crevasse till we thought we had nearly reached the height of the col. Our guides now differed in opinion as to the position of the col, Almer maintaining that it was to our left, and that we were going up a spur of the Grosshorn instead of making for the true pass, Lauener, who was leading, thinking that we were in the right direction. He, however, willingly gave way to the opinion of Almer, which proved quite correct, for before we had gone many hundred yards to the left, a break in the clouds showed us the col right in front of us. It showed us, moreover, to our great delight, that the thick clouds through which we had made our way, were massed against the south side of the mountains only. As we pressed on to the edge of the cliffs which look down on the Lauterbrunnen valley we walked fairly out of the clouds, saw Trachsel Lauinen and many a well-known spot lying in bright sunlight far below us, and fervently blessed the priest and his barometer. It was just 8.45. The ascent had been entirely free from difficulty, except that of finding our way through the clouds, and our hopes were now high, though we knew from previous surveys of the north side that we must expect some difficulty in getting from the steep hanging glacier which runs down from the col, and ends in an

abrupt ice cliff near the rocks of the Grosshorn, on to the comparatively gentle slopes below. Just as we were commencing the descent and bearing towards the right along a gentle snow slope towards the rocks of the Grosshorn, Jakob with a loud yell rushed down a steep slope to the left, straight for some huge séracs and crevasses under the rocks of the Breithorn. I could not divine the reason of this strange procedure, and could attribute it at first to nothing but to some sudden revelation, understood by Jakob only, of the approach either of a chamois or an avalanche. Soon, however, it became clear that Jakob was engaged in a hot race with some small object which he was labouring to overtake before he or it went into a crevasse. The chase soon ended in Jakob's triumphant success, and he toiled up the snow towards us with a beaming countenance, brandishing a tooth-brush which had fallen from one of the knapsacks. Probably the circumstance that English travellers persist in carrying this useful article in remote districts where they are content to dispense with clean shirts, collars, and razors, had invested it in Jakob's sight with a mysterious value, and stimulated his zeal to save one of the party from a severe loss.

We were soon on the steep sloping face of the great hanging glacier which is such a conspicuous feature from the valley, and Almer began cutting large steps not down it but across it towards the rocks of the Grosshorn. At this time I thought that the descent, if practicable at all, would prove a most difficult and tedious business. To cut steps down such a slope would be a serious undertaking, and the rocks in front of us looked very forbidding. Almer, however, had noticed that near the rocks the snow was thicker and firmer, and as soon as he reached a point where it covered the ice to a sufficient depth, he turned round and began to go down backwards, kicking steps and driving his axe in above him to give a firmer hold. We followed in the same way and descended some hundreds of feet rapidly and without difficulty. Still the slope was too steep and the snow too thin to allow us to descend in the ordinary way, as we had reason to discover shortly afterwards. After a long descent we took for a few minutes to the rocks, which appeared to be quite practicable, and probably, when there is less snow, would furnish the best route. We returned, however, to the snow slope, and presently descended into a very narrow and steep gully between the glacier and the rock. Some way down a sort of landing place in our great staircase presented itself, where the gully ran nearly level for a few feet between the rock and the

glacier. I had just reached this when I heard a noise behind me and received a slight blow on the back, and on looking round saw the limbs of Morshead, Lauener, and Jakob, strangely intermingled in one heap. Jakob's axe was sticking in the ice some way up the slope. It seems that on approaching the trough of the gully, Jakob had turned round to look at it. The snow giving way with him he fell without any warning upon Morshead, who was of course knocked instantaneously out of the steps, and in his turn fell upon Lauener. The three descended like lightning into the gully, Jakob driving his axe manfully into the ice, but being unable to stop himself, as the handle ran through his grasp. No one was hurt except Jakob, who cut his hands slightly; but if such a slip had been made when we were higher up on the slope, it must have been fatal to the whole party. However, it must be said for Jakob, that he never while with us showed any rashness or carelessness in dangerous places; and we all felt that he would not have relaxed his caution here had he not seen that we were so near the bottom of the gully that a fall would not be dangerous. He seemed to have taken it into his head this year that he would establish a reputation for prudence; and he was so steady and careful in difficult places, that we could not grudge him an occasional indulgence of his natural bent in easy places. A slight escapade, such as his glissade on this occasion or his dive into the crevasse on the Aletsch Glacier, seemed almost necessary to afford relief to his pent-up feelings.

Another long descent backwards brought us fairly out of the gully, the glacier which formed its left bank ending abruptly in a perpendicular ice cliff, and the rocks on the right sinking so that we could once more get upon them. After descending by them a little way we took again to the snow slope on our left, which was in fact a prolongation of the gully, and descended, first with some care and finally with a long glissade, to the lower level of the Schmadri Glacier. Here we threw off the rope and looked back with much satisfaction at the steep slopes we had descended. After a most unpromising beginning we had had a glorious day, or rather morning (for it was only 11.30), and had made a very fine pass. We should recommend future travellers, however, as a general rule to take the pass in the opposite direction, since the difficulties are all on the north side, and would be more easily surmounted in ascending than in descending. Still, with a steady party and good guides, there seems to be no danger in taking the pass from the south side. We reached Trachsel Lauinen at 12.30, and Lauterbrunnen a little after 2 o'clock.

The afternoon of August 6th found us at the Kastenstein, intending on the next day to attack the col between the Finsteraarhorn and Agassizhorn. The next morning was dull and cloudy; as we left our bivouac at 3.30 it began to rain. Still the weather did not look thoroughly bad, and occasional glimpses of peaks above us gave us some hope that the day might possibly mend. However, for some time it grew decidedly worse, and we had twice to stop for about a quarter of an hour under such shelter as we could find, as Almer could not see the proper line to be taken for the Finsteraar Joch, and we were likely to lose much time if we got involved amongst the séracs of the northern ice-fall. Fortunately the rain stopped in time to give us good hopes of success. At half-past seven o'clock we reached the summit of the Finsteraar Joch. We had been just three hours from the Kastenstein, and were now about to enter upon new ground and to face the real work of the day. Those who have seen the Finsteraarhorn from the Aar Glacier, or know the photographs of it, will no doubt remember the great couloir which comes down from the lower extremity of its north arête, and separates the rocks of the Finsteraarhorn from those of the Agassizhorn. On this or up the rocks at one side of it our route lay. Both Almer and Melchior Anderegg, whom we had met at Grindelwald, had warned us not to attack this huge couloir too soon after a fresh fall of snow, and accordingly, though the weather had cleared on the Sunday evening, it was not till Wednesday that it was thought safe to make the attempt. We were rewarded for our patience by finding first that an avalanche of fresh snow had come down the couloir on one of the two preceding days, and, secondly that the old snow beneath was in admirable order. The foot of the couloir does not coincide with the summit of the Finsteraar Joch pass, but is a little to the south of it on the Aar Glacier side of the pass. We contrived to skirt the slopes of the Agassizhorn so as to lose no elevation, and then struck into the great couloir some little distance from its base.

The snow was at first very soft, and Jakob, who was leading, sunk several times up to the middle, but this happened only in a sort of drift near the rocks of the Agassizhorn. When we were fairly on the great slope, we found the snow in such perfect order that the steps kicked by the leading guide held the whole party in succession as safely as if they had been cut in hard ice. I do not think that a single step gave way, or that an axe was used for more than a dozen strokes during the

whole ascent. This was, of course, extraordinarily good fortune, and those who may follow us ought not therefore to count on making the pass in the same time, but should allow an hour or two more at the least for this part of the ascent. Jakob after leading for some time gave way to Almer, and he in turn to Lauener. We made rapid progress and soon gained a great height, but the couloir seemed interminable. Thick clouds covered both its summit and base; but occasionally, as the mist lifted, we caught glimpses of the huge slope which served to give us some idea of its vast proportions. As we saw it still stretching away into the dark clouds at a giddy height above us, I could not help thinking of

> 'Cry, faint not, climb: the summits slope
> Beyond the farthest flights of hope,
> Wrapt in dense cloud from base to cope,'

and reflecting with considerable satisfaction, as I looked at Jakob's solid frame, on the difficulty which the 'dull one-sided voice' would find in getting its ironical suggestions listened to in that quarter.

At last, soon after Almer had taken his second turn at leading, and about two hours since we had begun the ascent of the couloir, we caught a glimpse of its summit. Before long we cut a few steps towards the Agassizhorn, and after a short scramble upon its rocks, walked triumphantly on to the snow at the very top of our col. The first thing that met our eye was the Viescher Glacier, free from cloud and glittering in the sun far below. The rocks on the farther side were still wrapt in cloud, but our route down to the glacier seemed free from difficulty. It was only 9.30, and the thought occurred to us at the first moment that we might as well ascend the Agassizhorn, which seemed to be accessible by easy snow slopes on its south-west shoulder. We gave it up, however, as the wind on the summit seemed to be unpleasantly strong, the weather doubtful, and the snow deep on the glacier below, promising us a heavy trudge before we could hope to reach the Æggischhorn. The descent to the glacier proved quite easy by gentle snow slopes, and, with the exception of an unsuccessful attempt to shorten our course to the summit of the Grünhorn Lücke, by taking to the rocks to the north of the col, which were easy to climb, but brought us out too high, and amongst some séracs, the remainder of our journey lay over a well-known route. We reached the Æggischhorn hotel at 4.30, just twelve hours and a half after leaving the Kastenstein.

We christened our pass the Agassiz Joch. It is likely, I

think, to prove very useful and attractive. The whole route is fine, the ascent of the couloir when the snow is in good order is free from danger, but early in the year, or immediately after a fall of snow, there would be great risk of starting an avalanche. When there is much ice on the couloir the rocks of the Agassizhorn may be taken in many places, but not, I think, through the whole ascent, and some hard work at step-cutting must be expected. Of the other two passes, the Ebnefluh Joch was seen by us under very unfavourable circumstances, but it is probably at all times too severe a climb to be recommended as an ordinary pass. We all thought it very much more difficult than the ascent of the Schreckhorn, which we had made a few days before, and the climb from Trachsel Lauinen to the top of the ridge took us nearly twice as long as the ascent of the Schreckhorn from the Kastenstein. The Schmadri Joch, though not an easy pass, may be confidently recommended to travellers from Lauterbrunnen to the Lötsch Thal; and under favourable circumstances the Bell Alp, or the Faulberg, might be reached in the same day.

It may be of use to mention, before concluding this paper, that at times like last season, when there is much snow in the high Alps, and rock-climbing becomes difficult, the Schreckhorn may be ascended by the great couloir which descends from the lowest point of the ridge connecting the Schreckhorn proper with the Lauteraarhorn. This route was taken last year for the first time by Lord Melgund and Mr. H. Walker, who made the ascent and descent considerably quicker than it had been made before. Profiting by their experience, as conveyed in a note in the visitor's book at Grindelwald, we made the ascent by the same route on the 27th of July. Leaving the Kastenstein at 2 we reached the summit at 7.30, and returned to the Kastenstein at twelve, after spending a long time on the summit, and descending very slowly, owing to my being unwell and unable to go fast. I have no doubt that Morshead and Philpott could easily have reached the Kastenstein by 11, and Grindelwald by 1.30, had speed been any object. After resting for two hours at the Kastenstein, we reached Grindelwald at 4.45. It is hardly necessary to say that the snow on the couloir was in excellent condition. When this is not the case there would be great danger from avalanches. The final arête of rock, which is extremely sharp and somewhat jagged, was very difficult, owing to the fresh snow and ice upon it. It took us an hour and a half to get along it, though the distance is not great. Late in the season, or in dry seasons, the great couloir is no

doubt a mass of ice, but the rocks will then be in good condition, and Mr. Leslie Stephen's route may be taken with advantage. At other times travellers will probably prefer to follow Lord Melgund and Mr. Walker.

Suggestions as to the best Mode of carrying a Pack. By H. B. George, M.A.

THERE is no question more perplexing to the mountaineer than that of baggage—what must be taken, and how it is to be conveyed. The vast majority of men find their comfort perpetually at war either with their purses or with their regard for their own muscles. A certain amount of *impedimenta* may be assumed to be absolutely necessary on every expedition which is not out and home again, there being no one who will literally and in fact content himself with a toothbrush; but it does not at all follow that one is bound to drag over every pass the entire kit brought out from England. Such a proceeding may suit the exuberant gentlemen who like a 15lbs. knapsack on their shoulders to steady them, and may not seriously incommode people with fathomless pockets, though even these, to whom the expense of additional porters does not signify, will greatly prefer to be saved the nuisance of them. Average mortals, however, who see that the strongest and most willing of guides greatly dislike carrying much weight when there is severe work to be done, who feel that their own bodies are nearly enough for them to lift in climbing, and that wearing a heavy knapsack destroys a great part of the pleasure which is after all their main end and object, and who moreover find it extremely inconvenient to be continually paying for porters, are always seeking how to reduce their baggage to a minimum, and how to carry it most conveniently. Mountaineers of some experience have usually either struck out a plan of their own, according to the exact amount of luggage each man finds necessary to his individual comfort, or have resigned themselves to dragging about the regulation knapsack in despair; but the weaker or less experienced seem to be still at sea. It is with the hope of assisting some few of the latter, and of being minutely criticized by the former, that I desire to call attention to a mode of carrying which I have myself pretty thoroughly tried, as very likely others have done also, and which has recently been recommended for the use of the army, after a laborious investigation by a committee of generals and medical officers, presided over by General Eyre.

I assume that the traveller divides his baggage into two portions, and that he only desires to carry with him such an amount as may suffice to give reasonable comfort for three or four days, say a shirt, a pair or two of socks, a pair of thin shoes or slippers, washing apparatus, and one or two maps or books. All this, and more than this, may easily be stowed into a waterproof bag, and the whole will weigh about 5lbs. (I have carried 6½lbs. in the way I am about to describe, without feeling any great inconvenience, but this weight is more than will usually be required). Many mountaineers are in the habit of carrying such a bag, but they sling it across them from one shoulder—a method of carrying which causes a pressure upon the chest, to me absolutely intolerable, and which often is a serious nuisance in climbing. But it may be carried with perfect ease and convenience at the small of the back, or rather just below that point, resting on the *sacrum*, or broad strong bone which connects the hips, by a single strap passing round the back of the neck, over the shoulders in front, and back in a slanting direction under the arms. For violent exertion it is well to wear something round the waist over the bag strap, to prevent it from swinging freely when the body is thrown much on one side; but this need not be drawn at all tight, indeed the rope used for safety is amply sufficient. As a practical example, to show how easily a small pack may be carried in this fashion, I may mention that, though by no means in the habit of carrying weight, I wore one during the whole ascent of the Jungfrau from the Wengern Alp, through every variety of mountain work, having put it on when we started from our bivouac, and never, to the best of my recollection, even loosened it until we halted for the night some sixteen hours afterwards.

The military committee recommend in the strongest terms the total abolition of the stiff-framed knapsack, and the substitution for it of a soft bag, to contain a rather smaller kit than at present, and to be carried upon the principle I have explained above. Inasmuch, however, as the soldier has to carry other things besides his kit, especially ammunition, they recommend the adoption of a leather yoke fitting the shoulders, resembling in shape the wooden yoke worn by a milkman, though considerably shorter and smaller. From the ends of this yoke straps descend in front of the shoulders in the manner I have before mentioned, slanting back to the pack which is placed on the *sacrum*; while the great coat, which must necessarily be carried at the shoulders, is suspended from the centre of the yoke behind the neck, and the ammunition

pouches are also partially supported from the yoke in a manner which does not concern us for mountaineering purposes. By means of this yoke greater ease is also afforded in carrying the pack, by attaching a third strap which goes straight down the back, and connects the middle of the pack with the yoke at the back of the neck. This extra strap might also be used without the apparatus of the yoke, and would very possibly give still greater comfort than a single strap passing round the neck; but it would not be practically very easy to adapt it, and the experience of those whom I have consulted tends to show that it is not at all necessary for mountaineering purposes. Those who are in the habit of carrying a plaid might find their account in either wearing such a yoke, or in devising some combination of straps as a substitute; very probably the former, though two or three ounces heavier, and obnoxious as a novelty to the innate conservatism of human nature, would prove the most comfortable plan. Others, who are content with merely a bag, can carry it thus with no more cumbrous apparatus than a simple strap, and without really impeding their activity. To the mountaineer as well as to the soldier it is essential 'not only to secure perfect expansion of the lungs, but to allow free action to the great muscles of the shoulder and back,' and this end is best attained, in the opinion not only of General Eyre and his colleagues, but also of the medical journals which have commented on their report, by the method of carrying weight here recommended.

It may incidentally be observed that the discomfort arising from the pressure of a strap, especially of a single strap curved so much as now recommended, arises mainly from its not lying flat, whereby the edges of the strap cut wherever the strain comes. This is caused by the straps being sewn on flat, or attached by buckles, neither mode allowing any free play to suit the curves of the body: and it may be totally avoided by attaching the strap with swivels, or the still more simple and effective expedient of a ball and socket. In this way the strap will lie flat at whatever angle may be required, may be lengthened or shortened to vary the pressure, or shifted from one man to another of different build, and will always fit exactly, and cause no more inconvenience than is inevitable from the weight to be carried. This applies at least as much to ordinary knapsacks as to packs carried in the other way: and in fact much of the difference in discomfort to each individual resulting from one knapsack or another depends upon whether the straps happen to be so affixed as to suit his figure. With rigidly attached straps, what fits one man will not fit

another, and, what is still worse, what is fairly comfortable to the wearer with one length of strap cuts him as soon as the length is altered. Not having been able to obtain a sight of the accoutrements newly recommended for the army, I am not aware whether their yoke is so made as to ensure all straps lying flat, though it may easily be done; but it is manifest that suspension from a yoke will obviate much of the necessity for straps crossing real points of pressure.

Some mountaineers will doubtless be inclined to object that they want no more baggage than can easily be stowed in a knapsack, and that they do not like the trouble of carrying two articles. Men who are contented to do without a second coat or pair of trousers, and who carry all their geographical knowledge in their own heads, might convey all they want in a bag such as I have described; for all they want would be summed up in the six or seven pounds which can be so carried. But the majority prefer to have a second suit of clothes, a book or two, abundance at least of socks, and miscellaneous comforts — enough to distend to the utmost a good sized knapsack, and to weigh fifteen or eighteen pounds. Some do not object to carry this weight on a good path, but it is only one man in a thousand who does not seriously dislike such a load on a glacier pass; and if one is making glacier passes without a second bag, there is no resource but to take the knapsack or do without its contents entirely. Both alternatives are misery, from which the only escape is by an expensive porter. The mountaineer, therefore, who is not satisfied with a maximum of six or seven pounds of baggage (for a greater amount will be too bulky to be comfortably carried in the manner I have been advocating), will do well to take with him two articles, a small bag in which he will himself carry some five pounds of immediate necessaries, and a knapsack, or carpet bag, or any other article for his reserve baggage. The cost of sending this about will be really very small, not a fifth of what porters would otherwise cost him; for on high roads, where most men drive, there will be no expense at all—on good paths a guide will almost always readily carry a heavy load—and there are very few series of glacier passes where there is not tolerably easy and rapid means of communication between the two extremities. Sometimes it may be necessary or convenient to take all one's baggage across a high pass, but this will be but rarely, and after all will be only what is otherwise necessary on all occasions.

The evidence, given in General Eyre's report, of the soldiers who have tried his new pack, is very strong in its

favour, as compared with carrying the same weight in the old fashion, and coincides fully with the experience I can myself adduce. It may, however, be worth while to point out the special advantages to the climber of carrying his load, if he must have one, in this manner. Being supported partly by the shoulders, and partly by the strong bone on which it rests, the weight of the pack is distributed over the body, and very little pressure is felt on any one point. Being also placed close to the centre of gravity of the whole body and prevented from swinging loosely, it tends rather to preserve than to endanger the balance; whereas a knapsack carried on the shoulders materially disturbs the natural conditions of equilibrium, and often prevents the wearer from recovering himself when he has slipped or otherwise been thrown partially off his balance. It is not at all in the way in climbing, as a side-slung bag often must be, and though in descending rocks it may sometimes be inconvenient, yet it will be no worse than a knapsack in this respect, if as bad. Most important of all, it leaves the arms entirely free, instead of their being cramped by the knapsack straps under the armpits and by the pressure on the shoulder-blades—a condition of supreme importance to mountaineers, who often need to make their poles serve them as about the equivalent for two extra legs.

I am perfectly aware that this device is not new, as the principle of it was suggested years ago for the army by Sir Thomas Troubridge, though it did not in fact occur to my own mind independently; and I know also that one man's experience does not always accord with another's. But I have never yet heard a serious objection raised against this mode of carrying, if one is obliged to be a beast of burden at all; and I hope therefore that I shall not seem too zealous in urging its merits. Neither this nor any other plan is perfect, and I shall be very glad if criticism, however hostile, from mountaineers superior to myself, elicits some better method on a matter which is of vital importance not only to pedestrians, but also, as seriously affecting the army, to the whole nation.

The Col de Pierre Joseph. By C. G. Heathcote, M.A.

EVEN in the most deplorable weather some few amiable enthusiasts will generally be found at Chamouni in the month of August. At such times despair finds comfort in the wild prophecies of the natives, and the sceptic becomes tem-

porarily credulous as to the influence of a change of moon or the magic of a specified day. No amount of self-deception, however, would have induced me to stay at Chamouni during a week of uninterrupted rain in the valley and snow on the heights, but for the fact that my letters were at Zermatt, and the luxuries of warmth and sunshine were probably not to be had nearer than the Italian lakes. Meanwhile as the mountains were not to be seen out of doors we were compelled to find a substitute in Mons. Bardin's model, a careful inspection of which is mountaineering made easy and cheap. If the eastern part of the chain had been as far advanced towards completion as Mont Blanc itself, I should perhaps have been spared the expedition I am going to describe, and should certainly have saved myself from a grievous error.

At length, whether it was the change of moon, or whether the long-expected day had arrived which was to inaugurate an uninterrupted era of fine weather, there came a fine afternoon, which I spent with a party of friends on the moraine of the Tacul. As we basked there in the unaccustomed sunshine Michel Balmat spoke of a col—a new col; one at least that had been attained but never traversed, and growing eloquent over his subject he prophesied for it the most brilliant future. The Col du Géant was becoming monotonous, but this col would supersede the Col du Géant, and would be a highway trodden by the feet of innumerable travellers, a connecting link of the highest importance between the France and the Italy of the future. The explanation of all this enthusiasm was, that only a short time before, Balmat and Michel Ambroise Ducroz had reached the col with Messrs. Reilly and C. E. Mathews, but had been prevented by the weather from descending on the Italian side, and they were very much alarmed lest the honours of the first passage should be snatched from them by some more fortunate aspirant, especially as they had reason to believe that they were not the only persons in the neighbourhood who had designs upon one of the last remaining passes in that part of the chain. As I looked again and again at the delicate curve, its fresh snows glittering against the deep blue sky purified and intensified by the storms of the previous week, the Col de Pierre Joseph became the most attractive object in that very attractive panorama; and I determined to make at least an attempt on it at the first convenient opportunity. Accordingly on the 20th of August my friend Marindin and myself, with our two guides and a porter, left Courmayeur, having shrouded our designs under a decent veil of mystery, so decent indeed and

so mysterious as to defeat its own object, and to give rise to a general idea that we were going to attempt something very terrible indeed, that we should certainly fail, and that we should be back again at Courmayeur the following evening. As we left the village we received and declined a courteous invitation to inspect the cemetery, with a view, I suppose, to the selection of a satisfactory place of interment in the event of a disaster. The weather at starting was in that imperfect state of development that we are familiar with in the heroines of novels, having a boundless capacity for good or evil as circumstances might direct. The heroine in this case turned out in after-life very vicious, and very treacherous also, in that a gleam of her better nature induced us to leave the chalets of Gruetta at five the next morning. We had, however, enjoyed the advantage of inspecting a large cheese-making establishment, and of collecting some statistics on the subject which I only withhold because of their extreme improbability.

We were all profoundly ignorant of the locality, so ignorant indeed as to mistake the Glacier de Mont Dolent for the Glacier de Triolet. Inasmuch as after about seven hours' wading in very deep and treacherous snow we considered it prudent to return before reaching the summit, as we were on the wrong glacier and walking in a wrong direction, and as, even if we had persevered, and had not been killed, we should have descended on the Argentière, it is not necessary to describe our track minutely. Suffice it to say, that if, as I believe is the case, the French side of the Col Dolent is more difficult and dangerous than the ground we travelled over that day, it must be very difficult and dangerous indeed. The weather would, however, have made success very improbable if not impossible, even if our plans had been grounded on the most intimate acquaintance with the place. One piece of information, and one only, I can give to any person whom business or pleasure may take to the Glacier de Mont Dolent, and that is, that he had better keep on the northern side till above the ice fall. After that the glacier is level for a considerable distance.

Strange to say, a hasty examination of the maps at Chamouni left me still in my old error. I therefore imagined that the only part of the pass still untraversed was the short distance that separated us from the ridge, and I was accordingly very anxious after the miserable failure I have related to complete the unfinished work. Circumstances kept me in idleness at Chamouni till the 26th, but on the

afternoon of that day I started with Ducroz and Balmat, procured a rug, a saucepan, and some firewood at the Montanvert, and went on to the Pierre à Berenger. The evening was fine, but it was almost dusk when we reached the glacier. The moon, which was full that night, rose immediately over the Col de Pierre Joseph, and the most unsentimental of men might be pardoned the extravagance of hailing her appearance on the exact spot which we hoped to traverse as an omen of success, to say nothing of the more material advantages which she presented to men struggling in the dark with the difficulties of the broken glacier opposite the Couvercle. To those who have been on a glacier under the unclouded splendour of a full moon, description would only outrage memory, while to others I should despair of conveying any impression which would be more than a travestie of its glories. Long I sat outside the little cave in the Pierre à Berenger, contemplating the wonderful scene around me, and endeavouring to persuade myself that Balmat had been correct in asserting that the warm south wind which had blown on our faces as we ascended the glacier below was not the precursor of rain. With reference to the cave itself I may remark that the furthest end of it is admirably contrived for the reception of a baby's cradle, and that anyone who may not happen to be of less than Pygmæan stature had better select the bed nearest the door.

We started at half-past four, and descended to the Glacier de Léchaud. Following it to the upper end, where it receives three considerable affluents, we turned to the left up its eastern branch which descends directly from a col between the Aiguille de l'Eboulement and the Aiguille de Léchaud. The slopes were steep, and, except where the tracks of recent avalanches facilitated our progress, exceedingly soft and insecure, so that as soon as possible we took to the rocks which proved, however, very little if at all easier, though certainly considerably safer. These rocks are a ridge descending from the Aiguille de l'Eboulement, and beyond them is a snow slope extending to the Aiguille de Talèfre. I suggested that we should take that course, believing that it leads to the col which looks so tempting from the Tacul. The guides, however, were agreed in preferring the rocks, basing their preference as I understood on their previous experience, so that I suppose that the snow was less easy than it appeared to be. Under a projecting rock we found an old tattered rug, left there perhaps by the original Pierre Joseph, or forming possibly his habitual covering for the night when he revisits the scene of his now forgotten crimes or misfortunes. A solution of the mystery may possibly be

suggested by the abundance of excellent crystals which we found close to the spot. We reached the summit of the Aiguille at eleven. I have mentioned two cols both leading from the Glacier de Léchaud to the Glacier de Triolet, and of course either of them would be better entitled to the name of a pass than a route which lies over the summit of a mountain; but I am inclined to think that the depression to the north is accessible only from one side, while that to the south looked utterly impracticable from both. The guides descended to a promontory just below the summit, with a view to the descent, while I was engaged in a fruitless attempt to discover a way up the Col des Jorasses. I soon gave it up as an insoluble mystery, as it presents the appearance of a table-cloth not quite reaching to the ground, and after hazarding a conjecture to the effect that the Aiguille de Léchaud was accessible, and would command a fine view, I gave a last look at the Jorasses, the Géant, Mont Blanc, and the Aiguille Verte, and rejoined my companions.

Of the next four or five hours I have but little to say. For steepness, for sharpness, for rottenness, and for monotony, the rocks above the Glacier de Triolet may perhaps challenge competition with any in Switzerland; and when I add to these conditions a heavy snowstorm, it will probably be evident that our position was not an enviable one; and when at last after the descent of a very awkward *cheminée* terminating in the narrowest of ledges and the most unpleasant of corners, Ducroz turned to me with a radiant expression upon his face, and the pious expression 'Dieu merci! nous sommes dehors,' I felt no inclination to criticise either the matter or the manner of his ejaculation. How Balmat, who came last, got down, I have not the smallest idea, as I was engaged out of sight in endeavouring to prevent myself, the knapsacks, the provisions, and the wine from slipping over a precipice. The rest was comparatively easy, and I was at last relieved from the apprehension that, after all, we should be obliged to retrace our steps and descend the snow slopes on the other side, an apprehension which was the more disagreeable as I felt pretty certain that the descent of those snow slopes would in the existing state of the weather, and so late in the day, be almost if not quite impossible. If from our halting place on the glacier I had been able to see anything of our line of descent, I might have been able to decide whether the couloirs on either side of us would have been preferable. By this time, however, it was raining in torrents, so that it is impossible for me to say whether any better route may exist. That no route

which may be found practicable can well be worse, I think I may venture to predict. At 7.15 we floundered over the glacier torrent into the Val Ferrex, and in thick darkness reached Courmayeur, where Bertolini provided me with his best frockcoat and his warmest welcome. At the entrance into Courmayeur the gendarme whose business it is to guard against the entrance of cholera in all its forms stopped us and suggested fumigation—as if my guides, who never allow their lips to be guiltless of a pipe except under the direst necessity, could be more thoroughly fumigated than they were already. Balmat evaded the difficulty by a 'suppressio veri,' which came so very near an 'expressio falsi' as hardly to be distinguishable from it, while Ducroz and I, who though we disdained to lie ourselves, were not too proud to profit by the misrepresentations of another, stalked on in a dignified silence.

Of the pass itself I may perhaps be permitted to add a few words. It is one that can never become popular. I will not venture to assert that it cannot be done under seventeen hours' hard walking; but I do think that it will always be a very long business. The view is undoubtedly a fine one; but it comprises no distant panorama, and though the weather unfortunately prevented me from seeing much of the Glacier de Triolet, I think it questionable whether there is very much to see. In short on a calm retrospect of the expedition, and a comparison between its results and the trouble taken to secure success, without expressing an opinion upon the wisdom of such undertakings, I will venture upon a prediction that it will be a very long while before the brilliant anticipations of Balmat will be realised, and the Col de Pierre Joseph rival the Col du Géant even in the estimation of the Alpine Club.

Excursions in the Graians (No. 3).* Ascent of the Albaron. By R. C. Nichols, F.S.A.

THE morning was bright and fine as I walked down to Aosta on the 23rd of August, 1866. After a fortnight of bad weather in Switzerland I began to hope that a change for the better had taken place. My guide, J. V. Favret, had met me at Martigny, and I had pushed on across the St. Bernard to St. Rémy the evening before, in order to arrive early at Aosta and to have time to make my arrangements to

* Two previous expeditions are narrated in Vol. II. of the *Alpine Journal.*

start next day. At St. Rémy I was questioned first by the douaniers as to my nationality, and, being an Englishman, found that I could not be admitted into the kingdom of Italy without undergoing a fumigation on account of the cholera. It was in vain to urge that my stay in Switzerland had done away with any contagion I might have brought with me from England. Fumigated I must be; so with my baggage I was marched into a sort of dungeon where some kind of devils'-broth was mixed in an earthen pot for my benefit. The vapour was not very considerable or much more disagreeable than the natural earthy flavour of the place, and after about five minutes I was supposed to be sufficiently purified. Then came the visite—all the contents of my knapsack were rummaged and examined, my packets of soup were scrutinised and weighed, and I was told that if they had amounted to half an ounce more, I should have had to pay duty on them. We were interrogated as to what tobacco we had with us. Favret produced a small packet—all he had—weighing about 3 ounces. This was ruthlessly confiscated; I more prudently said nothing about the small modicum I carried for my personal consumption, and escaped being plundered. I had brought this with me from England, well knowing from previous experience that the 'mundungus vile' with which the Italian Government supplies its faithful subjects is simply detestable.

I had been disappointed in the hope of being joined by any of my party of the preceding years, and I had not been successful in obtaining any new recruits. I had therefore no companion but Favret. A porter was however necessary to us, as beside my baggage there was a considerable weight of provisions to be carried. We accordingly engaged one, named Honoré Duc, who would have been a very good man for us, only that he was 'almost damned in a fair wife' who would not part with him for more than two or three days. On the following morning we walked up to Comböe. The sky was overcast, but the barometer had risen during the night. On reaching Comböe we found that we had made an omission in not inquiring for Canon Carrel before leaving Aosta. He was down in the city and his house was locked up, so we had to make ourselves as comfortable as we could in the chalet. What was worse than this was that it began to rain as we arrived, and continued to do so all night and the next morning. I was disappointed of ascending the Becca or deriving any benefit from having taken this route instead of proceeding by the valley; but I resolved to push on to Cogne, and hoped that the next day might be more propitious. We started for

Arbole, but taking the right of the valley instead of the path on the left, found the ascent continually becoming more steep and difficult, until when on a level with the chalets we saw that there was a great gulf between us and them, so that we must either return the way we had come or mount the ridge on the right. We chose the latter, and on reaching the top, instead of attempting the descent to Arbole, we traversed the hill side above a little lake till we reached some deserted huts in the little valley leading to the Col de la Vallette. Here my guides got some wood, and we made a fire and waited some time, rather hesitating between proceeding and returning to Aosta. But the rain ceasing about 11 o'clock, we went on in the clouds and reached the col at 12.45. There is scarcely a perceptible track, but the route leads up a long extinct glacier moraine on the right of the valley (going up), and finally by grass slopes to the top. The descent to Cogne is not so easy to find or follow, though more so than the ascent from that place would be.

My hypsometrical apparatus consisted of a sympiesometer and aneroid by Casella. The readings of the first were generally too high, but especially so at high altitudes and low temperatures. The latter, at first correct, became gradually depressed by successive ascents until it had a considerable error in the opposite direction. Still, knowing the faults of my instruments, I was able to obtain between them results which may be taken as fairly approximate. I found the height of the Col de la Vallette by comparison with St. Bernard 9,272, with Aosta 9,246 ft. We did not stay long at the summit, but halted for half an hour a little lower, where, the clouds having risen, I had a good view of the Grivola, and made out the connection of its glaciers with the streams below. As we descended further the sun shone out with scorching heat. On leaving the col it was necessary, in order to avoid the precipices, to keep well to the left, and descend for some distance in a little steep ravine just under the Pte. de la Vallette. Then keeping well round to the left, a path is found which joins the route to the Col d'Arbole at a bridge below a waterfall. At six o'clock we reached Cogne. We found the little inn somewhat improved. In the evening I had a visit from the curé, M. Chamonin, who gave me some valuable information about the passes in his native valley of Grisanche. The vicaire also came in and told us something about the Col de Telleccio which we were to pass on the next day, and which he had ascended on this side, though he had not been further.

We supplied the place of our porter by another, named Joseph Gentête, who engaged to accompany us for a fortnight if we desired. How he kept his engagement will appear. We left Cogne at 5 A.M., and ascending the main valley to Lilaz, turned to the right up the long straight desolate valley called the Combe de Valeiglia. Here there is not a chalet or a hut, and scarcely a blade of grass; but, to my surprise, a capital road which led to nothing but the foot of the glacier. This I found was one of the king's hunting roads, and it certainly is a great boon to the few travellers who have occasion to traverse that stony defile. We reached the glacier at 7.40. It was steep and very hard and slippery. We halted for three quarters of an hour beside a moraine, for breakfast, at 8.35, then ascended a steeper portion of the glacier, after which we were on snow slopes for nearly three hours, till near the top, where we had a scramble up some rocks to the arête on the left of the col, and with a little difficulty made our way along it to the top at half-past one. I found the height by comparison with Aosta 11,281, and with St. Bernard 11,274 ft., the results being unusually accordant.

We had had a brilliant morning, but found, as is too often the case in crossing the Alps towards Italy, that the valley below us on the south was full of clouds. We had an unknown, and, as we had been told, a difficult route to follow. Immediately before us was a gently-inclined snow plateau, which, however, ended abruptly not far below. On the right this plateau continued for some distance, gradually narrowing until it became a mere ledge upon the precipices of the Tour du Grand St. Pierre, which towered close above us. We had been told that by keeping to the right we should find the only practicable descent. We did so, but not far enough, and had to traverse some unpleasantly steep snow slopes above the very verge of the precipice. On getting to the end of the snow we saw a couloir, which was evidently our line of descent; but before we reached it we witnessed such a tremendous shower of stones falling from the mountain above, and raking the couloir, that we were not desirous to incur the risk of finding ourselves in the line of another such cannonade. We therefore crossed the couloir to some slopes of snow and débris beyond, in the hope of finding a safer, if not an easier, descent. Finally Favret got down one way, the porter and I another, and rejoined on a wider shelf below, where some snow slopes helped us on by a long glissade. This brought us to another line of precipices, and we had to bear to the left to find a descent near to the main glacier which descends from the col. This glacier

is completely intersected by the first line of cliffs, over which it falls in avalanches. We now came to some grass slopes, then to more precipices, and finally over a stony plain to the chalets of La Miranda at 6.15. The height of these chalets I found to be about 7,530 ft. After half-an-hour's halt, we proceeded down a rough and steep path, to the chalets of Telleccio, where we arrived just as it grew quite dark, at 7.45. The height of the Piano di Telleccio is about 6,400 ft.

The mists were still about us when we rose next morning, but we set out at 8.15 to try to find our way over into the next valley on the west, the Val Noaschetta, where we were told we should come upon one of the king's roads leading direct to Ceresole. We were not successful; and, after wasting the morning, thought it best to return to the Val Piantonello, which we had left. We found a sort of goat-path, which led us by a somewhat difficult passage down to the foot of the Scalare di Telleccio, at 2 P.M. We had to make a halt of nearly an hour for dinner, and then pushed on as rapidly as we could. The valley trends eastwards, and compelled us to a long détour, which we should have avoided by crossing to Noaschetta. We could only get to Noasca by nightfall, and had to put up with the worse than indifferent accommodation of its wretched inn. We will draw a veil over the horrors of that night.

Next morning we ascended in the rain to Ceresole, a walk of about two-and-a-half hours. Of course we stopped at the 'Stabilmento dei Bagni,' the roughest specimen of a watering-place I ever saw. There was one visitor there of whom we saw little. As a specimen of the resources of the Establishment, I may mention that it possessed one dinner-knife, with a blade worn down to a length of three inches. I considered myself fortunate to have a more useful article in my pocket. The rain continued all day and all night, and I was not sorry to have a good long rest.

On the following day we ascended a ridge of the Levanna to a point called the Col de Nel, where I made a panoramic sketch. I was rather disappointed with the view of the Paradis range, a better point for which would be found further east, or on the spur, which extends southwards from the Paradis towards the Scalare de Ceresole. This point would also be better for the view of the Levanna, to which I was too near. The sky was not clear, and heavy clouds kept rising over the mountains at the head of the Val de Rhêmes, and never permitted me a clear view of them. Just as we were about to leave, our departure was hastened by a slight fall of snow.

The height of this point is about 8,700 feet, and that of the Baths of Ceresole about 5,000 feet.

When I rose on the 30th, soon after three o'clock, there were threatening clouds about and a watery moon. The barometer, moreover, had fallen, and I hesitated much about proceeding. However, we made our preparations for departure, and called for the bill. This was sufficient to decide me on not remaining. For the two days I was charged 33 francs 50 cents, and the guides 10 francs. I taxed my bill, to the great disgust of my landlord, down to 29 francs, being about twice as much as I ought to have paid.* The landlord said he had had several Englishmen there before, and that I was the first who had done such a thing, from which I concluded, either that from other nationalities he was accustomed to such a measure of justice, or that he avoided it by charging them on a more reasonable scale. The charge to the guides caused a strike on the part of my porter, at which, or perhaps more at his manner of doing it, Favret was so indignant that though I was disposed to accede to the man's demands, he would not allow me to do so, and vowed he would rather carry all the things himself. We accordingly set out in heavy marching order at five o'clock, as far as the village of Ceresole, where we secured the services of a young fellow, who undertook to accompany us as far as Tignes. We had to wait twenty minutes till he was ready. We passed Ciapini Sopra, or Chapis, at 7.45. It was now raining, and a little further on we took shelter in an empty chalet for half-an-hour. A violent wind was blowing from the west, the rain ceased, and we went on, turning off almost immediately from the mule-path, which leads to the Col de Nivollet, and crossed the pastures to the chalets of Serue, or Cerra, which we reached at 9.5. The wind had risen to a hurricane, and it was snowing a little. We waited till 9.50, when the snow having ceased we went on. A tolerably marked track on the hill-side led us to the foot of the Petit Coluret, a steep couloir, filled with loose earth, which, however, we did not find any difficulty in ascending, though Mr. Ball's guide states that it is necessary to take to the rocks. Then crossing the foot of a little glacier above, we mounted steep snow slopes to the Grand Coluret. Here we were a good deal sheltered from the wind. There was very little snow in the couloir, except what had fallen in the morning, which was not more than an inch in depth.

* I have been glad to learn that a complete change has this year been made in the management of the Baths of Ceresole, under the auspices of the Italian Alpine Club, and a reasonable tariff adopted.

We found the ascent rather troublesome. Near the top the couloir divides into two. The one going direct to the cross at the top seemed almost impracticable. We took that to the left, and traversed the rocks to the other, just below the summit. On reaching it we met the full force of the wind, but it was much less violent than it had been; still we could not stand upright before it, and without delaying a moment more than to look at my watch (it was 12.25) we hurried on to a more sheltered position. The height of the col, by the measurement of the French engineers, is 9,836 ft. We then put on the rope, as the glacier was strange to us, but it was hardly necessary. We kept to the right, near the rocks, and soon left the glacier, descending slopes of débris to the valley. The weather had become brighter, the sun shone out, and we sat down under a rock to dine, resting an hour and a quarter. We then proceeded by a path requiring some caution, on a steep bank overhanging the stream to Fornet, which we passed at 4.20, and Laval at 4.50. About half-way to Tignes we met two douaniers, by whose advice we turned back to take up our quarters for the night at Laval, chez Gillie. We did not find the accommodation equal to that at Tignes, and the charges were certainly extortionate, but we gained a good two hours' start for the next morning. I was afterwards informed that we should have been better lodged chez Bonnevie, in the same place.

The night was fine, and the morning also bright. I intended to have made an early start, but by some mistake I was not called till half-past five, and we did not get away till seven. The sky was clear above, but a white haze overspreading the heavens to windward betokened the coming rain. As yet the mountains were clear, and as it was evident they would not long remain so, I stopped for an hour on the path up to the Col d'Iseran, to sketch this side of the Ste. Helène. When we reached the top of the pass it was already shrouded in mist. I had intended to ascend the peak of Mt. Iseran, which, with all deference to Mr. Mathews, I must maintain to have a real existence, as 'I've seen, and sure I ought to know.' Had the weather been more favourable I would have gone to the top and brought it home with me for his inspection. I can, however, quite understand how he happened to overlook it when casting his eyes about in search of a mountain of 4,045 mètres. From the most careful estimation I could make of its height, I believe it to be nearly 11,300 ft., wanting only about 2,000 feet of that attributed to it by the Italian engineers.* Notwith-

* Since the above was written, and just before going to press, I have obtained, by the courtesy of General Blondel and the staff of the French

standing the weather, my ambition might have prompted me to become the hero of this famous peak, but I recollected to have heard that it had been already conquered by a French mountaineer, who has published a narrative of the ascent. Apart from the glory, I am sure it would well repay the trouble of ascending by the view which it would command.

Our view was speedily extinguished by the clouds. We descended without loss of time in the rain to Bonneval, and I was glad to find decent quarters at the house of the Maire, M. Jean Culet, himself a good guide and mountaineer. I feel that in recommending this little inn I am performing a public duty at perhaps a personal sacrifice. It is clean and the food good as far as it goes. The Alpine traveller will not of course raise too high his expectations of a mountain inn at an elevation of 6,000 ft. The charges are very moderate. But there are only two beds, and if I go there again and find those beds both occupied in consequence of this recommendation, I must content myself with clean hay in the loft. The place is a capital centre for excursions, and is only 4½ hours from Lanslebourg on the Cenis road. I hope that M. Culet's two beds will be so often occupied in future as to encourage him to increase the accommodation of his inn.

It continued to rain all the rest of the day and nearly all the next. I sent the porter (a new man, Nicolas Boch, whom I had engaged at Laval) down to Lanslebourg for letters, and myself sallied out with Favret to go up to the chalets of les Arses north-east of Bonneval to reconnoitre the Albaron, if the clouds should allow us to see it. The rain ceased about midday and the clouds lifted a little, sufficiently to allow us to examine the rocks at the foot of the Glacier du Vallonet, which would be the main, or only, difficulty in an ascent of the mountain from this side. We thought we saw our way up them, but there was too much danger of falling stones to make me feel quite comfortable at the prospect. We descended to l'Ecote and returned along the valley to Bonneval.

The next morning, Sept. 2, Favret woke me at two o'clock with the intelligence that the weather looked doubtful. I rose and dressed however, and on consideration of maps, &c., resolved to start for the Col du Collarin. If the weather should

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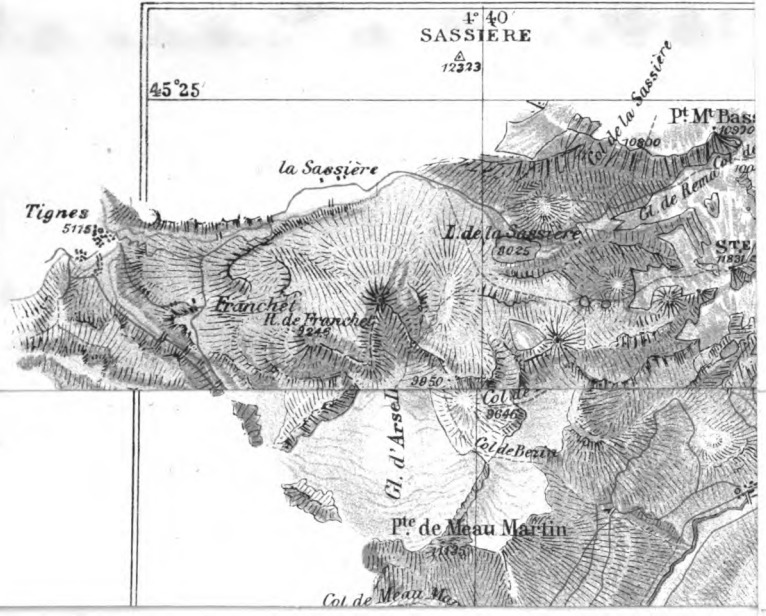
Dépôt de la Guerre, through Mr. Reilly, much valuable additional information relating to this district. The height of the point which I identify with the Mt. Iséran of the Sardinian map, is given by them as 3,451 mètres, or 11,322 ft. But they have given the name of Mt. Iséran to the lower hill, called on the Sardinian map the Pte. du Vallon, whose height is only 10,640 ft.

improve we could try the peak from that side, or if not, pass the col and reserve it for our return to Bonneval. We started at 3.25 and at 4.40 reached the opening of the Val d'Averoles. The sky looked better and we determined on making the attempt. We kept the valley towards Averoles for fifty minutes, and then turned sharp to the left up grass slopes till we reached the last chalet about seven o'clock. We had intended to leave the knapsacks here, but were told that there was another chalet further on. The other chalets, however, though further on, proved to be far below us in the little valley which descends from the Glacier d'Albaron. This was fortunate for us, as if we had left our luggage behind we should have had to return far out of our way to recover it. We might easily have made a cache of it by the side of the glacier, but we began to see that if we took it to the foot of the last arête, we might try to make a descent from thence direct to the col, and so save much time. We reached the foot of the rocks on the S. side of the glacier at 7.30 and halted nearly an hour for refreshment. We then took to the glacier, which proved very easy of ascent, and reached the arête at 11.5. Leaving our knapsacks here we proceeded along the arête, which was all snow, except about 25 ft. of rock, where the climbing was rather difficult. Even this might have been turned, and we avoided it in our descent; but we must then have cut a good many steps and lost some time. At 11.50 we stood upon the summit. The view would have been magnificent, but that nearly all the highest summits were hidden in cloud. Ours was fortunately free, as was the Pte. de Séa, of which I made a hurried sketch. It appeared, however, on a background of cloud, and for want of an horizon it was difficult to be certain of its relative height. We were all, however, of opinion that it was not so high as the point on which we stood. My observations compared with Aosta and St. Bernard give 11,977 and 12,103 ft. for the height of the Albaron. By the measurement of the French engineers it is 3,662 mètres, or 12,014 ft.* The thermometer stood at 30°, and after ten minutes we were glad to descend, and got back to our knapsacks in twenty minutes. On the way I pointed out to Favret a place where we could get down on the south side of the arête, but he declared it was too steep, and after a short halt we made the descent at the point where we had left the luggage, where a short snow slope led us to the top of a

* The French engineers have called this peak the Pte. de Chalanson; this I believe to be altogether a mistake.



precipice of rock in which we found a steep snow couloir, down which we cut our way to the glacier below. Then keeping to the left we reached in about an hour the point to which we should have come had we followed the route I pointed out, and Favret admitted that we should have had a much easier descent and saved at least half an hour by taking it. Thence we traversed the glaciers nearly on a level to the Col du Collarin, and reached it at 2.20. The wind had risen and was blowing very cold from the west, and we were glad to hurry down the easy and broad though steep snow couloir to the other side, where we took shelter under the rocks at 2.30 and rested till 3.10. The height of the col is 10,623 ft. We then descended the Glacier du Collarin, which is for some distance broad and gently inclined, and not crevassed, but quitted it on the left hand side, contrary to my judgment and to the indication of the map. We crossed some extensive moraines and another branch of glacier, which comes down from the Séa, and after a short descent came to precipices down which it was not easy to find our way, as we were again among the mists and could see nothing before us. However a way was found, and at half-past five we passed the chalets of Venoni, and soon got upon a path which took us down to la Balme in another hour. We ought to have left the glacier by the right bank, and we should then, as we afterwards saw, have found an easy path to descend. The little inn at la Balme is indifferent, but I got a clean bed and had nothing to complain of but the awful noise some convivial natives made in singing over their cups a song, or rather refrain, in which the words 'Quando siamo stanchi'—and 'discorrer dell' amor' pierced the ears with a most painful effect. Being somewhat weary myself, I could have desired that the worthy gentlemen would have discoursed of their love in a lower key or at a greater distance.

During the night there was a storm of lightning and rain, but next morning was fine, and we started at seven to cross to the chalets of Séa in the next valley to the north. We retraced our steps for just an hour, up the Val d'Ala, to the plain of Mussa, and then commenced a steep ascent up a path to the right, which led us to the chalets of Roussa. Here we ought to have kept on in the lowest ground till we reached a little valley which descends towards the west, joining the main valley just below the glacier; but instead of doing so we turned up the hill to the east. The wind was so violent that I could not expect to be able to do any drawing at the top of the pass, so at 9.50 we took shelter among some rocks, and I made a

sketch of the head of the valley. At 12.30 we went on ascending, but found it at last necessary to descend into and cross the little valley before mentioned. We then got up the opposite side to the arête overlooking the Val Groscavallo, at a point rather to the east of that where we conjectured rightly the true col to be situated. It seemed quite possible to descend here, but we thought it better to go along the arête to the col, as we did not know what course we ought to take in descending, and the precipices were evidently steeper below than near the top. It was as well that we did so, for though we should have crossed the path it is probable that we should not have been aware of it, as it is very slightly marked, and to have attempted to descend further directly might have led us into serious danger. The col crosses a step or zigzag of the ridge, in a direction nearly from west to east. It is called on the Sardinian map Ghicet di Séa, which is patois for Col de Séa.* But as the name of Col de Séa is appropriated to the more important col leading from the Alpe di Séa to Bonneval, I prefer to call this the Col de Ciamarella, Ciamarella being the name of the pastures in the little valley on its south side.† The height of the col I calculate to be about 9,025 ft.

An easy couloir led us down for some distance on the northern side. Then the path traverses a long way to the east along a natural ledge in the precipices, ascending and descending a great many times. Its course is indicated by little piles of stones on each elevation, and without these would not be easy to follow. In a mist such as that in which we had come down from the Collarin on the previous day we should have had much difficulty in finding a way down. At length a great slope of débris is reached, where the path is lost, but the descent may be effected anywhere. We now turned again westwards, and reached the chalets of Séa at 4.55, having left the col at 2.30. The chalets, or rather chalet, afforded the minimum of accommodation even for a chalet. It was very dirty and very small. The wind, which was bitterly cold, blew down from the glacier right through its dry stone walls, and we had for our couch only some knotty stumps of rhododendron bushes, which had been gathered for fuel.

The next day we started at 6.40 for the Col de Séa. We

* Ghicet. Fr. Guichet; *Anglicë*, Wicket.

† Mr. Bonney has stated that the name of Ciamarella has been improperly given to the Pointe de Séa, and that it belongs to the Albaron. This is not correct. Uja di Ciamarella and Punta di Séa are two names for the same peak, borrowed from the alps on its southern and northern sides respectively.

had been told at Bonneval that we should not find the path without a local guide, and Mr. Bonney appears to have missed it, and done very well without. We were lucky enough to hit upon it. The point where it is likely to be missed is at the rocks at the foot of the glacier on its northern side. My attention, however, was attracted at some distance by a few stones built up into a little wall or step at the foot of the rocks, and this proved to be the indication of what may be called by courtesy a path, but is only a place where the rocks may be climbed without difficulty. Ascending by the side of the last fall of the glacier, we came to its more level portion, and went upon it at 8.45. At nine we left it again for the rocks on the north, and an easy ascent brought us again to the glacier above another ice fall in twenty minutes. We reached the head of the glacier over easy snow slopes at 10.5, and in five minutes more were on the top of the col. The wind was still so high as to make drawing difficult, but I got as much shelter as I could, and worked till 2.35. The height of the col by my observations compared with Aosta is 10,330 ft., and with St. Bernard 10,290 ft. By the French engineers it is given as 10,154 ft. We found the descent of the Glacier des Eïvettes perfectly easy, and reached the foot of it at 3.30. We made a halt of nearly an hour, and then crossing a little col to the left traversed the mountain side to near Bonneval, where we arrived at 6.25.

We left next morning to return to Aosta by the Col del Carro. We had some arrears of sleep to make up, so we did not get off till half-past seven. The mule-road follows the left bank of the Arc for about an hour to beyond l'Ecote, where the stream is crossed, and after forty minutes more the path turns up a lateral valley to the left, to the chalets of l'Echauges, one of which belongs to our host of Bonneval. Here we took shelter for a short time from a blazing sun, and made another halt of a quarter of an hour under the shadow of a rock farther on. We reached the col at twelve o'clock. The ascent is entirely over rock and snow slopes, there being no glacier on the southern side. The view from the summit was much finer and more extensive than I had been led to suppose, and I much regretted not having made an earlier start that I might have more time to work. But we had a long way to go and another col to pass to the chalets of Nivollet, and I was obliged to content myself with sketching a part of the panorama to the south. It is stated in Mr. Ball's Guide that this pass commands but little view, being commanded to the east and south by the mass of the Levanna. Now the fact

is that the mass of the Levanna, as seen from the col, occupies only an angle of about 50°, and from the great breadth of the pass the view is otherwise remarkably extensive and uninterrupted.

According to my observations, the height of the point on which I stood, a little above the col, compared with Aosta, is 10,590 ft., and with St. Bernard 10,540 ft. This point is marked by the French engineers 3,202 mètres, or 10,505 ft. The height of the actual col, by the same authority, appears to be 10,292 ft.; but I think that these figures must refer to a point below the summit. We left at half-past three. The descent, over a snow-covered glacier, was at first very steep, for a few feet indeed almost vertical, but soon became easier. We bore to the left under the Cima del Carro, and after a short distance traversed the glacier nearly on a level to an arête of rocks, which we reached at 4.25, where we cast off the rope, and I took off my gaiters, thinking that we had done with the snow for the day. But on the other side we came to a snow couloir and another glacier, which we descended for twenty minutes, and after a short further descent over rocks and grass, reached the head of the Val Locana, just below the foot of the Petit Coluret. We now got into mists again, which caused us some loss of time in traversing the hill-side to gain the road to the Col de Nivollet. It was five minutes to seven when we reached the top of the col, and we did not get to the chalets till 7.50, when it had already been all but dark for some time. We found here wonderfully good accommodation for a chalet, and I should prefer it for night quarters to the inn at Val Savaranche. I had a comfortable bed and slept well.

The next morning, September 6th, I returned to Aosta. I had an appointment at Martigny for the 10th, but had still two days to spare. I dismissed my porter, and started the next day with Favret only, to go up the Val de St. Marcel, with the intention of trying from the head of it to ascend the Pta. di Tersiva, a peak about 11,600 feet high at the head of the Val de Grauson. Our walk up the valley of St. Marcel was hot and fatiguing. The valley is one of those little lateral valleys on the south side of the Val d'Aôste, which are passed on the road from Aosta to Chatillon. It is narrow, steep, and straight. At some distance up the valley, on the eastern side, a copper mine has been opened, and a most elaborate road, with infinite zigzags, has been nearly, but not quite, completed, to lead to it from St. Marcel. But I conclude that this great effort, to use an expressive Americanism, 'bust up' the Company, and

the road and works are all going to decay. The neighbourhood of the mine is indicated by two streams, which flow down side by side in different channels, the bed of the one being stained a deep blue, while that of the other is a brilliant yellow. The effect is startling. I wonder what the public would say if an artist were to venture to exhibit a faithful representation of the scene at the Royal Academy.

About four-and-a-half hours' walking brought us to the chalets of la Chaz, belonging to the Syndic of St. Marcel. The chalet was small and crowded, but we got a tolerable couch near the door, and were not badly off, though, with ourselves, the occupants for the night numbered eighteen persons. The beds were arranged in two tiers, one above the other, and as there were, as we were told, two *ménages* in this one chalet, there were two fires and two huge cauldrons to help fill up the space.

The next morning Favret was to have called me at three, but I roused him at half-past four. The sky was covered, and we were for some time in doubt about starting. After five, things looked a little better, and we set off at a quarter to six. We ascended the valley to the col at its head, keeping to the right of the little glacier (which is larger than it looks), and partly on its moraine, which is only distinguishable from the rest of the hill-side by the fact that under the loose stones there is hard black ice. We reached the col at 7.25, and now came for the first time in sight of the Pte. de Tersiva. But it was evident that the ascent ought to be made from the Val de Grauson. The arête, from the point where we stood, was far too long and difficult, and moreover the weather, though brighter, was still threatening. We resolved to limit our expedition to the Pte. de Tessonet, which seemed close to us to the left, but which required rather a difficult scramble of about an hour to reach. When we arrived at the top the view for the moment was all but clear, and certainly very magnificent. Clouds were however rising from behind the range on the south, and before I had time to do much had obscured so many points that my sketch was very imperfect. At 10.55 everything was hidden. I made the height of this point about 10,840 ft., and that of the col 10,060 ft.

We descended the arête to the north, thinking it would prove easier, but it was rather worse than the other. It led us on to the little glacier, which was very steep, and we descended in the clouds to the valley, and reached the chalet again at 12.30. After an hour's rest we went on down the valley, and arrived at the bridge of St. Marcel at 4.45, where a carriage

from Aosta met us. It had rained more or less during our walk down, and came on in torrents as we drove in to Aosta.

I must add a few words respecting the map which illustrates this paper. In compiling it, I have derived most valuable assistance from information obtained by Mr. Reilly from the French Dépôt de la Guerre. The glaciers at the head of the Val de Tignes are from my own observations, and on the Italian side I have followed the Sardinian map, correcting it as far as I have been able. The portion immediately to the south of the Levanna, at the head of the Val Groscavallo, I have not seen; and as the position of the Levanna, as determined by the French engineers, is considerably to the NE. of that given in the Sardinian map, this part is not at all satisfactory. I have not ventured to give the head of the Val de Viu further south. The line of watershed in the French survey differs so much from that shown in the Sardinian map, and the latter is altogether so vague and unsatisfactory that I could make nothing of it. The heights marked in the map on the Savoy side are given on the authority of the French engineers. Those on the Italian side must be taken as only approximate, being from my own observations, except the Roche Melon, the height of which is stated in the 'Opérations Géodésiques pour la mesure d'un arc du parallèle moyen,' to be 3,535·7 mètres, or 11,600 ft. The French measurement of this point is 3,548 mètres, or 11,640 ft. In the names of the peaks and glaciers I have generally followed the Sardinian map. The French engineers appear to have rechristened most of them; but in some instances, as in the case of the Albaron itself, certainly not correctly. Nomenclature is apt to be the weak point in most great surveys, to which our own Ordnance survey is no exception; while nothing is more uncertain than the local appellations of masses of rock and ice, in which the inhabitants of the country generally take no interest, and which are as yet rarely or never visited by strangers.

The Tibetan Route from Simla to Srinágar. Notes of a Himalayan Ramble in the Summer and Autumn of 1859. By J. F. Cheetham, F.R.G.S.

'——— antres vast and deserts idle,
Rough quarries, rocks, and hills, whose heads touch heaven.'

I HAD lingered on at Simla until my acquaintance at the club there, in their idle intervals between whist and waltzing, began to show symptoms of a disposition to make

themselves disagreeably merry over my glowing projects of Himalayan adventure. Not but that I had excuses, weighty enough to any reasonable mind, to plead for inaction. The forced gaieties upon which those giant mountain-forms seemed ever to be looking down in serene and solemn reproof, were scarcely likely to retain long within their dreary influence any true lover of nature. But my horse had fallen upon me at Delhi and sent me up to Simla at the end of April with a fractured collar-bone; and when, later, I began to regain strength and condition for mountain work, my plans received another blow in the sudden cancelling (owing to ugly appearances somewhere down country) of the four months' leave which a friend in the Connaught Rangers, then quartered at Delhi, had agreed to spend with me among the haunts of snow-bear and ibex. But in the meantime the bright fresh Himalayan spring-time had gone its way, and with it all the crimson glory of the rhododendron forest. It was no longer any use climbing Jáko to watch the sun set upon Kága (21,800 ft.), Ratáng (21,400 ft.), Deotíba (20,500 ft.), and the hundred other pinnacles of that wonderful wall of snow which seemed to block up the northern horizon. Heavy cloud-banks had hopelessly settled down about them; and, a more ominous sign still, in the deep *khuds* or ravines thousands of feet down at the foot of the Simla ridge, ghostly flakes of opaque vapour had appeared suddenly and as suddenly disappeared, had shown themselves again and again vanished, but always creeping higher up the forest until at length coming back once and for all, they took permanent possession of Simla, surging in a sea of mist through door and window; and then in a deluge of rain the monsoon broke upon the mountains. This was about the middle of June. At the end of the month a spell of comparatively fine weather set in, the usual eight or ten days interval between the *chota* and the *burra barsáat*—the smaller and the greater rains. Now, if ever, was my opportunity.

On the morning of the 4th July (my servants and coolies with the baggage having got under weigh an hour after midnight) I turned my back upon the sleeping world of Simla and rode gaily out on to the new highway to Tartary. Throwing three stages into one I skirted the splendid forest of the Mahásu ridge, passed without halting the Fágu post-house, and burst into the Théog bungalow upon the pair of friends who, in the course of a fortnight's campaign among the pheasants, were to break me in for my contemplated *grande course* over 500 miles of formidable mountain.

We halted on the 5th at Matiána. On the 6th we took

up our quarters among the clouds in the roomy bungalow on the Narkánda pass, 9,000 ft. above the sea, and about forty miles from Simla, a point famed for the magnificence of the view it commands, over the superb forest of the massive Háttu mountain on the right hand, and on the left across the abyss of the Sutlej valley to the grand snowy range, which as the rain ceased and the clouds broke away, lifted above us its solemn rampart of glistening wall, flushed into loveliness by the evening sun.

Here commenced our shooting operations, which were continued along the flanks of Háttu over fifteen miles of glade and forest to Kandrála, two stages further on the Tibet road. Our game was the pheasant in its Himalayan varieties, *koklass*, *cheer*, the black *kaleej*, and the gorgeous blue *monál*. I cannot say we were brilliantly successful. Our handful of beaters seemed lost in those boundless coverts, and we were without dogs, a luxury practicably unattainable in the Himalayas. I confess too that at times, as when for instance deluded by the seductive call of the *chakór* or hill-partridge, we found ourselves under a terrific sun at the bottom of a tremendous *khud*, with a couple of thousand feet of nearly perpendicular ascent between us and our cool quarters in the post-house on the ridge above, it was impossible to avoid emphatic reference to that French proverb about the game and the candle; but a sentiment so unsportsmanlike was instantly repressed with much sternness by the indefatigable Colonel of Rifles in command of our little party. No *khud*, with a possibility of pheasant at top or partridges at bottom, was ever too steep or too deep for him, and after all, what could be more exhilarating than beating up the *monál* in the fresh, dewy mornings on the grassy verges of the pine forest, or more savoury at the end of the hard day's work than the standing *pot-au-feu*, as replenished by the Colonel out of the most incongruous materials!

Of four-footed game we saw little. Once, blazing away excitedly at a thing not much bigger than a hare which jumped up out of a bush at my feet, I found I had killed a musk-deer. Captain R. shot another of these graceful little creatures; and one day when we had followed up some *monál* into thick forest on the mountain side, the Colonel and a big black bear very nearly tumbled over one another in a jungly ravine. We reproached him for not treating the brute to a couple of doses of No. 5 shot, but he replied that it was no laughing matter, and that the mutual recoil which had ensued could not by any possibility have been half as satisfactory to the bear as it was to himself. We had two cases of snake-bite among our beaters

whilst trampling through the luxuriant undergrowth which springs up in these forests after the setting in of the rains. It was evident the reptile was venomous, from the rapid swelling which followed, and the paroxysm of pain and terror into which the poor fellow was thrown. His comrades hastily twisted a tight bandage round the leg above the part affected, and we then taking him in hand, treated him copiously to *eau-de-luce* out of my little medicine chest. After which, having heard that in such cases it was of the utmost importance to keep up a succession of shocks to the system, we ordered, not without a spice of malicious satisfaction, our *bhishtis* to direct a continuous stream of cold water upon him from their pig-skins. A few hours of this energetic treatment produced the happiest effects, and we dismissed our patient, with a liberal *bakshish* in his pocket, a richer and certainly a much cleaner man than in all probability he could ever remember to have been before.

The time at my companions' disposal would not admit of our pushing further into the mountains than Kandrála. The view from this point, the complement of that from Narkánda, must in fine weather rival, if it does not surpass the latter. Due east the snows and black jagged rocks, distant apparently but a very few marches, of the lofty Shatúl, Yúsu, and Burénda passes, were generally visible, but further to the east and south the great ranges lay obstinately hid. Once only was the cloud-curtain lifted, and we were permitted to gaze with something of awe upon the stupendous peaks that guard the sacred sources of the Ganges and Jumna rivers.

At the end of a very pleasant fortnight the time came for my friends to return to Simla. We parted company at Narkánda, where I lingered a day or two waiting the arrival of sundry additions to my stores, that seemed indispensable for the long campaign I was now about to settle down to in sober earnest.

I had pored at Simla for days together over maps and itineraries of the Western Himalayas, trying to solve the problem of a mountain route to Kashmir under the essential conditions of (1) the utmost attainable diversity of scenery and life, and (2) the speediest possible escape from the influence of the monsoon, which, from July to September, would be deluging the Indian flanks of the Himalayas. I selected at last the track which, crossing the Sutlej below Narkánda, would lead me northwards ten days' journey over the hills and dales of Kúlu into the splendid scenery of the first snowy range about the head waters of the Beás. Thence the Rotáng pass would carry me at once into the rainless Tibetan

region of Lahoul, whose wild valleys I should thread for a week to the sources of the Chenáb in the Bára Lácha pass of the great central Himalayan chain. Then would follow seven days of uninhabited wastes of mountain and table-land, out of which I should escape by the lofty Tunglung pass into the valley of the upper Indus, two or three marches above Léh, the chief city of Little Tibet. From Léh I should follow the usual route to Kashmir, first down the Indus valley, and then westwards across a wide tract of barren mountain to the pass of the Tsoji-La at the head of the first Kashmir valley. It would be time enough then to consider by what line I should retreat upon the plains.

On the afternoon of the 23rd July I dropped down through the woods to Komhársen, a picturesque little hamlet on the bare pastures below the forest zone. It was my first night in camp, and I surveyed with much satisfaction my little tent in the centre of the village-green, the grey *ghoont* or hill-pony picketed close by, and my servants busy over the camp fire with preparations for dinner. I may here mention that to the Madrasee, Manuel, cook and valet in one, whom I had brought up with me from Calcutta, I had added at Simla a bright, brisk, Kashmiri Mussulman, Jamál Khán by name, one of the handiest fellows I ever met, and thoroughly in his element among the mountains; also one Borroméo, a venerable Punjábi *bhishti* or water-carrier, the oddest old gentleman possible. His first act was to secrete undetected a large quantity of native tobacco I had laid in to distribute among the hill-men. At this he smoked away incessantly, day and night together. When it was done he took to opium. Unlike Madrasee and Kashmiri, who had been careful before starting to fit themselves out (at their master's expense) with a suit apiece of warm woollen clothes, he clung to his scanty cotton attire of the plains. His grisly hide seemed alike impervious to the extremes of heat and cold; only at all times he was most careful to keep head and chin swathed up in a dirty cotton handkerchief. I long pitied the infirmities that, as I supposed, necessitated this ghastly bandage, until one morning I surprised the old impostor with a bit of broken looking-glass in one hand, whilst the other was engaged in stroking and twisting a tuft of grisly whisker up to the corner of his eye. He looked very foolish, and the fact was the old fop was egregiously vain of his bristly whiskers, and tied up his jaw in this way for the sole purpose of coaxing them into that grim growth upwards and backwards which imparts such an air of truculence to Sikh dandyism.

The trio made up my staff of domestics; for a dull-witted

native from one of the lower villages, whom I had engaged as *saïs* or horse-keeper, belonged to all practical purposes exclusively to the pony. Fourteen or fifteen sturdy little *Puháries* or hill-men sufficed for the transport of my (from an Indian point of view) modest kit, which was mostly stowed away in *khiltas*, long conical or wedge-shaped baskets of the form familiar to Swiss travellers, covered with goat-skin to keep out the rain. A hardy, home-loving, rather selfish race they seemed to me, these *Puháries* of the higher villages, when I came to know more of them, eminently childish, pre-eminently dirty, though in this latter particular quite unable to compete with their Tibetan neighbours on the other side of the mountains. Their dress, a loose woollen tunic (precisely the 'Norfolk' coat of Mr. Poole), tightly belted at the waist with a coil of woollen rope, loose trousers of the same material fitting close on the ankle, curious netted shoes, part wool, part leather, warranted not to slip, a little woollen cap jauntily set upon glossy ringlets, and a *dángra* or small hatchet, tool and weapon in one, was the model of a workmanlike mountaineering costume. They were changed from day to day at the end of the usual stage of eight to ten miles, and the relay for the morrow's march was often summoned by some fellow in a little authority getting upon a knoll or rock overlooking a populous glen, and making the night hideous with the long-drawn howl '*e-e-e-h bagári, bagári o-o-o-h*,' the strict meaning of the term *bagári* being, I am afraid, 'forced labour,' although I am not aware that any other obligation than a sternly moral one now exists, by virtue of which the Puhárie must leave his field or his flock and stoop for sixpence a day to the burdens of the lordly Englishman.

The evening was beautifully fine, and the quaint little hamlet on the bare green mountain side, with a background of the snowy peaks up the Sutlej valley, made up a picture which seemed to insist, in spite of the most cruel treatment, upon making its way into my sketch-book. Far up on the opposite heights of Kúlu, at a most disagreeable elevation, I could distinguish the village of Dilárss, to-morrow's destination, and the first stage on a route which I calculated would, in eight or ten days, carry me over the first snow-pass into a rainless Tibetan climate.

It was nearly six next morning before my people were in marching order, a tardiness for which I, at all events, had to smart severely before night-fall. The track led by stony zigzags down slopes which grew steeper and barer as they fell 3,000 or 4,000 ft. to the noisy but long hidden Sutlej. Valley, properly speaking, there was none; the eye sought in vain for

the repose which even a few roods of level open bed would have afforded in the dreary gorge which seemed to grudge room for passage to the great roaring torrent of milky mud.

This, it seems to me, is the weak point of Himalayan scenery. There is, out of Kashmir, an almost universal absence in those bottomless ravine-like valleys, of that rest and contrast of broad level spaces of which the traveller so much feels the need in his vain efforts to estimate the majesty of the loftiest mountains in the world.

We found a capital wooden bridge on the approved Hindoo lever or bracket principle, spanning a narrow chasm in the rock. Not very far above this, a little glen with a limpid brook rippling past shady bushes tempted me out of the path for breakfast and a brief shelter from the insufferable heat. I have the most vivid recollection of the ensuing horrors of that 5,000 ft. of climb to Diláss. The air seemed filled with fire, the rocks under foot red-hot. There was not a tree, or a shrub, or a ledge of rock big enough to hide my burning brain from the withering stroke of that Indian July sun as he stalked fiercely across the meridian. As if to fill up the cup of misery to the brim, the grey *ghoont* had, in descending the rugged path from Komhársen, cast a shoe, and was utterly useless with a broken hoof. I fell at last helpless by the wayside, where I lay for hours, huddled under such shelter as my cotton umbrella could give, until a thunderstorm began to gather, veiling the afternoon sun and setting in motion cool currents of air. Then I rose and tottered up what remained of the slope and into camp at Diláss just as the refreshing rain began to pour down; and when I woke up from my first heavy sleep far into the night and found the water dripping on to my baked face, and forming a little network of pools among the blankets, I felt (for that night only) almost grateful to the rascally Delhi tent-maker, who had so considerately provided the hitherto unsuspected chinks and crannies in my canvas roof.

I was in no mood for a long march next morning. Over the Diláss ridge we dropt down into a deep glen, where I divided the mid-day hours between the cool embraces of a little mill-stream and the shadows of a great lizard-haunted rock, pitching my tent in the evening on the terraced fields of Chawáï. Next morning as we were climbing a hill the unusual apparition of a figure in European costume stood suddenly out against the sky above us. Kashmiri, with preternatural acuteness, recognised it whilst yet afar off as that of a *padre Sahib*; and when we met in the narrow path and turned

mutually about to indulge in the luxury of a ten minutes' chat, after the fashion of travellers in lone places, I found my new acquaintance was one of the little fraternity of German-Moravian missionaries established at Kyélang in the Tibetan valley of Lahoul, on his way on an errand of some importance to Simla and Calcutta. No fewer than three English officers, he informed me, had this season passed through their remote settlement on the way to Ladák, but during the two preceding years they had only seen as many European faces.

I came that evening up a lovely glen, amongst rocks and dashing streams and wildernesses of exquisite ferns, to the village of Kôt, buried in the deodar forest on the slopes of the Jalaúri mountain. The platform of the quaint little open-timbered *deóta*, or hill-temple, was the most charming spot imaginable for my tent; but nature and human nature were not by any means in accordance here. The villagers looked very sourly indeed upon us. Perhaps, as not uncommonly happens in the hills, they had been cheated by the servants of the last English traveller. At all events, I regret to state that Kashmiri was obliged to use the stick before even a bowl of fabulously-priced milk was forthcoming.

The wetness of the night was amply atoned for by a most brilliant morning. The path, a rocky gutter greasy with the night's rain, led at first along forest glades, and afterwards up the bare broiling shoulder of the mountain, with odious directness to the *jodh*, or top of the Jalaúri pass. Once there, at a height of 11,500 ft., it was a blissful relief to turn one's back upon those lower ridges, visibly glowing with a furnace-like heat as they sank in rapidly falling waves away to the plains, and gaze forward over Kúlu's 'thousand shadowy-pencilled valleys' to the 'snowy dells in a golden air' of the great chain upon which my path was steadily converging.

Again I have regretfully to record the utter insensibility of the men of Kôt to the elevating influences of nature. They had that morning taken my burdens on their backs with extreme ill grace, and now growing utterly untractable, they made show of throwing them away and bolting precipitately down hill home. And now again, the milder arts of persuasion entirely failing, the stalwart Kashmiri fell back upon the irresistible logic of the stick.

The descent on the northern face was long and steep, through the dense forest of pine and oak which on that side clothed the Jalaúri mountain and the adjoining ridges from summit to base. Far below I bathed in a rushing mill-stream, and

following its banks two or three miles came to my camping ground, on a knoll under great deodars hard by the village of Ressáleh, or Richálu.

The next three marches (Monglúr, July 28th, Largi, 29th, Bijoura, 30th) lay along glens and valleys offering much wild scenery, but associated chiefly in my memory with sweltering sultry heat, and the harsh mournful 'crake, crake' of the black partridge. At Largi, the stream I had been descending from the south received the waters of a similar glacier-fed torrent from the east, and was in its turn swallowed up by the Beás, which, issuing in great volume through a wonderfully deep and narrow gorge from the north, turned suddenly westwards, and swept through an outlet flanked by lofty precipices away to the plains of the Punjáb. To cross the torrent flowing from the east it was necessary to go considerably out of the way to a crazy bridge some distance up its banks. The track then mounted abruptly to a great height above the gorge of the Beás, a portion of whose upper course now came finely into sight, meandering in a wide stream down a broad, flat, green valley with a background, now and then visible through the clouds, of high snowy mountains. At a point above the gorge where the Beás flows through the open valley in a broad, swift, comparatively smooth stream, there is a ferry of a description as novel as it is ludicrous to the European traveller. As I drew near to the river, a herd of fabulous monsters, of enormous size and bloated appearance, seemed to rise from their recumbent posture under the shade of a large tree, and waddle bolt upright in an absurdly pompous manner along the bank to a point some hundreds of yards above me; then, rolling over into the water, they came shooting with great velocity obliquely across the current to my feet. They turned out to be the black inflated skins of buffaloes—*déri* the natives call them—and each huge skin supported a ferryman as black and nude as itself, who in turn carried it over his back when out of the water. The *modus operandi* was as follows:—The beasts paired off, as it were, floating on their backs in twos, side by side. Then their respective proprietors stretched themselves across in opposite directions, with hands and feet in the water to act as paddles and rudder. On the raft thus formed a loaded coolie crept with great circumspection, holding on grimly with hands and knees to one of the prostrate ferrymen, and in a twinkling the buoyant concern had shot far down and across the swift current, and was skilfully making its way to the opposite bank. In this fashion all my people were safely carried over; but when it came to my turn, they placed a

charpai, or native bedstead, across a pair of the finest skins, and so took me over in state, the entire corps of ferrymen careering wildly about on their marine chargers as a guard of honour. Two or three careless riders tumbled off, and the manner in which their futile attempts to mount up again were invariably defeated by the beast turning considerately over in the water created universal merriment; but the fun ceased when the dismounted ferrymen were swept into the neighbourhood of some dangerous rapids, and instantly a little fleet darted down-stream to the rescue.

I halted at Bijoura, a village across the flat, where the path I had been following fell into the main route which leads from the plains of the Punjáb across the Himalaya into Western Tibet, and next day marched up the bare open valley to Sultanpúr, the chief place of Kúlu, a mean little town perched in the angle of the junction of the Beás with another stream descending from lofty mountains on the left. Here a couple of hot wearisome days were lost in an attempt, frustrated by weather and grievous under-estimate of distance, to reach the noted hot springs of Máni-karn, lying far up the adjacent rugged glen of the Parbáti river. On the 3rd of August I continued to ascend the Beás river for eight or ten miles, crossing over to the left bank at the village of Nágar, where a picturesque old keep of the former chiefs of Kúlu looked out from thickly-wooded heights over a wide sweep of cultivated valley. Its occupant, the Superintendent of Kúlu, was away over the passes on an official tour in Spíti, but he had left instructions of the most hospitable nature behind him, and a stately *chuprassie*, issuing from the great gateway, invited me with much ceremony to make his master's house my own for the night: which I did, and, stretched before the wide hearth blazing with fragrant pine-logs, a pile of the latest magazines at my elbow, and the music of the outer wind and rain in my ears, disbelieved (temporarily) in the superior blessedness of the dwellers in tents.

Next morning, after some half a dozen miles of hot rice-fields and frequent villages, the well-built chalet for the use of travellers at Jagatsúk irresistibly suggested breakfast and a long mid-day halt. Above this point the valley at every step grew more alpine and picturesque. Cultivation ceased to encroach upon the virgin forest, whilst on the left bank of the river the mountains closed in with a continuous wall of purple rock, crowned with sombre pine forest, and sparkling with the white lines of many waterfalls.

Búrwa, the uppermost village of the valley, lay in a maze of boulders and rivulets, amongst which, in the dusk of the

evening, we had long to grope and stumble before a spot could be found open and dry enough for the camp. All through the night the rain pattered incessantly upon the canvas overhead, and when morning came things looked so black, and the report of the local weather-prophet was so unsatisfactory, that Kashmiri tried hard to persuade me to call a halt for the day. It would be excessively disagreeable up there on the pass such weather, I should see nothing, and then (added the impudent fellow, with his usual easy assurance) it was certain to be fine to-morrow. I knew better. It was the height of the monsoon, and we might have gone on waiting there a month for a fine day: whereas I had only to cross the pass, and I should find myself in a region whither these intolerable rains could not continue their pursuit of me. So a start was ordered. But then arose a fresh difficulty. The *bagári*, or coolie service, had, as usual, been put under requisition over-night; but now, when it came to the point, the men of Búrwa were either out of the way or unwilling to move, and by the time a neighbouring hamlet had been beaten up, and the necessary complement of porters had arrived, it was pretty nearly all over with our prospects of arriving that night at Koksar, the first village in Lahoul on the Tibetan side of the pass.

The path, after leaving the open ground adjoining the village, grew very rough and slippery as it entered a narrow gorge overhung by towering cliffs, down whose crags the merry waters came leaping in many a cascade to join the infant Beás, that brawled along on the right in the depths of a rocky chasm. This opened out at last into a lovely glen, or *cirque*, whose walls offered the most picturesque combinations possible of rock and wood and waterfall. Here the track, leaving the course of the stream, turned abruptly to the left up a steep and rugged staircase, which landed me, after an interminable climb of at least three or four miles, on the gentle slopes of a beautiful alp. My porters were long in making their appearance, and then, very much to my disgust, proceeded to lay down their loads, declaring that it was impossible to cross the pass that evening. They pointed to a couple of ruined huts close by as the usual camping-ground (known under the name of *Märri* or *Murree*), and then disappeared to shelter themselves in some well-known caves and holes in the rock in the neighbourhood, where I fancy they had much the best of it through the wretchedly cold wet night that followed.

It no longer rained when we came to start in the morning, but the mist hung heavily about us, parting only at rare intervals to disclose fleeting glimpses of mysterious snow-

peaks far overhead. The path led up the alp, and then at an easy gradient along steep slopes and ledges of rock high above a grassy glen, at the bottom of which a rivulet, issuing from what appeared to be the foot of a tiny glacier, murmured along through silvery thickets of dwarf birch, and under arched beds of rapidly melting snow. Further on we crossed the glacier, which came streaming down from the left, filling a deep and narrow gully in the rocks. It was barely a stone's throw in breadth, covered with snow, and apparently free from crevasses. From its opposite bank long bare slopes led easily to the broad crest of the pass, indicated by the usual cairn of stones with sticks stuck in it, flaunting with bits of rag to drive away the *jins* or evil spirits. The reputed source of the Beás, an almost imperceptible streamlet oozing from beneath a slaty rock, was marked by a low wall, about which withered flowers lay scattered, the offerings of Hindoo pilgrims. As I lingered on the pass, the mist, lifting for a moment, disclosed to the north a striking glimpse of sunshine lighting up a deep and most desolate valley, across which rose wild rocky mountains too steep and smooth for the most part to hold much snow: directly opposite to me a glacier descended a deep fissure in the rugged mass, terminating abruptly not far below the level of my position. These mountains were in the line of the great central chain (here called the Bára Lácha), running in a north-westerly direction along the right bank of the Chandra-Bhága or Chenáb, and ultimately dividing Tibet from the valley of Kashmir. I was standing upon a parallel range of little inferior elevation; for though the Rotáng pass is but little over 13,000 feet, the chain in which it is so deeply sunk has an average height of at least 17,000 feet, whilst many of its peaks reach or exceed 20,000 feet. Probably few passes afford a more rapid and startling transition than the Rotáng, from the luxuriant vegetation and exuberant moisture of the Indian flanks of the Himalaya to the inconceivable aridity and bareness which everywhere characterise the Tibetan side of the mountains.

The descent into the valley of the Chandra, 3,000 feet below, became a short distance below the pass exceedingly steep, but the soft shaly slopes afforded pleasant easy footing, and I raced down them right upon the village of Koksar, which now came in sight on the opposite bank of the river. A mere flat-topped heap of mud it seemed from that height, on a little platform of cultivation. The primitive suspension bridge spanning the Chandra at Koksar well deserves its wide-spread notoriety. It consists, or consisted (for its destruction and

renewal is a matter of probably annual occurrence), of rude massive piers, between which three stout cables of twisted bark and twigs were loosely hung, the undermost and broadest of the three forming the footway, the others serving as handrails. A flimsy wattling of basket-work served as a pretence for sides, but was wanting altogether at the most critical point midway, where the effect was as of a mere tight-rope between the shuddering traveller and the roaring abyss of molten ice and mud, that dashed up its freezing clouds of spray derisively into his face.

I took counsel next morning with the little Tartar headman of the village, as to the ways and means of getting the pony over. There was a wide reach of the torrent some little distance higher up, across which he undertook to swim him by dint of pulling and hauling of ropes, adding, however, that he would not guarantee his coming out of the water alive. So deadly cold was it that only a few days before, three or four horses, the property of a party of Caubul merchants passing that way, had turned over frozen stiff and stark ere they had reached the mid-stream. Kashmiri, ever fertile in contrivances, suggested a bottle of brandy applied internally before the immersion and another externally after it. But it was a cruel risk to run (and besides I could not spare the brandy), so I concluded to send the pretty little fellow back with his keeper to Simla. He had not been of the smallest use to me, except to look at, since the day he cast a shoe and broke his hoof in the Sutlej valley, and I was not sorry to have a cogent reason at last for getting rid of him.

This little difficulty and a view up the Chandra valley, the very savageness of which delayed me another hour with my sketch-book, rendered the day's march a short one of seven or eight miles to the hamlet of Sissu. It was in the course of this or the following march that the novelty of a long *máné* by the path side significantly reminded me I had left Hinduism (as well, I hoped, as the rain) behind me, up at the sources of the Beás on the Rotáng pass. It was a low stone wall, perhaps three yards in breadth, whose long flat top was closely strewn with little slabs of slate carved and scratched with mysterious Tibetan characters. Afterwards they were of common occurrence, stretching sometimes many hundreds of yards in length by the road-side. Further on I found them even upon the desert highlands between Lahoul and Ladák, several days' journey from inhabited places. The slabs, which in myriads are scattered closely over their broad level tops, are inscribed, according to the learned, with the one mystical Buddhist formula '*Om máné pádmé óm.*'

From Sissu it was another short march down the valley to the quaint village of Gúndla. At rare intervals a patch of cultivation, or a handful of pollard willows by the side of a water-course, had been the only relief to the nakedness of the valley; but the dreariness of the scenery was forgotten in its grandeur. The path hugged so closely the base of the mountains on the north side that it was impossible anywhere to see far up their flanks, but over the river, the range I had just crossed rose up 10,000 feet above the bed of the valley in vast smooth precipices of grey slaty rock, supporting broad ledges and shelves thickly piled with snow and glacier, from which, all through the heat of the day, avalanches poured their streams of white powder. '*Puhár bolta, Sahib*'—'the mountain is speaking'—Kashmiri poetically put it, as their deep thunder reverberated through the valley. The cloud-banks that rolled up the Indian side of this mountain-wall veiled for the most part its loftiest pinnacles, but a fine pyramid of snow opposite the village of Sissu (the Sissu peak, 20,355 ft.) was nearly always prominent, and as seen in the bright moonlight from Koksar, and again from Gúndla, was an object of wonderful beauty and sublimity.

Some miles lower down, a huge snowy mountain (the Ghusa peak, 19,833 ft.) lay projected so far out from this range as to seem from Gúndla to completely block up the valley. Through the narrow gorge thus created, the Chandra escaped with a sudden northward sweep into a more open valley, where it was immediately joined, underneath the eastern buttresses of the Ghusa mountain, by a scarcely inferior torrent, the Bhága, descending from the north-east.

The twins had been long and widely separated since the days of their common infancy up in the pass of the Bára-Lácha; now, at last, in the heyday of their turbulent youth, they bounded exultingly together, to sweep henceforward irresistibly through 150 miles of mountain barrier to the utilitarian old age which awaited them upon the plains of the Five Rivers. To the hill-man the joint stream is known only under the joint names of Chandra-Bhága, but the Punjábi styles the broad river, to which his lands owe their fertility, the Chenáb.

By following the course of the Chandra-Bhága through the grand scenery of the Pángi and Kishtawar districts I might, in about another fortnight's rough marching, have reached Kashmir. Jamál Khán had been that way, and had wonderful stories to tell of the ibex shooting in Pángi. I could see that he would not be sorry to take this short cut into his native valley. But I was not prepared to sacrifice Tibet,

not to mention that I should have been running again, lower down, into the very jaws of that monsoon which I was just congratulating myself upon having finally escaped. So we turned away from the main river, and, striking to the right across the tongue of land upon the point of confluence, climbed up to Kárdong, in the mouth of the Bhága valley, the end of the ten-mile march from Gúndla, and the most considerable place of the Anglo-Tibetan province of Lahoul. Perched on the shoulder of the mountain, at a great height above the river, it commanded an extensive and cheerful prospect up the valley of the Bhága, of dusky villages and carefully irrigated terraced fields, whose rich verdure was in striking contrast with the positively hideous barrenness of the mountain wastes above them. But what instantly caught and held my eye, was a trim quadrangle of low white buildings, the Moravian Mission settlement of Kyélang, lying among the greenest of meadows, upon a plateau far below me on the other side of the valley. I could, by a very slight détour, have taken the settlement *en route* next day, but it was still early in the afternoon, and there was a bright home-like air about the spot, as I surveyed it through my glass, so irresistibly inviting, in the midst of all that Tibetan squalor and heathenism, that I started off forthwith to pay it a visit. Brothers Jäschke and Heyde gave me a very cordial welcome. They presumed I had met their associate Brother Pagell somewhere among the mountains, on his way to Calcutta; but they did not, any more than he had done, enlighten me as to the object of his journey, and it was not until some months later that I learnt he had gone to meet and escort back into the mountains the three ladies who were destined to add fresh bloom and perfume to that little garden in the wilderness of heathenism.

For the practical results of their short three years' settlement in the valley, they could point with modest satisfaction to this commodious mission-house; a flourishing school for both sexes; and translations into Tibetan from the New Testament, printed Tibetan fashion, lengthwise upon loose narrow slips of paper. On leaving they pressed upon my acceptance a large jar of honey, with the remark that it had formed part of some superfluous stores left with them by the German traveller Adolph Schlagintweit, when he passed that way on his last ill-fated journey into Central Asia. I have always turned with interest since that day to the Missionary reports of the United Brethren, for the fresh glimpses which extracts from the simple diaries of these earnest men from time to time afford, of their labours in that remotest outpost of Christian civilization.

I marched next day twelve miles up the valley to Kohlung on the right bank of the river. Out of the belt of cultivation I had overlooked from Kardong, the track passed into a sparse juniper wood thinly dotting the arid mountain side, then into regions again of utter barrenness, with here and there a hamlet standing in its little patch of verdure. At Kohlung I encamped under an old ruined tower, on a bluff commanding a superb view up a reach of the wild Bhága valley, backed by fine snow peaks. Of these, the most imposing and also the most distant, was a splendid cone of snow lying far back to the right or eastward, and which I vaguely conjectured might possibly form one of the Shígri group (exceeding 21,000 ft.) in the range separating the upper courses of the Chandra and Bhága rivers.

Here, at Kohlung, I came up with the Caubul merchants of whose disasters I had heard at Koksar. They were preparing for the next eight or ten days' journey through an uninhabited wilderness, and the camp next morning was astir with the arrival, from all sides, of droves of unruly ponies for the transport of their merchandise. My modest requirements for the same journey had been specially charged, by the Kyélang missionaries, upon a very influential native of these parts and the principal landowner in Lahoul, Tara-Chand by name; and here he was before me, the shrewd, bustling, most unmistakable little Tartar, with a crew of fourteen sturdy unkempt Lahouli porters, and three equally sturdy, unkempt, and also unshod, Lahouli ponies.

There was an hour's rain at starting, the first that had fallen since crossing the Rotáng. I came, at the end of a rather short march, to an open place where two considerable streams from opposite points of the compass emptied themselves into the Bhága. In the angle below the embouchure of the left-hand stream, the Dartche, an immense pile of rocky débris, the ruins of a gigantic landslip from the mountain above, was projected like the moraine of some great glacier, far across the level floor of the valley. On the opposite side of the Dartche I found my tent pitched close under the few miserable huts of Dartche Sumdo (*Sumdo*, 'a place where three ways or rivers meet'), which, at an elevation of 11,800 ft., mark the limits of cultivation and permanent habitation in this valley.

Our first camping-ground in the desert was a wild spot, named Patseo, on the left bank of the stream, a short but rough stage above Dartche. Here Tara-Chand, who had honoured me so far with his escort from Kohlung, took his leave. Herds of sheep, and shaggy *yaks*, and the black tents of their nomad

drovers, added life and picturesqueness to a very savage bit of mountain scenery.

Some little distance higher up, next morning, the valley forked right and left into two deep and rugged gullies. The track to the pass of the Bára Lácha, of which we might now be said to have commenced the ascent, led up the one to the right, over heaps of rocky débris crumbled down from the heights above, to the smooth rocky platform of Zing-zing-bar, or Ching-ching-bar, where, at an elevation of 13,500 ft., we passed a night of such severe cold as to render sleep almost unattainable, and the start at dawn next morning particularly welcome.

We had a long day's work before us. There was first a snow-bridge to be crossed to gain the other bank of the gorge; then miles of the same exasperating beds of shattered rock to be traversed; then a sharp scramble to the brink of a still cold tarn, lying deep in its rocky bed only a few hundred feet below the bare spongy slopes, which, at an elevation of about 16,500 ft., constituted the summit of the pass. I now overlooked a long basin, of which the western corner was occupied by the tarn I had just skirted; the heights that formed its eastern rim were very heavily snowed, and a depression to the right of them, looking south-east, was pointed out to me as admitting into this pass a track leading up from the wild region of Spiti along the head waters of the Chandra. Hence the name of the pass—*Bára Lácha*, 'the crest of the cross roads.' The view was for the most part bounded by the walls of the basin. Two or three savage black peaks, probably in the Spiti ranges, showed themselves over the depression to the south-east, and I caught a glimpse, far away westwards over the gorge I had been ascending, of a fine cone of snow, rising out of dreary snow-fields. Northwards, a glen of which only a few miles were visible sloped very gently away from the summit of the pass. Down this the path continued on the left bank of the stream draining the pass, and which, constantly fed on either hand by rivulets from snow-fields above, opened out three or four miles lower down into a little lake, Namtso, or Yunámtso, perhaps a mile in diameter. A large flock of wild-fowl lay motionless upon its still surface. To the lake, whose western margin we skirted, succeeded broken sandy tracts burrowed by large light-coloured marmots. Then a few rickety spars across a rocky chasm carried us to the right bank of the now formidable torrent. There was an abrupt descent amongst stupendous fragments of rock to a grassy plain, and lower still, on a green flat screened from the river by sandy hillocks—our camping-ground of Kilung.

Porters and servants were long and late in coming up, for the march had been a very fatiguing one. The Madrasee was not among them, and the others said they believed he had missed the bridge and ridden forward (he had been too sickly to walk the last day or two) with the Caubul party, on the wrong side of the river. Their heavily-laden ponies would have broken through the crazy bridge, and the torrent would not be fordable until the night's frost should have locked up its sources in the snow-fields. I could see their camp fires on the mountain-side over the river, and concluding they would bring Madrasee over with them in the morning, transferred any anxiety I might have felt on his account to the subject of dinner, which had begun to wear an ugly appearance of indefinite adjournment. But without hesitation Kashmiri flung himself into the breach, and succeeded in acquitting himself after a fashion that went far to console me for the absence of the real *chef*.

I waited vainly next morning for some sign of movement in the Caubuli camp—then, striking tent, pushed onwards along a narrow plain, shut in by ridges from whose arid glowing flanks the sun's rays were reflected with an intensity of heat quite unlooked for at so lofty an elevation. The river flowed for the most part out of sight on the left, along the deep channel it had cut for itself through the alluvial platform. The perpendicular sides of this channel were, in places, eroded in the most singular manner into the semblance of buttresses supporting a sort of castellated cornice. The effect was strangely architectural and artificial. I came at the end of about nine miles to the next camping ground—Sertchu (probably the *Chérpa* of Cunningham), a gravelly flat, lying low along the river above its junction with a large stream, the Lingti, flowing from the east. The low matted *Dama*, or Tibetan furze, grew abundantly about, a shrub which seems providentially placed in these wilds to afford fuel to travellers.

Late in the afternoon the Caubul party came up, but my servant was not with them, and I now learnt, to my great alarm, that he had left their camp to rejoin me at dark the previous evening. No action could be taken at that late hour, but before dawn next morning, whilst the moon was still bright, a couple of Lahoulis, one mounted, the other on foot, left the camp under strict orders to search carefully the valley and river in the neighbourhood of yesterday's ground. Towards noon *two* horsemen were descried coming towards us along the plain. Could the second be the lost man? They grew rapidly into distinctness under my glass, and then, as I recognised in the

hindmost the Lahouli who had left the camp that morning on foot, now bestriding the missing Madrasee's pony, all suspense was ended in the certainty of some great calamity. The Lahoulis rode up and told their brief story. They had found the pony quietly grazing upon the mountain side above the spot where the merchants had bivouacked, and as for the Madrasee, they added with the utmost unconcern that he was lying drowned in the river. Taking Kashmiri with me I rode hastily back up the valley. There, just above my old camp, lay the body, as the Lahoulis had indicated, stranded upon a shoal of pebbles, from which the torrent, sweeping down on either side in great fury and volume, seemed to cut off all access. Fortunately a party of six or eight swarthy Mussulman pedlars of Askárdu were busy cooking their evening meal under some rocks close by, and, for the sake of a few rupees, unconcernedly stalked, hand in hand, into the roaring flood. Several times the chain swayed violently, as if about to break, but the sturdy fellows struggled on gamely, and at last I had the satisfaction of seeing them emerge upon the shoal, take up the body, and carry it with comparative ease through the other arm of the torrent to the opposite bank, to gain which I had to make a long détour up the valley by the bridge, crossed two days before in descending the pass.

There were some ugly bruises about the head of the corpse, naturally accounted for by the rocks and boulders that strewed the bed of the torrent; but I was puzzled to understand how the action of the water could have turned the whole of the pockets so neatly inside out, and removed a showy ring so carefully from one of the fingers. One of two inferences seemed inevitable, either he had been washed out of his saddle, madly attempting to ford the river at nightfall, and afterwards, lying upon that exposed bank during the better part of two days, had attracted the cupidity of some unscrupulous passers-by, or in the growing darkness had been followed down to the bank, knocked on the head, rifled, and then thrown into the river by some one or more of the ruffianly Affghans who hung upon the skirts of the Caubul party.

We carried him up from the river to a sandy hillock, in which, whilst Kashmiri reverently wrapt about him a cotton shroud he had thoughtfully brought from the camp for the purpose, the Askárdu men scooped out with their hands a shallow grave; and there, with a cairn of stones at his head, we left him; the honest Askardians, with a handful of rupees now between them and their ragged poverty, to make merry over their scant evening meal; the others of us to ride back in

silence over the long moon-lit plain, to the distant point of light that marked my little tent-home in the wilderness.

My Lahoulis were not one whit less cheery and unconcerned that night in camp than usual. In fact they treated the occurrence with the utmost levity, as quite in the natural order of things in those wilds. But Jamál Khán and the *bhishti* were evidently affected. Looking out from my tent long after midnight, I could see them still cowering together over the embers of the fire, the *bhishti* drawing dreamy consolation from his bubbling *nargilleh*, whilst in solemn tones the follower of the prophet expounded to him the cruel *Kismet* that had led on their unhappy comrade from his distant Calcutta home to his grave in this wilderness.

Early next morning we forded the Lingti river, here the boundary between British Lahoul and the dominions of the Maharajah of Kashmir, a rapid, tolerably smooth stream, nearly waist deep in the mid current. Two of the Lahoulis best acquainted with the ford led the way, the others with the baggage followed hand in hand, the foremost man steadying himself with a firm grip upon the tail of my pony, and so all reached the other bank with no other casualty than the immersion of one of the *khiltas*.

The strip of plain along which we had been marching from the foot of the Bára Lácha narrowed to a point as the bounding ridges approached one another, and our next camping ground, Gyám (13,500 ft.), was a little shelf of rock just big enough for my tent on the mountain side, above the Lingti, whose broad bed here filled up the whole valley. Next day (August 17) I crossed the Lúnga Lácha pass in a long and harassing march, during which I had my first experience of the unpleasant effects which highly rarefied atmosphere, inclement weather, and severe exertion combine to produce at great elevations.

Giddiness, acute headache, nausea, were the more specific sensations, agreeably superadded to a general feeling of intense misery, and profound mental and physical depression. With me, fortunately, this enviable complication only endured for a few hours in the middle of the day, and then intermittently. I noticed that I invariably felt better going down a hill than up one, and that there was a subtle correspondence between the fitful gleams of sunshine and my lucid intervals.

The sufferings of Kashmiri and the Caubul merchants were evidently much more continuous and acute than my own, the climax in fact of a general derangement of which they had been complaining ever since the passage of the Bára Lácha.

They were not to be reasoned out of their intense belief that it was all attributable to the poisonous exhalations of some mythical '*dewaï ghás*,' or 'medicine grass,' which they averred grew about in these regions, though no specimen of it was ever forthcoming.

The ascent of the Lúnga Lácha commenced with great abruptness from the little rocky shelf of Gyám overlooking the Lingti. The path led by steep zigzags up, and then along, barren heights, separated on the right by a profound valley from other and still more utterly dreary and desolate ranges, whose scarred slopes I swept vainly with my glass for the smallest trace of living thing—veritably

> 'a waste land, where no one comes,
> Or hath come, since the making of the world.'

Only, close at hand, a solitary snow pheasant, hardly distinguishable in colour from the rock upon which it was perched, kept a suspicious eye upon my movements. Then a long file of sheep and goats met us in the narrow path, each laden with a little pack of wool or borax, urged forward by ragged Tartar drovers and a pair of big black surly dogs.

Soon afterwards the track dipped into a glen, out of which again it mounted no very great way to the actual crest of the pass (16,750 ft.), and then descended for several miles along a defile of the most savage and rugged character. This terminated in an apparent *cul-de-sac*, overhung by precipices which, on the left, rose up into a splendid obelisk-shaped aiguille of, apparently, granite. Down a chaotic pile of rocks I climbed thankfully out of the pitiless wind into this quiet nook, where at bottom a brook babbled along under the rocks, and on the green sward a Tartar family were bivouacked for the night among their sheep, under the shelter of piles of little bales of borax and *pushm* (fine wool), destined for the markets of Hindostan. The good wife was busy brewing in a great cauldron the national beverage of tea-soup, and observing the exhausted looks of the stranger, insisted upon his refreshing himself with the as yet unknown and formidable looking mixture. Having ladled some of the tea out of the cauldron into a small portable churn, she proceeded to work it up with *ghee*, or clarified butter, into the consistency of rich chocolate, and then filled me out a bowl of it, at the same time putting into the palm of my left hand a little heap of a kind of oatmeal (*suttoo*), which it appeared to be the correct thing to knead up into little balls in the tea. The flavour was as of cocoa seasoned with salt and Parmesan cheese. I found it very palatable.

It was almost dark before the tired Lahoulis made their appearance with the baggage, the wiry old *bhishti* with the inevitable pipe at his lips marshalling the way, as fresh, to all appearance, as at the hour of starting. A morning pill of *úfim* (opium) was at the bottom, I afterwards found, of his wonderful powers of endurance. Much rain and hail fell during the cheerless night, and heights over head, bare in the evening, were, when morning came, all powdered with fresh snow. Through a rift in the walls of our rock-built eyrie we escaped with the rivulet into a more open glen, where I recall a fantastic spectacle of flying buttresses and spires, as of some buried minster, boldly carved out of the steep face of yellow conglomerate. Then the character of the scenery underwent a striking change as, having splashed through a shallow stream, and scaled the steep slopes of a crumbling escarpment, we stood upon the edges of a lofty table-land. Its actual extent was a mystery. I could only conjecture that the great bare plain stretching away some twelve miles by six before us, between ranges of low barren hills, formed possibly but one of many similar portions of an extensive plateau, broken up by the ramifications of an intricate mountain system.

In the centre of this remarkable plain, named after the *kyáng*, or wild horse, which haunts its thinly-grassed surface, a little low wall of stones, loosely built up to screen the wayfarer from the cutting night wind, marked the camping ground of Kyángchu. Here I pitched my tent at an elevation of 15,800 ft. above the sea. The Caubul merchants laid out their camp close by, ensconcing themselves as snugly as possible between their piled-up bales of merchandise.

I had ridden the greater part of the day alongside the leader of their party, Bachcha Khán, an elderly man of the most stately manners and bearing, a veritable prince among merchants. My uncertain Hindustani and his somewhat inarticulate utterance rendered conversation a thing of shreds and patches; but I managed to glean some points of the story of a life spent in the very romance of commerce.

He was now on his year-long journey from Calcutta back to Caubul, by the circuitous but profitable route through Léh, Yarkand, Kashgar, and other marts of Central Asia, where he counted upon disposing most advantageously of the bales of English prints and white cotton cloths, for which, at one point or another, he had bartered his Yarkand horses, boxes of the delicate Caubul grapes so grateful to the Anglo-Indian palate, dried fruits, wool, raw and manufactured, and other products of strange countries beyond our north-western frontier. He

spoke wearily of the vastness of the mountain barrier yet to be surmounted, adding, that much as he was then suffering at that lofty and bleak elevation, greater hardships still were in store for him in the frightful deserts of the Karakorám in the mountains between Léh and Yarkand. With him were several companions, partners probably in his venture, men only less dignified than himself, and as richly attired in furred robes and voluminous turbans, whilst two or three fierce-looking Affghans (whom I privately suspected of having had a hand in the rifling, if not worse, of the poor Madrasee), picturesquely armed with lance and shield, brought up the rear of the long file of forty or fifty heavily-laden Lahouli ponies. We had a terrible night of it. A freezing wind swept in violent gusts along the plain, and at intervals a pelting storm of hail peppered us with its icy missiles. Evidently with the advance of the season the weather was becoming shamefully unsettled. Sleep, that night was not to be won any more under canvas than out there, *sub Jove frigido*, alongside the parapet; but probably my people, curled up closely beneath the wall with their feet to the fire of Tibetan furze, were, of the two, the least deserving of pity.

A number of wild horses came about, at dawn, to reconnoitre our position. They were seen by some early risers in the Caubuli camp, but had disappeared when I came to start, a couple of hours later.

We traversed the plain to its north-west corner, and then turned up a narrow prolongation of it between long low ridges. Passing a *máné* shortly after the commencement of this narrow strip, the horse I was riding suddenly started back snorting with terror, and all at once I became aware of a horrible odour of decaying mortality proceeding, apparently, from the centre of the pile. I learnt afterwards that a Caubuli, who had gone on some days in advance of the main party to provide means of further transport, had succumbed to this rigorous climate, and his comrades had that morning been putting him out of the way either in the *máné* or a shallow hole at its base.

Further up the winding strip of plain, towards the end of the day's march, we came to the low black tents of Rukchin, the summer home, at a height of 15,800 feet, of nomad Tartar shepherds, who resort to this uncomfortable elevation with their flocks of sheep and yáks for the sake of the rich pasture lying about some marshy pools of fresh water in the neighbourhood.

We had another trying night in camp. In the morning

Kashmiri was so exceedingly ill as to render further progress that day out of the question. I gave him some tea, saw him snugly laid by a great bonfire of furze, and then, just as he was beginning in the most affecting manner to groan out his last will and testament into the ear of the utterly apathetic *bhishti*, started off to explore the adjacent valley of the salt-lake Tso-kar on the other side of the low ridge to the eastward.

The view from the windy shoulder of the ridge was very striking. Across the yellow floor of a great desert valley or basin stretched a small lake, perhaps five miles by two, whose blue expanse stood out vividly against the silvery band of saline crust that everywhere bordered its margin. Flocks of wild geese, the only signs of life in the desolate landscape, lay pluming themselves on its shallow reaches. A clearly marked horizontal line, everywhere visible at the height of about a couple of hundred feet along the face of the mountains opposite, told plainly that this little sheet of water was but the dregs of the great lake that at some former period had filled up the whole valley.

Kashmiri was so far convalescent next morning as to be able to bestride one of the broad-backed little yáks I had taken on here at Rukchin to replace my homeward-bound crew of Lahoulis, so there was nothing to prevent our pushing on ten or twelve miles to the next camping ground of Larsa, at the head of the narrow plain we had now been for three days traversing, and which here, in an amphitheatre of lofty hills, ended abruptly at the southern foot of the Tunglung pass. Ghýa, the first village of Ladák, lay just on the other side of it; and, full of novelty and interest as these desert high-lands had been to me, I confess I found myself sharing in the childish glee with which my servants looked forward to a speedy escape from this terribly rigorous climate into more genial regions.

Our camping ground of Larsa was at a height of 16,400 ft., so that the crest of the pass (17,750 ft.) which we scaled next morning was but 1,350 ft. above us; but the ascent was exceedingly steep, and the slightest exertion in that rarefied atmosphere seemed to make respiration acutely painful. The pass on that side was free from snow, but it lay heavily on the adjacent heights, and there was a large patch of it just below the crest on the northern face. The descent, at first very steep along the margin of this snow-bed, afterwards became very gradual as we traversed a dreary defile that seemed interminable. At last the shining spirelets of fantastically be-

dragoned *chóktens*, then barley-fields of most refreshing green, and finally masses of white flat-topped buildings, made most cheerfully apparent the welcome fact of our return to the permanent habitations of men. I pitched my tent on an open space in the centre of this quaint village of Ghýa (13,600 ft. and one of the loftiest permanently inhabited places in the world), in full view of the *gonpa* or monastery, which, perched on a high cliff across the ravine, 'in a wrinkle of the monstrous hill,' looked down with stony indifference upon us from serene heights of spiritual abstraction. No Bedouin in the heart of a great city could have felt more uncomfortable than my quaint Rukchin drover and his herd of coal-black shaggy yáks seemed to be, in this little hand's-breadth of settled abode. Stolidly proof against all allurements to longer exile from their congenial wilds, they disappeared up the pass behind us at sunrise next morning, and henceforward the little wrinkled ragged ladies of Ladák did the lion's share of duty in my transport service.

A ravine fifteen miles in length opened a way from Ghýa into the valley of the Indus. From end to end of this wonderful corridor the rocky walls seemed at every turn to indulge in some new and superb freak of form and colour, reds and yellows predominating in gaudy contrast to the tender green of the margin of the stream below. Very strange to the eye were the long straight grooves traversing at intervals steep planes of rock from base to summit, as smooth and mechanically regular as if the gigantic chisel of some by-gone age had been at work there. More startling still was the apparition, at a sudden bend, of a troop of wild creatures leisurely advancing in single file along the ledges of the opposite face of the ravine. Sheep of some strange wild sort evidently, from their tell-tale heads, though remarkably deer-like in general form, and particularly in the length of their slender delicate legs. Kashmiri in great excitement ran back for the rifle, which, somehow, through sheer want of employment, had got into a provoking way of lagging in the rear; but it came up too late to do more than add to the tumult of the stampedo up the crumbling cliffs.

Midway down, the ravine opened out for a moment, as if grudgingly, to yield sites among its red rocks for the scattered village of Miru, and then again contracting its rugged walls until track and stream through seven miles of narrow way seemed to be ever jostling one another, cast us out finally upon the meadows of Upshi by the gravelly shores of the great *Senge-kha-báb*.

The father of Indian rivers presented at this point a respectable but not imposing appearance. His stream, barely twenty yards in width, was flowing over its boulder-strewn bed very swiftly, it is true, and past all hope of fording, but with little of that fierceness appropriate to its mysterious descent from the mouth of the fabled lion. Next morning, from a high alluvial bank, which the path surmounted shortly after quitting Upshi, there opened out a magnificent view of the valley of the Indus, down which my route lay for the next four or five marches. The rugged bounding ranges, closely skirting the river at Upshi, now gradually trended away until, at a point some twenty miles lower down, opposite the hidden city of Léh, there was a breadth of at least six or seven miles of open valley with an obliquely receding background of purple snow-tipped mountains. No cultivation was visible from this point, and the entire scene was one of the most picturesque desolation.

Onward the track led for miles, across plateaux of stony desert ever widening between river and mountain. At last a long line of refreshing verdure rose into sight upon the edges of a great lateral ravine. This was the oasis of Marsilang, and I felt, after that howling wilderness of Rupchu, as if I could never have enough of the music of its watercourses and the shade of its leafy labyrinths of willow and poplar. An excursion, opportunely suggested next morning by Kashmiri, to the neighbouring monastery of Himis, furnished an unanswerable reason for lingering another day about these pleasant green places of Marsilang. I crossed the desert slopes to the rocky bases of the great mountains walling in the valley on the west, and then turning into a narrow gorge, came suddenly into view of the brilliantly white, flat-roofed pile of the monastery, of which from without no trace whatever had been visible. It lay on a platform some distance above the bed of the gorge, in which many very large poplars were growing. Close above it towered yellow crags, on many of which, at an astonishing height, were perched little shrines and cells, evidently long since deserted by the degenerate descendants of earlier and sterner anchorites.

A score of red-robed, red-booted Lamas, redolent of an odour not of sanctity, crowded out to stare at me in the courtyard. I was told that the rest of the fraternity (some hundred in all) were away on errands of pious mendicancy among the villages. I have further Kashmiri's valuable authority for stating (he understood, or pretended to understand, a few sentences of Tibetan, and played the part of interpreter) that the foundation was rich in possessions of flocks and herds; but

the nakedness and squalor of so much of the interior as I was permitted to explore certainly seemed to belie the assertion. The dust and dirt of ages encumbered its dark cells and passages. I have vague recollections of a large refectory, and of a kitchen furnished with a pair of enormous cauldrons. I can more distinctly recall the gloomy chapel where dim perpetual fire was burning upon high altars before strange images, and where, conspicuous among the medley array of offerings before the great image of Boodh, stood an empty Bass's bitter-beer bottle. Musty hangings and *bizarre* pictures adorned the walls, along which in racks, like bottles in wine-bins, reposed the dusty tomes of Buddhist theology.

Each book consisted of a number of long narrow slips of coarse paper, printed lengthwise and enclosed between two bits of red-lacquered board tied together with a thong. From the alacrity with which the old Lama who acted as cicerone transferred one of these to my ownership, it was clear that he, at all events, set little store by its mystical contents. But I was less successful in my attempts to obtain a small portable specimen of the praying cylinders, numbers of which, in various large sizes, were hung upon pivots in niches and shelves all round the quadrangle. Some details of the history of this singular monastery, of which we are told the real Lama name is '*Sang-gye-chi-ku-sung-thug-chi-ten*,' '*The-support-of-the-meaning-of-the-Buddha's-precepts*,' are to be found, I believe, in Herr Emil Schlagintweit's recently published monograph on 'Buddhism in Tibet.'

From the willow groves of Marsilang, whence on the 27th August I made a long double march of twenty miles to Léh, we passed again, at a stride, into the dominion of that all-pervading Tibetan desert. A troop of wild sheep were roaming over its stony expanse, warily contemptuous of my laborious stratagems to creep within rifle distance. Below, at the great garden enclosure of Chishot, the hand of man struggled into mastery, and for miles down the valley the busy harvest fields and wet pastures were models of patient culture and irrigation; but directly we had crossed a low wooden bridge spanning the Indus some miles below Chishot, the wilderness closed in once more upon us. A weary waste of gravel and boulder remained to be traversed to a gap in a long low rocky spur thrown out to the river from the northern mountain chain, and then the out-of-the-world little city of Léh stood suddenly and strangely before me. High up, a spectral keep, towering in vast mass from a spur of yellow rock; below, a confusion of white walls, broken by lines of flat roofs and the deep shadows of long balconied

windows—the whole standing out vividly from a dark background of wild mountains whose recesses were now rapidly filling with the purple gloom of evening. Long low *mánés* and monumental *chóktens*, with their emblazonry of fiery dragons, added unique Tibetan character to the broad intervening space of desert foreground.

Nowhere in my Indian rambles had I seen anything more striking. We crossed a mile or two of stony plain among the *chóktens* and *mánés* to a gateway in the low wall, opening into the single wide street of the silent bazaar. Then, when this ended against the castle rock, we turned to the left, and were guided by devious lanes and footpaths to a plantation of poplars behind the city, overlooking terraces of well-watered meadow sloping to the foot of an amphitheatre of desolate mountains.

Here, from August 28th to September 1st, my camp remained stationary. My servants needed rest, and I certainly thought four days would be little time enough to devote to the wonders of this mother-city of Western Tibet.

First I climbed to the massive seven-storied keep of the old Gyálpos of Ladák, but very quickly climbed down again. The foul obscurity of its long-deserted dens and passages defied exploration. Then I ransacked the lifeless bazaar in quest of strange wares from little known regions of Central Asia. But for two years, owing to a more than usually anarchical state of affairs beyond the northern frontier, no caravans had arrived from Yarkand (though one, at last, was reported within ten days' journey), and there was positively nothing in all Léh but a few bricks of the coarsest tea, some inferior yáks' tails, and a pair or two of Tartar woollen boots and felt leggings. As a last resource, I entered into delicate negotiations with a Tibetan lady, with the view of becoming the proprietor of her head-dress—an unusually showy specimen of the long band of cloth or leather, studded with turquoises and silver ornaments, worn by the women of Tibet from the brow over the back of the head to the girdle behind, and secured there along with the ropy tresses of thinly-plaited hair. But here, too, I was foiled. The fair Ladakhi's vanity was not to be estimated even in glittering 'Kumpani's' rupees, and I was permitted merely to give a fabulous price for two of the turquoises, which eventually a London jeweller pronounced worthless. On the whole, the emptiness of this fair whited sepulchre of Léh was not creditable to the paternal rule of our excellent ally the Sikh Maharajah of Kashmir. One morning my Caubul friend, Bachcha Khán, presented himself at the tent door with a thank-offering

of fresh fruit, apples and apricots, and a little bag, whose silver contents he proceeded with many courtly phrases to count out before me. A few rouleaux of my rupees had been of considerable service to him some days before at Rukchin, when short of funds to meet the demands of his Lahouli drovers. Here we were to part company. I calculated upon reaching Kashmir in a fortnight's easy marching, upon a westerly line. He would wait the arrival of the approaching caravan, before starting upon his long month's arduous journey over lofty passes and desert regions due north to the next market city of Yarkand.

On September 1st I broke up camp at Léh, and leaving the little city as I had entered it, by the street of the bazaar and the western gate, marched down the stony plain falling away gently three or four miles to the Indus. Right opposite, across the broad valley, and 10,000 feet above it, rose the fine snowy peak of Tók (21,000 ft.), the loftiest point visible in the rugged chain bordering the left bank of the Indus.

The path led to the river, and then turned away from it up into a wide tract of desert, interposed between the mountain wall on the right and the rapidly receding Indus, soon hidden behind a screen of low hills. We were unusually late. The freshness of the morning had slipped away from me whilst absorbed at the city gate over my sketch-book, and the sun was now high overhead, flooding with intolerable light the long wastes of yellow gravel. I can remember how, as we toiled on wearily through the glare and heat, all at once there floated before my thirsty eyes a vision of cool still waters, as of a lake stretching far into the recesses of a lovely mountain bay, whose shores were everywhere fringed with luxuriant forest. For a moment the delightful cheat imposed upon me. Then dull sense rudely waking up, passed over the lake as a phenomenon within the bounds of possibility, but denied flatly the right of any such stately masses of foliage to exist in that Tibetan wilderness. And, as we drew nearer, shadowy forest died down into bare rock, and the expanse of limpid water sank into the glowing shingle of the desert.

At last the Indus came back from its long bend, and the path turning to meet it down a ravine by the margin of a babbling brook, led us out on to a broad shelf of verdure hung between mountain and river; and here, fourteen miles from Léh, I pitched my tent among the busy harvest fields of Nyémo.

The next day's march was very similar in character. The river again wandered away from us, and the track, leaving

behind it Nyémo, and Bazgo with its orchards and rock-perched ruins, turned up, as before, into a wide desert region. Here, among low bare hills shutting out the river, I came to a secluded plain, over which wild sheep of the same species as those previously encountered (? *shalmar* or *shapoo*) were wandering. A troop of morose old males with the most tempting heads kept warily in the open out of the possibility of mischief, but I observed with satisfaction a large flock of females and young constantly straying towards a rib of rock most felicitously disposed across the plain. With the aid of a sporting Tartar of my company I essayed a laborious stalk, which seemed just on the point of leading to the happiest results, when a precocious lamb, in a fit of the most unwarrantable curiosity, frisked up the rocks, and coming suddenly over a ledge upon a pair of strange uncomfortable quadrupeds, bounded back to infect the rest of the advancing herd with its own horrid fright. That it did not pay for its temerity with its life was perhaps due, that exciting moment, rather to a certain obliquity of vision than to any regard for its tender years, or (from a sporting point of view) worthless head. As it was, all escaped; and the flock of males, charging in splendid form up the steep face of the opposite hill, drew up just over the top into line, with heads and tall horns vividly defined against the sky, and so kept motionless watch until the baffled enemy had faded to a speck upon the plain.

The mountains on either hand now drew together, until, beyond the village of Saspola, the valley assumed the character of a wild and rocky gorge. It became necessary at this point to cross by a few ricketty spars to the left bank of the Indus, as the bridge at Khaltse lower down on the main route had been broken away. A mile or two further on, and at least fourteen or fifteen from Nyémo, I found a picturesque spot for my camp by the little village of Gehra, on a high narrow shelf overlooking the river, and itself overhung by lofty crags.

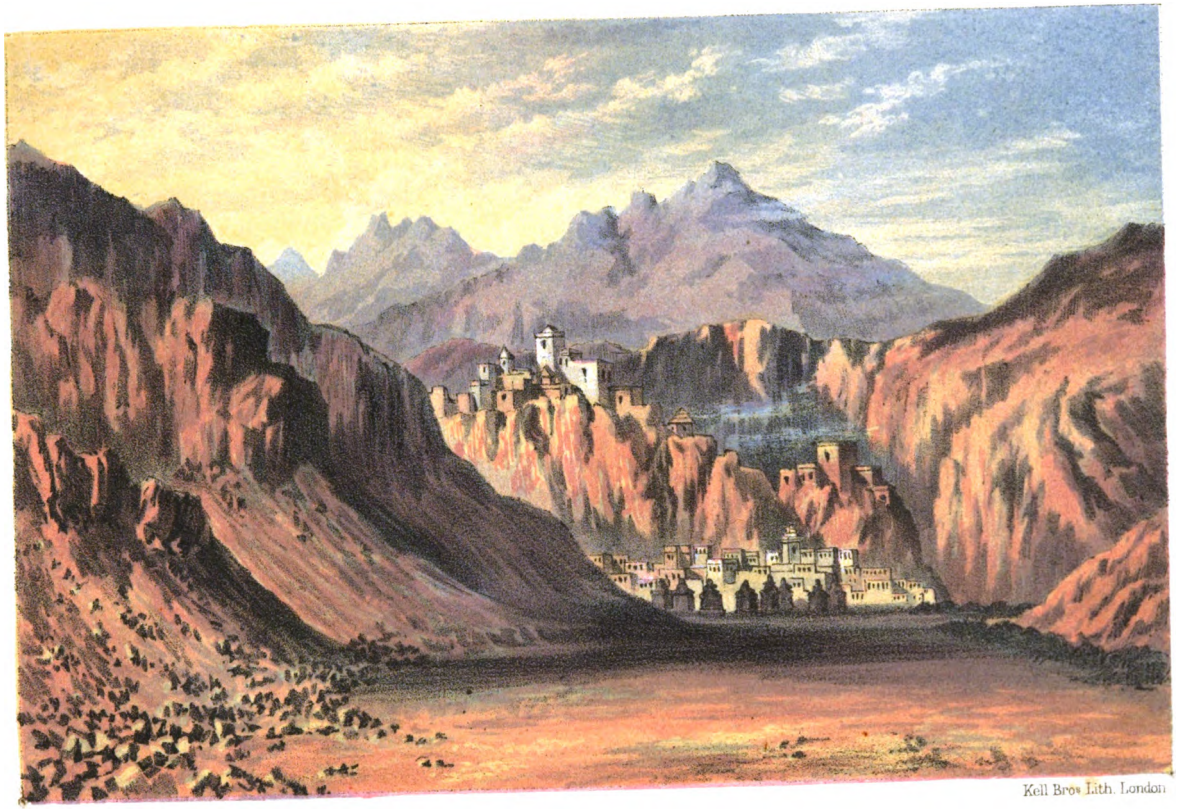
All next day we followed the unfrequented by-path creeping up and down rocks and round the crumbling couloirs of ravines falling away steeply to the Indus. At one point we crossed, at a great height and for a considerable distance, a steep talus of shale descending from an airy line of scarped cliffs, and ending most unpleasantly below upon the edges of precipices overhanging the river. Opposite, on a high and steeply-scarped alluvial platform of considerable width, lay the village of Núrla, in a belt of luxuriant verdure whose fresh tints seemed only to bring out with greater intensity the wonderful desolation of red and yellow rock that elsewhere reigned

supreme in the landscape. Traces of man there were none on my side of the river. There was in fact no standing room for him. Only at the end of the day's march I came to a nameless hamlet of two solitary houses, and there found space for my tent on a turfy knoll under a willow tree.

Khaltse, with its little Sikh fort, was soon opposite to us next morning, and at this point the main route, interrupted for the time being by the destruction of the bridge, rejoined us from the right bank of the river. Nowhere had the valley of the Indus seemed so wild and rugged as below Khaltse. But we had barely descended three miles of it before the path, turning suddenly up from the river, entered the deep and narrow gorge through which the Wandla torrent finds its way to the Indus. We skirted its winding channel through miles of superb rock scenery. Then, after a sudden and steep ascent under high cavernous cliffs, came the greatest surprise of all—a deep green basin walled in by bare crumbling cliffs, crowned, just above the opening through which we had climbed into it, by the village and monastery of Láma Yúru. The accompanying picture gives a view of this picturesque spot, as seen from the slopes of the Photo La pass at the upper end of the basin.

Láma Yúru has an elevation of about 11,600 feet. An hour's easy walking next morning up gravelly hollows among low bare heights, carried me to the top of the Photo La (13,600 ft.). I dropped down to Karbu in the dreary valley of the Kánji river, and the following day crossed the Námika La, resembling, in its scenery and easy gradients, the Phóto La, but about 1,000 ft. lower. The barrenness of the arid wastes of mountain and valley, overlooked from these dismal passes, was positively repulsive. The desolation of the Indus valley had been imposing in its force of colour and abruptness of outline; but here naked sterility seemed to stand out in all its natural hideousness.

During the descent from the Námika La, by the valley of the Pashkyam river to Shurgol, I came upon the gigantic representation of some Tibetan deity, carved in relief on the face of an isolated rock close to the path. I had met with few outward signs of Buddhism since leaving Láma Yúru, and this, the most remarkable, was also, I think, the last: henceforward Mahomet supplanted Buddha. Mohammedanism is popularly regarded as less objectionable than the grosser forms of heathenism; the notion being that it has at all events something, however little, in common with Christianity. Indeed my Kashmiri, who was fond of arguing upon these matters, used to maintain with much subtleness, that when the little diffi-



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LA´MA YU´RU.

from a drawing by J. F. Cheetham.

culty about the prohibition of wine had been (as it easily could be) got over, there remained only this essential difference between Mussulman and Christian, that the one ate pork and the other did not. Nevertheless, I see no matter for congratulation in the stealthy advance of Mohammedanism, from the west, up these Tibetan valleys. The Hindu or the Buddhist, whatever else he may be, is not, like the follower of the prophet, a truculent fanatic piously thirsting for the conversion, or the life, of unbelievers in general, and of Christian infidel dogs in particular. Western civilization has, through all heathendom, no foe half so dangerous as the Moslem.

The march from Shurgol to Kargil (Sept. 7) offered some boldly marked transitions of scenery. A rocky glen, nine or ten miles in length, opened out suddenly at Pashkyam into a richly cultivated well-wooded basin, which was as abruptly succeeded by a superlatively rugged and desert plateau, lying at a great height between the converging Pashkyam and Kártse rivers. Kashmiri had some story to tell of a sanguinary two days' battle that had been fought out on this stony plain between Ghooláb Singh's Sikhs and the Tibetans. At the confluence of the rivers a long straggling bridge, commanded by a little Sikh fort, carried us over to the scattered village of Kargil, lying up the steep left bank of the Kártse. The defile through which this stream poured from the south its furious torrent of glacier water opened up a wonderful glimpse of a distant range of grand snowy mountains, the continuation of the central Himalayan chain I had crossed much lower down at the Bára Lácha, and at this point dividing Tibet from the Wárdwán valley, at the south-east corner of Kashmir. I was told of a track that way, rarely followed by European travellers, up the Kártse and Súru rivers and over one or two lofty passes eight or ten days' journey to Islamabád, the second city of Kashmir, at the upper or south end of the valley. The scenery could hardly fail to exceed in point of grandeur that of the ordinary route by Drás and the Tsoji La.

My tent that evening, at Kargil, was besieged by the sick and halt of the neighbourhood, and I found myself helplessly committed to an extensive medical practice. My first patient was a learned and venerable Kashmir Pundit, who represented himself as in great agony from the effects of a surfeit of sweetmeats. I quite expected that the savage remedies I maliciously administered would have read him a salutary moral, as well as physical, lesson, but he came next morning, overflowing with gratitude, 'a new man,' as he expressed it, to beg for a liberal supply of the wonderful drug whose potency would hence-

forward enable him to sin with impunity. After this my reputation was established, and I could afford to disregard the mutterings of an old lady for whose sore eyes I had no ointments, and the abusive scepticism of a leering cripple for whose chronic rheumatism I positively refused to prescribe my only bottle of brandy.

Not very far below Kargil the Kártse received the waters of the Drás river, descending from the west through a wild and rugged valley. Up this the track continued, at a great height above the stream and over rough and difficult ground. I observed at one point a gang of wretched natives, far below me, washing the sands of the river for gold. I camped below the village of Karbu, and the following day marched up into the broad upland plain of Drás, elevated about 10,000 ft., green under foot, but surrounded by mountains of the usual Tibetan barrenness. Several of these rose considerably above the snow line, notably the Drás peak (19,400 ft.), and further away to the south-west a cluster of rocky snow-tipped mountains marked the head of the first Kashmir valley.

Towards these I pressed forward next morning (Sept. 10), past the lonely *killa*, or fort of Drás, to the left-hand corner of the plain, where I turned up a tolerably open well-grassed valley, winding, with a very gentle ascent, between lofty and often very abrupt hills. I halted early in the day for some goat's milk at the wretched village of Pandrás. Some hours later the chalets of Máten or Matáï lay opposite to us across the stream, the last inhabited spot on the Tibetan side of the pass. Then, as the snow-cliffs of the Machahói peak (18,000 ft.) rose finely into view directly in front, I came to a grassy knoll (my people called it Káru), on whose broad top I pitched my tent for the night, in the midst of a cheerful colony of marmots.

We had a good deal of difficulty in the morning in fording a swollen torrent crossing the path from the right, and the operation was not rendered any the more pleasant by the reflection that three or four men had been washed away a few days before. Further up, the track passed close under the foot of the fine Machahói glacier streaming down a ravine on the left. The herbage had long been luxuriant underfoot, but now thickets of dwarf willow and juniper began to clothe the hillsides, marking the transition to a more humid and genial climate. It became at last difficult to say whether we were ascending or descending, but presently a rivulet flowing towards the south out of a little tarn showed that the summit of the pass (11,400 ft.) had already been left behind.

Here a tempest of hail routed us. I crept with my servants under the little blanket tent of a Srinágar merchant travelling to Léh, whilst the porters took to their heels down the pass in a state of utter demoralization. The prolonged fury of the storm called to mind stories I had heard of the readiness of these hill-men to succumb to bad weather, and I began at last to feel very uneasy about the fugitives. Jamál Khán amused himself by making a cheerful calculation of the number of frozen bodies we should presently find bestrewing the path, and it was only too true that, but a very short time before, an English traveller had lost several of his coolies in a snow-storm on a neighbouring pass leading to Askárdu. But we had not long emerged from our shelter before sounds suggestive of anything but woe were borne by the gale to our ears, and further on a hut of refuge came into sight, in which I found the runaway crew making merry round a roaring fire they had kindled with the aid of their *chak-maks*, or flint-and-steel pouches, out of a heap of dry brushwood. At this point the long glen (it might almost be called a continuation of the plain of Drás, so uniformly gentle had been its slope) ended abruptly in a steep gully, blocked up some way down with a mass of snow, beneath which the stream disappeared into a chasm of unknown depth; whilst the track, crossing to the right over the snow bed, mounted steeply through a pretty birch wood, to a point on the shoulder of the ridge to which, as being somewhat higher than the true pass at the water-shed, the name Tsoji-La strictly belongs.

I venture to differ with the traveller who, coming to this spot as I then did out of the Tibetan wilderness, was content to describe as 'in itself ordinary enough' the view that there burst upon him. Undoubtedly some allowance must be made for the force of contrast. Still, I do not think I have ever among mountains come upon anything more beautiful than that first glimpse of a Kashmir valley. There was not the vastness which had elsewhere characterized Himalayan scenery; but peaks rising to 18,000 ft. were lofty enough for grandeur, and it seemed to me that I had nowhere looked upon so exquisite a combination of rich forest and park-like glade, emerald alp, purple rock, and dazzling snow, as then lay before me in that highland valley of Baltal.

I ran down a couple of thousand feet, waist deep in drenching herbage, to find shelter from another storm that was now threatening in the log-hut of Baltal at the foot of the pass, at a height of 9,300 ft. Thence the valley was a continuous park to the cabins of Serbal; their smoky interiors were

already overcrowded with parties of Kashmiri and Tibetan wayfarers, and I was compelled to make the best of a very cold snowy night under canvas. The six or eight log-houses of Sonamárg, the uppermost village of the valley, were an hour and a half's delightful walk lower down, next morning, and then the stream swept for miles through a rocky gorge clothed on either hand with dense forest. Afterwards, as the valley became more open, log-built villages, with roofs sometimes of timber, sometimes of thatch, began to make their appearance in the almost unbroken wood of deciduous forest timber and half wild fruit trees. I halted for the night at the third or fourth of these, Kúllan, and here my crew of Drás coolies took their departure. Next morning at the village of Sirsingh, seven or eight miles lower down, I fell into the toils of a local *shikári*, or hunter, who, with true Kashmirian mendacity, drew such a beguiling picture of the herds of ibex up a craggy mountain overlooking the village, that I not only climbed it out of hand, but remained a couple of nights under a rock near the top, on the look out for the promised game, which eventually presented itself in the shape of a flock of the most domestic of goats. I was however consoled for the cheat by a superb view of the entire length of the valley of the Sindh river I had been descending, with the enclosing mountain ranges, and, away to the west, of a portion of the great Kashmir basin with the snowy chain of the Pir Panjal and Ratan Pir shutting it in from the plains of the Punjab.

Another excuse for lingering in this loveliest of valleys turned up a few miles further on at the village of Tyhún, where the walnut-trees were being nightly plundered of their ripening fruit by marauding bears from the neighbouring mountains. I trust my candour will be sufficiently appreciated when I record the blank results of the three nights' campaign I waged against these grisly robbers. After all, a black bear in a leafy tree on a dark night was not by any means an easy object to take a sight at, at all, much less to hit in a vital part; and though I wounded three or four and tracked them in the daytime for some distance, the thickness of the forest invariably baffled pursuit. I made up, however, for my ill-success some weeks later in the neighbouring valley of the Lidir.

Continuing down the valley from Tyhún, on the 20th, through beautiful tracts of meadow and orchard, I crossed to the left bank of the river and climbed through the woods to the village of Gúttel-bagh, on high ground in the mouth of the valley which here bent from west to south. The next morning

I emerged upon the plain of Kashmir at Ganderbál, where I halted for breakfast under the shade of one of those stately *chunárs* or plane-trees which clustered in groves and formal gardens on the shores of the far-famed lake, and about the crystal fountains of the Thelum, are almost the only surviving monuments of the taste and luxury of the old Moguls. So much of the renowned valley as was visible from this point seemed comparatively bare, and in its lower parts unpleasantly marshy, but there was a charm in the soft balmy air, and in the silvery girdle of surrounding snowy mountain, which quickly dispelled all trace of the first natural feeling of disappointment. Towards evening I came to the crazy capital, and threading its narrow lanes to the broad highway of the smoothly flowing Jhelum, gave myself over into the hands of an eager crew of Srinágar *mánjis* or boatmen—sauciest and yet most insinuating of oriental *gamins*—who, with many a snatch of boisterous melody, paddled me up, under the venerable bridges of deodar logs, above the city to the well-known reach overshadowed by tall poplars and backed by a lofty spur from the eastern mountains. And there I found sweet respite from my wanderings in the only vacant one of the seven or eight little tenements which old Ghooláb Singh, of jovial memory, built to house the visitors he so ostentatiously welcomed of that nation of rovers to whose possibly mistaken generosity he was indebted for his fairest of all mountain kingdoms.

The Tödi and Adula Gebirge. By A. W. Moore.

ALTHOUGH, since its first authentic accomplishment in 1837, the ascent of the Tödi has always been a popular expedition with Swiss mountaineers, yet the peak was, until quite recently, comparatively neglected by our climbers. The district in which it lies is, indeed, rather out of the beat of the great crowd of tourists, and, until the appearance of Mr. Forster's paper in the first series of 'Peaks, Passes, and Glaciers' in 1859, the merits of Stachelberg as a mountaineering centre were little known. A few English parties, I believe, at long intervals, slept at the Sand Alp, with a view of attacking the Tödi, but either from bad weather or other causes the expeditions were without result. In 1863 the whole district was thoroughly explored by the Swiss Alpine Club, which earned the gratitude of all mountaineers by erecting a commodious 'cabane' in a convenient position on

the Grünhorn, on the left bank of the Biferten Glacier, some three hours above the Ober Sand Alp. In the following year Mr. Tuckett crossed the Porta da Spescha, but the ill fortune of his predecessors stuck to him, and the weather was too bad to allow of his climbing the Tödi *en route*. So it came to pass that, up to the summer of 1865, the summit of that mountain remained untrodden by an English foot, and it was the knowledge of this fact which induced Mr. H. Walker and myself to select Stachelberg as the starting-point for our campaign of that year. We hoped to ascend the Tödi from there, and descending on the south side into the Vorder Rhein Thal, reach Andeer on the Splugen road, on our way to Pontresina, through the little explored group of mountains of which the Rheinwaldhorn is chief, and which are known collectively as the 'Adula Gebirge.' This programme we carried out in the expeditions which I am about to describe.

Having left London on the morning of the 18th June, we drove up to the Baths of Stachelberg late on the following evening, and found Jakob Anderegg awaiting our arrival. We had determined to make rather a bold experiment, and endeavour to effect the various expeditions which we contemplated during the season with only his assistance, dispensing with the services of local men, except in the shape of an occasional porter to carry our baggage up to chalets, &c. The complete success which attended the experiment is evidence enough of Jakob's merits, which are moreover sufficiently known by this time to most of the readers of this volume. No time was lost in commencing operations, and at 7.25 A.M. on the 20th we started for the 'cabane' erected by the Swiss Club on the Grünhorn, intending to sleep there and attack the Tödi on the morrow. As two days' provisions had to be taken, and we were otherwise heavily laden, we had instructed Jakob to engage a man as beast of burden as far as the hut, taking care to secure, if possible, some one acquainted with the ground above the Ober Sand Alp, as the way was understood to be rather intricate, and we had no very precise notion of the exact position of the hut. He now produced a man, a native of Berne, who had quitted his own canton, and been settled for some years in the Linth Thal. This individual professed to know all about everything; but the sequel proved that he knew nothing about anything, and I suspect that Jakob, in his desire to serve a compatriot, made his inquiries rather superficial, and was only too glad to take the fellow's knowledge for granted.

Instead of reaching the Ober Sand Alp by the usual path

up the valley, with which we were both acquainted, we determined to follow a route which, though more laborious, would probably be more interesting, viz., by the Altenoren Alp and Clariden Firn. The main outlet of that extensive field of nevé is to the north-east towards the Altenoren Alp, but it sends down several small glaciers in an easterly and south-easterly direction into the deep hollow in which the Ober Sand Alp is situated. Up to 1864 the only known way of reaching the Clariden Firn from the Linth Thal was from the Sand Alp, by climbing the steep grass slopes below the ice at a point where a small stream, the Beckibach, flows down them; but in that year Mr. Tuckett proved its perfect accessibility from the Altenoren Alp, and a combination of the new and old routes struck us as promising an interesting walk. The lower chalets of the Altenoren Alp are perched on a broad shelf of pasture, plainly visible from Stachelberg, on the top of the tremendous cliffs which frown down upon the Pantenbrücke, and are approached by a good but steep path. We reached them at 10.45 in three hours' very easy walking, and another hour up a wild glen, at the head of which was the glacier, took us to the upper chalet, a deserted and ruinous hovel, where we halted for half an hour. The rocks of the Altenoren Stock, on the south side of this glen, are rather curious. When first seen they appear to form an absolute wall, cut clean away from top to bottom, down which no living thing could creep; but on looking back from the head of the glen, this apparent wall resolves itself into a series of steps, separated by great broad shaly ledges, easily accessible one from the other, so that there would be no difficulty at all in gaining the summit. More than an hour of laborious walking over slopes of shale and snow was required before we reached the foot of the glacier, which terminates in a tongue of ice, squeezed in between rocks, and too steep to be climbed except by means of much step-cutting. This was fortunately unnecessary, as on the left bank there was fairly easy access to the level surface above, over slopes of hard shale, stones, snow, and finally moraine, and a stiff scramble landed us on the ice at 1.15. The glacier is very unlike most of its kindred; there is no ice-fall worthy of the name, but long slopes of nevé stretch away towards the Clariden Grat with a regularity broken only by a few crevasses. With these slopes we had now nothing to do. Being on the left bank, we had merely to cross to the right where the nevé curled over towards the Sand Alp free from any bounding ridge. The ice was perfectly level and easy, and at 2.10 we were standing on the further side, on

the rocks above the Beckibach, in a state of bewilderment at the magnificence of the scene before us.

At our feet, in a deep hollow, some 2,000 ft. below, were the chalets of the Ober Sand Alp, with the cliffs of the Tödi behind them, and, more to the left, the grand line of precipices which circles round from the Selbsanft to the Biferten Stock, on the right bank of the Biferten Glacier. There was nothing else; but no similar view in other parts of the Alps has left on me a greater impression of perfect sublimity. The distance from our position to the summit of the Tödi is almost exactly 4,500 mètres, or rather more than $2\frac{3}{4}$ miles, and of the mountain's 11,887 ft. of actual height more than 5,600 ft. were before us, the elevation of the Sand Alp being 6,258 ft. We were ourselves at a height of 8,491 ft., and so were in every respect in the best possible position for appreciating the real form and grandeur of the mountain. It is not a 'peak,' but a broad bastion of rock, so steep on the north side, at which we were looking, that very little snow can lie, and the glaciers are consequently insignificant. As one amongst many higher mountains the Tödi would not perhaps be considered very remarkable, but standing as it does, almost perfectly isolated, and overtopping all its neighbours, there is not a more noble object in the Alps. Steep slopes of grass, gravel, and shale, lay between us and the Sand Alp, and down these we started at 2.30. It was easy work, and at 3.15 we reached the chalets, the walk from Stachelberg having occupied about six hours; but we had travelled slowly and lost time in various ways.

At 3.35 we commenced climbing the slopes behind the châlets in the supposed direction of the 'cabane,' where we were to pass the night. Our porter was here discovered to know nothing whatever of the country, so we had to exercise our own judgment as to the way. Before leaving England, I had read up pretty thoroughly all that has ever been written on the subject of Tödi ascents, and had in consequence a tolerably accurate idea of the proper line of march for a certain distance. The ground was very steep, and the work, after our rapid descent from the Clariden Firn, rather severe. I had a private source of misery in the fact that, in addition to my own load, I had slung round my neck our Russian furnace or 'Teufel,' as Jakob had christened it, of which I had, in a moment of weakness, volunteered to relieve that worthy. The chronic throttling, which was the result, was bad enough, but endurable compared with the jerk with which the machine would at every favourable opportunity swing round from my

back to my front, and, hitting me violently in the stomach, summarily 'bag' what little wind the steepness of the ascent had left me. At 5.50, we reached the top of (I believe) the Ochsenstock, and held a council as to where we ought to go next. Up to this point, I believe that we had followed the proper way, but we were now completely puzzled as to the direction to take. To our right front was a steep and crevassed glacier which flows down from the north-east face of the Tödi, and is represented on the map as terminating a short way above the level of the Biferten Glacier. In fact, however, it actually joins the Biferten Glacier, the lower portion of which was just visible in the gorge below us. I fancied the 'cabane' to be somewhere on the other side of this glacier, and that we ought to cross it; but this course did not look promising, and our porter insisted strongly that the proper way was to the left. This I was certain could not be the case, but he succeeded in humbugging Jakob, and the two set off in that direction to search. A description of our wanderings would be uninteresting; suffice it to say that at 7.30 we were no nearer the 'cabane' than we had been two hours before, and accordingly, having found a tolerable hole, resolved to bivouac. We might have been much worse off, as we had shelter from everything except driving rain, of which there appeared to be no chance; there was plenty of firewood about, and water within easy reach. A fire was lit, the 'Teufel' set to work, and a good brew of soup prepared; we then rolled ourselves in our plaids, and with some difficulty managed to squeeze into the hole, which, with accommodation for two, had upon this occasion to receive four occupants. The cold until early morning was not severe, and on the whole we were not more uncomfortable than is usual under such circumstances.

At 3.0 A.M. on the 21st we very unwillingly emerged from our lair, and, shivering, took up our position round the fire for breakfast. Some hot wine and water put a little warmth into us, and, at 4.10 on a perfectly cloudless morning we started, after dismissing our porter, who had proved neither useful nor ornamental. We were in happy ignorance as to the way we ought to steer, but finally determined to cross the lateral glacier before mentioned and see what lay beyond it. A short ascent took us on to the ice, but we soon began to doubt the wisdom of the choice we had made. The glacier was very steep and crevassed, and the more we looked the less obvious did it become what we were to do when the other side was reached. It was at length resolved to get down at once to the main Biferten Glacier which was below, on our left, as we

knew that, once on it, we should have only to find a way somehow to its head. We therefore turned downwards, but the ice was so steep and hard that getting along without cutting steps was difficult and uncomfortable. On the surface were a good many small stones, still fast bound by the night's frost, and by making use of these as stand-points we got along pretty well, and were approaching the Biferten Glacier, when Walker put his foot on a stone which seemed secure, but was really glazed by a thin film of ice. In an instant he fell with great violence, and commenced an involuntary descent of the slope, but managed to get the point of his axe into the ice and stop himself; but he was unable to move hand or foot, and so lay prone, with his face to the ice, holding on until help came. Jakob on seeing him slip made an effort to catch at and stop him, but in so doing lost his own footing, and unable to recover himself rolled headlong over. In vain did he brandish his axe right and left, in hope of finding some hold—the slope was too steep and the ice too hard—so down he went helplessly over the sharp stones in his course, until the slope became more gentle and he stopped. During this startling performance I was the only member of the party on my legs, and therefore the only one able to appreciate the position of affairs, Walker being so situated that he could see nothing, and only hear the clatter caused by Jakob's fall. For a few moments I was horribly alarmed, as it seemed impossible for a man to roll nearly 100 feet over such ground, and escape serious injury. But so it was, for Jakob quickly picked himself up, and announced himself unhurt except by a few cuts about the hands. He then released Walker, we resumed our way, and at 5.10 reached the Biferten Glacier at a point just below its central ice-fall.

We made straight for the foot of the ice-fall which stretched completely across the glacier, leaving, so far as we could see, no space on either side by which it might be turned. The piece of work which ensued was sufficiently difficult and exciting, but our leader rose to the emergency, and scented out a way with marvellous sagacity, never losing an inch of ground. We were approaching the top of the fall, and expecting shortly to emerge on to the plateau which was visible above, when our progress was stopped by a crevasse of more than ordinary size which we found it impossible either to cross or turn. Success was not hurriedly despaired of, but our situation was too critical to allow of prolonged hesitation. We were not standing on firm ice but over a huge chasm, choked with débris much of which had evidently not long fallen. Where this

fragile roof was less compact than elsewhere we got exquisite but far from reassuring glimpses into the blue depths below. The sun was blazing full upon us from a cloudless sky, and the water was streaming from the icicles which fringed the threatening pinnacles that impended over us. If we could not advance, it was plain we ought not to dawdle where we were, as every moment's delay made even retreat more dangerous; so we yielded to fate, and began to retrace our steps along the devious path which had cost so much trouble to make. A sharp look-out was kept on either side for a practicable opening in the maze, but none such appeared, and, at 6.45, when about half-way down, we halted for breakfast in a very 'blue' frame of mind. As we ate, we moodily reflected that an hour and a half of arduous work had not to all appearance advanced us one step on our way, and the possibility of utter failure loomed before us with unpleasant distinctness. At 7.15 we resumed our march, and had not descended many yards when a promising opening in the ice on our left tempted us aside. Our prospects changed instantaneously, as nothing but a stretch of moderately-broken glacier intervened between us and a series of slopes of avalanche snow which lay between the ice-fall and the rocks on the left bank of the glacier, and had either escaped our notice or been invisible from below. While steering for this promising highway, I caught sight of something perched on the cliffs in front of us, which I at first thought was merely a large rock, but it gradually assumed an appearance suspiciously like the anxiously looked-for 'cabane.' I pointed out the object to my companions whose keener vision at once confirmed my suspicions. There in very truth, with the Swiss Federal flag floating over it, was the little building, pretty much in the position I had always supposed, but we remained as puzzled as ever as to how it should be approached from the Ochsenstock. Our failure to find it had cost us three precious hours of the early morning, besides an entirely needless risk in the ice-fall, which we ought never to have touched. However the way was now straightforward enough, and we zigzagged steadily up the steep slopes of hard snow towards the plateau below the upper ice-fall, until at 8.0 we were at the foot of a spot famous in the annals of Tödi ascents, the so-called 'Schnee Runse.'

Until last year, when Mr. Freshfield found a way up it, the great upper ice-fall of the Biferten Glacier was supposed to be impassable. It certainly seemed so when we looked at it; but it must be remembered that in June 1865, owing to prolonged hot and dry weather, all ice-falls were unusually bare of snow,

and therefore at their worst, while the season of 1866 was signalised by continuous bad weather and consequent excess of snow. To gain the nevé above the ice-fall, it has always been considered necessary to take to the rocks on its left bank, at a point generally known as the 'Schnee Runse.' A great spur is thrown out from the Tödi towards the ice-fall, and forms the south side of a ravine which runs deep into the heart of the mountain. The head of the ravine lies immediately underneath the summit of the Tödi, and is overhung at a great height by a small steep glacier, blocks from which periodically rake the depths below. The rocks on the south are lowest where they abut against the ice-fall; where they merge in the main cliffs of the Tödi they are much higher, and are crowned by a mass of broken séracs. At some point along their face there is access to the plateau above the fall, presenting I believe no particular difficulty, but exposed to the fire of these several glaciers. We were a good deal puzzled as to the true point of attack, and commenced operations by climbing along the base of the rocks on the south side of the ravine, but soon crossed to the north side, intending to work up to its head, and scrape through a cleft between the séracs crowning the western end of the southern spur and the cliffs of the Tödi. But on closer inspection the feasibility of this seemed doubtful; so we recrossed over a mass of avalanche débris, and made for what looked like an accessible point in the rocks on the south side. Before turning upwards it was necessary to pass along the face of the cliffs, nearly on a level; and, while so engaged, my equanimity was disturbed by the sudden fall of a stone as large as a cocoa-nut between Walker and myself. Walker being in front was happily unconscious of the intruder; but I, who had seen it almost graze the tip of my nose, experienced a momentary sensation the reverse of pleasant. The rocks proved more troublesome than we had expected, and at last led us to the foot of a *cheminée*, which appeared to be the only route available for further progress. This *cheminée* was the most extraordinary place of the kind I ever was in, being almost perpendicular, and so confined that a good deal of diplomacy had to be used in order to move in it at all. But its most startling features were reserved to the last. Near the top a biggish stone had fallen from above and got jammed, and to advance it was necessary to squeeze through the small passage left between the stone and the back of the gully. Here just for one step the rocks gave no support at all, but there was a lump of old snow (the remains probably of a larger mass) sticking to the cliff, on which, by exercising great contortions

of the body, it was possible to rest the foot. Making use of this, Jakob and Walker passed up, and after the former had gone on a little further, and made himself 'fest,' I followed. By a scientific wriggle I reached the snow, and leaning my whole weight on it, was giving the heave up necessary for the next step, when it suddenly gave way and slithered down the rocks. I should have followed suit, so far as the rope would have allowed, but for a curious circumstance. Already during the ascent I had once or twice stuck fast, and now that all support was gone from my feet, I found that—thanks to the bulky load on my back—I was jammed hard and fast between the sides of the *cheminée*: my legs dangled free, but I could not have fallen had I wished to do so. I regret that I am unable to explain by what means I escaped from this remarkable position, and am not hanging there to this day. I have a vague recollection of making frantic exertions, and at last emerging from the hole, when I found Walker standing on a knob of rock, holding on to nothing in particular. The only position available for me was the stone in the mouth of the gully, which had a tendency to 'wobble,' but was really firm enough for all practical purposes, and on it I accordingly perched myself, wondering exceedingly what was going to happen next. Some twelve feet of perfectly vertical rock still intervened between us and the top of the cliffs, and this, immediately over our heads, there was no possibility of scaling without assistance from above. On our left was a rounded ledge, only a few inches wide, leading to a more practicable point, along which Jakob had already crept, and now stood adjuring us to follow. Walker looked at me, and I looked at Walker, after which expressive performance we mildly protested. Above the ledge the rock was too smooth to give handhold, while below it was a more absolute precipice than I have often seen. We pointed out to Jakob the objectionable character of the place, but merely got for a reply 'Kommen Sie nur, Sie fallen nicht,' which though consolatory was not convincing. Walker however magnanimously resolved to risk the thing, and crawled along to where Jakob was standing, an operation which I did not care to watch. His successful accomplishment of the passage relieved me from the necessity of attempting it, as he and Jakob were then able to climb to the top of the cliffs, and help me straight up from where I was standing. We were now, at 9.20, on the crest of the spur, and close to the séracs before alluded to. Assuming that they finally merged in the nevé of the Biferten Glacier, we attacked them and after much winding about and step-cutting found ourselves, to our no small satis-

faction, on the snow-fields above the ice-fall. It was 9.55, and we had thus taken two hours to effect a passage which can, I believe, be accomplished by the initiated in half that time.

Now at any rate our road was plain enough, as we had only to toil up a succession of snow-slopes of no great steepness, which swept round to our right delightfully free from difficulty. At 11.0 we reached a point on the field of nevé forming the head of the Biferten Glacier, nearly in a line with a well-marked depression between the Piz Urlaun and Stockgron—the Porta da Gliems, through which we hoped, later in the day, to descend to Disentis. As we sat, the Porta da Gliems was on our left; on our right crevassed snow-slopes stretched away to a 'grat' with the two principal peaks of the Tödi at either end, the Piz Russein, or highest peak, at the western end, and the Tödi proper at the eastern; and in front was the ridge connecting the Stockgron and Piz Russein, which cuts off the head of the Biferten Glacier from the Russein Thal. There are several depressions in this ridge, but the best marked is close under the Stockgron—the so-called Porta da Spescha, which was crossed by the Swiss Alpine Club in 1863, certainly for the first time this century. The heat during the last two hours had been most intense, and we, being out of condition and very heavily laden, had felt it severely; so much so that when first we halted, I had doubted whether I should be able to accompany Walker and Jakob to the top of the mountain. But half-an-hour's rest, and a good dose of lemonade powder mixed with snow—a delicious combination which I strongly recommend to general attention—served to recruit our exhausted energies, and at 11.30 we set off again, leaving our baggage on the snow to await our return.

We turned at once due north, and for some time walked on over the snow-slopes, with a comfortable conviction that the two peaks we were approaching were the two principal summits of the mountain, the Piz Russein and Tödi respectively, when our confidence was shaken by the appearance of another peak to the south of, and at right-angles to, the supposed Piz Russein, which looked so offensively high that we were seized with a horrible suspicion that *it* must be the real 'höchste Spitze.' The doubt was most annoying, for on emerging from the Schnee Runse we had fondly imagined that no further mistake was possible. We had been prepared for the presence of two peaks of nearly equal height with a ridge between them, but the apparition of three peaks, with of course two connecting ridges, entirely upset all our calculations. Our original conclusion was right, as I at least ought

to have known perfectly well; but we allowed ourselves to be seduced by the imposing appearance of our new friend, and turned towards the slope leading up to the saddle between it and our first love. A steep wall of snow or ice lay below this, the ascent of which offered little difficulty, although at some points the snow was in a tricky state, and at others steps had to be cut. The saddle was soon gained, and our mistake at once made evident. On our left was the delusive peak which had misled us, rising little more than 100 feet above our position, while on our right a sharp snow arête led up towards the Piz Russein. The error was of little consequence, as the arête, though rather narrow, proved perfectly easy; we trotted merrily along it, having the Russein Thal at vast depth below on our left, and cutting a few steps here and there, until at 1.20 we reached the wished-for summit, a widish snow-ridge, on which we could all stand in comfort.

We had thus gained our end, but with an expenditure of time and labour quite disproportionate to the height of the mountain, which is only 3,623 mètres, or 11,887 feet. In the course of the expedition we had indeed made every mistake which it was possible to make, crowning all by at last reaching the summit from a direction diametrically opposite to the usual one. We had certainly found our own way, and felt proportionately conceited; but on the whole I should recommend future comers, who may make the ascent from Stachelberg, to sink the conceit, and take a local guide. One result of our errors was that we got no view. The clouds had risen since the morning, and we had scarcely time to get a glimpse of the second peak, or Tödi proper—which is very little lower than the Piz Russein—and the graceful snow-peak of the Biferten Stock beyond, when mist enveloped us and blotted out everything. The temperature was very different from what it had been a little earlier, so having shivered for ten minutes, and finding that there was not much prospect of a clearance, we turned to go down at 1.30, and regained our baggage at 2.5. After fifteen minutes' halt we again reluctantly assumed our burdens, and started across the plateau towards the gap between the Piz Urlaun and Stockgron. For some incomprehensible reason the Federal engineers have called the latter peak Piz Russein—a name which is universally applied to the highest point of the Tödi, whereas the Stockgron has been recognised by all explorers of the district from Placidus a Spescha downwards. To have made straight running for the col would have involved some descent and re-ascent, so we steered for a point on the north-east face of

the Stockgron, and thence at 2.45 dropped down on the pass, a small snow plateau with a big crevasse in the middle of it. For some years past the existence of a pass across the chain at this point had been known, but we were the first persons who actually crossed it, with the exception perhaps of the indefatigable Placidus a Spescha, some time towards the end of the last century.

Just as we reached the col slight snow began to fall, so, as nothing was to be seen, we commenced the descent without delay by a steep ice-slope, which led down to the Gliems Glacier at its extreme north-western angle. There was a good deal of soft snow on the ice, necessitating caution; but keeping well to the right under the rocks of the Stockgron, we passed the steepest portion, and then, striking away to the left, were able to glissade on to the level plateau below. We were in a sort of bay, the main glacier falling away rather steeply to our left. Our first idea was to go straight down it to its extremity; but Jakob's eye was caught by a remarkable breach in the rocks on its right bank, towards which, at his suggestion, we turned. At 3.10, in only twenty-five minutes from the col, we stepped from the nevé into this curious opening, which was not many yards wide, and found ourselves looking down into the upper Russein Thal. A not very steep slope, strewn with broken rocks, fell away from our feet, promising an easy descent, and down it, after ten minutes spent in looking about us, we started. Care was necessary to avoid dislodging the loose stones, which were ready to start off at less than a moment's notice; but there was not the slightest difficulty, and we were soon at the bottom of the rocks. Snow-slopes followed, and a succession of glissades down them took us to the first grass, whence a regular high road led towards the valley. We were on a grassy ridge, falling away rapidly on either hand, and had only to follow its crest, descending steadily until near the bottom, when we bore away to the right, in order to hit the valley at a favourable point for crossing the numerous small streams which flow into the main torrent. The distance was longer than we had supposed; but at 4.40 we were fairly in the valley, and at 4.55 reached (I believe) the highest chalets on the Russein Alp, the descent from the summit of the Piz Russein having occupied only three hours of actual walking. The herdsmen received us civilly, supplied us with milk, and lent us a small boy to carry our traps to Disentis, for which place we started at 5.25. The valley, as far as its junction with the Vals Cavrein and Cavardiras, is fine, and the view up those savage glens is striking; but lower

down it becomes uninteresting, and continues so until the Vorder Rhein Thal is approached, when the scenery improves again. The final gorge is magnificent, and the view looking up from the bridge, which carries the diligence-road across its mouth, superb. The cliffs, with pine trees clinging to every available ledge, tower on either side to a vast height, while the torrent of no mean size thunders below. We fell into the main road at 8.5, and at 9.0 reached Disentis, where we found comfortable quarters at the 'Condrau zur Krone.'

We had intended to devote the next day to finding a passage to Olivone in Val Blegno, across the hitherto untraversed Medel Glacier, but our two first walks had been so much longer and more laborious than we had anticipated, that we determined to get a good night's rest at Disentis, and in the afternoon go up to the highest occupied chalets near the glacier. The morning of the 22nd was therefore passed in delightful idleness. We ascertained from the civil landlord that shortly before a party of the Swiss Alpine Club had been exploring the Medel Glacier, but had been persecuted by bad weather, and consequently accomplished nothing important. The glacier lies in a direct line between Disentis and Olivone, and it was clear from the map that a pass across it, if practicable, would in point of distance be a much shorter route between those places than the circuitous mule-track of the Lukmanier. We had had a good view of the glacier while descending the Russein Thal, and did not anticipate much difficulty in the expedition, which however, lying over entirely new ground, promised to be interesting. Having secured a porter to carry our baggage as far as the chalets, we left Disentis at 2.50 P.M. by the usual path to the Lukmanier. The village is built high above the left bank of the Vorder Rhein, which has cut for itself a deep gorge, into which it is necessary to descend, and then climb the opposite side. This is a rather long operation, and it takes a good hour to reach the little hamlet of Mompemedels, on the right bank. Thenceforward the path, which is stony and bad, continues to mount for some distance, and then descends to the level of the Mittel Rhein, rather above the village of Curaglia, where it crosses to the right bank. Here we left the Lukmanier path, and turned into a glen which opens out to the south-east, and is closed at its head by the main Medel Glacier. The first ascent from Curaglia is steep, but as soon as the valley is fairly entered, the walking becomes very pleasant, the path mounting gradually through pleasing scenery. At 5.50 we reached some chalets, where there were cows, and halted there for the

night, the next chalets being still unoccupied, and only an hour higher up. We retired early to our hay, which was plentiful and clean, and before going to sleep heard a genuine 'Ranz des Vaches,' but were not so impressed as I suppose we ought to have been, possibly owing to the inferiority of the performer, who started well, but broke down miserably before the end of each blast of the horn.

We started at 3.40 A.M. on the 23rd, without the porter, and an hour's walk through not very interesting scenery took us to the last chalets on the Plattas Alp, built in the centre of a little green plain at the very head of the valley, and commanding a good view of the glacier. Its central portion is very much shrunk, and terminates on the brow of steep ice-ground rocks, but right and left the ice streams down into the valley, the branch which comes down on the east side being the most extensive and descending lowest. The landlord at Disentis had told us, as the experience of the Swiss Club party, that we should not be able to get on to the ice from the head of the valley in which we were, but must pass through a gap in the ridge on its left side, and keep along the west face of that ridge until it merged in the snow-fields. The gap referred to was now close on our right; but a survey of the glacier failed to reveal any necessity for the very considerable détour which the adoption of the course recommended would involve. It seemed possible to get above the steepest part of either branch by means of snow-slopes between the ice and rocks, but as we knew our proposed col to be more in a line with the head of the eastern branch, we determined to try our luck in that direction. We accordingly followed a faint track, whose zigzags could be traced up to a depression in the ridge on the right side of our valley, separating it from the Val Lavaz. I have rarely seen a more beautiful glacier than this eastern branch of the Medel Glacier, by the side of which we mounted. It descends into the valley in a broad tongue of ice, of great steepness and exquisite purity, and is indeed a reproduction on a larger scale of the tourist-haunted end of the Rosenlaui Glacier; there is no terminal moraine, the lateral moraine is insignificant, and the ice itself is unsoiled by dirt or stones. At 5.35 we got on to the snow between the hill-side and the glacier, crossed it and the moraine beyond, and then took to the ice, which rose in front steep but pretty well covered with snow. A few crevasses had to be passed, and some steps cut, but Jakob chose his route well, and by 6.50 we had left the steepest part of the way behind us, and felt justified in halting till 7.10 for breakfast. That finished we

had but to plod slowly and laboriously over snow-fields, whose only prominent feature was their enormous extent. We made for a col immediately to the east of the tiny giant of the district, the Piz Medel, 10,509 ft. in height, whose ascent we had contemplated. It was evidently very easy of access by a gentle slope of snow, but an envious cloud had perched itself on the summit, so we determined to leave it alone, the idea of expending time and labour on so insignificant a novelty, with the certainty of seeing nothing for our pains, striking us as too absurd to be seriously entertained. Some of the crevasses in the nevé were rather troublesome, but altogether our progress was singularly easy and uneventful, and at 8.5 we reached the col. The watershed is equally accessible at all points, so for comfort's sake we established ourselves on some rocks a little to the west of the actual pass, which we christened Camadra Pass from the name of the glacier on the south side. Its height cannot be less than 10,000 ft., as the summit of Piz Medel was certainly not more than 500 ft. above us. I cannot say much about the view, as since the early morning clouds had risen, and we saw very little except towards the north, where the Tödi was conspicuous.

On the south side the small Camadra Glacier fell away very steeply towards Val Blegno, and at 8·30 we commenced the descent in that direction. Scrambling over the rocks immediately below us on to a snow slope beyond, we descended it for a short distance and then, turning sharp to the left, passed down a broad and rather steep gully filled with the soft snow, on to the extreme eastern branch of the glacier. This scarcely showed a single crevasse, and stretched right away down to the valley more like a steep snow slope than anything else. It was just the place for a glissade; so off we started in the approved style, roped as we were, but keeping the pace moderate for fear of hidden crevasses. Passing the end of the glacier, which dies out almost imperceptibly, we continued our course over the snow slopes below it, until the decreasing inclination of the ground stopped us. We were at the extreme head of Val Blegno, at the foot of the steep and dreary ascent to the Greina Pass, our glissade having extended almost without interruption for at least 3,000 ft. The head of the valley is very stony, but the ground was a blaze of gold, being densely covered with a tiny yellow flower which seemed to thrive with the greatest luxuriance in the most unpromising places. We soon found a faint track, which, as well as the scenery, improved as we descended, and brought us at 11.10 to Ghirone, the first village. Soon after passing through it, we

were stopped by an old and dirty native, who took Walker aside confidentially, and, holding out his unclean palm in a suggestive manner, offered to show him what he called a 'splendid hole,' imagining from our gear that we were on the look-out for eligible mining speculations. We undeceived our disinterested friend and interpreted his offer to Jakob, whom it struck as a most sublime joke,—indeed he never quite got over it, and lost no opportunity of referring to it, especially whenever we happened to be interested in holes from a camping-out point of view. Beyond Ghirone the valley contracts to a mere gorge, on emerging from which Olivone is seen at a great depth below, and beyond it the smiling expanse of the lower Val Blegno almost as far as Bellinzona. The path descends by steep zigzags to the village, which is built on both sides of the stream, and at 12.35 we entered its only inn, on the right bank, kept by one Stefano Bolla. Its external aspect was not encouraging, and did not prepare us for the clean salon within, nor for the very tolerable dinner with which we were subsequently served. The presiding genius was an ancient individual with stupidity marked on every feature of his venerable countenance, who spoke only a lingo of the vilest Italian *patois*, and very little of that. The only thing intelligible we could elicit from him was, that we should certainly not be able to find anyone to carry our traps up to our proposed night-quarters, all the men being busy cutting hay. Our programme for the next two days was rather extensive. We proposed to sleep in the highest available chalets in Val Carassina, a considerable glen which opens out into Val Blegno opposite Olivone, and is closed at its head by the extensive Bresciana Glacier flowing down from the western face of the Rheinwaldhorn;—effect the ascent of that peak on the morrow, and, descending to the Rheinwald Glacier, find a pass into Val Malvaglia, which debouches into Val Blegno about two thirds of the way between Olivone and Biasca;—and the next day make another pass to the Zapport branch of the Rheinwald Glacier, and so to Hinterrhein and Andeer. Now it was clear from the map that the ascent into Val Carassina must be very steep, and we had no desire to half kill ourselves by carrying up, on a broiling afternoon, our usual burdens *plus* two full days' provisions which it would be necessary to take. The information given us by our host was therefore particularly unwelcome, and we were waiting for dinner in rather a sulky humour, when we were rejoiced by the appearance of an active bustling waiter, probably old Bolla's son, who amongst his other virtues spoke French, and

soon set our minds at ease. The porter turned out to be merely a question of francs, and was stated to be procurable enough, if we did not mind paying a little more than usual, which of course we did not, so one was quickly found. Enquiries about the Rheinwaldhorn had not much result; the existence of such a hill was admitted, but it was stated to be quite inaccessible from this quarter; some distinguished person had tried to get up, and failed after undergoing terrible perils; and *we* had better not attempt it. This intelligence did not spoil our appetites, and at 3.10 we left Olivone, in a state of repletion which, having regard to the nature of the walk before us, made the engagement of the porter more than ever a subject of congratulation.

The Val Carassina does not open into the Val Blegno in a well-defined gorge, but terminates above steep cliffs, over which the torrent from the glaciers of the Rheinwaldhorn leaps in a single bound of 700 or 800 feet to join the main stream of the Brenno. The path into the valley is therefore, as might be expected, exceedingly steep; it mounts along the left bank of the torrent almost like a staircase, turning and twisting about in the most reckless way, and ingeniously circumventing smooth faces of rock which from below seem to bar all progress. The scenery is very picturesque; trees cling wherever there is space; great boulders are scattered about on every spot of level ground; close by, the torrent plunges down with a roar almost deafening; while at every upward step the view, looking back towards Val Blegno, becomes more extensive and beautiful. At 4.50 we reached the chalets of Compièto, 2,258 ft. above Olivone, in the middle of a charming little green plain, through which the stream meanders gently, unconscious of the terrific plunge before it. There were cows here, but our destination was higher up; still, with milk to tempt us, it was impossible to resist a halt in such a delicious situation. We were in the centre of an amphitheatre, almost completely enclosed, so that it was hard to discover in which direction our road onwards lay. Above Compièto the valley turns abruptly from north-east to nearly due south, and at the angle the gorge is so confined, that no one ignorant of the peculiar conformation of the ground would suspect its existence. The plain in which we were communicates with Ghirone by a low grass col to the north, in a line with the natural prolongation of the upper valley, at the head of which a similar col leads to Val Soja. The valley is therefore like a trough open at either end, the col to Ghirone representing one opening, and that to Val Soja the other, the real outlet towards Olivone being far less marked.

At 5.15 we resumed our way, and skirting the head of the amphitheatre along the right bank of the stream, commenced a second ascent, which was to take us to the upper reach of the valley. After the first steep bit the path led through a pine wood, along the side of a ravine, through a cleft in which, so small that a moderate-sized boulder would block it up, the torrent finds its way from the upper to the lower level, as before, in a single leap. Beyond this ravine the valley becomes almost level; and at 5.50 we reached our destination, the Bolla Alp, from which we looked over the col towards Ghirone to the glaciers at the head of Val Blegno, and were able to identify our entire line of descent from the Camadra Pass, which looked excessively steep.

We passed a comfortable night, and started again at 4.10 on the 24th, without the porter. An hour's walking over nearly level ground brought us to the last chalets on the Bresciana Alp, where we came in sight of the tail of a glacier high up the steep grass and stone slopes on the east side of the valley. This evidently belonged to the northern branch of the Bresciana Glacier, but as the Rheinwaldhorn was known to be at the head of the extreme southern branch, we thought it most prudent to get as near as possible to the head of the valley before turning up towards the ice. Beyond the alp the path gradually died away, and we lounged along over rough and broken ground of a hummocky character until, at 5.50, we were close to the low ridge separating Val Carassina from Val Soja. Seeing from the map that the Bresciana Glacier did not come down into the valley, but terminated abruptly on the top of cliffs, we had been prepared for some difficulty in getting on to the ice. We now therefore saw with great satisfaction a 'live' moraine, high up in an angle of the hill, which looked as if it must belong to the main glacier, and would give access to it at a point considerably above its termination. At any rate it was an object to steer for, and it was unanimously agreed to climb the hill-side towards it. While examining the ground below the moraine, our attention was attracted by three dots moving up the slopes in the direction which we proposed to follow; and the telescope revealed them to be three men armed with guns—a discovery which did not much affect Walker and myself, but threw Jakob into an extraordinary state of perturbation. He instantly set them down as evil-disposed persons, who had got wind of our plans at Olivone, and come out to waylay and murder us like the unfortunate Hanoverian on the Col Torrent in 1863. That tragedy created a great sensation throughout Switzerland, especially among the guides, as a

class, and many of them have not to this day recovered from the alarm which such an event naturally caused. Jakob did not express his fears in words, but his constant halts to examine the objects of his suspicion through the telescope, his soliloquies, and his indecision as to the line of march, were sufficient evidence of what was passing in his mind. In spite of all delays, however, and the steepness of the slopes, he could not prevent our gaining on the enemy, or rather on one of them who lagged behind—of course to watch our movements, while the rest of the party put themselves in ambush to receive us. He made a final and desperate effort to avert our impending fate by an unnecessary détour of about a quarter of an hour, but at 7.5 we reached the base of the moraine, on the top of which was seated one of the would-be murderers, who to our innocent eyes appeared to be a very harmless 'jäger' of the better class of peasants. He was as civil as his astonishment at our appearance, in a spot where probably no traveller was ever seen before, would allow, and certainly succeeded in disguising his felonious designs wondrous well. After a few minutes' conversation we wished him and his friends 'good sport,' and passed on, Jakob quaking visibly, and evidently expecting each moment to be his and our last.

We had struck the moraine just at the proper point, and found, as we had expected, that we were on the right bank of the southern arm of the Bresciana Glacier, some way above its end. We kept along the crest of the moraine for some distance, and at 7.20 halted for breakfast, Jakob, still uneasy, taking care to select a spot where we should be safe from a shot from behind. Our position commanded a fine view of Monte Rosa, the Mischabel range, and the Bernese Alps, which towered into the clear morning air free from cloud or mist; but a bitterly cold wind made inaction unpleasant, so we cut our meal as short as possible, and, having put on the rope, took to the ice at 7.40. The glacier was smooth and uncrevassed, and we kept straight up its centre towards the base of a considerable ice-fall, which stretched from the right bank about three-fourths of the way across. Under the left bank the ice, though steeper than elsewhere, was less broken, and promised a tolerably easy passage to the upper nevé. Although we encountered no serious difficulty, yet the work was sufficiently troublesome, much step-cutting being necessary, and some of the crevasses requiring no little diplomacy to pass. As we approached the nevé the chasms increased in size, and one, combined with a low but steep ice-wall beyond it, gave us the only really *mauvais pas* on the expedition. But our

progress, though slow, was steady, and on reaching the upper snow-fields our hearts were gladdened by the appearance of the object of our ambition, the Rheinwaldhorn itself. It was our first view of the peak, and certain fears of possible difficulties which had haunted us were at once dissipated, as snow-slopes of no great steepness stretched up to its very summit, now not far above us. Our direct course would have been to have borne away to the right to the summit, but the snow proved to be in very bad order, so we preferred keeping straight on towards a low ridge of rocks considerably to the left of the peak. Floundering laboriously through the soft snow, we reached them at 9.45, and found ourselves looking down a precipice upon the extensive Lenta Glacier, which flows from the northern face of the Rheinwaldhorn into one of the many branches of the St. Peter's Thal.

From that mountain two ridges diverge, one to the north-east, the other, on which we were, to the north-west; the former separates the Lenta and Rheinwald Glaciers, the latter the Lenta and Bresciana Glaciers; but both ridges merge in the steep snow-slope forming the northern face of the peak, the two last-named glaciers falling away in opposite directions from the point where the north-western ridge is lost. Turning along the ridge in a southerly direction, we followed it without any difficulty very nearly to the point where it disappears in the snow, and then traversed the face of the peak, here not more than a hundred yards across, to the ridge above the Rheinwald Glacier. This point was attained by Mr. Freshfield's party in 1864 from the Lenta Glacier, and has twice been reached from Hinterrhein by the Rheinwald Glacier, but it had never before been gained from Olivone. We had thus made a pass giving access to either the Lenta Thal or Hinterrhein, the actual col, which may conveniently be called Bresciana Pass, being at the point where the nevés of the Lenta and Bresciana Glaciers meet. We had struck the ridge much above its lowest point, and, turning along it to the right, a few steps up a broad slope of snow landed us at 10.30 on the summit of the Rheinwaldhorn, the not very lofty monarch of the Adula group, 11,149 ft. in height. The summit is a narrowish ridge of rock, running nearly north and south, and is crowned by a dilapidated stone man, in which was a canister containing the cards of our predecessors, Mr. Freshfield and his friends. Clouds had risen, and we were again unfortunate as regarded distant view. Near at hand the Guferhorn was a fine object, showing as a sharp and very elegant cone of snow above steep shaly rocks, and the

view over the vast expanse of the Rheinwald and Zapport Glaciers was very striking. The Federal engineers have made a great mistake in confusing these two glaciers under the single name of 'Zapport.' They are in fact perfectly distinct, the head of the western or 'Rheinwald' Glacier being cut off from the eastern or 'Zapport' by a well-marked ice-covered 'grat,' starting from a point near the Vogelberg, and extending to the rocky mass which is correctly represented on the map as dividing the lower portions of the two glaciers.

Our plan, as before stated, was to get down to the Rheinwald Glacier and steer for a broad depression at its head between the Rheinwaldhorn and Vogelberg, but nearer the latter; then if possible descend into Val Malvaglia, pass the night somewhere near the head of that valley, and in the morning ascend one of its lateral glens to a col which—it appeared on the map—ought to exist on the east side of the Vogelberg, and lead us to Hinterrhein by the Zapport Glacier. But the appearance of the weather was so threatening that we were more than half inclined to make at once for Hinterrhein, as, if overtaken by really bad weather in Val Malvaglia, we should be in a *cul-de-sac*, with no means of escape except by descending to Biasca and Bellinzona, to the utter derangement of all our plans for the future. Jakob however was disgusted at the idea of a change of plan, and we ourselves were very loth to abandon a section of our programme which, though not of first-rate importance, was of particular interest, taking us into an entirely unknown country, with a possibility of resulting in the discovery of two glacier routes between Hinterrhein and the Lago Maggiore, *vice* the carriage-road of the Bernardino Pass. We therefore determined to run the risk, and trust to a continuance of the comparative good fortune which had so far attended us.

We had supposed that, before turning down to the Rheinwald Glacier, it would be necessary to descend the ridge by which we had mounted, to a point rather lower than that at which we had struck it; but Jakob suggested that such a course would be very circuitous, and that we had better go down the steep rocks forming the eastern face of the peak, from the base of which the distance to our supposed col would be inconsiderable. This course we agreed to, although, considering our total ignorance of the ground, its prudence was doubtful, and set off at 11.15. The rocks proved very steep and rotten, but were not really difficult, the only risk being the usual one in such places, of knocking down the stones on each other's heads. So we got on pretty well, and worked gradually down

to the edge of a broad snow couloir, which struck Jakob as an admirable place to 'schleifen.' We were scarcely so impressed with its merits, as the snow was very incoherent and rested on hard ice, while there were some very ugly rocks below, and we therefore did not quite approve the proposed glissade. However off he started, but slipped instantaneously, jerked me, still hesitating, off my legs, and down we should have gone in a heap, had not Walker still had firm hold on the rocks and stopped us. Using rather more care we descended the couloir for some distance, then took to the rocks again, and lower down came to a second couloir, the snow in which was in better condition, but still far from safe. Unwarned by experience we again ventured a glissade, but had not gone many yards when we slipped simultaneously, and slid some way on our backs, before, by driving our elbows and heels into the snow, we managed to stop. The results of a prolonged roll might not have been very serious, but, taught wisdom by this second 'shave,' we abstained from further experiments until there was obviously snow enough to give footing and nothing below to hurt, when we let ourselves go, and at 12.0 shot on to the level surface of the Rheinwald Glacier. Winding round a rocky spur, and dropping over a rather complicated and troublesome bergschrund, we passed on our left a very palpable col at the point marked on the map 2,950 mètres. We might no doubt have descended from it into Val Malvaglia, but we preferred making for another and slightly lower col, a little further south, whose height is 2,928 mètres, or 9,640 feet. This we reached at 12.30, and having satisfied ourselves by a glance that the descent into Val Malvaglia would offer no particular difficulty, sat down on the highest rocks to christen our discovery and enjoy the view. A satisfactory name was not easily selected, but, seeing that the pass lies between the Rheinwaldhorn and Vogelberg, and nearer the latter than the former, we at last agreed upon 'Vogel Joch,' not that we were satisfied with that title, but it seemed the least objectionable of the few from which we had to choose. The weather had improved during our descent from the peak, and we now got an exceedingly fine, though still not cloudless, view towards the Oberland, the principal peaks of which showed to great advantage.

At 1.0 we started on our downward journey, and from the foot of the first snow-slopes commenced one of the roughest, moist toilsome, and altogether revolting descents I ever made. In spite of the steepness of the ground there was no difficulty; but the way lay over a succession of stony slopes, varied by

smooth faces of rock which had to be dodged, and covered, as we got lower down, by dense patches of rhododendron, concealing all the holes and pitfalls which abounded. Although going very leisurely we were shaken to pieces, and were delighted to reach at 2.30 a chalet on the left side of the sort of glen we had been descending, which we had seen from above, but which proved to be a ruined and deserted hovel, not apparently communicating by any path with anywhere else. A little lower down, however, we found a faint track which took us to the right side of the glen to a second deserted but more substantial chalet, whence a steep path led down to the main Val Malvaglia. We crossed the stream, and, climbing the slopes on the right bank, came at 3.35 to a magnificent alp—the Bolla Alp of the Federal map, where many cows were grazing, and where we therefore expected to procure both milk and information. No herdsmen were visible, and on investigation the chalets proved to be locked and without any sign of the recent presence of man; so, as milk was a necessity, Jakob proposed that he should bring to bear his experience on the cattle alps of his own Canton. The saucepan from the 'Teufel' was got out, and after several unsuccessful attempts to cajole one or other of the animals to submit to the operation of milking from the hands of a stranger, a docile beast was found and nearly drained dry before our thirst was assuaged. At 4.15 we started down the valley, hoping eventually to find some one who would direct us to the most eligible night-quarters. The glen up which our morrow's route lay was visible on the opposite side of the valley, and we suddenly caught sight of three persons moving along the steep path leading up into it. As it was reasonable to assume they were going to some chalets, we instantly struck down to the bank of the torrent, and tumbling across it somehow scrambled along the steep slope on the other side, until we fell into the path where we had seen our friends. Although well made, its general inclination cannot have been less than 45°, and it went straight up with a noble contempt for zigzags, which said a good deal for the soundness of leg and wind of its constructors and habitual frequenters. We, less sturdy mortals, found the ascent severe, and rejoiced greatly when the gradient lessened, and after an interval of comparatively level, *i.e.* ordinarily steep walking, we came at 5.40 to a level plain, in the middle of which were the chalets of Pena. They had evidently not been visited this year, and we were rather puzzled what to do, when we were joined by an unprepossessing looking native, who, so far as we could make out from his almost unintelligible *patois*, did not belong to the

chalets, but was employed in watching goats on the mountain side, and, attracted by the unprecedented apparition of strangers, had come down to look at us. He at first insisted that we could not get into any of the chalets, but was finally induced to assist in a burglarious assault on one of them, the door of which at last yielded to the gentle pressure put upon it, and admitted us into an airy barn, where there was a little old hay which made a couch just a degree softer than the bare and dirty boards. On the whole there was not much to complain of, and we were thankful enough for such a solution of our difficulties. Our friend, having brought us a quantity of goats' milk, wished us good night, and left us to our well-earned slumbers, which lasted till 2.45 A.M. on the 25th, when we rose as fresh as larks.

At 3.55 we started, having first secured the door of the chalet so as to look as nearly as possible in the same condition as before our rather violent entry. The glen above the Pena Alp presented a scene of savage desolation, being enclosed by an amphitheatre of black shaly cliffs, over which streamed numberless waterfalls. According to the map, above these cliffs there was a tract of level ground at the base of the final slopes at the actual head of the glen, and over-night we had been considerably puzzled as to how we ought to steer in order to attain this. Now however the difficulty, like many difficulties in more important matters, vanished on being fairly grappled with, and a rough track revealed itself, winding up the slopes on the north side of the glen, which led us at 4.50 by a devious and sometimes unpromising course to a point above the cliffs which had appeared so formidable, at the edge of a rather extensive plain, on the other side of which were the chalets of Guimello, at a height of 6,773 feet. On all sides except that by which we had approached, the plain was surrounded by long steep slopes of shale and débris, interspersed with patches of snow. Immediately on our left was the fine dark pyramid of the Vogelberg, to the south-east of which was the only considerable bit of glacier visible, with an undeniable col at its head, which the map and compass showed must be the one for which we were looking. Strange to say, this glacier is not marked on the Federal map, the general accuracy of which in this district, as elsewhere, is astonishing, but the nevé of the Zapport Glacier is represented as just curling over the ridge on the Malvaglia side, and then dying away without giving rise to any defined glacier. On the opposite side of the glen the 'terrain' is laid down accurately enough, as on that side there *is* merely a fringe of nevé over which it would be possible to pass at almost any point into Val Calanca. One such pass is

certainly known to the natives, as our friend of the previous night had assumed, as a matter of course, that we were bound to Val Calanca, and was proportionately astonished on hearing that our destination was Hinterrhein. The glacier below our col appeared to be most accessible from its right bank under the Vogelberg; so we abandoned the path which crosses over to the chalets, and turned up the slopes forming the base of that peak. We had not gone far when a shouting was heard behind us, and looking back we discovered our native with something in his hand, which proved to be a large can of goat's milk. Finding us flown from the chalet, he had given chase along the steep and difficult path we had traversed—a piece of good nature which almost made us register a vow never again to judge of a man from his outside, as that of our friend was far from fascinating. We managed to spend half-an-hour very pleasantly, and, in the course of it, were joined by a 'jäger,' armed with a gun of portentous length, on the look-out for chamois. He was not so good a specimen as the murderers of Val Carassina, and did his best to persuade us to go to Val Calanca instead of to Hinterrhein, declaring that our proposed route was impracticable, notwithstanding the evidence of our eyes that on this side, at any rate, it was eminently easy. On our two friends taking their departure—the one to his hunting, and the other to his goats—we resumed our way up the slopes, which were steep but easy enough, and at 6.40 halted for breakfast on the moraine of the glacier. At 7.20 we took to the ice, keeping close under the rocks forming the southern arête of the Vogelberg. Although the inclination was very trifling, yet the col was concealed from us by undulations in the nevé, and, as usual under such circumstances, the distance was greater than it had appeared from below. A few crevasses had to be passed, but none gave any trouble; and at 8.10, in less than 3¼ hours actual walking from Pena, we reached the crest of the ridge, close to the first rocks of the arête of the Vogelberg, and found ourselves, as we had anticipated, at the very head of the Zapport Glacier. We estimated the height of the pass at about the same as that of the Vogel Joch, or 9,600 feet, and unanimously agreed upon the name 'Zapport Pass' as appropriate and tolerably euphonious.

Clouds as usual spoiled the view; so, as a bitterly cold wind was blowing, and the appearance of the weather was generally vicious, we made no prolonged halt, and at 8.20 set off down the Zapport Glacier. The nevé crevasses in its upper portion were superb, but we avoided them without difficulty, and having found an easy passage through the great central

ice-fall on its left side, got, at 9.5, on to the lower portion of the great rocky mass which separates the Zapport and Rheinwald Glaciers. The top of this was a sort of plateau covered with loose stones, and overgrown with coarse rank grass, and proved to be cut off by a precipice from the valley of the Rhine, into which we wished to descend. We were some time in finding a way down, but at last discovered a steep and stony gully, which led us to the bottom at 9.50. The most troublesome part of the day's work was now to come. We were on the right bank of the deep ravine locally known as 'die Hölle,' through which rushes the infant Rhine, a muddy and unromantic-looking stream, and had to get across by some means to the left bank. Of the details of this operation I will give no particulars. How, with infinite trouble and difficulty, we succeeded in attaining 'Paradis,' a blasted and sterile alp—how, having done so, our immediate anxiety was to find our way out again—and how we lost both time and temper in accomplishing this—it is unnecessary to describe. Suffice it to say that at 10.45 we escaped from our embarrassments and reached the Zapport Alp, where we halted just long enough to allow Jakob to milk a goat for our benefit. The valley below the alp is particularly uninteresting; on either side are dreary slopes of stones and shale, those on the south side furrowed by numerous torrents from the Zapport Glacier; of vegetation there is little or none; and the furious stream of the Rhine, often bridged over by the remains of avalanches, runs riot over the broad tract of sand and stones which forms its bed. The view, looking back of the Zapport Glacier, with our pass conspicuous at its head, scarcely redeems the walk from dullness; the path too is of the vaguest and stoniest character, and reminded us strongly of Dauphiné in general and the Vallon des Etançons in particular. We made one halt of thirty minutes to finish the scanty remains of our provisions, and at 1.25 reached Hinterrhein, where the uninviting portals of the 'Poste' received us, while a char was being prepared to take us on to Splugen and Andeer. We arrived at the latter place at 5.45, and at the Hotel Fravi were once more surrounded by all the luxuries of civilization, which were welcome enough after our three days of wild life amongst the 'Adula Gebirge.'

REVIEWS.

THE LAKE DWELLINGS OF SWITZERLAND.*

The industry of a number of years has brought man into connection with geology. The patient investigation of tumuli, of shell mounds, of caves, and of the drift have carried him back, not indeed to the time of his appearance upon earth, but at any rate for a space into which the imagination finds it hard to penetrate. The transition however from the times antecedent to history into those where history begins demands more ample illustration. Curiosity about the contemporary of the mammoth may be satisfied for the moment by a knowledge of little more than his bare existence; but the mind craves for detail about our ancestors of a nearer age; and great as was the mass of facts which had been brought together before, the discovery of the lake dwellings of Switzerland broke upon the world almost with the force of a revelation. No other place had been able to show so continuous a sequence or so rich a variety of remains. Elsewhere for the most part the primitive man told his story by what he left behind him in dying; there it became always possible to study him with minuteness as he lived. The importance of the investigations which have since taken place has produced its natural fruit. Each new dwelling as it came to light has brought forth its swarming progeny of memoirs, and a copious literature has summed up and speculated upon the general results. Fortunately this literature is one which has been tinctured less than is usual with antiquarian bitterness. A theory of successive wars of conquest corresponding to the ages of stone and bronze is one which can be debated without interference from those outer prejudices which enlisted themselves in virulent strength against cave men and implements from the drift. The facts at least are beyond dispute, and deductions in leaving them untouched must of necessity be comparatively harmless. Most therefore which has been written about the lake dwellings is free from polemical taint and stands in some ascertainable relation to established facts. But these merits are susceptible of degree; and the greater the quantity of mere facts which are blended with inevitable theory in an antiquarian work the larger are the pleasure and the advantage which the reader is likely to reap. Dr. Keller may at any rate be praised for having collected a very large number of facts, and for offering them in a very bare form. His method is therefore in principle sound. But a sound antiquarian mind is apt to produce very dull writing; and Dr. Keller must be confessed to be guilty in this direction of flagrant sin. His translator is even worse. Dr. Keller himself may allege that six separate reports presented at different times to the Antiquarian Society of Zurich can hardly be

* *The Lake Dwellings of Switzerland and of other Parts of Europe.* By Dr. F. Keller. Translated and arranged by G. J. E. Lee, F.S.A., F.G.S. London, Longmans, 1866.

expected, without entire recomposition, to furnish materials for a consecutive volume. He can only be blamed for its absence of arrangement in that he has sanctioned the form in which it has been put before the English public. If Mr. Lee had been contented to follow the unavoidable irregularity of the original his modesty might have been praised by the same mouth which disputed his judgment; but in translating he has seen fit to change the 'order' of the whole, and in changing has left a chaos. He has forfeited the praise of modesty, and has betrayed notions of method upon a level with those which may have characterised the race of lake dwellers themselves. Forbidding however as is the mould in which Dr. Keller and Mr. Lee have between them cast their information, the book is upon the whole the best upon the subject which has yet appeared. On the one hand its deductions are more sober than those of some writers—sometimes perhaps almost too sober; on the other hand it presents the fullest and most authoritative description which has yet been compiled of the remains discovered up to the present time in by far the larger number of the settlements. To the 'Lake Dwellings' may be referred both those enthusiasts who are careless about the toil through which the fullness of knowledge may be obtained, and those more ordinary readers who wish for a particular description of some settlement at which they may think of glancing as they pass by the lowlands of Switzerland on their way to a keener enjoyment. Such as care simply for a general view of the subject may still content themselves with the compact summary in which Sir J. Lubbock has stated everything which is really essential with a definiteness of argument and a clearness of presentment which will be searched for in vain in the pages of Dr. Keller.

Lake dwellings have become identified primarily with distant antiquity and with Switzerland because the remains of those which existed in the waters of that country revealed the traces of a prehistoric people. But even at the present day towns similar in their mode of construction lie scattered over the world, and history tells us of the past existence of others. The authority of Herodotus combines with contemporary evidence to prove for how long a time the fishermen of Lake Prasias have lived upon their lake. Some bas-reliefs brought from Kouyunjik may commemorate the conquest of a tribe dwelling in the lower Euphrates; and Hippocrates seems in describing a people living upon the Phasis, to point to habits identical with those which still continue in the far East. Tcherkask is built upon the Don, and perhaps the huts raised on piles by fishermen of the Bosphorus may represent there the last relics of antique custom. The villages of the Dyaks are described in language which might be applied almost without change to the old settlements of Switzerland; and in many places in the East, especially in Borneo and New Guinea, the habit of lake dwelling seems extensively to prevail. Even in America Ojeda found lake dwellings upon the site of Venezuela, and Vasco Nunez was baffled in Dabaybe by a tribe which lived in huts stretching from trunks to trunks of trees, which grew out of a watery swamp. But all these instances are either the product of exceptional circumstances among a people whose common practice is different, or are

merely the last indications of a departed custom. At some period of uncertain remoteness there is evidence that the habit prevailed not only in Switzerland, but in most parts of Europe. In Norfolk, in Wigton, in Laaland, in Pomerania, in Brandenburg, in Bavaria, in Carinthia, and in Italy the piles and sometimes further remains of lacustrine habitations have been discovered. Every year adds largely to the number of settlements known to exist outside the limits of Switzerland, and the frequency of their occurrence in that country, which alone has been exhaustively searched, can best be seen by reference to the long list which will be found at the end of this paper.

Either contemporarily or at a like stage of development the people who inhabited a broad band stretching across the whole centre of Europe abode for some inexplicable reason, wherever circumstances allowed, in dwellings which required more labour for their erection than houses built on shore would have wanted and which, while obviously in some respects dangerous, cannot be seen to have afforded in other ways either peculiar safety or peculiar convenience. Antiquarians have been unwilling to accept the simple belief that they formed the everyday houses of their owners; they have supposed them to be places for sacrificial rites, or to be forts in which a population living commonly on shore might find refuge in times of peril. But the various evidences of ordinary life, and the absence of anything which can be decisively identified with religion was fatal to the former hypothesis; and the apparent continuity of their occupation seems to have compelled an abandonment of the second idea. Against the latter a more decisive objection might be urged; stages connected with the shore only by narrow bridges might be strong against enemies who coming from a distance could only operate on land, but the next village supplies the chief foes of a savage tribe, and against an attack from canoes a lake dwelling was peculiarly weak. A firebrand stuck into the bridge on a windy night, and a few lighted arrows among the thatched house roofs, would easily have destroyed the settlement and its inhabitants at once. However the practice of building lake dwellings arose, it is impossible to believe that mere safety was aimed at by combining inflammability with ease of access and difficulty of escape. A strange notion has indeed been entertained that they may have been intended to protect their inhabitants from the inroads of wild beasts. But besides that wild beasts are nowhere known to be or ever to have been aggressive, it would be absurd to suppose that a people who could cultivate their fields and pasture their herds upon the shore should be obliged to fly to the water for escape from hordes of wolves and armies of bears. We must remain content to acknowledge ignorance as to the circumstances under which so strange a habit declared itself. All that seems certain is that lake dwellings were used as places of permanent abode, and therefore, of course in a certain sense as fortresses. In Ireland no doubt the tradition of their use so far remained that the old or similar foundations were employed to support stockades, which served as fastnesses down to the beginning of the seventeenth century. All those which were used in this manner were apparently situated in small lochs and disconnected with the shore. They were consequently as likely to have been kept in existence because

they readily lent themselves to new wants as because the old reason for their use still operated in full. It cannot be concluded that the numerous settlements which thickly line the shores of larger lakes were set in their strange position primarily for the object of defence, simply because other lake settlements were under other circumstances used for defence alone. Beyond the analogy of Crannoges nothing but bare assumption can lead to a definite theory of any kind as to the original reasons which prompted the choice of water as the foundation for a town; and a presumption that the custom in Switzerland was uselessly transmitted, like a meaningless animal habit, from a life spent under other circumstances may perhaps be got from the alleged fact that piles were even driven into dry ground to give superfluous support to the upland settlement of Ebersberg.

If the question as to why the lake dwellings were built must for the present remain unsolved, no such uncertainty fortunately affects the method of their construction. Above the water they seem to have been in all cases essentially alike; but their foundations could be laid in two ways. Sometimes masses of fagots, alternating with layers of brushwood mixed with clay or gravel, were piled upon each other till the top was brought upon a level with the surface of the water; a number of piles were driven in to keep together the heap; and a floor upon which the houses were built overlaid the whole. This kind of substructure, like the Irish Crannoges of analogous formation, has as yet been found only in the smaller lakes, where a muddy bottom would have allowed foundations composed of piles alone to sink too deeply, and where the mass of water was not sufficient to be raised by wind into destructive waves. It seems also to be so far more ancient than the alternative method that no instances have been discovered in which fascine dwellings are associated with bronze remains; but so far as can be judged from the manner in which the timbers which occur are morticed together, and from the fashioning of the pottery, scraps of which are found among the débris, the people who inhabited them seem to have differed in nothing from those who erected more artificial stages upon piles alone. The latter kind of dwelling from its greater solidity could be built under more varied conditions. Sometimes, as at Wangen, the villages were built close to the shore and seem to have been protected by palisades; much more frequently they were placed at a greater or less distance from it; in some examples they were pushed out for a space of three hundred yards. In the latter case the water was often deep, and it was not rarely that an entire settlement was placed upon piles hardly less than thirty feet long. It is calculated that in the settlement of Robenhausen 100,000, and that at Wangen 40,000 piles, must have been used; and though these were villages of unusual size it is obvious that enormous labour must have been expended before the smallest cluster of huts could be erected by men whose only tools were a fragment of stone and a fire. It is difficult to realise the length of patient industry which must have been applied to fell a single tree by the help only of a stone hatchet; to sharpen the trunk with fire might be a simpler and quicker operation; but to drive it through five feet of earth by means of

wooden hammers or clumsy blocks of stone was again a work hardly less severe than the original creation of the pile. When a sufficient number of these piles had been sunk sometimes at random, more commonly in regular order, the platform upon which the cabins were to be built had to be set upon the top. Logs ten or twelve feet long were fastened by wooden pins to the heads of the upright trunks which had been chopped to an even height, and a boarding of planks was again pegged to the rougher basis of the floor.

So far there is no question about the mode of construction; it is less certain how the huts themselves were built. Their framework was probably made of logs connected by wattles of smaller branches; the many morsels of clay which have been discovered still marked with the impression of wattling, prove that they were coated either outside or inside with unbaked earth; the plentiful remains of straw and reeds seem to indicate that they were thatched; the flat stones which still often lie *in situ* upon the flooring show the size and the nature of the hearth; the invariable presence of clay weights is held to indicate that each hut had its loom; and grounds exist according to M. Troyon for asserting their shape to have been round, according to Dr. Keller for declaring them to have been usually rectangular, and in some cases for fixing their size at about twenty-seven feet by twenty-two. On the whole the latter opinion seems to be the more consistent with a somewhat meagre range of facts; and the analogy of the more perfect remains the discovery of which has been announced within the last few weeks from Daber in Pomerania would lend to it additional probability.

Beyond this nothing is known of the dwellings themselves; but the objects which have been found in them are such as almost to enable us to reconstruct a picture of the life which their inhabitants passed. In their tools, their weapons, the bones of the animals which they ate, the grain which they cultivated, and the wild fruits which they gathered, in the fragments of material which could only have come from distant countries, even in the seeds of tares which in lurking among the corn betrays the origin of their cereals, are revealed or suggested the progress of their handicraft, the changes which took place in the nature of their food, something of the aspect of the country in which they lived, something even of the lines which trade may have followed, and along which comparative civilization may have come.

It is useless to enter into any description of the form of the weapon and implements of the stone or even of the bronze age. Most people are acquainted with the usual shapes of stone and bronze celts and of arrow-heads; the more exceptional implements it would be useless to describe without the help of figures; and it is more interesting, as it is of more importance, to note of what materials they were made. Whether or not commerce, in the proper sense of the term, existed in that earliest age when stone and bone were the only materials employed for the manufacture of tools or weapons, it is certain that much of the stone then in use was of a kind which cannot be found in Switzerland. Flint was brought from France; but nephrite, the appearance of which is not uncommon, is believed not to occur within the limits of Europe, and jade is almost certainly of Eastern origin. It is difficult to believe

in regular commerce, but it is equally difficult to understand that passing from hand to hand, which not being commerce, could yet according to Sir J. Lubbock introduce foreign materials in considerable quantities. His own example drawn from the tumuli of the Mississippi, the intercourse by which Humboldt accounts for the large quantity of gold found in Hispaniola and Florida, the trade which at the present day penetrates Africa in all directions, and a hundred other like instances would rather lead to the supposition that it is very easy to underrate the amount of barter which may take place among very savage tribes and the distance to which objects may be transmitted in regular course. Single specimens are not so significant, but the glass bead found at Wauwyl in a habitation of the earliest stone period, and that of amber which was discovered at Meilen, must have come, the one from Egypt or Phœnicia, the other presumably from the Baltic. The probabilities of commerce are increased, or the direction of immigration is shown, by the wheat the barley and the flax which were grown by the lake people ; the two former are identical with the species which used to be cultivated in Egypt; the *Centaurea cyanus*, the seeds of which are mixed with the corn, finds its home in Sicily ; the flax is of a kind which is native to the Mediterranean countries; and a weed (*Silene Cretica*) which is found in conjunction with it is now unknown to the north of the Alps.

The knowledge which is afforded by vegetable remains is far from being bounded by a stray indication of the direction of lines of importation. Thanks to the preserving power of fire, we see in a vast mass of carbonized remains the fruits which were eaten by the ancient Swiss and the fabrics with which they clothed themselves. Cakes of unleavened bread, equivalent to a weight of forty pounds had they been newly baked, were gathered at Robenhausen; elsewhere grain, roasted and coarsely ground, has been discovered in the earthern pots which were used for its storage; wild apples sometimes in quantities so large as half a peck in a single place, and pears dried for winter consumption, occur profusely; the wild plum, the cherry, the raspberry, the blackberry, the beechnut, and the hazelnut must have been eaten; the seeds of the dog rose, the elder, and the dwarf elder abound; carraway seeds, and those of the water-lily, the water chestnut, and some pines, may perhaps exhaust the vegetable resources of the lake dwellers.

Their animal food was not less varied. The remains of about seventy species of quadrupeds, birds, fishes and reptiles lie in the relic beds; and the marks of knives and the fractures which show that the bones had been broken open for their marrow, attest the indiscriminate appetite which enjoyed or was forced to content itself alike with a fox or a sheep. Probably like most savages the lake dwellers felt a hard pressure upon their means of subsistence, and the remains, numerous as they are, which are everywhere found may only register the distant occasions on which a victory or a death permitted the slaughter of their scanty herds, or on which unusual fortune in the chase could afford the rare luxury of an animal meal. Much the larger portion of their meat was obviously obtained by hunting. The bones of stags and oxen

equal in number those of all the other species together; but of the five varieties of the latter the urus and the aurochs were wild; pigs existed in a domesticated state, but a sort of wild boar, which Professor Rütimeyer calls the *Sus scrofa palustris*, supplies by far the greater number of the bones which belong to the hog tribe; and the fox, the marten, and the roe are as abundant as the goat or the sheep. Here and there the badger, the hedgehog, and the beaver are found in some quantity; more rarely the ibex, the chamois, the bear, the wolf, and the elk seem to have succumbed to the traps or the weapons of man.

More interesting even than these remains are those which indicate the extent to which animals had been domesticated; and supposing the careful and ingenious observations of Professor Rütimeyer to yield results as accurate as he believes to be given, it is possible in all cases to distinguish between the bones of a wild and tame species, and so to settle definitely the position occupied by the latter in the economy of the stone period. He has recognized in a huge ox which occurs at Concise and Chevroux, an animal only before known through fossil relics in the diluvium of Italy to exist as the contemporary of the mammoth and the hippopotamus; and he has discovered that though it most commonly roamed at large in the forest, yet that sometimes it was also domesticated. As the settlements where it appears lasted through the stone into the bronze age, the date at which this variety was tamed may be somewhat doubtful; but the species of ox most frequently occurring in the earliest and in later times alike is identified with that which still prevails over the whole south of Switzerland. Sheep, never common, increase in number as the age of stone draws to a close; and there seems to be a doubt whether the hog was domesticated at all before that of bronze began. In the stone age therefore we find ourselves in face not indeed of the earliest, but certainly of very early efforts on the part of man to bend wild animals to his use; and by the altered proportion of tame to wild beasts in the bronze period the course of progress in this respect is distinctly marked.

Two classes of objects yet require to be mentioned before proceeding further. The clothing of a people who lived so largely upon the products of the chase might be expected to consist in some measure of skins, but it is not without surprise that we learn of the practice of tanning. The scraps of leather which have been preserved are not numerous, nor is it possible to guess at the manner in which it was cured. Some means of treating it were however certainly known. The examples of woven fabrics are more frequent, and suffice not only to show the material but the method of manufacture. String, ropes, nets, and stuffs of various kinds were made chiefly of flax, but partly also of the fibre of lime trees and of reeds; the stuffs were not destitute of ornament, and M. Paur upon the evidence of the clay weights and the patterns has reconstructed, with more or less of probability, the loom which was employed. Earthenware has been found in great quantities. Unluckily it is usually broken into small pieces, and it is only possible to distinguish the more common forms, to perceive that the ornamentation was rude, and to decide that the vessels were made without the assistance of the potter's wheel. Two

sorts appear to have been manufactured—the one composed of coarse clay, mixed with small pebbles that the material might the better resist fire, the other formed of loam mixed sometimes with charcoal, and now and then painted with graphite. The shape was usually cylindrical. Sometimes the plainness of the surface is relieved by a row of knobs; sometimes the pressure of a cord, of the end of a stick, or of the finger nail gave it a rudimentary ornament; occasionally an endeavour is vainly made to introduce the more difficult refinement of a curve. As the enthusiasm of Dr. Keller has heightened in his copy the merit of the so called leaf ornament on the Wangen vase, it may be broadly asserted that no representation of animal or vegetable form has yet been met with; and that in this respect therefore the Swiss were far inferior to the more ancient contemporaries of the mammoth in France.

Such were the arts and such the condition of the lake people during the period which from the absence of metal is called the stone age. Gradually in the progress of many centuries this state of things began to change; the forests must have been partially cut; the pastures became more ample; the number of wild animals diminished; sheep and oxen grew more common; bronze began to take the place of stone as the material out of which weapons and implements were made; the occupation of deeper waters evidences better tools and larger resources; bracelets and earrings prove some margin of labour and means beyond what was demanded by the wants of simple animalism. Population at the same time probably extended itself more generally over the country. To whatever extent villages existed upon dry land during the stone period none of their remains have at least been discovered, though several burial places remote from water are supposed to belong to that age; but the settlement of Ebersberg, the relics of habitations at Gorgier in Neuchâtel and on the plateau of Granges in Soleure, pottery which has been found on the Salève, and less definite traces which betray themselves at Windisch near Vilten, and on the Uetliberg, may all be referred with certainty to the succeeding period. Curiously enough the lake dwellings of this age seem as yet to be almost confined to the lakes of Sempach, Morat, Bienne, Neuchâtel, Geneva and Luissel, that is to say, they occur almost entirely in the extreme west of Switzerland, and are, except in two instances, wanting in the east. It has been supposed from this that the stone period lasted for a longer time in the east than in the west, and that the people of the Lake of Constance used flint and serpentine alone at a time when those in the basin of the Thièle had finally adopted bronze. The supposition may possibly be true, but its improbability must be allowed to justify the scepticism of Sir J. Lubbock; and a more reasonable solution of what without doubt is a difficulty may perhaps be suggested by the mainland settlements, which so far as is at present known, would appear to have sprung up more commonly during the time when metals certainly prevailed. That fewer lake villages belong exclusively to the bronze than to the stone age would seem to show that a tendency to abandon the water had commenced by the time when bronze was introduced, and it is not inconceivable that this tendency may have pronounced itself at an earlier period in the Lakes of Constance or of Zurich than on those

of Geneva or Neuchâtel. The small number of remains which have as yet been found upon land at all, and the high probability in any given instance that all traces of a settlement would be obliterated by the long succession of subsequent generations deprive of significance the fact that nearly as many such spots in the west as in the east give evidence of having been occupied.

Whether or not any movement into villages built upon the land accompanied more or less generally the growing prosperity which came with advancing time, it is certain that pasture was much more extensively occupied than in the age of stone, and that the animals of the forest had decreased. The bones of the ox become decidedly more common than those of the stag; the aurochs disappears, and the formidable urus only remains in a state of domestication. Pigs, undoubtedly tame, predominate over the boar; sheep increase in quantity; and foxes yield their place to dogs, the type of which, intermediate between that of a hound and that of a pointer, declares their use, and proves a development from the inferior examples which are found in the earlier dwellings. The remains of man himself, strangely wanting before, appear though still with rarity in the habitations of the bronze period; and half a dozen skulls are insufficient to permit conclusions to be drawn with safety from their characteristics. The industry of the bronze age seems in most things to have in no wise altered its processes and to have very little improved its results. Similarity of vegetable remains indicates, if it indicates anything, that agriculture had not rendered superfluous the gathering of wild seeds, tiresome to collect in large quantities, and deficient in nutriment when eaten. The linen fabrics are identical with those of the former age. Pottery assumes slightly more elegant forms, and circles and spirals are added to the angular ornaments of the stone period; but the potter's wheel is still unknown, and the material if somewhat finer is essentially the same.

In implements however and in weapons progress is far more apparent. Axes, arrows, and knives retain their ancient shape; but swords, lances, and sickles are found for the first time; and pins, buttons, fish-hooks, needles, earrings, bracelets and rings are even frequent. Swords, short, double-edged, and straight, may be supposed from their rarity to have been reserved for the chiefs; and two poniards coated with silver, in the collection of Col. Schwab, must have been precious in the last degree. Ordinarily bronze celts were the weapons of ordinary use, and the immense variety of their shapes no less than their great actual number would prove the universality of their diffusion. The stone age melted into the bronze age, but although stone celts continued to be used even into the Middle Ages, metal must have become sufficiently common long before the appearance of iron to supersede generally the implement of flint or serpentine.

How then did metal first come to Switzerland at all, and whence was so large a quantity derived? Dr. Keller believes that the lines of communication which are suggested or proved by vegetable relics may be held to account first for the advent, and then for the spread of copper and of tin either separately or in combination. He points to the early association of the Phœnicians with Cornwall, to the difficulty

of imagining that tin could have come by the more direct route of Gaul, to the high probability of the existence of continued communication with the Mediterranean. He thinks that bronze was a subject of barter with the Etruscans, or with nations who had received it from them, and that most of it, even in late times, was imported as a compound metal and not in its component elements. To this M. Troyon and others reply with a different theory. They suppose that the people of the age of stone were violently displaced or destroyed by a new race, who advancing from Asia brought with them a knowledge of metals and of the processes necessary for their extraction from the ores. It is said, and with justice, that all Europe could not have been supplied by the Phœnicians, that no part of it, except perhaps Hungary,* offers evidence of an age in which the use of copper preceded that of bronze, and that it is impossible to conceive the idea of compounding copper and tin to have arisen simultaneously with their first discovery. It is alleged with high probability upon the evidence of the deposits at La Tinière that the age of bronze must have lasted between 3,000 and 4,000 years, while the Phœnicians certainly did not discover Cornwall till between twelve and fifteen centuries before our era. Finally it is asserted that the bronze of the Etruscans, of the Greeks, and of the Egyptians always contains traces of lead, and that the bronze of Switzerland and northern Europe is as invariably free from it. Neither theory is as a whole satisfactory. On the one hand there is no sufficient evidence of a great Asiatic irruption; on the other it seems necessary to throw back the age of bronze considerably before the time which, so far as we know, any dependence upon Phœnician commerce would mark as that at which bronze was introduced into Switzerland. The facts of which the truth is established beyond any doubt whatever are meagre enough. Copper occurs in France near Lyons and in more distant places; in Switzerland, in the Val d'Anniviers, in Glarus on the Mürtschen Alp, and in the Grisons near Andeer and Ilanz. That of the Val d'Anniviers is found close to mines of nickel and cobalt; and an analysis made by M. von Fellenberg shows that nickel and cobalt are present in Swiss bronze and in Swiss bronze alone. Tin is worked in Saxony, and traces of ancient mines have lately been found in Limousin, in La Marche, and in Brittany. A bronze mould for casting has been found at Morges; drop-shaped refuse from crucibles was mixed with implements at Estavayer and Echallens; at the latter

* In the absence of any information as to whether the two apparently copper celts found at Maurach and Sipplingen have been analysed, it is impossible to be sure that they may not have to be classed with the so-called copper implements of Ireland, which invariably contain a certain, though not large, proportion of tin, and therefore only indicate a dearth of the latter metal at a particular place or time. It may often have been difficult to obtain enough of a metal which had certainly to be imported from a considerable distance; and the composition of Swiss implements furnishes a hint of irregular supply. The proportion of tin found in the bronze of that country varies from six to eighteen per cent. Occasionally of course it may have been impossible to get tin at all; and the celts of Maurach and Sipplingen, even if made solely of copper, would probably only indicate a moment of absolute privation. Moreover no conclusion can be drawn from two examples which may have been imported, possibly from Hungary.

place pure copper has been found in crucibles in the immediate neighbourhood of bronze celts still marked with seams from the mould in which they were cast; and at Estavayer a bar of pure tin has been preserved. At some period therefore during the bronze age bronze was cast in Switzerland, some at least of the implements were made from Swiss copper, and it would be curious if all those chosen for analysis should happen to have owed that part of their composition to an unusual source or to have been cast at the end of the period. Probably therefore most of the bronze used by the Swiss was cast at home, and from copper of home production. If so it would be less forced to imagine that their tin was imported from France, which had already supplied them with flints, than to compel a reluctant chronology to bring the Phœnicians into regular communication with the west. But it remains to be asked, and probably the question will long remain unanswered, whether the knowledge of metals was the result of a slowly growing civilization in which the people of western Europe made this knowledge for themselves; or whether occasional communication with the East may have brought a few specimens, a hint of how the material was composed, perhaps a stray native of some place where mines existed who could find in the new country the ores which he was accustomed to work in his own. One fact only at present seems to point to the direction in which these questions may hereafter be solved. Copper implements may of course be found in some place where the knowledge of metal may gradually have been gained under circumstances which forbade its transmission to the west of Europe, until after many ages perhaps it struck men's minds that it would be well to fuse two metals together. But that any such place should have existed on this side of the Ural mountains or of the Caucasus is hardly probable; and unless something be discovered to show that Europe has passed through a stage of copper, the mind is almost compelled to look to Asia or to Eastern Africa as the source from which bronze came, perhaps only as a rarity, or perhaps though with less likelihood as an article of regular traffic.

In the foregoing pages some of the chief facts which are known about the lake dwellings during the two periods to which they for the most part belong have been put together in a fragmentary and imperfect manner. It would extend a review already lengthy into wearisome bulk were yet another period added to the list. But the transition from bronze to iron almost trenches upon the province of actual history. The pottery of the iron age is altered to the Roman type. Gaulish and Massaliote coins have been dug up on the battle-field of Tiefenau, and the lake dwellings dwindle alike in size and in number. At some time towards the end of the vast bronze period the habits of the population changed, and when hostile contact with civilization gave materials for history, the inhabitants of Switzerland were already a strong people, living upon the land, wielding iron swords, driving in chariots, and clothing themselves in coats of mail. A few fishing villages sparsely scattered along the lakes remained, as in the Limmat they lingered till the end of last century; but lake dwelling had ceased as a general custom, and the relics which have come to us from the age of iron,

however interesting they may be in themselves, need hardly be described before closing the register of that curious phase of human development with which they were accidentally connected. Here then we shall stop, adding only a list which we may be allowed to hope will supply an object for many a walk in parts of Switzerland which we Alpine men are perhaps too ready to neglect.

List of the Lake Dwellings in Switzerland, Savoy, and North Italy.

The more important settlements and those of which the remains are most easily seen are marked with a dagger, †. Those in which stone remains are found are followed by an S; those where bronze occurs by a B. In places where both stone and bronze implements have been discovered, and where those of one or the other kind predominate, an asterisk affixed to the S or B respectively indicates to which class the larger number of remains belong. The settlements to which no letter is affixed have yielded implements of neither kind. In all instances in which exceptional objects or iron implements have been found the place of their discovery is mentioned.

BODENSEE.
- Haguenau. S.
- Bodmann. Southern settlement. S.
- Bodmann. Northern settlement. *S.B.
- Lützelstetten. S.
- Mainau. S.
- Nussdorf. S.
- Maurach. S. Amber bead. Part of a copper celt.
- Unter Uhldingen. *S.B. Forty iron implements.
- Sipplingen. S. One celt of copper; sixteen iron implements.
- Markelfingen. S.
- Allensbach. S.
- †Hegne. S.
- Iznang. S.
- Hornstad. S.
- Gaienhofen. S.
- Hemmenhofen. S.
- †Wangen. S.
- Stein.
- Oberstaad. S.
- Neuenburger Horn. S.
- Feldbach. S.
- Steckborn. S.
- Berlingen. S.
- Ermatingen. S.

NEAR FRAUENFELD (to the west of the town).
- On Island.
- †Niederwyl. S. (Fascine dwelling).

NUSSBAUMENSEE (north-west of Frauenfeld.)
- On Island.

PFÄFFIKER SEE.
- †Robenhausen. S. Though no bronze implements have been found during the careful search which this settlement has undergone, the discovery of half-a-dozen crucibles, of three lumps of melted bronze, and of a lump of copper, lead to the belief that it must have been abandoned or more probably destroyed in the earliest days of the bronze period. Three successive settlements at different times on the same spot; two burnt, the third abandoned.
- Irgenhausen.

GREIFENSEE.
- Riedikon. S.

ZÜRICHER SEE.
- Zürich.
- Mänedorf. S. Crucible found.
- †Meilen. S. One bronze celt and an armilla of bronze; amber bead.

ZUGER SEE.
- Zug. S.
- Koller. S.
- S. Andreas, near Cham. S.
- Herschbach, Zwieren, Bathing-place at Zug } (?) Existence of lake dwellings at these places doubtful.

BALDEGGER SEE.
- Near the mouth of the Aa.
- In four other places on what is now dry land; remains not investigated.

SEMPACHER SEE.
- Schenken. S.
- Island at north end. S. Head of one bronze hair-pin.
- Mariazell. S.B.*
- Margrethen.
- Between Nottwyl and Sempach.
- Between Sempach and Eich. S. One bronze celt.

MAUENSEE (west of Sempacher See).
In two places.

WAUWYL (west of Sempacher See).
†In bed of reclaimed lake. S. (Fascine dwelling). Glass bead.

INKWYLER SEE (west of Herzogenbuchsee).
Island in middle. S.

MOOSSEEDORFER SEE (north of Bern).
Two dwellings, one at east, and one at west end. S.

LAC DE BIENNE.
†Nidau. S.B.* The settlement here is upon a Steinberg, or heap of stones artificially made for the protection of the base of the piles. The area of the Steinberg is from 2½ to 3½ acres. A bit of spiral gold wire and a gold plate; several iron objects of a late period; string of glass and jet beads.
Graseren.
Sutz. B. One flint flake.
Lattringen. B.
Möringen. B.
Near Hageneck. S.B.
Peters Insel. One bronze pin.
Small island south of Peters Insel. S.B.
Above Ligerz.
Vingelz (2,950 feet from shore, in fifteen feet of water).

LAC DE NEUCHÂTEL.
†Marin. ? S.B. Remains chiefly of the iron age; rings and beads of glass.
Hauterive. S.
Monruz.
Crêt. Apparently of iron age.
Auvernier. Two settlements S and B respectively; that of the stone age on a Steinberg nearly two acres in extent.
Colombier. S. Two settlements.
Between Colombier and Cortaillod. Remains of Roman times only.
Cortaillod. S.B.* Several iron and gold objects and string of amber and glass beads; three settlements.
Bevaix. B. Three settlements.
Chez les Moines. S. Fragments of Roman tiles.
Near St. Aubin. S. (Steinberg).
†Concise. S.B. Good example of a Steinberg.
Between Concise and Onnens.
Between Onnens and Poissine.
Corcelettes. S.B.
Port à la Reine, near Corcelettes, to the west. A rectangular enclosure of three rows of piles, with the interstices filled in with pebbles.
Tuilleries.
Les Uttins. Two settlements, the one at a distance of 1,850 yards, the other at a distance of 2,200 yards from the lake, in an alluvial plain formed since their erection by the washings from Mont Chamblon.
Clendy.
Between Camp Pitet and Cheseaux.
Yvonand.
Near Chables.
Font. S.?
†Estavayer.
1. Settlement close to the shore. S.
2. Settlement 130 yards from the shore. B.

La Crasaz. Two settlements; that near the shore, S.; that further from the shore, B.
Below Corbière. Roman water-jug. (? whether this is not identical with the bronze settlement of La Crasaz).
Forel. Roman tiles.
West of Chevroux. S.B. 'Great' iron fork.
Chevroux. S.B.
Gletterens. B. Roman tiles.
Between Gletterens and Port Alban. B.
Port Alban. S.B.? (Marked as of bronze age in Dr. Keller's map; but mentioned in his list of settlements on the Lake of Neuchâtel as yielding stone implements only.)
Between Port Alban and Chabrey. S.
Champmartin. S.? (Steinberg.)
Between Champmartin and Cudrefin. S.?
North of Cudrefin (Steinberg).
Between Cudrefin and A la Sauge.
A la Sauge. Pottery; Roman tiles and handle of Roman amphora.
Pont de la Thièle (Zihlbrücke). S. Along the shore of river, under and on both sides of the remains of Roman bridge. See calculation of length of time since this settlement was formed, quoted by Lubbock.

LAC DE MORAT.
At the northernmost corner of the lake
Montellier. S.B.* (Steinberg.)
Opposite the monument of the battle of Morat (Steinberg).
Greing. S.B.
South-west of Greing.
Faoug (Steinberg). Roman tiles.

North of Chandon.
Opposite Chandon (Steinberg).
Near Vallamand (Steinberg).
Guevaux.
1. Near shore. B.
2. Farther out from shore (Steinberg).
Between Guevaux and Motier; two settlements.
Motier. Stone celt; iron javelin; Roman tiles (Steinberg).
Near Praz; two settlements.

LAC DE GENÈVE.
La Tinière, near Villeneuve. Traces of settlement ascribed to stone age at 19 ft. (Troyon 21 ft. 8 in.) from the surface, and of one of the bronze age at about 12 ft. For calculations of length of stone and bronze ages, based on the time required for the accumulation of the deposits in which these remains were found, see 'Bulletin de la Société Vaudoise des Sciences Naturelles,' vols. v. and vi., and Lubbock.
Vevey. S. Near the church of Ste. Claire, at a depth from the surface of the ground of 37 ft., one stone hatchet and range of piles; Roman remains 12 ft. nearer to the surface.
Creux de Plan, between Vevey and Gonelles.
Cully.
Lutry.
Pully.
Cour. Bones which have apparently been notched by instruments of metal.
Vidy.
St. Sulpice. Pottery which is referred to the bronze age.
†Morges. B. Silver necklace-bead.
Les Roseaux, close to Morges. S.?B. Many iron sickles.
St. Prex.
Rolle. B.
Nyon.
Versoix.
Les Pâquis.? Close to Geneva. (Troyon does not consider that the piles at this place, and those within Geneva itself, are beyond doubt so old as the bronze age).
Geneva.? From the Île de Rousseau towards Cologny for a long distance.
La Belotte.
La Gabieule.
Bassy.
Moulin, above Hermance. Pottery of the bronze age.
Fabrique Canton, above Hermance.
Creux de la Tougue. B.
Beauregard.
Messeri.
Nernier. Settlement partly in what is now dry land, ascribed to stone age.
Yvoire.
Thonon. B.
Evian.
Amphion.

LAC DE LUISSEL (near Bex.)
Remains found in 1791. B.

LAC D'ANNECY.
Roseley. Early pottery.
Sevrier.

LAC DE BOURGET.
Bay of Grésine Saint-Innocent, north of Aix.
Opposite Saut de la Pucelle. B.?
Entrance of Canal of Savières.

NEAR ARONA.
Peat-moor, formerly lake, of Mercurago, south of Arona. S.B.
Peat-moor of Borgo Ticino.?
Lake or pool at Gagnano.

NEAR IVREA.
Peat-moor of San Martino. S.?

LAGO DI VARESE.
Isolino. S.
Cazzago.
Bodio. Three settlements. S.B.
Bardello.

LAGO DI GARDA.
Peschiera. B. Several copper implements.
Isola di Secchi. Two settlements.
S. Felice. Three settlements.

LAGO DI FIMON. S.

HANNIBAL'S PASSAGE OF THE ALPS.*

One can never feel confident that any controversy is finally closed. There are people outside lunatic asylums who still believe that Copernicus was an impostor, that the earth is a fixed plane and the sun in motion about it. There are mathematicians still confident of squaring the circle, in spite of proof, as cogent as can be given short of demonstration, that the thing is literally impossible. Still more inevitably, and less unreasonably, is this the case with respect to controversies on past events. Though the data remain as they have been for ages, eager disputants always think they can deduce from them some new view, or at least some new chain of argument in favour of an old view; and even if new data should be discovered, they would either discredit them, or twist them round to suit their preconceived opinions. The dispute as to the route by which Hannibal crossed the Alps is one of these irrepressible and utterly hopeless controversies, and Mr. Law and Mr. Ellis, especially the latter, are typical disputants. If Mr. Law could produce Hannibal's hat, with his name in full written inside it, from a chink in the rocks on the Little St. Bernard, we should half expect Mr. Ellis to argue that it had been blown thither from the Little Mont Cenis; and we are not quite sure that Mr. Law would not treat with equal scorn a similar piece of evidence adduced in favour of Mr. Ellis's favourite pass. We have no hesitation in avowing our distinct preference for Mr. Law's theory, if one must have a theory at all: but we are more disposed to agree with the remark of the Dean of Christ Church, in his Roman history, that 'the controversy will probably last for ever: the data seem insufficient to enable us to form a positive judgment.' At any rate the question is hardly worth so much angry ink-shed: and though it is true that, as the Bishop of St. David's says of clerical declarations, 'there is no law to prevent an Englishman from wasting his paper and his ink,' we cannot treat the result as much more valuable than waste paper. Since however Mr. Ellis and his friends have had the field to themselves, until the publication of Mr. Law's present work, from a date before the foundation of the Alpine Club, and since it may be assumed that the general assent of the Club is accorded to the view which is ably summarized in Mr. Ball's Guide by one of its earliest and most distinguished members, we cannot refrain from noticing this new outbreak of 'Hannibal's passage on the brain' (as the disease may be styled), if it be only to show that the Alpine Club by no means abjures the right of private judgment.

There are two modes of dealing with a question of this kind, which relates to the details of a fact that certainly happened somehow or other,

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* *The Alps of Hannibal.* By William John Law, M.A., formerly Student of Christ Church, Oxford. London: Macmillan & Co. 1866.

An Enquiry into the Ancient Routes between Italy and Gaul; with an examination of the Theory of Hannibal's Passage of the Alps by the Little St. Bernard. By Robert Ellis, B.D., Fellow of St. John's College, Cambridge. Cambridge: Deighton, Bell & Co. 1867.

and depends for its solution upon rather scanty and not altogether concordant authorities. First, we may consider what is most likely to have been the course of events, on such *a priori* grounds as may be available, and then see how the authorities accord with what seems in the nature of things most probable. This method obviously entails the danger of unduly discrediting or twisting the authorities to suit the pre-conceived theory: but it may easily be the best plan if the evidence is really unsatisfactory. The other method is to rely wholly on the authorities, and discard probabilities altogether, using observation only to discredit modes of interpretation which involve actual impossibilities. So few things happen in the way *a priori* most likely, that probabilities are at best a very unsafe guide, ; but trusting entirely to the authorities usually results in making them out to be a great deal more certain and minute than they really are. We do not presume to say whether in the present controversy Mr. Law or Mr. Ellis has followed either method strictly, but they certainly exemplify the evils of both in a greater or less degree.

Mr. Law almost worships the authority of Polybius, an accurate and pains-taking writer in general, who wrote very soon after the event, and took special pains to verify this part of his narrative by crossing the Alps himself in Hannibal's track. But after all he gives scarcely a single name (deliberately, on the ground that the barbarous names would be meaningless to his readers), and very few geographical details; and we all know how differently two travellers will describe the same route, according as one feature or another strikes the eye or the imagination. It is no wonder that Polybius is not more explicit: in the first place he was writing a history, not a guide-book, and moreover there was not in his day, nor for many centuries afterwards, a single human being who possessed a clear general idea of the structure of the mountain country between Gaul and Italy. For his age Polybius is unusually intelligible and correct in these matters, and we hold it clear that, if stress is to be laid on his every detail, the theory of Hannibal's passage by the Little St. Bernard is by far the most reasonable, in fact that no other is consistent with true canons of interpretation. The fault we find with Mr. Law is that he rides his hobby too hard, and would have us believe that the matter is as certain as Napoleon's passage of the Great St. Bernard before Marengo. Dr. Arnold, with his marvellously keen eye for geography, may have been over severe upon Polybius, and have expected more of him than was possible in the second century B.C.; but the present writer follows Arnold throughout, both in thinking that the description of Polybius cannot be accurately identified, and also in holding, both on the authority of Polybius so far as he can be relied on, and on the probabilities of the case, that Hannibal did cross the Alps by the Little St. Bernard.

Mr. Ellis has satisfied himself that the Little Mt. Cenis was Hannibal's pass, whether by a study of the geography, by a comparison of all the so-called authorities, or from Polybius alone (who is really the only authority on the subject worth a farthing), we need not here enquire. He admits that every expression in Polybius must be minutely explained, and for this purpose is obliged to devise the singular theory

that Polybius tells everything twice over, first in short sentences of summary and then in detail. It would be impossible for us to give any full account of the reasons why he thinks this method is to be adopted, so that we must refer readers desirous to test the theory for themselves to Mr. Ellis's pages, simply remarking that, from the nature of the case, every historian must occasionally resort to such a practice, though we have never heard theories of interpretation built upon the instances. However, even admitting these rather extensive premisses, we cannot say that we are much more ready to swallow the conclusion, and we are inclined to think that Mr. Ellis will best support his cause by arguing upon the probabilities and letting Polybius alone. There are undoubted difficulties in the way of accepting the Little St. Bernard theory, and Mr. Law does not ignore them, though he does his best to explain them away. The *a priori* difficulties of getting Hannibal over the Cenis may be less, though the present writer does not so estimate them; but certainly if Polybius is to be gospel, the Cenis must be discarded.

We are delighted to find that both the disputants virtually disregard the authority of Livy, who has in fact no claims to consideration except on the old hypothesis that whatever a classical author says must be true, and who has done more harm to real historical knowledge than perhaps any man who ever professed to write history. There have not been wanting modern writers who took him as their guide in this controversy, and were led, as by a will-of-the-wisp, up and down all manner of Alpine valleys. If Livy means anything definite at all, a point of which no one who has ever studied his geography, or even his narrative of facts, will feel very confident, he means that Hannibal crossed by the Mont Genèvre, which in later times was a known and frequented pass, indeed the only one, except the Little St. Bernard, which was habitually used by the Romans. But Livy is not consistent with himself: he agrees withPolybius in taking Hannibal's army up the Rhone far beyond the opening of the Durance valley which leads to the Mont Genèvre, and his partisans were put to great straits to get them back again. However, we may consider Livy extinct as regards this controversy, as well as the theories which ingenious people have propounded in favour of the Great St. Bernard, some pass under Monte Viso, and even the Simplon. The question has narrowed itself, always supposing that no new and eccentric combatant enters the arena, into a rivalry between the Little St. Bernard and the Cenis, with a recognition of Polybius as the only authority, the doubt being, not to the authors now before us but to lookers-on like ourselves, how much respect he is properly entitled to.

We have no intention of entering at length into the details of the controversy, as we do not feel bound to satisfy ourselves or our readers that every word of Polybius can be clearly, accurately, and consistently explained. The famous λευκόπετρον may easily be the Roche Blanche of the Little St. Bernard, or any number of white rocks on other passes, and no amount of argument can identify it certainly. Polybius' rock may, for all we know, have been disintegrated, and have lost its conspicuous character entirely in the twenty centuries which have elapsed

since he observed it. There is no real view of Italy from the summit of either of the rival passes, and therefore some explanation must be found for Polybius' statement that Hannibal cheered his men on the top of the pass by pointing out Italy to them. Mr. Ellis takes him up a peak very near the Little Mont Cenis for this purpose, Mr. Law construes the words to mean that he pointed out the unquestionable fact that Italy lay at their feet. We need not choose between them, we are content once more to deduce the inference that Polybius did not write a guide-book. Much discussion has arisen about the snow which caused such difficulties and disasters to the Carthaginian army; but for various reasons we cannot attach much importance to it, as an argument for or against any route. The objection that snow does not usually lie all the year through nor fall so early in autumn, applies equally to both passes; but there *was* the snow, and Polybius' account of the new snow lying on the old will be felt by all mountaineers to be the most graphic and obviously truthful portion of his narrative. The suggestion that very possibly the climate was then colder than at present, has not, so far as we know, been imported into the controversy: most persons have deemed it enough to assume that the year of Hannibal's passage may have been exceptionally cold. It would however, more reasonably explain the *double* fact of old snow lasting through the summer, and fresh snow falling early in autumn, if we adopted this hypothesis, which is in accordance with the theory, now supported by some eminent authorities, that explains the ancient glacial periods by means of the precession of the equinoxes.

We have expressed considerable respect for Mr. Law and his theory, and somewhat less for Mr. Ellis's; but the founder of the illustrious fraternity of Alpine travellers seems to demand a further tribute from us. What if we try to take Hannibal into Italy by a pass higher and more creditable to his mountaineering genius than any yet proposed, and select for that purpose the Col du Géant! Manipulation of times and distances on a theory less exacting than Mr. Ellis's would easily bring the Carthaginian army into the valley of Chamouni, and for the descent into the Italian plain Mr. Law is with us throughout. There is a tradition, obviously of great historical value, that the Col du Géant was formerly a working pass; and the snow difficulties of the descent are exactly what many of us have there experienced, and all have heard of. There is a most conspicuous λευκόπετρον in Mont Blanc—the objection that the mountain is white with snow and ice, not from white rock, being no obstacle to an active minded commentator; for after all snow and ice are crystalline and solid, and therefore most truly rock. Finally the difficulty about ἐνάργεια τῆς Ἰταλίας vanishes at once, for no one who has stood upon the Col du Géant on a clear day will doubt the propriety of saying that from thence Hannibal might have pointed out to his soldiers a superb view over Italy.

THE NORTH-WEST PENINSULA OF ICELAND.*

Ten years ago Iceland was a country comparatively unknown to English travellers. A few scientific men had, from time to time, been attracted thither in the pursuit of science, hoping to find there a fresh field for the study of natural history, or with the view of adding new specimens to their botanical or ornithological collections; a few yachtsmen had, now and then, visited its coasts; a few travellers had at intervals been led thither by the spirit of adventure and curiosity; but still Iceland lay far wide of the ordinary beaten track of travel, and the man who had climbed Hecla, or looked down the pipe of the Great Geysir, was generally regarded as a traveller of more than ordinary mark. Even of those who had reached this Thule, scarcely anyone had made a tour of any considerable extent except Henderson, who, in the early part of this century, traversed the greater portion of the island on a mission for the distribution of Bibles amongst its inhabitants, and whose Journal still retains its place as the best and most interesting book of Icelandic travel. Other travellers were for the most part content to have visited the Geysirs and Hecla, or, at all events, to have explored the lava-fields between Reykjavik and Cape Reykjanes and the sulphur mountains of Krisuvik, and none of them ever penetrated very far into the country. But of late years not only has the number of travellers in Iceland considerably increased, but also those who have gone there have made far more extended tours than used to be thought of. Now every summer the little steamer which voyages between Copenhagen and Reykjavik carries several parties of Englishmen to Iceland, and all the easily accessible districts in the island have been visited by one or other of our countrymen. The number of accounts of recent tours in Iceland, published in the last few years, affords a remarkable illustration of the increased attention which English travellers have turned towards that country. The travels there of Lord Dufferin, Captain Forbes, 'Umbra' and his friends, Mr. Baring-Gould, Mr. Metcalfe, and others, will probably at once present themselves to the recollection of most of our readers, many of whom must already be more or less acquainted with descriptions of the scenery and the people of this singular island. But notwithstanding all these different accounts of travels in Iceland, there remained two large districts altogether unknown to us. One of them, the Vatna Jökull, in the south-eastern corner of the island, is an immense ice-field calculated to occupy an area of about 3,000 square miles. We believe that no exploration of this has ever yet been even attempted; the sterile deserts which almost encircle its trackless ice-fields have hitherto guarded it from approach; and no more is known of it than such outlying portions as may have been seen by the few travellers who have skirted the southern coast or

* *The North-West Peninsula of Iceland*, being the Journal of a Tour in Iceland in the Spring and Summer of 1862. By C. W. Shepherd, M.A., F.Z.S. London: Longmans, Green, & Co. 1867.

ridden across the Sprengisanðr by a rarely used track. The other unknown district was the Peninsula which stretches out from the north-west extremity of the island into the ocean beyond the Arctic circle. The missionary Henderson visited the shores of this Peninsula nearest to the mainland, but the northern parts of it were still unexplored by any but natives when Mr. Shepherd, in 1862, made the expedition into it of which he gives an account in the little volume before us.

This tour was Mr. Shepherd's second visit to Iceland. It was undertaken partly from a wish to explore the North-west Peninsula and the Vatna Jökull, and partly with the object of making certain ornithological inquiries, which required his presence during the breeding season. Accordingly, he determined to set out as early in the season as possible, and he and his two companions arrived at Reykjavik towards the end of April. This was much too early for a journey in Iceland: the ponies, which during the winter months are turned out to pick up what they can for themselves, were not yet in a condition to stand the fatigues of the journey; there was not sufficient grass for them to live upon; the roads were still impassable with snow and slush, and guides were not procurable till later on, when the fishing season should have ended. These difficulties occasioned much delay; and though by the help of a good-natured friend the travellers were enabled to reach Thingnes at the head of Borgarfjörðr on the 9th of May, yet they were unable to commence their travels in earnest until the end of that month. Meanwhile they had to encounter weather 'dreadful beyond conception, which not only made a tent thoroughly untenable, but actually forced them to beat a retreat from Reykholt, where they had taken up their quarters, back to Thingnes. At last they set out and reached their first camping ground on Arnar-vatns-heiði, a high table-land forming the western part of the large desert which occupies the whole of central Iceland. Here they had expected to find the undiscovered breeding-place of many birds whose summer *habitat* was unknown, but in this they were disappointed; and after four days spent in the dreary solitudes of this stony, boggy wilderness, where there was only just enough grass to keep the ponies from dying, and the weather brought nothing but wind, sleet, and fog, the travellers packed up their tent and moved on northwards towards the Peninsula. A most pleasant change in the weather greeted them soon after they reached the northern coast; and their ride along the shores of Húnaflói, an immense ocean bay, which separates the Peninsula from the mainland on the east, seems to have been delightful. The sun and sky were warm and clear above them; the travelling was better, the grass smooth and green, and as they followed the coast line of Húnaflói, or wound round the heads of the fjörðrs, magnificent views were often obtained of the sombre, massive headlands and snowy peaks, which looked over the blue waters of the bay. The people, too, along this coast seemed well-to-do; their farms were better cared for, their buildings neater, their tûns greener than any others Mr. Shepherd had seen in the island, and there was a general appearance of wealth and comfort among them which is rarely to be met with among Icelanders.

It is rather surprising to find such well-to-do farmers in this northern

and exposed country, where 'the mountains and valleys seem to be torn up and dashed to pieces by the fury of the elements,' and in places the beach is strewn with the dead bodies of sea-fowl killed by the 'furious winter rages' of Arctic storms; but possibly the well-being of the people is to be attributed, at least in great measure, to these very storms, which throw up on their shores such immense quantities of drift-wood as to cover the whole coast line. Leaving the coast of Húnaflói, Mr. Shepherd and his companions crossed the hills to the shores of Isafjardardjúp, a long fjörðr, which, running into the land from the north-east, divides the northern part of the Peninsula into two heads. Each of these heads is crowned by a large snow mountain; the northern by Dránga, the southern by Glámu Jökull. The travellers successfully accomplished an ascent of the Dránga Jökull, but, unluckily, the weather was very unfavourable for the occasion. They were enveloped in mist and rain until they reached the top, and then the fog only rose for a few minutes before it again shut out the view from them. The ascent does not appear to have been attended by any difficulty. The top of the mountain, like those of many of the Icelandic Jökulls, was a flat dome; its height a little less than 3,000 feet. At Isafjörðr, a small Danish trading port on the south shore of Isafjardardjúp, the travellers found a vessel shortly about to sail for Skagafjörðr, a bay on the north coast of the mainland, and they gladly accepted an offer by the ship-owner to give them and their baggage a passage there, whilst their ponies were driven in easy stages round to the same point by land; for the ponies were beginning to suffer much from the fatigues of the journey, and the route by land back out of the Peninsula would be long and tedious. Mr. Shepherd gives an interesting account of the island of Vigr, an eider-duck colony, which he visited from Isafjörðr. The ducks are most strictly preserved for the sake of their down, and this island where they breed is perfectly infested with them; they swarm especially round the one farm-house upon it, and their nests occupy every possible hole and cranny, from the turf slopes of the roof to the scraper at the door. The ship, unfortunately, sailed before Mr. Shepherd and his friends had expected, and they were compelled to abandon their intention of exploring Glámu Jökull and Stiga-hlið, the surturbrand mountain of the district, but they managed to reach a spot nearer to Isafjörðr, where a small quantity of this curious mineralized wood is to be seen *in situ*.

The travellers reached the Skaga fjörðr safely, and after having been rejoined by their guides with the ponies, pushed on across the country by way of Akreyri to Myvatn. This part of the island, as well as that through which Mr. Shepherd returned to Reykjavik, has been traversed and described by former travellers, and he has judiciously compressed into a small space his account of this part of his tour; but he has added to his sketch of the country some interesting notes with regard to the species and habits of the water-fowl at Myvatn. He intended from Myvatn to have made an attempt upon the western side of the Vatna Jökull, but found the Sprengisandr impassable from the depth of the snow, and was forced to abandon the intention; and the vast ice-fields of the Vatna still remain unexplored. But, notwithstanding that

Mr. Shepherd did not succeed in accomplishing all he had hoped to do, and that he encountered during his journey a good deal of unfavourable weather, he seems to have made a very pleasant and interesting tour, and he has given us in this little volume a very pleasant and interesting account of his wanderings. The book is simply written in a modest and unaffected style. The author never thrusts himself unnecessarily before his readers, and his book is singularly free from both the two great besetting sins of travellers—egotism, and attempts at fine writing. It is a simple, unvarnished account of what he did and what he saw during his journey such as might have been written in his own journal. But, on the other hand, it is not a mere monotonous record of travel, but the narrative is interspersed with amusing incidents by the way, and descriptions of Icelandic life and scenery. The former are told with simple touches of quiet humour; the latter have in them a sense of reality which can scarcely fail to bring the scenes before our imagination, and whether Mr. Shepherd is describing the wonderful beauties of an Arctic midnight, or the dreary wastes of the 'ever-to-be-avoided heiði,' his reader has the satisfaction of feeling as if he had almost a personal acquaintance with the country through which he accompanies the author.

SCHEUCHZER'S ITINERA ALPINA.*

Alpine travelling, in its modern acceptation, dates from but a very few years back. The travels of Saussure form the great epoch to which we can trace the serious exploration of the glacier regions. Before Saussure's time, however, there was a race of travellers who were gradually opening up the great European playground; they scarcely caught a glimpse of the beauties which we admire; but in a queer fashion of their own they were beginning to pry into some of the more obvious phenomena. It is curious to turn over their pages and speculate as to the charms by which they were chiefly attracted. They had not yet learnt to appreciate the sublimities of the mountains, but they thoroughly enjoyed the freaks and eccentricities of nature. An intermittent spring, a circular rainbow, a rock with a hole in it, gave them intense delight, as indeed is still the case with the British cockney; a man to whom Snowdon is nothing but a dirty and inconvenient mound will fall into ecstasies at a rock shaped like the late Duke of Wellington's nose. The faculty—whatever it may be—through which the mountains appeal to our emotions, remains dormant after we have begun to appreciate the more striking oddities. The attitude of these travellers in regard to science was analogous. They had none of the general views which have been since developed; but they were beginning to deal with certain detached problems; the real 'fairy tales of science'—those which were invented during the twilight of modern thought—still retained a certain credibility; legends such as those which Sir Thomas

* Οὐρεσιφοίτης *Helveticus, sive Itinera per Helvetiæ Alpinas regiones facta annis* 1702-3-4-5-6-7-9-10-11 *a* Johanne Jacobo Scheuchzero. Lug. Bat. 1723.

Browne records in the history of vulgar errors were lingering in their minds; the nature of dragons was gravely discussed whilst the foundations of geology were being slowly laid; theories about the mystic virtues of certain gems come side by side with acute guesses about meteorology or the motion of glaciers; and, in short, these critics often remind us of children who still look upon nature as a great collection of quaint toys and ingenious puzzles, but whose curiosity is a proof of intelligence and will soon extract really valuable results from what is apparently mere play.

Scheuchzer is an example of this class. His collection of travels, published in 1723, is a fat solid quarto, whose very outside suggests the style of the contents. Each of the journeys opens with an elaborate dedication of complicated Latin sentences. The first four are dedicated to the Royal Society of London, who published the earlier journals. There are strange engravings, two of which are printed at the expense of Sir Isaac Newton. The towns are very clearly represented; but the views of scenery and the maps are curiously inferior. The maps are of that order in which an eruption of equidistant pimples represents the mountain ranges; or sometimes the rivers are bordered by long lines of sugarloaves—each like its neighbour—and crowded as close as they will stand. These symbols, however, are more like the original than the bulbous excrescences which do duty for hills in the engravings. There is a picture of the 'Montes Glaciales Grindelianes,' which is stated to have been drawn 'ad vivum' by an 'insignis pictor topiarius 'Meyerus.' It is a very accurate likeness of the waterfall by which the Serpentine discharges its superabundance into Hyde Park, consisting of large regular blocks (which may be ice or rock or wood), with a stream pouring over them in the centre. The wildest conjecture fails to suggest the spot from which the 'insignis pictor' drew the glaciers or the view which he took of their structure. Some of the other drawings have a closer resemblance to their originals. The Gemmi, for example (whose name, we may remark, comes from gemitus, 'quod nonnisi cum crebris et maximis gemitibus superetur'), has evidently impressed the artist. He has drawn a cliff up which there winds a corkscrew path, strongly reminding us of the edge of the old-fashioned frill on a gentleman's shirt-bosom. Two other interesting, but unluckily vague pictures, give us tolerably faithful likenesses of the Rhone, and the lower Grindelwald glacier. Some points about them are rather uncertain; though, on the whole, they seem to imply that there can have been no very marked alteration in the glaciers since their time. The domelike shape of the Rhone glacier and the final icefall of the Grindelwald are clearly indicated, though the mountains above take the usual fantastic shapes. On turning to the letterpress, we find a corresponding uncertainty as to the nature of the glaciers or 'montes glaciales.' On the one hand, Scheuchzer had certainly a clear notion as to some of their phenomena, and indeed in a passage (of which the substance is noticed by Professor Tyndall) gives the first theory as to their motion. He started what has since been known as the dilatation theory—that is, that the glaciers are propelled by the freezing of water within their fissures. He also observes, as we may notice, that the

polar icebergs are probably caused by the breaking off of glaciers. On the other hand, he was no iceman, and evidently had the vaguest impressions as to their extent and shape. He entertained a notion similar to that which was suggested to the early observers of Mont Blanc, that the glaciers of Grindelwald were overflowing from a big hypothetical valley behind the Oberland screen of cliffs. There are two glaciers, he says, in Berne, one between the Eiger and Mettenberg, and the other between the Mettenberg and Schreckhorn or Wetterhorn, 'qui utrique per vallem montis Mettenberg conjunguntur, et propriè hi duo unicum constituunt.' He follows up this information by a queer list of glaciers. There is one, he says, on the Scheideck; others in Uri; some near the source of the Rhine; 'in monte Kibhalpen etiam est mons glacialis;' another again by the Mons Silvius to which the Salassi gave the name of the Mons Rosæ; and so on through a short list, which conveys the impression that he looked upon these montes glaciales as unaccountable lumps of ice sporadically distributed throughout Switzerland.

Scheuchzer had, however, travelled a good deal within sight of glaciers. He describes amongst other tours his passages of the Splügen, the Maloya, the Julier, the St. Gothard, the Furca, and the Gemmi. He probably did not much enjoy the labour. Indeed there is something pathetic about his account of some of his ascents. He failed to get quite to the top of Pilatus, 'partim propter corporis lassitudinem, partim propter longinquitatem viæ adhuc metiendæ'—causes which have hindered a good many ascents before and since. As he observes with great force in another place, 'anhelosæ quidem sunt scansiones montium,' although he admits that the labour may be much sweetened by agreeable conversation. His scientific zeal led him to encounter a good deal of severe exertion; he made a number of barometrical observations, which for some reason brought out singularly erroneous results, always very much below the true height; and he collected and described a very large number of plants, of which he gives careful engravings. But it is also plain that the agreeable conversation had great charms for him. He picks up and records the eternal stories still to be found in guide books; how travellers on the Gemmi have their eyes bound to prevent giddiness; how the bells in one district are near the ground to prevent the sound spreading upwards and starting avalanches; and many other familiar legends. There is a glacier accident, precisely similar to one recorded by Mr. Longman in the first number of this Journal as having happened on the Aletsch glacier; and the chamois hunters—whose fertile imagination seems to have been already at work—plied him with characteristic anecdotes.

Of the chamois, indeed, or 'rupicapræ,' as he calls them, he takes rather a peculiar view. He records the common anecdotes as to the danger of hunting them; but he inquired more particularly into their internal economy. The chamois, it is known, have sometimes in their intestines the concretions known as bezoar stones, to which people formerly attributed imaginary medical properties. Scheuchzer seems to have inquired strictly of his hunters what chamois were thus endowed, whether, for example, those on one side of a valley had them oftener

than their neighbours, and whether they were any the better for it. Certain chamois, it was said, possessed the invaluable power of 'impenetrabilitas;' they were invulnerable to a musket shot; and this was attributed by some to their feeding upon a certain herb. Scheuchzer summarily puts this down amongst 'anilia deliramenta;' but he cannot doubt that certain chamois, though not absolutely invulnerable, were at least very hard to kill; and he thinks it highly probable that these tough chamois were the fortunate animals whose insides produced the 'ægagropilas.' The power to produce such excrescences resulted from a general strength of constitution which made them literally indifferent to powder and shot.

This marvel, however, is nothing to a somewhat similar discovery which follows. Scheuchzer found an object in a museum at Lucerne, to which he says there is nothing similar 'in regum, principum, privatorumque museis.' This is nothing more or less than a draconita or dragon-stone. Now a dragon-stone must be procured in this wise. First you must find a dragon asleep. Then you must make him sleep sounder either by scattering soporific herbs near him, or (which Scheuchzer admits to have a fabulous sound) by incantations. You may then proceed to cut the stone out of the dragon's brain; but if he should wake during the process or die in a state of consciousness, the stone will be spoilt. The difficulty of carrying out this programme, considering the acknowledged rarity of dragons, is so great that some sceptics doubt the authenticity even of the solitary specimen at Lucerne—but wrongly. For, if the poor man who sold the stone had been an impostor, would he not have invented some more out-of-the-way story and said that it came, for example, from the farthest Indies, instead of simply claiming to have cut it out of a sleepy dragon; and, which is still more convincing, could the stone have otherwise cured all those ailments—exceeding in rarity and intensity even those for which Holloway's pills are a specific—of which many persons testify that it has relieved them? Suppose the stone had been mere marble or jasper, it might perhaps have cured hæmorrhages—but dysenteries and fevers and a whole catalogue of most various diseases? Never! Scheuchzer having demonstrated that this stone was cut from a dragon, proceeds to prove that dragons exist. People profess to doubt it, but there is a strong *à priori* probability that in a district so full of rocks and caves as, for example, the Rhœtian Alps, dragons must exist. Moreover, he adduces a great variety of eyewitnesses, including a man who slew a very ugly dragon, with a cat's head, protuberant eyes, and 'caudâ pedali' (which appears from the engraving to mean, in defiance of classical Latinity, that the dragon frequently stood on his tail) transfixing it with a pointed stick. It was very seldom, however, that dragons allowed such a near approach. As a rule, they were met by a person described as a 'vir quidam probus,' who came home and told his story, very sick and with trembling legs. These unparalleled symptoms, together with a remarkable giddiness, he generally attributed to a specific influence of the dragon. This indeed is fully credible when we look at the awful pictures of the brutes—for the 'vir probus' was always able to give an accurate de-

scription from which the dragons had their portraits drawn. There are scaly dragons and slimy dragons, dragons with wings and feet, dragons with two legs and four legs, with and without wings, and sometimes without wings or legs, but with objectionable heads with semi-human features, and an expression at once humorous and malignant. Some species of dragons again have crests, and some are without (unless as Scheuchzer is careful to suggest, the male dragons alone may be crested), and one is exactly like a crocodile with a turkey's head and wattles. The most marvellous is a heraldic-looking dragon of which it is hard to say whether he has three claws and a head, or four claws without a head, for the head with its singular processes is just like a claw; and perhaps the most facetious dragon is that which we have endeavoured to reproduce. Conceive an Alpine traveller meeting such a beast in the forest by twilight just as he is approaching the hospitable hearth of M. Seiler!

Scheuchzer admits with true impartiality that some of his dragons may be fabulous, and grants to rationalizing interpreters that the peasants sometimes call torrents dragons. But, on the whole, after comparing these Swiss specimens with various 'exotic' dragons, 'satis superque constat' that there are such beasts and indeed many species, and he ends by giving seven characteristics which distinguish dragons from serpents—including the fact that they breathe so hard as to draw in, not only air, but the birds flying above them—after which we quite agree in his conclusion, 'nunc tempus est, ut promoveamus pedes.'

We should be doing Scheuchzer a gross injustice if we left our readers to suppose that this remarkable ebullition about dragons was a fair specimen of his writings. His botanical researches were evidently extensive, and a large part of his travels concerns regions which are of no peculiar interest to the Alpine Club, but with regard to which his information is probably accurate and interesting to antiquarians. Moreover, he has evidently taken much trouble in constructing maps and visiting regions then little known. He gives a careful list of passes which shows that the Gries and the Théodule and others of the minor snow passes were then well known and often traversed. The difficulties were, of course, exaggerated, and he is moved to a most devout expression of thankfulness on his safe return from an expedition over the Splügen, and back by the Maloya and Julier. He looks upon the mountains throughout with a certain horror, but fully recognises their utility. How, but for them, he asks, would those rivers be supplied which fertilize the lower parts of Switzerland? He is a zealous supporter of the claims of the Alps to be the highest mountains in Europe, and takes some trouble to prove, in the course of his argument, that rivers generally run down hill. Indeed the study of these early travels is a striking proof of the difficulty which the most cultivated travellers must have found in appreciating Alpine beauties in those days of painful and dangerous journeying. The one great attraction to the Alps seems to have been the hot springs, and he describes with great length and minuteness the baths of Pfeffers, St. Moritz in the Engadine, and Leuk. But we have abundant proof that the beauty of the snowy Alps (Alpes, he says, quasi Albi because covered with ice) had not

yet dawned upon travellers; thus in describing the Lake of Thun he mentions that the highest mountains near it are the Niesen and the 'Mons Stockhornius,' which are rivals for the primacy; but he says nothing of the exquisite view of the Bernese Oberland which gives to the Lake of Thun its almost unrivalled beauty, and his picture is taken with the back of the spectator towards the Jungfrau. The two mountains which then claimed to be the highest in Switzerland seem to have been the Titlis and the Tödi. Those who enjoy the charms of Alpine scenery by the help of good roads and comfortable inns owe some gratitude to the first explorers, who ventured into the wild recesses of the mountains without either of those great aids to due æsthetic appreciation of scenery.

ILLUSTRATIONS OF ALPINE SCENERY.*

There would seem at first sight as great a contrast between the two books we propose to notice, as it would be possible to imagine between any two works relating to similar subject-matter; and in many respects this is of course true. But apart from the fact that the letter-press of both is by the same author, there exists, underlying the apparent and wide difference, a connection between them which may enable us best to bring out the characteristics of each by comparing them together. Of both the illustrations are the essential portion, the text merely subordinate; in both the illustrations are very good of their kind, though the kinds are extremely dissimilar, both in style and purpose. Mr. Bonney does not pretend to be an artist, and his sketches have been made, as he himself says at the outset, 'to obtain a clear idea of the orography of the country.' They are such sketches as a conscientious surveyor of a mountainous country will make on all occasions, to explain and arrest his trigonometrical records, such as Mr. Reilly, for instance, has made in great numbers round the chain of Mont Blanc. Their interest and value will of course be appreciated only by mountaineers, and not by all of them, but only by such as, like Mr. Bonney, 'are never quite contented with an Alpine view, however beautiful, until they are able to identify every summit in it.' Moreover guides there are none in Dauphiné, and the traveller who visits that inhospitable region will often be indebted to Mr. Bonney for knowing the names of peaks, and the real relation of passes. Mr. Walton, on the contrary, is a painter, and not a geographer. He has the sense to see, what very few artists will see, that the peaks have a meaning in their forms, and that wilfully to alter those forms is to destroy the meaning; and consequently he is more faithful in his mountain outlines than the vast majority of painters. But still his subjects are chosen

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* *Outline Sketches in the High Alps of Dauphiné.* By T. G. Bonney, M.A., F.G.S. London: Longmans. 1865.

The Peaks and Valleys of the Alps. By Elijah Walton; with descriptive text by the Rev. T. G. Bonney. London: Day & Son. 1867.

for pictorial effect, which is often inconsistent with topographical clearness; and his constant practice of shrouding part of the view in mist renders this especially marked. More geographical knowledge may be acquired from studying one of Mr. Bonney's plates than from Mr. Walton's whole series. On the other hand, there is more artistic beauty in the worst of Mr. Walton's pictures than in all Mr. Bonney's. It could not be otherwise; each has had a distinct aim, and has attained it with more or less uniform success.

It is almost a pity that Mr. Bonney did not cast his Dauphiné experiences somewhat more into guide-book form. His style is not very lively, though it possesses the clearness and accuracy less often acquired; and his adventures were not remarkable. Indeed, he himself professes to avoid incidents of travel, inasmuch as a great part of his little volume has already seen the light (chiefly in the pages of this Journal), and to study only to afford information. Much of the latter he has certainly given, few men are better qualified to do so, especially about Dauphiné; and we most heartily commend the man who, being in the position of the 'needy knife-grinder,' is equally candid in confessing it. Still his book assumes the form of a diary of travel, and one has to follow Mr. Bonney's track oneself in order to get the full benefit of his narrative, whereas it is every mountaineer's first wish to strike out a plan for himself. The descriptive text accompanying Mr. Walton's pictures is, we are inclined to think, a much more favourable specimen of Mr. Bonney's powers as a writer. The introduction, in which he calls attention to the influence of geological structure upon mountain form (a matter which one would be inclined to suppose too obvious for mention, were it not for the obstinacy with which artists disregard it), is not a mere imitation or dilution of Mr. Ruskin's views in 'Modern Painters,' but derives much of its force from his own observation of instances.

Whether Mr. Walton deserves all the praise he receives, whether in truth 'every stroke of his pencil means something, and means right,' we are hardly prepared to say; but we are quite ready to admit that he surpasses, in regard to the truthfulness of his drawing, every painter of Alpine scenery known to the public, with the single exception of Mr. Mac Callum. This may seem scanty praise to those who are acquainted with the preposterous rubbish which every year does duty for Alpine pictures in the Exhibitions, and is duly lauded by art-critics who never saw a mountain. We will therefore vary the phrase, and say that Mr. Walton is not merely superior to the herd of Alpine artists but different in kind. They cannot paint anything worth looking at, for they never set about it in the right way; he, at any rate, tries to represent the mountains faithfully, and often with great success, while even his comparative failures are not contemptible, for they are honest efforts to do right. But our readers may easily judge for themselves of Mr. Walton's merits. The splendid volume now before us is perhaps rather large for a drawing-room table, but it would ornament one infinitely more than the average of illustrated books which one sees there displayed. Moreover there is an exhibition of his pictures now open, which will show his actual work, though bestowed on less interesting subjects. For the present series of plates we need only say

that everything which is possible to chromo-lithography has been done for them, and that they by far are the most satisfactory reproductions of Alpine pictures which we have ever seen. Something no doubt is lost in the process of translating by mechanical means the expression of the painter's mind, even as something is lost in trying to express upon canvas the inexpressible glories of nature; but enough is left to convey to those who cannot see the original scenes a very adequate idea of their beauty, and to stimulate the mountaineer's memory to clothe the picture on which he is gazing in all the gorgeous hues of nature's colouring.

MISCELLANEA.

GRINDELWALD IN WINTER.—*To the Editor of the Alpine Journal.*—Dear Sir,—A winter expedition to the Alps is sufficiently novel to induce me to trouble you with a brief account of ten very pleasant days which Mr. H. Walker and I passed at Grindelwald last December.

We arrived there on the evening of the 16th, in very unpromising weather. About three weeks before, there had been an extraordinarily heavy fall of snow, which had been three feet deep in the village itself; but this had been succeeded by rain, which had reduced the depth to about one foot. During the day of our arrival, and the subsequent night, more snow fell; but by the next evening the weather had cleared entirely, a hard frost set in, and during the whole of our stay we had a succession of cloudless days followed by moonlight nights of unspeakable splendour. With a view to chamois hunting we had come provided with guns, but it was necessary to allow the fresh snow to become consolidated before venturing on the mountains, and in the interval we amused ourselves in the pursuit of foxes and hares, following their traces in the snow. Game was not plentiful, but the search for it kept us on our legs from dawn to dusk, and led us about the valley in all directions. We saw the mountains from every possible point of view, and were kept in a chronic state of delight at the exquisite scenes upon which we came at every step in our rambles through the pine woods densely laden with snow.

By the 20th chamois hunting was considered safe, and, game having been reported on the Mettenberg, we slept that night at the Eismeer chalet. To reach this was a rather difficult and dangerous piece of work; the path, which as every one knows is carried along the brink of a precipice, being converted into a steep slope of snow or ice, requiring much step-cutting and the use of the rope. The hut was more or less full of snow, and, after an uncomfortable night, we started at 2 A.M., and by 6.40 had reached a point on the side of the Mettenberg, called the 'halb mond,' at a height of about 9,500 feet. Below this point chamois had been seen the day before, and our porters had

been left below to drive them up towards us. A mistake had however been made in starting at so early an hour, as the cold before and immediately after sunrise was so severe that we were compelled, while waiting on our perch, to keep in motion, and the chamois, hearing us, passed by on the other side out of shot, and went to the very top of the Mettenberg. Thither Almer and another man followed them, and managed to get three shots, none of which were successful. *We* remained on the 'halb mond' till 1.50 P.M., or more than seven hours—for the first three hours in cold more intense than I ever felt, but afterwards, when the sun reached us, in our shirt sleeves in the greatest comfort. The view from our position of the basin of the Grindelwald Glacier, the lake of Thun, and the flat country beyond as far as Bern, was very fine, and the expedition, though a failure from a hunting point of view, was in every other respect most enjoyable.

That evening we were joined by Melchior Anderegg, and on the 23rd, with him, Almer, and Peter Bohren, we started to cross the Finsteraar Joch and Strahleck passes. We left Grindelwald at 3 P.M., and at 1.15 A.M. on the 24th were on the Finsteraar Joch. The moon was at the full, but we were in shadow until we got on to the level glacier at the foot of the upper ice-fall; still, we had no difficulty in finding our way up the steep rocks on the Zäsenberg side of the glacier by which the central ice-fall is turned. The snow on the upper glacier was in fair condition—not worse than it might often be found in summer. In consequence of the perfect stillness of the air, the cold, although really severe, did not inconvenience us. We found a tolerably easy passage on the right side of the upper icefall, which, in such brilliant moonlight, was a wonderful sight. Descending the Finsteraar Glacier, and keeping well under the Finsteraarhorn, we reached, at 3.20, the entrance of the long glacier valley leading to the Strahleck. The passage of this occupied till 5.40, and was the most trying part of the expedition, as we all began to feel the want of sleep. We climbed the snow wall and gained the col at 6.40. The snow on the lower part of the wall was deep and soft, but quite safe, binding well under the foot; higher up we found ice, and the same was the case on the Grindelwald side, as far as the top of the first rocks. The view was clear, and the sunrise, which we witnessed from the rocks, one of the finest I ever saw. We reached Grindelwald again at 1 P.M., having been absent twenty-two hours, including halts to the extent of less than an hour and a half.

On the 26th we ascended the Faulhorn and slept there, having taken the landlord up with us to open the house. Although on the way up the snow was deep, on the summit there was very little except where it had been sheltered from the wind and sun, under the lee of the inn. During the night, in spite of a violent wind, the thermometer never sank below 26° Fahr. This must have been an exceptional circumstance, but in the daytime we always found the temperature on the hill-sides much higher than down in the valley. There the frost was invariably severe all day, the sun only penetrating its depths for a very short time, while higher up, on the north side of the valley, the sun shone for many hours, and the heat was often quite oppressive. De-

scending to Grindelwald on the morning of the 27th, we reached Bern the same evening, and two days later were back in England.

I hope that the success of our expedition will induce others to follow our example. I am sure that no one who may be favoured with reasonably good weather will return disappointed. A full moon is desirable, and indeed, in consequence of the shortness of the days, essential, supposing any high expeditions are contemplated. As regards the prudence of attempting such, our experience goes to show that snow and glacier excursions, under favourable circumstances, may be made with less actual difficulty, and little more risk from avalanches, than in summer. Our three men agreed that we might have crossed the Mönch Joch, Eiger Joch, or Agassiz Joch, without difficulty, and even proposed, when we were on the Finsteraar Joch, that, instead of making for the Strahleck, we should turn off to the last-named pass, and return to Grindelwald by the Mönch Joch; and we should have done so had we not feared that our non-appearance at Grindelwald quite at the expected time would excite alarm. On the other hand, all rock mountains, even such as are easy in summer, become quite impracticable in winter, from the prevalence of ice.

Grindelwald has many advantages for an expedition of this sort, of which not the least is the presence at the 'Adler' of such excellent people as Herr Bohren and his wife. Their kindness and attention to us were incessant, and I am only discharging a duty in taking advantage of your pages to express our obligations to them.

Yours faithfully,

A. W. Moore.

St. Robert's Hypsologista.—*To the Editor of the Alpine Journal.*—Dear Sir,—The Comte de St. Robert of Turin, well known as a distinguished savant and zealous mountaineer, has invented an ingenious instrument for determining the difference in the height of two stations from a pair of barometer observations, without the necessity of using the Tables, or of making any arithmetical calculations whatever. The instrument, which is called by the inventor *St. Robert's Hypsologista*, is a graduated wooden scale, with two graduated slides, and from its convenient size (8 inches long by $1\frac{3}{4}$ inches wide), it can easily be carried in the pocket. I have been favoured by M. de St. Robert with a model and detailed description, and I hope to make arrangements for its manufacture with Mr. J. Hicks, of No. 8, Hatton Garden. As some of the members of the Club may wish to avail themselves of this instrument during the approaching season, I have ventured to trouble you with this short notice. I am, dear sir, your faithful servant,

Wm. Mathews, Junr.

English Churches in Switzerland.—As many of our readers may be glad to know in what places within the Alpine region they will find English service on Sundays during the coming summer, we give the following list in alphabetical order. Some of the places are served by the Society for the Propagation of the Gospel in Foreign parts (S.P.G.),

some by the Colonial and Continental Church Society (C.C.S), and some are in private hands (Priv.).

Æggischhorn	Arranged by M. Wellig.		July 1 to end of season
*Aix les Bains	C.C.S.	Hotel de Ville.	May 26 „ Oct. 20
Basle	C.C.S.	St. Martin's Church.	June 2 „ Sept. 29
Baveno	S.P.G.	Pedretti's Hotel.	May 5 „ Oct. 17
Bel Alp	S.P.G.		June 1 „ Aug. 25
Bellaggio	C.C.S.	Hotel de Grande Bretagne.	May 5 „ Sept. 29
Berne	C.C.S.	Hospital Chapel.	Permanent
Bex	C.C.S.	Swiss Church.	May 12 „ Oct. 13
Cadenabbia	S P.G.	Hotel Bellevue.	May 5 „ Oct 27
Chamouni	C.C.S.	English Church.	June 16 „ Sept. 29
Champéry	C.C.S.	Hotel de la Dent du Midi.	July 7 „ end of season
Château d'Oex	C.C.S.	Swiss Church.	June 2 „ end of season
Comballaz	C.C.S.		July 7 „ end of season
Courmayeur	C.C.S.	Protestant Church.	Uncertain
Diablerets	C.C.S.		July 7 „ end of season
Engelberg	S.P.G.	Hotel Titlis.	June 16 „ Sept. 22
Geneva	Priv.	English Church.	Permanent
Glion	C.C.S.		June 2 „ end of season
*Grindelwald	C.C.S.	Adler Hotel.	July 7 „ Sept. 29
Hospenthal	S.P.G.	Hotel Meyer.	June 30 „ Sept. 22
Innsbruck	C.C.S.	Hotel d'Autriche.	July 7 „ Sept. 29
Interlaken	C.C.S.	English Church.	June 2 „ Oct. 13
Ischl	S.P.G.	Hotel Bauer.	June 1 „ Sept. 15
Kandersteg	C.C.S.	Hotel de l'Ours.	Uncertain
Lausanne	Priv.	English Church.	Permanent
Lucerne	C.C.S.	Protestant Church.	„
Lugano	S.P.G.	Hotel du Parc.	April 28 „ Oct. 27
Luino	C.C.S.		Uncertain
Martigny	S.P.G.	Hotel Clerc.	July 1 „ Sept. 29
Meyringen	Priv.		Permanent
Milan	C.C.S.	English Church.	„
Montreux	Priv.		„
Neuchâtel	C.C.S.		June 16 „ Oct. 12
Pontresina	S.P.G.	Gredig's Hotel.	July 1 „ Sept. 29
Ragatz	C.C.S.	Hof Ragatz.	July 7 „ end of season
*Rigi Kaltbad	C.C.S.		July 7 „ Sept. 29
Rigi Scheideck	S.P.G.		June 16 „ Sept. 29
*St. Moritz	S.P.G.		July 1 „ Sept. 29
Salzburg	C.C.S.	Hotel de l'Europe.	July 7 „ Sept. 29
Seelisberg	S.P.G.		June 1 „ Sept. 15
Stresa	C.C.S.	Hotel des Iles Borromées.	May 5 „ Oct. 27
Thun	C.C.S.	English Church.	June 2 „ Sept. 29
Turin	C.C.S.	English Church.	Permanent
Vevey	Priv.	English Church.	„
Villeneuve	S.P.G.	Hotel Byron.	„
*Zermatt	C.C.S.	Alternately at the two hotels.	June 16 „ Sept. 29
Zurich	C.C.S.	St. Ann's Church.	Permanent

ATTEMPTED ASCENT OF ORIZABA.—A correspondent of the New Orleans *Pícayune* gives an account of an attempt made early in the present year to scale the peak of Orizaba. We do not even profess fully to understand the narrative, but we give the valuable por-

* At these places the building of English churches is in immediate contemplation, and the necessary subscriptions have been partly raised.

tions entire, for the edification of the mountaineering world. The correspondent describes the incidents of the first day's ascent, and continues:—'At sunset we reached the stone chapel and tower, 13,000 feet above the level of the sea. One after the other our company filed into the gateway for the night. Of its origin there is no history—of its age generations long since dumb knew nought. But a shepherd would not cross its threshold at night time, nor seek shelter from a storm, if a coronet were offered him. The frost that night was sharp and heavy; the bare hard earth was white, and the morning light revealed the neighbouring streams iced over as it slept almost on the narrow level above the abysses. From this point there was no horse-path. Here ended all signs of human or animal travel. Horses were picketed within the walled yard of the ruined chapel; artists packed their apparatus, the engineers their instruments, and, with a plenteous supply of brandy in each man's pocket, the guides were directed to commence the ascent. Then followed promiscuously Americans, Englishmen, Mexicans—one after the other, singing, whistling, jesting as they went. Not long did these noisy demonstrations last, for the breath came hard, and the hands, and feet, and senses were required for the hazardous journey. As we advanced ledges were precipitous and barely passable; rocks of round sandstone came rolling and sliding downward by us, drifts of snow from the topmost ridges glided swiftly from their places as the sun rose in the heavens; and huge flat ice blocks at times came whirling by us like cannon-balls. When on a rise of 14,000 feet the party separated, some taking the high snow ridges, others the gorges or gullies. There is a mean difference in height between the two—often 800 feet. The gullies run up to the summit, with occasional breaks, parallel with the ridges; and the surface composed of rubbish—a collection of centuries—a spongy, black earth, through which we sank to the knees, and where no snow or ice lay, but through which, at noon-day, ran the drippings that trickled from the high snow cliffs. The leaping fountains winding through the gorges increased as they descended, and, uniting sometimes below, swept in a thundering torrent down the mountain side. These streams had worn beds a hundred feet deeper yet than the general level of the gullies. The formation of rocks and earth differed in no wise from that farther down. Here and there lay huge piles of grey limestone and sandstone, and specks of quartz, promiscuously intermingled, angled, some flat and edged, others with regular layers of lime and sandstone; rents, fearfully deep, in the mountain side disclosed curiously-disposed strata of the upper and lower and intermediate sections of geologic formation. Great gaping mouths in the rocky sides sent out sulphuric fumes; and in one mammoth opening lay heaps of sulphur, and farther back pillars of purplish stone (the result of drippings) thirty feet high. These are no evidences of recent eruption (perhaps none for 200 years), but the fact that the summit is bare and black, and that occasional whirls of smoke are emitted from the crater, indicates the smouldering condition only of the volcano at present. The ascent was continued in an almost direct line towards the top. Up to within 2,000 feet of the summit level the whole company were

in motion, but scattered at great distances from each other. At this time some failed and fell. Blood began to pass from nose and ears, and faces were swollen so that old friends knew each other only by the dress. A few continued the journey a thousand feet higher, lay down, slept on the snow or black dust, gasped for breath and awoke. Some dropped every few minutes—it was impossible to keep awake all the time—but started up again as soon, catching the breath. The painful, oppressive atmosphere weighed heavily upon the loaded artists, and they with one accord, and without parley, turned and retraced their steps towards the spot where fell early the unambitious and weak lunged. Those on the ridges sent whirling under their feet rocks and patches of black earth, and ice clefts that seemed to hang in air above the affrighted explorers in the gullies beneath. Land and snow sections were continually started under the feet of those above; and snow-drifts often fell, burying us at times in the rubbish. No sign of tree, or shrub, or grassblade, or hardy flower—all silence, and snow, and black desolation; rifted rocks, weird, unseemly piles of frozen earth and ice, upward; mist and cloud below; the sun and sky deep blue overhead; beneath, the cloud-field and the abyss. Artists were out of sight under the clouds descending, engineers and others lay down or staggered at points on the way, incapable of willing or acting, and calling upon those in front to return. Falling rocks became more frequent; boulders undermined by the thaw of ice came spinning after each other at fabulous rates of speed. Shafts of ice 30 ft. long, loosened by the falling boulders and snow slides, slipped from their mooring, fell upon the sandstone cliff below, ground into fragments, and bounding onward between sun and cloud, sparkled like diamonds as they fell. The wind was sharp and cold, but not high. Once, and once only, it chopped round and swept the mass of cloud away eastward, and then distant landmarks and cities and plains were visible. Popocatepetl and all the Mexican volcanoes were distinguishable, and with a good telescope we looked out over the Chiquite Mountains into the placid waters of the gulf. In a few minutes the wind shifted, and cloud and mist trooped back again and hung with a sort of affectionate embrace around the mountain top and sides. Sound at this height was very distinct, although it appeared distant when actually near. Amid the silence that reigned, the snapping ice shafts and snow slides, and falling rocks, and even the little waterfall, fell painfully upon the ear. The crashing noises one experiences in caverns when a stone strikes the floor, or a rill plays upon the rock, resemble very nearly the sensation; and when a boulder broke upon the lower ledge, the sound quivered with a vibratory motion for a long time before it died away. The sense of isolation is acute, existence is a dream, the senses half benumbed, memory in a mist, and thought lost in a maze of uncertainty. Were it not, indeed, for the continuous struggle to retain vitality, the sensation of losing breath, and the constant loss of blood, one might easily be induced to dream on in a seeming sleep on a sunny snow ledge or cinder gorge. We were now nearly 16,000 ft. above sea level. Distinctly, as if at our elbow, the sound of the guide's feet striking the solid drift, 1,000 ft. away, fell upon the ear. Evidently the Indian

pilots, who did not count upon our advancing so far, became alarmed, and indicated a wish to return. But General S—— urged them forward, taking himself a narrow, conical ledge, pushed towards the summit. Notwithstanding the pretentious knowledge of these natives, it is very much doubted whether any living being advanced farther towards the summit than our party did. Some time during the war with Mexico, twenty or more years ago, an army officer—a South Carolinian, I believe—made the attempt to reach the top, but he fell, paralyzed, after reaching the height of 15,000 ft. above the gulf. His comrades proceeded no further, but planted on the spot, firmly in the rocks, a stout staff, and on it unfurled the stars and stripes. The flagstaff remains yet in its place, but not a thread of the red, white, and blue is left—all given to the winds and storm, the hail, sleet, blasts, and the gale. Two-thirds of our party were out of sight, down the slope; three alone, beside the affrighted guides, held their way. Blood oozed from ears, nostrils, and mouth, and veins stood out on the forehead like great black lines. Our footing became more and more uncertain, the ascent more abrupt, the stones constantly turning and crumbling away, and betimes huge masses of earth, and boulders, and scoria, loosened by the melting snow, came thundering and hissing from above, fairly flying past our heads on to the next projecting ledge, and great snow drifts, broken and crumbled by the colliding rocks, avalanched down upon our heads a perfect storm of snow, and icicles, and black earth, and lava dust. One of the guides, smitten by a passing drift, rolled, half dead, 300 feet down the slope, and was buried for awhile in the snow and earth. Colonel C——, a West-Pointer, was thoroughly exhausted, and made as incoherent speeches as a toper in his last struggles to maintain consciousness. His broken sentences, low and indiscreet, were indicative of scenes on the Chickahominy, mustering squadrons in cold weather. Down the mountain side, almost under the clouds, lay our English friends, completely demoralized, and seemingly discussing on a lava bank sundry bottles of Cognac, unconscious of the dangers threatening their fellow voyagers in their perilous journey on the treacherous cliffs above. The miniature cascades disappeared; even the drippings disappeared from the rocks; for we had passed the line of thaw. Snow was beaten down hard and compact, and glistened like ice as the sun fell upon it. But an abundance of loose rocks lay on the surface, poised for motion at the slightest touch. The guide started more than one as he picked his way some distance in front. We heard by the footfalls that the courageous S—— was pushing on. He was within 500 ft. of the top, turning into a shallow gully to avoid the falling boulders, when a sliding, tumbling noise was heard, then a heavy, dull click, then a fall, and in a moment a heavy boulder came whizzing by on its downward course; some one called out, "S—— has fallen!" The rock struck him on the shoulder, breaking it, and hurled him 100 ft. down the steep gully. The guide reached him soon after, and we bore him slowly down the steep slope, abandoning for the time our enterprise. Arrived at the tower, we found our horses picketed as we left them in the morning. We passed another night within the roofless chapel;

and, with all the quaint stories and goblin fables associated with it, slept soundly till morn; and down again with our wounded comrade into the soft, warm winds and pine groves, we picked our way, and yet farther on to the balmier air of the lowlands, where cool streams from the hills and peak danced merrily through maguey fields, and in the orange shade through broad pampas to the Rio Blanco.'

Ascent of Mount Hood, Oregon.—We reprint from the Proceedings of the Royal Geographical Society, the following extracts from a paper by the Rev. H. K. Hines, narrating his ascent of that mountain, which it will be seen he believes to be higher than any other in Europe or North America. It must be observed, however, not only that Mt. St. Elias, at the corner of what was Russian America, is very possibly as high—neither mountain having been properly measured—but also that Mt. Elbrouz in the Caucasus is about a thousand feet higher than Mr. Hines' estimate of Mt. Hood.

'The Cascade range of mountains is a northward continuation of the "Sierra Nevada" of California, and traverses the state of Oregon and the territory of Washington from south to north, at a distance of 100 miles from the Pacific Ocean. This range springs up to an average altitude of 8,000 or 10,000 feet, while, at intervals of many miles, more aspiring summits, from 5,000 to 8,000 feet higher, rise above the evergreen roofing of the lower mountains. The highest of these is Mount Hood. It stands about fifty miles south of where the Columbia has ploughed its way through the Cascade Mountains, and in the centre of that range from east to west.

'In September of 1864, in company with three gentlemen of Vancouver, I first attempted to reach the summit of Mount Hood. On reaching an altitude about 800 feet below the summit, a dense cloud came sweeping against the north side of the mountain, and, drifting rapidly over it, instantly enveloped us in its folds. The air changed suddenly to a fierce cold. The driving snow filled the air so entirely that a cliff of rocks 300 feet high, standing not more than fifty feet from us, was invisible. To go up or to go down, was, for the time, alike impossible. One of my companions was chilled nearly to insensibility, but we struggled against the tempest for hours, unwilling to be defeated in our purpose to reach the summit.

'On the morning of the 24th of July, 1866, in company with three gentlemen of the city of Portland, Oregon, I set out full of determination to stand upon the summit, if energy and endurance could accomplish the feat. Our rendezvous was at the house of a Canadian, who, fourteen years before, had erected a cabin at the place where the emigrant road leaves the mountains and enters the valley of the Willamette. From this place the track enters the mountains along the gorge through which flows a dashing river about 300 feet in width, which rises beneath the glaciers of Mount Hood. Up this stream we travelled for thirty miles, when, leaving the gorge, the way makes a détour to the south to gain the summit ridge. Here is the celebrated "Laurel Hill." For three or four miles the ascent is continuous, and in many places very steep.

'Reaching the top of Laurel Hill we were on the general summit of the range: a comparative level of perhaps ten miles in width, whose general character is that of a swamp or marsh. On this plateau is a dense and grand growth of fir, cedar (*Thuja gigantea*, Nutt.), pine and kindred evergreens, with an almost impenetrable undergrowth of laurel (*Rhododendron maximum*, Hook.). Straggling rays of sunlight only here and there find way through the dense foliage to the damp ground. Passing over this level we crossed several bold clear streams, coursing down from the direction of Mount Hood, and then, turning to the left, we took an old Indian trail leading in the direction of the mountain. After a ride of an hour and a half up a continuous and steep ascent, we came to an opening of scattered trees which sweeps around the south side of the mountain. It was about five o'clock when we emerged from the forest and stood confronting the wonderful body of rock and snow which springs up from the elevation.

'We selected a place for our camp on a beautiful grassy ridge between one of the main affluents of the Deschutes River and one of the Clackamas, and which nearly constitutes the dividing ridge of the mountain. Having erected here a hut of boughs and gathered fuel for a large fire during the night, we spread our blankets on the ground and slept well until the morning. We picketed our horses in this place. At seven o'clock on Thursday we were ready for the ascent. For the first mile and a half the ascent was very gradual and easy, over a bed of volcanic rock, decayed and intermixed with ashes. Huge rocks stood here and there, and occasionally a stunted juniper found precarious foothold; some beautiful variegated mosses were also seen clinging to little knolls of sand. We soon reached the foot of a broad snow-field, which sweeps around the south side of the mountain, several miles in length, and extending upward to the immediate summit. The first part of this ascent is comparatively easy, being smooth, and only in places so steep as to render the footsteps uncertain. Near the upper edge of this field of snow the deep gorges, from which flow affluents of the streams Deschutes on the right and Sandy River on the left, approach each other and seem to cut down into the very foundation of the mountain. The waters were rushing from beneath the glaciers, which, at their upper extremity, were rent and broken into fissures and caverns of unknown depth.

'The present summit of the mountain is evidently what was long since the northern rim of an immense crater, which could not have been less than three miles in diameter. The southern wall of the crater has fallen completely away, and the crater itself become filled with rock and ashes overlaid with the accumulated snows of ages, through the rents and chasms of which now escape smoke, steam, and gases from the pent-up fires below. The fires are yet so near that many of the rocks which project upward are so hot that the naked hand cannot be held upon them. Just at the south-west foot of the circular wall, now constituting the summit, and at a distance of near 2,000 feet from its extreme height, is the main opening of the crater. From this a column of steam and smoke is continually issuing, at times rising and floating away on the wind, at other times rolling heavily down the

mountain. Into this crater we descended, as far as it was possible to go without ropes or a ladder. The descent was stopped by a perpendicular precipice of ice sixty or seventy feet high, resting below on a bed of broken rock and ashes so hot as immediately to convert the water, which dripped continually from the icy roof 100 feet above, into steam. The air was hot and stifling.

'At this point the real peril of the ascent begins. It leads out and up the inner wall of what was once the crater, and near 1,000 feet of it is extremely steep. The whole distance is an ice-field, the upper limit of a great glacier which is crushing and grinding its slow journey down the mountain far to the right. About 700 feet from the summit a crevasse, varying from five to fifty feet in width, and of unknown depth, cuts clear across the glacier from wall to wall. There is no evading it. The summit cannot be reached without crossing it. Steadily and deliberately poising myself on my staff, I sprang over the chasm at the most favourable place I could select, landing safely on the declivity two or three feet above it, and then with the staff assisted the others to cross. The last movement of fifteen feet had considerably changed the prospect of the ascent. True, the crevasse was passed, but we were thrown directly below a wall of ice and rocks 500 feet high, down which masses, detached by the heat of the sun, were plunging with fearful velocity. To avoid them it was necessary to skirt the crevasse on the upper side for a distance, and then turn diagonally up the remaining steep. It was only 700 feet high, but it was two hours' sinewy tug to climb it. The hot sun blazed against the wall of ice within two feet of our faces, and the perspiration streamed from our brows, but on nearing the summit the weariness seemed to vanish, and with a feeling of triumph we bounded upon the pinnacle of the highest mountain in North America.

'The summit was reached at about the centre of the circular wall which constitutes the extreme altitude, and it was so sharp that it was impossible to stand erect upon it. Its northern face is an escarpment several thousand feet high. I could only lie down on the southern slope, and, holding firmly to the rocks, look down the awful depth. A few rods to the west was a point forty or fifty feet higher, to the summit of which we crawled, and then discovered that forty or fifty rods to the east was a point still higher, the highest of the mountain. We crawled back along the sharp escarpment, and in a few minutes stood erect on the highest pinnacle. This was found to be 17,640 feet high, the thermometer standing at 180°, about forty feet below the summit, when the water boiled—giving thirty-two degrees of depression. This estimate makes Mount Hood higher than any summit of Europe or North America.

'The view from the summit was magnificent. From south to north the whole line of the Cascade Range is at once under the eye, from Diamond Peak to Ranier, a distance of not less than 400 miles. Within that distance are Mounts St. Helen's, Baker, Jefferson, and the Three Sisters; making, with Mount Hood, eight snowy peaks. Eastward the Blue Mountains are in view, and lying between us and them are the broad plains watered by the Deschutes, John Day's, and Uma-

tilla rivers. On the west the piny crests of the coast-range cut clear against the sky, with the Willamette Valley sleeping in quiet beauty lying at their feet. The broad silver belt of the Columbia winds through the evergreen valley towards the ocean. Within these limits is every variety of mountain and valley, lake and prairie, bold beetling precipices and graceful rounded summits blending and melting away into each other.'

MOUNTAINEERING IN THE TYROL.—*To the Editor of the Alpine Journal.*—Dear Sir,—Having obtained a tolerably complete knowledge of Tyrol during four consecutive visits to different parts of that country in 1863-4-5-6, and being inclined to think that the exquisite beauty of its scenery, and the very moderate cost of travel, will lead to its being visited every year by an increasing number of our countrymen, I venture to offer, for the information of my brother-mountaineers, a sketch of an 8 weeks' tour which I believe will be found to embrace the chief objects of interest throughout the principal mountain groups. I assume that the Tyrol is entered at Landeck in the upper Inn Thal, which may be reached viâ the Vorarlberg either from Zurich or Constance, in about 3 days from London; whilst in returning from Bormio a great variety of interesting routes offer themselves to the traveller's choice. I will only add that it will give me great pleasure to furnish privately further particulars as to maps, guides, &c., or any other information in my power. Yours very truly, F. F. TUCKETT.

1. Thursday. From Landeck by the Finstermünz Pass to (*a*) Reschen and the highest available quarters in the Langtauferer Thal, or (*b*) Mals and the chalets at the head of the Matscher Thal.

2. To Vent (or Fend) in the Oetzthal by (*a*) the Langtauferer Joch, or (*b*) the Matscher (Hintereis) Joch, ascending, in the first case, the Langtauferer Spitz, and, in the second, the Weisskugel en route.

3. Ascend the Wildspitz.

*4. At Vent, and stroll down to Sölden in the afternoon.

5. By the Winacher Thal and Pfaffen Ferner to the summit of the Schneide or Zuckerhütl, and then by the Pfaffen Joch and Sulzenau Glacier to Graba and Neustift in the Stubay Thal, whence Schönberg and perhaps Innsbruck may be reached the same night.

6. To, and at, Innsbruck.

7. At Innsbruck, and by rail to Jenbach, and *voiture* to Zell in the Ziller Thal.

8. Drive to Mayrhofen, and thence proceed up the Zemm and Zamser Thals to the chalets at the entrance of the Hörpinger Thal.

9. Ascend the Hoch Mösele Spitz, and proceed by the Mösele Ferner and Mühlwalder Thal to Taufers; thence drive up the Ahren Thal to Steinhaus, or further if time will permit.

10. By the Vord, or Hint Thörl, to Pregraten in the Virgen Thal.

*11. At Pregraten, and thence by the Dorfer Thal to the Johanns Hütte near the foot of the Dorfer Kees.

12. Ascend the Gross Venediger, and descend by the Untersulzbach Kees and Thal to Neukirchen in the Pinzgau; thence drive to Mittersill.

13. Drive to Zell-am-See and Saalfelden (*a*) or Frohnwies (*b*).

14. Cross (*a*) the Steinernes Meer to Königssee and Berchtesgaden, or (*b*) proceed to the same place by the Hirschbühel Pass and Ramsau.

15. At Berchtesgaden.

16. Ascend the Jenner Spitz; cross the Torrener Joch to Golling; and thence drive to Salzburg viâ Hallein.

17. Drive to Ischl viâ St. Gilgen and the Wolfgang See, or quit the carriage at St. Gilgen and ascend the Schafberg to sleep, proceeding to Ischl the next morning.

*18. At Ischl.

19. Descend the Traun by boat to Ebensee, and then take the steamer to Gmunden on the Traun See, returning in the same way to Ebensee and driving back to Ischl, whence Aussee may be reached by voiture the same evening viâ Laufen.

20 Visit Alt Aussee and its lake and the Grundl See, and then proceed to Hallstadt viâ Ober Traun and the Hallstädter See.

21. Visit the Rudolfsthurm, and returning to the village, proceed to the Wiesen Alp (Almhütte) to sleep.

22. Ascend the Dachstein and descend (*a*) by the Hoch Gjaidstein Joch and Schladminger Kees to Ramsau and Schladming in the Enns Thal, or (*b*) to Hinter Gosau.

23. Drive (*a*) to Radstadt, St. Johann (im Pongau), and Lend; or (*b*) over Pass Gschütt to Abtenau and Golling, and thence to Werfen, St. Johann, and Lend, if time permits.

24. To Wildbad Gastein per voiture in either case.

*25. At Wildbad Gastein.

26. Cross the Stanzer Scharte to Bucheben in the Rauriser Thal, and then the Schütterriedl to St. Wolfgang and Ferleiten in the Fusch Thal.

27. Cross (*a*) the Pfandl Scharte, or (*b*) the Bockkar Scharte, to Heiligenblut in the Möll Thal, in the latter case ascending the Breit Kopf. The first is the easier, but the second is by far the finer, route.

28. At Heiligenblut, and to the Leiter Hütte to sleep.

29. Ascend the Gross Glockner, descend to Kals, and proceeding to Huben, drive thence to Lienz.

30. Drive to Sillian and Inichen and over the Ampezzo Pass to Cortina and S. Vito.

31. Ascend the Antelao viâ the Forcella Piccola, and returning to the Pass descend by the Val Oten to Calalzo and Pieve di Cadore or Tai.

*32. At Cadore or Tai, and in the afternoon to Forno di Zoldo in Val di Zoldo.

33. Cross Col Dai (ascending Monte Civita en route?) to Alleghe and Caprile.

34. Visit the gorge of Sottoguda in Val Pettorina, and then, crossing due S. to Forno di Canale by a pass between Monte Pezza and Monte Alto, proceed up the valley to Gares.

35. Ascend the Palle di S. Martino by the Valle delle Comelle, and returning to Gares, cross the Gesurette Pass to the Valle di S. Lucano and Agordo.

36. To Caprile up the Cordevole Valley viâ Cencenighe and the Lago d'Alleghe, and thence on to Pieve by the Livinallongo Thal.

37. Cross viâ the summit of the Monte Prelungei (Zissa Berg?) to Corfara in the Gader Thal, and from thence proceed up the valley to the Grödner Jöchl, and, skirting the head of the Grödner Thal, traverse the Sella Pass to Campidello in Val Fassa (Fleimser Thal). Ascend the valley to Alba or Penia, or even some higher sleeping quarters if time permits.

38. Ascend the Marmolata and return to Campidello.

*39. At Campidello.

40. Viâ the Duron Pass and over the summit of the Schlern to Bad Ratzes. Thence viâ Völs to Steg in the Eisack Thal, and to Botzen per voiture.

41. At Botzen, and per rail to Trent and Roveredo, and thence to Riva at the head of the Lago di Garda per voiture.

42. Drive up the Val di Sarca to Alle Sarche, and thence walk to Molveno.

43. Cross by the Bocca di Brenta, or over the summit of the Brenta Alta and by the W. side of the Bocca, to Pinzolo in Val Rendena.

44. At Pinzolo and to the Bedole Malga in Val di Genova.

45. Ascend the Adamello and return (*a*) to the Bedole chalet or (*b*) to Pinzolo.

*46. At (*a*) the Bedole Alp or (*b*) Pinzolo; in the latter case proceeding in the evening to the Nardis Alp to sleep.

47. Proceed (*a*) to the summit of the Cercen Pass, thence ascend the Presanella, and returning to the col drop down on the N. side to Vermiglio, Fosine, and the Bagni di Pejo, in Val di Sole. Or (*b*) ascend the Presanella from the Nardis Alp by the Glacier of the same name, and descending by the opposite arête upon the Cercen Pass, proceed thence as already suggested (*a*).

48. By Val del Monte and the Glacier at the head of Val Piana (or Val Umbrina?) to the ridge running S.W. from the Pizzo della Mare, ascend the latter, and returning to the col, traverse the nevé of the Gavia Glacier to the summit of the Pizzo Tresero, whence Sta. Caterina may be reached very directly viâ the Tresero Alp.

49. At Sta. Caterina.

50. At Sta. Caterina; ascend Monte Confinale.

51. Cross the Passo di Forno to the highest châlets in the Val della Mare, perhaps ascending the Vios, or Viozzi, Spitz en route.

52. By the Glacier of La Mare to the saddle between the two highest summits of the Monte Cevedale, or Fürkeli (the Zufall Spitz of the maps of Lombardy and Tyrol), ascend the latter, and dropping down in a N. direction upon the Cevedale Pass, and skirting the head of the Langenferner (which descends into the Martell Thal) to the Janiger Scharte, traverse the latter to Gampenhöfe and St. Gertrud in the Sulden Thal viâ the Sulden Glacier.

*53. At St. Gertrud.

54. Ascend the Orteler Spitz and descend by the Trafoi route to Trafoi.

55. At Trafoi; drive to Gomagoi in the afternoon and stroll up the Sulden Thal to St. Gertrud and Gampenhöfe.

56. Cross the Pass between the Orteler Spitz and Klein Zebru, ascend the latter, and then proceeding to the Orteler Joch traverse the Unterer Trafoiferner to the Heiligen Drei Brunnen and Trafoi (viâ the 'Bergl'?).

57. Cross the Stelvio to Bormio per voiture or on foot, and if desired Tirano may easily be reached the same night, and London in four or five days, either viâ Chiavenna and the Splügen or by the Bernina, St. Moritz, and the Julier, to Chur and Zürich.

Blue Light in Snow.—Most mountaineers have observed more or less frequently in the Alps blue light flashing from the feet as they are lifted out of fresh snow, or seeming to fill the footsteps with a transparent liquid. I have never, however, seen this phenomenon in England, or heard of its being seen, until the great snowstorm of March 19th, 1867, which deposited nearly a foot of snow over several of the southern counties. Late on that afternoon I went out with a companion, while the snow was still falling, and a thick fog covered everything; and for nearly an hour we observed the blue light in our footsteps. It was greener than I have ever seen it before, and very transient, flashing out as we lifted our feet and disappearing almost immediately; nor was pure blue light visible in the holes we made in the snow, except to a slight extent. I presume that the snow was not fine enough to exhibit its natural blue colour very fully, while the condition of the atmosphere, with the light diffused through a thick white fog, was favourable to the appearance of the flashes of light from the snow we threw off from our feet.

H. B. George.

*** *It is requested that short notes of new ascents and remarkable expeditions, intended for publication in our usual 'Summary of new Expeditions' during the present summer, may be sent to the Editor of the 'Alpine Journal,' care of Messrs. Longmans & Co., 39 Paternoster Row, E.C.*

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