3. ASCENT OF THE ALETSCHHORN.

By F. F. Tuckett, F.R.G.S.

The year 1859 will long be remembered by mountaineers as one of the finest which has for some time favoured their explorations, forming, in this respect, a marked contrast to its successor. From the commencement of July till towards the end of September, an almost uninterrupted succession of brilliant days and cloudless skies offered the greatest inducements and facilities to the whole tribe of climbers, and many a peak, pass, and glacier, which had never felt the foot of man, then, for the first time, acknowledged his supremacy.

So uniformly fine was the weather, that one began at length almost to long for a cloudy day, by way of variety, whilst, from the incessant melting action of the sun, the mountains became rapidly so denuded of snow as to be quite marred in their beauty, and present a grim and uncouth appearance.

Indeed it may well be questioned whether, on the whole, variable weather be not the most conducive to the full enjoyment of a mountain district. Disappointing as it is at the moment to have some cherished scheme interfered with,—to wake on the morning of a day chosen for the attack and discomfiture of some mountain giant, and to listen instead to the plashing rain-drops, or to watch the thickly-falling snow-flakes,—there are, on the other hand, many compensating advantages. Not to dwell on the

picturesque side of the question,—the marvellous effects of light and cloud, and the charm of variety and surprise, as one point after another is unveiled, and the rolling mists wreathe themselves into a thousand fantastic forms,—an occasional wet day is often practically found to be a real, though perhaps at the time an unwelcome, boon.

When once the mountain spell has done its work upon a man, the climbing rage—"*der reiz*," as even the cautious Germans phrase it—so takes possession of him that it is difficult to restrain within reasonable limits the ardent desire to be up and doing, and, in the exaltation of the mind, the claims of the body would run no small risk of going unheeded, did not the much-abused bad weather come to the rescue.

What Goethe says becomes sooner or later true of mountaineering, as of art or science:—

"Vergebens werden ungebundene Geister,
Nach der Vollendung reiner Höhe streben.
In der Beschränkung zeigt sich erst der Meister;
Und das Gesetz nur kann uns Freiheit geben."

"To mount aloft to heights serene
In vain uncurbèd spirits try,
In self-restraint the master's seen;
And law alone can give us liberty."

Mountains, like other good things, require a digestive process; and one can't go on swallowing them at the rate of two or three a week, with a liberal allowance of cols by way of seasoning, without at length becoming aware of a dulling influence upon body and mind, which renders the former more susceptible to fatigue, and the latter less alive to the charms of scenery.

A wet day, in short, like a full stop in a paragraph, gives time for breathing and reflection, and enables one to start again with renewed vigour. The botanist has an opportunity of drying and arranging his specimens,—making

hay, as some may perhaps wickedly insinuate, even when the sun shines not; the geologist's bulging pockets stand a chance of being relieved of their angular contents; the meteorologist finds time to reduce or verify his observations; sketches are touched up, home letters written, novel and remarkable tailoring feats accomplished, the trusty boots cobbled and re-nailed for the *n*th time; and the lost day proves, in fact, to be a great gain in many ways.

It is a very generally entertained opinion that the months of August and September are those best adapted for the *grandes courses* which have so multiplied of late years. In this there is much truth, though it depends partly, I believe, on custom, and also on the fact that those months being generally set apart for the holidays, a greater number of adventurous spirits are abroad at that particular time. Without going further into the question here, suffice it to say that, having for several years been in the habit of making pedestrian tours in Switzerland, and generally during June and July, I have never been prevented, except from temporary causes, from crossing the loftiest cols even in the early part of the former month, and have only occasionally found the higher summits inaccessible, either from the backwardness of the season, or from some other exceptional cause. Let none, therefore, whose engagements prevent their leaving home except at this time, be discouraged by a fear that they will be unable to do good mountaineering work. My experience goes to prove the contrary; whilst an early start affords other, and by no means trifling, advantages, such as the choice of guides, longer daylight, better accommodation at inns, a richer flora, grander expanses of snow, well-bridged crevasses, and unopened "bergschrunds."

Between 3 and 4 A.M., on the 15th June, 1859, ac-

companied by Victor Tairraz of Chamounix, and Peter Bohren of Grindelwald, I quitted Viesch for the Hotel de la Jungfrau, 7153 feet above the sea, and now so well known to tourists that it is hardly necessary to say one word in its praise. M. Alexandre Wellig, and his brother Franz, are model hosts, and the house is one of the best specimens of a mountain inn to be met with in Switzerland. Many a day have I spent beneath its hospitable roof, and, whether alone or with a merry party round the blazing fire, in rain or sunshine, I have ever found it "*valde bene in omnibus.*" I will only add, that on the present occasion the house had been most kindly opened before the usual time entirely for my benefit; and though, on bidding him good-bye, M. Wellig insisted that I had not "*vecu*," but only "*existé*," I can bear willing testimony to the resources of the *cuisine* and the excellence of the *cave*.

As we zigzagged up through the noble pine-woods which clothe the lower slopes, the sun rose in a cloudless sky, lighting up the deep red trunks till they glowed again, and giving promise of a brilliant day, which was in no way belied. Halting at the hotel for breakfast, we proceeded at 6.35 to ascend the Æggischhorn. This is usually an easy walk of an hour and a half, but the snow now lay low, so that our progress was delayed, and it was not till 8.30 that we gained the summit. The grand panorama was displayed in perfection, every peak standing out with the most brilliant clearness; and many very tedious pages might be filled with an enumeration of the mountain legion, that in serried ranks barred the horizon in every direction. Topography is dull, however, except to the initiated; and as those already familiar with the district require no explanation, and those unacquainted with it would not, I fear, be much the wiser for one, I will

THE ALETSCHHORN, FROM THE ÆGISCHHORN.

confine myself simply to such particulars as are necessary to indicate the position of the Aletschhorn.

Standing, then, on the summit of the Æggischhorn, the vast mass of the Aletsch glacier is seen in all its vast extent from its central source in the snows of the Jungfrau, Mönch, and Viescherhörner, to its termination between the Lusgen and Rieder Alps, a distance of about fifteen miles. Its course resembles a boomerang in shape, the Æggischhorn and Märjelen See being situated at the centre of the convex side, just where its downward direction changes from nearly south to south-west. On the opposite side of the glacier, to the north-west of the spectator, and at the head of the Aren or Mittler-Aletsch glacier, which here enters the main trunk stream at right-angles, rises the Aletschhorn, flanked by the subordinate summits of the Dreieckhörner, Olmenhorn, and others. On the north it is bounded by a great arm or feeder of the Aletsch glacier, which, descending from the Lötschsattel, and fed by the névés of the Mittaghorn, Ebnefluh, and Gletscherhorn, unites with the central stream from the Jungfrau and Mönch at a point nearly opposite the Faulberg. Its position is thus extremely central with reference to the great *massif* of the Oberland mountains, and on this account I think it is even superior as a point of view to the Finsteraarhorn, which overtops it very slightly.*

I had come to this place with no very definite idea of what excursions I should make; but before quitting the

* The following are the heights of those peaks of the Oberland group which exceed 13,000 English feet in height, as given on the Federal map, or in the works of Durheim and Ziegler: —

1. Finsteraarhorn	14,026	6. Walcherhörner	13,281
2. Aletschhorn	13,803	7. Gletscherhorn	13,064
3. Jungfrau	13,671	8. Eiger	13,045
4. Mönch	13,438	9. Ebnefluh	13,005
5. Schreckhorn	13,394		

summit of the Æggischhorn, my mind was quite made up that, weather permitting, the Aletschhorn should be the first point of attack. I threw out a hint to Victor, who at first shook his head, and said there was too much snow, but gradually caught my enthusiasm, and ended by pronouncing it "*bonne idée*," in which Peter Bohren, always ready for anything in the shape of scrambling or adventure, strongly coincided. And so it gradually became a settled thing that we should at least make the attempt.

The beautiful Märjelen See at our feet was almost entirely frozen over and snow-clad, with the exception of a canal of blue water on the further side, in which floated some miniature bergs. Here, on our first arrival at the summit of the Horn, we were witnesses of a very pretty and interesting spectacle. Two chamois, which were grazing on the rocky slopes beneath us, took fright on discovering our presence, and, descending rapidly to the margin of the lake, started off across its frozen surface towards the base of the Strahlhörner. Through my telescope I could watch every movement of the graceful creatures, who were evidently in no small perplexity. The ice proved thin and treacherous, and every now and then the leader would pause in great embarrassment, look around, then strike off again more to the left or right, once more to be brought to a stand after fresh flounderings and lettings in. They seemed to be ignorant of the canal of open water, which might be some thirty feet in width, completely cutting them off from the shore; and I watched with great curiosity to see what they would do on discovering the trap into which they had fallen. The doubt was soon solved. The leader, on reaching the water's edge, trotted along it for some distance till he came opposite one of the floating bergs of small size, when he made a magnificent

leap, landing safely on the little islet of ice, which spun round with the impetus, and gained the land in a second bound. His companion, a female, following his example, reached the berg in safety, but failed in the second leap, and fell into the water. She soon, however, scrambled out, and the two made off together up the steep mountain-side at a pace that excited my admiration and envy.

After spending two delightful hours at this charming spot I read off my barometer, and we then descended to the Aletsch glacier, followed its course till opposite the Aletsch Wald, and then climbing the south slopes, and crossing the ridge a little to the north of the Rieder Alp, made our way back by the Betten and Laaxer Alps to our hotel.

It was amusing to watch Wellig's puzzled look when I told him of the meditated expedition. Every discovery of an additioual excursion is an advantage to the hotel-keeper; but then, "it was so early in the season that he hardly felt justified in encouraging me." I thanked him, said that my mind was quite made up, and that I would take the entire responsibility on myself, leaving him to find the necessary provisions. He still seemed to hesitate, fearing that if anything went wrong he should be blamed, but at length consented to facilitate my views, provided I would give him a written statement, that he had fairly represented the case to me, and that I had relieved him from all responsibility. All this sounded very absurd; but considering that such expeditions are rarely taken at so early a period as the middle of June, and that, had anything gone wrong, he might have suffered in reputation, I at once complied with his request.

The following day a messenger was despatched to Laax for the trusty Bennen, then a servant of the hotel, but now an independent guide on his own account; and as Bohren's boots wanted cobbling and he had no gaiters, he

descended to Viesch, whilst I strolled away with Victor along the well-known watercourse towards the glacier of Viesch and the Märjelen Alp. After scrambling about for some hours, we descried a cosy nook in full view of the wildly-contorted ice-stream which struggled down through the rocky gorge at a great depth below us, and here, for three hours, we established ourselves in a state of lazy enjoyment, which past labours and the prospect of future hard work could alone justify. I would call the attention of travellers to the very beautifully formed and clearly defined ancient moraine of the Viesch glacier, — or perhaps, I should say, of the united glaciers of Viesch and Aletsch,—which may be seen from the neighbourhood of the hotel, and was very conspicuous from our resting-place. From a point rather below the present termination of the glacier, and on the east side of the valley, it sweeps round in a most graceful curve, overlapping at its southern extremity the village of Viesch, and clothed with pines, which thin off as the glacier is approached. Its true character is seen at a glance when once the eye catches its outline, whilst the recently constructed road leading to the upper Vallais, which zigzags up its terminal slope, offers several sections, disclosing the boulders and sand of which it is composed.

On our return to the hotel we found that Bennen had arrived. His appearance at once impressed me most favourably, and I liked him none the less when he eagerly entered into my views, and pronounced the ascent of the Aletschhorn "*ohne Zweifel schwierig, doch möglich*" (doubtless difficult, but yet possible). There was a frank hearty look about him, an honesty in the eye, and a quietness and simplicity of manner, which proved on this, as well as on many subsequent occasions, a true index of his character. I most cordially unite in the warm

eulogium passed on him by Professor Tyndall, as well as in the more recent allusion to him by Mr. Hawkins in the graphic narrative of his and Professor Tyndall's attack on the Matterhorn.

The afternoon proved stormy, snow and rain fell in considerable quantities, and a falling barometer rendered my hopes for the morrow somewhat of the faintest. Appearances, however, improved after nightfall, and under M. Wellig's active superintendence, with numerous solemn consultations in the kitchen, at which everybody assisted, the necessary preparations progressed steadily. The great tin can, familiar to *habitués* of the Hotel de la Jungfrau, carried like a knapsack, and holding an indefinite number of bottles, was produced and nearly filled with good, sound *vin du pays*,—not for want of anything better, but because there is much truth in Bennen's remark that "*es schmeckt ganz gleich dort oben*") it's all one up aloft). A bottle or two of champagne was added, by way of enabling me to study the expansion of gaseous bodies under a diminished atmospheric pressure—of course, for no other purpose. As for solids, it need not here be told how poulet and ham, sausage and mutton, bread, cheese, butter, and honey, with other good things galore, were duly consigned to a roomy "*Hutte*" or basket, nor how "*noch ein stück*" of this, that, and the other was added to fill up crannies, till all were satisfied that there was no danger of a deficiency. There being no known resting-place, such as the Faulberg offers in ascents of the Finsteraarhorn, Jungfrau, &c., it was thought desirable to take a couple of coarse blankets, together with a small supply of firewood; and then it was discovered that an additional pair of legs would be required to carry the mass of indispensables and luxuries we had by this time accumulated. Being in a particularly good humour, having a

special dislike to bargaining, and taking into account the amount of additional fatigue caused by the deep fresh snow, I gave way, perhaps somewhat too readily, and the consequence was that we had the company of a strong, stolid individual, Alexander Bürker by name. He appeared to be all back *et preterea nihil*, a peculiarity which served our turn better than if there had been more talk and less do in his composition.

On rising at 5 in the morning of the 17th, I found a dense fog concealing everything from view, and weather-wiser heads than mine shook ominously. The temperature had, however, fallen considerably; and knowing that after the rain of the previous afternoon a fog might be expected at this early hour, without being necessarily an unfavourable indication, I had no idea of giving up, or even delaying the expedition. Fortifying myself, therefore, with a hearty breakfast, I descended to the guides' apartment to superintend the final packing and adjustment of the loads. It is well always to see to these things oneself, and to obtain from the landlord a list of provisions, by which to check off each article as it is packed. By this means the not uncommon accident of leaving behind the salt, or sugar, or cups, or some other equally important article, is avoided.

At length after much palaver, oft-repeated good wishes from our host, little speechifyings, and various other manœuvres, of which a quiet Englishman bent on quietly accomplishing his work rarely sees the meaning or advantage, we got under weigh about 7. Our party consisted of Victor Tairraz, Peter Bohren, Joseph Bennen, the man with a back, and myself, two more than were necessary; but, as I before mentioned, I was in a compliant humour, and for once let things take their course.

The mists showed some signs of dispersing, though the

appearance of the weather still continued anything but assuring, and grand masses of brouillard rolled over towards us from the other side of the Rhone valley, occasionally disclosing the mountain summits, deeply covered with fresh snow,—a sight which boded ill for our success on the morrow. Pushing forward at a steady pace, we reached at 8.30 a sort of depression or col, to the west of the Æggischhorn, after a long pull through soft snow. Here the Aletsch glacier came into view, but the opposite mountains were still entirely concealed. A steep descent down slopes of snow and rock brought us to the lateral moraine at 9.30; and as we had the day before us, and the cool morning air had sharpened our appetites, it was decided that a glass of wine and something to eat would be no bad idea. At 9.45 we were again *en route*, and taking to the ice struck across diagonally for the west side of the Aren or Mittler-Aletsch glacier, at the point where it sweeps round the base of the Sattelhorn and unites with the trunk stream. This direction, though it involved a slight detour, was selected in preference to the east or Olmenhorn bank, as the ice-fall in which the glacier terminates seemed on that side to present greater difficulties.

It has been asserted that the Aletsch glacier exhibits no medial moraine; but this, as far as relates to the lower half of its course, is a mistake, which may have arisen from the circumstance, that the spectator stood at the side of, instead of facing, its mass. In the former position the bands, which are not so strikingly developed as on the Unteraar and other glaciers, might almost escape notice. When seen, however, from the Lusgen Alp, or the Furka, above the Rieder Alp, which command a view directly up the portion of the ice-stream extending from the pine-clad gorge beneath to a point a mile or more above the

Æggischhorn, three, if not four, well-defined, perfectly parallel medial moraines are clearly distinguishable. They are separated by very narrow intervals, and are very unequal in magnitude. I have never been able to trace them clearly to their origin, but am inclined to think that one or more is derived from the Walliser Viescherhörner, whilst the others may have a more distant source, but, ingulfed in the névé, only come to light in the central and lower portion of the glacier. A photograph by Martens, taken from the Lusgen Alp, gives an admirable idea of these moraines, and of the course of the glacier as far as the Faulberg. I could see no dirt-bands nor regular swellings of the surface; but the "ribbon structure" was beautifully developed, and its relation to the lines of pressure and the direction of the crevasses unmistakably clear.

The passage of the glacier occupied about an hour, numerous détours being necessary in the more crevassed portions. After crossing the lateral moraine, formed by the union of the débris of the east and west slopes of the Olmenhorn and Dreieckhörner, which here cover a considerable surface, being spread out by the forward thrust of the Aren glacier, we reached at 10.45 the base of the Sattelhorn. Here a halt was called before commencing the ascent of the "*seracs*" to the upper level of the glacier, as a storm of snow and hail appeared to be sweeping down it, and our present position offered better shelter than was to be obtained higher up. A keen cutting wind now rushed down upon us in furious gusts, whirling angular fragments of hail, mixed with snow, in our faces; and the thought would now and then intrude that a night on the ice, under such circumstances, might be a dubious pleasure. Gradually, however, the storm drew off down the gorge of the Massa, and soon after 11 the foot of the ice-fall was reached, and a steep snow-

slope ascended for half an hour, till a jutting rock was found, which tempted us to camp and lunch. As the loving cup went round, and the sky brightened, the spirits of all rose, and even the placid porter gave vent to his pent-up feelings in sundry "*jauchsen*" and "*jödeln*," which woke up a magnificent echo in the cliffs above.

At 12.30 the word of command, "*vorwärts*," was shouted by Bennen, and a short stiff scramble over and between the jagged masses of the dislocated glacier brought us to its central portion. As this was entirely covered with snow, and signs of crevasses abounded, the rope was put in requisition, and in single file we tramped steadily forward in a north-west direction, crossing the glacier diagonally towards the Dreieckhörner, and making for the western base of the Olmenhorn, in the hope of discovering some suitable place for the night's bivouac.

For a long time our search proved fruitless, nothing in the shape of shelter presenting itself with the exception of a large isolated erratic block, resting upon the ice of the glacier, and which would have been only better than nothing, if we could have been certain that the wind would not shift during the night. Before, however, forming ourselves into an improvement and building committee, it was resolved to make a further examination of the rocky sides of the Olmenhorn, and Bennen's quick eye having detected a promising-looking cranny at a considerable height, he was despatched, about 2 o'clock, to make a closer investigation and report the result. This was speedily communicated to us, in what was supposed to be a favourable sense, by loud shoutings and hunting calls, and a climb of some 300 feet, soon enabled us to judge for ourselves of the discovery which had rewarded our perseverance. This was a cleft of no great width or depth,

which, with the help of a little engineering, promised to be quite a palace compared with anything we had ventured to hope for.

The first operation was to level the floor, which had a disagreeable slope, and this was soon accomplished with the aid of some flat stones, a good supply of which was at hand. Under these, a channel was scientifically constructed for the water of a little spring which welled out from the back of the cave, and proved a very convenient source of supply for our subsequent culinary operations. Leaving Victor and the porter to complete the "*travaux de construction*," Bennen, Bohren, and I started on a hay-making expedition, which proved eminently successful, and after a pleasant scramble returned, heavily laden, with a supply of dry grass, which, duly disposed upon our stony platform, made quite a luxurious couch. Our cave was evidently a favourite resort of chamois, to judge from the quantity of hair and numerous bones that lay scattered about.

Our arrangements for the night being at length completed, we began to think about dinner; so, lighting my Russian furnace*, a "*casserole*" of water was boiling merrily in less than five minutes, and a cake of Chollet's "*Julienne au gras*" being sliced into it, we were soon busily engaged upon a couple of quarts of really excellent soup and vegetables, as a first course, followed by *pièces de résistance* and *entremets* in the shape of mutton, veal, ham, and sausage. The soup, both from the manner of its production and intrinsic excellence, seemed to make a profound impression on my companions, who had, I suspect, previously imagined the brown-looking cakes out of which vegetables seemed to spring into existence, like

* See Note 1 at end of this Article.

flowers from a conjuror's hat, to be "*der Herr's*" supply of cavendish. Many an exclamation of surprise — "*Sehen Sie nur! wie es ist merkwürdig!*" &c. — "Just look! how wonderful!"—rose around me, as the process of conversion went on, and Bohren especially could not for a long time get the "*vortreffliche Suppe*" out of his head, as the sequel will show.

Dinner over, whilst Victor, who is an universal genius, washed up, Bennen smoked his pipe, and I made some meteorological observations.* Bohren, who never seemed to be so happy or comfortable as when poking about amongst the rocks and into all manner of holes and corners, disappeared with Bürker over the edge of the cliff, and soon a perfect storm of rolling stones, accompanied by vigorous strokes of the axe, gave signs of his never-ceasing activity. In half an hour he returned, with a flush of triumph on his good-humoured face, and informed us he had manufactured for himself a magnificent "*gîte,*" which he begged me to come and see.

From the entrance of our cave the cliff fell away almost perpendicularly for a depth of eight or ten feet, to a little platform, which afforded a secure landing-place; from this the level of the glacier was easily attained, by traversing a narrow ledge along the face of a precipitous rock, and scrambling down slopes, intersected by couloirs of débris or snow. Near the middle of the ledge, the rock receded or caved in for a length of four or five feet; the recess extending back to a depth of about three feet, with a floor sloping inwards. On descending to this spot I found that Peter, ingeniously availing himself of the cranny, had improved upon it by ranging flat stones edgewise upon the ledge and along the opening, plugging the

* These give for our cave a height of 8896 English feet (mean of Geneva and St. Bernard).

interstices with moss, and strewing the interior liberally with hay, leaving a hole at one end just large enough to wriggle his body through, feet foremost. In this way he had produced no bad imitation of a caddis-worm's cell; and when inside, with nothing of him visible but his face, the general effect was not unlike that of a magnified Indian papoose. His performance drew down "thunders of applause," which speedily added Victor and Bennen to the circle of admirers; and Peter, seeing how sincere my praise was, most politely insisted that I should occupy the cell. I at first declined; but as he persisted, and the place really took my fancy amazingly, I gratefully accepted his handsome offer, though not without some scruples, such as a conscientious hermit crab might entertain before turning a polite whelk out of his shell.

The temptation was all the greater, for, in proportion as the prospects of the weather improved, the air became colder, and a keen northern blast would at times insinuate itself into our cavern, with an amount of cold-bloodedness that suggested uncomfortable wakings during the night, and undesirable shiverings down the back, in spite of all one might do to keep the intruder out, and notwithstanding a Scotch plaid stretched across the entrance. Already, indeed, we were so cool, not to say chilly, that we decided unanimously on a good scramble over the rocks of the Olmenhorn,— a description of exercise which, except where "*mauvais pas*" necessitate caution and deliberation, is about as warming as any that can be selected. An hour of this work sent us back all in a glow to our snuggery, where we determined thoroughly to enjoy ourselves, till it was time to turn in. My "*machine*" was accordingly again put in requisition, some piping-hot grog was brewed, pipes were lit, and, as the smoke curled cheerily out into the evening air, it would not have been easy, I fancy, to

find a merrier or happier party at any comfortable English fireside.

Conversation at length flagged, and, knowing that cold is much more felt when one is silent, and thinks about nerves, and sensations, and other abstractions, which ought not to be admitted for a moment into the mountaineer's vocabulary, I soon, in order to start the others, volunteered a song. Solo and chorus followed in quick succession, till the roof rang again with polyglot harmony, in which the ingredients contributed by my companions consisted, for the most part, of pathetic allusions to "Vaterland," unknown "Mädchen," and impossible "Gemsen." Lest any one should be disposed to think that the "*machine*" or its contents had anything to do with these ditties, I beg to observe that my brew was of the mildest, and the allowance sternly homœopathic: I always find that the most limited use of spirits, or, still better, entire abstinence, is to be recommended to the pedestrian, especially when liable to be exposed to long-continued cold or wet.

Soon after 9 P.M., a rope having been first tied round my waist as a precaution whilst descending the cliff in the dark, I betook myself to my hole, some thirty or forty feet lower down, drew a woollen nightcap over my ears,— I had previously donned a second shirt and pair of flannel trowsers, — rolled myself snugly in one of our "*couvertures*,"— a coarse sort of counterpane,— and was then built in with stones,— a large one forming the door, and only small crannies left for the admission of air. At first I thought I should be smothered; but as the night wore on, the cold increased to a great degree, and, on rousing partially two or three times, I was glad to draw my wraps still more closely around me, and pile the hay upon my feet.

I had scarcely settled when Peter commenced a series of songs, or one long epic — I don't know which,— and this,

with the occasional assistance of Bennen, he contrived to keep up with scarcely a moment's cessation till past midnight, as Victor, who wished to get some rest, and was excessively disgusted at having to listen to what he did not understand, afterwards informed me. I do not wish to be uncharitable, but (by way of parenthesis) I may remark that our stores comprised a bottle of "*rhum*," in case of need, which bottle is supposed to have slept near Bohren, and to have passed a very restless night, as its contents had partially evaporated before morning. I think the delinquent suggested, in reply to my remonstrances, that the cold might have had something to do with it, and I remember reading him a severe lecture on his folly, which ended in a little quarrel and ultimate reconciliation.

At 12.30 A.M., June 18th, after getting three hours of tolerably unbroken sleep,— an art in which I flatter myself I am a proficient,— I arose from my lair. Brilliant moonlight was penetrating through my breathing-holes, and a slight push at once sent the door of my apartment bounding down the rocks beneath, at the same time letting in such an amount of cold air as speedily removed the slightest inducement to prolong my slumbers. A vigorous crow, two or three times repeated, brought Bennen in hot haste to my rescue, and his strong arm soon extracted me, somewhat after the fashion of a periwinkle, minus the inevitable pin, and in a semi-fossilised condition, from my rocky chamber.

I shall not soon forget that crawling forth into the intensely keen but perfectly still night air. Glorious moonlight streamed up the glacier at my feet, whilst each rocky peak and snowy ridge, bathed in soft, subdued light, had an almost unearthly beauty, suggestive of scenic change or magic transformation. Our mountain, the

Aletschhorn, rose proudly at the head of the valley, not even a wreath of mist clinging to its vast buttresses, and with an apparent calm, quiet consciousness of its own superiority,— a sort of now-then-come-on look about it,— that raised a responsive defiance in the heart, and made me long to be up and away, pitching into its icy ribs with alpenstock and axe.

On reaching the cave I found Bohren's tide of melody still flowing, and, as interference at the moment would have been utterly useless, I left him for a time to himself. When Victor and I had brewed some famous hot tea, he — doubtless retaining an agreeable reminiscence of the previous day's *Julienne* — insisted that our concoction was soup, and "*recht gut*" too, and proceeded deliberately to consume the leaves, an undesirable proceeding, against which I remonstrated with some success. Knowing how important it is on such occasions to make a good meal before starting, especially when, as in the present instance, the cold is extreme, Victor and I secured a substantial breakfast, and tried to induce the others to do the same. Bohren, however, was in far too exalted a state to listen to reason, Bennen had no inclination for food, and Bürker preferred taking out the time in sleep. The result later in the day was just what I had anticipated,— Bürker knocked up in a very short time, Bohren was generally indisposed, and at the foot of the final ascent declared he could go no further, whilst Bennen suffered greatly from difficulty in breathing, and neither of them was quite right till the following day. Victor and I, on the contrary, were in excellent condition, and did not experience the slightest inconvenience.

A moderate but sufficient supply of provisions and a bottle of champagne were consigned to a knapsack, the wine-can strapped on the porter's shoulders, and, all

being at length ready for the start, we quitted our temporary home at 2.30 A.M., scrambled cautiously down to the glacier, and were delighted to find the snow in excellent order, the keen frost having rendered it almost as solid as rock. Favoured by this circumstance, as well as by the bright moonlight, we made rapid progress, and at 3 reached the head of the glacier, whence steep slopes of névé, intersected by numerous crevasses, led up to a sort of col or depression, the lowest point of a snowy *arête* connecting the Aletschhorn with the Dreieckhörner.

About this time I observed a phenomenon of rather rare occurrence, but which now presented itself on such a scale, and with such intensity, that I may be permitted something more than a mere passing reference to it. I allude to a "phosphorescence" of the snow, of which the MM. Schlagintweit remark*— "Snow and ice, especially large lumps of the latter, become slightly, but quite distinctly, phosphorescent when brought into a dark room, after being exposed to the light at a temperature several degrees below the freezing point." These gentlemen, however, seem to have witnessed the appearance only from a distance, and when the luminous surface was projected against the sky, whilst in the present instance we were completely surrounded by it. The glacier valley we were traversing, the entire mass of the Aletschhorn, and the snowy arêtes and slopes connecting it, on the one hand, with the Dreieckhörner, and on the other with the Rothhorn, shone with a soft lambent glow, something like that produced by the flame of naphtha, and reminding me strongly of the well-known "*Grotta azzurra*" at Capri, though less decidedly blue in colour. It might have been

* "Neue Untersuchungen über die Physicalische Geographie und die Geologie der Alpen," von Adolph und Hermann Schlagintweit, page 480. Leipzig, 1854. See also Note 2 at the end of this paper.

the opening scene in some act of incantation, so weird and unearthly was the effect, and my companions seemed to entertain the notion that it was not altogether "canny." Happening to look down, a new surprise awaited me. At every step we took an illuminated circle or nimbus, about two inches in breadth, surrounded our feet, and we seemed to be ploughing our way through fields of light, and raising clods of it, if I may be allowed the expression, in our progress. I was inclined at first to attribute this effect to the action of the moon's rays, as they fell obliquely upon the small cloud of fine snowy particles raised by the movement of our feet; and I still feel some little uncertainty on this point. Of the character of the general phenomenon, however, no doubt could exist, as its intensity increased when the moon sank behind the Rothhorn, and the sides of that mountain, now in deep shadow, presented the appearance of a transparency, as they shone with the subdued brilliancy of a glacier vault or "*bergschrund.*"

On the lower portion of the ascent before us, the névé was much crevassed, and, as the fissures were dangerously masked by the fresh snow, some caution and many détours were required to effect a passage. Once, however, clear of the maze, steep slopes of solid snow alone separated us from the col; and as, at 4 A.M., the thermometer indicated a temperature of only —7° Centigrade (19° Fahrenheit), a rapid pace was both easy and agreeable.

The pale tints of dawn had been stealing over the summit of the Aletschhorn for nearly an hour, when, at 4.15, the ruddy hues of sunrise struck the topmost peak, and soon the mountain was all aglow in a blaze of splendour which I have never seen surpassed in magnificence. Almost at the moment of lighting up, a soft fleecy cloud seemed to spring into being close to the surface of the

Aren glacier behind us. An instant before all had been clear, and now there was the misty veil, which "rose like an exhalation," and gradually faded away as the sun gained power. The vapour was probably then in a state of invisible suspension, and its sudden appearance must have depended on some effect of oblique illumination, which often produces most striking, and, at first, almost incomprehensible effects. Throughout the day, with the exception of this passing visitor, not a cloud, nor even the faintest wreath of mist, dimmed the dark-blue vault above us, and the vast horizon of mountain chains.

At 4.30 the thermometer indicated −9·5° C., or 15° F., and only rose to −8° C. in my pocket; but the air was still, and our rapid progress up the steep slopes set us all in a glow. There were decided symptoms, however, of a very different state of things on the ridge in our front. Clouds of fine snow were whirling into the air like smoke, — a sign equally unmistakable and unwelcome that a furious "*vent du Nord*" was vexing the upper world with its keen blast. It required, therefore, but little logic or acuteness to show that our endurance would be put to a pretty severe test ere the goal should be won and our present sheltered position regained.

At 5.15 the col was reached: there was a sudden glimpse into a new world, a wild sea of peaks,— Jungfrau and Mönch, Gletscherhorn and Ebnefluh,— and then, phiz—z! right in our faces came a blast of such keenness, and charged with such a storm of icy spicula, that it sent us reeling backwards, eyes, ears, mouth, and nose filled with the fine frozen particles which insinuated themselves into everything. Our worthy porter, who had got thus far in safety and silence, now announced that he was knocked up, and was accordingly relieved of his tin, fed, and dismissed, to find his way back at his leisure to the cave,

and there await our return. We likewise retraced our steps a few paces till below the line of fire, and made a second breakfast of bread, meat, cheese, and champagne, partly on the principle that —

> "He that would fortify the mind,
> Must first the body fill" —

and partly because, by this time, cold and exercise had not a little sharpened our appetites. While seated here, the sun peeped over the ridge between the Olmenhorn and Dreieckhörner, and looked comfortable, if it did not warm us much; for the thermometer had now got down to −10° C., or 14° F., and certain sensations in outlying portions of the body warned us that a long stay would be undesirable.

So, at 5.45 A.M. we again addressed ourselves to our task, leaving the commissariat in the safe custody of a snow-drift.

A nearly level ridge or arête of snow, some two hundred yards in length, and running up to a thin edge, extended south-westwards from the point we had reached, sinking again into a second slight depression, beyond which rose the upper portion of the Aletschhorn, with its double summit. On both sides the arête fell away in extremely precipitous slopes of snow and névé, which terminated to the south in the Aren glacier, and on the north in that upper branch of the Aletsch glacier which has been already referred to as descending from the Lötschsattel. The wind and snow had formed on this latter side a "*corniche*" or eave, and it was therefore necessary to traverse the length of the ridge a little below its summit, by which means we were also partially protected from the chilling northern blast. This was the most doubtful part of the whole expedition, as the southern

slope, rapid enough at first, descended at a constantly increasing angle, and became all but perpendicular as it approached the glacier beneath; whilst "there was nothing to arrest a falling body in its fearful plunge" of 2000 feet. A good head, however, care in roping, and caution in placing the feet, will in all such cases reduce the risk to a minimum. The real danger lay in the fresh snow which our united weight might set in motion, thus producing an avalanche, against which, in such a position, nothing but the utmost coolness and the promptest action could, as we had soon occasion to prove, avail anything.

Here, however, the frost came to our aid, binding the snow in its icy grasp, and giving us confidence in the security of our footing, though what effect the sun might produce in the interval that must elapse before our return, was a question which, as it involved an unpleasant doubt, was dismissed from our minds. The axe was now brought into requisition for the first time, Bennen and Victor taking turns at step-cutting, as Bohren was suffering from the cold; and with scarcely a halt we worked steadily forward, reaching at the end of three-quarters of an hour, or at 6.30, the second col or depression, which was the limit of the arête in this direction. The more rapid portion of the ascent now commenced; and as we wound up and round the slopes of the lower and more easterly summit, the wind, being in our backs, rather assisted our progress, though its attentions were still more boisterous than pleasant. Showers of fine snowy particles were hurled, as if in spite, against every weak point in our defences, and our back hair was soon a mere mass of bobbing icicles.

About 7 we reached a bergschrund, a species of crevasse usually met with at the base of the higher and steeper slopes, and probably produced by the lower snow-

fields giving way. These often present serious obstacles, especially at a later period of the year, when they attain their maximum development, and the bridges of snow, which in June and July offer a safe mode of transit, are altogether melted, or become so attenuated as to afford but a treacherous support. In the present instance, however, we managed to turn the enemy; and passing soon afterwards, in a similar way, round some awkward crevasses in the névé, exquisitely fringed with enormous icicles, we found ourselves in a sort of hollow between the two summits, the lower of which, a rounded dome, rose on the right some one to two hundred feet above us, whilst the higher shot up steeply before us to a much greater elevation. From this last we were still separated by a second bergschrund, which there was no avoiding, as it swept completely round the foot of the final ascent. The passage was soon effected, however, without much difficulty, and at 8 o'clock the first step was cut in the frozen slope, which rose steeply from its margin.

The snow, covered with an icy "*croûte*," lay at an angle of 50°; and as every step had to be cut, we made but slow progress, and were necessarily much exposed to the blast, which could now batter us to its heart's content. Constant movement of both feet and hands was requisite to prevent frost-bites, and more than once I heard poor Peter piteously exclaiming, "*Ich kann nichts mehr; ich muss sterben wenn ich nicht zurück gehe* ("I can do no more; I must die if I don't go back"). As, however, I knew that, as long as he kept moving, there was little or no danger of his coming to any harm, and he had besides brought his sufferings on himself entirely by his thoughtlessness, my sympathies were not very strongly excited or freely expressed, and I dare say I appeared in a most unamiable light. Gradually the mass above us tapered

away more and more, and at length, after a stiff climb of three-quarters of an hour, and with the aid of rather more than two hundred steps, we stood upon the summit exactly at 8.45 A.M. The effect was startling. A moment before, and nothing was visible but the snow-slope and the heels of the man in front, and now there was nothing above us but the sky, whilst all the world was at our feet.

The first thing to be done was to set up my barometer, in order that it might have as long a time as possible to settle. After an exposure of a quarter of an hour, the reading was 460·4 millimètres (reduced to 0·° C); air temperature in shade, —12·2° C., or 10° F.; in sun, —6·7° C., or 20° F. This indicates, by comparison with Geneva and the St. Bernard, a height of 13,664 and 13,633 feet respectively, or a mean of 13,648, which is 155 feet less than that given by the Swiss engineers.

A wind of such violence as almost to carry one off one's legs, driving snow, and 22° (Fahr.) of frost, are not quite the companions one would select for the examination of so vast and diversified a panorama, and the "*cui bono*" argument may here appear to the uninitiated unanswerable. Scoffers may laugh and wise men shake their heads; but, in spite of them all, I unhesitatingly maintain that there is a joy in these measurings of strength with nature in her wildest moods, a quiet sense of work done, and success won in the teeth of opposition which, whether we owe it to our Anglo-Saxon blood, as some may hold, or whether it be only one of the modes in which the "contrariness" of human nature crops out in certain individuals, are nevertheless as genuine feelings as that which, at the witching hour of dinner, attracts unto his club the mildest, most comfortable, and least erratic old gentleman who "dwells at home at ease." Nay, could the

writer of the clever article in the *Times* on mountaineers and their pursuits, which set us all laughing some time ago, be induced to enter the lists against some doughty giant of the mountain-land, I should not despair of his being won over to the climber's view of the question.

To return, however, to myself and my companions, left shivering all this time on our snowy pedestal. I will frankly confess that my descriptive powers are totally unable to grapple with either the vast extent or thousand details of the wonderful view which stretched away endlessly in widening circles, till mountain and valley, earth and sky, were blended in the blue haze of distance. Even could I give to the component parts the most pictorial grouping, and place them before the reader in their all but endless succession, I fear that I should fall miserably short of conveying an adequate impression of the scene. Abandoning, therefore, the attempt to catalogue, let us see what can be done in the way of classification, by simply indicating some of the more prominent centres, around one or other of which the minor details group themselves. These are the mountains of the Oberland; the great plain of Switzerland, bounded by the Jura; the Bernina group, with the mountains of the Grisons and Tyrol; Monte Rosa and her allies, from Monte Leone on the east to Mont Vélan on the west; the *massif* of Mont Blanc; and far away, mellowed by distance*, yet defined with the utmost sharpness of outline, the rugged forms of the "*montagnes d'Oysans*," which, till the cession of

* The summits of the Aletschhorn and Grand Pelvoux are distant from one another about 135 miles, as the crow flies; and I do not recollect ever having been able to identify a mountain at a greater distance. It is popularly supposed that the Orteler Spitz is visible from Monte Rosa; but there are good reasons for believing this idea to be a myth, and, at any rate, the extent of vision implied is scarcely so great as in the case of the summits of Dauphiné.

Savoy, boasted, in the Mont Pelvoux, the loftiest summit in France. The intelligent reader will know how to clothe these colossal masses for himself in all their magic colouring and variety of form, and thus, like another Cuvier or Owen, build up from the disjointed framework here merely indicated, that goodly portion of our common mother which is embraced within its limits. My more modest task shall be confined to a few remarks on the first-mentioned group,—that of the Oberland,—of which the Aletschhorn itself is a distinguished member, as a glance sufficed to assure us.

With the exception of the rocky pyramid of the Finsteraarhorn, and the yet loftier summits of the *Pennines* and *Hautes Alpes*, we overtopped everything within the range of vision, though of our nearer neighbours the sharp peak of the Jungfrau appeared but little inferior in altitude. The great elevation of our position was perhaps most strikingly illustrated by the fact that, on the north, the eye ranged completely over the chain which extends from the Jungfrau to the Breithorn, and comprises the lofty summits of the Gletscherhorn, Ebnefluh, Mittaghorn, and Grosshorn, none of them less than 12,000 feet in height. There lay, stretched out before us till lost in the obscurity of distance, or bounded more distinctly in a N.W. direction by the range of the Jura, the great plain of Switzerland, over the surface of which hung a veil of mist, serving to remind us that a very different climate to ours was enjoyed by its inhabitants, whilst, at the same time, it rendered minute details undistinguishable.

Turning now to the opposite quarter of the compass, the eye followed the snake-like windings of the Simplon road,— the "*cantines*" dwarfed into the semblance of milestones,—bounded, on the one hand, by the heights of the Monte Leone, and on the other by the still more

imposing mass of the Fletschhorn. Away in the far south, the faint blue outline of more distant summits rose from out the haze of the Lombard plain, where the legions of France and Piedmont were then engaged in deadly strife with the hated "Tedeschi." The combats of Palestro and Montebello, the *mêlée* of Magenta, the wild enthusiasm of recovered liberty at Milan, and the fierce fight of Melegnano, had now given place to that pause, which, like the lull that precedes the hurricane, preluded the hour when, from early dawn till the stormy close of a summer's day, the hostile ranks surged in fearful shock round the heights of Solferino. These reflections, if they did not occur to me at the time, doubtless ought to have done so; but I was unluckily in total ignorance of everything that had happened at the seat of war subsequent to Magenta, and so thought took a more prosaic form. It required, however, no great stretch of the imagination to picture what might be going on at the moment; and the consciousness that events which riveted the attention of Europe were then developing themselves behind that rocky barrier, and within the range of our vision, served at least to enhance the sense of vastness which, in the abstract, the mind almost fails to grasp. For the mere statement that a radius of 100 miles hardly defines the sphere of vision, suggests to most persons no very precise idea.

As already mentioned, the lower or eastern summit of the Aletschhorn consists of a rounded dome, which now lay some 600 or 800 feet beneath us, and was hardly distinguishable from the snow-fields out of which it rose. The highest point on which we stood consisted, at the time, of a nearly level and very narrow ridge of snow, extending in a N.E. and S.W. direction for a distance of 80 or 100 feet. In the centre and highest portion of this a small rocky patch was visible, enabling me to secure a souvenir

in the shape of the summit, which was at once transferred to my pocket. On the N. and E. the ground falls away very rapidly, but on the S. and W. snowy arêtes less precipitous, at any rate for the first few hundred yards, establish a connection with the Rothhorn, and the upper névé of the little known but very beautiful Jägi glacier. This last, lying between the Aletschhorn and Gross Nesthorn, and exhibiting some beautifully developed medial moraines, might be reached, probably without any great difficulty, by the Ober Aletsch glacier, which indeed is its southern outlet; and though I do not think the Aletschhorn itself could be attacked from this side with much chance of success, it must form a very imposing feature in the view. It might be possible to effect a passage in this direction into the valley of Lötsch, thus avoiding the long détour by the Lötschsattel (indeed this has, I believe, been already accomplished by the late M. Lähner, curé of Kippel), and I strongly recommend my brother mountaineers to direct their attention to the exploration of its recesses, believing that they will be amply rewarded by very fine scenery and some interesting topographical results.

We had been on the summit rather more than half an hour, of which I had made diligent use to fix in my mind, as far as possible, the greater features, at least, of the magnificent panorama; but, finding that Bennen's breath was much affected, whilst the dark blue appearance of his and Bohren's face, arising from the congestion of the minuter blood-vessels, showed what a hold the cold had taken of them, I reluctantly resolved to commence the descent. This I the more regretted, as it is not often possible to gain so great a height so early in the day, or in such glorious weather, and I should have liked to devote several hours to a careful examination of the details of the panorama which, under the circumstances,

was out of the question. Another reason against delay, was the possible effect of the increasing power of the sun, which might render the passage of the arête a matter of difficulty and danger. The champagne experiment was, unfortunately for science, a failure, from a similar cause to that assigned for the invisibility of the Spanish fleet by the Governor of Tilbury Fort in the "Critic" —

> "The Spanish fleet thou canst not see,
> Because—it is not yet in sight."

The bottle had been left behind at the col. My barometer was carefully replaced in its case, one more good look taken, and at 9.20 A.M. we were off.

The descent of the final slope had to be accomplished backwards, as the inclination was too great to allow of the heels being inserted in the steps; but the footing was firm, and we soon found ourselves at the upper edge of the bergschrund, which, it being as yet but slightly developed, we cleared by a flying leap. At 10.25, or in less than half the time occupied in the ascent, we reached the W. end of the arête, and soon had cause to congratulate ourselves on not having delayed our return, as, though our traces were still visible, the surface had become soft, and frequently slipped away beneath the feet. Treading with caution and as lightly as possible, so as not to disturb the slightly coherent snow, we proceeded rapidly onwards, and at 10.50 reached the col beneath the rocks of the Dreieckhörner. Here we halted, the barometer was set up, and preparations made for a hearty lunch. After an exposure of half an hour I read off the instrument, which indicated 497·2 millimetres (reduced), with an air temperature of — 3·9° Cent., or 25° Fahr. This, compared with Geneva and the St. Bernard, gives for the height 11,864 and 11,778 feet respectively, or a mean of 11,821. A determined onslaught

was now made on the contents of our provision sack: the vigorous leap of the champagne cork proved an interesting and agreeable confirmation of the diminished pressure indicated by the barometer, and, in the foaming contents, most unmistakably iced, and strongly resembling acidulated pins and needles, we drank to the health of absent friends and our lately vanquished foe.

The earliness of the hour, the continued brilliancy of the day, and the total absence of all sense of fatigue, now suggested to me the idea that something more might be effected; and, as I intended on the next day but one to proceed to Kippel by way of the Lötschsattel, it at once occurred to me that an attempt might be made with Victor and Peter to cross the ridge, and descend on the N. to the Aletsch glacier, which would, if we were successful, be reached at a point about two miles to the E. of the "Sattel."

Unfortunately none of us knew much of the character of the northern side of the mountain, and, as usual, it was difficult to judge from above of the nature of the obstacles to be encountered. That the descent must be extremely rapid we were well aware; but from its position the sun could have had but little effect in softening the snow; the frost was still keen in the shade, and we trusted to our ice-axe and alpenstocks, which had ere then taken us safely through many as doubtful a labyrinth.

The decision once come to, no time was to be lost in carrying it into effect: the wine-can and empty knapsack were shouldered by Bennen, accounts settled between us to his satisfaction, and, shaking him warmly by the hand, we parted with mutual injunctions, "*Acht zu nehmen*," — he of the concealed crevasses in the névé, we of the "*tiefer Abgrund*." We watched him for a moment as he went merrily down the mountain side, and then, after carefully roping, with long intervals between us, stepped over the

ridge, Victor in advance, I in the middle, and Peter bringing up the rear.

For some time we got on pretty well—a frozen "*croûte*" on the surface enabling us to secure our footing without having to resort to the axe; but the slope soon became of the rapidest (I estimated it at upwards of 40°), and many were Victor's injunctions to "*assurer bien les pas*" and "*enfoncer le bâton.*" No precaution was neglected, and well was it for us all that we had not now to learn for the first time how to handle the trusty alpenstock.

We had accomplished in safety a distance of scarcely more than 150 yards when, as I was looking at the Jungfrau, my attention was attracted by a sudden exclamation from Victor, who appeared to stagger, and all but lose his balance. At first, the idea of some sort of seizure or an attack of giddiness presented itself, but, without stopping to inquire, I at once turned round, drove my good 8-foot ash-pole as deeply as possible through the surface layer of fresh snow into the firmer stratum beneath, tightened the rope to give Victor support, and shouted to Peter to do the same. All this was the work of an instant, and a glance at once showed me what had happened. Victor was safe for the moment, but a layer or "*couche*" of snow, ten inches to a foot in thickness, had given way exactly beneath his feet, and first gently, and then fleet as an arrow, went gliding down, with that unpleasant sound somewhat resembling the escape of steam, which is so trying to the nerves of the bravest man, when he knows its full and true significance. At first, a mass eighty to one hundred yards in breadth, and ten or fifteen in length, alone gave way, but the contagion spread, and ere another minute had elapsed the slopes right and left of us, for an extent of at least half a mile, were in movement, and, like a frozen Niagara, went crashing down the ice-precipices and seracs

that still lay between us and the Aletsch glacier, 1800 to 2000 feet below. The spectacle was indescribably sublime, and the suspense for a moment rather awful, as we were clinging to an incline at least as steep as that on the Grindelwald side of the Strahleck — to name a familiar example, — and it was questionable whether escape would be possible, if the layer of snow on the portion of the slope we had just been traversing should give way before we could retrace our steps.

Not a moment was to be lost; no word was spoken after the first exclamation, and hastily-uttered, "*au col! et vite!*" and then in dead silence, with bâtons held aloft like harpoons, ready to be plunged into the lower and older layers of snow, we stole quietly but rapidly up towards the now friendly looking "*corniche*," and in a few minutes stood once more in safety on the ridge, with feelings of gratitude for our great deliverance, which, though they did not find utterance in words, were, I believe, none the less sincerely felt by all of us. "*Il n'a manqué que peu à un grand malheur*," quietly remarked Victor, who looked exhausted, as well he might be after what he had gone through; but a *goutte* of cognac all round soon set us right again, and shouting to Bennen, who was still in sight, though dwindled in size to a mere point, we were soon beside him, running down the névé of our old friend the Aren glacier. The snow was now soft*

* The contrasts of temperature in mountain regions are sometimes very striking.

In a few moments the traveller exchanges an arctic for a tropical climate or *vice versâ*, and to sensitive persons this meeting of extremes is sometimes productive of much discomfort.

Hugi, in the interesting description of his perilous attempts to ascend the Finsteraarhorn, mentions ("Naturhistorische Alpenreise," page 194) that within a few hours the thermometer had ranged from − 10° Reaumur to between + 20° and 30° (9°·5 to 77° or 99° Fahr.); and I have no doubt the extremes were equally great on the occasion above referred to. Near the

and the heat tremendous, and both Bennen and Bohren showed signs of fatigue; but a rapid pace was still maintained in spite of the frequent crevasses. Some were cleared in a series of flying leaps, whilst into others which the snow concealed, one and another would occasionally sink, amid shouts of laughter from his companions, who, in their turn, underwent a similar fate. To the carefully-secured rope, which with the alpenstock and ice-axe are the mountaineer's best friends, we owed it that these sudden immersions were a mere matter of joke; but even the sense of security which it confers does not altogether prevent a "creepy" sensation from being experienced, as the legs dangle in vacancy, and the sharp metallic ring of the icy fragments is heard as they clatter down into the dark blue depths below.

Suddenly, to our great surprise, on rounding some seracs, we came upon Bürker in a state of amusing bewilderment. He had somehow contrived to quit the track, had next dropped his bâton into a crevasse, and, after struggling on some little distance, had got into such a confused state of mind that he dared venture no farther, and resolved to await our return. Relieving him from his icy

summit of the Col d'Argentière, at 10·25 A.M., July 2nd, 1860, a thermometer in the shade stood at 0° Centigrade (32° Fahr.), whilst one with a black bulb exposed to the sun, which was by no means so powerful as I have often found it on such occasions, indicated 35°·5 C. (92°·3 Fahr.), a difference of 60° Fahr. Dr. Hooker ("Himalayan Journals," vol. ii. Appendix, page 410, 1st edition) records still more extraordinary results in the following terms:—"At 10,000 feet, in December, at 9 A.M., I saw the mercury (in a black bulb thermometer), mount to 132°, with a difference of + 94°, whilst the temperature of shaded snow hard by was 22°; at 13,100 feet, in January, at 9 A.M., it has stood at 98°, difference + 68°·2; and at 10 A.M., at 114°, difference + 81°·4, whilst the radiating thermometer on the snow had fallen at sunrise to 3°·7. In December, at 13,500, I have seen it 110°, difference + 84°; at 11 A.M., 11,500 feet, 122°, difference + 82°. This is but a small selection from many instances of the extraordinary power of solar radiation in the coldest months at great altitudes."

prison, our united party proceeded on its way; the glacier was at length traversed, the rocks climbed, and, bathed in perspiration, and, like Chaucer's Sompnour, with "fyr-reed cherubynes face," we entered the cave at 1.20 P.M., after an absence of about eleven hours.

As there were still many hours of daylight left, it was resolved to remain quietly here till the intense heat should have a little abated. And soon the prostrate forms and loud breathing of my companions showed that they appreciated and were availing themselves of the luxury of repose. I had plenty of occupation in completing my notes, observing the barometer, which indicated a height of 8896 feet, and depositing a record, with a rough map of our route in an empty bottle, to be left in a crevice of the rock for the benefit of future comers. As the remainder of our stock of wine was served out, I proposed that our quarters should be christened the "*Gasthof zum Bennen*," in compliment to that worthy, and the prosperity of the house was drunk with all the honours. Our traps were then collected, the few remaining bits of wood put in a dry corner *pro bono publico*, and at 4 o'clock, not without feelings of regret, we quitted the spot which had afforded us such good shelter, and had begun by this time to feel quite homeish.

At 5 P.M. we gained the level surface of the Aletsch glacier, at 6 the head of the Märjelen See was reached, and at 8.15 P.M. we entered the hotel, amidst the warm greetings of M. Wellig and his staff.

Little more remains to add; but I cannot close this paper without some allusion to the admirable qualities which Victor had shown throughout the expedition. Cool, cautious, and yet daring as the bravest where my wishes or circumstances called forth the exercise of the latter quality, I found him then, as I have ever found him

before and since, equal to any emergency. We have roughed it together in storm and shine, in cold and heat, on breezy col and rugged peak, and I should be ungrateful did I not here bear testimony to his excellence. I may add that I do not know his equal as a care-taker of ladies, in which capacity he acquitted himself in 1860 *à merveille*, under rather trying circumstances.*

A few words by way of summary, and I have done. Since my ascent, the summit of the mountain has, if I am not mistaken, been only once attained, by a party of English gentlemen, who, I believe, encountered no more serious difficulties than had attended my expedition. I would, however, venture to recommend the excursion, as deserving the more frequent attention of mountaineers, not only from its intrinsic interest, but because it possesses many not unimportant advantages over those to the Finsteraarhorn and Jungfrau. With the last-named mountain I am not personally acquainted, but its position is less central, and I imagine that it must therefore be inferior as a point of view. As to the Finsteraarhorn, I can speak from my own experience, having had an opportunity in 1860 of gaining its summit; and my opinion is that, though the distant view is necessarily very similar, the Aletschhorn, on the whole, offers finer grouping in the nearer scenery. Apart from this, however, there can be no question that the position of the night-quarters at the Faulberg and "*Gasthof zum Bennen*," in relation to the respective mountains, is decidedly in favour of the latter.

* In offering these remarks, it will, I hope, be understood that I by no means wish to make an undue distinction between Victor and such other first-rate fellows as Melchior Anderegg, Bennen, Perrn, Auguste Balmat, Auguste Simond, Croz, and many more, who are not to be surpassed in all that constitutes excellence in a guide and pleasantness in a companion; but it has been my lot to be thrown more with Victor than with any of them, and in him I naturally feel a special interest.

The distance to be traversed is very much shorter, as a glance at the map will show, and the necessity, as in returning from the Finsteraarhorn either by the Grünhorn Lücke or Viesch glacier, of reascending or traversing a dangerously-crevassed glacier, perhaps at a late hour, is exchanged for an uniform and a gentle descent over broad and open surfaces of ice.

Note 1.

The boiling apparatus referred to in the preceding narrative was constructed for me by Mr. Stevenson of Edinburgh some years ago, and has been my constant companion in the mountains. By a simple arrangement, it is rendered equally adapted for cooking or hypsometrical purposes: a thermometer inserted in a steam-chamber furnishing the means of ascertaining the boiling point, from which the altitude is obtained either by a special formula, or with the aid of Regnault's Table of Equivalent Pressures. The chief peculiarity of the "*machine*," however, consists in the "Russian furnace," the action of which is rather facilitated than impeded by wind, and is so powerful and rapid that snow pressed down tightly in an electro-plated copper vessel or "*casserole*," holding about a quart, may, by means of it, be converted into boiling water, even at the greatest altitudes, in from three to four minutes. This ingenious contrivance is, in principle, a self-acting blow-pipe, vapour of spirits of wine being the agent employed. A small copper saucer is filled with spirit from a measure provided for the purpose, and upon it is placed a cylindrical chamber with hollow centre, which has been similarly charged through a hole at the side. This hole being closed with a screw, there is no vent left for the enclosed spirit but a curved tube with extremely narrow orifice. The spirit in the saucer being ignited, soon causes that contained in the closed chamber to boil; vapour of spirit is given off, which escapes with loud noise through the tube; and there, being ignited, rushes up through the hollow centre of the cylinder with great force and a blue flame, the intense heat of which renders it alike adapted to the laboratory or the mountain top,—to the boiling of a thermometer, or the preparation of soup, tea, coffee, and chocolate.

Note 2.

On the "Phosphorescence" of Snow and Ice.

The following observations and remarks with reference to this phenomenon may not be without interest. They occur in the interesting work of the MM. Schlagintweit ("Neue Untersuchungen, &c., pp. 479–80) already alluded to.

"On the snow-clad slopes of the Alpine summits, and, during winter, even on snowy surfaces in the plains, a peculiar brightness ('*Helligkeit*') is ocasionally observed during the earlier hours of the night.

"In the Alps, the appearance recalls the 'second colouring' after sunset, and frequently immediately succeeds it, without, in my opinion, being connected with it. I cite a few examples.

"From the Vincent-hütte we frequently remarked, especially during the night of September 12–13, 1851, that the snow-fields throughout the night stood out clear from the background, notwithstanding that the sky was obscured by an uniform stratum of clouds; although the moon was near the full, not even the slightest glimmer indicated the existence of open spaces between the clouds, parallactically concealed from us. In the valleys, too, of Piedmont and Switzerland, we repeatedly noticed a greater brightness of the snow in contrast with the uniformly obscured sky. As, however, it is impossible in the valleys to command such a view of the horizon as is obtained at the Vincent-hütte, the supposition cannot be altogether excluded that oblique illumination may have been the cause, though the absence of the moon, and the clouded state of the heavens, render this improbable.

"The following observations may be cited as instances of similar phenomena:—

"Professor Bertz informed me that, when crossing the Col de Balme on a night so dark that it was impossible to distinguish the nearest objects, the Glacier des Bois (Bossons?) could be seen with perfect distinctness, as a luminous surface on the farther side of the valley of Chamounix.

"In the Vallais a similar appearance was observed during the winter of 1851 on the snow-covered declivities of the Rhone valley.

"During the stay of Agassiz at the 'Pavillon' (on the lower

glacier of the Aar), a peculiar luminosity of the glacier, which here lies at a depth of nearly 100 mètres, was remarked.

"As was to be expected, the phenomenon was most distinct during the darkest nights.

"The appearances here referred to point very clearly to a light evolving property in snow, through phosphorescence. Snow and ice, especially large pieces of the latter, become slightly but quite distinctly phosphorescent when brought into a dark room after exposure to light at a temperature several degrees below the freezing point. The light appears of a bluish colour.

"Placidus Heinrich, in his numerous researches into the phosphorescence of various bodies, has also investigated ice, and found it weakly phosphorescent.

"During the winter of 1852–3, and especially on the 27th of February, 1853, I had opportunities in Berlin of observing on a large scale the luminosity of the snow. With a grey and uniformly clouded sky, it was quite clear that the roofs of the houses stood out distinctly from the background. In order to exclude the possible effect of the lighting of the streets, I repaired to Schöneberg, where, about 9 P.M., the (proportionately great) relative brightness of the snow, both on the roofs and surface of the ground, was very distinctly seen. Throughout the winter, however, the appearance was comparatively rare, and by no means presented itself on every dark and cloudy night. A sudden overclouding, following rapidly on an active '*insolation*,' or intense cold in the night, freezing the water with which the snow has been saturated during the day, appears to be particularly favourable to its development. On the other hand, I never observed the luminosity when a fall of snow had taken place shortly before nightfall, although fresh snow is always intrinsically whiter than that which has been exposed for some days to atmospheric influences.

"The relative luminosity of the snow was never very considerable; and though sufficiently so, indeed, as has been said, to be clearly perceptible, it was limited to such surfaces as were directly bounded by the sky."

From the above passages, it will be seen how remarkable, both in extent and intensity, was the phenomenon witnessed by me on the night of June 17th.