Mustagh Pass. We meant to cross southward over a traditional col to Khapalu, but there was no possible passage, so we returned to Askole. After a day's rest we crossed the Braldu river, mounted to a col in the ridge south of it, the Skoro Pass, and descended to Shijar and Skardo, where there were apricot trees, and vegetables, and other delights.

We bundled off our baggage over the Deosai plains to Srinagar, and ourselves took ponies and rode day after day up the Indus by a horrible path to Leh, the capital of Ladak, or Little Tibet. There we visited Buddhist monasteries and the like curiosities, but these have already been described in earlier volumes of the 'Alpine Journal.' From Leh we rode the eighteen marches to Srinagar at a forced pace, and, on October 11, I re-entered the place after an absence of exactly six months in camp.

Two Days on an Ice Slope.

By ELLIS CARR.

(Read before the Alpine Club, June 6, 1893.)

In venturing to write an account of our attempt on the Aiguille du Plan, I have felt myself somewhat handicapped by the necessity of describing a failure, and by the fear that, in the opinion of some, the fact that we did not reach the summit of our peak might deprive me of my chief if not sole justification for putting pen to paper.

In undertakings of all kinds it has been admitted that success often covers a multitude of sins in the methods adopted to attain it, while failure as often tends to emphasise those sins and bring them into relief; and it seems to me that mountaineering offers no exception to the rule, but, on the contrary, frequently affords striking examples of its application. Accepting, therefore, whatever risk there may be of the latter contingency in the present instance, I have endeavoured to record the details of an expedition which, though unsuccessful in the ordinary acceptation of the word, was, to myself at least, instructive, not only as a test of endurance, but as a lesson in that self-reliance on the mountains which can only come by experience.

Before leaving England Mr. Mummery and I discussed the possibility of making an ascent of the Aiguille du Plan from the Chamonix valley. The mountain excited our interest in the first place from its having received but little

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attention from climbers generally, and, secondly, from the fact that the summit had never been reached from the north-west side of that great ridge in the chain of Mont Blanc of which it forms a part, the side from which we proposed to approach it. Further, so far as we were aware, no one had ever attempted it since Mr. Baumann's defeat in August 1880. The description he gives in the 'Alpine Journal' (x. 443) of his experience on the mountain, and its appearance when seen from a distance, led us to the conclusion that in no case could we expect to find the problem an easy one, nor lacking in interest and excitement (danger for its own sake we did not court), and this, added to the ever seductive charm of possibly making a new ascent, determined us to assign to the Aiguille du Plan a prominent place in our programme, when we met, as agreed, at the Montanvert in August.

A pleasant sojourn among the Graians with Messrs. Walker and Solly had occupied the latter part of July, and after waiting a day or two in vain for fine weather at Courmayeur, in the hope of traversing Mont Blanc, I accompanied them across the Col du Géant, arriving at the Montanvert on August 3.

With the exception of the rooms secured for us by the kind mediation of a friend at court, we found the hotel, I believe for the first time in its history, full to overflowing with English climbers and their families in residence, amongst whom were many personal friends, and it seemed as if the noble Alpine spirit (a judicious blend, by the way, of enthusiasm for the mountains and tender pity for the outsider), hunted out of its old haunts by the rush of trains, hotel omnibuses, and their teeming contents, had found, for a time at least, a congenial resting-place under the shadow of the Aiguilles, before being driven to take wing once more. That this will, sooner or later, be its fate is, alas! already but too apparent, as the daily storming of the hotel, in fine weather, by 200 to 300 birds of passage, of varied plumage (some of whom devour their meal with shouts prior to rejoining the ranks of the army crossing the glacier to the place from whence they came), already drives the poor roosters to take refuge with a luncheon bag on the mountain side, or, without any such visible means of support, to remote corners of the hotel, there to wait till the rush is over, and at least one of the salon windows can again be opened without incurring risk of personal violence.

Having determined to devote a day to a preliminary

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inspection of our mountain, we started from the hotel in company with Messrs. Slingsby and Solly at 6 A.M. on August 11. Our party followed the usual Charmoz route across the rocky spurs which descend from that mountain, and the weary valley of boulders beyond, as far as the right moraine of the Nantillons Glacier. Having traversed this glacier and a second smaller one lying at the base of the Aiguille de Blaitière, and after turning at its foot a rib of sharp rocks which forms its left bank, we found ourselves on the glacier immediately below the Aiguille du Plan, and for the first time in a position to obtain a full view of our mountain. Its appearance, from where we stood, was that of an enormous façade of most excessive and uncompromising steepness, crowned with towering pinnacles, and flanked on each side by projecting wings—on the left by the rocky wall of the Aiguille de Blaitière, and on the right by steep cliffs forming the base of a detached peak of the Plan itself. Access to the summit ridge was apparently completely cut off at both ends by these huge wings, really mountains in themselves; and as there were no subsidiary ridges or ribs of continuous rock to suggest a probable route, we were driven to the conclusion that only by the steep snow slopes on the face in front of us could the summit be reached from this side. Roughly speaking, it may be said that the upper face of the mountain is divided vertically into two parts, differing in their character, that next to the Aiguille de Blaitière consisting of smooth rocks interspersed with patches and streaks of snow, the other of a series of hanging glaciers and snow slopes running up to the highest peak, which, when seen from the N.W., stands somewhat behind the line of the summit ridge (S, fig. 1). The lower part of the face is unequally divided into two bays or cirques, the larger on the side next the Blaitière, by a huge rocky rib or buttress (B, fig. 1), which, rising from the glacier, cuts the face at right angles, terminating abruptly at the foot of the ice cliffs of the first hanging glacier of the series before referred to. Though, when seen from below, these ice cliffs appeared to be more or less broken, there were no dangerous-looking séracs, and at one point where there was a gap, we thought it might be possible to force a passage to the snow slopes above, could we once succeed in reaching the ice by way of the rock buttress. As there appeared to be no more promising alternative, and the rock buttress would most likely in any case command a comprehensive and near view of the face, we decided to make our reconnaissance in this direction.

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On our way up the glacier we deviated sufficiently to the right to obtain a glimpse into the bay or great couloir on the far side of the buttress, but at once rejected it, as it was completely blocked by a hanging glacier at the top, and

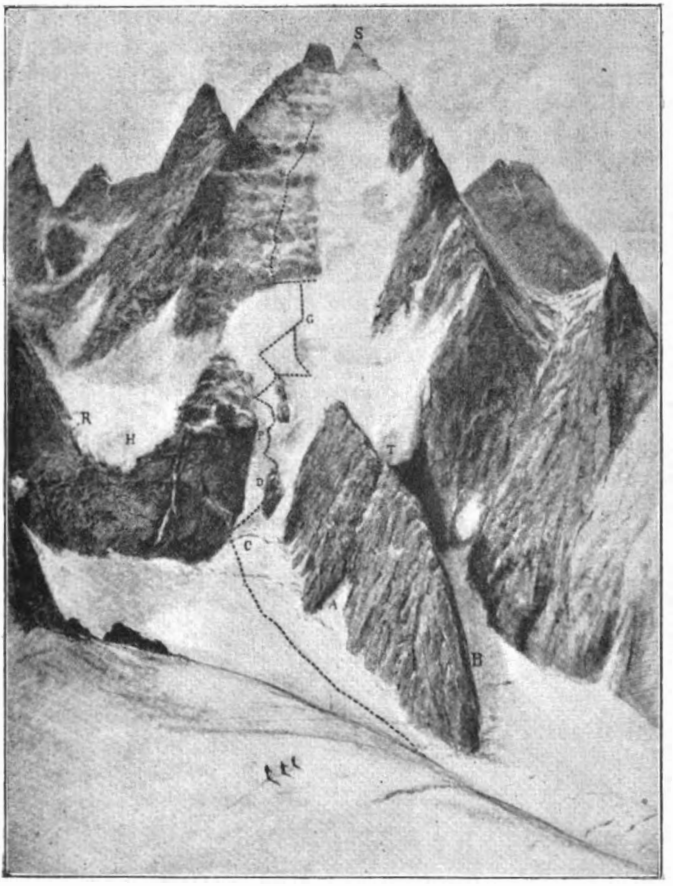

FIG. 1.

would be swept throughout its entire length by any séracs which might fall.

On approaching the rocks at the foot of the buttress we found them exceedingly steep, and judged them, if not absolutely unclimbable, much too expensive in time so early in the day; so, turning a crevasse or two, we skirted them on

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the left for some distance, making our way up the glacier and keeping a look-out for a promising point of attack.

There did not appear to be much choice, the lower part of the rocks being smooth and offering an almost continuous and unbroken wall. We therefore continued our course up the glacier, before long reaching a point from which a better view could be obtained of the lower portion of the face opposite to us, and saw that it consisted for the most part of apparently inaccessible precipices, surmounted at their northern end by a hanging glacier (H, fig. 1), doubtless the same to which Mr. Baumann gained access by scaling the rocks of the Aiguille de Blaitière still further to the left (R, fig. 1).

Only on the right of this section of the face—i.e. on the side adjoining the great rock buttress—was a break in the line of cliffs, formed by a most formidable-looking ice couloir (C, fig. 1), up to the bergschrund at the base of which the glacier slope whereon we stood rapidly narrowed and steepened. Some distance above the bergschrund a rib of steep rocks (D, fig. 1) divided the couloir into two parts. Above the point where this rib somewhat abruptly terminated, the inclination of the couloir, steep throughout, became more severe, and continued to increase, culminating at a point some 800 or 900 ft. above the bergschrund in an apparently perpendicular ice wall (P, fig. 1).

Of the two divisions of the couloir that on the left alone showed no traces of falling stones or ice, being somewhat removed from the direct line of fire from the glaciers above, while its neighbour on the right was less favourably situated, being in admirable position to receive most liberal contributions.

The awful steepness and great length of the couloir confirmed our decision to try first the rock buttress, though, should that fail, we felt that here would be our best alternative, as, supposing it possible by any means to surmount the ice wall, the snow slopes above seemed to offer a direct and comparatively easy and unbroken way to the summit.

Mr. Baumann's route by the rocks of the Blaitière we had rejected as too dangerous, for not only did the state of the ice cliffs put all idea of scaling them out of the question, but in the only gully by which the Blaitière rocks, traversed by him, could be reached, a large mass of snow, over which we should perforce have to pass, hung suspended and obviously on the point of falling bodily. In fact, later on we saw that it had done so. This route was also

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objectionable from the fact that it led to a portion of the face hopelessly remote from the summit, while Mr. Baumann's description of the rock-climbing above suggested anything but rapid progress in that direction. We therefore resumed our search for a breach in the outworks of the rock buttress on our right, determined to attain on this as high a point as time would allow. The only place we could discover which appeared at all promising was situated at the upper edge of a steep snow slope (A, fig. 1) which ran some distance up the side of the buttress, and at whose base we were now standing. Here the rival claims of two small chimneys divided our attention, till on nearer approach we chose the one more to the left, as being of the two somewhat easier and leading to a better line of route above.

It took more time than we anticipated to reach the rocks, as the snow slope, after we had passed a bergschrund not far from its base, turned to hard ice, and, on coming to close quarters with our chimney we found careful climbing and consequent slow progress compulsory. The rocks above the chimney, though easier, were still much too difficult for speed, and at the rate the hours were slipping by we began to realise that unless matters improved, and that pretty soon, we should never reach the séracs before dark. Our efforts had hitherto been directed towards a gap on the ridge on the left of a rocky tower (T, fig. 1), which, if not turned, threatened to bar all further progress, and, in fact, on a nearer approach, we could see no alternative landing-place. Instead of becoming easier, the steepness and difficulty of the climb now rapidly increased, and we consequently decided to abandon all idea of reaching the séracs. In the hope, however, of obtaining a view of the point where the rock buttress joined the mountain, Mummery and I, divesting ourselves of our rucksacks, made our way up the rocks, crossing some steep smooth slabs, partially covered with snow, till we stood almost close to the base of the rocky tower (fig. 2). On our left was a steep gully, running up to the gap on the sky-line we had been aiming for, with smooth sides enclosing a sharp angle in which was some ice. An upright crack, on its opposite side, seemed to offer means of access to the desired gap could we once manage to get into the gully. It was possible to traverse towards it for some 15 to 20 ft., there being, so far, good hand- and foot-hold in the face of the rock. Beyond, however, the foot-hold entirely ceased, and the hand-hold was reduced to one oblique crack, from $\frac{1}{2}$ in. to $\frac{3}{4}$ in. wide, on the right of a steep slab. After

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inspecting this in turn, with the rope held hitched round an ice-axe placed in a crevice (fig. 2), we thought that by hardening our hearts, and with the stimulus of assured success beyond, the slab itself might 'go.' As this stimulus, however, was conspicuous by its absence, and the hand-holds of the rest of the traverse were even more sketchy, we turned back to the base of the tower and scrambled up to

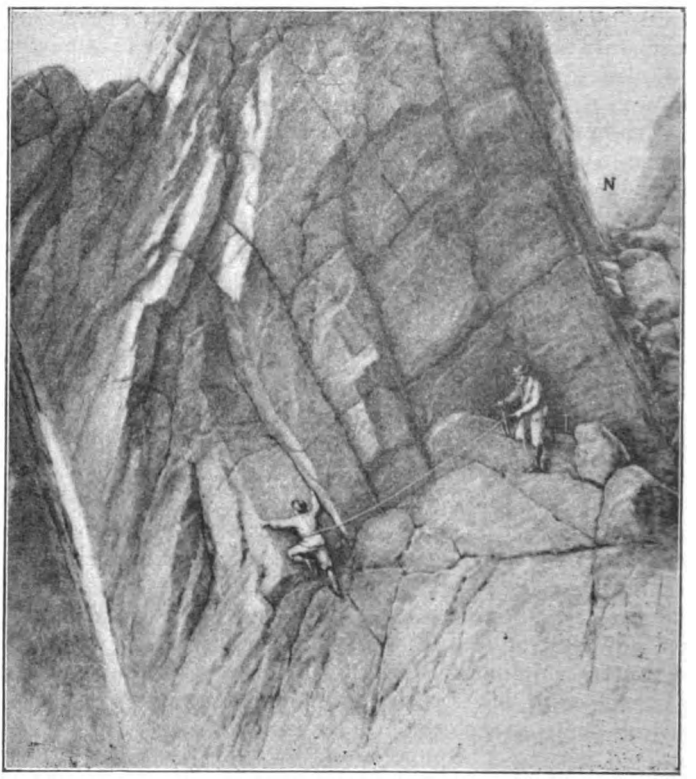

FIG. 2.

the ridge on its lower side. From the notch (N, fig. 2) in which we found ourselves the tower was quite unclimbable, and a steep chimney which descended below us on the far side offered no prospect of turning it there. It was conclusive; so with the consciousness of having done our best for the buttress route, though it failed to appreciate our efforts, we returned to our companions, having kept them patiently awaiting us for more than an hour. The afternoon

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was well advanced, and we hurried down to traverse the valley of boulders under the Charmoz before dark, and to seek the assistance of mine host of the Montanvert in satisfying the vacuum which we, like nature, were beginning to abhor.

The rocks having failed us, visions of the ice couloir, which had haunted me more or less during the day, now took definite form, and as we descended the glacier I could not help glancing back from time to time at the sheeted spectre, with its sweeping shroud of ice, much as a schoolboy might look for some signs of relenting in the cold, stern face of the master whose frown he meant nevertheless to brave. I looked in vain. Far from appearing easier, the couloir in the evening light seemed steeper than ever, and though I consoled myself by reflecting on the frequently deceptive appearance of slopes viewed in full front, I felt that *there* would be the tug of war, if not the unconditional surrender.

Apart from this obstacle the ascent of the couloir to the foot of the snow slopes resolved itself into the task of cutting steps up some 1,000 feet of ice or névé at an angle increasing from about 30° to 50°, and we hoped, by making an early start from a *gîte* situated as near as possible to our work, we might gain the snow slopes in time to complete the ascent.

To neglect no detail which might contribute to success, the morning of the next day, August 12, was partially occupied in sharpening the dulled points of our axes, an operation we found both difficult and tedious on the intoxicated and deformed instrument known as the hotel grindstone, one end of whose axle, scorning restraint, described complicated curves in the air on its own account, but expeditiously and, in the opinion of the operators at least, splendidly performed by means of an old file borrowed from the ' boots.' Our own axes finished, it was curious to note how many others required attention, and we might have continued filing and panting for the remainder of the afternoon but for our appointment with the ice couloir.

Solly having to prepare for his return to England, Mummery, Slingsby, and I started at 4 P.M., with a porter carrying the material for our camp. This comprised a silk tent of Mummery's pattern, only weighing 1½ to 2 lbs.; three eider-down sleeping-bags, 9 lbs.; cooking apparatus of thin tin, 1½ lb.; or, with ropes, rucksacks, and sundries, about 25 lbs., in addition to the weight of the provisions. Though not unduly burdened the porter found the valley of boulders

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exceedingly troublesome, and in spite of three distinct varieties of advice as to the easiest route across them, made such miserably slow progress, often totally disappearing amongst the rocks like a waterlogged ship in a trough of the sea, that we were forced to pitch our tent on the right moraine of the Nantillons Glacier instead of near the base of our peak, as intended. The *gîte*, built up with stones on the slope of the moraine, with earth raked into the interstices, was sufficiently comfortable to afford Mummery and myself some sleep. A stone, however, far surpassing the traditional *gîte* lump in aggressive activity seemed, most undeservedly, to have singled out Slingsby as its innocent victim, and judging by the convulsions of his sleeping-bag, and the sighs and thumps which were in full swing every time I woke up, it must have kept him pretty busy all night dodging its attacks from side to side. His account of his sufferings next morning, when Mummery and I were admittedly awake, fully confirmed and explained these phenomena; but on going for the enemy by daylight he had the satisfaction of finding that he had suffered quite needlessly, the stone being loose and easily removed. We used Mummery's silk tent for the first time, and found that it afforded ample room for three men to lie at full length without crowding. The night, however, was too fine and still to test the weather-resisting power of the material, and as this was thin enough to admit sufficient moonlight to illuminate the interior of the tent, and make candle or lamp superfluous, we inferred that it might possibly prove to be equally accommodating in the case of rain or wind. It was necessary, moreover, on entering or leaving the tent, to adopt that form of locomotion to which the serpent was condemned to avoid the risk of unconsciously carrying away the whole structure on one's back. We started next morning about three o'clock, leaving the camp kit ready packed for the porter whom we had instructed to fetch it during the day, and pushed on to the glacier at the foot of our mountain at a steady pace, maintained in my case with much greater ease than would have otherwise been possible by virtue of some long single-pointed screw spikes inserted over night in my boot soles; and I may here venture to remark that a few of these spikes, screwed into the boots before starting on an expedition where much ice work is expected, appear to offer a welcome compromise between ponderous crampons and ordinary nails. They do not, I think, if not too numerous, interfere with rock-climbing, and can be

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repeatedly renewed when worn down. A slight modification in the shape would further facilitate their being screwed in with a box key made to fit.

Leaving the rock buttress, the scene of our reconnaissance on the 11th, on the right, we struck straight up the glacier basin between it and the Aiguille de Blaitière, which glacier appeared to me to be largely composed of broken fragments of ice mixed with avalanche snow from the hanging glaciers and slopes above. Keeping somewhat to the left, we reached the bergschrund, which proved to be of considerable size, extending along the whole base of the couloir, and crossed it at a point immediately adjoining the rocks on the left. The axe at once came into requisition, and we cut steadily in hard ice up and across the couloir towards the small rib or island of rock before mentioned as dividing it higher up into two portions. The rocks at the base of this rib, though steep, gritty, and loose, offered more rapid going than the ice, and we climbed them to a gap on the ridge above, commanding a near view of the perpendicular country in front of us. Far above us, and immediately over the top of the right-hand section of the couloir, towered the ice cliffs of the hanging glacier we had tried to reach on the 11th, and beyond these again, in the grey morning light, we caught the glimpse of a second and even a third rank of séracs in lofty vista higher up the mountain. As before observed, this section of the couloir seemed admirably placed for receiving icefalls, and we now saw that it formed part of the natural channel for snow and débris from each and all of these glaciers. We therefore directed our attention to our friend on the left, and after a halt for breakfast traversed the still remaining portion of the dividing ridge, turning a small rock pinnacle on its right, and recommenced cutting steps in the hard ice which faced us. As has been before remarked, it is difficult to avoid over-estimating the steepness of ice slopes, but, allowing for any tendency towards exaggeration, I do not think I am wrong in fixing the angle of the couloir from this point as not less than 50°. We kept the axe steadily going, and with an occasional change of leader, after some hours' unceasing work, found ourselves approaching the base of the upper portion of the couloir, which from below had appeared perpendicular (P, fig. 1). We paused to consider the situation. For at least 80 to 100 feet the ice rose at an angle of 60° to 70°, cutting off all view of the face above, with no flanking wall of rock on the right, but bounded on the left

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by an overhanging cliff, which dripped slightly with water from melting snow above. The morning was well advanced, and we kept a sharp look-out aloft for any stray stones which might fancy a descent in our direction. None came, and we felt gratified at this confirmation of our judgment as to the safety of this part of the couloir. However, the time for chuckling had not yet come. As I stated, we had halted to inspect the problem before us. Look as we might we could discover no possibility of turning the ice wall either to the right or left, and though, as we fondly believed and hoped, it formed the only barrier to easier going above, the terrible straightness and narrowness of the way was sufficient to make the very boldest pause to consider the strength of his resources (fig. 3).

How long *I* should have paused before beating a retreat, if asked to lead the way up such a place, I will not stop to enquire, but I clearly remember that my efforts to form some estimate of the probable demand on my powers such a feat would involve were cut short by Mummery's quiet announcement that he was ready to make the attempt. Let me here state that amongst Mummery's other mountaineering qualifications not the least remarkable is his power of inspiring confidence in those who are climbing with him, and that both Slingsby and I experienced this is proved by the fact that we at once proceeded, without misgiving or hesitation, to follow his lead. We had hitherto used an 80-ft. rope, but now, by attaching a spare 100-ft. length of thin rope, used double, we afforded the leader an additional 50 ft. Mummery commenced cutting, and we soon approached the lower portion of the actual ice wall, where the angle of the slope cannot have been less than 60°.

I am not aware that any authority has fixed the exact degree of steepness at which it becomes impossible to use the ice-axe with both hands, but, whatever portion of a right angle the limit may be, Mummery very soon reached it, and commenced excavating with his right hand caves in the ice, each with an internal lateral recess by which to support his weight with his left. Slingsby and I, meanwhile possessing our souls in patience, stood in our respective steps, as on a ladder, and watched his steady progress with admiration, so far as permitted us by the falling ice dislodged by the axe.

Above our heads the top of the wall was crowned by a single projecting stone (s, fig. 3), towards which the leader cut, and which, when reached, just afforded sufficient standing-

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room for both feet. The ice immediately below this stone, for a height of 12 or 14 ft., was practically perpendicular, and Slingsby's definition of it as a 'frozen waterfall' is the most appropriate I can find. Here and there Mummery found it necessary to cut through its entire thickness, exposing the face of the rock behind.

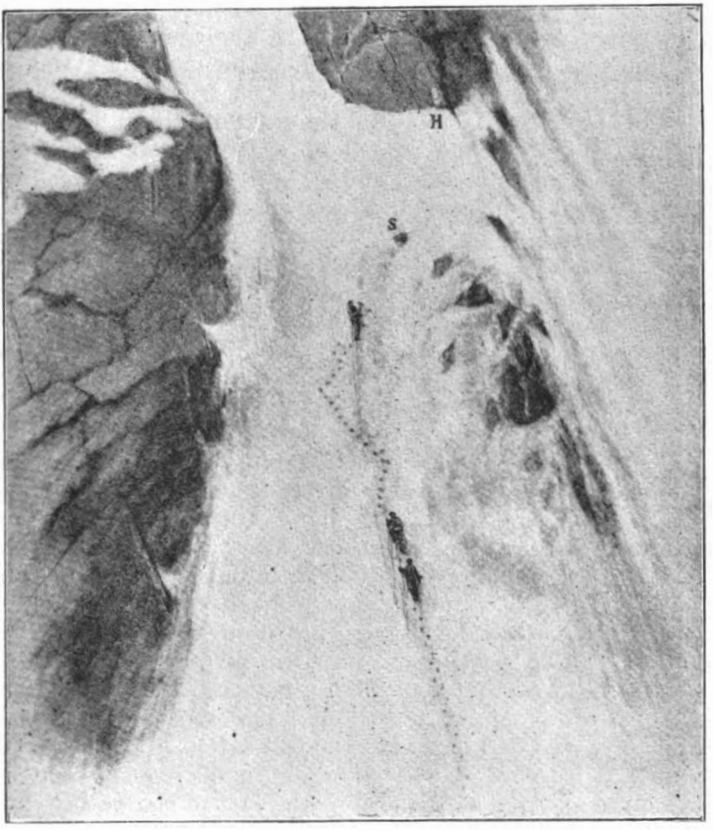

FIG. 3.

On reaching the projecting stone the leader was again able to use the axe with both hands, and slowly disappeared from view; thus completing, without pause or hitch of any kind, the most extraordinary feat of mountaineering skill and nerve it has ever been my privilege to witness.

The top of the wall surmounted, Slingsby and I expected

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every moment to hear the welcome summons to follow to easier realms above. None came. Time passed, the only sounds besides the occasional drip of water from the rocks on our left, or the growl of a distant avalanche, being that of the axe and the falling chips of ice, as they whizzed by or struck our heads or arms with increasing force. The sound of the axe strokes gradually became inaudible, but the shower continued to pound us without mercy for more than an hour of inaction, perhaps more trying to the nerves, in such a position, than the task of leading. The monotony was to some extent varied by efforts to ward off from our heads the blows of the falling ice, and by the excitement, at intervals, of seeing the slack rope hauled up a foot or so at a time. It had almost become taut, and we were preparing to follow, when a shout from above, which sounded, from where we stood, muffled and far away, for more rope kept us in our places. It was all very well to demand more rope, but not so easy to comply. The only possible way to give extra length was to employ the 100 ft. of thin rope single, instead of doubled, at which we hesitated at first, but, as Mummery shouted that it was absolutely necessary, we managed to make the change, though it involved Slingsby's getting out of the rope entirely during the operation. To anyone who has not tried it I should hardly venture to recommend, as an enjoyable diversion, the process, which must necessarily occupy both hands, of removing and re-adjusting 180 ft. of rope on an ice slope exceeding 60° at the top of a steep couloir some 1,000 ft. high. The task accomplished, we had not much longer to wait before the shout to come on announced the termination of our martyrdom. We went on, but, on passing in turn the projecting stone, and catching sight of the slope above, we saw at a glance that our hopes of easy going must for the present be postponed. Mummery, who had halted at the full extent of his tether of about 120 ft. of rope, was standing in his steps on an ice slope quite as steep as that below the foot of the wall we had just surmounted. He had been cutting without intermission for two hours, and suggested a change. Being last on the rope, I therefore went ahead, cutting steps to pass, and took up the work with the axe. The ice here was occasionally in double layer, the outer one some 3 to 4 ins. in thickness, which, when cut through, revealed a space of about equal depth behind, an arrangement at times very convenient, as affording good hand-holds without extra labour. I went on for some time cutting pigeon holes on the right side of the

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couloir, and, at the risk of being unorthodox, I would venture to point out what appear to me the advantages of this kind of step on very steep ice. Cut in two perpendicular rows, alternately for each foot, the time lost in zigzags is saved, and no turning steps are necessary; they do not require the ice to be cut away so much for the leg as in the case of lateral steps, and are therefore less easily filled up by falling chips and snow. Being, on account of their shape, more protected from the sun's heat, they are less liable to be spoiled by melting, and have the further advantage of keeping the members of the party in the same perpendicular line, and consequently in a safer position. They also may serve as hand-holds. To cut such steps satisfactorily it is necessary that the axe be provided with a point long enough to penetrate to the full depth required for the accommodation of the foot up to the instep, without risk of injury to the shaft by repeated contact with the ice.

As we had now been going for several hours without food, and since leaving the rock rib, where we had breakfasted, had come across no ledge or irregularity of any kind affording a resting-place, it was with no little satisfaction that I descried, on the opposite side of the couloir, at a spot about 30 or 40 feet above, where the cliff on our left somewhat receded, several broken fragments of rock cropping out of the ice, of size and shape to provide seats for the whole party. We cut up and across to them, and sat down, or rather hooked ourselves on, for a second breakfast. We were here approximately on a level with the summit of our rock buttress of the 11th, and saw that it was only connected with the mountain by a broken and dangerous-looking ridge of ice and névé running up to an ice slope at the foot of the glacier cliffs. The gap in the latter was not visible from our position. The tower we had tried to turn appeared far below, and the intervening rocks of the buttress, though not jagged, were steep and smoth like a roof. The first gleams of sunshine now arrived to cheer us, and getting under way once more, we pushed on hopefully, as the couloir was rapidly widening and the face of the mountain almost in full view. We had also surmounted the rock wall which had so long shut out the prospect on our left, and it was at this point that, happening to glance across the slabs, we caught sight of a large flat rock rapidly descending. It did not bound nor roll, but slid quietly down with a kind of stealthy haste, as if it thought, though rather late, it might still catch us, and was anxious not to alarm

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us prematurely. It fell harmlessly into the couloir, striking the ice near the rock rib within a few feet of our tracks, and we saw no other falling stones while we were on the mountain.

Leaving the welcome resting-place, Mummery again took the lead, and cut up and across the couloir, now becoming less steep, to a rib or patch of rocks higher up on the right, which we climbed to its upper extremity, a distance of some 70 or 80 feet.

Here, taking to the ice once more, we soon approached the foot of the first great snow slope on the face, and rejoiced in the near prospect of easier going. At the top of this slope, several hundred feet straight before us, was a low cliff or band of rocks, for which we decided to aim, there being throughout the entire length of the intervening slope no suspicious grey patches to indicate ice. The angle was, moreover, much less severe, and it being once more my turn to lead, I went at it with the zealous intention of making up time. My ardour was, however, considerably checked at finding, when but a short distance up the slope, that the coating of névé was so exceedingly thin as to be insufficient for good footing without cutting through the hard ice below. Instead, therefore, of continuing in a straight line for the rocks, we took an oblique course to the right, towards one of the hanging glaciers before referred to (G, fig. 1), and crossing a longitudinal crevasse, climbed without much difficulty up its sloping bank of névé. Hurrah! here was good snow at last, only requiring at most a couple of slashes with the adze end of the axe for each step. If this continued we had a comparatively easy task before us, as the rocks above, though smooth and steep, were broken up here and there by bands and streaks of snow. Taking full advantage of this our first opportunity for making speed, we cut as fast as possible and made height rapidly. We still aimed to strike the band of rocks before described, though at a point much more to the right, and nearer to where its extremity was bounded by the ice cliffs of another hanging glacier; but, alas! as we approached nearer and nearer to the base of the cliffs, looming apparently higher and higher over our heads, the favouring névé, over which we had been making such rapid progress, again began to fail, and before we could reach the top of the once more steepening slope the necessity of again resorting to the pick end of the axe brought home the unwelcome conviction that our temporary respite had come to an end, and that, instead of snow above,

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and apart from what help the smooth rocks might afford, nothing was to be expected but hard, unmitigated ice.

We immediately felt that, as it was already past noon, the establishment of this fact would put a totally different complexion on our prospects of success, and, instead of reaching the summit, we might have to content ourselves with merely crossing the ridge. We continued cutting, however, and reached the rocks, the last part of the slope having once more become exceedingly steep. To turn the cliff, here unclimbable, we first spent over half an hour in prospecting to the right, where a steep ice gully appeared between the rocks and the hanging glacier; but, abandoning this, we struck off to the left, cutting a long traverse, during which we were able to hitch the rope to rocks cropping out through the ice. The traverse landed us in a kind of gully, where, taking to the rocks whenever practicable, though climbing chiefly by the ice, we reached a broken stony ledge, large and flat enough to serve as a luncheon place, the only spot we had come across since leaving the rock rib, where it was possible really to rest sitting. Luncheon over, we proceeded as before, choosing the rocks as far as possible by way of change, though continually obliged to take to the ice streaks by which they were everywhere intersected. This went on all the rest of the afternoon, till, when daylight began to wane, we had attained an elevation considerably above the gap between our mountain and the Aiguille de Blaitière, or more than 10,900 ft. above the sea.

The persistent steepness and difficulty of the mountain had already put our reaching the ridge before dark entirely out of the question, though we decided to keep going as long as daylight lasted, so as to leave as little work as possible for the morrow.

The day had been gloriously fine, practically cloudless throughout, and I shall never forget the weird look of the ice slopes beneath, turning yellow in the evening light, and plunging down and disappearing far below in the mists which were gathering at the base of the mountain; also, far, far away, we caught a glimpse of the Lake of Geneva, somewhere near Lausanne. I had turned away from the retrospect, when an exclamation from Slingsby called me to look once more. A gap had appeared in the mists, and there, some 2,700 ft. below us, as it were on an inferior stage of the world, we caught a glimpse of the snowfield at the very foot of the mountain, dusky yellow in the last rays of the sun. Mummery was in the meantime continuing

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the everlasting chopping, in the intervals of crawling up disobliging slabs of rock, till twilight began to deepen into darkness, and we had to look about for a perch on which to roost for the night. The only spot we could find, sufficiently large for all three of us to sit, was a small patch or lump of rocks, more or less loose, some 20 or 30 ft. below where we stood (x, fig. 1), and we succeeded, just as the light failed, or about 8.30 P.M., and after some engineering, in seating ourselves side by side upon it. Our boots were wet through by long standing in ice steps, and we took them off and wrung the water out of our stockings. The others put theirs on again; but, as a precaution against frost-bite, having pocketed my stockings, I put my feet, wrapped in a woollen cap, inside the rucksack, with the result that they remained warm through the night. The half-hour which it took me next morning to pull on the frozen boots proved, however, an adequate price for the privilege of having warm feet. As a precaution against falling off our shelf we hitched the rope over a rock above and passed it round us, and to make sure of not losing my boots (awful thought!) I tied them to it by the laces.

After dinner we settled down to spend the evening. The weather fortunately remained perfect, and the moon had risen, though hidden from us by our mountain. Immediately below lay Chamonix, like a cheap illumination, gradually growing more patchy as the night advanced and the candles went out one by one, while above the stars looked down as if silently wondering why in the world we were sitting there. The first two hours were passed without very much discomfort, but having left behind our extra wraps to save weight, as time wore on the cold began to make itself felt, and though fortunately never severe enough to be dangerous, made us sufficiently miserable. Packed as we were, we were unable to indulge in those exercises generally adopted to induce warmth, and we shivered so vigorously at intervals that, when all vibrating in unison, we wondered how it might affect the stability of our perch. Sudden cramp in a leg, too, could only be relieved by concerted action, it being necessary for the whole party to rise solemnly together like a bench of judges, while the limb was stretched out over the valley of Chamonix till the pain abated and it could be folded up and packed away once more. We sang songs, told anecdotes, and watched the ghostly effect of the moonlight on a subsidiary pinnacle of the mountain, the illuminated point of which, in reality but

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a short distance away, looked like a phantom Matterhorn seen afar off over an inky black arête formed by the shadow thrown across its base by the adjoining ridge. We had all solemnly vowed not to drop asleep, and for me this was essential, as my centre of gravity was only just within the base of support; but while endeavouring to give effect to another chorus, in spite of the very troublesome vibrato before referred to, I was grieved and startled at the sudden superfluous interpolation of two sustained melancholy bass notes, each in a different key and ominously suggestive of snoring. The pensive attitude of my companions' heads being in keeping with their song, in accordance with a previous understanding, I imparted to Mummery, who sat next to me, a judicious shock, but, as in the case of a row of billiard balls in contact, the effect was most noticeable at the far end, and *Slingsby* awoke, heartily agreeing with me how weak it was of Mummery to give way thus. The frequent necessity for repeating this operation, with strengthening variations as the effect wore off, soon stopped the chorus which, like Sullivan's 'Lost Chord,' trembled away into silence.

The lights of Chamonix had by this time shrunk to a mere moth-eaten skeleton of their earlier glory, and I became weakly conscious of a sort of resentment at the callous selfishness of those who could thus sneak into their undeserved beds, without a thought of the three devoted explorers gazing down at them from their eyrie on the icy rocks.

From 2 to 4 o'clock the cold became more intense, aggravated by a slight 'breeze of morning,' and while waiting for dawn we noticed that it was light enough to see.

Daylight, however, did not help Mummery to find his hat, and we concluded it had retired into the bergschrund under cover of darkness.

We helped each other into a standing position and decided to start for the next patch of rocks above, from there to determine what chance of success there might be in making a dash for the summit, or, failing this, of simply crossing the ridge and descending to the Col du Géant. There was very little food left, and, as we had brought no wine, breakfast was reduced to a slight sketch, executed with little taste and in a few very dry touches. Owing to the time required to disentangle virulently kinked and frozen ropes, &c., the sun was well above the horizon when we once more started upwards, though unfortunately just at this time,

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when his life-giving rays would have been most acceptable, they were entirely intercepted by the ridge of the Blaitière. We started on the line of steps cut the night before, but soon after Mummery had recommenced cutting the cold, or rather the impossibility, owing to the enforced inaction, to get warm, produced such an overpowering feeling of drowsiness that Slingsby and I, at Mummery's suggestion, returned to the perch, and jamming ourselves into the space which had before accommodated our six legs, endeavoured to have it out in forty winks. Mummery meanwhile continued step-cutting, and at the end of about half an hour, during which Slingsby and I were somewhat restored by a fitful dose, returned, and we tied on again for another attempt.

Surmounting the patches of rock immediately above our dormitory, we arrived at the foot of another slope of terribly steep, hard ice some 200 ft. in height. At the top of this again was a vertical crag 14 ft. or 15 ft. high, forming the outworks of the next superior band of rocks, which was interspersed with ice-streaks as before. A few feet from the base of this crag was a narrow ledge about 1 ft. in width, where we were able to sit after scraping it clear of snow. Slingsby gave Mummery a leg up round a very nasty corner, and he climbed to a point above the crag whence he was able to assist us with the rope to a still higher and narrower ledge. Beyond was another steep slope of hard ice, topped by a belt of rocks as before.

Before reaching this point the cold had again begun to tell upon me, and I bitterly regretted the mistaken policy of leaving behind our extra wraps, especially as the coat I was wearing was not lined. As there was no probability of a change for the better in the nature of the going before the ridge was reached, I began to doubt the wisdom of proceeding, affected as I was, where a false step might send the whole party into the bergschrund 3,000 feet below; but it was very hard, with the summit in view and the most laborious part of the ascent already accomplished, to be the first to cry 'Hold!' I hesitated for some time before doing so, and the others meanwhile had proceeded up the slope. The rope was almost taut when I shouted to them the state of the case and called a council of war. They returned to me, and we discussed what was practically something of the nature of a dilemma. To go on at the same slow rate of progress and without the sun's warmth meant, on the one hand, the possible collapse of at least one of the party from cold, while, on the other hand, to turn back involved the

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descent of nearly 3,000 ft. of ice, and the passage, if we could not turn it, of the couloir and its ghastly ice wall. Partly, I think, to delay for a time the adoption of the latter formidable alternative, partly to set at rest any doubt which might still remain as to the nature of the going above, Mummery volunteered to ascend alone to the rocks at the summit of the ice slope, though the chance of their offering any improved conditions was generally felt to be a forlorn hope. He untied the rope, threw the end down to us, and retraced his steps up the slope, in due time reaching the rocks some 100 or 130 ft. above, but, after prospecting in more than one direction, returned to us with the report that they offered no improvement and that the intersecting streaks were nothing but hard ice. He, however, was prepared to continue the attempt if we felt equal to the task. If we could at that moment have commanded a cup of hot soup or tea, or the woollen jackets which in our confidence in being able to reach the ridge we had left behind, I am convinced I should have been quite able to proceed, and that the day and the mountain would have been ours; but in the absence of these reviving influences and that of the sun, I was conscious that in my own case, at any rate, it would be folly to persist, so gave my vote for descending. As the food was practically exhausted, the others agreed that it would be wiser to face the terrible ordeal which retracing our steps involved (we did not then know that it meant recutting them) rather than continue the ascent with weakened resources and without absolute certainty of the accessibility of the summit ridge.

As Slingsby on the previous day had insisted on being regarded merely as a passenger, and had therefore not shared in the step-cutting, it was now arranged that he should lead, while Mummery as a tower of strength brought up the rear. Though it was past 5 o'clock, and of course broad daylight, a bright star could be seen just over the ridge of our mountain not far from the summit—alas! the only one anywhere near it on that day. We started downwards at a steady pace, and soon were rejoicing in the returning warmth induced by the more continuous movement. Before we had gone far, however, we found that most of the steps were partially filled up with ice, water having flowed into them during the previous afternoon, and the work of trimming or practically recutting these was at times exceedingly trying, owing to their distance apart, and the consequent necessity of working in a stooping and cramped position.

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But if the work was tough the worker fortunately was tougher still, and Mummery and I congratulated ourselves on being able to send such powerful reserves to the front.

The morning was well advanced before the sun surmounted the cold screen of the Blaitière, but having once got to work he certainly made up by intensity for his tardy appearance.

The provisions, with the exception of a scrap or two of cheese and a morsel of chocolate, being exhausted, and having, as before stated, nothing with us in the form of drink, nothing was to be gained by a halt, though, as we descended with as much speed as possible, we kept a sharp look-out for any signs of trickling water with which to quench the thirst which was becoming distressing.

Since finally deciding to return, we had cherished the hope that it might still be possible to turn the ice wall by way of the great rock buttress, and made up our minds at any rate to inspect it from above. With this in view, when the point was reached where we had on the previous day struck the flank of the hanging glacier (G, fig. 1), instead of continuing in the tracks which trended to the right across the long ice slope, we cut straight down by the side of the glacier to its foot, and over the slope below, in the direction of the séracs immediately crowning the summit of the buttress.

On nearer approach, however, it was manifest that even if by hours of step-cutting a passage from the ice to the rocky crest below could be successfully forced, descent by the latter was more than doubtful, while the consequences of failure were not to be thought of.

Driven, therefore, finally to descend by the couloir, we cut a horizontal traverse which brought us back into the old tracks, a short way above the point where the ice began to steepen for the final plunge, where we braced ourselves for the last and steepest 1,000 ft. of ice. Slingsby still led, and on arriving at the spot below our second breakfast place, where I had last cut pigeon holes, joyfully announced that one of them contained water. He left his drinking cup in an adjoining step for our use as we passed the spot in turn, and the fact that it was only visible when on a level with our faces may give some idea of the steepness of the descent. The delight of that drink was something to remember, though only obtainable in thimblefuls, and I continued dipping so long that Mummery became alarmed, being under the impression that the cup was filled each time.

Mummery had previously volunteered, in case we were

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driven to return by the couloir, to descend first, and recut the steps and hand-holds in the ice wall, and as we approached the brink we looked about for some projecting stone or knob of rock which might serve as a hitch for the rope during the operation. The only available projection was a pointed stone of doubtful security, somewhat removed from the line of descent, standing out of the ice at the foot of a smooth vertical slab of rock on the left (H, fig. 3). Round this we hitched the rope, Slingsby untying to give the necessary length. With our feet firmly planted, each in its own ice step, we paid out the rope as Mummery descended and disappeared over the edge. It was an hour before he reappeared, and this period of enforced inaction was to me, and I think to Slingsby, the most trying of the whole expedition. The want of food was beginning to tell on our strength, the overpowering drowsiness returned, and though it was absolutely essential for the safety of the party to stand firmly in the ice steps, it required a strong effort to avoid dropping off to sleep in that position. We were fortunately able to steady ourselves by grasping the upper edge of the ice where it adjoined the rocky slab under which we stood. This weariness, however, must have been quite as much mental as physical from the long-continued monotony of the work, for when Mummery at last reappeared we felt perfectly equal to the task of descending. The rope was passed behind a boss of névé ingeniously worked by Mummery as a hitch to keep it perpendicular, and I descended first, but had no occasion to rely upon it for more than its moral support, as the steps and hand-holds had been so carefully cut. I climbed cautiously down the icy cataract till I reached a point where hand-holds were not essential to maintain the balance, and waited with my face almost against the ice till Slingsby joined me. Mummery soon followed, and rather than leave the spare rope behind detached it from the stone and descended without its aid, his nerve being to all appearance unimpaired by the fatigues he had gone through. I had before had evidence of his indifference while on the mountains to all forms of food or drink, with the single exception, by the way, of strawberry jam, on the production of which he generally capitulates.

Rejoicing at having successfully passed the steepest portion of the ice wall without the smallest hitch of the wrong sort, we steadily descended the face of the couloir.

Here and there, where a few of the steps had been hewn unusually far apart, I was fain to cut a notch or two for the

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fingers before lowering myself into the next one below. At last the rock rib was reached, and we indulged in a rest for the first time since turning to descend.

Time, however, was precious, and we were soon under way again, retracing our steps over the steep loose rocks at the base of the rib till forced again on to the ice.

Oh, that everlasting hard ice slope, so trustworthy yet so relentlessly exacting!

Before we could clear the rocks, and as if by way of hint that the mountain had had enough of us, and of me in particular (I could have assured it the feeling was mutual), a flick of the rope sent my hat and goggles flying down to keep company with Mummery's in the bergschrund, and a sharp rolling stone, which I foolishly extended my hand to check, gashed me so severely as to put climbing out of the question for more than a week. As small pieces of ice had been whizzing down for some time from above, though we saw no stones, it was satisfactory to find our steps across the lower part of the couloir in sufficiently good order to allow of our putting on a good pace, and we soon reached the sheltering rock on the opposite side and the slopes below the bergschrund wherein our hats, after losing their heads, had found a grave. The intense feeling of relief on regaining, at 5.55 P.M., safe and easy ground, where the lives of the party were not staked on every step, is difficult to describe, and was such as I had never before experienced. I think the others felt something like the same sensation. Fatigue, kept at bay so long as the stern necessity for caution lasted, seemed to come upon us with a rush, though tempered with the sense of freedom from care aforesaid, and I fancy our progress down the glacier snow was for a time rather staggery. Though tired, we were by no means exhausted, and after a short rest on a flat rock and a drink from a glacier runnel found ourselves sufficiently vigorous to make good use of the remaining daylight to cross the intervening glaciers, moraines and valley of boulders, before commencing to skirt the tedious and, in the dark, exasperating stony wastes of the Charmoz ridge. Sternly disregarding the allurements of numerous stonemen, which here seem to grow wild, to the confusion of those weak enough to trust them, we stumbled along amongst the stones to the brow of the hill overlooking the hotel, where shouts from friends greeted the appearance of our lantern, and, descending by the footpath, we arrived among them at 10.30 P.M., more than fifty-four hours after our departure on the 12th.

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Their kindly welcome I shall not easily forget, and I was sorry to find they had suffered considerable anxiety for our safety, for though aware of our intention, if possible, to cross the range into Italy, they had heard by wire of our non-arrival at Courmayeur, and were discussing the desirability of sending out a search party when our light appeared.

Our failure to reach the summit may, I think, be fairly ascribed to three causes, which on a future occasion might be avoided or allowed for—firstly, our under-estimate of the exceedingly icy condition of the upper part of the mountain, owing to the impossibility of examining it sufficiently closely from the rock buttress; secondly, the low temperature, due to the sheltered position of the face; and thirdly, the neglect to take sufficient food and extra wraps.

We went prepared for a tough piece of ice work in the couloir; and had carefully chosen settled weather for the attempt, but as the neglect of some apparently less important item of the arrangements has often proved the undoing of carefully laid plans, so our omitting to take extra wraps, added to our want of sufficient previous knowledge of the difficulties of the expedition, sufficed to complete our discomfiture, and forced us to return when the most laborious part of the ascent had been accomplished, and success seemed within our grasp. Better, however, the slip 'twixt cup and lip than of a shivering and half-frozen climber from his steps on a steep and lofty ice slope, and the consciousness of the wisdom of our decision to return remains, to some extent, as a set-off against the disappointment of failure.

As regards any future attempts on the mountain from this side, I believe the best, if not the only, line of route to the summit must lie over the upper snow slopes and snow-streaked rocks of the face adjoining the hanging glaciers, passing to the right of the square-topped central peak which crowns the ridge immediately above; but I am also convinced that to reach these slopes at all from below will ever be the chief difficulty. Leaving Mr. Baumann's route out of the question as offering a point of attack too remote from the summit, though it might possibly, under favourable conditions, give access to the snow slopes, the alternative appears to lie between the couloir and the rock buttress. The former, if free from ice thick enough for step-cutting, as photographs prove is sometimes its condition for hundreds of feet, might prove to be absolutely impossible, as the rocks are exceedingly steep and smooth, while the passage of the latter, if practicable under any conditions, will always, I am certain,

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be extremely difficult, and frequently entirely barred by the ice cliffs of the hanging glacier which dominates it.

It would, therefore, appear that the presence of ice below in the couloir, and its absence at the same time on the slopes above, are the most favourable conditions for an ascent, apart from possible risk from avalanches, though whether such will ever be found to co-exist only the future can show. It should be borne in mind that the expedition is one for which fine settled weather is absolutely essential, and one where the endurance of every member of a party may be put to a severe test. In spite, therefore, of the risk of prophesying, I venture to predict that some time will elapse before an easy route is discovered up the N.W. side of the Aiguille du Plan.

Mountain Sickness.

By C. G. MONRO, M.B.

IT may seem unnecessary to begin this paper with a description of mountain sickness, especially in a publication like the 'Alpine Journal'; but the fact is that even quite recently doubts have been thrown on the very existence of mountain sickness as a distinct affection. To begin with, the name is not altogether a good one, for it implies that the presence on a mountain of the individual so attacked is a necessary feature of the affection. This is by no means the case, for aeronauts have been known to suffer from similar, if not identical, symptoms; and M. Paul Bert has shown that the malady may be produced in individuals who are subjected to artificial exhaustion of the atmosphere by means of an air-pump. As, however, the train of symptoms caused by these various conditions is best known as mountain sickness, I shall adhere to this name in default of a better. The symptoms of mountain sickness are somewhat variable; but the chief and all-important one is an 'indescribable feeling of illness,' associated with great muscular weakness, especially in the lower limbs, and a consequent inability to proceed with the ascent. To this may or may not be added breathlessness, headache, loss of appetite, nausea and vomiting, giddiness, thirst, and, at least in one case, rise of body temperature. Mountain sickness has been known for centuries. Accounts of it are given by Father de Acosta in 1590, Bouguer in 1737, and by de Saussure. In our own

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