metallic lustre on the cleavage planes, in irregular columns or thick prisms, some of it rather resembling diallage, most hornblende. A microscopic section of the greener variety shows it all to be hornblende. The white mineral cannot now be well called felspar, probably it is nearer to saussurite; but it may, however, be a decomposed and metamorphosed felspar. One of the gabbros, which I have collected from near the Lizard (Cornwall), shows exactly the same change in both minerals.

An Ascent of the Monte della Disgrazia from Chiareggio in the Val Malenco. Read by F. T. Pratt Barlow, before the Alpine Club. March, 1876.

THE northern face of the Monte della Disgrazia as seen from the Bernina group, or from the southern slopes of the Muretto Pass, is perhaps the most striking object in the Alps with which I am acquainted—always excepting the Matterhorn. At the same time, the ordinary tourist hardly knows of the existence of such a mountain, so shut in is it by a network of unfrequented valleys and second-rate ridges.

Still and I had never lost the recollection of its glories as seen from the top of the Sella Pass in 1868, and it was with the intention of claiming a closer acquaintance with them that we made for Pontresina last August.

Our party consisted of Mr. S. F. Still and myself, with Jakob Anderegg and young Peter Taugwald. Two other Club men, who accompanied us from England, would have doubtless joined in all our expeditions had they not been most shamefully thrown over by Christian Bohren, of Tricholegg, Grindelwald, who had engaged to meet them at Pontresina, and whose delinquency I am glad of having this opportunity of recording. As guides of sufficient class were not procurable in the Engadine to supply his place, our friends' tour was utterly spoilt.

It is probable that our mountaineering programme would have suffered somewhat, had not the state of our guides demanded immediate action, for Pontresina never before seemed so charming as it did this year, partly from the glorious weather, which greeted us everywhere in Switzerland last autumn, partly also from the numbers of pleasant English people who were there congregated.

Both Jakob and Taugwald, who had only come to the Engadine under pressure, were rapidly wasting away before our eyes. Jakob assured us with tears running down his cheeks that all the food he could get consisted of flies and hot

water. Taugwald dolefully stuffed his knapsack into a cavity beneath his waistcoat, to show us what had been his condition before he was subjected to the régime prescribed by the hospitable inhabitants of these valleys for all strange guides, whom they look upon simply as poachers on their manor.

Our English friends were delighted to learn that we intended to start the next morning on an expedition which, if successful, would be a heavy blow to the reputation of Jenni & Co., who, having a monopoly, exacted the fullest benefit thereof from the visitors.

On August 27 we ought to have caught the diligence at 4 A.M., but as Still declined to strike a match until that vehicle stood at the door, it declined most inconsiderately to wait half an hour for us, and the result was that we had to post all the way to the inn at the head of the Maloya Pass.

Here we laid in a large stock of provisions to last two days, and were delayed a considerable time in obtaining a porter to carry them over the Muretto Pass. It may be well to note that the one we did engage came with us for half the sum at first demanded.

We found the Muretto both hot and dreary; and it was not until we had descended the southern side for some fifteen minutes that the Disgrazia burst on us with a sudden grandeur that was perfectly startling. The telescopes were instantly called into play, and for half an hour we scanned intently every possible route to the summit, only to see Jakob shake his head at each suggestion. We eventually decided to bivouac that night as high as possible up the glen through which flowed the Ventina Glacier, and to trust to chance on the morrow.

As our caravan pursued its way into the valley, with ardour somewhat damped by the prospect before us, we were startled beyond belief by being pounced upon by a band of men, who appeared as if by magic on every side at once. Our porter recognised them as officers of the Italian Custom House. Still remarked on the ease with which we could knock half a dozen of them into the ravine below, but changed his mind on seeing the revolvers which each of them carried. An examination of our knapsacks convinced them that we were not smugglers—much to their disappointment possibly—for never, since the days of Roderick Dhu, was an ambuscade better planned, on ground, too, which apparently could not shelter a rabbit. We concluded that the constant use of our telescopes had been remarked, and was accounted for by the supposition that we were smugglers looking out for the officers; certainly our costume warranted any suspicion.

Chiareggio is charmingly placed, but the dingy house mentioned in 'Italian Alps' was too dingy to allow us to listen to Jakob's suggestion that we should stay the night there. We shuddered, moreover, when the host tried to persuade us to order some of his 'soupe maigre,' probably the same brew as that enjoyed by Mr. Freshfield when there ten years before.

We ordered him, therefore, to bring out a supply of bread, butter, cheese, polenta, and wine on to the green in front of the church, and found all he gave us of most excellent quality, so much so that we regretted not having deferred our commissariat arrangements until our arrival here. The wine was particularly good.

The impediments to further progress were excessive. At first no native would engage himself to act as porter, lest we should take him on to the mountain. Our wants, too, in this Italian valley were feebly expressed in a mixture of German and French with a few Latin words thrown in, and no language at our command could convey the fact that we wished for blankets. As a last resource we made a raid into the house, and took what we required off the host's own bed, an act of pillage to which he did not offer any objection, knowing probably that we were thereby courting our own punishment. Our only anxiety was on Jakob's account. He was evidently unwell, and we feared lest the exertions he had undergone earlier in the season might have seriously injured a frame weakened by his illness of the previous year. That our fears were well grounded subsequent events proved, but it was to him alone that the success of our expedition is due. When we had once started, the excitement of the climb over new ground showed him in his usual aspect, whether as guide or companion, as second to none in the Alps.

There is nothing which patience and determination will not overcome; and before 5 P.M. we had made all necessary preparations, and secured a porter to carry the heavy baggage up to some bivouac on the mountain side, but where we had not determined.

We crossed the stream and went a short way up the valley, and then mounted steeply through woods on the right bank of the torrent which comes from the Ventina Glacier, until, at 6.20, we suddenly emerged on a lovely spot of green turf, dotted here and there with chalets, some quite new, and all unoccupied, immediately at the foot of the Ventina Glacier. Still and I agreed that we had never seen so perfect a place for a night out, and at once determined to pitch our camp there, although we were not so high as had been hoped.

Such an unexpected solution of the problem, which was of the most immediate interest, was hailed by all as a good omen. Even Jakob recovered his wonted spirits. The mountain itself seemed to smile on us, for, hardly had we settled ourselves, when a large herd of goats came jumping down from the rocks above, and insisted on being milked, a process readily and effectually performed, and we filled a large casserole with milk before we had done with them. While lighting the fire inside we heard a tremendous row, and, rushing out, saw Jakob on his back sucking an elderly matron of the flock, who vigorously objected to the teeth of her red-bearded offspring. At length she managed to plant one hind foot in his mouth, and the other in his right eye, and with a tremendous kick sent him rolling over and over on the turf, where he lay, his disreputable old sides shaking with laughter, until we picked him up and set him to work in his ordinary character of cook.

I would willingly avoid all mention of our miseries during the night, especially as the guardian of our Alpine literature has expressed an opinion that the subject of insects is already terribly overdone in the Journal; it is, however, a kindness to warn mountaineers against the blankets of Chiareggio, unless they would prefer to encounter our fate, and the risk of being eaten alive.

At 2 A.M. we were glad to rouse ourselves and brew a jorum of strong soup. Between that hour and four Jakob persistently visited the door and prognosticated bad weather, of which we could see no sign beyond the excessive brilliancy of the stars.

The guides, anticipating a laborious climb, and being naturally doubtful of success, suggested that my knapsack should be left 'en cache' against our return, for they said that *if* we did get over the mountain it would be easy to send some one back for it. This proposal was scouted at once, and the knotty point was only solved by my offering to carry my baggage myself, which I did for the whole of the day; this matter settled, we started with the dawn at four. Our way led us at first over moraine *débris* intermixed with fallen trees and rushing streams greatly to the damage of our shins and tempers, daylight overtaking us as we reached the edge of the moraine on the right side of the Ventina Glacier. Along this we found an easy and pleasant path, till, at 5.30, it merged in the precipices which bound the glacier on this side. Had we been geologists or mineralogists, there would have been much to interest us on this moraine. Great masses of fibrous mineral, which we pronounced to be asbestos, and beautiful crystals, some

green, resembling Angelica, met us at every step. But we had other views for the moment, being much attracted by a hanging glacier on the further side of the Ventina, by which we thought we saw a road to our summit. Our guides, however, did not acquiesce in our views, and insisted on the primary importance of avoiding rockfalls and avalanches; wrongly as we now believe.

On leaving the friendly moraine we commenced the ascent of the main glacier, bent on turning a mass of séracs, of which we viewed the profile descending some way ahead on the left side of the glacier.

It had been our fate this year to walk over several slippery glaciers, but never in all our experience had we such an one as this to contend with. There was here simply no footing. The ice, inclined at a considerable angle, was cut transversely by large crevasses, and these so close together that to slip was a serious matter, especially as the rope had not been called into requisition. Step-cutting therefore became a necessity, and we gradually and laboriously rounded the ice-fall we had been aiming at, bearing across the glacier; patches of nevé were reached at length, and we progressed once more with muscles free until hunger proclaimed a halt at 7 o'clock.

I would here remark that at the head of the Ventina glacier is a very marked col, indicating a tempting route into one of the valleys on the south side of the Disgrazia.*

While breakfasting we could see nothing of the ground immediately above us, but further advance in the direction we had hitherto followed was clearly impossible without immense risk, as to gain some rocks at which we had been aiming, immediately below the eastern peak of the mountain, we should have to traverse ground swept by constant discharges of ice from the heights above.

At 7.30 we were again under weigh, and turning at right angles to our former course, addressed ourselves to the exploration of the ice-slopes above us, entering at once on an immense system of enormous fissures, among which we dodged, being forced more and more to the right. Suddenly we found ourselves facing an obnoxious icefall, composed of séracs of the most taper and unstable character, while between us and a ridge of rocks on the right was a great gulf, formed on the Kilkenny cat principle, by sérac and crevasse eating each other up. Among the séracs we battled manfully, first

* From distant views of the Disgrazia I have no doubt that this col can be reached without much difficulty from the S.—D. W. Freshfield.

one end of the line leading, then the other, until progress was quite hopeless, for we stood on the edge of a schrund of interminable length, and at least fifty feet broad. There was nothing for it but to turn back and get clear of the séracs, through which we had climbed, as quickly as possible, and try to cross the gulf mentioned above, which we had before thought so repulsive. It gave us less trouble than we expected, and we gained the rocks without serious difficulty. These proved much rougher than they looked from a distance, and the number of small crystals which they contained was very remarkable. We much regretted that we had no time for loitering and digging out specimens. We had now a stiff climb of at least an hour, with lots of work for hands as well as feet, revenging ourselves on our old enemies, the séracs, as we went, by hurling stones at them, and cheering as a better directed missile than usual would send one shivered to atoms among his less-exalted brethren below. We were almost despairing of again reaching the ice by our new route, when we fortunately found a precarious path by which to descend on to the snow basin above the fall which had so bothered us.

Across this snowfield we went at full speed, aiming at a small bed of rock at the foot of the steep ice slope which now alone intervened between us and the first, or eastern, peak. A bergschrund which defended this slope narrowed almost to nothing as it neared these rocks, but even here it was by no means easy to cross. The snow on the upper edge was both deep and soft, and it was only after three or four attempts that we conquered it.

Now for the slope itself. It was, say 1,000 feet long, and tolerably, but not excessively, steep, and broken in two places by small islands of rock. Each of these islands we visited in succession. After leaving the last some way, and when about two-thirds of the whole slope had been accomplished, the character of the snow suddenly changed. We were now above all the surrounding ridges which had protected the main mountain from the influence of the Föhn wind which had been blowing for the previous week, and which hereabouts had worked its entire will. A few steps, and Taugwald, who was leading, re-echoed a grunt from Jakob in the rear, 'Es ist ganz gefährlich,' and I heard muttered exclamations of which 'Lavine' was the most audible. It did not want any coaching to teach us the danger. I had never before seen snow in a similar condition, and can only liken it to the slush in London streets in a thaw, or rather to a mixture of water and large hailstones. Our axes absolutely splashed in the

compound. It was sufficiently obvious that the only course was to gain the arête on our right hand at the nearest point, and to do so by cutting steps into the solid ice. Our progress was necessarily very slow while cutting steps as large as soup plates across the fifty yards' interval which separated us from the arête, and I don't think that in my Alpine experiences I remember so bad a twenty minutes as that passed in those steps, the slush falling lazily into the holes as fast as made, and covering up our boots, and with the prospect of the whole slope above us coming away without further warning. Once on the arête we met with no further difficulty, as the snow on the further side of it was hard, and at 12.30 we reached the summit of the eastern peak, after five hours of continuous hard work from the place where we had breakfasted on the glacier below.

All hands were now piped to lunch, and we employed three quarters of an hour in eating and looking about. After breakfast the weather had become to all appearances very unsettled; peak after peak had put on a heavy nightcap, until, at one o'clock, every one in the neighbourhood was covered up except our own, a most fortunate exception for us. Clouds kept racing up from the valley, but still we felt no wind, and could light our pipes with ordinary wax matches. Our chief point of interest was of course the rock arête we had still to traverse. The distance seemed nothing, but the road was ominously jagged. I thought it feasible, and appealed to Jakob for his opinion. 'Es muss gehen' was his reply, as he looked back on the slope we had come up.

At 1.15, therefore, we set to work again, after building two small stone men on our peak, but only such, I am afraid, as would be blown down in the first gale. From where we were, on the snow point at the eastern end of the final ridge, there did not seem more than 300 yards between us and the western end, where stood the stone man which marked the highest point of the mountain. At no point was there anything which appeared to overtop us considerably, but that 300 yards included four gigantic teeth, over each of which we must go, as neither face of the mountain seemed to offer the smallest foothold. At 1.15, then, we took a nip of cognac to give us some little confidence, and went at the front tooth with the pleasant feeling that, if unsuccessful, a night of storms on the top was in store for us.

Whether it was the cognac or only the absence of difficulty, which enabled us to reach the top of this first tooth, I am unable to say, but there we were in ten minutes from the start; and on looking ahead thought we saw a large and perfect stone man on

the summit of the next one—a trace of civilisation which we hailed with three cheers.

Before we reached it much time flew by. Probably the alcohol had evaporated, but I distinctly remember a lot of ticklish work. When arrived there, our stone man turned out to be merely a large stone on end, and a glance on the other side showed us that our troubles were only beginning.

There was a sheer drop of some fifty feet on to the exceedingly sharp gap dividing our tooth from the next. To our right a shoot between two rocks led into a gully, slabbed with ice, which, in its turn, seemed to bend round under our feet, and lead on to the southern face of the mountain, which was here little short of a precipice.

Cautiously down this shoot went Taugwald. Carefully we held him as he reached the gully, and intently we watched him as he tried to chip a foothold in the icy floor. Hardly had his axe touched the ice when the whole of it came away under him, and slid down a slab as thick as a York paving stone. In a second it shot out on to the mountain side. Everything seemed to wake up at its touch, and snow, rock, and ice at once joined in a mad race for the valley. Spreading as it went onward, an avalanche was formed such as I have never before seen, which went thundering down long after we had lost sight of it in the clouds of dust which it left behind. Truly a most impressive warning to us not to follow.

Taugwald got to the end of his rope and desired Still to follow, but 'mitacht.' Accordingly that Herr soon found himself in the gully, which was now smooth, wet, and slippery. Jakob and I paid Still out as long as the rope lasted, and then I was despatched after him. There were now three of the party in as insecure a position as could well be imagined—in fact, I believe we were entirely held up by the rope; and it is my firm belief that had Jakob attempted to leave his fortress above us before Taugwald reached some foothold, we should have all started in a direct line for the stream which we saw in the valley, apparently some thousands of feet immediately beneath. I fancy, however, that the guides had both seen a small ledge, invisible to us, and Taugwald succeeded in reaching this just as Jakob was paying out his last yard or two of rope. As this gave firm foothold we were spared the necessity of being hauled up again by Jakob, and in two minutes more were all standing together, at the base of the next tooth, which was itself conquered after a tough scramble.

There now remained only one more between us and the highest point. But the intervening gap was much the same

as the preceding one, with the addition of the ascent opposite being absolutely vertical. The guides looked grave, and the possibility of failure was after all most unpleasantly forced on us. Taugwald passed over on to the northern face, and then wormed his way along a chink sufficiently broad to poise some huge stones, which a touch would probably have dislodged. Round and under these we pulled ourselves, and then I saw Taugwald disappear very slowly. Next Still went out of sight, yet more slowly, and I, in my turn, found myself on the brink of a wall of granite, on which my two predecessors were spread at intervals, as Mr. Leslie Stephen says somewhere, 'like beasts of ill repute nailed to a barn.' As for me, I, after some hesitation as to which leg should have the honour of leading, let myself go; and have no distinct recollection of what happened, beyond that a crack seemed to give occupation to the fingers of the right hand. In the end we all found ourselves on the col, with our clothes considerably the worse for our exertions. We were here at the base of the last tooth, which, as before described, was perpendicular on this side.

How then to proceed? Jakob answered by dropping his axe. It went in a bound down some 100 feet on the northern side, and stuck in the nevé just where it joined the rocks. Of course he had to go after it, and returned with it much sooner than we expected, reporting that the face of the mountain was now easy, and that the last tooth could be turned. With only one mauvais pas it was turned! and so was the gap on the other side of it. 'Die Spitze ist gewonnen'! shouted Taugwald, pointing with his ice-axe to the veritable stone man at the head of a staircase just above us. In five minutes more we were dancing a species of can-can round it like four madmen. Time 3.45. The passage of the last arête had therefore cost us 2½ hours of excessively hard work. That we wasted three-quarters of an hour here was the subject of many future regrets, and of much bad language; for although the descent by the usual route appeared to us to be easy enough, still the snow was in a most dangerous state, and required much negotiation.

Putting on all speed we only reached the ridge above the Val di Mello at 6.10, just as dusk was coming on. The guides declined to attempt the precipices which encircle its head after nightfall, and Jakob suddenly remembered that he could take us to a chalet in the Val Sasso Bisolo—a most desirable arrangement, as a thunderstorm of more than ordinary violence was brewing.

If there were space in the Journal I might enlarge to any

extent on the miseries suffered during the next three hours—how we had to get down some 2,000 feet into the Val Sasso Bisolo in the dark by the sides of a waterfall, and how we blundered along the valley itself by the light of almost incessant lightning; how we got into a swamp, and how Jakob finally decided on halting, at 9.10 P.M., under a large rock, making in all a very considerable addition to the danger and toil of the day.

No sooner had we stopped than Jakob dropped off asleep, and Taugwald tumbled into a pond in an effort to get water. We fed each in turn with portable soup cut in slices; little else would they touch. I then lit a candle and searched for some shelter for myself, and finding a cavity under a rock, crawled in, and composed myself as best I could among the boulders. I must have slept for some time, when a nightmare of unusual violence awoke me. It proved to be only Still and Jakob, who, thoroughly wet through by the storm, which was now raging without, had crept into my cave, and had deposited their soaking forms on the only soft place they could find, which happened to be my body. When matters were rearranged everyone was so uncomfortable that sleep was impossible, and morning was devoutly prayed for. It came at last, and with it the rain ceased. At five we left our quarters, and in ten minutes reached the chalet which would have been so much appreciated the night before. After a really good breakfast, and under the influence of a lovely day, we quickly forgot our discomforts, and looked back with unalloyed pleasure on our expedition successful beyond our hopes. We all agreed that it had never fallen to the lot of any one of our quartet to have overcome so many difficulties on one mountain. Both guides expressed their decided opinion that no arête in the Alps with which they were acquainted could compare in stiffness with the one which I have attempted to describe.

As a climax. Poor Jakob, weakened by his illness of the year before, was evidently unequal for a time to any further exertion, and we thought it better to send him home without delay.

To any member of the Club who may be tempted to visit the scenes described in this paper—and we can assure him that in so doing he will not be wasting his time—we should like to offer one or two suggestions. He might strike out an entirely new route, and one for which we have a particular fancy, by gaining the very marked arête, and following it to where it abuts against the north side of the mountain immediately below its highest or western peak. We should have tried this

way ourselves had we not been persuaded that the last face of rock was an absolute precipice. Jakob, however, proved, when in search of his axe, that this portion was comparatively easy. We think that the arête might be gained by ascending the hanging glacier before spoken of, which falls into the Ventina Glacier close to its lower extremity. Should he prefer a climb along the upper arête, we believe that much time might be saved by making for the notch or col at the head of the Ventina Glacier, and then turning, or scaling, the snow-peak on the right hand. When once on the ridge a broad saddle-back of snow leads up to the first summit, and from this point he would probably follow our course. By this means he would avoid the crevasses, rocks, and slope over which we consumed more than five hours.

We can imagine no finer expedition in the Alps than one which would include an ascent of the Disgrazia by its northern face, leaving and returning to Pontresina by passes at the head of the Mortaratsch and Rosegg Glaciers; and we beg, in conclusion, most strongly to recommend it to the attention of members of the Club who may find themselves in the Engadine.

On the Health and Training of Mountaineers.

By T. Clifford Allbutt, M.A., M.D. Cantab., &c.

THE strong impulse towards mountaineering which has shown itself of late years may receive various explanations, but no doubt the chief one lies in this, that it supplies a healthful and a fascinating pursuit in the place of those other sports which are gradually passing out of the reach of ordinary men. English country sports are every year becoming more difficult of attainment, and less fitted for recreation when attained. Our modern tendency to gather in large and busy towns makes country life at once more needful and less accessible, and as land is enclosed and cultivated the growing demand for country sports is met by constantly diminishing opportunities. Hence, while fox-hunting, shooting and fishing are more necessary and more eagerly sought after, these sports are year by year becoming more artificial and very much more costly. But few young men can pretend to spend three hundred a year upon fox-hunting, and not much fox-hunting can be had for a smaller outlay. Cover-shooting is an idle, cruel game which one would hope can have no attractions for members of the