nous tournons nos regards vers le zénith, et nous voyons une couronne toute noire au-dessus de nos têtes, et près de la couronne un bleu très clair qui devenait plus foncé à mesure que le regard s'approchait de l'horizon.

Éblouis par ce merveilleux panorama, nous n'avons pas pensé à consulter l'heure, d'autant que le soleil était encore élevé à l'horizon, lorsque, regardant nos montres, nous voyons qu'il était cinq heures. Promptement nous faisons quelques pas de descente jusques près du degré du côté de Montrond, en face d'une profondeur perpendiculaire et vertigineuse. Nous disons simultanément qu'il faut nous tourner la face contre le roc, et nous nous laissons glisser doucement, en tenant les mains aux aspérités du roc jusqu'à ce que nos pieds recontrent le petit banc de roc que nous traversons. Nous effectuons sans difficulté la descente par le passage suivi en montant, et arrivons au pied du glacier à la tombée de la nuit, et continuant notre marche, nous arrivons chez nous à une heure du matin.

Note.—Dès que nous avons approché du sommet de l'aiguille chaque quart d'heure nous sentions un pressant besoin de manger, et quelques bouchées suffisaient pour calmer l'appétit, et nous sentions l'un et l'autre un gonflement au front, et en même temps une forte démangeaison aux narines, sans doute effets de la raréfaction de l'air.

Conclusion.—Avec peu de travail et de dépense on pourrait rendre le passage facile et sans danger, et qui sait si, après l'accomplissement de ce travail, les Aiguilles d'Arves ne deviendraient pas, après le Mont-Blanc, le lieu le plus fréquenté par les touristes des différentes nations, qui y seraient attirés par le magnifique panorama qui s'y présente? (n'y attirera pas de nombreux touristes des différentes nations?)

Toutefois avant l'exécution de quelque travail on ne pourrait conseiller l'escalade du fauteuil, qui (en l'état actuel) est dangereuse, car le plus jeune des frères Magnin, qui avait alors 24 ans, plus impressionnable, à cause de son âge, pendant le mois qui a suivi cette ascension a rêvé plusieurs fois être à la descente de ce passage, mesurant de l'œil la profondeur vertigineuse de l'abîme, et se réveillait en sursaut, en sentant bouillonner le sang dans ses veines, sans, cependant, avoir éprouvé ce sentiment lorsqu'il l'a réellement franchi.

FIFTEEN YEARS AGO IN VAL FORMAZZA.

By A. CUST.

On September 19, 1878, I looked down from the southern summit of the Basodino * on the long reach of Val Formazza, conjecturing the position of the hotel at Tosa Falls, to which I was bound. The district was then unknown to me; I had merely taken the route in

* I found a cairn near the top.

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returning from Italy to Switzerland on the advice of friends, and was unprepared with maps or information. Ascending the Antabbia glen by mistake, I had scrambled on till time and an obscured view checked my upward course 9,000 ft. above Bignasco, my starting place. Unaware that the hotel nestled at my feet, and picturing it some way down the valley, I marked out for my descent a more direct course than that indicated by the cattle tracks, which made for the upper end of the valley. Brought up, however, by mist and growing darkness on a dangerous declivity, I had to pick my way back to them, having in reality been before prompted by conscience to avail myself of their more certain guidance. It has been no uncommon experience with me to be benighted, but never more helplessly than now. The darkness of a misty night grew as complete as it well could be in the open air. Yet I once remember it greater. My friend Cawood and I were descending from the Bel Alp with our baggage on a mule, yet for some reason or other without a lantern. In the wood literally nothing in the immediate proximity was discernible. The mule was thereupon put in front; the driver, holding by its tail, gave a hand back to Cawood, who in turn extended an ice axe to myself. The invisible animal went steadily down the zigzags without a pause. To return to the present occasion, I contrived, under difficulties, to adhere to the path, and after resisting the temptation to remain for the night in the dry recess under an overhanging rock, and failing to find entrance to a shed to which I came, at length reached the level ground. Just as the path then nearly lost itself a strange moving light somewhere across the flat expanse attracted my notice. Hailing without effect, I committed myself to the unknown intervening space, and found a group of men, whom I followed, expecting to shelter in a hut or village. In two or three minutes the lantern lit up the wall of a substantial building, and, before I had realised the meaning of the confused noise of water that had begun to make itself heard, to my agreeable surprise I found myself at the inn.

Remaining at Tosa Falls the next day, I was recommended to proceed by the Binn valley, and studied the route from the Italian Government map which I found. Understanding that my course would be past the Obersee (Lago Sruer), which on the map was set in a curious sort of side recess above the main enclosing rock wall of the Hohsand Glacier, after some hesitation, and hurried by the coming on of mists, I surmounted that wall, only to find the ascent a mistaken one. 'To get fun out of the position,' as my original notes have it, I continued to the glacier, meaning to descend further on, first gaining a rocky eminence that rose near to make a cairn and deposit my empty wine bottle.* A gap at the far head of the glacier meanwhile promising a more direct and agreeable course to the valley I wished to reach, I went on to it (the Hohsand Joch, as I afterwards learnt); but on the other side could

* The summit of ridge 2,926, but S. of that point as placed on the map. The glacier I first reached was really the Ban Glacier, close to point 2,973.

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only see down another glacier and a bit of rock below, all the lower region, whatever it was, being concealed by mists. The general aspect, however, seeming favourable, and my compass, which formed my sole connection with the outside world, making the direction right, I descended. Mists came on, with scantily falling snow, and it was not till I was clear of the ice that a brief lift of cloud disclosed the valley.

I hit off the diligence road by a village, which I afterwards thought to be Lax. The 15 kilometres now to Brieg seemed endless, though I solaced myself with the thought that after all a kilomètre was not a mile. Soon after I sighted the lights of Brieg a conveyance overtook me, which proved to be occupied by young Seiler, and I was heartily glad of the ride which he gave me.

In returning the following year (1879), near the end of September, to Val Formazza, for the purpose of exploration, I foolishly persevered, in spite of a heavy fall of snow, in the passage, new as it was to me, of the Bistenen Pass to the Simplon. Reaching the first of the two passes included in the route about noon, at nightfall I was only in the intermediate Nanzerthal (a distance of some two miles, with a dip of about 1,000 feet), vainly seeking entrance to one of the deserted huts. With a brilliant moon I set off about six for the remaining pass, but it proved a still more serious business; the deep, toilsome snow had now a thin frozen surface, which detained the weary foot, only to let it abruptly down. It is difficult to suppose anything more tiring and disheartening, while, at the same time, it precluded active motion, and I availed myself of occasionally obtruding stones to stamp off frostbites. But 'it's dogged that does it,' and, gaining the top in three hours, by midnight, in $17\frac{1}{2}$ hours from Visp, I was at the hospice.

The typical leader-writer would have depicted a solitary belated traveller nearly perishing. But solitude is a safeguard to a person acquainted with his own endurance, as, a single individual requiring all his management to see to himself when almost at danger point, the risk is increased if companions have to wait for or attend to each other.

I had never been at the hospice before, and making no one hear, though I believe I ventured to ring a large bell in the open entrance, I wandered disconsolately through the unlighted passages. Meanwhile noisy voices and laughter from the other end of the building seemed to indicate that the inmates were engrossed in jollification. At length I went to the source of the noise, and found a large room full of Italian workmen, who were the reverse of sleeping. I felt timid as to attempting rest amid so rough-looking a set; however I lay down in a corner, placing my *sac* and boots under my head for safety. Later on there was a sound of a vehicle driving up, and the still noisy gang were whirled off into the night; and, left to myself, by further exploration of the deserted passages and aid of the moonlight streaming in through the windows, I obtained more fitting accommodation.

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On descending to Crevola I found an inn in the tower-like structure at the corner of the bridge which many travellers may have wonderingly noticed. At bed time I was taken down the staircase of this quaint structure, storey after storey, my conductress key in hand, as if to some dungeon, till part way down it the door was opened for me of a small bedroom.*

On this and subsequent occasions I found headquarters at Andermatten,† in Formazza, or Pommat. Returning in successive years I was led on to the endeavour to construct a map—at first from sketches, afterwards by aid of a prismatic compass—of a glacier region then practically unmapped—a work, to my grief, interrupted when it seemed to require only one more visit to complete it, along with my Alpine projects in general, and since rendered superfluous by the new Italian map.

The discomforts I endured at so humble a hostelry (Osteria Imboden), with all the friendliness of the hostess, as well as in facing the inclement condition of the Alps when closing in for winter, are a curious measure of the enthusiasm produced by such explorations. I became accustomed to village entertainment in my 'rambles in Ticino,' and in some ways felt more at ease than among tourists and waiters; it was a lonely existence, but brought me into contact with the people of the country. The dismal part, however, here was the early morning start—the turning out to a cold dressing on the rude boards of a large, scantily-furnished bedroom, followed by a scanty meal, being a Mark Tapley sort of business. Then came the weary sameness of the toil up the steep woods of the Lebenduner Tobel,‡ with the prospect, perhaps, of my projects being cut short by baffling fresh snow and insufficient daylight.

In this now deserted valley-head I spent the day in complete solitude; but on one occasion, when I had made myself comfortable for the night in the hayloft of a large barn in the lower set of

* My bill at 'Al Torre' is worth recording; it was duly made out in items, and amounted to fr. 1.95 for supper (including soup, good meat and beans, fruit, half a bottle of wine), bed, and breakfast! Since then, I believe, the little hostelry closed, and in my subsequent visits I found more luxurious quarters and a friendly, intelligent landlord at the 'Stella,' over the way. At Baceno ('Agnello'), my next halting-place, at which spot the interest of Val Antigorio, whether for scenery or excursion centres, the gorge of Foppiano, singled out for praise in a valley of surpassing beauty, seeming to me overrated, my bill was fr. 2.40 for supper (with soup, egg pudding, half a bottle of wine), bed, and breakfast (with cheese). On one occasion I stayed at the inn at St. Rocco (Soleil), and was well satisfied.

† Alla Chiesa, I. map; see Ball's *Central Alps*, p. 249. My immediate aim was to explore the route from the Lebendun (Vannino, I. map) valley to that of Binn, but I was disappointed in the expectation, to which I had unfortunately given premature expression in *Fraser*, June 1879, of finding a direct passage.

‡ The more level upper part of this side valley is rather pleasing, with the Ofenhorn terminating the vista of the higher gorge. The Italian map banishes the word Lebendun, stream, huts, and lake bearing the name Vannino. In this bilingual district there must be some curious dialectic local names—*e.g.* Mincjo Krüpfe, I was told, was merely equivalent in meaning to Monte Bocchetta.

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Lebendun huts, I heard persons outside, who tried the door and found it fastened (with my ice axe). I must confess to an uneasy feeling, and it was with decided relief that, after they had again tried it and called out, I heard them go away without noticing my reply. In the morning I found it was a party of hunters or poachers, who had gone on to the upper huts. I now fraternised, and as I remained in the hut with one of them, after the others had gone out, he praised my wine bag, and at length asked me to give it him, a request which I naturally refused, as it was of use to me. He repeated the request in the tone of a man who did not want to be refused, and I more firmly declined, though a little uncomfortable in sight of his gun. However he said no more. It looked like an attempt at virtual robbery, and I hope the experience of 'coveting' is unique in Alpine travel.

Another time when I passed the night at these huts it was earlier in the season, and the herdsmen had not gone down. They were friendly-disposed, and gave me of what they took themselves, but that seemed mighty little. The first proceeding on inviting me indoors was to hand me a small spoon; the others had each one and were standing round a large caldron of slightly-warmed milk coated at the top. Into this we dipped and took *ad lib.*, though the others mostly took little or none, only one keeping me company. When I desisted the caldron was swung over the fire, and incessantly stirred with a wooden ladle, or rather pronged stirrer. Access was gained by a ladder to the upper storey, in which we were to sleep. The first to mount was a small dog, which being placed on the steps managed to get slowly up. The men meantime beguiled the time with singing. A bed was prepared for me, the rest followed at various intervals, and soon we were all lying side by side on the hay, three herdsmen, a young woman, and the dog forming the remainder of the party. I had, however, a rug and a sheepskin to myself, though a knock of my neighbour's elbow into my ribs reminded me occasionally of his proximity. The young woman was safely wedged in between two of the herdsmen; what became of the little dog I did not know, but I attributed the movements of something in the dark in the neighbourhood of my face to a roving propensity on its part. Smaller animals were, of course, numerous, but I managed by this time to sleep through them, having become reconciled to them, especially for the sensible habit I had noticed of retiring to their own rooms at an early hour after dinner. Some of them certainly appear to make a breakfast also, but they too withdraw before daylight, and so do not accompany your travels. Before retiring the men brought up to the loft a hot bowl as the result of the stirring. I was handed a ladle and again was left alone with one rival in relish for a repast which I was not sorry for. But it was little for hardy men to sup on. I cannot speak to their morning meal, as I went before it.

Before me on this occasion (September 7, 1880) lay a much thought of project of crossing a small glacier on the southern flanks of the Ofenhorn (now Arbola Glacier), over which seemed to lie

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the only direct pass to be found to the Binnen Thal. Ascending the glacier between the Ofenhorn and the Punta del Forno (now Forno Glacier), which I had explored the previous year,* I took to a snow gully in its western wall, which, as it grew steeper, I left where practicable for the side on my right. At one such spot, high up where the snow was very steep, the thought occurred to me, 'Now this is just the place one might go backwards, and so headforemost down the gully.' The next moment the little knob of rock to which I was holding with my upper hand came off, and I swung back to near, but not quite, the balancing point. My other holds were sufficient to preserve the balance, which, in fact, a very slight hold will do. I now crossed to the rocks on the other bank, by which I found easy access to the top (in about 4 hrs. in all from the huts).

The glacier (Arbola Glacier), at whose edge, as I had hoped, I now found myself, seemed to offer no difficulty, and proceeding to the terminal summit of the mountain spur (in direction S.S.W.†) on which I was, overlooking its lower end, I saw that I could easily reach a low gap in the rock-ridge beyond it at the head of the Binnen Thal. Unfortunately the day was clouding over, and a bitter wind robbed me of the pleasure which the elevated position combined with the prospect of success should have brought. After some hurried observations I returned to the pass (Ofenjoch), and set off for the summit of the Ofenhorn, it being freezingly cold on the way.

In crossing from the ridge on my right, which I had kept near, towards the final ridge of the mountain at the head of the glacier, I suddenly became conscious that I had one foot in a crevasse, which means worse than 'one foot in the grave.' I have often thought since that of all deaths, short of physical torture, the worst would be one of the mental torture which a solitary man would undergo, aroused to a sense of his foolhardiness on finding himself resting in the minor discomfort perchance of cold and trickling water and cramped space on a ledge of ice, part way down a crevasse, with the brilliant blue sky through the opening above, in a cruel, hopeless silence, till the blue faded from the sky and the stars slowly crossed the opening, looking down with unpitying eye. He might console himself with wondering whether if he wrote a page or two of diary it would come out in a hundred years or so at the foot of the glacier, and then calculate the distance and time it would take till he counted himself to sleep. Thus twice that day did I nearly see Cerberus and the dusky realm of Pluto.

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* I then reached the gap at its head (Forno Pass), but could not cross it till the autumn of 1881, when I went over it from Baceno to Lebendun. To reach this pass from Binnen Thal ascend an easy grass gully to the first gap seen left of the Albrun and not much higher than it; then on the other side follow ascending paths across the side ridge to the left, and, skirting the base of the rocky point 2,582 (S. map), continue without intermediate descent along terraced ground to the plateau at the foot of the final débris gully leading to the pass.

† The account (*Alpine Journal*, vol. x. p. 98) is incorrect here. The 1885 I. map clears up all this region.

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Reaching the top in less than half an hour from the col, I commenced taking observations in a sheltered place behind the cairn, but the cold was excessive, the weather more and more threatening, and not caring to be caught in a snow storm, I ruthlessly cut short my angles, to be continued on a more propitious occasion, and in some ten minutes was back on the pass.

A quarter of an hour brought me across the glacier and down to the gap I had marked. It was a quaint little gap choked with huge pieces of rock, which, having been warmed by the earlier morning sun, gave me back a grateful heat. Looking over the other side, I saw that there only remained easy slopes, so, the pass mine, I promptly returned, well contented, to the warm rocks, to select a comfortable spot for a meal.

The snow slopes below the gap led me to a tiny glacier, the smallest I have seen, though containing, I believe, a crevasse.* My return way to Tosa Falls was now by the wearisome ordinary route of the Albrun, Minojo, and Neufelgiu Passes, which being new to me I wished to explore, the toil up the latter seeming endless, but once on the top I set off to race the daylight, it being now about six, and in an hour was at the hotel.† A short way below the summit I surprised three chamois within a stone's throw. Two went off; the third stood and looked at me and its companions in a puzzled way, at last making off in another direction.

I had noticed near the foot of the Forno Glacier a small side-glacier descending into the head of the Lebendun (Vannino) valley from the ridge of the Ofenhorn, an overflow, in fact, of the icefield above, which promised the easiest access to the mountain on this side, and on September 2, 1882, tried the route with Pierre Zertanna, his brother, the acting landlord of the jointly-owned hotel, volunteering to accompany us. Passing the Obersee or Lago Sruer and crossing the low ridge beyond it to the S.W., after brief trial of the glacier, we ascended its left bank ‡ and came out high up on the névé that covers the mountain slope, by which we had easy access to the final ridge.

* From Studer's description it was in 1864 evidently larger, and, indeed, apparently united with the upper glacier in Eggerofen.

For this little notch ('Einschnitt') in the ridge, whence, Studer writes, 'in a couple of paces we found ourselves on the upper firn,' the name Eggerofen Thor might be preferable to Arbola Glacier Pass; but I see in 'Climbers' Guides' Eggerscharte given as an alternative. This rock-ridge bounds the Arbola Glacier, forming the international frontier, as shown on the I. map, and the S. Map (1889) is quite wrong in removing it and making the glacier partly fall into the Binnen Thal.

† In 4 hrs. going from the Albrun Pass.

‡ This buttress should be ascended directly on the side away from the glacier. I believe this way will be found preferable to that by the lower and larger outlet from the same icefield leading to the Lebendun Pass. It was not known to my companions, who, however, seemed unaware of any routes up the Ofenhorn except on the Binnen Thal side. Our times were: start, 5.53; Neufelgiu Pass, 7.47; rocks above side glacier, 9.47 to 10.12; summit, 11.30 to 3.45; foot of Hohsand Glacier, 5.7; hotel, 7. In passing the Neufelgiuhorn Pierre told us that he had ascended it.

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On the summit, where the landlord took a willing and intelligent part in recording my observations, we were favoured with one of the most beautiful mountain effects I have seen. Fine as the day was, a mass of clouds persistently clung to the Italian side of the main ridge of the Alps, to the south-west of us, here peculiarly wild and jagged, rising just up to the top, and there contrasting in its mysterious cloudland beauty with the rugged peaks showing themselves on the Swiss side. From our superior height we looked down on the scene, the whole being in full sunshine—a delightful sight, felt even, I think, by the impervious sons of the soil. When at length they proposed to descend, I mustered sufficient German to say, 'Wir sind in Himmel; warten wir,' and they did not dispute either clause of the suggestion.

In descending we retraced our steps till we approached the rocky ridge falling north-east from the summit, when we crossed it to the snow-slopes on its further side. By this time mists covered the lower part of the mountain and glacier below, in which we were soon enveloped. The way was new to all of us, but my previous observations of the locality made me confident that we should succeed in emerging on to the lower glacier. So we felt our way down and among the crevasses on the glacier. From time to time I pulled out my compass, which had an effect on the confidence of my companions, who proceeded not without many an exclamation, though, as it pointed in a different direction from what I expected, I left its admonitions unheeded. We came out of the clouds, to our mutual satisfaction, exactly where we wanted to be, some way down the main ice stream of the glacier. I gave them the remains of my brandy flask, and they were happy men for the rest of the day.

For exploring the lofty region at the head of the Gries Glacier I discovered a convenient highway in a side glacier (now Siedel Rothhorn Glacier), descending thence into the Hohsand ravine. At its foot, without being traversed by its stream, lies a curious, long, and very level plain, floored with fine débris, with occasionally island-like mounds of grass, and a bounding ridge of the same on the side of the ravine. Here I fell in with a herd of chamois, who, instead of running away, remained, as if accustomed to me or knowing the difference between a gun and an ice axe.*

By this route I reached the Siedel Rothhorn† and Blindenhorn in the autumn of 1881, returning in each case the same way. On the latter mountain I remained from 1.45 to 5.30, which at that time of the year must have been close on sunset. It has two lower summits on the north, so distinct in appearance as seen from the

* The neighbouring hut is appropriately called Gemsland on the new I. map. The shortest way from Tosa Falls is by a brief and easy ascent to the plain from the vicinity of the Zum Sand hut. A pleasant alternative entry to the Hohsand ravine may be made by crossing the bridge at Morast and taking a track above the rocks on the left bank of the gorge, reaching the Zum Stock hut by a slight descent.

† I found, if I remember right, no trace of a cairn here.

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highest point that, being unnoticed on the map, I took them for the Merzenbachschien, the next mountain marked down the Gries Glacier. Afterwards discovering that they were intermediate summits, I ascended both on August 31, 1882, accompanied by Pierre Zertanna, going by the Siedel Rothhorn Glacier and returning by the Gries Glacier. On neither was there trace of a cairn.*

IN MEMORIAM.

CAPTAIN MARSHALL-HALL, 1831–1896.

CAPTAIN MARSHALL-HALL, born in London, February 6, 1831, was the only child of Dr. Marshall-Hall, the eminent physician and physiologist; he was educated at Eton, and at Caius College, Cambridge.

From his youth he was a passionate Alpinist, inheriting this ennobling taste from his mother, who was an enthusiastic mountaineer until she was over eighty years of age. He accompanied his parents on their annual visits to Switzerland, and in 1849, when only eighteen years old, he was the first to make the passage of the New Weissthor from Zermatt.† In 1867, with Mr. W. Leighton Jordan, and with Jean Couttet as chief guide, he made the second traverse of the Aiguille de l'Eboulement.‡ Later on, from 1878 to 1884, he resided with his family six years in Switzerland, passing the winters at Montreux, the summers in high stations of the Valais—always interested in every aspect of Nature, and specially in glacier observations. He then often contributed original notes to the reports on glacier variations issued by the writer of these lines; and later, in 1891, when living at Parkstone, Dorset, he continued to follow up this subject with great eagerness, and obtained from the Alpine Club the formation of a committee (Sir Martin Conway, Professor T. G. Bonney, Captain Marshall-Hall) charged with the care of studying the oscillations of the glaciers in different parts of the British Empire. He wrote many reports on the subject, § and obtained the official co-operation of the Colonial Administration for the study of this important phenomenon. At last, in 1895, at the sixth International Geological Congress, at Zürich, he initiated the formation of a committee for studying the variations of glaciers in the whole world (Commission Internationale des Glaciers). He was himself elected as representative

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* They are shown on the 1889 map with height 3,334 m. for the southern and slightly higher of the two. The short ridge, rocky except at its north-east end, of which they form the ends, presents a separate appearance on the Gries Glacier side, the upper snow of which extends to the uneven brim of the depression parting it from the highest point (3,384 m.), the more so from their not being in line with the latter, but really forms part of the precipitous frontage of the mountain over the Blinden Valley (see Imfeld's panorama from the Eggishorn).

† *Alpine Journal*, February 1879, p. 175.

‡ *Ibid.* 1894, p. 65.

§ *Ibid.* 1891, 'On Glacier Observations,' &c.

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