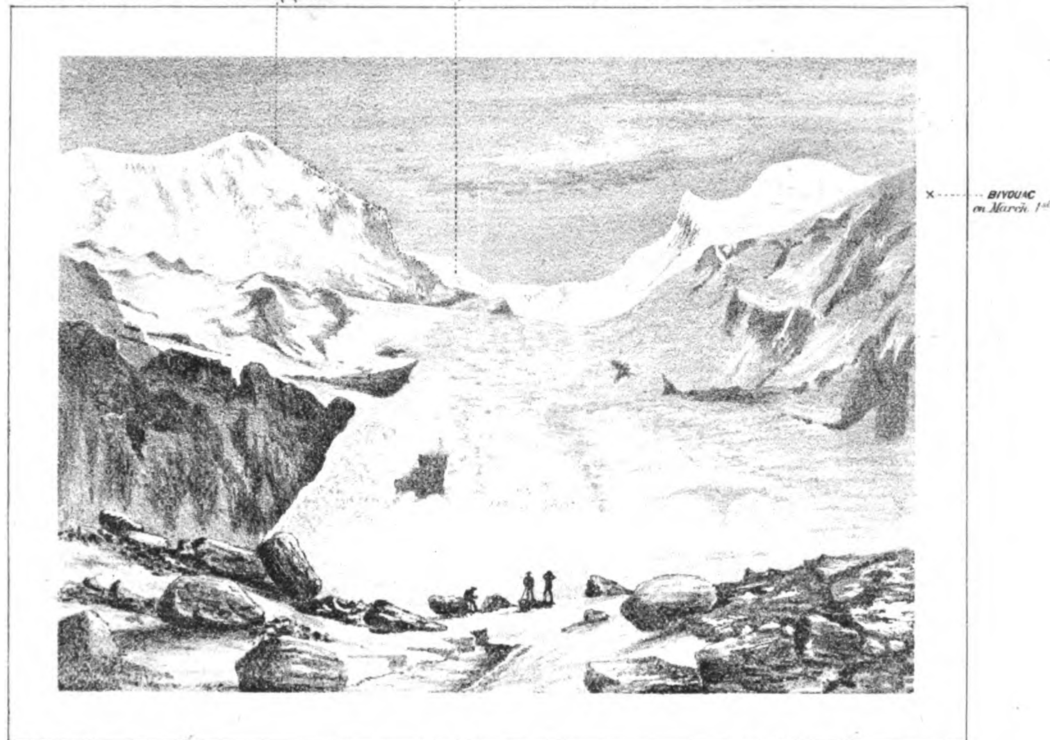

W. S. G. del.

Fred^k Dangerfield Lith. London 1887.

MOUNT COOK. AND MOUNT TASMAN.
FROM THE GREAT TASMAN GLACIER.

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THE

ALPINE JOURNAL.

FEBRUARY 1883.

A Journey into the Glacier Regions of New Zealand, with an Ascent of Mount Cook. By the Rev. W. S. Green. (Read before the Alpine Club, December 18, 1882.) *

III.

IN the last number of this Journal I described two attempts which we made from our camp on the Great Tasman glacier to ascend Mount Cook. On the first occasion we were brought to a stand by a rock-tooth on the southern arête; our second effort ended in the face of a sandstone cliff of the eastern spur.

On March 1st we were once more under weigh at dawn, and after ten hours' climbing, including many halts, we selected a place for a bivouac among the topmost rocks of the Mount Tasman spur, on the north side of the Hochstetter glacier. A short reconnaissance proved the possibility of further advance, and while Boss and I melted snow by spreading it out thinly on boulders which still retained some of the sun's heat, Kaufmann scraped a smooth place under a rock, making a nice bed for us of material somewhat like road-metal. On this we spread our waterproof sheet, then an opossum rug, and after some Liebig and a smoke we huddled together, pulling the flaps of the sheet over us, and dozed away till morning. Shortly after 4 A.M. we were awake, but on peeping out found the outside of the waterproof wet with a drizzling mist. It was still very dark, so we waited a little, and then came the pale light of dawn through the fog. We got up, made tea, and a little before six o'clock it was clear enough to move upward. Great banks of clouds had settled in the valley; above them,

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against one of those pea-green skies so peculiar to New Zealand, rose the bold crags of the Malte Brun chain, one which we called the Matterhorn looking quite worthy of its name. Other fleecy masses had sailed aloft to the summits of the mountains, and we tried to think that our virgin peak was putting on her bridal veil. Somehow or other we felt more confident of success this morning than on any other occasion. A few minutes from our bivouac brought us to the upper névé of a glacier which poured its icy mass down a glen to our right; we zigzagged upward and soon crossed the rocky ridge which separated us from the great plateau above the Hochstetter glacier. By this time every cloud had vanished, and a prospect met our eyes which surpassed anything I had yet seen. We overlooked the great plateau; on our left we could just see the top of the Hochstetter icefall; before us the great peak of Mount Cook, and then the cliffs of Mount Tasman, between which and us spread out this wondrous field of ice; it was nearly two miles wide and about six long, and seemed perfectly flat, though in reality it was a shallow basin. There were no large crevasses except where the ice began to round off to the Hochstetter fall, but some long narrow ones, which we afterwards found to be immensely deep, crossed the field in parallel lines. These, however, gave us no trouble; and we came to the conclusion that it would be a safe place on which to spend the night, with plenty of room for exercise should we find it impossible to regain our bivouac.

What absorbed our interest most of all was a glacier coming down between Mount Cook and Mount Tasman, which I shall call the Linda glacier. It was much crevassed and broken, but its upper portion wound round into a couloir between the rocky ribs of Mount Cook, and promised a practicable route by which we might reach the upper part of the arête. We lost no time in descending to the great plateau, and an hour's tramp brought us to the séracs of the Linda glacier. We had to climb over big ice-blocks, creep up sharp edges between immense crevasses, cross treacherous snow-bridges on hands and knees, and at 10 A.M. we reached a little plateau above which we could see the upper portion of the glacier winding round towards the summit. We were close up to the foot of the arête which connects Mount Cook with Mount Tasman. The wind had changed to the N.E., causing light filmy clouds to form on all the higher peaks; the sun still shone with great power, bringing down innumerable avalanches from the ice-cliffs of Mount Tasman, and the heat was very great, as we were surrounded on three sides by cliffs catching and reflecting all

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the sunshine. We halted for breakfast, and, as our way was now plain, we determined to leave our provisions here till our return; my men even suggested leaving our coats, as the work before us promised to be very heavy, but by the time we had finished eating we were sufficiently cooled down to abandon this idea. We deposited the knapsack, flask, and camera near a conspicuous ice-block, and resumed our ascent between the main northern arête and one of the other two ridges which came down from the summit in our direction. The crevasses were numerous, some extending right across the glacier, and several of these would have formed complete barriers had there not been a thick coating of fresh snow. We had to advance with caution, and the snow was in that most unpleasant of all conditions, having a crust just strong enough to bear our weight until we prepared to make a step, and then letting us through over knee deep. Several times Boss and I offered to relieve Kaufmann at the work of breaking the steps, but he would not hear of it, and three hours' plodding brought us to the head of the glacier. The arêtes on either hand had now drawn close together, forming a couloir filled with ice, its lower termination being an ice-cliff of about 100 feet. I thought we might have turned off to the right and gained the Mount Tasman arête at this point, but the men considered the bergschrund across its foot would prove impassable, and that the rocks above could not be managed; so we turned off to the left, crossed the arête that had been on our left, and reached the foot of an ice-filled couloir. The passage from the head of the Linda glacier to this couloir was a severe piece of step-cutting, but it was only the commencement of the real work, and it was now 2 P.M. From this slope we got our first and last view of the western sea.

More than one avalanche swept down the couloir as we worked up to the shelter of the rocks; we therefore cut our steps close to the rocks on the right, and every now and then sheltered behind some jutting crag as a block of ice splintered itself on the rocks above and sent its pieces whizzing past and over our heads, some blocks singing through the air like a cannon-shot. Now and then we added to our security by getting a grip with one hand on the rocks, not an unimportant consideration, as the ice-slope ended below on the brink of a profound abyss. When near the top of the couloir we thought it safer to take to the rocks, but soon we reached their upper termination, and above us hung the ice-cliffs, with loose séracs ready to tumble at any moment. To cross the couloir seemed too dangerous; we preferred to attempt the ice rampart above.

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We cut steps up to its base and climbed the first escarpment, but only to find ourselves facing an utterly insurmountable wall of blue ice. We retreated to the rocks and held a short council of war. The rocks on the opposite side of the couloir extended upwards, and might prove accessible. Should we risk the couloir? My men asked me if I saw the danger. I said of course I did, and feared we must turn back. It would have been a sore disappointment to me, and as I saw by their faces an equally great one to them. I asked them if they were ready to chance it. They replied that on leaving home they expected to meet some danger; here it was and they were ready, but I must give the word.

The sun had now gone in, which lessened our risk, and no avalanche had fallen for some time; so I said, 'Forwards.' A large avalanche-block had stuck just midway in the couloir, and afforded us shelter when half-way across; so with anxious glances upwards, Kaufmann cut away with all his might, no time was lost, and we reached the rocks in safety. Unfortunately, however, they proved inaccessible; the most we could do was to climb through a notch, and, after the nastiest bit of climbing in the whole ascent, reach the ice-slope beyond. We could now see there was heavy work still before us; it was a long slope with a continual stream of detached ice sweeping down it, just like large hail, which stung us bitterly, hitting our faces and even through the mittens hurting our hands. Add to this the fact that a rapid thaw had set in; every step we cut filled with water, which soaked our clothes, a condition of misery which I never before experienced in the High Alps. It was now 4.20 P.M., so the question as to whether we should advance was again discussed. If we went on it was quite clear we could not regain our bivouac before dark; but, considering that men had survived nights on icy peaks, I asked Kaufmann how long he thought it would take to cut up the slope. He said an hour; so on we went again, taking the precaution of keeping close enough to the rocks to use whatever grips might be available to secure ourselves against a slip. At 5.30 we reached the highest rocks, from which an easy slope led up to an icicled bergschrund, which starting from the cornice of the arête ran round the cap of the summit from left to right. By bearing away to the left we avoided it, and surmounting the cornice without any difficulty at 6 P.M., stepped on to the topmost crest of Ao-Rangi. Our first glance was, of course, down the great precipice beneath us towards the Tasman glacier, the precipice up which we had gazed so often, but the dark grey masses of vapour swirling

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round the ice-crags shut out all distant view. The cornice rose in a gentle incline to our right, so we advanced along it, keeping a good hold with our axes, as the wind blew fiercely from the N.W. Now and then a blast stronger than usual would shatter the icicles and send them down the slopes up which we had climbed. Descending with a swishing sound, they soon pounded themselves to pieces, and so accounted for the showers of coarse hail which had proved so disagreeable on the final ice-slope. The cornice which had been formed by south winds was thus being destroyed, and the thaw which was now going on assisted the demolition, causing the ice to stream with water. My men now urged that, as we were fairly on the summit of the peak, we should lose no more time, but commence the descent; however, I wished to satisfy myself about a break which I saw ahead of us in the cornice, and finding on examination that it presented no difficulty whatever, but that it would have taken some minutes to reach the slope beyond, I said I was satisfied, so reading the barometer at 19·05 and making a rapid sketch, we commenced our descent at 6.20. I was unable to take the exact temperature, as my thermometer had met with an unlucky knock and was broken; but the thaw which was going on gave me fair data to estimate the temperature at about 35°, which I have done in calculating the elevation to have been about 12,350 ft.* The highest point of the ice-cap was about 30 ft. higher than where we turned, and my only reasons for not going on to it were that there was no view; there was no difficulty in reaching it; the twenty minutes we saved was an important addition to the hour's daylight which still remained for us to find a place of safety for the night; and, as we were several hundred feet above the highest ridge of rocks, there was no means of building a cairn or leaving any record of our ascent. I did see some rocks which seemed, so far as I could judge through their veil of icicles, to be a stratum of slates projecting from beneath the ice-cap on our left, at a spot where a notch in the ridge gave us a view down the cliffs, but these were in a completely inaccessible position. On returning to the point where we first struck the arête we had to turn with our faces to the ice and descend backwards, so as to keep a good grip with our axes. Soon we reached the highest ridge of rocks, composed of highly indurated yellow sandstone, where we loosened a few

* The sea-level readings kindly furnished to me by Dr. Hector, F.R.S., chief of the New Zealand Meteorological department, &c., for the afternoon of March 2, were, Bar. 30·02″, Temp. 65° F.

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fragments and deposited beneath them my handkerchief and Kaufmann's tin match-box. These rocks afforded no shelter whatever from the *Heiterwind*, which was steadily increasing in violence. The golden tint of parting day gleamed through the storm-clouds, giving a warm blush to the snow. My men urged me to go quicker and quicker, but to find the ice-steps backwards and look out for a firm grip was no easy job. The lower termination of this ice-slope was the worst bit of the whole descent. The ice thinned off over a ridge of rocks with a vertical fall of about 6 feet, and bad holding ground below. We could cut no steps and had kicked away all the grips coming up; there was nothing to which we could attach our spare rope. The thought of this spot bore heavily on my mind so long as we were above it, and there was only dim twilight when we reached its brink. Kaufmann and I placed ourselves as firmly as we could, while Boss slipped over the edge, and though he used his axe with great dexterity I felt an unpleasant strain on my hips before he could check his descent. Then came my turn. Kaufmann held the rope tight, slacking me down slowly, and then I got my feet on Boss's axe. Kaufmann had no one to slack him down, so Boss stood up to him, as close as he could with security, and let him down gently, while I jammed myself into the only crevice available. To cross the couloir was the work of a few minutes, and as we gained the rocks on the opposite side night closed in. Still we had no shelter. The wind was now blowing in fierce squalls, accompanied by showers of sleet and drenching rain. We could not find the rock-grips in the dark, so we groped our way once more in the ice-steps, but climbing in this manner became so dangerous that I called a halt on a little ledge at the side of the couloir. We stood for a few minutes, and thinking that we could stay there for the night, we took off our boots, wrung the water out of our socks, and put them on again. Not only did the wind and rain beat down upon us fiercely, but bits of falling ice struck our ledge, telling us plainly that it would not do for a lengthened stay. By this time the full moon had risen, and though we could not see it through the clouds it gave us some faint light. Once more we took to the ice-slope, descended slowly to the lowest part of the rock-ridge, and turning to the left beneath its shelter succeeded in finding standing room on a little ledge from which we scraped the snow. It was less than two feet wide and sloped outwards, so that we had to hold on with our hands; and, as we were still about 10,000 feet above the sea-level, it was not all that might be wished for a night's lodging.

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There was no choice, however, as for thousands of feet below there was nothing but steep and crevassed ice-slopes. I served out a meat lozenge all round, and twice during the night repeated the dose; it was the only thing in the way of food or drink we possessed. The nine hours of darkness went slowly by. We stamped one foot at a time to keep life in it, then slapped our legs and shoulders with one hand, holding on all the while with the other. Sitting down, or even shifting six inches from the position we first occupied, was out of the question. The rain streamed down the rock and prevented the water with which our clothes were soaked from getting warm; and now and then a squall would swirl round the crags, bringing a deluge of rain with it. At last midnight came. We were getting drowsy. It seemed impossible to keep awake; to give way to sleep for an instant would be to fall from the ledge, and our whole time was occupied in watching so as to keep each other awake. We forced ourselves to keep on talking. We discussed the administration of the Swiss poor laws and European politics; we sang songs, and though Boss regretted much that the tobacco was with the provisions over a thousand feet below us, both he and Kaufmann congratulated themselves upon at all events having their pipes, at which they sucked away diligently at intervals, and by sheer force of imagination enjoyed several good smokes.

Whatever ideas may exist as to the cessation of avalanches at night in the European Alps, all was different here; not a quarter of an hour elapsed without a distant rumble or a thundering roar which made the rock we stood on to vibrate. The warm north-west wind was of course the immediate cause, everywhere a rapid thaw was going on; and though bad for us in some ways it no doubt helped to prevent our being frost-bitten, as we must certainly have been had the wind shifted to the south or had radiation set in. Through the early part of the night there was enough light to read our watches, but about 4 A.M. it became intensely dark; the moon had set; the wind seemed to blow harder and the sleet to feel more chill. At 4.30 we saw the first glimmer of dawn; it did not come a bit too soon, as we were perfectly blue and stiff with the cold, and the effort to keep awake had become more and more painful. Still we had not enough light, as the rain-clouds hung in heavy masses on the ice-slopes. Now and then we saw the cliffs of Mount Tasman looming ghost-like for an instant, and again all would vanish. At 5.30 we left our eyrie and resumed our descent. The steps were almost obliterated, and Boss had to recut most of them, while Kaufmann, whose

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hands were black with blood-blisters, kept a good hold above with his axe. We had still to climb down backwards, and at last reached the head of the Linda glacier. Here the snow was in very bad order, sometimes letting us sink waist deep, and several of the snow-bridges which we had used on our ascent were no longer to be trusted; one crevasse extending right across the glacier, had become almost impassable. Still we made our way downwards, now and then scrambling over the blocks of some great avalanche that had fallen during the night and obliterated our tracks. When we reached the little plateau its whole aspect was changed; it had been completely swept by an immense avalanche over which we scrambled, and mistaking the level at which we had left our knapsack, for a time we feared it had been swept away; but soon we were gladdened by seeing it all safe below us. At 8.30 we reached it, and lost no time in discussing some cold duck and bread, both of which seemed excellent, though the latter was now twenty days old, and our mouths were sore inside from sucking the snow. However, twenty-two hours without food would make anything seem good, and as we sat on our axe-heads we realised the fact that we had not once sat down for the same length of time. Lest we should get stiff we made but a short halt, and shouldering our traps were soon amongst the séracs. Here again the avalanches had obliterated our track; the débris of one of these covered an area of at least 200 acres and conveniently filled one large crevasse which had caused us to make a détour the day before. In an hour we reached the Great Plateau, and another hour's brisk walking took us across it. While crossing it we saw a grand avalanche fall from the Tasman cliffs not far from us. A large piece of glacier cracked off and slid with a quantity of smaller pieces to the brink of the cliff, and then toppled over, coming down on the glacier below with a deafening crash, and sending up clouds of ice-dust, from the midst of which huge pieces flew like rockets in all directions. None of us had ever seen such avalanches before. The slopes between the plateau and our bivouac were in a most treacherous condition, loose snow lying on steep ice; so we were compelled to diverge from our old route and seek a safer line close to the rocks.

At 1 P.M. we reached our bivouac in safety, and soon had the spirit-lamp going, and felt much refreshed after a cup of tea and half an hour's rest; but as our clothes were still wet, and every now and then it rained heavily, we had to shoulder our packs. Tired as my men were, they would allow me to carry nothing, but loaded themselves with our rugs, &c. I

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suggested tumbling the whole pack down a snow-couloir which led to the bottom of the Hochstetter glacier; but they argued that they would lose more time picking up the bits than in carrying the pack down. The rocks were in many places so loose and bad that we had to keep on the rope, and at 6 P.M. we reached the Tasman glacier. On the way down the rocks we gathered a quantity of the New Zealand edelweiss (*Gnaphalium grandiceps*), and I secured a photograph of the top of Mount Cook, from which the clouds cleared between the showers. There was no time to spare on reaching the Tasman glacier, as night would soon be upon us, so we took off the rope, after having had it on for thirty-six consecutive hours, walked down the glacier at a good four miles per hour, and at 7.30 reached our camp. While Kaufmann fetched water and Boss got the fire going I prepared our beds for the night; and after a supper of parrot-soup and porridge, and a lounge round our camp-fire, we turned in. I, for one, never slept so soundly in my life; I just laid my head down, and it seemed to me that an instant only had elapsed when I awoke in the sunshine, and found by my watch it was 9 o'clock next morning. The weather was still cloudy, but we were not so anxious about it as we had been for the past three weeks, and we made it a day of rest and eating. We were sorry to think that our time among the mountains was now drawing to a close. Our little camp seemed more comfortable than ever; everything wearing a brighter hue now that the dismal feelings generated by our two fruitless attempts had been dispelled.

On March 5 we rose before the sun, and after breakfast set to work packing up our tent and clothes, as we determined to try, if possible, and reach our lower camp in the one day. To do this no return journey could be made, and though our provisions were subtracted from the general load there was a good deal to be carried. Kaufmann made up one pack for himself, which weighed quite a hundredweight; Boss carried another heavy pack; and I carried my knapsack, camera, gun, and ice-axe. Just as the sun rose we started and toiled along over the boulders; there was only one bit of about 500 yards which was at all level enough for fair walking till we reached the foot of the glacier. By far the greater part of our route lay over loose, tottering boulders of all sizes up to that of a house, and we had constantly to use our hands to steady ourselves. Almost the only way in which our long exposure on Mount Cook told on us was in making our hands very tender and causing them to swell, and scrambling over the rough, sharp boulders was painful work. It rained most of

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the day. We rested often, and in twelve hours reached the camp. We found everything in good order, and, after pitching our small tent to hold our stores, retired to our hammocks for the night. Two days afterwards the horses arrived, and on March 12 we were once more in the train, running down to Timaru.

Having given you, to the best of my ability, a true account of our adventures on Mount Cook, I hope without either exaggerating or underrating the difficulties we encountered, I shall now make a few general remarks which may be of interest to many of you, and I trust of use to those who may follow my steps to the antipodes. The Southern Alps, though possessing no peaks of as great an altitude as their European namesakes, must not be treated as lower and therefore easier mountains to be climbed. From a mountaineering point of view they may be considered of equal height, as the level at which snow-work begins is 3,000 ft. lower than in Europe, and but little elevation above the sea is gained until the very bases of the mountains are reached. The general style of the peaks is very similar to those of Switzerland, and some will prove as difficult as any peaks that have ever been scaled. Little will be done in their exploration except by parties of men well used to Alpine work. Though the ascent of Mount Cook is necessarily a long expedition I would not say it is a difficult one, except for the man who cuts the steps. For the last five hours every step we ascended had to be cut in hard ice with the spike of the axe, the adze-side being of no avail. If the snow were in a different condition from that in which we found it, so that steps might be kicked, then the time and difficulty would, of course, be much lessened. Whether the last slopes are ever in this condition at the season of the year when mountaineering is possible I very much doubt. There is no denying the fact that we had to face a certain amount of risk from avalanches. Our ascending track was obliterated in nearly a dozen places by ice-avalanches which fell during the night we were on the ledge. I think, however, that more fell during that night than for many weeks previous. The hot wind and thaw set them tumbling about in all directions, and their débris covered areas upon which we found no signs of avalanches during our ascent. All these fell upon the Linda glacier from the hanging glaciers on the arête connecting Mount Cook with Mount Tasman; in fine weather I should think there would be but little danger on this part of the ascent. The couloir above the Linda glacier will always present some danger, as it is overhung by

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PEAKS OF THE MALTE BRUN RANGE.

FROM THE SLOPES OF MT. COOK, N.Z.

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séracs, but good shelter is afforded by the rocks, and the only unavoidable risk is for the few minutes occupied in crossing it.

Several of the crevasses in the Linda glacier were very wide; one of them very nearly cut us off, but a thick coating of soft snow enabled us to cross them on treacherous bridges. In the ice-cap of the summit bergschrunds may be expected, but as these do not occur till the ice has rounded off into easy slopes they can be turned at the arête or followed round till the easiest place is found. Whether any other route will be discovered to the summit time will tell. A choice of routes did occur to us at the head of the Linda glacier, as an arête rose on either hand. We chose the one on our left. The route from the Hooker glacier may be practicable, and if it is so it would be much the most direct.

Of the other grand peaks which came under our notice Mount Sefton was the first to attract our attention, and if I mistake not it will prove as tough a climb as any man need desire. It would be reached easily from Birch Hill sheep-station; and from a camp on the Müller glacier its lower cliffs might be scaled, an upper glacier-plateau reached, and from there the great rock-arête could be attacked. If, however, a party does not feel strong enough to face the Schreckhorn, they had better let Mount Sefton be and keep their necks intact.

After Mount Sefton, Mount Tasman, a glorious glacier-peak with a Silberhorn on its southern shoulder, was one which we often discussed. Never have I seen a grander array of hanging glaciers, and no speck of rock was visible in its glittering dome. But to select a route safe from avalanches seemed impossible, as one ice-escarpment began in the hollow where its neighbour ended, and the whole mountain was channeled by avalanche-tracks.

Mount De la Bêche reminded us somewhat of Monte Rosa as seen from the Gorner glacier, and may be no more difficult. But the peaks at the head of the Tasman glacier, Mount Beaumont on the one side and Mount Darwin on the other, were the climbs which I longed most to make. Here the survey is at fault, and an interesting topographical question remains to be settled by the mountaineer who gains the view from Mount Darwin.

Between Mount Darwin and Mount Beaumont is a dome like the Cima di Jazi, from which a view in many respects similar to that from Mount Darwin might be gained. Failing Mount Darwin we hoped to have made this expedition at least, but we had not time at our disposal to make another

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journey for provisions which the expedition would have involved, so had to give it up. This would be an interesting expedition for a party not feeling equal to the more formidable peaks, and it might be done from the lower termination of the Tasman glacier by men who know something of the dangers of crevasses and the use of the rope; who would be ready to carry provisions for three days and satisfied to sleep beside a fire on the lateral moraine under the shelter of the Southern Cross.

The bold peaks of the Malte Brun range will afford some splendid expeditions to men who prefer rocks to ice, and are the last I shall speak of in this region round the Tasman glacier.

The distant peaks which came in view to the north when we were on the higher slopes of Mount Cook, Mount Tyndall and others were too far off for accurate examination, and belong to quite a different district. The time has hardly yet arrived for making glacier-passes in New Zealand, as the difficulty of carrying supplies over mountain-ridges into valleys where no signs of human habitation exist would involve very heavy labour. But supposing no insuperable mountaineering difficulty should intervene, a most interesting expedition for first-rate climbers would be to ascend the Hooker glacier to its head, cross the col between Mount Cook and Mount Stokes, and descend by the Balfour or Hector glacier to the west coast. These western glaciers have been but imperfectly mapped out, so a safer way of attempting such an expedition would be, after exploring the Mount Cook district from the neighbourhood of Birch Hill, and making a cache of provisions on the Hooker glacier, to return to Christ Church, take the far-famed drive thence by coach to Hokitika, go up to the glacier-sources of the Weheka River, and work back to the Hooker glacier. This journey would take the traveller through some of the grandest scenes of New Zealand.*

Another interesting field for mountaineering may be found in Otago, many of the peaks being quite as fine as those of the Ortler district. But time and space forbid wandering, so leaving those who wish to know more about the mountain districts to study Dr. Haast's 'Geology of Canterbury' and Professor Hutton's 'Geology of Otago,' I shall conclude with a few remarks on the best season for mountaineering and the best system of travelling in the Southern Alps.

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* See an interesting paper by Mr. S. H. Cox, F.C.S., F.G.S., on 'The Western Flanks of Mount Cook,' published in the 'Transactions of the New Zealand Institute,' vol ix. p. 577.

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I was much distressed at spending the month of January in quarantine, as I believed it would be the best time for the glaciers, corresponding as it does with July in our northern climes; but Dr. Hector and Dr. Haast assured me on my arrival in February that I was not a day too late, as the end of February and the whole of March is the season when a continuance of fine weather can almost certainly be calculated upon. During that period we enjoyed splendid weather; it rained on only seven days in a whole month, and but three days were really bad. On one of these snow fell as low as 3,000 feet above the sea. I would like to have been established in camp for the first week in February, as in March the days are very short, and on unexplored ground starting before daylight is only to get involved in difficulties. In the earlier summer months the rivers are swollen and impassable, the weather wet and stormy; but, though more snow falls on the Southern Alps than on our European peaks, when the fine weather does come it is more continuously fine.

In the paper which I read before the Royal Irish Academy, and which was republished in the 'Alpine Journal' for last August, I described our hiring a waggon and our journey to the foot of the glacier. Were I going on a mountaineering expedition to those regions again I think I would adopt the following plan:—

At Timaru, where there is a horse-fair once a week, I would purchase a few horses with long legs suitable for fording the rivers, fit them with pack-saddles, take them by rail to Albury, and then start for the mountains on foot. I would engage, if possible, two men who would take charge of the horses, and be ready to act as porters when we came to the glaciers, as on our expedition more time and labour was lost in 'swagging' provisions than in anything else. Had we had but two men at our lower camp who would have fetched up supplies to our upper camp, we might have climbed four mountains while we were climbing the one. If the horses had been grazing near our lower camp, we would have been free to go or stay, or shift our camp as we pleased. No great loss would be incurred in the sale of the horses again. Should time, however, be an object, the waggon certainly was a good institution, as with three horses we made short work of the first forty miles of our journey from Albury.

We calculated on finding sheep near our camp at the Tasman glacier, as a mob of 2,000 are generally sent over the Hooker for the summer months. This year, however, owing to some glacier-bridges having given way, they were unable to cross,

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and we had to supplement our provision-store with Paradise ducks and parrots. It would be safer for future travellers to make themselves independent of such supplies by taking plenty of tinned meats from Timaru. I must now bring these notes to a close, and hope they may be of use to others who shall visit the Southern Alps, but I cannot do so without saying that, no matter how much I may long to be again amongst those wild secluded valleys, rugged peaks, and untrodden snows with my trusty friends Emil Boss and Ulrich Kaufmann, without whose skill and plucky endurance I could have done nothing, no less a pleasure would it be to find myself once more in company with the many kind friends I made amongst the hospitable people of New Zealand, many of whom impressed upon me that the same kindness would be extended to any other members of our Club who may seek to unravel the mysteries of their Southern Alps.

STRAY JOTTINGS ON MOUNTAINEERING IN NORWAY. By W. CECIL SLINGSBY. (Read before the Alpine Club. May 2, 1882.)

IN introducing my favourite north land to the Alpine Club, and recommending it as a most profitable field for mountaineers, I must first ask my friends to make a considerable descent with me—*i.e.* from notions of the 13,000, 14,000, and 15,000 feet of the Alps, or the 20,000 feet of the Andes, to the modest 6,000, 7,000, and 8,000, or perhaps even 5,000 feet in Norway. The five figures to which we are so much used cannot be reached at all.

There is a common but erroneous opinion that the ordinary lumpy rounded masses, which seem to have had their tops cut off, and are generally the only mountains seen by nine out of every ten persons who visit Norway, are typical of the whole of the mountains in the country; but this is by no means the case, and I think that I can prove that this land, which I know so well, still offers much scope to aspiring mountaineers looking for new peaks and passes (which even from a Swiss point of view must be styled good work), and who are fond of adventure, able to go without guides, and not afraid of hard work with moderate fare. The objection on the score of the trifling height of the peaks is only a small one, because the snow-line in many cases is so very low, that an ascent of a good 6,000 feet can be made over glacier; while there are

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