to end; and the only object for this paper, as I observed before, is to point out that under favourable circumstances mountaineering, even among some of the greater Alpine peaks, may be undertaken so early as June.

A Spitzbergen Glacier Expedition.

By VICTOR H. GATTY.

THREE years ago, in the paper which introduced the subject to these pages, I ventured on the assertion that Spitzbergen was little likely to attract the climber. This prediction has been falsified in at least two notable instances, and the facilities for visiting the islands have increased in a degree which could not then have been anticipated. Spitzbergen has, in fact, entered into a fresh period of its history, and has definitely emerged from the outer darkness of a seldom heard of Arctic land, and renewed the pleasant memories of its youth, when there were hot rolls for breakfast in Smeerenburg (so history chronicles), only the tourist has replaced the whale.

A second visit this summer, of only too short duration, to a different district, an extension of a Norwegian holiday, served to modify the opinion I had formed regarding Lamont's comparison of the islands to the Alps submerged to the snow-line, after seeing something of the country round Ice Fiord only—a country from which the parallel gains little support.

Soon after 3 o'clock on the afternoon of August 5 last, Dr. Woodman, Captain Stronge, Mr. A. Waddell, and myself landed on the W. shore of Recherche Bay, Bel Sound, at a point just S. of the right moraine of the Fox Glacier, a glacier which ends in a sheer wall of ice about 100 ft. high, rising out of the water of the bay. We avoided the ice at first, and went on up through a little valley which lay between the moraine and the hill to the S. of it.

This part of the island is entirely different from the country round Ice Fiord, where mosses, flowers, and lichens cover the low-lying land along the coast and in the valleys, and extend in a tentative way even to the tops of hills 3,000 ft. above sea level. Round Recherche Bay the valleys are filled by glaciers, and the little vegetation which is to be seen down at sea level ceases entirely a short way up.

The little stony valley we went up brought us in ½ hr. on to the glacier at the point where it commenced to be snow-covered. Before going on to the ice we left behind some

surplus provisions and a part of our apparel, which we found too much for us already—a practical testimony to the geniality of the Spitzbergen climate.

Soon after getting on to the ice we thought it advisable to put on the rope, although no more than 450 ft. above sea level. From that point there was a sharp rise of a few hundred feet. Whilst we were ascending it an unexpected and unwelcome mist came on, which blotted out everything more than a hundred yards away.

As the owner of the rope and the possessor of the only ice-axe in the party I had found myself in a position to nominate the leader, and, with the negligence which marks the holder of an assured position, had omitted to take the bearings of the peak we were making for whilst it was still in sight. We knew, however, that it was across the glacier some way up, and steered a diagonal course by the sun, which just showed through the mist, saving us the trouble of constant reference to the compass, and inspiring hopes as well of better things above.

At the top of the slope we came on a fairly large snow-covered crevasse, which was chiefly remarkable as the only one of any size we crossed on the whole expedition, and went on hard over an almost level plain of snow stretching all round us into the mist, and devoid of all indication of crevasses. The snow was shallow and not bad (it was rather loosely packed granular ice, like hail, than snow), but in some places the steps went through the crust, which appeared to be firm, into six inches of slush underneath. Why it should melt underneath and not on the surface seemed hard to explain, as there was no appearance of melting and refreezing on the top.

After going hard for an hour over the same endless plain we heard a faint sound ahead, the cause of which we could not exactly determine, but took to be either running water or the mingled cries of birds. At least, we were sure, it meant that the edge of the glacier was there. As we advanced, the sounds became louder, and suddenly a huge cliff appeared above the mist a few hundred yards away. A few steps more and we were under blue sky, in the sunlight, and saw that the cliff was the face of the peak we had been aiming for. The sounds now appeared to come from the cliff, and must have been caused by a great number of birds nesting in the crannies of the rocks, though none were visible excepting one, which sailed round slowly above us, uttering a plaintive cry. It was a large bird, of spotlessly white plumage; but not one of us

was ornithologist enough to name it. When we came back, seven hours afterwards, it was still wheeling round above, as though the guardian of the glacier.

It appeared impossible to climb the cliff direct, so we kept up the glacier to the end of the west ridge of the peak. The glacier here divides: to the W. lies a wide snow basin, surrounded by peaks, many finely shaped; whilst N.W. a longer but narrower branch runs up behind Mount Fox. It was this branch we mounted to the foot of the ridge, and there on the rocks we pitched our camp for a time at 6 P.M., 1,400 ft. above the sea.

We could, from the point where we were sitting, see the whole expanse of the glacier, down which the mist was now clearing; it runs straight up to the west from the bay to a huge snow basin, several miles wide, surrounded by peaks of varied form and character (I counted fourteen in all), some with sharp rocky arêtes, which might afford some scrambling, and steep snow faces showing the bergschrund line at the bottom, others with round and glaciated domes. To the N.W., beyond the ridge we were on, lay the head of the glacier, narrowing to a well-marked col between steep peaks.

We could readily have imagined ourselves in the Alps, nine or ten thousand feet above sea-level; indeed, the view was strongly suggestive of the snow basin at the head of the Aletsch glacier, seen from the Concordia hut. The glacier basin and the ring of peaks containing it appear to occupy the whole of the promontory which lies between Recherche Bay and the sea.

The peak at the foot of which we were sitting should be called Mount Fox, as, although it is certainly not the highest of the mountains round the glacier, it most completely dominates it. The back or N.W. side sloped up above us; it was quite clear of snow, and covered with steep and slippery screes. Up this slope the Doctor and I found no difficulty in making our way to the top of the peak, which we reached at half-past seven. As we got higher, to the S., W., and N., through the various gaps between the peaks, we saw a white and undulating plain resembling an immense glacier, which greatly excited our curiosity. It seemed to be an ideal representation of the 'high inland ice' which is writ so large upon the Spitzbergen chart, but in the wrong direction. The wider view from the top disclosed its real character. In every direction over the water, by which the promontory on which we stood is almost surrounded, lay a vast sea of clouds dazzlingly white in the sun, which shone out of a clear blue

sky above. Out of the clouds, which lay about 700 ft. above the sea from N.W. round to S., rose innumerable peaks, all as sharp and clearly defined as the nearest rock. To the N.W. appeared Prince Charles Foreland, showing five peaks —small, but still dark blue, at a distance of seventy or eighty miles; to the N. lay the entrance to Ice Fiord, the S. side marked by a conical peak. From there round to E.S.E. lay the mass of shapeless hills between Ice Fiord and Bel Sound, their prevailing colour black, with patches of snow and glacier here and there, and the entrances to the various bays of Bel Sound plainly defined by the fog which filled them. Across the bay there is a big hill above Reindeer Point, and S. of it, to the eastwards, rose range after range of hills of finer shape, with faces and arêtes of grey and red rock, most of them clear of snow on the S.W. side, but snow-covered or glaciated on the N. On this side alone we counted sixty-five separate peaks, all, of course, unclimbed and unnamed. To the S.S.E. (by the compass) there is a high and distant rock peak, with a double-toothed point, throwing down a steep snow wall or glacier between them. A reference to the chart shows that this peak, which must be twenty-five or thirty miles distant, lies nearly in the middle of the district marked 'High Inland Ice.' Of this ice sheet we saw no trace, but only ranges of hills stretching away to the E. and S.E. as far as the eye could reach. Were there any big unbroken sheet of ice in this direction we could not have failed to see it, and I believe that this district will be found to be very different from the large, blank sheet of inland ice which represents it on the chart. It appeared to us to be of purely Alpine character, as far as we could see, probably with glacier-filled valleys.

The height of the peak we were on was 2,400 ft. by the aneroid, and the temperature on the shady side 42° F. at 8 P.M. It is connected by a sharp ridge with another peak (which might be named North Peak) to the N.W. At the S. foot of this latter lies the col. It was our intention at first to go over this peak to the col, but we found that the ridge was extremely rotten—a condition which the climate of Spitzbergen seems peculiarly adapted to produce—and studded with gendarmes, which would probably have necessitated a good deal of step-cutting on the steep northern ice face. This ice face ended abruptly in a wall, sometimes 12 or 15 ft. high on the top of the ridge, the southern side being entirely clear of ice and snow, excepting in the gullies, right down to the glacier, but impassably steep and

rotten. For this kind of work we had no time, and therefore decided to go back down the ridge and across the snow basin to rejoin the others at the camp.

After a hasty supper we all left again, just after ten o'clock, and made for the col. The valley we were now traversing is a névé basin; the slope, at first very gradual, becomes steeper below the col, which we reached at 10.30 P.M. The height is 1,750 ft. On the other side there is a steep but short glacier, apparently very little crevassed. Just below it lay the cloud bank which betokened the sea beneath. We found seats on the rocks above the col, and for half an hour enjoyed the marvellous view over the clouds to Prince Charles Foreland, still clear and blue in the distance. The sun was shining warmly. At 11 P.M. it was due N. by the compass, and the thermometer exposed to its rays showed a temperature of no less than 62° F.

Soon after eleven o'clock we started down again, following our tracks. We were now in the shadow of North Peak and Mount Fox, and the snow was frozen crisp and firm, although the thermometer never fell below 36° F. in the air. Through the gaps to the S. the sky was a beautiful green blue, and the sun was shining brightly on the peaks round the snow basin. It never sank low enough to tinge the snow with sunset or sunrise tints, even at midnight. It was just at that time that we emerged from the shadow of Mount Fox into the sun and felt the warmth of its midnight rays. Soon after this we plunged into a dense fog, which still held the lower levels, and from that moment saw the sun no more. A stretch of bare ice caused us to lose our tracks, but the shape of the glacier enabled us to readily find the spot at which we came on the ice, and to resume the cast-off clothing which the cold, damp fog now made acceptable. We had taken an hour and three-quarters from the col, hard going, without stops. The distance, therefore, would not be less than seven miles; adding to this two miles down to the sea face, gives nine miles as the length of the glacier, or about that of the Gorner glacier or the Mer de Glace.

We reached the shore just after 1.30 A.M.—10¼ hrs. after we had left it—and all agreed that never had we shared in a more enjoyable or more remunerative expedition, devoid of difficulty or adventure as it was. Though climbing for its own sake may attract but few so far afield, it will always remain true that none can properly appreciate the charm of these arctic islands without some taste and capacity for mountaineering work. The peaks and glaciers of Spitzbergen

are no less numerous than those of the Alps, and if the hills are small it may be safely prophesied that the distance which separates them from the centres of life will save them, at least in our time, from the complete 'exhaustion' which has overtaken their greater Central European brethren.

Arolla in August 1897.

By W. C. COMPTON.

THE opening of a new hotel—the Kurhaus—in the summer of 1897, drew to Arolla a very considerable number of visitors—climbers especially—who, for reasons which it would be impolitic to enter into in detail, had partially, or wholly, eschewed that very attractive valley in previous years. And the venture of Herr Spahr was further justified by the number of would-be guests who were turned away, or kept lingering at the Dent Blanche of Evolena in the fond hope of finding room at the Kurhaus in a few days, or who boldly stormed the wooded slope on which it has been erected only to find that before retiring to rest they must await the nightly evacuation of those rooms on the ground floor which had been intended for use only by day. Here at times, if the atmosphere were not too clouded by certain vapours, much sought after by some, to allow of a clear view across the spacious chamber, might be seen couches spread along the floor, whose destined occupants were doomed to see them used as divans until the frequent visits of reconnaissance in force by the burly *portier* had succeeded in dislodging the last lingerer.

From the hotel the writer of a paper might not unnaturally proceed to descant upon the surrounding scenery, the rich variety of peak and glacier, snowfield and crag, within easy striking distance. But as most readers of the 'Alpine Journal' are not unacquainted with the valley, it would be idle here to dwell upon its peculiar attractions. Suffice it, before passing on to the expeditions in which the writer of these pages took part, to pay a tribute to the flora, unsurpassed among all the valleys of the Alps in profusion and fragrance, if not in the rarity of the species; though even here there was much to furnish themes for discussion among botanists, who were well represented, round the log fire after the day's work was done. Another speciality must not be overlooked that furnished several at least of this year's guests with much of the enjoyment which will long remain with them as