J. M. Biener and A. Imboden, we started betimes, and got to the bergschrund in 3 hrs. from the chalet.

At the foot of the couloir the fresh snow was in capital order, and we got up the steep wall above the big schrund with very little difficulty. Once over this the slope must be quite 1,100 ft. high, and over 50° angle, while there is usually a choice of ice or rocks. In our case the difficulty now was to find out where the rocks ended and the ice began, for deep snow covered everything. We, however, drew no hard and fast line as to our route, but keeping always well to the left worked our way up wherever we could do so quickest, and, sometimes on ice, sometimes on rocks, but always in snow, got to the summit very wet and cold in 4½ hrs. from the foot.

Here we both were much struck by the extraordinary accuracy of Whymper's engraving of the 'Summit of the Col Dolent,'* as well as impressed by the narrowness of the corniced parapet and the steepness of the wall on both sides. A very short tunnel would be long enough to pierce the foot of this pass.

The descent of the Italian couloir to the Pré de Bar Glacier calls for few special remarks. The rocks are loose, and need care if any further services from the leading man are ever likely to be required! Also stones fall all the way down, and plough a great track in the broad snow slope at the bottom of the gully. We gave this track a wide berth till we reached its foot, but were then forced into it in order to cross the big crevasse at the only practicable place; and here one large stone whizzed by, much too close to be pleasant. Two and a half hours was the time taken from the pass to unroping on the lowest rocks of the Grépillon, whence it is no great distance down to the Petit Ferret path and the direct route to Courmayeur.

Mountaineering in Arctic Norway.

By WILLIAM CECIL SLINGSBY.

(Read in part before the Alpine Club on March 7, 1899.)

Lyngen Fjord.

'WHERE there's a will there's a way,' is a proverb which stay-at-home and fireside philosophers are fond of quoting. Its truth, however, is more than doubtful. At any

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* *Scrambles*, p. 334.

rate, in the year 1851, Professor James D. Forbes wished to explore the glacier of Reendal, and to make some mountain ascent on the promontory of Lyngen, but though the will was present the way did not appear. Many persons who have seen the peaks of this remarkable region have had the will to climb, our President, and possibly also a former President (Mr. Bonney), among the number. The German Emperor and Dr. Von Gussfeldt, a few years ago, even went so far as to engage the services of Emile Rey to accompany them to Lyngen, and the latter, in consequence, persuaded Miss Richardson, who had previously engaged him for her summer campaign, to allow him to cancel the engagement. However, political or other reasons prevented the fulfilment of this dream of the Imperial mind, and, in consequence, the regiments of rock Trolds, which guard the many mountain crests, were spared the honour of an imperial review. Apparently, the Norsk mountains do not behave kindly to his Imperial Majesty, as on one memorable occasion, when the Emperor ascended for some little distance on the ice of the well-known lower Suphellebræ he was not fortunate enough to see an avalanche fall from the upper glacier, and, in consequence, a man was sent up with a crowbar to the crags above, to send down a mass of rock as a substitute for the séracs which would not fall to order.

In 1897, Mr. Priestman got together a small but select party, and took them to the Lofoten Islands, about which, in the 'Alpine Journal,' Vol. III., the Rev. R. St. John Tyrwhitt says, 'An exploration of the Loffodens would be a work worthy of the Club, in every sense of the words.' In Vol. IV., the Rev. T. G. Bonney, in his admirable paper on 'The Lofoten Islands,' says: 'The peaks, in a word, should be looked at from below, not from above.' After Mr. Priestman's party had spent some weeks amongst the Lofotens, the men of leisure of their party went further north to Lyngen, where one of them, by a *tour de force*, ascended Jœggevarre, the Mont Blanc of the North, and the ball was opened in earnest.

For nearly twenty years I have wished to climb in Nordland and Finmark in general, and about Lyngen in particular, but was always deterred by two reasons, first, the great distance from home—still eight days, and until a few years ago, nearly a fortnight; secondly, the impossibility of getting companions to accompany me. It was, however, now high time for me that my will to visit the

North should force my way to appear, as I take a kind of paternal interest in climbing in Norway.

It was all arranged round the fire at Kinloch Ewe, last Easter, and eventually the party consisted of Messrs. Hastings, Haskett-Smith and myself. Many were the arrangements to be made before leaving. The old campaigners, Hastings and Haskett-Smith, were entrusted with the collection of supplies and the outfit in general, and during the last fortnight in June, telegrams and postcards were despatched to town at the rate of two or three a day, such as the following:—

'Where is the jam?'

'Have you got the plum-puddings yet?'

'Seen that fellow about aluminium ice-axes and boot-nails yet?'

'Barograph not arrived; how is that?'

'Only five thermometers and seven barometers come; where are rest?'

On me devolved the duty of engaging a porter, and through the agency of Herr Bing, of Bergen, to whom we are deeply indebted, we secured the services of Elias Monssen Hogrenning, of Loen, in Nordfjord, the best and cheeriest Norsk porter with whom I have yet had the pleasure to climb. This stalwart young fellow was married only two or three weeks before he set off to join us, over eight hundred miles and eight degrees of latitude away from his bride and his home.

Nothing is much easier or more pleasant in its way than a journey up to the North Cape, along the romantic west coast of Norway, on the well-ordered, clean, and comfortable mail steamboats. But, early this century, it was far different, and the few travellers who visited Hammerfest and Tromsö usually went in winter by way of the Gulf of Bothnia to Torneå, and from thence over to Alten by sleighs. This probably accounts for the extraordinary inaccuracy of the ancient maps of the north of Norway. I have an interesting one of Lapland two hundred years old, in which 'Lingen' and 'Trumsoe' are each shown to stand near a lake whose waters drain into the Torneå river, and so into the Gulf of Bothnia. Sir A. de Capell Brooke, in 1820, was probably the first Englishman who travelled from Throndhjem to the North Cape by the western coast. This part of his journey occupied forty days. In the middle of the seventeenth century mariners even considered it desirable to buy from the Lapps on the shore, who called themselves 'wind merchants,' the

winds which were necessary to carry their ships in the direction they desired. These Lapps had the power to 'stop ships in their full course, so that they cannot stir from the place, let the wind blow never so strong.' On a voyage taken in 1653, a suitable wind was bought from a Lapp necromancer, 'for ten crowns and a pound of tobacco.'

We thoroughly enjoyed the voyage, though I own it is at times very tantalising to be a deck-tied passenger, and not to be able to get hold of the grand scenery with one's hands as well as to feast upon it with one's eyes.

We were fortunate in having for a travelling companion Professor Mohn, the well-known meteorologist. He is a brother of my old friend Emanuel Mohn, with whom, in the year 1876, I had a most successful mountain campaign in Jotunheim and afterwards amongst the then unknown Söndmöre mountains, where we unravelled several strictly guarded secrets of nature. Professor Mohn gave us much information about Nansen's famous journey, and about Arctic exploration in general. He is a great admirer of Lord Dufferin's delightful classic 'Letters from High Latitudes,' and has named a large glacier in Jan Mayen after this distinguished statesman. We also met Herr Caspari, a schoolmaster of Hamar, who formerly had a post at Tromsö, and when there, had explored many of the mountain fastnesses of that wild country. We invited him to pay us a visit when in camp, and to take several expeditions with us. Fortunately for all concerned, this came to pass.

The mountain playground for which we were bound is passed and seen in clear weather by all North Cape and Spitsbergen tourists three or four hours after leaving Tromsö, and is termed the promontory of Lyngen. It runs due N. and S., is about 45 miles in length, and has an average breadth of some 12 miles. On the E. is Lyngenfjord, and on the W. are the Ulfsfjord and the Sörfjord, which latter are connected by a narrow channel, where there is a very extraordinary tidal race. Just north of this channel, and about halfway up the promontory, a deep and narrow arm of the Ulfsfjord, called the Kjosfjord, runs E., and almost bisects the promontory itself; in fact, the isthmus or 'eid' between the head of this little fjord and Lyngseide on Lyngenfjord is only about two English miles across.

In this comparatively small compass of 540 square miles nature has placed a complicated mountain system, where she has developed her wildest and most eerie forms, where the glacial phenomena are more characteristic of the Arctic

regions than—so far as is yet known—any to be found elsewhere in Norway; she has hidden away many remarkable lakes, and laid interesting problems which we conceived it to be our duty to attempt to solve.

Hastings, a deep plotter, who had been in Lyngen in 1897, had arranged in his own mind that we should set up our camp at the head of the Jægervand. He kept his designs dark until we arrived in Tromsö, on July 9, when he unburdened his mind. This Jægervand, or Hunter's Lake, is on the west side of the great promontory, and lies roughly parallel with the Ulfsfjord, which it very nearly joins. It is about five miles long, and its head, or south-eastern end, is overshadowed by a noble mountain, the Stortind or Great Peak, also called by the Lappish name of Garjelgaissa or Russian Peak. Many other noble mountains are within easy reach, and it was certainly a most suitable place for our first camp.

At Tromsö we first met Mrs. Main and her party, who were on their way to Lyngseide. After some little bargaining we hired the steam launch 'Sandvik,' to alter her plans for the day and to put us down at the little hamlet of Jægervand on the Ulfsfjord. Our already enormous amount of stores was supplemented by the addition of a keg of butter, half a sheep, and a pair of Hermann Woolley's boots, left at Tromsö the previous year.

In due time we got aboard the launch, and backed off through the crowd of quaint craft which is typical of the northern harbours of Norway, and when almost clear of the shipping, by not making sufficient allowance for the strongly running tide, we were carried broadside on to the bow of a timber-laden jagt, whose spare anchor got hooked on to our taffrail. The strong current held us jammed fast for over an hour, in spite of all attempts on the part of our crew to get free, until at last, when the tide had somewhat slackened, and much uncouth and nautical language had been fired off, we got under weigh.

For the next two or three hours at odd intervals our captain kept saying, 'It's a —— of a yob is this ere,' showing thereby his great linguistic attainments. When we passed Grötsund, and saw in the rich golden evening light the land of promise ahead of us, we all felt certain that, granted good weather, we had a rare good time to look forward to.

Arrived off Jægervand, we whistled shrilly and loudly for a long time for a boat to put off to take us ashore, as ours was stove in. At last a man and boy brought up a large boat

alongside. Our many heavy packing-cases, land and water bags, and miscellaneous assortment of baggage, nearly filled the boat, and we got in very gingerly. How we ever got safely to land across that choppy sea, with the gunwale close to the water-level, was, and always will be, a mystery, even to the two yachting members of our party.

We ascertained that at high water a large basin in the river, which drains the lake, would be practically connected with the fjord, and that we could take our stores in a boat into the basin, and that by doing so a portage of barely a hundred yards would only be necessary to take our luggage on to the shore of the Hunter's Lake itself. As the tide would not be high enough to serve our purpose until 5 A.M. next morning we pitched our biggest tent on the grass just clear of a collection of fishes' heads which were ranged along the shore to dry, probably for winter consumption by the horses. The young squire of the place indicated precisely the ground which we were to occupy.

A few minutes after we had gone to roost, an innocent cuckoo came and warbled as sweetly as its rather limited vocal compass would allow, and I regret to say that my two companions showed an antipathy to the science of ornithology which was quite depressing. Certain it is that my notice of the cuckoo on this, the only occasion when we heard it in the north, afforded the wit of our party a theme around which many humorous variations were worked in during the next few weeks.

Next morning we made, willy nilly, an early start, and, with one exception, it was the only occasion on which we did so during our campaign. Willing hands helped us to reload a boat, to row it up through the pool, and to carry our baggage to the lake itself. The shores of this pool were bright with *Gentiana Alpina*, *Trollius Europæus*, *Pyrola minor*, a lovely yellow flower which I believe was *Pedicularis Sceptrum Carolinum*, *Menziesia*, and many another lovely flower, all wide open to catch the sunbeams, and every species larger and brighter in colour than their brothers and sisters in southern Norway or in England. We found this invariably to be the case during our stay in the north. The *Saxifraga oppositifolia*, *Linnæa*, *Silene*, various sorts of *Orchis*, *Drosera longifolia*, *Viscaria Alpina* and others were always exceptionally fine.

We took two boats on the lake, had a lovely five-mile row in the early morning, and saw six peaks which we afterwards ascended. The Stortind, to which I have already referred,

is the end peak of a fine range, the Jægervandtinder, whose axis is roughly N.E. and S.W. When we arrived at the head of the lake, the choice of a camping-ground formed the subject of much discussion between two of us. The one suggested a picturesque bog near the river and under the shelter of a high bank. The other wished to camp upon a dry promontory near a disused sæter and an excellent covered shed. The æsthetic member of the party was so thoroughly convinced of the superiority of his choice, that he set up the big tent at once on a carpet of moss surrounded by choice bog plants, but took the precaution of digging a trench all round it. I put up an old Whymper tent, used first in 1874, on some small bilberry plants which lifted me above the bog. The others, probably nurtured in the lap of luxury, rejoiced in the soft ooze and sphagnum moss, and longed for bed-time to come. Three days later, after some heavy rain, our æsthetic friend suggested that we should do well to go to the dry promontory. This we did. The positions of both camps were exceedingly beautiful, more or less in a grove of birch and alder trees with lovely mountain and lake views, and only some 25 ft. above sea level.

The Jægervand is fed by a large glacier river which drains the many glaciers on each side of the Stortinddal, a valley which pierces two-thirds of the distance across the promontory of Lyngen, which we expected to traverse very often.

After paying our boatmen and making arrangements with one of them, whom, for want of a better name, we called Mr. Red Shirt, to keep us supplied with milk, fish, &c., we set off to explore the Stortinddal. At first we had a lovely walk of half a mile through a birch wood, which was carpeted with ferns, mosses, and Alpine flowers. So far as we were able to judge during our campaign, the birches are much more kindly disposed to the mountain wanderer in the north than they are in the south of Norway. Even on the steepest hill sides where we found them growing they were always erect, while in Sogn, Hardanger, Nordfjord, and Romsdal they are often found to be growing nearly horizontally, having been beaten down by the winter snows. We emerged from the birchwood on to a terrible wilderness of stones, which, during countless ages, had tumbled down from the crags of the Stortind. It reminded us of the well-known valley of stones in the lap of the Aiguille des Charmoz on Mont Blanc, where there are bad, worse, and worst, but no good routes. We noticed that the ground across the river was rather better, but there was no chance on this day of being able to

ford so great a stream. On several future occasions we forded this river and always found it to be a matter of considerable difficulty. Two of our party prolonged their reconnaissance too long, and gained a mistaken addition to their geographical knowledge which cost us dearly.

The Kjostind and Stortind.

In 1897, Hastings had seen the Kjostind from several places and rightly concluded that it was the most suitable mountain for us to begin with, as, from its summit, a most comprehensive view of the mountains both north and south of the Kjosfjord could be obtained.

This we proved to be the case, but the principal feature of the ascent of this really fine peak was our entire corroboration of the truth of the twentieth proposition of the first book of Euclid, which we worked out most patiently, most stubbornly, and most painfully, and we proved after 3½ hours of hard plodding, to which a twelve-year-old schoolboy is a stranger, that the two sides of the triangle which we traversed to the base of our peak, and which cost us 19½ hours to accomplish, were greater than the one side which we followed with weary footsteps on our return, but which, nevertheless, only absorbed 5 hours. The classically-minded member of our party apparently considered the working out of this problem to be beneath his notice; certain it is that he turned back to camp when we had reached the end of the first side.

When climbing up the crags a few hundred feet below the summit of Kjostind Hastings paid me the one compliment with which he has ever honoured me, and I am very proud of it. It was in the good Yorkshire dialect in which we sons of the North are so fond of indulging when out on the fells, and was merely 'Thar't a toff un.' The summit of Kjostind (5,680 ft.) is a beautiful snow dome, and the views were exquisite. While Hastings photographed, I carefully studied the northern mountains, and was able to solve one or two orographical puzzles. Our return was enjoyable despite our fatigues. We had a magnificent glissade down a long snow gully; we discovered four hitherto unknown lakes, two of which are formed by huge ancient terminal moraines. All of these drain into the Stortinddal. We passed hundreds of reindeer, and had a most romantic walk past the lakes into the big valley, and 3½ hours after leaving camp were welcomed back by Haskett-Smith.

Never was a companion more attentive and kind than he. In pouring rain he ministered to all our wants. He toiled

with the fire, gave us soup, tea, and innumerable delicacies; he set out our tents, fitted up the mosquito curtains, allowed us to go to sleep and to remain asleep for 12 hours, despite the fact that three reindeer came and looked round the camp, at that time a novel sight.

We all mentally—though, I now think, unwisely—resolved to have nothing more to do with the upper portion of Stortinddal, and consequently we neglected to make on the two occasions when we could easily have managed it, a grand glacier pass down the large glacier which heads the valley, though we had carefully noted the route, rather an intricate one, between two ice-falls, when we were on Kjostind.

Stony valleys are the rule rather than the exception in Lyngen, and indeed this is generally the case where the geological formation is mainly of gabbro, provided that the valleys or glens are narrow and the mountain-walls steep. It is so in many a place in Jotunheim and to a smaller degree in Söndmöre. At Arolla, some of the mountains are gabbro, some of the valleys are stony. It is also notably the case in the wilder corries of the Coolins in Skye. Think of that terrible Corrie Labain. As a rule, the rocks on the ordinary faces of gabbro peaks are very loose, especially in the gullies, but the ridges and buttresses afford magnificent climbing. The faces of crags where the angle is greater than 45°, however, are generally firm and good. In steepness therefore is safety. Very many of the finest mountains in Norway are now proved to be topped by gabbro, even the Lofoten Hills and the saw-toothed peaks of Söndmöre which, only a few years ago, were considered to be granite. This is a corroboration of Professor Forbes' theory, who, in 1851, saw the mountains of Lyngen from the deck of a steamer, and thought that from their shape and general characteristics, they had a similar geological formation to the mountains in Skye.

The day after our return from Kjostind was brilliantly fine, but we seemed to spend all our time over the fleshpots. Hastings was chief cook, or as our porter pronounced it 'head cock,' and certainly he treated us to most unwonted delicacies. He often served up a meal of seven or eight courses, some of which the less hungry members of our party fought shy of. These were all without eggs, which, as a matter of fact, I knew were obtainable but had not the hardihood to suggest. Many expedients, quite unknown to me, such as the burying of meat in a bog in order to keep it fresh, were resorted to. All proved to be successful.

There was, however, one meal which the 'head cock' could not manage to provide. This was breakfast. To Haskett-Smith undoubtedly the credit is due that we ever got up at all in the morning. Almost invariably, whether he was wakened up by the sea-gull which had its nest close to us or no, he was up first, lighted the fire, and usually had the porridge ready before he called us. If ever an early human bird deserved a worm it was he, and I attribute much of the general success of our campaign to his devotion to comparatively early rising. In this land of nightless days the temptation to go to bed late, which of course means to get up late next morning, is very great, and one naturally, but quite wrongly, imagines that it is as rational a proceeding to start on a mountain expedition at midday as at 6 A.M. In the one case there is the risk of losing a day altogether; this happened on several occasions. In the other case, a long climb on one day could easily be followed by a short one the next day.

In the afternoon Herr Caspari and Hogrenning, our porter, arrived. The latter was decked out in a richly-embroidered wedding vest. As it was a glorious evening it was quite evident that if we stopped up a little later we should see the midnight sun. We did so, and were well rewarded for our pains. The colouring was rich and varied to a degree that I had never conceived to be possible, and the beauty of the scene was enhanced by the fact that at midnight the sun was seen a little to the W. of Fugleö—Bird Island—a mountain island whose wondrous beauty has impressed many travellers. Much of the beauty of the north of Norway is due to the Gulf Stream, whose warm waters give a certain degree of humidity to the atmosphere, which softens the lines of the hills, deepens the colours, and blends them into a most harmonious whole, entirely unknown in the drier air of the Alps, and not quite equalled in the highlands of Scotland, which is saying a great deal.

In the year 1875 Messrs. Cook first tempted the unwary tourist to visit the North Cape, and issued a very flowery-worded prospectus, in which, if my memory serves me aright, the tourist is told that on a certain day he will be able 'to see the reindeer browsing on the moss-covered slopes of the North Cape under the benign influence of the midnight sun, while far away to the south will be seen the moon, thin, pale, and jealous.'

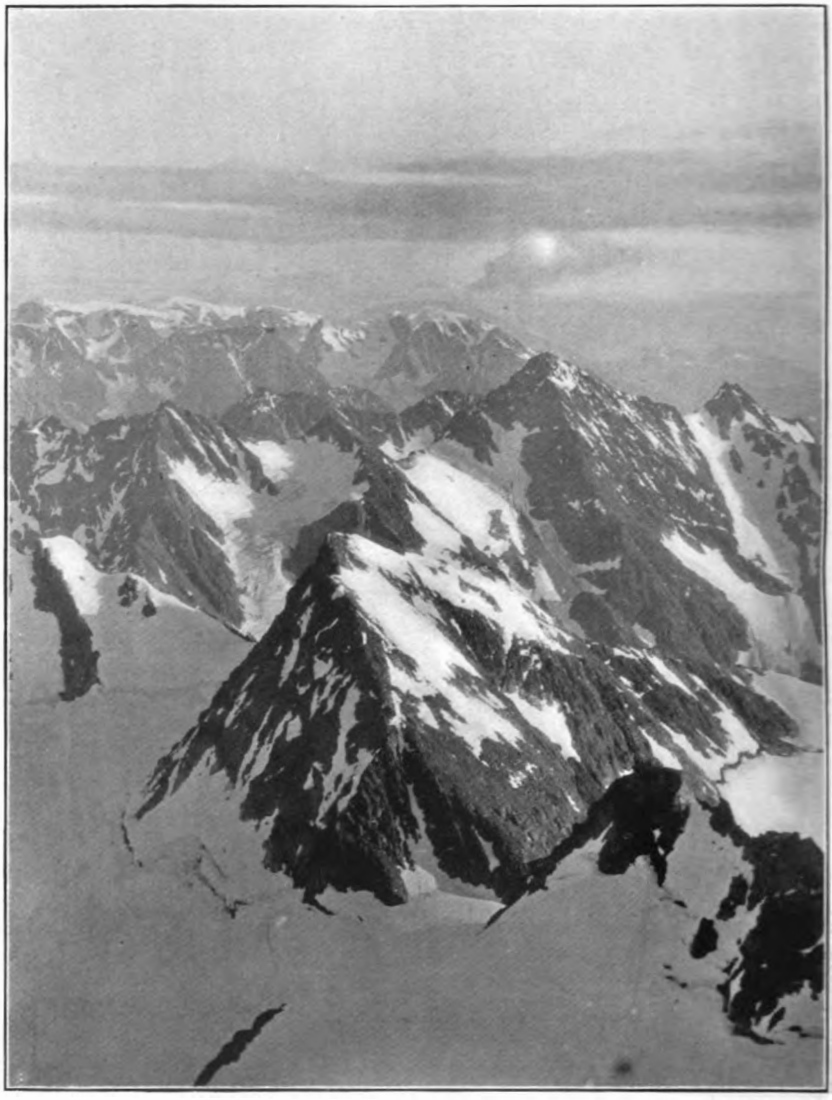
Next day, Thursday, Hastings and I were still too tired to undertake a long expedition, so Haskett-Smith and Caspari

took a long reconnoitring walk into two glacier valleys on the N.E. of Stortind. As the one could not speak Norsk and the other had only a limited knowledge of English, they had to resort to Latin and Greek, in which two languages these gentlemen had long conversations about nomad Lapps, glaciers, narrow arêtes, ice-axes, oatmeal porridge, motor cars, and many other subjects equally well known to the ancients whose language formed the medium of their conversation.

During two days of lovely weather the Stortind had beckoned us to try our metal upon its grisly rocks, and at last the call was irresistible, and we felt forced to obey. Our way lay through a beautiful parklike birch grove, where the boles of many trees were nearly 2 ft. in diameter. We saw many reindeer, some quite close, but whether they were old or young, black, brown, or white, all looked as if the use of a curry-comb would have done them good. They used to come to graze nearly every evening near our camp, and one day an inquisitive young calf very nearly poked its head into my tent. The Lapps, their owners, fortunately for us, were encamped near Lyngseide, across the mountains.

Above the woods we followed reindeer tracks on to a broad shoulder. Below us, on the eastern side, was a round tarn of turquoise blue, singularly like Le Lac Bleu at Arolla, and fed like it by a stream which, after emerging from a glacier, is for a long distance lost to daylight beneath a huge moraine. The rocks above are, I believe, of the same geological formation in both cases. The shoulder came to an abrupt end abutting against the narrow N. ridge of Stortind. There was a gap and a wall beyond. No doubt the wall is scaleable; we did not test it, but turned down to the western face, where, for nearly 3 hrs., under my leadership, we tried in vain to traverse the face over to a broad gully which apparently would have taken us to the ridge again. We all climbed an exceedingly steep and nasty chimney, and Haskett-Smith shoved me up another beyond, whilst the others were perched on a sort of 'tennis-court ledge.' It was nearly feasible, but not quite, so we had to return. The rocks, all firm and good, were singularly like the huge slabs on the N. face of Sca Fell. Two hundred feet lower down, a narrow stony gully led to the arête. Hastings went up it, and as he reported favourably we all followed.

From here we had as jolly a ridge climb as one could wish to see. It was never too easy, but never supremely difficult. It afforded much variety, the rock was always good in steep



G. Hastings, photo. *Swan Electric Engraving Co.*

JÆKKEVARRE AND FORNOESTIND (DISTANT)
AND RANGE OF ISSKARTINDER.
From Store Jægervandtind.

places, and the holds were excellent. We had narrow ledges over grim precipices, chimneys where a leg up and a broad shoulder helped the first man, who in turn performed the duties of a derrick. We reached a low peak, and here we tested the masonic powers of Hogrenning, who soon put up a respectable cairn. It was doubly delightful to me, as, in spite of the fact that I had gone wrong on the face, my companions unselfishly allowed me to lead up to the very top of the mountain.

A short steep descent brought us to a gap. Here we were driven below large slabby rocks to the top of a steep snow-field on the eastern side. Our route was simple enough along the crest of a snow wave, which ultimately led us to a steep snow slope which terminated in ice below smoothly-polished rocks. Here I had to cut some good steps, the size of a Viking's helmet, and great care and watchfulness were necessary. After the slabs of rock we entered a narrow and steep snow gully, from which a good winding rock staircase led us on to the final arête, and we came unexpectedly to the top, a perfect and spotless cone of snow.

Our two Norsk companions acquitted themselves admirably. Hogrenning, accustomed to *roches moutonnées* from babydom, and to walks on the glacier a few hundred yards above his home from more advanced boyhood, proved to be a tower of strength. Caspari, who had never been on a fine mountain before, went most pluckily, and thoroughly enjoyed himself, thanks in great measure to Woolley's boots, which he wore. I have never heard of Woolley's heart and pluck disappearing into his boots, but I do believe that Caspari got some mysterious inspiration from the borrowed footgear. Unluckily, a cloud curtain hid most of the view from us, but now and then through rifts we had most dramatic peeps of fine mountains E.

The scientific member of our party now arranged his implements before him, but though we spent nearly two hours on the top no good photographs were possible, and the plane table could not be used. However, he had four or five barometers of various construction—mercurial and aneroid. Each told a different tale. Once this same friend was with me in a fog on the top of Uranaastind, in the Jotun Fjelde, when three compasses, a few yards apart, told three very different tales. 'When doctors differ patients die!' What happens to a mountain when its height is being ascertained by varying barometers?

I am told that Stortind is 5,140 ft. above sea level. I believe it too.

Ye climbers who climb for sport, avoid science like poison when ye climb, unless valuable information can be obtained by its pursuit. Avoid barographs below—and paragraphs, too, for that matter—and unwieldy instruments above. As for a plane table and a prismatic compass, not necessarily heavy to carry, leave them severely at home, where they may be useful.

This is gross heresy, I am aware. Well, if it be, I will limit my advice to climbers who climb within the Arctic circle n the summer time, and who, having no night, are tempted, and constantly yield to the temptation, to spend twenty-four hours on an expedition which could easily be performed in sixteen. At the same time, it is only fair to state that many of the magnificent series of views which our photographer secured were the outcome of long hours of waiting, which, I acknowledge, were well repaid.

The Stortind rises out of the Stortinddal with grand precipices, but it could be climbed from that side by ascending a little glacier to a col at the head of the Forholtbræ. Haskett-Smith, Caspari and I descended the snow dome towards the E. to see if we could circumvent a savage-looking crag and gain this col far below and then descend by the Forholtbræ. Our reconnaissance was most unsatisfactory, as we could see nothing but ghosts grinning through the gloom, so we harked back again to the summit.

Our descent was very enjoyable. Hastings was last on the rope, and when one by one we crossed the smooth rock bosses and gained the snow below we felt that it was well to have a good man above.

At the gap between the two peaks we looked down at our tents far below, and hesitated whether we should attempt to descend by the snows of the great central gully, but as there was one rather doubtful place we decided to leave it alone, though at a later date we clearly saw that it could have been negotiated. Caspari, with the boldness of a lion, proposed as an alternative a descent by the eastern face to the Forholtbræ, but as it would probably have involved the cutting of 5,000 steps, and the risk of starting an avalanche, we turned to our old course, and for a second time enjoyed the ridge climb.

We reached camp in detachments, the first arriving at 12.45 A.M. Bed pulled very hard after this, and we did not get up till 1 P.M.

The Pass of Strupen.

Our next expedition, the exploration and passage of the Strupskar, was in some respects the most interesting which we undertook, and though the distance from the northern end of the Hunter's Lake on the W. of Lyngen promontory to the well-known cove of Strupen on the E. side is only a dozen miles as the crow flies, so far as Caspari could learn, no one had ever crossed the pass, though, apparently, it was a 'Gate of the Hills,' designed by nature to be a highway, at least, on to Strupenbræ. There was an air of mystery about the pass; every one knew there was some obstacle in the way, no one knew what that obstacle was. As for us, our duty was clear.

Late on Sunday night, July 17, we halted in a mist on a bank of loose rocks, a lake behind and below us on the W., and another in front of and below us on the E. We had already met with great surprises. We had been face to face with the finest mountain in the Arctic circle, which rises with terrific precipices out of two remarkable cirques or botner, which give the name of Storebotndal to the valley; we had found four lakes not known to the maps; we had ascertained that the valley was probably unknown solely from the fact that there was no herbage there beyond plants of *Viscaria Alpina*, and hence, no grazing for reindeer.

'Now we are on the top of the pass,' said some of us, 'let us build a cairn.'

'Nonsense,' said Hastings, 'we are only about 2,000 ft. above the sea, and last year I was over 2,500 ft. up on Strupen glacier, and never saw the pass; we have at least 500 ft. yet to ascend, and that new lake drains through the screes into the other, W.'

All the votaries of science, this time four in number, brought out their aneroids, and the height was estimated to be 2,040 ft. above sea level. Nevertheless, the cairn building was continued.

The clouds were heavy, the wind cold; we had been out 9½ hrs. but had only rowed four miles and walked six. The eastern lake, 140 ft. below us, looked dark, deep, and forbidding, and was apparently hemmed in by high mountain walls, and we felt sure that if there were any serious obstacle to our progress it was near at hand.

By sheer good luck we took to the N. shore, and traversed a long snowfield, which sloped steeply into the lake. As usual, the snow was in excellent condition, and there was no need to use a rope. Beyond the snow came the inevitable

screes, which we followed down to the water. About a quarter of a mile from the pass, crags were seen rising precipitously out of the water. At this point we came to a place where the surface of the lake was almost covered with long rectangular ice-floes projecting some 18 in. above narrow lanes of cobalt blue water. This offered to most of us, including the two Norskmen, who were used to such an icy highway, a tempting route at least round the crag, and would, as we eventually proved, have saved us considerable time. One of our party, however, who was not born to be drowned, perceptibly shivered at the bare notion of entrusting himself to such an apparently risky enterprise, and would have none of it.

We advanced along a spit of land below the crag until further progress in that direction was impossible. Then we turned back a few yards, and climbed over smooth rock bosses to a platform 150 ft. above the lake. Through the mist we saw some icebergs like dismal ghosts rising 30 to 40 ft. above the floes, and knew well that they were séracs which had been calved from the snout of some neighbouring glacier: where, we knew not. Success seemed to be very doubtful to us on the line we had taken, a horrid looking corner ahead was our only hope, and even it seemed to end in clouds. We put on the rope, and for nearly an hour Hastings skilfully led us up and down, across and around, glacier-polished rocks which were anything but easy, and where great care was necessary, as the angle was very steep. In one place, when we had climbed up several hundred feet above the lake, we were all but cut off by a huge curtain of rocks, but after speering about we discovered a ledge below us by which we soon got on to a rough scree slope under the peak Rendalstind. Here, as well as on the slabs, we were in more or less danger from falling stones, and Hogrenning often looked wistfully through the mist and pointed to the ice-floes below. In the year 1874, with two other men, I crossed a lake on similar floes in Morka Koldedal, above Vetti, in the Jotun Fjelde.

In crossing a scree-filled hollow we started a stone avalanche, a most uncanny sight. I was second on the rope, and only rode a few feet down on this stony train, as it was not yet urged onward by the force of stones from above. Those behind, however, had to deal with a swiftly-flowing river of stones perhaps a dozen feet in width, which was very trying to the ankles. The rope was most useful here. This avalanche played away for over two hours to our knowledge.

Soon after this we apparently reached the end of the lake, the shore of which sloped gently upwards towards the N.E. A little stream trickled into the lake, and Hastings was triumphant. 'Didn't I tell you that we had 500 ft. at least yet to climb, and the water from this lake drains W. under the scree mound and your confounded cairn?'

A sceptic followed the shore some way S., but remembering that water was boiling for tea he soon hurried back to where the others were huddled together under the lee of a rock, trying to look as if they enjoyed the cold drizzling rain. Warmed by his tea, the sceptic set off again, this time on to rather higher ground. After half an hour of weary waiting, there was a welcome rift in the clouds, and he saw that the place which had appeared to be the end of the lake was only a little bay in a promontory, and that the lake went on considerably further. A few minutes later the heavy clouds rolled away for a time, and a wonderful view was revealed. We were at the junction of two valleys—one was occupied by the lake, whose northern shore we had been traversing; the other was filled by Strupen glacier, which, flowing down from a great height, crossed the mouth of our valley and dammed up its waters with a magnificent dam of ice, and thus was the cause of the hummock-covered lake. It was a glorious sight, and as soon as the discoverer had ascertained without the shadow of a doubt the reality of the vision, he ran back to his companions as quickly as his somewhat stiffened limbs would carry him, and with wild shouts proclaimed his discovery. After a hasty packing up of heavy rucksacks, all hastened on to the promontory, and, though the sulky clouds never entirely disappeared, we saw bit by bit most of the wall of the Rendalstind, the northern boundary of the lake, and the spur of Strupentind, which rises out of it with sheer precipices, and bounds it on the S., as well as supports the left bank of the upper portion of Strupenbræ.

This remarkable Norsk example of a Märjelen See character is much grander than its Swiss rival, even before it was artificially drained.

Strupenbrævand, as we naturally term this lake, is about an English mile and a half in length, and a good half mile wide. The glacier, having no wall there to hold it up, spreads out like a fan into the lake, and from its sides the icebergs calve and are drifted by the wind a considerable distance up the lake.

It was a welcome and delightful climax to our uncertainty, a very uncanny scene, which had much of the ghostly

element about it, with its icebergs, large floes, blue water, grand séracs, and black rock pinnacles now and then leering at us through the mist, and is the most thoroughly typical Arctic scene I have ever enjoyed, and is one which I long to see again.

Hogrenning and I ran down to the lake, and were soon jumping over blue watery chasms. Near the land the ice-floes were the last winter's lake ice, and were only a couple of feet out of the water. Soon, the floes increased in size, and one could easily distinguish between the lake ice and the floating séracs. Some water lanes were not easy to negotiate, and we had to zigzag about a good deal, but in 20 min. we stood on the glacier itself.

The three other men toiled round the bay, the eastern extremity of the lake, and joined us on the glacier. We had to ascend several hundred feet in order to cross to the right bank to ground which Hastings knew, and found that he had only failed to discover the glacier lake a year earlier by having then followed a natural trough on the eastern side, from which it was invisible. The crevasses were very wide and deep, and we had to exercise great care. Strupen glacier is a noble ice-stream, perhaps 6 miles in length and nearly a mile broad, and it curves beautifully round the rugged headland S. of Strupen cove. It is connected directly with another fine glacier, the Kopangsbræ, to the head of which we descended from one of our best ascents eight days later.

The foot of Strupenbræ is well known to North Cape tourists, who are taken into the wonderful cove, on each side of which are stupendous cliffs nearly 4,000 ft. in height, and in front, a rock wall of some 1,200 ft., down a corner of which frequent ice avalanches fall, which form a secondary glacier, whose snout almost touches the sea. A commercial speculation connected with this secondary glacier was, perhaps fortunately, unsuccessful.

Once on the glacier we hurried on, in the hope of finding a fisherman and his boat in this capital fishing ground, the cove of Strupen. It meant much to us, a wait of possibly 12 hrs., a high glacier pass, or a quiet sail down the coast. "Hurrah, there's a boat!' We glissaded like madmen down snow-slopes, and even down a little moraine, we climbed down slippery rocks, forced our way through rain-dripping birches and *Aspidium filix fœmina* 4 ft. in height, we forded a glacier stream as best we could, and about 3 A.M. we hailed the boat, in which were a man and a boy. Caspari soon

made a bargain with the stolid fisherman, a so-called Sö Finn or Sea Lapp, a race rather different from the nomad Lapps who frequent these coasts in summer, as the former have more or less mixed blood in their veins. We were soon shivering on our way to Fastdal. The walk from this little hamlet to Lyngseide through lovely sylvan scenery where the ground was everywhere carpeted with the fairest of flowers, was a dreadful toil for five weary, heavily-laden men, and took 3 hrs. to accomplish. At a little bay called Rottenvik we tried to hire a boat to take us the mile and a half which still remained, but it was low water, and the boats were all stranded high and dry. Wearily and unsteadily, like drunken men, we plodded on, and about 8 o'clock we were welcomed by Fru Gjæver with thorough Norsk hospitality at the cosy house at Lyngseide. Soon an excellent and what we considered to be a well-earned breakfast was placed before us, and when I looked across the table I saw my old friend Joseph Imboden and his son Emil, who were the first to congratulate us upon our success.

Our fatigue did not arise from the distance we had walked or the height which we had climbed, as both were small. It was the result of much cold waiting on the shores of the icy lake, and to the fact that we each carried a considerable weight. The pass could be crossed from the hamlet of Jægervand to Strupen cove in 6 or 7 hrs. When we were crossing the glacier we discussed the probability of the water from the lake draining away under the glacier. This was proved to have actually happened soon after our crossing by Herr Caspari, who, on August 3, accompanied by one male and two lady friends, paid a second visit to this remarkable lake.

Caspari says in a letter, 'I could scarcely recognise the lake. It had drained away at least 100 ft., and the great blocks of ice lay on shore far from the lake.' After suggesting that a large avalanche had fallen into the lake, and had broken up the icebergs and floes, he says, 'the lake was diminished in extent and in grandeur.' On August 12 Hastings looked from the ridge of Rendalstind down upon the lake, then apparently full of water, which was re-covered with ice-floes.

Professor Amund Helland, the celebrated geologist, was staying at Lyngseide, and was much interested in our discovery of Strupenbrævand. He gave us much information about the physical geography of Norway, and, as a result of his investigations in Greenland, he is one of those

geologists who attributes much greater powers to glacial agency than is the case with many men of the present day.

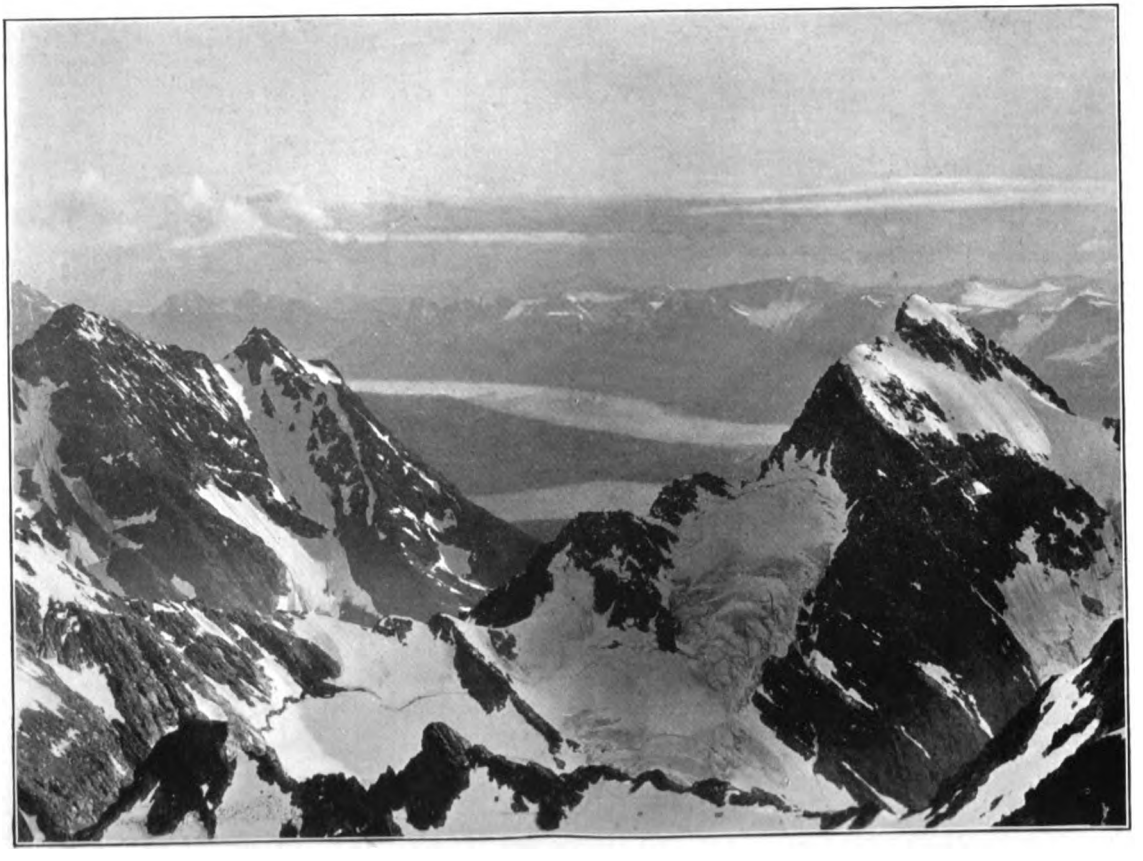
Helland is the great authority on the formation of botner, or cirques, in the Alps, as well as in Norway. He was much pleased to see, in a stone which Caspari had brought from the top of Stortind, a partial corroboration of his theory that all the peaks of Lyngen are, in the main, composed of gabbro.

In the evening we met Mrs. Main, and were shown by her the first fruits of a very successful series of photographs, and heard her adventures and told our own. Lyngseide is a delightful place in which to linger, especially in glorious sunny weather such as we found there. The kindness and hospitality of Herr Gjæver and his wife are unbounded, but I regret to have to relate that their pretty house was burnt down to the ground a fortnight after we left it.

The richness of the meadows, woods, and gardens at Lyngseide, which is nearly on the 70th parallel of N. latitude, shows what wonders are wrought by the Gulf Stream, where, without its aid, life would be only tolerable to Eskimos. The neatness, substantial appearance, and beauty of the houses dotted about the shores of this lovely bay all speak of the wealth and magnitude of the northern fisheries, which contribute in so large a degree to the welfare of the natives of the far north. Readers of that powerfully-written novel 'Afraya,' the scene of which is laid about Lyngen and Balsfjord, must not imagine that the character of Helgestad is typical of the northern merchants of to-day, as that would be doing them a great injustice, nor can I think that the hero Afraya has his counterpart to-day.

On our arrival at Lyngseide, Caspari and I found it to be necessary, from the condition of our garments, to adopt the custom of courtiers when retiring from the royal presence, and to resort to various other expedients outside the house, which was, to say the least, rather embarrassing.

Next day we set off to return to camp, and at Kjosen found a cattle show in progress—a picturesque sight—on the brow of a hill sloping gently down to the fjord. Each cow was tethered to a peg, driven in the ground by the sturdy Norsk girl who had charge of her favourite. Each animal had a little pail of water and some grass given to it, and I believe that a prize of some little value was given for each exhibit. Cattle shows are now general all over Norway, and are said to have led to a great improvement in the stock. There is a large Lapp encampment on the isthmus between Lyngen and Kjosen, and we saw Lapps of all ages.



G. Hastings, photo.

STORE ISSKARTIND. (on left)

Swan Electric Engraving Co.

STORTIND.

The Isskartinder.

From our camp at Jægervand a range of four principal and several minor peaks, the Isskartinder repeatedly beckoned to us. The third highest had been climbed by an officer and our friend Red Shirt, who proudly pointed out to us the cairn which he had built.

What a jolly day three of us had up there, in spite of the rain! Did we not climb two new peaks, and cross two new glacier passes? We climbed two peaks, because we were uncertain which of two was the higher; we call the pass beneath the highest peak Tvivlerensskar, or the Doubter's Pass, on account of our doubts. Let me transport you to a ridge 25 ft. below the top of the eastern peak. In front and above was a huge slab, where there was one great crack, which did not come down to the ridge, but to the head of a fearful cliff. It was probably feasible. We preferred the better part of valour, and descended about 100 ft. on the snowy ledge up which we had come to a place where there was a split block in a corner of a vertical face about 20 ft. high—a place almost exactly like the so-called East Pisgah climb on the Pillar Rock.

Clearly this was the place for Haskett-Smith; in fact, it might have been made for him, and Hogrenning and I much enjoyed seeing him overcome the difficulties, which were by no means small. The wedged stone in the Pisgah climb was absent, otherwise the similarity was complete. Rucksacks and axes were hoisted up, and for that matter so were two human burdens.

A series of broad, gently inclined slabs, curiously and deeply cracked here and there, soon led us to a model top where, in process of time, a huge cairn was erected. As the top is not unlike the brow or stem of an old viking ship, I have taken the liberty of giving the mountain the name of 'Hringhorn,' or Baldur's Ship. The view was superb; but it was clear that we were only on the second highest. A treble-peaked mountain in the same range—now called Tre Gygre, or Three Witches—looked very grand. It was climbed a few weeks later by Mrs. Main.

How well Hogrenning led up the steep arête of the highest peak, and what a jolly glissade we had down the big central gully! Then, too, think of our new pass—the Isskar—which gives its name to the range; no carelessness allowable here amongst the big séracs. 'Anchor well in that ice, while I cut steps across to the rock.' 'More rope do you say? Well,

you cannot have more than 4 ft.' 'I must have 10 ft.' Slowly, cautiously, and surely our leader reaches the rock. There is but a 2-in. crack in it; and on him (Hogrenning) for 5 min. devolves all the responsibility. Look at him, firm as the rock itself.

We are off the glacier on a terrace, 1,200 ft. from the base of the gorge below. There is one feasible route—but feasible only for a madman—almost under the glacier itself, which terminates on the brow of a cliff. No, no, no! The terrace leads us to a lateral gorge. Hideous! We must descend to the main gorge down the rock wall itself, and within rather narrow limits, too. Hogrenning led us, step by step, up, down and across, most cleverly, principally down a huge boss of rock. We were only half an hour in descending; but who knows how much that half-hour meant?

This cliff, coped with ice, is a conspicuous object from the W., and is well named Isskaret, the Ice Gap.

We arrived in camp at 10 o'clock, and, in spite of unfavourable weather, had had one of the most successful expeditions during our campaign.

The Store Jægervandtind and Lenangentind.

Now we were in full swing, and during the next fortnight we had nothing but success. Each succeeding mountain expedition, if possible, seemed to possess more interesting characteristics than the last one we had undertaken; each was, in fact, most enjoyable.

We shall long remember the bergschrund into which on another day our leader cut a way, and hacked an icy staircase up through the overhanging lip on the other side; nor shall we soon forget the wicked Trold which looked down upon us maliciously all the time, nor the steep couloir above, and the element of uncertainty as to our position, which urged us quickly onward. 'Ah! Now we know where we are. Forward!' See our new leader swinging himself out of sight at the end of the first of the three peaks which together form the Store Jægervandtind. Hear him call out, 'Come along, you fellows; it's all right.' See the narrow snow ridge; no fear of cornices in this nightless land. Look down far, far below on both sides to the glaciers. But on, on, on. A second peak, another gap and narrow connecting ridge, and the top.

Was ever such a view seen in Finmarken before? In every direction it was clear, and everywhere it was beautiful. North, beyond Pipertind and the Bird Island, was the open sea.

Beyond that, so far as is known, is no land between it and the Pole. A maze of grand peaks surrounded us. North-east was the Jökulsfjord and the one glacier in Europe which launches a flotilla of little icebergs into the sea direct. This remarkable glacier was explored a few weeks later by Hastings. The head of the long forest valley of Reisendal could be seen. South-east, beyond Lyngen, could clearly be seen, not 40 miles away, the sterile uplands of that intrusive Russian land. A little further south were the hog-backed Swedish mountains, from which in spring the nomad Lapps drive their reindeer away from the plague of flies to the sea coasts of Lyngen, Balsfjord, and other places.

By far the most impressive section of the view was that of the Storebotntind, or Lenangentind, which towered grandly above a large and wide snow-field. The western face of this mountain is bisected by a long trap-dyke, a very long and narrow snowy highway, which undoubtedly offered the only probable route up the mountain on this side, and it looked very savage. The three ridges of the peak bristled with petrified Trolds, who had been turned to stone for disobedience in stopping out after sunrise. What they were supposed to do with themselves during the weeks of the midnight sun is a question which I cannot answer. A steamboat on Lyngenfjord was also a pretty sight. But, no more.

What a store of happy memories we laid up on our ascent of the Lenangentind, the highest and finest mountain north of the Kjosfjord, and in many respects our most interesting expedition; and how uncertain was our success, even to the last! How full of interesting details was our route! How well Hogrenning cut up, up, up, always up, that couloir—a couloir which in Southern Norway or in the Alps would probably never be attempted on account of the danger of avalanches; in this case nil. How small we felt when we reached the ridge and were cut off from the top, as was the case on the ascent of the Dent du Requin! We reached the summit five minutes before midnight, and had one of the strangest and most fascinating views which I have ever seen, of sharp peaks and the midnight sun above a pall of clouds which enshrouded the lower regions.

Expeditions from Gjörik.

Time will not allow me to describe the ascent of the Fornæstind, the Romsdalshorn of northern Norway, on which we had the most difficult rock climbing we had hitherto met with during our campaign. Shall I say that it was

partly owing to the fact that we lost our way through a fog? No; why should we give ourselves away? We descended by another route in bright sunshine, and met with greater difficulties than on the ascent. Through a break in the fog we saw the Spectre of the Brocken, and very uncanny it was. It is the only time I have seen it in Norway.

How delightful it is to look back upon our crossing of the Fugleskar, or Bird Pass! Surely there is no more romantic a glacier pass in Norway! I must not attempt to describe it; I will instead invite my friends to follow our footsteps. The ice scenery is, in some respects, wilder even than in the valleys west of the Justedalsbræ. What can I say more?

See those huge black ice-capped precipices of Jæggevarre. See below them that large secondary glacier, or glacier remanié, probably the best example of the kind in Europe. See, too, how far its snout projects into the dark waters of that weird Fugledalsvand, and tell me, if you can, where this scene has a rival.

I left my companions still climbing, and, in spite of bad weather, they met with much success, though undoubtedly I was fortunate enough to have been in the most remarkable and enjoyable expeditions. Mrs. Main's party also were very successful. Certainly this far northern region is a delightful playground, where, if the weather be at all decent, everything is in favour of a well-equipped party, and breathe it, not openly, there is plenty of new work yet to be done by those who possess the eyes of a mountaineer, and have the power to follow the dictation of those eyes.

I quote the following extract which, at the request of the Editor, I wrote to an English paper published in Bergen, as I think it sums up pretty fairly the favourable conditions which we met with:

'We were never troubled by ice-glazed rocks on the mountains whilst I was climbing, owing to the fact that, as there was no night, there was no frost. We never found ice or snow where it ought not to be, and it is an undoubted fact that several of the seven new peaks which we ascended this summer would have proved to have been very tough fellows indeed if they had been in southern Norway or in Switzerland, instead of being nearly on the seventieth parallel of latitude. The climbing is really first rate in Lyngen. The natives are delightful and most hospitable. The mosquitoes are not half so bad as we expected to find there, and whereas further south, everyone was complaining of a deluge of rain, we had, on the whole, good weather, and as we were nearly three weeks

living under canvas we could not help knowing whether there was rain or not.'

What delightful memories we all have of the week spent at Gjövik—bonny Gjövik—on the Kjosfjord! What jolly hours we spent in the garden with our genial host and hostess and their children!

Farvel, Gjövik, farvel; but may I sometime grasp that hand again, friend Gjæver, and hear your cheery voice say, 'Velkommen tilbage!'

Vesuvius: a Note on the Eruption of September 1898.

By TEMPEST ANDERSON, M.D.

THE end of August 1898 found me in Switzerland with Yeld. We had brought a very satisfactory holiday to a close by visiting Champex, and were thinking of returning home, when we saw in the papers that Vesuvius was in eruption. Here clearly was an opportunity not to be missed, though as the heat was great even in Switzerland it would be probably much greater at Naples. However, the reports of the eruption continued, so on September 2 I crossed the St. Bernard to Aosta, where I found the climate of a Turkish bath. At Turin it was even worse—that of an oven, at least. What must it be at Naples? Luckily these gloomy forebodings were unfounded. The voyage from Genoa was genial; the heat at Parker's Hotel, Naples, quite bearable, with a pleasant breeze in the evening, and at the Hermitage on Vesuvius the weather was delightful. Through the kindness of Dr. Linden, of the Aquarium, I got excellent quarters here, and both Mr. Faerber, Messrs. Cook's agent, and Mr. Noble Fell, who was engineering the railway extensions on the mountain, showed me many kindnesses. The latter especially gave me much information, of which I have availed myself freely in the following notes. Here I stayed more or less from September 7 to 13, exploring the mountain in the daytime and spending every evening on the top of the observatory close by, which commanded a full view of the eruption.

Most members of the Club will scarcely need to be reminded that in the great eruption of A.D. 79, which overwhelmed Pompeii and Herculaneum, and cost Pliny the elder his life, a great part of the then mountain was blown away by an explosion comparable to that of Krakatoa in 1888, and a vast crater ring, perhaps two miles in diameter, was formed, of which Monte Somma still remains as a great crescentic moun-