ACROSS GREENLAND

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THE FIRST CROSSING

OF

GREENLAND

BY

FRIDTJOF NANSEN

TRANSLATED FROM THE NORWEGIAN

BY

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WITH MAPS AND NUMEROUS ILLUSTRATIONS

IN TWO VOLUMES—VOL. II.

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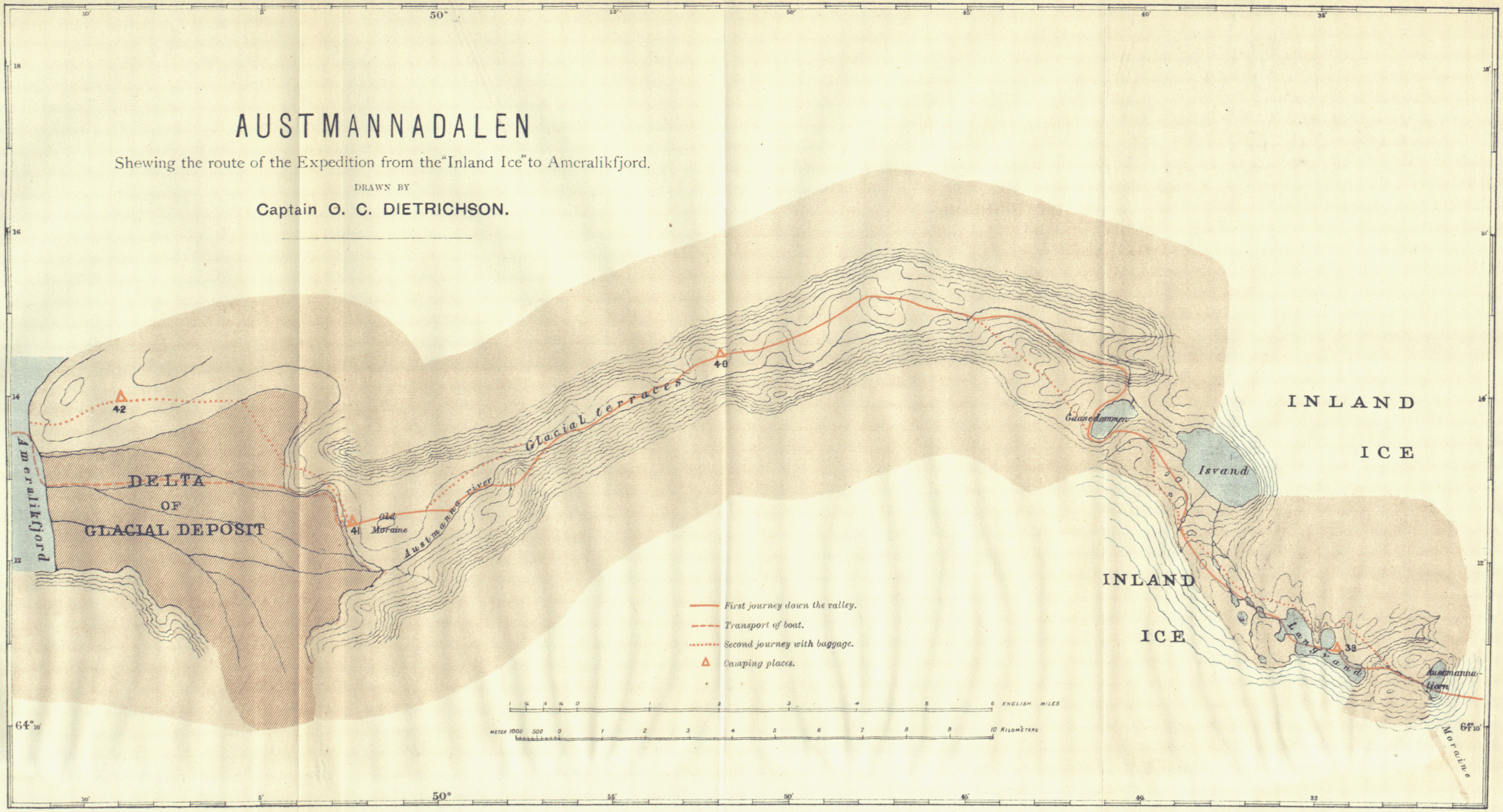

AUSTMANNADALEN
Shewing the route of the Expedition from the "Inland Ice" to Ameralikfjord.
DRAWN BY
Captain O. C. DIETRICHSON.
Ameralikfjord
DELTA OF GLACIAL DEPOSIT
Old Moraine
Austmanna river
Glacial terraces
Glasedammen
Isvand
INLAND ICE
INLAND ICE
Langvand
Austmannahorn
Moraine
42
41
40
38
First journey down the valley.
Transport of boat.
Second journey with baggage.
Camping places.
ENGLISH MILES
METER 1000 500 0
KILOMETERS
64°10'
50°
W. & A.K. Johnston, Edinburgh & London.

THE FIRST CROSSING
OF
GREENLAND

CHAPTER XVII

OUR START FOR THE WEST COAST—THE ASCENT OF THE ICE.

As I have already said, we spent the first day or two after our expedition on the ice in a thorough overhauling and rearrangement of our equipment. The weather meanwhile was dull, rainy, and mild, and we were therefore in no hurry to start, as we hoped for bright weather with frost at night. We lived during these days almost entirely on sea-birds, which we had shot during our voyage up the coast, but had hitherto had no time to eat. We enjoyed this fare amazingly and it must have been a fine sight to see the party sitting on the rocks round the camp-kettle, which consisted of a tin box previously devoted to biscuits, and each member fishing out his own bird with his fingers and proceeding forthwith to tear it

in pieces and devour it by the help of hands and teeth. Modern adjuncts of the table such as forks, I need scarcely say, were not to be found among us, and I can vouch from my own experience that such things are not at all necessary, seeing that the forks with which nature has provided us are exceedingly practical instruments, as long as one does not plunge them into inordinately hot cooking vessels; a discretion which is of course the outcome of a very short experience.

On August 14 the weather improved and we resolved upon a start. Sverdrup and I considered that the best route was up the mountain side on which he and I spent the night of our glacier excursion, provided at least that it proved easily accessible from the sea.

So we launched our boats once more, loaded them with all our baggage, and set off with the intention of beginning our climb there and then. But we had hitherto had no view of this mountain from the water, and we now found its base so precipitous that an ascent with our heavy loads would have been much too laborious an undertaking. Our only course therefore was to return to our old camping-ground and start from there. So our boats were unloaded at this spot once again, and it was late at night before the day's work was finished.

On the morning of August 15 the boats were hauled up to their last resting-place, a little cleft in the rocks, which promised them a tolerable degree of shelter and protection. We placed them carefully with their keels uppermost, blocked them with stones to keep them steady in a wind, and it is to be hoped

HAULING THE BOATS ASHORE ON AUGUST 15
(*From a photograph*)

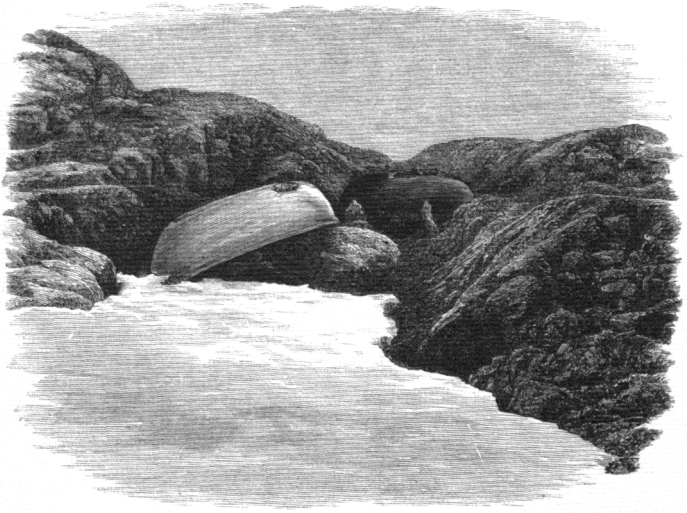
they are still there just as we left them. But it is quite possible, of course, that the Eskimo have already found them and appropriated the iron parts and fittings of the boats and many other wonderful things. If this be so, it is not easy to imagine what kind of supernatural beings they have taken us for, who have thus abandoned our valuable possessions

and so mysteriously disappeared. Under them we stored a small supply of ammunition, dried seal's flesh, and a few other things. A curiosity among the latter was the Eskimo skull which we carried off from Igdloluarsuk and here deposited in the locker of one of the boats. If the natives have come across our cache, the discovery of this skull has no doubt scared them not a little A number of tools, chiefly belonging to the boats, were also left there, and among them a sail-maker's palm, the want of which we afterwards felt acutely. As I have said already, I had intended to leave one of our guns here, too, but when the time of parting came, we were so overcome by its charms that we had not the heart to abandon it to this desolate fate.

On a small piece of paper, too, I wrote a short account of the progress of the expedition so far, packed it carefully in a little tin, and enclosed this in the bread box which had belonged to our sealing-boat. In my account I wrote that we were quite hopeful of reaching the west coast, if we were only favoured with sufficient frost; as it turned out, we were favoured with a good deal more than enough.

The Lapps maintained that we might just as well leave one of the big sleeping-bags behind, as we could easily put four men into one of them, while they could sleep in their fur coats, Balto even declar-

ing that they could put up with seventy degrees of frost. However I considered it better to see how things were before I consented to such a step, and I told them it was not unlikely that they might be glad of the bags to sleep in after all. Balto still insisted that that would never be, and that the extra bag



THE LAST RESTING-PLACE OF THE BOATS
(*From a photograph*)

would be only so much dead weight. It was not long, however, before he had good reason to change his opinion.

As it was now too warm in the day time, and the snow consequently soft, we determined to do our hauling work at night. So at nine in the evening

the sledges were finally loaded and we started on our way for Christianshaab.

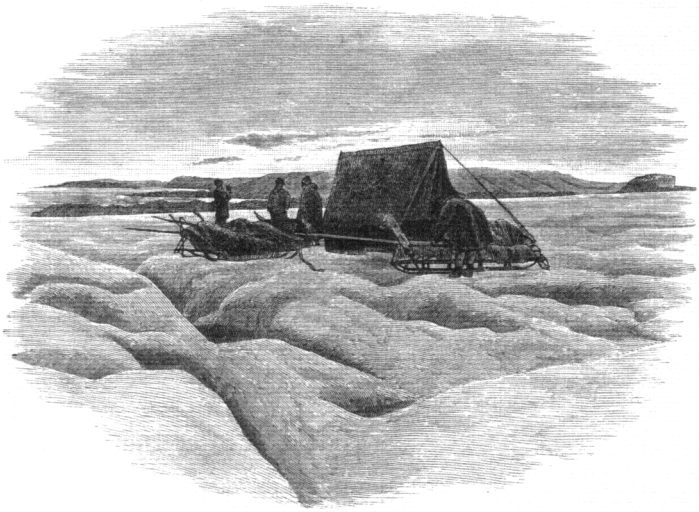
At first our progress was slow. The snow came nearly down to the sea, so we could begin hauling at once, but the gradient was steep and we had to put three men to each sledge. Our loads were heavy, too, each sledge weighing somewhat more than two hundredweight. When we had got so high that we could think of dragging them singly, we redistributed the weight, so that four of them were about two hundred pounds; and the fifth, which had two to pull it, weighed about double as much. This first night we had fine weather and just enough frost to make the snow hard. The ground was favourable except for the steepness of the incline, and of crevasses we as yet found none. Towards morning, however, we reached some unpleasant ice, which was full of depressions and irregularities, but had at the same time a hardish surface on which the sledges travelled well. After a first stage of some two or three miles we pitched our tent at a height of about five hundred feet. It was a pleasure almost divine to get half a dozen cups of good hot tea with condensed milk and then to creep into our sleeping-bags after this our first spell of sledge-hauling. I have no doubt there was a pretty general consensus of opinion among us that we had

had pleasanter work in the course of our lives, but these opinions we kept each to himself. Just as we were proposing to go off to sleep it was discovered that we had left our only piece of Gruyère cheese at the place where we had halted for our midnight dinner. To leave this cheese behind was scarcely to be thought of, and yet to fetch it, tired as we were, was also too much to be expected. But then Dietrichson came forward and offered to go and get it, declaring that there was nothing he should like so much, as it would give him a little morning walk before he went to bed, and a look round besides, which would be to the advantage of his map. I remember that it was with a feeling of simple admiration that I saw him start gaily off on this errand, and that I could not myself conceive that anyone could find pleasure in such an expedition after the work we had had already.

On the evening of the day we broke up again and went on over ice of the same rough kind. Towards midnight it grew so dark that we could no longer see, so at eleven o'clock we encamped, made some chocolate, and waited for daylight. Before we started off again we took a photograph of the tent and the ice to the south stretching downwards towards the sea.

We now got on to some smoother ice, but the

snow grew looser and crevasses began to appear, though the first were negotiable without any great difficulty. Towards morning it began to rain; as the hours passed things grew worse and worse, and existence to us less joyous. We all got into our waterproofs, of course, but waterproof these garments



OUR CAMPING-PLACE ON THE MORNING OF AUGUST 17
(By A. Bloch, from a photograph)

were certainly not, and the rain poured down upon us till every rag we had on was wet through. There was no chance of our getting chilled or frozen, though there was a moderately sharp wind blowing, as our work kept us warm and we had to put forth all our strength. But to feel one's clothes cling to one's limbs and hinder every movement is not a state of

things to make hard work pleasanter. We kept on till past noon; the ascent was not too steep to allow of the sledges being brought up with tolerable ease, but we had to put two men to each of them. Crevasses were plentiful, so we had to go warily. We could not rope ourselves together, as that made

UNDER WAY ON AUGUST 17

(*By the Author*)

the hauling work too difficult, so we had to be content with attaching ourselves to the sledges by our strong tow-ropes, which were again made fast to the stout hauling-strap and belt we each wore. If we went through the snow-bridges which crossed the fissures, we were left hanging securely, as long

as the sledge did not follow us, which, owing to its length, was not very likely to happen. As a matter of fact, we fell through rarely, and then only to the armpits, so that by the help of our staffs we were able to get out again without other assistance.

Now and again, however, one or other of us experienced the strange abdominal sensation of having the ground suddenly go beneath his feet and his body left swinging in the air from the chest downwards. At these times we generally managed to recover ourselves without any further invitation from outside. It was, as a rule, an easy business to bring our long sledges over these crevasses. They had so large a bearing-surface that they would run well over with their own impetus, though from time to time it happened that the snow gave way slightly beneath them.

This day we did not stop till nearly noon, when we encamped on a flat ledge between two huge crevasses, the weather being now altogether impracticable. We found unspeakable consolation this particular day in dry clothes and hot tea, and the number of cups which we consumed passed the limits of calculation. After having laid our staffs and 'ski' under the tent-floor in order to keep our bed reasonably dry, and having taken all possible measures to exclude the rain, we retired to our bags.

The smokers, too, were allowed a pipe of tobacco, and altogether we made ourselves exceedingly comfortable under cover while the elements raged in all their fury without.

For three whole days, from noon on August 17 to the morning of August 20, we were now confined to the tent by a violent storm and uninterrupted

THREE DAYS IN THE TENT

(By E. Nielsen, from a rough sketch by the Author)

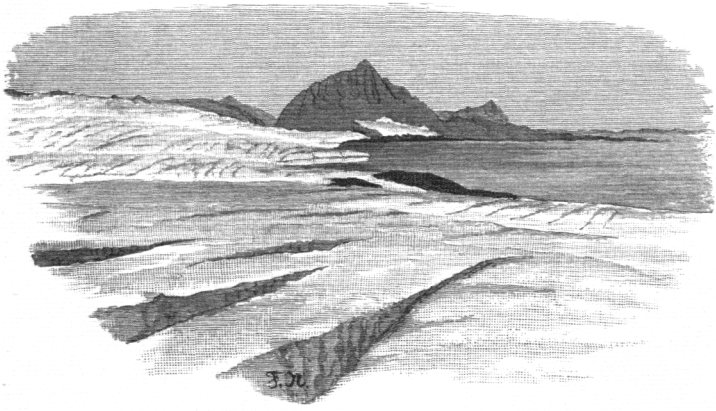
rain. The whole time we only left our sleeping-bags for the purpose of getting food and for other small errands. The greater part of the time we spent in sleep, beginning with an unbroken spell of twenty-four hours. Rations were reduced to a minimum, the idea being that as there was no work to do, there was no need for much food, though we had to take just enough to keep ourselves alive, the whole

consumption amounting to about one full meal a day. Some of the party found the allowance unreasonably short, and piteously urged the clamorous demands of their inner organs. When not eating or sleeping, we filled the gaps in our diaries, told stories in turn, and read a paper by Professor Helland on the 'ice-fjords' of Greenland, besides our 'Nautical Almanac,' our 'Table of Logarithms,' and the other equally interesting books of which our modest library consisted. Ravna and Balto read their New Testament as usual on such occasions. Our waking moments were, however, perhaps chiefly spent in gazing at the tent roof and listening to the rain splashing overhead and the wind tearing and shrieking round the walls and among the guy-ropes. It is pleasant, no doubt, to lie snugly housed while tempests rave outside, but there is also no gainsaying that we longed to hear the rain beat a little less pitilessly and the wind howl a little more gently round our tent.

At last, on the morning of August 20, the weather so far improved that we could resume our journey, and in preparation we fortified ourselves with a supply of hot lentil soup, to make up for the famine rations of the three preceding days.

The ice was still much fissured, and as we were about to attempt the ascent of a ridge which lay in front of us, we found the crevasses so numerous and

formidable that there was no possibility of passing them. Here they ran not only parallel, but also across each other, a combination before which one is completely powerless. We had to turn back and try more to the north, and sitting on the sledges we slid down the slope again between the crevasses. Below we found the ice less broken and the gradient



VIEW OVER THE 'INLAND ICE' TOWARDS KIATAK (AUGUST 20)
(*By the Author*)

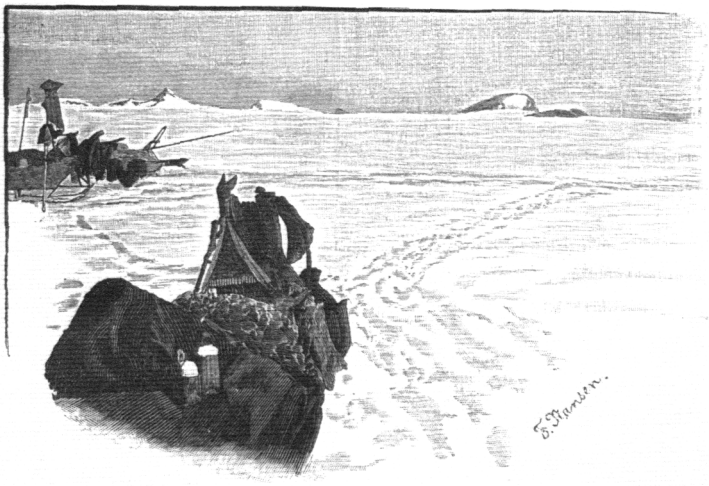
less steep. Progress was here comparatively easy, and at places we could even haul our sledges singly, Sverdrup and I going on in front with the heaviest to choose the route. The rain had here evidently contributed to make the going better for us, as it had made the snow firmer in places and often washed it away altogether. At times, however, we still sank deep, but could we only have got a little frost, things

would have been excellent. Yet on the whole the surface was very rough, and Balto writes in his narrative:—

'On August 20'—(he probably means August 22)—'the ice was terribly rough, like the great waves of the sea. It was awful work to drag the sledges up these waves, and when we went down the other side the lumps of ice came rolling after us.' (This is a circumstance I do not myself remember.) The ropes we pulled with cut our shoulders, till they felt as if they were being burnt.'

Towards eight o'clock that evening the sky looked as if it would clear, and as we felt sure that this would bring us frost, we stopped and camped at once to wait till the snow got harder. Next morning, August 21, we turned out at four. The sky was clear, and though the thermometer showed that there was still a certain amount of warmth in the air, the crust on the snow was nevertheless sufficiently hard to bear us. The gradient was still steep, and the crevasses large and numerous, but we pushed on fast and without mishap in the most glorious weather, keeping at work till well into the morning, when the blazing sun began to make the snow softer and softer. This work under such conditions is terribly exhausting, and we suffered from an unquenchable thirst. We had already

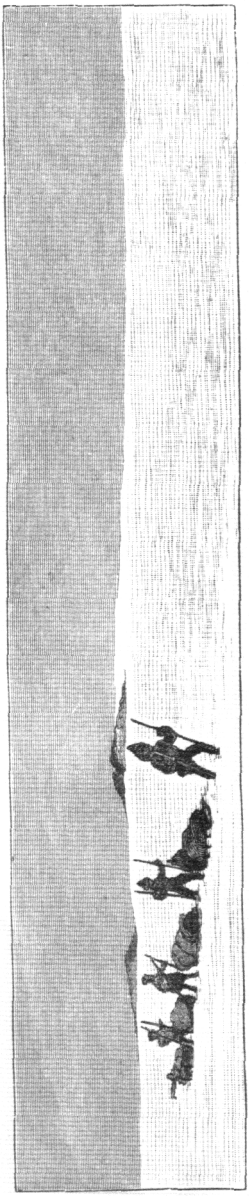
passed the limit of drinking-water, and were destined to find no more till we reached the west side. All we get is what we can melt by the warmth of our own bodies in the tin flasks which we carry at the breast inside our clothes and sometimes next the very skin. Few of us are long-suffering enough to



ANIKITSOK, JOHNSTRUP'S AND KORNERUP'S NUNATAKS (AUGUST 21)
(By the Author, from a photograph)

wait till the snow is turned to water, but as it grows a little moist we suck out the few drops which it produces.

About eleven we had reached the top of a ridge which we had set as our goal for the day's march, a distance of some three or four miles. Beyond, the ice sloped gently inwards, and was particularly



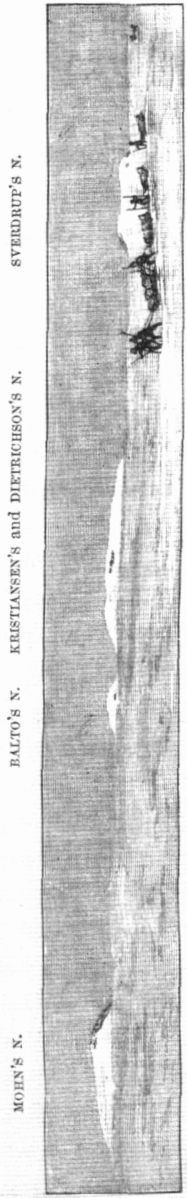
HELLAND'S AND RINK'S 'NUNATAKS' (AUGUST 22) (*By the Author*)

free from crevasses. So we thought we must have already overcome the first difficulty of our ascent, and felt justified in marking the occasion by a festal meal, distinguished by extra rations of cheese, jam, and oatmeal biscuits. We were now all but 3,000 feet above the sea, and could see 'nunataks' here and there in front of us, while we already had a whole row of them alongside us to the north.

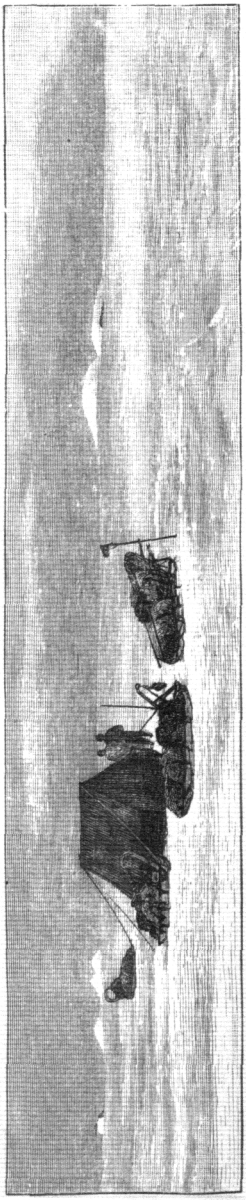
At two o'clock on the morning of August 22 we went on again. There had been nine degrees of frost in the night and the snow was as hard as iron, but the surface was exceedingly rough, so rough indeed that a sledge occasionally upset. By nine o'clock the sun had such power that we were obliged to halt after having again

accomplished a stage of three or four miles.

We began to feel the want of water more and more keenly, and were very glad to get a good drink of tea. With a view to making this beverage still more refreshing, I hit upon the brilliant notion of putting citric acid into it, for we had all heard, of course, that lemon juice was a most delicate addition. It never struck us that we already had condensed milk in our tea, and our disappointment when we saw the milk slowly curdle and sink to the bottom in lumps was indescribable. We drank the mixture, however, and I, who, as the inventor and patentee, was bound to set the others a good example, could say no less than that I found the refreshing qualities of the tea increased by the addition of citric acid in spite of the unwelcome lumps of curd. But this dictum



NUNATAKS ' TO THE NORTH OF OUR ROUTE



THE MOST NORTHERLY 'NUNATAKS' SEEN FROM OUR ROUTE (*By the Author*)

did not meet with general acceptance, and the experiment was never repeated.

We started off again the same evening about nine o'clock. The ice was still very rough; we had now to haul our sledges up on to the crests of the steep waves, now to let them rush down into the hollows. The strain on the upper part of the body was very trying, and Balto was quite right in saying that our shoulders felt as if they were burnt by the rope.

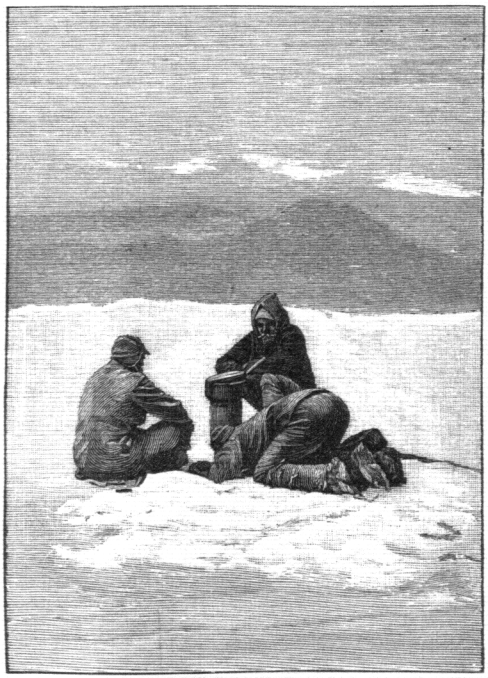
But if we often suffered a good deal in the way of work, we had full compensation during these nights in the wonderful features of the sky, for even this tract of the earth has its own beauty. When the ever-changing northern lights filled the heavens to the

south with their fairy-like display—a display, perhaps, more brilliant in these regions than elsewhere—our toils and pains were, I think, for the most part forgotten. Or when the moon rose and set off upon her silent journey through the fields of stars, her rays glittering on the crest of every ridge of ice, and bathing the whole of the dead frozen desert in a flood of silver light, the spirit of peace reigned supreme and life itself became beauty. I am convinced that these night marches of ours over the 'Inland ice' left a deep and ineffaceable impression upon the minds of all who took part in them.

We presently reached a steep incline and our work was worse than ever. We had to put several men to each sledge, but even then the labour was cruelly exhausting. Consequently our astonishment and joy knew no bounds when we had climbed some hundred feet higher and then found the surface stretching flat in front of us as far as we could see in the moonlight, and the snow as hard and level as the ice on a frozen lake. This glorious state of things made us very triumphant. Anything better was beyond our imagination, and we began to reckon how soon we should reach the west coast, if we had such snow to deal with all the way.

The question had arisen whether it would not be as well to reduce the weight of our loads without

abandoning any of our provisions. Balto gave it as his opinion that we could safely leave the Indian snow-shoes behind, as they could be of no use to us. I agreed that this might be so as long as we had snow



OPEN AIR COOKERY
(*From a photograph*)

of this kind to cross, but it was impossible to tell how long this would last. Then Balto broke out: 'Good heavens! just hear what Ravna says then. He is an old Lapp; he has lived forty-five years on the mountains, and he says that he has never used anything of

the sort, and that no one is going to teach an old man like him. And I say just the same myself: I am a Lapp, too, and there is no one who can teach us Lapps anything about the snow.' I laughed and answered: 'You Lapps think yourselves so precious clever, but you are not unlikely to learn a thing or two before you get home again. Do you remember, Balto, those snow-spectacles I showed you in Christiania? Didn't you want to know what was the good of those rubbishy things? Didn't you say that you Lapps never used anything of the kind, and yet you had good eyes? But who was it whose eyes first wanted snow-spectacles, and found them excellent things? Wasn't it you two Lapps? Take care it doesn't turn out just the same with these snow-shoes. Not one of them shall be left behind.'

Balto maintained that it was a very different thing with the spectacles, and acknowledged that he had found them, not only useful, but necessary. But as for these snow-shoes, he swore by all his gods that he would never put them on his feet. Just at this time he was so confident and pleased with himself that he often indulged in the sin of swearing very emphatically. This was a state of mind very encouraging to the rest of us, to whom it served as an index of his valorous state of mind.

Unluckily, our good fortune with the hard, icy

surface did not last long, though we had it all that day. There are probably not many who have had such an experience on the 'Inland ice.' If it had been thoroughly levelled with a plane, the surface could scarcely have been smoother. The ascent was very gradual, and there was a gentle, almost imperceptible undulation. About eleven o'clock on the morning of August 23 we stopped and pitched our tent after having done a stage of nine or ten miles. This day, as had also been the case a day or two before, the sun beat down so fiercely on the tent-walls that the air inside was rather too warm for us, and one of the party was even constrained to go outside and lie on a tarpaulin in the shade of the tent in order to get some sleep.

At half-past six we were on the move once more. As we advanced things altered for the worse again, and the hard, icy surface was covered with a coat of freshly fallen snow.

We already began to see that we should have more frost at night than we cared about, for on the dusty new snow and in the fifteen degrees of frost which we now had the steel runners of the sledges slid no better than upon sand. So seeing the folly of now doing our work in the night, instead of the day-time, when the friction of the snow was likely to be less, we halted again about ten o'clock.

We were still speculating whether it were not advisable to lighten our loads by abandoning one thing or another. The first things to sacrifice were the oilcloth covers of our sleeping-bags, as, now that we had advanced so far, there was no moisture to be afraid of except in the form of snow, which was not likely to do them any damage. But it would have been too stupid simply to leave them behind without making any use of them. Oilcloth was combustible, and we might use them, of course, for cooking purposes. This was a happy thought which found immediate favour.

A cooking-pot was the next thing necessary. But all the biscuit tins leaked more or less on account of the rough treatment to which they had been exposed on the sledges. At last we found one which seemed moderately watertight, and operations were started in the tent. The tin was filled with snow as usual, and set up on a stand made of the steel bars which had originally been under the runners of the sledges, but had succumbed to the rough work among the ice. The oilcloth was torn up into strips, placed in a steel snow-shovel, which was made to do duty as a fire-basket, and duly lighted. The fuel burned bravely; the flames rose high round the tin and shed a fine red glow on the tent-walls and the six figures, which were grouped around and sat gazing at the

blaze and enjoying the real solid comfort of a visible fire.

It was the first time we had had a fire of this sort inside the tent, which wanted something of the kind to make it really cosy. But all the joys of this life are fleeting, and none have I ever known more fleeting than that which comes from burning oilcloth in a tent which has no outlet in the roof. Our fuel smoked to such an extent that in the course of a few minutes our little habitation was so full that we should scarcely have been able to see one another if we could have kept our eyes open, which we could not do, as the pain caused by the fumes was simply unendurable. If there be a mortal who has seen the inside of a barrel in which herrings are being converted into bloaters, he will be able to form some idea of the atmosphere of our tent. It was to no purpose that we opened the door, for if a little smoke did find its way out, there came more to take its place, and the cloud grew persistently denser and denser. Our pleasure at the sight of the fire had long died out; the eye that managed to open could only see a faint light glimmering far away in the fog. Most of the party followed the sensible plan of burying themselves in the sleeping-bags, and drawing the covers tight over their heads. One or two, however, had to sit out the infliction in order to look after the

fire and get the water for our tea boiled. By dint of opening first one eye and then the other, and now and again thrusting the head out of the door for a little fresh air, they got through their task tolerably well. The snow began to melt, but now, by way of filling the cup of our discomfort, the tin proved deplorably leaky, and we were obliged to have recourse to something else. The cover of the tin box which formed our medicine-chest was sound enough, but it held only half the necessary amount of water. It was the only vessel available, however, and by using it in conjunction with the original tin, which was placed on edge so that its soundest side only was taken into use, we managed fairly well. Then, by firing up unremittingly, and turning the tent into a veritable 'inferno,' we eventually succeeded in obtaining some tea of a certain kind; but I am bound to confess that it was the worst tea-making at which I ever had the luck to assist, and I emphatically warn all whom it may concern against following our example.

Next morning, nevertheless, we had another oil-cloth fire; but this time we were prudent enough to arrange the fire-place outside. We now managed to get so much snow melted that, over and above a good supply of hot soup, we were able for once in a way to get thoroughly the better of our thirst, the

addition of citric acid, oil of lemon, and sugar turning the water into the most delicious lemonade. But this was the last real satisfying drink we had before we found water on the other side. Our small supply of fuel would not allow us any indulgence in this way.

We were a remarkable sight by daylight next morning. Our complexions, hitherto comparatively fair, and washed moderately clean by wind and weather, had undergone a complete transformation. In places the incrustations of soot were so thick that they could be scraped off with a knife. All wrinkles and depressions were full of this foreign substance, and great masses had settled on all outstanding points, such as the eyebrows, cheek-bones, under-lip and chin, and the fair hair with which nature had provided some among us had been dyed to a raven black. The only parts still clean were the eye-balls and teeth, and these now shone out quite uncomfortably white in contrast.

This state of things did not trouble us very much, both because soot is a relatively clean dirt and because, as a general principle, most people, no doubt, wash themselves for altruistic reasons, and we had no chance of meeting others of our fellow-creatures for some time to come. The tooth of time was left to work upon our faces, and the soot by slow degrees was worn away; slow, indeed, for there was,

in truth, enough to withstand time's ravages for many a day.

Possibly when my readers learn that in spite of such disasters we did not wash ourselves from the day we left the 'Jason' till we reached the west coast, the more narrow-minded among them will straightway class us with the least cleanly of four-footed beasts. This fate we must be content to risk, and to share in the company of many who have not even the crossing of Greenland for their excuse; and, besides, if we go a little farther back in time, there will be few among our forefathers who will not stand upon our side.

But perhaps it will be as well if I explain that washing was in ordinary circumstances one of the habits of our daily life, and that if we omitted the practice during this whole period, the omission was not without its reasons.

In the first place, while we were in the interior we had no other water than the small quantity we melted every morning and evening over our cooker, and the still smaller quantity that we could melt by the warmth of our bodies in the course of the day. But when a man is, as we were, the victim of a perpetual and intense thirst, and has the choice whether he will use his limited portion of water for washing or drinking, or, as a third alternative, for the two

purposes combined, washing first and drinking afterwards, I think there is little doubt that, however conventionally-minded he might be, he would devote it simply and solely to the assuaging of his thirst.

In the second place, the pleasure of washing in a temperature in which the water turns to ice if it is allowed to stand a couple of minutes, in which the fingers grow hard and stiff during their passage from the vessel to the face, and in which the face itself freezes as soon as water is put upon it, is, to say the least of it, highly questionable. I think there cannot be many whose love for cleanliness would in such circumstances lead them beyond theory and eloquence.

In the third place, we were absolutely forbidden to wash even if we had a superfluity of water, and this at a comfortable temperature, the reason being that in this sunshine, when the glare comes not only from above, but also back from the snow below, it is as well to have as little to do with water as possible. At such times the sun attacks the skin mercilessly; it cracks it and peels it off, and will even cause sores, which will lead to a good deal of inconvenience as well as undeniable pain. I am convinced that here again, when the choice must lie between this and uncleanliness, the defenders of cleanliness will be found few and far between.

Lastly, though it might be more becoming in us and more in harmony with the conventions of the day to confess that we found it unpleasant to go so long without a wash or change of clothes, it is better to acknowledge the truth and to say openly that in these respects we felt entirely comfortable, and had, besides, too much work to do to leave us time even to think of the condition we were in.

On August 24 we had things against us all day, as the snow grew heavier and heavier to pull upon, was so loose that we sank several inches, and we had, besides, a considerable gradient to ascend. In order to keep our spirits up, every mile covered was rewarded with a cake of meat-chocolate per man. At dinner-time we cooked our meal again with oil-cloth in the open air, but this time we also used a spare theodolite-stand of ash, which was condemned as superfluous. We further consigned to the flames a number of splints, which we had brought for possible broken limbs, but most of which we did not care to carry farther now that we had passed the crevassed ice without mishap. Some we kept, nevertheless, in case any of us might come to grief during the descent on the other side.

After sunset this evening we again found it distinctly cold, the friction grew worse than ever, and we came to a halt. Our march had been scarcely

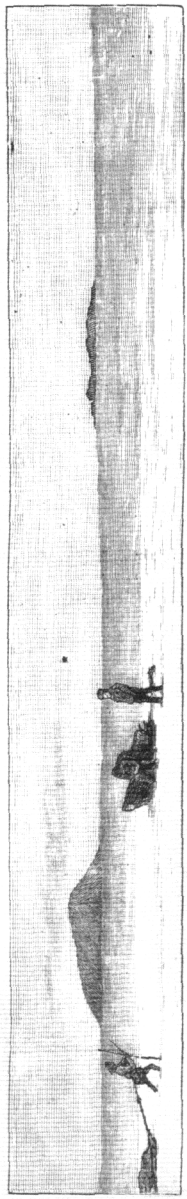
more than five miles. As we had had our dinner not long before, we were fain to be content with a supper of oatmeal biscuits together with snow over which our lemonade mixture had been poured. This makes the most refreshing and exhilarating dish I know, and is much like the preparation used in Italy and known as 'granita.' Indeed, if one can get really fine fresh snow, the Greenland form is even better. We were all in excellent spirits as we sat outside the tent eating our lemon-snow and biscuits, and by careful economy prolonging the enjoyment to the utmost, while we watched the rays of the moon playing over the endless stretch of white desert. My thoughts went back to the last time I had 'granita.' This was also by moonlight, but it was a hot summer night by the Bay of Naples, and the moon was shining on the dark waters of the Mediterranean.

On August 25 the rise was still steep, and the snow even worse, as it was loose and lay to a depth of six or eight inches. To make things complete, there was also a wind blowing full in our faces.

It had struck us that our halts for dinner took up a good deal of time, and to-day we evolved the very happy idea of cooking as we went, and thus saving the long time we otherwise had to wait while a meal was being prepared. So the cooker was put at the back of one of the sledges, was lighted, and

as the snow gradually melted into water, the cakes of soup were added, and we meantime went on our way rejoicing, and very proud of our brilliant invention. When the soup was on the boil, we halted, pitched the tent, and carried the pot carefully in. But, as luck would have it, just as we were sitting down to the enjoyment of this grand dish, I made some clumsy movement, upset the rickety erection, and all the precious soup was running over the tent-floor mixed with burning spirit, water, and lumps of snow from the upper vessel of the cooker. We were all on our legs at once, all loose objects were ejected from the tent, and by seizing the corners of the floor we gathered the liquid into the central depression. Hence it was conveyed into the pot and set to boil again, scarcely a drop having been lost. In these cases it is an excellent thing to have a waterproof tent-floor. Balto maintains that this day's soup 'was not altogether pure and clean, as the floor of the tent was somewhat dirty. But we could not help that; the soup tasted just as good, for our insides were rather empty.' He does not mention the fact that there was some methylated spirit in it, too, but it was not much, and no doubt he thought it improved the flavour.

While we were now sitting and enjoying our dinner in the warmth and comfort of the tent, a



THE MOST WESTERLY 'NUNATAKS' TO THE SOUTH OF OUR ROUTE (AUGUST 26) (*By the Author*)

snowstorm was getting up outside. It was only the drifting of already fallen snow, but it met us full in the face when we went on again, and through the afternoon the wind grew stronger and stronger, which in from fifteen to twenty degrees of frost is distinctly unpleasant. However, we plodded on as well as we could up a steep slope with our heads bent down and wrapped in our monkish hoods, while the fine, dusty snow did its best to find a way into all the pores and chinks of our waterproof clothes. It was late before we camped and crept into our bags, and there enjoyed our frugal supper, while the moon shed its peaceful light through a cranny in the tent-door, and we comfortably felt that we had shut out the wind and driving snow.

The storm lasted all night, and next morning, August 26,

when I was about to turn out to make some coffee, I was not a little surprised to find myself, the sleeping-bags, and our clothes all buried under the snow, which had forced its way in through every crevice and had filled the tent. My boots were full of snow; when we went out to look at the sledges they had half disappeared, and great drifts lay high against the tent-walls. Nevertheless we spent a very pleasant Sunday morning with coffee and breakfast in bed.

All this day, too, the storm continued and our work grew heavier and heavier as the snow grew deeper. I felt much inclined to tie the sledges together, make them into two rafts, as it were, and try, by the help of sails, to beat up against the wind. If we go on at our present rate, it will be a long while before we reach Christianshaab. We hope to get a change for the better, but it does not come to-day, and we have to tramp along as best we can. A couple of miles farther on we reach a ridge which has to be climbed. We had to put three men to each sledge, and even then it was heartbreaking work to get them up, the gradient proving to be as much as one foot in four. As we were coming down after one haul, Kristiansen, who seldom said anything, turned to Dietrichson and exclaimed, 'What fools people must be to let themselves in for work like this!'.

CHAPTER XVIII

THE CROSSING OF THE 'INLAND ICE'—WE CHANGE OUR COURSE FOR GODTHAAB—SOME FEATURES OF THE CLIMATE AND THE SNOW.

We had reached a height of some 6,000 feet above the sea when we halted that evening, August 26. Taught by our experiences of the night before, we took measures to protect ourselves better against the storm and penetrating dust-like snow. We dug a hole which gave us a bank on the weather side and we furthermore turned one of the sledges over and covered it with tarpaulins. We thus obtained fairly good shelter, and were in excellent spirits as we sat round the singing tea-kettle and lamp, which threw a faint light about the tent and its strange group of occupants and showed us the fine snow which, in spite of all our precautions, settled upon everything and filled the air. When the tea was ready we lighted one of the five candles I had brought for photographic purposes, and altogether spent a most comfortable evening in defiance of the storm which shrieked outside.

There was no abatement in the wind when we woke next morning, but the tent was not so full of snow as it had been the day before. I was by this time tired of plodding along against the wind in this deep loose snow, and resolved this morning to rig the sledges and try a sail. The proposal, however, met with a good deal of opposition, especially from the Lapps. Ravna put on a most dejected look, and Balto simply unbridled his tongue. He had never seen such a lot of lunatics, he said. Wanting to sail on the snow, indeed! Very likely we could teach him sailing on the sea and one or two other things perhaps, but on land and on the snow, no, never. Such infernal nonsense he had never heard. He spoke more than plainly, but to little purpose, as he had to put up with the absurdity. The sledges were placed side by side and lashed together, two going to make one vessel, and three to the other. On the first the tent-floor did duty for a sail; on the latter, which was manned by Dietrichson, Ravna, and Balto, the two tarpaulins.

I had contemplated using the tent-walls, too, but when it came to the point I dared not, as they seemed too thin, and to have our tent torn in pieces in a country like this would have been a good deal worse than unpleasant. When the tarpaulins were hoisted to the wind, they came apart at once and proved

unmanageable, which made it necessary to sew them together. To sit and sew with bare fingers in the cold wind and drifting snow was miserable work, but by dint of keeping our hands well rubbed and knocked about, and after toils and tribulations of all kinds and six or seven hours' work, we eventually got under way in the course of the afternoon.

We soon found that there was no question of tacking up against the wind, as we could not get within less than eight or nine points of the wind at best. But I had not really been very hopeful on this score and had, as a matter of fact, other ends in view. I now saw plainly that with this heavy going and this persistent foul wind there was no chance of our reaching Christianshaab by the middle of September, when the last ship for Copenhagen would sail and with it vanish our last chance of getting home this year. At the time I looked upon this eventuality as most unfortunate, seeing that we should have to waste a whole winter in Greenland, while the men would no doubt all be consumed with home-sickness. I had, too, very vague ideas as to the traffic of the west coast, and I argued that the last boat which sailed from Christianshaab would also call at the more southerly ports, and that therefore we should have a better chance of catching her if we made for one of these, for preference Godthaab. In favour of

this particular line there were other reasons, and above all the fact that an exploration of the ice along this route would be particularly interesting, seeing that it was absolutely unknown, while Nordenskiöld's two expeditions had already obtained much valuable information about the tract to the south-east of Christianshaab through which we should otherwise pass. Again, it was now late in the year, and the autumn of the 'Inland ice' was not likely to prove a gentle season, so the fact that it was a considerably shorter crossing to the head of one of the fjords in the neighbourhood of Godthaab than to Christianshaab was another argument which had its weight. We should thus be able to reckon upon sooner reaching more hospitable surroundings, even though we knew nothing of the condition of the ice just there and whether a descent was likely to be practicable, and even though we might not actually get to the colony of Godthaab any earlier than to that of Christianshaab by the longer route. For in the former case the land journey after one leaves the ice is much longer than in the latter, and indeed it was quite possible that we should find this part of the route very difficult. However, we had no doubt that by one means or another we should be able to find our way to the colony, and if there were no other access, then in the last resort by sea.

All these considerations filled my head this particular morning. I consulted the map again and again, made the calculations to myself, and finally determined upon the Godthaab route. I was quite prepared to find the ice difficult to deal with just here, since there are so many glaciers converging at this point, but I felt sure we should be able to compass the descent somehow.

The point where I thought of getting down was that which we actually hit, and which lies at about lat. 64° 10′ N. I aimed at this particular spot because there seemed to be no glacier just here, while according to the map—which I may say, in passing, was absolutely wrong—there were huge ones both to the north and the south. My notion was that we should find between these two great streams of falling ice a kind of back-eddy, so to say, or belt in which the surface lay comparatively calm and level. My experience, so far as it went, had led me to this conclusion.

The rest of the party hailed my change of plan with acclamation. They seemed to have already had more than enough of the 'Inland ice,' were longing for kindlier scenes, and gave their unqualified approval to the new route. So the sails were hoisted and at about three in the afternoon we got under way, keeping as well up to the wind as we could. We could not do much in this way, as I have said,

and as it blew about NW., our course necessarily lay a good deal to the south of Godthaab; but since the wind was now on our side, we all preferred this deviation to unassisted hauling. By putting two men in front to pull, and keeping a third behind to steer, we got on moderately well, and though we started late and knocked off work early we did a good five miles before we stopped for the night.

I now began to consider what would really be our best route when we got off the ice on the other side. According to the map it was rather a rough country, much cut up by mountains, valleys and fjords. Things looked most promising near Narsak, a settlement at the mouth of Ameralikfjord and to the south of Godthaab. But it seemed very likely that we should have a good deal of trouble here, too, and I felt more and more inclined for the sea-route. Here we had obviously plenty of materials for boat-building in our waterproofs, tarpaulins, and tent-floor; we had wood for the ribs, oars, and other parts in our 'ski,' sledges, staffs and bamboo poles. So far we were excellently provided, and if all hands went to work at once the job could not take us long. As soon as I had come to this conclusion, I confided in Sverdrup, who, after some consideration, quite agreed with me. And now as it is always a good thing to have something to give definite occupation to one's thoughts, we began to

discuss, as we went along, how we had better build our boat in case such a course were advisable.

For the next two days the weather remained unchanged; there was the same storm and driving snow. At night I often feared the tent would be torn in pieces; in the morning, when we proposed to start, the sledges had to be dug out of the drifts and unloaded to have their runners scraped clean of snow and ice. Then they had to be lashed together and rigged again, and the whole was a task which we found anything but grateful in the biting wind. The lashing especially, which had to be done with the bare hand, if it was to be any good, was particularly detestable work. Then when we at last managed to get under way, it was a case of tramping the whole day in the deep snow—a heavy and exhausting business, whether one was in front with the rope or walking behind to steer. But the cruelest work of the whole day was getting the tent up in the evening, for we had to begin by lacing the floor and walls together, and as this had to be done with the unprotected fingers, we had to take good care not to get them seriously frozen. One evening when I was at this work I suddenly discovered that the fingers of both my hands were white up to the palms. I felt them and found they were as hard and senseless as wood. By rubbing

and beating them, however, I soon set the blood in circulation again and brought their colour back, and so escaped any further consequences that time.

On August 28 Kristiansen had been unlucky enough to tread unwarily on the edge of a hard drift and strain his knee. For several days he was so lame that he could only walk with difficulty, which kept us back to some extent, but a persistent use of 'massage' soon restored him. It was a curious sight to see him sitting with his leg bare while Dietrichson rubbed him, in the drifting snow and bitter wind. The same day, too, the Lapps' eyes were not quite right. They, strangely enough, as I have already said, were the first to suffer from snow-blindness, and, in fact, the only ones among us who did so at all. I even had to treat Balto with cocaine, but the attack was of short duration and little consequence, and by the help of snow-spectacles and red silk veils they both soon recovered. The rest of us went scot-free from this complaint, which many Arctic travellers have considered inevitable. If dark spectacles or veils are used, there is no doubt that it can be avoided.

Though we only had the sun in the daytime, it was the cause of a good deal of trouble to us, and in the middle of the day its action was simply intense. This was largely due to the want of density in the air at this altitude, 6,500 feet, but partly also, of course,

to the reflection of the rays from the huge level expanse of snow. Our faces were all more or less affected; we were burnt brown, of course, and none of us escaped losing a certain amount of skin from the nose and other prominent points. Kristiansen's face was very severely handled; his cheeks swelled and blistered, as if they had been badly frost-bitten, and caused him a good deal of pain. After this we were more careful in the use of our veils, and thus escaped any serious inconvenience.

It was an odd sight to see these fine red veils fluttering against the blue sky. They led one's thoughts instinctively to the life and fashion of our promenades at home, to smart carriages, graceful figures, and bright eyes, while here were six men with grimy weather-worn faces, and figures anything but graceful, dragging carriages of a certain sort, but which were scarcely open to the reproach of smartness.

On the afternoon of August 29 the wind so far dropped that it no longer paid to sail, and we therefore unrigged our vessels and set to work in the old way, taking a course straight for Godthaab.

This day too the snow was so loose and deep that Sverdrup, Dietrichson, and I took to the Indian snow-shoes. These implements caused us a good deal of trouble at first, as we had, in fact, had no practice with them previously. Our preliminary attempts

brought us time after time headlong. At first we did not keep our feet wide enough apart: one snow-shoe caught against the other leg and over we went. Then, though for a time we managed to avoid this fault, we would put one shoe down on the top of the other, and the next attempt at a step brought us flat on our faces again. Then we learnt to straddle sufficiently and keep them clear of each other, and got on admirably for a time. But presently we would catch the nose of one of the shoes in some hard snow, and again come to utter grief. In this way we went on, time after time plunging into the snow, and then struggling on for a while with more or less success. But we soon got accustomed to the peculiarities of these snow-shoes and then we found them of great practical use. They bore us well up in the snow and gave us good and firm foothold, and we now regretted that we had not taken to them before.

Kristiansen tried the snow-shoes, too, but failed utterly to get upon satisfactory terms with them, and after he had fallen on his face a score or so of times, he grew so disgusted that he threw them upon his sledge and would have no more to say to them. He then tried the Norwegian 'truger' instead, but they proved very inferior, as they sank deep in the snow and made walking much heavier work. The Lapps, who had already vowed by all that they held holy

that they would never use these 'idiotic things,' would not, of course, condescend to try them now, and it was with much contempt and disapprobation that they saw us make our first experiments with them. Consequently it was with unconcealed satisfaction

HAULING ON INDIAN SNOWSHOES
(From a photograph)

that they watched us dive head first into the snow no sooner than we had started. But when things began to go better, and it was obvious that we had a great advantage over them, Balto could contain himself no longer, and cautiously ventured the inquiry whether the snow-shoes were really good to walk with, a

question which he subsequently repeated several times. It was evident that he was on the point of giving way and making the experiment, in spite of his previous condemnation of them. But on the morning of August 30 the snow was in a condition to allow of 'ski' being used, and he took to them instead. Ravna waited a while, but presently upon Balto's recommendation he put on his 'ski,' and Kristiansen soon followed them. I considered, however, that the snow-shoes were better as long as we had the rise of the ground much against us, and so Sverdrup and I kept to them till September 2, while Dietrichson gave them up for his 'ski' the day before us. Henceforth till we reached the west coast we all used our 'ski' invariably.

All this time, or for more than three weeks on the whole, our life was simply inordinately monotonous, with not a trace of any important occurrence. It is no wonder therefore that the veriest trifles were magnified into circumstances of consideration and were made to pad our diaries during the period. Our last sight of land of course came in for mention and was recorded by Dietrichson as follows: 'About ten in the morning of August 31 we saw land for the last time. We were upon the crest of one of the great waves, or gentle undulations in the surface, and had our final glimpse of a little point of rock which

protruded from the snow. It lay, of course, far in the interior, and for many days had been the only dark point, save ourselves and the sledges, on which our eyes could rest. Now it, too, disappeared.' We christened this last point of rock 'Gamél's Nunatak.'

Nor could so notable an incident as the sight of a snow-bunting be passed over. My diary says: 'An hour or so after we had lost sight of our last rock we were no little astonished to hear the twitter of a bird in the air and suddenly to see a snow-bunting come flying towards us. After having circled round us two or three times it settled down close by, put its head on one side, regarded us for a moment, hopped a little way on the snow, and then with a chirp flew off again northwards and was soon lost in the distance. This was our last greeting from land.'

At the end of August we were still ascending. We were always hoping to reach the uppermost plateau, and that the ascent we were just then making would prove our last; but when we came to the top we always found a level stretch and then another rise beyond.

On the evening of September 1 we reached the top of one of these long slopes and saw before us a huge flat plain with an almost imperceptible rise westwards. There was a very marked change in the weather and appearance of the sky. Far away in

the west and almost at the level of the horizon were closely packed banks of cloud of the round cumulus form, which we had hitherto not seen lying above the snow. I thought they must be formed by currents of moist air which rose from the sea and had followed the western slope of the continent up into the interior, and I therefore supposed that we must have got far enough to have this long-looked-for slope in view.

To the south and east there were also clouds, while the sky was clear overhead and to the north. In the latter direction the snowfield showed a distinct rise, while it fell away to the east and south. Everything seemed to point to the conclusion that we had reached the high plateau of the interior. The announcement of this to the party produced general rejoicing, for we were all heartily tired of the long slopes we had to climb, and which just lately had been especially trying. Sanguine as we were, we hoped soon to reach the westward slope, when it would all be downward travelling and pure delight, and it was in the most triumphant mood that we saw the sun sink that evening in all his glory behind the banks of clouds and transform the western sky into one scheme of glowing colour. All that we knew of beauty in this desert was contained in the evening and setting of the sun; our hopes lay in the same

direction, but it was destined to be long before we saw the goal which it all seemed to hide from us.

We thought it no more than reasonable to keep this evening as a festival, and we marked it as usual by extra rations of oatmeal biscuits, cheese, and jam. The smokers, too, were allowed a pipe, and on the whole we had a thoroughly cheerful night.

The height to which we had now mounted had brought us to the end of the millimètre scale of our aneroid barometers. They marked a pressure of 550 mm., the elevation we had reached being about 7,930 feet, and if we were to ascend still higher it would be difficult to continue our observations. By the help of the movable scale, however, we managed fairly well.

But the long-expected change of level would not come. For days—I might almost say weeks—we toiled across an interminable flat desert of snow; one day began and ended like another, and all were characterised by nothing but a wearisome, wearing uniformity which no one who has not experienced the like will easily realise. Flatness and whiteness were the two features of this ocean of snow; in the day we could see three things only—the sun, the snowfield, and ourselves. We looked like a diminutive black line feebly traced upon an infinite expanse

of white. There was no break or change in our horizon, no object to rest the eye upon, and no point

THE CARAVAN ON THE MARCH (*By A. Bloch, from a photograph*)

by which to direct the course. We had to steer by a diligent use of the compass and keep our line as

well as possible by careful watching of the sun and repeated glances back at the four men following and the long track which the caravan left in the snow. We passed from one horizon to another, but our advance brought us no change. We knew to a certain extent where we were, and that we must endure the monotony for a long time to come.

The surface over which we were passing all this time was almost absolutely level, though the tract from one slope to the other was marked throughout by long, gentle undulations scarcely discernible to the eye, the ridges and furrows of which ran nearly due north and south.

An entry in my diary for August 30 says: 'The loose fresh snow which lies upon the old hard frozen surface is scarcely more than four or five inches thick to-day. It lies smooth and level, whereas for the last few days there has been a layer a foot thick, which was blown into drifts, upon which the sledges dragged heavily.' From this day onwards the surface was smooth and even as a mirror, with no disturbance in its uniformity save the tracks we made ourselves.

Our day's marches were, as a rule, short, and varied between five and ten miles. The reason of this was the persistently heavy going. Had we come earlier in the season, say about midsummer-time, we

should have found an excellent, hard and slippery surface, such as that we had during the first day or two of our ascent. On such a surface both 'ski' and sledges would have run well, and the crossing could not have taken us long.

Now, however, the old hard frozen layer was covered with a loose coat of freshly fallen snow, which was as fine and dry as dust, or else packed by the wind in drifts, on the cloth-like surface of which both 'ski' and sledge-runners are very hard to move. The severe cold we experienced made things, in this respect, unusually bad; the snow, as we were fond of saying, was as heavy as sand to pull upon, and the farther we got into the interior the worse it became. If, as was often the case, the upper layer were fresh and loose, then perhaps it was worst of all. On the whole, the going was so unconscionably heavy that it was only by the exertion of all our strength that we were able to make any progress at all. At every stride we had to do everything we knew, and work at this high pressure is of course very wearing in the long run.

A few extracts from my diary at this time will show what we actually thought of the state of the snow at the moment. On September 1 I wrote: 'To-day it was unusually hard work; about eight or nine inches of freshly drifted snow as fine as dust and heavy as

sand lay on the top of the older crust. This was about two inches thick and covered another layer of loose snow. At noon the effect of the sun made things worse than ever. In our despair Sverdrup and I unscrewed the steel plates from the runners of our sledge, as we thought the wood was likely to move better. The gain was, however, questionable; the sledge still went heavily. It seems to us that it goes worse every day.'

A day or two later I wrote: 'Now and again things are certainly a little better, but the improvement never lasts long and seems to be followed by a period which is worse than ever. At night there is often a little fall of fresh snow, which is even heavier than the older drifts to haul upon. Though the sun shines hot upon us it has not power even at noon to melt the surface and so give us an icy crust afterwards. The whole way the snow is loose and dusty or sticky like cloth.'

As a matter of fact we had a thin crust like this on August 30. My diary records my opinion that this must have been formed by the powerful effect of the sun at noon and the subsequent frost. This crust was not thick enough to bear the sledges, but it helped to make them move easier. We only had it, however, for that one day.

On September 8 again: 'The snow was incre-

dibly heavy going to-day, heavier than it has ever been before, though the surface was hard and firm. The wind-packed snow is no better than sand. We had the wind to pull against, too.' The next day I wrote: 'It began to snow in the middle of the day and our work was heavier than ever. It was worse even than yesterday, and to say that it was like hauling in blue clay will scarcely give an idea of it. At every step we had to use all our force to get the heavy sledges along, and in the evening Sverdrup and I, who had had to go first and plough a way for ourselves, were pretty well done up. The others who followed us were a little better off, and besides their steel runners moved easier. The evening in the tent, however, with a savoury stew, helped us to forget the toils of the day.'

These notes will be sufficient to show the difficulties and labour the state of the snow entailed upon us. I ought, however, to add that the sledge which Sverdrup and I pulled together always travelled much worse than any of the others, so much so, indeed, that we were ultimately constrained to abandon it altogether. On September 11 I wrote in my diary: 'To-day Sverdrup and I found our sledge heavy to pull beyond all toleration, and it was really as much as we could do to make it move at all. We could not quite understand what was wrong with it;

it had always been worse than all the others, and Sverdrup declared that we must have had the Evil

'DONE UP'
(From a photograph)

One himself for a passenger behind. This morning we therefore decided to abandon it, and take Balto's instead, while he put his load on Ravna's sledge, and

the two Lapps for the future pulled together. This change caused a new sun, as it were, to rise upon our existence; Sverdrup and I, with our new sledge, pushed on so fast that the others had hard work to keep up with us. We now found life almost enjoyable.'

Nor were we the only two who found the work heavy. The Lapps never ceased to complain, and one day Balto stopped and said to me: 'When you asked us two Lapps in Christiania how much we could pull we said that we could manage a hundredweight. But now we have two hundredweight apiece, and all I can say is, that if we drag these loads across to the west coast we are stronger than horses.'

Lest any reader should be led to believe, by what I have here said about the state of the snow and the difficulties we met with, that our 'ski' were of little or no use to us, I ought perhaps to state once and for all that they were an absolute necessity, that without their help we should have advanced very little way, and even then died miserably or have been compelled to return. I have already said that 'ski' are considerably better than Indian snowshoes, even for hauling purposes. They tire one less both because they have not to be lifted, but merely driven forwards, and because the legs are kept no wider apart that in ordinary walking. For nineteen days

continuously we used our 'ski' from early morning till late in the evening, and the distance we thus covered was not much less than 240 miles.

The weather during almost the whole time of our crossing was so far clear that we could see the sun, and there were not many days on which the sky was completely overcast. Even when there was snow falling, which often happened, it was not thick enough to prevent the sun showing through. The snow which fell was always fine, and was more like frozen mist, so to say, than the snow we are generally accustomed to in Europe. It was exactly the same as is known in certain parts of Norway as 'frost-snow,' which is due to the fact that the moisture of the air falls directly to the earth without going through the intermediate cloud-stage.

When the sun shone through the fine falling snow there was always a ring round it, which, together with mock-suns and the intersecting axes, were phenomena which occurred almost daily during our journey across the interior. When the sun sank so low that the halo partially disappeared below the horizon, there were generally bright mock-suns at the points of section, as well as another one immediately under the sun itself.

As we came farther and farther in the cold increased in proportion. The sun had, however, a

powerful effect when the weather was clear, and at noon the heat was, for a while, even oppressive. In my diary for August 31 I noted that just about that time the sun had been so hot that it made the snow wet and sticky, so that the sledges ran badly and our feet got rather wet. When the sun began to sink, and it froze again, the sledges went better certainly, but it was a bad business for our feet, and we had to take care not to get them frost-bitten. It happened not infrequently that when we took our shoes off at night, they, our thick, rough socks and ordinary stockings were all frozen together into a solid mass.

After this time the sun was not sufficiently powerful to melt the snow, but it had a great effect, owing to the height at which we were, and the fact that the air was so thin and absorbed comparatively little of the warmth of the rays. On September 1, for instance, a spirit thermometer marked in the sunshine 85° Fahr. (29·5° Cent.), while the real temperature of the air as obtained by a sling thermometer was very little more than 25° Fahr. (−3·6° Cent.). In the night we had had nearly twenty-nine degrees of frost (−16° Cent.). On September 3, again, a spirit thermometer laid in the sun on one of the sledges at noon showed as much as 88° Fahr. (31·5° Cent.), while a sling thermometer gave the real temperature of the air at the same time as 12° Fahr. (−11° Cent.).

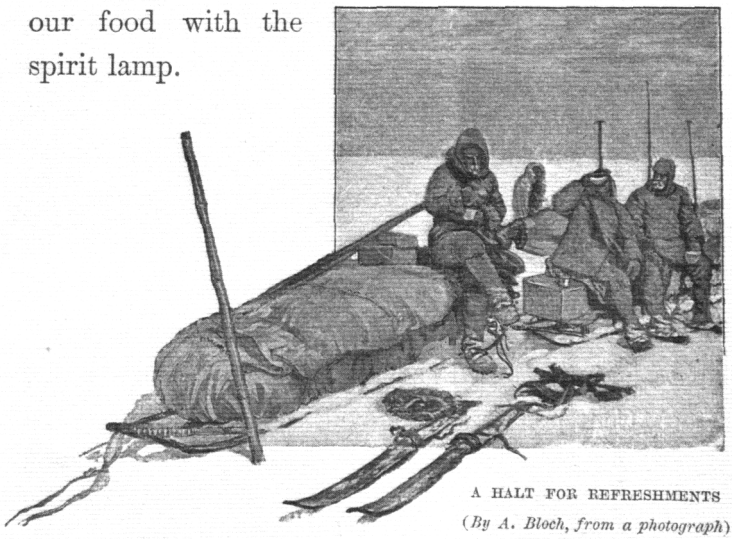
This great difference between sun- and shade-temperature is plainly due to the excessive radiation in the dry, thin air of this high plateau. A similar phenomenon was observed many years ago in Siberia by our celebrated countryman, the astronomer Hansteen. In a letter from Irkutsk, dated April 11, 1829, he writes: 'The considerable elevation of the country, together with its distance from the sea, makes the air exceedingly dry and causes a strong radiation, which is one reason of the low temperature of this place. The power of the sun is so great here in the spring, that at midday, when the temperature in the shade is as low as −20° R. (−13° F.) or −30° R. (−35° F.), the water drips from the roofs of the houses on the sunny side.'[1]

As the afternoon advanced and the sun began to draw near the horizon, the temperature fell in an astonishing way, though the change was most marked at sunset.

The scale of our sling thermometers only read as low as −22° Fahr. (−30° Cent.), as no one had expected such cold at this time of year in the interior of Greenland. But after September 8 the mercury quickly retired below the scale as soon as the sun disappeared in the evening. The lowest temperature we experienced could not therefore, unfortunately,

[1] *Astronom. Nachrichten*, vol. vii. p. 327.

be determined with accuracy. But when I went to bed on the night of September 11 I put a minimum thermometer under my pillow. In the morning the spirit was a good way below the scale, which marked −35° Fahr. (−37° Cent.). The temperature was, no doubt, below −40° Fahr. (−40° Cent.), and this was in the tent, in which six men were sleeping and in which we had cooked our food with the spirit lamp.



A HALT FOR REFRESHMENTS
(*By A. Bloch, from a photograph*)

The most remarkable fact in connexion with the temperature was the great difference between night and day limits. It was more than 40° Fahr. (20° Cent.), a difference which cannot occur in many parts of the globe. Something corresponding to this state of things has been observed in the Sahara, where in

January it may be intolerably hot in the day and so cold that water left in the open air will freeze at night.

It is remarkable that this extraordinarily rapid fall of the temperature in the course of the night on the 'Inland ice' of Greenland has not been observed before. The reason, no doubt, is that those of our predecessors who have penetrated any appreciable distance have done so at higher latitudes and at a time of year when the sun has been above the horizon the whole, or nearly the whole, night. Nor have these expeditions as a matter of fact published any full meteorological records.

Reckoning from the way the temperature sank at the approach of evening, Professor Mohn, of Christiania, has calculated that our lowest records must have reached something like − 50° Fahr. (− 45° Cent.). On these days the temperature of the air at noon rose to between − 4° Fahr. (− 20° Cent.) and + 5° Fahr. (− 15° Cent.). This was in the middle of September, and these temperatures are without any comparison the lowest that have ever been recorded at the time of year anywhere on the face of the globe. What the minimum reached in midwinter can be it is impossible as yet to form any idea.

As to the question of the highest temperature

attained in the middle of summer in these regions, and whether there is any considerable melting of snow, we can form some estimate by examining the strata of the upper surface of the snowfield and finding whether the older layers show signs of having melted. This was done by us as often as we had time and opportunity.

Up to August 30, when we had reached a height of 6,530 feet, we found the old snow consistently frozen hard and often transformed into a kind of loose, granular ice, or, if it be preferred, a solidified mass of coarse, granular snow. This had evidently been exposed to violent thaws and subsequent frost. Over this old layer there was generally a coat of from five to ten inches, or even a foot, of loose, dry snow, which must have fallen after the hot season was over.

On the evening of August 31 we found, to our astonishment, when we were ramming our staffs in, preparatory to the pitching of the tent, that, though there was certainly a solid crust under the upper layer of fresh snow, yet when we had passed through this we could drive the poles down to an indefinite depth. This was a clear proof that we had already reached a height—it was then all but 7,500 feet—at which the sun even at midsummer has only power enough to make a thin layer of snow wet and sticky,

and that this freezes afterwards as the sun gets low again. At this height, therefore, melting can do absolutely nothing to reduce the quantity of snow, for the insignificant amount of water thus formed can get no way, as it is at once intercepted by the following night-frost.

We found a similar state of things throughout the upper plateau, there being practically no melting of the snow. On the whole the stratification was very remarkable. An entry in my diary for September 3 shows me that I tried the snow several times that day and found, as a rule, uppermost about three inches of fresh snow, then a crust about half an inch in thickness, then seven inches of loose snow again, then another crust which could only be bored with difficulty, and that after this the staff could be driven down for a foot or more through a mass which grew gradually harder and harder, till about two feet from the surface it came to a standstill altogether.

I had tried at another place somewhat earlier the same day. Here the upper layers were much the same as I have just described, but in this case the staff could be rammed down some four feet altogether, though with increasing difficulty, while it finally stopped against an absolutely solid mass.

This stratification we also found throughout the highest tract, but as a rule we could drive our staffs

down as far as we would. Everything shows that in the very interior the only melting that goes on is the moistening of the upper surface just at the warmest period of the year, while this layer is solidified again immediately.

CHAPTER XIX

THE CROSSING OF THE 'INLAND ICE'—A STORM IN THE INTERIOR—OUR DOMESTIC LIFE

CONSTANT exposure to the cold which I have described in my last chapter was, as may be imagined, by no means pleasant. The ice often formed so heavily on our faces that our beards and hair froze fast to the coverings of our heads, and it was then difficult enough to open the lips to speak. This inconvenience can of course best be prevented by shaving, but this was a task for which we had neither time nor inclination.

There was less pleasure still at these altitudes when we had the wind in our faces, as an entry in my diary will best show: 'On the morning of September 4 the weather was glorious and the air still. There had been a light fall of snow in the night. The sun shone over the infinitely monotonous snowfield, which, rising almost imperceptibly, stretched away and away in front of us like one huge white carpet, glittering with diamonds, soft and

fine in texture as down, and laid in long, gentle undulations which the eye could scarcely follow. But in the afternoon the aspect of our landscape changed entirely. A biting wind got up from the north-west, which drove the snow before it in one huge, overwhelming whirlwind.

'The sky above then cleared completely and it grew colder and colder, the thermometer falling a degree or two below zero. The wind increased in strength; it was bitter work toiling along against it, and we had to be careful not to get badly frozen. First my nose hardened, but I discovered this in time to save it by rubbing it well with snow. I thought myself safe now, but then I felt a queer, chilly feeling under my chin, where I found that my throat was quite numb and stiff. By more rubbing and wrapping some mittens and other things round my neck I put matters straight here. But then came the worst attack of all, as the wind found its way in through my clothes to the region of my stomach and gave rise to horrid pains. This was met by the insertion of a soft felt hat and I was now armed at all points against the enemy. Sverdrup suffered pretty much as I did; how the others behind fared I do not know, but they can scarcely have been much better off. The bodily comforts of our tent were more welcome than usual that evening.'

Next morning things were quiet again, but in the afternoon we had another storm of drifting snow from the south-west. This went on all night, the wind working round more and more to the south, and I rejoiced in the hope of a sail, but in the morning again, September 6, it had so far fallen that we did not think it worth while to rig up the sledges. A little later, however, it freshened up and at noon blew due south. I was for sailing, therefore, but the proposal was met with so many objections on the part of the others, who were little inclined for the necessary rigging and lashing in this bitter weather, that I unfortunately gave way. This we all had reason to regret, for as we went on the wind worked round behind us more and more and at the same time increased in force.

We had soon a full snowstorm blowing from east-south-east or east. It was therefore behind us, and carried both the sledges and ourselves on our 'ski' along well, and as the ground was also slightly in our favour we made good progress. The driving snow soon grew so dense that Sverdrup and I could not see the others at twenty paces' distance, and we had to wait for them repeatedly in order not to part company. It was no easy matter to get the tent up that evening when we stopped at about eight o'clock, and those unlucky ones among us who had clad

themselves insufficiently in the morning and now had to take off their outer clothes to put something extra on beneath had a terrible time. The wind blew in to the very skin; the snow drove through all the pores of shirt and jersey; one felt completely naked in fact; and I myself nearly sacrificed my left hand to the frost in the process, while it was with the greatest difficulty that I could get all buttoned up snug again. The tent we did eventually manage to get up, but we could cook nothing that evening, as the snow drove in much too thick at all crevices and apertures. A few biscuits and some dried meat had to suffice, and we were glad enough to crawl as soon as possible into the sleeping-bags, draw the covers well over our heads, devour our food there, and as we slept leave the storm in undisputed possession outside. We had pushed on a long way that day, not much less than twenty miles, as we supposed.

The storm raged all night through, veering gradually round to due east. Next morning, the 7th of September, as I woke and was still lying half-unconscious, I heard something go outside. It was one of the guy-ropes on the east side, where the wind was now blowing with such violence that every moment I expected the tent-wall to give way, more especially as there was now a great bulge in it owing to the broken rope. By the help of some bags we

made the weak side somewhat stiffer, but I still expected it to split and was wondering what we should do when we had the snow driving straight into the tent upon us. The only course could be to creep deep into the bags and leave ourselves to be buried.

We hoped, however, that the wind would drop, and meanwhile I set the lamp going and cooked some stew and tea, which comforted us greatly. Then the weather began to look a little better and I thought we might prepare to start. So we got ourselves up in our best storm-gear and were about to go out to rig the sledges, as we meant to sail to some purpose that day. Balto was ready first and crawled out of the tent-door—which was not an easy job, as the way was barred by a snowdrift. It was not many seconds before he came plunging in again, absolutely breathless and with his face and clothes covered with snow. The wind had completely taken his breath away, and the first words he said, when he had recovered himself, were, 'There is no going on to-day!' I put my head out and at once saw that he was right, as the whole place was a sea of drifting snow.

So we had to stay where we were, though the tent had to be supported and victuals fetched in from the sledges before we were quite snowed up.

This work Balto and Kristiansen were set to do. They rigged themselves out for the purpose and tied themselves up at every possible point to prevent the snow blowing in. Balto was ready first and I looked out after him as he went, but he had not taken more than a few steps before he fairly disappeared in the mist of whirling snow. The sledges had almost entirely vanished, and he had to grope about for them before he found them, and it was then no easy matter to get hold of the food we wanted. When Kristiansen went out to put some storm-guys on the weather side of the tent, the wind fell upon him with such force that he had to go on all fours.

In spite of all obstacles we managed to put things fairly straight. By the help of some 'ski' we braced the tent-wall up from the inside, some poles along the ridge of the roof stiffened the whole structure, and we now felt moderately safe. Then we stopped all openings and crevices as well as we could with reserve clothes and such things. We never could get the tent quite snow-tight, and great drifts by degrees collected inside. Of space we had none to spare already, but it gradually grew less and less under the encroachment of the drifts within and pressure of the snow on the walls without. We were snug and comfortable enough, however. The ever-gathering drifts outside, which threatened to completely

bury the tent in time, protected us well against the wind and kept us nice and warm.

Then suddenly, a little after midday, the wind dropped all at once as abruptly as if the current had been cut off short with a knife. There was an absolute calm outside, and an uncomfortable silence came upon us too, for we all knew that the wind would presently fall upon us with still greater violence from the opposite quarter. We sat listening intently, but the attack did not come at once, and some of us thought that the storm was possibly over. But presently there came a gentle gust from the north-west, the door side of our tent, and this was soon followed by blast upon blast, each more furious than its predecessor. The storm overwhelmed us with greater fury than before, and the inside of the tent even was a mist of flying snow. Balto had taken advantage of the interval of calm to go out and fill the cooking tins, and it was all he could do to find his way back again. We were now in great straits, as the door side, against which the storm now blew, was the weakest part of the tent, and we always made a point of turning it away from the wind. By the help of 'ski' poles, snowshoes, and articles of clothing we managed to strengthen this side of the tent just sufficiently and to make the doorway tolerably snow-tight, but we were now caged as fast as mice in a trap, and

there was no getting out for us, however much we wished it. Meantime we made life as pleasant as possible; the smokers were allowed the consolation of a pipe; we made some coffee, which had by this time been discontinued as a daily drink, crawled into our bags, and amused ourselves as best we could.

Ravna alone, in spite of the coffee, was inconsolable, though, as a nomad Lapp, he ought to have been quite accustomed to this kind of thing. I tried to cheer him up, but he said, 'I am an old Lapp; I know what a snowstorm is upon the mountains in September; you won't see the end of it yet awhile.' In spite of all encouragements he refused to be comforted and persistently maintained that he was 'an old Lapp, who had lived in the snow for forty-five years.'

When we woke next morning the wind had dropped so much that we found we could move on again. But it was no easy matter to get out of our prison; the tent was buried so deep that only the ridge of the roof remained above the snow, and we had to dig our way through the drift that blocked the door. Of the sledges there was practically nothing to be seen, and we had a good deal of work to do before we got them out and were ready to start. When we did get off we found the going as usual heavier than ever.

In Balto's description of this day in the tent, he says: 'One day we had terrible weather, storm and driving snow, but we pushed on all the same till the evening. At first the wind came from the north' (he means south, by the way) 'and then it went round to the east. Next morning after we had made some coffee' (this is a doubtful statement, but it may pass) 'one of us was going out for some purpose or other, but as soon as he opened the tent-door, he was driven back again, as the weather was so frightful outside that it seemed impossible to get out. Then I put a coat over my head, covering it so that I only left a peep-hole for my eyes, and ventured out. I went a few steps away from the tent to look for the sledges, but there was not one of them to be seen, as they were all buried in the snow. I could not see the tent either now, so that I had to take to shouting, and it was only when they answered me from inside that I could find my way back. The tent, too, was nearly covered by the snow. Next day the weather was fine again and we had enough to do to dig all our things out of the snow again.'

During this, the median period of the crossing, our daily life went its monotonous round, unrelieved by any really noteworthy event.

The worst work of the day was turning out in the morning an hour earlier than the others in order to

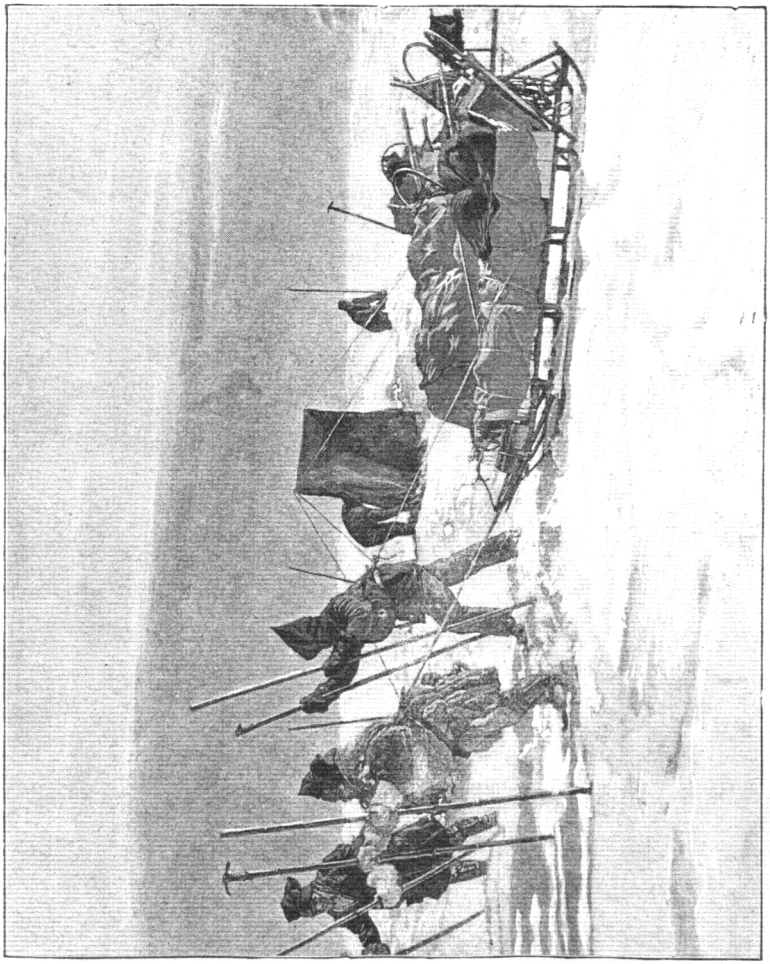
do the cooking. This was generally my pleasant lot, for the efforts of the others usually ended in a loss of time or spirit, of neither of which things we had a superfluity. When I woke I generally found my head completely surrounded with ice and rime. This was inside the sleeping-bag, where the breath had frozen and settled upon the hair of the reindeer-skin. Once awake and conscious one found one's self sitting in a room, the temperature of which was something like −40° Fahr., and the walls, except that on the wind side, covered with inch-long fringes of hoar-frost, which gave one an uncomfortable shower-bath if one were unfortunate enough to knock up against them. Then followed the lighting-up of the cooking apparatus. The mere touching of the metal in this temperature was unpleasant enough, and no less so the filling of the lamp and arrangement of the wicks. The latter, if they were to burn well, had to be thoroughly soaked with spirit, which one of course got upon one's fingers to one's great pain and infinite regret. To keep the wicks nice and dry, and thus save as much trouble in this way as I could, I generally carried them in my trousers' pocket. The lamp being eventually lighted and the cooker placed upon it, the wicks had to be attended to further, or the flame would get too high, make the lamp too hot, and cause a very undesirable explosion. The lamp often did

get too hot, and it then had to be cooled down by the application of snow. Nor could the flames be allowed to burn too low, or much time was wasted in the cooking. Towards the end of our journey Balto became so skilled in the management of the cooker that he was quite equal to the work single-handed. He was very proud of the trust and I gladly handed the task over to him, as one does not readily surrender an hour of one's morning sleep without dire necessity.

When the tea or chocolate was at last ready, the others were called, but breakfast was as a rule enjoyed in bed. Breakfast over, the next thing was to get ready for the day's march with the least possible waste of time. The sledge-runners had to be scraped clean; the baggage well packed and lashed fast and the tent struck. Often again an observation was taken with the boiling-point thermometer before we broke up camp. Two or three times, too, samples of air were secured in the way I have already described.

When all this was done we put our 'ski' on, harnessed ourselves to the sledges, and got under way, but after a couple of hours' march we generally halted, and a cake of meat-chocolate was served out to each man. Then we went on till dinner-time came, the meal being eaten as we sat on the sledges and as quickly as possible. After another two hours

or so we stopped for another cake of meat-chocolate apiece, and then two or three hours' more marching



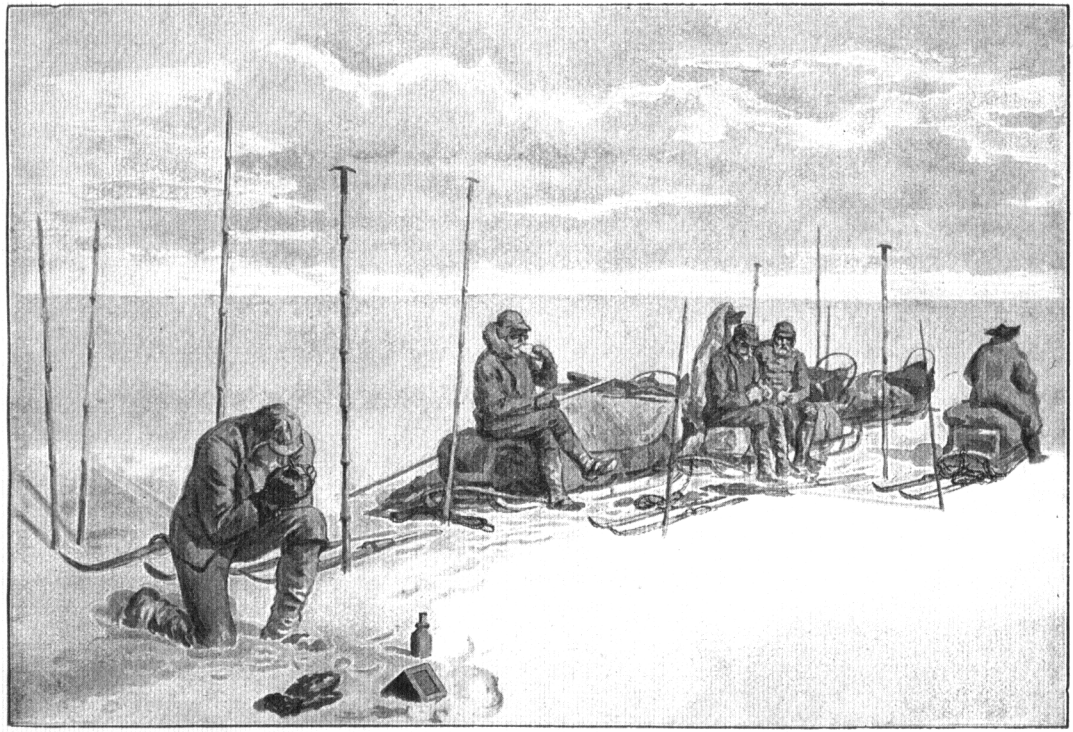
THE START IN THE MORNING (*From a photograph*)

brought us to afternoon tea at about five o'clock. We now kept at work till night, the period being

only broken by a third halt for the chocolate distribution.

In this extreme cold the taking of astronomical observations was often anything but agreeable. It was difficult to handle the instruments in heavy gloves and mittens, and if it was necessary to have the readings really accurate, the bare hands had to be used, and good care taken that the fingers were not frozen fast to the metal. But in spite of obstacles our observations both with theodolite and sextant were quite as good as one could expect to get them with such small instruments. In the driving snow it was almost an impossibility to use the sextant and artificial horizon, for the latter was at once obscured and we had to be very sharp to see anything at all. If this were out of the question the theodolite had to be used. This gave us twice the trouble, but equally good results.

When we stopped for the night, most of the party set to work at once to clear the ground for the tent, put it up and support and strengthen it with tarpaulins on the wind side. Ravna's evening task—and, I really think, the only regular work he had besides hauling during the whole journey—was to fill the cooking vessels with snow. As an old Lapp who every winter used snow for his cooking-pot instead of water, he knew well what was the best kind for



OBSERVATION TAKING, AND DINNER ON THE 'INLAND ICE

(*By E. Nielsen, from a photograph*)

melting. So as soon as we stopped, he would steal silently off with the cooker, dig himself a hole down to the old coarse snow, which melts into far more water than the newer, bring his pot back to the tent, and then, if it were already up, crawl in and sit with his legs crossed under him, not to move again till supper was ready. It was not till I had set him to this work for many days in succession that Ravna showed himself possessed of sufficient enterprise to undertake even this little job of his own accord. But little as it was, it completely satisfied him, and therewith he considered his mission in this world far more than accomplished.

The evenings in the tent, when all the party were seated round on their clothes-bags, after having carefully brushed themselves of snow, in order to bring as little of it as possible inside, were without comparison the bright spots in our existence at this particular time. However hard the day had been, however exhausted we were, and however deadly the cold, all was forgotten as we sat round our cooker, gazing at the faint rays of light which shone from the lamp, and waiting patiently for our supper. Indeed I do not know many hours in my life on which I look back with greater pleasure than on these.

And when the soup, or stew, or whatever the preparation might be, was cooked, when the rations

were served round, and the little candle-stump lighted that we might see to eat, then rose our happiness to its zenith, and I am sure all agree with me that life was more than worth living.

Then after supper there were various small preparations for the coming day—the cooker to be filled

EVENING IN THE TENT. 'THE SOUP IS READY'
(By E. Nielsen, from a sketch by the Author)

with snow or the chocolate to be broken up. When all this was done we crawled into our sleeping-bags, shut the hoods close over our heads, and slept as sound a sleep as the best of European beds could have given us.

It is not unnatural that food was the axis on which our whole life revolved, and that our ideal of enjoyment was enough to eat in one form or another. It was to fatty food that our fancy especially turned, for, as I have said, our supply of fat was far too short. We were reduced in the end to an absolute famine, and could have looked forward to no greater treat than the full and unrestricted possession of a pound or two of butter, or lard, or something of the kind apiece to work our hungry wills upon. The remnants after the first assault would certainly have been small. Each man had half a pound of butter served out to him a week, and as long as the ration lasted one of our favourite enjoyments was to eat our butter in large lumps, and the tin box in which we kept it once open, it was difficult indeed to put the lid on again. To some of us this enjoyment was of short duration. Kristiansen was the worst of all in this way, as he used to devour his half-pound the first day, which was of course very crude economy. To such an extent did the craving for fat go that Sverdrup asked me one day whether I thought our boot-grease, which was old boiled linseed oil, was likely to disagree with him.

As a rule of course the rations for each meal were all carefully weighed out, for which purpose we used a small letter-scale. The amount which I considered

fully sufficient was about one kilogramme, or $2\frac{1}{5}$ lb., per man per day. When we approached the west coast, however, all were allowed to eat as much as they liked of the dried meat, of which we had an abundance. But even then it seemed impossible to attain to a feeling of repletion.

Our daily bill of fare was as follows:—*Breakfast.*

WEIGHING OUT THE RATIONS

(*From a photograph*)

Chocolate made with water—and when we had come to the end of the chocolate, tea—biscuits, liver pâté, and pemmican. *Dinner.*—Pemmican, liver pâté, and biscuits, this followed by oatmeal biscuits, and by lemonade to pour over some snow. *Afternoon tea.*—Biscuits, liver pâté, and pemmican. *Supper.*—

Pemmican, biscuits, and pea-, bean-, or lentil-soup. Instead of plain soup we sometimes had a stew or concoction of pemmican, biscuits, and pea-soup, all of which together made an exceptionally grateful dish. Sometimes, too, tea took the place of soup or stew.

The weekly ration of butter we were of course free to use at whatever meal we pleased. Generally we had it at dinner-time, as we found that butter eaten alone quenched the thirst well, which is a somewhat noteworthy fact, seeing that it was salted.

As to our method of cooking I must allow that I have seen food prepared more cleanly. I have already had occasion to point out that we had no superabundance of water. There was therefore nothing to wash the cooking-pot with, nor would such washing have been at all pleasant work if we had had water. So after we had made our pea-soup or stew in the evening, the pot was handed over to be cleaned, as a special grace, by someone who had helped in the cooking. Balto was generally the lucky man, and his mode of performing the task was by licking and scraping the vessel as clean as tongue and fingers could make it. This was well enough as far as it went, but not very much can be done in this way in a deep, narrow pot, as anyone who has tried will allow. The bottom of our cooker was in fact all but inaccessible.

Next morning chocolate or tea was made in the same vessel, and when after this it was emptied it was not an uncommon sight to see on the bottom a wonderful conglomeration of the remains of soup or stew mixed with half-dissolved lumps of chocolate or obtrusive tea-leaves. On the top of all this the soup was cooked in the evening again.

At these ways of ours no doubt many a housekeeper will turn up her nose, but I must assure her with all respect that never in the course of her career and with all her cleanliness has she prepared food which gave its consumers such supreme satisfaction as ours did us. Many will perhaps accuse us of simple piggishness; but it is a piggishness which in the circumstances is no more than inevitable. At the same time our methods suited us; we had no time to do more than simply eat for eating's sake; and the interior of Greenland is certainly not the place for the fastidious or the epicurean.

The high place held by butter in our regard was disputed only by the claims of tobacco. I had taken but a small supply, as I considered the indulgence harmful at times of severe exertion. So the Sunday pipe was economised to the last degree; the tobacco was smoked first, and then the ash and wood of the bowl as long as they could be induced to burn. This would not of course last the whole week out, so the

pipe was next filled with tarred yarn as the best procurable substitute. It was Balto who felt the want of tobacco most keenly and there was nothing which the promise of a pipe would not extract from him. Of chewing tobacco we had none ; but several of the party chewed great bits of tarred rope instead. I thought the same practice might relieve one's burning thirst and made the experiment one day myself ; but the rope was no sooner in my mouth than out, for a viler taste have I rarely known.

A thing I did find good to chew as we went along was a chip or shaving of wood, as it kept the mouth moist and diminished one's thirst. I made a great use of a piece of bamboo in this way, but there was nothing that came up to a shaving off one of our 'truger,' or Norwegian snow-shoes. These were partly made of bird-cherry wood, and the bark of this was excellent. Sverdrup and I in fact went at the 'truger' so persistently that there was very little left of them when we reached the west coast. But luckily this was the only use we had to put them to.

CHAPTER XX

THE CROSSING OF THE 'INLAND ICE'—THE FIRST SIGHT OF LAND AND FIRST DRINK OF WATER

As the middle of September approached, we hoped every day to arrive at the beginning of the western slope. To judge from our reckoning it could not be far off, though I had a suspicion that this reckoning was some way ahead of our observations. These, however, I purposely omitted to work out, as the announcement that we had not advanced as far as we supposed would have been a bitter disappointment to most of the party. Their expectations of soon getting the first sight of land on the western side were at their height, and they pushed on confidently, while I kept my doubts to myself and left the reckoning as it was.

On September 11 the fall of the ground was just appreciable, the theodolite showing it to be about a third of a degree. On September 12 I entered in my diary that 'we are all in capital spirits, and hope for a speedy change for the better, Balto and Dietrichson being even confident that we shall see land to-day.

They will need some patience, however, as we are still 9,000 feet above the sea' (we were really about 18,250 feet that day), 'but they will not have to wait very long. This morning our reckoning made us out to be about seventy-five miles from bare land, and the ground is falling well and continuously.' The next day or two the slope grew more and more distinct, but the incline was not regular, as the ground fell in great undulations, like those we had had to climb in the course of our ascent.

On September 14 the reckoning showed that it was only about thirty-five miles to land. But even now we could see nothing, which the Lapps thought was very suspicious. Ravna's face began to get longer and longer, and one evening about this time he said, 'I am an old Lapp, and a silly old fool, too; I don't believe we shall ever get to the coast.' I only answered, 'That's quite true, Ravna; you are a silly old fool.' Whereupon he burst out laughing: 'So it's quite true, is it—Ravna is a silly old fool?' and he evidently felt quite consoled by this doubtful compliment. These expressions of anxiety on Ravna's part were very common.

Another day Balto suddenly broke out: 'But how on earth can anyone tell how far it is from one side to the other, when no one has been across?' It was, of course, difficult to make him understand the mode

of calculation; but, with his usual intelligence, he seemed to form some idea of the truth one day when I showed him the process on the map. The best consolation we could give Balto as well as Ravna was to laugh at them well for their cowardice.

The very pronounced fall of the ground on September 17 certainly was a comfort to us all, and when the thermometer that evening just failed to reach zero we found the temperature quite mild, and felt that we had entered the abodes of summer again. It was now only nine miles or so to land after our reckoning.

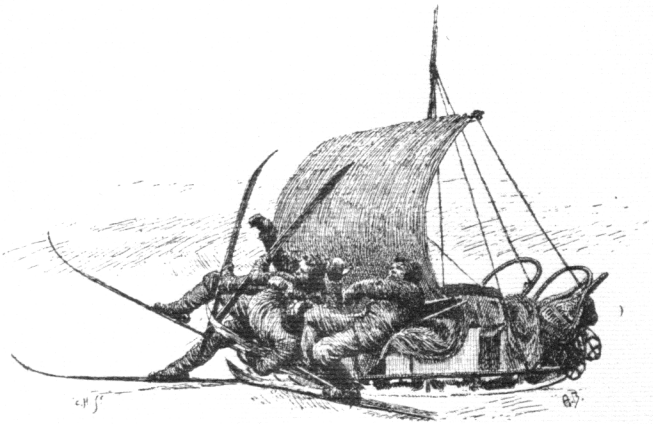
It was this very day two months that we had left the 'Jason.' This happened to be one of our butter-mornings, the very gladdest mornings of our existence at the time, and breakfast in bed with a good cup of tea brought the whole party into an excellent humour. It was the first time, too, for a long while that the walls of our tent had not been decorated with fringes of hoarfrost. As we were at breakfast we were no little astonished to hear, as we thought, the twittering of a bird outside, but the sound soon stopped and we were not at all certain of its reality. But as we were starting again after our one o'clock dinner that day we suddenly became aware of twitterings in the air, and, as we stopped, sure enough we saw a snow-bunting come flying after us. It wandered round us two or three times and plainly showed signs of a wish

to sit upon one of our sledges. But the necessary audacity was not forthcoming, and it finally settled on the snow in front for a few moments, before it flew away for good with another encouraging little twitter.

Welcome, indeed, this little bird was. It gave us a friendly greeting from the land we were sure must now be near. The believers in good angels and their doings must inevitably have seen such in the forms of these two snow-buntings, the one which bid us farewell on the eastern side, and that which offered us a welcome to the western coast. We blessed it for its cheering song, and with warmer hearts and renewed strength we confidently went on our way, in spite of the uncomfortable knowledge that the ground was not falling by any means so rapidly as it should have done. In this way, however, things were much better next day, September 18; the cold consistently decreased, and life grew brighter and brighter. In the evening, too, the wind sprang up from the south-east, and I hoped we should really get a fair sailing breeze at last. We had waited for it long enough, and sighed for it, too, in spite of Balto's assurances that this sailing on the snow would never come to anything.

In the course of the night the wind freshened, and in the morning there was a full breeze blowing.

Though, as usual, there was no great keenness to undertake the rigging and lashing together of the sledges in the cold wind, we determined, of course, to set about the business at once. Kristiansen joined Sverdrup and me with his sledge, and we rigged the two with the tent-floor, while the other three put their two sledges together.



FIRST ATTEMPTS AT SAILING
(*By A. Bloch*)

All this work, especially the lashing, was anything but delightful, but the cruelest part of it all was that while we were in the middle of it the wind showed signs of dropping. It did not carry out its threat, however, and at last both vessels were ready to start. I was immensely excited to see how our boat would turn out, and whether the one sail was enough to move both the sledges. It was duly hoisted and

made fast, and there followed a violent wrenching of the whole machine, but during operations it had got somewhat buried in the snow and proved immovable. There was enough wrenching and straining of the mast and tackle to pull the whole to pieces, so we harnessed ourselves in front with all speed. We tugged with a will and got our boat off, but no sooner had she begun to move than the wind brought her right on to us, and over we all went into the snow. We were soon up again for another try, but with the same result; no sooner are we on our legs than we are carried off them again by the shock from behind.

This process having been gone through a certain number of times, we saw plainly that all was not right. So we arranged that one of us should stand in front on his 'ski' and steer by means of a staff fixed between the two sledges, like the pole of a carriage, leaving himself to be pushed along by his vessel and only keeping it at a respectful distance from his heels. The other two members of the crew were to come behind on their 'ski,' either holding on to the sledges or following as best they could.

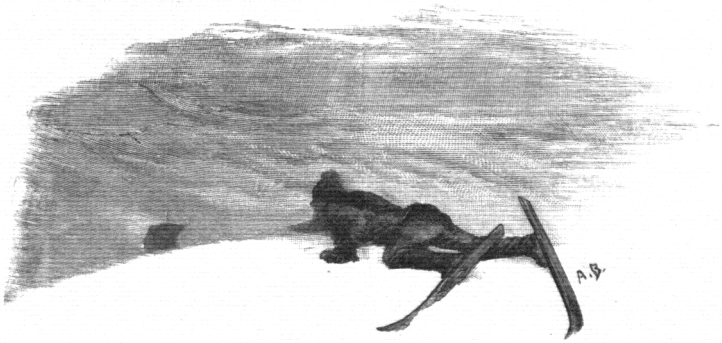
We now finally got under way, and Sverdrup, who was to take the first turn at steering, had no sooner got the pole under his arm than our vessel rushed furiously off before the wind. I attached

myself behind at the side, riding on my 'ski' and holding on by the back of one of the sledges as well as I could. Kristiansen thought this looked much too risky work, and came dragging along behind on his 'ski' alone.

Our ship flew over the waves and drifts of snow with a speed that almost took one's breath away. The sledges struggled and groaned, and were strained in every joint as they were whirled over the rough surface, and often indeed they simply jumped from the crest of one wave on to another. I had quite enough to do to hang on behind and keep myself upright on the 'ski.' Then the ground began to fall at a sharper angle than any we had had yet. The pace grew hótter and hotter, and the sledges scarcely seemed to touch the snow. Right in front of me was sticking out the end of a 'ski,' which was lashed fast across the two sledges for the purpose of keeping them together. I could not do anything to get this 'ski'-end out of the way, and it caused me a great deal of trouble, as it stuck out across the points of my own 'ski' and was always coming into collision with them. It was worst of all when we ran along the edge of a drift, for my 'ski' would then get completely jammed and I lost all control over them. For a long time I went on thus in a continual struggle with this hopeless 'ski'-end, while Sverdrup stood in

front gaily steering and thinking we were both sitting comfortably on behind. Our ship rushed on faster and faster; the snow flew round us and behind us in a cloud, which gradually hid the others from our view.

Then an ice-axe which lay on the top of our cargo began to get loose and promised to fall off. So I worked myself carefully forward and was just en-



'AND THERE I LAY GAZING AFTER THE SHIP AND ITS SAIL
(*By A. Bloch*)

gaged in making the axe fast when we rode on to a nasty drift. This brought the projecting 'ski'-end just across my legs, and there I lay at once gazing after the ship and its sail, which were flying on down the slope, and already showing dimly through the drifting snow. It made one quite uncomfortable to see how quickly they diminished in size. I felt very foolish to be left lying there, but at last I recovered myself and set off bravely in the wake of the vessel,

which was by this time all but out of sight. To my great delight I found that, thanks to the wind, I could get on at a very decent pace alone.

I had not gone far before I found the ice-axe, in trying to secure which I had come to grief. A little way farther on I caught sight of another dark object, this time something square, lying in the snow. This was a box which contained some of our precious meat-chocolate, and which of course was not to be abandoned in this way. After this I strode gaily on for a long time in the sledge-track with the chocolate-box under one arm and the ice-axe and my staff under the other. Then I came upon several more dark objects lying straight in my path. These proved to be a fur jacket belonging to me and no less than three pemmican boxes. I had now much more than I could carry, so the only thing to be done was to sit down and wait for succour from the others who were following behind. All that could now be seen of our proud ship and its sail was a little square patch far away across the snowfield. She was going ahead in the same direction as before, but as I watched I suddenly saw her brought up to the wind, the tin boxes of her cargo glitter in the sun, and her sail fall. Just then Kristiansen came up with me, followed not long after by the other vessel. To them we handed over some of our loose boxes, but just as we were stow-

ing them away Balto discovered that they had lost no less than three pemmican tins. These were much too valuable to be left behind, so the crew had to go back and look for them.

Meanwhile Kristiansen and I started off again, each with a tin box under his arm, and soon overtook Sverdrup. We now sat down to wait for the others, which was not an agreeable job in this bitter wind.

Sverdrup told us that he had sailed merrily off from the very start, had found the whole thing go admirably, and thought all the time that we two were sitting comfortably on behind. He could not see behind him for the sail, but after a long while he began to wonder why there was not more noise among the passengers in the stern. So he made an approach to a conversation, but got no answer. A little further on he tried again and louder, but with the same result. Then he called louder still, and lastly began to shout at the top of his voice, but still there was no response. This state of things needed further investigation; so he brought his boat up to the wind, went round behind the sail to see what was the matter, and was not a little concerned to find that both his passengers had disappeared. He tried to look back along his course through the drifting snow, and he thought he could see a black spot far away behind. This must have been my insignificant figure

sitting upon the lost tin boxes. Then he lowered his sail, which was not an easy matter in the wind that was blowing, and contented himself to wait for us.

We had to sit a long time before the others caught us up again. We could just see the vessel through the snow, but her sail was evidently not up, and of her crew there was not a sign. At last we caught sight of three small specks far away up the slope and the glitter of the sun on the tins they were carrying. Presently the sail was hoisted and it was not long before they joined us.

We now lashed the sledges better together and made the cargo thoroughly fast in order to escape a repetition of this performance. Then we rigged up some ropes behind, to which the crew could hold or tie themselves, and thus be towed comfortably along. In this way we got on splendidly, and never in my life have I had a more glorious run on 'ski.'

A while later Sverdrup declared that he had had enough of steering, and I therefore took his place. We had now one good slope after another and a strong wind behind us. We travelled as we should on the best of 'ski'-hills at home, and this for hour after hour. The steering is exciting work. One has to keep one's tongue straight in one's mouth, as we say at home, and, whatever one does, take care not to fall. If one did, the whole conveyance would

be upon one, and once under the runners and driven along by the impetus, one would fare badly indeed and be lucky to get off without a complete smash up. This was not to be thought of, so it was necessary to keep one's wits about one, to hold the 'ski' well together, grip the pole tight, watch the ground

SAILING ON THE 'INLAND ICE'
(*By A. Bloch, from photographs*)

incessantly, so as to steer clear of the worst drifts, and for the rest take things as they came, while one's 'ski' flew on from the crest of one snow-wave to another.

Our meals were not pleasant intervals that day, and we therefore got through them as quickly as we could. We stopped and crept under shelter of the

sails, which were only half lowered on purpose. The snow drifted over us as we sat there, but the wind at least was not so piercing as in the open. We scarcely halted for the usual chocolate distributions and took our refreshment as we went along.

In the middle of the afternoon—this notable day by the way was September 19—just as we were sailing our best and fastest, we heard a cry of joy from the party behind, Balto's voice being prominent as he shouted 'Land ahead!'

And so there was; through the mist of snow, which was just now a little less dense, we could see away to the west a long, dark mountain ridge and to the south of it a smaller peak. Rejoicings were loud and general, for the goal towards which we had so long struggled was at last in sight.

Balto's own account of the occurrence runs as follows: 'While we were sailing that afternoon I caught sight of a black spot a long way off to the west. I stared and stared at it till I saw that it really was bare ground. Then I called to Dietrichson, "I can see land!" Dietrichson at once shouted to the others that Balto could see land away to the west. And then we rejoiced to see this sight, which we had so often longed to see, and new courage came into our hearts, and hope that we should now happily and without disaster cross over this ice-

mountain, which is the greatest of all ice-mountains. If we had spent many more days upon the ice, I fear that some of us would have fared badly. As soon as Nansen heard this he stopped and gave us two pieces of meat-chocolate each. It was always our custom, when we reached a spot which we had long wished to reach, to treat ourselves to the best food we had. So when we came to land after drifting in the ice, when we reached Umivik, when we had climbed to the highest point of Greenland, when we now first saw land on the west side, and lastly when we first set foot upon bare ground again, we were treated to our very best—which was jam, American biscuits, and butter.'

Though this first land we saw lay a little to the north of the line we had hitherto been following, I steered for it nevertheless, because the ice in this direction seemed to fall away more rapidly. However the point was soon hidden in the snow again, and we went on with the wind straight behind us for the rest of the afternoon without getting any further sight of land. The wind grew stronger and stronger, we flew down slope after slope, and everything went famously.

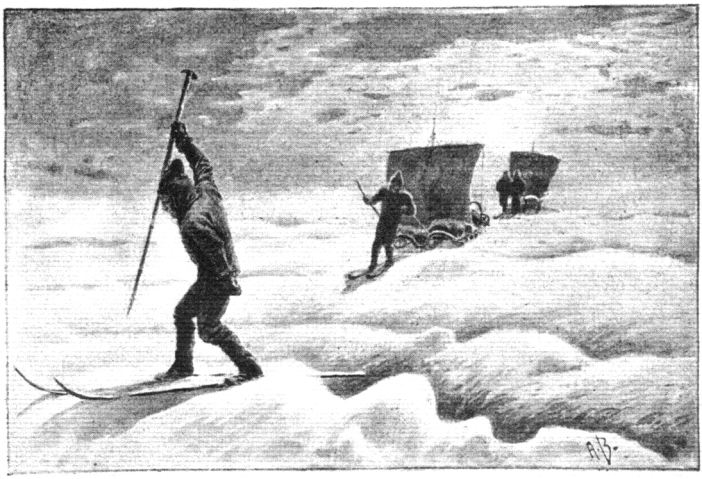
A while later both the gradient and the wind slackened off for a time, but as evening began the breeze freshened and the slope grew steeper, and we

rushed along through the dense driving snow more furiously than ever. It was already growing dusk, when I suddenly saw in the general obscurity something dark lying right in our path. I took it for some ordinary irregularity in the snow and unconcernedly steered straight ahead. The next moment, when I was within no more than a few yards, I found it to be something very different, and in an instant swung round sharp and brought the vessel up to the wind. It was high time, too, for we were on the very edge of a chasm broad enough to swallow comfortably sledges, steersman, and passengers. Another second and we should have disappeared for good and all. We now shouted with all our might to the others, who were coming gaily on behind, and they managed to luff in time.

Here also Balto has something to say: 'The same evening while we were still sailing along—it may have been about half-past seven and it was rather dark—we saw Nansen, who was in front on his "ski," signalling wildly to us, while he shouted "Don't come here; it is dangerous!" We, who were tearing along at full speed, found it difficult to stop, and had to swing round and throw ourselves on our sides. At the same time we saw in front of us an awful crack in the ice, which was many hundred feet deep.'

As to the rest of the day's sail my diary says:

'This was the first crevasse, but was not likely to be the only one, and we must now go warily. It was suggested that it was hardly advisable to sail any further that evening, but I thought it too early to stop yet, as we must take advantage of the wind. So I left the sledges and went on in front to reconnoitre



SAILING IN MOONLIGHT. 'WHEN THE SNOW LOOKED TREACHEROUS I HAD TO GO CAUTIOUSLY AND USE MY STAFF'

(*By A. Bloch, from a sketch by the Author*)

while Sverdrup undertook the steering of our boat, and the sails of both of them were taken in a bit. The wind was strong enough even to blow me along, and I could run long stretches without moving a muscle, and so covered the ground fast.

'When the snow looked treacherous I had to go cautiously and use my staff to see whether I had solid

ground under foot, and, if not, to signal to the others to wait till I had found a safer route. In spite of all precautions, Sverdrup and Kristiansen all but came to grief once, as the snow fell in behind them just as they had passed over an unsuspected crevasse. Meantime the wind was steadily increasing, and the sails had to be taken in more and more to prevent the sledges overrunning me. As we were all getting hungry biscuits were served out, but no halt was made to eat them.

'It was rapidly getting dark, but the full moon was now rising, and she gave us light enough to see and avoid the worst crevasses. It was a curious sight for me to see the two vessels coming rushing along behind me, with their square viking-like sails showing dark against the white snowfield and the big round disc of the moon behind.

'Faster and faster I go flying on, while the ice gets more and more difficult. There is worse still ahead, I can see, and in another moment I am into it. The ground is here seamed with crevasses, but they are full of snow and not dangerous. Every now and then I feel my staff go through into space, but the cracks are narrow and the sledges glide easily over. Presently I cross a broader one and see just in front of me a huge black abyss. I creep cautiously to its edge on the slippery ice, which here is covered by

scarcely any snow, and look down into the deep, dark chasm. Beyond it I can see crevasse after crevasse, running parallel with one another and showing dark blue in the moonlight. I now tell the others to stop, as this is no ground to traverse in the dark, and we must halt for the night.

'In the west we could now see land again against the evening sky, which still shows a faint trace of day. They were the same mountains we had first seen, but they now tower high above the horizon, and to the south of these peaks again there is a long ridge of rock protruding from the snow.

'It was a difficult business to get the tent up in this strong wind and on the hard, slippery ice, which gave no hold for our guy-ropes, and we had to cut deep holes before we could make our staffs do duty as pegs. At last, after having fared worse than usual with the cold, we got the tent up and were able to crawl into a partial shelter. No one was inclined to do any cooking that evening, as even inside the tent the wind was much too aggressive, and the little feast which was to do honour to the day, and which we had much looked forward to, was put off till next morning. So we were content to divide our last piece of Gruyère cheese, and then, well pleased with ourselves and our day's work, creep into our sleeping-bags. I now discovered for the first time that I had

got the fingers of both my hands frozen during the afternoon's sail. It was too late now to rub them with snow, as they had begun to thaw on their own account, but that night the pain they gave me was almost unendurable, till I fell asleep in spite of it.'

Early next morning, September 20, I started up with the consciousness that I had forgotten to wind my watch up overnight. Unluckily Sverdrup had done exactly the same, and though we wound them both up at once it was now too late. This was, of course, rather unfortunate for our longitude observations, but we were now so near land that we could reckon our position with tolerable exactitude nevertheless.

When we looked out of the tent we could see the whole country to the south of Godthaabsfjord lying spread out before us, a rough mountainous tract with many deep valleys and lofty peaks. Those who remember their first sight of a mountain landscape in their childhood, with its sunlit peaks and stretches of glittering snow; who can remember how this new mysterious world fascinated and allured them—they will understand what our feelings were this morning. We were just like children, as we sat and gazed, and followed the lines of the valleys downwards in the vain search for a glimpse of the sea. It was a fine country that lay before us, wild and grand as the

western coast of Norway. Fresh snow lay sprinkled about the mountain tops, between which were deep black gorges. At the bottom of these were the fjords, which we could fancy, but could not see. A journey to Godthaab in this kind of country looked anything but a simple matter.

We enjoyed our grand breakfast at our ease and leisure this morning, made tea unlimited, and simply revelled in cheese and oatmeal biscuits. It was glorious to have a treat like this once in a way. The morning was well gone before we got finally on the move. In the darkness of the evening before we had sailed into some very rough fissured ice, and we now had to bear away to the south to avoid the worst crevasses and reach smoother ground. The snow throughout this day's march was partly blown into drifts, especially where there was any unevenness in the ice to catch it, and partly swept away by the wind, leaving the surface slippery and bare.

Presently we reached the top of a long, steep slope which had to be descended. Sverdrup and I started down on our 'ski' and had a fine run. But our sledge was difficult to steer and we had huge crevasses on each side, so at last we were constrained to take our 'ski' off for safety's sake. We then went on standing each on a runner of the sledge and scraping and breaking with our feet in order to keep

clear of the crevasses. The Lapps during this run were especially reckless and let their sledge rush ahead much as it pleased. A little farther down we came upon a flat piece of ice which was so slippery that it was quite difficult to cross. It looked like the frozen surface of a lake or pool. Beyond this we found ourselves in some nasty ice again, and after I

COASTING DOWN THE SLOPES

(By the Author, from an instantaneous photograph)

had fallen through the snow several times I thought it best to put the 'ski' on again. With them one is of course much safer, as when one slides across the narrower crevasses their great length will generally hold one up. At this time we had a nasty experience, as our sledge came lengthways upon a crevasse, the snow-cornice of which gave way under one of the runners, and we only managed to drag it on to firm

ground just as the whole mass of snow was falling in beneath it. Ravna and Balto nearly got into a worse scrape once, when they tried to take a short cut instead of following our course. They slid down on to a huge wide fissure, whereupon one of the runners cut straight through the snow and all but upset the sledge, and it was only by the skin of their teeth that they escaped. I was furiously angry with them of course and rated them well for not being content to let us who went in front run such risks as were necessary. Kristiansen, too, was once on the point of losing his sledge in much the same way.

In the afternoon we had a hailstorm from the south and south-east. The hail stung our faces and the wind continually blew the sledges round, so that hauling became hard and difficult work. In this respect Sverdrup and I were worst off, as our load was very bulky and lay high on the sledge, which therefore exposed a large surface to the wind. The steel bars or keels under the runners would here have been an advantage, but they had long ago given way on the rough ice of the east coast.

We stopped for the day on a little flat, on which there was just enough drifted snow to hold our staffs, and the pitching of the tent was thus a simple matter. We had flattered ourselves that we should come within very easy distance of land, if not reach it

altogether, this evening, and we were considerably disappointed when it seemed to us at the end of the day that we were almost as far off as ever.

Next day, September 21, snow was falling and we could see nothing either of the land or the ice round us. We had to grope our way as best we could, and there was no possibility of choosing the most advantageous course.

Towards noon we stopped in order to get an observation, if it were possible, as the sun now and again showed through the clouds. It was most important that we should know where we were, and the day before I had been too late for the purpose, having made a mistake about the time owing to my omission to wind my watch up. Luckily this time the sun was visible for a while and I was able to get the altitude, my reckoning putting us at about lat. 64°13′N. This position was a little more northerly than I should have liked, the reason being that I had, as I have said, steered too much to the north as we were sailing after we came within sight of land. As it will appear we now had to pay some days' penalty for the mistake. If we had kept our original more southerly course, we should probably have been able to sail right down on to the land itself.

We now, therefore, turned more to the south when we set off again. In the course of the after-

noon Sverdrup and I had a disagreement as to our best route—a thing which rarely happened. He wanted to take us more to the right up on to a ridge, as he had through the snow seen crevasses down below in front of us. I had seen nothing of the kind and preferred to keep away to the left, but after some discussion Sverdrup prevailed, and we climbed the ridge, but only to find ourselves in the middle of some terrible crevasses. They were worse than any we had hitherto had to deal with, and we were very glad to clear out again and bear away more to the south. Here we found a tolerably smooth stretch of ice forming the bottom of a valley between two ridges, which were both quite a network of fissures. This alley or furrow narrowed in front of us, and ended in a defile, where the two ridges almost met. Here there was an abrupt fall in the ground, and the ice was uncomfortably rough. The place looked all but impracticable, and it was clearly no use trying to push on any farther while the weather was so thick. It seemed very likely that we had come too far already.

So it was settled that Dietrichson, Ravna, and Balto should pitch the tent, while Sverdrup, Kristiansen, and I should go down and see whether this broken ice would allow of a passage. Balto in his quality of under-cook was told to set the appa-

ratus going and have everything ready by the time we came back—some good pea-soup and plenty of hot water in the upper vessel, so that we could have some lemon-grog after supper.

We three soon had the Alpine rope round our waists and set off downwards. The ice was unusually rough and hard to pass, a simple chaos of sharp edges with fissures in between; but it was not dangerous, as the clefts were as a rule not deep.

We had not gone far before, to my astonishment, I saw a little dark spot down below us between some ridges covered with snow. It looked amazingly like water, but it was quite possible that it was only ice, so I said nothing to the others. But when I reached it and, putting my staff in, met with no resistance, our surprise and delight were quite unbounded. We threw ourselves down, put our lips to the surface, and sucked up the water like horses. After a month of incessant thirst and limited rations, the pleasure of having abundance of drink was indescribable. How many quarts we swallowed I should not like to say, but we plainly felt ourselves swell within and without during the operation. We then went on refreshed, but before we had gone far we heard someone shouting behind, and saw little Ravna running after us as fast as his short legs would carry him. We waited fearing that there was

something wrong in the camp, and I was much relieved to hear, when he came up, that all he wanted was the wicks for the spirit lamp, which I usually carried in my pocket to keep them dry. I was anxious to know whether he had seen the water, for Ravna was the worst of all of us to drink when he had the chance, and I was half afraid that he would go at it till he made himself ill. He had seen the water, he told us, but had not had time to attend to it as he came down, though he meant to make up for the omission on the way back.

So we sent him off again and went on with our exploration. We presently found ourselves among the roughest ice I had ever seen, and all that I knew of from Captain Jensen's descriptions was nothing compared to this. Absolutely impassable it was not, but ridge upon ridge, each sharper and more impracticable than its neighbour, lay in all directions, while between them were deep clefts, often half-full of water, which was covered with a thin skin of ice not strong enough to bear.

Darkness was already coming on when we finally turned homewards. We were wretchedly done up by having to toil over this rough ground on which the soft snow lay deep in places, and were much comforted when we at last caught sight of the tent in the distance. As we passed the pool again we

must needs have another drink. We lay down and let the water fairly flow down our throats. Our foreheads grew numb and cold, but that did not stop us. It was a truly divine pleasure to be able once more to drink to the very end of one's thirst. A cheering smell of good pea-soup met us as we entered our little tent, where we found the others squatting round the cooking machine. Balto had everything hot and ready for us, and was very proud of having carried out his orders to the letter.

His description, too, will serve to tell us what the rest of the party did while we were away.

'The other three went off with a rope round their waists to look for a way, while we—that is, Ravna, Dietrichson, and I—stayed behind to put up the tent. I had to make some pea-soup, too, for I was cook. So I got the machine out, but then found that there were no wicks, as Nansen had them in his pocket. So I sent Ravna off to get them, and when he came back he said he had found water and drunk his stomach full. When I heard this I caught up a tin box and ran as hard as I could go till I reached the pool. Then I threw myself down and began to drink. I had to lift my head up now and then to get breath, and then I went on drinking again. It tasted just like fresh, sweet milk, for we had not had any water for a whole month. Then I filled the tin and carried

it up to the tent, and when Dietrichson saw it he lay down and drank till he could not hold any more. The tin was a very big one, but there was only just enough left for the pea-soup afterwards. We found plenty of water every day after this.'

I am sure we all remember September 21, when we first found water. I really think it was one of the best days of the whole expedition.

Balto's fragrant soup was soon served out, and we set to work upon our supper with more than usual keenness, which means considerably more than it seems to say. Even Ravna could eat that night. He used to declare he never could make a good meal because there was not enough to drink. This used to induce him to save up his rations, and he would often annoy us and make our mouths water fruitlessly by bringing out four or five spare biscuits at a time to show us. The truth probably was that his little body did not need as much food as our larger ones.

After supper we had lemon-grog, which consisted of citric acid, oil of lemon, sugar and hot water, a compound which to our tastes was nothing short of nectar, and which we sipped and enjoyed to the utmost as we lay in our sleeping-bags. For my own part it was a long time since I had been so tired. The laborious wading in the deep, fresh snow had

tried my legs severely, and I do not fancy that the others were much better. But an evening like this in the tent brings a feeling of comfort and gratitude upon one, and a veil of forgetfulness is gently and soothingly drawn over all the pains and tribulations of the day.

A candle-end—the last we have—has been lighted for supper. This over, and all our preparations for the morrow made, we put out our light, bury our heads well beneath the hoods of the sleeping-bags, and pass swiftly and lightly over into the region of dreams.

CHAPTER XXI

THE CROSSING OF THE 'INLAND ICE'—THE DESCENT TO AMERALIKFJORD

BEFORE breakfast on September 22, while Balto was making the tea, Sverdrup and I climbed the ridge of ice which lay to the south of the tent for a reconnaissance. It was seamed with broad crevasses of unfathomable depth, most of them running parallel. Once I fell through a snow-bridge, but the fissure was so narrow that I could keep my hold on both its sides, and after some amount of struggling I managed to extricate myself. From the top of the ridge we had a fine view over the surrounding ice, and could see that our best course would probably be to keep a westerly direction for the present and turn southwards again lower down. As far as we can see, in front of us the ice seems to lie in fissured ridges, which all run westwards towards Godthaabsfjord. We had been in doubt as to what valley or fjord the depression right before us could be, but we could now see that it must be Kangersunek. Altogether we were able to make out our whereabouts

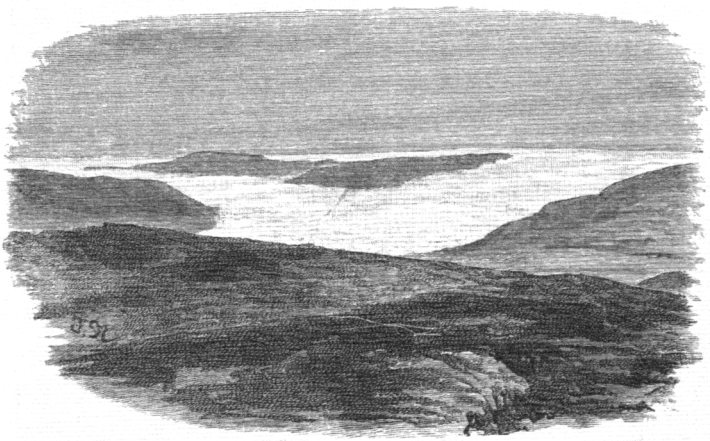
very well, and it was quite plain that we had come down four or five miles farther to the north than we had meant.

We found breakfast ready when we got back to the tent, and afterwards it was settled that Sverdrup and I should go out again and explore the ice to the west, keeping to the north of the part we examined the previous evening. The others meanwhile must follow us with the four sledges as far as they could in the same direction, and, if they could get so far, stop at the last ridge we could see from here. As they had a fair wind behind them, I thought they would be able to manage a sledge each without much difficulty.

So Sverdrup and I started off, and with the wind behind us ran fast down on our slippery oak-'ski.' The ground was fairly easy till we came far enough to see down into the fjord, which was full of floating glacier-ice. Then the crevasses began, but at first they ran parallel, and we pushed a good way farther on. But presently things became utterly hopeless, a simple network of interlacing fissures, the ice protruding in small square islands from the midst of the blue abysses. Even the fancy could form no idea of the depth of these chasms, and the sight of the riven and chaotic mass was unearthly in the extreme. Not a step farther could we go; there was nothing for us

to do but eat our dinner and go back to look for the others. We found shelter in a little crevice, where the sun did its best to comfort us and temper the keenness of the biting wind.

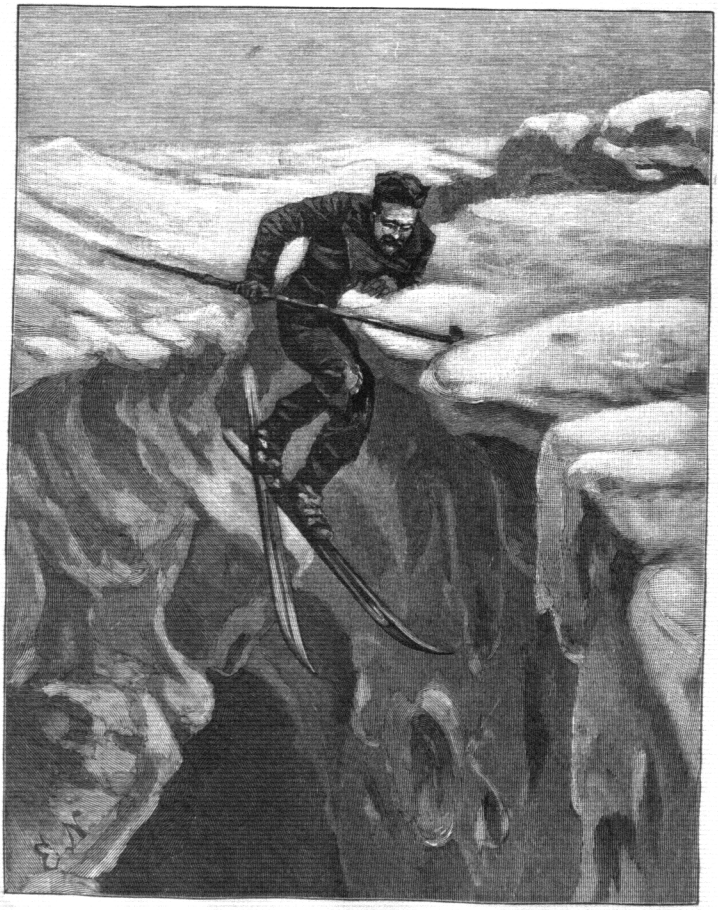
On the way back I had the ill-luck to fall into a crevasse. I was left hanging by my arms, and the position was neither easy nor pleasant. The fissure was narrow indeed, but it was very difficult to get a



THE 'INLAND ICE' AS IT FALLS INTO KANGERSUNEK
(*By the Author, after a photograph*)

footing with my 'ski' on the slippery edges. I was alone, too, as Sverdrup had taken a different line, and, being a long way on in front, saw nothing of my disaster. However, after struggling for a while, I at last managed to scramble out by myself. Strangely enough, none of us ever went further into these crevasses than to the armpits.

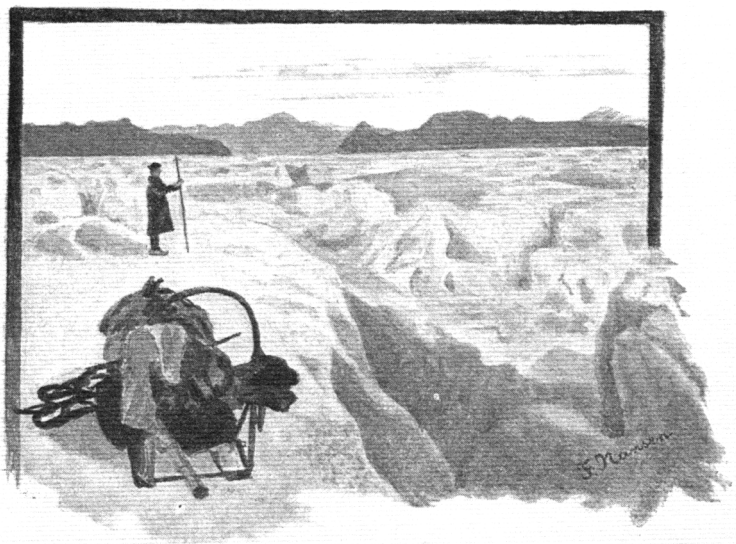
We had not gone far before we caught sight of the tent, which lay a little way to the north of us and



AN AWKWARD PREDICAMENT
(*By E. Nielsen*)

on the very ridge where the party had been ordered to halt. They had reached this point about half an

hour before, and the coffee was already under way. I must explain that we were now so near the coast that the coffee prohibition was not so stringently observed. It was not quite ready, and a short rest after our little 'ski'-excursion did us good. After we had finished our coffee the tent was struck and



VIEW TOWARDS KANGERSUNEK FJORD (SEPTEMBER 22)
(By the Author)

we set off in a southerly direction in order to skirt the ice stream which flowed down to the fjord, and in the middle of which we had just been. At first the ground was easy and we made good progress, though the wind did its best to hinder us by blowing the sledges round. In the evening, when it was already

growing dusk, we reached a ridge of nasty, broken ice, which we had seen in the distance that morning, and which there seemed to be no way of avoiding. It was necessary to explore the ground here before moving any farther, and so there was nothing to be done but encamp and wait for daylight. While

ON THE MORNING OF SEPTEMBER 23: ROUGHISH ICE
(By E. Nielsen, from a photograph)

supper was preparing two of us went out again. The ice was undeniably awkward, but with enterprise we could no doubt get through. The ridge was luckily not broad, and the best route was evidently the straightest and shortest.

Next morning, September 23, Sverdrup went out

upon another prospecting expedition, and came back with comparatively reassuring intelligence. The ice was not so bad as it had seemed to be at first sight, and it would be possible, if we put three men to each sledge, to get them along without carrying them.

Then we broke up camp and set out upon the heaviest bit of ice-travelling which we had yet had. In many places we had to carry each sledge bodily up the steep slopes of the ridges we had to cross, while as we descended the other side the unfortunate man who went behind had to hold it back with all his might. If he slipped, down went he and the sledge on to the heels of the others in front, and the whole group slid on together. Often, however, we were lucky enough to hit upon the course of a frozen river, which gave us an easy though somewhat winding passage among the hummocks and ridges of ice, which often formed cliffs with nearly perpendicular walls. In one case we had to pass through a narrow cleft which only just gave us room, and at the bottom held a little stream only partially frozen, the water of which stood well above our ankles.

In the afternoon we at last passed out of the worst of the ice, and could again take the sledges singly. The surface was now tolerably good, and it

grew still better, but the wind was awkward, as it was always blowing the sledges round. A good way further on I discovered a moraine running across the ice in an easterly direction from the land. I imagined that this moraine must mark the limit between the

REST AND REFLECTION (SEPTEMBER 23)
(By the Author, from a photograph)

streams of ice, more especially because it lay in a depression, and as I could not see any good in getting into the full current of another ice-stream, I determined to work down towards land on the north side of the moraine. We now halted, and the tent having been pitched and Balto sent out to look for water for

IN ONE CASE WE HAD TO PASS THROUGH A NARROW CLEFT'

(By E. Nielsen, from a photograph)

the coffee, Sverdrup and I set off downwards towards the land to see whether the ice were practicable here. We had not gone far before we saw that our opportunity had come. We seemed to have crossed to the south side of the stream of ice which fell into Godthaabsfjord, for the surface seemed to fall away to

ON THE AFTERNOON OF SEPTEMBER 23: INTO BETTER ICE AGAIN

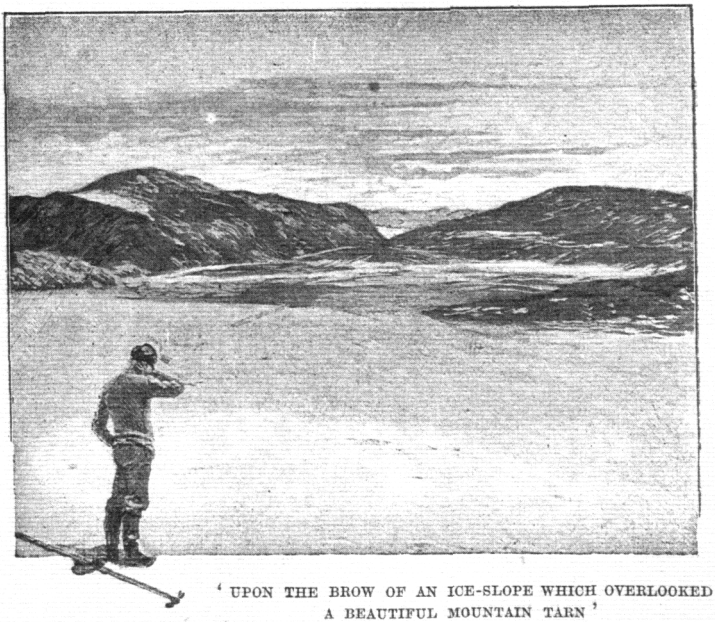
(*By A. Bloch, from a photograph*)

the south, or more correctly towards the land which lay straight before us. We went back with the encouraging news, and the whole party drank their coffee in the highest spirits. The prospect of once more feeling dry land beneath our feet was now not far off, and this was enough to fill us with delight.

As soon as we could we went on again, and with the wind behind us made good progress, the ice being relatively smooth and yet often falling rapidly. We were disappointed, however, in our hope of reaching land that evening, as, owing to the gathering darkness, we presently had to stop. But on the whole we were more than satisfied with the day's work, as we had advanced a good deal farther than we had had any reason to hope in the morning.

Next day, September 24, we turned out early and set off with the determination to reach land that day. This time, too, we were not disappointed. We pushed on fast, as the gradient was often tolerably steep and gave us much help. The wind was fair, too, the ice easy, and everything promising. Some way down a reconnaissance proved necessary, as the ice here got rather rougher. I went on in front and soon found myself upon the brow of an ice-slope which overlooked a beautiful mountain tarn, the surface of which was covered with a sheet of ice. Beyond was a gorge through which a river from the tarn ran downwards, while to the right the great glacier sloped evenly down to its end moraine, and would have formed the most magnificent coasting-hill imaginable, but for the stones that lay scattered over its surface. Here was an easy descent for us and no obstacles to separate us from our goal. I soon had

the whole party by me, and we stood enjoying the sight of the land below. After I had taken a couple of photographs, we set off down the last ice-slope. It was steep, steeper perhaps than any we had run down before, and we had to use our brakes; but the



'UPON THE BROW OF AN ICE-SLOPE WHICH OVERLOOKED A BEAUTIFUL MOUNTAIN TARN'

(*By A. Bloch, from a photograph*)

sledges went gaily, and soon we were safe and well upon the frozen tarn below the glacier, with the 'Inland ice' for ever left behind.

We now pushed across the tarn towards the river on the other side. The ice was not everywhere quite safe, but by moving carefully we reached the rocks

beyond without mishap, took off the 'crampons' which we had been using the last few days, and, like schoolboys released, ran wildly about the shore. Words cannot describe what it was for us only to have the earth and stones again beneath our feet, or

'BEHIND US LAY THE "INLAND ICE," ITS COLD, GREY SLOPE SINKING SLOWLY TOWARDS THE LAKE'

(*From a photograph*)

the thrill that went through us as we felt the elastic heather on which we trod, and smelt the fragrant scent of grass and moss. Behind us lay the 'Inland ice,' its cold, grey slope sinking slowly towards the lake; before us lay the genial land. Away down the valley we could see headland beyond headland,

covering and overlapping each other as far as the eye could reach. Here lay our course, the way down to the fjord.

But it was high time to think of dinner. Neither the highest spiritual enjoyment nor the overwhelming sense of an end attained is sufficient to make one oblivious of bodily wants, but on the contrary, the consciousness of difficulty overcome renders material indulgence doubly sweet. There was now a trace of gladness to be discovered even in Ravna's face. He had over and over again abandoned all hope of feeling solid earth beneath his feet again, poor fellow! and the first thing he and Balto did when they had brought their sledge safe to shore was to run straight away up the mountain side.

While dinner was preparing and the last remnant of our much regretted jam being weighed out, Sverdrup and I went on a little way down the valley to examine the ground. We passed a couple of small lakes with a moraine between, and beyond the second we climbed up the mountain side and got a good view downwards. The valley, at least as far as we could see, seemed tolerably easy of passage. When we got back dinner was waiting for us under the shelter of some great boulders, where stretched in the heather we could enjoy its pleasures to the full.

Afterwards we went to work to prepare each his burden for the land march down to the fjord. Our object was to take as much as possible of the most necessary things, but not to overload ourselves, or we should get over the ground too slowly, seeing that we wished to despatch two men to Godthaab as soon as could be. So that we might have the necessary material for boat-building to begin upon at once, we took some bamboo poles with the idea that we could fetch some more while the work of construction was going on.

I now for the first time was able to form some idea of Ravna's real strength. During the crossing he had had a lighter load than any of us, and nevertheless he was always complaining that it was so heavy for an old man like him, while not seldom he lagged behind and kept us waiting for him. But now there were six piles of necessary things, as large as we thought we could manage, and I was fairly astonished when I saw Ravna catch up his bag of clothes and other private property in addition to his load. I told him that it would be too much for him and that I did not mean him to carry both, but he declared that he would not part with his clothes-bag, which had his Testament in it, and that he could manage the whole very well. And though his load was thus nearly double as heavy as ours, which we found

quite heavy enough, he actually managed to carry it and went quite as well as any of us. No doubt he thought that there was no need to save up his strength now, and that he would show us for once in a way what he was good for. It was quite true what Balto was always saying in admiration, 'Ah! he is a strong chap, that Ravna, and no mistake about it!'

The rest of our things were packed on the sledges and well covered with tarpaulins. These preparations together with our afternoon tea being finished, we set off down the valley. The descent was steep in many places: our course lay over piles of débris and stretches of bog, and as our loads were heavy, the progress was naturally only slow. Several times on the way Ravna exclaimed enthusiastically, 'It does smell good here, just like the mountains in Finmarken, where there is good reindeer pasture.' And, true enough, the whole valley was redolent of mountain grasses and reindeer-moss, and we all breathed the fragrant air slowly and with infinite delight.

Late in the afternoon we reached a long, narrow lake, into which we saw, to our surprise, that a huge glacier projected from the western side of the valley. It was evidently an arm which protruded from the main body of the 'Inland ice' beyond the mountain

which lay to the west of us. When after descending a steep slope we came to the lake, Sverdrup and Balto hit upon the idea of putting their two loads together and dragging them across the ice on a sledge hastily made of the bamboo poles which they carried. Ravna

'WE REACHED A LONG AND NARROW LAKE INTO WHICH . . . A HUGE GLACIER PROJECTED FROM THE WESTERN SIDE'
(*From a photograph*)

and I, the smallest and biggest of the party, then followed their example, and put our burdens together; but it was no easy matter to construct a sledge which we could use out of nothing but a 'ski'-staff and the wooden theodolite-stand. After a number of attempts,

however, we succeeded fairly well, but by this time the others had pushed on a long way ahead, and we had to hurry. The ice on the lake was anything but strong, and it rocked uncomfortably under our tread in many places. When we reached the middle of the lake, and had passed a little island, we found it worse than ever. Here the ice had been much broken up, apparently by the fall of fragments from the glacier opposite, many of which lay scattered round about us. We now proceeded with rather more care, and I presently discovered in the dusk a dark patch of open water lying right in front of us. The pieces of ice on which we now stood were not even frozen together, and they rocked so violently beneath us that it was quite difficult to keep one's balance. The others shouted to us from shore with all their might, but without their warning it was plain that we must beat a hurried retreat, and we were glad indeed to get on to firmer ground again without having had a ducking. We now kept closer to the others and closer in to shore, but as we went on the ice grew worse and worse, and presently we had finally to take to the land. We now found an excellent camping-place, and as it was already late in the evening, and our unaccustomed loads had made us tired, we determined to halt for the night. For the first time we had real good springy heather to lie

upon, and we stretched ourselves upon the soft couch with supreme delight, while the mountain air blew over us with a peculiar resinous and narcotic fragrance which comes from a kind of heath abundant in Greenland.

While we were eating our supper inside the tent Ravna, who sat next the door, was told to light up a fire of heather outside. The necessary material had been already collected and we thought we should like to have the cheering blaze of a camp-fire to look at. But Ravna did not see it in this light at all, and, with the usual perversity of a nomad Lapp, had a number of objections ready at hand. He did not see any use in it, as we should want the fuel next morning to boil our water with. I considered there was plenty of stuff lying round about us, but this argument Ravna met by asserting that he had no birch-bark to make a fire with. At this we all burst out laughing, and I represented to him that this obstinacy was not at all amiable, that he would not have more birch-bark at his disposal if he waited till the next morning, and that we should be much obliged to him if he would go and light the fire at once. Thereupon he went out, and it was not long before we had a great fire crackling and blazing outside and throwing a warm and romantic glow into the dark little tent and upon the figures of its occupants, whose weather-

beaten faces shone strangely and picturesquely in the fitful light. It was quite a novelty to us to be able to see what we were eating, and a very welcome change after the absolute darkness to which we had often been accustomed.

I now asked Ravna several times to come in again, as there was no need to attend to the fire any longer, which would burn quite well by itself; but now that he had once undertaken the work he was not to be prevailed upon to abandon it.

After supper the smokers had a pipe of moss or grass, and we all stretched ourselves at length round the blazing fire, comforting ourselves to the full with the feeling that we had seen the last of the 'Inland ice' and had gained our long-wished-for goal. The light of our camp-fire spread out into the night and the flames rose high against the dark starry sky, where the familiar northern lights were playing and the yet unrisen moon showed faint signs of her approach.

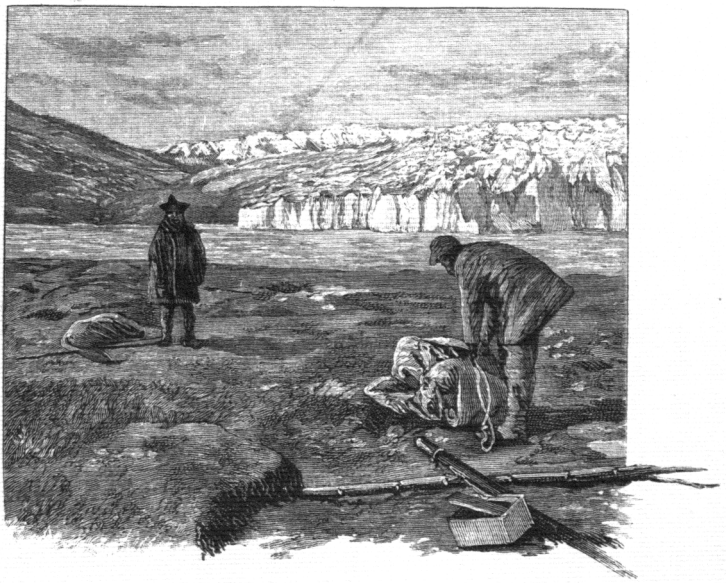
I lay and amused myself by watching the look of glee and something approaching to roguishness which was visible in Ravna's hitherto so discontented face. He was all smiles now, and to the question what he thought of the country, he answered with enthusiasm that he would like to live here. I then asked him seriously whether he would like to bring his reindeer over. He said he would indeed, but it would cost

him too much; but when I suggested that in that case the Danish or Norwegian Government might send him over free, he declared that he would not hesitate a moment. Good pasture there was, and plenty of wild reindeer, for he had seen their tracks that afternoon, and he would get rich in no time. The only difficulty would be to find anything to burn in the winter, but no doubt he could manage as some Lapps had done on an island at home in Finmarken—cut peat for winter fuel. Old Ravna finished his eulogy by saying, 'I like the west coast well; it is a good place for an old Lapp to live in: there are plenty of reindeer; it is just like the mountains in Finmarken.' He evidently felt almost as if he were back in his native haunts.

It was a glorious night, with the peculiar mild air of a summer evening at home. The conversation dies away of itself, thought follows thought out into space, each seeking and attaching itself to the rays of the moon, which is just rising above the distant ridges, and all are at last spun together into one tangle of ideas, till every thread is lost in the confusion, and the thinker drops into a comfortable doze. It was late at night before we recovered ourselves sufficiently to go decently to bed. Sverdrup declares that never in his life has he had so glorious an evening as when he lay by that heather fire and smoked

his pipe of moss. Several of us no doubt are ready to support him here.

Next morning, September 25, after I had taken a photograph of the glacier opposite, we set off again with our loads on our backs across the ridge on which



THE MORNING OF SEPTEMBER 25: PREPARING FOR THE START

(*From a photograph*)

the tent had stood. On the top we found a well-trodden reindeer path which led down to an arm of the lake below. This arm was not entirely frozen, but we managed to find a passage across it. At the farther end of the lake we halted for a rest, and while there saw a hare come bounding along in the distance

and stop under a rock. I got a rifle out at once and stalked her to within a hundred yards or so. I could scarcely distinguish her yellowish white coat from the snow, and the distance was long. But as there seemed no hope of getting nearer, I fired, and she fell stone-dead with the ball through her neck. The others were much delighted, as they had been waiting in great excitement to see whether they were going to have fresh meat for supper or not.

Then we went on again down the narrow valley, scrambling down steep declivities and over stony moraines. Some way farther on on the west side another arm of the 'Inland ice' reached into the valley. This drove a huge moraine in front of it, and formed here and there high pinnacles and ridges, which were, however, so covered with clay and stones that it was often difficult to distinguish ice from bare land.

Later in the morning we came out upon the top of a precipitous slope, at the foot of which was a lake, into which the 'Inland ice' descended from the east. From here we could see a long way over the great icefield, as far as Nunatarsuk, the land on the eastern side of Kangersunek. The river we had been following hitherto now joined that which flowed out of this lake not far from its point of exit. The map we had been trusting to proved completely

wrong; we had still some twelve miles at least to go before we reached the fjord, and our hope of getting there to-night was vain.

At noon we reached another lake with broad, flat shores. Here we saw abundant traces of geese, which showed it to be a very favourite resort. Possibly it was a general resting-place during the autumn passage down the edge of the 'Inland ice' while the lakes are still open.

Here, too, in the clay, as all along our route where such marks could be left, the tracks of reindeer were very numerous, and some of them at least were not more than two or three days old, but they all pointed downwards towards the fjord. I kept my eyes well about me, and scanned unremittingly the brown slopes that lay around us on every side, but to no purpose, as not a sign of deer was to be seen. On the south shore of the lake, which we christened 'Goose Pool,' we camped in the deep heather to enjoy our dinner.

It was a splendid day: the sun shone warm and bright, the sky lay clear and blue above, and round about us was as fine shooting-ground as a sportsman could wish to see. It must be a simple Eldorado earlier in the year, when the reindeer are here in their numbers, and the wild geese fly screaming along the lake, in concert, perhaps, with

duck and snipe and many other of the Greenland waders.

In the evening we camped on a flat piece of ground by a little tarn amid brown slopes of heather and the best reindeer-ground imaginable. We set about to cook our hare in a vessel which had originally been a spirit-can. Just as it was ready the pot upset into the fire, and we lost all our soup. The hare was rescued and divided, but her poor meagre little body gave little enough to each of six hungry men. The small portion we got, however, was enjoyed amazingly. We were not accustomed to fresh meat, and it was marvellously easier to bite than the hard pemmican, which is very difficult for anyone with defective teeth to deal with. Sverdrup and I, who were the worst off of the party in this respect, used always to select the most mouldy parts, as they were softer and easier to masticate. The evening was clear, like yesterday; the northern lights were playing above us, the camp-fire burning brightly by our side, and our spirits were perhaps even brighter still.

On September 26 we had at last a reasonable expectation of reaching the fjord. We followed the river downwards, passing at times over sandy hills and terraces, at times across flat, sandy stretches in which the river ran in a deep channel between steep

banks. The ground was often covered with thickets of willow and alder, the bushes of a man's height or so. The alders were still green, but the willow leaves yellow and withered, the result apparently of the early frost of some few nights ago. Now, on the contrary, we had 55° Fahr. in the daytime in the shade, while the nights were as mild as September nights at home. The cause of this high temperature was evidently a warm and dry easterly or south-easterly wind very like the 'föhn' of the Alps. Such winds are not unusual on the east coast of Greenland.

These flat stretches of ground are often, too, cut transversely by watercourses which come from the adjacent slopes. These have ploughed deep in the soft, sandy clay, and they were sometimes unpleasant enough to cross when their steep banks were thickly overgrown with willow scrub. Geologically this valley was extremely interesting and very instructive to the observant eye. At one spot a long way down the sand-bank had lately fallen into the stream, and masses of old mussel shells were exposed to view. These shells tell us plainly how these great, sandy stretches have been formed. Once the fjord has filled this valley, and the clay and sand brought down by the river from the glacier moraines have settled upon the sea-floor, forming a gradually increasing deposit which has finally taken the water's place. Subsequently the land

has risen, and that it has done so is clearly shown by the presence here of these shells of a salt-water mussel (*Mytilus edulis*) of a post-glacial period. Whether this rise of the land has taken place at intervals and by jerks, or gently and continuously, is as yet uncertain. The latter view is commonly adopted, and is supported by most of the phenomena. No doubt the layers of sand and clay lie in terraces, but even if the land has risen gently and continually it is held that this might be explained by the supposition that during certain climatic periods of heavy rain- and snow-fall, the river has brought down considerably more matter than during the intervening and less productive periods, an alternation of conditions which might well lead to this step-like formation. I cannot for several reasons subscribe to this view, but as the subject is difficult and its discussion would take too much space here, I must be content to acknowledge the question as still open.

The sea-floor thus having at one time or other risen, the river proceeded to cut its winding channel through the deposits of sand and clay which now lie high-and-dry. Soft stuff like this is easy to cut through and undermine, and bank after bank has therefore slipped into the river, and in the course of ages been carried along by the stream to its outflow in the fjord, where it has gone to form new but pre-

cisely similar deposits. The mighty forces of nature which work in these regions are never at rest; some are chiselling out valleys and fjords, leaving peaks and ridges behind; others, or, more correctly, other forms of the same forces, are striving to level and fill up the excavations already made.

The glaciers are excavating and hollowing out the valleys and fjords—these characteristic narrow glacier-fjords with their smooth, precipitous sides, simple chasms gouged out of the hard gneiss rock. The same streams of ice are driving before them their huge moraines, which, as the great moving mass from time to time draws back, are left as long barriers stretching across the fjord-mouth or valley-floor. At the same time the clay and grit of which these moraines consist, as well as that of the so-called 'ground-moraines' which lie beneath the ice, are carried off again by the milky glacier river and deposited in the fjord at its mouth. Here the material does its filling up and levelling work, and forms eventually the flat, sandy stretches that lie at the head of Greenland and Scandinavian fjords. These are the 'örer' which appear so commonly in such Norwegian place-names as Trondhjesmören and Lærdalsören, and are to be seen in hundreds on the Greenland coast.

For the geologist, therefore, Greenland, which is

now passing through its ice-age, is of great importance. Phenomena, which would be otherwise unintelligible to him, are here made clear throughout their history; here he can see close at hand, and in their full activity, the mighty forces which he can behold elsewhere only in the mirror of his fancy, or which he can at most study in the pigmy remnants which we still have in Europe—remnants from the time when the north of the continent and the high regions of the Alps were buried under mantles of ice like that which now forms the great 'Inland ice' of Greenland.

A long way down the valley we had to wade the river, but soon afterwards discovered, to our annoyance, that the other side was impracticable. Here the river was too deep to wade, and it was either a case of going back or of climbing the shoulder of the mountain to the west to see if we could thus obtain a passage. While we were discussing the point we thought we would stop and have our dinner, and then see what was to be done.

After we had finished, Balto disappeared, and presently I caught sight of him high up on the mountain side. He was waving his hat in high glee and looking westwards; he could evidently see the fjord. He soon joined us again, carrying a big reindeer-horn, and told us that he had seen a great sheet

of blue water which must be the fjord, and that the inner end was covered with ice. We all now climbed the slope as fast as our legs would take us; we longed to get a sight of the sea; possibly the whortleberries which Balto promised us enticed us too; and, what was more, the flies down below made a longer stay there unendurable. From the ridge we had a glorious view down the valley. The river went winding along through the sandy flat, and beyond lay the fjord, a blue expanse stretching far away among the high mountains which hemmed it in. What Balto had taken to be ice we could now see to be the estuary sands, which quite filled the head of the fjord.

We had not far to go now. Our joy was great when we found a little lower down some old footprints from a Greenlander's boots in the sand by the river-side. They were probably the tracks of some reindeer hunter, who some months ago had visited the now deserted valley, in which the well-trodden paths showed that at certain seasons it must be frequented by numbers of deer. Here we rested by the first signs of human life which we had found on the western side, if we except certain equivocal traces Balto had hit upon, and doubtfully attributed by him to either man or bear.

After we had climbed one more willow-grown

ridge we had the fjord at last straight before us, and to the bare sands, through which the river still wound for a long way farther, we had only a short slope to descend. Just below us was a little flat stretch grown with heather and scrub and close by a tarn. This was the very spot for our camp, as the hill would shelter us from the east wind, which was now blowing down the valley straight from the 'Inland ice.' We ran down, threw our burdens into the heather and ourselves by their side, and allowed the consciousness of having reached our destination to comfort and soothe our wearied bodies. Much remained for us yet to do certainly; four were to go back and fetch the rest of the baggage, while Sverdrup and I were to go to Godthaab and take measures—of what kind we had as yet but vague ideas—for the relief of the others. One thing at least is certain, that we are once more at the sea level, if not exactly at its edge, and are in all probability at the end of our toils and sufferings. A difficulty has been overcome, a difficulty which many, perhaps most, of those qualified to judge have deemed insuperable. It is no wonder then that the mood of the party was at this moment one of pure, unalloyed satisfaction.

After a little rest and refreshment two of us went up the mountain side to the east to have a look down the fjord. On its north side the ground, as

far as we could see from here, was so rough that there was very little probability of our being able to reach Godthaab that way. To get to Narsak, which lies on the south side, would no doubt be easier, but we were not certain of finding any people who understood a European language. The sea route was obviously the safest, and after determining to set to work with our boat-building at once, we went back to the tent.

We had brought down with us two bamboos and one 'ski'-staff, but had nothing for the ribs. For these the bent ash rods fixed at the back of the sledges would have been just the thing, but they were up by the ice, and it would have taken two or three days to get them. So it was necessary to find something else, and our thoughts went straight of course to the willow bushes, which lay in plenty round about us and were sometimes as much as six or seven feet high. Ribs made of these would not be as straight as we could wish and would not stretch the canvas very evenly. Our boat was not likely to prove very fast in these circumstances, but the main thing was to get her to carry us. We set about detaching the tent floor at once, so as to have it ready for next morning. It was settled that Balto should stay and help us with the sewing, while the other three were to go back for the rest of our goods after breakfast.

We turned out early on the morning of September 27 and made a very meagre breakfast of bread and pemmican, to which our last ration of tea was added. Of the pemmican we had brought down a good provision, but it had disappeared amazingly fast, and of the remainder Sverdrup and I wanted as much as we could get for our voyage, seeing that it was impossible to tell how long it would last.

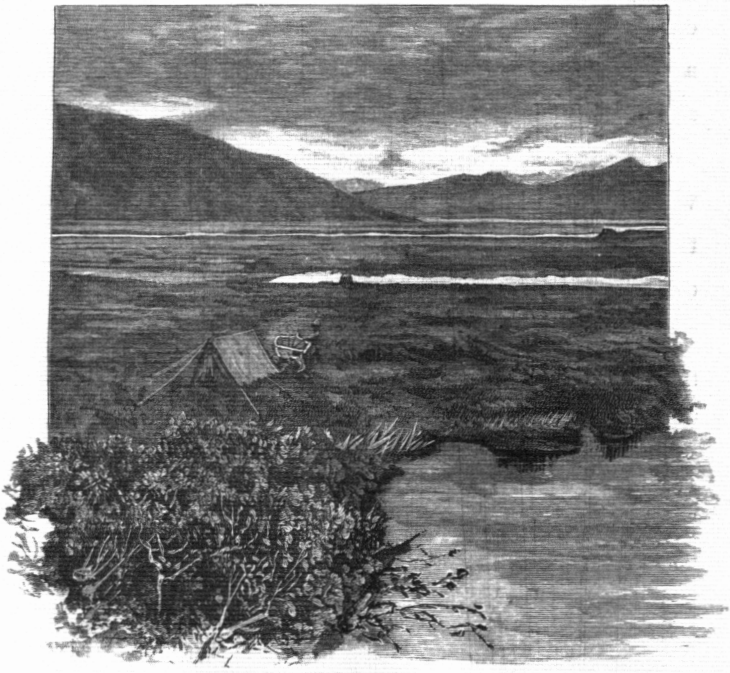
After breakfast Sverdrup and Balto went to work upon the boat at once, while I took some observations and the others made preparations for their return. After having received their rations for the day, they were ready to start, and I gave them their final instructions. First and foremost they were to secure the instruments and diaries, and then bring as much of the rest as they could, including of course all the provisions. Balto was to join them later.

Then they started off up the valley with our best wishes and in the most glorious weather, while we went on with our work. Originally it had been my idea to build the boat long and narrow in order that she might travel better, but Sverdrup considered that this would entail too much sewing, and that it would be better to use the tent-floor just as it was, giving it the form of a boat and patching it wherever necessary. This would not make an ornamental craft of her, but it would save an immense deal of

sewing, and to Sverdrup, as a sailor, I of course at once gave way. Unluckily, as I have already said, we had left our sailmaker's palm behind in our cache on the east coast. If we had had it now we should have got through our work a good deal faster, for as it was we had to drive the needle through the hard canvas with our bare hands. Another difficulty, and a worse one, which we had to contend against was a plague of small black flies, which swarmed round us, settled on our faces, necks, and hands, and bit us villainously. It was impossible to escape them, and they were almost worse than the mosquitoes on the other side of Greenland.

After I had tried my hand at the sailmaker's needle for a while, and found that it was work to which I was eminently unsuited, I left the task to the others, who at this kind of thing, as well as at much else, were simply masters, and went off with my axe to the forest, or, more correctly speaking, to the nearest thicket of willows, to look for some branches which would make ribs for the boat. In many places the bushes of the thicket were so high that I quite disappeared in them, and the tops of some I could scarcely touch with the tips of my fingers. There were plenty of branches that were thick enough, and one bush had stems as massive at the root as a grown man's thigh, but they were as a rule

desperately crooked, and to find any that would serve our purpose was by no means an easy matter. At last I managed to collect as many as we wanted. They were anything but straight and even, but as we had nothing else we must needs put up with them.

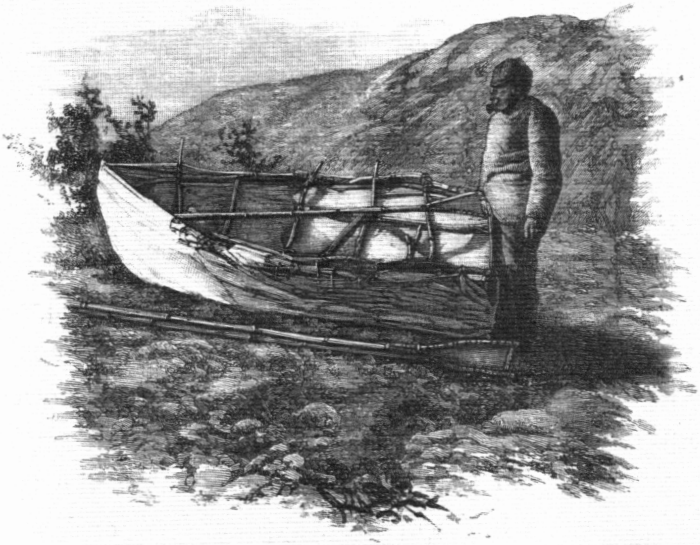


OUR CAMPING-PLACE NEAR AMERALIKFJORD ON THE EVENING OF SEPTEMBER 27
(*From a photograph*)

By the evening the boat was finished. She was no boat for a prize competition indeed; in shape she was more like a tortoise-shell than anything else, but when we tried her in a pool close by we found she

carried us both well, and altogether we were hugely pleased with her. Her dimensions, I may add, were: length, 8 ft. 5 in.; breadth, 4 ft. 8 in.; depth, 2 ft.

As yet, however, we had no oars made. I had found some forked willow branches, which I intended to stretch canvas across, so that we could use them



THE BOAT AND HER BUILDER
(From a photograph)

as blades, while for the shafts we had pieces of bamboo. I had not got on very far with this job, however, as on this particular day, as well as on the two or three preceding, I had a racking headache, and was not up to much work of any kind.

Next morning, September 28, Balto also left us.

We watched him stride away up the valley, and the active fellow joined the others up by the edge of the ice the very same evening. By noon our two pair of sculls were made, and the boat ready to be launched. The most difficult part had been the thwarts, as we had nothing to make them of but a slender round ash theodolite-stand and two thin pieces of bamboo. They were, indeed, the scantiest seats it has ever been my ill luck to sit upon, and I devoutly hope never again to have to go through a similar penance.

After we had had our dinner—which was as meagre a meal as our breakfast had been—we packed up the sleeping-bags, our clothes, and everything that we were not going to take, in the tent, which was covered with stones and protected as well as we could manage it against the weather. In the boat we stowed our clothes-bags with as much clothing as we thought necessary. To sleep in we had borrowed the two reindeer-skin tunics of the Lapps, and we each also had our pair of Lapp boots with the necessary grass lining. We took also the camera, a gun and cartridges, a stock of provisions packed partly in tins and partly in canvas, a supply of biscuits being stowed away in my canvas trousers, two cups which were also to do duty as balers, and lastly a cooking-pot, which was really the upper vessel of our great cooker deprived of the original felt covering.

As soon as all our preparations were made we got under way. First we took our baggage down to the sands, and then the boat itself. We had hoped to be able to row all the way down the river and straight out to sea, but here, again, we met with the most unexpected difficulties, as the water was so shallow that rowing was out of the question. When we were both in the boat it was an absolute impossibility, so I, as the heavier, got out to walk across the sands, while Sverdrup sat in to try and punt himself along alone. But this was no great improvement, as he had soon to get out and wade in the cold water, while he towed the boat behind him, which was no agreeable work. It was seldom that he could punt, and still more rarely that he could row, and progress was therefore very slow.

Nor was it much fun for me to tramp over the sands, for the ground was soft and I often sank well up to my knees. We both had incredibly hard work in one way and another ; again and again we were buried to the hips in mud and water, and half a day's toil of this kind told terribly on our legs. The sticky stuff held our feet fast at every step and we were thoroughly tired out when we at last reached a certain point well out in the fjord, where we had hoped to be able to finally put to sea.

But here we discovered that we were by no means

at the end, as the river now spread out in a delta, the branches of which were so shallow that it became impossible even to drag the boat, and it had to be carried for the rest of the way. But it was now evening and we thought we might as well halt for the night. So we carried the boat up on to higher ground with the idea of turning it over and using it as a tent to sleep under. Then we brought up our things and to our great comfort got some dry clothes on after our long wade in the icy water. Next we found a good place for a fire, put a hoop of copper wire on our cooking-pot, and I went off to get some water while Sverdrup made the fire up. There was no lack of fuel round about us, and by the time I got back the pile was blazing well. The pot was hung over it, and when we had put our reindeer-skin coats on and drawn up to the fire we felt thoroughly comfortable. We had enjoyed our comfort just long enough to see the water begin to boil, when the pot and all its contents fell into the fire and completely extinguished it. The ears of the vessel to which the hoop had been fastened had melted off and caused the disaster. There was nothing to be done but begin from the beginning again. We put a new hoop on the pot—this time with more solidity—more water was fetched, the fire resuscitated, and we were soon able to enjoy the sight of boiling water again. The pea-

soup was excellent and we had another splendid evening. The last flush of day soon vanished behind the mountains in the west; the stars grew more and more distinct in the darkening sky, and presently the moon came too and shone down upon us as we sat by our sinking fire and talked of the 'Inland ice' as a distant dream.

Afterwards we each chose out a willow-bush, crept under, curled ourselves up in our fur coats, and were soon asleep. To use the boat as a tent, we thought, when it came to the point, was an unnecessary waste of energy.

CHAPTER XXII

OUR VOYAGE, AND ARRIVAL AT GODTHAAB

NEXT morning, September 29, we carried the boat down to the water. It was desperate work plodding along with it through this sticky sand, in which our feet sank deep, and fixed themselves, and wheezed like the piston of an air-pump as we pulled them out again at each step. But at last we reached the water's edge, and set the boat down, to go back and get the rest of our things. There were any number of gulls down here, and we had looked forward to the prospect of a supply of fresh meat; but, unfortunately, they kept at a respectful distance, and we had no chance of a shot. When we got back to our camping-place, we came to the conclusion that we had had quite enough of the sands, and determined to carry the other things over the higher ground, rough and difficult though it was.

When we got down to the shore again, we saw that the boat was now afloat a long way out in the water, as, while we had been away, the fjord had risen to such an extent as to flood all the outer part of

the sands. Luckily, Sverdrup had been thoughtful enough to moor her fast by driving a stake into the ground, though we had left her so far from the edge of the water that we thought she was quite safe. He now waded out to her, and rowed her in to a point of land close by, while I moved the baggage to meet him at the same spot. Thus, at last, after a day's labour, we had overcome one more obstacle, and were ready to embark on a good sea-way.

After we had had our dinner we set out upon our first voyage, our destination being the farther side of the fjord, along which we meant to coast on our way outwards. We discovered at once that our boat travelled much better than we had expected. She did not prove to be a fast craft, certainly, but we could get along in her, and reached the other side of the fjord after what we considered to be a remarkably quick passage. Nor was water-tightness one of our boat's virtues, for we had to take to baling with one of the soup-bowls about every ten minutes.

Just here, the head of the fjord formed a little bay or inlet which seemed to us, in our present state of mind, an unusually attractive spot. It ended in a peaceful, gentle valley—a valley of long, brown slopes and stretches of moss and stones, and skirted by low, round hills; just the ground that is most welcome to the reindeer and his pursuer. Our

interests still centred in all that we could connect with food and the pursuit of game, and the more poetic reader must forgive us. To us, at this time, this was the most beautiful side of Nature; and for her true beauty—the lofty peaks, the snow-clad mountains, the precipitous cliffs, and all the glories of barrenness, glories of which Ameralikfjord has enough and to spare—we had no eyes of appreciation. Such delights are for that true lover of Nature, the tourist, as he wanders among them on his comfortable steamer, with abundance of warm clothing and good food.

Then we worked along the stupendous cliffs which form the northern shore of Ameragdla, as the inmost branch of Ameralikfjord is called, and stopped for the night at a spot where we could land our boat and find flat ground enough to sleep upon—accommodation not to be procured everywhere. We had not advanced much that day, but we were quite satisfied, and very pleased to be on the sea once more. Our chief delight, however, was the prospect of eating our fill of good fresh meat after nearly seven weeks of the driest of food. During our row I had shot six big blue gulls. At first I missed several times, as the birds kept out of range; but at last one ventured nearer, and then I had no further trouble. Gulls, as most people know, are inquisitive birds; so when I

had thrown one dead body out to float, the others must needs come to look at it, and I brought down one after the other, and stocked our larder for the time.

SHOOTING GULLS FROM THE BOAT

(By A. Bloch, after photograph and sketch)

These gulls are big birds, and we determined to have two apiece for our evening meal. They were skinned, put two at a time into boiling water, and

cooked as little as possible. Sverdrup was afterwards asked whether he took care to clean them properly. 'Oh, I don't know,' he answered; 'I saw Nansen pull something out of them, and I suppose it was part of the inside; and some more came out in the pot while they were cooking. All I can say is, I never tasted better birds in my life.' And he was quite right: we both thought we had never had anything which could be compared with those gulls; the tenderest of chickens could not have been better. Whether the cause lay in our appetites, or the peculiar method of preparation, I will not attempt to decide. We looked for no reason at the time, but tore our birds in pieces as fast as teeth and fingers would allow. It was not long before the first two had disappeared, and then we set to work upon the second with greater deliberation and more prolonged enjoyment. We finished with the broth in which they had all been boiled. This had a very characteristic, gamey taste, which added much to its peculiarity, though we were not quite certain to what we should attribute its origin.

Language, in fact, has no words which can adequately describe the satisfaction of the two savages who sat that evening on the northern shore of Ameragdla, and dipped each his hands into the pot, fished out the body of a gull, and conveyed it, piece by piece, head, feet and all, into the depths

of his hungry stomach. The light of the fire, meanwhile, was almost dimmed by the brighter glory of the northern lights. The whole heaven blazed, both north and south; the lights swept onwards, and then returned again; and suddenly a whirlwind seemed to pass across the sky, driving the flames before it, and gathering them together at the zenith, where there was a sparkling and a crackling as of burning fire, which almost dazzled the eyes of the onlooker. Then the storm seemed to cease, the light died slowly away, there was nothing left but a few hazy flecks, which sailed across the starlit sky as we stood there still gazing. Such a display of northern lights I have never seen, either before or since. And there, below us, lay the fjord, cold and impassive, dark and deep as usual, and girt round about by steep walls of rock and towering mountains, the familiar fjord landscape of the west of Norway.

Next day things did not go quite so well with us, as in the course of the morning a head-wind sprang up, which blew so hard that, instead of making progress, we were almost driven backwards, and our little cockle-shell danced up and down upon the waves to such an extent that there seemed every chance of our capsizing. She proved a good sea-boat, however, and never shipped a drop of water, except that which ran in unceasing streams through her bottom. Against

the breeze, though, she travelled very heavily, and there was nothing to be done but land, rest meanwhile, and hope that the wind would drop towards evening. This it eventually did, and we embarked again. It was not long before we reached Nua, as the point is called which lies at the mouth of Itivdlek Fjord, the northern branch of Ameralik. Here the country was less wild and broken, and, with its low ridges covered with moss and heather, promised excellent reindeer-ground.

It was a fine, still evening, and we now set about to cross the fjord. This was the longest sea-passage we had as yet attempted; but all went well, and we were soon across by the opposite shore. It was dark by this time, and we put to land to get some supper. Here, however, we found neither fuel nor water, and had to eat our food cold and without drink, a state of things to which we were, nevertheless, well used. We had thought of pushing on farther during the night, but we now saw some ominous storm-clouds coming up from the west, and gathering about the sharp, wild peaks on the north side of the fjord. The night, too, was so dark that it would have been difficult to cross the fjord again, as we wished; and so we determined to bring the boat ashore, and get a little sleep, in the hope that the moon might come to our help later. During the operation of beaching

the boat Sverdrup was unlucky enough to fall into the water, which is not very pleasant just before bedtime, and when one has so little in the way of a change of clothes.

There was no improvement in the weather, and we slept till the morning of October 1. It was a

BY AMERALIKFJORD ON THE MORNING OF OCTOBER 1

(From a photograph)

splendid sunny day, and there was a gentle wind blowing to help us.

In the course of the morning we crossed the fjord again, and went ashore to get ready a substantial dinner of two gulls apiece and a soup of unsurpassed excellence. To the broth in which the birds had

been cooked we added peas and bread, and the compound was so invigorating that we literally felt the strength grow in us as we took down one basin after another.

Unluckily, at this spot where we had landed there was a great abundance of crowberries, and as a matter of course we added them to our bill-of-fare. It was long since we had had access to fresh, wholesome, vegetable food, and we actually indulged ourselves beyond the bounds of reason. First we ate the berries standing; and then, when we could stand no longer, we ate them sitting; and when this posture became at last too wearisome, we lay prone at our ease, and prolonged the debauch to incredible lengths. When we landed there had been no wind, but now a stiff northerly breeze sprang up, which blew up the fjord, and made any attempt at farther progress on our part quite out of the question. All we could do, therefore, was to lie here, and go on with our crowberries. At last we grew so torpid that we had not the energy to pick the berries any longer with our hands, and so we turned on our faces, and went on gathering them with our lips till we fell asleep. We slept till evening, and when we woke, there hung the great black, luscious berries still before our very lips, and on we went eating them till we dozed off again. If what people say is true, that gluttony is one of the

deadly sins, then may Heaven's mercy save us from the dire punishment that must await us for what we did that day in Ameralikfjord. It has always been a cause for wonder to me that we did not pay the penalty then and there; but, as a matter of fact, we suffered no ill-effects from our excesses.

At midnight the wind dropped, and I turned the crew out. In spite of the crowberries, Sverdrup had had sufficient energy in the course of the evening to collect some wood and fetch water in the event of our needing a meal in the night. We now, therefore, fortified ourselves for work, and by one o'clock we were afloat, ready to push on with renewed energy. We made our way quickly along the shore in intense darkness. The phosphorescence of the water was almost as brilliant as anything that tropical seas can show. The blades of our oars gleamed like molten silver, and as they stirred the surface the effect was seen in the glittering radiance that stretched far below. The whole scene was very grand as we passed along under the beetling cliffs, where we could see scarcely anything but the flashes of phosphorescence which flitted upon the water round about us, and danced and played far away in the eddies of our wake.

We seemed to have luck with us just now—a state of things to which we were not much accustomed. The weather was fine, and there was no wind; so, to

make the best use of our opportunities, and keep the steam up, we had recourse to frequent stimulants, in the way of meat-chocolate. Rations were served out often and liberally, and with apparent effect, for we made rapid progress.

At dawn, while we were resting at a certain spot, we heard numbers of ptarmigan calling in the scrub

FULL SPEED AHEAD FOR GODTHAAB

(By Th. Holmboe, after a photograph)

close by us. It would have been easy to bag some, and I was tempted to try; but we thought we had no time to waste on land for such a purpose, so we showed an heroic determination by rowing away from the enticing spot.

We rowed on all the morning without stopping,

except for chocolate. Along the whole stretch of shore the rocks fell so abruptly into the water that there were but two or three places where a landing was possible. About noon, to our great astonishment, we found ourselves approaching the mouth of the fjord. Here we came upon a point with a nice flat stretch of beach, and pulled in to land. The spot seemed a favourite camping-place, for there were several rings of stones marking the sites of Eskimo tents, and masses of seals' bones and similar refuse strewn about the place.

The consciousness of having got so far made us unusually reckless. We felt that we should soon be in Godthaab now, and in honour of the occasion we contrived a dinner which, in magnificence, surpassed even that of the day before. We had now no need for parsimony or self-restraint, and no meal throughout the course of the expedition came up to this in extravagance. We began with sea-urchins, or sea-eggs, which I collected in numbers on the beach close by. The ovaries of these are especially good, and little inferior to oysters, and of this delicacy we consumed huge quantities. We then went on to gulls and guillemots, which were followed by the usual excellent soup. Biscuit and butter we had in abundance, and there were plenty of crowberries for him that had recovered from the surfeit of the

preceding day. It was, indeed, a dinner worthy of the name, as Sverdrup said. It was no easy matter for us to convey ourselves into the boat again, and bend over the oars to do our proper work. If at any time afterwards I wished to bring Sverdrup into a thoroughly good humour, I had only to call to mind our notable dinner at the great camping-place in Ameralikfjord.

Fortune was strangely kind to us that day: we now had a fair wind behind us, and, in spite of our torpor and laziness, we made rapid progress during the afternoon. Everything was rosy to us now, and we pulled away in sheer fulness of heart. There was one thorn in the side of our happiness, nevertheless. This came from the absurdly thin little rails on which we had to sit instead of thwarts. I suffered so much that I felt I could well do without a certain part of the body altogether. We shifted, and shifted again, but with little relief to our soreness and discomfort. The happiness of this world is, indeed, seldom pure and unalloyed.

Thus we passed out of the fjord, and saw the sea, islands, and scattered rocks spread out before us, and lighted by the most glorious of sunsets. The whole expanse seemed to be suspended in an atmosphere of gently-glowing light. The vision stopped us, barbarians as we were, and deprived us of speech and

power of action. A feeling of home and familiar scenes came over us; for just so lie the weather-beaten islands of the Norwegian coast, caressed by flying spray and summer haze, the outskirts of the fjords and valleys that lie behind. It is not to be wondered at that our forefathers were drawn to this land of Greenland.

We had set ourselves the task of passing the mouth of Kobbefjord, an inlet which lies just to the south of Godthaab, that evening, so that, in the event of bad weather next day, we could, nevertheless, easily reach our destination overland. We now came to a little fjord which is not marked sufficiently clearly on the map we had, and which we therefore wrongly assumed to be Kobbefjord, though I thought at the time that it lay suspiciously near to the mouth of Ameralik.

Consequently, we thought we might as well land there and then, as we sat simply in torture, and our legs were stiff with the pain and discomfort of the position. But then it struck us that we had better keep on till we could see the lights of Godthaab, for, in our innocence, we supposed them to be visible from the south. We saw, however, nothing at all, and, as the current now ran hard against us, we were at last obliged to desist and go ashore. This was at a point which lies at the foot of a high mountain, which

we afterwards found to be Hjortetakken. It was now about nine o'clock, and, with the exception of short intervals for breakfast and dinner, we had been fixed to those seats of affliction for a good twenty hours. It was indeed a welcome change to have a broad surface to stretch ourselves upon.

Phenomenal as our dinner had been, the supper which now followed was not much less so. For the first time since we left the 'Jason' we could go to work upon bread, butter, and liver 'pâté' without restraint and stingy weighing out of rations. We drank lemonade to our heart's desire, and did our very best to prevent any of that provender which we had been economising so long from remaining over, to be carried to people among whom it would have no value. This thought it was that harassed us, and urged us to further effort; but in the end we were obliged to desist, with our task as yet undone.

This was the last of these wonderful nights which we had a chance of enjoying before our re-entrance into civilisation. We felt that it was our farewell to Nature and to the life which had now grown so familiar and so dear to us. The southern sky was as usual radiant with the northern lights, streamer after streamer shooting up to the zenith, each more brilliant than the last; while the stars glittered in their usual impassive way, their brightness more or

less eclipsed as the rival lights waxed or waned in intensity.

We were both of us in a strange mood: our wanderings were all but ended; we had met with many mishaps and many unforeseen obstacles, but we had succeeded in spite of all. We had passed through the drifting ice, and pushed our way up along the coast; we had crossed over the snow-fields of the continent, and made our way out of the fjord in our miserable little boat, in defiance of adverse winds; we had worked hard, and undeniably gone through a deal of tribulation to reach the goal which now lay so near to us. And what were our feelings now? Were they feelings of triumph or exultation? For my own part, I must confess that mine were not of this lofty order; to no other feeling could I attain than a sense of gross repletion. It was a feeling grateful enough to me; but as for our goal, we had been kept waiting too long—there was too little surprise about its eventual attainment for us to give much thought to it.

We curled ourselves up in our fur pelisses, chose each a stretch of heather among the rocks, and slept our last night under the open sky as well as we had seldom slept before.

It was late before we woke next morning, October 3, and when we at last shook off our sleep,

the wind had long been blowing freshly up the channel leading to Godthaab, and calling us to work. But we felt that for once we need not hurry—we could sleep to the end, and yet reach our destination in good time.

We began breakfast again with the worthiest intentions of consuming to the last morsel the provisions which remained; but though we attacked them manfully, we had to put to sea once more with this end still unattained. With the wind behind us we made rapid progress northwards, and when we passed the spit of land on which we had camped for the night, we found that we had been all the time on the south side of Kobbefjord. This fjord now lay before us set in a circle of wild, lofty mountains, among which Hjortetakken was most conspicuous, with its sides sprinkled with fresh snow, and its peak from time to time wrapped in light, drifting mist.

We now set about to cross the fjord to the south side of the promontory on which Godthaab itself lies. As we reached the middle we heard, for the first time for many weeks, the sound of unfamiliar voices. They were evidently Eskimo women and children from whom the sounds came. They were screaming and shouting; but, though we listened, we could make out nothing, and though we looked, there was no one to be seen. Some time afterwards

we learned that these voices must have come from a party of folk who had gone over to 'Store Malene,' a mountain lying to the east of Godthaab, to gather berries. They had caught sight of us, and were shouting to one another that they could see two men in half a boat, and were much exercised to know what new sorcery this could be. Such a vessel they had never seen before, and they did not at all like the look of it.

This Eskimo description of our little craft as half a boat was really very happy, as it did much resemble the fore-part of an ordinary boat. Some way farther on we saw in the distance the figure of a man sitting, as it were, in the water. This was the first 'kayaker' we came across on the west coast. Presently we caught sight of two more; they were out after seal, and took no notice of us. This was either because they preferred their own business, or because they thought there was something wrong about us. There is no doubt that they saw us long before we saw them, for the Eskimo has the keenest of eyes, and never fails to use them.

As we rounded the next point, Sverdrup, who was rowing bow, caught sight of some houses which he thought must be Godthaab. I turned my head in astonishment, and saw some Eskimo huts, but could not think them to be Godthaab, as, according to the

map, the settlement did not lie just there. Sverdrup then said: 'But those big houses can't belong to these wretched Eskimo.' I then turned quite round, and could now see the slated roof of a long building, surmounted by a little tower, and was quite ready to agree that this could not be an Eskimo abode, though it struck me that it might very well be a warehouse. But as we passed another point, we found we had before us no warehouse, but a church and a number of Eskimo huts lying by a little bay. We did not think it was any use landing here, and were for keeping straight on; but suddenly a fresh breeze sprang up, and made it very heavy work to row, and we concluded that it would be better to go ashore at once, and proceed to Godthaab overland.

So we turned our little tub shorewards, and found that a number of Eskimo, chiefly old women, were already swarming out of the houses, and coming down to the beach to receive us. Here they gathered, chattering, and bustling to and fro, and gesticulating in the same strange way as we had seen their fellows of the East coast often do. We could see little or no difference between the two branches of this people we had met; here there was just the same outward aspect—the same ugliness, and the same beaming friendliness and good humour.

When we landed they thronged round us, and

helped us disembark our goods, and bring the boat ashore, all the while jabbering unceasingly, and laughing, in wonder and amusement, at us two poor strangers. While we were standing there, mounting guard over our gun and the more valuable of our possessions, and ignoring the crowd of people round us, whom, of course, we could not understand one whit, Sverdrup said: 'Here comes a European!' I looked up, and saw a young man advancing towards us. He was clad in an attempt at a Greenlander's dress, but had a Tam-o'-Shanter cap upon his head, and a fair, good-looking face, which was as little like an Eskimo's as could well be. There could be no mistake about him; he and his whole demeanour were, so to say, a direct importation from 'the King's Copenhagen,' as it is called here. He came up to us, we exchanged salutations; then he asked, 'Do you speak English?' The accent was distinctly Danish, and the question somewhat discomfited me, as I thought it a little absurd for us to set to work at English instead of our own mother-tongue. But before I could answer, he luckily inquired: 'Are you Englishmen?'

To this I could safely answer, in good Norse: 'No; we are Norwegians.' 'May I ask your name?' 'My name is Nansen, and we have just come from the interior.' 'Oh, allow me to congratulate you

on taking your Doctor's degree.' This came like a thunderbolt from a blue sky, and it was all I could do to keep myself from laughing outright. To put it very mildly, it struck me as comical that I should cross Greenland to receive congratulations upon my Doctor's degree, which I happened to have taken just before I left home. Nothing, of course, could have been more remote from my thoughts at the moment.

The stranger's name was Baumann. He was a good-natured, sociable native of Copenhagen, who was now in the Greenland Service, and acting as assistant, or, as they call it, 'Volontör,' to the Superintendent of the colony of Godthaab. We subsequently had a good deal of his society. The Superintendent, he told us, was just now away from home, and in the name of his superior he offered us a hearty welcome to the colony. Godthaab itself was close by, and it was quite by chance that he had just walked out to Ny Herrnhut, the spot where we landed, to see the missionary. This is one of the few stations established by the German Moravian Mission in Greenland.

The first question I asked, as soon as I could get an opportunity, was about communication with Denmark, and whether the last ship had sailed. From Godthaab I learned that the last ship had gone two months or more ago, and there was none now that we could catch. The only possible chance was the

'Fox,' at Ivigtut, but she was to leave in the middle of October, and the place was 300 miles away.

These tidings were anything but welcome. It had been the thought of catching a ship to Europe which had spurred us on during our crossing of the ice; the vision of a ship had haunted us unceasingly, and never allowed us the enjoyment of rest or ease. We had consoled ourselves with the thought that we could make up for lost time on board, during our voyage home; and now, when the time came, we found that our ship had sailed before ever we started upon our journey across the continent. It was a magnificent structure of hopes and longings that now sank into the sea before our eyes. As far as I was concerned personally, this was not of much account, for, on the contrary, I was quite ready to spend a winter in Greenland; but for the other poor fellows it was another matter. They had friends and relatives—one of them wife and children—away at home, whom they longed to see, and they had often talked of the joys of their return. And now they would have to wait through the long winter here, while their people at home would think them long since dead. This must never be; a message must be sent off at once to the 'Fox,' our last hope of relief. While we were talking the matter over, we were joined by another European—the Moravian missionary, Herr Voged. He

greeted us very kindly, gave us a hearty welcome, and would not hear of our going by his door unentertained.

He lived in the building with the tower which had first caught our attention, and which served both as church and as a residence for him. We were received here, by the missionary and his wife, with unaffected heartiness, and it was with a strange mixture of feelings that we set foot once more in a civilised dwelling, after four months of wild life on shipboard, in our tent, and in the open air. The room we were taken into will always remain vividly impressed upon my memory. Its dimensions were not grand, and its features were uniformity and simplicity; but for us, who were used to a cramped tent, and the still greater simplicity of the open air, the appointments of this house were nothing less than luxury itself. The mere sitting upon a chair was a thing to be remembered, and the cigars to which we were treated were a source of unconcealed satisfaction. Then the cup of welcome was handed round, while coffee and food were being prepared for us. It was a queer change to be sitting at a table again, and before a white cloth, and to be using knife and fork upon earthenware plates. I will not say, unreservedly, that the change was altogether for the better, for we had been thoroughly comfortable when sitting by the camp-fire,

and tearing our gulls to pieces with our teeth and fingers, without forks, plates, and formalities.

While the meal was in progress, the pastor of Godthaab, Herr Balle, arrived; soon after him came the doctor of the place, whose name was Binzer. The news of our coming had already reached the colony, and they had hurried out at once to bid us welcome. We were now beset with questions as to our journey: as to why we had changed our route, how we had got out of the fjord, where we had left the others, and so on; all our accounts being followed, meanwhile, with the most lively interest. Then the party broke up, and we took our leave of our kind host and hostess.

When we got out of doors, we found, to our surprise, that it was raining. Our luck was true to us this time, and we had reached the habitations of men none too soon, for the rain would have been very unpleasant to us in our little boat.

We were assured that our boat and things should be taken care of and sent on, and then we started off to walk in the rain over the hills to Godthaab.

After a time our way brought us out upon a projecting point of rock, and we saw the colony lying below us. There were not a great number of buildings—four or five European houses, a church perched

upon an eminence, and a good many Eskimo huts. The whole group lay in a small hollow between two hills, and by a pleasant little bay. The Danish flag was flying on its high mast which stood on a mound down by the water. Crowds of people were swarming about. They had all come out to see the mysterious strangers from the interior who had arrived in half a boat.

Then we made our way down; but we had hardly reached the houses before a gunshot rang out over the water, and was followed by one after another, in all a complete salute. We had parted from civilisation amid the thunder of cannon, and with this same thunder we were received into the civilised world again, for to such the west coast of Greenland must certainly be reckoned. It might have been supposed that we were individuals of the most warlike tendencies. How many shots they fired in our honour I cannot say, but the salute was well sustained. The little natives had all their work to do round the guns under the flagstaff, as we were passing among the houses and between long rows of Greenlanders of both sexes, who crowded round and lined the way. They—and especially the women—were a striking sight in their picturesque attire. Smiles, good nature, and here and there, perhaps, a little unaffected wonder, beamed from all the faces about

us, and added a new sunshine to the surroundings.

Then our eyes fell upon a more familiar sight—the figures of the four Danish ladies of the colony, who were coming to meet us, and to whom we were duly presented. At the same time, it struck us somewhat curiously to see European petticoats again among all the skin jackets and trousers of the fair Eskimo.

As we reached the Superintendent's house, the salute was brought to an end, and the native gunners, under the lead of one Frederiksen, gave us a ringing cheer. The Superintendent's wife now welcomed us, on her own part and that of her husband. Here, again, we were temporarily entertained, and also invited to dine with the doctor at four o'clock.

We had still a long time to get through before then, however, though we had plenty to do in the way of washing and decorating ourselves. We were shown up into our new friend Baumann's room, the aspect of which, again, was sufficiently unfamiliar to us to make a very vivid impression upon our minds. Here a musical-box played to us 'The last Rose of Summer,' an air which will hereafter never fade from my memory; and here we were, for the first time, horrified by the sight in a glass of our sunburnt and weather-beaten faces. After our long neglect

in the way of washing and dressing, we seemed to ourselves little fit for presentation in society, and, both in our faces and clothes, a considerable number of the hues of the rainbow were intrusively conspicuous.

It was an indescribable delight to plunge the head into a basin of water once more, and to go through the ceremony of an honest Saturday night's wash. Cleanness was not, however, to be obtained at the first attempt. Then we attired ourselves in the clean linen, so to say, which we had brought all the way across Greenland for the purpose; and, thus reconstituted, we felt ourselves quite ready for the good things of the doctor's well-provided dinner-table.

By all the Danish inhabitants of Godthaab we were entertained with unprecedented hospitality, and the luxury displayed on all sides was quite astonishing. We had expected to find that the Europeans exiled to this corner of the world would be so influenced by the nature of their surroundings, and the primitive section of humanity amid which they dwelt, that they would have inevitably forgotten a certain amount of their native etiquette. And therefore our surprise was great when we saw the ladies appear at social gatherings in the longest of trains and gloves, and the men in black coats and shirt-fronts of irre-

proachable stiffness, and even on occasions going to the extremity of the conventional swallow-tail. Surrounded, as we were, by the natives, in their natural and picturesque attire, and thoroughly unaccustomed as we had grown to all these things, to us the absurdity of European taste in such matters seemed altogether incongruous.

We two were now safe in port, and the next thing to be done was to send relief to our comrades in Ameralikfjord with the least possible delay. They had no means of knowing whether we had reached our destination, or had gone to the bottom of the fjord, and left them to starve to death out there. And after this was done, we must despatch a message to the 'Fox.'

In the course of the afternoon we tried, therefore, to arrange matters, but without success. No sooner had we arrived than a storm from the south had sprung up, and the weather was so bad that the Eskimo, who are bad sailors in anything but their 'kayaks,' would not venture upon the voyage into Ameralikfjord. The letter to the 'Fox' was to be sent by one or two 'kayakers,' but we could find no one in the colony who would undertake to start in this weather, and we were therefore obliged to wait till next day.

When night came, and lodging had to be found

for us, Sverdrup was quartered upon the before-mentioned Frederiksen, the carpenter and boat-builder of the place, while Herr Baumann's room was put at my disposal. It was strange, too, to find myself in a real bed again after six months' absence. There can be few who have enjoyed a bed as completely as I did this one. Every limb thrilled with delight as I stretched myself on the soft mattress. The sleep which followed was not so sound as I could have expected. I had grown so used to the bag of skin, with the ice or rock beneath it, that I felt my present couch too soft, and I am not sure that, after a while, I did not feel a faint longing for the old order of things.

On the morning of October 4 I was roused from my unquiet dreams by the gaze of the Eskimo maid-servant who had come with the morning supply of tea and sandwiches. After this early meal I got up, and went out to look round the place.

Down by the beach there was just now a deal of life and movement, for a boat's load of seals, which had been caught not far off, had just come in, and the so-called 'flensing,' or process of cutting the blubber out, was now in progress. I went down with Baumann to study this new phase of life. The Eskimo women, with their sleeves rolled up, knelt in numbers round the gashed and mangled seal. From

some the blood was taken, and collected in pails, to be afterwards used in the manufacture of black puddings, or analogous delicacies; from others the intestines were being drawn, or the blubber or flesh being cut. All parts were carefully set aside for future use.

After having seen enough of the sanguinary spectacle, and duly admired the dexterity and grace displayed by the Eskimo women, as well as the good looks of some among them, we went across to see Sverdrup, and, if he were up, to ask him to come and have breakfast at the Superintendent's house.

When we entered, however, we found him already at table with his host, Herr Frederiksen, and engaged upon a breakfast of roast ptarmigan and other delicacies. I expressed my regret that this was the case, as I had hoped that we should breakfast together. But Sverdrup could see no reason why we should not do so still. He was now occupied with his first breakfast, certainly, but so good a thing would easily bear repetition, and he expressed himself ready at once to begin again. So he actually did; and, as a matter of fact, he made at this time a regular practice of eating his meals twice over. For three days he stood the strain; but after this he succumbed, and had to keep his bed for some hours in consequence. It was a long time, indeed, before any of us returned to decent

ways again, and were content to take our food like civilised beings.

In the course of the morning a man was found who was considered equal to the task of carrying our despatches southwards, and was at the same time willing to undertake the journey. The man's name was David, and he was a resident of Ny Herrnhut. He was to go to Fiskernæs, a small settlement some ninety miles to the south, and there to send the letters on by other 'kayakers.' An errand of this kind is usually undertaken by two men in company, as risks of a fatality are thus much lessened. But as the same David was not afraid of the undertaking, and had expressed his readiness to start the same afternoon, I, of course, had no objection to make. I promised him, as well as the others to whom he was to hand the despatches on, extra pay in case they caught the 'Fox.'

I then wrote a hurried letter to Herr Smith, the manager of the Cryolite quarry at Ivigtut. The 'Fox' being the property of the company who own this quarry, it lay really with the local manager to decide what course the vessel should take; but I also wrote to the captain of the ship. In both these letters I asked that the vessel should be allowed to come up to Godthaab to fetch us, if possible. I did not propose that she should wait at Ivigtut till we

could join her there, because, in the present uncertain state of the weather, it was quite impossible to calculate how long it would take us to get the rest of the party from Ameralikfjord, and cover the necessary 300 miles in open boats. As far as we could judge, we could not reckon upon reaching Ivigtut by the middle of the month—the date at which the ship was expected to sail—and we could not ask her to wait an indefinite time for us down there. On the other hand, it seemed to me that, if she thought of doing anything on our behalf, it would be to come and fetch us. By these means she could save time, and it would be possible to reckon, with a fair amount of accuracy, how many days the voyage to Godthaab and back would take her.

Furthermore, in case my messengers should catch the 'Fox,' but she could not see her way to fetching us, I hastily wrote the following lines to Herr Gamél, of Copenhagen :—

'Godthaab : October 4, 1888.

'At last I have the great pleasure of informing you that Greenland has been crossed from east to west.

'Want of time, I am sorry to say, makes it impossible for me to give you a detailed account of our journey; I can only scribble a few words to go by the "kayaker," whom I am now sending southwards

to stop the "Fox" at Ivigtut, if possible, and try and get her to bring us home this autumn. In case, however, the Eskimo should catch the ship, but she should have to go without us, I write these few lines to let you know, at least, that we are alive and well.

'As you know already, we left the "Jason," on July 17, with the best of prospects, and expected to reach land the very next day. In this, however, we were disappointed.

'We were hindered by the packing of the ice, by the force of the currents, and by floes so impracticable that we could neither row between them nor pull our boats over them. One boat got crushed; but we mended her, and made her serviceable again. We were carried seawards by the current at the rate of thirty miles in the twenty-four hours. We drifted in the ice altogether twelve days. We struggled to reach the land, and were near doing so three times, but three times we were carried out to sea at a speed there was no contending against. Once, during a whole day and night, we were in continual risk of destruction in the heavy sea that broke upon the edge of the ice.

'After twelve days' drifting, we were carried ashore at Anoritok, which lies to the north of Cape Farewell, in lat. 61° and some minutes, the number of which I do not remember at this moment. We

then rowed northwards, and reached Umivik, and began the crossing of the "Inland ice" there on August 15.

'We steered first for Christianshaab, but, as we met with violent storms and heavy going underfoot, we saw we should not arrive there in time to reach home this year. By going to Godthaab I thought we should have more chance of this; and, besides, I considered that it would be more interesting to examine the ice in this quarter, as it was as yet quite unexplored.

'We therefore altered the course for the District of Godthaab, reached a height of nearly 10,000 feet, and experienced as much as −40° or −50° Cent. of cold.

'For several weeks we were more than 9,000 feet above the sea. We had furious storms, loose, fresh snow, and terribly heavy going.

'At last, towards the end of September we came upon land not far from Godthaab. Though the ice here was nasty and rough, we found a passage, and, coming down at the head of Ameralikfjord, here made a boat out of our tent-floor, some bamboo-poles, and willow-boughs.

'In this Sverdrup and I rowed off, and reached this place yesterday, October 3. The four others will be fetched as soon as possible; they have rather short commons to live upon in there.

'Here you have our "saga" in short. I may add, that we are all perfectly well, and that everything has gone capitally. I only hope that we shall catch the steamer, and that you will thus see our sunburnt faces instead of this letter.—With best wishes, I remain,

'Yours ever,

'FRIDTJOF NANSEN.

'P.S. Remember me to A—— —— ——. I must say good-bye, as my "kayaker" must make the most of the weather, and be off at once. There are some 270 miles to be covered.'

Besides this, the Eskimo also carried a letter from Sverdrup to his father.

These two letters brought to Europe the first news of our having reached the west coast of Greenland, and contained all that was known of our journey for six months. In one respect they hold, perhaps, a somewhat unusual position, for their postage came to no less than 17*l.*

Our messenger promised me that he would start that very afternoon. He did make the attempt, but, as far as I could learn, was driven back by stress of weather.

As things were just as bad in this respect when evening came, and it was the general opinion that no

boat would be able to make the voyage into Ameralikfjord next day either, the Pastor proposed that a couple of men should be despatched in 'kayaks' to take to our companions the news of our safe arrival, together with a temporary supply of provisions, with which they could console themselves until the boats could be sent to fetch them away. This proposal I accepted, of course, most gratefully; and while the Pastor went to secure his 'kayakers,' two plucky brothers, named Terkel and Hoseas, who belonged to Sardlok, but happened at this moment to be at Godthaab, the ladies of the colony set busily to work to collect a supply of the most unheard-of delicacies. These were stowed away in the two canoes, while I supplemented them with some simpler articles of food, such as butter, bacon, and bread, and last, but not least, some pipes and tobacco. Among the latter was a big Danish porcelain pipe with a long stem, and a pound of tobacco, for Balto's private delectation—a present which I had promised him up on the 'Inland ice' on some occasion when he had surpassed himself in handiness. As soon as the 'kayaks' were ready packed, I gave Terkel, the elder of the two brothers, through the medium of the Pastor, an exact description of the spot where the others were to be found, and pointed it out to him on the map, which he understood well.

Next morning, therefore, October 5, three Eskimo left Godthaab—two bound for Ameralikfjord, and the third for Fiskernæs. The first two, who were excellent hands at their work, made good use of their time, and found our companions on the morning of the following day. But the latter, who was an inferior 'kayaker,' had to turn back, and was a long time before he finally got off. As far as I could make out, he was seen hanging about Ny Herrnhut, which was his home, some days later.

This same morning, too, a boat for Ameralikfjord made an attempt to start, but only to come back a couple of hours afterwards. As I have already said, these Greenlanders are no great performers with the oar. In the afternoon they had another try, and this time, strange to say, we saw no more of them; but, as we subsequently learned, they got no farther than to an island a little way to the south, where they disembarked, and passed the next few days in a tent instead of returning, though they were no more than an hour's row distant all the while. There was a very good reason for this odd conduct, as it appeared, for, had they come back, they would have lost all the pay which they now managed to put to their credit; and, besides, they would have had nothing like so good a time at home as in their tent on the island, and therefore they felt

no call to move till they had consumed their whole supply of provisions.

Next day the Superintendent of the colony, Herr Bistrup, returned, together with Herr Heincke, the German missionary from Umanak, a Moravian station up the fjord, some forty miles from Godthaab. The Superintendent had been in Umanak, when a 'kayaker,' who had been sent off from the colony, brought him the news of our arrival. He and the missionary had thereupon at once despatched a couple of men in canoes into Ameralikfjord. They also carried a supply of provisions sent by the missionary and his wife, and were told to remain with our party, and help them in every possible way.

On October 7, Terkel and Hoseas came back from Ameralikfjord with a letter from Dietrichson, telling us that they now felt quite comfortable in there, as they had an abundance of provisions, and now knew of our safe arrival at Godthaab.

Two days later, or on October 9, the weather was sufficiently favourable to allow of my sending off an ordinary Eskimo boat, which I had borrowed of Herr Voged, the German missionary whom we had first met. The crew consisted, as usual, chiefly of women. The same day, too, the first boat, commonly known as 'the whaler,' finally left the island on which its crew had hitherto been picnicing.

Several days now passed, and as we had heard nothing of our companions, we began to expect their arrival every moment. The Greenlanders in particular were extremely anxious to see them.

Like all Eskimo, they have the liveliest imaginations, of the fruits of which we had some noteworthy examples. The very day after our arrival the strangest rumours were flying about among the natives of the colony as to our experiences upon the 'Inland ice.' We were said to have taken our meals in the company of the strange inhabitants of the interior, who are double the size of ordinary men. We had also come across the tiny race of dwarfs who inhabit the rocks in the recesses of the fjords. Of the feet of these little people we had seen numerous traces in the sand, and we even had two specimens of the race in our company.

On the other hand, it was reported that two of the members of the expedition had died on the way; but of this sad occurrence we, as was quite natural, had no desire to speak.

At first, indeed, we were regarded as possessing certain almost supernatural attributes, and it was feared that we had achieved the heroic feat of crossing the dreaded 'Inland ice' by the aid of means not strictly orthodox. And, therefore, as soon as Sverdrup or I showed ourselves in public, the natives

assembled in their numbers to gaze at us. I, especially, on account of my size, was a favourite object of their regard. We received appropriate names at once: Sverdrup was called 'Akortok'—that is to say, 'he who steers a ship'; while I was honoured with two appellations—'Angisorsuak,' or 'the very big one,' and 'Umitormiut nalagak,' which means 'the leader of the men with the great beards,' under which description the Norwegians are generally known.

It had also come to the knowledge of these good people that we had two Lapps in our company—members of a race which they had never seen. The two 'kayakers' who had come back from Ameralikfjord had minutely described their meeting with the strangers. 'There were two men,' they said, 'of the people who commonly wear great beards, and two who were like us, but were clad in a wonderful dress.' They were thus quite acute enough to see that the Lapps, in spite of all distinctions, belonged to a race somewhat on a level with themselves, and were widely different from all Danes and Norwegians.

At last, early on the morning of October 12, the two Eskimo who had been sent into the fjord from Umanak arrived with a note from Dietrichson, saying that the whole party were now on the way.

The entire colony, Europeans as well as natives, now turned out, and awaited their arrival in great

excitement. At last we could see, by a movement among the 'kayaks,' which lay below us, that the boats must be in sight. Presently, too, 'the whaler' appeared from behind a projecting point. The 'kayaks' simply swarmed round her, and we soon caught sight of our four companions, seated in the stern, in front of the steersman, and already waving their caps in the air by way of salutation. It was a little strange to me to see them sitting there as passengers, instead of working at the oars.

The boat came slowly on, with a long string of 'kayaks' tailing out behind, and soon put in to shore under the flagstaff mound, where the four strange beings from the interior landed, and were heartily welcomed by the Europeans of the colony, as well as by crowds of Eskimo, to whom, of course, they were a source of renewed wonder and admiration. The Lapps came in for marked attention. The Greenlanders set them down as women, because they wore long tunics something like the cloaks of European ladies, as well as trousers of reindeer skin, which particular garments are only used by the women of the Eskimo. Balto seemed to take the attention which fell to his share with the greatest complacency and nonchalance. He talked away, related his experiences, and was soon on an intimate footing with all the inhabitants of the place. Ravna, as usual,

went his own silent way; he came up to me, ducked his head, gave me his hand, and, though he said very little, I could see his small eyes twinkle with joy and self-satisfaction.

They were all glad enough to have reached their destination, and the announcement that there was a very doubtful prospect of their getting home this year did not seem to have much effect upon their good spirits.

Of course, there now followed an interminable series of questions and answers. I will leave chiefly to Dietrichson the task of chronicling the events which occurred after Sverdrup and I parted from the others in Ameralikfjord.

CHAPTER XXIII

WAITING IN AMERALIKFJORD

THIS short account of the movements of the rest of the party after Sverdrup and I set out upon our voyage to Godthaab is the work of Lieutenant Dietrichson, who was left in charge of the detachment; but I have also thought it as well to insert an extract or two from Balto's narrative:—

'The task which had been entrusted to us, the remainder of the party, was to fetch the baggage, which we had been obliged to leave meanwhile up by the ice, down to Ameralikfjord, and on September 27 Kristiansen, Ravna, and I set off on our errand, leaving the other three busy at their boat. We had about eighteen miles to go, but hoped to reach our destination before dusk, as we expected to be able to shorten the distance to a certain extent by crossing some of the lakes on the ice. The upper lakes indeed were just frozen, but the ice was altogether too thin to bear us, so we had to make our way as best we could along the steep valley-side and over the rough surface of the moraines, while the swollen

streams also contributed not a little to delay our progress. It was therefore not till half-past seven or so, or long after the sun had gone down, that we eventually came to the end of our day's march. After a somewhat primitive and miscellaneous supper of fragments we crept into our sleeping-bag and spent the night in the open air.

'The morning of the next day was devoted to arranging and packing our goods, so that they could be carried on the back with tolerable comfort, and we were not ready to make a start till noon. We considered it best to move the things in sections and by short stages, and began by conveying our first lot down to a certain lake, to which we had given the name of "Langvand." When we got back to the starting-place we found Balto already there. He told us that after a day's work the boat had progressed so far that his aid was thought no longer necessary, and so he had been despatched to help us. He had taken about the same route as that we had followed on the way down, except that he had had to go round nearly all the lakes. Langvand, however, for the sake of the short cut, he had tried to cross. At first the ice was tolerably firm, but in the middle of the lake it was so weak that he had had to go on all fours, and even then only just managed to get across without going through.

'Next morning, September 29, we carried our last load down to Langvand. Balto again tried the ice and crossed a little arm of the lake, going on his "ski" and dragging a sledge behind him. I was busy making a map of the valley, and as I had fallen a good deal behind, I thought I would make up for lost time by following Balto's example. So I set off like him on my "ski" and pulling a sledge behind me. When I was half-way across I felt that the ice was on the point of giving way under me, but as I saw there was a second layer below, I went confidently on. The upper layer, however, now grew weaker and weaker, the lower came to an end, and the only course left me was to scramble to shore by the shortest way. But the ice now refused to bear me altogether, and I sank slowly down into the water, "ski" and all. The "ski," however, were luckily not bound fast to my feet, so I slipped them off at once and swam to land.'

Balto, who had gone on before and only crossed the same ice with great difficulty, thus describes the situation:—'As I was afraid that Dietrichson would try and cross this bad ice, I pulled out my whistle'—he means by this one of the small horns that we carried for signalling purposes—'and ran up on to some high ground and blew away. Dietrichson answered at once, and I then ran in his direc-

tion to see what was going to happen. Just as I got down to the lake, he was well out in the middle, and I could see that the ice was very weak. So I called to him to come straight to shore, but after a few steps he went in through the ice. Then I told him to leave the sledge and "ski" and swim to land, which he did, and when he got out we pulled the instruments out of his pockets to prevent them getting wetter than was good for them. We were now at our wits' end to know how we should get the sledge and "ski," and Dietrichson wanted to swim out again and fetch them. But I said, "Don't do that, man, you'll freeze to death!" and I shouted to Kristiansen to bring one of the long bamboo poles and a rope. But Dietrichson would not wait, and went on to the ice again. He got on to a loose piece at once, which tipped up, and he went head first into the water once more. Then he swam back to shore again. I now ran up on to a hillock and blew with all my might. Kristiansen then shouted, "What's the matter?" I shouted back, "Bring a bamboo and a rope! Dietrichson has fallen into the lake and the sledge is left out on the ice." Kristiansen was much frightened at this; he thought Dietrichson was drowned and that only the sledge was left on the ice. He came running as hard as he could go with the pole and rope and we drew the sledge and gun to

shore. We then went on to the place where the others had a fire and were making coffee, and where we stopped for the night, for Dietrichson of course was quite wet through.'

'After getting the things ashore,' resumes Dietrichson, 'we went on to the others, who were getting a meal ready. A cup of coffee and a partial change, for I had not enough for a complete one, soon made me warm and comfortable again.

'We now had all our goods collected at this spot, but we could see that we should not be able to carry the large loads we had brought so far all the way. On the other hand, if we took them in three portages, instead of two, we should lose so much time, and should not reach the fjord as soon as we wished. So I determined to abandon one sledge and one pair of "ski," and then to make sure that every man had a fair share of the weight, I made a pair of scales out of "ski," bamboos, and rope, and while the others were busy distributing the things equally, I went on down the valley surveying for my map in order to avoid being delayed by these operations next day.

'Next morning we started at six o'clock, and after a hard day's work got all our things down to another lake, which we had called "Gaasedammen," or "Goose Pool," where we spent the night.

'Next day, October 1, after two hours' march, we

came to a long and steep, but fairly smooth and grassy slope, down which our loaded sledges ran capitally. But when we came to the river below we met with an unexpected obstacle. The volume of water was quite four times as large as it had been five days before. Cross it we must, however, as farther down, and on the same side on which we stood, it ran close under a steep wall of rock quite impassable to us, and furthermore the tent and our other things lay on the opposite side. At the best wading place we could find the river was some seventy yards wide, and this breadth of water we had to pass three times before we conveyed all our loads over. The two Lapps kept all their clothes on to protect themselves better against the cold water, but Kristiansen and I preferred to divest ourselves of trousers and stockings. The stream ran very fast, and we had to use our bamboo poles diligently and carefully, for had we lost our footing the loads on our backs would have made it very difficult to recover ourselves. It was a chilly business, indeed, wading this seventy yards three times over, and with the water nearly up to our waists. Kristiansen's and my legs were simply blue with cold when it was all over, but a good rub and our dry clothes soon brought back the warmth again, and then we were in better case than the Lapps, who had nothing

dry to change into. A couple of days later we should have found it quite impossible to get our things across the river, had it gone on increasing in the same way.

'Though it was not yet noon, we determined, as there was plenty of fuel hereabouts, to light a fire and have our dinner. We all felt that some hot soup would be very grateful and comforting after our cold bath.

'At two o'clock in the afternoon of October 2 we reached the fjord with our first loads. The rest of the things we left where they were for the present, and spent the remainder of the day getting the tent in order. The original tent-poles had been used for the boat, and we now had to supply their place with others.

'During the six days which had passed since we were here last we had been unusually lucky in the weather. The days had been bright, but not too hot, and the nights clear, but mild enough to make it a simple pleasure to spend them in the open air with no other protection than our sleeping-bag.

'Early next morning, October 3, we were on the move, and, after breakfast, we started up the valley to fetch the rest of our things. By noon, we had them all down by the fjord, and as there was now a prospect of our having to spend some days here

inactive, we unpacked a number of our goods and made the tent and camp generally as comfortable as we could. We took stock of our provisions also, and found that, besides a good supply of pemmican, we had biscuit for six days and pea-soup for five. In the way of fat we had nothing left, and our stock of salt had also come to an end.

'Every day now we might expect to hear from Godthaab; we had even had faint hopes of finding a boat already arrived to fetch us when we got down to the fjord with our baggage. As yet we had no reason to feel anxious about our two comrades, but if another week were to go by without our receiving news of them, we should have to try and reach the colony by land, for in that case we should be justified in supposing that they had come to grief. By that time, too, we should have come to the end of all our provisions, except the pemmican, which would just suffice for the proposed land journey.

'Outside the tent we made a camp-fire, and lying round it enjoyed to the full a hardly earned rest. The whole afternoon we thus spent stretched on the elastic heather, and gloating over the thought that our worst labours and trials were over, and that we had now a few days of ease and leisure before us.

'We turned in early, and it was not till late next morning that we left the tent again. I spent the first

part of the day finishing my surveying, and Kristiansen went out with the gun, but came back an hour or two afterwards empty-handed. This day and the next as well we practically devoted to rest.

'On the morning of October 6 I started off along the stretch of higher ground which ran out into the fjord to the end of the river sands, partly to look for a landing-place for the boat we expected, and partly to see if there was anything to shoot. When I was about half-way to the point I heard a shot. I hurried up to the top of the ridge to see who it could be, and soon caught sight of two Greenlanders coming up from the water and carrying packs on their backs, attached by the peculiar broad forehead-strap which the Eskimo use for this purpose. I shouted and they stopped, and then came to meet me. As I had, of course, guessed, they proved to be two men sent off in "kayaks" by Nansen. A letter they brought told me that he and Sverdrup had arrived safely at Godthaab, that he had sent off a temporary supply of provisions herewith, that a boat with more things of the kind would be soon despatched, but that owing to stormy weather no one had yet been found willing to undertake the voyage.

'We three now started for the camp, our way lying over a high headland of rock which jutted out towards the river. When we reached the top of this

I shouted to the others in the tent, who all came rushing out and, at once apprehending the situation, set up shrieks and cheers of joy. I had gone out to look for game, but though I had found nothing I have never in my life come back from shooting with a better bag than these two Eskimo.

'The whole party now gathered round the welcome supplies. First I read the letter, which contained nothing but pleasant news except the announcement that there was little hope of our reaching home this year. But in the first rush of joy we had not much room for this disappointment. Then we began to unpack, with all the curiosity of children round the Christmas tree. We feasted our eyes on the sight of all these good things—bread, meat, coffee, tobacco, and all the rest, and above all upon the butter and bacon, for which we simply craved. Cakes even and sweetmeats were not wanting, for the Danish ladies of the colony had collected for us all manner of delicacies. We set to work upon them at once and with unprecedented fury.'

Balto's account of this incident may be added. He writes:—

'While Dietrichson was out I climbed up on to a crag which was 300 feet high. When I reached the top I saw three men coming towards me. One of them I knew, for it was Dietrichson, and he had met

the two men who had been sent from Godthaab to bring us victuals. I ran straight down to the tent and told the others that I could see some men coming. They would not believe it, but I began to collect dry wood and made a fire, fetched some water, filled the coffee-pot, and put it on, as I knew these people must have some coffee with them. As soon as they all reached the tent Dietrichson began to look at what had been sent us. I saw Nansen had sent me a pipe and some tobacco, which I caught hold of at once and began to smoke, while the others set about eating. We cut slices of bread an inch thick, spread half an inch of butter on them, put bacon on the top of that, and then we had coffee afterwards.'

'While we were still engaged upon our meal,' Dietrichson continues, 'we heard two or three more shots in the direction of the point, and presently two men appeared on the high ground above. When they came down they handed us some letters, one from Herr Bistrup, the Superintendent of Godthaab, another from Herr Möller, a Greenlander of the same place, and a third from Herr Heincke, the German missionary at Umanak, at which settlement the two former were on a visit. Besides these letters they also brought a supply of provisions from the Superintendent and the missionary.

'We asked our new visitors to come into the tent

and inspect our arrangements. When they saw the sleeping-bags they pointed first to themselves, then to the bags, laid their hands on their cheeks, and shut their eyes. Then they pointed to the tent and all it contained, pretended to lie down on their backs, and finally nodded in the direction of the fjord. From all this pantomime we understood that they meant to spend the night with us, and that they would conduct us to the colony. The provisions they had brought were down by the fjord with their canoes, and so Kristiansen and Balto prepared to go and help bring them up. The two Eskimo from Godthaab also made signs of moving, and as I managed to get out of them that they meant to go back at once, I wrote a few lines to Nansen thanking him for the supply of provisions and telling him how we were getting on.

'When the new consignment of good things arrived another solemn unpacking began. The names of the different things were shouted as they were turned out, and as soon as someone named spirits, another sugar, and a third candles, we determined to make the evening memorable by drinking a bowl of punch in the tent. It was already late and we set to work at once. The water was boiled and sugar and spirits added, the latter being a luxury which we had not tasted since we left the "Jason." Our grog did not promise to be of much strength, however, for Balto

had boiled an absurd amount of water. But this was perhaps as well, as the spirits proved to be the ordinary Scandinavian "akvavit," which is really impossible in combination with water, and a stronger mixture would therefore have been almost undrinkable. As it was we thought it excellent.'

Balto, however, a connoisseur in these matters, reproachfully observes in his narrative that 'one cannot expect grog to be anything but weak when one has to add five bottles of water to one of spirits,' and that 'this did not taste of anything at all.'

'Cigars too had been sent us, and we were soon working away at them with a will to make up for lost time. Nansen's letter said that he and Sverdrup were living like princes at Godthaab, but we were just as well pleased with our fate and ourselves in the little tent, and we all agreed that this was undoubtedly the pleasantest evening we had spent together. There were six of us again in our little dwelling, and as we grew lively a bewildering confusion of tongues prevailed. With the Greenlanders we managed to carry on a fairly satisfactory conversation by means of gestures and the aid of our Eskimo dictionary and conversation-book. Our two guests, Peter, a seal-catcher from Godthaab, and Silas, a mighty hunter of Umanak, were both intelligent and well-informed men, who could not only read and write but even

draw. Their sketches of some of the buildings of Godthaab and Umanak were so true that we afterwards recognised the originals at first sight.

'We enjoyed ourselves so thoroughly that evening that we were all loth to go to bed. Eventually Kristiansen, Balto, and I packed ourselves into one bag, while Ravna and the two Greenlanders occupied the other. Sleep did not come at once, however, as our two guests presently set to work to sing hymns. They went through three in all, then finished with a prayer. This little service was probably due to the fact that the day was Sunday, though it may have been called forth by their apprehension at the prospect of a night in the midst of strangers.

'Next morning Silas went out to look for reindeer. He told us that in August last he had some sport among these very mountains, but I must confess that I had not much faith in his luck when he started off this morning with his rusty old muzzle-loader over his shoulder, though at the same time I felt a strong temptation to go with him. However I had settled that we would to-day begin to move our things down to the extreme end of the point, where was the only available landing-place. I did not like to shirk this work, and besides my help was necessary because Ravna was now of scarcely any use, as during the latter part of the crossing he had rubbed one of his

feet so badly that he was now almost completely lame. So Silas went off alone and the rest of us began to move the sledges and other things that we had no further need of down towards a new camping-place at the end of the point.

'At one of our scanty meals up on the ice we had discussed what particular preparation of food would have been most welcome to us at the moment. Most of us had given our votes for a good bowl of porridge with plenty of butter, and this delicacy Nansen had promised to treat us to as soon as we reached Godthaab. But among the good things now sent us was some meal, so we thought we would set about making the long-looked-for porridge for this day's dinner.

'This was in fact our first hot meal since the provisions arrived, and after it was over we were lying stretched on the grass smoking our after-dinner pipes, when we caught sight of Silas at some distance up the mountain-side. He was coming down towards the tent and had something large and heavy on his back. We scarcely dared think it was a reindeer, but presently we saw the horns sticking up above his head, and there was no longer room for doubt. We all rejoiced; the Lapps were simply wild with delight at the prospect of again enjoying some of their national food, which they had had to do without so long. Balto ran to meet the hunter, skipped and

danced about him, clapped him on the back, and knew not how best to express his overflowing joy.

'Silas soon reached us, and laid down his burden before us. It was the hide, head, suet, marrow-bones, and one haunch that he brought, the rest having been left behind to be fetched next day. He distributed the marrow-bones and suet among us and gave us to understand that we must put the pot on at once and cook the whole supply. The Greenlanders eat their meat quite as willingly raw as cooked, and our two friends had already begun their meal. For our parts it was little more than an hour since we had eaten our fill of porridge, but nevertheless we put the pot on at once, and, grouping ourselves round it in Lapp fashion, took bit after bit out with our fingers, so that by the time the larger pieces were properly done most of us were already satisfied. In the evening, however, we set to work again and finished our first supply of good fresh meat.'

Balto's recollection of the reindeer moves him to say that 'from this time things grew brighter, we began to forget the hardships we had gone through—the hunger, the thirst, the cold, and the desolation of the ice.'

'Next day the two Greenlanders went off to fetch the rest of the reindeer, while we moved the tent and our other things down to the point in expectation of

the boats. Ravna's foot was still so bad that he could scarcely manage to climb over the high bluff which barred our way.

'On their return the Greenlanders took the reindeer meat down to the spot where their 'kayaks' lay and presently made their appearance at our new camping-place with a great piece, which was put on to boil at once. Peter also presented us with a ptarmigan which he had shot. First, however, he took the entrails out and devoured them forthwith, to our great consternation, but his own undisguised delight.

'Our constant watch for the boats met with nothing but disappointment. Hitherto, as I have said, we had had splendid weather, but now it began to rain, and at times so hard that we were constrained to keep within the tent, I only showing myself outside when meteorological observations had to be taken. This confinement grew at last very wearisome and we began to await impatiently the hour of relief. On October 9 there was a fairly strong wind blowing from the east, which would delay the boats considerably, and if it went on increasing in force, there was a chance of our remaining fixed here for some time yet. So in order to provide against a possible dearth of provisions, we had to take to limited rations again, though there could be no real famine

in prospect as long as we had the reindeer to rely upon.

'No pleasanter diversion than a stalk during this period of waiting could have been wished for, but all my attempts to induce Silas to go with me were in vain. He only shook his head and declared the wind to be in the wrong quarter.

'The last few evenings our two Greenlander guests had, in spite of the incessant rain, left us and spent the night down by their canoes. I supposed that this was in order to keep watch in case the boats should arrive in the middle of the night, but possibly the motive was sheer modesty and consideration for us, from the idea that they were a burden to us, seeing that the boats were so long in coming. Even before this they had disappeared from the tent once or twice just before a meal was going to begin.

'At last, at seven o'clock on the morning of October 11 we were awoke by the sound of several shots. We guessed at once what they meant, and jumped from our bags and fired in answer out of the tent-door. Very soon afterwards we were dressed and outside on the look-out for the new arrivals. Presently, above a little rise in the ground, we saw one Eskimo head after the other appear. We began to count, but their number actually baffled us, as they seemed to swarm.

Fourteen there were in all, men and women, chattering eagerly together as they neared the tent. When they reached us one of the party advanced, and, in a mixture of Danish and Eskimo, announced that they had come with two boats to carry us away. It was one Terkel, a smith in the Danish service, who thus acted as interpreter. The result of the performance was that we understood a little of what he said, and he practically nothing of all the questions we put to him. We extracted from him, however, that they had arrived at the point the night before, after having spent five days on the voyage. It was less than sixty miles from Godthaab, but there had been a storm on the coast outside which had forced them to put in and wait when they were only four or five miles from the colony.

'Often as we had struck our tent and broke up camp, we had never performed these operations so speedily as to-day. The things were packed, each of the new-comers took his burden, and the whole caravan moved off towards the boats, which lay a short half-mile from the encampment. Down at the point stood the Greenlanders' tent in which they had spent the night. Terkel now informed me that they had run out of provisions, owing to the length of their voyage, and asked if we would give them something, so that they could make a meal before we started, as

they had now eaten nothing for a long while. They had brought us another good supply, so we now had plenty for everybody, and I promised that they should have what they wanted, but not till we reached the other side of the fjord. It was just now high water, and I feared that if we delayed we might not be able to get the boats off.

'The relief party had come in one wooden boat, belonging to the Danish Greenland Service, and one ordinary Eskimo skin-boat, the property of the German Mission. We embarked in the former and stowed our baggage on board the latter. The packing seemed likely to take some time, so leaving Balto to see that nothing was left behind, the rest of us started and rowed across the fjord to look for a convenient landing-place and make ready for the distribution of food to the Greenlanders.

'As soon as the other boat arrived supplies were served out and the natives were presently hard at work upon the long-expected food. I have already mentioned that we had seen to our astonishment Peter devour the entrails of a ptarmigan. We were now introduced to another Greenland delicacy. Silas produced the stomach of the reindeer he had shot, and the very sight of it made the mouths of his fellow-countrymen water. It was then cautiously opened and the contents distributed among the party, all of

whom after eating their share with evident satisfaction carefully licked their fingers lest they should lose even a stray fragment of the highly prized delicacy.

At last we were ready to start in earnest and got under way, Peter escorting us and Silas the other boat in their quality of 'kayakers.' It was not long, however, before our companions had to put in to land again. Their boat had now been so many days in the water that the skin was soaked to such a degree that it was quite necessary to take it ashore and dry it. We therefore gave the crew a quantity of provisions and went on our way alone.

The weather had grown finer and finer as the day wore on and at noon the sun was shining brilliantly. We lay at our ease in the stern of the little white boat leisurely contemplating the grandeur of the landscape round us. Towards evening as the sun sank lower and the mountains thrust their long shadows far over the surface of the fjord, the solemnity of the scene seemed to inspire even the Eskimo, who had hitherto been so gay and lively. The cheerful conversation and merry laughter by degrees died away and gave place to absolute silence. Thus we rowed on for a long while with not a sound but the monotonous splash of the oars and not a sign of life to be seen. At last the intensity of the silence became too much

for the Greenlanders, and with an earnestness which seemed the outcome of the surrounding nature they broke out into a hymn. This was followed by another, and to the accompaniment of their chants we now rowed on through the gathering darkness.

Except for a break of half an hour our crew had been at their oars since nine o'clock in the morning. So at eleven we put in to land, to give them a well-earned rest, and pitched our tents for the night.

Though we were up at five next morning we found that the other crew whom we had left behind the day before had been astir still earlier. Their boat was already in sight, but only Silas, their 'kayaker,' caught us up before we started, and henceforward he kept us company as well as our own attendant Peter.

We calculated that we should reach the colony somewhere about noon to-day. We got under way at six o'clock and as a nice breeze was blowing from the east we hoisted sail and our boat shot quickly by one little spit of land after the other. The wind soon dropped, however, and the crew had to take to their oars again. We now left Ameralikfjord and turned northwards among all the islands which lie between it and Godthaab. When we came within two or three miles of the colony our two 'kayakers' went on in front to announce our approach.

As we turned the point of one little promontory

we came within sight of a long, low, red house with a little tower and surrounded by Eskimo stone-huts. This we supposed to be Godthaab, but the boats passed on and we were told it was the German missionary station, Ny Herrnhut. Another promontory was passed and we saw the settlement itself lying before us. There were already a number of people down by the beach, and the Danish flag was hoisted as we came into view. We landed and were received in the heartiest way by the Superintendent, Herr Bistrup, and his wife, to whom we were afterwards indebted for so much kindness and hospitality, and by the other Danish families, all of whom had come down to offer us a welcome.'

CHAPTER XXIV

AN ESKIMO NARRATIVE

I FEEL that I must devote a special chapter to another narrative of a somewhat peculiar kind. This is an account written in his own tongue by Silas, one of the two 'kayakers' who were sent from Umanak into Ameralikfjord to relieve our party. It was originally printed in Eskimo in the journal which bears the eccentric title of 'Atuagagdliutit,' is published in Godthaab once a month, and is distributed gratis among the Greenlanders. It has since been kindly translated for me into Danish by Herr Brummerstedt, the Superintendent of the colony of Holstensborg, who has attempted to reproduce the original as closely as possible.

The rambling prolixity of the narrative and its abundance of repetition are very characteristic of the Eskimo method of imparting a story. The reader must bear in mind that the narrator is an ordinary native hunter and seal-catcher, and has had no education other than that which now falls to the lot of all the Eskimo of the colonies.

'*An Account of the Europeans who have crossed Greenland from east to west over the "Inland ice," and of their arrival in Ameralikfjord and at Godthaab.' By Silas of Umanak.*

'I must first tell of our journey to Korkuk. We Greenlanders, who live in the fjords, are very careful to look after our fox-traps, as the sale of the skins brings a little money into our pockets. At the end of September we went in to Korkuk, a party of four —that is to say, I myself, Peter, David, and my foster-son Conrad, the latter having, in May, got a "kayak" through the "Board." When we reached Korkuk, David and I went out after reindeer, while Peter and Conrad went to look at the traps. We saw tracks, but no deer, and as it looked as if we should have some rain, we set off on our way homewards next day. When the wind dropped, David and I went across the fjord; we saw a little fjord-seal rise, and went after it, but as there was a little sea on we missed it several times. Then, as we saw no more seal, David left me to cross the fjord to the two others, who were on the opposite side, while I kept out in the middle. When I got near home, and had just passed a little point, I noticed that there was a wooden boat lying down by the houses. I had heard before we left that the mis-

sionary expected a visit from the Superintendent of Godthaab, after he had been at Kornok; which was quite true, for it was he that had come. When I got in to shore, I found two "kayaks" pulled only a little way up above highwater-mark. It was two postmen, who had come in the "Seminarists'" "kayaks."

'Just as I had got out of my "kayak," my foster-son came down on to the beach to me and told me that the people who had crossed the "Inland ice" from the east coast to the west had safely reached Ameralikfjord. Four of them were still in the fjord, while two had come to Godthaab in a boat made of canvas.

'When I heard this I was very much astonished, and said at once, "Just think, if I had met them in the summer when I was at Kapisilik after reindeer!" I must tell you that we had heard say that there were some folk who were going to try to cross the ice in this way. Then I said, "But how did they manage to come from Ameralikfjord to Godthaab in a canvas boat? The whole way there is nothing but steep cliffs where one cannot land. It is a very strange thing; we Greenlanders could never have come that way in such a boat."

'Then I went up into my house, pulled my skin-coat and trousers off, and set about getting something to eat. Presently the children knocked at the

window and said that Otto, the missionary, was calling for me. Then I made haste and put my trousers on again, but the children called in through the window that Otto was just coming into the house. As it would have taken me too long to put my coat on, I went out in my shirt-sleeves and met him by the doorway. As I got outside he said, "You know the way to Ameralikfjord well; the four Europeans in there are very badly off, and you and the Superintendent's 'kayaker' Peter must go and take them food. So make haste and get ready to go."

'As I have said, I had just come home, and at first did not care much about going out again, but I made up my mind to do it at last.

'It was raining very hard, and at four o'clock in the afternoon, when I had had my coffee and was waiting for the letters, I went into the tent of the Superintendent's crew to see if they had any news to tell. The steersman then told me that two of this party were Lapps. Now when I was at school I had heard something about a people who were called Lapps, but of their ways and customs I knew nothing.

'When the letters were ready, and we—that is, Peter and I—had filled our "kayaks" with provisions, spirits, and other things, we set off to try and reach, if possible, the house at the fishery before nightfall, as it was raining too hard for us to lie in

the open air, and there were no large stones with holes under in which we could sleep.

'As it was beginning to grow dark we reached this place, and went into the house, but as the roof was leaky the rain dripped heavily down inside. I luckily had a coffee-pot and a saucer with me; the saucer we used as a lamp, and then we laid ourselves down to sleep as best we could.

'In the morning we made some coffee, and as soon as it was light went on our way.

'When we came to Itivdlek, we first carried the provisions and other things across to the side opposite to that on which we landed; then we took our "kayaks" on our heads and went across by land, to save rowing round. We had expected to reach the head of Ameralikfjord before evening, but as the south-west wind was blowing harder and harder, and the sea rising, we only got as far as the north side of Kingak; for I dared not go round Kingak Point, because I did not know what it was like to pass in a high wind, and because I knew there was no place at the point where we could land if it were blowing too hard.

'Here we found a great hole under a stone, into which we crawled for the night.

'When it began to grow light, as the weather was now fairly calm, we left this place, after having

drunk up our last coffee. After paddling for some time we at last rounded the point which I had been most afraid of, and went further into the fjord. As my companion had never been this way before, I told him the names of the different mountains and the way we used to take when we were out after reindeer.

'We did not know exactly where these people were, but I thought it most likely that it would be at one of the camping-places at the head of the fjord. So when we had crossed over and were just off Ivigtussok we fired several shots; but they were not answered, and we paddled on farther. Here we saw two seals and tried to shoot them, but as the wind was blowing too hard we could not get within shot. We then went on till we reached the end of the fjord, where we fired off several more shots; but these were not answered either, and we began to fear that we should not find the people we were looking for.

'But presently we thought we heard a shot, which seemed to come from Umiviarssuit, and I said to my companion, "Let us land here at Umiviarssuit, and first go and see whether they are not on the other side of the big river; it is very likely that they are."

'When we had dragged our "kayaks" over the mud up on to the dry ground, I took the letters and my gun and Peter took his to fire off some signal-

shots. At last, when I had fired once—my companion Peter's gun had got wet and could not be used—we heard a shot close by, and at the same time caught sight of the tracks made by some large boots. As we now had no longer any doubt that we should find those whom we were looking for, our spirits began to rise, especially because we thought we were going to see the Lapps. As we went farther on, we came across tracks of Eskimo. We had thought we should be the first Greenlanders to come to these people, but we afterwards learnt that we had arrived just a little after two others. Presently Peter saw a tent and people outside it. While Peter began to shout, I fired off my gun in joy, and then we looked about for the best way to get down to the tent. We were now called to in Eskimo, "Amuinak!" (Come straight down). We then recognised the two Greenlanders, who turned out to be Terkel and his younger brother Hoseas from Sardlok. They had just come, like us, to bring provisions. We now saw that the two Norwegians and two Lapps were having a meal out of the food and coffee that had been sent them. They were using one of their sledges for a table, on which the things were spread.

'When we came up I gave the letters to one of them, and he handed them at once to the man who sat farthest away.

'And now we had the Lapps before us at last whom we had so longed to see. We were much surprised at their dress, as it was so different from that which we are accustomed to see Europeans wear over here. Their boots were like skates, the points being very much turned up. One pair had soles on like the soles of Eskimo boots, while the other Lapp, the elder of the two, had boots made of the skin of the reindeer's legs, and the toes of these were also much turned up. They both had trousers of reindeer-skin, which were very close-fitting, and underneath they had white woollen drawers. In their coats they had many pockets, and the whole of the inside of the coat was used to carry things in. They had scarves round their necks, in each end of which was a pocket.

'The younger one, Samuel Balto, had a high cap with four corners, in which were feathers, and with a broad red band round the middle. The elder, Ole Ravna, had a tall red cap growing smaller and smaller as it went upwards, and in the top was a tuft.

'After the letters which we had brought from the Superintendent and missionary had been read, they gave us food and coffee, which we took. When they went into the tent we went with them to try and talk to them. Then we heard they had a book,

and we were shown one which was printed in Eskimo and Danish, as well as two papers which were written in these two languages. By the help of these we at last, after a long time, made them understand what things we had brought with us, and got two of them to go down with us and fetch some of the things, as we could not carry them all up alone.

'As Terkel and his brother wanted to go back to Godthaab, Peter and I settled to wait here for the boat which was to come and take the four men away. Otto, the missionary, had told me to come straight back to Umanak, but I thought I had better wait and go with the rest to Godthaab, as I should get more pay this way.

'Making signs to the two who were to come with us to fetch up the things we had brought, we went off with them and Terkel and his brother down to the "kayaks," and began to pull out the things, which the two men were very glad to see. We had all sorts of things with us, and among them five loaves of rye-bread and two bottles, in which was wine.

'When we were ready to take the things up to the tent, we first wished Terkel and Hoseas a good journey home, and then left them. We then came to some tracks in the sand, which I told Kristiansen

and Balto were made by me and my companions in the summer, when we were here in July after reindeer. I showed them the mountain Akuliarusiarssuak, told them that my companions were called Conrad and Frederik, and that we had shot five reindeer there.

'When we got near the tent the Lapp began to shout, and I shouted too. When the master (*i.e.* Dietrichson) saw what we had with us, he seemed to be very glad too. All the things were carried into the tent, and they began to make some coffee in a big pot.

'When the coffee was made we drank it, and ate as much as we could, and afterwards had some punch. When they wanted to sleep, they told us to come in, and gave us a bag which was big enough for three men, and in which we were to sleep with the old Lapp.

'My companion Peter would not get into the bag with him, and I, too, was rather afraid to lie in the same bag as a Lapp. This was because we are not accustomed to sleep with Europeans at any time.

'As Peter still refused, I got into the bag; but for a long time I could not sleep, partly because the Lapp, my bedfellow, breathed so hard, partly because we were laughing very much, and because the other three in the other bag were joking with

one another. When at last, after a long while, they were quiet, we went off to sleep.

'When we woke next morning, and had had our breakfast and coffee, I felt inclined to go out after reindeer, because the weather was fine, and because I do not like doing nothing.

'As Peter said he had never seen reindeer yet, I wanted him to go with me, but as his gun had got wet he would not. Towards midday, though it was Sunday, October 7, I started off. If I had been at my own home, Umanak, I do not think I should have gone out like this, but I wanted so much to get the four strangers some meat, even if it were only a hare.

'Just as I started I remembered what day it was, and that the Sabbath belonged to God, our Lord, and then I prayed, without doubting, "Give us this day our daily bread." I could wish that all Christians, when they go out to do their work, would pray in this way without doubting.

'I went slowly up the mountain-side, and when I had nearly reached the top I looked down in a gully, and fancied I saw there some things lying down. As I thought they were reindeer, I sat still for some time watching them, but as they did not move at all I began to think I could not have been right, and went straight down to see what

the things were. When I got some way down the herd began to run, and among them was a great buck with his does, as well as several others. I was so angry with myself that I said, "I was a fool for not seeing them; I have done myself harm by my blindness."

'They made off rather fast at once, but presently stopped. I remained quite quiet, and kept my eye on them. A little while afterwards they ran below that part of the mountain on which I was. When they had passed me, the young ones being behind, I went on to look for them, and saw them a little way below, and on the other side. Then they came nearer, the doe being first, though she was rather a long way off, and the buck behind, but a little nearer. I shot at him, though I would rather have had the doe, and hit him; but the ball only broke his shoulder, so I loaded again, ran after him, and killed him. I did not look for the other deer, because I did not think I could get up to them again.

'When I had skinned the buck and hidden part of the meat under some stones, I put all I wanted to take with me into the skin, and then went off homewards, without looking whether there were any more deer about. A great white reindeer ran by me a little in front, and then another very big one, but I thought they were too far off for a shot.

'When I reached the bottom it was already afternoon. As I came near the tent I thought of firing a shot, as we Greenlanders do when we have got a big reindeer, but as these people in the tent were Europeans, and I had not much powder, I gave up the idea. There was no one outside the tent, and so I kept quite quiet for a time. Peter came out first, and when he saw me he asked whether I had got a reindeer, and when I answered this question he went into the tent and told the news to those inside as well as he could. Then they came out, and began to stare at me.

'When I got up to them they were very pleased, very pleased indeed. I gave them one shoulder, and told them to cook it. I gave some marrow, and suet, too, to Lieutenant Dietrichson, because he was beginning to grow very fond of me. When I had had some coffee and something to eat, and while the meat was being cooked, the old Lapp told us that he owned three hundred reindeer.

'Though the meat was not yet cooked, they began to eat it, and told Peter and me to eat it out of the pot too. I gave them some more meat to cook, and as soon as it was done some more was put in, and so we went on till none of us could eat any more.

'When we lay down to sleep they began to joke

each other again. As I was very tired and sleepy, I said to Peter, "I suppose we are going to have all that nonsense again, and I am so sleepy. They must know that it is the Sabbath to-day." Then I said to them, "To-day is the Sabbath."

'A little while afterwards, when they were almost quiet, Peter and I began to sing hymns—different ones that we had learnt. Presently they became quite quiet, and then the younger Lapp began to sing hymns.

'When we woke, Peter and I went out to fetch the rest of my reindeer. When we came back the sky was overcast again. We took the meat down to our "kayaks," but just as we got down there the Lapps came, and I gave them some more meat to cook, and went back to the tent with them. Afterwards they had the saddle and neck of the reindeer to eat.

'We now began again to grow tired of being here, as it was coming on to rain, and still no boats came to fetch us. What we were most tired of was our boots. Though we had brought two pairs each, they were all worn out, and at last we had to put an odd one on each foot.

'Then we began to talk about going down the fjord again as soon as the weather cleared. So we told the Europeans that that evening we would

sleep in our "kayaks," as we did not like sleeping so long in the morning as they did, which is not a habit or custom among us Greenlanders. They had nothing to say against this, so we went down to sleep in the "kayaks." When we woke and went up to the tent next morning they asked us if we had slept well, and when we said that we had, they thanked us.

'In the evening, when we had had our supper, we said Good-night to them, and went down to sleep in the "kayaks" again. We meant to start next morning, if the weather would let us, for our boots were much too uncomfortable to use in the state they were in now.

'Next morning the weather was very fine, with a blue sky, and we got ready to start. We were just packing in the meat we were going to take, when we suddenly heard a shot from the fjord, just as the the sun was rising. At first we were not quite certain whether we had heard right or not, but presently there came another shot, and then several more. Then I answered, and, going up towards the tent, I saw the boats just down in the fjord, and full of people.

'We were very glad when we saw the boats, as we had begun to fear they would not come. There was one wooden boat and one skin boat. When we

were all together we were very pleased, for now we knew that we should all go to Godthaab. The Lapp Balto made some coffee, and when it was ready I drank it, and was going away. Then Peter called to me, and I came back and found that they wanted me to have something to eat with them. We then ate till we were quite full, and had some coffee too.

'When they were getting ready to start, and the boats' crews had taken the things down to the water, we went down to our "kayaks" again. When I had loaded them I looked for the boats, and then saw that they were just starting to cross the fjord. So we paddled up to them, and when we reached the other side of the fjord the crews had some coffee and food. Then we went on again, and, though the rowers had not had any sleep the night before, they wanted to go on. It was not till we had reached Nûa (*i.e.* the point) that the crew of the skin-boat settled to put up their tent and spend the night there. This was because the skin of the boat was too wet, since it had been in the water too long without being dried, and we thought it was dangerous to go on without drying it a little. There were some holes, too, to sew up, which had been made in the boat. I stayed here for the night with them, to help them pull the boat out of the water and put it in again next morning.

'In the middle of the night I went out of the tent, and, as I saw it was quite calm, I thought it best to go on now while it was calm. So I woke the others, and told them it was best to go on. While coffee was being made, we loaded the boat, and then we went on.

'Soon afterwards we reached Nunangiak, where the wind began to blow a little. A little later in the day, when the boat had got as far as Tuapagssuak, I went on in front to see what had become of the other boat, for I did not know where they were, whether they had gone on or put up the tent for the night.

'I had begun to long to get home, for I had been away a long while. In the summer I am sometimes a good long time away when I am out hunting, but then I have always a companion from my home to keep me company.

'When it was getting quite light, and I had got on to Tuapârssúnguit, I saw the boat and tent there. They were all just up, and when I got to land Peter came down and pulled me up on shore. He told me they were making tea. It was cold, too, as a good fresh Ameralik east wind was blowing. Then we drank the tea and had breakfast, and the Europeans were glad to see me again.

'When we had done we went on again, and when

we came to Kingigtorssûp Kristiansen and I began to laugh at each other, because we now thought we should get to Godthaab that day.

'As soon as we reached Uvkusigssap Point, Peter and I went on in front to take a letter which had been written to the leader of the expedition.

'As we were getting near to Godthaab, the people supposed it was we who were coming, and began to collect. When we got to shore, and they heard that the others were near, more and more of them came together. The Greenlanders were very anxious to see the Lapps, and when they learnt that I had shot a great reindeer they grew quite excited, and I heard nothing but shouts from them all for a little of the fat.

'When Peter went up to his house I went with him, and envied him for having got so far. We had coffee there, and then went down to the Superintendent, because we thought we should get paid at once. Presently we heard the people shout that the Lapps were coming, and soon afterwards I went across to Lars Heilmann's house, and had some coffee with his wife. I always sleep at this house when I spend the night at the colony.

'When I had had the coffee I went down with all the others to see the boats come in to shore, and when all the Europeans and Greenlanders were down

there together they made a great crowd of people. The skin-boat, which had the travellers' things in, came a little while after the other, and as they had brought my reindeer-meat and other things I went down to the shore again to get them. After I had given away some of the meat to the Greenlanders, I sold the rest at a good price.

'For the meat the Europeans had eaten in Ameralikfjord I got five "kroner,"[1] for my journey there I was paid twenty "kroner," for the head of the deer three "kroner," for the skin four "kroner" and a half, and for the rest I got about eighteen "kroner." When I had collected all the money I began to think seriously about buying a rifle. This had long been the wish of my heart, but before this I had not had enough money to buy one. I had an old rifle certainly, for in the year 1874 I changed a flint-gun with Irminger, the Dane who was lost in the "kayak," and got an old rifle for it. The people in South Greenland well know this Irminger, no doubt; when he was drowned I was with him.

'So I got a rifle, and shall now give my old gun to my foster-son, who is seventeen, for him to practise with. For us who live by the fjords it is an important

[1] Most readers will know, though some may not, that the Scandinavian 'krone' is a little more than a shilling, eighteen of them being nearly equivalent to an English pound.

thing to have a rifle for reindeer and seal and other things.

'I spent the night at Godthaab, but was not altogether pleased, because I was plagued by the members of the expedition to sell them the skin of the reindeer I had shot. It was a fine heavy skin, and good to lie upon in the winter when it is cold, so I really would rather have kept it myself. In August I got a big reindeer, but the skin was so poor that I would not have it made into a rug for the sleeping-bench. As they came three times and offered to buy this one, I did not like to refuse them any longer, so I sold it.

'I now told the Superintendent that I would buy a rifle, and one was given to me. When I had done my business I wanted to go, as I was very anxious to get home, but the north-east wind obliged me to stop another night at the colony. I was afraid to pass Kasigiganguit, partly because of the wind, and partly because I had so much to carry in the "kayak."

'Next morning, when I got up, the weather was better, and the wind had dropped, so I rowed past Kornok to my home.'

Upon the occasion of our arrival a poem was composed by a Greenlander of the name of Christian Rosing, and published in the same 'Atuagagdliutit.' As it will give the reader some idea of modern Eskimo poetry, I insert it here with a translation.

Angutit arfinigdit	Six men
Norgemit antdlarput,	Journeyed from Norway;
Sisamat Norskiussut	Four were Norwegians,
mardluk Lappiussut	Two were Lapps;
Norskinut ilauvdlutik	They sailed upon a Norwegian ship,
tunumut niúput,	Landed on the eastern coast,
sákûtitik tamaisa	And carried all their implements
nagsataralugit.	With them.
Sermíkut ingerdláput	They journeyed across the 'Inland ice'
nâgdliokalutik,	And suffered much by the way;
takuakarpiarnatik	They had no great store of food
ardluatakaralik;	And only one suit of clothes;
kavfinik nungûtsíput	Their coffee came to an early end
tuparugtarputdlo,	And likewise their tobacco.
taimaitdlutingme kîsa	And yet they crossed the 'Inland ice'
ituikasakaut.	And reached the western coast.
Mardluk Nûngmut tikipút	Two of them came to Godthaab
Ameralikôrtut,	Out of Ameralikfjord;
umiatsiakarput	They had a boat,
tupingnangârtumik,	Which was exceeding strange.
ilatik sisamaussut	Four of them
kimagsimavdlugit,	Had been left behind;
Lappinik tusarpugut	We heard that there were Lapps among them;
erininakautdle.	We longed much to see them.
Kîsame likilerput	At last they came,
Lappit ilatigdlo,	The Lapps and the other two;
ásitdlime uvagut	We went as usual down
aterfiorpavut;	To the sea-shore to receive them.

áipangussákulua	One of the Lapps
tusiavigdlune,	Was somewhat lame;
mikissúngûvdlunilo	He was very small
kúmukujôkartok.	And had a tall, pointed cap.
Áiparssuákulua	The other big one of the Lapps
sisamavililik,	Had a four-cornered cap;
nísunik kardlekartok	He had trousers upon his legs
ánorârssualik,	And a great pelisse.
inugsiarningârpok	He was very kind
okalugkajokaok,	And very talkative;
taimaingmat kalâlêrkat	For this reason the little Greenlanders
nuánarivigpât.	Grew very fond of him.

CHR. ROSING.

CHAPTER XXV

WINTER-QUARTERS AT GODTHAAB

THE first thing to be done, now that we were all together again, was to find lodgings for the whole party. It was not yet quite certain that we should spend the winter here, but at all events we needed shelter for a time. Dietrichson, Sverdrup, and I were hospitably received by the Superintendent, while the other three were assigned a room in the building known as the 'Old Doctor's House.' Here they cooked for themselves, and did their own housekeeping generally.

The new-comers were, of course, for a long time a source of great interest to the Greenlanders. Of their arrival Balto writes :—

'The first evening, all the time we had a light in the room—there were no blinds or curtains before the windows—as soon as we had a light, there came a crowd of Eskimo girls outside the window, and peeped in at us as long as we were up. They came every single evening all the time we had no blind to the window.'

It was not long before we were all on good terms with the natives, and made many friends among them. The three in the 'Doctor's House' had an unbroken stream of visitors, and card-playing, fiddling, and talking went on from early morning till late at night. Here Balto, of course, was supreme. He took upon himself the duties of host, as he would say, 'quite and altogether alone.' He held forth to the devoutly listening Greenlanders, partly in his broken Norwegian, to which a flavour of Danish was soon added, and partly in excruciating Eskimo. He had quickly picked up a number of words of this formidable language, and these he twisted and turned to his purposes with the greatest confidence and self-satisfaction. The subject of his discourse, which was always attended by an abundance of illustrative gestures, was at one time our journey across 'Sermersuak,' or 'the great Inland ice'—when he would describe how we Norwegians, who were evidently, in his estimation, the finest of fine fellows, had managed to find our way across this terrible desert of snow, where there was no coffee to be had and only a pipe of tobacco every Sunday; and at another time the frightful perils of the ice-floes, where 'these Norwegians ate raw flesh, and we Lapps were almost (*i.e.* very much) afraid.'

All this, of course, was highly interesting to the

Greenlanders, but I think Balto impressed his hearers most when he discoursed to them of his own native country, and told and showed them 'how we Lapps drive reindeer,' and how 'clothes and boots are made in the land of the Lapps.' Here he was in touch with the Greenlanders' own manner of life, and had their full sympathy and interest. There are few of them, indeed, who understand any Danish or Norwegian, but pantomime is a 'Volapük' which is intelligible all the world over.

Kristiansen, on the other hand, who rarely let his tongue get the better of him, assumed a humbler position, and gladly left the leading part to Balto. If there was card-playing, however, Kristiansen would readily join in, while old Ravna wandered silently about, mutely protesting against the whole proceedings. Often he would plaintively say to me, 'I am an old Lapp, and I don't like all these people about.' When the room was crammed full with smoking, card-playing, chattering Greenlanders, Ravna would either be sitting up on a bed in a corner, looking indescribably miserable, or else he would steal out, and go and pay a visit to one of the Eskimo houses, where he was always welcome, and where he would take his place upon a bench. Here he would sit for hours, gazing at the ground in front of him, and saying never a word, and then would go

out again. Why these visits of his were so highly appreciated, and why he went through the performance day after day, is still a mystery to me.

This want of sympathy between Ravna and his younger companions is easily to be explained if it be remembered that he was an elderly and sedate father of a family, while the other two were young and lusty. Not that, as far as I could learn, anything that could shock him was ever done in the room. The visitors were of one sex only, for, to avoid possible complications, it had been decided that the feminine part of the population should not be allowed admittance.

This rigorous prohibition was not, however, sufficient to prevent Balto being deeply enamoured of a young Eskimo, who was rather attractive than really pretty. Unfortunately, she was already betrothed to an Eskimo Catechist, who was now stationed at a colony further to the north, and to whom she was to be married the following year. This state of things was, however, no obstacle to the growth of a pretty platonic attachment between Balto and his beloved Sophie. It was a romantic story altogether, and Balto was in course of time moved to write Sophie a long letter, which a Greenlander helped him to turn into Eskimo. In this he told her of his affection, explaining that he loved her, but that she must not

misunderstand his love. He had no intention of marrying her, not only because she was already bound to another—this engagement, I think I may say with confidence, would as a matter of fact have gone little way to deter either of them—but because, if he took her with him to the land of the Lapps, she would not be comfortable, as she would never accustom herself to the ways of this strange people; while, on the other hand, if he were to settle here in Greenland, he would always be pining for his relatives and friends at Karasjok. For this reason he would now say good-bye to her, and tell her that he was very fond of her, but did not wish to marry her.

This letter was a great source of joy to Sophie, as well as to her mother, who was very proud of the direction which Balto's affection had taken. She, indeed, used to say quite openly that she would much rather have Balto for a son-in-law than the unfortunate Catechist.

In spite of the letter the two lovers saw just as much of one another as before, and when Balto began to talk about Sophie his eloquence would rise to its highest pitch. She was not like the others, he declared; she was so modest, so retiring; she never ran up and down the road after the men-folk, as the other girls did.

When he went away in the spring, I am sure he

left some portion of his heart behind him. The parting was a hard one. On the voyage he spoke of Sophie several times, and it was only the fair ones of Copenhagen that completely effaced her memory from his mind.

The first Sunday evening after our instalment at Godthaab there was dancing in the assembly-rooms of the colony—that is to say, in the cooper's workshop. I hope it is unnecessary to say that all the members of our party, except Ravna, were present on the occasion, and whenever there was a dance, which was not seldom.

I fear I can scarcely describe how I was impressed the first time I saw these Greenlanders dance. The picturesque coloured dresses in closely-packed, swaying groups, the graceful forms in rapid movement, the beaming faces every muscle of which was full of life, the boisterous voices, the infectious laughter, the nimble little legs and feet clad in boots of white, red, or blue, the perfect time which they all kept in their reels and other numerous dances—the whole was a scene of teeming life and unrestrained enjoyment.

It was all so new at that time to us wanderers from the deserts, so strange and attractive, that we were carried away in spite of ourselves. It was as if we had suddenly discovered what a spring of

pleasure and delight life really contains. Among these folk at least joy is not yet a forgotten thing.

It really does one good to see the way in which they dance in Greenland. Here they do it to move

'KRETORA,' A NATIVE GIRL OF GODTHAAB

(By A. Bloch, from a photograph by Carl Ryberg, Inspector of South Greenland)

their limbs and refresh their minds. Here there are no bitter-sweet visages of uncompromising propriety, no misshapen forms or extravagant dresses, no bored wearers of black coats, white shirts and gloves;

none, in fact, of all that futility that stalks about a European ballroom and takes the place of the Graces and other good spirits that should be found there. How these Greenlanders would laugh were they to see the funereal performance which we entitle a fashionable ball!

I need hardly say that we did not remain spectators for long. Our absolute ignorance of the dances was no bar, we were unceremoniously seized and set in motion by the little Eskimo. Here there was no modest waiting for engagements; all our partners were obviously proud when they could get possession of one of us, which was as a rule no difficult matter. But at the same time they laughed at us most unmercifully when we danced wrong or awkwardly, as we all did of course at the beginning. For a long time afterwards, indeed, we used to see the more mischievous among the girls dancing for the benefit of their friends in the road before the houses and mimicking our ways and movements so accurately that we could well recognise ourselves as we passed by. These Greenlanders have a wonderfully keen eye for the comic side of things.

We were industrious pupils, however, and after a time one or two of us learnt to dance well enough to inspire respect. The Lapps, however, were quite hopeless. As a people they have no dancing, and

Ravna was not even to be induced to go and look on. Balto both looked on and joined in, but he remained to the very end a simple caricature, whether it was a reel or round dance in which he performed. He sprawled and jumped about like a man of wood, while the Greenlanders laughed at him till they nearly died. This ridicule did not deter him in the smallest degree however. He was only too glad to manage the whole concern, to officiate as master of the ceremonies, to lead off or arrange a dance, and tell everyone what he had to do. In the qualities of enterprise and self-confidence he was rarely wanting.

The Eskimo dances are not national. They are are for the most part reels imported by English and American whalers, but adopted with such appreciation by the natives that they have become general along the whole west coast and have in time assumed a certain national character. A few round dances, such as the waltz and the polka, are also in favour, but they are not held so high in estimation as the reels.

The only Greenlanders who do not dance, or, more strictly speaking, are not allowed to dance, are the so-called 'German Greenlanders,' who are members of the Moravian congregations. According to the teaching of the Moravian missionaries it is a great sin to dance or look at others dancing, and they have therefore been narrow-minded enough to forbid these

poor people to practise one of their few amusements. The idea may have been to protect the morality of their charges, but, as far as I could learn, this does not stand higher among the German congregations than elsewhere in Greenland. The answer to this might be, however, that the charges dance in spite of the prohibition.

However this be, I feel sure that everyone who has witnessed and taken part in a Greenland dance must see at once what a healthy and glorious recreation it is, as well as a most attractive sight. Many an evening, too, did we commit the sin of taking our enjoyment with these child-like folk, while the floor rocked under the rhythmic tread, and the fiddler sat on the carpenter's bench and worked till his strings gave way.

The first period of our stay at Godthaab was strangely delightful after our march across the snow. Danes and Greenlanders alike did all they could to make things pleasant for us, and I think we could all say with Balto that we very soon forgot 'our hard life and all the desolation of the ice.' At the same time we all grew in bulk to such an astonishing extent that it was reported that the difference could be seen from day to day.

In spite of all this, however, there was one thing which prevented our being thoroughly comfortable—

the uncertainty whether we should be here for the winter or not. None of us had much hope that our messenger had caught the 'Fox,' but all the same we felt as if we were expecting every day to see a ship come under steam and sail inwards from the horizon. The presentiment that something might happen was for a long time in our minds.

But the ship did not come, and I had long ago persuaded myself that the 'Fox' had never had my message. Sverdrup and I, however, had for a time been thinking over another idea. There was an old sloop at the colony, belonging to the Greenland Trade Service, which was used to take goods to the neighbouring settlements. Now we thought that, if we could get this sloop, it would be an easy matter to put across to America and get home that way. This project came to nothing, however, because the Superintendent conceived that he had not the right to lend this vessel, which, as is set forth in his instructions, must not leave the colony except for official purposes, and a voyage to America could scarcely be brought under that head. So we must needs be content to stay where we were.

Then one day, while we were sitting at dinner, word was brought that there were 'kayaks' coming up from the south, and soon afterwards a packet of letters was given me. They were opened in silent

expectation, no one understanding what they could be, and our surprise was great when they proved to be from Herr Smith, the manager of the cryolite mine at Ivigtut, and several of the Superintendents farther south. The first letter told me that my messenger had caught the 'Fox' at the last moment. The ship had started the day before, but had been obliged by stress of weather to seek shelter close by. The following day she was just about to weigh anchor, when two 'kayakers' were seen in the distance paddling at full speed and signalling to her to wait. Thus the captain got my letter, and was induced to go in to consult with the manager as to what was to be done, though in his opinion there could be no question of the 'Fox' going up to Godthaab. The two agreed that this was impossible, as the captain did not know the water and was afraid of the dark nights, while the deciding argument was that he had forty passengers on board, men from the mine who were on their way home. They dared not run the risk of the ship being wrecked up north, and of these men having to winter somewhere, as for instance at Godthaab. An increase of this magnitude to the number of consumers might possibly have led to serious consequences in the way of famine.

The result was that the 'Fox' went off without us, but taking my letter to Herr Gamél and Sverdrup's to

his father. Thus it came about that the old 'Fox,' the same vessel that had carried McClintock on his celebrated search for Franklin, brought to Europe the first news of our having successfully crossed Greenland.

Had these two Eskimo paddled very little less vigorously, no intelligence would have come. But in that case what heroes we should have been, and what a welcome back to life we should have received, if in the spring we had suddenly risen from our laurel-crowned graves in the ice! It was an unlucky thing indeed for ourselves as well as the newspapers.

With the voyage of the 'Fox' on her way home we need not concern ourselves, though I may mention as worthy of note that she was obliged by want of coals to put in at Skudesnæs, and it was therefore my own country after all that received our first greeting. As to the arrival of the news in Europe on November 9, 1888, I need say nothing, but leave it to the reader to supply a description which I do not feel myself qualified to give, for this reason among others, that I was over in Greenland at the time and little suspected what giants we suddenly became in the eyes of the world that day.

As we now knew that we had no chance of getting home this year, we became resigned to our fate and reconciled to the idea of spending the winter where we were.

As time went on our intercourse with the natives grew closer, and the interest we took in them of course increased. It was not only the Eskimo of Godthaab and Ny Herrnhut whose acquaintance we made, but we also paid visits to other settlements in the neighbourhood. Thus in the middle of October

THE INTERIOR OF AN ESKIMO HUT

(From a photograph taken by the Author at Sukkertoppen)

some of us made an excursion in the company of the Superintendent to Kangek, some ten miles from Godthaab, and another in November to Narsak, which lies beyond the mouth of Ameralikfjord.

I myself spent most of the winter in studying

the peculiarities of native life. I lived with the Eskimo in their huts, studied their methods of hunting and seal-catching, their customs and manner of life generally, and learnt, as far as I could in the short time at my disposal, their difficult language, in which latter task I received at the outset valuable assistance from the doctor of the place.

As in the course of the next few chapters we shall have a good deal to do with the Eskimo, I think I cannot do better than try at once to give the reader some idea of what manner of person an Eskimo is. To this I will devote a special chapter, but I must here remark that this description has no claim whatever to be considered exhaustive in any one direction. A mere winter is of course altogether insufficient for a thorough study of so peculiar a people, and their ways of thought and general civilisation, which might well call for the work of years. These are but the cursory notes of a traveller, and contain little more than the impressions which the Eskimo and his social organisation have made upon me. They may contain, too, much in the way of error as well as much that is not new, though on the other hand there may be many points which have struck me as a new-comer and passing visitor, but might have escaped the notice of an observer permanently resident in the country.

Whether my point of view find approval or not, I hope my remarks will be taken in the spirit in which they are written, even though I do not always follow the beaten track, or express full contentment with things established. I hope, too, that I shall be forgiven if I occasionally show the weakness of deploring the fate of a dying people, who, long since wounded by the venomous sting of external culture, are now perhaps past recovery. As an excuse I must advance my conviction that no one could pass any length of time among the Eskimo without becoming thoroughly attached to them and warmly interested in their future welfare.

CHAPTER XXVI

THE ESKIMO OF GREENLAND

I. Origin and Distribution

Among the inhabitants of the earth few can be considered more remarkable than the Eskimo, as he is a striking proof of the power of man to adapt himself to circumstances, and to spread in spite of the most unfavourable natural conditions. Traces of this hardy race have been found almost as far north as we have yet succeeded in advancing.

Another characteristic of the Eskimo is his strongly marked nationality. Distinctly as his whole manner of life, his outward appearance, his build of body, and his ingenious appliances separate him from all other races, no less distinct and remarkable are the points of connexion which bind the various Eskimo tribes together. A pure Eskimo from Bering Strait is so like an East Greenlander that no one could for a moment doubt their identity of race. The difference in speech is so small that it is not too much to say that an Alaskan Eskimo could converse with a Greenlander without any great

difficulty.[1] A distance of nearly three thousand miles separates these tribes, and so close a resemblance of speech in these circumstances must be a phenomenon almost unique in history.

The similarity in all respects which mutually connects the various sections of Eskimo would naturally suggest their origin from a small tribe which has spread at a comparatively modern date over the tracts which they now inhabit; though it could also be explained by the view that the race is one of extreme antiquity, all the characteristics of which have had time to establish themselves in well-marked and persistent forms, which are now little liable to change or modification. The isolated position of the race, and the perfection of their various implements and appliances, would also support the latter view, though there are other considerations which tell equally strongly against it.

The relatively short time in which the Eskimo have managed to spread without moving in the great hordes characteristic of national migrations, can be readily explained by the fact that the regions which they occupy are among the most inhospitable upon earth, and were in all probability never inhabited,

[1] I learn from Captain Adrian Jakobsen, who has travelled both in Alaska and Greenland, that he could easily make his way in the former country by the help of the little Eskimo he had learnt in the latter.

at least permanently, till they took possession of them. Here, therefore, they met with no obstacles to their advance save those put in their way by nature herself.

These regions extend from the western side of Bering Strait on the one hand to the east of Greenland on the other, and include Alaska, the northern coast of North America and the Arctic islands bordering thereon, and the whole of the west coast of Greenland.

The isolated position of the whole race has caused much difficulty to anthropologists, and the most diverse opinions have been advanced as to their origin. This is scarcely the place for an elaborate discussion of this formidable subject, which has by no means yet been sufficiently threshed out. All that can be said with confidence is, that the Eskimo came last from Bering Strait or Bering Sea, possibly from the American side, and have thence spread over Arctic America to Greenland.

Dr. Rink, with whom Greenland and the Eskimo have been the study of a lifetime, and who is without any comparison the greatest authority on the subject, is of opinion that the weapons and other appliances of the Eskimo are largely derived from America. He considers it possible that the race once inhabited the interior of Alaska, where a not

inconsiderable number of 'inland Eskimo' are even now to be found. At a comparatively recent date they must have migrated to the shores of Bering Sea and the Arctic Ocean, either attracted by the riches promised by the sea,[1] or driven out by hostile and more warlike Indian tribes.[2]

Dr. Rink also points out that the Indians of the North-West not only hunt on land, but also fish the lakes and rivers in their birch-bark canoes. The original 'inland Eskimo' must have done the same,[3] and possibly in their canoes made their way from the north-west of Alaska down to the sea. As they advanced they would have found the trees grow fewer and fewer, and would have had to look about them for materials other than bark with which to cover their canoes. It is not unreasonable to suppose that even upon their rivers they had already made use of the skin of sea animals for this purpose, as one finds instances of this among some of the Indian tribes.[4]

[1] Dr. Rink, *The Eskimo Tribes.* 'Meddelelser om Grönland,' part xi. p. 32. (Copenhagen, 1887.)

[2] Dr. Rink, *Eskimoïske Eventyr og Sagn.* Supplement, p. 217. (Copenhagen, 1871.)

[3] As a matter of fact, the inland Eskimo of Alaska still fish the rivers in birch-bark canoes.

[4] Boats covered with skin seem to have been invented independently in several parts of the world. The 'coracle' of the old Britons and Gauls is well known, and the fisher-folk of the west of Ireland still have a form of boat something like the 'umiak' or large skin-boat

As soon as he met with the full force of the sea in the river estuaries the Eskimo must have found it necessary to deck his canoe, and finally to cover the whole of the upper surface with skin. Thus he arrived at the 'kayak' as we now know it, which, again, in its whole form and construction bears a stronger resemblance to the Indian birch-bark canoe than to any boat of Northern Asia.[1]

When he reached the coast he would soon have discovered that his existence depended principally on the capture of the seal, and on this pursuit he would expend all his energy and ingenuity. The 'kayak' which he already possessed, therefore, led to the invention of all the admirable appliances of the

of the Greenlanders. In India similar boats seem to have been in use from time immemorial; and in Africa, America, Australia, and Polynesia they have been found among half-savage races, under conditions which would apparently prove them to be of spontaneous origin, and independent one of another.

[1] The Turks have a word 'kajęk' for a kind of boat, and the same word appears in Servian, Bulgarian, and most of the Slavonic languages, sometimes in the form 'kajuk,' while it even extends far into Siberia; in Greek, Roumanian, and Kurdish it is also to be found, but I have not been able to trace it through Asia. Probably it is a Turkish word, and in that case comes from the distant East.

The Kamtchatkans, again, use on their rivers a boat called 'koiakh-taktim,' which is possibly a compound word, as 'taktim' has a striking likeness to 'taktou,' which is the name of a kind of sea-boat (*see* Kracheninnikow, *Hist. et Descr. du Kamtschatka*, vol. i. Amsterdam, 1770). The other part, 'koiakh,' of course reminds one of the Turkish 'kajęk' and the Eskimo 'kayak,' but more evidence is necessary before one can decide whether there is any connexion between them. The distance between the original homes of the Turks and Kamtchatkans is possibly not so very great.

Eskimo seal-catcher, which were gradually brought to a higher and higher state of perfection. The material which he had to work upon, again, probably came from America, as the Indian feathered arrows provided him with his first javelins or harpoons to use on the sea. Small feathered darts of this kind are still used in the southern part of the west coast of Alaska.

Farther north, however, the feather begins to disappear, and a small bladder attached to the shaft of the dart takes its place. Something of this kind was necessary to hamper the movements of the seal in the water. It was also found necessary to attach the point in such a way that the seal's movements would, instead of breaking it off short, simply detach it from the shaft, which would then be left hanging by a thong. This seems to be the history of the 'bladder-darts' known to every Eskimo.

These may, again, have possibly given rise to the most important of Eskimo weapons—the ingenious harpoon with line and bladder. For the capture of the larger sea animals the bladder would have been made larger and larger, though the inconvenience of having it so large as to prevent the harpoon being thrown with full force or from a distance would soon have been discovered. The bladder would then be detached from the harpoon, and connected with it, or

rather its point, by a long and strong line. Henceforth the harpoon would be thrown alone, and would carry the line with it, while the bladder would not be cast off from the 'kayak' till the victim was struck.[1]

The two-bladed 'kayak' paddle may again have been developed out of the Indian paddle with a single blade. Among the Eskimo of South Alaska the latter only is used, north of the river Yukon both forms are found, but the single is in the majority, and it is not till the Mackenzie River is passed that the double paddle becomes universal.[2]

As to the Asiatic Eskimo, little is known in this respect as in many others, but it would seem that they, as a rule, have only the double paddle.[3]

These points would appear to connect the Eskimo with the Indians, but there is one of his appliances which separates him distinctly from them and brings

[1] The Indians of the North-West and the Tchuktchis also use harpoons with great bladders for the capture of the larger sea animals, and throw them from large open canoes or boats of skin. They seem, however, to have learnt this practice from the Eskimo.

[2] The Aleutians, a side branch of the Eskimo, seem, curiously enough, only to know the double paddle. *See* Cook and King, *A Voyage to the Pacific Ocean*; 3rd edit. vol. ii. p. 513 (London, 1785); as well as other later writers, such as Eliot.

[3] The inhabitants of St. Lawrence Island seem strangely to know nothing of the 'kayak,' and have only large open skin-boats of the same construction as those of the Tchuktchis. *See* Nordenskiöld, *The Voyage of the 'Vega.'*

him nearer to the nomad tribes of Asia. This is the dog-sledge.

With the exception of the Peruvians under the Incas, who used the llama as a beast of burden, the early inhabitants of America employed no animal either for hauling or carrying purposes. The Indians indeed had a kind of half-tame dog, but seem to have put him to no use. The dog-sledge, therefore, brings the Eskimo into close connexion with Asia, and in fact, according to Lütke, the Eskimo dog has a strong resemblance to the Kamtchatkan.[1]

The use of animals for driving purposes points to a high degree of development, and makes the connexion of the Eskimo with the Arctic folk of Asia very probable. At the same time it must be pointed out that they seem never to have tamed the reindeer themselves and used it for driving, though there is mention of the custom in their traditions. Among most of the Arctic folk of Asia, however, this animal is thus used, except by the Kamtchatkans, who on this point again bear a resemblance to the Eskimo.

It is not inconceivable, however, that the Eskimo, who show so much power of invention in other respects, have taught themselves to train animals and construct sledges.

[1] F. von Lütke, Erman's *Archiv*, vol. iii. pp. 446–464 (1843).

Even if they had no dogs, it is possible that they managed to tame the Arctic wolf, from which in that case their dogs of the present day would have descended, as some indeed of their traditions seem to suggest. If this be so, it must be the Asiatic tribes who have learnt dog-driving from the American Eskimo.

Then, again, there is another instrument, the throwing-stick, which distinguishes the Eskimo from Asiatic folk and North American Indians alike.

Strange to say this extremely ingenious invention, which increases the length and strength of the arm so much, and to some extent serves the purpose of a sling, is only known to exist in few parts of the world, in all probability only three. These are, Australia, where the throwing-stick is very primitive; the country of the Conibos and Purus on the upper waters of the Amazon, where it is not much better; and in the tracts inhabited by the Eskimo, among whom it has reached its highest development.[1] It is scarcely possible to allow that the invention can be anything but independent in each of these far distant regions.

At what date the Eskimo reached Greenland and

[1] As to the various forms of throwing-stick among the Eskimo, see Mason's treatise on the subject in the *Ann. Report of the Smithsonian Institution for* 1884, Part II. p. 279.

settled there for good is, in my opinion, impossible to say. Arguments which I have already mentioned suggest that it must have been recently, though I cannot allow that we are justified in concluding, as has been done in several quarters, from the accounts of the Icelandic Sagas that the immigration did not take place till the fourteenth century. It does certainly appear that it was only at this date that the Scandinavian colonies were exposed to serious attacks, if they were ever so exposed at all, on the part of the so-called 'Skrællinger' or Eskimo, who are said to have come down upon them in herds from the north; but this does not prevent them having been settled on the west coast much earlier, and even long before the Norsemen came to the country. They do not seem to have lived in the south of the country —that is to say, near the Eastern and Western Settlements—during the first four hundred years of the Scandinavian occupation, for the Sagas have nothing to say on this point. But it is expressly stated that the first colonists, Erik Röde and others, at both these settlements found human habitations, fragments of boats, and stone implements; and we may therefore conclude that the Eskimo had at least visited these parts before, and that their visits cannot have been of very short duration. It is not indeed unreasonable to suppose, as our experience shows, that

the natives fled incontinently as soon as they saw the Viking ships come sailing over the sea, but that their stampede can have been so rapid and complete that the Norsemen saw absolutely nothing of them seems scarcely probable. It is more likely that the Eskimo had their permanent dwellings further to the north, or beyond lat. 68° N., where seal and whales were plentiful, and where they had now perhaps first arrived in the course of their advance southwards.[1]

From these permanent habitations they would no doubt, in the Eskimo way, have made various longer or shorter excursions to the southern part of the country, and there left traces of their movements. When the Norsemen during their stay in Greenland found their way northwards they eventually came into actual contact with the Eskimo, which, according to Professor G. Storm, could not have been till the twelfth century.[2] The 'Historia Norvigiæ' tells how the Norse hunters in the uninhabited parts to the north came across small men, whom they called

[1] In the north they would have been able to catch seal on the ice the whole winter through, a method of capture which they must have learnt up there, and which must have formed their chief means of subsistence.

[2] G. Storm, *Studier over Vinlandsreiserne* in 'Aarböger for Nordisk Oldkyndighed og Historie' (Copenhagen, 1887). The Eskimo, too, have several traditions of meetings with the old Norsemen. *See* Rink's *Eskimoïske Eventyr og Sagn.*

'Skrællinger' or 'weaklings,' and who used stone knives and arrow-points of whalebone.

Then, when their more northerly haunts became over-populated, the Eskimo would have migrated southwards for good. Here they would have come continually into contact with the Scandinavians, and as these meetings could have been only to their own detriment, it does not seem altogether impossible that ultimately, in the fourteenth century, they took revenge by first attacking and perhaps destroying the 'Western Settlement,' in some year subsequent to 1341, and then in 1379 by making a raid upon the 'Eastern Settlement,' which appears to have been finally destroyed or to have died out in the following century.[1]

About the latter date, therefore, the Eskimo must have entered into permanent possession of the southernmost portion of the country.

The Eskimo themselves have traditions as to

[1] On the authority of the Flóamannasaga it has been advanced that Thorgils Orrabeinsfostre, whom I have already mentioned in connexion with the ice belt, found Eskimo on the east coast somewhere about the year 1000, it being assumed that certain 'witches' of whom he speaks were such. Professor Storm, in the treatise I have referred to above, shows that we cannot place much faith in the statements of this wonderful narrative, and it must also be remembered that the manuscript of the Saga dates from 1400 or thereabouts, or long after the Norsemen had met with Eskimo on the west coast. Even if by these 'witches' Eskimo were meant, which is very doubtful, the statement may be a mere ornamental addition of a later age.

certain conflicts with the old Scandinavians,[1] but their present character is little in harmony with an aptitude for fighting and raiding. It seems unlikely, therefore, that the destruction of the European colonies was due entirely to a war of extermination. Possibly it was also owing to a gradual absorption of the settlers into the Eskimo population, for they can scarcely have been less susceptible of native charms than their successors of to-day.

There has also been some difference of opinion as to the route by which the Eskimo reached the west coast of Greenland. Dr. Rink has maintained that when they crossed Smith's Sound they did not, as one would have naturally expected, follow the coast southwards, but rounded the northern extremity of the continent and then went southwards down the east coast, eventually reaching the western side by way of Cape Farewell. The chief argument in support of this view is that Thorgils Orrabeinsfostre fell in with Eskimo on the east coast, and that this was the first meeting of the Norsemen with them. But we have to reckon with the untrustworthiness of this narrative, to which I have already called attention. In other respects this theory of the Eskimo's immigration is in direct contradiction to the accounts of the Sagas, which expressly point

[1] *See* again Dr. Rink's *Eskimoïske Eventyr og Sagn.*

to the advance of the natives from the north, and not from the south, as the 'Western Settlement,' the more northerly of the two, is said to have been destroyed before the 'Eastern.' There is also another circumstance which, to my mind, tells against this theory. If the Eskimo passed round the country to the north, they must, while they were up there, have lived like the so-called 'Arctic Highlanders'—*i.e.* the Eskimo at Cape York and further north. In this case they must have gained their subsistence mainly by hunting on the ice, and have travelled by the help of dog-sledges. They could have had neither 'kayaks' nor skin-boats, as the permanent ice of those seas would have made the use of such craft well nigh impossible. Of course it is quite conceivable that when they reached more open water they should have resumed the building of 'kayaks' and boats, for the traditions might easily have been preserved. But it seems very unlikely, not to say out of the question, that after they had once lost the art of seal-catching from the 'kayak,' they should have taken it up again and advanced it to a higher degree of perfection than obtains anywhere else.

The most natural view to take, in my opinion, is that the Eskimo, after crossing Smith's Sound—which, of course, they must have done—followed the coast southwards at once, and eventually made

their way to the east coast round the cape. Whether this latter passage took place before or after the arrival of the Scandinavians we cannot tell. That they found at the outset a great obstacle in Melville Bay, where the coast is for a long way unprotected by islands, cannot be disputed. But they must have been able to work their way along in their skin-boats inside the ice belt; and besides, the difficulties could not have been greater than those which would have met them had they gone round the northern extremity of the country.

There is, however, one difficulty in connexion with this view—the fact that the east coast Eskimo possess dogs and dog-sledges, the latter of which are not in use in the south of the country on the western side. But if it be borne in mind how quickly the Eskimo travel in their boats and canoes, and how frequently they must have passed up and down these coasts in earlier times, it is not unreasonable to suppose that dogs may have been carried from that part of the west coast where they are still used for driving—that is to say, from Holsteinborg northwards—to Cape Farewell. This may well have been the case even if the natives of the south had given up keeping dogs, which is scarcely likely, since they are now universal throughout the whole west coast.

As to the supposition, based on certain peculiarities, that the east coast Eskimo have had closer connexions with the Alaskan Eskimo than those of the west coast by the help of some northern route, the objection must be advanced that in that case we should expect to find their language show a greater resemblance to that of the Alaskan tribe, which is by no means the case.

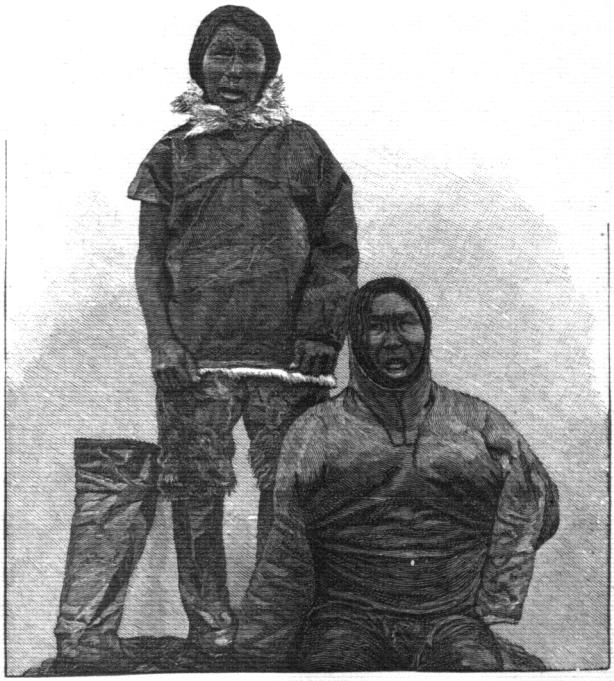
On the west coast of Greenland the Eskimo now extend from Smith's Sound to Cape Farewell, and their number in the Danish settlements approaches 10,000. On the east coast, according to the report of the Danish expedition in 1884–1885, they reach to the district about Angmagsalik, in lat. 66° N., and here their number was at that time 548. Further north Captain Holm was told that there were no permanent inhabitants, as far as his informants knew. Frequent journeys, however, are taken in that direction, and possibly as far as lat. 68° or 69° N., two boats having gone that way a year or two before Holm's visit, but of these nothing had since been heard.

It is still uncertain whether there are Eskimo living on the eastern side to the north of lat 70° N. In 1823 Clavering found two families in lat. 74° N., but none have been seen since, and the German expedition which passed along and wintered on this

coast in 1869 and 1870 found only houses and other remains, and inferred that the inhabitants had died out. This, however, seems to me improbable, as the Eskimo are an extremely tenacious race, and their absence in this case may well have been due to other causes. Just at that time they may have been further north or south, or their dwellings may have been so scattered that the travellers just managed to miss them. They are spread over huge tracts of broken and impracticable ground; and besides, even if a stranger does hit upon an inhabited section, it is by no means certain that he catches sight of the inhabitants. They are timid, and even if they do not flee at once, they need give no sign of their presence, and their huts and tents are so inconspicuous that they are by no means easy to see at a distance. I am therefore inclined to think it very probable that there are natives still living along this coast, and if so, they must be, owing to their isolated situation, which has made all connexion with the civilised world impossible either directly or indirectly, among the most interesting folk—from an ethnological point of view—still to be found on the face of the earth.

II. Personal Appearance—Dress—The 'Kayak'—Habitations

I have already, in connexion with our experiences on the east coast, given some description of the



ESKIMO FROM THE EAST COAST
(From a photograph taken by the Danish 'Konebaad' expedition)

appearance of the true Eskimo. He has, as I have said, a broad good-natured face, with large features, small dark eyes, which are often set rather obliquely, a flat nose, fat round cheeks, a wide mouth, and

ANE AND LARS HEILMAN

A GOOD SEAL-CATCHER AND HIS WIFE FROM GODTHAAB (OF HYBRID RACE)

(From a photograph by C. Ryberg)

heavy jaws. In these features one would hardly expect to find beauty, though the typical Eskimo may nevertheless be of very attractive appearance.

The hybrid race which is the result of intermixture with Europeans is, as a rule, handsomer than the true Eskimo. These folk have something southern in their look, and sometimes a surprisingly Jewish aspect, with their dark hair and eyes, and brown complexion. Among them types of real beauty are not uncommon in both sexes. Characteristic portraits of both pure and hybrid Greenlanders will be found in Chapter XII. of the preceding volume as well as in the present chapter.

In the true Eskimo the skin is brownish or bluish yellow, and in the hybrids as well a certain tinge of chestnut brown is often rather prominent. Newly-born children are lighter, but Saabye [1] among others has observed that they have a bluish-black spot on the small of the back, from which the darker colour gradually spreads. Holm reports something of the same kind from the east coast,[2] but I have myself had no opportunity of proving whether the phenomenon is general. In any case there is a similar feature in Japanese children.

Several of the accompanying illustrations will

[1] H. E. Saabye, *Greenland: being Extracts from a Journal kept in that country in the years* 1770 *to* 1778. (London, 1818.)

[2] *Meddelelser om Grönland*, vol. x. p. 58. (Copenhagen, 1888.)

give the reader a fair idea of the Eskimo dress. In southern Greenland the men wear a so-called 'timiak' or vest of bird-skin. On land the skin of the eider duck is generally used for this garment, the feathers

BOLETTE, ESKIMO OF HYBRID RACE, FROM GODTHAAB

(From a photograph by C. Ryberg)

being plucked out and the down only left. In the 'kayak,' on the other hand, auk-skin is substituted. The skin of the cormorant is also employed, and is considered the strongest and best of all. Over this

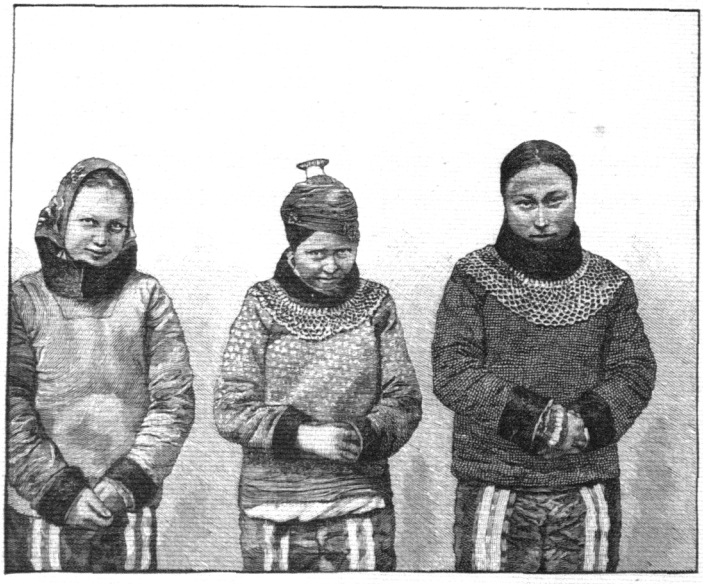
vest is worn an 'anorak,' or kind of cotton jersey. Both these garments are provided with hoods which can be drawn over the head. On the legs are worn breeches of seal-skin or some European stuff; and on the feet 'kamiks,' a peculiar form of boot, which consists of an inner sock of skin with the hair inside, and an outer boot of tanned and waterproof leather. Into these the feet are put bare.

The dress of the women is very like that of the men. Above they wear a bird-skin vest, which has, however, no hood, but generally a broad band of beads round the neck. In both sexes this garment also has an edging of dog-skin, preferably black, round the neck and wrists. Below, the women wear seal-skin breeches, shorter than the men's, and richly decorated in front with coloured skin and white strips of dog- or reindeer-skin. Sometimes, too, these breeches are entirely of reindeer-skin. The boots are longer than the men's and reach above the knees. As a rule they are brightly coloured, and may be red, blue, violet, or white, while the front is also decorated with stripes.

Originally the women wore long over-garments[1]

[1] The original female over-garment had points both in front and behind, the latter thus bearing some resemblance to the tail of an animal. Something of the same kind seems to exist among the Kamtchatkans or Itelmi, as Steller tells us that the 'kuklanka' of the women is furnished with a tail. He also says that the latter people have travelling or winter boots with soles of seal-skin and the rest made from the reindeer's

like the men, but they have since acquired from the Europeans a taste for white linen. This they consider too beautiful to be concealed, and so, instead of lowering the upper part of their dress like their European sisters, they have raised the lower part,

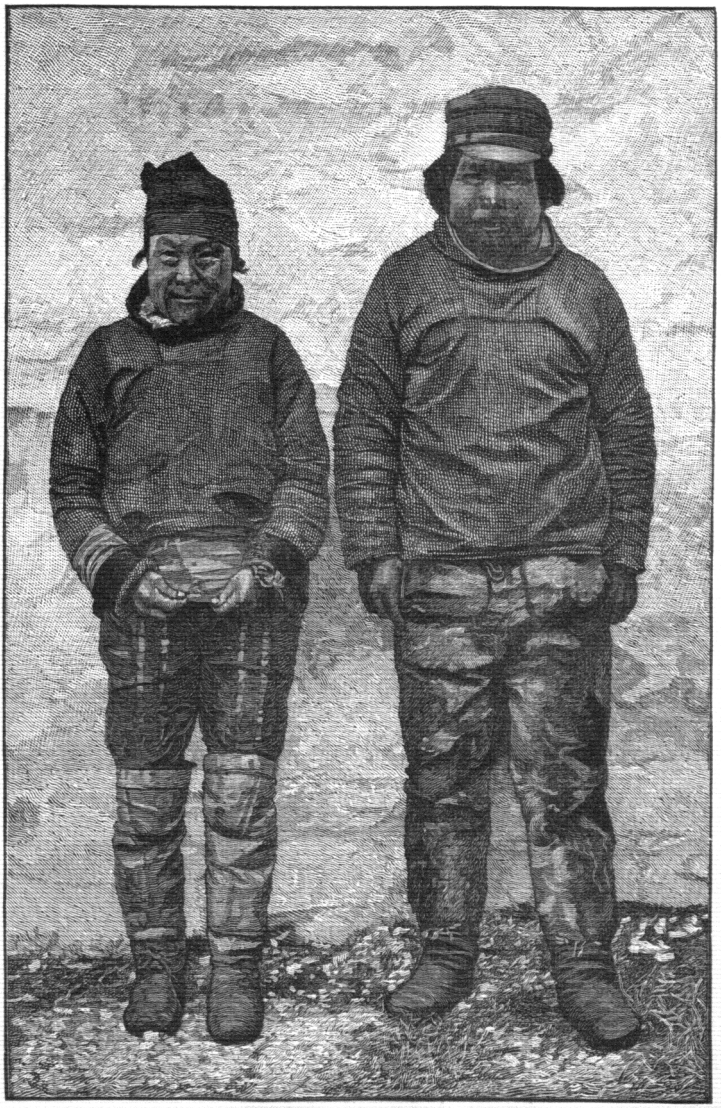


GIRLS OF HYBRID RACE FROM SUKKERTOPPEN
(*From a photograph*)

thus leaving a space of some inches in which the bare linen is visible.

The Eskimo of the east coast have a somewhat similar dress, although they generally wear seal-

legs. These are called 'kamas,' a word which seems possibly to have some connexion with the Eskimo 'kamik.



ANE CORNELIA AND JOEL

A POOR SEAL-CATCHER AND HIS WIFE FROM NY HERRNHUT (ESKIMO OF PURER RACE)

(From a photograph by C. Ryberg)

instead of bird-skin. This is also chiefly the case in northern Greenland.

Indoors the Eskimo, men and women alike, were originally completely naked, with the exception of the 'nâtit,' of which I have already spoken—a narrow band round the loins. This custom still prevails, as the reader will remember, on the east coast.

It is, of course, a good and wholesome custom. The clothes, of skin, check evaporation, and are therefore unhealthy in hot rooms. It is consequently a natural instinct which has led these natives to throw off their clothes indoors, even if they have ever been in the habit of wearing them there. When the Europeans came to the country, this national peculiarity shocked their sense of propriety, and the missionaries were short-sighted enough to preach against it. The practice has, therefore, been partially discontinued on the west coast. Whether the discontinuance has led to any moral improvement I will not venture to say, though I scarcely think so. But it is quite certain that from a sanitary point of view the change has not been for the better.

But the Greenlanders of the west coast are still very ready to strip themselves partially on slight provocation. Many, indeed, assume some covering when Europeans enter their dwellings, but this, I imagine,

must be rather from mere affectation, and a desire to please their visitors, than from any real feeling of modesty, for they will otherwise go through all sorts of performances in the most natural way in the world, and without allowing the presence of their countrymen to embarrass them in the smallest degree. So when they discover that a European does not appreciate or even notice their affectation of bashfulness, they generally abandon the attempt with great readiness.

Their hair the women gather up from all sides into a tuft or knot at the top of the head, tying it together with a band, which on the west coast of Greenland may be of various colours. The unmarried women wear red, though if they have given birth to a child the band must be green; the married women wear blue; the widows black, though if they wish to marry again there is generally a little red mixed with the black, while if they have children in their widowed state they must also assume the green. A widow of advanced age who has no further hope of marriage will often wear white instead of black.

As the Eskimo women are no less vain than their sisters elsewhere, it is naturally a point of honour with them that this characteristic tuft should stand as perpendicularly as possible. To this end they gather up the hair so tightly that it often

comes away from the forehead, temples, and back of the neck. Elderly women will therefore sometimes be seen nearly bald. The result is not attractive, but it at least serves as an excellent measure of the force of vanity.

Since it is on the management of the 'kayak' or native canoe and the seal-catching that is effected by its help that the whole community of Greenlanders

AN ESKIMO IN HIS 'KAYAK'
(*By A. Bloch, from photographs*)

depends for its subsistence, it is necessary in any account of the social condition of the Eskimo to make early mention of this particular subject. As, however, I shall return to it subsequently, I will make my description here very short.

The 'kayak' consists of a very light framework of wood, covered externally with skin, generally that

of the saddle-back seal (*Phoca Greenlandica*) or that of the bladder-nose. Though the latter is not considered so strong or waterproof as the former, yet if the skin of the young seal be taken, when the pores are still small, it is very serviceable.[1]

In old times drift-wood was always used for the framework of the canoe, though the ribs were also sometimes of willow, which is found along the coast. More recently the natives of the west coast colonies have taken to buying wood imported from Denmark, though it is still reckoned that drift-wood furnishes the best material.

An ordinary Greenland 'kayak' is generally from sixteen to twenty feet long and eighteen or twenty inches broad, while its depth in the centre is some five or six inches, but the size of course depends to some extent upon that of the occupant. Its under surface is comparatively flat, and it has no keel; towards each end it gradually tapers. The little craft is so light that, with all the accompanying apparatus, it can easily be carried on the head for several miles.

It will be understood that a vessel of this kind is not easy to sit, but on the other hand it can be driven

[1] Sometimes, too, the skin of the bearded seal (*Phoca barbata*) or that of the ringed seal (*Phoca fœtida*) is used. That of the former is the strongest of all seal-skins, but it is rarely to be found on the west coast. On the east, however, this seal is the commonest, and its skin is consequently in great demand for the covering of 'kayaks.'

at an astonishing pace by the help of the double-bladed paddle. It is without doubt, all things being considered, the best craft in existence for a single occupant.

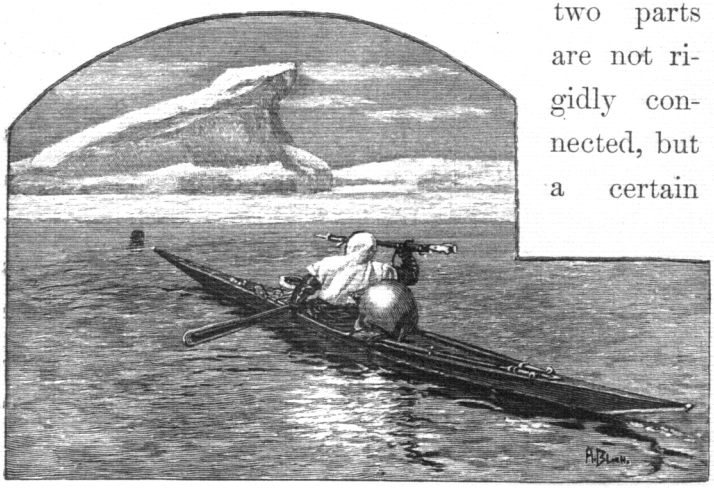
In fair weather the 'kayaker' wears a garment, the lower end of which fits closely to the hole in which he sits, while its upper end is fastened under his arms. This is quite enough to prevent small waves from washing into the vessel. In bad weather he uses a more voluminous covering, which, fitting equally tight below, is extended above into sleeves and a hood. This is made of waterproof seal-skin sewn with sinews, and it is furthermore tied closely round the face as well as the wrists. With this garment the Eskimo can take his canoe through the heaviest seas, and can capsize and right himself again without getting wet himself or admitting a drop of water into his vessel.

I have already spoken of some of the instruments used in seal-catching from the 'kayak,' and I shall here only describe the harpoon, which with its accompanying line and bladder is the most important weapon of the Eskimo.[1]

This exceedingly ingenious appliance points to a

[1] The bladder is generally made of the whole skin of a young ringed seal, which is deprived of its hair, and then blown out and dried. The harpoon-line is made of strips of the skin of the bearded seal, but that of the young walrus is considered even better.

high degree of inventive faculty, and is far superior to the ordinary run of implements to be found among savage or half-savage peoples. The harpoon consists of a shaft to the end of which a barb of bone, usually shod with iron, is fixed by a peculiar attachment. Lest the implement should be broken by the shock of impact or by the struggles of the animal, the two parts are not rigidly connected, but a certain



A 'KAYAKER' THROWING HIS HARPOON AT A SEAL
(By A. Bloch)

amount of play between them is allowed. Furthermore the bladder-line is attached to the barb only, so that the shaft may become disconnected, if necessary, and left floating on the water. The harpoon[1]

[1] There is also a peculiar harpoon, the 'sigagut,' which is used about Kangamiut and further north for the walrus-hunting. It is of considerable size, and is thrown by the hand without the help of a throwing-stick.

is thrown, like the other Eskimo spears and darts, by help of the throwing-stick.

In order to become a proficient 'kayaker' it is necessary to begin early. The boys in Greenland will often practise in their fathers' canoes when they are no more than six or eight years old. Those who are clever seal-catchers themselves will often set their children up with 'kayaks' when they are ten or twelve; in earlier days at least this was generally the rule. From this age onwards the boys would practise assiduously. At first they would confine themselves to fishing, and subsequently proceed to the difficult art of seal-catching. In order that his children may lose no opportunity of practising eye and hand, the sensible father will give them small darts and harpoons as playthings, and with these the little urchins of three and four may be seen trying their skill upon small birds, the Superintendent's ducks and chickens, and any other worthy prey that they may come across. It is, of course, of the highest importance to the Eskimo community that the young should be trained up to become clever seal-catchers, as on their skill the very existence of the people is absolutely dependent.

A thorough mastery of the 'kayak' cannot be gained without the acquirement of the art of raising one's self again after a capsize. To do this one takes

the paddle by one end, thrusts it forward parallel with the canoe, and then by a vigorous sweep, as near the surface of the water as possible, struggles up first on to one's elbow as it were and then into the original position. If the whole thing be not done in one movement, a second stroke with the paddle will complete it. The paddle has an oblique position all the while, and by thus forcing the water down below it, itself shows a strong tendency to rise. A really skilful 'kayaker' can raise himself by the help of his throwing-stick, or even without other aid than his arm. This latter accomplishment is very useful, as the paddle may easily be lost in the catastrophe.

Without this art, or without the help of a companion, all is over with the first capsize. An upset is easily brought about, either by a wave or by the line catching at the moment when a seal is harpooned, or even by a careless movement in calm water and at times of comparative safety.

Every year, therefore, many an Eskimo meets his death in this way. Thus in 1888, out of 162 deaths in Danish South Greenland, 24, or 15 per cent., were due to drowning in the 'kayak' alone. In earlier days every tolerably skilful 'kayaker' understood this saving art, but latterly, or since the arrival of the Europeans, there has been retrogression here as in many other respects. In many places, however,

this very necessary qualification is still fairly general, and, as I can vouch from my own experience, at Kangek, for instance, most of the seal-catchers were so far proficient. On the east coast, too, according to Holm, the art of recovering one's self is common, though perhaps not so common as it has previously been on the other side of the country. This is only what might be expected, as on the west coast, where there is so little ice, and almost always some sea moving, the acquirement is far more necessary. With a full command of this art it is possible to defy almost any violence on the part of the waves and weather.

The Eskimo are often reproached with cowardice and want of spirit. This is no doubt to some extent because their detractors have seen them on land or at sea in fair weather, when they are in fact too light-hearted and indolent to display any spirit, if perhaps they have been called upon to undertake something which they do not understand or feel an interest in. My experience takes me in exactly the opposite direction. If one is to decide as to a man's greatness, one must see him at his own work, and if an Eskimo be followed out to sea in bad weather, the result will be a very different opinion. Though, as I have pointed out, seal-catching in the 'kayak' is full of danger, and though maybe his father and brothers

have lost their lives in its exercise, still the Eskimo goes calmly out to pursue his daily occupation. If the weather be unusually bad, he will stay at home if he can, no doubt, as experience has taught him that on such days many lose their lives. But when he is once out he takes the whole thing calmly, and proceeds on his way with the greatest unconcern. It is a fine sight then to see him cutting through the big waves, which completely bury him, or riding like a sea-bird on their crests, always with the same happy, indifferent air and the confidence of the master-hand. At such times he is great indeed.

Or the sight of him in his little vessel attacking the seal or the huge walrus with his usual coolness, though he knows that at any moment they may cause his death if his hand fail of its usual cunning, will soon convince the observer that the Eskimo does not lack courage where courage is necessary.

As I think they will help the reader to form a proper idea of the native character, I will here relate one or two incidents illustrative of the Eskimo's general hardiness, and of the dangers to which he daily exposes himself.[1]

[1] These accounts, and many others of the same kind, have been written by the Greenlanders themselves in Eskimo, and printed in the Godthaab journal *Atuagagdliutit*. These particular ones have been subsequently translated with others by Dr. Rink in his book, *Om Grönlænderne, deres Fremtid*, &c. (Copenhagen, 1882.)

A man from Tornait, near Fiskernæs, went out in his 'kayak,' one day in February 1876, towards the north. When he came to the sealing-grounds a seal rose in front of him, and he took out his rifle to shoot it, but in so doing shot himself through the abdomen. When he came to himself again after the shock, he got out of the 'kayak' on to a piece of ice and lay down; but as the wind now began to rise and the sea broke over him as he lay, he had to embark again and paddle southwards. In spite of his terrible wound he went out into the open sea, passed round the islands, and reached his home. Here he dragged his canoe ashore, but then sank down by the edge of the ice, as he had no strength left to carry him up to the houses which lay close by. When he was afterwards found, and the state of the canoe seen, no one could understand how he still managed to live after losing all the blood which the hull of the little vessel contained. When they carried him up they did not think he could live through the night, but he did not actually die till two days after. 'He was not afraid of dying,' the original story concludes, 'but was like one who had found salvation.'

Another time, also in February, six men from Kangamiut were out after walrus, and as the wind began to blow they took refuge, together with a walrus which they had in tow, upon a little island

out by the open sea. But as the waves broke heavily round the island, they were unable to get off again without getting their canoes thrown against the rocks. But the island afforded no shelter from the wind, and after they had sat huddled together the whole night through, their thin and sodden clothes began to stiffen with the cold. Then four of them tried to throw the other two out into the breakers, canoes and all. One of the two capsized, but managed to right himself, and both got well away. The other four, who were nearly carried away by the waves while they were helping their companions, lost all desire to emulate the feat. Three of them sat down again, but the fourth, after exploring the island, found a cleft in the rock just large enough to allow of a 'kayak' being slid down it into the sea. Certainly this slide ended abruptly, and left a perpendicular drop which must bring the man into the sea head first, but as it was high water he thought the plan was feasible. When the others saw the place they were simply terrified, but they reflected that if they stayed on the island another night they must freeze to death, and that it was much the same to them whether they lost their lives in the water or on the land. So they were encouraged to try the dangerous slide, and all managed to get away in safety.

A man from Kornok, whom I knew personally,

tells how he was once caught in a storm in Godthaabsfjord together with his brother and another companion. They made for land, and though the edge of the ice was so high and steep that they could not get up by their own efforts, they were thrown on to the top by the force of the waves.[1] When this man came to himself, and found his brother still alive, he pulled him out of his canoe and tried to get him to a ruined house near by, in order to find shelter from the storm, which threatened to freeze their limbs stiff because of the wetness of their clothes, and of the feeble state in which they were after the shock of being thrown against the ice. By leading and at times carrying his brother he got him to the ruin, where he dug a hole in the snow for both his companions. But while he was gathering some stalks of grass, which stuck out above the snow, he noticed that the third man was growing weaker and weaker, and finally saw him breathe his last. Presently, too, his brother's arms began to stiffen, and he could see that the fury of the storm made all his exertions futile. As soon as he was convinced of the hopelessness of his brother's condition, he began to talk to him of a future life, and

[1] On the west coast of Greenland, where the water is open throughout the winter, there is always a certain amount of ice along the shore, which at low water may form a perpendicular wall some ten feet in height.

continued till he noticed that the dying man heard no more. Then says the Eskimo, 'I was seized with fear and trembling, and while I sat gazing at him, he turned round, smiled at me, and drew his last breath.'

I will mention one more occurrence, which happened at Sukkertoppen in the spring of 1889, and was told to me by the natives when we visited the spot directly afterwards.

Three men were out at sea one day and were driven homewards by the violence of the weather. On the way one of them capsized, and as he could not right himself the others went to his help. But owing to the heavy sea it was no easy matter to get him up again, and in the process he fell out of the canoe, which of course filled at once. Things were worse now than ever, but they tried to keep the man above water, and at the same time took his 'kayak' and attempted to empty it, with the idea of putting him in again. This was a very difficult manœuvre, however, and the sea moreover filled the canoe again as fast as they emptied the water out. While all this was going on another of them upset, and only by dint of great exertion managed to recover himself. They both turned again to the original victim, but their strength being now exhausted, all further efforts to save their comrade were in vain, and they were obliged to return home without him.

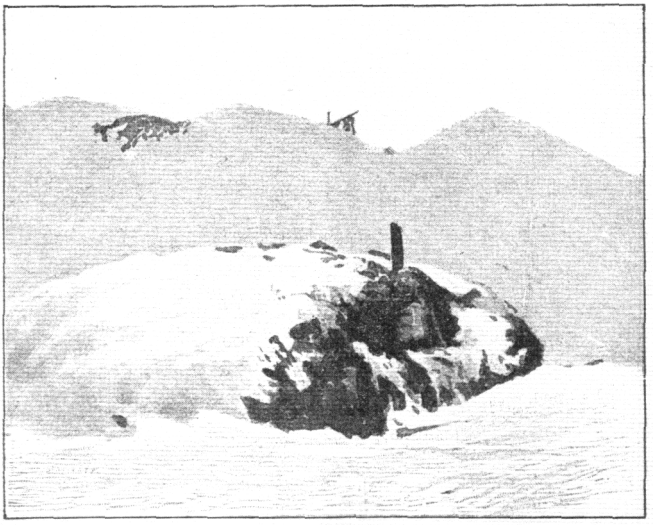
It would be easy to give a long list of such incidents, gathered from the daily life of a people who have been called cowardly and spiritless, and on whom Europeans are accustomed to look down. The Eskimo's ordinary occupation brings him continually face to face with dangers and hardships like these, and yet he sets about that occupation with willingness and lightness of heart.

Most of his time, in fact, the Greenland Eskimo spends in his little canoe. He leaves home with the break of day, and returns late in the evening with his booty. Household affairs meanwhile are left in the hands of the women.

In the winter the Eskimo live in regular houses built of stone and turf, and with their floor generally below the surface of the ground. These houses or huts contain but one room, which serves as the abode of the whole family, or generally of an aggregation of families, men and women, young and old, being more or less promiscuously mixed up together.

This room is of an oblong shape, and is commonly so low that it is all but impossible to stand upright in it. Along the whole back wall goes the principal bench, which is five or six feet deep. On this the whole household sleep, or rather the married members and the unmarried daughters, lying side by side, with their feet towards the back and their

heads pointing into the room. The unmarried men usually sleep on smaller benches under the opposite wall and windows, of which latter there are rarely more than two even in well-to-do houses. There are also benches by the side walls, which are at the disposal of chance visitors. If there are several families



AN ESKIMO HOUSE IN THE WINTER

(By the Author, from a photograph taken at Sukkertoppen)

in occupation of the same house, which is the rule, the main bench is divided by low partition-boards into separate stalls for each family.

In the old Greenland houses there was no fireplace, and all the heating was done by train-oil lamps, which were kept continually burning, since,

as I have already said, the Eskimo will not sleep in the dark if he can possibly help it. These lamps were also used for the cooking, which was all done in the common part of the room. On the east coast this is still the prevailing order of things, and on the west the warming is as a rule done by the lamps, while the cooking is carried on in special fireplaces outside near the entry, the fuel used being peat and a kind of guano provided by the gulls. In some houses, especially at the larger settlements, stoves imported from Denmark may be seen, and in these the same fuel is used. But the oil lamps are nevertheless always burning. Formerly vessels of potstone were used for cooking, but on the west coast at least these have now given way to iron pots.

To the interior of the house leads a long narrow passage, which lies at a lower level than the house itself, and into which one generally has to descend through a hole in the ground. The passage is often so narrow and low that one has almost to crawl along it, and a big man may find very great difficulty in getting in at all. The object of this passage is to keep cold air out of the house, or rather to keep the warm in, which is effected by its low level and narrow dimensions.

Formerly, as soon as spring came, the Greenlander abandoned his stuffy winter-dwelling, the roof of

which was usually taken off for the purpose of airing the interior well. He then would roam with his tent the whole summer long, from one of his haunts to the other, and for one month or more, in July and August, he would move into the fjords to hunt reindeer, at least in those parts of the country where these animals are to be found. This period, with its abundance of delicacies in the way of reindeer-suet and paunches, was the most enjoyable of the year. The summer tent-life, on the whole, was the Eskimo holiday, and a most healthy change for him. Unfortunately, with the increasing poverty of recent years, the custom has gone more and more out of use on the west coast, and few of the seal-catchers can now afford skin enough for tent and boat, both of which are, of course, necessary for the nomad life. Instead, they are now obliged to spend the whole year in their unwholesome little winter-dwellings. The retrogression in this respect has latterly become quite alarming.

III. The Eskimo Community in West Greenland—Property—Mutual Helpfulness—Hospitality

It is no easy matter to give a satisfactory description of the present social organisation of the West Greenland community, since the influence of the European inhabitants, to say nothing of their

direct interference, in the course of the last hundred and fifty years, has brought most of the old portions of the structure to a state of premature decay.

Before this it was an unusually well-regulated community; it had its customs and definite rules of conduct for all conjunctures of circumstances, and they were seldom transgressed, for the Eskimo are orderly and peaceable folk, who seldom do each other wrong.

Then came the Europeans. They, having no knowledge whatever of the natives, took it for granted of course that they were in need of thorough reformation and improvement, and laid their officious hands upon the prevailing social order. They tried to force upon the community an entirely new character; they gave it a new religion, and they detroyed its respect for old customs without providing it with new ones to take their place. In short, the new-comers behaved in exactly the same way as elsewhere, when they take upon themselves to make a wild and irresponsible people participators in the blessings of eternal truth.

At first the Eskimo listened in astonishment to the strangers. They had been well satisfied with themselves and their whole existence; they did not know that life was a futility, and mankind a miserable thing; and they could not understand a religion

which was cruel enough to condemn human beings to everlasting fire. Original sin they could indeed recognise as a common possession of the 'Kavdlunaks' or Europeans, who, as they could well enough see, were a bad lot for the most part; but, as the 'Kalatlits' or Eskimo were good folk, they could proceed to heaven without further ado.[1] And they simply laughed at the stupid strangers, who knew nothing about seal-catching or any of the duties of life which they considered most important.

But by the might of a higher civilisation the strangers were enabled to prevail, and they have succeeded in course of time in making the native life a mixture of Eskimo traditions and modern European ways.

And yet many important features characteristic of old Eskimo life are maintained at this day, and I will try to give the reader some idea of the present social conditions without paying much attention to that which is not strictly national.

[1] We cannot wonder that the first estimate made by the Eskimo of the Europeans was very bad, for many of those then sent to Greenland were criminals, whose behaviour aroused great indignation among the orderly natives. This was the case with the men and women who accompanied Major Paarss in 1728. The heathens were continually asking how it was that the European women were so impudent and deficient in feminine propriety. Whether the conduct of the successors of these people in their dealings with the natives has been altogether calculated to remove this impression is a question of some uncertainty.

With the Eskimo, as with all races of hunters, the idea of property is of very limited extension. Yet it is quite wrong to insist, as some people have done, that this idea does not exist at all with them.

As to the possession of most things there is more or less community, but this community admits of wider and narrower extension according to the nature of the thing in question. The smallest area of community is the family; next comes the household or aggregation of families, and the circle of relatives; and, lastly, the whole settlement. The most private possession is the 'kayak' and its appurtenances. These belong to the 'kayaker' alone; they may not be touched by others, since he, who depends upon them for the support of himself and his family, must always be sure of finding them in the place he left them. It is seldom, too, that they are lent. Formerly good seal-catchers kept two canoes, but this is rarely the case now. Among hunting appliances may also be reckoned 'ski'; but as these are only a modern importation, the idea of property is here not interpreted so strictly, and while an Eskimo will never think of touching his neighbour's sealing implements, he will not hesitate to borrow a pair of 'ski' without consulting the owner. For the same reason rifle and gun seem not to be considered as strictly private property.

Next to the hunting implements and personal apparel come certain household effects, such as knives, axes, saws, and sewing materials. These the owner may regard as private possessions, if he be willing to press his right, but as to some of them there often prevails a certain amount of community.

Other domestic appliances are the common property of the members of the family or even of the household. The 'umiak' or large skin-boat belongs to the head of the family or its members, as does the tent also. So, too, does the winter-house, though if it is occupied by several families it is held in common ownership.

In land there is no property, though there seems to be a rule that no one may pitch his tent or build his house on a previously occupied spot without the leave of the occupiers. In proof of their consideration for one another in this respect I will quote a passage from Dalager, to whom, as the reader may remember, I was much indebted in an earlier chapter:—

'In the summer, when they carry their tent and belongings with them, and contemplate settling on a spot where there are other Greenlanders standing, they row towards shore very slowly, and when they are still about a gun-shot distant they stop and say nothing. If those on the shore also say nothing,

then the new-comers think that they are held of no account, and so row rapidly away to an unoccupied place. But if those on land make, as they generally do, signs of welcome to the others, and say, "Look! here is good ground for your tents, and a good place for your boats; come and rest after the toil of the day," then, after a while's reflection, they will put in to shore, where the bystanders are ready to receive them and to help them carry their baggage up. But when they go away, the others only help them put their boat in the sea and leave them to do the rest themselves, unless they be very familiar friends or near relatives, in which case they are sent away with the same marks of honour as they were received with, and with the parting compliment, "Your departure leaves with us a silent memory."'[1]

There seems, too, to be some notion of property in connexion with the fact that, when people have built dams across salmon-rivers to catch the fish, it is not considered proper for strangers to come and meddle with the dams, or use nets above them, as Europeans have often done in times gone by—a form of trespass which Dalager also records.

Drift-wood belongs to the one who first finds it floating in the sea, no matter where that be, but to

[1] Dalager, *Grönlandske Relationer*; pp. 15, 16. (Copenhagen, 1752.)

establish his rights the finder must tow it ashore and pull it up above high-water mark. For this form of property the Eskimo has great respect, and the man who touches drift-wood which has once been duly secured is considered nothing less than a scoundrel.

But against this rule, again, the Europeans have sinned, either consciously or unconsciously, down to this very day.[1] In proof of Eskimo uprightness I may state that a man who has brought his wood to shore is certain to find it at the same spot years after—if so be, indeed, that no European has come that way.

As to the native idea of property in connexion with loan and purchase Dalager is again worth quoting :—

'If a man lends anything to another, such as a boat, a spear, a line, or other appliance to be used at sea, and this suffers damage owing either to the seal or other animal carrying the spear away, or the fish breaking the line, or if the boat is injured by the fish or seal, the loss falls wholly upon the owner, and the borrower pays no compensation. But if anyone borrows a spear or other implement without the knowledge of the owner, and it comes to harm, the borrower is then bound to give satisfac-

[1] See Dalager again, *op. cit.* pp. 23, 24.

tion to the owner. This happens very seldom, for a Greenlander must be in great straits before he will borrow anything in this way for fear lest it should suffer damage.'

'If a man buys any costly thing of another, such as a boat or a gun, and the buyer cannot make good to the seller the payment which is demanded, then he receives credit till he is able to do so. But if he die first, the creditor never presses his claim. This is,' adds Dalager, 'prejudicial to the merchants of the colony, who have continually to give credit, and it is an experience from which I have suffered this year especially, seeing that many of my debtors have departed this life, and by so doing brought me into considerable embarrassment.'

According to the original customs the Eskimo could scarcely be said to own any other property than the things I have already mentioned.[1] Consequently, even if he had any idea of accumulating wealth, and this is very rarely the case, his fellows would be able to advance their claims upon his stores. Thus a natural, but incongruous state of things now prevails in Greenland, insomuch that the European settlers who live there at the expense of the natives can accumulate property and live in abundance, while

[1] To these must be also added dogs and sledges in those parts of Greenland where they are in use.

the natives themselves have no opportunity of doing the same.

Nor even does the Eskimo's prey as a hunter belong entirely to him. Old and definite rules prescribe its distribution, and there are only a few animals the greater part of which he is allowed to keep for himself and his family. Among these is the saddle-back seal, but even of this he must give a piece of blubber to each of his fellows who comes up at the moment of its capture, and when it is brought home each of the children of the settlement receives a small portion. In the case of other animals there are fixed rules, according to which they are divided among all those who were present or helped at the capture, or even among all the houses of the settlement. This is the case with the walrus and several species of seal and whale; of the white whale, for instance, a very small portion falls to the catcher, even if he has secured it without other help. When large whales are brought to shore it is said to be a simply horrid sight to see all the inhabitants of the place throw themselves, knives in hand, upon the animal, while it is still in the water, in order to secure each his due portion.[1]

[1] When several are out together, there are fixed rules which determine who is to be considered the killer of the animal. If all or some of them fire at a reindeer, it belongs to the man who hit it first, even if the hit caused a mere trifling wound. As to the regulations on this

Nor are these regulations confined to the larger animals only, for certain kinds of fish are also included. If, for instance, a halibut is caught, it is the catcher's duty to give to each of his fellows who are on the spot a piece of the skin, which is eaten raw and considered a great delicacy. Furthermore, when he gets home, he generally shares the fish with the members of his household and his neighbours.

Thus, as will have been already seen, the main principle which governs this code of rules is that a whole settlement shall as far as possible profit by the booty of a single catcher, so that families are not entirely dependent on the daily success of their own provider of food. They are laws which have become gradually established as the result of the experience of succeeding generations.

Again, even if the catcher has made good all the regular claims upon him, he is not always suffered to retain in peace that part of his prey which the law

point in the case of seal-catching, Dalager says: 'If an Eskimo hits a seal or other sea animal with one of his small spears, and the animal is not killed, but makes off with the spear, and another happens to come up with it and kills it, in this case it belongs to the first striker. But if he has used the ordinary harpoon, and the line has broken, and then another comes and strikes the animal, in this case the first loses his right. And if they both throw together and both strike, then the animal is divided in two portions after its length. Again, if two strike a bird together, it is divided in two parts. If a seal is found dead with a harpoon in it, the owner of which is known, he receives his harpoon again, but the finder keeps the seal.' Precisely similar regulations seem to be in force on the east coast.

assigns to him. If, for instance, it is a time of hunger and scarcity at his settlement, it is considered his duty to hold a feast for his neighbours or distribute his catch among them. If the catch is plentiful, a feast is held at which the partakers eat till they can eat no more. If the whole provision is not consumed, and there are no neighbours still in want, the catcher may put by for a winter store. But if famine come again, he may be certain that all who have no store of their own will present themselves before him, and it is held to be his duty to distribute his food among them as long as it lasts. When it is all gone, the whole population starve in common, which sometimes ends in their starving to death. Thus in Greenland it is a thing unheard of that some live upon their abundance while others suffer want, though here also, of course, the Europeans, with their usual forethought, are often well-provided enough while the Greenlanders are starving around them. But in the Eskimo community this state of things would be quite impossible.

The Greenlander is, therefore, the most compassionate of creatures with regard to his neighbour. His first social law is to help others. On this law and on the principle of common suffering and common enjoyment all the small communities depend for their existence. A hard life has taught the Eskimo that even if he is a skilful hunter and can as a rule

manage to hold his own well enough, there may come times when, without the help of his fellows, he would have to succumb. It is better, therefore, for him to help in his turn. One of the first and most important of the principles of Christianity: 'Do unto others as ye would they should do unto you,' he has been taught by Nature herself, and it is a principle which he actually carries out, which cannot be said to be the case in all Christian communities. It is unfortunate that as the Eskimo community becomes more and more civilised, it loses its strength on this point. Yet the mutual desire to help is still so general, that I believe a European who had just refused assistance to an Eskimo would nevertheless be assisted in his turn if he happened to be in want of help.

Nor is hospitality to strangers a law of less force than the assistance of one's neighbour. The traveller enters the first hut to which he comes, and remains there as long as may be necessary. He is well received, and entertained with all that the house affords, even if he happen to be an enemy. When he leaves he is often supplied with food, and I have seen 'kayakers' who have been detained for days by bad weather go away laden with halibut which has been presented them as a parting gift. To make any payment in return is out of the question. Even

Europeans who are travelling are hospitably received everywhere, though it would never strike the Greenlander to intrude himself on the European in return. The Europeans do, however, often make some recompense, as they generally have coffee and other things with them in which the souls of their entertainers delight. They are therefore very welcome guests, at least as long as they have anything to treat their hosts to.

Of the force of hospitality on the east coast, too, Captain Holm gives many instances. I may mention his story of the murderer Maratuk, who had killed his stepfather, and was a bad character generally, who had no friends. In spite of this he was received and for a long time entertained when he paid a visit to the nearest kindred of the murdered man, though this did not prevent his entertainers speaking evil of him as soon as he was gone.

Hospitality is, of course, also forced upon these people by the hard natural conditions amid which they live. Often they are overtaken by bad weather when far away from home, and are compelled to seek shelter in the nearest house.

Sad to say, it seems that hospitality on the west coast has latterly been losing its force. This is, of course, due to European example. It is even said that Europeans have been known to make a return

in money for what they have received, and the infectious consequences of such a proceeding are, of course, inevitable.

IV. Food—Cuisine—Stimulants

The Greenlander has no regular meals, but takes his food when he can get it or, if he has a supply of it, when he is hungry. The men as a rule eat nothing before they go off in their 'kayaks' in the morning, as they declare that while fasting they can better maintain the necessary balance. In the days of old they took merely a drink of water at this time, but they now take one or, if possible, two cups of coffee. On this they will go the whole day, though if they catch a seal, they generally eat a piece of blubber. They have quite a remarkable faculty of doing without food, but, to make up for it, they can devour an astonishing quantity at one time.

The food at home is usually served in a dish, which is set upon the floor, while the partakers all sit round on the great bench, and dive into it with their fingers as best they can. They have no tables, and it seems rarely to strike them to put the dish upon a chest or anything which will raise it. They appear almost to have a partiality for a stooping position. This is supported by a story told of a young European lady newly arrived in Greenland.

She happened one day to have some Eskimo girls in to do her washing, and when she went into the room to see how things were going, she noticed that her handmaidens were all stooping over the tub, which stood upon the floor. She naturally thought

A MEAL IN AN ESKIMO HUT

(By E. Nielsen, from a photograph)

this was an awkward and tiring position, so she gave them some stools to put the tub on. A little while afterwards she came in again, and was no little astonished to find the wash-tub still on the floor, while the girls were standing on the stools

and thence doing their work. *Se non è vero è ben trovato!*

The Eskimo culinary method is pre-eminently simple, and there is little range or variety. Meat and fish are eaten both raw (or very commonly also in a frozen condition) and cooked. Sometimes, too, they are put through a stage of decomposition, and seal's flesh in this state is highly prized. Seal- and whale-blubber are not boiled but eaten raw, though many people seem to believe that melted train-oil is an habitual drink among the Eskimo, which is altogether a mistake. The old Greenlanders used to eat a number of plants, among which were angelica, dandelion, sorrel, crowberries, whortleberries, and divers kinds of seaweed. I have already spoken more than once of the contents of the reindeer's paunch as one of the chief delicacies of the Eskimo. This is evidently, to some extent, because they feel the want of vegetable food, and the contents of the paunch are of course moss and other food which the reindeer has just eaten, and which has only been slightly altered by the action of the gastric juice. The compound is, however, extremely sour. A preserve formed of the same substance mixed with crowberries and blubber is a very favourite food. Of other delicacies I may mention 'matak,' or the skin of various species of whale, which is taken off

the animal together with the upper layer of fat, and is eaten raw. That which comes from the white whale and that of the dolphin are especially prized. In their appreciation of this article of food I can quite support the Eskimo, for its flavour seems to me to suggest a blending of filberts and oysters. Most of the Europeans in Greenland are fond of 'matak,' though they boil it as a rule, when, as it seems to me, the eating of it is of little profit.

Meat which is not rich and fat the Eskimo cares less for, and he consequently prefers sea-birds to ptarmigan, though the latter are very abundant. Their inner parts he devours whole with great relish, but the rest he is glad to sell to Europeans. In this connexion there is another story current.

At one of the southern settlements a newly-arrived pastor gave an entertainment to some of the members of his flock. His wife treated them to the best fare available, which happened to be roast ptarmigan. As the natives partook sparingly of this dish, the lady of the house pressed them, and asked if they did not like this estimable bird. 'Yes,' was the answer; 'we eat them when there is a famine in the land.'

As for European importations, the Christian Greenlanders are especially addicted to coffee, the drinking of which has become little less than a vice on the

west coast. Spirits, luckily, they have no opportunity of buying. They make their coffee very strong, and never, if they can help it, drink less than two good cups at a time, while they repeat the process some four or five times a day, if fortune favour them. They extol its excellent flavour and exhilarating qualities, though they are well aware of its deleterious effects. For this reason, young men who are destined to be good seal-catchers are allowed little or none. It is asserted that the giddiness from which the men often suffer, and which, of course, is fatal in a 'kayak,' is due to excessive coffee-drinking. This agrees remarkably with the results of modern physiological research, which have shown that the worst of the injurious principles contained in coffee, such as caffeone and the like, act upon just that part of the nervous system which governs the power of balance.

Next to coffee come tobacco and bread. The tobacco is generally smoked or chewed in the west, while snuff-taking is the weakness of the Greenlanders on the east coast, though the women in the west also do a good deal in this way. The chewing-tobacco is usually prepared in the deep china pipes affected by the Danes. These are filled half full with smoking-tobacco, over which water is poured, while some dry tobacco is placed upon the top. The pipe is then smoked till the fire is extinguished by the wet tobacco.

whereupon the ashes are emptied out. Then all the oil which can be gathered together from the receptacle below the bowl, and from the stem of the pipe, is poured over the already sodden plug which remains in the bowl, and it is now considered ready for the main operation.

Spirits, as I have said, are not allowed to be sold to the natives, though the Europeans may treat them from their own supplies. Thus they well know the taste, for they are entertained pretty frequently. They are passionately fond of spirits, men and women alike, not because they like the taste, as I was often told, but because it is so delightful to be drunk. And drunk they become at every possible opportunity. Somewhat incongruously, too, the women as a rule like their husbands best when they are in a state of intoxication. Their name for spirits is 'silakangitsok,' which is, being interpreted, 'that which takes away the reason of man.'

V. Woman's Position in Eskimo Society—Her Several Functions and Duties

The status of the woman generally must be regarded as good, for, though she is considered far inferior to the man, she is in no way oppressed. An Eskimo, in fact, likes to have sons, but he would be

glad to avoid daughters; and both father and mother are therefore disappointed, not to say depressed, when one of the latter makes its appearance.

The division of labour in the household is distinct. To the man falls, as I have said, the arduous work of the hunter and supporter of the family, but as soon as he touches land his work is at an end and his booty is handed over to the women. They await him on the beach as he comes towing his prey home; they help to pull him ashore, and then, while he looks after his canoe and its belongings, and carries them up to their proper place, it falls to the women to drag the booty up to the house. Formerly, indeed, this part of the work was held unworthy of the dignity of a man, and the same idea still prevails to a certain extent. The women skin the seal and cut it up according to the prescribed rules, the mistress of the house superintending the distribution meanwhile. Then they have to do the cooking and preparation of food, to dress the skins, cover the boats and canoes, make the men's clothes, and manage the house generally. Nay, even more, they must build the houses, pitch the tents, and row the great boats when their families are on the move. In earlier times at least it was derogatory for a seal-catcher to row in one of these boats, though it was the duty of the head of the household to steer it.

Now, however, it is a common thing to see men doing this work, especially if the boat has been hired by Europeans. It is quite a pitiful sight to see them in this humble position instead of in all the pride of the 'kayak.' Even still the clever seal-catchers will not condescend to take a place in a boat except as steersman.

WOMEN ENGAGED IN COVERING A 'KAYAK'
(PAYMENT FOR THIS WORK IS ALWAYS MADE IN COFFEE)
(By E. Nielsen, from a photograph)

At home the women are generally to be seen busily engaged on one thing or another, while the men do nothing but eat, lounge, tell stories, and sleep. If they do any work at all, it is with their weapons, which they keep in order, decorate with

carved pieces of bone, or alter and improve if circumstances demand it.

When the family are out after reindeer, it is the men who do the shooting, while the women generally have to drag the animals home to the tent. This is often heavy work, and calls for a considerable amount of strength and endurance.

With very rare exceptions the women never enter the canoes, and the only fishing they do as a rule is for the capelan, a small fish which in the early summer frequents the coast in such shoals that it can be scooped out of the water into the boats. This fishery is carried on till the catchers think they have enough for a winter supply, and, however many there may be left, no effort is made to secure more. The fish are prepared by being laid on the rocks to dry. The care of them, and the stowing away for future use, is, of course, the women's work.

Captain Holm speaks of two women of Imarsivik on the east coast, who were accustomed to use 'kayaks.' But at this particular place an unusual state of things prevailed, as there were only five males out of a population of twenty-one. Whether these two women had attained to the same level of skill in seal-catching as the ordinary run of men, we are unfortunately not told.

These two had, in fact, assumed a masculine way

of life altogether. They dressed as men, wore their hair in the same way, and generally conducted themselves as such. When they were allowed to choose from among Holm's articles of barter, they took no needles or any such feminine instrument, but spear-points and similar fittings for their weapons. It must have been very difficult to distinguish them from men, and it is quite possible that we saw them when we were at Singiartuarfik on August 6, but were not aware of their sex.[1] Holm also states that there were two other girls at the same place, who were intended for a masculine life, but at that time they were still too young to enter upon it.

In the old Greenland days marriage was a simple and speedy affair. If a man took a fancy to a girl, he merely went to her home or tent, caught her by the hair or anything else which offered a hold, and dragged her off to his dwelling without further ado.[2] She was then assigned her place on the bench; possibly her future husband presented her with a new bucket or some equally appropriate and serviceable utensil, and that as a rule brought the ceremony to an

[1] One of the two, Holm says, was the daughter of a dwarf living at the place, who was probably identical with the little hunchback we found there.

[2] Sometimes this performance was done by proxy, but in any case the visit took the form of an attack or raid.

end. It was, however, considered the proper thing in Greenland, as in other parts of the world, for the lady to show no partiality whatever for her suitor however fond she might be of him. She had therefore to resist, to cry and lament to the best of her power; and if she had been thoroughly well brought up, she would continue her mourning for several days, and even run away from her husband's house a number of times. If this show of propriety passed beyond the bounds of reason, and the man were not already tired of his wife, he would sometimes scratch her feet till they were too sore for her to walk, and before the wounds were healed she would have settled down contentedly to a permanent connexion.

This form of marriage is still the only method in force on the east coast, and violent scenes are often the result. The woman's relations meanwhile stand quietly looking on, as the struggle is considered a purely private affair, and the natural desire of the Greenlander to stand on a good footing with his neighbour prevents him from attempting any interference with another's business.

Of course it sometimes happens that the young woman really will not have her admirer, and in this case the struggle goes on till she is obliged to submit or the suitor is constrained to give her up. Graah tells a story which shows how difficult it may be

in such cases to divine the true direction of the girl's wishes.[1]

A clever young oarswoman from his crew, of the name of Kellitiuk, was one day seized and carried off to the mountains by a man named Siorakitsok in spite of the most strenuous resistance on her part. As Graah believed that she would not have the man on any account, and was supported in this view by her friends, he went in pursuit and rescued her. Some days afterwards, just as the party were about to start, and the boat was being launched, Kellitiuk sprang on board, crept under one of the seats and covered herself with bags and skins. Graah soon saw that this was because Siorakitsok had just landed on the island and had brought his father to support him. While Graah happened to be away for a moment, the man jumped into the boat and pulled the girl from her place of refuge. This was told to Graah, who was now convinced that she really had a repugnance to her brutal suitor, and considered that it was his clear duty to protect her. When he came up, the man had already got her half out of the boat and the father stood ready to help to carry her off. When Graah pulled her away and referred the man to 'Black Dorthe,' another rower, of whom he would

[1] Graah, *Narrative of an Expedition to the East Coast of Greenland.* . . . Translated from the Danish by the late G. Gordon Macdougall. (London, 1837.)

gladly have rid himself, the thwarted suitor listened quietly, muttered some unintelligible words between his teeth, and went away with angry and threatening looks. The father meanwhile showed no sign of dissatisfaction, but helped to load the boat and then wished them a kindly farewell. But, strange to say, when the boat was at last ready to start, Kellitiuk was nowhere to be seen, though she was shouted for and looked for all over the little island, where she must have stowed herself away in some nook or other. Her affections had apparently been fixed on Siorakitsok all the time.

Originally the Greenlanders were separated as easily as they were joined together. If a man grew tired of his wife, or a wife of her husband, which was rarer, she simply gathered her skins together and returned to her own people with no outward sign of concern whatever. Again, if a man took a fancy to another's wife, he possessed himself of her without more ado—that is to say, if he happened to be the stronger of the two rivals.

Papik, for instance, a skilful seal-catcher of Angmagsalik, on the east coast, having taken a fancy to the young wife of Patuak, proceeded to the latter's tent with an empty 'kayak' as well as his own. He then went up to the tent, brought out the wife, took her down to the water, and, making her get into the

empty canoe, rowed straight away with her. Patuak, a younger man and no match for Papik in skill or strength, was obliged to put up with the loss of his wife.[1]

On the east coast there are even instances of women having been united to as many as half a score of husbands. Utukuluk of Angmagsalik, after having been married to eight different men, took as her ninth husband a man who had already been her sixth in chronological sequence.[2]

It is when there are no children that the separation is managed so easily; but if the woman have given birth to a child, and more especially a boy, the couple are united by a closer bond.

The real Greenlander generally marries as soon as he can support a wife, his reason usually being that he needs the help of a woman to prepare his skins, make his clothes, and so on. Often, indeed, he marries before there is any chance of the union being productive, and this accounts for the frequent change of wives which takes place before he settles down to a more permanent connexion.

On the east coast, if a man can afford to keep a second wife he generally takes one, and most of the good seal-catchers therefore have two, but there are

[1] *Meddelelser om Grönland*, vol. x. p. 96. (Copenhagen, 1888.)
[2] *Ibid.* p. 103.

never more than two.[1] As a rule, the first wife seems not to like the presence of a rival, but sometimes the rival is taken at her express request, as she needs more help in the house. There may be another reason too, for Dalager says: 'Once I asked a woman why her husband had taken a second wife. "I asked him to myself," she answered; "I am tired of having children."'[2]

The introduction of Christianity has of course put an end to these easy-going methods of the west coast, and matrimony is subjected to the same religious ceremonies as in Europe. Here, too, it is not necessary for the bride to make as active a resistance as in the good old days.

Nowadays, in fact, marriage may be sometimes just as difficult of attainment as it was easy before. None but the pastors may perform the ceremony, as the native 'catechists' who are their assistants, and are stationed at the various outlying settlements, have not that qualification. At places, therefore, where the pastor comes, perhaps, only once a year, people contemplating marriage must contrive to take advantage of his visit or defer the concluding ceremony for twelve months or more. It is, of course,

[1] Dalager states that on the west coast in his time hardly a twentieth part of the men had two wives, while three were uncommon, and four very rare. 'Yet I knew a man,' he says, 'who had eleven.'

[2] Dalager, *Grönlandske Relationer*, p. 8. (Copenhagen, 1752.)

inevitable that such an arrangement should lead to looser connexions, especially as the Eskimo have by nature and tradition a strong propensity to contract such in any circumstances. It can, therefore, only have detrimental effects and contribute to destroy that very respect for the ceremony which the restriction is intended to create.

Under the influence of Christianity, polygamy has also died out. The missionaries even demanded that a man who had two wives when he adopted the new religion should put away the second. In 1745 a heathen at Fredrikshaab had been persuaded to become a Christian, but when it was proposed to him to separate himself from his second wife, 'he began to hesitate,' says Dalager, 'since by her he had two sons, whom he would in this case lose, and finally he changed his purpose and went his way.' Herein one cannot but give the man one's sympathy. Similar cases of men being called upon to separate from one of their wives with whom they have perhaps lived happily for years frequently occur now, whenever a Greenlander from the east coast settles in the neighbourhood of Cape Farewell and becomes a convert to Christianity. The injustice to which the native is exposed in these circumstances I need hardly point out. Even Dalager could not approve of the proceeding, and he quaintly adds: 'Whether

it is contrary to the ordinance of God that a man should have more than one wife seems to me a problem.'

Occasional instances of polygamy are still to be met with on the west coast, and about the first thing that a spirited Greenlander sets his mind upon, when he begins to take to erratic courses, is an additional wife. I was told of a case or two at Godthaab.

Renatus, the most skilful seal-catcher in Grædefjord, the inhabitants of which are a Moravian community, fell in love with a young woman and took her as his second wife. Things in his house went comfortably, however, till the affair reached the missionary's ears. He tried to make clear to the offender the enormity of his conduct, and to persuade him to give up the woman, but with no effect. Complaints were then made to the board of authority at Godthaab.[1] Renatus appeared before them, and was finally induced to submit with a good grace. He then sent the woman to Kangek, near Godthaab, where she was received in the house of one Simon, a 'catechist.' At the same time he also moved to a settlement farther north, named Narsak; but as he

[1] This is an institution which consists chiefly of native delegates from the various settlements of a district. The Europeans of the colony are also members, and one of them generally officiates as chairman. The native members of such a board are called 'partisok.'

now often met the people of Kangek on their sealing-grounds, and accompanied them home, he had many opportunities of enjoying the society of the contraband wife. Meantime, however, there came loud complaints from his old home in Grædefjord, where scarcity of food had prevailed since he, its best seal-catcher, had left the place. This induced him to return to Grædefjord once more, where he has since lived in full propriety. The rejected wife is still at Kangek, where I have myself seen her, and she wears the green headdress as a token that her children are considered illegitimate.

Another clever seal-catcher, living near Lichtenfels, had committed the same offence. The missionary, hearing of it, summoned him, and did his best to convince him of his wrong-doing, but ineffectually. He then wrote to the man, but received no answer; wrote more and more severely, and finally tried serious threats. To these he received a reply, the one word 'Susa,' which was calculated to express the most absolute indifference. Subsequently, however, the man seems to have grown tired of his second wife, and separated from her of his own accord.

The matrimonial position of women seems to vary in Greenland as elsewhere, and to depend mainly on the differences of individual character. As a rule, the man exercises the authority, but I have myself

seen instances of an inversion of the regular order. Among the real Eskimo, in fact, the woman seems to be regarded as the man's property. On the east coast marriage is often a plain commercial transaction, as a young man gives the father a harpoon or something of the kind in return for his handsome daughter; while, on the other hand, skilful seal-catchers are paid by the fathers to take their daughters, they being obliged to marry entirely at the parental discretion.[1] It also often happens in these parts that two men agree to change wives for a shorter or longer period, the arrangement thus made sometimes becoming permanent. A change of wives is no doubt not uncommon among the converted Eskimo, especially during their tent-life in the summer, when they allow themselves all manner of liberties.

The mutual relation of husband and wife seems, as a rule, to be unusually good. I have never heard an angry word pass between them, and such is the general experience. The two are, on the whole, uncommonly considerate towards one another, and sometimes even indulge in the luxury of a caress by rubbing their noses together.

On the east coast the same state of things would seem to prevail generally, though, according to Holm, there are occasionally sanguinary scenes.

[1] *Meddelelser om Grönland*, vol. x. p. 96. (Copenhagen, 1888.)

One day Sanimuinak brought home to his wife, Puitek, a rival, who was none other than Utukuluk, the heroine of nine husbands, of whom I have already spoken. This new introduction was resisted by Puitek, who spoke out her mind. Furious at this, the husband seized his wife by her hair, beat her about the back and face with his fist, and finally caught up a knife and stabbed her in the knee, so that the blood gushed out.[1] Such an occurrence must be quite the exception among these peaceful folk.

Yet it seems to be not usual that any deep-seated attachment exists between married folk, and if one dies the other generally finds consolation with the least possible delay. 'When a man loses his wife,' says Dalager, 'not many of his own sex condole with him. But the women station themselves at the very back of the great bench in his house, and lament for the dead woman, whereupon the man hiccups to them and wipes his nose. Some days afterwards, however, he begins to decorate himself as in the days of his bachelorhood, and to his "kayak" and weapons, as the things with which the Greenlander ordinarily makes most show, he gives his special attention. When in all this brilliant state he draws near to other Eskimo on the sea, they say: "See, here comes a new brother-in-law!" And if he

[1] *Meddelelser om Grönland*, vol. x. p. 102. (Copenhagen, 1886.)

hears them, he says nothing, but smiles in answer.' If a man marries a new wife, it is quite necessary for her to lament over her own shortcomings and to praise the virtues of her predecessor, 'from which one sees,' resumes Dalager, 'that the Eskimo women are just as ready to play a self-interested part as those of their sex in civilised lands.'

From what I have already said it will have been gathered that chastity is not much accounted of in Greenland. The real Eskimo seem to have exceedingly indefinite notions on the point, as we can well judge from what we now know of the inhabitants of the east coast, as well as from the accounts of Egede and the early missionaries as to the conduct of those with whom they had to do. It is reckoned no shame for an unmarried woman to have children either in the heathen or Christian communities. I have myself had opportunities of making the observation. There were two girls near Godthaab, for instance, who were about to give birth to children, but made no attempt whatever to conceal the fact, and even assumed the green head-dress long before it was necessary, as if they were proud of the badge. I have seen women of this standing who not only wore the green in their hair, but used it as a trimming to their outer garments, thus making the best decorative use of the colour which distinguished them, though

there is no ordinance or custom which enjoins such a practice.

Though the clergy have striven hard against the general laxity of conduct in this respect, and have tried to impress upon the young Eskimo of both sexes, from their schooldays onwards, the virtues of a stricter morality, their efforts seem to have effected little improvement. The young women, as I have said, make no attempt whatever to conceal the relation in which they stand to men; and if the man in question happen to be a European, the connexion is simply matter for boasting. For this state of things the Europeans themselves are, of course, very much to blame, and the conduct of many of the younger men who have come to the country has been very discreditable. And yet such is the respect with which they have succeeded in inspiring the natives, that the simplest European sailor is preferred to the best Eskimo seal-catcher. The result of this is that in the course of a century and a half there has been such an intermixture of races that it would now be extremely difficult, if not impossible, to find a true Eskimo throughout the whole of the west coast. And yet the number of Europeans is a mere fraction of the total population. This looseness on the part of their countrymen has, of course, not made the pastors' work in the way of reform any easier. The

consequences of European influence are again shown by the fact, to which I myself can speak, that the Eskimo women of the larger colonies are far freer in their ways than those of the small outlying settlements where there are no Europeans. The women of such places as Sardlok and Kornok, for instance, made a far better impression upon me than those of Godthaab, Ny Herrnhut, and Sukkertoppen.

Nevertheless, the Greenlanders do not seem originally to have been destitute of all sense of chastity. When, indeed, an Eskimo refrains against his inclination from interfering with another man's wife, the determining impulse seems to be that he does not wish to fall out with the man, rather than that he sees anything actually wrong in the act. And yet there is evidence that he has a vague notion of its immorality, since there is a saying extant at Angmagsalik that 'whales, musk-oxen, and reindeer deserted the country because men allowed themselves too much freedom with other men's wives.' There is another version that it was because 'the women were jealous at the conduct of their husbands,' and this is said to have been the reason why the channel that traversed the country from Sermilikfjord to the western side was blocked by ice.[1] Egede says that the doctrine of monogamy found great favour with

[1] *Meddelelser om Grönland*, vol. x. p. 100. (Copenhagen, 1888.)

the women, and that they often begged him to impress it upon the men in the course of his religious instruction.

As to their outward daily life the Greenlanders are models of decency, and there is nothing to be said against the conduct of either the heathen or converted sections of the population. In other respects, too, there are strict regulations. Marriage between children of the same family, or even near relatives, is altogether inadmissible, and it is preferred that the contracting parties should belong to different settlements, which is, of course, a very sensible custom.

The heathen Eskimo kill deformed children and those that seem too sickly to live, as well as those that lose their mothers at birth, when no one else can be found to take charge of them. They are either left to die on the ground or thrown into the sea.[1] Inhuman as the practice may seem to many, there can be no doubt of its prudence. Considering the hard conditions under which the Eskimo community exists, it cannot be expected that its members should care to bring up offspring which are never likely to be anything better than a burden to them. For the same reason, those who have grown too old to be of any further use are held in little respect, and therefore

[1] *Meddelelser om Grönland*, vol. x. p. 91. (Copenhagen 1888.)

look forward to their own end. Thus on the east coast it is said that old people who are supposed to be near death are drowned by their friends, or sometimes drown themselves.

The Eskimo are unusually fond of their children, and do all they can to please them, especially if they are boys, who are looked upon as the future supporters of the family. These little tyrants commonly rule the whole household, and the recommendation of Solomon as to early chastisement finds no favour here. They are seldom, if ever, punished, and I have never even heard an Eskimo speak harshly to his child. This method of education might be supposed to produce bad results, but this is not the case. Though I have seen a good deal of the Greenlanders of the west coast, I cannot remember to have met with more than one ill-disposed child, and that was in a home that was really more European than Eskimo. When the children are approaching years of discretion, a gentle reminder from father or mother is quite enough to restrain them if their minds are set on things forbidden. Neither out of doors nor in have I ever seen them quarrel or even exchange an

ESKIMO BOY FROM GODTHAAB
(*From a photograph by C. Ryberg*)

angry word. I have watched them at their games for hours, and often joined them at their football—a performance very like the English game—but never have I seen an angry look or a sign of irritation. What this striking difference between European and Eskimo children is due to I will not pretend to decide, but it must come in no little degree from the ex-

ESKIMO BOY FROM GODTHAAB
(From a photograph by C. Ryberg)

tremely peaceful and good-natured disposition of the Eskimo. To some extent, too, it may be attributed to the very close association between mother and child both at home and when she is out at her work, and carries the little one in the 'amaut,' or hooded garment which she wears for the purpose. The

mothers seem to devote themselves much more to their children than is commonly the case in Europe; they even suckle them an inordinately long time, and there is altogether a much closer family intimacy than that to which we are accustomed.

That the Eskimo boys now and again divert themselves by spearing the ducks and chickens of the superintendent or pastor must not be counted too much to their discredit, nor that they occasionally make raids upon the gardens and pull up or destroy the plants. It must be remembered that the idea of property in ground or in things which run or grow thereon or fly in the air is quite out of the reach of the native's comprehension, and even if the notion be specially impressed upon him, he seems to arrive at no clear perception of its significance.

ESKIMO GIRL AND BOY FROM SUKKERTOPPEN. THE GIRL WITH A BABY-SISTER IN HER MOTHER'S 'AMAUT.'
(*From a photograph*)

VI. The Eskimo Disposition—Crime—Trial by Combat—Sense of Independence

The character of the Eskimo is exceptionally gay and careless—even to an extent, in fact, that is quite

childlike. If he has a sorrow, which is not often, it may be violent for the moment, but it is soon forgotten, and he is as beaming, cheerful, and satisfied with his existence as usual. This joyous indifference leads to an almost complete disregard of the future. If he has food enough for the time being, he is glad, and eats till it is gone, in spite of the prospect of coming famine—a calamity which is now not unusual and, sad to say, becomes more and more common every year. For this thriftlessness he has been often and severely reproached, but it undoubtedly has its virtue, since he is spared all that fear of the future which is often the greatest hardship which our poor folk have to endure. When a new supply of food comes in, the Eskimo is as pleased as ever, and the memory of past suffering has as little power to destroy his equanimity as the reflection that there is possibly more to come at no distant date. The only thing which does disturb him is the sight of others enduring hunger while he has plenty, and this is a state of things which he rarely allows to exist.

As I have already often had occasion to point out, good nature, peacefulness, and an easy-going placidity are the main features of the Eskimo disposition. He rarely opposes anyone, and even when another man makes a mis-statement of fact, he clothes his objection in the gentlest possible form. If he can

help it, he will not tell a truth which he thinks may be unpleasant to his hearer. It is his ambition to stand on as good a footing as possible with his neighbour, and he seldom has an enemy. His peaceableness goes so far that if he is robbed—which does not often happen—he does not demand his property back from the robber, even though he can put his finger upon him. The consequence is, of course, that there are seldom disputes in the community, and the course of life is smooth and frictionless.

Honesty is another of his prominent qualities. The contrary is sometimes asserted by Europeans, but this is mainly due to the point of view they take. Theft from members of his household or settlement is regarded as an abomination, and is very seldom practised. To steal from strangers is not so criminal, though it is by no means acknowledged as permissible, and only happens exceptionally. We can scarcely wonder that the natives did a good deal of stealing from the Europeans when they first arrived, when we consider how the latter treated them, and that they even carried off some of them to Europe. The Eskimo regarded the strangers very much in the light of enemies, or at any rate not as friends, and therefore could see no wrong in stealing from Europeans whatever they could lay their hands on. The same conception still exists to some extent, as it is held to

be far less objectionable to rob Europeans than their own fellow-countrymen. Nevertheless theft is in any case rare, though I have myself seen very respectable natives filching flour out of the barrels of the Colonial Trade Service, and filling their pockets and mittens without being in the least embarrassed by the fact that I was looking on. In this case it was evidently the impersonality of the proprietor that deprived the act of all offence.

As a proof of their honesty in cases where they have laws or customs to respect, I may recall the fact, which I have mentioned before, that they never think of touching drift-wood which has been already appropriated. When Europeans offend against this convention, have not the Eskimo just as much right to despise them for their conduct as we to despise the Eskimo when they transgress against our laws?

The pacific disposition of the Eskimo makes murder an extremely rare occurrence, and the slaying of a fellow-creature is considered a great barbarity. War is, therefore, an abominable thing, and the training of soldiers and officers, whose business it is to kill folk, is simply incomprehensible to them.

Yet a case of murder does occur every now and then even on the west coast—a woman being often the cause, as in other places. The act is generally

done on the sea, the assailant trying to slit his victim's canoe open or to drown him in some way or other. The Danish authorities, who interfere as little as possible in native affairs, have found it very difficult to punish such crimes. Thus, a number of years ago, when a man at Holstensborg killed his mother, he was given a 'kayak' and some food, and despatched to a desert island, there to live alone. Not long afterwards he came back, saying that he could not keep himself alive there. Nothing further was done to him, and so the net result of his act simply was that he obtained a new canoe.

On the east coast crimes are punished and differences settled by the strange mode of procedure known as the 'drum-dance.' This is the real Eskimo's only tribunal, and corresponds to the trial by combat and duel of the so-called civilised world. The ceremony takes place, as a rule, in the presence of a large crowd of spectators. The two disputants are stationed in the middle of the ring, and, beating each a tambourine or drum the while, they hurl at each other lampoons or scurrilous songs. The combatant who succeeds in drawing more laughter out of the audience by his personalities and witticisms at the other's expense, is considered to have gained the victory. To be made ridiculous or laughed to shame by his neighbours is to a Greenlander the worst

punishment that can befal him; and it sometimes happens that men are fairly driven out of their homes and settlements by this means.

It is obvious that this 'drum-dance' must be an excellent institution and a most simple and easy way of getting disputes settled. It existed on the west coast also in earlier times, but as the first missionaries took it into their sage heads that it was an injurious and immoral proceeding, they opposed its practice, and finally abolished it. In this conduct Dalager refused to support them, and it is almost impossible to do anything but agree with him when he says: 'And verily, if people danced in our country to equally good purpose, and with the same object in view, we should very soon see that every moralist and every lawyer would turn dancing-master.' And another reason which might have reconciled the missionaries to the innocent 'drum-dance' was that it was a great source of amusement to the Greenlanders, for, poor souls, they have not a superabundance of such wholesome diversions.

The Eskimo has a very strongly-developed sense of freedom and independence. He is accustomed to be his own master, and to wander hither and thither at his own sweet will. The master, indeed, of every household exercises a certain amount of authority, but this is so gentle and so unobtrusive that it is

scarcely felt. They have servants, too, in a sort of way, as women are often received into the houses of the well-to-do, where they join the wife, daughters, and daughters-in-law in the ordinary work. They generally stand on exactly the same footing as the others, and the service is therefore more of a name than a reality. Thus it is no wonder that a Greenlander finds it difficult to reconcile himself to anything like a menial position, and that he considers it somewhat derogatory to him. Least of all does he like to be ordered to do anything. It was quite natural, therefore, for a seal-catcher to answer, when he was asked which he considered the higher position, his own or that of the Inspector, that he could scarcely say, for the Inspector had people over his head at home in Denmark, while he himself was responsible to no man.

For this reason it was somewhat difficult at first for the Europeans to supply themselves with servants. But by degrees civilisation has led to degeneracy in this point as in many others, and now the natives are glad to take service with the Europeans. Even the good seal-catchers will enter the Trade Service, and, indeed, take a pride in the position, as, in their capacity of 'officials,' they are, among other things, treated to a dram every morning, which is an indulgence from which the rest of their fellows are debarred.

Still, however, the mistress may have a good deal of trouble with her Eskimo handmaidens on the score of pride. They are willing and good-natured as long as they are well treated; but if a hard word be said to them, they will often decamp without further ado, and never return to their service unless the mistress be content to eat humble pie.

VII. Original Religion—Superstition—Artistic Sense—Poetry—Music

Originally the Eskimo had no definite or developed religion, but many superstitions and legends of various supernatural beings, of whose powers and qualities they had, however, very hazy notions. Their wise men were the so-called 'angekoks,' who endeavoured by a multitude of strange arts to obtain a hold on the people. They were, as a rule, the most intelligent members of the community, and could therefore at times do good by giving sensible counsel.

Nor have the Christian Greenlanders even yet abandoned their old faith completely. They are still exceedingly superstitious, and discourse with the greatest gravity of the most wonderful beings who have their abodes on the great ice-field, in the recesses of the fjords, at the water's edge, and in the depths of the sea. The old tales are still told of an evening by a narrator here and there to a crowd of

rapt listeners. They are excellent story-tellers, these men, and accompany their narratives, which are, if truth be told, somewhat discursive, with a number of lively gestures often calculated to incite their audience to laughter.

On the whole, the Eskimo may be said to have a particularly acute intelligence within the limits of their own experience. This is shown by their exceedingly ingenious weapons and appliances, in which the available material is utilised in the best conceivable way. The smallest studs of bone or simplest fastenings show such good work that it is impossible to imagine better, and on such points we have nothing whatever to teach them.

Their criticisms on Europeans are often very shrewd and happy. This the early missionaries learnt to their cost, for many a question put by their pupils as to various points in the Christian faith reduced them to dire extremity. They learn furthermore to read and write with great readiness, and some of them become far advanced in these accomplishments. Dominoes and draughts they soon pick up, and some even get so far as chess.

Their sense of form is tolerably developed, and they often show great aptitude for artistic work. Often, too, they become good draughtsmen, and for specimens of their skill in sculpture I refer the

reader to the engravings of two busts in wood here annexed, which were made by a man near Godthaab while we were there. There is no room to doubt that the models of these are members of their own race.

Their tales and legends, which have been collected

THE 'VENUS' AND 'APOLLO' OF THE ESKIMO

and translated into Danish by Dr. Rink, give the reader a good idea of the Eskimo intellectual life.[1] The stories show a great deal of imaginative power, a certain amount of pathos, and sometimes a poetical

[1] H. Rink, *Eskimoïske Eventyr og Sagn*, and *Tales and Traditions of the Eskimo*. Translated from the Danish. (Edinburgh and London, 1875, 1876, 1877.) See also Holm's 'Traditions from the East Coast' in *Meddelelser om Grönland*, vol. x.

apprehension of natural phenomena. Beside these legendary tales, and a certain number of a more strictly epic nature, they have also a stock of songs of various kinds. These were formerly either lampoons which had done duty at the ceremony of the 'drum-dance,' or else songs of more general application, descriptive of events or things. In these they descant upon the various charms of life and nature in a peculiarly child-like and engaging way. Often, too, they are childish love songs, in which the longing of the lover and the virtues of the loved one are charmingly described.

Their sense of the beautiful in nature I have had many an opportunity of observing in the course of the excursions I have made in their company. Thus, one day when I was in Ameralikfjord with one Joel on a 'kayak' tour, and we had just passed a point of rock, we suddenly saw the mountains at the head of the fjord lying before us bathed in the full sunshine. It was foggy weather, but the mist had scattered and now hung in shreds about the peaks, while the snowfields lay glittering in the brilliant light. It was a gloriously beautiful sight, and Joel stopped and ejaculated a single 'Binnekaok,' 'It is very beautiful.' He was in a general way a very rough specimen of humanity, and few would have credited him with feelings of this kind. I have often, too, heard

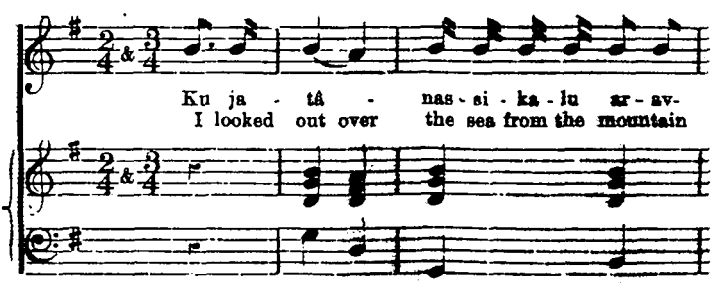
Greenlanders describe very poetically their summer-life and reindeer-hunting with full appreciation of natural beauty.

The writers of these songs often compose the airs themselves, and as the Eskimo are an astonishingly musical people, the effect of the melodies is, if somewhat monotonous, distinctly entertaining. As a specimen of these productions I append a song of recent date from the east coast, which has been kindly given me by Fru Signe Rink, who has placed several such at my disposal, though for want of space I am compelled to omit them.[1]

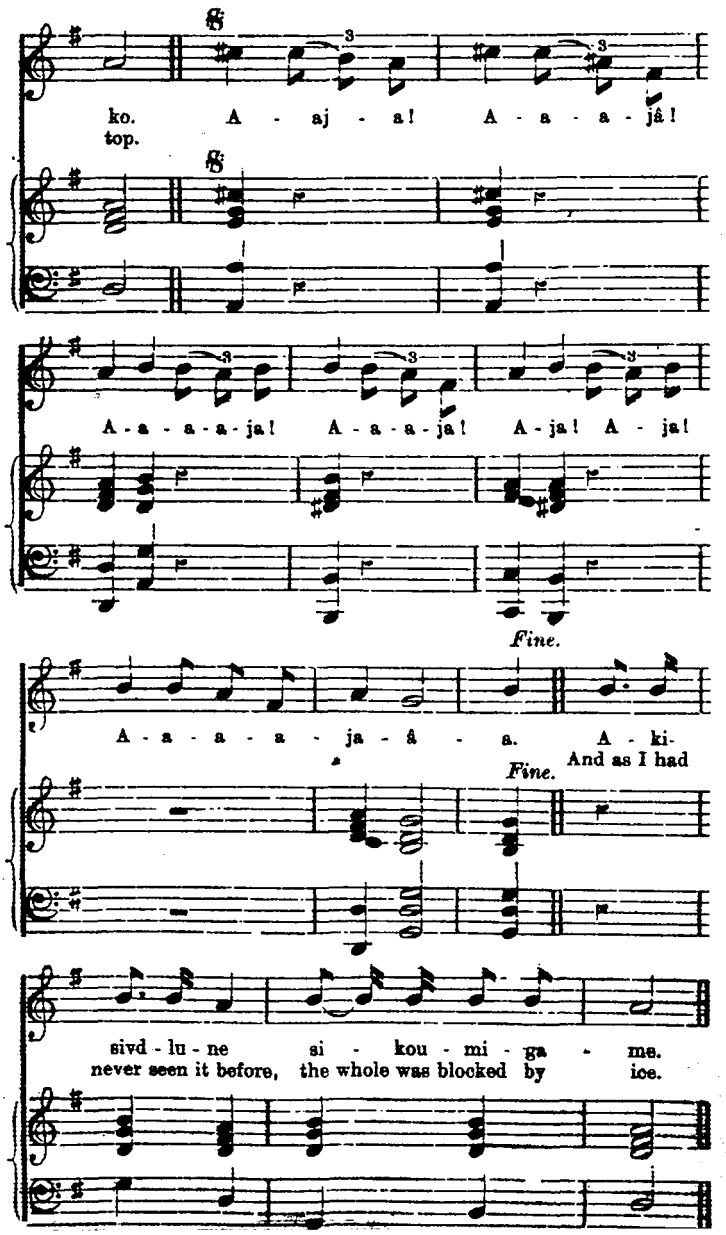
AN ESKIMO LAMENT

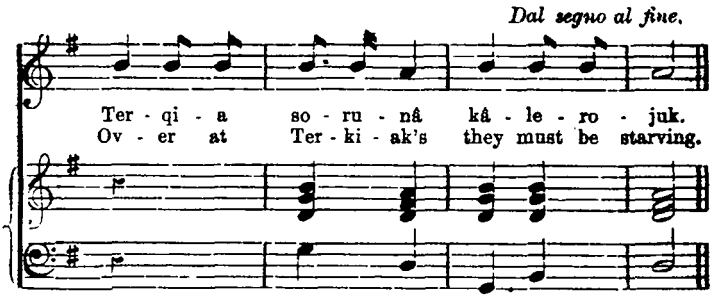
A party of Eskimo are caught by the floe-ice and are threatened with starvation.

Slowly, and, as it were, through the nose.



[1] Fru Rink, who was born in Greenland and has passed most of her life there, has given us a number of sketches of Eskimo life in the form of stories.


ko. A - aj - a! A - a - a - jå!
top.
A - a - a - a - ja! A - a - a - ja! A - ja! A - ja!
Fine.
A - a - a - a - ja - å - a. A - ki-
Fine.
And as I had
sivd - lu - ne si - kou - mi - ga - me.
never seen it before, the whole was blocked by ice.



The song goes on to say that if things continue as they are now they must all die of hunger. But to their joy a polar bear appears, and with him unexpected salvation.

But the 'drum-dance' and its attendant poetry have had to give way to Christianity and civilisation, and the art of verse-making has either become obsolete or been diverted into other channels. Songs of one kind or another are still, however, tolerably frequent. The subject-matter is sometimes of a comic description, and the writer, in a more or less unsophisticated way, attempts to ridicule the peculiarities of his fellows. Of these satirical songs there were, as far as I could understand, a certain number composed at the expense of the members of our expedition, but I am sorry to say I never succeeded in getting hold of any of these productions. Children's songs are another species, and it often happens that one of these is specially composed for a particular child and presented by the author as a kind of birthday gift. The airs are sometimes taken from well-known European tunes, though they are not seldom

of native authorship. Even these, however, are much influenced by European music, religious as well as secular.

In singing the Greenlanders take great delight, and in the summer, when they are rowing in their great skin-boats, they are very often to be heard chanting psalms and other songs, the effect at evening as the sound comes floating slowly over the smooth waters of the fjords being particularly attractive.

In their church service, too, it is the singing which appeals most strongly to the native congregation. At the 'Seminarium' at Godthaab, an institution for the training of native 'catechists,' special attention is given to choral music. These pupils, together with the Eskimo women of the place, form a choir on festal occasions. Their singing is exceedingly good and there are many excellent voices among them.

VIII. The Influence of Civilisation—The Future of the Eskimo

If the question be asked whether the introduction of our civilisation has benefited the Eskimo community on the whole, I fear that a favourable answer cannot be given. We have not in fact given the Greenlander any one thing which makes his struggle

for existence easier. His weapons we have not been able to improve in any way. We have indeed brought him iron, but he had a certain amount of this before, and it is besides a substance that is not absolutely necessary to him. It might be thought that fire-arms were a great help to him, but so far from this being the case their acquisition has proved distinctly detrimental. The rifle has caused him to neglect the far more important method of capturing the seal with harpoon and bladder. With these appliances he could go to work in all kinds of weather, and the result was far more certain. With the rifle he needs fair weather, and he is besides liable to maim and kill quite as many seal as he actually captures. The gun, too, has tempted him in many parts to pay more attention to the pursuit of birds than seal. And yet the seal is, and will be, the one necessary condition for his existence. From it he obtains his meat, his blubber for food and fuel, his skins for clothes, boots, canoes, boats, tents and house; it is, in fact, absolutely indispensable to him. The gun, too, enables the native to press so hardly upon certain kinds of birds, such as eider-duck, that their numbers are reduced year by year, and his resources in this direction will soon be seriously diminished. The capture of these birds has already become necessary for many families in certain parts,

and at Godthaab the people live mainly upon them the greater part of the winter.

In old times the Eskimo killed his birds with the dart. In this way he would secure numbers at times, but he never managed to get more than the stock would fairly stand. All that he wounded with his dart fell into his hands, but now, when he fires promiscuously into the middle of a flock, there are many victims which of course he never secures. We cannot, therefore, flatter ourselves that we have done much towards improving his methods of killing game.

On the other hand, we have undoubtedly done him considerable harm by our importation of various European products. We have given him a taste for coffee, tobacco, bread, European fabrics and decorations of divers kinds. And he in return has sold us his necessary sealskin and his blubber to gain these things, which have only brought him a moment's doubtful pleasure. Meantime for want of skin his boat has gone to ruin, as well as his tent; even the indispensable 'kayak' is sometimes left lying on the shore for lack of a new cover; in the winter his lamps have now and again had to be extinguished during the night for want of the blubber he sold in the autumn. Often, too, in the cold weather he will shiver in the miserable European rags which have

taken the place of the good warm sealskin he used to wear. He sinks into deeper and deeper poverty as time goes on; for want of tent and boat he must give up his summer wanderings—he must spend the whole year in his wretched little hut, where infectious diseases flourish and work more havoc among the community than ever.

A striking instance of the general retrogression is shown by a certain settlement near Godthaab, which a few years ago possessed eleven large skin-boats, and now only one, and that the property of the missionary.[1] It is only fair to add that here there were special reasons, such as the emigration to other places of the best seal-catchers, which partly accounted for this state of things.

The returns of the population would appear to show a certain amount of progress, as there is a slight increase in numbers, but in this sign not much faith can be placed. The community has not yet sunk so low that all increase has ceased, but it is impossible to conceal from one's self that things must come to this point; then, just as certainly,

[1] The possession of a 'umiak' or skin-boat is generally regarded as a sign of prosperity, as a man must needs capture a large number of seal to obtain skin wherewith to cover it. And as it enables him to wander about in the summer from one haunt of game or seal to another, it contributes in no little degree to the comfort and well-being of himself and his family, as well as of the other members of his household who accompany him.

in accordance with all natural laws, decline will begin, and work its way rapidly.

Of late, too, disease has manifested itself to an alarming extent, especially in the form of tuberculosis, which is the great scourge of the Greenlanders. It would be difficult to find a community with a proportionately larger number of inhabitants suffering from this plague. While we were in Godthaab two died and ten or twelve more were merely struggling for life, and this out of a total of something like a hundred. The disease was so common that it was almost easier to reckon up those who were free from it than those who had it. The Greenlanders seem, indeed, to have a remarkable power of resistance to consumption, for though they may in their young days be so far gone as to suffer from violent spitting of blood, they may nevertheless survive to a comparatively advanced age. I have myself seen men severely attacked by this symptom one day, and yet out in their canoes after seal the next.

As a rule, however, the sufferers are weakly and of little service to themselves or others. This in itself must go far to cripple the efforts of a small community like theirs. A disease which killed its victims quickly would of course be far preferable.

Though the Europeans cannot be accused of having brought consumption to the country, as it

existed there before their arrival, yet it must be said that their influence has largely contributed to its increase, owing to the comparatively unhealthy life which the natives have now been driven to lead. Nor is the poor European food sufficient for these people, who have been accustomed to live on meat and blubber, a proof of which is that the disease is commonest at the larger settlements, where the natives who are in the Danish service have to a great extent to live upon imported food. Another contributory cause which may not be without its effect is that many are now obliged to sit in cold houses and poor clothes during the winter for lack of the old abundance of blubber to use as fuel.

Thus a continuous and irresistible decline from earlier ease and comfort, ending often in hopeless poverty and sickness, is the result which the Europeans may look upon as their handiwork.

But have we not in return given them Christianity and enlightenment? It cannot be denied that we have; it was for this very purpose that Hans Egede first migrated to the country, and his successors have carried on his work. So far the result has been gratifying; all the west coast Eskimo are Christians, at least in name, and enlightenment has so far advanced that most of them can read and write.

It is, however, plain to the meanest understanding

that it is impossible to teach the Eskimo these things, to provide him with higher intellectual interests, and yet expect that he shall be as thriving a member of his community as in the old days when he had but one interest, to master the art of canoeing and to be a successful catcher of the seal. He lives, so to say, on the verge of existence: if he is to maintain his desperate struggle with an unkindly nature he has need of all his natural powers; make his work harder, and he must succumb.

But then comes the question, Can this intellectual improvement compensate for the material decay which is the result of a contact with external civilisation? Which is to be preferred — a Christian Eskimo, who is able to read and write and has a certain amount of knowledge on other points, but who is not master of the one art on which his existence depends, who cannot therefore support his family, who suffers from ill-health, and consequently sinks into deeper and deeper misery;—or a heathen, who indeed lives, as the missionaries would say, 'in spiritual darkness,' for he knows not much more than he can see with his own eyes, but who generally has a strong constitution and good health, who lives in comfort and keeps his family comfortably, and is always happy and content? From the point of view of the Eskimo the answer can scarcely be uncertain.

And yet the Greenlanders have been treated more considerately than any other uncivilised folk who have been exposed to the influence of our civilisation. We can only express our full acknowledgment of the way in which the Danish Government has acted. The real interests of the Greenlanders have been its main object. There is no other instance of a wild and defenceless people having, after the first contact with civilisation, stood their ground so well and so long as is the case with the Eskimo. The treatment of Greenland may, therefore, so far, be held up as a striking example for other nations to follow.

But in spite of this the result is, as we have seen, a decaying people. This may well warn us against taking it for granted that all missionary activity is profitable. It may indeed bring to a number of heathen the light of Christianity, but to many folk it will first bring the decadence which follows upon a sudden contact with a strange culture, or perhaps, more correctly speaking, with its products. And, furthermore, it must be borne in mind that what a civilised people first confers upon an uncivilised is, not its virtues, but its vices.

What has become of the North American Indians? where is the old pride of the Mexicans? where are the aborigines of Tasmania and the wild folk of Australia? Soon there will be none of them left to raise

a reproachful voice against the race that has brought about their destruction. And yet we Europeans show no compunction; we still talk in big words of carrying the blessings of civilisation to the poor uncivilised. It is, may be, an inevitable consequence of our struggle for existence, this war of extermination against other races, but in this case it has been misnamed. In some instances, possibly, such proceedings may have a show of right, as land is taken from those who are too ignorant to make use of it. In Greenland, however, there is no such excuse; the Europeans live there wholly at the natives' expense, and if these succumb, their parasites must withdraw and the land be left desolate.

Lastly, if it be asked whether there is no hope of salvation for the Eskimo community, the only answer is that the Europeans must evacuate the country altogether and leave the natives to themselves. If this were done it is possible that, when no longer tempted by foreign products, they might recover. But such an eventuality is scarcely conceivable; if the Danes were to retire, others would take their place, and the progress of decadence would be continued.

There is another danger, too, that threatens the Greenlander—the fact that the seal are decreasing in numbers at an alarming rate. This is scarcely the

result of his own consumption of them, for what he takes is but a trifle compared with the havoc worked by the European and American sealers, especially on the floe-ice off Newfoundland, where the newly-born young ones are slaughtered every year by thousands. Here, again, it is the white race that injures the Greenlander, and even if he knew of the fact, no remedy would lie in his power.

It is therefore certain that this little community is destined at a more or less early date to disappear altogether, or at all events to shrink into a mere remnant of what it has been. And yet the Greenlander is happy and contented—happier, perhaps, than most of us. He does not hate us, but is friendly and glad when we go to see him. European society, indeed, has much to learn from the Eskimo.

CHAPTER XXVII

A SHOOTING TRIP TO AMERALIKFJORD

We had long been looking forward to a trip into Ameralikfjord to try our luck with the reindeer, but hitherto the necessary snow had been wanting. At last, on Friday, November 23, we were ready to start and sitting in our boat, which had just been loaded amid a great commotion with the many things necessary, or at least desirable, for an excursion of the kind at this inclement season of the year.

On the beach stood several of the Europeans of the colony and most of its fair Eskimo to wave us a last farewell, and it is even asserted on credible authority that there were some among them whose eyes dimmed at the thought of losing their Norwegian friends for so long a time.

We pushed off, our sails were set, and we sped away southwards before a good northerly breeze. We had one 'kayak' in tow and another among the six passengers on board. Of these six five belonged to our party. Ravna refused to join us, saying, 'I am an old Lapp, it is too cold for me,' and in his

place we had Joel, a Greenlander of a most entertaining type. He is a little fellow, well and stoutly built, has a broad round face with a good-natured, mischievous expression, a wide smiling mouth, two little black ever-twinkling eyes, a scanty beard and moustache, and a shock of jet-black hair hanging about his shoulders like a matted horse's mane. He is a good man in a 'kayak,' but no seal-catcher; he bears the reproach of laziness, and is consequently poor. At fishing, which is despised by the real seal-catchers, at reindeer-stalking, and at incidental sport of all kinds he can hold his own. He is certainly lazy enough to deserve his reputation; evil tongues say of him, too, that his notions on the score of property are ill-defined. He is married to Ane Kornelia, a dame of much the same character as himself.

In the course of the afternoon we reached the mouth of Ameralikfjord, where an adverse wind stopped further progress. After a deal of groping about in the dark, for the day is short at this time of year in these parts, and after spending an hour or two in the cold and driving snow, while we cleared a camping-place, dragged boulders up a steep slope of rock from the beach to be used as tent-pegs, and made our other arrangements, we had all in due order at last. The stove was put up, a cheerful fire was

crackling inside, and the tea-kettle above was soon singing and filling our little habitation with a fragrance which recalled home and family life in spite of the fury of the wind and snow outside. Then followed supper, and then cigars, together with a comfortable satisfaction that we could take things easier than when we last lay here under the shadow of the 'Inland ice.'

Next day Joel thought it was no good going on as there was a strongish wind blowing out of the fjord, and recommended us to stop and try for ptarmigan. The following day things were better; there was still a little wind against us, but not more than we could manage, so we rowed on inwards with Joel by our side in his 'kayak.'

In the afternoon, when it was dark and we were close to Kasigianguit, a place on the south side of the fjord, where we contemplated spending the night, Joel took it into his head to lead us a most extraordinary dance before he showed us the way to the proposed camping-ground. First he took us to the head of a long inlet, where he landed to get a drink of water out of the river and to enjoy himself generally, while he calmly left us waiting in the boat. Then out we went along the other shore of the bay, and then he stopped off a point of land for a quarter of an hour engaged in some mysterious employment

which, as far as we could understand, consisted in simply doing nothing at all. Then we passed into another bay, up to its head and out again along the other side as before. What on earth all these manœuvres meant we could not for the life of us understand.

They were possibly explained by the harangue which Joel entertained us with the whole time, but as not a word was intelligible to us the entire performance was, and is, and probably will remain, a mystery to me till the end of time. Hungry, tired, and furiously angry as we were we did not take the trouble to speculate further on the real nature of Joel's antics, but determined to be made fools of no longer. So we put in to shore on our own account just outside the last inlet, and presently heard Joel's voice out of the darkness calling us to come to him. This time we refused to stir till we were sure it was the last movement. So we inquired carefully first, and at last extracted the long expected 'Ajungilak,' 'Here is a good place.'

It was indeed an excellent site, with water at the very door, a good beach for the 'kayaks,' and promising ground round about. Had Joel only brought us here straight away, everything would have been well.

The tent was pitched and the stove put up. Joel

made a fire, fetched water, and set the kettle going. He was now enterprise itself, but would hardly have been so had he understood the many execrations that were hurled at his devoted head that afternoon.

At this spot we spent several pleasant days, some in reindeer-stalking, some after ptarmigan, and some in the canoes. Then we moved further up the fjord to Iterdlak.

A description of the whole period would be both long and wearisome, but I should like to give the reader some idea of the sport to be had in Greenland at this season, and if he has not already had enough perhaps he will accompany us on one or two of our outings.

On the morning of November 27 the sun had already risen, and the mountain-tops on the other side of the fjord were just reddened by the first beams, when Joel and I paddled our 'kayaks' into the bay which he had so unaccountably led us round the evening of our arrival. Here we beached our little vessels, put on our 'ski,' and set off up the valley in search of reindeer.

We had not gone very far before we found in the snow the tracks of two which had passed up the valley the preceding day. We followed them and scanned the slopes unceasingly, but to no purpose. Then we reached a lake where the tracks turned

back. We, however, continued our previous course, crossed the lake, had a drink from the river, at the imminent risk of being plunged in head first by the collapse of the rotten ice which covered it, and went on up the valley. We were just climbing a little slope when I suddenly saw Joel drop in his tracks as if he had been shot, and point to the other side of the valley, while he whispered 'Tugtut.' Down went my head too, for there were six deer at no great distance. At once we retired behind a knoll, and I pulled out my stalking costume of white linen, which had been made for the occasion. Joel's face when he saw me arrayed in this uniform expressed the most unqualified astonishment, which he gave vent to in a single 'Tupinnekaok,' 'Heaven preserve us!'

He soon, however, discovered the advantage of this cunning device, and begged me to go on in front while he crawled behind. Presently we were near enough to see to our rifles and clean the barrels of snow and ice. In order to have a ball ready for a second shot with his muzzle-loader, Joel put one in his mouth. As this seemed a very practical method, I proceeded to do the same with a cartridge, without thinking of the cold. Scarcely had the metal touched my tongue before it stuck there, and I tore it out with a piece of the skin attached. I must, I suppose, have made an absurd grimace, for Joel was forthwith

convulsed with laughter. The cartridge, with two others, I now placed in one of my mittens, and we pushed cautiously on. It is no easy matter to walk quietly and without attracting attention when at every other step one sinks to the waist in the snow down among the huge boulders of a Greenland river-course. Our 'ski' we had been obliged to drop when we began the stalk, as they would have made all crawling impossible. My white 'overalls' screened us excellently, as far as sight went; the snow deadened all sound, and little Joel hid himself as well as he could behind my broad back, or rather that part which follows closely upon the back when one creeps on all fours.

At last we passed the brow of a slope and saw the whole herd of deer on a stretch of flat ground in front of us, but they were still a long way out of range. Here there was no cover to bring us nearer, so we had to retreat again to try another approach by a side route.

We now got on well behind some high knolls, and presently, as we felt a gentle movement of air about our necks, Joel was constrained to stop and try with a piece of wool which way the wind was blowing. Just at this moment I suddenly caught sight of a young buck, which we had not seen before, standing alone and watching us. We both crouched down,

and then, whether he had seen us or not, he came running exactly in our direction. Some rising ground hid him at first, and then, as he appeared again over the edge, I raised my rifle and pulled the trigger, but it missed fire.

I cocked the other barrel, a smooth-bore, at once,

REINDEER STALKING IN AMERALIKFJORD
(*By A. Bloch*)

and this time both our shots went off together. The buck jumped, and was evidently hit in the shoulder, as he trailed his foreleg, but he went off at full speed nevertheless. Again I tried my rifle-barrel, but again the cartridge missed; I put in another, and this time with good effect, for the express bullet hit

the buck behind the shoulder and he dropped dead where he stood.

I ran on now to look for the rest, but there was no trace of them to be seen. It was already past noon, and as the days are so short I thought it was best to give them up and go back to our dead buck.

The first thing I did was to fall on my knees and take a good draught of warm blood from the wound, which is a most comforting drink on a cold day like this. Joel looked on in wonder. I asked him if he would not have a pull, but he smiled from one end of his face to the other, shook his head, and pointed knowingly to the muzzle and stomach of the reindeer, to indicate the direction in which his tastes lay.

Our next business was to get the buck down to the water, but this was no easy task. We fetched our 'ski,' made a kind of sledge by laying them all side by side, and put the reindeer on the top. Then we harnessed ourselves and proceeded to haul, but it was heavy work, the more so because for the lack of 'ski' on our own feet we often sank to our waists in the snow. It was worse than ever when we got among the boulders, where we fell time after time through the treacherous covering which hid the holes.

But the end came at last, and late in the afternoon we had our reindeer down by the fjord. We had

thought of now tying our canoes together, putting the buck across them behind us, and so carrying him to camp in the true Eskimo way. But it was so late and so dark that we came to the conclusion that this mode of procedure would not do, and so we made up our minds to leave our game behind.

So when we had duly gralloched the buck, and devoured some of his inner parts then and there, we brought some stones to cover him with from the river-bed close by, heaped snow on the top, set our staffs in the heap, and tied rags on them to keep foxes, ravens, and all evil-disposed birds away. Then we got into our canoes and set off for home in excellent spirits. Before we had gone far Joel struck up 'Den evigglade kobbersmed,' which was then the fashionable air in Greenland and had been supplied with Eskimo words. So, singing, we paddled on in the darkness, and gave our companions at the encampment good notice of our approach.

From Sverdrup and Balto we learned that they had been out after reindeer too, and had seen four up in a high-lying valley, but had not managed to get within shot.

Next day the weather was bad, and we were content to go and fetch the reindeer in the boat, whereupon we skinned it and cut it up. The blood, we found, was not quite as it should be, as I had made

an imprudent cut when I opened the animal the night before. However, it seemed a pity to throw all this good food away, so we added flour and set to work to boil a pudding in a coffee-kettle which leaked like a sieve and had to be stanched with dough, meat, and anything we could lay our hands on. Round the spout we bound a bandage of grass, flour, and rope, and the whole apparatus presented a charming sight.

Then we ate the black-pudding. The first piece was retained with difficulty, but habit prevailed; we went valorously on and soon liked it better. Joel did not seem to care about our cooking; when we offered him some of the pudding he shook his head and said, 'Ajorpok,' which is to say 'It is disgusting.' To console himself he pulled out a raw ptarmigan, opened it, and swallowed its internals at one gulp. This was too much for Balto, who with an ejaculation thrust his head out of the tent-door and was simply overcome. Meanwhile Joel went calmly on with his meal; he plucked the bird and ate it whole, all that was left being a pile of feathers. There was something heathenish about the whole performance which impressed Balto, and he exclaimed, 'Why, he is just like an eagle.'

Then we boiled some of the meat; but it was nearly as much contaminated as the blood had been.

This did not prevent Joel and Balto, however, from eating enormously and even drinking the broth afterwards, the smell of which was quite enough for the rest of us.

On the whole, our kitchen management was not of the best. When we made porridge it was always eaten half-raw and tasted like paste, because we could not give it time to cook properly. When we roasted our venison we managed it by laying frozen pieces of meat on the stove and eating the outer portion as it thawed. Balto declared that we were still hankering after the old wild life up on the ice, and as we could not make pigs of ourselves sufficiently in Godthaab we had been obliged to move out here to Ameralikfjord.

Balto always kept us lively at this time. Every evening, as soon as we had had our supper and pipes and cigars were lighted, he used to bring out the cards. Some one fetched a box to serve as a table, and the game went on till well into the night. We had to sit in some thirty degrees of frost, but we were all in skins; and if the fingers did get too stiff, a couple of flaps with one's arms soon set them right again. Balto's quaint remarks, his eccentric Norwegian and frequent Malapropian excursions, kept us in an almost continual state of laughter.

On December 4 day was just breaking as I woke.

I put my head out of the bag and was pleasantly surprised to see Joel already sitting up in his night attire and busily engaged upon his morning toilet, or in other words combing with his fingers the mat of stiff black hair which sticks out like feathers round his head. Then he thrusts head and hair out of the door, his eyes wander round the mountain-tops on both sides of the fjord, and in comes the head again. 'Well, what is the weather like; will it do for reindeer to-day?' I ask. 'Asukiak, imekame' ('I don't know, perhaps it will'), is the answer. I am sufficiently familiar with the love of euphemism common to Joel and all his fellow-countrymen to know that this means that things look bad. This feature of their character is an amiable sign, no doubt; but it is rather trying to anyone who has much to do with them.

I then said, 'So you think it is bad again to-day?' which extracted the answer, 'Soruna ajorpok' ('Yes, it is bad, certainly'), for the wind was blowing up the valleys. This being so, there was nothing to be done, as with the wind at one's back one only succeeds in frightening the deer. Often, indeed, Joel said the wind was bad when he was lazy, which was not an unfrequent occurrence, and then I had to go out and see for myself.

This time, however, his statement was true, so we

made up our minds to try the birds. Joel, as usual, got into his clothes, lighted the fire, and went down to the brook to get some water in the kettle. At these times he generally managed to slip up on the ice outside, and we heard him and the kettle fly in one direction and the lid in another.

As soon as the coffee was ready we had breakfast in our sleeping-bags, discussing meanwhile how we should portion out the ground and where the birds were most likely to be. Breakfast over, we dressed, went out with our guns, tied the 'ski' on, and disappeared each in his own direction.

This morning I was one of the last to start. When I had got my 'ski' on I went up on to some high ground to the east of the tent which I thought seemed to promise well. It was heavy work climbing, as I had to choose the rough and broken ground in which the ptarmigan most delights. My eye wandered hither and thither and in and out among the stones, but to-day I had no luck. There were no signs of birds, not a track in the snow, no round black spot on the white surface that might be a ptarmigan's eye, no distant cackling, the only thing to be heard was the sound of my own 'ski.' I climbed higher and higher, and at last came out on a ridge which gave me a view inwards towards the 'Inland ice.' It was a marvellously lifeless scene;

there was not even a circling eagle, or a croaking raven, neither of which are as a rule uncommon here. All round me were the hoary mountains, on the dark walls of which the snow could find no place to lie. Deep down below the dark water of Ameralikfjord wound gloomily between the precipitous cliffs out towards the sea, deserted of life and light alike, for the whole winter through no sunbeam reaches its surface. Here there is no forest, no tree, or even bush within view; yet it is beautiful, as the sunlight wanders over the peaks on the other side, and the snow glitters and glows in turn. Life is not always necessary to make one of Nature's pictures beautiful.

I went on further and found in front of me a stretch of bog, and beyond that a high steep cliff with piles of débris at its base. I had not gone far before it seemed to me that I heard something moving up on this cliff, and thought possibly that it was a reindeer which had got into difficulties up there. I looked but saw nothing, and it scarcely seemed likely that anything without wings could make its way on the face of such a precipice. So I went on, but still I thought I could so plainly hear something moving and rattling the stones down as it went that there could be no mistake. I stopped and looked, and looked again, but still saw nothing;

so I went on, wondering how it was my ears could deceive me so. Then came the sound of steps once more, and this time so sharply and clearly that there could be doubt no longer. I then set myself to scan the whole mountain-side in search of the supposed reindeer. I began from the bottom, and for a long time I discovered nothing; but when I reached the middle of the cliff I was no little surprised to see a man, though at the height he looked no bigger than a fly. By the big pelisse and high square cap I knew it to be Balto; he was on his 'ski' and just crossing a patch of snow which hung over the precipitous wall of rock. I stood fixed to the spot and watched all his movements as closely as the distance would allow. I could see him digging the 'ski' into the snow to get a foothold; his gun hung across his back, his head was turned towards the rock, and he was moving cautiously and with the aid of his staff. I wondered how he, who was generally so careful of his life, could be so bold a rock-climber.

Just then one foot slipped, and he drove the staff hard into the snow; then the other foot lost its hold and he began to slide downwards, while my blood simply froze as I watched him. He rushed faster and faster, carrying the snow down with him; just below him the cliff fell sharply away. Then his clothes caught on a little point of rock which pro-

jected from the snow, and he hung for a moment on the brink. He struggled and tried to find a hold, but then slipped again. First came a clear drop through space, then he rolled down another snow-slope, then fell over another precipice, and finally landed in a helpless mass on a ledge below. I thought he must be dead or else badly crushed.

But presently an arm was lifted and the joints were cautiously bent; then followed the other arm, and then the head, which was stretched out and slowly moved backwards and forwards; last came the legs, and, strange to say, it seemed that nothing whatever was broken. Balto then rose. I could not quite follow his next proceeding, but then came a shot. I could see he was doing something, but could not make out what; presently there came another shot. I wondered what on earth it could mean.

He was walking about the little ledge on which he had fallen, and apparently looking for a way down, which did not seem easy to find. Then I saw him put his 'ski' over his shoulder and begin descending the cliff warily at a place where he could just find sufficient foothold. He came down step by step, and when I saw him safe on the débris at the bottom I went on. Of birds, however, I saw none; I had been unusually unlucky that day.

I then heard a shot from Balto, who was now not

far off and up among some boulders on the other side of a gully. I looked, and saw a covey of ptarmigan fly away from him and settle among some rocks further up the gully. As they were not much out of my way I went up after them, and presently found them all running about on the snow among the stones. As I got near them they would stop and stretch out their necks in an inquiring way, but they generally let me get within easy range. I shot two or three, but then frightened the whole covey further up still. Here they came to Balto again, who loaded and blazed away with his muzzle-loader as if his life depended on it. There were not more than he could manage, so I sat down to watch and wait for him.

He had dropped his 'ski,' and was now jumping about from stone to stone and peering cautiously in all directions. Apparently he had found his head too hot, for he had abandoned his cap in spite of the thirty degrees of frost. If he caught sight of a ptarmigan he would stalk it warily, stooping behind the boulders as he went, or sometimes crawling on all fours, till he was so close that he could almost have knocked it over with the butt of his gun. Then followed a long, careful aim, then a report, and the poor bird generally dropped dead on the spot. Then he loaded in frantic haste and looked cautiously round to see if there were any more about before he

moved. If he wounded one there was an exciting chase, the bird flapping along in front, Balto struggling behind, and sinking every now and then to his waist in the holes between the stones. In the end he would manage to throw himself upon it, and its head was soon bitten off.

At last he finished his work here, and came towards me bareheaded and out of breath, with his birds hanging all about him. He asked me if I had seen a wounded one, which he believed to be thereabouts; if he got it, it would make exactly fifteen. I had not seen it, but presently he found some tracks in the snow, and then the missing bird itself. Now came a final chase, which ended in the capture of the victim some little way off.

He gathered his things together and we set off for home, he declaring that there were two more birds lying at the foot of a rock on the way, over which they had fallen. These we actually found and then went on, Balto being in the best of spirits and quite overcome by his own success. He explained to me very circumstantially all his shooting tactics.

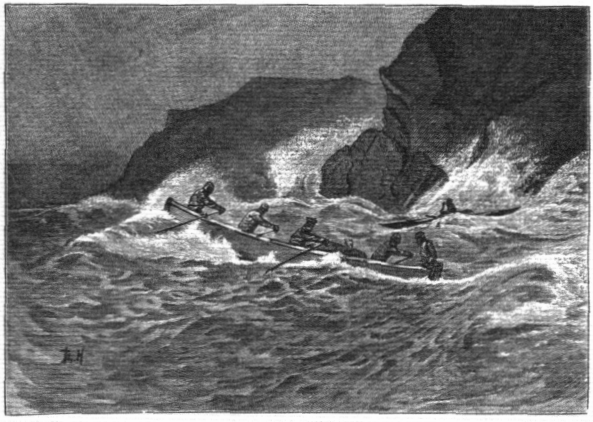
In the course of the conversation he told me that earlier in the day he had nearly lost his life. I expressed my surprise and let him go on with the narrative. When he had done I told him that I had witnessed the whole scene, but could not understand

what his two shots meant. He explained that when he found that everything, 'ski' and gun and all, were still unbroken, he got up to look round him, and then discovered that he had plumped down close by two ptarmigan, who were sitting and watching him in astonishment. He took up the gun and shot one; the other sat still while he loaded, and then he shot it too. But he declared that he had had enough of using 'ski' on steep and slippery places. On the way home he was as good as his word, for at all the nasty spots we had to pass he took his 'ski' off and carried them.

We had now shot over all the ground round Kasigianguit, and were longing for change and a fresh neighbourhood. Joel told us that further in, at Iterdlak, there was an excellent place for reindeer; and so one morning we broke up camp, launched our boat, loaded it, and set off, Joel showing us the way in his canoe. In front of our camping place the water was smooth, as it lay in shelter; but when we passed the first point and came out into the main fjord we found things very different. There was a strong east wind blowing, which, confined as it was between the high mountains, whipped the sea into one mass of foam and spray.

Our wretched long boat, named by courtesy 'the whale-boat,' though it could never have been used

for whaling all its days, cut with sharp bow through the high choppy waves and shipped sea after sea. This would not have mattered much if we could have baled. But it was so cold that the water, already nearly freezing, turned to ice as soon as it got inside the boat. Not a drop reached me, who was sitting in the stern; while Sverdrup, who was rowing



'OUR WRETCHED LONG BOAT . . . CUT WITH ITS SHARP BOW THROUGH THE HIGH CHOPPY WAVES'

(*By Th. Holmboe, after a sketch by the Author*)

bow, was very soon completely clad in ice. For a long while we struggled on; it seemed absurd to give in, more especially as Joel in his canoe simply laughed at us and the sea. But we found it was no good; the boat was ready to sink with ice, and we turned back. Before the wind we travelled fast and soon reached our old quarters.

When I got into shelter I found that my nose had got frozen meanwhile, and was now as white and insensible as an icicle. A frost-bitten nose like this is not a pretty sight when it thaws again and swells up to a red excrescence trimmed with a fringe of peeling skin.

A day or two later we were more successful, and in spite of a high and choppy sea managed to get as far as Iterdlak. Here, however, we found nothing but valleys full of huge boulders and moraines; it was an interesting spot enough for a geologist, but the opposite for a sportsman, and the very last place a reindeer would choose to live in. We had a strong suspicion that our good friend Joel had brought us in here that he might set his traps and possibly catch a blue fox. The skins fetch a good price, according to Greenland ideas; for every blue-fox skin the Eskimo is paid four 'kroner,' while it is sold again in Europe perhaps for a hundred.

When we had been in Ameralikfjord for nearly three weeks we began to get short of provisions. The bread was all gone, there was not much flour left, and the reindeer seemed to have disappeared altogether. So on December 10, as there was a good breeze blowing, we loaded our boat and set off. The wind was excellent; we got our

sails up, and flew over the waves down the fjord. That day Joel was better in his 'kayak' than ever, for fast as we sailed he managed to keep up with us. We soon reached the mouth of the fjord, and here, as we turned north and met the wind, we were obliged to row.

Presently darkness came on, the wind dropped, and in the most brilliant moonshine we passed over the gloomy water, out of which the mountains rose silent and sprinkled with snow. The long wake left by our boat just caught the rays of the moon. A winter night in Greenland can indeed be incomparable.

As we drew near Godthaab we sent Joel on ahead, and when we reached the landing-place the whole colony was afoot to receive us. Eskimo and Europeans stood mingled together down by the beach, and the crowds of people in the radiant moonlight, with the little winter-clad settlement in the background, made a very fantastic scene.

There were many hands to bring our things ashore that evening. After our sojourn in the tent, a wash, a warm room, and a little homelike comfort were things to be appreciated.

CHAPTER XXVIII

FIRST LESSONS IN THE 'KAYAK'

THE Eskimo 'kayaks' were, of course, a great attraction to us strangers, and as soon as possible I possessed myself of one. This I had with me on the tour into Ameralikfjord which I have just described, but it was not till the end of December that I was completely fitted up with storm-gear and various other things, so that practice could begin in earnest.

The necessary balance in this narrow, crank little vessel is of course very difficult for a beginner to acquire. One feels as if he were swinging on a knife-edge, and it is very necessary, so to speak, to keep your hair parted well in the middle. Yet when one sees the Eskimo dancing like sea-birds on the crests of the waves the whole performance seems simply child's play.

As soon as my 'kayak' was ready I took it down to the shore. I found it no easy matter to force my legs and as much else of me as was necessary through the narrow opening into the place where I was to sit. This done, I was carefully pushed out

into the water, but the feeling that seized me just as I left dry land was one of unspeakable insecurity. The little craft rocked first to one side and then to the other, and every moment promised an immediate capsize. It seemed to me a simple impossibility that I should ever learn to sit it, and I looked with despairing envy and desire at the Eskimo, who were of course out to enjoy the sight of Nalagak in a 'kayak,' and were darting hither and thither over the water and throwing their little spears about with as much ease and indifference as if they were sitting safe on the floor at home. But practice has a wonderful effect, and after one or two outings I began to feel tolerably comfortable. I got on better still when I had a pair of outriggers or supports made to help me. These are miniature 'kayaks,' about two feet long, and are fastened one on each side of the canoe just behind the seat. They make things considerably easier for the uninitiated of course, but the Eskimo themselves very rarely use them, and I myself abandoned them after a while.

One day, when I was out shooting, I found myself in the middle of a shoal of white whales, which I followed up. They took me well out to sea, and in my excitement I did not notice that the day was closing in. When at last I turned homewards it was already beginning to get dark. Unfortunately, too,

before I had gone far a strongish breeze from the south got up, and as it caught me sideways it made paddling hard work, and I did not reach Godthaab till well into the evening. The folk there had meanwhile been getting very anxious on my account, for all the native 'kayakers' had come in a long time ago, and the whole settlement was on the move.

As I passed the last point and entered the bay I thought I saw some dark objects against the snow, and heard at the same time the sound of childlike voices. I answered with a vigorous shout, which at once seemed to turn the whole place into one prolonged shriek. Then as I rode on the top of a wave in to the landing-place, there came a general rush of black forms down the white hillside to meet me. The snow swarmed with figures large and small, which pressed round partly to help scrape the ice from the canoe, and partly to look upon one who had risen, as it were, from the dead.

This little event Balto describes as follows:—

'When it began to grow dark, we fell to wondering that Nansen had not yet come. We waited for him a good while, but he did not appear, and then we all began to be very sorrowful. We had heard that he had not gone to Ny Herrnhut, where there was a birthday-party at the missionary's. We sent a message, however, to ask, but he was not there, and

then I stretched myself upon my bed and the tears began to flow. Bistrup called all the people of the colony together and told them to get ready to go out and look for Nansen. They were soon ready, and Dietrichson took a gun, a lantern, and a horn to make him hear. Just as they were putting off in the boat Nansen came in to shore safe and well. The Greenlanders set up a frightful yell, and shouted "Kujunak, Kujunak, Nansen tigipok, ajungilak," which means "Thank God, Nansen has come home!" or, "Let us give thanks, Nansen has come; all is well." Then my heart returned to its own place, and we were as happy as before.'

After I had been some time practising, and the others saw that I got on tolerably well, some of them felt inclined to try too. Sverdrup was the first to get himself a 'kayak,' and he soon became very proficient. Balto had begun to express his eagerness to try as soon as he arrived at Godthaab, and had asked me whether I thought it was difficult. The Danes of the place meanwhile, none of whom understood the art, represented to him the danger of it, and told him how many lost their lives over it.

Balto, at no time distinguished for his courage, had given up the idea, and quietly looked on while I was out on the water. But now that Sverdrup had begun too, the temptation became too strong.

Both Sverdrup and I told him that it was not the easiest thing in the world to sit a 'kayak,' and that he would have to mind what he was about. But Balto was just now in a great state of elation, and said he was sure he could manage it, as he was used to driving a Lapp reindeer-sledge. Sverdrup pointed out to him that the two processes were not exactly identical, but Balto stood his ground and determined to make the experiment. Sverdrup's canoe was carried down; there were a number of spectators gathered round to watch, and I paddled about a little way from shore ready to fish him out.

Balto placed himself in the 'kayak,' made himself comfortable, and tucked his great pelisse round him. He made all his preparations with the most confident air, and evidently intended to show us what a Lapp really could do when he tried. When he was ready he eagerly seized the paddle in both hands and boldly gave orders to push off.

But no sooner did the canoe touch the water than its steadiness began very perceptibly to diminish, and Balto's expression grew less confident. Yet he was determined to carry it off well, and even helped to push the canoe along. At last it was so far out that only the point was left resting upon the shore. Balto's valour now gave place to the most absolute terror, while at the same time the 'kayak' slid out

into the water and began to rock uncomfortably. Then came some desperate flourishes with the paddle in the air, which were apparently preparatory to strokes in the water; his face was one picture of horror and despair; he made frantic efforts at some unholy ejaculation, but no further than the first letter, 'D—— D—— D——' could he get. His mouth and the whole concern went under together, and his emotion vanished in a simple gurgle. All we could see was the bottom of the canoe and his great square cap floating on the surface of the water.

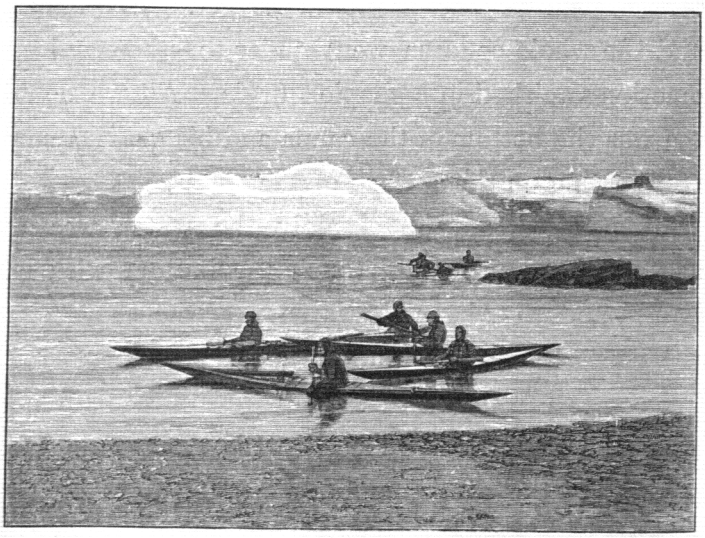
I paddled up, but luckily the water was so shallow that Balto could touch the bottom with his hands, and the 'kayak' was so near the shore that the spectators could pull it and its occupant out. Balto was greeted with a pitiless shout of laughter from the bystanders, especially the girls. Then he got out of the canoe, and as he stood there on the rocks, throwing his arms and legs about, while the water poured out of his voluminous garments, which now hung close and lank about his body, he looked for all the world like an ordinary scarecrow.

The first thing he said was, 'Well, I am almost wet.' Then he reflected a moment, and added with all the fervour of conviction, 'And I will say that that "kayak" is a very devil of a boat.'

It was some time before Balto tried the 'kayak'

again. Soon after this Dietrichson had one made, and was not long in learning the use of it. His success induced Kristiansen to try his luck, and even brought Balto to the point once more.

Both of them set to work to build their own vessels. The Greenlanders helped them with the



THE MEMBERS OF THE EXPEDITION IN THEIR 'KAYAKS' IN GODTHAAB HARBOUR

(*From a photograph by C. Ryberg*)

frames, and they were then covered with skin, as usual by the Eskimo women. As soon as they were ready both the beginners set about practising vigorously. Balto's experience had, however, made him cautious, and he had the outriggers put on at once. Kristiansen was more reckless, and frightened us all by starting

without these supports and going right out to sea. But, for the first time, he got on surprisingly well.

Towards the end of the winter all the members of our party except old Ravna were often to be seen out in their 'kayaks' after sea-birds.

There are not many seal about in the winter, so it does not pay to go after them for mere amusement. We found the birds better worth our attention, and the flight-shooting of the eider-duck was especially attractive. In the earlier part of the winter this generally goes on in the evenings, when the duck come flying in large or small flocks along the shore on their way into the fjords. The 'kayaks' are drawn up in line, especially just off the promontories. It was quite exciting work to lie there in wait for the duck, and reminded me of the flight-shooting at home when the woodcock come back in the spring. One's eyes are turned southwards, whence the duck should come. Suddenly you see the man in the furthest canoe stoop forward and paddle away as hard as he can go, while the rest of the line meanwhile dress up to him. Then he stops, there is a moment's waiting, and then come a flash and a report, which are taken up by the next, and so follow down the line. You see a dark mass to the south of you silently skimming the water. You bring your canoe up a bit to get better into range;

you put your paddle in under its strap and get your gun ready. By this time you can distinguish every bird. Just as they sweep by you, you let fly into the thickest part of the flock, and if you are lucky you get a couple or more to your shot. Then you load again, gather up your birds, and wait for the next flight. So you go on till it is dark, the line of 'kayaks' shifting backwards or forwards just as the duck happen to fly close to or further from the shore.

This shooting needs a considerable amount of skill, for the duck fly strongly and a good command of your canoe is necessary if you are to keep within range and shoot tolerably straight. Many of the natives are amazingly good hands at it. The quickness with which they bring the canoe up to the point, secure the paddle, and get the gun to the shoulder, as well as the accuracy of their aim, even if they have only one bird to cover, is enough to secure the admiration of the best of shots, especially as the little boats in which they sit are the whole time bobbing up and down upon the waves.

CHAPTER XXIX

CHRISTMAS AT GODTHAAB

In due time Christmas came, in the keeping of which the Greenlanders cannot be said to be far behind the rest of the world. The preparations begin months before; the women have their hands full with the making of any amount of fine new clothes, tunics, breeches, and boots, all with the most garish decorations. The whole family, from the youngest children to the aged grandparents, must appear as smart as possible and in new things from top to toe.

The young unmarried women, of course, are the most extravagant. If they belong to the more well-to-do families, who are employed by the 'Service,' the parents will generally have ordered something from Copenhagen for the occasion; something really good, better than anything the colonial store supplies, of silk may be, though it is even said that some have had velvet imported for them. In this new finery, which is generally made up in secret, these girls suddenly appear on the festal day, each one more irresistible than her neighbour.

If women are in the habit of talking about dress and decorations elsewhere in the world, the Christian Greenlander is by no means behind her sisters. But I cannot deny that she really does look bewitchingly attractive at Christmas-time in her picturesque Eskimo costume. I fear a competition would not always

GODTHAAB IN WINTER GARB
(*From a photograph by C. Ryberg*)

prove the superiority of her rivals across the sea, in spite of all their European advantages.

But it is not only dress that engages the attention on the approach of Christmas. With the idea of simply revelling in creature-comforts, the Eskimo saves up his money, so far indeed as he can contrive to do so, for a long while before. If he has no money when

the season comes, why, he simply raises it by selling one of his chief necessaries. It has been no uncommon practice to take the down out of the coverlets and sell it to the Trade for the purpose of buying some luxury or other. The thriftless one must then, of course, lie and shiver under nothing but cotton for the rest of the winter. The first thing of all that there must be an abundance of is coffee.

So it will be seen that our great festival has not been improved in character by its transplantation to Greenland soil. It is, in fact, here as elsewhere, the despair of the father and the ruin of the stomach. It brings a transitory joy perhaps, but one that is followed by a more permanent privation. It is needless to say that an institution of this nature is thoroughly appreciated by the Eskimo, who has made the Christian precept 'Take no thought for the morrow' pre-eminently his own.

In our host's house the usual preparations were also in full swing. Our hostess, Sverdrup, and Dietrichson had long been busy making bags, baskets, and other receptacles of coloured paper, while the Superintendent himself was at work upon a Christmas-tree, which he constructed by fastening branches of Greenland juniper into a piece of wood which did duty for a stem.

On the morning of Christmas Eve this tree was

dressed. At two o'clock there was a grand ceremony in the church. The children were to be catechised, and no Eskimo could fail to be present at so amusing a function. As soon as this was over the children, in accordance with old custom, rushed one and all across to the Superintendent's to receive each his bag of figs. These they carried home, and then they presented themselves at our rooms to receive another supply. There was a regular stampede of all these little skin-clad creatures. All who could walk came by themselves; those who were too young were carried by their mothers, while the smallest of all appeared by proxy.

At five o'clock there was choral service in church. Hymns, written in or translated into Eskimo by the 'catechists,' were sung by a large choir of natives, who had surreptitiously been practising a long while before. The performance impressed one by its charm of simplicity, and the melodies were fresh and cheerful. An elderly half-civilised Greenlander, who never hid his light under a bushel if he could help it, declared that the singing was not so good as when he had a hand in it, but it was 'very pretty' all the same. It reminded one so much, he said, of a gull-rock, where the birds are always flying up and down and screaming.

After supper at the Superintendent's, to which all

our party were invited, the tree was lighted and general excitement prevailed.

Just as the merriment was at its highest the door opened and a great round head with a huge shock of hair appeared. This was part of our friend Joel, who had come to inquire about a bottle of beer he had received from the Lapps in exchange for some eider-ducks, but which he had left behind with something else when he went to pay a visit to the doctor on the chance of getting a dram or two in honour of the occasion. As far as this errand went he seemed to have been eminently successful. He set us all laughing at the lively gestures by which he described that everything had disappeared, and that he had found 'Bovase nami, mitit nami, elisa nami, damase nami'; that is to say, 'No bottle, no duck, no fishing-line, no anything.' He was, however, soon consoled with another bottle of beer. His astonishment, and the glitter of his dark eyes, which turned to two bright round beads, when he saw the Christmas-tree and all the lights and decorations, were most amusing to see; but the wildness of his delight was still greater when he was given some bags of sugar-plums. As rich as Crœsus and far happier, he reeled off across the rocks to join his charming consort at Ny Herrnhut.

On Christmas morning about six or seven o'clock, just as I was sleeping my sweetest and fancying

myself back at home, the songs of children were suddenly wafted through the air and took their place in my wandering dreams. The sound grew louder, and I woke to hear the carolling of a large choir in the passage outside our door. They had been singing at the Eskimo houses all night long, and had now come, faithful to tradition, to wake the Europeans of the place. I allow that the custom is charming, and that I had never been woke in so pleasant a way before, but I must add that when the strains had ceased and the choir departed to sing at other doors I gently dozed off again to pick up the lost thread of my interrupted dream.

When I went into the kitchen that morning I found Balto there haranguing the girls. He was holding forth at length on the virtues of the Eskimo Christmas, which he had found 'very jolly.' He was fluent as usual. He had been wandering from house to house the whole night; and what a place it was for coffee! It was not yet ten o'clock, and he had had twenty-four big cups already 'that morning.' As his eyes and speech showed, something stronger than coffee had also been exhibited, but this was not mentioned. He had never had such a Christmas before; it all really was 'very jolly.'

Soon after noon the adult Eskimo of the place, men and women alike, came round as usual to all the

Europeans, to shake hands with them and wish them a Merry Christmas. To this greeting it is only necessary to answer 'Itlidlo,' or 'The same to you,' but even this gets somewhat monotonous when it has to be repeated to fifty people or more.

At three o'clock the leading natives—that is to say, the 'catechists,' the printer, the men employed by the 'Service,' and the seal-catchers—were invited, together with their wives, to an entertainment of chocolate, coffee, and cakes at the Superintendent's. They came in their best Christmas array, paid their respects to the host and hostess, and ranged themselves in silence along the walls. It was a very solemn performance, but that is not to be wondered at, since these poor folk were now in the state apartment of 'the Merchant,' one of the highest in the land. Presently, however, the refreshments had their usual effect, and the gathering assumed a more genial tone. One of the men, who had been in Copenhagen and wished to show his fellow-countrymen how things were done in the great world, went up to one of the more prominent of the native ladies and offered her his arm with an awkward bow. She, of course, did not understand the manœuvre, and he was obliged to drag her away by force in order to conduct her, as he said, to a worthier place further up the room. When he had accomplished this he

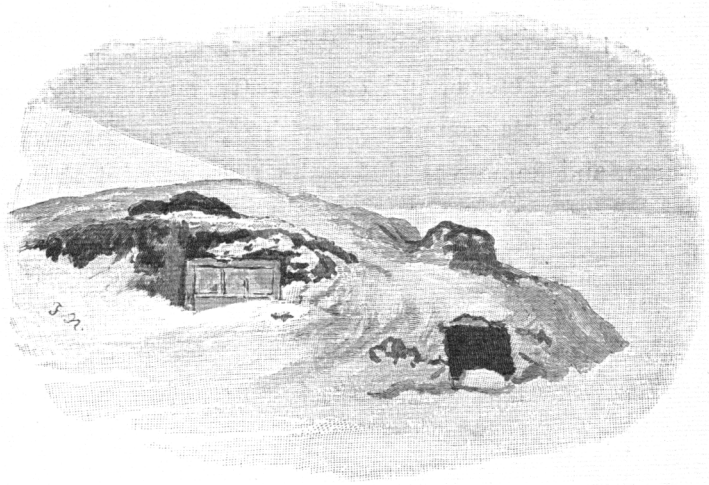
turned to me to explain how stupid his compatriots were, and how often they had to be instructed how they should behave in polite society. 'Now,' he went on, 'suppose you take my wife and lead her up to a more honourable place.' I thanked him for the great compliment he was paying me, and deplored that I did not feel myself at all worthy of the distinction. The man had evidently had a little more than was good for him. He was one of the few Greenlanders who are so far trusted that they have spirits given into their keeping on such occasions. He was celebrating the festival by indulging himself as long as his supply lasted. Every night he was quite unmanageable, and his nice little wife had to leave the house or sleep in the garret, though she had taken all possible precautions beforehand, by making signs and binding amulets under the seats of the chairs, with a view to charming her husband into a gentle drunkenness, as Eskimo superstition ordains.

At last the guests took their leave, and went off on their Christmas pilgrimage to another house, there to begin the festivities again.

Two days later the Superintendent gave another entertainment to the employés in the 'Service' and the leading seal-catchers. On this occasion rooms were borrowed in the hospital, and there was a great supply of pea-soup, bacon, salt reindeer, and stewed

apples; spirits were not wanting, and afterwards came punch, coffee, and cigars. On such field-days the combatants come armed with plate, cup or bowl, spoon, and some vessel for the punch. All that a man does not eat of his ration he carries home to his wife and children, who, indeed, often put in an appearance at the meal itself to make their share secure.

This entertainment came to an end in the course of the evening, and the company then adjourned to the cooper's workshop for further jollification.



AN ESKIMO HOUSE IN THE WINTER

(*By the Author*)

CHAPTER XXX

SARDLOK AND KANGEK—NOTES FROM MY DIARY

February 6.—I am now living half underground in an earth-hut, which is so low inside that I can scarcely stand upright. As in all Eskimo houses, the entrance is a long passage, which is so small that one is almost obliged to go through it on all-fours. Outside the snow is deep enough to bury the hut. All that is to be seen is part of the window, which is kept as clear as possible, and the hole which serves as entrance to the above passage.

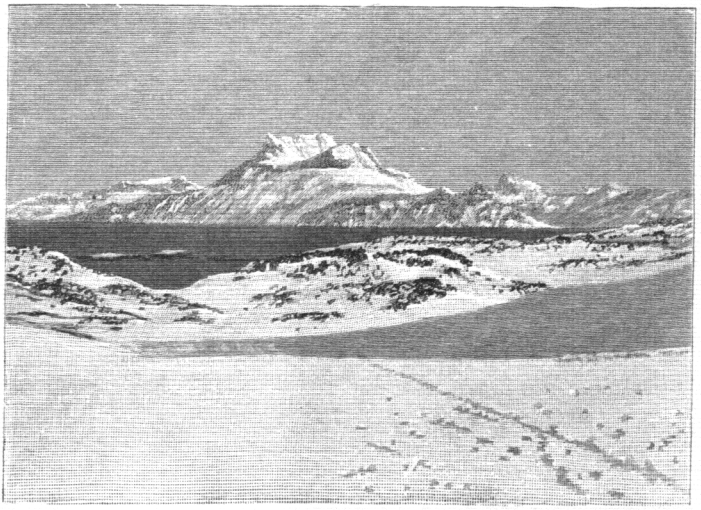
I had long had it in my mind to pay a visit to Sardlok, and as the doctor, one day in January, was coming out here to see a sick man, I started off at the same time in the company of Joel.

The distance is thirteen or fourteen miles; my arms were not quite used to the exercise, and the cramped position which the 'kayak' entails upon one tired me considerably before I reached my journey's end, and as the afternoon went on I began to long for Sardlok. In Joel, however, as the reader will surmise, I had a cheery companion. At one time he sang songs, 'Den evig-glade kobbersmed' among them of course; at another he gave me any amount of unintelligible information about the places we passed; then whenever he saw a flock of eider-duck come flying by he made desperate attempts to get his gun out, which he only did once in time, and then he shot wide. Then, again, he would grunt out that he must go ashore to empty his canoe, and would paddle off as if his life depended on it. The little vessel was half full of water indeed, as, like the rest of him, it was in very bad repair and leaked unmercifully.

It was a dark evening; the 'Saddle' and other peaks rose menacingly above us and shut in the east side of the fjord; over our heads the net of stars shone brilliantly, and while we worked along silently

side by side there was no sound to be heard save the splash of the paddles and the rippling of the water against the sides of the canoes.

At last we rounded a point, saw a friendly light shining to greet us, and found ourselves at our destination. The doctor had arrived a little while



'SADLEN' OR 'THE SADDLE,' A MOUNTAIN TO THE NORTH OF GODTHAAB
(From a photograph by C. Ryberg)

before. The passage of the narrow little tunnel, the entry into a small but cosy room like this, and the welcome of Eskimo hospitality, all have attractions of their own.

I am staying in the house of Johan Ludvig, an old 'catechist.' Its other occupants are his wife,

one daughter, and two sons. Johan Ludvig told me with obvious pride that his grandfather was a Norwegian, and had been renowned for his gigantic strength. He has himself been a clever seal-catcher in his day, but he goes out no longer as he is more than seventy years old. He has had several sons, who have done him credit, though two of them were lost in their 'kayaks.' The youngest, who is now at home, a boy of eighteen, is no seal-catcher. His parents are afraid to let him go out.

The fourth son, Johannes, who was once his parents' pride, kept his place upon the bench when we came in. He lay there pale and emaciated, a victim of consumption. He had a racking cough and could scarcely eat, but as he lay there without hope of ever getting about again his thoughts still dwelt on his life as a hunter in the open air. The memories of bygone days, when he was the best seal-catcher in the place, still rose in his mind, and he was never tired, if his cough allowed him, of telling us of his exploits. His eyes sparkled, his lips smiled; he felt himself in his canoe again; he seemed to see the seal, lifted his thin feeble arm to throw the harpoon, and then towed his booty home through storm and calm. Then followed an attack of coughing and spitting of blood; he sank back

upon his pillow, his dreams vanished like a mirage; his harpoon has been thrown for the last time. The doctor carried him off to have him nursed in the Godthaab hospital, but he is not likely to live long.

In the next house lies Justus, a cousin of Johannes, who was also one of the best seal-catchers in Sardlok. He is now even in a worse state than the other, and cannot be far from his end.[1] Both of them leave families — Johannes two hopeful sons, Justus only one. It is terrible to see the ravages of this insidious disease among these poor people.

It is no active life I am leading here; in fact I am fast turning Eskimo. I live as the natives do, eat their food, and am learning to appreciate such dainties as raw blubber, raw halibut-skin, frozen crowberries mixed with rancid blubber, and so on. I talk to the people as well as I can, go out in my 'kayak' with them, fish, and shoot on land and water. In fact I begin to see that there really is nothing to prevent a European turning Eskimo if he only have his time before him.

One cannot help being comfortable in these people's society. Their innocent, careless ways, their humble contentment with life as it is, and their

[1] He died even before we left Greenland.

kindness are very catching, and must clear one's mind of all dissatisfaction and restlessness.

My original idea had been to do some reindeer-stalking, and I went out one day on 'ski,' but as there was not even a track to be seen I have done nothing more in that way. My chief amusement is to go halibut-fishing. Pulling up these huge, strong fish, which are big enough to upset a boat, from a little canoe is the best sport in the way of sea-fishing that I have yet come across.

To begin with, one may wait half or even the whole day and not get a bite. This is no pleasant work in thirty or forty degrees of frost, with a bitter north wind blowing, and perhaps in driving snow. Care has to be taken or some part or other of the face will be caught by the frost.

But if the bite does come at last, all hardships are forgotten. At first, as a rule, there is no violent tug, but the line is drawn down by a slow and irresistible force; then come some distinct jerks; the paddle is slipped under its strap,[1] you take the line in both hands and pull as hard and violently as you can; then you feel if the fish is still on, and if he is you go at it again. You tug and tug and tug again,

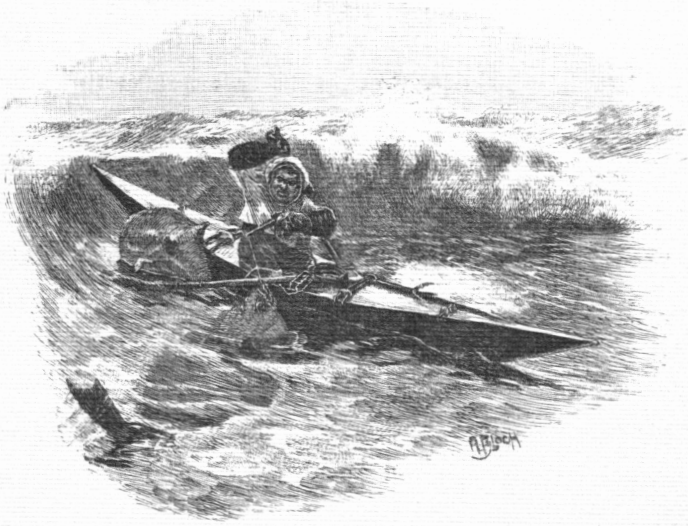
[1] It is passed through certain straps which are fixed to the 'kayak' just in front of the occupant, and then projects from the vessel laterally. The blade thus lying on the water of course very much increases the steadiness of the canoe.

time after time, for it is necessary to get him well hooked. You look like a lunatic all the while this is going on, but if one has to transmit the jerks the whole length of a hundred fathom line it is indispensable to put one's back into the work.

At last you have him fast and you begin to haul in. It is a slow business, as the fish resists and the line is long, and the strain tells on the arms. The line is coiled up on the 'kayak' meanwhile, and drenched with water from time to time to prevent its freezing into a mass. In case the fish should make for the bottom again and take all the line out, you throw the bladder which is fastened to the end out to the side; if he does do this you simply follow the bladder, which remains on the surface, and take the line up again when he is more exhausted.

The length of one of these lines is extraordinary. At last the end comes; you can see the cord twisting with the fish's movements. The resistance increases and it is all you can do to pull; hand over hand, however, the line comes in; the sinking-stone appears, and then a huge head rises above the water with a mouth and eyes that are enough to make your blood run cold. You seize the club which lies behind you and give him a couple of prodigious whacks in the region of his brain, but with a desperate effort he drags his

head under water and with the speed of lightning darts off to the bottom again. Woe betide you now if you have not your line clear and it hitches anywhere; you are upside down before you know where you are. As the fish reaches the bottom the pace slackens, and you can begin to haul in again. A



HALIBUT-FISHING FROM THE 'KAYAK'
(*By A. Bloch, after a rough sketch by the Author*)

second time you get him up, and perhaps a second time he returns to the depths. To pull a big halibut up three or possibly four times from a hundred fathoms of water is fairly exhausting work. When you really have him in hand at last you give him a few well-directed blows which make him somewhat

quieter; then you let fly at him as hard and fast as you can manage; perhaps he makes one or two more despairing attempts to break away, but as the blows shower down upon him he gradually grows stupid and inactive. Then you drive your knife into his brain and spine till he is as dead as you can manage to make him for the time being. You now attach the bladder to his mouth to make him float, and tow him ashore in order to fasten him properly to the canoe.

While I was at this work one day I found I had got both cheeks, as well as my nose and chin, well frozen. However, by rubbing them with salt water and ice, of which there was plenty on the 'kayak,' I succeeded in reviving them and preventing further consequences.

To get your fish to land you take the line between your teeth and then paddle away. I must confess that I found this towing the least agreeable part of the whole business. Every time the canoe is carried on the top of a wave you are suddenly pulled up by the line with a jerk almost hard enough to wrench your teeth out. This is a difficulty, perhaps, which does not present itself to the Eskimo, whom nature has provided with teeth so strong that he can easily pull nails out with them.

When you have brought your fish ashore you

tie him fast to the side of the canoe, with his head foremost, so that he is as little drag upon you as possible. To arrive at Sardlok with one of these huge fish in tow, and to be received on the beach with the same beaming welcome that awaits everyone who brings in a catch, was an experience which recalled the triumphant return home with one's first game in the days of childhood.

This fishing is a sport well worthy of the name. The fish weigh from two to four hundred pounds, and they make good food at a time when there is little else to be had. On two which I caught we lived, five of us, for nearly three weeks, and ate scarcely anything else the whole time.

One day as we were out fishing in still, calm weather, the sky suddenly darkened to the south. We knew the wind was coming, and gathered up our lines with all haste. But before we were ready the storm was upon us, first with a few preparatory gusts, and then in all its wild fury. The sea flew black and white before it, the calm surface was soon one sheet of foam. The current and the wind met here; the green waves broke in crests of white spray, and the canoes were lost to each other in the hollows. We had to make for shore to save our fish and ourselves, and we paddled away as fast as we could go with the sea on our beam.

An occasion like this, which was, of course, a regular experience of the Greenlanders, had all the charm of novelty to me, and my mastery of the 'kayak' was put to a hard test. You have to keep a sharp eye on these big breaking seas, for if one of them catches the canoe before the paddle is well out on the lee-side there is every chance of its occupant going to the bottom for ever and a day.

When we reached the shore we kept along it under shelter. Then we ran northwards fast before the wind, and now the 'kayak' was even harder to manage than before. The big seas came rolling up from behind, and it was no easy matter to keep an even keel. As the wave comes you give a couple of powerful strokes and let the paddle float out to the side. Then the stern is lifted high in the air and you lean hard back. As the wave breaks you feel a heavy blow on the back, while the spray showers round you and you seem to fly through space on the foaming crest. Then it rolls by you, you sink into the hollow, and with a few more vigorous strokes you ride again on to the back of the next wave.

I had a good companion and instructor in Eliase, who kept the whole time as close to my side as the sea would let him. Now he would shoot past me on the top of one wave, and then I would ride by him

on the next. It was a dance with the waves and a game with danger.

Presently the shore turned westwards and again offered us shelter. But first there was a belt of ice to pass, and it was necessary to bring the canoes through without getting them crushed between the moving floes. We found an opening and seized the opportunity, and with a few quick strokes sailed through on the top of a sea.

Terkel, the leading seal-catcher of Sardlok, and his brother Hoseas, both of whom have already appeared in this narrative, were of our party. They each had a halibut in tow, and came into shelter a little while after us. We hoped that while the fish were being lashed fast and other preparations were being made the wind would drop. But it was equally strong when we started again for Sardlok. We had it all behind us, however, made a good passage, and were soon safe at home.

I am often asked out to eat halibut in the other houses, generally just after I have had my fill of it here at home. But I have to go from one to the other and continue eating as long as my system will consent to be imposed upon. I go most to Terkel's, which is the biggest house in the place. The other evening as I sat there I witnessed a very comical performance. Hoseas' son, a little boy rather more

than twelve months old, was dancing the 'mardluk,' a kind of reel, with Terkel's daughter, a child of three. The boy had nothing but his shirt on, which

TERKEL, THE LEADING SEAL-CATCHER OF SARDLOK

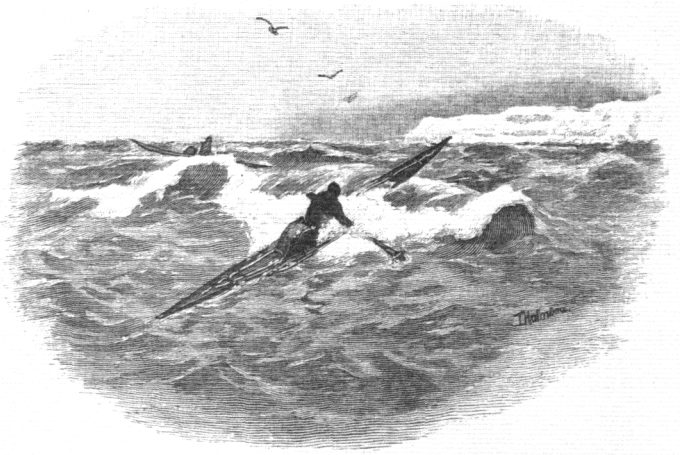
(By A. Bloch, from a photograph by C. Ryberg)

reached about half-way down his stomach; his arms were held out stiff like pump-handles; with an air as grave as any professor's he went through his steps. First he hopped on one leg and then on the other,

then he twirled round, and all was executed in perfect time with the singing of the air and with the same grave contemplation of his partner. She was a pretty little girl, was dressed just like a woman, and had her hair tied on the top of her head in the orthodox way, and an arch, coquettish look on her face which suggested that this was not the first time she had been in masculine company. The whole sight was enough to make a hermit laugh. The Eskimo children are precocious indeed.

On February 14 I went back to Godthaab, having already been at Sardlok nearly a month. We were a party of three, Hoseas joining Joel and me. All our 'kayaks' were well laden with halibut, birds, and such things, and very inopportunely a strongish west wind sprang up on the way. As long as we kept close under the western shore we did well enough, but when we were about to cross over to Godthaab things grew worse. The further we got out the bigger the waves became, and we quite disappeared between them. As it came on to snow, too, and we could see nothing, the Eskimo began to hesitate, and called to me to turn back and shelter under the land again. I thought we could find our way across well enough in spite of the snow, and wanted to push on. So we went on for a while, with the waves rolling in on our quarter; but things grew worse and

worse, my companions would listen no longer, and turned towards shore without waiting for my consent. So we worked back against the wind, and lay in shelter to see if the weather meant to improve. Meanwhile we landed a good deal of our cargo, and packed it away under stones and snow, so that we could fetch it next day if the weather were better.



'KAYAKERS' IN THE OPEN SEA

(*By Th. Holmboe, from a rough sketch by the Author*)

It is bad, of course, to have too much on the canoes in a sea, as they capsize so much the more easily. A little later, as the snow cleared off and the wind dropped a little, we went on our way again, and got safely across to Godthaab.

Kangek, February 28.—It is the last day of February to-day and another month has gone. Perhaps in one more month the ship will come, and we shall have to leave these people without seeing anything of their summer life. But that cannot be helped, so it is no use thinking about it.

It is so wonderfully fresh out here on the open coast, where the sea shows its full force, plays with the 'kayak' as if it were a cork, and breaks over it in sheets of foam. All around the waves are hurled roaring upon the rocks and cliffs, and showers of spray fly far over the snow-clad shore.

It is a glorious life, when sea and wind wash the cheek, and nerve and muscle are braced alike to hold one's little craft on an even keel, and the eye gazes out to windward to keep good watch for coming waves. . . .

. . . And then, again, when the nights are almost still, the country lies silent under its mantle of white, while here and there a headland stands out black against the snow out by the shore, where the sea washes in slow melancholy measure, and throws up a faint reflection of the dark starlit sky. Or above, perhaps, the northern lights are flashing, now blue, now red, now green and blue again; then they come in undulating ever-changing bands, which light up the southern sky; then the rays gather

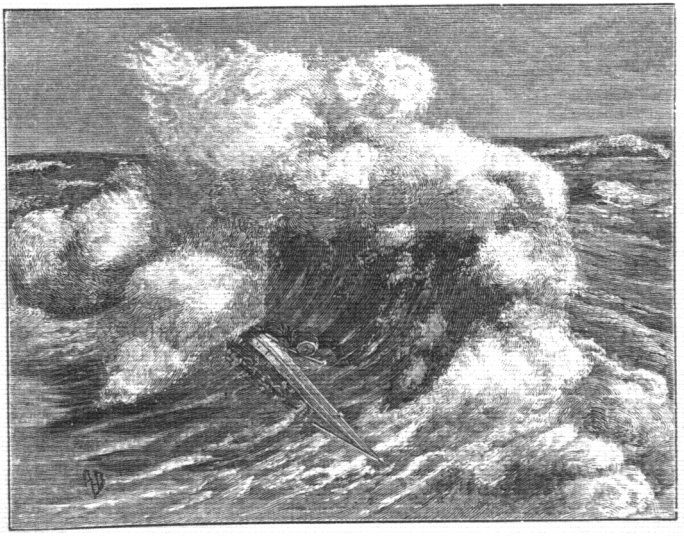
into radiant brilliant groups, flicker, blaze, and disperse, only to gather again and then disappear. Then come new bands and fresh rays; there is a continual change, ever the same order and yet ever new, a vision as mysterious as it is fascinating. And meanwhile the sea rolls in as ever, washing heavily against the shore.

The traveller who sees the South will not forget it, and yet if he visit the North his longing to return will perhaps be more keen.

A little while ago I was at Sardlok, now I am here, though why I can scarcely tell. Perhaps I am looking for the spring, as the days are growing long, the sun is warmer, and the snow is melting away. I am nearer to it here as it comes over the sea from the South, but here I shall not meet it after all. Yet it is comforting to see the days get longer, to see the water glittering under the climbing sun, whose beams are now almost genial, to set off in one's canoe at dawn and come back at evening and yet find the day not ended. The world and all its steam, great thoughts and great futilities, are all alike distant, and instead we have a free life and the mere joy of living.

I came out here on February 17. It is a good place for practice in the 'kayak.' The current is exceptionally fast, and off the headlands and between

the islands it runs like a river. Where it meets the great waves coming from the open sea they rise and break like the surf over a sunken rock. So it is no wonder that the natives of Kangek are the cleverest 'kayakers' hereabouts, and I doubt whether there are better in all Greenland. They get their living in



'AND AS THE WAVE BREAKS THROW THEMSELVES INTO ITS VERY JAWS'
(*By A. Bloch, after a rough sketch by the Author*)

the open sea at the risk of their lives, and though many are lost they go out calmly to their daily task. It is a pleasure to see them on the great sea-waves, riding them like horses, while the foam floats round them like a long white mane. There is scarcely a sea they cannot ride; if a wave presses them too hard,

they fasten the paddle under the strap on the weather side, stoop down, and let it roll over them. Or they lay the paddle out flat, and as the wave breaks throw themselves into its very jaws, and so lessen the shock, rising again on the paddle when all is over. I have even been told that really masterly 'kayakers' have a prettier manœuvre still. When a sea is so heavy that they think they cannot manage it in any other way, they capsize at the moment the wave breaks and let the bottom of the canoe receive the shock.

The blow such a wave can give must be very severe. I have heard of a man who was struck by the full force of a sea, which bent him down in the canoe and wrenched his back so badly that he became a cripple for life; and yet he was not upset. The presence of mind and command of their little craft that these men can show is simply marvellous.

A skilful seal-catcher from Karusuk, Anton by name, came out to Kangek one day in his canoe. There was a high sea running, and as he did not know the water he was carried by a big wave over a sunken rock and there left high and dry. Here another sea rolled in upon him; he thought all was over, but bent forward and held his paddle fast, while the wave floated him clear and left him riding as gaily as before.

The sport I cultivate most here is eider-duck

shooting. One of the best places is a small group of islands known as Imerigsok. Far out on the sea side of these the birds are especially abundant, but here there is always a swell and the current runs fast, so that for a new hand the shooting is difficult.

SIMON, 'CATECHIST AND SEAL-CATCHER OF KANGEK

(From a photograph by C. Ryberg)

But on the whole it is the best form of sport that I have yet had in the 'kayak.'

Here the method is different from that practised at Godthaab, as we paddle about to find our duck. When you catch sight of them you work well off to windward before you bear down on them. As a

rule you cannot get very close in, but as they must rise against the wind they are generally forced to fly by you within range. But the thing is to get your canoe into the right position to give you a shot. As the 'kayak' does not give one much turning room, a man who does not shoot from his left shoulder cannot cover his right side, but must be content with straight ahead or left side shots. So, as the duck rise, and you see which direction they are going to take, you swing the canoe round if necessary, fix the paddle, slip your right mitten off, fetch out the gun and bring it to your shoulder; but if you are to have any chance of dropping your bird this must all be done in an instant. And if there is any sea running you must be so thoroughly at home in the canoe that you can handle your gun with as much certainty as if you were ashore, to say nothing of keeping your balance at the moment of firing.

Many of the Kangek men are masters at all this, and I have seen them, in a heavy sea, bring their half-score birds down without a miss. Now and then I have met out at sea a man of the name of Pedersuak —that is to say, 'the great Peter'—and we have generally gone on in company. Sometimes we have tried our skill together, but as he is an excellent shot at these birds I have come off second best, much to his amusement and satisfaction.

One day when we were together two duck came sweeping by us down the wind. They were out of range for me, but were making for Pedersuak. I shouted to him and he saw them, but quietly let them pass him. I could not understand what he meant, but presently he raised his gun and brought them both down. He explained to me afterwards that he had only waited to get them in line before he fired. I thought it was simply a fluke, but we had not paddled far before two more duck came by, and still better within my companion's reach. He fixed his paddle and held his gun ready, but did not fire. Then, when they were a long way past, the report came and both birds fell. I have often witnessed this performance, and have even seen three birds brought down at one shot in the same way.

These folk have only muzzle-loaders, but they use heavy charges, and shoot at what we should call absurdly long distances. I have often been out with them and have let birds pass me as being out of range, while an Eskimo by my side has not hesitated to fire, and has, moreover, brought off his shot. The loading of these guns when the sea is breaking over the 'kayak' is not easy. The natives put the butt of the gun forward on the canoe, and hold the muzzle against the face, or rest it on the shoulder, while they take out powder, cap, and wadding, which they

always carry in their caps to keep them dry. In this way they manage to load in almost any sea without getting water down the barrel. There is a special bag to contain the gun on the canoe in front, so that it is always ready to hand.

TOBIAS, ONE OF THE LEADING SEAL-CATCHERS OF KANGEK
(*From a photograph by C. Ryberg*)

Another way of getting these birds, which is really better sport still, is spearing them with the dart; but it is exceedingly difficult and needs a great deal of practice. Here, again, the Kangek people are supreme. It is truly delightful to see the darts fly from the throwing-stick as if they were shot from a

steel bow, and birds hit from the same distance at which one would fire with a gun if they were lying on the water. I understand that birds are even killed flying in this way. It is the auk especially that they use their darts upon, and in November and December, when these birds are most plentiful, though they have no more than one or two of these little weapons lying before them on the 'kayak,' they come home often with a bag of sixty or seventy. This is more than one can get with a gun, which frightens the birds a long way round, while by the dart only the very nearest are disturbed.

While I have been here this sport has not been very good, as the birds are said to be shyer now the sun has got so high. Yet the men will bring home twenty, which have been killed in the course of the morning, all by the strength of the arm and an instrument made of wood and bone. Where, then, are the great advantages which our firearms were to bring these people? The advances of civilisation are not always so huge as we are often ready to imagine them.

After spending three weeks at Kangek I returned, and on the home journey fell in with a good instance of Greenland superstition. When I reached Godthaab I was received as usual on the beach by a number of fair Eskimo. I must have been more surly and

taciturn than usual, possibly because I was tired from having paddled about among the islands after birds the whole day. But the Greenlanders at once came to the conclusion that I had come across a horrid big ogre or supernatural being named 'Tupilik,'

BOAS, ONE OF THE LEADING SEAL-CATCHERS OF KANGEK
(*From a photograph by C. Ryberg*)

because of his tent-like shape, who haunts some of the islands, and has the uncomfortable habit of displaying himself to solitary 'kayakers' who trespass upon his domain, and frightening them out of their wits. When the men come back after seeing this

apparition they are always silent and moody for a season. The belief in this is absolute, and the men therefore dare not go out to these islands by themselves. It was considered, too, that I ought not to be allowed to paddle about alone so much, but now my friends hoped that I had had my experience and paid for it.

CHAPTER XXXI

FURTHER ATTEMPTS ON THE 'INLAND ICE'—THE SHIP! THE SHIP!—THE VOYAGE HOME

WE had long had it on our minds to make a little expedition to the 'Inland ice' as soon as spring came, to see whether that season were not likely to be the best for exploration of the outer margin. We thought, from what we had observed in September, that all the fissures and irregularities would be filled up and smoothed down by the heavy snowfalls and continual winds of the winter.

It was my idea, therefore, that future 'ski' expeditions which are intended to investigate the outskirts of the ice-field ought to utilise the months of April and May, and perhaps a part of June, and that then they would be able to pass over with comparative ease ground on which they would be otherwise much hampered by the obstacles which are exposed by the subsequent melting of the snow. Again, if such an expedition contemplated using a special vessel built for sailing on the snow, which I am persuaded would be a great help, the spring and early summer would be

best for this purpose, since not only would the snow be in good condition, but there would be more wind. It is quite possible that with such a vessel one could easily sail along the edge of the ice-field from the southern part of the country a very long way north, if not to its extreme end.

There was much, therefore, to urge me to visit the 'Inland ice' again, and I thought it would be most interesting to explore first that part where we came down, in order to see what changes there had been since we were there in the autumn.

But it was thought possible at the colony that the ship from Europe which was to take us home might arrive as early as April 1, and after that time, of course, we should not be able to leave the place for long. So some of us determined to make an attempt in March, though this was too early to produce any great result. Our equipment this time was in several respects very poor. The only provisions we could scrape together were dried capelan fish, ship's biscuit, and butter. Of spirit for melting snow we had a very small supply. With what we could get, however, three of us, Sverdrup, Kristiansen, and I, started for Ameralikfjord on March 21, I in my 'kayak,' and the other two in a boat.

We reached Kasigianguit, where we hoped to get a few reindeer to stock our larder with, but here we

were kept by snowstorms and mild weather for five days. Most of the time we spent in the tent, and lived on our fish, biscuits, and butter, while the wet snow accumulated on the top of us, and that on which we lay melted away underneath. The last day or two, in fact, we lived in a simple pool, and once, as we thought the sleeping-bag was rather damp, we examined it, and found so much water inside that we could bale it out with our hands. This was of little use, however, as it found its way in again just as fast. Sverdrup opined that our life in the tent up on the 'Inland ice' had been pure enjoyment compared with this.

As the end of the month was now near and the ship might soon be expected to arrive, we did not see the use of going on any further, so on March 28 we returned to Godthaab.

At the same time as we left for this excursion, Dietrichson and Balto had started on a 'kayak' tour into Godthaabsfjord to visit the settlements of Sardlok, Kornok, Umanak, and Karusuk. They came back some days after us. The last day of their tour, as they were on the way home and were just off the mountain known as 'Sadlen,' Balto called out to Dietrichson that he must go ashore, as his canoe was leaking fast and would soon be half-full. Dietrichson answered that he did not see what good that would

be, for the shore was so steep that there was nothing to land on; they had better paddle on a bit and try to find a better place. In the most heartrending tone Balto replied, 'Then I suppose I shall have to sink.' However, they paddled for dear life, and presently found a rock or two, on to which Balto could just crawl out, so that they could empty the canoe. They found a hole in the bottom, but all they had to plug it up with was a mitten and some butter, which they made to serve the purpose, and so went on.

Soon afterwards they were suddenly caught in a storm, but luckily just by a spot where they could land, for if this had happened a little earlier or a little later there is no saying how things would have gone. There was no other possible place to go ashore, and the storm was so violent that they could scarcely have weathered it on the water. On this very occasion a native was lost off Umanak. Seven hours they had to spend on the little shelf of rock on which they had landed. Then the weather improved somewhat, and in the evening they arrived safely at Godthaab, where they were joyfully welcomed by the Eskimo, who thought they had done well to travel on such a day when they themselves had not ventured to go out.

After I had waited nearly a week at Godthaab

and there was no sign of the much-expected ship, I determined to make one more attempt on the 'Inland ice.' So on April 4 I set off in my 'kayak' with Aperâvigssuak—that is to say, 'the great Abraham'—a well-known old 'kayaker' of Kangek,

MY FRIEND APERÂVIGSSUAK

(*From a photograph by C. Ryberg*)

into Godthaabsfjord. The same day we reached Kornok, which is about 36 miles from Godthaab, and next morning I went on with two men named Karl and Larserak further up the fjord towards Ujaragsuit, where I meant to make my ascent. As the head of

the fjord was frozen we went into an inlet by Kangiusak, beached the canoes and took to our 'ski.' Then we crossed the end of the inlet, which was also frozen, and went on over a promontory till we joined the main fjord again. Here we pitched the tent, which we had carried across along with some provisions. Our supply of the latter was by no means sufficient, and it was necessary to shoot some ptarmigan. These were devoured raw in the usual Eskimo way, and treated in this very simple manner they are certainly excellent. They must be allowed to get cool, however; one day, when I was very hungry, I set to work upon one directly after I had shot it. I did not get far, and never repeated the experiment; it had a most peculiar taste and the flesh still quivered between my teeth.

Next day, April 6, we crossed over the ice on our 'ski' and went up Ujaragsuitfjord. Half-way up I went on shore after ptarmigan, and from a height I had climbed I could see that the head of the fjord was entirely open, owing to the amount of water brought down by the glacier-river that runs into it, so that it would be impossible for us to land there. To reach the 'Inland ice' it would have been necessary to land at Ivisartok on the eastern shore, but we should have taken at least two days to get there by this route, and as I could not give

so much time to it there was nothing to be done but turn back.

This time, however, the result of the journey was not so meagre as last time. I had not reached the edge of the ice where I wished, but I had at least seen the glacier which comes down between Ivisartok and Nunatarsuak. This proved, however, not to have so much snow on it as I had expected, and the ice was nearly as blue and fissured as ever. There was also astonishingly little snow on the ground hereabouts. The bare land showed through in long stretches, and the difference between this place and Godthaab was very striking. Evidently the high mountains to the west and south had attracted most of the moisture.

The change that takes place in the surface of the ice during the winter is possibly not so great as I had expected where there is a broad strip of land separating it from the sea, as there is just at this part of the coast. The land in this case attracts to itself a large portion of the snow. Another result of this little excursion was the observation of the great quantity of water which this glacial river had brought down into the fjord even in the winter-time. It had not yet been warm enough for any real melting of the snow along the coast even at Godthaab. Now it is well known that it is always

considerably colder in here by the edge of the ice than outside, and the difference that there is between the temperature on the surface of the ice-field and on the land which skirts it we had had opportunity of seeing on our journey. But in spite of all this the river was now running, as it were, in flood, and, according to the Eskimo, it was in the habit of so running the whole winter through. The consequence is, in the lower layers of the great ice-sheet melting must go on independently of the temperature of the surface. What an important part this must play in the internal economy of the ice-sheet I shall discuss in the Appendix which follows this chapter.

In the evening we camped on a point at the mouth of Ujaragsuitfjord. As we were in no real hurry we arranged things as comfortably as possible. Of grass we could collect any amount on the bare spots, and with this we covered the floor of the tent and made ourselves a good dry couch. We then made some coffee, and the Eskimo produced one of their dainties, the red fish 'bergylt,' which was eaten frozen and raw; besides this we had our ptarmigan, and altogether enjoyed ourselves immensely. Then we slept just as we were, as we had brought no bag this time because I thought it would be too heavy to carry.

Next morning we crossed the fjord again. I was

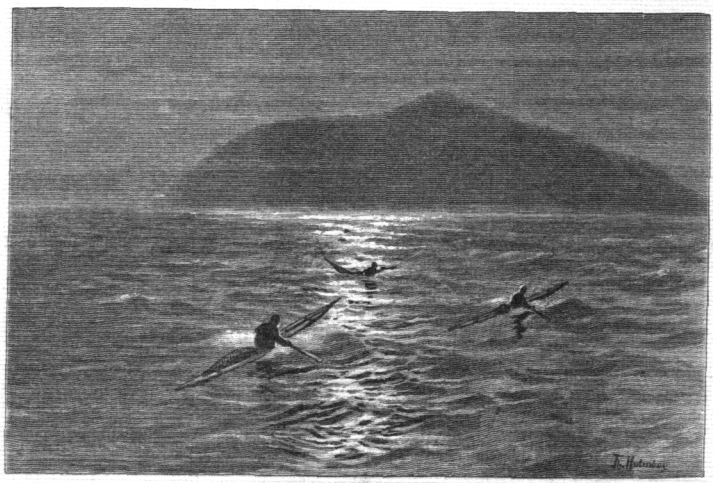
very much inclined to stay a little longer in this hunter's paradise, for Ivisartok and Nunatarsuak are well known as excellent reindeer-ground. Besides, there were a number of seal on the ice, and they afford most exciting sport. The old Norsemen knew what they were about when they settled in here. This and Ameralikfjord were probably the richest part of the old 'Western Settlement,' and there are many traces of their occupation still left, Ujaragsuit in particular being celebrated for its extensive ruins.

When we crossed the ridge which we had passed over on our way up, we had rather a steep descent to Kangiusak, where we had left our 'kayaks.' I now found to my cost how bad these Greenlanders are on their 'ski.' They had already been lagging behind the whole way, and I had had to relieve one of them of nearly all he was carrying to enable him to keep up at all. When they came to this descent they did not hesitate to take their 'ski' off and carry them. I rushed down, and then had the pleasure of waiting nearly an hour at the bottom while they plunged along through the deep snow down the cliffs. Nor was it till they reached the ice on the fjord that they ventured to put their 'ski' on again. One of them certainly did try once on a little slope, but he began by falling and made no further attempt.

On the ice, too, Karl shot a ringed seal, which also

had to be dragged along to the 'kayaks.' We reached them in the course of the afternoon, but did not know how late it was, as the sky was clouded and none of us had a watch. I wanted to reach Kornok that day, as there might possibly be news of the ship. So, though Larserak especially was very little inclined for it, we got into the 'kayaks' and set off. But we had not gone far before we saw that it was much later than we thought, for it was already quite dark; and as we were met in the fjord by a stiffish westerly breeze things became anything but pleasant. As long as we could hug the shore we got on tolerably well, but when we reached the headland of Kangersuak it was a case of crossing the fjord to get to Kornok. This was worst of all, as off the point we met the full force of the sea, and in the dark it was not easy to keep one's eye on the big waves. So we stopped and considered matters; the two Greenlanders asked me if I thought I could manage it, but I did not like to show the white feather, and inquired in return whether they thought they could. Finally they started, but we soon found that it was not altogether a joke. Karl was worst off as he had the seal lying on the 'kayak' behind him. He shouted out that he must go ashore to take it off, but there was no place to land along these precipitous cliffs. So we pulled his seal off for him and

he towed it for a while. This, however, kept him back, so we had to help him put it on to the 'kayak' again. At first the night had been completely dark, but now the clouds lifted a little, and occasionally the wind parted them enough for the moon to shine through and help us to see the waves and find our way. It was hard work to paddle against the wind,



A NIGHT PADDLE TO KORNOK

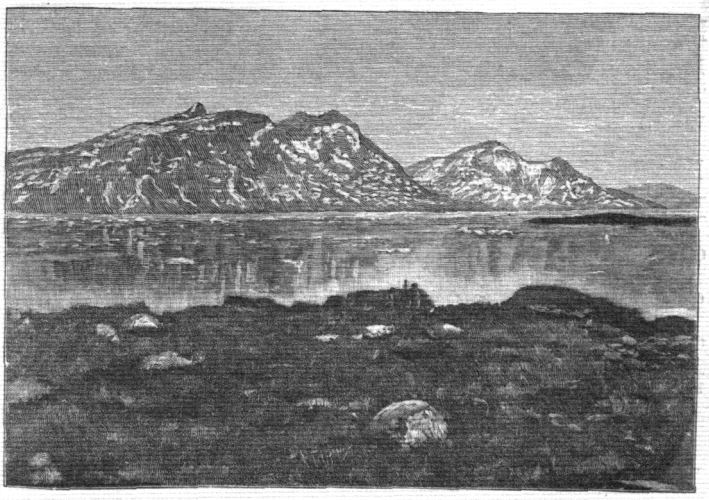
(By Th. Holmboe, from a sketch by the Author)

but at last we reached the opposite shore. Here, too, we met with a new difficulty in the shape of masses of drift-ice, which for a time quite shut us in.

It was not till one o'clock that we reached Kornok, much to the consternation of the inhabitants, as the natives rarely travel at this time of night.

There was no news of the ship yet, so next day I went in to Umanak to see the place, which is one of the Moravian stations, and to visit the missionary, Herr Heincke, with whom I spent four pleasant days.

On April 12 I was in Kornok again. The next day it rained, and my companion on the way out, Aperâvigssuak, did not care for the journey. He



VIEW TO THE SOUTH FROM KORNOK

(*From a photograph*)

had spent the whole time while I was in the fjord in going the round of all the houses at Kornok and Umanak. So instead of going back I gave a great ball to all the inhabitants of Kornok. Dancing began at four in the afternoon, and the entertainment consisted of coffee and ship's biscuits. We amused

ourselves thoroughly till late in the evening, when I grew so sleepy that I had to ask my guests to go.

The following day, April 14, we paddled back to Godthaab in tolerably fine weather. As an instance of the rate one can travel in the 'kayak,' I may say that, though for the first three hours we had the current against us, and for the last hour a stiff breeze, we covered the thirty-six miles in eight hours. This is little compared with what a really good 'kayaker' can do. Herr Heincke told me that when his wife had been taken very ill a couple of years before, in December, a seal-catcher named Ludvig, belonging to Umanak, had gone off before dawn to Godthaab to consult the doctor. In spite of the shortness of the day he was back before evening, the whole distance that he had travelled being over eighty miles.

On April 15 we had thick weather and snow, and we all agreed that the ship would not come that day. But after dinner, as we were sitting over our coffee at the Superintendent's, and having a chat with the doctor, suddenly the whole settlement rang with a single shriek, 'Umiarsuit! Umiarsuit!' ('The ship! The ship!'). We rushed out and gazed seawards, but could see nothing but the flying snow. All at once we caught sight of some dark object looming high up in the air. It was the 'Hvidbjör-

nen's' rigging, and the vessel was already nearly in the bay. We jumped into boats and 'kayaks,' and as we boarded the ship the Norwegian flag was hoisted and a thundering salute fired in our honour. We were welcomed and congratulated by the captain, Lieutenant Garde, whom I have already mentioned more than once in connexion with the Danish east coast expedition, and by some of the Greenland officials who had spent the winter in Europe.

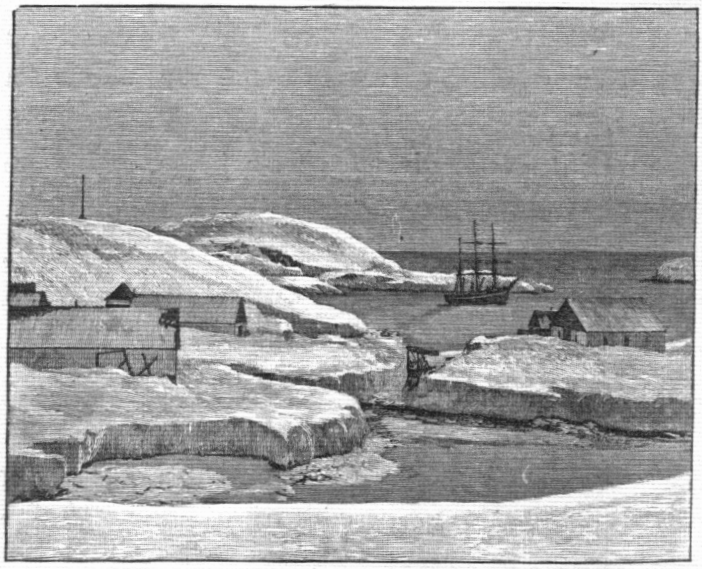
Greetings were given us from home, and there was a general questioning and exchange of news. An entertainment was at once prepared on board, and it was late in the evening before we escaped from the festive scene and got back to Godthaab.

Then came the hour of departure. I had long shrunk from the thought of leaving, but now there was no way of avoiding it. It was not without sorrow that most of us left this place and these people, among whom we had enjoyed ourselves so well.

The day before we started one of my best friends among the Eskimo, in whose house I had often been, said to me: 'Now you are going back into the great world from which you came to us; you will find

much that is new there, and perhaps you will soon forget us. But we shall never forget you.'

Next day we started, and Godthaab, still in its winter garb, smiled a melancholy farewell in the beams of the spring sun. We stood looking at it for long, and the many happy hours we had spent



HARBOUR OF SUKKERTOPPEN
(*From a photograph*)

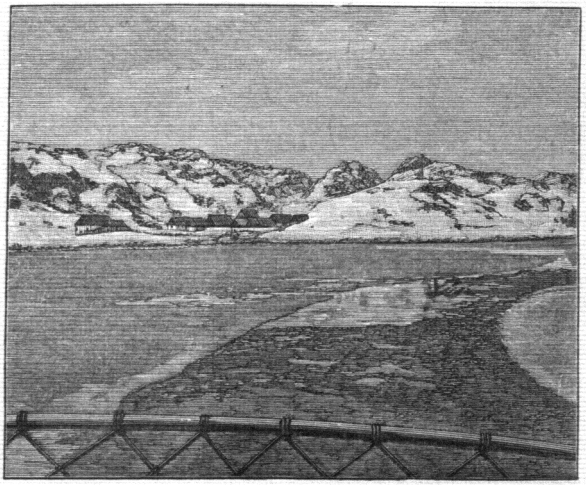
there with Greenlanders and Europeans alike came back into our minds. Just as we were leaving the fjord we passed three 'kayaks,' in which were Lars, Michael, and Jonathan, the three best seal-catchers in Godthaab. They had paddled out here to give us a

last touching farewell, by a salute from their three guns. We were steaming fast out to sea, and for a time saw them bobbing up and down upon the waves till at last they disappeared.

Our ship had to go northwards to Sukkertoppen and Holstensborg before she set her course for home. We reached the first place on April 26. Here we found a good instance of the postal facilities in Greenland, for no one knew that we had been spending the winter at Godthaab, which is only ninety miles to the south. On May 3, after six days at Sukkertoppen, and a deal of merry-making, we left again for Holstensborg. On the way we fell in with the 'Nordlyset,' a bark belonging to the 'Trade Service.' She was fast in the ice, so we went to her help, and towed her in to Sukkertoppen. In the evening we left again to go northwards, but we found the whole sea full of ice

ESKIMO POVERTY—A GIRL FROM SUKKERTOPPEN
(*From a sketch by the Author*)

ten inches thick, through which it was impossible to push. There was, therefore, nothing to be done but give up Holstensborg and turn back. On the morning of May 4 we anchored at Sukkertoppen for the third time, and the same day said our last farewell to Greenland.



OUR LAST FAREWELL TO GREENLAND
(*From an instantaneous photograph*)

That evening, when we were well out in Davis Strait, Balto was standing at the taffrail in deep thought, and gazing towards land, though it had long since disappeared from view. Dietrichson asked him why he was so melancholy. 'Have you forgotten Sofia?' he answered.

We were now seventeen days on board the

'Hvidbjörnen.' In the captain we had excellent company, for few could have taken more interest in our expedition than he. Thanks to hospitality the time went pleasantly, and in spite of wind and sea we drew slowly nearer home. Many of us will remember the morning revels, at which we drank the champagne and ate the good things sent out from Europe for us—very different entertainment from that of the 'Inland ice.'

On May 21 we were in Copenhagen. To describe the welcome and hospitality accorded us here, as well as in Norway afterwards, my pen would be far too feeble, and I will forbear to make the attempt. Nor will I try to account to the reader for all the speeches that had to be heard, and all those that had to be made in return; nor for all that had to be eaten or drunk on such occasions; nor to give him an idea of the incredible sufferings that those tormentors of the human race, those ghouls of modern life, by courtesy called interviewers, are allowed to inflict on people as innocent as ourselves. It was no pleasant or easy thing to cross Greenland, but I must say, in full earnest, that the toils and hardships of our return were even worse to bear.

In glorious weather, on May 30, we entered Christiania Fjord, and were received by hundreds of sailing-boats and a whole fleet of steamers. It was

a day that I do not think any of us will forget. Even Ravna, I am sure, was impressed in his own way. When we got near to the harbour, and saw the ramparts of the old fortress and the quays on all sides black with people, Dietrichson said to Ravna: 'Are not all these people a fine sight, Ravna?' 'Yes, it is fine, very fine;—but if they had only been reindeer!' was Ravna's answer.

PLAUDITE!

APPENDIX

THE SCIENTIFIC RESULTS OF THE EXPEDITION AND SOME CONSIDERATIONS SUGGESTED THEREBY

I. The Geological History of Greenland

Those who see Greenland in its present desolate, ice-bound condition will perhaps find it difficult to realise that it was once quite free of ice and snow. The rocks in places give us indisputable testimony that its soil was once covered with luxuriant forests of palms and other tropical plants that we must now go to the latitude of Egypt to find.

The country consists almost wholly of rocks which belong to the earth's earliest periods, the so-called Archæan—that is to say, of gneiss and mica- and hornblende-schists, together with granites, syenites, and other eruptive formations. As these form by far the greater part of the country which is now free of ice, it is only reasonable to suppose that that which is still covered consists mainly of the same materials. All these rocks are much too old to throw any light on the climate and vegetation of earlier times.

But here and there are also found far younger rocks, which belong to the Cretaceous and Tertiary periods, and these are celebrated for their fossil plants. I will here give a short account of these

deposits, as they bear witness to important changes in the climate of Greenland, and perhaps that of the earth generally.

Their greatest distribution in that part of the country which is known is between 69° 15′ and 72° 15′ N. L. Here there are beds of sandstone and slate, with an occasional intervening layer of coal, and on Disco Island and the peninsulas of Nugsuak and Svartenhuk, especially, these rocks form a large part of the surface. They are comparatively loose in texture, and would certainly have disappeared under the pressure of the superincumbent ice had they not been covered by huge sheets of basalt, which flowed over them, and so preserved them in the general destruction.

Along the Waigat coasts, for instance, the lower strata, which belong to these later formations, have a thickness of from 2,000 to 3,000 feet, while over them comes the basalt and brings the general level up to some 5,500 feet. It is in these underlying beds of sandstone and slate, which contain layers not only of coal, but of clay and clay-ironstone, that the fossil plants are found, and in such abundance and so well preserved a state that Northern Greenland may, perhaps, be said to furnish the best plant deposits from the Cretaceous and Tertiary periods of all countries in the world.

The coal-beds in Northern Greenland have been long known. The German mineralogist Giesecke, who, as I have already said, travelled in these parts from 1806 to 1813, pointed out the occurrence of fossils in the coal. Recent travellers, such as Rink, Olrik, Whymper, Brown, and Pfaff, have made collections from these beds; but the fullest and most important series have been brought home by Nordenskiöld and Steenstrup, and examined by the late Professor O. Heer.

The deposits Heer divided into (1) the *Kome beds*, which gave 88 species of plants; (2) the *Atane beds*, which gave 177; (3) the *Patoot beds*, which gave 118; and (4) the *Tertiary beds*, which gave 282 species.

Of the 88 species in the *Kome beds* 43 were assigned to the ferns, 10 to the cycads, 21 to the coniferæ, while there were five monocotyledonous plants, and only one dicotyledonous. The ferns, which are in a large majority, show certain species which are allied to those now found in the Temperate zone. Among the coniferous trees the most important genera, Sequoia and Pinus, seem to have formed in places extensive forests. The single dicotyledonous plant is a poplar.

By comparing this flora with that now found on the earth, Heer came to the conclusion that the mean temperature of Northern Greenland at the time the *Kome beds* were formed must have been between 70° and 72° Fahr. He bases his reckoning on the cycads and several of the ferns, while the coniferous trees also suggest a subtropical climate, or at least that of the warmer parts of the Temperate zone.

When we come to the flora of the second series, the *Atane beds*, we find a considerable change. Out of 96 species which were found at Lower Atanikerdluk no less than 57 are dicotyledonous. There are an abundance of trees, and at this time the fig and bay must have stretched their branches over Greenland soil. The ferns are reduced in number and only show 14 species, while the conifers have also 14 and the cycads four. As yet there is no marked change in the temperature apparent.

In the third series, the *Patoot beds*, the cycads have quite disappeared, the conifers have 18 species, and the dicotyledons 69, this section thus numbering more than half the total. The oaks, which are represented by seven species, and the planes are

now most abundant, and then come birches, and the alder, the maple, the fig, the walnut, and the bay. Some of the species are those now at home in temperate regions, while side by side with them are tropical and subtropical forms, and it is evident that the temperature at this period could not have been very different from that which prevailed when the preceding beds were formed, though it may have been somewhat lower.

As for the Tertiary plants, twenty deposits are known in Northern Greenland, from which 282 species have been collected, 251 of which belong to the phanerogams and 31 to the cryptogams. Among the former Heer finds the genera Taxodium, Thuja, Sequoia, Gingko, Abies, and Pinus. Dicotyledonous trees are more numerous still, and include not only poplars, birches, alders, elms, planes, ashes, maples, beeches, and chestnuts, but a marvellous number of species of oak and walnut. To these must be added four species of bay, three of ebony, six of Magnolia, one Sapindus, and two supposed palms. Nor were the forests without climbing-plants, as there were two species of vine and smilax.

If all this luxuriance be compared with the present miserable Greenland flora, which does not possess a single tree, the difference is indeed striking. It has no connexion whatever with the modern Arctic flora, and we must go some twenty or twenty-five degrees farther south, whether in Europe, Asia, or America, to find a similar vegetation.

Heer considered, therefore, that the mean temperature in the Tertiary period could not have been less than 55° Fahr. at 70° N. L. in Northern Greenland. Professor Nathorst, who is the greatest living authority on the Tertiary period, thinks that this temperature is somewhat too high, for the leaves which Heer took to be palms are certainly not so.

And, furthermore, he maintains that the Tertiary beds of Greenland were not, as Heer believed, deposited at one and the same time, and that it is best to separate those which were anterior to the formation of the basalt covering from those which show the actual flora at the time of the eruption. The two periods have indeed species common to both, but the later basaltic flora is deficient in just those species upon which Heer based his theory of a warmer climate. But even if the Tertiary basaltic flora in Greenland suggests a temperature somewhat lower than that of the pre-basaltic, yet the climate must have been tolerably warm, as the ripening of walnuts in 70° 25′ N. L. clearly shows.

These Tertiary plants are found as far north as in Grinnell Land at 82° N. L., and on Sabine Island on the east coast of Greenland at 73° 20′ N. L. This wide distribution leads us to the conclusion that large tracts of the land that is now buried under the ice must as recently as in the Tertiary period—that is to say, the geological period immediately preceding the present—have borne a vegetation which needs a mean temperature approaching the 55° Fahr. mentioned above.

The mean annual temperature on that part of the west coast of Northern Greenland where these fossils are found is now reckoned at about 15° Fahr., and in this case there must have been a decrease of some forty degrees since the Tertiary period. But in this period the country must have rejoiced in a climate similar to that of Naples, while in the earlier Cretaceous period it must have resembled that of Egypt.

Nor is it only Greenland that was so favoured in Tertiary times, for both Spitzbergen and Iceland have similar deposits of plants which point to precisely analogous conditions.

Yet it is an interesting fact that the flora from these different deposits does not suggest identical conditions of climate. Thus, Heer came to the conclusion that Spitzbergen at 78° N. L. had a temperature of 49° Fahr. at the same time that the west coast of Northern Greenland had one of 55° Fahr. at 70° N. L.; while in Grinnell Land at 81° 44′ N. L., where Taxodium still grew, the temperature was about 47° Fahr.

Thus the present condition of the country, with its huge ice-mantle skirted by a narrow strip of open shore, and with its meagre flora, is in strange contrast to the luxuriance of bygone times. We have from Greenland 260 species of vascular plants now living as against 600 fossil species, and those that have been preserved can be but a mere fraction of the number which once grew there. Not a single species, according to Heer, has survived from Tertiary times, and most of the genera are different. Thus it seems that there cannot have been any direct connexion between the floras of the two periods, but that a gap must have intervened between the destruction of the old and the introduction of the new, for which I shall presently try to account.

Strange as it may appear, there seems probably to have been since these earlier times a period, or perhaps more than one, of a severer climate than that which prevails at present.

For if we examine the form of the mountains, the shores of the fjords, and the structure of the loose deposits at the outer coast, we shall soon see that all this must once have been under ice, which moved outwards, rounded all projecting points, and left its marks even on the islands which skirt the open sea. In those days there could not have been so much as a stone appearing above the ice over large tracts of

country, and the highest projecting peaks must have been few and far between.

It is only reasonable to suppose that the early luxuriant vegetation must have retired before the advancing ice-sheet, and perhaps then and there gave way to an Arctic flora. But in any case plant-life must have almost totally disappeared when the ice enveloped the country.

Then came a time when the ice-sheet began to shrink again, and left a narrow margin of coast exposed. To this a new flora found its way from more southerly regions—though it is possible that a plant may have been left here and there on a projecting peak, a relic of the pre-glacial flora, and now increased and multiplied as more land became exposed.

This is what we may take to have been the history of the present order of things in Greenland. But, as I have already said, it is a history that belongs not to Greenland alone, since other large portions of the earth's surface are known to have been covered by similar sheets of ice.

Among these tracts was the whole of North America down to the fortieth parallel or even further, and the north of Europe, where all Scandinavia, a large part of Russia, Northern Germany down to the fiftieth parallel, and the whole of England except its southern portion, were under one ice-sheet. At the same time, too, large parts of the Alps and the contiguous lowlands were similarly buried. Other parts of the world which had their own ice-caps were Iceland, the Faroe Islands, Patagonia, and New Zealand.

It is most remarkable that these various regions have undergone such violent changes of climate and temperature, but it is still more remarkable that signs have been found in some of these tracts of two such

glacial periods with an intervening period of warmth, during which, as in England for instance, the lion, the hippopotamus, and the rhinoceros walked abroad in the forests of the southern part of the country.

Some geologists even maintain that there are signs of several earlier glacial periods, and some of the evidence, such as that which points to such a period in Carboniferous time, seems tolerably convincing.

II. The Cause of Glacial Periods and Change of Climate

Everything points to the fact that there have been, and probably will be again, remarkable changes and alternations of climate in various parts of the earth's surface.

To explain such phenomena many and diverse theories have been advanced, but none of them can be regarded as established, and therefore it will not be worth our while to devote a large space to their enumeration and discussion.

But in order to give an idea of the various sources to which philosophers have had recourse for their explanations, I will mention some of the better known of the series, and especially those connected with the origin of glacial periods and extensive ice-sheets.

The most natural course to pursue in our investigation of these phenomena is to group the forces and conditions which now prevail, and see if by their arbitrary rearrangement we could produce the state of things which we are trying to explain. Several attempts of this kind have been made, but not with much success as a rule.

It has been conceived that a fresh distribution of land and water in the Northern hemisphere would produce a glacial period. Theorists have laid the

Sahara under water, and flooded Russia, Finland, and a large part of Germany, and have imagined that the conditions necessary for a European ice age would then prevail. They have cut through the Isthmus of Panama and turned the Gulf Stream into the Pacific, and then thought the American continent would be in a condition suitable for their purpose. In other words, they have assumed that a larger extent of water and a smaller extent of land would bring large portions of the Northern hemisphere under ice. If this be so one would think that the Southern hemisphere at the present day was in an excellent state to assume a permanent ice-mantle. It has, indeed, a colder climate than the northern half of the globe, but neither in Patagonia nor New Zealand, where there have been ice ages, is there anything of the kind now, though they have their ordinary mountain glaciers. At the Antarctic pole there seems certainly to be an ice-cap, but this extends no further than to the Southern Polar circle, whereas it would have to reach double as far, or to 40° S. L., if it were to correspond to the old ice-sheet of North America. It may be urged that the Antarctic ice-cap would extend further if the land on which it rests were larger. But, even if this were so, any extension such as that I have mentioned would be hardly conceivable, as the mean annual temperature of southern latitudes is not, after all, so much lower than the corresponding temperature of northern latitudes.

Others have gone in exactly the opposite direction, and have thought that by extending the land surface of the Northern hemisphere, or by uniting the Faroe Islands, Iceland, and even Greenland to Europe, and thus checking the flow of the Gulf Stream, they would produce their ice-sheets. But even if such a rearrangement were sufficient for

Europe, which is more than doubtful, it would do nothing to explain the American ice age. Besides, it must be remembered that for the formation of an ice-sheet a great fall of frozen moisture from the air in one form or other is necessary, and that this must come from the sea, so that the introduction of too much land into the Arctic Ocean would not be favourable to the production of the desired result.

Some have opined that there may have been periods when there was much more moisture in the earth's atmosphere, and that this may have been enough to produce glacial epochs. But, in the first place, there is no positive evidence that such has been the case; and, secondly, this moisture must have fallen in the form of snow, which is scarcely likely if the earth were then as warm as it is now, and received the same annual amount of solar heat.

Lastly, there are those who have maintained that the tracts which were covered with ice lay, previously to the glacial period, at a much higher elevation than they lie now, and have thus favoured the formation of glaciers. In this connexion some have also thought that they could point to a sinking of the land subsequent to pre-glacial times, which might be ascribed to the agency of the ice itself, which, as it gradually increased, pressed down lower and lower the land which supported it. Yet this, again, is scarcely satisfactory, since for the production of such huge ice-sheets as those which covered the northern parts of Europe and America, and in such southerly latitudes, a very considerable elevation of the land would be necessary, and of this there is no real evidence. And, even if there were, we should still have to assume two distinct rises and falls to account for the two distinct glacial periods, the existence of which has been established. Before such a view

could be accepted the reasons for these huge changes of level must be pointed out.

But even if the glacial periods could be explained by these various theories, they all have one weak point, which is, that they do not account for the preceding warm period which we know once existed in Greenland. Even by an accumulation of all the most favourable conditions, as things are now established, it would be impossible to cover Grinnell Land in 82° N. L. with luxuriant woods, or to induce palms to grow in the ice-bound soil of Greenland and Spitzbergen. Other causes must certainly have been present to produce such results. One of the most obvious views to take, if it be granted that the globe has been at one time in a molten condition, is that there has been a gradual reduction of heat owing to radiation. Thus the warm climate of these northerly latitudes would have existed at a time when the earth's surface was just so much hotter as that climate was warmer than the present—that is to say, some forty or fifty degrees.

This theory would possibly explain the warm climate of those times if it be taken for granted that such a vegetation as then existed in Grinnell Land, for instance, could have flourished in the condition of extreme light and darkness which would have prevailed in these latitudes, where months of winter night would have followed upon months of summer day. But if it be true, as geologists state, that there have been alternate glacial and tropical periods, which indeed seems probable, in that case this theory will be deprived of all its force. And at all events it goes no way whatever to explain the occurrence of colder periods than that which now prevails.

If we look at the question from another point of view we shall soon see how untenable this theory is. Supposing that the crust of the earth has cooled to

the extent of some forty degrees between the Tertiary period and the present time, we shall not have to go far back in geological time to find a temperature which would have made all organic life impossible. So, for instance, if we go back double as far we shall come to a temperature eighty degrees higher; and by doubling this again we shall have an increase of a hundred and sixty degrees, and then have reached the limits of endurance of organic life. But the distance we should have travelled back in time would still be very little compared with the enormous antiquity of, for instance, the Silurian period. Even at that early date we know that there was a considerable amount of life on the earth; which seems to prove that the subsequent cooling of the earth cannot have been anything but infinitesimal.

The easiest method of explaining a glacial epoch, as well as the occurrence of warmer climates in one latitude or another, is to imagine a slight change in the geographical position of the earth's axis. If, for instance, we could move the North Pole down to some point near the west coast of Greenland between 60° and 65° N. L., we could, no doubt, produce a glacial period both in Europe and America. And we can even find a support for the hypothesis that such a state of things has really existed in the fact that no evidence has yet been found of the occurrence of an ice-sheet in the eastern part of Russia and the north of Asia.[1] The traces in Alaska are also doubtful, so that the zone of ice-sheets seems to have had

[1] It will also be seen that such a change in the position of the axis would bring New Zealand into higher latitudes, and give it a colder climate. With this arrangement also agrees the conclusion that has been arrived at—that New Zealand has had two glacial periods, like those of Europe and America. The ice age of Patagonia, on the other hand, seems to have been earlier, or even so far back as the latterpart of the Tertiary period, when the North Pole may possibly have been more on the Asiatic side than it is now.

its centre somewhere near the point we have mentioned.

It has also been thought that reasons could be found for the transference of the earth's axis in the removal of material by the help of rivers, and glaciers, and the like. There is no doubt that such removals, as well as large accumulations of ice, can change the position of the earth's centre of gravity, and so alter that of the axis to some extent. But no one has conceived the possibility of removals of material so extensive or changes so violent as to cause a transference through twenty or thirty degrees of latitude.

That an actual movement of the axis does take place seems to have been established by the fact that observations at several German observatories, Berlin, Potsdam, Strasburg, and Prague, agree remarkably in showing an alteration of more than half a second in the course of six months.[1] And trustworthy observations at Pulkowa, Greenwich, Washington, Milan, Naples, and other places seem also to point to change of latitude.[2]

If this really is a fact, that the pole can change its place as much as, for instance, a second in a year, no great amount of time, geologically speaking, is needed for a very considerable alteration. In 3,600 years it would move a degree, and for the twenty or thirty degrees necessary for our purpose a period of no more than 72,000 to 108,000 years would be required. But whether these supposed records of an actual

[1] The observations show a slight increase of latitude during the first quarter of 1889, and in the second quarter the beginning of a decrease which continued till January 1890, and amounted to 0·5″–0·6″ (*Astronomische Nachrichten*, 1889, vol. cxxiv.).

[2] The Italian Fergola has compared the various trustworthy determinations of latitude which point to a movement, and has arrived at changes in the course of 100 years at Greenwich of 2·4″, at Washington of 2·8″, at Milan of 2·5″, and at Naples of 2·4″ (*Atti d. Società di Napoli : Accad. d. Scienze*, vol. v. 1873).

change are to be relied upon or not, it is at least certain that astronomers cannot deny the possibility of such movement.

I may also call attention to another phenomenon, of the cause of which we are ignorant, though in this case we do know of its existence—that is, the wanderings of the magnetic pole. That they are due to changes of one kind or another in the earth itself, possibly in its interior, we may feel certain, but it has not yet been shown what the nature of these changes may be. Altogether there are here great gaps in our knowledge to be filled up, but it can at least scarcely be said that the phenomenon of movement is more impossible in one case than the other.

What causes us difficulty is not only the uncertainty of any actual movement of the axis taking place, but also the consequence that there must have been many changes in its position. For in order to produce the warm climates of Greenland, Spitzbergen, and Nova Zembla the pole would have to be brought right over to the neighbourhood of Bering Strait, or even still farther south.[1] Its position in the Tertiary period twenty degrees nearer Siberia, or at about 70° N. L. and 120° E. L., Professor Nathorst thinks is suggested by the fact of the Tertiary flora of Japan showing a climate considerably colder than that which must have prevailed in Greenland, for instance, at the same time. And another argument which points in the same direction is that Spitzbergen and Grinnell Land also had, as we have seen, a colder climate than that of the west coast of Northern Greenland. The only thing which the same geologist thinks could argue against this position of the pole in the Tertiary period, is that recent discoveries in the New Siberian islands have produced fossils of plants

[1] This, however, brings us into collision with the Tertiary flora of Alaska and other places.

from this period which might be held to point to a warmer climate there than that of Japan at the same time. These particular fossils are, however, so badly preserved, and the question has been so little investigated, that no certainty can at present be arrived at on the point.

There is also some difficulty caused by the fact that the deposits of Tertiary plants would in this case be brought at Tchorimgi-chaja by the River Lena[1] to 85° N. L., in Kamtchatka to 68° or 69° N. L., at Sakalin to 67° N. L., and in Spitzbergen to 64° or 65° N. L.

All this would lead us to suppose that the Tertiary flora must have had the power of extending northwards to a far greater degree than corresponding plants in our present climatic conditions. But it is contrary to all known biological laws that plants should have possessed greater hardiness in earlier times than they have now, the tendency being just the contrary, or towards an increasing power of endurance and an increasing faculty for distribution. We should thus be obliged to assume a higher temperature of the earth's crust at the time, and in that case fail to find the explanation which we are seeking.

Yet it does not seem to me to have been proved satisfactorily that the Tertiary strata were deposited at the same time over the whole earth. The argument on which this assumption is based—namely, the repeated occurrence of certain species of plants and animals—does not appear to me convincing, and I have never been able to understand why these species should have necessarily appeared in various parts of the globe at exactly the same time. When we bear in mind how long certain species of animals, or at all events certain genera, have survived in the course of geological time; how, for instance, such a fish as

[1] It is not certain whether these fossils are Miocene or not.

Ceratodus has been transmitted, if not in the same species, as some have believed, at least in the same genus, from the remote Carboniferous period till now, it is easy to understand that a well-marked flora could survive without much change of character for a very considerable period. There seems to be no doubt that the Tertiary period was very long, and allowed ample limits for all kinds of transformations.

My idea, therefore, is that, if it be allowed that the axis of the earth can admit of considerable changes of position, there is nothing to be said against the hypothesis that several of these changes may have taken place within the bounds of Tertiary time. The beds in the New Siberian islands may in this case have been deposited while the axis was in one position, while similar beds in Japan and elsewhere may date from different positions. It is clear that the flora, or more especially the fauna, could easily migrate from place to place and one latitude to another according as the pole shifted its position and the climate changed, and they would thus give to the deposits at each region which they reached the same character which they had imprinted upon those of their former habitats.

But even if it be granted that the pole had a different position in the Tertiary period, there still remains the fact that it must have moved twice over towards Greenland, and twice back again, to account for the two different glacial periods. Such movements would be, no doubt, somewhat extravagant, and no sufficient reasons for their occurrence are forthcoming.

The causes of climatic change have therefore by some been sought outside the globe, and it has been thought possible that the radiation of our source of heat, the sun, is liable to change, or, in other words, that the sun is a variable star. Some have imagined that the warmth of the sun is maintained by a con-

stant bombardment of meteors, which gather heat by their speed and the consequent friction. If this be so, there is no difficulty in supposing a recurring increase and decrease in the severity of this bombardment, just as we ourselves have large falls of meteors at definite intervals when we cross the paths of various comets. But there is too little ground to build upon in such hypotheses.

According to the theory of Kant and Laplace we should expect that the radiation of heat from the sun would be continually decreasing, as the orb itself grows cooler. This might well explain the occurrence of earlier warm climates, but would do no more to help us out of our difficulty with the cold periods than the decreasing heat of the globe already referred to.

Others have found a reason for cold and warm periods in the supposition that the space through which our whole solar system moves has warmer and colder regions. The only answer to this is that, improbable as it may be, it is at least possible, but that no argument can be advanced for the supposition; and while this is so it must be relegated to the number of mere mental experiments.

The theory that has found most supporters is that advanced by Croll, that changes of climate are due to changes in the eccentricity of the earth's orbit. As is well known, the orbit at different periods is more or less elliptical, and Croll's view is, in the first place, that it is a matter of great importance for the climate of either hemisphere whether its winter falls upon that part of the orbit which is nearest the sun or most distant from it. In the latter case the winter, in the present form of the orbit, would be seven days longer than the summer. The warmth of the sun's rays would be less at this season on account of the distance, but this would be quite compensated by their greater heat in summer. On the other hand,

the shorter summer could scarcely compensate for the greater loss of heat owing to radiation from the earth's surface during the seven days longer winter. At such a time, therefore, the conditions for the formation of glaciers would be more favourable than at other times. The Southern hemisphere is at present in just such a state, and its temperature is therefore lower than that of the Northern.

If, however, this period of increased winter coincide with a time at which the eccentricity of the earth's orbit is greatest, or, in other words, when the ellipse is most prolonged and flattened in form, the difference between the seasons will be so accentuated that the winter will be thirty-six days, or more than a month, longer than the summer in one or other of the hemispheres. In these circumstances Croll thinks that every condition necessary for a glacial period will be present.

He has calculated that the conditions have been most favourable for this result 200,000, 750,000, 850,000, 2,500,000 and 2,600,000 years ago, while they will again occur in 500,000, 800,000 and 900,000 years. If this theory should prove tenable, it would provide us with a series of glacial periods, which would serve as eras in geological chronology.

But this view has one defect, that even if it could be held to explain climatic changes of one kind, it will not provide us with a cause for those of another kind. If we allow that it will furnish us with glacial periods recurring at definite intervals, it cannot account for the recurrence of conditions so favourable as to explain the existence of subtropical climates, such as Greenland, for instance, must once have had.

Thus we see that from whatever point of view we regard these phenomena we cannot find any satisfactory explanation which covers them all. This must be the work of the future, and we must perforce be

content with the knowledge that things must once have been so, and that we actually have at this very day an ice-sheet which reaches as far as the 60th parallel, or to the latitude of Christiania and the Shetland Islands, and this in a period which, according to Croll, should be most unfavourable for the formation of extensive glaciers.

The 'Inland ice' of Greenland is, furthermore, an ice-sheet quite sufficiently large to allow us to study the various phenomena and conditions connected with a glacial period; and a journey across the country thus affords, as Nordenskiöld puts it, as much interest to the geologist as an archæologist would find if he had the opportunity of exploring a fully preserved settlement from the age of lake-dwellings.

III. The Scientific Results of the Expedition

A detailed enumeration of the results which the expedition is believed to have attained would be out of place even as an appendix to this narrative, and besides, this task will be undertaken elsewhere. I will therefore confine myself to pointing out those of the observations made by us which I think will be considered of most importance.

The questions which seem to be of most obvious interest concern the extent and the outward form and elevation of the 'Inland ice.'

As to its extent, our journey has shown, once for all, that the 'Inland ice' stretches in an unbroken sheet over that part of the continent which we traversed. We are, furthermore, justified in concluding that the whole country from the 75th parallel southwards is similarly covered, for there is no reason to suppose that the atmospheric conditions are not approximately the same throughout the whole interior, and indeed, as far as investigations go, we

actually have evidence in this direction. We can therefore conclude with a high degree of confidence that there are no open oases in the southern part of Greenland, though it is quite possible that there may be, as exceptions to the general rule, peaks in the interior which project above the ice-sheet. Nothing, however, has yet been observed in Greenland which would make this probable, and it will be remembered that the last 'nunataks' which we came across on the eastern side were little more than thirty miles in, and were easily visible from the mountains of the coast.

The ravens which Nordenskiöld's Lapps saw in 1882 at a distance of what I take to have been some seventy-five miles inland, and which he considered at the time as a possible sign of the existence of an oasis farther to the north, can now scarcely be regarded as affording much evidence in this direction. We, as I have said, came across snow-buntings at about the same distance from either coast. These birds can hardly be supposed to have strayed from inland oases, and they are far less vagrant in their habits than ravens.

Our present knowledge is by no means sufficient to show how far the great ice-sheet extends continuously towards the north. All we can say is that its limit must at least lie beyond the 75th parallel, for so far along the west coast it sends huge glacier-arms into the sea. Among these is Upernivik Glacier, in lat. 73° N., which has a rate of advance of no less than ninety-nine feet in the twenty-four hours. So rapid a movement must presuppose the existence of an enormous interior ice-sheet, which can supply material for consumption on this huge scale.

I think it must be plain to everyone who has kept up with modern glacial investigations that it is the thickness of the interior ice-sheet, or, in other words,

the volume of the ice- and snow-reservoir from which the true glacier receives its supply of material, that chiefly controls the size and speed of the latter, and not the incline of the bed, as, strange to say, is even now sometimes maintained, especially by geologists, whose experience is confined to the comparatively small glaciers of the Alps. Indeed, the contrary is generally the rule—namely, that minor glaciers have a steeper gradient than larger ones, and so much so that when one sees a glacier with a very rapid fall, one can be tolerably sure that it is of no great extent or importance.

On the eastern side we have as yet learned little or nothing of the edge of the 'Inland ice' north of lat. 66° N., though we know that it must protrude into the sea at many points to account for the formation of icebergs. From this fact, and especially from our knowledge of the conditions on the western coast, we can infer that the sheet is unbroken over the whole continent as far as to the 75th parallel.

It seeems probable also that it covers the country still farther to the north, seeing that in Smith's Sound, for instance, between lat. 79° and 80° N., it sends out so huge an arm as Humboldt's Glacier. We know little, however, as to the movement of this glacier, and as it seems to rise rather rapidly from the sea, we are scarcely justified in taking it for granted that it has its source in so large a reservoir as might be at first sight imagined. And, furthermore, since we know that Grinnell Land, which might be supposed to have climatic conditions just as favourable for the formation of an ice-sheet as that part of Greenland which lies immediately over against it, but that, nevertheless, it is not entirely covered, we cannot now conclude with certainty that the northern part of Greenland is so covered. It may very well be that the temperature is here too

low and the snowfall too little to allow of the formation of a continuous ice-sheet, though what we do actually know can scarcely be said to make this probable.

The best idea of the outward form and elevation of the 'Inland ice' will, I hope, be conveyed by the section or profile drawing at the end of this volume, which has been constructed by Professor Mohn and myself from our numerous astronomical and barometrical observations, supplemented by the notes of my diary.

As this section shows, the ice-sheet rises comparatively abruptly from the sea on both sides, but more especially on the east coast, while its central portion is tolerably flat. On the whole the gradient decreases the further one gets into the interior, and the mass thus presents the form of a shield with a surface corrugated by gentle, almost imperceptible, undulations lying more or less north and south, and with its highest point not placed symmetrically, but very decidedly nearer the east side than the west. This point lies about 112 miles from the place of our ascent, and about 170 miles from the head of Ameralikfjord, where we again reached the level of the sea.

As the head of this fjord is about 56 miles from the outer coast-line on the west side, while the place of our ascent was only 13 miles from the eastern coast line, it follows that, in a section taken in the direction of our route, the ridge of the ice-field must lie about 125 miles from the eastern coast and 226 miles from the western.

It will be seen, too, that the highest point which we reached was 2,718 mètres, or some 8,970 feet. To the north, however, the snow-field seemed to be still rising, so it is probable that higher elevations will yet be recorded.

As to the gradients, we recorded a height of 1,000 mètres, or 3,300 feet, at nearly 15 miles from the

place of ascent, or 28 miles from the outer coast; while we reached the corresponding point on the west side at 26 miles from Ameralikfjord, or 82 miles from the west coast. This gives a gradient of 1 in 23 on the east side, and 1 in 42 on the west, for the first 1,000 mètres.

An elevation of 2,000 mètres, or 6,600 feet, we reached at 50 miles from the place of ascent, or 63 miles from the east coast; and the same point on the west side we found to be 78 miles from Ameralikfjord, or about 134 miles from the outer west coast. The gradient for the second thousand mètres was, therefore, 1 in 57 on the east side, and 1 in 84 on the west.

For that portion of the ice-field which has more than 2,000 mètres elevation the gradients were about 1 in 142 on the east side and 1 in 206 on the west. It will thus be seen that the east side has throughout a steeper gradient than the west.

But in connexion with these gradients two things must be borne in mind—first, that our route was not at right angles to the axis of the country, and, secondly, that when we reached the interior we always had rising land to the north of our course. And as on the earlier stages of our journey we worked further to the north than at any subsequent time, while we also held a more northerly course, and so were moving more nearly at right angles to the axis, it follows that the gradients of this part of our route were, speaking relatively, considerably steeper than after we changed our direction and made for Godthaab. For by turning to the south we crossed the ridge of the country obliquely, and as this ridge, as I have said, rose to the north of our route, the gradients both for the remainder of the ascent and for all the descent were gentler than if we had held a straight course all along and crossed the axis perpen-

dicularly. For the same reason we must have reached our highest point sooner than we otherwise should have done, or, in other words, our highest point must lie nearer the east coast than the ridge of the country actually does.

The section, which is based on the route we followed, does not therefore give the same aspect as a true transverse section of the country would, as the highest point would in this case come considerably nearer the centre. If, however, we eliminate as far as possible the errors due to our irregular course, we come to the remarkable result that a section of the country at the latitude at which we crossed gives an almost exact mathematical curve, approximating very closely to the arc of a circle described with a radius of about 6,500 miles.[1] The whole way across the surface coincides tolerably accurately with this arc, though it falls away somewhat abruptly at the coasts, and a little more abruptly on the east side than on the west. In other words, the ice-sheet at this point approximates to the superficies of a cylinder with a gentle rise from south to north. It will be interesting to compare with this result the data which other expeditions give us as to the conditions of its surface in other latitudes.

To the south of our route there is only one point at which investigations have been made which are of any service in this connexion. This is on the west coast, between 62° 40′ and 62° 50′ N.L., where the Danish expedition in 1878, under Captain Jensen, made their ascent. Unfortunately they did not penetrate far, but their record is sufficient to show us that the ice-sheet here again comes pretty near to the arc of a circle, in this case with a smaller radius of about

[1] It must be borne in mind that for the purposes of this calculation the spherical form of the earth is disregarded and the plateau of Greenland is looked upon as resting on an absolutely horizontal plane.

5,600 miles. In this case also, as in ours, there is a deviation from the arc at the coast. Another interesting fact in connexion with this journey is that near the farthest point reached by the expedition the gradient is less than it would have been had it followed the arc exactly. The reason for this deviation is that the ice at this point lies in shelter of certain 'nunataks,' forming, as it were, an eddy or backwater in the stream. The level is therefore lower than that of the ice on the far side of the 'nunataks,' where the surface again coincides with the main arc. If the ice-sheet follows this same arc right across the country, which is here some 247 miles broad, the highest point reached will be about 6,820 feet.

If we proceed farther north and examine Baron Nordenskiöld's route in 1883, we find that the gradients of the ice, as far as he himself penetrated, coincide surprisingly closely with the arc of a circle almost from his very starting-point at the coast. The radius of the circle is here very large, being something like 14,600 miles. So far, so good; but it will be remembered that the two Lapp members of the expedition were sent alone on a tour of reconnaissance a considerable distance farther in. Now, their record at once shows a very striking discrepancy, as the gradient of their journey forms no part of the circle which had been so closely followed hitherto. The divergence is very strongly marked, and it would appear as if they had suddenly come out upon an almost absolutely horizontal plateau.

From what we know now we are fairly justified in assuming that no plateau of this kind exists. We may also reasonably assume that the Lapps made no mistake in the reading of their barometers, and that the height of about 6,390 feet which they profess to have reached is not far from the reality. In this case the only possible explanation that remains is

that the two 'skilöbers' very much over-estimated the distance that they covered in their fifty-seven hours' journey.

Now, on the other hand, if the gradient of the Lapps' journey had been a symmetrical continuation of that recorded by Nordenskiöld, the height they reached would lie about 45 miles from the point at which they left the rest of the expedition, instead of about 138, as their calculation made it. This 45 miles too, out and back, is a distance which their 'ski' may very well have carried them in the time they took; while the longer distance which they supposed they had covered is, as every experienced 'skilöber' will acknowledge, not far short of an impossibility with the snow in such a condition as that which the surface of the 'Inland ice' affords. How easy it is to over-estimate distances on ground of this kind the members of our expedition can testify, as we continually set our day's marches down at more than double their actual length.

If, as I am assuming, the surface of the 'Inland ice' at this point does really follow throughout the same arc as that of Nordenskiöld's route, the highest point will not be more than about 7,740 feet, or lower than the height which we registered farther south.

The heights and distances recorded by Peary and Maigaard in their expedition of 1886, are, unfortunately, not quite trustworthy. Their ascent was made about lat. 69° 30′ N., and, as far as we can judge from their reports, the gradient for the greater part of their route agrees remarkably well with that of Nordenskiöld's journey. For the first 25 miles, indeed, the curve was considerably abrupter than it would have been had it followed the circle throughout; but this is easily explained by the fact that the ascent was made from an arm of Disco Bay, which penetrates some considerable distance further in

than the point from which Nordenskiöld's expedition started.

The result to which this investigation leads us is that the surface of the 'Inland ice' forms part of a remarkably regular cylinder, the radius of which nevertheless varies not a little at different latitudes, increasing markedly from the south, and consequently making the arc of the surface flatter and flatter as it advances northwards.

Another peculiarity of the surface which deserves notice is the gentle undulation of which I have already spoken. On the section I have set off two kinds of these waves—a series of larger ones, which are most prominent near the coasts, the east coast especially, and afterwards become broader and flatter as they near the interior; and a number of minor ones, which could be traced the whole way across, but were also less noticeable in the interior. These latter are partially visible in the sectional drawing. Similar undulations have been observed by most of the expeditions which have advanced any distance upon the 'Inland ice.' They seem always to have an approximately north and south direction. I cannot think that the underlying land has any real share in their formation, but am inclined rather to believe that they are to some extent connected with the action of the wind.

It may now be asked what the causes are which determine the form of this great sheet of snow and ice. That it must be to a certain extent independent of the form of the land on which it lies we can soon see, as it would be impossible to maintain that the land forms a plateau as flat and even as the surface of the 'Inland ice.' As the wild and mountainous coasts of Greenland remind the observer strongly of the coast of Norway, its western coast especially, we are fairly justified in supposing that, if the ice-cap were removed,

the interior of Greenland would also resemble Norway, and would probably show an even more broken and furrowed surface, seeing that its east coast is scarcely less rugged than its west. This is the same as assuming that it is a land of high mountains and deep valleys, all of which have disappeared under the cover of ice and now show no sign of their existence.

In order that we may more easily form an idea of the conditions which have led to the present form of the ice-mantle, let us first try and imagine the original course of its construction.

The sinking of the temperature was possibly accompanied by an increase in the snowfall, and the masses of snow at the higher elevations which the summer could not melt away began to grow in bulk year after year. They had begun to establish themselves in the form of mere drifts of greater or less extent, but in time they would assume the dimensions and attributes of large snow-fields and glaciers. The Norwegian mountains in the winter show plainly enough how this accumulative process goes on. The wind drives all the light dry snow which falls, away from the peaks and eminences and deposits it in the depressions and valleys; the former are kept quite bare, while the latter are gradually filled. So as soon as the climate reached a point at which these accumulations of snow could defy the melting power of the summer, they would grow more and more extensive, and as long as their level remained lower than that of the higher ground the wind would probably continue its levelling work.

In course of time the valleys were filled up, and the snow could proceed to envelop the outstanding peaks. All this would have first taken place on the highlands of the country. The great snow-fields established there would send down their glacier-arms into the lower parts, and gradually the mantle of ice and

snow would creep over the whole land. The wind would continue to keep the loose surface smooth and level, and in the end, perhaps, there would not even be a peak left projecting from the monotonous plateau.

But this covering cannot be supposed to be equally massive throughout. It might seem probable that it is thickest where the snowfall is greatest in proportion to the annual melting and the potency of the other forces which are hostile to the accumulation of snow. But the remarkably regular cylindrical form of the ice-sheet suggests to us at once that there is another factor at work of a more purely mathematical nature. This is simply the force of pressure. It must be remembered that the ice-sheet is a more or less viscous mass having a constant movement outwards to all sides. Where therefore the resistance to this movement is greatest, there we should expect the mass to be thickest and to reach its highest point. The resistance again must necessarily be greatest in the neighbourhood of the central line of the country, though the exact situation will be to some extent dependent upon the irregularities of the bed, which must have their due effect in one way or another. From a central point the resistance will decrease on all sides, a process which readily accounts for the strikingly symmetrical form to which our observations and calculations lead us.

What I have already said must, I think, make it plain that the minor irregularities of the land beneath can have had no influence whatever on the form of the upper surface of the ice-sheet, while the larger features though they may have had some influence, cannot have had an absolutely determining power in this direction, because of the intervention of the forces to which I have referred above. So it is by no means certain that the ridge or watershed, if I may say so, of the ice-sheet lies just above the

ridge or watershed of the country. It has, at least, been proved beyond all doubt that the ridge of the Scandinavian ice-sheet could not have lain over the watershed of the peninsula, but must, in the most recent glacial period, if not before, have been situated about a hundred miles farther east.

The thickness of the Greenland ice-sheet is a question of great interest, but one that it is no easy matter to settle, since any measurement of it would be a task of immense difficulty.

I have already said that there is every probability that Greenland, as far as its orography and main physical features are concerned, bears a strong resemblance to Norway. Now if we take this for granted, and imagine Norway covered with an ice-sheet of similar dimensions, we shall be able to arrive at something in the way of a result. If this were so not even our highest peak, Galdhöpiggen (8,400 feet), if it happened to lie under the ridge of the ice-sheet, would raise its head above the snow; high-lying plateaux, like Fillefjeld and Hardangervidden, would have a covering of some 4,000 or 5,000 feet; and the valleys of Valders, Hallingdal, and Gudbrandsdalen would lie from 6,000 to 7,000 feet below the surface. At some spots, such as over the lakes of Mjösen and Randsfjorden, the sheet would be much thicker still, while over the high ridges which separate the valleys it would be perhaps from 1,000 to 2,000 feet less.

If we now pass to Greenland again we shall see that the state of things there must be somewhat similar. It may well be that that country lies somewhat higher than Norway; but even so the average elevation of its valleys cannot be much more than 1,000 or 2,000 feet. Over such valleys we should then have a thickness of 5,000 or 6,000 feet at least, while in other parts the ice-sheet would naturally be less massive.

The pressure exercised by 6,000 feet of ice can-

not be less than 160 atmospheres; and when a mass of this weight moves over the bed on which it rests it will be understood that it must have an enormous power of excoriation, and must break off and carry away all projections with which it comes into contact. It cannot, therefore, be doubted that the glacier-arms, which are ever advancing towards the sea, must be able to deepen and enlarge the valleys in which they lie. The deeper the valley, the thicker the glacier, and the greater its capacity for erosion. Thus it will be seen that an ice-sheet cannot work uniformly over the whole surface on which it rests, but that its activity must concentrate more and more upon those lines to which it was directed by the original conformation of the country. Nor will its erosive power be dependent merely on its thickness, but also on the speed at which it moves. This speed must naturally be greatest on the outskirts of an ice-sheet, where resistance is least and the snowfall probably heaviest. And yet the thickness is less on the outskirts than further in. So the greatest erosive power will be found where the product of these two factors is greatest, and this will probably be at a point not far from the edge.[1]

As an instance of the enormous excavating power of glaciers I may call attention to the Waigat, in Northern Greenland, the long, narrow sound which runs out to sea to the north-west between Disco Island and the Nugsuak Peninsula. As Professor Helland has observed, no geologist who has examined the spot can doubt for a moment that the huge strata from the Cretaceous and Tertiary periods, as well as the later basaltic formations lying above them, which show corresponding features and dimen-

[1] Nor must we forget that the glacier is largely helped in its erosive work by the water and rivers formed owing to the melting of the under surface. The importance of this factor I shall try to show subsequently.

sions on either side of the channel, once formed a solid and connected whole. The channel cannot be older than the rocks which form its sides. And as some of the Tertiary deposits are of very recent date, belonging, in fact, to the latest section of Miocene time, and as, furthermore, these strata are covered by huge layers of basalt, it follows that the Waigat itself must be a production of a comparatively recent period. We know of no other forces that can have produced it than the glaciers, though it is indeed a Herculean piece of work for them to have achieved. The basalt layers reach a height of from 4,000 to 5,000 feet or even more; and as the channel itself is of great depth, we can see that here a mass of solid rock nearly one hundred miles in length, some ten miles broad, and several thousand feet in thickness, has been quarried out and carried away by the agency of the ice.

There is also another effect which so huge a covering of ice would appear to have, in that its tremendous weight may actually compress and force downwards the underlying land. In this way the sinking of land which is thought to have occurred at various places subsequently to the pre-glacial period has been explained. Seeing that rock is to a certain extent elastic it does not seem impossible that the rising of land which has taken place in Northern Europe and America, as well as in Greenland to a less extent, may be accounted for by the shrinking and complete disappearance of the ice-sheets, and a consequent reduction of the superincumbent weight. That this really is the case seems to be shown by certain investigations of old shore-lines in Norway, recently undertaken by Herr Andreas M. Hansen.[1] They clearly point out that the country has risen more in

[1] The results of these investigations have not yet been published, but they will appear in forthcoming issues of the Norwegian scientific periodical *Archiv for Mathematik og Naturvidenskab* (vols. xiv. and xv.).

the interior, where the covering of ice was thickest, than at the coasts, which were subjected to less pressure. There seems, indeed, to be an almost constant ratio between the amount of rise and the distance from the outer coast-line.

Nor does it appear improbable that this theory will also account for the formation of terraces, since just as the weight of ice cannot be thought to have decreased uniformly, neither can the rising of the land have taken place regularly and uninterruptedly. The climate has probably varied periodically, and there consequently have been times when the ice-sheet decreased very slightly or even began to grow again, and when also the land rose very little or even sank. Such times of inactivity would have led to the formation of terraces, larger or smaller in proportion to the length of the different periods. At times of rapid decrease in the ice, on the other hand, the land would rise rapidly, and the formation of terraces be temporarily interrupted.

Meanwhile, if we are to realise how great the actual effect of these huge ice-sheets was, both in this respect and in respect of erosion, we must always bear in mind that the 'Inland ice' of Greenland is small compared with the sheets which once covered Northern Europe and America, as well as with its former self when it enveloped the whole of Greenland.

Again, there is another circumstance which may have contributed to the rising of land subsequently to its envelopment in ice—namely, the diminution of pressure owing to the amount of material which the ice itself quarried out and carried away.

One can see that the diminution of pressure cannot have been trifling when one considers the amount of stone and grit that was removed from Scandinavia and deposited in Russia, Denmark, and Northern Germany.

But at the same time it must be remembered that this rising may to some extent be only apparent, and may be due to the sinking of the sea rather than to the real elevation of the land. It has been shown that land exercises a certain attraction upon the sea, the level of which is higher by a high and mountainous country than elsewhere; and if this be so, a lofty ice-sheet might well have a somewhat similar effect.

How great the change of level due to this attraction may be is uncertain, but it is plain that, the greater the mass of land or ice, the stronger the attraction and the higher the level of the water. So when a land has lost all the material that its ice-sheet has carried off, and lost also greatly in bulk owing to the melting of that ice-sheet, the attraction which it can exercise on the sea must have to some extent diminished, and the level of the water at its coasts will have sunk accordingly. But that this will not be sufficient to explain the changes that have taken place seems to be shown most clearly by the recent investigations in Norway to which I have just referred. For according to them the sinking of the sea must have increased uniformly with the length of the fjords, and proportionately to the distance from the outer coast. The attraction certainly would be somewhat greater inside the fjords, but by no means sufficient to account for the measurements actually recorded; nor can it be supposed that any diminution of the attraction could cause an apparent rise in the land of close upon 800 feet.

Among the objections that have been made to the theory that the disappearance of the ice has caused a rise of land, I may mention the phenomenon pointed out in Sweden by De Geer of post-glacial rises. It seems, however, that these can easily be explained by supposing that long after the ice-sheet had left the south of Sweden there must have been large remnants

of it in Norway and Northern Sweden, the disappearance of which may have led to these post-glacial changes of level.

A piece of evidence which is more difficult to meet is the fact of land having risen in Asia, where no ice-sheet existed. Yet it is not inconceivable that the destruction caused by the rain and rivers may here have been so great as to lead to an appreciable elevation. This would in that case be observed especially in the northern parts of the continent, where the activity of these destructive agents is greatest. The consideration that the wearing effect of the sea on the coasts of Iceland and the Faroe Islands may have caused the rise of land there, and may also explain the oblique position of the basalt beds, seems also to suggest what the effect of erosion may be in this direction.

Again, the fact that the rise in Greenland is as a rule considerably less than that in Scandinavia appears to harmonise with our explanation of the phenomenon of land-elevation, for it is certain that the Greenland ice-sheet, even at its greatest, cannot have been so large as those of Europe and America. And, further, the 'Inland ice' has as yet only partially retired; so that there are still great possibilities in the way of a future rise by the time that the ice-sheet has entirely disappeared. Whether Greenland is for the moment sinking, as some believe, or is in a stationary condition, is a question of comparatively little interest; it would only show at the most that the ice-sheet is at present passing through a period of increase or stationariness. That there can at all events be no decrease of importance I shall subsequently try to show.

As to the superficial aspect of the 'Inland ice,' I may say, in the first place, that of crevasses we found a surprisingly small number in the course of our journey. On the east side they occurred only

in the first seven or eight miles; on the west side we came across the first fissure at some twenty-five miles from the margin of the ice. In the interior there was no trace of them.

Of surface rivers we found practically none. Some may be inclined to think that this was due to the lateness of the season, though this objection has little force, seeing that the middle of August, when we were on the east side, is not late in the season as far as regards the melting of the snow, and furthermore, that even if the rivers had disappeared themselves on the west coast, we should have seen traces of their channels. None such did we see in the interior at all, and the first we observed were not more than fifteen or twenty miles distant from the western edge. It is possible, also, that there were minor brooks on the surface in the first ten miles from the eastern side. Except for these small water-courses near the two coasts, I may say positively that there are no rivers at any time of the year on that part of the 'Inland ice' over which we passed.

The description which I have given in the course of my narrative will, I hope, furnish the reader with a tolerably clear idea of the surface of the ice-sheet in the interior. Thus it will be seen that at no great distance from the east coast the surface of dry snow begins, on which the sun has no other effect than to form a thin crust of ice. The whole of the surface of the interior is precisely the same. How deep we should have to go before it changes to ice we cannot tell. It must do so sooner or later, partly on account of the pressure, partly, as I shall show presently, because of the higher temperature maintained below.

The most remarkable fact in connexion with this dry snow is that the bulk of snow and ice in the interior cannot be diminished by superficial melting; but this is a point to which I shall also return.

Of foreign substances upon the surface we also found little or none. Of Nordenskiöld's 'glacial dust' or 'cryoconite' we saw scarcely anything on the east side; on the west I found it at several places within the last twenty miles, but only in small quantities, though this may be largely due to the lateness of the season, as the holes in which it is usually found were filled and frozen.

Of moraine débris or erratic blocks we met with none upon the ice with the exception of the last little slope when we left it for good on the western side, or no more than a hundred yards from the extreme edge.[1] This is in full agreement with earlier observations on the 'Inland ice,' but quite contrary to the views commonly held by geologists with respect to the working of great ice-sheets, which they imagine have carried huge moraines of boulders and grit upon their backs. To my mind this idea is nothing less than absurd, and it is only necessary to point to the 'Inland ice' of Greenland to refute it. And again, the objection that this proves nothing because Greenland has been exposed far too long to the erosion of the ice to have any movable material of account left, approaches the ridiculous, since even if we did not know, as we do, that blocks are carried every day out into the glacier-fjords of Greenland, it would scarcely be denied that large masses of moraine débris and mud are continually being washed out by the glacier rivers. This débris would infallibly work up to the surface of the glaciers if they really had that powerful lifting faculty which has been attributed to them.

[1] I may here mention that we found a moraine on the ice on September 23. This was, however, merely a common medial moraine of the regular type, which lay between two ice-streams, and is of little interest in connexion with the fact which I have stated above

IV. The Meteorological Record of the Expedition

Temperature.—Our meteorological record will be found to show some features which may fairly be called surprising—as, for instance, some of the temperatures which we experienced were far lower than the established meteorological laws could have led us to expect.

As I have already said the temperature on certain nights, September 12 and 14, probably fell, according to the calculations of Professor Mohn, to −45° Cent. (−49° Fahr.), while the mean temperature of certain days, September 11–16, when we were about in the middle of the country, or a little to the west of the highest ridge, varied from −30° Cent. to −34° Cent. (−22° to −29° Fahr.). This is at least 20° Cent. (36° Fahr.) lower than anyone would have been justified in expecting if he had based his calculations on accepted laws, taking for his data elevation above and distance from the sea, as well as the mean temperature of the neighbouring coasts.

Even when reduced to sea-level these temperatures are beyond all comparison the lowest which have ever been observed in the month of September. Among the lowest mean temperatures recorded for the month is −9° Cent. (16° Fahr.), from Grinnell Land. In the interior of Greenland, however, it cannot be much less than −30° Cent. (−22° Fahr.), which gives a difference of something like 20° Cent. Even when reduced to sea-level this mean temperature would not in any case be higher than −13° Cent. (9° Fahr.).

It would therefore appear, as Professor Mohn says, that in the interior of Greenland we have come upon the second cold pole of the Northern hemisphere, and it is very probable that this same tract of country is among the coldest regions of the earth's surface.

Another remarkable feature of our record is the great difference between day and night temperatures. In the interior this was as much as from 20° Cent. to 25° Cent. (35° to 45° Fahr.), as while at night we had −45° Cent. (−49° Fahr.) we had only about −20° Cent. (−4° Fahr.) in the day. But this great difference was only observable on a few days, when the weather was fairly clear.

Meteorologists have found some difficulty in explaining these very low temperatures. They are, in fact, quite a novel phenomenon, due to the effect of certain factors which have never yet been taken into calculation. It seems to me that this extreme cold, as well as the great daily difference of temperature, must be accounted for somewhat in this way.

That the radiation from snow-fields is greater than from rock or ordinary soil seems to have been already surmised by several observers, as they have noticed that the temperature at the surface as a rule falls very low at night, especially in bright weather.

This seems somewhat astonishing, as we have little ground for supposing that the smooth white surface of snow would give off heat more rapidly than the rough dark surface of the earth. It could easily be shown by experiment that it is not the case either, and it is also in conflict with ordinary experience. Every Norwegian peasant knows well, for instance, that the bogs do not freeze readily even in extreme cold if they have once been covered with snow, though, may be, the covering is of no considerable depth. Yet if this layer of snow were not present the very same temperature would freeze them hard and solid. If radiation, therefore, were assisted by a covering of snow, freezing would be for that very reason the more rapid, at least if the layer were thin, so that the want of conductivity on the

part of the snow would not play so important a part.

But a closer investigation of the matter suggests that the actual radiation is diminished by the snow, the apparent increase being really due to the snow's want of conductivity. Substances which are good conductors of heat, even if their radiation be strong, will gradually supply their surfaces with a certain amount of warmth. In this way the whole mass will lose a large amount of heat by radiation, but the temperature of the surface will not sink so low as it would in substances which are bad conductors. In their case the radiation will practically take place from the surface alone, and as little or no heat is supplied meanwhile from below the surface temperature will be able to sink without hindrance, while lower layers of the same substance will nevertheless possess a degree of warmth considerably higher. The difference in this respect between good and bad conductors will be much the same as that between bad clothes and good clothes. The former will entail upon their wearers a great loss of bodily warmth, while their own surface temperature is high; the latter will cause little loss of warmth, but their own surface temperature will be relatively low.

Now it is obvious that it is the temperature of the uppermost layer of the earth's surface which controls the temperature of the contiguous air. Consequently, as we have seen, when radiation is taking place the temperature of the lowest layer of air will be coldest over a badly conductive surface, even if the radiation there be actually much less. If this be so, we ought to expect to find a more rapid fall of temperature in the night over a snow-field, especially if there be a thick and loose upper layer, than over a tract of ice; and more rapid, again, on a soil of loose earth or sand than over a mass of solid rock or

saturated soil. And there is yet another consideration that must not be left out of account, which is that loose snow, sand, or dry soil represents far less substance than a corresponding bulk of ice, rock, or wet soil, and possesses, therefore, a much smaller quantity of absolute warmth. Accordingly the loss of a definite quantity of warmth will cause a far greater fall of temperature in substances of a loose nature like snow than the loss of an equal quantity would in ice or rock. On loose surfaces, therefore, we might expect that the difference between a day and night temperature would be extreme, since in the daytime the sun will the more readily heat the uppermost layer, which in its turn will be unable to transmit much of its warmth to the lower layers.

This conclusion is in remarkable harmony with known facts. We have seen that the daily difference in the centre of Greenland was as much as from 20° to 25° Cent. A similar record, though not so striking in degree, was obtained at the American polar station on the snow-fields by Fort Rae, in Canada, in March 1883. The Sahara, again, and the great Asiatic deserts are celebrated for their great daily difference in temperature, which may even be equal if not greater than that we experienced in Greenland.

In the interior of this country all the conditions necessary for rapid cooling by radiation must be present. It is only at midsummer that the sun suffices to cover the snow with a thin crust of ice, which forms a denser substance, is a better conductor and a rather inferior radiator of heat. For far the greater part of the year the surface consists of absolutely dry snow, which is indeed packed together by the wind, but, since it has fallen at a very low temperature, it is exceedingly fine, and is therefore an extremely bad conductor of heat.

But if the radiation from the snow can produce so

low a temperature of the contiguous air in the course of a night, what degree of cold can it not produce in the winter season, when the sun is low, or, if we go farther north, quite absent?

We can scarcely say that we have any measure which will enable us to form even an approximate idea of the cold that must then prevail. But we are at least justified in assuming that the difference between summer and winter must be very great.[1]

I also think that it is the rapid cooling of the uppermost layer of snow which is the cause of the uniformly low temperatures that we met with during the whole course of our journey across the interior. It is certainly correspondingly easy for the sun to heat this badly conductive layer during the day; but it must be remembered that it never in any case rises above freezing-point, and at the same time the white surface reflects back a considerable amount of the heat.

Another factor which helps to increase the radiation largely, and indirectly the general lowness of temperature, is the rarity of the air at these high altitudes. And it must also be borne in mind that no similar level plateau of this height above the sea is known to occur elsewhere on the globe. It is not furrowed by valleys, into which the air cooled by radiation can sink, or out of which warm air can rise. The atmospheric conditions are also such that little air can come from the coasts, since the prevailing winds blow outwards.

The radiation must be extremely rapid and easy through this cold rarefied air, which, though it certainly possesses a large relative coefficient of moisture, has a very small degree of absolute moisture. Be-

[1] We may feel quite sure that the melting of the snow cannot in any considerable degree help to make the summer colder and so reduce the difference between summer and winter temperature, as, in fact, is generally the case, because even at the warmest period of the year the melting is very insignificant.

sides, it must be remembered that we could only examine the air to a height of six feet or so above the ground. It is not at all inconceivable that the higher layers may be warmer and comparatively dry, and therefore still more favourable to radiation. For it must not be forgotten that since there is comparatively little change in the layers of air, and since there can scarcely be, except in the summer, a strong determination of air upwards which could bring moisture to the higher layers, because the moist layers which are cooled by the snow sink to the bottom by their own weight, we must necessarily expect the air of higher layers to be drier, and to a certain extent also warmer, at all times when the radiation of heat is greater than the absorption, which is the case, of course, during far the greater part of the year.

A third factor which may also contribute, though in a less degree, to the lowness of the temperature in the interior is perhaps of sufficient interest to be mentioned. As I shall attempt to show subsequently, a continual melting must go on at the under-side of the ice-sheet, where it comes into contact with the underlying land.[1] This melting process must absorb a large amount of heat, which is carried out to the coasts in the water which runs beneath the ice.

It is plain that this unceasing loss of warmth below cannot but have its effect on the surface-temperature. The warmth is taken on the one side from the ice-sheet itself, and the effect of this loss must be transmitted to the surface in a greater or less degree in proportion to the varying thickness of the sheet. On the other side it comes from the

[1] As I have already said, there is no surface melting which can reduce the quantity of the snow. Nor can the melting which does take place contribute to reduce the temperature by absorbing heat, as the heat actually absorbed in the process is all given off again by subsequent night-freezing.

underlying rock—or in other words it is a portion of the internal heat of the earth's crust, which is always passing outwards to take the place of heat lost on the surface; here it is stopped and expended, and the surface of the ice-sheet is consequently deprived of a certain quantity of warmth which would otherwise fall to its share. There is no doubt that the amount of heat which is passed through the layer of ice is small, and that which finds its way through the uppermost layer of snow still smaller. For this reason the loss of warmth on the surface which must be attributed to this factor would not be very considerable, but some loss there nevertheless must be.

So, as will be seen, all the considerations which I have enumerated must work together to bring about a low superficial temperature on the 'Inland ice.' That they are reasonably sufficient to produce the intense cold of that region I am for my own part fully assured.[1]

Snow- and rain-fall.—In connexion with snow- and rain-fall and moisture generally we also experienced a state of things which had scarcely been expected. The degree of moisture in the air was surprisingly high over the greater part of the ice-sheet, as in most cases it reached between 90 and 100 per cent., or in other words the air was very nearly saturated. It was only near the west coast that we found it to be below 79 per cent., though there we experienced winds of a 'föhn'-like character.

It will thus be seen that though, owing to the low temperature, the absolute moisture of the air was little, its relative moisture was nevertheless very high.

[1] It may occur to some of my readers that evaporation from the surface of the snow might also help considerably to reduce the temperature. But, as I shall afterwards have occasion to mention, the evaporation in this low temperature must be quite insignificant, as the contiguous air is as a rule nearly saturated with moisture, and there are very frequent falls of snow.

This is as a matter of fact not really more than could be expected, since all the winds which reach the 'Inland ice' must come from the sea, and the air they bring must be cooled more and more the further they get into the interior. It was, therefore, only probable that we should have frequent falls of snow or rain. In the forty days which we spent on the ice there were sixteen of either snow or rain. On four days only did we have rain, when we were weather-bound in the tent near the east coast, and on one day near the west coast we had hail; on the rest it was always snow, which in the interior took the form of fine 'frost snow,' or needles of ice. This fell almost daily out of a half-transparent mist, through which we could often see the sun, together with halos and mock-suns.

When we regard this abundance of falling snow in connexion with the fact that the ice-sheet is not diminished by surface-melting, we are led to the conclusion, either that it must be continually increasing in volume, or that there are other factors to be taken into account which work destructively and counteract this increase.

Our present knowledge forbids us to take the former alternative, for we can easily see that, if there were a continual increase in the interior of the 'Inland ice,' this would have its effect upon the margin and cause increase there; but no sign of this has been observed though measurements have been taken for a series of years.

We must thus seek for the reason which prevents this increase.

As we have already seen there can be little evaporation from the surface, and what there is cannot reduce the volume to any appreciable extent. Nor can the wind, which might drive the snow from the interior towards the coasts, have any

considerable effect in this direction. Along the edge the winds do certainly blow outwards with tolerable persistence, but in the interior there appears to be very little wind at all, and what there is does not blow regularly in any one direction.

Consequently on the surface there is no influence at work to prevent the increase of the snow, and this fact we can support from actual observation of the number of layers of snow which are separated by thin crusts of ice. This being so we must go lower to look for the cause which we seek, and here we shall soon come upon a factor which must be of importance—that is, the pressure exercised by the ice-sheet.

It must be remembered that the snow and the ice into which it is compressed form, to some extent, a plastic, viscous mass, which cannot attain to any great thickness before its weight squeezes it out laterally, and gives rise to the ordinary glacier-arms of greater or less extent which are common to so many mountainous districts. In this way the pressure would urge the ice-sheet of Greenland into constant movement outwards, down the inclines of its bed of rock, out through the valleys where it would meet with least resistance, and towards the fjords and sea, into which it would finally throw its huge icebergs to be floated off by the water. So these glaciers, or streams of ice, correspond to some extent to the rivers of other lands, since they carry off a large part of the snow and rain that fall in the interior. The sole difference is that the water is conveyed in a solid form instead of a liquid.

It is therefore plain that the ice-sheet, with a definite increase in the form of snow or rain, could not, apart from the effect of other influences, rise above a certain height, at which the movement caused by pressure would counterbalance the in-

crease from outside. We must now inquire whether it has yet, as a matter of fact, reached this particular height.

This is unlikely, for before it got so far another factor must have asserted itself and put a stop to further rising. This factor is the melting that must go on beneath the ice-sheet, owing to the internal warmth of the earth.

It is a fact no longer disputable that the earth has an internal warmth of its own, and that the temperature rises in proportion to the depth one penetrates beneath its surface. But in an ice-sheet the conditions must be precisely the same, since it differs in no way from other geological strata except in its peculiar faculty of movement and its tendency to melt at a much lower temperature. Both snow and ice are bad conductors of heat, and therefore, if it had no movement, we should expect it to show a greater increase of temperature for depth than other geological strata. Yet at the same time it may be that the ice-sheet is of so recent formation, and in such constant movement, that the heat of the earth has not yet had time to penetrate it throughout.

It is therefore impossible, in default of experiments, to calculate what the increase of temperature for depth is likely to be. But if we assume that it follows the usual rule, and that the mean annual temperature of the surface lies between −20° and −30° Cent. (−4° and −22° Fahr.),[1] we should expect to find at a depth of from 2,000 to 3,000 feet a temperature somewhere about freezing-point, for borings have shown that in the earth there is an average rise of 1° Cent. (1·8° Fahr.) for every hundred feet.

But this last estimate is far too uncertain, and the conditions which prevail in the depths of the ice

[1] It will scarcely be necessary to descend far into the snow to find the constant annual temperature.

are far too little known to justify us in attaching weight to any such calculation. Yet it may be asserted with tolerable confidence that at some depth or other below the surface the temperature must rise to freezing-point. And at the same time we must take into account the fact that pressure will lower the melting-point of ice, or in other words cause it to melt more readily. A very considerable pressure is indeed required to lower it so much as a degree, but the superincumbent weight must have at least some effect in this way.

At a certain depth, then, all conditions necessary for the melting of the ice will be present. Below this depth there can be no further rise in the temperature, and the increase of warmth will be expended in the melting process. Consequently, the heat of the earth alone will be enough to cause a melting of the lower layers of the ice. The thicker the sheet is, the thicker will be that part which has a melting-point temperature, and the larger the amount of melting which will ensue. Thus the wasting of the lower parts of the mass must be regulated by the increase in the upper part from outside. There is yet one other source of heat which we must not omit to take into account. The movement of the mass of ice, in conjunction with its enormous weight, must, of course, cause most violent friction both against the surface of the bed of rock and between the lower layers of the ice itself. This friction must give rise to warmth, which warmth, whether it be great or little, must do its share in the general melting.

All the above considerations make it clear that a sheet of ice and snow can only rise to a definite height, at which the melting of the lower layers will counteract external additions to the upper. This height will again depend on the amount of the latter

in the form of snowfall and upon the temperature of the surface.[1]

I have already mentioned in the foregoing chapter an observation of my own which proves that such a melting actually does take place. It is also matter of common knowledge in Greenland that there are rivers running out from beneath the ice-sheet winter and summer alike. Hitherto, however, it has usually been maintained that these rivers are due to superficial melting in the summer. I hope that our experience has been sufficient to show that this melting is far too insignificant to supply the rivers with water, and the only conclusion that remains is that they have their origin on the underside.

The quantity of water that reaches the sea in this way is assuredly very much larger than that which it receives in the form of icebergs. It must consequently follow that the melting of the lower surface of the ice-sheet does more to counteract the addition to the upper surface than the movement of the whole mass. When the snowfall increases, the volume of this ice-sheet increases in like degree, and when it decreases there is a corresponding decrease on the other side. What the present state of things is we cannot even conjecture, but the observations which we have show that there is no strong tendency in either direction. The Eskimo, indeed, have tales to tell of the increase of the 'Inland ice,' but these are scarcely fit to build scientific structures upon.

My speculations on the question of a considerable waste in the under-surface of an ice-sheet have led

[1] For this reason an ice-sheet cannot be so thick at its margin as in the interior, since the temperature of the surface will be too high; but this may be to some extent compensated for by the greater snowfall.

me to believe that this very process will serve to explain certain geological phenomena that have never been thoroughly understood. I mean especially the so-called 'drumlins' or 'lenticular hills,' and the so-called 'kames' or ridges which are so familiar in Sweden under the name of 'åsar.'

The 'drumlins' are found especially in America; in Europe they are commonest in Ireland and England, while in Norway there are a certain number of them in Jæderen. Such, at least, seem to me to be the numerous sand-hills which occur there.

'Drumlins' are low, oblong, and quite symmetrically rounded hills consisting of stones and grit. The breadth is generally half or two-thirds of the length, which varies from a couple of hundred to five thousand feet. The height is proportionate to the other dimensions, and varies from twenty-five to two hundred feet. They are always to be found lying upon the till or so-called 'ground-moraines,' which in America, for instance, have an enormous distribution. One remarkable feature of these mounds or hills is that where they occur they often lie very close together, while their longer axes are as a rule always parallel with the glacial scratches, and consequently with the line of motion of the glacier which caused them. They do not seem to consist of waterworn deposits, but in structure resemble the till. They are very compact, but are not stratified, or at all events only imperfectly, and consequently they are entirely different from the 'kames,' as will presently be seen.

There is no doubt that these hills have been formed by the ice-sheets of the glacial period in some way or other, but geologists have puzzled their heads in vain and performed the most desperate acrobatic feats in their endeavours to explain their exact origin. It has been thought that they were surface-moraines

which had gathered in depressions of greater or less extent; but, as I have already tried to show, the ice-sheets carried no such moraines on their backs, and, besides, it is very difficult to see how material of this kind could have been transported to, and packed away in, depressions on the surface.

My idea is that the existence of these mounds may be due to the fact that the ice melts just as unevenly on its under surface as on its upper. Just as the 'cryoconite' or 'glacial dust' does not melt the upper surface uniformly but gathers into holes, in the same way holes, hollows, and large excavations must necessarily be found in the lower surface during the process of melting. These hollows will fill with stones and grit, especially when the ice-sheet moves over one of these 'ground-moraines.' The stones will be revolved in the hollow owing to the movement, and will help to enlarge it, especially as they will be assisted by the heat generated by friction. It is obvious that the hollow would thus assume a very symmetrically oblong form, the major axis of which would follow the line of movement of the ice. It would not be able to reach more than a certain size, which would be regulated by the thickness of the ice and the consequent rate of melting, as well as by the amount of friction. It is obvious that when the hollow had penetrated a certain distance, the ice would be so firm and the mass of stones so cold that they would not be able to excavate more than would be compensated for by other causes.

When the ice-sheet eventually retired, the stones which filled these hollows would remain in the form of 'drumlins.' The great pressure to which they had been exposed would have left them in a compact condition, and it is for this reason that they have been enabled to withstand the ravages of time and weather so well.

The 'åsar,' again, consist of much the same materials as these mounds, and are also generally found above the same 'ground-moraines.' They differ, however, from the 'drumlins' in so far that their materials are more distinctly waterworn and show unmistakable signs of stratification, a feature which again points to the part which water has taken in their construction. They are low narrow ridges which often extend a considerable length, as a rule parallel with the glacial scratches. In Norway we have few such ridges, though there may be some in Jæderen, but they are so frequent and prominent in Sweden that they form quite a characteristic feature of some parts of the country. In England they are common, but still more so in Scotland and Ireland, where they are known as 'kames' and 'eskers' respectively. In America, too, they stretch over large tracts of ground.

The observations which we were enabled to make must, I think, dismiss for ever the theories which looked upon these peculiar ridges as the contents of river-channels or tunnels in the upper layers of the ice-sheets. We have seen, in the first place, that surface rivers are not a necessary appendage of an ice-sheet at all; and, secondly, that the surface shows no traces of the materials which would be required to fill these channels.

I therefore think there can be no doubt that these ridges are formed in river-channels not on the upper, but on the lower surface of the ice-sheet.

All the water that comes from the melting of the ice below must find an outlet. This it can well do by cutting itself a channel in the ice, thus, in contrast to an ordinary river, working upwards instead of downwards, or wearing away the ice which lies above it rather than the rock which lies below. These rivers will of course mainly follow the direction of the

movement of the ice, or their further progress would be continually stopped; and since the movement of the ice will be regulated in a greater or less degree by the incline of its bed and the valleys into which it flows, it follows that in the valleys most of these river-courses would be found. Now when an ice-sheet having its under-surface furrowed in this way passes over a bed of till or a 'ground-moraine,' it is obvious that the material of this moraine would be pressed up into the river-channels, and the hollowing power of the water upon the roof of its tunnel would at the same time be much greater than when the ice-sheet passes over solid rock. As the river thus works upwards, the stones and grit of the moraine will follow it, and will form a ridge over which the stream will now run; and this bed will, as in the case of the 'drumlins,' continue to rise until other forces assert themselves, and stop its further progress.

On the other hand, it is clear that a river which is forced along a confined tunnel, not only by great hydraulic pressure, but also by the enormous weight of the superincumbent ice, must be able to carry with it large quantities of stones and grit from the moraine which lies beneath it. But when it nears the outer edge of the ice-sheet, where the ice itself is thinner and the pressure consequently less, it will no longer be able to carry so much material, but will gradually drop deposits in its bed. If the ridges which we are discussing have been formed in this way they will necessarily consist of materials more or less waterworn, and will also show distinct traces of stratification.

Now when the ice-sheet eventually retires, these ridges from the river-channels will be left behind as the familiar 'åsar.' Nor is it unnatural that they should occasionally lie across valleys instead of along them. For we have seen that most of the

rivers must necessarily follow the direction in which the ice is moving, and if this crosses a valley the river must necessarily do the same, descending one slope, traversing the bottom, and ascending the other slope, exactly as any brook or stream does which follows a subterranean channel. The ridge will, in this case, also follow the course of the river, unless the ice-sheet, in the course of its retirement, assumes some different and more local movement, and so destroys the ridge, as of course often has been the case.

Atmospheric pressure.—Before I conclude this short account of our observations, I must briefly touch upon the atmospheric conditions and the winds of the interior.

It would appear that there is an area of comparatively high pressure over the whole of the interior, and that the winds which prevail on the coasts have an especial tendency to blow outwards at all points. The plateau seems to be too high and the air too cold to allow depressions or storm centres to pass across, though, nevertheless, our observations show that in several instances the depressions of Baffin's Bay, Davis Strait, and Denmark Strait can make themselves felt in the very interior. We experienced, also, one instance of the crossing of a depression in the storm-centre which passed over us on September 8. This must have been, according to Professor Mohn, a secondary depression which lay over Baffin's Bay some days before.

Just at the time when we were leaving the ice for land, on the western side, we experienced a dry and warm east or south-east wind of a decidedly 'föhn'-like character. This came, of course, down from the ice, or from the higher layers of air above it; but, as we have already seen, it is an impossibility

that it could have passed across the interior. It must, therefore, have been a moist sea-wind which had passed on to the ice further south as a south-westerly wind, and which then, in the usual way, advanced in a curve and reached us as an inland wind. This view must, I think, explain many of the warm easterly winds which blow upon the west coast of Greenland. The Danish meteorologist Adam Paulsen has pointed out the improbability of these winds coming across the whole continent, as was formerly supposed, but he attributes their origin to the local mountains of the coast. In this he is, no doubt, to a large extent right, and the coast mountains must therefore, in this case, play the same part as the 'Inland ice' does in others.

I think it is not necessary for me to say more at present about the scientific results which our expedition may claim to have attained. My readers will see that there is yet much left to investigate in the interior of Greenland. Our expedition has been the first to penetrate to the interior, and has, so to say, done little more than show of what scientific importance a thorough exploration of this region will be. On our journey most of our energy had to be devoted to our advance and personal safety, and all that we could do in the way of scientific observation was no more than was compatible with rapid progress. But our experiences will enable future expeditions to manage their affairs better, and to go more leisurely and systematically to work. If they so do they will return with scientific results beside which ours will sink into insignificance.

For such an expedition may we not be kept long waiting!

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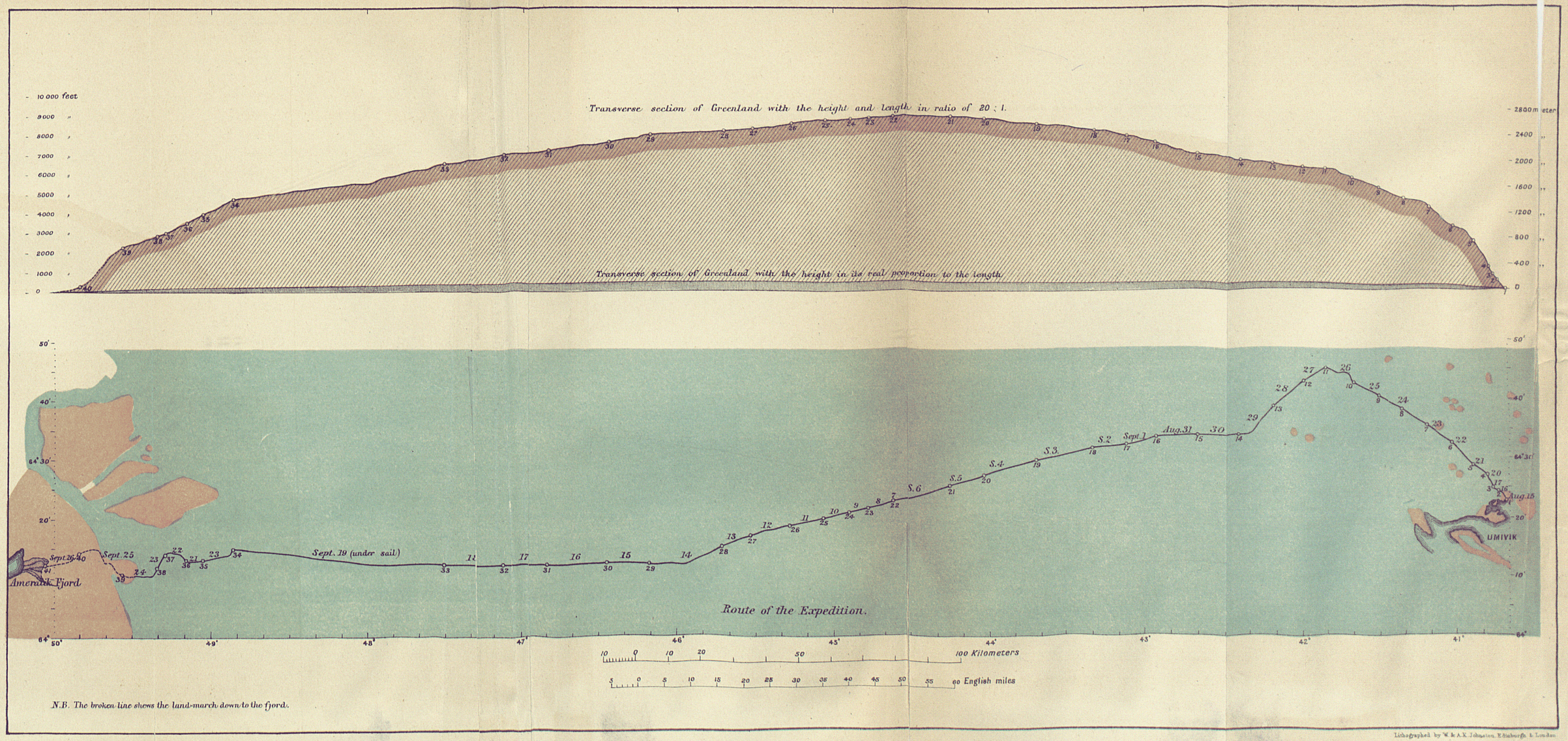
THE ROUTE OF THE EXPEDITION ACROSS GREENLAND,

WITH SECTIONS OF THE COUNTRY ON THE LINE OF THIS ROUTE.

By Professor H. Mohn, from observations made by the Expedition.



N.B. The broken line shews the land-march down to the fjord.

Lithographed by W. & A.K. Johnston, Edinburgh & London.

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