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THE SCORESBY SOUND COMMITTEE'S 2ND EAST GREENLAND
EXPEDITION IN 1932 TO KING CHRISTIAN IX'S LAND

LEADER: EJNAR MIKKELSEN

REPORT ON THE EXPEDITION

BY

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WITH 31 FIGURES IN THE TEXT AND 1 PLATE

KØBENHAVN

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BIANGO LUNOS BOGTRYKKERI A/S

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PREFACE

The Scoresby Sound Committee was formed in 1924 under the presidency of the late Vice-Admiral C. F. Wandel, with the object of rousing an interest in the plan of founding a Greenlander settlement at Scoresby Sound. Its chief task was to find the funds and, in case this proved successful, to take the responsibility for the establishment of such a settlement, and it had in so far fulfilled its mission when, in 1925, the newly built Scoresby Sound Settlement had been presented to the Government for Greenland.

The Committee, however, had still some funds at its disposal, and as it wished to keep in touch with the new settlement, it remained sitting, even after its original task had been accomplished. It followed the development of the settlement with interest and in the following years sent off several houses to the settlers; also, in 1927, it arranged about a church for the settlement, the gift of one of the members of the Committee, Mr. Valdemar Uttental.

On the death of Mr. Wandel, the Committee was reconstructed, and its members now are:

Mrs. Inger Wandel, wife of the late Vice-Admiral Wandel.

Mr. Lauge Koch, Ph. D.

Mr. C. Kraemer, Ship-owner.

Mr. Johan Petersen, for many years head of the administration at Angmagssalik, later at Scoresby Sound.

Mr. Valdemar Uttental, Estate-owner, Treasurer of the Committee.

Mr. Ejnar Mikkelsen, President of the Committee.

At the same time it was decided that the Committee should, as far as possible, extend its sphere of activity and, the occasion offering, undertake other tasks, for instance scientific investigation, though in such a manner that the economic interests and distribution of the native

population along the east coast of Greenland should always be the principal object.

In 1930 the Committee learnt that more than a hundred Greenlanders, in the summer of 1928, had travelled north along the coast from Angmagssalik, hoping to find better sealing and hunting conditions than they had in and around the settlement.

The destination of these travellers was the almost legendary hunters' Eldorado, Kangerdlugssuak, but they did not get further than Nualik where they wintered, a hundred and seventeen individuals all told. By far the greater part got no further than this locality, but some enterprising members of the party sledged north, in the spring of 1929, and reached the southwestern coast of Kangerdlugssuak.

They only remained for a few days at the fjord and then returned to their families at Nualik, but what they had seen of hunting conditions in Kangerdlugssuak seemed to further the hopes which they had entertained of the fjord as a new hunting ground, and tallied with what, in 1884—85, old men had told Gustav Holm about the travels of their forefathers in those far-off parts.

As they had no actual knowledge of conditions up there, and as they further feared that they would have difficulties in providing shelter for the many people who had come with them to Nualik, they abandoned the idea of taking their families up to the great fjord, and so they returned to Angmagssalik.

The report of the Greenlanders' journey to Kangerdlugssuak seemed to point towards a new task to be undertaken by the Scoresby Sound Committee, *viz.* to try to create such conditions at Kangerdlugssuak that the Greenlanders, in coming years, might safely go there with their families, which would only be possible when the animal life of the fjord had been subjected to a thorough investigation, and some houses for the use of the travellers had been built in suitable places.

This coincided very well with plans which had already, for some time, been before the Committee, *viz.* to build some houses in suitable places along the coast so as to create a connection between the two East-Greenland settlements, Angmagssalik and Scoresby Sound, thus making it possible for the Greenlanders to travel from one settlement to the other, without having to undertake this long journey at a stretch.

The Committee was further encouraged in these plans by the fact that the English Greenland Explorer G. H. Watkins, in 1930, had succeeded in going with the "Quest" along the coast from Angmagssalik to Kangerdlugssuak, the mouth of which was known from the Amdrup Expedition of 1900. Watkins had corrected Amdrup's map of the whole of the distance from Angmagssalik to Kangerdlugssuak, partly by observations ashore, partly by means of photographs taken from an aero-

plane, and he had also charted Kangerdlugssuak, which extended rather far inland.

One of Watkins' companions, the geologist L. R. Wager, had during his stay in those parts undertaken a preliminary examination of the geological conditions of Kangerdlugssuak, having i. a. proved the presence of nepheline-syenite, but he had not had the opportunity to subject this interesting species of rock to a closer investigation.

An investigation of this kind was considered most desirable, also from various quarters in Denmark, and as there were thus sufficient tasks for an expedition along the coast between Scoresby Sound and Angmagssalik, the Committee resolved to attempt to find the funds for such an expedition, though on the understanding that its chief object should be to investigate the coast from Cape Dalton as far as and including Kangerdlugssuak, i. e. a continuation of the investigations of the Watkins Expedition, and, secondarily, the coast from Kangerdlugssuak as far as Angmagssalik.

In the spring of 1931 the Committee had attempted to arouse an interest in the plan, but it proved impossible to find the necessary funds, the costs of the expedition being so excessively high in consequence of the necessity of buying a vessel for the purpose.

In the winter of 1931—32 the Committee, however, through the Government for Greenland, received an offer to the effect that a suitable vessel would be placed at the disposal of the Committee, provided the necessary funds could be procured by means of private gifts.

The costs of the expedition being thus lessened by not having to purchase a vessel, it quickly proved that it would be possible to arrange the financial side of the matter. One member of the Committee placed a large sum at its disposal, and during the following month the Committee received other contributions, from private individuals as well as from the Rask-Ørsted Fund, while a number of large firms gave part of the equipment, either entirely free of cost or at greatly reduced prices.

The direct money contributions amounted to 41.000 kr. in all and the assistance towards the equipment to about 7000 kr, and in February 1932 the Committee communicated to the Government that it would be possible to send off the expedition, after which the Committee in its turn received an assurance from the Government that the M/S "Søkongen" would be placed at its disposal.

While making its preparations for the expedition the Committee, according as funds were forthcoming, extended its field of activity so as to comprise various scientific investigations, for which it had not been thought possible to get the necessary financial support, and the expedition, besides Ejnar Mikkelsen as leader and captain of the ship, was composed of the following scientists, assistants and ship's crew:

L. R. Wager, geologist, Lecturer in geology at Reading University.

H. Wager, assistant of the geologist, Lecturer in botany at Trinity University.

M. Spender, in charge of the cartographical work.

Those three members of the expedition were English, while all the others were Danes.

The Danish scientists and assistants were:

M. Degerbøl, zoologist, M. sc., amanuensis at the Zoological Museum, Copenhagen.

Ulrich Möhl Hansen, conservator at the Zoological Museum, Copenhagen.

Tyge W. Böcher, botanist B. sc.

Chr. Larsson, assistant topographer at the Geodetical Institute.

Jens Jensen, physician	{	assistants wherever necessary,
Sven Mikkelsen, artist		onboard as well as in the work of the scientists.

The crew consisted of:

Chr. Nielsen, first mate under the Government for Greenland.

R. Bang Christensen, second mate.

Peter Bertelsen Trans, radio-operator and sailor.

Hans J. Hansen, carpenter and sailor.

Hans Vilhelm Lind, sailor.

Knud Christiansen, engineer.

Holger Gormsen, cook.

The plan of the expedition, which was prepared by Lauge Koch and Ejnar Mikkelsen in collaboration and was approved by the Committee was roughly as follows:

The expedition should, as early in the year as possible, attempt to reach Cape Dalton, which was the most southerly point on the coast to which scientists had penetrated (the Amdrup Expedition in 1900)¹⁾, and from there it was to work slowly down the coast, making stays in fjords suitable for the purpose, from which scientific investigations of the surrounding land could be undertaken. The cartographers should perfect the already existing maps by surveying the fjords, which had not already been charted by the Amdrup Expedition in 1900, and at the same time try to survey as much of the hinterland as possible, while the geologists were to undertake shorter journeys across the inland ice to the nearest hinterland in order to investigate the latter.

¹⁾ Medd. o. Grøn. vol. XXVII and the following.

About midway between Cape Dalton and Kangerdlugssuak a house was to be built, so that the Greenlanders could stay there when travelling from Angmagssalik to Scoresby Sound.

About August 1 the expedition was to be in the Kangerdlugssuak area, the projected base of the most important part of the scientific, in particular the geological investigations; here three houses were to be built, to serve as more or less fixed abodes for the Greenlanders, when travelling for hunting purposes along the coast from Angmagssalik and in a northern direction. At these and the other houses as much provision as possible was to be left for the use of the Greenlanders.

While staying at Kangerdlugssuak attempts were to be made to reach the hinterland in several places, partly for scientific — more especially geological investigations — partly with a view to mapping the large hinterland.

The expedition was to stay as long as possible in the Kangerdlugssuak District, though presumably not after September 1.

On the journey from Kangerdlugssuak in a southerly direction the scientists were to be given the fullest opportunity possible to visit the coast; at any rate the expedition was to call at Tugtilik (Lake Fjord), as the last house was to be built there.

After a visit at Angmagssalik the expedition was to start for Reykjavik or Julianehaab, where the "Søkongen" was to be handed over to the Government for Greenland.

A wintering was to be avoided if at all possible, but for an emergency the Government for Greenland placed sufficient provisions and equipment at the disposal of the expedition.

As will appear from the following report of the journey, the plan agreed upon was followed in all particulars; only the voyages across the inland ice to the hinterland round Kangerdlugssuak were shorter than expected, as the glacier ice proved extremely difficult to traverse.

The coast stretch investigated was, until this summer, the least known along the east coast of Greenland. Its most northerly part had been sighted in 1822 by the scientist and whaler William Scoresby the younger, who at a distance of about twenty miles charted the coast from a vessel. In 1832 the central part of the coast was, for the first time, sighted at a long distance by a French naval officer, Jules de Blosseville on "La Illoise"; he headed seawards from Iceland, until at a distance of about 70 miles he saw the unknown coast looming up above the white masses of ice which separated him from them.

In spite of the long distance Blosseville succeeded in taking a few bearings to the most outstanding mountains along the coast, and after

having sent home a report with a rough sketch, the courageous young officer again attempted to reach the country he had just seen. However, he shared the fate of many others, who have been lured by the call of the unknown: "La Illoise" disappeared with all onboard, and now only the name of the coast testifies to this gallant attempt to penetrate through the pack-ice to the unknown country with its high peaks.

In 1879 the Danish man-of-war schooner, the "Ingolf", with Capt. Mourier in command, steamed along the edge of the pack-ice and saw the country at a long distance, without being able to tell anything new about it, and in 1892 G. Ryder, after wintering in Scoresby Sound, attempted to sail south along the coast. However, he did not get much nearer to it than Scoresby had been, and although he altered the map a little, before the ice forced him to abandon the attempt, this expedition brought no new information worth mentioning of the country which until then had only been sighted from a distance.

The following year the Norwegian sealer Ragnvald Knudsen with the "Hekla" came closer to the land than any of those who had been there before him. He penetrated through the pack-ice, until about 18 miles from Cape Grivel, but there all progress was stopped by the ice, and he was obliged to turn back after having seen two fjords cutting into the country.

It was not until 1900 that the difficulties were conquered and the coast reached and mapped by G. C. Amdrup, then Lieutenant, now Vice-Admiral in the Danish Royal Navy. With Cape Dalton as his starting point he laboriously made his way along the coast to Angmagssalik, in a 18 feet long rowing boat and with a crew consisting, besides himself, of three men of whom I was one.

In the period between the Amdrup Expedition and the expedition of 1932 which I had the pleasure to conduct, the travelling technique has progressed enormously, and where, more than thirty years ago, Amdrup struggled along unknown coasts, in an open boat, we now sailed in comparative safety in a fairly large vessel with a powerful motor, with seventeen men onboard, three motor boats and a radio on the mast head, by means of which we were in constant communication with the outer world.

Owing to the pioneer work done by Amdrup our task was made an easy one: even in foggy weather we sailed safely by his excellent maps, and time after time we were struck by their correctness.

This was all the more surprising as Amdrup, besides charting the country, had the difficult work of manœuvring the boat through the ice-filled water. Along stretches where, in 1900, only hours could be spent on charting, we had, in 1932, as many days at our disposal, and further, we had two trained cartographers, whose only work was to survey the

land with the most modern instruments which are to be had in our day. And yet the mistakes which we found in the map of Amdrup were few and of no importance. Wherever the coast had been drawn in full line, so as to show that it had actually been charted, the map was correct, and Amdrup never once succumbed to the temptation of estimating the outline of the coast and laying down sighted but remote distances as actually charted.

Amdrup naturally could not chart all the fjords and the hinterland with any degree of accuracy; all this appears on his map as dotted lines, and our chief work from the point of view of cartography consisted in filling in these gaps. But as a first, preliminary chart of a hitherto unknown stretch of coast, Amdrup's map is surely unique in its correctness, nothing having been left to individual judgment.

From a scientific point of view the coast was a *terra nova*. It is true, Amdrup had in 1900 made collections of plants and rocks, but in consequence of the very character of the expedition, the results achieved could not be great. Thus the Scoresby Sound Committee's 2nd East Greenland Expedition, with its rather large and well-trained scientific staff, had ample work to do along the coast, and for me personally it was a great satisfaction to be able to continue and supplement the work, commenced thirty-two years ago by the man under whose leadership I had made my first journey in the Arctic.

The expedition was only made possible by a very close collaboration between the Danish Government's Greenland Department and the Scoresby Sound Committee, which owes a special debt of gratitude to Mr. Stauning, Minister of State, for the interest which from the very first he took in the plans of the expedition, and the initiative which he showed in placing a Government vessel at the disposal of the Committee. Another very great debt of gratitude the Committee owes to Mr. Daugaard Jensen, chief of the Government's Greenland Department, for the readiness with which he and his officials assisted and furthered the work of the Committee, before the departure as well as after the return of the expedition. The Committee further has to thank Professor N. E. Nørlund, Director of the Geodetic Institute, for the loan of expensive and modern charting instruments, the purchase of which far exceeded its economic capacity; and last not least, it begs to express its sincerest thanks to all the private individuals, who have contributed the funds which were necessary for carrying out the plan.

Ejnar Mikkelsen.

REPORT OF THE JOURNEY

BY EJNAR MIKKELSEN

We left Copenhagen on June 22, 1932, and on July 7 at p. m., after a rather protracted journey with a short stay in the Faroe Islands and a longer one in Reykjavik, we encountered the edge of the ice in $66^{\circ}55'$ N lat. and $26^{\circ}30'$ W long., these first precursors of the pack consisting of small, much weathered floes.

As there was rather a dense fog, it was impossible to see the lay of the ice towards land, but we continued on a magnetic north-western course until 7 p. m., when the ice became too packed to permit of navigation under the somewhat difficult weather conditions.

On July 8 we headed northeast along the edge of the ice in calm, clear weather. We passed a number of very much scattered and greatly weathered ice-tongues and ice-bars, but judging by the appearance of the sky towards the west the pack-ice farther in seemed to be rather heavy.

On July 9 there blew a strong north-easterly gale with very heavy seas and a violent rainfall, which compelled us to heave to, as we were unable to proceed north. About midnight, however, the wind fell light, the sea calmed, the weather cleared, and we sighted land towards the west. We were able to get the bearings of Cape Brewster, and in about $69^{\circ}10'$ N. lat. and $21^{\circ}45'$ W. long. we laid our course for what we supposed to be the situation of Cape Dalton.

On our way we passed several patches of weathered floe-ice, but not in such quantities as in any way to prevent our keeping a steady course towards land. On the other hand, there were rather heavy masses of ice on either side of our course, and about 8 a. m. we realized that we were navigating in a practically ice-free lead between apparently heavy masses of pack-ice.

About 9 a. m. we met our first iceberg, and farther north, at a distance of about 15 miles, we saw them in fairly large numbers very nearly in the same latitude, where William Scoresby the younger (22 July, 1822) had encountered icebergs in such quantities that he was unable

to pass between them, but was obliged to head towards the sea in order to get clear of them¹).

In 1892 Ryder, also somewhere about this latitude, had observed numerous icebergs²), and though it does not appear from Amdrup's report of the journey from Cape Brewster to Cape Dalton (1900) that he too saw many icebergs in this very neighbourhood, it seems likely to suppose that there is as rule a similar, rather clearly defined conglomeration of icebergs in about $69^{\circ}30'$, this having been observed by three of the four vessels, which are known to have navigated in these particular waters.

The depth of the sea off this part of the coast is not very great (about 200—300 m), and the likely conclusion is that, in this latitude (about $69^{\circ}30'$), there is a bank on which the larger icebergs are grounded and hold up the pack-ice drifting towards the south, so that scattered ice is to be found south of this presumed bank with its grounded icebergs.

This may explain the very favorable ice-conditions which we encountered on our landward passage, as well as the fact that heavy pack-ice was sighted both towards north and south of our route, in the north probably held up by the icebergs and then again gathering in more closely packed masses farther south, while there is a more or less open lane between these areas in the very place where we were fortunate enough to enter the ice.

On July 10 at 11 a. m., after a landward passage of only seven hours, we got into landwater entirely free from ice, and at 1 p. m. we anchored in 23 m off Amdrup's depot house at Cape Dalton. The bay north of Cape Dalton contained very little pack-ice and only a few isolated bergs, while the country was practically quite bare of snow, and there was no sign of winter-ice anywhere along the shore or in the lagoon. Upon the whole the melting off on land was far more advanced than in 1900 when, a week later, the Amdrup Expedition reached this locality.

The outside of the depot house had suffered a great deal from being exposed to all kinds of weather; the tar paper covering had for the greater part been torn off the roof, and the window was entirely broken, but the house was so solidly built that inside it was quite dry and undamaged.

A few tins of the provisions left there in 1900 were opened, and the contents proved to be fresh and good, and also sledges, kayaks, skis, skin apparel etc., which had been stowed away in the loft, were dry and absolutely fit for use.

The door was closed, as it had been closed thirty-two years ago, and it had surely not been opened since, but the window was, as already

¹) Scoresby: *Greenland Voyage*, p. 228.

²) *Medd. o. Grønland*. vol. XVII, p. 116.

mentioned, broken and had already been so in 1928, when the depot house was visited by Alwin Petersen¹).

Whether the window had been broken by human agency or by a bear, it is impossible to say for certain. Alwin Petersen thought that it must have been a bear, but it seems more probable that chance visitors (sealers or hunters) are responsible for the damage done, all the more as the door shut so hard that it was necessary to send a man into



Fig. 1. Amdrup's depot house at Cape Dalton.

the house through the broken window, so as to force it open from the inside — from the outside it could not be done.

It is true, there was no direct evidence in the house itself that it had been visited by sealers, but for all that it seems more than probable that such unbidden guests, after having tried to force the door, had actually broken the window to get quick and easy access to the interior of the house. For one thing, it is not very probable that a bear should accidentally have found this identical spot — the only vulnerable one in the wall of the house — all the more as it had been covered up with boards in 1900; secondly, it is my firm impression that the provisions, left there thirty-two years ago, took up considerably more space than those which we found there in 1932; and last not least, the boxes con-

¹) Medd. o. Grøn. vol. LXXVII, p. 348.

taining the wearing apparel and private effects which, with a view to a possible wintering, the four members of the Amdrup Expedition had left there in 1900, could only have been dragged through the broken window and searched outside by human hands.

And this undoubtedly had been done. In 1900 there were four boxes with clothing, one for each member of the expedition, and besides they had each left a trunk or sea chest containing old clothes, books etc. All of these boxes were, however, gone, and a number of the books lay scattered on the floor and the table; outside the house we found one trunk with the lid and bottom torn off, and strewn about a few pieces of old wearing apparel and various articles of equipment, among other things an sextant which had been in one of the boxes.

This, as said above, could only have been the work of man, and I am further strengthened in my conviction of sealers having visited the house by the fact that practically the whole supply of coal which had been deposited outside the house had disappeared, as also the drums with kerosene, of which only a single one was found, which had been dragged all the way down to the shore.

It is true that the Greenlanders at Scoresby Sound have once visited the depot house, *viz.* in 1928 together with Alwin Petersen who, as already mentioned, found the house in the same condition in which we found it, but even apart from this, the Greenlanders on sledge journeys have neither the power nor the occasion to remove coal or large quantities of kerosene.

It is very unfortunate that one cannot with safety leave provisions and equipment on the east coast of Greenland and trust to such depots being considered inviolable, except in cases of absolute need, when information should afterwards be given to those concerned with the laying out of the depot.

On the other hand, though there is every reason to suppose that sealers or hunters had been at the depot house and taken away what they could use, it must be admitted that they had shown more consideration than has been shown farther to the north; they had not emptied the depot entirely, neither had they been guilty of wanton destruction, such as in 1924 we proved to have taken place in and around the depot house at Cape Stewart.

We had neither sufficient glass nor other materials for repairing the window, and so we closed the opening firmly with boards, and then repaired the outside of the house as well as we possibly could. As already mentioned, the house had been built so solidly that it can last for a very long while, but the next expedition visiting Cape Dalton ought to take the necessary materials for its complete restoration. After having put everything in order and restowed the provisions, we left about a ton and

a half of coal at the depot house; kerosene we were not able to dispense with at this early stage of our journey.

As soon as we had anchored off Cape Dalton, the scientific staff set about their various tasks. The cartographers surveyed the country south of our anchorage from a ridge behind the large lagoon, which offered a good view of the bay situated to the south of Cape Dalton. In the clear weather they managed to obtain bearings along the coast as far as Cape Ryder, and they also surveyed the country in a northerly direction, so as to connect the cartographic work performed in 1900 by I. P. Koch with the measurements towards the south, which we intended to undertake.

Our geologist, L. R. Wager, identified the fossiliferous strata which were found by Dr. Nordenskjöld in 1900, and a considerable material was collected and taken back to the vessel.

Our zoologists, Degerbøl and Möhl-Hansen, and our botanist Tyge Böcher were busily occupied in making collections, particularly in the upland behind the lagoon¹).

Our chief mate Nielsen sounded the bay inside Cape Dalton, particularly the mouth of the lagoon, where there proved to be such deep water that, in case the ice from the north presses into the completely open bay, a vessel may seek a partial shelter behind the projecting point of the wall of the lagoon.

The lagoon itself is very shallow, and large boulders appear above the surface of the water.

The wall of the lagoon consisted of boulders, some of them very large and rounded, and at a considerable height above the sea, at least 50 m from the shore, there were large trunks of driftwood, which it is almost impossible to imagine having been carried so far inland by the action of the waves, though it seems to be very powerful in the autumn, judging by the large boulders which constitute the whole beach as well as the coast rather far inland.

On July 10 towards nightfall the sea fog came down over the land, but it lifted early next morning, and we had another very fine day, of which cartographers and naturalists profited to the fullest possible extent. A short trip was made to the interior of the bay, at the southwestern corner of which a small inlet cuts about 5 km inland and ends in a glacier. On the northern side of this fjord the vegetation came right down to the sea, and was quite luxuriant as compared with the vegetation at Cape Dalton, where it was necessary to ascend to rather high levels in order to find any plants.

¹) As to the investigations made by the members of the scientific staff and the methods employed by the cartographers, the reader is referred to their reports.

After having dredged the bay north of Cape Dalton, we left our anchorage at 1 p. m. on July 12, hoping that the thick fog which in the course of the morning had been coming down from the sea would lift, when we got south of the promontory.

This, however, did not happen, and the fog soon became so dense that we could not find our way back to our former anchorage behind Cape Dalton, but had to continue across the fjord towards Cape Ewart. The sea ice across the bay seemed very scattered, but as there were both icebergs and land to keep clear of, it became rather an exciting passage.



Fig. 2. Cape Dalton and the bay to the north.

Towards evening we caught sight of Cape Ewart, dimly seen through the fog, and while keeping quite close to the coast we groped our way round the promontory and steered into Knighton Bay. The fog grew lighter and lighter, the farther we got from the outer coast, the sun, a red gold disc, was just visible through it, and as it looked as if the land fell off in an easterly direction, we presumed that we were at the mouth of the small inlet which, from the observations of the Amdrup Expedition, was known to be situated behind the promontory, and so we laid our course for it.

Gradually the weather became quite clear, and at 8 p. m. we ran the "Søkongen" into some rotten winter ice, which was still to be found from the head and halfway towards the mouth of this fjord. The ice was

in fact so rotten that we could run our vessel a couple of ships' lengths into it, and we left it there for the night, or until the weather cleared sufficiently to permit us to continue.

The country round this little inlet sloped gradually down to the coast, and as the depth of the water in the middle is about 20 m with mud bottom it makes a splendid harbour where a vessel can lie quite safely.

When in 1900 the Amdrup Expedition passed Knighton Bay on July 22, the winter ice, both in the bay and the small inlet, was still unbroken, but now the bay was completely free from winter ice on July 12, and the winter ice in the small inlet was so rotten that it was sure to drift away — or disappear completely — in the course of a few days.

The country round the inlet and the coasts of Knighton Bay was practically bare of snow, and the appearance it presented quite summer-like. Thus we had a decisive proof that the melting off was at least a fortnight — probably even more — further advanced than in 1900, and while the Amdrup Expedition found winter ice farther down the coast much later in the summer, the winter ice encountered in the inlet off Knighton Bay was the first and the last which we saw in 1932.

As soon as the vessel was firmly lodged in the winter ice, the naturalists went ashore in order to make collections. On the following morning, July 13, the weather was clear and calm, and in the wonderfully beautiful morning we headed across Knighton Bay towards Cape Barclay. There was only little floe-ice and very few bergs in the bay which proved to be considerably longer than expected, and it looked as if there was a small fjord at its head, surrounded by very steep, almost perpendicular mountains, above which the inland ice was visible.

We rounded Cape Barclay in open water and found a good anchorage in 10 m of water, a short distance inside the mouth of a small inlet, Høst's Harbour¹⁾ which also here cuts into the country behind the promontory itself, and which is separated from Knighton Bay by a low spit of land; from the western coast of Knighton Bay another inlet cuts into the country, so that there is at most a couple of kilometres from fjord to fjord. There was no trace of winter ice in these small inlets; in the same manner the whole layer of snow had practically melted off their gently sloping coasts.

Høst's Harbour was sounded and proved to be shallower at the mouth than farther in, where the greatest depth (20 m) was found near the head of the bay; about midway it was at its narrowest, and then again widened to a fairly large basin which — as far as we were able to prove — had an even depth of 12—20 m; further, it was entirely free from skerries and shallows, deep right up to the beach and with a splendid clay anchor ground.

¹⁾ Named after the Danish painter Olaf Høst.

Upon the whole it was an excellent harbour and so sheltered against the inroad of pieces of ice of any considerable size that a vessel could lie there in safety in all weathers.

As we had now reached the area where our scientific work was to begin in good earnest, tent- and boat-equipments were handed over to the members of the scientific staff, who tried them and made several small alterations so as to adapt them to the special needs of each party.

In separate boxes we had provisions for one man for ten days, which boxes had been packed at home so as to save time in handing out stores;



Fig. 3. Høst's Harbour behind Cape Barclay.

also, in that manner we could always make sure that the various boat parties had sufficient provisions, as every boat was to be supplied with at least one spare box of provisions, besides what was calculated to last as long as the party expected to be absent from the vessel.

For each of the tents we had a cooking box with eating utensils, a primus cooker, sewing gear and the most necessary medicines, all calculated for parties of three; by thus having everything stored in one box we saved time, when the parties were going to start.

These cooking boxes and all boxes with provisions for one man for ten days were placed just below the hatchway, and in case of any accident happening to the vessel, either in the ice or near land, we could in a very short time get the boats away from the "Søkongen" with sufficient

provisions and cooking gear, kerosene etc. for the whole crew, all calculated for at least one month's consumption.

For the use of the scientific staff we had one boat with a 6 h. p. Scandia motor, which proved very reliable and economical in the working, and further two boats, each supplied with a Penta outboard motor. These outboard motors worked very well, being easy to handle, serviceable and consequently very much to be recommended; only, when manœuvring in the ice, one must be a little careful with the propeller. It is placed on a round shaft without a groove and made fast by means of a thin metal stick, and so one does not risk breaking the blades or bending them, as the propeller — in case it strikes against a fragment of ice — is immediately loosened from the shaft and can be made fast again in no time.

The working programme was here as for some time to come the following: We had two cartographers, M. Spender and his first assistant C. Larsson, who were given the disposal of the large motor boat, and one of them, assisted by some other member of the expedition, was landed in a suitable place near the vessel, whereas the other took the motor boat and made a round trip of the fjord, or returned to any area which had possibly been left without charting. The cartographer in charge of this part of the work was generally accompanied by the second mate, Bang-Christensen, who proved a valuable assistant.

The two boats with outboard motors were at the disposal of the naturalists and were used either for day-trips or for landing in suitable places.

When immediately after anchoring in Høst's Harbour we were going to land the cartographers on the inner side of Cape Barclay, we met a small bear on the shore. It was shot, and proved to be extremely thin, presumably ill.

Spender returned with the motor boat to Knighton Bay which he surveyed. On the western coast he found two hot springs, where water samples were taken and collections of plants made. As he had not brought a thermometer, he was unable to measure the temperature of the water. It was, however, so hot that he could not hold his hand in it, and the outflow was rather considerable.

Wager with two assistants pitched his tent in Barclay Bay, partly to make collections and partly to test the camp gear. Our zoologists Degerbøl and Möhl-Hansen and our botanist Tyge Böcher, spent nearly two days in making collections and investigating the fauna and flora which were, however, rather inconsiderable in this inclement fjord, at the head of which large glaciers come right down to the sea. The gently sloping coasts all the way round our anchorage were also rather poor in vegetation, and beyond eiderducks the avifauna was very inconsiderable.

On the south side at the entrance to the harbour there is a rather large lagoon, but the small holm, mentioned by Amdrup as being situated at the mouth of the bay, does not exist.

From the high country on the western coast of Cape Barclay we had an excellent view of the fjord, in which there were a number of smaller icebergs and much brash-ice, probably originating from the glaciers at the head of the fjord, but beyond some apparently rather closely packed and broad bars of ice at the mouth of the fjord there was much open water to be seen everywhere. Towards the west some very high and dentate mountains rose above the inland ice and continued, as far as we were able to see, westwards behind the coast land. Winter ice was not to be seen, and the western of the two glaciers at the head of the fjord is presumably only a smaller glacier area between the coast land and the hinterland, whereas the eastern glacier is very large and is probably connected with the inland ice.

There was open water or very scattered ice right out to sea as well as in the direction of Cape Ryder, off which a number of larger icebergs were visible.

On July 14, at 7 p. m. we weighed anchor, and after having towed nets etc. in Høst's Harbour we steered towards Cape Ryder. We had some difficulty in forcing the bars of glacier- and sea ice mentioned above, but by skirting the western side of Barclay Bay very closely, we again got into entirely open water and made for Cape Ryder.

When in 1892 Ryder passed along the coast he encountered, on August 14, unbroken winter ice off the promontory, which Amdrup in 1900 named Cape Ryder. This unbroken mass of ice, which apparently was fast to the land, stretched out to sea in due south. There was no open water round the bergs, and the unbroken sea ice also extended into Barclay Bay; so Ryder presumed that the winter ice was still unbroken. He then steered south-south-east by south-east along the edge of the ice in order to find an opening, and the weather clearing, he saw heavy pack-ice everywhere in a southern direction. This was in $69^{\circ}7' \text{ N. lat.}$ and $23^{\circ}50' \text{ W. long.}^1$.

On July 24, 1900, the Amdrup Expedition was also stopped by unbroken ice at a distance of about $1\frac{1}{2}$ mile from the same promontory, and from a height of about 500 m the unbroken ice was seen to extend about 6 miles seawards; outside this solid sheet of ice there were huge masses of pack-ice, whereas the ice was scattered to the south of it and still farther out²).

We reached this place exactly a month earlier than Ryder and ten

¹) Medd. o. Grøn. vol. XVII, p. 117.

²) Ibid. XXVII, pp. 211, 212.

days earlier than Amdrup, but we encountered no difficulties of any kind whatsoever off the promontory. A number of icebergs were apparently aground, and when, in glorious weather and completely open water, we passed the place where the two previous expeditions had either been stopped or encountered great difficulties from the ice, we took a number of soundings and recorded a minimum depth of 40 m at a distance of about two miles from Cape Ryder. Thus Amdrup was justified in his supposition that in this very place, where the ice under certain circum-



Fig. 4. Head of d'Aunay Fjord.

stances remains for a very long while, there is a shoal on which the icebergs are grounded so as to hold up the winter ice.

Judging by the extent of this area of entirely open water, fringed with icebergs, the shoal extends about 8 miles towards the sea, but between land and the shoal there must be a deeper channel, as large icebergs were sighted inside us and very close to the shore.

After we had passed Cape Ryder, which towards the sea was practically bare of snow, although the northern side of the promontory (the southern coast of Barclay Bay) was highly glaciated, we made for d'Aunay Bay, where we arrived in the early morning of July 15.

The eastern coast of d'Aunay Bay was surprisingly free from land ice and snow and presented quite a summer-like appearance, whereas the western coast of the fjord, in the direction of Cape Coster, was rather

glaciated. In the most southerly ramifications extending towards the west there is a small local glacier.

D'Aunay Bay, or Fjord, which latter name corresponds more nearly with the character of this incision, cuts considerably farther inland than indicated on the map which Amstrup prepared. As we headed into the fjord, it gradually became narrower, and the water changed colour from being mixed with outflowing river water containing particles of clay, so that we were unable to see anything in the water, and were



Fig. 5. Receding glacier at the head of d'Aunay Fjord.

constantly obliged to take soundings. It was almost like sailing in ditch water, and it proved later that a huge river at the head of the fjord — for that matter, we had heard the roar of it far out in the fjord — carried large quantities of mud out to sea.

At 4 a. m. we found an excellent anchorage in a rather deep arm of the fjord, which almost at its head cuts in a north-easterly direction, and we anchored in about 30 m water.

The country in d'Aunay Fjord was more gently sloping than any we had hitherto seen along the coast; the slopes on the east side of the fjord, as well as on both sides of the arm of the fjord in which we anchored, were practically free from snow and ice, while the western side was rather steep and heavily glaciated. This particularly applied to the head of the fjord, where a great mass of ice filled a depression between the mountains and apparently extended far inland.

Above this mass of ice which nowhere came down to the sea, a very high mountain rose, conically shaped and with a curious notched peak.

From northeast a large glacier with a very clearly defined central moraine made its way between the mountains, but it did not come down to the fjord, from which it was separated by a terminal moraine, several kilometres in length. It was the melting water from this glacier which was the chief tributary of the large river, the roar of which we had heard almost at the mouth of the fjord, and which carried the huge quantities of mud out to sea.

We spent July 15 and 16 in this locality, there being plentiful work both for our scientists and our cartographers.

A party consisting of Wager and three others made a trip on foot across the mass of ice already mentioned and ascended a mountain about 1520 m in height, from which they had a splendid view over the huge mountain land behind the fjord and the smaller masses of mountains surrounding Mt. Rigny. The unbroken surface of the inland ice could not be seen from this mountain, and Wager had the impression that mountain masses, divided by larger and smaller glaciers, extend far inland from this place.

The naturalists worked ashore for the greater part of our stay in the fjord, and being favoured by particularly fine weather, they managed to bring back considerable collections, while also the cartographers made interesting surveys. On his return from the inland Wager started in our motor boat for Cape Coster, his object being to carry on geological investigations, and before we left the fjord we made four towings with nets both at the anchorage and in the fjord itself, which was practically free from ice, probably owing to the large outflow of water from the inland ice.

When we were steering out of the fjord, the sky began to cloud over; the wind freshened, and we became rather anxious about Wager, whose motor boat we were to meet on our way out. However, at 4.30 p. m. he was taken onboard at the steep and inaccessible Cape Coster, and being now once more united in our small vessel, we continued in a westerly direction, slightly anxious about the heavy masses of fog, which we saw drifting out at sea.

We just caught a glimpse of De Reste Bay with the splendid hinterland, rising above the glacier at the head of the fjord and extending as far as the impressive mountain masses of Mt. Rigny. But then the fog came down, cold and damp and shutting off everything from our view, and in extremely thick weather we had to grope our way, first along the very steep coasts of Cape Beaupré and then past Store (i. e. big) Glacier.

As far as we were able to judge in the dense fog, the currents set

very hard along the shore and off the glacier, and there was a good deal of ice around us, particularly a number of icebergs. We tried to stand off shore, in order to skirt the greater number of icebergs, which in all probability were to be found closer inland off the glacier, but there were bergs everywhere which suddenly broke through the fog right ahead. About 10 p. m. the fog was so dense that we ran against the huge ice-foot of a small berg, before we had seen the berg itself; our speed was not great, but still we were badly jolted. Fortunately, it was an ice-foot which sloped gently upwards, and so we were able to refloat the vessel with a reversed engine without any damage being done.

We made fast at once to a smaller floe, but suddenly the iceberg, with which we had already collided, came drifting against our floe, and in the collision great masses of ice were torn loose from the iceberg and fell into the water, which became violently agitated.

With the strong current it was evidently more dangerous to lie made fast to the ice than to continue, and all through the night we therefore groped our way blindly, the ice being sometimes rather closely packed, and at other times so scattered that for some time we could not see ice-floes around us.

In the early morning of July 17 we suddenly saw land looming up through the fog, and also a corner of Store Glacier; but as there was now only comparatively little ice around us, we continued across Johan Petersen's bay to the west of Store Glacier until, through the fog, we caught a glimpse of land, *viz.* Cape Tupinier.

We were only able to see the actual foot of the promontory when about 500 m off the shore, and we now made our way laboriously in a westerly direction, between great quantities of ice and against such a heavy current that we were hardly able to head it.

At 8 a. m. we reached comparatively open water close inshore, and the current against us continuing very strong, we passed the steep western slope of Cape Tupinier and made for a small open bay to the west of the promontory, where we anchored about 500 m from the shore in 16 m water.

It was our intention to build a house in this region, and the bay we were now lying in seemed particularly well suited to our purpose, the country being entirely free from land ice and practically clear of snow.

From the head of the bay and some distance inland there was an area of comparatively level country, the greatest we had seen along the coast, and at the eastern corner of the bay there was a lake, $2\frac{1}{2}$ km in length, about 5 m above the level of the sea and separated from it by a huge wall of very large boulders. The bottom sloped quite gradually right up to the shore, so that in case the pack-ice was forced into the bay — either by the wind or by the current — we could shift our anchor

to very shallow water or seek shelter behind a large piece of grounded ice. We therefore considered ourselves justified in risking the landing of timber and building a house in this open, otherwise unprotected bay.

We remained there from July 17 to July 20, encountering no difficulties from the ice, until the house was finished, and we were ready for departure. Everybody on board, the scientific staff as well as the



Fig. 6. Lagoon in bay at Cape Daussy, where a house was built.

crew, joined in landing timber, coal etc. and by our joint efforts we succeeded, in about four hours, to land and transport everything to the building site selected. This being accomplished, the cartographers and geologists, with whomever we could spare for manœuvring the motor boat etc. went back along the coasts to Johan Petersen's Bay and Store Glacier, while our zoologists and botanist remained in the neighbourhood of the vessel, making investigations and collections.

Though the soil was in places very dry and sun-baked, the vegetation was comparatively luxuriant in this large valley facing south,

where the house was built. In the lagoon as well as in a small neighbouring lake there were comparatively great quantities of wild fowl, particularly eiderducks at the lagoon and divers — the latter with their young ones — in the lake. In the sea we saw an occasional seal, and on land a bear was shot near the building site.

On July 18, the building of the house was commenced by six of the crew, but as they were all, with the exception of the ship's carpenter, unaccustomed to the use of tools, our first house took rather a long time

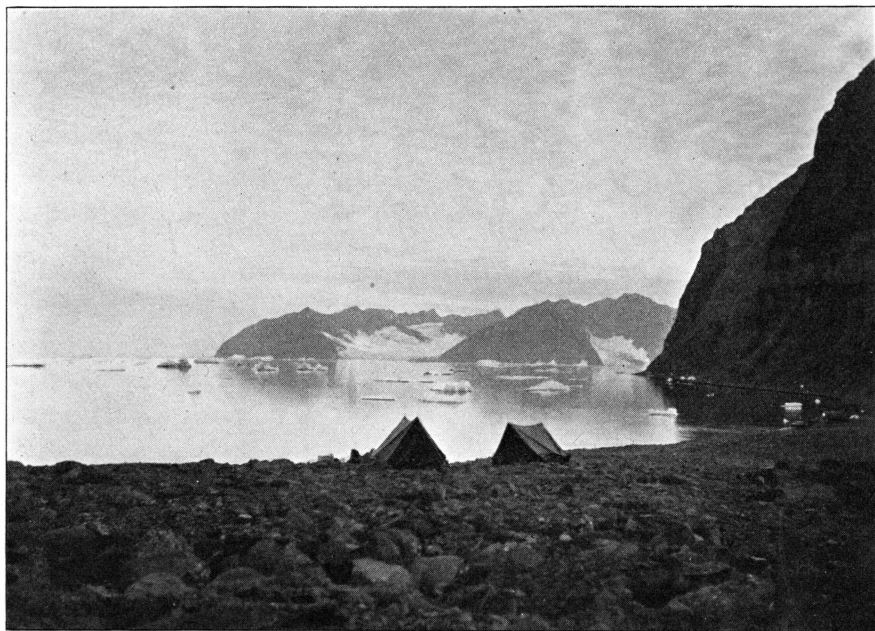


Fig. 7. Johan Petersen's Bay with Cape Tupinier in the background¹⁾.

to build, in spite of the fine weather and the good working conditions.

This house which was exactly of the same type as those subsequently built measured 3.5 by 3.5 m and 2 m in height, the roof being pointed so as to make a spacious loft.

It was provided with a kind of porch and built of timber frame (13 by 13 cm); the outside was covered with vertical tongued and grooved boards, the inside with planed and tongued and grooved match boards. Floor and ceiling consisted of double layers of boards, while the roof was made of a single layer, and the whole structure was covered with tar-paper.

In the house we left about 1½ tons of coal, 1 drum of kerosene, a

¹⁾ Named after Mr. Johan Petersen, former Administrator of the Angmagssalik and Scoresbysund Settlements.

quantity of sea biscuits and some wood materials. On July 20 in the evening everything was finished, and we nailed up the double window with boards.

Besides the motor boat trip to Johan Petersen's Bay east of Cape Tupinier, where the geologists ascended a mountain to investigate and to obtain a view of the hinterland, a short motor boat trip was made to the bay between Cape Daussey and Sorte Glacier. There was a small local glacier at the head of this bay, and the country was rather glaciated;



Fig. 8. View inward across Store Glacier from the top of a mountain.

upon the whole the bay to the west of Cape Daussey presented a much rougher appearance than the bay where the house was built.

Also the naturalists profited by the fine weather and the particularly good working conditions, with which we were favoured during our stay at Cape Daussey, and they made rather important investigations as well as large collections.

The ice left us in peace as long as we were building the house, but no sooner was it finished and the workmen's party ready to go onboard, than the bay suddenly was filled with ice. A large floe drifted towards the "Søkongen", and although we had been looking forward to a night's rest after the forced work of building the house, we were obliged to weigh anchor. However, we anchored again farther inland, but the ice was now in such lively motion that we were all the time obliged to keep the machine going, in order to be able to skirt the larger floes or to prevent

our dragging the anchor. From about 6 p.m. until midnight we fought the ice, which was too closely packed and in too violent motion to permit our getting away from our anchorage; then at last the ice settled, and the over-tired crew were able to turn in to get a few hours of badly needed sleep.

On July 21 at 3 a.m. we broke anchor and left the bay which had given us such good working conditions for more than four nights and days, and we at once met with much more difficult ice conditions than we had had until then.

The ice had come very close inshore, and the drift was very strong, but the farther we worked the ship away from shore, the more the violent current decreased, and although the ice was still very closely packed, we could with some difficulty make our way in a westerly direction past Sorte Glacier, which seems to drain a rather large glacier area; the inland ice itself was not to be seen, owing to the large masses of land behind the glacier. On the eastern side of the glacier there was a fairly large lateral moraine; it was this which we had seen through the fog on the Amdrup Expedition, and the black surface of which had caused Amdrup to call the glacier Sorte (o: black) Glacier. With the exception of this lateral moraine there was, however, nothing black about the glacier, which extended far inland, where it was divided into two branches by a huge mass of mountain towering above it.

Hoping to find somewhat better conditions inshore, we headed towards Cape Savary, where again we got into such a violent current that we had great difficulty in stemming it with the machine power at our disposal, and the navigation became rather difficult, as there was a strong set of ice round a number of bergs which had probably grounded there. The fact that it was about the time of the spring tide undoubtedly caused the current to be stronger than it normally was.

After we had struggled along as far as Cape Grivel, the ice slackened a little, and with a slack current and moderately passable ice we passed across the bay to Cape Vedel, where we again got into heavily drifting ice; the current set against us with such strength that even with the motor going full speed and keeping close inshore — the ice apparently being impenetrable farther out — we made no progress whatsoever for more than four hours.

It was not until after midnight, on July 22, that the current slackened so much that we were able to make some progress, and as at the same time the ice opened a little, we managed, after four hours of hard work in the ice, to get as far as Cape Johnstrup, which is one of the steepest and most jagged promontories along this stern coast.

The farther west we went, the more and more closely packed the ice off land apparently became, and our only possible chance of getting westwards was evidently to keep quite close to the almost perpendicular

coast, where we experienced many difficulties from the strong current, the many icebergs and the drift which was often so violent as to cause the ice to close up ahead of us, where minutes before we had had open water, or on the other hand, to open up and become passable, where we had not at all thought it possible to be able to make any progress.

There was, however, the advantage in navigating close inshore, that it was only just off the most projecting points of the promontories that the current and the ice drift were so strong that we could hardly

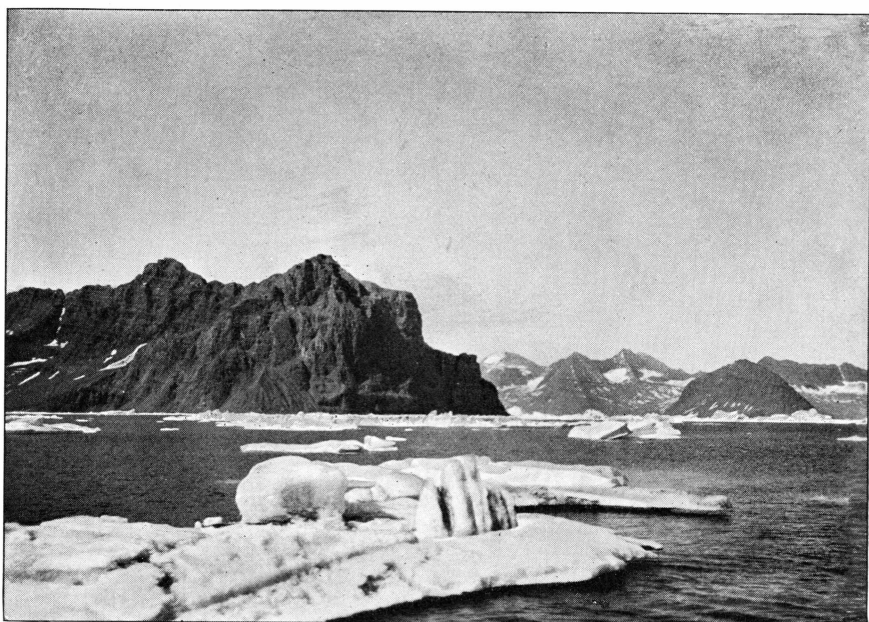


Fig. 9. Cape Grivel seen from the west.

fight our way against it, for when we got out into the mouths of the fjords between the promontories, the ice as a rule slackened a good deal, while the current decreased, and though there were a great number of icebergs everywhere, off the promontories as well as in the fjords, the ice was as a rule fairly passable at the mouths of the fjords.

For a long time we had in vain been looking for a place, where we might hope to find so much shelter from the ice as to be able calmly to await better conditions. But the fjords and bays along this coast all terminated in glaciers and were so full of glacier- and brash-ice, that there was no hope of finding even a moderately sheltered anchorage between the steep coasts, without which we dared not head in between the ice masses of the fjords or bays, for — being in the height of spring tide — they were in violent motion, even rather far inshore.

Under very difficult conditions we worked our way westwards, as

far as a short distance past Cape Ravn, but here all further progress was stopped, the only visible open water being in a lead along the inner side of a huge floe of apparently unbroken ice, about 2 km offshore. Between us and the coast there were a great number of grounded icebergs; these, however, were not particularly large, and the sea between them was filled with smaller pieces of floe-ice in violent motion.

Towards the west, in the direction of Cape Stephensen, the ice lay unbroken with a number of frozen-up bergs across our course, and



Fig. 10. Glacier between Cape Stephensen and Cape Ravn.

as far as we could see, the fjord between Cape Ravn and Cape Stephensen was also full of ice, or rather of an enormous mass of smaller icebergs, which were frozen together and formed, as it were, a continuation of the large and undoubtedly very active glacier at the head of Stephensen's Fjord.

Farther out to sea the ice lay unbroken, as far as could be seen from the mast head, and particularly along the eastern edge of this huge mass of ice there were a great number of bergs.

There was no doubt that open water was now a thing of the past, but as ice conditions seemed rather settled in the blind alley where we lay, we made fast to the unbroken mass of ice in order to await further developments. Immediately after having made fast we saw two adult bears on the ice, one of them with two cubs.

In 1900 the Amdrup Expedition reached Cape Ravn on August 2

and found also there unbroken ice which, however, did not extend more than 3—4 miles seawards, and as also on this expedition very many icebergs were seen in this region, it seems likely to suppose, that the water here must be shallow, so as to make the icebergs ground and hold up the winter ice until late in summer.

We took soundings and registered, as expected, a comparatively shallow depth very nearly midway between Cape Ravn and Cape Stephensen, *viz.* 206 m with a soft mud bottom. Judging by the probable im-



Fig. 11. »Søkongen« in the ice off Cape Stephensen.

mersion of those icebergs, which lay frozen up farther inshore in the unbroken sheet, and the very large areas of unbroken ice offshore, which were entirely free from frozen-in icebergs, the depth must be considerably smaller farther west and out to sea than in the locality where we lay, and where we took water samples and water temperatures and made several hauls with the plankton net.

In the morning of July 23 the edge of the floe to which we had made fast broke up, and as at the same time the motion of the loose ice became more lively, our position was now rather exposed. Consequently, we left our anchorage in order to get out to sea, hoping in that manner to be able to skirt this large mass of unbroken ice and possibly get beyond it.

The ice was very closely packed along the unbroken mass of ice, but the "Søkongen" proved to be extremely easy to manœuvre, and

required very little water to be able to squeeze between the floes; and although our progress was slow, we got farther and farther away from the shore, all the time following the edge of the unbroken ice and looking for an opening towards the west. This continued until 4 p. m., when we could no longer pick our way between the ice-floes, but made fast about 10 to 12 miles from the shore.

In the course of our outward passage we took some soundings, the result being that we had 420 m about 4 miles due southeast of our first sounding; then about 5 miles due south the depth became lower (350 m), decreasing further to 320 m about 1 mile due west of our last sounding. These figures showed that we were on the east side of a shoal, extending far out to sea about due south from Cape Ravn.

From the east a number of smaller floes drifted down on to the unbroken ice, and a great quantity of icebergs came sailing through the pack-ice, being either grounded on the edge of the shoal or held up by the unbroken mass of ice, which however could offer little resistance, as its edge at least was in rather a decayed state from being exposed to the heat of the summer.

We did not see seals in great numbers, but there were many bears on this unbroken sheet of ice, and during the first twenty-four hours we saw no less than six.

In the night between July 23 and 24 there was a heavy fog which, however, lifted with the increasing power of the sun, and in the clear weather we were able to see the coast from the steep Nuna Isua in the west to Cape Grivel in the east, and behind the glaciers at the heads of the fjords, on both sides of Cape Ravn, we saw huge mountain masses towering above the lower coastal mountains.

On July 24 there came a few openings in the ice, and we made use of them to work our way outwards, but it did not amount to much, and presently we were again enclosed by the ice and obliged to make fast.

It looked as if we were continually drifting towards the shore and eastwards, though very slowly, and the ice generally appeared more scattered inshore than towards the sea.

The loose ice drifted to and fro with the tide, and there was no suggestion of a constant surface current in a westerly direction. On the other hand, the under current must set towards the west, as all the icebergs and the deeper lying floes moved rather quickly in that direction, irrespective of the surface current.

July 25 was another fine and very clear day, but although we had spent a fairly quiet night, we had been forced to change our position once or twice, owing to the threatening nearness of icebergs or ice-pressures, caused by the drifting of larger icebergs through the surrounding broken ice. The disturbance caused by icebergs drifting through

pack-ice can be traced far away, when the ice, as was the case here, lies very close.

As there was no suggestion of water or water sky out to sea or in a westerly direction, and as at the same time the ice opened somewhat inshore, we cast loose at 10 a. m., and following the edge of the unbroken ice, we again headed landwards, partly in order to see whether there should be any change in the ice, partly in the hope of finding an anchorage in one of the



Fig. 12. Wiedemann's Fjord with Wiedemann's Mountain's in background.

fjords, which we had already passed on our way to Cape Stephensen.

The ice was still entirely unbroken towards the west, but there was now much more open water along the east side of the immense ice-sheet than there had been, when a few days ago we had headed seawards. Only close inshore the ice again thickened, but nevertheless we succeeded in finding a passage through a belt of rather closely packed ice-floes, thus getting into open water off Cape Ravn; then, following the highly glaciated west coast, in the hope of finding a headland behind which we could anchor, we headed into Wiedemann's Fjord¹⁾ in gradually more and more scattered ice.

Along the western shore there were a couple of projecting headlands, behind which we might have anchored, as the depth was not particularly great, only about 40—60 m, but on closer inspection it proved that

¹⁾ Named after late factory owner Johannes Andreas Wiedemann.

there was very little shelter against the drifting ice, and we consequently made for the eastern side of the fjord, which was much less glaciated than the western one. Very nearly at the head of the fjord, about 2 km off a rather high and broad glacier wall, we found at 7 p. m. an excellent anchorage at the mouth of a very rapidly flowing river, which kept the ice at a distance and coloured the water with mud far out into the fjord. We anchored in a depth of 15 m, about 500 m from the coast, which was low and gradually sloped up to a height of about 400 m, after which



Fig. 13. River through the gravel-covered glacier at the anchorage in Wiedemann's Fjord.

the land rose steeply to rather considerable heights. The eastern side of the fjord was practically free of land ice, at any rate entirely free of local glaciers draining into the sea.

On both sides of the river we saw some hills, which at a distance looked like heaps of gravel; when we examined them more closely we found, however, that they were the remains of a dead glacier, which was entirely covered by a layer of gravel and clay, about 10—30 cm thick, the ice being visible only where the river had cut its way through it.

As long as we lay in the ice off the coast and in Wiedemann's Fjord, the weather remained uncommonly fine, clear, calm and warm, with the exception of occasional mist formations. Böcher recorded that the temperature among the vegetation was 24° C. and that of the air 17°, but it was a little colder at sea level.

Upon the whole we had so far been greatly favoured by the weather

during our stay off the coast, having had almost continual calm, and it was presumably owing to this unusually calm and fine weather, that the ice off Cape Stephensen was still unbroken; one day of gale would evidently have been sufficient to break up the ice, which was in a state of extreme decay from being exposed to the action of the sun.

On the day after we had anchored in Wiedemann's Fjord (July 26) I left the vessel together with the brothers Wager. We were bound for Cape Ravn, from the eastern side of which it was apparently possible to reach the top — across a small local glacier — and we hoped in this manner to get a good view of the ice out to sea and westwards.

We had to climb a very steep local glacier, and after rather a strenuous walk across the ice we reached the top of the 760 m high promontory, but although it was quite clear landwards and on the top where we were, the fog hung below us covering the sea, so that at first there was no possibility of getting a view of the ice.

It was extremely hot on the sharp, almost knife-edged peak where we saw a couple of butterflies, and while the brothers Wager made geological collections, we waited for the weather to clear. In the afternoon the fog at last lifted, and my joy was great when we saw completely open water to the west, but the sheet of unbroken ice extended as far out to sea as we could see from our point of vantage, and as far as we were able to determine, it also lay unbroken right into the fjords between Cape Ravn and Cape Stephensen, and from there beyond Cape Rink and presumably as far as Cape Normann.

Along the shore side of this huge sheet of unbroken ice there were a very large number of frozen-up bergs, originating from a huge glacier area behind Cape Stephensen. These icebergs, which lay so close that they almost seemed to form a continuation of the glacier, extended in two tongues out of the fjords on either side of Cape Stephensen and into the winter ice, which had large melting holes or lakes on the surface, and it would surely not take many days, before this mass of ice broke up and went adrift.

When we returned to the "Søkongen", very pleased with the result of our climbing expedition, we found our comrades in equally high spirits. They had been ashore and found particularly good conditions for the investigations, which they intended to carry out, and they also had found several plants and a bird species, which had hitherto been unknown in Greenland; also the insect life was comparatively rich.

The weather remained the finest imaginable during our subsequent forced stay in Wiedemann's Fjord. The naturalists roamed along the coast, and according to them the region was particularly interesting, as it seemed to form a definite boundary between the flora, fauna and insect life of the southern and northern east coast. After some days,

however, time began to hang heavily on their hands, although there was still work to be done, *viz.* investigations ashore, dredgings and the towing of nets from the vessel or motor boat in the fjord, where they found a comparatively rich bird life, and where a black guillemot was shot with a fish in its beak. The black guillemots hatched on inaccessible mountain walls on the eastern side of the fjord, but they seemed by preference to pick their food at Cape Ravn.

The cartographers would have liked to have gone farther east with



Fig. 14. Wiedemann's Mountains.

the large motor boat, but for one thing the ice now lay quite closely packed towards the land from Cape Johnstrup and eastwards, and besides I dared not let them leave the vessel for any length of time, in case the ice should break up and thus make it possible for us to proceed.

Wager, with a party of three, undertook a sledge journey across the glacier ice towards Wiedemann's Mountains, the sledge being pulled by the men themselves. At a terminal moraine he had found traces of syenite, and he now wished to reach the mountains in order, if possible, to find the place in which this rock species originated. On this trip, which lasted for a couple of days, the party passed the large glacier area between the coastal mountains and Wiedemann's Mountains. The surface of the glacier was full of fissures, and from the place where they sledged across the ice, Wager had an excellent view of a complicated system of glaciers, projecting from the inland ice and debouching partly

into the fjord between Cape Johnstrup and Cape Ravn, partly on either side of Cape Stephensen. At the most advanced mountain masses Wager, for the first time, saw the eternal basalt, which constituted the coastal mountains, giving way to more interesting species of rocks, in which he traced syenite and various minerals; these, however, have no monetary value, as the mountain area is so extremely difficult of access.

After his return Wager made another short trip — this time accompanied by Spender — across the glaciers to a hinterland which lay

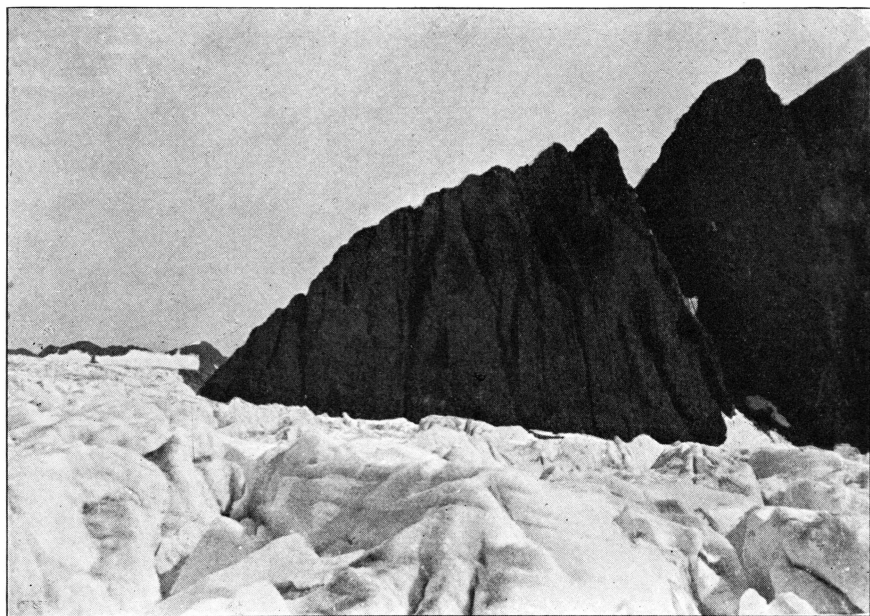


Fig. 15. Glacier near Wiedemann's Mountains.

right at the back of the fjord, and every day the chief mate or I went to the mouth of the fjord, either to Cape Ravn or to another more easily ascended mountain shoulder, about 450 m in height, behind Cape Johnstrup, from where we had an excellent view of the ice.

Day by day the unbroken sheet of ice became narrower, and the open water in the west came nearer and nearer, while large holes appeared, particularly in the neighbourhood of the icebergs, but still there was a strip of unbroken ice, which we could not pass, and towards the south there was not a sign of water between the ice-floes.

Towards the east the ice became more closely packed as the days passed; new masses of ice came down continually from the north along the coast and packed against the eastern edge of the unbroken sheet, which was exposed to a tremendous pressure, an action which, however, did not seem to make the least impression on it.

It was undoubtedly from the west that the break-up was to be expected, and we must be ready to seize the very first chance of heading westwards, for at the moment that the solid sheet broke up and went adrift, huge quantities of ice would be scattered over the now practically entirely open sea to the west of the unbroken masses of ice. This would in all probability cause great difficulties to navigation, and so it was of the greatest importance for us not to lose any time whatsoever, but to attempt to squeeze through the first opening, so as to get a start of the masses of ice, for which reason ice conditions were made subject to a very close investigation, as a rule both morning and night.

On the evening of July 30 the ice seemed to be breaking up, and we decided to start quite early the next morning, but unfortunately the day (July 31) broke with such a heavy fog that it was utterly impossible to head into the ice. Consequently, we were obliged to remain at anchor, and although the fog lifted in the fjord on August 1, and we tried to get out, we were soon forced to return to our old anchorage, being unable to see anything in the outer part of the fjord.

We kept everything ready to make use of the first clearing of the weather, in order to attempt heading westwards, now bent on losing no time by ascending the mountains and examining the condition of the ice before our departure, and on August 2, at 8 a. m. we weighed anchor in heavy cloudy weather with a freshening breeze from the east, being now at last able to leave Wiedemann's Fjord where we had been held up by the ice since July 22.

Long though our stay had been, the time was by no means regarded as lost. The results achieved by the scientific staff were unexpectedly good, the chief of these being, as already mentioned, the discovery of a rather sharp boundary line between the flora and in part the fauna of South and Northeast Greenland, and the first hint of the basalt being replaced by more interesting species of rocks. But on the other hand, we had spent all the time, which we could possibly spare for the investigation of the coast as far as the Kangerdlugssuak area, and as I had promised Wager about a month for his geological investigations in those parts — one of the chief objects of the expedition — we were now obliged to proceed with the utmost speed possible.

It was, however, our intention to anchor for a day or at most two in the fjord west of Cape I. A. D. Jensen, where the Kangerdlugssuak area was supposed to begin, partly in order to undertake geological and other scientific investigations, partly for the surveying of the coast and the fjords. We had unfortunately no time to survey the intermediary part of the coast, and when we weighed anchor and headed into the ice, Cape I. A. D. Jensen was our first destination.

To our great joy it proved that, although the ice lay still very closely

packed off Cape Stephensen, it was decidedly broken, and as the "Sø-kongen" required only a minimum of water in order to be able to advance, we managed to squeeze through and to get into slightly more scattered ice to the west of the unbroken sheet, at a distance of 3—4 miles from the shore and just outside the before mentioned tongues of glacier ice, one on either side of Cape Stephensen.

As soon as we had passed this promontory, ice conditions improved, and now we profited by all our climbings, because we were familiar with the greater icebergs, and knew where we should go to find most open water. The improvement in the ice proved lasting, and a couple of hours after we had passed Cape Stephensen, we had practically open sea.

On the journey along the coast we had constantly had the impression that the land ice (the smaller local glaciers) had decreased considerably since the Amdrup Expedition, but until now no decisive proofs had been forthcoming.

These, however, we found when at a distance of about 3 miles we passed the bay between Cape Rink and Cape Normann. On Amdrup's map considerable local glaciers were indicated at the head of this fjord, and as on the boat journey of 1900 we had been rather close to Cape Rink and Cape Normann and had had fairly clear weather, there can be no doubt that the information given by Amdrup was correct¹).

Although the weather was not particularly fine, when the "Sø-kongen" passed the bay, the visibility was, however, very good, and to our surprise we saw that the glaciers, which Amdrup had marked on the map, had practically disappeared, and instead of the local glaciers which 32 years ago joined and formed a smaller glacier at the head of the fjord, there was now a gently sloping valley region without land ice in any quantity worth mentioning.

Thus we think we have proved the correctness of our suppositions as to the decrease of the land ice, which proofs were further substantiated by our investigations farther west, where we also proved with certainty that the land ice decreases, and that with comparative rapidity.

The less fine weather which we had when leaving our anchorage — for the first time on our journey along the coast — soon became worse, and it began to blow hard from the east, at the same time that the air became thick with fog, light snow and rain. In spite of everything we were, however, able to form a fairly accurate idea of our whereabouts, by taking bearings to the promontories in the short clear periods between the showers.

At 11 p. m. we were right off Cape I. A. D. Jensen and kept very close to the extremely steep promontory in order to head into the fjord.

¹) Medd. o. Grøn. vol. XXVII, p. 230.

The wind came in violent gusts from the mountain, and there was a distinct swell, but the weather looked as if it were going to be worse. As we could see open water in the interior of the fjord behind a comparatively narrow and rather scattered ice-bar, I thought we could do no better than to proceed into the fjord, so at a distance of about $1\frac{1}{2}$ km from the promontory we headed towards the ice-bar.

However, it soon proved that the swell, which was inconsiderable outside the fjord, became unproportionally violent the moment we got into the ice, but as there were no more than a few ships' lengths to the open water beyond the ice-bar, and the ice was in rather violent motion, we hoped, almost against hope, to be able to break through. But the "Søkongen" was rapidly losing speed, owing to the violent motion in the water between the ice floes, which in its turn was caused by the swell, and as we could not regain our speed quickly enough to take advantage of the open water which now and again appeared, we soon lost command of the vessel, and she began to drift shorewards with the ice.

It was surprising to see the rapidity with which comparatively large masses of ice might gather in a place, where until then apparently only very little ice had been visible; and where, a quarter of an hour beforehand, we had only been removed by a few ships' lengths from quite open water in the fjord, there were now suddenly several kilometres or more of ice, and the same was partly the case towards the sea.

At the same time the swell seemed to increase, presumably in consequence of our having got into lower depths and nearer land, and there was nothing to be done, except to try with the utmost speed to turn and get out into open water. But also this was apparently impossible, and we were constantly being carried landwards with the stem pointing right towards the shore. The ice consisted of very small floes and generally much decayed glacier ice, so it was very dangerous to use the propeller in the quite closely packed masses which rose and fell round us with the constantly increasing swell.

Still, we dared not stop the propeller for fear of being entirely at the mercy of ice and chance, and were obliged — at great risk — to let the motor go full speed, in the hope of once more getting command of the vessel. Our first concern was to turn the vessel so much that the stem did not point right towards the shore, as every revolution of the propeller apparently carried us nearer and nearer land, and at midnight everybody was called out, in the hope that, with the united efforts of the scientific staff and the crew, we might force the stem round by poling from the bows against the ice, while working at the same time as hard as possible with helm and propeller, the latter incessantly striking against the ice.

This was our last expedient, and by dint of hard poling we succeeded at last to turn the vessel. While working aft we saw, to our infinite relief,

that the stem at last began to turn slowly towards the interior of the fjord; soon we lay parallel to the shore, and then at last we managed to turn the bows still more so as to point seawards. Once more we were able to apply the propeller in good earnest, but then we were right inshore, where the smaller fragments of ice were being smashed against the greater and grounded floes.

Some most uncomfortable minutes had passed, before we were able to force the ship round with the stem pointing seawards, so that we might once more get away from the threatening land. The ice pitched up and down along the sides of the vessel; the water roared and foamed round the fragments of ice and over the large ice-foots, on which we were frequently made to ride. Above us towered the land, dark and sinister; the wind came in violent gusts down the almost perpendicular mountain sides; it rained and was half dark, but all on board exerted themselves to the utmost without showing fear, and I had an opportunity to notice and admire the calm attitude of the young scientists, as well as the splendid seamanship of our chief mate, Chr. Nielsen, when confronted with this extremely difficult situation.

With the splendid comradeship, which from the first day to the last united all onboard the "Søkongen", much work could be done and difficult situations managed. And so it turned out in this case, for after two hours of very hard work, we again got into open water, without the vessel having suffered any damage worth mentioning.

It was out of the question again to venture into the fjord, as in the couple of hours which had passed since our first attempt, the fjord had become so filled with ice that there was hardly any water to be seen in the direction of the interior.

The weather also became worse and worse; the air thickened, it rained and the wind blew hard, while the swell rose, and well content with having escaped the danger, to which I had exposed vessel and crew in my eagerness to do as much as possible, without paying too much heed to untoward conditions, we brought to outside the mouth of the fjord, hoping that the weather would soon improve and give us a chance to enter the fjord, under better conditions than last time.

Hitherto everything had gone rather smoothly, and the obstacles we had met with had been such as were natural in this part of the coast, *viz.* obstacles arising from the ice, but from now onwards we were up against another and quite unforeseen hindrance, that is the swell from the open sea, which greatly delayed the carrying out of our work.

As the weather did not seem to improve, we kept the vessel going throughout the whole of August 3 off Nuna Isua and Cape J. C. Jacobsen of which we could catch occasional glimpses through the thick, rainy weather.

We lay the whole day in rather a heavy swell. It was so lively that there could hardly have been much ice outside; but though we saw a large quantity of pack-ice at a distance of about 4 miles from the shore, we could not, the weather being as it was, judge about the extent or the density of the ice masses.

Towards evening we saw two sealers, one of them passing on an easterly course along the shore, and the other one apparently heading for Kangerdlugssuak.

On the morning of August 4 there was a thick fog, rain and hard wind from the east, with a heavy swell, and so for the time being we abandoned the idea of entering the fjord at Cape I. A. D. Jensen, and while hoping at a later period to get a chance to return to this area and to examine the country, we now headed westwards, until we found Strøm (ø: current) Island, which is very easily recognizable from the sea.

From Strøm Island and for several miles in an almost due southerly direction there were a large number of icebergs and, close to the shore, some very closely packed bars of rather large floes, the swell making the sea set heavily in between them.

We made several attempts to get through these bars, but whenever we headed for an apparently passable opening, it closed before we could manage to get through, and upon the whole there was a violent motion in the ice, both among the smaller floes and the actual bergs.

Finally, at 7 a. m. we managed to force the ice-bar and to get into open land water with great masses of ice outside it. The swell decreased, as soon as we had passed the bar, but it must have been very strong outside and far into the ice, for in the morning we saw one of the sealing vessels, which we had observed the day before, lying ice-bound and rolling violently.

Off the fjord east of Cape Irminger there was much open water, although the ice was visible at a distance of 8—10 miles off the shore, and as on a later occasion there proved to be groundswell across the mouth of the fiord, at a rather considerable distance from the shore, it is probable that there is here a shallow shoal or a collection of submarine reefs, which keep the ice off land. This was further substantiated by the fact that off Cape I. C. Jacobsen, about 5 miles out, there were only 275 m water, but unfortunately we did not get another opportunity to take soundings on the supposed shoal off the fjord east of Cape Irminger.

The unusually strong motion in the ice, which we had recorded off Strøm Island, is probably also due to the fact that the main current sets against the shoal and is forced outwards, and vessels, which in the future may visit this part of the coast, should undoubtedly be very careful here.

The fjord east of Cape Irminger had gently sloping coasts and was

apparently free from ice, but we expected to come back there, when we had finished our work in Kangerdlugssuak, and our scientists were very anxious to reach this important base of operations, so we passed the fjord without stopping, and about noon we headed into Mikis Fjord where, after having searched for some time, we found a fairly good anchorage.

The entrance to Mikis Fjord is narrow, and on either side the mountains rise almost perpendicularly out of the sea. This inhospitable impression, however, disappears the moment one gets farther into the fjord, which after a few kilometres makes a sharp bend and then turns

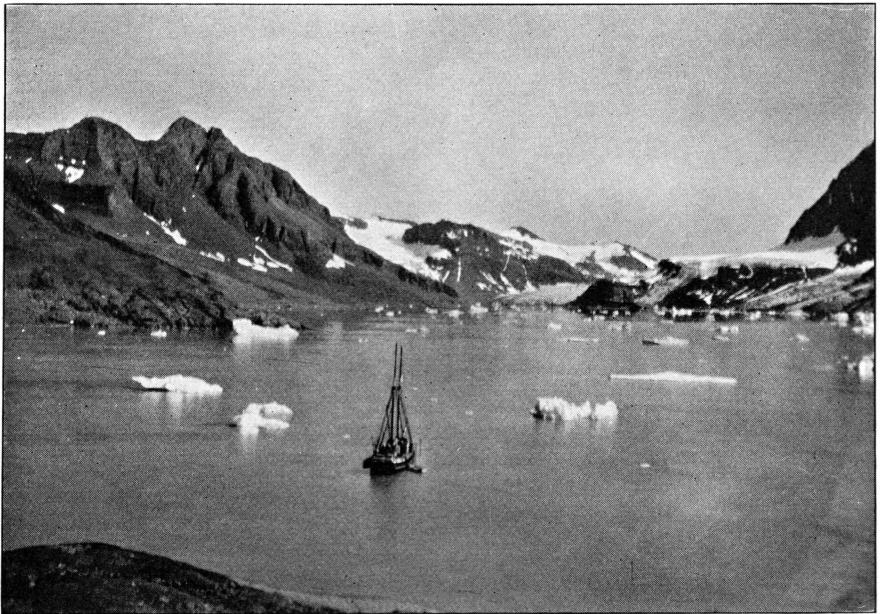


Fig. 16. Mikis Fjord looking eastward from the mountains at the back of the house.

due east. On the western and northern side of the fjord the coasts are gently sloping and clear of land ice, while the south side is steep and high and studded with local glaciers.

At the head of the fjord there is a small glacier, which fills the space between two high mountain masses and extends from Mikis Fjord to the fjord east of Cape Irminger, and towards the north there is a large valley through which a rapid river winds its way to the fjord.

In the place where the fjord makes a sharp bend, there is also a valley with a river, and we tried to find an anchorage off the latter. However, we did not succeed, as the bank of the river rose like a wall, from a few to 50 meters in a couple of ships' lengths, and though we showed the utmost care in looking for an anchorage, the "Søkongen"

nevertheless touched ground at the edge of this bank, which consists of clay.

After many futile attempts we found a comparatively good anchorage on the west side of the fjord inside a small lagoon, and with the anchor in 18 m water there was ample room to swing towards the coast.

In the course of subsequent soundings in the fjord, we found the greatest depth to be 175 m, and at the very head of the fjord there was an unusually good anchorage, where a vessel might lie quite safely under all conditions. It would be a splendid winter harbour, and the outflow from the great river would here cause the fjord ice to melt very early in summer.

On a low and smooth promontory on the northern side of the fjord we found a fairly large deserted Eskimo village, and scattered along the southern and eastern coasts we saw numerous traces of the extinct Eskimos in the shape of graves, meat depots, fox traps and tent rings.

Under the leadership of Degerbøl careful excavations were made of the ruins, and also the graves were examined. I shall not enlarge on these excavations, but refer to the chapter, prepared by Degerbøl in collaboration with the archæologist Therkel Matthiasen, on the former settlement of this fjord and Kangerdlugssuak. In this place I should only like to point out that in several of the huts at both fjords we found human skeletons, and that the archæological results were rather considerable.

Both animal and bird life as well as vegetation were comparatively rich in the fjord, and as there was only a short distance to the sea and easy passage across a smooth and unbroken glacier to Kangerdlugssuak, we resolved to build a house here in Mikis Fjord. This house, together with the two which we intended to build at Kangerdlugssuak, would make the whole of the area a more permanent dwelling place for the Greenlanders, who, it is hoped, in a near future will travel north from Angmagssalik to the good hunting grounds of this district.

Before the scientific staff set about the investigations which awaited them here, they assisted the crew with the landing of timber for our second house. It rained hard on the arrival in Mikis Fjord, and we could not at once open the hatchways and set about unloading, for fear of damaging the other goods which were stored in the hold, and only on the following day (August 5), in glorious weather, could we start unloading and transport of building materials.

We had found a good building site near the anchorage on the rather high coast beside some Eskimo tent rings, and at 11 a. m. everything had been brought ashore. The scientists and cartographers were thus freed from all work on the vessel and could at once set about their investigations and surveys.

Wager went into the mountains, and from a rather considerable height — where by the way he found a well-trodden bear path — he could look down into Kangerdlugssuak and far out to sea.

There was not much ice in Kangerdlugssuak, and down the coast towards Nualik only a quantity of very large icebergs and a few bars of pack-ice were visible. Wager had the impression that the sea was entirely open, as had also been expected after the heavy swell, which we had had during the last part of our journey.

Towards the interior — some distance east of Kangerdlugssuak — Wager saw a few, elevated lakes, one of which at any rate was fairly large, and it was decided that before our final departure the naturalists should attempt to get in there, in order to investigate the country and the lakes. This journey, however, was put off until some later occasion, as for the time being there was more than sufficient work in the fjord.

On August 7 the scientific staff worked hard at the excavation of the Eskimo houses and various other investigations, while the crew were busily engaged in building the house.

The weather was not as fine as on the preceding day, and it was undoubtedly very bad outside, as a fresh breeze blew into the fjord, carrying heavy fog banks with it. Towards evening, however, the sky cleared, and the weather improved, but even when at its worst it did not prevent the progress of the work.

On the following day (August 8) the weather was again particularly fine, and as the geologists had finished their preliminary examinations of Mikis Fjord, where they found that Gabbro and granite were beginning to replace the basalt, they wished to proceed to Kangerdlugssuak. The party started at 7 a. m. in our large motor boat, and I joined them, seeing that it was important to examine the possibilities of anchoring at the mouth of the fjord.

Along the outer coast, past Cape Hammer, the ice presented no special difficulties, but outside us lay a long and apparently close range of large icebergs.

When we passed Skærgaard Peninsula, we sighted a cairn on its highest peak. On the cairn a pole had been put up and — as far as we could see — with a flag tied to it. There was, however, too much swell to permit us to land and examine the cairn, so this would have to be put off till some other time, and we continued past Skærgaard Peninsula in the direction of Kraemer's Island¹⁾, anxiously looking for an apparently navigable passage between the many skerries and small islands, which are found off the east coast of the mouth of Kangerdlugssuak.

Judging by the narrow fringes of grounded ice-floes between some

¹⁾ Named after Mr. C. Kraemer, ship-owner.

of the skerries, these must be connected by submarine reefs, where the ice takes ground, but off the south side of Kraemer's Island we found a rather broad and apparently clean channel with a rapid current, and through this we entered the narrow, long, but ice-free Uttental Sound¹).

On the land side of Uttental Sound there was a beautiful valley, which in the early summer must be partly filled with water, but was now almost dry, though with such an abundant supply of melting water



Fig. 17. Uttental Sound looking southwards.

from the surrounding smaller local glaciers that a rapid river drained the valley.

Here Wager pitched his tent, and we proceeded with the motor boat in order to find possible anchorages in Uttental Sound. We found a couple of places close to the shore, where it was possible to anchor in about 20 m water, and after having taken soundings at the entrance to the sound and found about 20—25 m water, we returned to Mikis Fjord. The house was finished, and the investigations of the naturalists were so far advanced that they were willing to go on to Kangerdlugssuak, on the definite understanding that they should be allowed to return and finish the many investigations which they had commenced.

On August 9 in the early morning we weighed anchor, and in a

¹) Named after Mr. Valdemar Uttental, estate-owner.

glorious weather headed out of the fjord and followed the dark coast in practically open water, though we were now and again obliged to pass some smaller ice-bars. The swell set rather hard against the shore, and also on this stretch of coast we recorded that some of the small glaciers, which we had seen on the Amdrup Expedition, had partly disappeared, although not to the same extent as at Cape Normann.

In the beautiful clear weather we were able to see the coast from Amdrup's Fjord towards the south, far past Cape Edward Holm, and when we rounded Cape Hammer, we had a fine view inward the large Kangerdlugssuak Fjord, where one huge mountain mass lifted its dentate peaks behind the other.

The country here presented an entirely different character from what it did farther east. The dark steep basalt mountains were replaced by a yellow-red species of rock, intersected by dark basalt dykes, and the whole appearance of the country was essentially more friendly and inviting than anything we had hitherto seen.

Outside the fjord and at the mouth of Kangerdlugssuak lay a number of extremely large icebergs with very jagged surfaces, fissured and cracked, apparently very unstable and surely all originating from the large glacier of Kangerdlugssuak, which must be a very great producer of ice.

Although the fjord must be very deep, it still looks as if the icebergs did not have free access to be carried out to sea by the current, for a single, very large iceberg drifted backwards and forwards in the mouth of the fjord during the nearly two weeks, which we spent at Kangerdlugssuak. But apart from some skerries at the mouth of the fjord, one near the western point of Skærgaard Peninsula, we found a depth exceeding 600 m at the mouth — the greatest depth in which we were able to take soundings.

The passage through the channel between the skerries into Uttental Sound took place without accidents. Several times in the course of our stay in the fjord, we passed this entrance with the "Søkongen" always keeping a sharp look-out for submarine rocks. As we had furthermore taken soundings at the entrance and seen rather large pieces of ice drifting out and in, we consequently feel persuaded that there are no submarine skerries in the passage, but it is necessary to keep as near as possible in the middle of the channel, as there is a reef about 150 m in length projecting north from the northeasterly point of the skerry, which forms the southern boundary of the channel.

In Uttental Sound we found a good anchorage in about 30 m water, but rather close inshore. For a vessel provided with a steam-worked winch there will be no difficulty in finding anchoring ground in the sound, where in midwater we found a maximum depth of about 67 m.

Amdrup's Fjord

Kraemer's Island

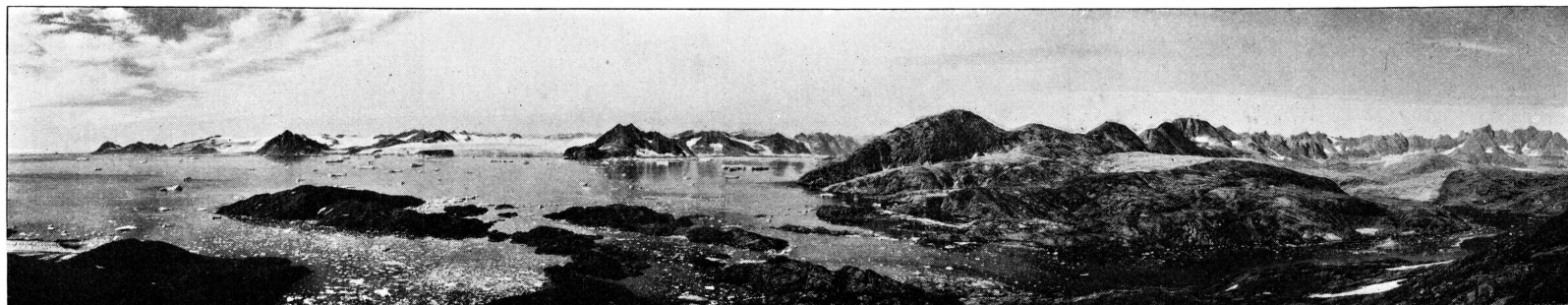


Fig. 18. The mouth of Kangerdlugssuak with entrance to Uttental Sound.

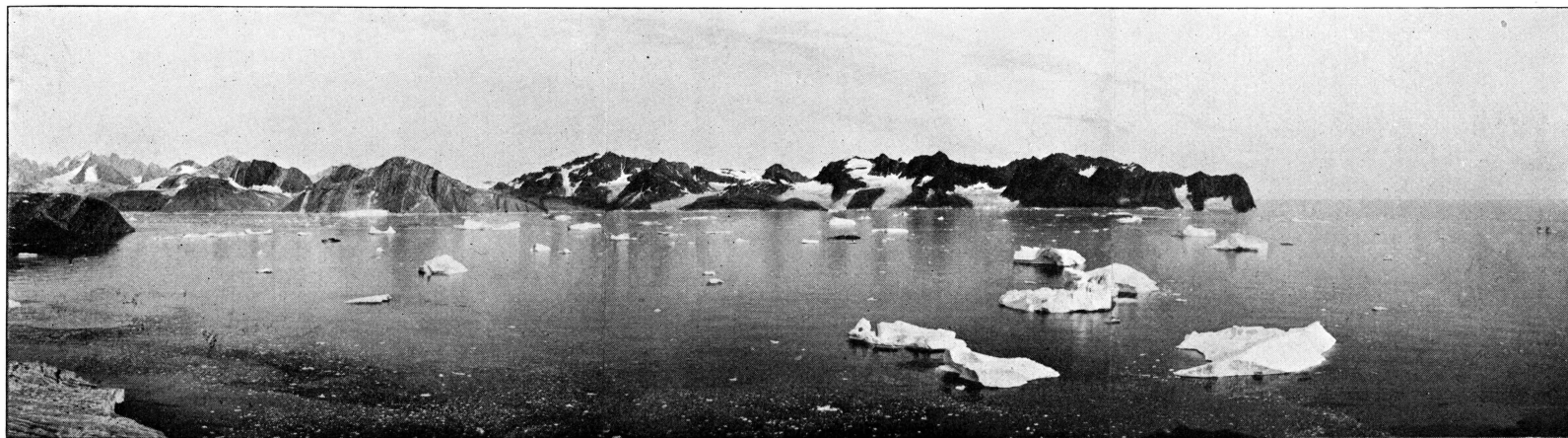


Fig. 19. East coast of Kangerdlugssuak from Kraemer's Island to Cape Hammer.

During the time spent in Uttental Sound we were in no way troubled by the ice, which only in small quantities can get into the sound; the mouth of the latter towards Watkins Fjord is blocked by a reef, which is nearly dry at low waters.

About 2 km from the southern end of the sound there is also a reef with at most $1\frac{1}{2}$ m water, extending from the main land to one of the islands which form its westward boundary. South of this barrier the depth again increases, and there is a possibility that vessels may follow the northern side of Skærgaard Peninsula and get in among the small islands where, however, several submarine skerries were found.

The only way in which ice can get into Uttental Sound, is through the passage which we used along the south side of Kraemer's Island, but it is not particularly deep, and as already mentioned only small quantities of ice can get through here. Thus a vessel can lie safely in the sound, as far as the ice is concerned, but the current in it is very strong. With rising water it sets in a northerly, with falling water in a southerly direction, and the current is so strong that strong eddies often form above the reefs and at the entrance, where one must consequently be very cautious, as the tide rips apparently set across the short reef mentioned above.

The animal life in Uttental Sound seems very rich, and during our stay in the sound we saw very great numbers of seal, preferably Greenland seal, which occurred in large flocks of at least 50—100 animals. Whenever we were out in our motor-boats, we saw these flocks and frequently several of them at a time. They came quite close to the vessel, and from the deck we often sighted flocks of seal both to the north and south of us.

There were also a great number of common seal, but we encountered neither narwhal nor walrus in this closed water. The former, however, are common in Kangerdlugssuak proper, while walrus seem of rarer occurrence. On the journey along the coast we did not see walrus, until we were off Cape Hammer. The bird life in the neighbourhood of Uttental Sound was rather lively, and we saw a good deal of waders and sea birds, but in particular eiderduck in fairly great numbers. We also saw several bears on the ice as well as on shore, and found some well-trodden bear paths across the glacier between Mikis Fjord and Kangerdlugssuak.

For the Greenlanders this must be an ideal abode, as hunting and sealing can take place inside the skerries within rather a circumscribed area, and in consequence of the strong current the winter ice in Uttental Sound will undoubtedly settle at a very late date, while there surely must be great open holes in the ice all through the winter.

It also proved that along the coasts of the sound, particularly on the east side, there were numerous traces of a former Eskimo settlement.

In the northern part of the sound these traces only consisted of fox traps, tent rings and meat depots, perhaps with an occasional grave, but in the southern part of the sound we found a quantity of collapsed huts, well built graves and very large meat depots.

On the Amdrup Expedition eight ruins of houses were found on the south side of Skærgaard Peninsula, so at one time many Eskimos must have lived within this area, and judging by the extent of the kitchen middens they must have lived there for a long time.

At the huts which in 1900 were found on the south side of Skær-



Fig. 20. Transport of building materials in Uttental Sound.

gaard Peninsula, there was only very little vegetation, and Amdrup presumed that it was owing to the lack of turf that the Eskimos had been obliged to build their houses without the usual tightening material between the stones¹⁾. This is apparently correct, as far as these houses are concerned, but it applies by no means to the houses which we found on the north side of Skærgaard Peninsula, about which the vegetation is quite luxuriant.

As the hunting conditions were so favourable to the Greenlanders in Uttental Sound, we resolved to build two houses there. In order to obtain the best possible shelter and a constant water supply, we decided not to build them near the former Eskimo dwelling places, where there was not the slightest trace of water at our time of call. We found, however, good building sites with sufficient water just inside the Skærgaard

¹⁾ Medd. o. Grøn. vol. XXVII, p. 240.

Peninsula on the mainland, where there was a rather broad and comparatively low area extending from the coast and in the direction of the high mountains which divide Mikis Fjord from Uttental Sound.

Directly after our arrival in Uttental Sound we set about landing materials for the first house. This was rather slow work, as everything had to be transported over a distance of 3 km from the vessel to the building site. As usual, the scientific staff assisted the crew, but even so this work occupied the greater part of the day.

In the evening we went with the motor boat in a northerly direction



Fig. 21. One of the houses in Uttental Sound. Kraemer's Island in the background.

through the strait to Watkins Fjord¹⁾, which was entirely filled with ice and impassable, both for vessel and motor boat. At the head of this fjord some large glaciers debouch, which are apparently connected with the inland ice, although we could not see the ice-cap itself owing to some high mountain ranges, which extended in the direction north to south across the head of the fjord.

On August 10 the scientific work at Kangerdlugssuak began in good earnest. The geologists had already been there for several days, but in order to enable them to extend their working bases and to make them entirely independent of the vessel, a motor boat was placed at their disposal, while Jens Jensen — the physician of the expedition, for whom in this capacity there was fortunately not the slightest use — went with them to help in their work.

¹⁾ Named after the late H. G. Watkins; Commander of the British Arctic Air Route Expedition.

The two cartographers with an assistant were put ashore on the western point of Kraemer's Island, where they tented in order to make surveys. Degerbøl and Möhl Hansen examined the sea-bed fauna, with the vessel as their base, while Böcher made botanical collections and investigations in various places in Uttental Sound. Later on, after we had found the Eskimo dwelling places mentioned above, these were excavated by Degerbøl, assisted by whoever might have time to spare from their own special tasks.

The crew built the houses, one being finished on August 13 and the other on August 16. They are not situated in the same place, but at a distance of about 1 km, and connected by a fairly level road. At the houses we left about 4 tons of coal, 1 drum of kerosene and a good deal of provisions, in particular coarser cereals, sugar, salt etc. so that the Greenlanders, if they visit these parts, need suffer no want until they are able to start hunting. For that matter I consider it rather superfluous to leave provisions here, the sea providing food in such abundance.

It would indeed have been of great importance for the Greenlanders, if we had dared to leave powder and ammunition in the houses, but we feared that, as they could not read Danish and, consequently, were unable to see that the boxes contained explosives, they might meet with accidents when opening the cases.

On August 10 the weather was very fine, and the naturalists had good working conditions, but on August 11 and 12 it became rainy and foggy, and although it did not to any great extent hinder the work, it unfortunately caused the cartographers to lose a couple of days. At last they became tired of waiting for fine weather and returned to the vessel, where they had enough to do with calculations and making ready for the photogrametric survey work.

On August 13 in the evening all the scientists went out to the west point of Kraemer's Island in order to investigate a new region, and they returned on the evening of August 16, having i. a. sighted a number of narwhale, bear, great quantities of seal and one walrus. In the meantime there had been a good deal of fog in the region round Uttental Sound, but fortunately the weather was clearer farther towards the interior of the fjord, where the naturalists had had good working conditions. In motor boats they crossed the fjord to the west coast, where the geologists worked on the coast from Notched Mountain to Amdrups Fjord, making some smaller trips across the glacier ice to mountains behind the actual coast land.

On August 17 the weather was again particularly fine, and Degerbøl and I seized the opportunity to investigate Skærgaard Peninsula, which is connected with the mainland by a quite low and very narrow isthmus.

Near this isthmus there are rather large areas covered with sharp-edged gravel, and it seems as if the species of rock of which Skærgaard

Peninsula consists (by preference Gabbro) decays very quickly, seeing that nearly all the larger stones were extremely decayed, particularly on the side towards the sea. The huge quantities of gravel which did not, however, make a particularly thick layer, gave to this region a peculiar, desert-like appearance, undecayed stones hardly being seen anywhere, only the brown sharp-edged gravel.

We visited the Eskimo houses found by Amdrup in 1900 on the south side of Skærgaard Peninsula. Outside one of them we saw a very large bearded seal lying on the beach, but we did not undertake excavations of the huts or examine them further, as we had more than sufficient work in excavating those which we had found in Uttental Sound.

Our principal object was to reach the cairn which we had seen on the peak of Skærgaard Peninsula, and when we arrived there, we saw that it was the Norwegian flag which was hanging from the pole, but tied into a knot — presumably to prevent it from being blown to pieces.

To the mind of a sailor it is a somewhat curious manner of treating the flag, as, from time immemorial, a flag tied in a knot has been regarded as a signal of distress, and we could not help wondering whether this should be symbolical of the position of Norway in East Greenland.

In the cairn had been deposited a brandy bottle with the following report:

“Skipper John Myklebugt, engineer Herman Hagen, first hunter Bent Backland, second hunter Ingbregt Nakken, steward Hakon Willesen, stoker Oskar Nyksen S/S Polarstrøm. ³⁰/₇ 1932 we have placed the Norwegian flag on a peak.

S/S Polarstrøm, Aalesund, Norge.”

Judging by the remark: “We have placed the Norwegian flag on a peak”, these men seem to have been in ignorance of the exact locality of the vessel, otherwise they would surely have added the locality. The object thus seemed to have been to raise the Norwegian flag, with the smallest amount of trouble imaginable, somewhere or rather anywhere on the coast.

It seemed to us such an empty and entirely indifferent demonstration that we saw no reason to take away the report or flag, and so we limited ourselves to put the report back, in another bottle, after having added:

“The bottle with this report was opened ¹⁷/₈ by the Scoresby Sound Committee Expedition to the coast between Scoresby Sound and Kangerdlugssuak, where we arrived on August 3, after having done scientific work and made preparations for a future Eskimo settlement along the traversed distance.

Kangerdlugssuak ¹⁷/₈ 1932.

Ejnar Mikkelsen

President of the Scoresby Sound Committee and Commander of the Expedition”.

From the peak of Skærgaard Peninsula we had, in the beautiful weather, a wide view across the fjord and towards the sea, where with the exception of huge icebergs no ice was to be seen. In the direction of the interior there were a great number of icebergs, while at the very mouth of the fjord there were many tall bergs, but no sea ice. From the peak we sighted a couple of submarine skerries off Skærgaard Peninsula, which no vessel ought to approach nearer than one mile, and off the western coast of Kangerdlugssuak there is another skerry, which, however, rise high above the sea, but there is every likelihood of there being more skerries at the mouth of the fjord than we saw.

Late in the evening of August 17 we had finished the building of the two houses, and the next morning we weighed anchor in order to enter the fjord, where the cartographers and geologists worked, without having been in communication with the vessel for several days.

It was fine weather and almost calm in Uttental Sound, and after having undertaken a series of dredgings, we made for the outlet, but had hardly got outside the skerries, when the wind began to freshen, and the farther we got out into the fjord, the harder it blew. At the same time there was a heavy, choppy sea, and when we reached the western point of Kraemer's Island, which had hitherto sheltered us from the wind, there was such a violent gale right out of the fjord that we were unable to make progress against it.

We remained in shelter of the land for a couple of hours, hoping that the gale would spend its force, but instead it grew worse and worse, and at about 11 a. m. we were obliged to return to our sheltered anchorage in Uttental Sound, where it was quite warm and calm.

The only result of our attempt to enter Kangerdlugssuak was the dispatching of some radio messages, which we had been unable to send from the anchorage, from where the radio could not be heard. For that matter this had surprised us, as there were no mountains and no obstacles of any kind to the south of us, but in spite of many attempts to send messages to Iceland or Angmagssalik, we could not obtain any communication at all from Uttental Sound. However, as soon as we passed the skerries and got out into the mouth of Kangerdlugssuak, we immediately established communication with Iceland, and in order to investigate where the communication ceased, we asked the Iceland radio station to keep in touch with us, while we were again making for the anchorage. In this manner we were able to ascertain that, while approaching the skerries, it became increasingly difficult to apprehend the messages we sent out, and when we were about 1 km outside the skerries, Iceland could no longer hear our radio, although we were still in perfectly open water. The conclusion we arrived at was, that in Uttental Sound and among the skerries outside it, there

must be certain local conditions, which apparently absorb the electrical waves.

The weather remaining calm at our anchorage we sent a couple of times in the course of the day a motor boat as far as the entrance, in order to see whether the gale was calming down, but it blew, if possible, still harder towards evening.

On August 19 we renewed our attempt to get into Kangerdlugssuak, but though we entered a small inlet on the southwestern point of Kraemer's Island, and were thus in completely calm water close inshore, we could not hold up the "Søkongen" against the gale, which was now so violent that we drifted astern, the machine going full speed forward. This continuous gale, which prevented us from entering the fjord, was very awkward, all the more as we knew that both cartographers and geologists were beginning to be in want of provisions, and would in any case waste their time, if we did not arrive at the previously arranged meeting place. For all that we had to give up the attempt and turn back about noon, as we feared to be blown out of the fjord into open sea, and as we could find no anchoring ground in the bay where we lay, we decided to go back to our old anchorage. There it was still quite calm, which was all the stranger as the direction of the gale was parallel with that of Uttental Sound, and there were no mountains north of us to break the power of the gale.

Towards evening the wind calmed a little, but then it was too late to enter the fjord. In the meantime the geologists succeeded in getting across Kangerdlugssuak in their motor boat. They crossed where it was at its narrowest, dodging to leeward of all the icebergs, and reached the southern side of Kraemer's Island, from where they got back to the vessel without encountering difficulties of any kind. There had been a very strong wind in the place where they had worked (the western side of Kangerdlugssuak), so the possibility we had entertained of its being merely a local gale did not hold good.

At last, on August 20, we succeeded in proceeding in a northerly direction in Kangerdlugssuak. The weather was calm, the sky clear and the barometer as high as during the gale of the preceding days. The ice in Kangerdlugssuak placed no obstacles in our way, there being essentially less than there had been on the preceding days, when the naturalists had crossed the fjord in a motor boat — the violent offshore gale had presumably sent the ice out to sea.

From Watkins Fjord across Kangerdlugssuak to Amdrup's Fjord we met a great number of icebergs, and there is probably here a very deep-lying reef or collection of submarine skerries, as the larger icebergs seemed to have stranded. When later on we headed out of the fjord, the number of icebergs had increased considerably in this place, which was

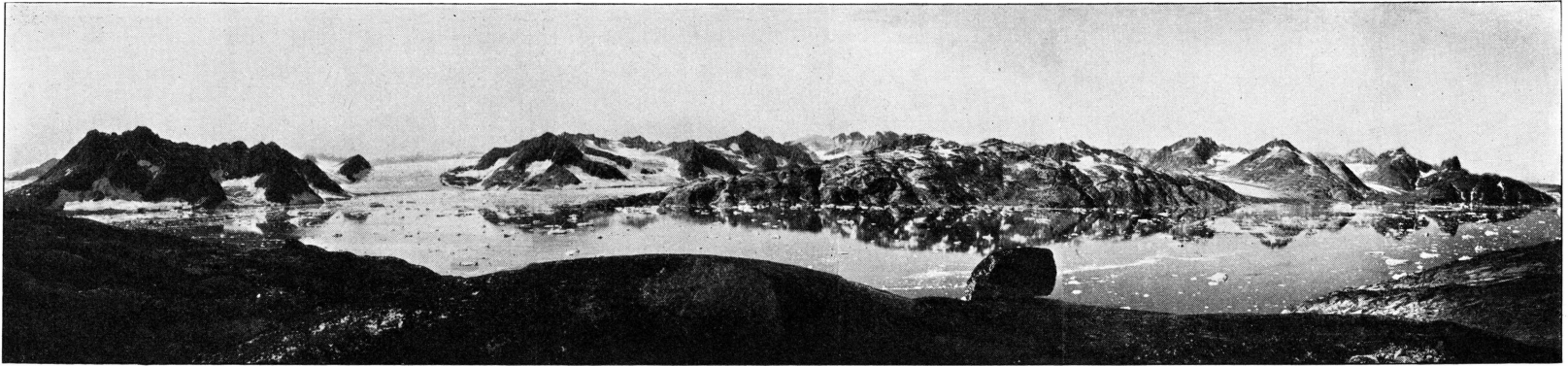


Fig. 22. West coast of Kangerdlugssuak from Amdrup's Fjord to Notched Mountain as seen from Kraemer's Island.

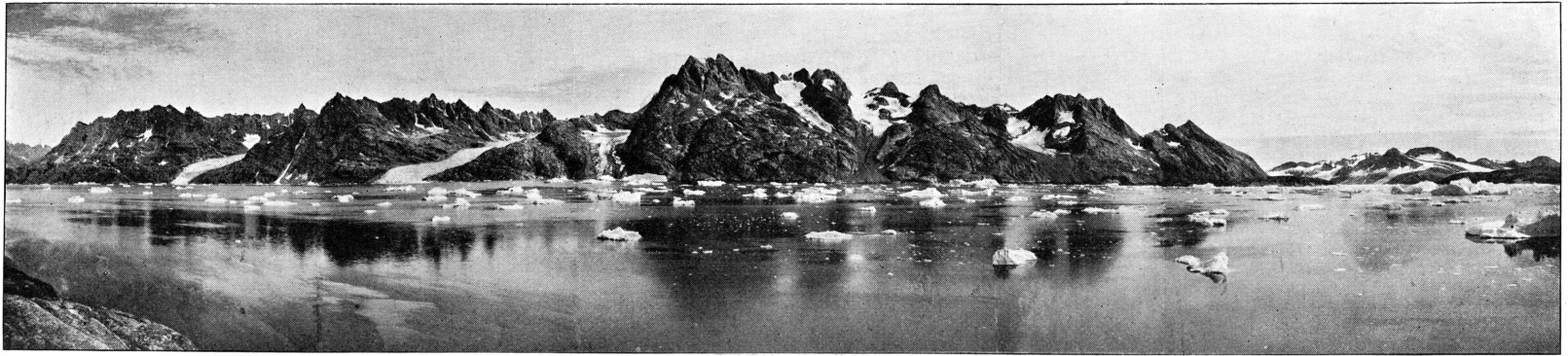


Fig. 23. East coast of Kangerdlugssuak from Watkins Fjord to Courtauld's Fjord.

almost entirely blocked up by very large bergs, round which there ran an exceedingly rapid current, but we did not get the opportunity to take soundings in this place, and in all probability our sounding line would not have been sufficiently long, judging by the dimensions of the icebergs.

At 8 a. m. we reached Notched Mountains, where we found the cartographers' party in the best of health. They also had had a violent gale for fully two days and nights, and as we had supposed, the gale had swept the icebergs out from the head of the fjord, where Spender and his assistants during the preceding days had witnessed a violent motion in the ice.

The great icebergs had been drifting very rapidly outwards, but they seemed to meet with many obstacles before they reached the sea, for all of sudden an iceberg might either stop — presumably grounded on some submarine peak — or change its direction and cut cross the usual ice drift. In both cases this caused great disturbances in the surrounding ice, which collided or turned over with a terrific noise, burst into smaller icebergs, or went entirely to pieces, while the sea was put in such violent motion that the breakers beat high up against the rocks.

It was Spender's opinion that we could only with great difficulty have stayed in there with the vessel during the gale of the preceding days. The coasts were very steep, and there was presumably no shelter to be found anywhere, so that we would have had to keep the ship going between the rapidly drifting icebergs, and this would have been exceedingly difficult in the very strong gale.

Degerbøl was very anxious to undertake some dredgings at the head of Kangerdlugssuak, and we took the first off Notched Mountain where there were 125 m water with gravel bottom very close inshore.

In the meantime the geologists left the vessel in order to examine the geological conditions of the west coast, and after the dredging at Notched Mountain we headed across Kangerdlugssuak to land the other scientists and cartographers in suitable places on the northern side of Courtauld's Fjord¹), while the vessel was kept going outside, chiefly engaged in comparatively deep dredgings.

Unfortunately we were not fully equipped for these deep-sea investigations; our winch was not sufficiently powerful to enable us to dredge in greater depths than 300 m, and besides it took too long to haul in the dredge, so that it became a rather circumstantial and slow work.

However, we obtained some dredgings with good results, while the shore parties were absent from the vessel, but as a rule it was very difficult to undertake dredging in Kangerdlugssuak, seeing that the bottom everywhere seemed to consist of extremely soft mud, which filled the dredge in a moment and was very apt to tear it.

¹) Named after Mr. Augustine Courtauld who alone remained on the ice-cap during the winter 1930—31.

While waiting for the naturalists we saw a Norwegian sealing vessel in the ice farther out in the fjord. As soon as those onboard sighted us, the vessel stopped, but half an hour later it turned and again headed seawards, without having tried to establish a communication with us.

We again crossed the fjord to the west coast, looking in vain for an anchorage, but everywhere we found the water too deep to anchor, and so we could do no more than land the naturalists in various localities.

We had hoped to be able to stay at the head of Kangerdlugssuak for a couple of days, but as we could not find an only moderately sheltered



Fig. 24. Mountains in Courtauld's Fjord.

anchorage, I considered it unjustifiable to lengthen our stay beyond what was absolutely necessary. For that matter, with the exception of the geological investigations, there did not seem to be much work for the naturalists, as the mountains round the fjord were the most desert and barren imaginable.

There was extremely little vegetation to be found in the places where it was at all possible to land, and we saw no traces whatsoever of bird and animal life on land. The sea, on the other hand, presented a rich animal life; the fjord seal was of common occurrence, we sighted and shot a bearded seal, and though the harp seal was not met with in such large flocks as farther out towards the mouth of the fjord, still it was rather common in there, and the same held good of the narwhal. Upon the whole the marine animal life was abundant right up to the head of the fjord, though richest at its mouth.

We found a great number of icebergs in the large basin constituting the head of Kangerdlugssuak and a good deal of small glacier ice in long and rather broad bars, but no sea ice whatsoever.

We attempted to reach the depot laid out by Watkins in 1931 near the very outflow of the Kangerdlugssuak Glacier, but we were stopped by a quantity of closely packed ice in the bay off the depot, and although we were only about a couple of kilometres off the shore, and had expressly been asked by Watkins to take the depot onboard and land it at Tugtilik (Lake Fjord), we failed in the attempt on account of the ice.

We came so close to the long tongue of ice, which from the Kangerdlugssuak Glacier is pressed out into the fjord, that we were able to see how it was divided from the main glacier by a very straight and extremely narrow channel; the several kilometres long glacier tongue itself was broken to pieces, and as a matter of fact only consisted of some extremely large icebergs separated by very narrow lanes. These icebergs will probably drift outwards at spring tide, and the huge, cracked and dentate bergs in and outside the mouth of Kangerdlugssuak probably all originate from this glacier, which must move quickly over a very uneven bottom.

Seen from a distance of a couple of kilometres the surface of the glacier looked extremely rough, being cracked and crossed and re-crossed by huge fissures.

The country at the head of Kangerdlugssuak was very beautiful, and the mirror-like fjord was surrounded by very tall, steep and wildly jagged mountains, ranging in shades from practically black to yellow and golden-red, and intersected by black dykes.

But, as already mentioned, it was an inclement and desert country, and the fjord itself was a very awkward place for a vessel to spend the night without shelter, the current being strong and the motion in the ice at times violent.

However, we would like to use one more day for investigations in this fjord, and the weather being fine and clear we hoped that it would not become bad or darker at night than that we might be able to keep the vessel drifting and avoid larger fragments of ice. Towards evening the sky began to look unsettled, but the night passed quietly, the weather kept fairly good, and although it blew hard at times, we managed to keep the ship clear of the ice. We were, however, glad when it grew light, and we continued our dredgings until noon, while the cartographers and scientists went ashore to carry on their surveys and investigations.

Off the northern Mudder Bay we landed the cartographers' party consisting of three men with a motor boat and equipment, and as there was no more work to be done for the other scientists in the fjord, we decided to get away from Kangerdlugssuak, while it was still time.

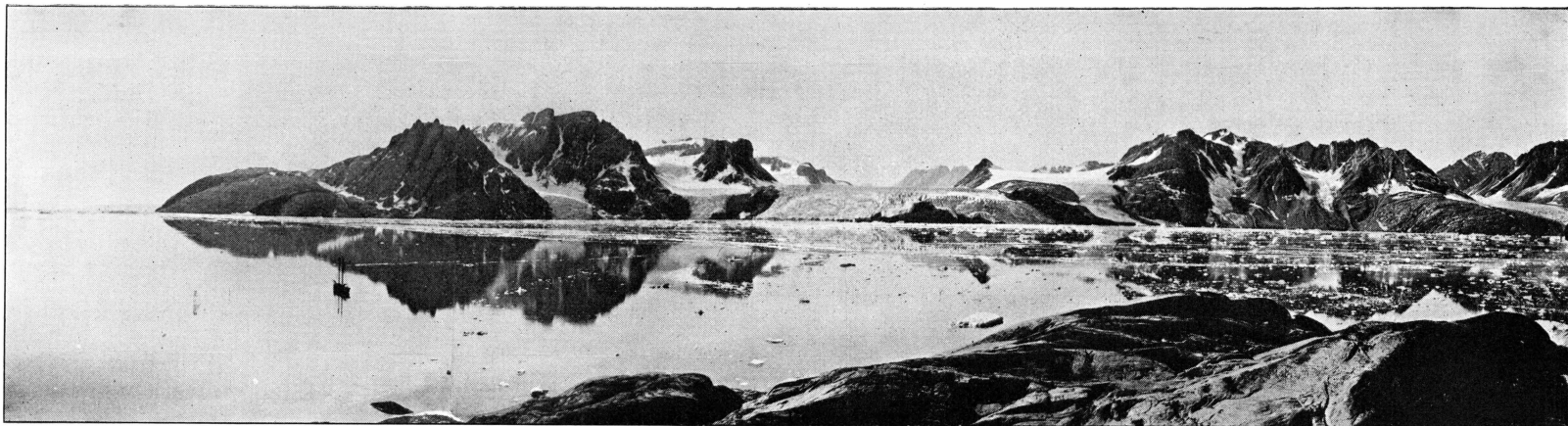


Fig. 25. West coast of Kangerdlugssuak from Notched Mountain and northwards.



Fig. 26. Head of Kangerdlugssuak (seen from Notched Mountain).

Böcher had been ashore to carry on botanical investigations, and when returning at noon he told, to our great surprise, that he had again seen the Norwegian sealing vessel, which we had met the day before farther towards the head of the fjord. It now lay in a small open inlet, made fast to the shore with wires on either side, and as the crew were busily engaged in landing building materials and bags, it was evident that they were making preparations for a party wintering.

Böcher had not been in communication with the Norwegians, but the cartographers, who were left in this region in order to undertake surveys, were visited by them, and it proved that it was the "Polaris" from Aalesund, which had been operating in the waters off Umivik and was now engaged in landing the materials for a radio station. It was the idea that three men should winter there and send off meteorological reports during the coming year. Mr. Thor Iversen, inspector of fisheries, was onboard with a view to undertaking hydrographic and fishing investigations, and they had i. a. caught a quantity of cod off Cape Deichmann. A young medical student had joined the party in order to carry on botanical investigations.

The vessel lay, as we had expected, in an extremely exposed place, entirely open to the sea and to swell and gales, while calving icebergs on several occasions had set such heavy breakers against the shore that the wires holding the vessel burst. It seemed to us a curious place for a radio station, the chief object of which was the sending of meteorological reports, for the house was built in a small ravine with violent gusts from the mountains, whereas it was entirely calm right outside on the fjord. On the other hand, there is presumably no other locality on the western side of Kangerdlugssuak, where a vessel has the least possibility of lying for the length of time required to land goods. The vessel was so well hidden that we could not possibly have discovered it from the fjord, if Böcher had not told us the exact locality in which to look for it.

When we passed the place where, as already mentioned, we consider it likely that there is a deep-lying reef, *viz.* between Watkins and Am-drup's Fjord, we found such an immense quantity of icebergs, some of which were grounded, that the fjord at its narrowest was practically blocked, partly by highly cracked and unstable icebergs, partly by a quantity of smaller glacier ice, whirled in among the icebergs by the current, which in this place sets very hard.

When we reached the entrance to Uttental Sound, we found the bay outside it filled with brash-ice, the first time we had seen ice in these waters. However, the ice was not more closely packed than that the geologist party — consisting of three men with tent equipment and a motor boat — could make their way through the ice and enter Uttental Sound through a more southerly entrance than the one formerly used.

Here they should spend the night, after which they were to cross to Amstrup's Fjord and proceed along the coast southward to, or beyond, Cape Edward Holm.

With the "Søkongen" we now headed out of the fjord, rounded Cape Hammer in open water, and towards evening, on August 21, we anchored at our old anchorage in Mikis Fjord.

Early in the morning of August 22 Böcher, Møhl Hansen and Sven Mikkelsen went in across the valley from the head of Mikis Fjord to the

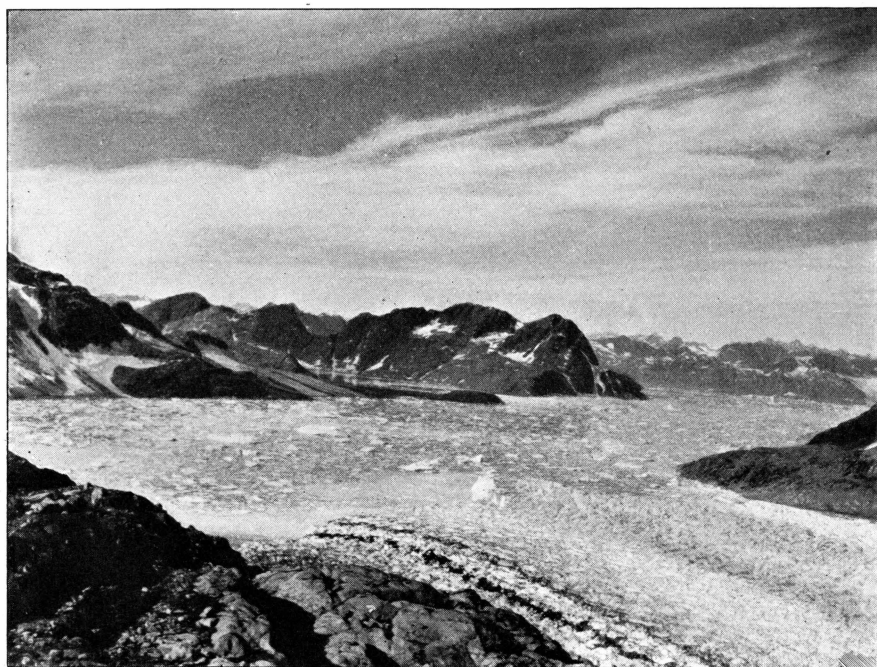


Fig. 27. View westwards over Watkins Fjord from a mountain range at the head of the fjord.

formerly sighted great lakes in the continuation of Watkins Fjord, while those onboard resumed the excavation of the Eskimo huts near the anchorage of the vessel, which work was continued on the following day.

On August 24 in the evening Böcher and his two companions returned. They had reached the lakes which lie at a height of about 300 m in a depression between two somewhat higher mountain ridges. The greater of the two lakes is about 2 km long and the smaller about 1 km. They were connected with one another, but there was no visible outlet from the lower and smaller lake. The only possibility is that it drains under a glacier into Watkins Fjord, but as to this no definite proof could be found.

The water in the lakes was very clear, and only very little bottom

or strand vegetation was visible. Upon the whole, this region was extremely desert and, generally speaking, quite devoid of vegetation, but in certain localities, particularly in the valley north of the lakes, where the snow lay late in spring and held the moisture for a longer time than in the snow-bare areas, there was a copse about 80 cm high and chiefly consisting of willow.

Also the animal life was very sparse. On the lake a couple of divers were observed with their young ones; one diver was shot with a fish



Fig. 28. View northwards over glacier from a mountain range behind Watkins Fjord.

in its beak, and near the tent there was a bear track, which had been used while our men were at the lakes, for they saw fresh traces of bear across their own footprints, but apart from that the region was practically devoid of animals, birds and plants.

From the top of the most northerly mountain ridge, at a height of about 600 m, the scientists had an uncommonly good view of the country in a northerly and easterly direction; it was completely glaciated, with the exception of some high mountain ridges which extended northwards, parallel with the coastal mountains of Kangerdlugssuak.

On August 25 it had been our intention to leave for the fjord east of Cape Irminger, but the weather became bad, with a dense fog and rain and an unsteady, quickly changing barometer. It was consequently out of the question to leave the fjord, and we had to content ourselves with working in Mikis Fjord. More particularly we undertook dredgings, which

in the comparatively low water yielded good results, although — as in all other places where dredgings were undertaken — we had great difficulty in finding the right kind of bottom; the soft mud spoiled many dredgings for us.

Towards evening a strong swell set into the fjord, so that we were unable to stay in our old, well-used anchorage, but had to weigh anchor

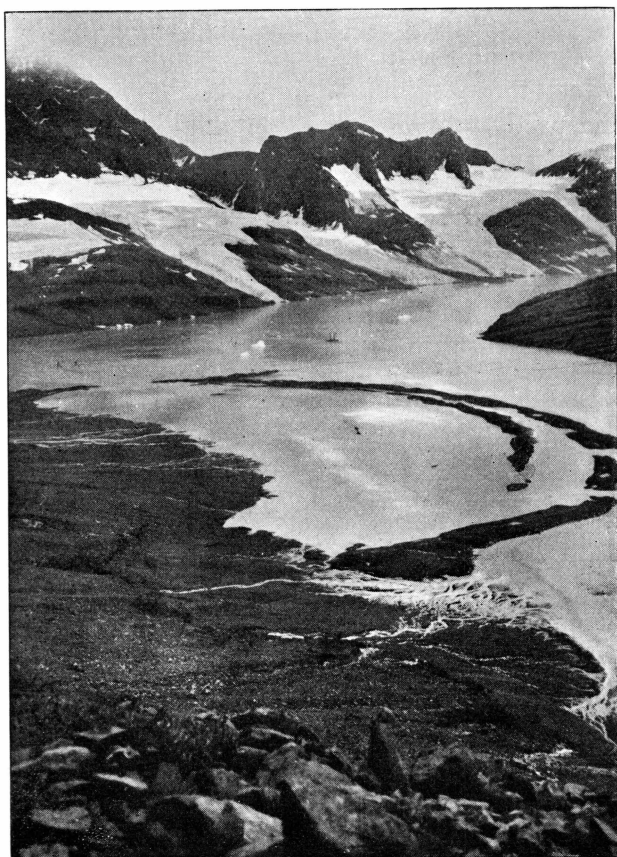


Fig. 29. Terminal moraine at the head of Mikis Fjord. Just inside the anchorage.

and enter the head of the fjord, where there were excellent anchoring conditions in an entirely closed basin with 15 m water.

The bad weather which began on August 25 was evidently the harbinger of autumn, for during the following days the weather became extremely unsteady with gales and rain. It had been comparatively warm throughout the summer, the temperature of the water not being less than about $1,1^{\circ}\text{C}$., and so we did not fear an early and cold autumn, which would cause a sudden freezing up of the fjords and make navigating difficult. Neither had we, on the other hand, been prepared for such

unsteady weather as we had had in the greater part of the month of August, and which particularly on the last days of the month became extremely bad with gales, violent rains, heavy swells round the coasts and at the mouths of fjords, and finally at times a surprisingly high temperature.

From August 25 to September 1 (including both days) we had practically had unceasing gales with unusually heavy and unrelenting rains. On August 30 we measured the rainfall and arrived at the result that it had been no less than 6,4 cm in twenty-four hours, and this in spite of the fact that it did not rain so hard within those as in the preceding and partly the following twenty-four hours.

During this period the wind remained almost constantly southeast; the barometer was very unsettled although not particularly low, but what surprised us more than anything else was the temperature which was astonishingly high for that time of the year, being 13,5° C. at 8 p. m. on August 31.

Rivers and rivulets swelled as during the most pronounced days of thaw, and everywhere great quantities of water flowed towards the sea, where the surface temperature rose to 2°4' C.

It was apparently a storm, extending over great parts of Southeast Greenland and Iceland. Through the radio we learned that the vessels of the other Danish expeditions in those waters, *viz.* the "Godthaab" and the "Gustav Holm" as well as the French "Pourquoi pas" had similar weather, partly at Scoresby Sound and partly in the waters between Scoresby Sound and Iceland, where the two latter lay hove-to for a couple of days.

From Iceland the radio reported unusually unsettled weather with gales and rain, and we learned later on that the weather had been as unsettled at Angmagssalik.

With the unsettled weather we were excluded from performing work of any kind ashore or on the vessel. We began to be anxious for our six men at Kangerdlugssuak, and felt persuaded that they were absolutely unable to work in the extremely bad weather; further, it would probably be impossible for them to traverse the distance from Kangerdlugssuak to Mikis Fjord in their open motor boats, but we hoped that they had found shelter in the houses built at Uttental Sound, and at any rate we knew that they had ample provisions. To our great joy they returned in safety on August 28, having had a very difficult passage along the outer coast.

The work of the cartographers had been interrupted a day too soon by the bad weather, which had been, if possible, still worse in Kangerdlugssuak, but the geologists had achieved their object and had been able to examine the coast and part of the immediate hinterland till

some distance past Cape Edward Holm. Upon the whole, they had achieved very good results, and further they had established the presence of a protected bay on the south side of Cape Edward Holm, where a vessel might probably lie in safety. In this bay, as well as in another, but more open bay, with surrounding level coasts on the south side of the country north of Cape Edward Holm and on Keglen (i. e. the cone) they had

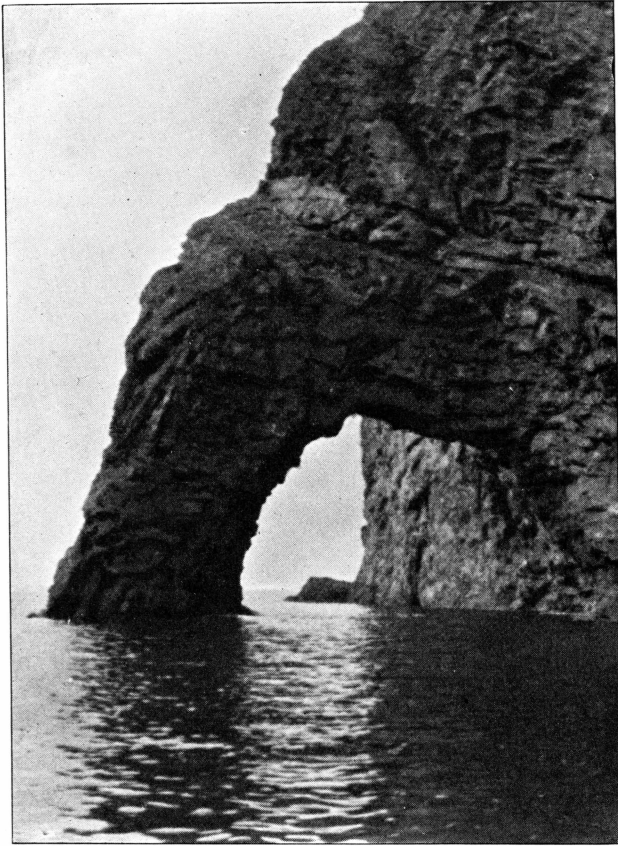


Fig. 30. Cape Edward Holm.

found numerous Eskimo huts and graves apparently exceedingly old.

On Monday, August 29, the gale abated, and as the weather seemed to be clearing, we weighed anchor in order to leave Mikis Fjord for the fjord east of Cape Irminger.

It was almost calm when we got out to sea, but there was a very heavy swell, and after some time the weather began to thicken with rain and fog. The nearer we got to the fjord, the more lively became the swell; the "Søkongen" rolled terribly, and the country, which we had hitherto been able to see rather clearly, was now veiled by rain squalls.

However, we hoped to be able to find shelter in the fjord east of Cape Irminger, but when we were off its mouth and had already begun to make for the shore, we saw a ground swell extending from Cape Irminger to about 5—6 miles off the fjord.

It must be a rather deep-lying reef, as we did not see the swell actually breaking over it, and though I am persuaded that it is possible without any danger to stand in for land in moderately calm weather, I dared not, under present conditions, attempt to cross the reef. To make matters worse our boats, which had been firmly lashed before we left Mikis Fjord, began to go adrift with the heavy rolling of the vessel, and we had no other expedient than to give up the fjord and once more head westwards to Mikis Fjord.

On the return journey to Mikis Fjord the wind rose; the air became thick with rain, and we were glad to be able once again to drop our anchor in a known and completely protected anchorage.

On August 30 the weather was even unusually bad, and it was impossible to work ashore; this was also the case on August 31, when dark clouds raced across the mountain peaks. Towards evening, however, the weather seemed to clear up a little, but it was only a short lull, and in the course of the night we had to drop our second anchor, as we were drifting even in this excellent harbour with the splendid holding ground.

On September 1 the weather seemed at last to abate. The drifting of the clouds decreased; it became calm, the sun began to appear, and at 1 p. m. we weighed anchor in order to renew our attempt to go south.

We had given up all thoughts of being able to do more work along this part of the coast, but we hoped that sea and swell would abate so much, that we could land a little hut at Nualik; it had been built out of our spare materials, and it was to make a point of support for the Greenlanders on their possible journey from Angmagssalik to Kangerdlugssuak. After that our object was to reach Tugtilik (Lake Fjord)¹), where we were going to build our last house as a travelling hut for the Greenlanders, but before the departure of the expedition I had made arrangements with the English arctic explorer G. Watkins that he and his comrades might live in the house during the first winter.

However, to our great regret we received on August 27 a radio message that Watkins had perished while out sealing, but as we wanted

¹) According to G. Holm, *Medd. o. Grøn.* vol. IX, pl. XV, fig. I and page 224 in the text, the fjord south of Steenstrup Glaciers is called Tugtilik (viz: the fjord where reindeer live) by the natives of Angmagssalik. As it is the only locality on the east coast of Greenland, where there is an original native reference to the former existence of reindeer, this name ought not to disappear from the map in favour of the new name Lake Fjord which was given to the fjord by the Watkins Expedition.

in any case to build the house in that locality, and Watkins' companions for that matter intended to carry out the programme of the expedition, the sad news made no alteration in our plans.

When we got out to sea, it proved to be nearly calm, but the swell was so violent that we almost dipped the railings in the water, although the vessel at that time carried only a very light cargo. When we were out of the fjord, the temperature fell at once to 7° C.

Beyond some huge icebergs there was not the faintest suggestion of ice, and the sea undoubtedly was entirely open outside us. At 2 p. m. the surface temperature of the sea was $2^{\circ}4$ C.

When on the morning of September 2 we were off Nualik, the swell was still so heavy that it was out of the question to land in order to build the hut mentioned above. We did not want to waste our time by waiting for a calmer sea, all the more as we knew that the Greenlanders, who spent the winter of 1928 in that region, had repaired the "dead men's house", found by Amdrup near Nualik in 1899, and also built another house, so that they had in fact sufficient points of support for a journey along the coast

And so in ever finer weather we continued south along the coast towards Tugtilik. In the afternoon of September 1 and partly in the early morning of the following day we had clear weather and saw the country very distinctly from Kangerdlugssuak till well past Nualik.

It was not nearly so glaciated as we thought it would be according to Amdrup's map, for instead of seeing glacier beside glacier we saw practically only continuous land masses coming right down to the sea. It was, however, difficult to find our bearings, and consequently we have not made any alterations in the previously prepared charts, but beyond one large glacier north of Nualik the coast was apparently almost entirely free from glacier ice.

The country south of Nualik was much more covered with snow than the country round Kangerdlugssuak and the coast from there and in an easterly direction, but this was perhaps due to the advanced season.

In the morning the weather was foggy, though not more so than that we were justified in going full speed, there being only very few icebergs around us. About noon it cleared up entirely, and after dusk we reached the mouth of Tugtilik (Lake Fjord) without having been in any way hampered by the ice. Off and south of Steenstrup's Glacier we passed many large icebergs, and also in the outer part of Tugtilik we found them in great numbers; still, we were able to pick our way among them in the growing darkness, and at 9 p. m. we anchored in Tugtilik, after having for some time groped about to find an anchorage. In the course of our search we took the ground on the very steeply

rising bank of a river, but we managed without difficulty to refloat the "Søkongen". One must be very careful when looking for an anchorage off the mouth of a river, as the depth decreases very rapidly; in this place we consequently heaved the lead as quickly as at all possible, and while the ship lay practically still we first took 25 m without reaching the bottom, then 15 m, and before the lead could be heaved once more, the vessel grounded. Like all of these banks this one also consisted of clay, and when a vessel has very little way on her, nothing much happens, it being nearly like running against a soft wall.

We had expected to find our English friends in Tugtilik, but as no one came out on our arrival, we took it for granted that the bad weather had delayed their journey from Angmagssalik, where they had been in order to cable the tragic news of Watkin's death to England.

In order to make ready as quickly as possible we turned to at break of day on September 3, and began to land building materials near the English camp, which consisted of a large dwelling tent and a smaller tent. The English expedition had apparently been lucky in their salmon-fishing, for we found a couple of hundred fish hung up to dry, but it was evident that they had left the camp in a great hurry, as all sorts of things lay scattered over the ground.

As soon as the building materials had been carried ashore, our scientists commenced examining the country, particularly the flora, while the crew raised the framework of the house, and before noon the three Englishmen arrived in a motor boat from Angmagssalik, having, as we supposed, been delayed by the bad weather which had been raging along the coast.

As Watkins had calculated on catching sufficient seal to serve as food for the whole party, the expedition had brought very little by way of actual provisions, and by going over their stores it became apparent to us that it would be unjustifiable to let the three men spend the winter at such a long distance from Angmagssalik, without leaving an additional supply of provisions with them, a fact which they themselves realized to the full, all the more as none of them had the inclination or the ability to take on the arduous and dangerous task of catching seal.

We therefore asked them to prepare a list of the provisions which they considered necessary for the coming winter, and we handed over to them such quantities of our own stores as we thought ourselves justified in dispensing with, while the remainder was taken from the provisions with which we had been supplied by the Government for Greenland with a view to a possible forced wintering. Further, we handed over to them about 2 tons of coal and one barrel of petrol.

In the course of the day we had raised the framework of the house, laid the ceiling and part of the floor and nailed on the western wall, and as

one of the wintering party had some experience in carpentering, he could easily do the remainder of the work single-handed, all the more as we had sorted out all boards and marked them so that it was impossible to mistake their places in the house.

As the weather still seemed very unsettled, and as it was getting late in the season, we hastened the work as much as at all possible. In the evening of September 3 all provisions etc. were landed, and at four



Fig. 31. Lakes at the head of Tugtilik (Lake Fjord).

o'clock the following morning we weighed anchor and left Tugtilik to proceed to Angmagssalik.

It had been arranged that two members of the English party were to accompany us as far as Angmagssalik with their sea-going motor boat, but when we got outside Tugtilik, the weather had again become comparatively bad, and this in connection with the fact that the swell still ran very high, made it necessary for the motor boat to turn back, while we continued our journey, still in quite open water, though with a considerably greater number of icebergs round us, than we had seen north of the Steenstrup glaciers.

At about 3 p. m. we rounded Cape Dan, and making for the Angmagssalik settlement we met, halfway across Angmagssalik Fjord, three kayakers who were taken onboard, and at 5 p. m. we anchored off

the settlement, where we were cordially welcomed by the officials, the members of the Dutch expedition and our friends the Greenlanders.

The latter were very eager to hear about conditions at Kangerdlugssuak, and as we ourselves wanted to give the fullest and most accurate information possible, we invited them to a meeting which was attended by a couple of hundred natives from the adjacent dwelling places.

The clergyman of the settlement, Mr. Rosing, undertook to act as an interpreter, and while Degerbøl described the animals of capture at Kangerdlugssuak, I told them about the country and the houses and what we had left there by way of provisions, sledges and general equipment. It was, we told the Greenlanders, our firm conviction that hunting conditions were particularly good at the mouth of Kangerdlugssuak and also good in Mikis Fjord, and we further assured them that they had the fullest right to use the houses built and to dispose of the provisions left, though at the same time we cautioned them to use the latter with discretion.

It is our impression that the Greenlanders were very pleased with the work which had been done for them, and that a number of young hunters with their families will try to get north in the summer of 1933.

The weather was not very good during our stay at Angmagssalik, but nevertheless the scientists were given the opportunity to examine conditions there and compare them with conditions farther north. On September 10 we took leave of all our friends and headed out to sea, laying our course for Reykjavik.

The weather was rather windy and hazy, but there were only a few icebergs off Angmagssalik, and we had no difficulty in getting out to sea.

The last group of icebergs were passed about 50 miles off the shore, but we saw a solitary berg — our last — about 70 miles farther out in Danmark Strait.

On September 11 at 6 p. m. we received a radio message, to the effect that the American airman Hutchinson had been forced to land south of Angmagssalik and sent out S.O.S. signals. At the same time it was communicated that the English trawler, the "Lord Talbot", which had been fishing off Angmagssalik during the greater part of the summer and was only about 15 miles from the scene of the disaster, was already on its way there and might arrive in a couple of hours. When we received the message about Hutchinson's forced landing, we were in the midst of a gale from the west with a heavy sea, and as we were sailing before the wind with reefed boom foresails, it was entirely out of the question to turn and work westwards against wind and sea with a view to try to get to Angmagssalik for assistance. We thought for a moment of heaving to, so as to await better weather, but after having discussed the matter thoroughly, we continued our journey, thinking that if further assistance were necessary,

the H. M. S. "Fylla", superintending the fishing in these waters and actually lying at Reykjavik, might reach Angmagssalik in less than two days, whatever the weather.

In a constantly increasing gale from the west we kept on our course, and the following day (September 12) at 11,30 p. m. we arrived in Reykjavik. Here the scientific staff and myself left the "Søkongen", as we were to return to Copenhagen by the ordinary passengers' boat, while our splendid vessel was to be taken to Julianehaab with chief mate Chr. Nielsen in command, and left Reykjavik on September 16.

Our journey was at an end. Thanks to the eagerness for work and the interest in their several tasks evinced by the scientific staff, no less than by our excellent crew, and first and last to the spirit of good comradeship and collaboration which prevailed from start to finish, we had been able to accomplish the partly scientific, partly practical objects of our expedition along the Blosseville coast.

