

DET KONGELIGE DEPARTEMENT
FOR HANDEL, SJØFART, INDUSTRI, HÅNDVERK OG FISKERI

NORGES SVALBARD- OG ISHAVS-UNDERSØKELSER

SKRIFTER

Nr. 88

REPORT

ON THE ACTIVITIES OF
NORGES SVALBARD- OG ISHAVS-
UNDERSØKELSER

1936=1944

WITH 7 FIGURES IN THE TEXT,
2 PLATES, AND 1 MAP



OSLO

KOMMISJON HOS JACOB DYBWAD

1945

RESULTS OF THE NORWEGIAN EXPEDITIONS TO SVALBARD
1906—1926 PUBLISHED IN OTHER SERIES

(See Nr. 1 of this series.)

The results of the Prince of Monaco's expeditions (Mission Isachsen) in 1906 and 1907 were published under the title of 'Exploration du Nord-Ouest du Spitsberg entreprise sous les auspices de S. A. S. le Prince de Monaco par la Mission Isachsen', in *Résultats des Campagnes scientifiques*, Albert 1^{er}, Prince de Monaco, Fasc. XL—XLIV. Monaco.

ISACHSEN, GUNNAR, Première Partie. Récit de voyage. Fasc. XL. 1912. Fr. 120.00.

With map: Spitsberg (Côte Nord-Ouest). Scale 1:100 000. (2 sheets.) Charts: De la Partie Nord du Foreland à la Baie Magdalena, and Mouillages de la Côte Ouest du Spitsberg. ISACHSEN, GUNNAR and ADOLF HOEL, Deuxième Partie. Description du champ d'opération. Fasc. XLI. 1913. Fr. 80.00.

HOEL, ADOLF, Troisième Partie. Géologie. Fasc. XLII. 1914. Fr. 100.00.

SCHETELIG, JAKOB, Quatrième Partie. Les formations primitives. Fasc. XLIII. 1912. Fr. 16.00.

RESVOLL HOLMSEN, HANNA, Cinquième Partie. Observations botaniques. Fasc. XLIV, 1913. Fr. 40.00.

A considerable part of the results of the ISACHSEN expeditions in 1909 and 1910 has been published in *Videnskapsselskapets Skrifter. I. Mat.-Naturv. Klasse. Kristiania (Oslo)*.

ISACHSEN, GUNNAR, Rapport sur l'Expédition Isachsen au Spitsberg. 1912, No. 15. Kr. 5,40.

ALEXANDER, ANTON, Observations astronomiques. 1911, No. 19. Kr. 0,40.

GRAARUD, AAGE, Observations météorologiques. 1913, No. 1. Kr. 2,40.

HELLAND-HANSEN, BJØRN and FRIDTJOF NANSEN, The sea west of Spitsbergen. 1912, No. 12. Kr. 3,60.

ISACHSEN, GUNNAR, The hydrographic observations. 1912, No. 14. Kr. 4,20.

With chart: Waters and anchorages on the west and north coast. Publ. by the Norw. Geogr. Survey, No. 198.

HOEL, A. et O. HOLTEDAHL, Les nappes de lave, les volcans et les sources thermales dans les environs de la Baie Wood au Spitsberg. 1911, No. 8. Kr. 4,00.

GOLDSCHMIDT, V. M., Petrographische Untersuchung einiger Eruptivgesteine von Nord-westspitzbergen. 1911, No. 9. Kr. 0,80.

BACKLUND, H., Über einige Olivinknollen aus der Lava von Wood-Bay, Spitzbergen. 1911, No. 16. Kr. 0,60.

HOLTEDAHL, OLAF, Zur Kenntnis der Karbonablagerungen des westlichen Spitzbergens. I. Eine Fauna der Moskauer Stufe. 1911, No. 10. Kr. 3,00. II. Allgemeine stratigraphische und tektonische Beobachtungen. 1912, No. 23. Kr. 5,00.

HOEL, ADOLF, Observations sur la vitesse d'écoulement et sur l'ablation du Glacier Lilliehöök au Spitsberg 1907—1912. 1916, No. 4. Kr. 2,20.

VEGARD, L., L'influence du sol sur la glaciation au Spitsberg. 1912, No. 3. Kr. 0,40.

ISACHSEN, GUNNAR, Travaux topographiques. 1915, No. 7. Kr. 10,00.

With map: Spitsberg (Partie Nord-Ouest). Scale 1:200 000 (2 sheets).

GUNNAR ISACHSEN has also published: Green Harbour, in *Norsk Geogr. Selsk. Aarb.*, Kristiania, 1912—13, Green Harbour, Spitsbergen, in *Scot. geogr. Mag.*, Edinburgh, 1915, and, Spitsbergen: Notes to accompany map, in *Geogr. Journ.*, London, 1915.

All the above publications have been collected into two volumes as *Expédition Isachsen au Spitsberg 1909—1910. Résultats scientifiques. I, II. Christiania 1916*.

As the result of the expeditions of ADOLF HOEL and ARVE STAXRUD 1911—1914 the following memoir has been published in *Videnskapsselskapets Skrifter. I. Mat.-Naturv. Klasse*.

HOEL, ADOLF, Nouvelles observations sur le district volcanique du Spitsberg du Nord. 1914, No. 9. Kr. 2,50.

Expeditions of TH. VOGT 1925 and 1928:

STØRMER, LEIF, Downtonian Merostomata from Spitsbergen. — *Skr. Norske Vid.-Akad. I. Mat.-Nat. Kl.* 1934. No. 3. Kr. 3,00.

The following topographical maps and charts have been published separately:

Maps:

Bear Island. 1:25 000. 1925. Kr. 10,00.

Bear Island. 1:10 000. (In six sheets). 1925. Kr. 30,00.

East Greenland. Eirik Raudes Land from Sofiasund to Youngsund. 1:200 000. 1932. Kr. 5,00.

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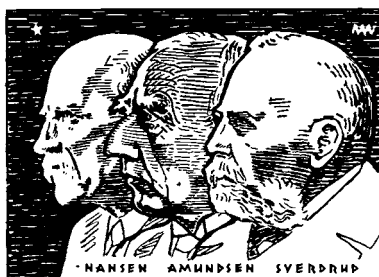
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A. W. BRØGGERS BOKTRYKKERI A/S

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Map of Svalbard.



Preface.

This report forms a continuation of the account of the Norwegian Svalbard expeditions given in the following two papers: Adolf Hoel, *The Norwegian Svalbard Expeditions 1906—1926*. Oslo 1929. *Resultater av de Norske Statsunderstøttede Spitsbergenekspeditioner Vol. 1. Nr. 1 (Skr. Svalbard og Ishavet. Nr. 1)*, and: Report on the Activities of Norges Svalbard- og Ishavs-undersøkelser 1927—1936. Oslo 1937. *Skr. Svalbard og Ishavet. Nr. 73*.

Since 1933 no scientific expedition has been sent out to Greenland, but several voyages have been made to South-East Greenland and to North-East Greenland for the purpose of relieving the Norwegian meteorological stations at Torgilsbu and Myggbukta (the upkeep and relief of which are charged to the *Norges Svalbard- og Ishavs-undersøkelser*), and a series of Norwegian hunting stations in North-East Greenland, also to bring supplies for fresh wintering parties. In Svalbard, scientific expeditions worked in 1938 and 1939, but since the outbreak of the war in Norway on April 9, 1940 no further expeditions have been sent to Svalbard.

The present report deals with the expeditions since 1936 and their results, and with the work carried out by *Norges Svalbard- og Ishavs-undersøkelser* in the period 1936—1944.

Oslo, Oct. 1, 1944.

Expeditions and Work of Norges Svalbard- and Ishavs-undersøkelser 1936—1944.

Work during the Winter of 1936—37.

The work of the *Norges Svalbard- og Ishavs-undersøkelser*¹ in this period was as follows: Topographers: Luncke prepared a plan for the survey from the air to be carried out by the Antarctic expedition of Consul Lars Christensen. Solheim carried out the trigonometrical computations and attended a photogrammetrical course at Jena in the spring of 1937. The topographers also furnished material for: *Karte von Nordostgrönland. Blatt Claveringöya, Jordan Hill und Geographical Society-öya. Mit einem Geleitwort von Otto Lacmann. Gotha 1937*, and published by the NSIU. Gunnar Scott-Ruud was attached to the office as draughtsman from November 1936.

After the highly successful air survey in East Greenland the NSIU and *Norges Geografiske Oppmåling*² made a joint purchase of a complete outfit for the photographic survey from the air and the construction of the maps. The purchase was made possible through the generous assistance of Mr. Thomas Olsen, shipowner of Oslo, who advanced the necessary funds, which the mentioned institutions undertook to repay during a period of 10 years; the first instalment was paid on July 1, 1937. The Zeiss aerial camera arrived in June 1936 and was used in Svalbard the same summer (see *Skr. Svalbard og Ishavet. Nr. 73*, p. 62). It was also lent to the Christensen Antarctic expedition, 1936—37. The map-construction outfit arrived in Nov. 1936 and was erected on the premises of the NGO. It is a Zeiss stereoplanigraph, originally model C/4, altered in the spring of 1937 to model C/5 to make it servicable for large angle exposures.

The NSIU had no hydrographic surveyor working in the winter of 1936—37.

The geologist Orvin worked on a geological map of Svalbard, preparation of *Skr. Svalbard og Ishavet. Nr. 18*, maps and reports of property claims in Svalbard, the place-names of Svalbard, expedition account 1936, etc.

Horn, also on the staff of the NSIU, worked on the place-names of Svalbard, made plans for a proposed expedition to Jan Mayen, did correspondence, translations, etc.

¹ In the following called NSIU.

² In this paper referred to as NGO.

Expeditions in the Summer of 1937.

Expedition to South-East Greenland.

An expedition with the M/S "Brandal" of Brandal, near Ålesund, commanded by Skipper Sivert Engeset, visited South-East Greenland to relieve the Norwegian meteorological station of Torgilsbu (Lat. 60° 32' N) and carry supplies for a wintering party. In the winter of 1936—37 the crew comprised three members, Ragnar Eggesvik, wireless operator, Arne Dobloug, cook, and Severin S. Brandal, handyman. They were to be replaced by Sverre Aaseth, wireless operator, Sigvald S. Brandal, cook, and Walter Molt, handyman.

The "Brandal" left Ålesund on Aug. 2, and first visited Kangerdlugsuak to inspect the Norwegian huts there (see *Skr. Svalbard og Ishavet. Nr. 73*, p. 27). The expedition arrived there on Aug. 11 and found the fjord packed with ice. The following day the ship went southward, and found some drift-ice off Kapp Løwenørn on the 14th. From Kapp Møsting to Skjoldungen the ice lay about 20 nautical miles off the coast. A call was made at Sørfjorden in the Skjoldungen district, where the expedition tried to catch char (*Salmo alpinus*) in the river at Trollbotn, but the result was only one barrel of fish.

On Aug. 15 the "Brandal" went into open sea and continued southward. Between Umanak and Kapp Tordenskjold there was a belt of drift-ice up to 25 miles from the coast. Torgilsbu was reached on Aug. 16, and supplies landed. On the 20th the ship visited Lindenowfjorden, where a new hut was put up, the old one having been blown into the sea in 1933. Also the houses in Hornfjorden and Mortensenfjorden were inspected. On the 23rd "Brandal" returned northwards, and after a call at Faxafj., Iceland, where some whale meat was received from the Norwegian floating factory "Labor", the expedition returned to Brandal on Sept. 7.

Expedition to North-East Greenland.¹

The purpose of the expedition was to relieve the meteorological station of Myggbukta and the hunting stations between 72° N and 76° N. The expedition sailed in the M/S "Polarbjørn" of Brandal, under Skipper Kristoffer Marø. The ship was fitted with an echo-sounder and radio direction finder. The expedition was led by John Giæver, Secretary of NSIU. Besides the crew, the ship carried 15 men who were going out to winter in Greenland, viz. Johan Holm, wireless operator, three hunters from Norwegian hunting company *Arktisk Næringsdrift A/S*,

¹ Geographical names written as on the map Eirik-Raudes-Land. 1 : mill. [Oslo 1932].

Søren Richter's hunting expedition, Herman Andresen's hunting expedition consisting of two men, and Sigurd Tolløfsen's hunting expedition of six men. Several Swedish and Norwegian tourists also accompanied the expedition under the leadership of the Finnish ornithologist Ludvig Munsterhjelm. They were: Ligner and Friherre Anders Koskull (Swedes), and Kr. Delphin, Solicitor; Bredo Diesen, Dentist; and Dr. Alf Bjercke (Norwegians). A German publicist, Vitalis Pantenburg, was also on board.

"Polarbjørn" left Ålesund on July 21 and reached the edge of the Greenland Ice about 100 nautical miles off the coast in about 74° N on July 26. Navigation continued in ice and fog until the 28th, when Jacksonøya was sighted. Ice conditions were very difficult, and near land great floes of polar ice had packed together. The ship entered a narrow lane of water at Arundeløya off Home Forland during the night and followed it northward to the Youngsund, the entrance of which, however, was locked by a great floe, that after some trouble was passed near K. Mary. Inside Sandøya the fjord was free from ice. At K. Mary they met the S/S "Quest" of Bodø, homeward bound with the expedition of the French Count Gaston Micard. The ship had wintered at the head of Loch Fine and reached the open sea a week later at Kong Oscars Fjord.

"Polarbjørn" first visited the hunting station of Revet in Copelandfjorden and then landed five men of the Tolløfsen expedition to catch char in the river under Zackenberg in the extreme north of Youngsund, while the ship went south. "Polarbjørn", however, ran aground here, and had to wire S/S "Veslekari" for help, which was successfully given on Aug. 3.

Andresen and his man went ashore at K. Herschel, and some coal and petrol was unloaded at K. Stosch, whereupon the ship sailed down the fjord and southward to Myggbukta. The ice was not broken here, and "Polarbjørn" had to continue to Frans Josefs Fjord on Aug. 7, where house materials were brought ashore about 10 kilometres west of K. Franklin. At K. Humboldt on Ymerøya two men went ashore, and a fishing party was landed at the river on Strindberg Land. Through Antarcicusundet the ship reached Kong Oscars Fjord, and called at the hunting station of Sunnmørsheimen on K. Petersens, where two hunters, Nils Hanken and Karsten Sulabak, who had wintered since 1934, embarked for Norway. From here the ship had to force the tightly packed ice to Antarcichamna, where the archæologist Søren Richter and his men went ashore with provisions. The ship now returned up Kong Oscars Fjord, and on Aug. 12 some coal was unloaded at the Norwegian hunting station on Ellaøya. A visit was also paid to the Danish station on the same island, where two men, H. Staub a Swiss geologist, and Arne Philbert a Dane, were lying ill. After consulting Dr. Ligner, the two men were offered a passage to Norway in "Polarbjørn". This they

could not do without the permission of Dr. Lauge Koch, who was then beset in the ice in Scoresby Sund, and did not get out till the latter part of September.

“Polarbjørn” therefore left the station without the two men and arrived at Hoelsbu in Moskusoksefjorden on Aug. 13. Here Levin Winther, the hunter, had made a record-catch of 142 foxes, taken by him alone. The following day the fishing party on Strindberghalvøya embarked with 46 barrels of Greenland char. The fish had been caught with a casting-net and a fishtrap of wire.

The ship now proceeded down Frans Josefs Fjord, landed coal at the hunting huts on Gausshalvøya, called at K. Humboldt, and on Aug. 15 in the evening she lay off Myggbukta in packed ice, fog, and rain.

That evening Giæver received a request from Dr. Lauge Koch to take the two men who were on Ellaøya to Norway, and the ship had to return through the Sofiasund to Ellaøya, where Staub and Philbert were taken on board in the morning of Aug. 17. “Polarbjørn” returned for Myggbukta by the same route, but 20 km south of K. Bennet she was stopped by tightly packed drift-ice. In the morning of the 18th the ice came from the north towards land, and the ship just managed to round K. Franklin and escape into Frans Josefs Fjord, where the ice was packed 50 km inwards from the entrance. A she-bear with three cubs was shot here. The following day the ice slackened, so that the ship could force its way into more open sea at Hold-with-Hope. Myggbukta, however, was packed with ice, and a motorboat had to follow a narrow lane of water along the shore to reach the meteorological station with provisions. Henry Haug, the wireless operator, and Edward G. Bird, an English ornithologist, who had wintered, now left the station for Norway, whereas Bird's brother, Charles Bird, would stay another winter.

The ship continued its course northward, landed some coal on Jacksonøya and called for Tolløfsen's fishing-party in the Youngsund on Aug. 21. They had got 21 barrels of char. Also the coal, that had been discharged earlier was now taken on board. Aage Hansen, the Danish hunter had wintered on Sandodden for three years and now wished to return home, but Dr. Koch refused; this was also the case with the two Swiss geologists on Eskimoneset. “Polarbjørn” then continued northward to land Tolløfsen's expedition. Along Wollaston Forland there was scattered ice, but in the Pendulumstretet and north-east of Bass Rock the winter-ice was still unbroken. Only south of Shannonøya a narrow lane of water stretched inwards to K. Tramnitz. Closer to land there was unbroken ice as far as could be seen. It was thus impossible to reach Kuhnøya, where two men should have been put ashore. The rest of Tolløfsen's party intended to go ashore in Roseneathbukta and on K. Beurmann inside of Koldeweyøya; consequently

“Polarbjørn” made her way farther north along the outer coast of Shannonøya, but off K. Pansch she met heavy ice, which was penetrated to 75° 40' N and about 18° W, but further advance proved to be impossible here. As the ice pressed from the north, “Polarbjørn” had to return southward, and Tolløfsen’s expedition was obliged to return to Norway.

A Danish hunter, Hennings, who embarked at Sandodden for Hochstetter Forland had now to be returned; moreover, food was needed for the homeward trip, as there were 39 men on board. The ice was now so packed at Pendulumøya that the ship was forced to sail 30 nautical miles in an easterly direction before a passage was found permitting the entry into Claveringfjorden. On Aug. 24, when the expedition visited K. Herschel, a heavy off-shore gale forced the ship to make for K. Mary to seek shelter. The following day Hennings was landed at Sandodden and the ship made ready for sea, while a hunting-party was ashore and shot two musk-oxen. On Aug. 25 in the evening “Polarbjørn” started for Norway, and already at midday the following day she was in the open sea after having passed an ice-belt 95 naut. miles broad. On the 28th the ship called of Jan Mayen, where two men from the Norwegian meteorological station, Arne Erlandsen, wireless operator, and Kvide Andersen, embarked for Norway. At 5 a. m. on Sept. 1 the expedition reached Ålesund.

Scientific work was not carried out on this expedition.

Svalbard.

The NSIU had no expedition to Svalbard in 1937, but one of our hydrographic surveyors, Captain Rolf von Krogh, visited the islands to lay out spar-buoys and inspect beacons.

Work during the Winter of 1937—38.

Topographers (Luncke, Solheim, Askheim). Work with the planigraph commenced on Oct. 15, 1937. The owners of the planigraph, the NSIU and the NGO, agreed upon the following: The NSIU to use the apparatus in the months of January, April, May, August and December, and the NGO in February, March, June, July, October and November. The first map constructed from the air photographs on the scale of 1:50000 was of the area south of Hornsund. The coast-lines in the eastern part of Svalbard were corrected from the air photographs. A general map of Svalbard on the scale of 1:2 mill. was drawn by Scott-Ruud. In January the planigraph was used for the construction of an Antarctic map (see p. 45). Major P. A. Grinaker, geodesist to the Geographical Survey of Norway, carried out the following computations:

The points of the Swedish-Russian Arc-of-Meridian Expedition 1899—1902 were re-computed to rectangular coordinates (Gaussian) in the system of Vestspitsbergen.

Orvin continued to work on the paper ("Das Festungsprofil auf Spitzbergen") published in *Skr. Svalbard og Ishavet. Nr. 18*, and a geological map of Svalbard; he prepared plans for the new meteorological station at Torgilsbu and was in charge of the fitting out of the relief expedition in the "Veiding" (see below).

Horn worked on the place-names of Svalbard, did the correspondence and various routine work. From June 4 to 14 he attended the Conference on Oil Shale and Cannel Coal arranged by the Institute of Petroleum and held in Glasgow on the 6th—11th June, 1938.

On Jan. 24, 1938 it was decided by the Storting to put the salaries of the personnel on a regulation basis from July 1, 1937. From July 1, 1938 the personnel became members of the Government Pension Fund (*Statens pensjonskasse*).

In the spring of 1938 Hoel was a member of a committee to advise upon the scientific work to be carried out by a proposed East Greenland expedition of the French Count Gaston Micard (see p. 24).

Expeditions in the Summer of 1938.

Expedition to South-East Greenland.

The "Veiding" of Hammerfest, Skipper Olav Bogstrand, arrived at Oslo on July 14 to load provisions and materials for the new house to be built at Torgilsbu, and left again on the 19th. She carried the following passengers: Ragnar Eggesvik, the new wireless operator to Torgilsbu, Mrs. Hansine Eggesvik, and Arne Pedersen. Arne Robøle, electrical engineer, accompanied the expedition to erect the new long-wave station, and Rolf and Magnus Grini, building contractors, to erect the new station house. On the 24th the Faeroes were passed and on the 29th Greenland was sighted. Soon after a belt of drift ice was met with, and they sailed along the ice edge, being now about 80 naut. miles from Torgilsbu. On the 31st they reached the station, having sailed through much ice. The "Veiding" remained here until Aug. 20, during which time the new station was built and wireless equipment installed.

On the homeward voyage many icebergs were encountered. On the 26th Cape Nord in Iceland was passed, the following day Langanes, and on the 31st the "Veiding" reached Ålesund.

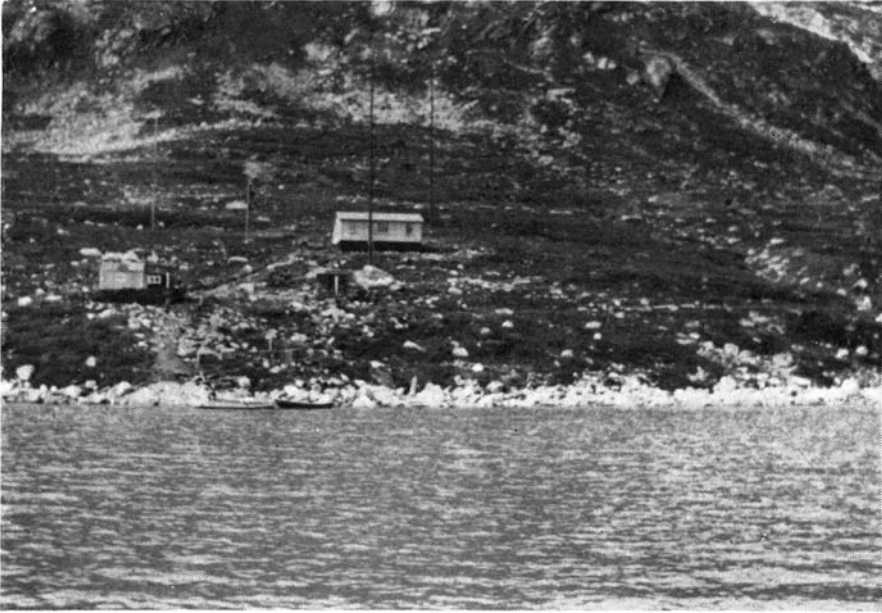


Fig. 1. The meteorological station in Torgilsbu, built in the summer of 1938.

O. Robøle phot. Aug. 1938.

Expedition to North-East Greenland.

This year the M/S "Polarbjørn" was again sent out to relieve the meteorological station at Myggbukta and the Norwegian hunting stations in North-East Greenland. Marø was skipper and Gæver leader of the expedition. The following men went out to winter in Greenland: Egil Rogstad, wireless operator, Kongsvinger, and for *Arktisk Næringsdrift A/S* Eilif Herdal, Oscar Bang, Bjarne Akre and Oddvar Akre; Sigurd Tolløfsen's expedition, including besides himself, Bjarne Jacobsen, Bjarne Dalsbø, and Øivind Tolløfsen. For Count Gaston Micard's expedition (see p. 24) the ship carried several tons of goods and the aviator Jess Tillier. This year, too, tourists took part in the expedition: Baron Anders Koskull, Alvestad, Sweden; Lars Erik Lamm, Director, Göteborg; and Consul Dan Huun, Bergen. Peder Henden, journalist, was also on board.

The "Polarbjørn" left Ålesund on July 21, and reached K. Herschel at Gael Hamkes Bay after a record crossing of only five days. On July 29 Tolløfsen's men were put ashore at the river under Zackenberg on the north side of the Youngsund to catch char, and the ship then went to Revet in Copelandfjorden, where Count Gaston Micard's ship "En Avant" (Ex "Ringsel") took over the goods belonging to his expedition (see p. 24). Miss Louise A. Boyd of San Francisco in S/S "Veslekari" was on the south side of Revet at the same time.

Hut materials were landed at Leirbotten, and provisions for Herman Andresen were put ashore at K. Herschel. The ship then went south to Myggbukta on the 2nd, and visited K. Humboldt, on Strindberg-halvøya, and Hoelsbu in Moskusoksefjorden on the following days. Hut material was also landed between K. Bull and Waltershausenbreen and on the western side of the middle part of Geologfjorden, and coal was put ashore at Eleonorebukta and in Vargbukta.

On Aug. 8 the ship visited the inner part of Frans Josefs Fjord, where hut-materials were put ashore east of the mouth of Kierulffjorden and in a small valley between Svenskeneset and Ättestupan. After a trip into Reinbukta hut-materials were landed on the south side under Payertoppen.

The "Polarbjørn" sailed south to Antartichamna, where the archæologist Søren Richter, his assistant, and 17 live foxes were embarked for the voyage home. Richter had also collected much archæological material. Returning up the fjord she landed provisions at K. Petersens, where Peder Sulebak was to remain another winter, and from here the ship continued northward to Moskusoksefjorden.

At the head of the fjord they met M/K "Grande" with Ole Klokset's expedition.

On Aug. 13 thirty barrels of char were taken on board, and the fishing party consisting of Framnes Hansen, Johan Johansen, Anders Godager and Levin Winther embarked. At Myggbukta the wireless operator, Johan Holm, came on board. All these men were going home to Norway. From Myggbukta the ship went to Zackenberg in Youngsund where the Tolløfsen expedition embarked with 12 barrels of char. The next place visited was K. Maurer on Kuhnøya, where provisions were unloaded for Tolløfsen's expedition. Then a call was made at the Danish station K. Rink for Baron Koskull, who on July 29 had gone northward from Zackenberg in the motor boat with the mate, Kristoffer Marø, to hunt walrus. He had passed the station and was now farther north.

From here "Polarbjørn" went to Jonsbu in Peterbukta, where Sigurd and Øivind Tolløfsen disembarked with provisions, and the English ornithologist, Charles Bird, came on board; he had wintered here in Myggbukta but had gone north in the spring to gather collections on Hochstetter-Forland. In the strait west of Shannonøya there was then unbroken ice, so the ship went east of the island and up to the hunting station of Ottostrand at Roseneathbukta, where Dalsbø and Jacobsen landed with provisions on Aug. 8. A letter left here by Baron Koskull told that he had gone farther north to K. Ritter six days earlier, but on the ship's calling at K. Ritter nobody was found. After some search they fortunately found him on the west side of Koldeweyøya; soon afterwards bad weather with mist set in.

“Polarbjørn” went back to Ardencaplefjorden and landed hut materials at K. Buck. Here the ship was delayed by the ice, which pressed her into the mouth of Granjeanfjorden.

The expedition also sought to capture calves of musk-oxen to be taken to Norway, but only full-grown animals were found. Previously a young musk-ox bull had been captured in Moskusoksefjorden. Later a calf was captured in Loch Fine. Already in 1929 musk-oxen had been captured in East Greenland and transferred to Svalbard where it was thought they would thrive, finding there conditions similar to those in North-East Greenland. The experiment proved successful. In 1932 musk-oxen were taken from Greenland to Norway and brought to the mountain region of Dovre in Central Norway. However, some of the animals had met with accidents, and in order to supplement the small stock left, more animals had to be brought from Greenland.

The “Polarbjørn” was delayed by storm at K. Rink on Aug. 21 and then went through heavy ice to Pendulumøya. From here there was an open lane of water southward along the coast. On Aug. 24 the “Polarbjørn” left Greenland for Norway. The ice-belt of the depth of 70 naut. miles was rather scattered, so the ship reached the open sea already on the next day. On the 27th they called at the island of Jan Mayen where 10 British scientists, led by Alexander King, of the Imperial College Expedition 1938, and Olaf Øyen, a Norwegian, from the meteorological station embarked. The British expedition embarked according to an agreement between the expedition leader and the NSIU.

Expedition to Svalbard.

The expedition sent out by NSIU in 1936 had for its main purpose the aerial survey of Svalbard (see *Skr. Svalbard og Ishavet. Nr. 73*). During that survey 3300 photograms were taken, covering two-thirds of the island group, viz., Vestspitsbergen, Barentsøya, and Edgeøya.

To finish this work another expedition was sent out in 1938, whose main task was to photograph the remaining parts from the air. If time permitted, hydrographic work and the erection of beacons was also be carried out.

The vessel of the expedition, the whale-catcher “Haug III”, left Kristiansund in Norway on July 12 and reached Tromsø on the 15th. A slip for the airplane had to be built on the after-deck of the vessel, and certain other work was also done at the Tromsø mechanical works. On July 16 the “Haug III” left Tromsø for Svalbard. The members of the expedition were as follows: Adolf Hoel, leader and geologist; Rolf von Krogh, skipper and hydrographic surveyor; Reidar Lyngaas, mate and hydrographic surveyor; Bernhard Luncke, leader of the air survey and air photographer; Nils Romnæs, chief of the air pilots, airplane

wireless operator and cinematographic photographer; Kjell Lassen-Urdahl, air pilot; Martin Hamre, air pilot; Hans Strandrud, air mechanic; Harald Christoffersen, ship wireless operator. Two assistants were engaged by the expedition and the crew numbered 7 men, making a total of 18 men on board.

The plane with pilots was hired from *Norsk Luftfoto A/S*, Oslo. It was a Stinson seaplane, highwing monoplane with a engine of 320 h.p. With a crew of 3 men, outfit, camera, wireless, emergency rations, rubber boat, etc. it had a cruising range of 4 hours (say 640 km). The aerial camera was of Zeiss make, film size 18×18 cm, and had arrangements for both oblique and vertical photographs. 12 rolls of Agfa "Aeropanfilm" were sufficient for 3300 exposures.

"Haug III" arrived at Longyearbyen on the 19th. While the vessel was coaling, von Krogh, Hoel, and Lyngaas went on board the vessel of the Governor of Svalbard (the *Sysselmann*), "Maiblomsten", to lay out spar-buoys. Odd Clemetsen, secretary in the Ministry of Trade, who was visiting Spitsbergen, was also on board. The spar-buoys had been obtained from the Norwegian Lighthouse Department. The anchor stones had a weight of perhaps 200—300 kg. The spar-buoys, along with some older ones from 1936, had been kept at the dock of Longyearbyen. Two spar-buoys were laid out at the mouth of Grønfjorden, four at Forlandsrevet. After having visited Ny-Ålesund on July 21, where the old coal-mining plant was inspected, the "Maiblomsten" returned to Adventfjorden, where Clemetsen left. Spar-buoys (2) were now placed on Ministerbåen in Sassenfjorden, and off Revneset on the north side of the mouth of Adventfjorden. The spar-buoys which had been fixed at Forlandsrevet were of the small type, but, as the depth this year was found to be 5 metres, von Krogh decided to put out the heavy spar-buoys instead. The last spar-buoy was placed on the 7.5 m shoal off the quay in Ny-Ålesund.

On July 25 the expedition sailed northward and the vessel anchored off Crozierpynten in Sorgfjorden on the 26th. The same day the first air survey flight was undertaken. In the morning of the following day the plane was in the air for four hours, this being the record for the whole trip. In the night between the 28th and 29th a short flight was again undertaken. That night the hunting sloop "Hornfjeld" entered the bay, having met a strong wind in Hinlopenstretet. This strong wind had also been observed in Hinlopenstretet and Wijdefjorden by the airmen, while there was a calm in Sorgfjorden. After two shorter flights Romnæs and Lassen-Urdahl flew to Longyearbyen on the 30th to fetch the mail. The vessel had in the meantime sailed to Verlegenuken, on whose northern point the building of the big beacon was commenced. When "Haug III" was back in Sorgfjorden the weather had changed, making it impossible for the plane to return from Adventfjorden until Aug. 6. While waiting for the plane a beacon, 5 metres

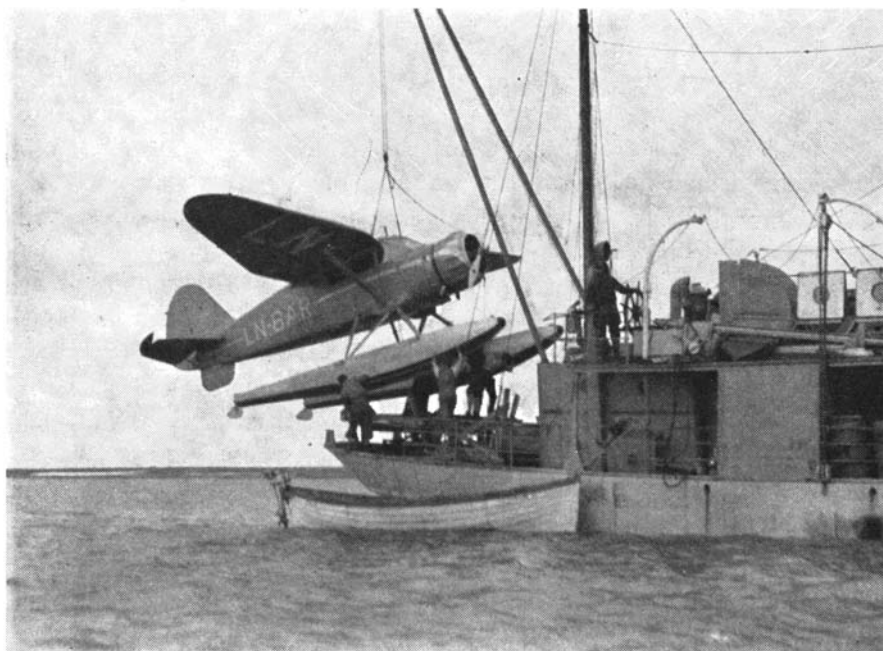


Fig. 2. The Stinson plane being taken on board the "Haug III" in Sorgfjorden after a survey flight. The special-shaped derrick was mounted for this purpose.

A. Hoel phot. July 28, 1938.

high, was built on Fosterneset, and stone cairns on the west and east side of the fjord inside of Crozierpynten, and on the east side of the mouth of Sorgfjorden. The plane returned in the evening of the 6th, but the next day flying conditions were again bad and the vessel sailed to Verlegenuken, where the big beacon ($3.0 \times 3.4 \times 4.0$ m) was finished. Adverse weather continued the following days and the time was spent in repairing the Swedish houses (wintering station of the Swedish Arc-of-Meridian expedition 1899—1900). Some Quaternary terraces were levelled. On Aug. 13 "Haug III" proceeded to Adventfjorden to coal, and on the way a beacon 4 metres high was put up on Gråhuken (Grey Hook). During the stay at Ny-Ålesund two survey flights were made, whereupon the plane flew to Adventfjorden to await the vessel, which arrived on the 15th. The next day Hoel sailed for Norway in the collier "Dagny I", and von Krogh was left in charge of the expedition. The "Haug III" went north again on the same day. The beacon on Verlegenuken was painted black. In Mosselbukta the vessel anchored off the Swedish station (wintering of the expedition of A. E. Nordenskiöld 1872—73).

On the 17th the bay was sounded, but as it was found to be a poor air base the expedition sailed eastwards to Murchisonfjorden, and "Haug III" anchored in the bay on the north side of the southern

point of Kvalrosshalvøya. The point was named *Flyodden*. In the evening and early the following morning survey flights were made. Later the sky became overcast and the opportunity was taken to overhaul the plane, while the hydrographic surveyors made a survey of the harbours on both sides of the point. The following days bad weather prevailed, partly with snow, but on the 24th it was possible to make three flights. On the 26th and the 27th photographic flights were again undertaken and the whole of Nordaustlandet and the region of Hinlopenstretet were now finished. In the evening of the 27th the plane was taken on board and the "Haug III" sailed southward through Hinlopenstretet, but owing to the fog she had to turn back and anchored north of Sparreneset. At this point a shoal, 2 metres in depth, was discovered. As the anchorage here has a stony bottom and is otherwise bad, the vessel shifted next morning to the south side, where the anchorage is much better with a sandy and clayey bottom.

About mid-day the weather improved and with a high NW wind the course was shaped for Kong Karls Land. In the evening, after they had passed Franzøya, the wind changed to NE and the sea became rough, making it difficult to carry on owing to the plane on the afterdeck. They decided to anchor off Lindemannodden on the south coast of Nordaustlandet and the next day they sailed eastward to Wahlbergøya. As the weather got worse, the trip to Kong Karls Land had to be abandoned, the "Haug III" sailing northward again. At the small island of Moffen the beacon was repaired and painted. The beacon on Amsterdamøya was also painted, and on Aug. 30 the vessel anchored at Ny-Ålesund. The spar-buoy here had been carried away by an iceberg. The next day they sailed southwards. The spar-buoys in Forlandsundet were left in their place, as fishing vessels might still use the sound, but the spar-buoys on Ministerbåen and Revneset were removed again and brought to Longyearbyen. The "Veslekari", with the American Boyd expedition, was also in the harbour and a visit was paid on board the ship. On Sept. 2 the spar-buoys in Grønfjorden were removed and Barentsburg was visited. On the return voyage to Longyearbyen a request was received from the Ministry of Trade to search for three missing hunters in the area of Bastianøyane, Kong Karls Land, and the island of Hopen. On Sept. 5 and after having coaled, the "Haug III" left Longyearbyen and reached Wahlbergøya at the southern entrance to Hinlopenstretet on the the following day. A hut on this island was examined. Wilhelmøya was the next call. With the plane the Bastianøyane, the country at Kappa Pyer, and the new house below Måkeberget,¹ were searched. As no trace of the hunters could be found, the plane was taken on board again and the course shaped for Kong Karls Land.

¹ See *Skr. Svalbard og Ishavet. Nr. 73*, p. 70. The mountain is here wrongly called *Måkefjellet*.

However, scattered calf-ice and fog were met with and soon the ice became so close and the fog so thick that the vessel had to stop. Later the fog lifted somewhat and by steering NE open water was reached. Svenskøya was sighted and in the evening "Haug III" anchored off Antarcticøya. On Sept. 8 the weather was fine and the voyage was continued south of Svenskøya and to the east coast of this island, where two huts were searched. The vessel anchored in the bay east of Kapp Altmann on Kongsøya and as the weather was good a flight was made and the remaining part of Kong Karls Land was photographed in just over two hours. Flying low the plane searched the country, but no signs of the hunters could be seen. The aeroplane had thus made it possible to search all these islands in the course of a few hours, whereas it would have taken days for the ship to do so. After midnight the course was set for Hopen, which was sighted at 1 p. m. on the 9th, but soon the island disappeared in the fog. Two nautical miles off the north-east point land was again sighted. On the 10th the "Haug III" was on the east side of the island. In a motor-boat the coast was searched, but nothing unusual could be seen. A case of serious illness had now occurred on board and on the 11th the course was set for Hammerfest in Norway to seek medical aid. However, as the patient improved the vessel altered her course and sailed to Tromsø, where she arrived in the evening of the 13th. The aeroplane was unloaded and the flying staff left the expedition here. In the evening of the 18th the "Haug III" reached Oslo.

Survey Work. From the air it could be ascertained that most of the glaciers had retreated, but in some places where the glaciers are likely to debouch into fjords (stretching inland from the present glacier front) the glacier fronts had advanced a great deal. This was particularly the case with the so-called *Bråsvellbreen* ("Sudden swell glacier") on the south coast of Nordaustlandet, and also with Negribreen on the west side of Storfjorden.

Despite less favourable weather conditions, the survey programme was more or less carried out. In 44 flying hours 2178 photographs were taken covering an area of abt. 25000 km². For other purposes 14 hours were spent in the air. 2500 m cinematographic films were taken.

Coal Investigations in Svalbard.

On behalf of the Ministry of Commerce Dr. J. Gram, chemist to the Norwegian State Railways, and G. Horn of the NSIU visited Spitsbergen to test coals especially with regard to their suitability for coking purposes. Gram stayed in Longyearbyen (*Store Norske Spitsbergen Kulkompani Aktieselskap*) from July 21 to Aug. 1, and Horn from July 16 to Aug. 31. Coal samples were taken from Mines 2 and 1 at

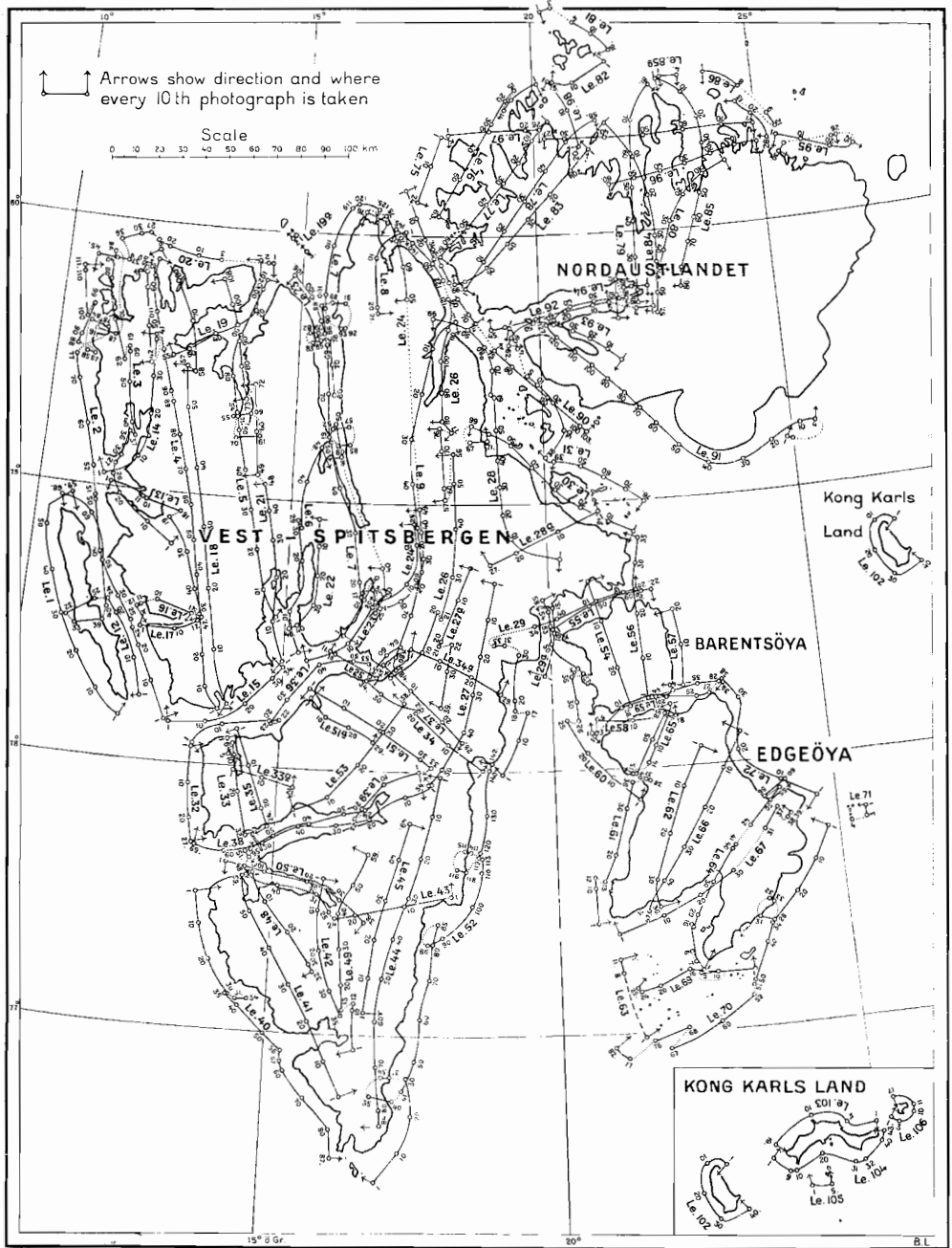


Fig. 3. General map showing flying series 1936 and 1938. Map of flying series in 1936 is shown in fig. 20 in *Skr. Svalbard og Ishavet. Nr. 73*.

Longyearbyen, from the company's property in Grønfjorden, and their Sveagruva mine at Braganzavågen. Coking tests were carried out by Gram in the laboratory in Longyearbyen, using an electric oven. Other coal samples were also collected by Horn. From Aug. 5 to the 12th Horn accompanied *Sysselmann* Marlow in the "Maiblomsten" on an inspection cruise around Spitsbergen. The examination of the coal samples was continued after the return to Oslo, and coking tests were carried out at the Drammen Gas Works. One sample was also tested at the Oslo Gas Works. A report covering the work and the results was submitted to the Ministry of Commerce by Dr. Gram in December.

Work during the Winter of 1938—39.

From Sept. 28 to Oct. 8, 1938 Hoel attended The Fifth International Congress of Photogrammetry in Rome (see p. 49). The topographers (Luncke, Solheim, Askheim): In addition to the usual computation work, etc., a report on the geodetic work carried out in Spitsbergen, Bjørnøya (Bear Island), and East Greenland was prepared for the International Union of Geodesy and Geophysics, General Conference in Washington 1939. The area between Hornsund, Sørkapp, and Storfjorden was constructed from the air photographs. For the benefit of the hydrographic work the costal area between Dei Sju Isfjella and Raudfjorden was constructed. The planigraph was lent for construction work on an Antarctic map (see p. 45). Askheim attended a photogrammetrical course at Jena in the spring of 1939.

Our new hydrographic surveyor, Reidar Lyngaas, worked on the corrections of the charts, and the filing of older survey material.

In April (1939) he acted as secretary to the Svalbard ice-breaker committee (see p. 50) when it sailed to Svalbard in the naval coast and fishery inspection vessel "Fridtjof Nansen" in order to study the ice conditions in the spring and other matters of interest in connection with the proposed ice-breaker. The members of the committee were K. Østbye, Commodore, Norwegian Navy; Johan Anker, chairman of the *Store Norske Spitsbergen Kulkompani Aktieselskap*, and Adolf Hoel.

Orvin was occupied with various geological work, etc. and Horn continued the work on the place-names of Svalbard, translated the paper by Orvin on the geology of Spitsbergen, etc.

Miss Kinn Glückstad, who has been on the clerical staff of the NSIU since 1928, retired at the end of 1938. Christine Marie Glückstad was born on May 23, 1873 in Halden and died on Oct. 5, 1940 in Oslo. We wish to record our appreciation of her long and able service. Miss Alfhild Baden (b. ^{20/9}1905) was employed to fill the vacancy (from 1/2 1939).

Relief Expedition for Count Gaston Micard in North-East Greenland.

The wintering expedition of the French Count Gaston Micard with the Norwegian Willie Knutsen as co-leader, sailed for North-East Greenland in the motor vessel "En avant" (ex "Ringsæl", particulars see p. 63) in the summer of 1938. The purpose of the expedition was hunting and various scientific work. Weather reports were thus to be sent to the Meteorological Institute in Oslo. The main station, named Micardbu, was set up on the east coast of Germania Land in lat. 77° 05' N and 18° 18' Long. W, about 4—5 km north of the "17 km Naze". Five sub-stations were also built (Koldewey I., two, Germania Land, three).

In the spring of 1939 Count Micard was taken ill, and wished to be transported home. He charged Hoel with the task of arranging a relief expedition. The "Veslekari" (see p. 63), Skipper Johan Olsen, was hired and *Widerøes Flyveselskap A/S* provided the plane (Stinson, 320 h. p. Wright motor) with Erik Engnæs (Lieutenant, Air Arm of the Norwegian Army) as chief pilot and Helge Bjørneby (Lieutenant of the Reserve, Air Arm of the Norwegian Navy) as wireless operator and second pilot. Fr. Blom Hartvigsen accompanied the expedition as physician, and our hydrographic surveyor, Captain Rolf v. Krogh, Norwegian Navy, was leader. The ship left Ålesund in Norway on May 13, and on the 19th when the ship was 250 km from Micardbu and off the edge of the drift ice, the plane was put on the water and took off for the flight. Micardbu was safely reached and the plane landed in a lane of open water some distance from the station. The plane returned the same day with Micard and Knutsen. On board the "Veslekari" the count received medical attention. The Norwegian coast was reached on the 25th and Count Micard was flown to hospital at Oslo.

The men remaining in Greenland returned to Norway in the summer.

Expedition in the Summer of 1939.

Expedition to South-East Greenland.

M/C "Grande", Skipper B. Hide, left Ålesund on July 20 to take fresh supplies to Torgilsbu, and the new wireless operators Sverre Aaseth and Harald Hoff. On board was also Rolf Grini, who was to repair the station house damaged by the storm in January. During the voyage Aaseth was taken seriously ill and the ship had to take him to Reykjavik in Iceland, arriving there on the 25th. Here Aaseth was taken to hospital. After having provisioned, the "Grande" left Reykjavik on Aug. 1 and arrived at Torgilsbu during the night of Aug. 5—6th. No drift ice was met with, but many icebergs were seen off the coast at Cape Walløe. "Grande" remained in Torgilsbu until the 14th. Provisions, coal, and building material were brought ashore and the house repaired.

Eggesvik and his wife had agreed to remain at the station another winter, and only Arne Pedersen, who had also wintered, left in the "Grande" which arrived at Ålesund on Aug. 23.

Expedition to North-East Greenland.

The vessel chartered for this trip was M/C "Polarbjørn" of Brandal, Skipper Kristoffer Marø, which left Ålesund on July 15. On board were the following: Johan Johansen and Hans Siewers, Henry Rudi, Schjølberg Nilsen, and Levin Winther, with his wife (all hunters for the *Arktisk Næringsdrift A/S*); and Andreas Skaanevik wireless operator. At Ålesund Søren Richter's expedition, consisting of three men, was picked up, and at Tromsø, where the ship arrived on the 18th, the hunter Helland came on board to join Sigurd Tolløfsen's expedition. Other passengers were: the Swedish Professor H. W:son Ahlmann and his assistants: the Swedish meteorologist Backa Erikson, and the Norwegian medical student Kåre Rodahl. The latter was to spend the coming winter at Revet to continue Professor Ahlmann's glacier survey on Clavingøya. Further: The Norwegian geologist Miss Brit Hofseth, to make geological investigations on Clavingøya. The following tourists sailed in the vessel: Ludvig Munsterhjelm, L. Seppänen, and L. Louekari, all Finns: Frantz Wallsten, Swede, Jeremi Wasiutyński, Polish student; the Norwegian author Nils Johan Rud, journalist of the expedition. Leader was John Giæver. The owner of the vessel, Martin Karlsen, also made the voyage.

The "Polarbjørn" first sailed to Spitsbergen — for the benefit of the tourists and reached Ny-Ålesund on the 22nd, whence it steered westward. In Lat. $76^{\circ} 15'$ and about 200 miles off the Greenland coast the ice became very close. They sailed SSW and on the 26th they were in Lat. $74^{\circ} 40'$ and abt. 100 miles off Sabineøya. On the 27th they reached Kapp Herschel. A stop was made at Revet on Clavingøya, where Ahlmann's expedition and Miss Hofseth were put ashore. The hunters Rudi and Nilsen also went ashore, and the Polish student left at Wordiebukta. At the mouth of Loch Fine they met the well-known American Arctic explorer Bob Bartlett, with his schooner "Effie M. Morrissey" carrying a tourist expedition. Ice conditions were exceptional this year on the stretch Hold with Hope to Davysundet, the winter ice in the mouth of the fjords being still there. On Aug. 1 the "Polarbjørn" reached Myggbukta.

Johansen and Siewers went ashore here. The wireless operator Rogstad came on board and was replaced by Skaanevik. Fosterbukta was covered by ice (unbroken winter ice) and the mouth of Frans Josefs Fjord was closed until the middle of August. However, on the 13th the "Polarbjørn" succeeded in penetrating Davysund and the stations were all reached from the south. The Richter's expedition was

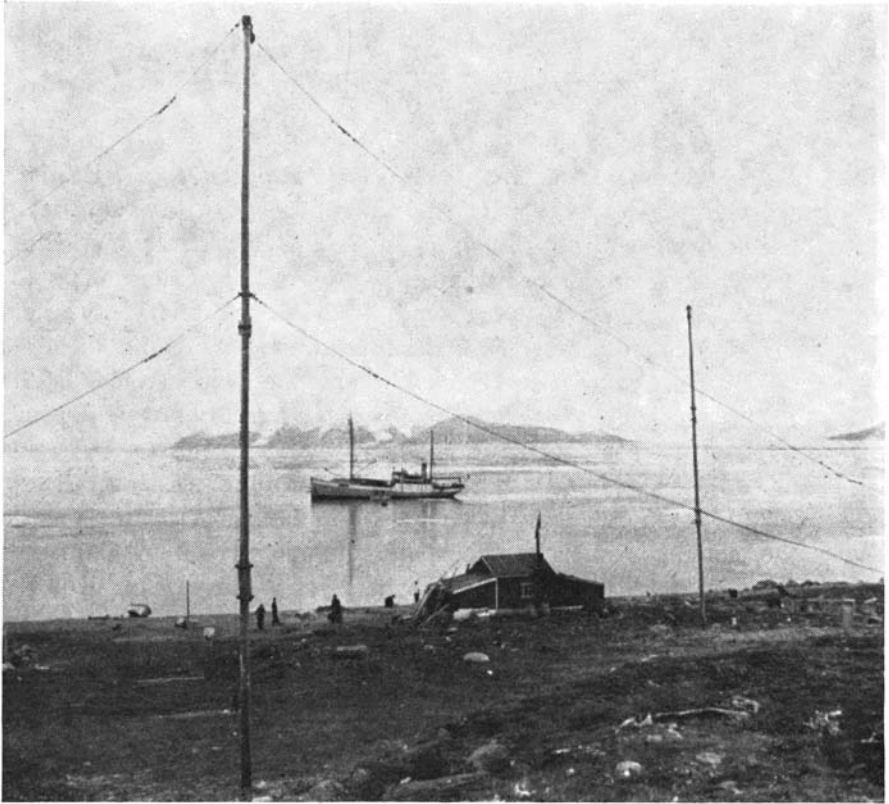


Fig. 4. Jonsbu hunting station (met. sta. 1932—34) in North-East Greenland.

Lat. $75^{\circ}20'$, long. $20^{\circ}28'$ W of Gr.

P. Røer phot. 1939.

landed at Mästervik and in the morning of the 14th Peder Sulebak was taken on board at Kapp Petersens. On the 17th Arne Jacobsen was picked up at his station east of Kapp Humboldt, and also Ole Klokseth, who had wintered since 1938 at Brochøyane (on his own account). On the 19th Gerhard Antonsen and Bjarne Jacobsen were taken on board in Youngsund and the following day Ahlmann's expedition and Miss Hofseth. At Kapp Herschel, Herman Andresen and Bjarne Dalsbø came on board. Jonsbu¹ in Peterbukta was reached on the 21st. Here Tolløfsen's expedition was picked up. Only Øivind Tolløfsen remained at this station to spend the next winter. The "Polarbjørn" left Greenland on the 22nd, but the same day the propeller was damaged in the ice south of Shannonøya, so that the speed of the vessel was reduced consider-

¹ Meteorologische Beobachtungen in Svalbard Radio, Bjørnøya, Jan Mayen, 5 Ost-Grönländischen Stationen und auf dem Fanaråken (Gipfelstation, 2064 m) während des internationalen Polarjahres 1932—33. Hg. von Det norske meteorologiske institutt. Oslo 1940. Norwegian Publications from the International Polar Year 1932—33. No. 3.

ably. The following returned with the vessel: the wireless operator Egil Rogstad, and four hunters of the *Arktisk Næringsdrift A/S*: Peder Sulebak from Kapp Petersens, Ole Klokseth from Kapp Laplace, Herman Andresen from Kapp Herschel and four men of Tolløfsen's expedition.

The homeward voyage has normally taken five days, now it took eight. Ålesund was reached on Aug. 31.

Expedition to Svalbard.

In the summer of 1939 NSIU organized an expedition to Svalbard, consisting of three parties:

1. Hydrographic expedition with the naval coast and fishery inspection vessel "Nordkapp", led by Captain Rolf von Krogh.
2. Surveying party to the north coast of Spitsbergen, led by Wilhelm Solheim.
3. Surveying party to Hope Island, led by Thor Askheim.

Solheim's party used the "Nordkapp" on the voyage to and from Spitsbergen, whereas Askheim's was taken to and fetched from Hope Island by the *syssekmann* of Svalbard in the "Maiblomsten".

1. Hydrographic Section in the "Nordkapp".

The expedition started from Tromsø on July 1. On board were the following:

Captain Rolf von Krogh, leader and hydrographic surveyor Lieutenant Reidar Lyngaas, hydrographic surveyor with two assistants Wilhelm Solheim topographer, with the assistants.

The crew of the "Nordkapp", besides its chief, Commander Køste, and second in command, Lieutenant Botten, numbered to 17 men.

On arriving at Isfjorden in July 4 the ship tried to find a shoal off Kapp Linné, reported by the Norwegian fishery inspection ship "Fridtjof Nansen", but failed to do so. In the evening "Nordkapp" moored at the old quay in Adventfjorden, where two motorboats, "Svenør" and "Svalis", a dory for the hotel at Ny-Ålesund, and a wahleboat were to be taken on board. When this work was done von Krogh borrowed "Maiblomsten" which had been chartered by *syssekmann* Marlow and went out with Lyngaas on July 5 to lay out spar-buoys at Revneset, Ministerbåen, and on both sides of the entrance to Grønfjorden; they also brought into position three of the spar-buoys in Forlandsundet, which had been shifted by the ice during the winter. Also a smaller spar-buoy was laid out here instead of the fourth, which had been carried so close to Murraypynten that they dared not go there with the vessel. They returned to Longyearbyen on July 6 late in the evening, and midnight "Nordkapp" left for the north. The following

day the spar-buoys in Forlandsundet and the beacons on Sarstangen and Murraypynten were painted and the spar-buoy at Murraypynten taken on board. In the evening the expedition arrived at Ny-Ålesund.

Here various goods and the dory for the hotel were discharged, and after having laid out spar-buoys on the seven-metre shoal near the quay, "Nordkapp" went north, brought on shore some provisions for Solheim and the hut on Bangenhuken, and landed Solheim and his three assistants with "Svalis" on Velkomstpynten.

"Nordkapp" now sailed to Magdalenefjorden and anchored east of Gravneset, where the ship and "Svenør" were made clear for sounding work on July 11. On the trip east to Wijdefjorden only scattered ice had been observed, and the beacon on Moffen was intact.

It was arranged that Lyngaas with two assistants in the motorboat "Svenør" should sound along the shore as far out as the 20-metre danger line, while von Krogh with the "Nordkapp" should sound outside this line. The work was commenced at Dei Sju Isfjella (The Seven Glaciers) and continued northwards to Smeerenburgfjorden. The sounding-sheets used were on the scale of 1:50000 with detailed coast line and many fixed points. The inner coast was surveyed with great accuracy after the so-called "line system" by Lyngaas in the "Svenør", which proved to be very useful for survey work in Spitsbergen. So did "Nordkapp", which was fitted out with echo-sounder and electric log, and was exceptionally easy to manage.

During the survey by "Nordkapp" off Magdalenefjorden a six-metre shelf was found on July 19. It has a dangerous position about 1¼ nautical miles NNW off Whales Back or right in front of Magdalenefjorden. The reason why no tourist steamers have struck here is that they have used the leading mark of the English chart of 1818 (surveyed by Capt. Broke), passing 200—400 metres south of the shelf.

On July 22—24 "Nordkapp" called at Ny-Ålesund where von Krogh conferred with Thor Iversen of the Norwegian Board of Fisheries in Bergen about the soundings west of Amsterdamøya, while the ship took in water and got her motor overhauled and the donkey-boiler cleaned out.

The ship now went north to Sørgattet, where she had her headquarters until the end of the survey. On July 28—30 "Nordkapp" was again in Ny-Ålesund to fetch 60 barrels of oil, sent up by the whaleboat "Lyngen".

In July the weather had been tolerable, but was bad throughout the whole of August. Either NE gale with snow or SW gale with rain and mist. This seriously impeded the work of the "Nordkapp" whereas "Svenør" as a rule could work either in Sørgatt or in Smeerenburgfjorden. "Nordkapp" had only one complete working-day (Aug. 7). Beyond that the work was limited to some hours now and then. But

as the work proceeded very rapidly with the "Nordkapp", the survey finished from Andrebreen and north of Amsterdamøya and Danskøya.

On Aug. 16 water was taken on aboard in Magdalenefjorden, and on the 21st a big iron tube was brought from Virgohamna and erected as a beacon on Danskeneset. On the rocks at the mouth of Sørgattet a great stone cairn was built, and a smaller one on the skerry NE of Bluffodden was put up.

On Aug. 23 survey work was stopped owing to the bad weather conditions, and "Nordkapp" went east to Sorgfjorden where Solheim's party embarked at Crozierpynten. A barrel of gasoline was taken on board at

Bluffodden, and with "Svenør" in tow "Nordkapp" arrived at Ny-Ålesund in the evening. The following morning the ship continued southward to Longyearbyen with both "Svenør" and the dory in tow. She arrived here in the evening of Aug. 25. A little later the inspection vessel "Thorfin I" also moored at the quay.

On Aug. 27 "Nordkapp" paid a visit, with *sysselmann* Marlow, to Barentsburg, and then left Grønfjorden for Norway. The expedition arrived in Tromsø on Aug. 30.

The results of this expedition can be briefly summarized as follows: In all, an area of about 850 km² was surveyed and 245 naut. miles were run with the echo sounder.

Spar-buoys were laid out on Ministerbåen, at Revneset, at Heerodden at Festningen, four on Forlandsrevet and one at Ny-Ålesund, a



Fig. 5. Map showing charted area (1939) in Svalbard.

total of nine. Thor Iversen had promised to take up all the spar-buoys in the autumn. Cairns were built in Sørgattet and near Bluffodden, and a beacon consisting of an iron tube erected on Danskeneset. Further, the beacons on Sarstangen, on Murraypynten and on Amsterdamøya were painted and those on Poolepynten, Gråhukuken, Verlegenhukuken, Fosterneset and on Moffen were inspected.

2. Topographic Section to the North Coast of Spitsbergen.

The topographer W. Solheim and 3 assistants were put ashore at Velkomstpynten (Point Welcome) on July 10. They remained there until July 25, when they left for Mushamna on the east side of Woodfjorden, travelling in the motorboat "Svalis". Some soundings were taken in the bay of Mushamna. On July 27 the party left for Mosselbukta on the east side of the mouth of Wijdefjorden and camped near the old Swedish station (wintering of the expedition of A. E. Norden-skiöld 1872—73).

On Aug. 10 they moved to Gråhukuken on the opposite side of the fjord. The small island of Moffen was visited on the 12th, whence they returned to Mosselbukta on the same day. On the 13th in the afternoon they moved to Sorgfjorden farther east and reached the old station at Crozierpynten (wintering of Swedish Arc-of-Meridian expedition 1899—1900) on the east side of the bay shortly after midnight. On Aug. 23 the "Nordkapp" arrived to fetch the party and they reached Ny-Ålesund in Kongsfjorden the following day.

Topographical work. At Velkomstpynten a base line, abt. 1000 metres in length was measured, whence a triangulation net was carried eastwards to Heclahukuken and connected with the Swedish base line there. All angles of the triangles were measured and the base lines were found to agree well.

Trigonometric stations to the number of 29 were occupied, 15 of which with photograms (100). Four cairns were built. Tidal observations were carried out at Velkomstpynten, Mosselbukta, and in Sorgfjorden. 100 km of coast line was measured by "direct depressions".

3. Topographic Section to the Island of Hopen.

The Island of Hopen is situated southeast of Spitsbergen and belongs to the Svalbard group. The length is abt. 34 km, and the breadth from 0.7 to 2 km. The area is abt. 50 sq. km.

This party consisted of the topographer Askheim and 3 assistants, and they were brought to the island in the M/C "Maiblomsten" chartered for the summer by the *sysselmann* of Svalbard to be used by him as an inspection vessel. The vessel left Tromsø on June 24, and on the 30th the party was landed at Koefoedodden on the east coast

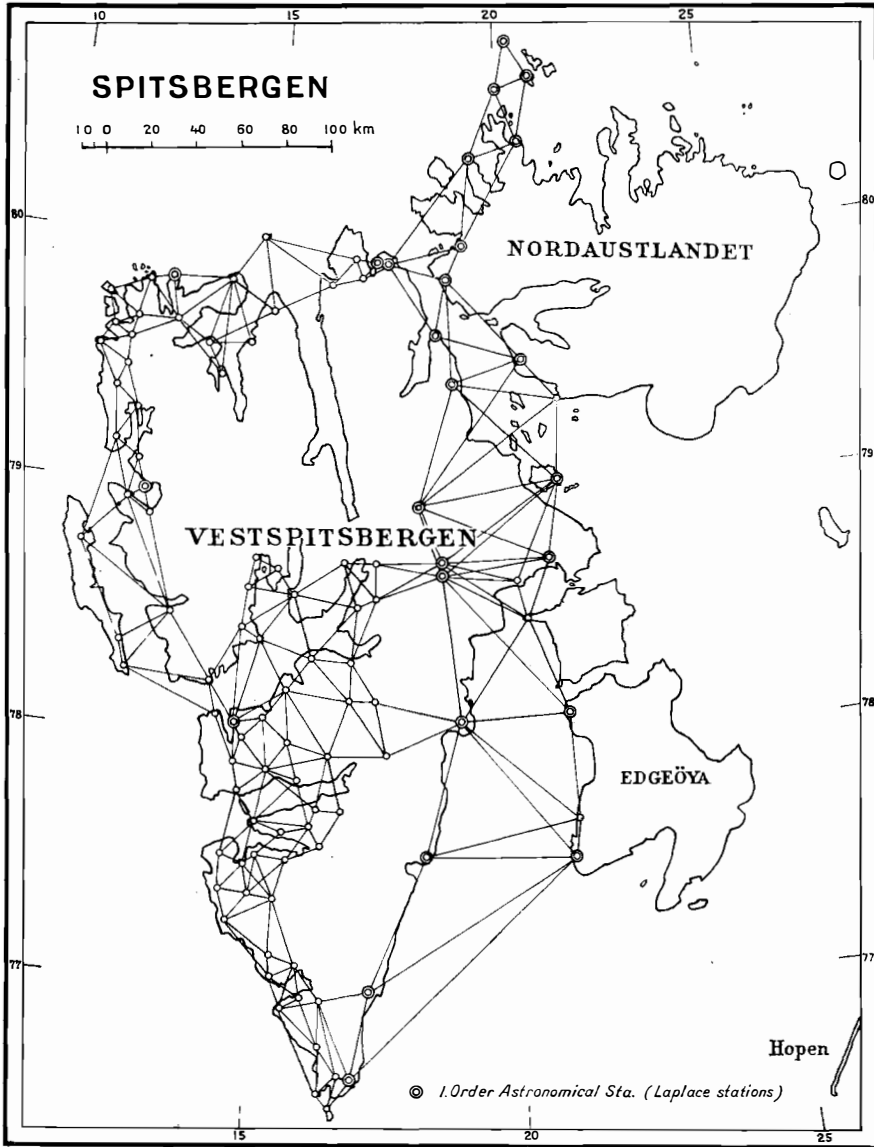


Fig. 6. General map showing trigonometrical net in Svalbard.

of the island. On Aug. 31 the "Maiblomsten" arrived to fetch the party and on Sept. 3 they were back in Tromsø.

The weather conditions in Hopen were very unfavourable for survey work, "no visibility" almost throughout the entire summer. The survey lasted 61 days, of which only seven gave "working weather" throughout the day, and two part of the day. 19 days were foggy down to 50—100 metres with rain or snow on some days, 33 days gave fog down to sea level. When Askheim arrived at Hopen, Koefoedodden

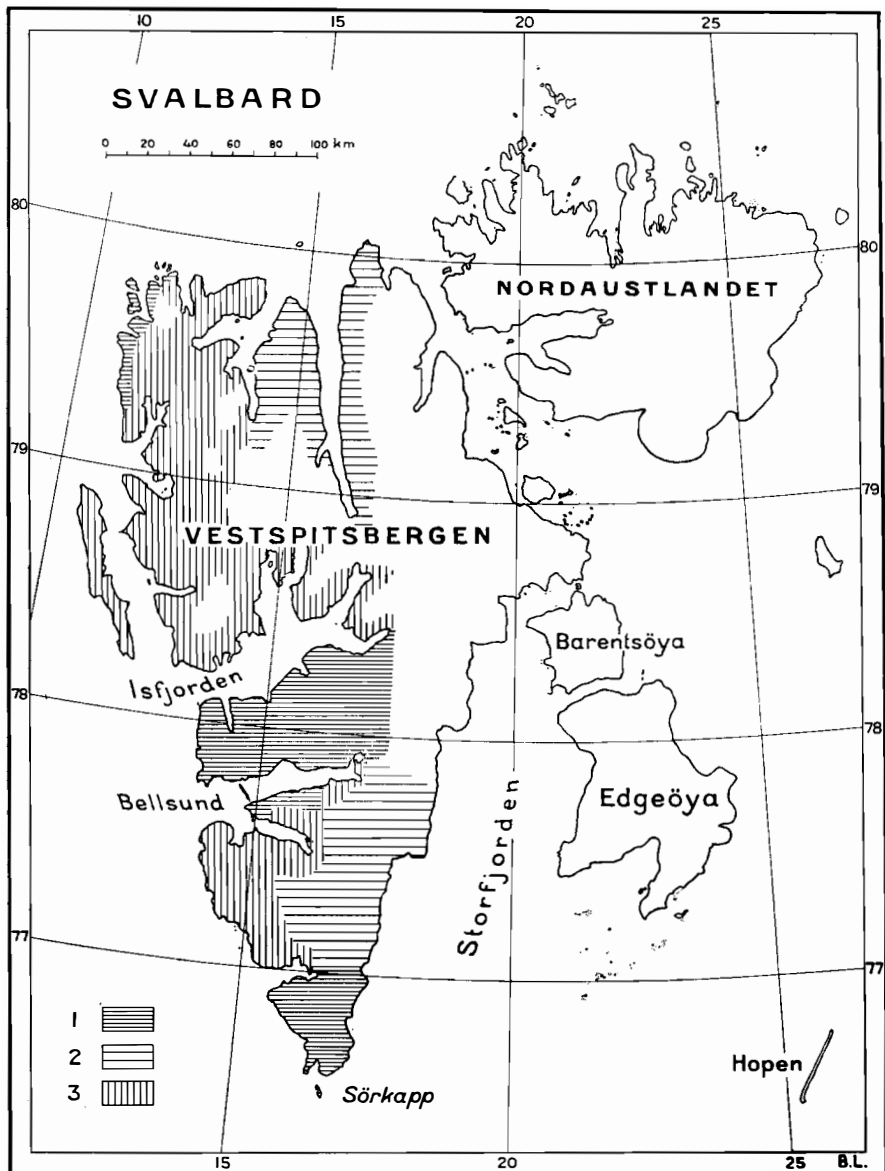


Fig. 7. General map showing surveyed areas in Svalbard.

1. Constructed from aero-photograms on the scale of 1:50 000, 1937—42. Area 6200 sq. km.
2. Constructed from aero-photograms on the scale of 1:200 000. 1942—43. (For general maps on the scale of 1:500 000 and 1:1 mill.).
3. Constructed before 1937 on the scale of 1:50 000, mainly as terrestrial photogrammetry. This applies also to the area between Isfjorden and Bellsund (see *Skr. Svalbard og Ishavet. Nr. 73*, fig. 19.)

was found to be only place where landing was possible. The possibilities of landing on Hopen during the period the party stayed on the island were as follows: 17 days: good; 18 days: possible; 13 days: difficult or very difficult; 13 days: impossible.

Topographical work. The work carried out amounted to: 7 trigonometrical stations without photograms, 19 stations with photograms, 28 tacheometer stations without and one with photograms; making a total of 58 photograms; 12 hours tide gauge reading; 20 km of coast line measured by "direct depressions"; measurement and levelling of 2 base lines; 9 cairns erected; 23 photographs taken for various purposes; preparation of concrete pillar for intended astronomical station at Kofoed-odden. Map construction: 10 sq. km. An accurate determination of the latitude and longitude of Hopen is planned to be carried out on a future expedition.

Work during the Winter of 1939—40.

The topographers (Luncke, Solheim, Askheim): Preliminary work for the construction of an area north of Hornsund and the western part of the Isfjord—Bellsund peninsula was carried out. Luncke, with the planigraph, was lent to Captain H. E. Hansen for a period of 2 months for the construction of an Antarctic map (see p. 45). Maps showing glacier variations in Svalbard were also prepared. The air camera, type Zeiss RMK P 21 was destroyed by fire on Sept. 17, 1939. A new camera, type Zeiss RMK S 1818 was purchased and arrived in Dec. 1939 (see p. 64).

The hydrographic surveyor (Lyngaas) was absent from Sept. 1, 1939 to the end of May 1940 owing to military duties.

Orvin worked on the place-names of Svalbard, geology of Svalbard, etc. and Horn continued the work on the place-names.

Expeditions in the Summer of 1940.

Expedition to South-East Greenland.

M/K "Ringsel" was fitted out at Tromsø to relieve the meteorological station Torgilsbu, and left that town of Aug. 2 in company with S/S "Veslekari", which was to relieve the stations in North-East Greenland.

Von Krogh was the leader of the expedition. The wireless operators Tom Fidjeland and Alf Hiorth were to winter in Torgilsbu, and of the other two passengers Willy Knutsen intended to winter in Angmagssalik and the icelander Kristjan Petur Gudmundsson from Akureyri would try to get to Iceland with a Danish boat from Greenland. The crew amounted to 8 persons including the skipper, Karl Nicolaisen.

The ships left Norway at Torsvåg north of Tromsø. On the first day two stowaways made their appearance on deck. Their names were Hans Engebriksen and Alf Sundt Jacobsen, both from Oslo. The skipper found it risky to return to Torsvåg in the bad weather and therefore included them in the crew. About midway between Norway and Bear Island a German aeroplane passed close over the ship. "Ringsel" arrived at Adventfjorden in the evening of Aug. 5, and after having taken on board 60 sacks of coal, left for Greenland on the 7th. "Ringsel" had a new wireless receiver, but the transmitter was unfit for use during the whole voyage.

"Ringsel" encountered the Greenland Ice on $78^{\circ}7'$ N. Lat. and $3^{\circ}43'$ E. Long. and followed the ice edge until the 7th, when land was sighted at Steenstrup Glaciers. On Aug. 19 they arrived at Angmagssalik. Here "Ringsel" ran aground and got her rudder buckled. The rudder was brought ashore to be straightened out, but the ship was not ready to continue her cruise until the morning of Aug. 25. The Danish and American authorities were asked for permission for Willy Knutsen to stay in Angmagssalik, but no answer arrived and the ship had to wait. On Aug. 26, however, the U. S. coastguard ship "Northland" anchored at Angmagssalik, and Knutsen, who was an American citizen, was permitted to go in the "Northland" to America. Commander Edward H. Smith of the "Northland" said that the ship was to relieve all the stations in East Greenland, but when he heard that "Veslekari" was calling at the Norwegian stations in North-East Greenland, he went southwards after having provisioned Angmagssalik.

"Ringsel" did not leave Angmagssalik till Aug. 27. They met "Northland" twice on the voyage, which took place in thick weather. When it cleared up on Aug. 29 the ice was scattered towards land and the vessel anchored south of Kapp Trolle about 35 naut. miles north of Torgilsbu. The following day the ship passed through the ice and, the weather being misty, went into Hornfjorden, where it anchored at the innermost hut in the evening. The next day, on Aug. 31 the "Ringsel" arrived at Torgilsbu. Here they met "Polarbjørn" and the "Northland". Skipper Marø on "Polarbjørn" told them that on Aug. 15 and 16 he had landed provisions for the winter and 80 sacks of coal at Torgilsbu, and then been to Myggbukta to unload provisions, when "Veslekari" arrived and stopped the work. The Norwegian warship "Fridtjof Nansen", however, also arrived and "Veslekari" was seized. Von Krogh then paid a visit on the "Northland", where Commander Smith told him that he had called to see that the station had provisions.

In the evening "Ringsel" landed the provisions brought from Norway, but not the coal, as there was enough ashore already. Fidjeland and Hiorth went ashore in the evening, and Eggesvik with wife and child and Hoff embarked. When the ship was ready to leave early

next morning it was discovered that the two stowaways had disappeared during the night. They could not be found anywhere, and "Ringsel" had to leave without them. The "Northland" left half an hour later.

Owing to thick weather with a gale from the northeast "Ringsel" was compelled to enter Mortensenfjorden for shelter till Sept. 3, when she continued northward along the shore. The following days they had partly thick weather and sighted land now and then. On the 8th a storm from the northeast forced the ship to run at half speed until next day, when they passed Kap Ryder 10 naut. miles off. On Aug. 10 they entered a fjord south of Kap Brewster, where water was taken in, the motor-couplings were inspected, and oil pumped over in the motor-tanks. There were only 25 barrels of oil left, 10—12 barrels having been pumped out of the tanks when the ship ran aground at Angmagssalik. For these reasons they had to take the shortest course to Norway. The "Ringsel" continued in mist and gale from the northeast, but on Sept. 17 the mountains in Vesterålen were visible and in the evening the ship entered Gavlenfjorden and called at Risøyhamn the next day. At midnight on the 18th the expedition was back at Tromsø.

Expedition to North-East Greenland.¹

The vessel chartered for this trip was S/S "Veslekari" of Ålesund, Skipper Johan Brandal. John Giæver, secretary to NSIU was leader. On board were the wireless operator Holger Hannestad, the photographer Coll, and 3 Danish hunters who were permitted to go in the ship to be put ashore at Mørkefjord, where they were to join the Danish wintering expedition of Count Knuth and Ebbe Munk. Goods for the Danish company *Nanok A/S*'s hunting stations and mail from *Grønlands Styrelse* in Copenhagen were also carried.

The vessel left Ålesund on July 28 and called at Tromsø, and Longyearbyen in Spitsbergen where coal was taken on board. The "Veslekari" sailed from Longyearbyen on Aug. 6, and called at Ny-Ålesund, whence it steered westwards until it reached the drift-ice. The ice was penetrated and the ship arrived at Claveringfjorden on Aug. 11. During the stay in Greenland waters "Veslekari" was seized by the Norwegian warship "Fridtjof Nansen", Captain Ullring, which in addition to her Norwegian crew, had some British soldiers on board. The wireless station Myggbukta was demolished and a prize crew was put on board the "Veslekari" which was then taken to Iceland and Great Britain. Before the ship left Greenland all the Norwegian hunting stations had been visited and supplied with provisions and stores. In the winter of 1940—41 the *Arktisk Næringsdrift A/S* had 6 hunters wintering. One of them had his wife with him.

¹ From the annual report of the *Arktisk Næringsdrift A/S*.

Work during the Winter of 1940—41.¹

The topographers (Luncke, Solheim, Askheim): Completion of the computation of the triangulation in 1939 from Raudfjorden to Hinlopenstretet, where connection was obtained with the net of the Swedish-Russian Arc-of-Meridian survey. The remaining part of the air routes from 1938 was plotted and construction continued of the area between Sassenfjorden—Tempelfjorden and Kjellströmdalen. The topographical map "Adventfjorden—Braganzavågen" on the scale of 1:100 000 was published in a preliminary edition. This map was of particular interest to the *Store Norske Spitsbergen Kulkompani Aktieselskap*. Two maps ("Skansbukta" and "Tempelfjorden") on the scale of 1:50 000 were prepared in connection with the deposits of gypsum owned by Jacob Kjøde, a Bergen shipowner. The planigraph was used for a fortnight to construct Antarctic maps. From Apr. 1, 1941 a new agreement was concluded with the NGO for the use of the planigraph. There being for the present no expeditions, the NSIU was to use the apparatus from Apr. 1 to Oct. 15, and the NGO from Oct. 16 to March 31.

The hydrographic surveyor (Lyngaas) worked on corrections of the chart Nr. 507 which appeared in a new edition in Aug. 1941. The construction of charts 509 and 510 was commenced.

Orvin worked on the preparation of geological maps and papers, was a member of the Government "Committee to discuss the question of an increase in the coal production in Svalbard and further investigations of the coal deposits" appointed on Jan. 7, 1941.²

Horn was also a member of the committee and acted as its secretary. The reports of the committee were ready on Febr. 6 and March 1. The first report dealt with the possibilities for a rapid extension of the coal production in Svalbard. The committee estimated that the production (export) in 1942 would reach 575 000 tons and in 1943 725 000 tons. The second report outlined a plan for future prospecting work.

¹ When no summer expeditions are sent out "winter" means the period July 1 to June 30 the following year.

² The members of the committee were: Adolf Hoel, leader of NSIU, chairman; Dr. Gunnar Horn; H. Merckoll, formerly mining inspector of Svalbard; Dr. Anders K. Orvin; B. A. Sherdahl, director of the Kongsberg Silver Mines; E. Slåtto of the Ministry of Trade; and E. Sverdrup, director of Store Norske Spitsbergen Kulkompani Aktieselskap.

Expedition in the Summer of 1941.¹

Expedition to North-East Greenland.

The vessel chartered for this trip was S/S "Buskø" of Ålesund, Skipper Elias Hessen, and leader of the expedition was Hallvard Devold, secretary to NSIU. The crew numbered 8 men including the skipper. The wintering party consisted of the following: Bradley, wireless operator, Anders Godager, leader of the hunting party, Mrs. Astri Godager, and 7 hunters. The vessel left Ålesund on Aug. 19 and proceeded to Laukvik in Senja in North Norway, whence it steered westward to Greenland. Nothing was heard of the expedition until the news was broadcast that the "Buskø" had been seized by an U. S. patrol vessel off the coast of Greenland. The ship and its crew had been taken to Boston, Mass., where they arrived probably abt. Oct. 15.

Work during the Winter of 1941—42.

The topographers (Luncke, Solheim, Askheim): The planigraph was modernised. In the autumn of 1941 the planigraph was improved upon in several respects. The most important improvements were: clutches on the vertical spindles on the drawing board, mechanic enumerator for reading the y and z values, fresh sets of toothed wheels (4:5), three SKF ball-bearings in the pedal disc, lengthening of the screws for adjusting the angular values φ and ω , fresh lamp sockets in the big reflectors, rectifier on the switchboard, and various improvements for reading the values x , b_x , b_z , z -micrometer and mechanic enumerator.² The construction of Svalbard maps on the scale of 1:50 000 proceeded in the area Adventfjorden—Kjellströmdalen. For use on the charts a new coast line was constructed from Woodfjorden along Wijdefjorden to Sorgfjorden and on the scale of 1:100 000. Scott-Ruud started the final drawing of the sheet "Sørkapp", to be reproduced on the scale 1:100 000. An agreement was concluded with the NGO for the sale of our topographical maps on the same conditions as those in force for our charts.

The glacier maps from Jotunheimen in Norway were printed (see p. 48). The hydrographic surveyor continued the work on the charts 509 and 510. In the period Apr. 11 — Nov. 3, 1942 he was transferred to *Norges Sjøkartverk* to do survey work.

Orvin prepared various geological papers, proposed place-names for the map sheet Sörkepp, etc.

¹ From the annual report of the *Arktisk Næringsdrift A/S*.

² The Germans had the disposal of the planigraph from March 1, 1944.

Horn completed the work on the place-names of Svalbard and the printing was finished on June 30, 1942.

In the winter of 1941—42 the western wing of the office building (of the NSIU) was rebuilt to serve as an office room. On the second floor alterations were also made.

Summer of 1942.

No expeditions were sent out in the summer of 1942 owing to the War.

Work during the Winter of 1942—43.

From Sept. 28, to Oct. 3, 1942 Hoel attended a meeting in Copenhagen for the discussion of Arctic problems. The meeting was called at the instance of *Deutsches Wissenschaftliches Institut, Arktische Abteilung*, leader Professor Hans Frebald, and included members from Denmark, Norway, Sweden, and Germany. Papers were read on geophysical, geographical, geological, and zoological subjects. Hoel read a paper on the Place-names of Svalbard.

The topographers (Luncke, Solheim, Askheim): The remaining parts of the Bellsund and Midterhukén peninsulas were constructed. Later the construction work covered the remaining area south of Van Mijénfjorden—Agardhfjellet and an area at Verlegenhukén. The drawing of the map sheet "Sørkapp" was continued. On behalf of the Ministry of Trade Askheim mapped an area at Tufte in the province of Telemark, where there is an occurrence of the rock søvite. A general map of Svalbard on the scale of 1:2 mill. was printed in a new edition. A new feature of this map was the separation of the ice-covered and ice-free areas. Of the entire island group of Svalbard 60 per cent. are glacier covered. The peninsula Isfjorden-Bellsund is glacier covered to the extent of 20 per cent., and Nordaustlandet to 80 per cent.

The hydrographic surveyor (Lyngaas) continued to work on the charts 509 and 510.

Orvin worked on various geological papers and maps, place-names on the "Sørkapp" sheet, etc.

Horn was absent on account of illness from Aug. 13, 1942 to Jan. 31, 1943. On his return he worked chiefly in the library, and on the publications, etc.

Mrs. Else Rosted (née Asmyhr), who had been on the office staff of the NSIU since Oct. 28, 1929 left our service on March 31, 1943.

Summer of 1943.

No expeditions were sent out in the summer of 1943 owing to the War.

Work during the Winter of 1943—44.

The topographers (Luncke, Solheim, Askheim): Trigonometrical computations. Svalbard map construction (planigraph) on the scale of 1:200000 and 1:50000 (smaller areas). Construction of the southern part of the island of Hopen from terrestrial photographs on the scale of 1:10000. Various other map work.

The air photographic films from Svalbard were evacuated in February to the Kongsberg mines, where special arrangements have been made to store material from the public archives, museums, and libraries and other valuable matter from public institutions.

The hydrographic surveyor (Lyngaas) finished work on the charts 509 and 510, and the sheets were sent to the Geographical Survey of Norway for printing. He also worked on a sailing directions for Svalbard.

Orvin commenced the preparation of a geological bibliography of Svalbard and also wrote a paper on the springs of Svalbard (*Meddelelser. Nr. 57*). Horn worked with the publications, the library, etc.

The eastern wing of the building (room for transit instrument) was rebuilt to serve as a safe (Aug.—Nov. 1943).

On Dec. 19, 1943 (Sunday) in the afternoon an explosion of ammunition occurred at Fillipstad some 500 metres from the building of NSIU. Great damage was caused to the buildings in the vicinity and several houses were set on fire. In our building all the windows were smashed and in the interior considerable damage was caused. During the first half of 1944 repairing work was in progress and greatly hampered the work of our institution, the personnel of which spent much time in moving and arranging books, papers etc. The greater part of our library was evacuated to safe places in February 1944.

Summer of 1944.

No expeditions were sent out in the summer of 1944 owing to the War.

Summary of Work.

In the preceding pages we have given an account of the work of the expeditions and we shall now state briefly what has been done in the various areas. For details, the preceding pages and the tables at

the end of this paper should be consulted. In the tables will be found detailed information about the members, vessels, instruments, summaries of the topographical and hydrographical work.

North-East Greenland.

In the years 1937—43 expeditions were sent out every summer to that part of North-East Greenland lying between Carlsbergfjorden in the south and Roseneatbukta in the north. The object of the expeditions has been to relieve the wireless operator at the meteorological station in Myggbukta and the hunters of various companies and expeditions. Scientific expeditions and tourists have also been carried. The NSIU have not had any scientific expeditions in this field.

Transport of hunting expeditions. In 1937 one wireless operator and 3 men of the *Arktisk Næringsdrift A/S* went in the vessel of the expedition to North-East Greenland. Further: Richter's expedition (hunting and archæology) consisting of 3 men, Herman Andresen's exp. (2) and Tolløfsen's exp. (6). On the homeward voyage one wireless operator and Edward G. Bird, who, with his brother, had wintered in Myggbukta.

In 1938: One wireless operator, A. N. 4 men, Tolløfsen 4, Micard expedition one. On the homeward voyage: Charles Bird, one wireless operator, 2 men of the A. N. The vessel called at Jan Mayen to bring home the 10 members of the Imperial College of Science Expedition, and one man from the Norwegian station.

In 1939: One wireless operator, A. N. 6 (of which one was a woman), Richter 3, Tolløfsen 1. Homeward: one wireless operator, 4 men of the A. N. and 4 Tollefsen men.

In 1940: One wireless operator, Danish hunters 3.

In 1941: 10 hunters.

The expeditions in 1940 and 1941 were seized by Allied naval units when they arrived in Greenland waters.

Tourists. 1937: 6, 1938: 3, 1939: 5. In this year the vessel also carried 4 members of two scientific expeditions.

Journalists. 1937, 1938 and 1939: one.

South-East Greenland.

The NSIU has since 1934 been entrusted with the relief of the personnel at the Torgilsbu station, and keeping it supplied with store and provisions.

Relief of wireless operators. The expeditions have only relieved the wireless and meteorological station of Torgilsbu. In 1937 3 men were carried each way, in 1938 6 men, in 1939 one man each way.

In 1940 2 wireless operators and 2 passengers to Torgilsbu (2 passengers to Angmagssalik) and 2 men back, and the wife of the one of the wireless operators with her child (born at Torgilsbu).

Wireless and Meteorological Station Torgilsbu. The station was built in 1932. A new building was erected in 1938; this house is 8×10 m². Repairs in the summer of 1939.

Svalbard.

The work of the expeditions to Svalbard in 1938 and 1939 will be found under these expeditions (p. 17 and 27).

Financing the Expeditions and the NSIU.

In the period 1937—43 the NSIU has continued to be subordinate to the Ministry of Commerce, which department has introduced the legislation dealing with the expeditions and NSIU. The cost of running the NSIU and the expeditions has been defrayed directly by the State, and to a smaller extent out of the Svalbard grants (*Svalbardbudgett*). No contributions from private individuals and scientific funds have been received during this period. On p. 72 will be found a table showing the expenditure.

Cooperation between the NSIU and Government Institutions dealing with the same Kind of Work.

In the years 1937—43 we have co-operated with the following institutions:

The technical Department of *Norges Geografiske Oppmåling* (Geographical Survey of Norway) has reproduced and printed our charts. The sales department of the survey has, for the usual remuneration, handled the sale of our charts.

Norges Sjøkartverk (Hydrographic Office of Norway) does the colouring of our charts and, if necessary, the hand corrections. They also order new impressions after consultation with the NSIU.

Marinens Navigasjonsvesen (Navigation Department of the Navy) has placed at our disposal instruments for Navigation.

The *Royal Norwegian Navy* has placed at our disposal the fishery inspection vessel "Nordkapp" for the hydrographic survey at Svalbard in 1939.

Meteorologisk Institutt (Meteorological Institute), Oslo. The meteorological stations Myggbukta and Torgilsbu in East Greenland are worked by the NSIU, which engages the necessary personnel and

arranges the yearly sailings to the stations. The observations are sent to the Meteorological Institute several times daily.

Meteorologisk Institutt, Tromsø. The hydrographic expedition to Svalbard in 1939 carried out meteorological observations for this institute throughout the expedition.

Telegrafstyret (Board of Telegraphs), Oslo, has helped to obtain wireless station supplies. Mr. N. Brinchmann of the Board of Telegraphs has been our adviser on matters relating to the radio equipment of the stations.

The *Natural History Museums* of the University of Oslo. The museums cooperated with the NSIU in the working up of the material.

Offices and Store Rooms.

The offices of NSIU are in the building of the old University Astronomical Observatory, Observatoriegata 1, Oslo, rented from the University (see *Skr. Svalbard og Ishavet. Nr. 73*, pp. 81—82).

The Library.

The library of the NSIU occupies 261 metres of shelves of which 156 metres are polar literature, and 105 metres periodicals and various other books. In volumes (1 metre = 35 vols.) these figures would correspond to 5460 and 3675 vols., making a total of 9135 vols. In addition, the library contains about 3000 pamphlets and authors prints, all on polar subjects.

From the autumn of 1937 to the end of 1942 Hroar Vartdal acted as librarian and gave help on bibliographical questions.

In February and November 1944 the greater part of the library was evacuated to safe places.

Publications.

Two series of publications are published by *Norges Svalbard- og Ishavs-undersøkelser*:

Skrifter.

Meddelelser.

The first 11 numbers of the *Skrifter* appeared as

Resultater av de norske statsunderstøttede Spitsbergen-ekspedisjoner
(Results of the Norwegian State-supported Spitsbergen Expeditions)

with *Det norske Videnskaps-akademi i Oslo* printed at the top of the title page. These 11 papers were also bound in one volume (I). The following number, 12, also appeared under the name of the academy, but now as

Skrifter om Svalbard og Nordishavet
(Publications on Svalbard and the Northern Polar Sea).

From No. 13 the title was altered to

Skrifter om Svalbard og Ishavet
(Publications on Svalbard and the Polar Sea),

the other particulars on the title page being the name of the Royal Ministry of Commerce, Industry, Handicraft, and Fisheries (*Det Kongelige Departement for Handel, Industri, Håndverk og Fiskeri*) and of the *Norges Svalbard- og Ishavs-undersøkelser. Leder Adolf Hoel* (Norwegian Institute for the Exploration of Svalbard and the Polar Regions. Leader: Adolf Hoel). From No. 82 the title was changed again, now to

Skrifter. Norges Svalbard- og Ishavs-undersøkelser
the other particulars being only the name of the institute and the leader.

The other series, *Meddelelser*, has not undergone any changes as regards the title; this series also contains reprints of papers appearing in various journals.

The abbreviated titles are:

Result. Norske Spitsbergeneksped. Nr.

Skr. Svalbard og Nordishavet. Nr.

Skr. Svalbard og Ishavet. Nr.

Skr. Norges Svalbard- og Ishavs-unders. Nr.

Medd. Norges Svalbard- og Ishavs-unders. Nr.

Svalbard Place-Names.

The paper on the place-names of Svalbard, mentioned in the "Report on the Activities, etc. 1927—1936". *Skr. Svalbard og Ishavet. Nr. 73*. P. 87, was finished in 1940 and the printing ended on June 30, 1942. The paper contains 539 pages. It was published as *Skr. Svalbard og Ishavet. Nr. 80*.

Bibliography of Norwegian Polar Literature.

In 1938 the Committee for the International Polar Exhibition in Bergen 1940 invited H. Vartdal to start work on a bibliography of Norwegian Polar Literature. At the outbreak of war in 1939 the exhibition in Bergen had to be given up. With interruptions the work on the bibliography was continued. As the indispensable bibliographical literature and most of the periodicals were gradually evacuated from the NSIU and the University library, the work on the bibliography had to be suspended in the summer of 1944. The unfinished manuscript was moved from the University Library to Kongsberg. Public evacuation rooms had been built there in one of the mines of the

Kongsberg Silver Works. The cost of the work was defrayed by grants from the Committee of the International Polar Exhibition in Bergen 1940, the Nansen Fund, "Norsk Varekrigsforsikrings Fond", and "Norges Ishavskomiteé".

Assistance to other Expeditions, etc.

Below follows a list — partly with particulars — of those expeditions to which we have given assistance in some way or other. It is a continuation of the list given in *Skr. Svalbard og Ishavet. Nr. 73* (q. v.) on pp. 83—84.

Svalbard.

1936.

On Oct. 27, 1936 an earthquake occurred on the island of Jan Mayen. A relief expedition was sent out in the sealer "Veslekari" of Ålesund, leaving Norway on Nov. 14 and reaching the island on the 19th. The relief party was landed on the 24th. The expedition was sent out by the *Værvarslingen for Nord-Norge* in Tromsø, and Hoel gave various assistance, helped in chartering the vessel, and the NSIU lent a radio direction finder.

1937.

Deutsche Spitzbergen Expedition 1937 von Dr. H. Rieche.

1938.

Cambridge Spitsbergen Expedition led by L. H. McCabe.
Deutsche Spitzbergen Expedition 1938 von Dr. H. Rieche.

1939.

In the autumn of 1938 and in the spring of 1939 the NSIU assisted the English-Norwegian-Swedish geological-palæontological expedition to Spitsbergen. Leader of the expedition was Professor Erik A:son Stensiö, Palæo-Zoological Department of the *Naturhistoriska Riksmuseet* in Stockholm, with Dr. Errol I. White, British Museum (Natural History), London, as chief of the English party, and Professor A. Heintz, Palæontological Museum, Oslo, as chief of the Norwegian party. The expedition received from us aerial photographs of all the areas to be visited, chiefly of the surroundings of Woodfjorden and of the inner part of Isfjorden. Maps were also prepared of the regions where the expedition intended to work. Hoel helped in chartering the vessel of the expedition ("Heimen") and in obtaining parts of the funds necessary to finance the expedition. A duty-free transit of the English outfit for the expedition through Norway was also arranged. From March 15 to 23, 1939 Hoel took part in conferences with Stensiö and Forster-Cooper in London to discuss the planning, fitting out, and scientific work of the expedition.

V. Romanovsky, Professor. Faculté des Sciences, Université de Paris.

Jan Mayen.

1938.

Imperial College of Science Expedition to Jan Mayen, leader A. King. According to agreement this expedition returned in our vessel (see p. 17).

East Greenland.

1938.

Norwegian-French Arctic Expedition, 1938 led by Count Gaston Micard and Willy Knutsen (see p. 24).

1939.

Count Gaston Micard (relief expedition), see p. 24.

Professor H. W:son Ahlmann's (Stockholm) glaciological expedition to Claveringøya. The NSIU supplied this expedition with maps, air photographs, and they sailed in our relief ship to East Greenland.

Miss Brit Hofseth (Oslo) was permitted to sail in the East Greenland relief ship to carry out geological studies on Claveringøya.

Antarctic.

Consul Lars Christensen of Sandefjord planned to make an aerial survey of certain regions in the Antarctic. At a conference in *Norges Geografiske Oppmåling* (Geographical Survey of Norway) Luncke of the NSIU was requested to put forward a plan for the survey. The proposal, with sketches and instructions for the photographer, was handed over to *Widerøes Flyveselskap A/S*. Its main points were: Photographs of the land in series (flying above the sea at a suitable distance from the coast). In addition: photographs *along* the coast-line at intervals of 50 km. The object of the latter photographs was to obtain lengthwise pictures of the coast line and coastal areas, to be used, like the series photographs, stereoscopic pairs in the Zeiss Stereoplanigraph or a similar precision apparatus. Desirable flying height was given as 3000 metres. The air camera, in the joint possession of the NSIU and the Geographical Survey of Norway, was placed at the disposal of the Lars Christensen expedition. The success of the expedition, and the results obtained, can be gathered from the account by Christensen: My last expedition to the Antarctic 1936—1937. A lecture delivered before the Norwegian Geographical Society, Sept. 22, 1937. Oslo 1938. In the period Jan. 16 to Febr. 6, 1937 a total of 2200 photograms were taken covering a coast line of abt. 2000 km between the meridians 20° and 100° east of Greenwich. Captain H. E. Hansen was in charge of the working out of the results. NSIU has frequently placed its planigraph at the disposal for the work, and Luncke has carried out the main part of the photogrammetric construction in this country.

Air photographs from Svalbard (or East Greenland) have been supplied to the following:

1937. Miss Louise A. Boyd, San Francisco
 Nordpolhotellet A/S (see p. 53)
 Dr. H. Rieche, Holzminden
 Dr. Ernst Herrmann, Berlin
1938. Store Norske Spitsbergen Kulkompani Aktieselskap, Oslo
 Norges Tekniske Høyskole, Trondheim
 Norges Landbrukshøyskole, Ås
 Zeiss Aerotopograph, Jena
 Professor P.-L. Mercanton, Lausanne
 A. R. Glen (Oxford University Arctic Expedition 1935—36)
1939. Professor H. W:son Ahlmann, Stockholm (East Greenland)
 Andrew Croft and Briand Roberts, Cambridge.
 Professor A. Heintz, University of Oslo
 Dr. Wilhelm Dege, Münster-Westf.
 Jeremi Wasiutyński, Vestre Aker (East Greenland)
 Professor Th. Vogt, Norges Tekniske Høyskole, Trondheim

Air photographs, ground photographs, and maps for use in books, papers, periodicals, and in the daily press have been delivered freely.

Glacier Studies in Norway.

With contributions from the Norwegian Government and various Norwegian scientific foundations the University Geographical Institute and the NSIU have since 1927 pursued a study of the variation of certain glaciers in the Jotunheimen area and of glaciers in North Norway. The topographers of the NSIU, with their great experience and knowledge of glacier surveys in Svalbard, have done very valuable work in the mapping of the glaciers necessary for these studies. The surveyors have done this work in their vacations. The maps were drawn by G. Scott-Ruud.

The following maps were printed in 1941:

1. *Tverråbreen 1927. Jotunheimen. Målestokk 1:2500. Ekvidistanse 2 m. Organisasjon og ledelse: Norges Svalbard- og Ishavsundersøkelser og Universitetets Geografiske Institutt. Stereofotogrammetri av Alfred Koller. Size: 30 × 36 cm.*
2. *Tverråbreen 1929. . . Stereofotogrammetri av A. Koller.*
3. *Tverråbreen 1931. . . Tachymetri av A. Koller.*
4. *Tverråbreen 1932. . . Tachymetri av W. Solheim.*
5. *Tverråbreen 1935. . . Tachymetri av A. Koller.*
6. *Tverråbreen 1938. . . Stereofotogrammetri av W. Solheim. Oversiktskart. Tverråbreen og Svellnosbreen. Jotunheimen. Målestokk 1:10000. Ekvidistanse 10 m. Organisasjon og ledelse: Norges Svalbard- og Ishavsundersøkelser og Universitetets Geografiske Institutt. Basismåling, triangulering og fotogrammetri 1927 av Alfred Koller, Wilhelm Solheim og Bernhard Luncke. Size: 52.5 × 78.2 cm.*

Svalbard Hunting Cabin.

In 1936 Mrs. Marie Killengren Andersen of Tromsø presented a hunting cabin from Purpurdalen on the west side of Wijdefjorden to the *Norsk Sjøfartsmuseum* (Norwegian Maritime Museum) at Bygdøy near Oslo. The hut was built in 1911 by the hunter Anton Eilertsen on behalf of the Tromsø firm of Claus Andersen. Eilertsen died in the hut in the spring of 1912.¹ The hut is one of the most characteristic hunting cabins of Svalbard and built throughout of drift timber. It was taken down and with all its belongings removed to *Norsk Sjøfartsmuseum* by the expedition in August 1936 (see *Skrifter Nr. 73* p. 74). The hut was shown at the Hålogaland Exhibition in 1941 (p. 50), and then re-erected on the premises of the museum. (See *Norsk Sjøfartsmuseum. Årsberetning for 1941*. Pp. 2—3.) On the same occasion a Russian cross (cross of St. Andrews) was also brought home, from the mouth of Kartdalen on the west side of Wijdefjorden. The length of the cross is 3.83 metres, it has two bars, and the year 1782 is inscribed on it. The wood was quite fresh and showed no sign of decay. These crosses were always to be found near the Russian hunting cabins, most of which are from the 18th century. The cross which we brought home was the only one remaining and it was thus saved from destruction. It is kept in the office of the NSIU.

The International Exhibition of Polar Exploration. Bergen 1940.

Plans for the arrangement of an International Polar Exhibition were put forward in Bergen, Norway, in 1938. The exhibition was to cover the following regions: The Arctic Ocean; Greenland; Jan Mayen; Svalbard; Frans Josef Land; Novaja Zemlya; Arctic America and Arctic Siberia, and the islands lying off these regions; the Antarctic continent with the surrounding seas and their islands. The exhibition was to be managed by a Commissioner General appointed by the Norwegian Government, and the participating countries should each have its own Commissioners appointed by their respective Governments, accredited to be Commissioner General. Several committees were appointed. Hoel was a member of the Honorary Committee and of the Norwegian Committee for Norway's participation in the exhibition. Hoel was also charged with the task of visiting a number of countries to seek their co-operation. In November and December 1938, and January and February 1939, he visited the following countries: Sweden, Denmark, Germany,

¹ The hut was originally put up at Krosspynten in Wijdefjorden and here E. died. Later the hut was moved to Purpurdalen.

Holland, Belgium, England, France, Switzerland, Italy, and Monaco. In all these countries he found the experts and Government representatives keenly interested in the coming Polar exhibition, and he received binding assurances of participation from all these countries. Hoel also did much work in the Norwegian participation committee and for the organization of the exhibition.

The outbreak of the War in September 1939 put an end to all the plans for the Polar Exhibition in 1940.

Exhibitions.

At the *Vi kan* ("We can") *Exhibition* in Oslo in the summer of 1938 the NSIU showed exhibits of charts, topographical and geological maps, and air photographs from Svalbard and East Greenland. The exhibits included an old Dutch map of Spitsbergen, general map on the scale of 1:2 mill., map of survey flights 1:1 mill. section of constructed map south on Hornsund 1:50000, series of air photographs, two coloured enlargements of air photographs, chart 503, geological map of Bear Island 1:50000 and the Brøgger peninsula 1:100000 south of Kongsfjorden (Kings Bay), three maps from East Greenland on the scale of 1:100000: Geographical Societyøya, Jordan Hill, and Claveringøya (see publication by Lachmann, p. 71).

From Sept. 28 to Oct. 8, 1938 *The Fifth International Congress of Photogrammetry* was held in Rome and Florence. The official representatives of Norway were Erling Bjørstad, sectional chief in the Geographical Survey of Norway, and Hoel, leader of the NSIU. The latter institution exhibited maps and photos from Svalbard and East Greenland. General map of Svalbard 1:2 mill., map showing survey flights on the scale of 1:1 mill., section of constructed map south of Hornsund 1:50000; series of air photographs, two enlargements of air photographs 70 × 75 cm. After the closing of the congress the exhibits were presented to Carl Zeiss in Jena.

The NSIU exhibited 3 maps at the *Hålogaland Exhibition* at the *Colosseum* in Oslo (May 16,—June 15, 1941). One map showed the Arctic Ocean with the Norwegian fishing grounds, another showed the Norwegian hunting areas in Svalbard and East Greenland and also the sealing grounds frequented by Norwegian sealers. On the third map the Norwegian voyages of exploration from Viking until recent times were shown. A hunting cabin from Svalbard was also exhibited. A. Koller arranged this exhibit.

The NSIU exhibited a large map of the Antarctic at the *Exhibition Normanna-folket* at *Skansen* in Oslo (Sept. 6, 1941—Oct. 12, 1941). The routes of the Norwegian voyages of discovery were shown on the map. The NSIU also showed various photographs of Norwegian Antarctic pioneers.

Norwegian Ice-Breaker Committee.

The possession of an powerful ice-breaker would be of great importance to Norwegian economic interests in the Arctic regions, particularly the exportation of coal from Svalbard and seal hunting. Proposals to that effect were laid before the Norwegian Government as early as 1922 and 1923 by Hoel and Otto Sverdrup, and the latter accompanied the expedition to Svalbard in 1923 to make a study of the ice and navigation conditions on the west coast of Spitsbergen (see Hoel, A. The Norwegian Svalbard expeditions 1906—1926. — Result. Norske Spitsbergeneksped. B. I. Nr. 1, p. 37.)

On the basis of these studies and the experience gained tenders were invited from British and German shipyards for the building of an ice-breaker of abt. 5000 tons dw., and 5000 h. p. The Government, however, was not able to accept any of the tenders received.

The ice-breaker question was not lost sight of, particularly after the difficult ice-year of 1929. In 1935 the Ministry of Commerce appointed a committee to study the question. The members were: Sigurd Scott-Hansen, Harbour Director; Commodore K. Østbye, Norwegian Navy; and Johan Anker, Civil Engineer and chairman of the board of the Store Norske Spitsbergen Kulkompani Aktieselskap. In the same year the Committee visited Copenhagen, Göteborg, and Stockholm.

In 1936 Hoel, with the approval of the Ministry of Trade, visited Finland and Sweden from Febr. 20 to March 8 to study ice-breakers and ice-breaking in those countries. He accompanied the Finnish ice-breakers "Tarmo" and "Jääkarhu" when they were working in Finnish waters between Helsinki-Porkkala and Hangö. In Stockholm he collected information about Swedish ice-breakers and their work in Swedish waters. Finnish and Swedish authorities gave advice on the planned Norwegian ice-breaker.

After the death of Scott-Hansen in April 1937 Hoel was appointed member of the committee.

From Apr. 6 to 15, 1939 the committee visited Svalbard in the "Fridtjof Nansen" naval coast and fishery inspection vessel. The purpose of this voyage was to study the spring ice conditions.

From June 10 to 17 Hoel and Østbye visited Helsinki to study the Finnish ice-breakers and confer with Finnish experts.

From March 7 to 21, 1941, Commodore Østbye and Hoel again visited Sweden and Finland to study ice-breakers. They took part in a cruise of the recently completed Finnish ice-breaker "Sisu" in the waters between Åbo and the Swedish coast. They were also on board the Swedish ice-breaker "Ymer" on a cruise from Stockholm to Visby in Gotland. The ice conditions were difficult and therefore the trip proved to be particularly instructive to the members of the committee.

From March 15 to 19 Østbye and Hoel were on board the Swedish ice-breaker "Göta Lejon" working in Öre Sund. Here too the ice conditions were difficult.

Johan Anker, member of the committee, died in October 1940 and no new member was appointed. Based on the experience gained and the information collected the committee had in December 1939 submitted its report on the building of a Norwegian ice-breaker having a displacement of 3300 tons dw. and an engine power of 6000 h. p. The War made it impossible, however, to realize this plan.

A report on the development of the ice-breaker question in Norway in being prepared.

Antarctic Place-name Committee.

On Jan. 20, 1939, the Ministry of Commerce, on the initiative of Hoel, appointed a committee to deal with the naming of Antarctic localities. The committee consisted of the following members: Hoel (chairman), Major E. Bjørstad, Geographical Survey of Norway; Captain H. E. Hansen, late of the Geographical Survey and in charge of the working out of the air survey photographs of the Lars Christensen expedition 1936—37; and Chr. P. Reusch, Secretary, Norwegian Foreign Office.

The committee had to deal with the new names on the maps surveyed by the Lars Christensen expedition and they also had to examine all the names occurring on Antarctic maps published in Norway. The names were registered and discussed, and an accepted form was agreed upon to be used on the Norwegian maps. The principles followed were those laid down in the Svalbard place-name paper published by the NSIU (The Place-names of Svalbard, *Skr. Svalbard og Ishavet. Nr. 80*, Oslo 1942.)

Professor Carl Marstrand was engaged as collaborator and he applied place-names to sites in the area between 62° and 64° Lat. East, and also throughout the area covered by the name of Ingrid Christensen. He further supplemented the old set of place-names in some areas previously mapped by Norwegians. In all 250 sites received names. The names were given after a thorough study of the available maps and photographs in order to get a satisfactory and characteristic name of each locality. Personal names were as a rule not entered. The work was finished in the beginning of 1943.

At the request (in May 1939) of The Permanent Committee on Geographical Names, care of the Royal Geographical Society, London, all Antarctic place-names to be found in the *Skrifter* of the Norwegian whaling Council were examined and an official Norwegian form was given to names by Norwegian authors. Where a question of priority of a Norwegian and foreign name arose, the committee also dealt with this point.

Arktisk Næringsdrift A/S.

The company *Arktisk Næringsdrift A/S* ("Arctic Industry and Trade") was formed on June 24, 1929 for the purpose of carrying out hunting and mining in Arctic regions and activities in connection therewith. The share capital was 37750 Kr. in 151 fully-paid shares of 250 kr. each. Later the share capital has been increased to 45250 kr. The company was registered at the Oslo Trade Register on Oct. 17, 1929. Kr. Fr. Brøgger is chairman of the board, and from 1933 the NSIU has kept the accounts, Hoel being manager of the company. In the period 1936—41 the company has had 7 men wintering in East Greenland (including a wireless operator). The hunting stations were Myggbukta, Hoelsbu, Humboldt and Revet.

In 1940 the relief ship "Veslekari" was seized (see p. 35), and in 1941 the relief ship "Buskø" was also captured (see p. 37).

Nordpolhotellet A/S (North Pole Hotel).

The coal company in Ny-Ålesund, Kongsfjorden (*Kings Bay Kul Comp. A/S*), whose mines had been disused since 1929, carried out, on a small scale, the sale of picture post-cards, etc. to the tourists coming ashore from the steamers calling at Ny-Ålesund. Hoel suggested an increase of this activity, and in the summer of 1935 the Norwegian Society for Home Industries sent two persons to Ny-Ålesund with various articles. This attempt met with some success, and in 1936 a trial was made to run a small hotel for tourists in Ny-Ålesund at Kongsfjorden, using some of the houses of the coal company. Hoel was the initiator of this hotel enterprise, and the manageress of the hotel was Mrs. Laura Borgen. From the Norwegian Society for Home Industries a number of articles (souvenirs) were sold to the passengers of tourist steamers calling at Ny-Ålesund.

The next summer (1937) the hotel enterprise was financed by the Bergen shipowner Jacob Kjøde. On June 22, 1938 a company, *Nordpolhotellet A/S*, was formed with a share capital of 20000 Kr. In addition, the Norwegian State gave a contribution of 15000 Kr. and a loan of 20000 Kr. The accounts of the company are kept by the office of the NSIU. This northernmost hotel in the world aroused considerable interest and several articles about it appeared in the international press.

In 1940 the hotel could not be kept running owing to the War. In 1941 the first boat of the Kings Bay Kul Comp. A/S arrived on May 7 with men and material for the reopening of mining operations. On Aug. 15 wireless communications were interrupted and on Sept. 9 a British broadcast announced the evacuation of all persons in Ny-Ålesund to a British port.

Nature Protection.

Adolf Hoel was also in the period president of the *Landsforbundet for Naturfredning i Norge* (Association for the Protection of Nature in Norway). As many questions pertaining to nature protection are of importance also to Svalbard, and as the activity of the Association is considered to be of general interest to the public, the Ministry of Commerce has permitted the Association to have its office and archives on the premises of the NSIU, and to receive the necessary clerical assistance there.

The Association receives a yearly grant from the State.

Literature.

A. Previously published Accounts of the Expeditions.

Expeditions to Svalbard.

1938.

Expedition, Norwegian, to Svalbard, 1938. — Polar record. Nr. 17. Camb. 1939. Pp. 5—6.

1939.

Expedition, Norwegian, to Svalbard, 1939. — Polar record. Nr. 19. Camb. 1940. P. 212.

Expeditions to Greenland.

1931—38.

Horn, Gunnar. Recent Norwegian expeditions to South-east Greenland. — Norsk geogr. tidsskrift. B. 7. Oslo 1939. Pp. 452—61. — Norges Svalbard- og Ishavs-undersøkelser. Meddelelse. Nr. 45.

1937.

Giæver, John. Norges Svalbard- og Ishavs-undersøkelser ekspedisjoner til Øst-Grønland sommeren 1937. — Norsk geogr. tidsskr. B. 6. Oslo 1937. Pp. 405—12. Norges Svalbard- og Ishavs-undersøkelser. Meddelelse. Nr. 41.

Expeditions, Norwegian, to East-Greenland, 1937. — Polar record. Nr. 15. Camb. 1938. Pp. 23—24.

1938.

Expeditions, Norwegian, to East Greenland, 1938. — Polar record. Nr. 17. Camb. 1939. P. 26.

1939.

Expeditions, Norwegian, to East Greenland, 1939. — Polar record. Nr. 19. Camb. 1940. Pp. 217—18.

B. Storting Papers concerning the Expeditions 1937—39.

1937.

Norges Svalbard- og Ishavs-undersøkelser. St.Forh. 1937: St. prp. nr. 1, kap. 535; Budgett-innst. S. nr. 91; Forh. i St., s. 518—26.

Til oprettholdelse av 2 radiostasjoner på Øst-Grønland. St. Forh. 1937: St. prp. Nr. 1, kap. 541; Budgett-innst. S. nr. 97; Forh. i St., s. 527.

1938.

Norges Svalbard- og Ishavs-undersøkelser. St. Forh. 1938: St. prp. nr. 1, kap. 535; Budgett-innst. S. nr. 97; Forh. i St., s. 773.

Til oprettholdelse av 2 radiostasjoner på Øst-Grønland. St. Forh. 1938. St. prp. nr. 1, kap. 541; Budgett-innst. S. nr. 102; Forh. i St., s. 775.

1939.

Norges Svalbard- og Ishavs-undersøkelser. St. Forh. 1939: St. prp. nr. 1, kap. 535; Budgett-innst. S. nr. 97; Forh. i St., s. 544.

Myggbukta og Torgilsbu radiostasjoner på Øst-Grønland. St. Forh. 1939: St. prp. nr. 1, kap. 541; Budgett-innst. S. nr. 102; Tillegg til budgett-innst. S. nr. 102; Forh. i St., s. 545, 1027.

1940.

Norges Svalbard- og Ishavs-undersøkelser. St. Forh. 1940: St. prp. nr. 1, kap. 535; Budgett-innst. S. nr. 104.

Myggbukta og Torgilsbu radiostasjoner. St. Forh. 1940: St. prp. nr. 1, kap. 546; Budgett-innst. S. nr. 105.

Every year: Om Svalbardbudgettet (St. prp. nr. 1).

Since April 9, 1940 no Storting Papers have been issued.

Errata and Addenda.

Adolf Hoel: The Norwegian Svalbard Expedition 1906—1926.
Oslo 1929. — Resultater av de norske statsunderstøttede Spitsbergen-
ekspedisjoner. (Skrifter om Svalbard og Ishavet). B. I. Nr. 1.

- Page 37: Line 13 from below, *for* Elias Kjær *read* Erling Kjær.
» 57: » 6 from above, *for* Jacob *read* Jakob.
» » : » 21 » below, *for* 1919 *read* 1920.
» 59: » 15 » above, *for* 160 *read* 250.
» 64: BJØRSET. *For* SOLBERG *read* SOELBERG. D. Febr. 2, 1937.
» » : BLEKUM. D. Apr. 25, 1944.
» 65: GRAARUD. D. Febr. 25, 1945.
» » : HAGERUP, JOHAN. *For* 1918 *read* 1924.
» » : HENIE. From 1943 head-master (Rektor) of *Hamar lærerskole*.
» » : HORNEMAN. D. Jan. 28, 1945.
» 66: INDREBØ. D. Aug. 4, 1942.
» » : ISACHSEN. D. Dec. 19, 1939.
» » : KIÆR. D. Oct. 31, 1931.
» » : LOUS. D. Sept. 24, 1941.
» » : LYNGE. D. Jan. 28, 1942.
» 67: MARSTRANDER. D. Jan. 1, 1936.
» » : NANSEN. D. May 13, 1930.
» » : RESVOLL-HOLMSEN. D. March 13, 1943.
» » : SCHETELIG. D. Oct. 17, 1935.
» 68: STAXRUD, ARVE. D. Apr. 4, 1933.
» » : SVERDRUP. D. Nov. 26, 1930.
» » : THORKELSEN. D. Apr. 9, 1940.
» » : BACKLUND. *For* HELGE *read* HELGE GÖTRIK.
» » : BODYLEWSKY. *For* W. J. *read* WITALIJ IWANOWICH.
» 69: LIND. D. Oct. 4, 1939.
» » : RABOT. D. Febr. 1, 1944.
» » : SOKOLOW. *For* D. N. *read* DIMITRIJ NIKOLAIEVICH.

Report on the Activities of Norges Svalbard- og Ishavs-undersøkelser
1927—1936. Oslo 1937. — Skrifter om Svalbard og Ishavet. Nr. 73.

- Page 10: Line 10 from above, *for* Commander O. G. Willoch, etc. *read*
Commander O. I. Willoch was in command of the "Michael Sars"
with Lieutenant T. Sundt as second in command and Lieutenant
G. Køste as third officer.

- Page 10: Line 16 from below, *add* Oceanographical work was carried out as far north as 80° N by Kjær and Sundt.
- » 18: Line 4 from above, *After* Vogt was also on board *add* The hydrographic surveyor Vogt also carried out all the oceanographical observations.
 - » 19: Line 10 from above, *for* The hydrographic surveyor . . . engaged *read* The hydrographic surveyor, Lieutenant Rolf Kjær, who in 1928 had been granted temporary leave from Norges Sjøkartverk, was now engaged.
 - » 45: Line 17—19 from below, *for* The hydrographer etc. *read* The hydrographic surveyor, Rolf Kjær, completed the chart S. 6: Norge—Svalbard, southern sheet: Frå Andfjorden og Varangen til Bjørnøya, and also prepared Chart S. 5: Norge—Svalbard, northern sheet: Frå Bjørnøya til Isfjorden, Storfjorden og Hopen, both on the same scale, viz. 1:750 000 (in Lat. N 74° 30').
 - » 46: Line 19 from above, *for* Kjær, etc. *read* Kjær made a sketch survey of the landing at Kapp Linné.
 - » 46: last line, *for* Jacksonøya etc., page 47, first line to “ran ashore” *read* Jacksonøya and the coastal waters down to Kapp Broer Ruys. Rolf Kjær with the “Polarbjørn” carried out soundings at Kapp Hold with Hope and off the coast between Kapp Herschel and Bontekoe as far east as the drift-ice permitted. He further made some soundings in Antartichamna and localized the reef near the head of Alpfjorden, where the “Polarbjørn” had grounded.
 - » 47: Line 6 from above, *after* Peterbukta *add* The astronomical determinations were only carried out in connection with the determination of the *magnetic variation* at points on the coast between Antartichamna and Peterbukta.
 - » 53: Line 6—7, *for* to go to Turkey . . . service. *read* to go to Turkey, as he had been engaged by the Turkish Government as a technical adviser under the reorganisation of the Hydrographic Office in Ankara.
 - » 59: Line 18 from below, *after* chart *add* S. 11.
 - » 70: Line 2 from below, *for* Måkefjellet *read* Måkeberget.
 - » 73: Line 21 from above, *for* Hold with Hope *read* Kapp Broer Ruys.
 - » » : Line 25 from above, *after* used. *add* Determination of the magnetic variation was carried out by Kjær at points on the coast between Antartichamna and Peterbukta.
 - » 76: Line 5 from above, *for* Kjær *read* Erling Kjær.
 - » 77: Line 7 from below, *after* von Krogh *add* and Vogt.
 - » 77: Line 11 from below, *from* In 1928 etc. *read* In 1928 Rolf Kjær in the lifeboat of “Michael Sars” sounded the coastal waters of Bjørnøya.
 - » » : Line 3 from below, *for* Kjær *read* Rolf Kjær.
 - » 78: Line 2 from above, *for* Kjær *read* Rolf Kjær.
 - » 78: Line 17 from above, *for*. In 1930 . . . Sørkapp. *read* In 1928 Rolf Kjær and T. Sundt made 6 oceanographical sections in Bjørnøya and Spitsbergen waters. In 1929 Fr. Vogt made 4 sections in the same waters, in 1930 Kjær again made 5, and in 1931 one section in the waters of Bjørnøya.
 - » 80: Line 6 from above, *for* Hydrographic Survey of Norway *read* Hydrographic Office of Norway.

- Page 80: Line 7 from above, *for 1937 read 1936.*
- » 87: Line 13 from below, *for 1925 read 1924.*
 - » 94: BØHMER. *For Commander read Captain.*
 - » 96: INDREBØ. *For Ludwig read Ludvig. D. Aug. 4, 1942.*
 - » »: KJÆR, E. *For Captain read Commander.*
 - » »: KJÆR, R. Line 5, *after 1930 add 1931, 1932. Line 6, for 1935 read 1933.*
 - » »: KULLMANN. D. July 9, 1942.
 - » »: KØSTE. Line 2—3, *delete and . . . waters.*
 - » 97: Münster. D. March 10, 1938.
 - » 99: Vogt, Fr. D. Sept. 26, 1942.
 - » » Willoch. D. Apr. 9, 1940.
 - » 110: Line 13 from above, *for terrestrially read terrestrially.*
 - » 111: » 4 » » » » » » » »
 - » 113: Line 11 from below, *for 2 floating spar-buoys read 1 floating spar-buoy.*
- 114: In table 14. Oceanographical Work, *insert under Svalbard:*

		Section	Stations	Sets of observation
1928	Rolf Kjær, T. Sundt, H. M. S. Michael Sars	6	41	333
1929	Fr. Vogt M.C Blue Jacket	4	51	

Line 8 for Bjørnøya-Sørkapp (section) read 1.

LISTS AND TABLES

1. Members and Collaborators of the Expeditions sent out by Norges Svalbard- og Ishavs-undersøkelser 1937—1941.

The following list contains names and professions of those who have been on the staff the expeditions in 1937—1941 and also of scientific collaborators not taking part in the expeditions. The year of birth and death and year of participation in the expeditions are given.

Norwegian.

- Aaseth, Sverre, b. 1899. Wireless operator and meteorological observer Torgilsbu 1937—38.
- Askheim, Thor, b. 1889, Topographic surveyor, Norges Svalbard- og Ishavs-undersøkelser. Topographic surveyor Svalbard (Hopen) 1939.
- Baashuus-Jessen, Johannes, b. 1887, d. 1945, Herdbook Registrar. Author of *Meddelelser Nr. 28, 36*.
- Barca, Emil Toni, b. 1888, Lektor at Akers komm. gymnasium. Examination of zoological material.
- Bogstrand, Olav, b. 1888. Skipper of S/S "Veiding" South-East Greenland (Torgilsbu) 1938.
- Botten, Kristian Odd, Lieutenant of the Reserve, Norwegian Navy, b. 1910. Ship's officer and assistant hydrographic surveyor Svalbard waters 1939.
- Brandal, Johan Petersen, b. 1888. Skipper of S/S "Veslekari" 1940.
- Bradley, Jacob. Wireless operator North-East Greenland 1941.
- Christoffersen, Harald, b. 1909. Wireless operator Svalbard 1938.
- Dahl, Eilif, b. 1916. Examination of botanical material.
- Devold, Hallvard, b. 1898. Secretary (from Oct. 9, 1940), Norges Svalbard- og Ishavs-undersøkelser. Leader North-East Greenland 1941.
- Eggesvik, Ragnar, b. 1907. Wireless operator and meteorological observer Torgilsbu 1936—37, 1938—39, 1939—40.
- Engeset, Sivert, b. 1895, Skipper of M/C "Brandal" South-East Greenland (Torgilsbu) 1937.
- Fidjeland, Tom, b. 1910, Wireless operator and meteorological observer Torgilsbu 1940.
- Giæver, John Schjelderup, b. 1901, Secretary, Norges Svalbard- og Ishavs-undersøkelser. Leader North-East Greenland 1937, 1938, 1939, 1940.

- Grinaker, Peder Anton, b. 1883, Geodesist, Geographical Survey of Norway. Geodetic computations.
- Grini, Magnus, b. 1902. Building contractor Torgilsbu 1938.
- Grini, Rolf, b. 1904. Building contractor Torgilsbu 1938, 1939.
- Hamre, Martin, Sub-Lieutenant of the Reserve,¹ Air Arm of the Norwegian Army, b. 1912, d. ²⁵/₁₀ 1943. Flight pilot Svalbard 1938.
- Hannestad, Holger Erik, b. 1915. Wireless operator and meteorological observer Myggbukta 1940.
- Haug, Henry Georg, b. 1907. Wireless operator and meteorological observer Myggbukta 1936—37.
- Heintz, Anatol, b. 1898, Professor of Palæontology in the University of Oslo. Examination of fish fossils.
- Hessen, Elias, b. 1894. Skipper of S/S "Buskø" 1941.
- Hide, Bernt Gustav, b. 1891. Skipper of M/C "Grande" South-East Greenland (Torgilsbu) 1939.
- Hiorth, Alf Kristian, b. 1913, d. ²⁸/₈ 1944. Wireless operator and meteorological observer Torgilsbu 1940.
- Hoel, Adolf, b. 1879, Professor of Polar Geography in the University of Oslo, Director of Norges Svalbard- og Ishavs-undersøkelser. Leader Svalbard 1938.
- Hoff, Harald, b. 1912. Wireless operator and meteorological observer Torgilsbu 1939—40.
- Holm, Johan, b. 1910. Wireless operator and meteorological observer Myggbukta 1937—38.
- Horn, Gunnar, b. 1894, Geologist, Norges Svalbard- og Ishavs-undersøkelser. Coal survey Svalbard 1938.
- Knaben, Nils, b. 1897, Curator at Bergens Museum. Examination of zoological material.
- Kolsrud, Niels Oluf, b. 1885, d. 1945. Professor of Ecclesiastical History in the University of Oslo. Adviser on questions concerning the history of Greenland.
- Krogh, Captain Rolf von, Norwegian Navy, b. 1872. Svalbard 1937, Skipper and hydrographic surveyor Svalbard 1938, Leader hydrographic expedition Svalbard 1939, Leader South-East Greenland (Torgilsbu) 1940.
- Køste, Olav Gabriel Lindtner, Commander, Norwegian Navy, b. 1899. Commander of "Nordkapp" and hydrographic surveyor Svalbard waters 1939.
- Lassen-Urdahl, Kjell Stub, Sub-Lieutenant of the Reserve, Air Arm of the Norwegian Navy, b. 1910. Flight pilot Svalbard 1938.
- Lid, Johannes, b. 1886, Curator at the Botanical Museum of the University of Oslo. Examination of botanical material.
- Luncke, Bernhard, b. 1894, Topographic surveyor, Norges Svalbard- og Ishavs-undersøkelser. Survey leader and air photographer Svalbard 1938.

¹ = „vpl. fenrik“.

- Lyngaas, Reidar, Lieutenant of the Reserve, Norwegian Navy b. 1910. Hydrographic surveyor Norges Svalbard- og Ishavs-undersøkelser from Oct. 1, 1937. Ship's officer Svalbard 1938, Hydrographic surveyor Svalbard 1939.
- Lynge, Bernt Arne, b. 1884, d. 1942, Professor of Botany in the University of Oslo. Examination of lichens.
- Marø, Kristoffer, b. 1884. Skipper of M/C "Polarbjørn" North-East Greenland (Myggbukta) 1937, 1938, 1939.
- Nicolaisen, Karl, b. 1907. Skipper of M/C "Ringsel" South-East Greenland (Torgilsbu) 1940.
- Omang, Simen Oscar Fredrik, b. 1868. Examination of botanical material.
- Orvin, Anders Kristian, b. 1889. Geologist, Norges Svalbard- og Ishavs-undersøkelser. Working up geological material.
- Robøle, Olav, b. 1908, Electrical engineer. Torgilsbu 1938.
- Rogstad, Egil, b. 1908. Wireless operator and meteorological observer Myggbukta 1938—39.
- Romnæs, Nils, Lieutenant of the Reserve, Air Arm of the Norwegian Army, b. 1902, d. $\frac{9}{10}$ 1943. Flight leader and wireless operator Svalbard 1938.
- Scholander, Per Fredrik, b. 1905, Ph. D. Examination of botanical material.
- Scott-Ruud, Gunnar, b. 1897, Artist painter. Drawing of topographical maps. From Nov. 1936.
- Skaanevik, Andreas, b. 1913. Wireless operator and meteorological observer Myggbukta 1939—40.
- Solheim, Wilhelm, b. 1890, Topographic surveyor Norges Svalbard- og Ishavs-undersøkelser. Svalbard 1939.
- Soot-Ryen, Tron, b. 1896, Curator at Tromsø Museum. Examination of zoological material.
- Strand, Andreas, b. 1895, Secretary, Board of Telegraphs, Oslo. Examination of zoological material.
- Strandrud, Hans. Flight mechanic Svalbard 1938.
- Størmer, Per, b. 1907. Examination of botanical material.
- Vartdal, Hroar Kaare, b. 1903. Librarian and bibliographical assistance 1937—42.

Foreign.

- Frebold, Hans, b. 1899, Professor of geology and palæontology in the University of Greifswald. Examination of palæontological material.
- Ostermann, Hother Bertel Simon, b. 1876, Parson in Greve, Denmark. Editor of Norwegian Greenland diaries and descriptions (before 1814).
- Stoll, Elisabeth, Germany. Examination of palæontological material.

2. Vessels and Members.

Year	Leaders of expeditions or captains of ships	Vessels	Members										Number of members		
			Topographic surveyors	Hydrographic surveyors	Geologists	Flight pilots and mechanics	Flight photographers	Assistants	Wireless sta. personnel	Hunters to winter	Passengers etc.	Journalists		Skipper and crew of the vessels	Wireless operators
1937	Engeset	M/S Brandal	-	-	-	-	-	-	3	-	-	-	7	-	10
	Giæver, Marø	M/S Polarbjørn	-	-	-	-	-	-	1	14	7	-	14	-	36
1938	Bogstrand	S/S Veiding	-	-	-	-	-	-	3	-	3	-	7	-	13
	Giæver, Marø	M/S Polarbjørn	-	-	-	-	-	-	1	8	4	1	14	-	28
	Hoel, v. Krogh	S/S Haug III	-	2	1	3	2	2	-	-	-	-	7 ¹	1	18
1939	Hide	M/C Grande	-	-	-	-	-	-	2	-	1	-	7	-	10
	Giæver, Marø	M/C Polarbjørn	-	-	-	-	-	-	1	10	9	1	14	-	35
	v. Krogh	H. M. S. Nordkapp	-	2	-	-	-	2	-	-	-	-	20	-	24
	Solheim	—→	1	-	-	-	-	3	-	-	-	-	-	-	4
	Askheim	M/C Maiblomsten	1	-	-	-	-	3	-	-	-	-	-	-	4
1940	v. Krogh	M/C Ringsæl	-	-	-	-	-	-	2	-	2	-	8	-	12
	Giæver, Brandal	S/S Veslekari	-	-	-	-	-	-	1	3	1	-	12	-	17
1941	Devold, Hessen	S/S Buskø	-	-	-	-	-	-	-	10	-	-	10	-	20
1942	No expedition														
1943	—→—														
1944	—→—														

¹ Not including the skipper. One of the hydrographic surveyors acted as skipper.

3. Particulars of Vessels.

Name	Owner. Home Port	When built, Material	Length			Breadth		Draught	Reg. tonnage		Engine	Year used by NSIU
			in feet	Gross	Net	in feet	Gross		Net			
										Length		
Brandal ¹	Martin Karlisen, Brandal, Ålesund	1911, wood	90	21	9 (14)	87	39	Motor 133 H. P.	1937			
Polarbjørn	Martin Karlisen, Brandal, Ålesund	1919, wood	123.6	26.1	12 (16)	324	113	Motor 360 H. P.	1937, 38, 39			
Veiding	Feddersen & Nissen, Hammerfest	1918, wood	95.1	23.4	11.9	159	69	Steam 120 H. P.	1938			
Haug III	Hv.selsk. Haugar A/S, Oslo	1925, steel	109.5	21.6	13.4	213	76	Steam 715 H. P.	1938			
Grande	Njuaal Olsen, Sandshamn, Ålesund	1917, wood	90	20	9	66	26	Motor 132 H. P.	1939			
Nordkapp	Fishery Inspection Vessel, Norwegian Navy	1937, steel	130 1/2	21 1/2	7 1/2	²		Diesel with electric drive 830 H. P.	1939			
Maiblomsten	Thorvald Brox, Tromsø	1911, wood	80	19.3	8.2	72	27	Motor 150 H. P.	1939			
Ringsæl ³	Karl Nicolaysen, Tromsøy. sund	1912, wood	76.5	20.1	9 (12)	69	26	Motor 122 H. P.	1940			
Ves'ekari	Paal Aarseth, Ålesund	1918, wood	125.1	27	18.5	282	154	Steam 357 H. P.	1940			
Buskø	Paal Aarseth, Ålesund	1926, wood	105	22.7	10.7	159	61	Steam 135 H. P.	1941			

¹ Lost at the coast of Norway in 1943.² Displacement 275 tons (max.)³ Used by the Norwegian-French expedition to North-East Greenland 1938-39 under the name of "En avant".

4. Office Personnel.

Year	Leader	Secretary	Geologists	Topographic surveyors and draftsmen	Hydrographic surveyor	Other office personnel ²	Total
1937—38	1	1	2	4	1	4	13
1938—39	1	1	2	4	1	4	13
1939—40	1	1	2	4	¹	4	12
1940—41	1	1	2	4	1	4	13
1941—42	1	-	2	4	1	4	12
1942—43	1	-	2	4	1	4	12
1943—44	1	-	2	4	1	3 (4 ³)	11 (12)

5. Instruments.

Air Survey Camera.

Year	Firm	Type	No.	Size cm	Objective		Focal length cm
					Type	Aperture	
1939	Zeiss-Aerotopograph, Jena ⁴	RMK S 1818	36421	18 × 18	Zeiss Orthometar	1 : 4.5	20.403

In the autumn of 1941 the stereoplanigraph was modernised. The expenses were shared by NSIU and Norges Geografiske Oppmåling.

6. Astronomical Stations.

None.

7. Base Lines.

Measured with Invar wire under a tension of 10 kilogrammes.

Year	Situation	Measured by	Length in m	Average error of three measurements
1939	Velkomstpynten	W. Solheim	998.6496	± 0.0025

¹ The hydrographic surveyor absent (military service).

² Including resident *vaktmester* (caretaker).

³ From 20/12 1943.

⁴ Joint purchase by NSIU and NGO to replace the camera No. 46467 (see *Skrifter Nr. 73* p. 105) destroyed by fire on Sept. 17, 1939.

8. Determination of Mean Sea Level for the Computation of Altitudes.

Year	Locality	Method of measurements	Observer
1939	Velkomstpynten	Water level readings in 1 1/4 days	W. Solheim
1939	Mosselbukta	—>— 2 1/4 >	—>—
1939	Sorgfjorden	—>— 1 1/2 >	—>—
1939	Koefoedodden, Hopen	—>— 12 hours	Th. Askheim

9. Methods used by the Topographical Survey.

The same methods were used and the reader is referred to *Skrifter Nr. 73*, pp. 107—08.

10. Details of Topographical Field Work.

Year	Topographic surveyors	Assistants	Trig. stations with photographs Number of		Trig. stations without photographs	Tacheometer stations	Photogr. sea stations Number of		Air photogrammetric Work Number of		Cairns built	Coast outlines Length measur. km	Area mapped in sq. km	
			Trig. st.	Photograms			Stations	Photograms	Series	Photograms			Terrestrial	Photographs from the air
1938	Luncke	-	-	-	-	-	-	-	40	2 180	-	-	-	Abt. 25 000
1939	Solheim	3	15	100	14	-	-	-	-	-	4	100	-	-
<i>Hopen.</i>														
1939	Askheim	3	20	58	7	28	5	10	-	-	9	20	10	-

Summary of Topographical Field Work.

Year	Region	Area in sq. km	
		Terrestrial mapping ¹	Photographed from the air
1906—1926	Svalbard	18 083	-
1928—1936	—>—	560	40 000
1938	—>—	-	25 000
1939	—>—	10	-
1906—1939	Svalbard	18 653	65 000
1929—1933	North-East Greenland	9 200	30 000
1906—1939	<i>Total</i>	27 853	95 000

¹ Included in the air-surveyed areas, as the methods supplement each other.

11. Topographically Surveyed Areas.

Year	Expeditions	Area	Surveying Staff	Area mapped sq. km	
				Terrestrially	From the air
<i>Svalbard.</i>					
1938	Hoel	2180 air photos mainly of Nord-austlandet, but also of Kong Karls Land, W side of Hinlopenstr. and of what remained in the N part of Vestspitsbergen.	Luncke Romnæs Lassen- Urdahl Hamre		Abt. 25 000
1939	Solheim	Geodetic and topographic work in the northern part of Vestspitsbergen between Raudfjorden and Hinlopenstr.			
<i>Hopen (Hope Island).</i>					
1939	Askheim	Topographic work in the S part of the island.	Askheim	10	

12. Hydrographically Surveyed Areas.

Year	Field	Hydrographic surveyors	Ships officers	Surveyed areas sq. km	Echo-sounding Naut.miles
1939	Coastal waters from Fjerdebreen, Magdalenefjorden, Sørgattet, Smeerenburgfjorden to Danskegattet. The open sea: westwards to 10° 10' and from Fjerdebreen to Amsterdamøya (79° 50' N)	Rolf v. Krogh Reidar Lyngaas	G. L. Køste Kr. O. Botten	850	245

Summary of Hydrographically Surveyed Areas.

1907—1925	Svalbard	16 196.68
1928—1936	Svalbard and North-East Greenland	92 284.20
1939	Svalbard	850.00
1907—1939	<i>Total</i>	109 330.88

13. Beacons, Lights, and Wireless Stations.

Year	Location	Beacon Light Wireless station	Name	Built by
1937	Revneset, Isfjorden	Floating sparbuoy		v. Krogh
1938	Fosterneset	Beacon		Hoel
1938	Gråhukken	—>—		—>—
1938	Verlegenhukken	—>—		—>—
1938	Ny-Ålesund	Floating sparbuoy		—>—
1939	Mesteinane, Sørgattet	Cairn		Lyngaas
1939	Perskjeret,	—>—		—>—
1939	Danskeneiset, Danskøya	—>—		—>—

14. Oceanographic Work.

No oceanographic work was undertaken in the period.

15. Number of Expeditions 1906—1941.

Svalbard 1906—1926 ¹	21
Svalbard 1928—1936 ²	12
Svalbard 1938—1939	4
Svalbard and Frans Josef Land 1929—1930.....	2
North-East Greenland 1929—1941	13
South-East Greenland 1931—1940	11
Davis Strait 1935	1
<i>Total</i>	64

16. Number of Photographs Taken by the Staff of Norges Svalbard- og Ishavs-undersøkelser.

Svalbard and Frans Josef Land			North-East and South-East Greenland		
Year	Photos for surveying	Photos for other purposes	Year	Photos for surveying	Photos for other purposes
1906—1936	13 546 ³	4 601	1929—1933	3 904	1 776
<i>Svalbard</i>					
1938	2 180	211			
1939	168	62			
1938—1939	2 348	273			
1906—1939	15 894	4874			

Grand Total 1906—1939: 26 448.

¹ See *Nr. 1* of this publication series.

² See *Nr. 73*.

³ Including 47 photos from sea stations (Koller 1936) not included in the figure given in *Skrifter Nr. 73*.

17. Papers and Maps Published 1/1 1937—30/6 1944.

Papers	Number of papers	Pages	Plates	Maps	Text-figures
Skrifter om Svalbard og Ishavet and Skrifter, Norges Svalbard- og Ishavs-undersøkelser, Nr. 68—87	20	1932	136	14	185
Norges Svalbard- og Ishavs-undersøkelser Meddelelser Nr. 36—55, 57—59	23	1066	3	8	67
1937—1944	43	2998	139	22	252
1911—1936	118	6109	581	99	1036
<i>Total 1911—1944</i>	<i>161</i>	<i>9107</i>	<i>720</i>	<i>121</i>	<i>1288</i>
<i>Maps and Charts.</i>					
Charts	2				
Maps	8				
(See pp. 71—72.)					

In the period 1/1 1937—30/6 1944 the following papers have been published:

In the series *Skrifter*:

- Nr. 68. Frebold, H., and E. Stoll. Das Festungsprofil auf Spitzbergen. III. Stratigraphie und Fauna des Jura und der Unterkreide. 1937.
- » 69. Frebold, Hans. Das Festungsprofil auf Spitzbergen. IV. Die Brachiopoden- und Lamellibranchiatenfauna des Oberkarbons und Unterperms. 1937.
 - » 70. Dahl, Eilif, B. Lynge, and P. F. Scholander. Lichens from South-east Greenland. 1937.
 - » 71. 1. Knaben, Nils. Zool. Res. Norw. Sc. Exp. to East-Greenland. VI. Makrolepidopteren aus Nordostgrönland. 2. Barca, Emil. Mikrolepidopteren aus Nordostgrönland. 1937.
 - » 72. Heintz, A. Die Downtonischen und Devonischen Vertebraten von Spitzbergen. VI. Lunaspis-Arten aus dem Devon Spitzbergens. 1937.
 - » 73. Report on the Activities of Norges Svalbard- og Ishavs-undersøkelser 1927—1936. 1937.
 - » 74. Høygaard, Arne. Some Investigations into the Physiology and Nosology of Eskimos from Angmagssalik in Greenland. 1937.
 - » 75. Dahl, Eilif. On the Vascular Plants of Eastern Svalbard. 1937.
 - » 76. Lynge, B. Lichens from Jan Mayen. 1939.
 - » 77. Frebold, Hans. Das Festungsprofil auf Spitzbergen. V. Stratigraphie und Invertebratenfauna der älteren Eotrias. 1939.
 - » 78. Orvin, Anders K., Outline of the Geological History of Spitsbergen. 1940.
 - » 79. Lynge, B. Et bidrag til Spitsbergens lavflora. 1940.
 - » 80. The Place-Names of Svalbard. 1942.
 - » 81. Lynge, B. Lichens from North East Greenland. 1940.

From No. 82 the title of these publications has been changed from *Skrifter om Svalbard og Ishavet* to *Norges Svalbard- og Ishavs-undersøkelser. Skrifter*.

- Nr. 82. Nilsson, Tage. The Downtonian and Devonian Vertebrates of Spitsbergen. VII. Order Antiarchi. 1941.
- » 83. Høeg, Ove Arbo. The Downt. and Devonian Flora of Spitsbergen. 1942.
 - » 84. Frebald, Hans. Über die Productiden des Brachiopodenkalkes. 1942.
 - » 85. Føyn, Sven, and Anatol Heintz. The Downtonian and Devonian Vertebrates of Spitsbergen. VIII. 1943.
 - » 86. The survey of Bjørnøya (Bear Island). 1944.
 - » 87. Hadač, E. Die Gefäßpflanzen des "Sassen"-Gebietes. 1944.

In the series *Meddelelser*:

- Nr. 36. Baashuus-Jessen, J. Periodiske vekslinger i småviltbestanden. — Særtr. av Norges Jeger- & Fiskerforb. Tidsskr. h. 2 og 3 1937.
- » 37. Orvin, A. K. Norges Svalbard- og Ishavs-undersøkelsers ekspedisjoner til Øst-Grønland og Svalbard i året 1936. — Særtr. av Norsk Geogr. Tidsskr., b. 6, h. 7. 1937.
 - » 38. Giæver, John. Kaptein Ragnvald Knudsens ishavferder. Sammenarbeidet efter hans dagbøker, rapporter m. v. 1937.
 - » 39. Ostermann, H. Grønlandske distriktsbeskrivelser forfattet av nordmenn før 1814. 1937.
 - » 40. Omang, S. O. F. Über einige Hieracium-Arten aus Grönland. 1937.
 - » 41. Giæver, John. Norges Svalbard- og Ishavs-undersøkelsers ekspedisjoner til Øst-Grønland sommeren 1937. — Særtr. av Norsk Geogr. Tidsskr., b. 6, h. 7. 1937.
 - » 42. Siedlecki, Stanislaw. Crossing West Spitsbergen from south to north. — Særtr. av Norsk Geogr. Tidsskr., b. 7, h. 2. 1938.
 - » 43. Soot-Ryen, T. Some Pelecypods from Franz Josef Land, Victoriaøya and Hopen. Collected on the Norwegian Scientific Expedition 1930.
 - » 44. Lyng, B. A small Contribution to the Lichen Flora of the Eastern Svalbard Islands. Lichens collected by Mr. Olaf Hanssen in 1930. 1939.
 - » 45. Horn, Gunnar. Recent Norwegian Expeditions to South-East Greenland. — Særtr. av Norsk Geogr. Tidsskr., b. 7, h. 5—8. 1939.
 - » 46. Orvin, Anders K. The Settlements and Huts of Svalbard. — Særtr. av Norsk Geogr. Tidsskr., b. 7, h. 5—8. 1939.
 - » 47. Størmer, Per. Bryophytes from Franz Josef Land and Eastern Svalbard. Collected by Mr. Olaf Hanssen on the Norwegian Expedition in 1930.
 - » 48. Lid, Johannes. Bryophytes of Jan Mayen. 1941.
 - » 49. I. Hagen, Asbjørn. Micromycetes from Vestspitsbergen. Collected by dr. Emil Hadač in 1939. II. Hadač, Emil, The introduced Flora of Spitsbergen. 1941.

- Nr. 50. Vogt, Thorolf. *Geology of a Middle Devonian Cannel Coal from Spitsbergen*. Horn, Gunnar. *Petrology of a Middle Devonian Cannel Coal from Spitsbergen*. 1941.
- » 51. Ostermann, H. *Bidrag til Grønlands beskrivelse, forfattet av nordmenn før 1814*. 1942.
 - » 52. Ostermann, H. *Avhandlinger om Grønland 1799—1801*. 1942.
 - » 53. Orvin, Anders K. *Hvordan opstår jordbunnsis? — Særtr. av Norsk Geogr. Tidsskr., b. 8, h. 8*. 1941.
 - » 54. Strand, Andr. *Die Käferfauna von Svalbard. — Særtr. av Norsk Entomol. Tidsskr., b. 6, h. 2-3*. 1942.
 - » 55. Orvin, Anders K. *Om dannelse av strukturmark. — Særtr. av Norsk Geogr. Tidsskr., b. IX, h. 3*. 1942.
 - » 57. Orvin, Anders K. *Litt om kilder på Svalbard. — Særtr. av Norsk Geogr. Tidsskr., b. X, h. 1*. 1944.
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18. Contributions (in Norw. Kroner).

Year	The Norwegian Government	Scientific funds and private subscribers	Total
1937 (1/7 37—30/6 38)	202 711.86	-	202 711.86
1938.....	232 902.52 ¹	-	232 902.52
1939.....	207 977.14	-	207 977.14
1940.....	197 630.00	-	197 630.00
1941.....	235 535.02 ²	-	235 535.02
1942.....	130 130.09 ³	-	130 130.09
1943 (1943—44) ..	130 254.69 ⁴	-	130 254.69
1937—1943... ..	1 337 141.32	-	1 337 141.32
1906—1936.....	3 302 132.12 ⁵	580 695.22	3 882 827.34
1906—1943.....	4 639 273.44	580 695.22	5 219 968.66

Distribution of the total sum 1906—^{30/6} 1944
on the different kind of works.

Scientific expeditions, working up of material, publishing of maps and papers. Office expenses of NSIU	4 045 595.31
Practical works: large-scale geological mapping, drilling for coal companies, etc.	575 644.33
Meteorological stations: expeditions and running expenses. Erection of wireless stations and lights	598 729.02
Total	5 219 968.66

¹ Including the grant of 3000 kr. to Gram & Horn for coal research.

² Grant to East Greenland expedition 140 250 kr., but only 113 855.02 kr. were used. The latter figure is the one included in the above amount.

³ From Norges Ishavskomit  11 410.09 kr. (*Medd. Nr. 51* and *52*).

⁴ — — 5 724.69 - (*Medd. Nr. 58* and *59*).

⁵ See *Skrifter Nr. 73*, p. 122.

Plate I.

1. Spitsbergen. Outer part of Murchisonfjorden on the west coast of Nordaustlandet (North-East Land). Metamorphic rocks (Hecla Hoek Formation) striking approximately north and south. During the survey in 1938 the expedition had its base in this fjord for some time. The fjord proved to be excellent for seaplane work. Taken towards the north-northwest from the height of 2700 Metres.

B. Luncke phot. July 28, 1938.

2. Spitsbergen. Kapp Platen and Prins Oscar Land on the north coast of Nordaustlandet. Rocks of the Hecla Hoek Formation (metamorphic). The ice of the interior is seen in the far distance. Taken towards the south from the height of 2400 Metres.

B. Luncke phot. July 27, 1938.



Plate II.

1. Kong Karls Land. Kapp Hammerfest, south point of Svenskøya. The small island is Antarcticøya, and the point above it Kapp Walter. The flat-topped mountain in the distance is Dunérfjellet (basalt). Taken towards north-northwest from the height of 1300 Metres.

B. Luncke phot. Sept. 8, 1938.

2. Kong Karls Land. Kapp Andreassen, west point of Kongsøya. The island (sandy reef) is Kennedøya and the mountain Sjögrenfjellet (basalt). The basalts capping the mountains are underlain by Mesozoic rocks. Taken towards southeast from the height of abt. 450 Metres.

B. Luncke phot. Sept. 8, 1938.

3. Spitsbergen. The mining camp Ny-Ålesund at Kongsfjorden. Showing from the left: Quay, houses, airship hangar (Amundsen—Ellesworth—Nobile 1926 and Nobile 1928), and mines (Ester and Sofie). Taken towards southeast from the height of abt. 550 Metres.

B. Luncke phot. Aug. 14, 1938.



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- No. S. 1. Bear Island. 1 : 40 000. 1932. Kr. 4,00.
 " S. 2. Bear Island Waters. 1 : 350 000. 1937. Kr. 4,00.
 " S. 3. From Bellsound to Foreland Reef with the Icefjord. 1 : 200 000. 1932. Kr. 5,00.
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