

THORVALD SØRENSEN'S REPORT

1931—32.

Aug. 4th.—Arrival of the s.s. "Gustav Holm" at Eskimonæs.

Aug. 4th—7th.—Building of the station house at Eskimonæs.

Aug. 9th.—Arrival at Nordfjord. The building of the house was started.

Aug. 15th.—Arrival at Ella Ø. Building of the house till about September 1st.

Sept. 1st—5th.—Excursion in boat to Ymers Ø, Karl Jakobsens Bugt (Imara and the zoologist boat) in company with STENØR, SIMONSEN, and THORSON.

Sept. 2nd.—Climbed Rødebjerg.

Sept. 6th—13th.—Stay on Ella Ø. Set up meteorological observation instruments, and placed sticks in the terrain for registration of the snow-covering of different plant communities. The thickness of the snow-covering was read once a month all through the winter. Carried out reconnaissance and circling work.

Sept. 14th—22nd.—Stayed in a tent camp at Kap Hedlund. Excursions in motorboat (Imara) in company with STENØR and SIMONSEN to make investigations in the interior of the fjords. Botanical reconnoitring and circling.

Sept. 22nd.—Return voyage across Mineralbugten (later Murgangsdalen). The circlings had now to be stopped for the autumn, as everything was frozen over. The time from now on till Christmas was chiefly occupied by work at the internal fitting of the house (painting, fitting of shelves and other joiner's work, etc.). Took part in the household work all winter in turn with the other members.

Jan. 20th—26th.—Unsuccessful attempt at a sledge-journey in company with NOE-NYGAARD with Eskimonæs as goal. One sledge with JØRGEN as dog-driver. On reaching Kap Humboldt, the party had to turn back owing to the bad going (and lack of knowledge of the travelling technique).

Febr. 10th.—The winter and spring excursions were started. Ob-

servations of the position of the snow-covering in relation to the vegetation.

Febr. 27th.—Started photographing of snow landscapes, likewise for the purpose of illustrating the distribution of the snow-covering.

March 17th—c. April 6th.—Mapping of the snow-covering of the Kap Oswald peninsula (snow fans and snow-free patches inserted).

March 26th.—The first snow buntings were observed.

April 7th—9th.—Hunting trip to Ymers Ø in company with SIMONSEN.

April 11th—14th.—Stayed in a tent camp on Kap Hedlund. Started out on sledge with the geodesist party. Walked back to the Ella Ø station after completing the work (observations of the position and thickness of the snow-covering in the different plant communities marked by sticks in the autumn).

April 15th—30th.—Measured the thickness of the snow along lines drawn at random around the station (1600 measurements). Measured the water content of the snow taken from hard and less hard snow-fans as well as of new-fallen snow for the purpose of gaining an idea of the amount of precipitation during the winter. Temperature observations in snow-drifts.

May 1st.—Thaw.

May 1st—c. 20th.—Observations of pH, light, and temperature in solifluction soil. GRIPP's theory proved to be wrong.

May 13th.—The circling was commenced.

May 18th.—The river broke.

May 21st.—Arrival of the geese.

June 5th—6th.—Sledge trip to Traill Ø, Vega Sund near Scott Kelties Øer. TH. SØRENSEN and SIMONSEN stayed there to be fetched in boat as soon as the ice disappeared. On the outward journey the ice of Kong Oscars Fjord was highly flooded by water, and it was only with difficulty that the Greenlanders reached back to the station on June 7th, before the ice was so rotten that sledging on it was no more possible.

Scientific Results.

The floristic results are published in "The Vascular Plants of East Greenland from 71°00' to 73°30' N. lat." Medd. om Grønland. Bd. 101, No. 3, 1933. Four species of flowering plants new to Greenland were found; however, three of them had previously been collected, but no notice had been given to them, and two are described as new to science.

Plant-sociological investigations. A total of 356 localities each comprising 20 random samples were circled. From each locality a sample of soil for examination of the pH concentration, etc., was brought

home, as well as ten samples of the moss and lichen vegetation of the locality. The circling material has not yet been fully worked up.

The investigations on the problem of solifluction and polygon soil are published in "Bodenformen und Pflanzendecke in Nordostgrønland, etc." Medd. om Grønland. Bd. 93, No. 4, 1935.

The meteorological and phenological results and the investigations on the wintering state of the plants have been published in "Temperature Relations and Phenology of the Northeast Greenland Flowering Plants" Medd. om Grønland. Bd. 125, No. 9, 1941.

The material collected with a view to a cytological investigation and the corresponding and far more abundant collections made during the wintering in 1934—35 have been handed over to Mr. JUL. GRØNTVED for description.

1933.

June 24th.—Arrival of the s.s. "Gustav Holm" at Scoresbysund. Ice in the bay.

June 25th—26th.—Visit at Kap Hope. Excursions in company with P. GELTING.

June 28th—July 4th.—Visited Kap Hooker and Jameson Land. Botanical investigations in company with GELTING.

July 4th—6th.—Excursion to Kap Stewart in company with P. GELTING.

July 7th—11th.—Stay at Liverpool Land opposite Fame Øer. Excursions in company with P. GELTING i. a. to Fame Øer and to Ulveodde (July 8th), thence northward in the "Gustav Holm".

July 16th—18th.—Stay at Eskimonæs.

July 18th—21st.—Visited Granatdal (where a mining party with ponies was met with).

July 22nd.—Went in motorboat to Hird Fox Farm, whence GELTING was fetched.

July 23rd—24th.—Trip in motorboat (accompanied by SEIDENFADEN and KAMMAN) to Loch Fyne, where a Swedish party was fetched, and thence to Grantafjord and Revet, where GELTING was set ashore, and back to Eskimonæs.

July 26th.—Motorboat trip in company with SEIDENFADEN to Rødely, Terneskær, and Jackson Ø. Hence southward in the "Gustav Holm".

July 29th—Aug. 1st.—Stay at Ella Ø. Sailed in the "Gustav Holm" to Eskimonæs. Visited Lille Finsch Ø on August 3rd. Proceeded northward in the "Gustav Holm". Motorboat trip (with SEIDENFADEN and KAMMAN) to Kuhn Ø, where the Swedish geologists were set ashore.

Aug. 7th.—Visited Kap Maurer.

Aug. 8th.—Visited Bastians Bugt and the Nanok station at Hochstetter. The "Gustav Holm" proceeded northward.

Aug. 10th.—Went in motorboat to the east coast of Store Koldewey, and thence to Danmarks Havn, where the "Gustav Holm" had already arrived. The "Gustav Holm" started towards Stormkap.

Aug. 11th.—After making some botanical investigations at Stormkap, TH. SØRENSEN went northward in the "Gustav Holm". Off Kap Amelie a motorboat party (MALMQVIST, SØRENSEN, and KAMMAN (motor-man)) started into Skærfjorden.

Aug. 12th—13th.—Stay at Kap Amelie.

Aug. 13th.—Visited Klægbugt.

Aug. 14th.—Visited C. Clausens Fjord.

Aug. 15th.—Investigations in Mourier Fjord and at Kap Marie Valdemar.

Aug. 16th.—Arrival in the motorboat to Danmarks Havn.

Aug. 17th.—Arrival of the "Gustav Holm" from Norske Øer. Subsequently return voyage via Clavering Ø and Ella Ø.

Botanical work in the Summer of 1933.

South of Clavering Ø (including this island): Chiefly investigations and collecting of polymorphic species. North of Clavering Ø: Floristic and plant-geographical investigations of the area in broad features. Publication: SEIDENFADEN & SØRENSEN, "The vascular plants of Northeast Greenland from 74°30' to 79°00' N. lat., and a summary of all species found in East Greenland", Medd. om Grønland, Bd. 101, No. 4, 1937.

The most important floristic observations made in the Scoresby Sund district were utilised in the paper just mentioned; otherwise they are as yet unpublished.

1934—35.

1934: s.s. "Gustav Holm".

July 30th.—Spent the night on Canning Land.

Aug. 1st.—On Ella Ø.

Aug. 2nd.—South side of Gauss Halvø. Landing of the party of Swedish geologists with ponies and hay.

Aug. 3rd—7th.—Moskusoksefjord: Botanical excursions from Prospektdal, Promenadedal, and a point on the south side opposite Hoelsbo. Went northward in the "Gustav Holm".

Aug. 8th.—Knudshoved. Thence with a motorboat party along the coast of Hold with Hope. (SEIDENFADEN, MALMQVIST, and KAMMAN).

Aug. 9th—10th.—Visited Holland Ø.

Aug. 11th—12th.—Visited Kap Broer Ruys.

Aug. 12th—13th.—Trip to the old Danish trapper's hut on the south coast.

Aug. 13th—17th.—Investigations of the southern (western) part of the coast of Hold with Hope. Fine botanical results of the trip along the outer coast in the form of circlings to supplement the circlings made in 1932, in which series actual outer coast localities were lacking (not yet published). Fifty-six localities were circled.

Aug. 17th—19th.—Sailed in motorboat in dense fog to Ella Ø. Thence in seaplane (pilot: OVERBYE) to Eskimonæs to spend the winter there.

Aug. 19th.—Arrived at Eskimonæs. Spent the winter there in company with the wireless operator S. K. ESPENSEN.

Autumn 1934.—Hunting excursions in boat with an outboard motor (Penta). The boat was entirely unsuited for the conditions around Eskimonæs, the water being always filled with very small lumps of ice which put the propeller out of action. Subsequently hunting expeditions by sledge. Twenty musk-oxen were killed in the course of the autumn, the greater number of them in Granatdal. Thus the station was provided with winter provisions for the dogs. However, later in the winter further two dog-teams were to have their food at the station (trappers, cf. below).

The autumn of 1934 was exceptionally mild and rainy. In September the weather was almost as in December in Denmark, alternately frost, snow, thaw, and rain. Heavy rainfall on October 1st. As some snow had fallen before, the rivers flowed over, as during thaw in spring. After that time the frost was constant, a crust of ice forming all over the land. This, probably, was the cause why no animal life at all (ptarmigans, hares, or musk-oxen) was seen during the whole winter.

The boat was hauled ashore on October 11th, when the small harbour was covered with ice 10—12 cm thick, but the bay was still free of ice.

The two ponies that had run away on the island in the summer, appeared at the station on November 29th in a rather emaciated state. One of them limped a little, it was at once shot, while the other was placed in the stable. It was fed with green mosses cut out of the mossy slope of the cape and subsequently thawed and washed free of sand. The horse ate it willingly enough, but at last it was so emaciated that it was unable to get on to its feet. It was shot on December 19th. Later on, when the dogs had become sufficiently hungry, the horses were used as dog's food; only reluctantly did the dogs eat horse meat.

The Danish trapper AAGE HANSEN arrived at the station on January

26th with face and hands severely frost-bitten. He stayed as a convalescent at the station till March 17th.

The Norwegian trapper NIELS HANKEN (ANDRESEN's partner) arrived at the station on January 27th with a broken tibia. He stayed as a convalescent at the station till April 12th.

IB POULSEN, of the Ella Ø station, visited the station from March 19th to 28th.

The three trappers of the Danish Nanok company, F. CHRISTOFFERSEN, H. NIELSEN, and P. POULSEN, arrived at the station on April 4th. Until their return voyage to Denmark they took part in the daily tending of the station (hunting, feeding of dogs, restoration of the station in the spring).

In the spring twenty musk-oxen were killed (chiefly in Granatdal and near Kap Stosch) to meet the wants of the station and in addition a number of seals, among others a very large bearded seal (killed by P. POULSEN).

The spring of 1935 set in late, and the summer was cold. The first snow buntings were observed (heard) on April 15th. The first geese were seen on May 21st.

On July 12th the ice began to break around Finsch Øer, and leads of open water were seen now and then.

On July 30th the boat was launched, and a voyage was made to Granatelv.

On August 15th TH. SØRENSEN and the three trappers were fetched by seaplane (pilot: OVERBYE) and taken on board the "Godthaab", Commander A. H. VEDEL. Off Scoresby Sund the party was transferred to the "Gertrud Rask" (August 27th or 28th), which sailed directly to Copenhagen.

Th. Sørensen's Scientific Work at Eskimonæs 1934—35.

Annual series of temperature observations of the air, the surface of the soil and the deeper layers of the soil, corresponding to the Ella Ø series 1931—32.

In the autumn investigations of the developmental stages of the plants when the winter set in. Collection of seeds, which were used in germination experiments in the spring. Collecting of plants in their winter stage.

In the period from the frost set in in the autumn to the thaw of spring (with the exception of December and the first part of January) a number of soil sections were cut out in the frozen solifluction soil (Polygonboden, Streifenboden, Brodelstellen) for the purpose of clearing up finally the problem of solifluction. The water content was determined

at every 5th centimetre in each section, and the soil samples were kept to serve for later slaking analyses. In the dark time TH. SØRENSEN succeeded in making about seventy-five slaking analyses. They furnish the proof for the correctness of the theories as to solifluction soil set forth in his aforementioned paper (Medd. om Grønl. Bd. 93, No. 4, 1935). In the spring and summer he collected plant specimens and fixed the whole flora of Clavering Ø with a view to a cytological investigation.

As a zoological curiosity it may be mentioned that a white wagtail stayed near the station from May 25th at any rate till June 12th.

The temperature observations, a number of phenological observations, and the investigations on the wintering of the plants have been published, with the corresponding observations from Ella Ø 1931—32, in the aforementioned paper (Medd. om Grønl. Bd. 125, No. 9, 1941).

The cytological material has been handed over to Mr. JUL. GRØNTVED for description (not yet completed).

The investigations of the soil have not yet been published. The slaking analyses require much time, and a large number of samples have not yet been treated.

1937.

Aug. 10th.—Arrival at Gurreholm.

Aug. 12th—15th.—Excursion to the island of Sydkap in company with HELGE LARSEN and GILBERG. Made a floristic investigation of the island, collecting all the species found there. Furthermore, investigation of the shrub vegetation on the ancient Eskimo houses and collecting of specimens for determination of their age.

From about the last week of August to about September 1st (or a little later) stay at Scoresbysund. Here collection of plants in their autumnal state (viz. such plants as had not hitherto been collected in their winter state farther northward). This supplementary material was very helpful during preparation of TH. SØRENSEN's paper of 1941 (Medd. om Grønl. Bd. 125, No. 9).

In addition collection was made of cytological material of such species as according to our experiences of previous years had reduction division in the autumn (especially *Bicornes* and heather). This material has been worked up by Dr. O. HAGERUP, who was concluding a work on the cytology of the ericaceous plants.

The programme for the 1937 expedition was an investigation of the vegetation of some very young Eskimo house ruins observed on Clavering Ø in 1925 for the purpose of determining their age, in cooperation with the ethnographer Mr. HELGE LARSEN. However, owing

to the unfavourable ice conditions the program was not carried out. Return to Copenhagen in the "Gertrud Rask".

The number of plants collected by TH. SØRENSEN during the expeditions amounts to roughly 5000. The collections have been handed over to the Botanical Museum of Copenhagen. The greater part of them have been labelled and inserted in the collections of the Museum. Two thousand duplicate specimens have been distributed by the Museum to Swedish, Norwegian, British, German, Russian, and American museums.
