

THE KNUD RASMUSSEN MEMORIAL EXPEDITION

Introduction

N. KINGO JACOBSEN

Jacobsen, N. Kingo, et.al. Report of activities at Tugtugligssuaq, Melville Bugt, 1978-79. *Geografisk Tidsskrift* 80: 29-44. Copenhagen, June 1980.

A joint cooperative Greenland/Danish expedition to the Melville Bugt area, Tugtugligssuaq/Kap Seddon to throw light on the Eskimos' immigration routes to Greenland seen in relation to climatic fluctuations. Studies of geography, botany, zoology, archaeology, and ethnohistory have been carried out.

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The KNUD RASMUSSEN FOUNDATION was established January 20th 1934 by the Royal Danish Geographical Society to support geographical and archaeological investigations and in particular studies of the people living in the Arctic. The centenary of Knud Rasmussen's birth on June 7th, 1879, has been celebrated by a renewed cooperative Danish/Greenland scientific venture, the Knud Rasmussen Memorial Expedition to the Melville Bugt.

The focus of the expedition should be on the routes the eskimo culture took to and within Greenland. Further it deals with natural environmental studies as background of studies of the immigration from Sarqaq (2.000 B.C.) via the Dorset - (600 - 0 B.C.) and Thule culture (900 - 1860) to comprise the present day West Greenlanders (Inugsuk culture) as these movements were related to climatic fluctuations.

Tugtugligssuaq/Kap Seddon was visited by Knud Rasmussen and Lauge Koch on the 2nd Thule Expedition (1916). They reported about 50 former settlements here in the middle of the Melville Bugt at 75° N and 58° W on the Lauge Koch Kysten between the calving fields of the Steenstrup and Sverdrup glaciers.

The first European to meet the Polar Eskimos at Thule was John Ross (1818). He was followed by many American expeditions and Scottish whalers. In 1891 Robert Peary started his search for the North Pole establishing the base camp at Inglefield Bredning.

Knud Rasmussen reopened on »The Danish Literary Expedition to Greenland« 1902-4 the old sledge route between North and West Greenland. The questions are how old is this route and how important has it been through the centuries?

Knud Rasmussen was born in Jakobshavn, and he was like an Eskimo himself and yet different. Always in high spirits, a tireless hunter and an extremely good sledge driver. He was the right man to make the Eskimos yield their best.

Right from the start it was Knud Rasmussen's intention to trace the migration routes of the Eskimos back to the point of origin. The area of Smith Sund must always have been important to Eskimos migrating from the islands of Arctic Canada via Ellesmere Island to Greenland. Thanks to Knud Rasmussen's efforts a mission station was established in 1909 at North Star Bay. On August 10th, 1910, he hoisted the Danish flag on his own trading post, Thule, which under his leadership and assisted by Peter Freuchen, became a very important station. This date marked the start of an epoch in the history of Greenland as well as for Eskimo research in which Denmark has played a central role.

The finding in 1916 of the Eskimo routes on the old sledge route from Kap York to West Greenland were decisive when planning the route of the modern memorial expedition. The fact that Kap Seddon was the southernmost station of the Polar Eskimos, reflecting their migrations and the climatic fluctuations, made it the primary base of this expedition that quite naturally also determined the choice of academic disciplines and scientists to be represented.

From where did the Eskimos originate? When did they arrive in Greenland? Where did the immigrations take place within Greenland and which role has the Melville Bugt played: as a barrier of ice or as the great sledge route described by Knud Rasmussen? Finally, how did their specific culture arise?

The results from Knud Rasmussen's Fifth Thule Expedition 1921-24 by Therkel Mathiassen and K. Birket-Smith, Helge Larsen's excavation in 1934 in northeastern Greenland and 1939-50 in Alaska, research made by E. Holtved and J. Meldgaard at Thule and Sarqaq, West Greenland, and finally Eigel Knuth's investigations in Pearyland and Thule have all pointed at the existence of three main cultures which may also be subdivided. These three main cultures include first of all the Stone Age Culture, a coastal complex migrating from the Bering Strait to Greenland (approx. 2000 B.C.) which was named Sarqaq by J. Meldgaard and Independence I and II by Eigel Knuth. Second is the Dorset culture, an inland complex dated approx. 500 B.C. and some centuries thereafter. Third there is the recent coastal whaler

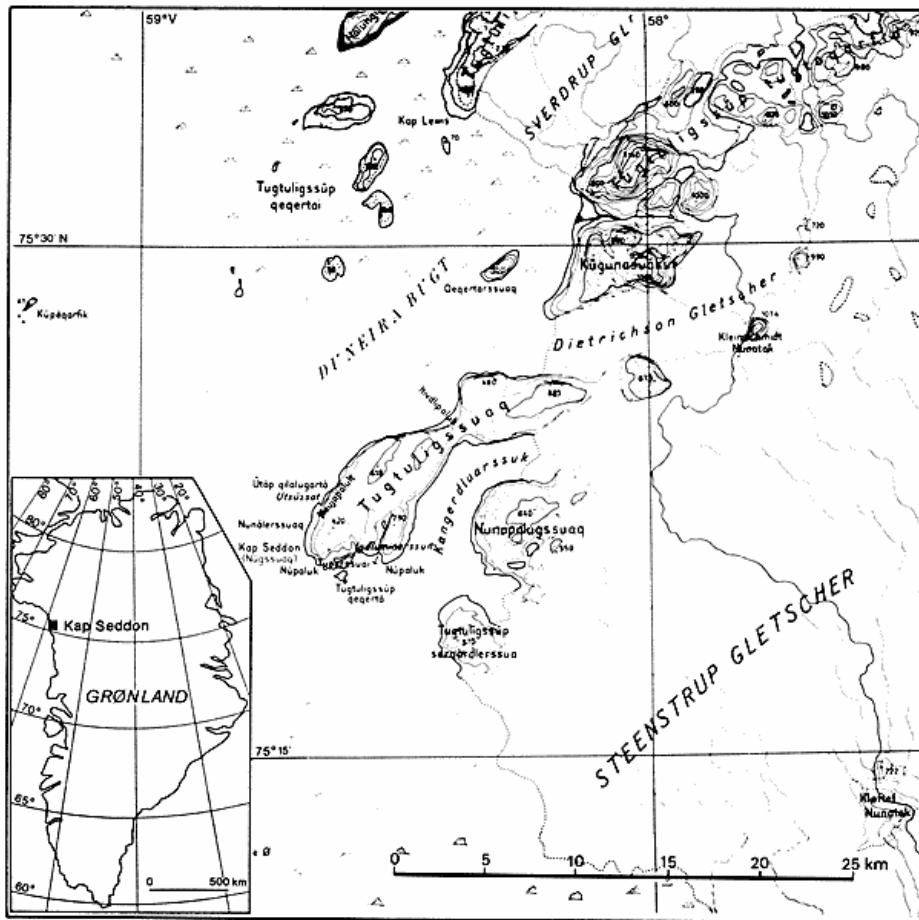


Fig. 1. Map of the area
 Fig. 1. Kort og placering af Tugtulisssuaq

culture, the Thule culture of approx. 900-1860. These three cultures have, of course, consistently changed and adapted themselves as, for example, one can see in the West Greenland Inugsuk culture which up to present time has developed more in southwestern Greenland.

ACTIVITIES

The Preliminary Expedition 1978

Expedition by the Admiralty's »Beskytteren« 10/8 - 25/8

10/8 - 13/8 Sdr. Strømfjord-Tugtulisssuaq

13/8 - 22/8 Tugtulisssuaq.

J. Meldgaard, M.A. archaeology, keeper at the National Museum, Copenhagen,

Vagn Pedersen, constructor, Slagelse,

H. Søgaard, senior lecturer, climatology, Geographical Inst., Copenhagen,

Niels Thingvad, stud.scient. climatology (snow) Geographical Inst., Copenhagen,

H. Valeur, meteorology, Danish Meteorological Inst. Greenland Ice Branch, Copenhagen,

13/8 - 22/8 Qanaq.

N. Kingo Jacobsen, professor, Geographical Inst., Copenhagen,

Peter Jensen, teacher, Qanaq

H.C. Pedersen, high school principal, Hvalso

The Expedition 1979

29/4 - 18/6 - Expedition by 7 sledges, Dundas - Tugtulisssuaq - Kuvdlorssuaq.

Bent Danielsen, sledge driver, Moriussaq

Paniqpak Daorana, sledge driver, Qanaq

Jens J. Fleischer, teacher, sledge driver, Godthåb

Itukusuk Kristiansen, sledge driver, Moriussaq

Angutivdluarssuk Nielsen, sledge driver, Savigsivik

Avataq Qanaq, sledge driver, Herbert Ø

Kidleq Suersaq, sledge driver, Savigsivik

Bjarne Grønnow, stud.scient. archaeology, The National Museum, Copenhagen,

Jørgen Roos, film director and photographer, Copenhagen,

Niels Thingvad, Copenhagen.

11/7 - 30/8 - expedition by ship, the Admiralty's »Ingolf«
 Chr. Bay, stud.scient. botany, Greenland Botanical Survey,
 Copenhagen,

Jes Christensen, commander, chartered surveyor, Copenhagen

Anders Fischer, M.A., archaeology, The National Museum,
 Copenhagen,

Bent Fredskild, senior lecturer, dr., manager of Greenland
 Botanical Survey, Copenhagen,

Bjarne Grønnow, Copenhagen,

Bjarne Holm Jakobsen, stud.scient., soil/geomorphology,
 Geographical Institute, Copenhagen,

Arine Kristiansen, teacher, archaeology, Qanaq,

Hans Engelund Kristiansen, teacher, zoology, Qanaq,

Morten Meldgaard, stud.scient., quaternary zoology, Zoo-
 logical Institute, Copenhagen,

Niels Gylling Mortensen, stud.scient., geomorphology, Geo-
 graphical Inst., Copenhagen.

Jørn Berglund Nielsen, stud.scient., ethnohistory, Eskimo-
 logical Institute, Copenhagen

6/8 - 30/8 - Film Expedition Upernavik (N. district) - Kap
 Seddon

J. Meldgaard, Copenhagen,

Jørgen Roos & assistant, Copenhagen

Jens Rosing, archaeology, the »Landsmuseet«, Godthåb,

Lars Jensen, West Greenlander, Kuvdlorssuaq,

Nikolai Jensen, West Greenlander, Kuvdlorssuaq.

The purpose of the expedition was to survey and excavate
 ruins at Tugtulgissuaq in order to determine and date the
 different culture periods. Further the question of climatic
 fluctuations is essential in all the discussions. To throw light
 on these topics some central research efforts will include
 studies and analysis of local deposits, soil profiles, slope pro-
 cesses, and periglacial phenomena, polygon soils, perma-



Fig. 2. The hut Kunupaluk at Tugtulgissuaq (Phot. MM)

Fig. 2. Knuds rejsehytte Kunupaluk



Fig. 3. Members of the Expedition 1979 in front of the hut: (Phot. MM)

Fig. 3. Ekspeditionsholdet 1979 foran rejsehytten:

From left, front: Arine Kristiansen, Jes Christensen, Jørn Berglund Nielsen,
 Bjarne Holm Jakobsen.

Fra venstre, foran: Arine Kristiansen, Jes Christensen, Jørn Berglund Niel-
 sen, Bjarne Holm Jakobsen.

From left, behind: Bjarne Grønnow, Morten Meldgaard, Anders Fischer,
 Hans Engelund Kristiansen (in the hut), Chr. Bay, Bent Fredskild, Niels
 Gylling Mortensen

Bagest: Bjarne Grønnow, Morten Meldgaard, Anders Fischer, Hans Enge-
 lung Kristiansen (inde i hytten), Chr. Bay, Bent Fredskild, Niels Gylling
 Mortensen

frost, stone circles, solifluctuation slopes, actual quantities of
 snow and sea ice as well as climatic conditions in general.
 Furthermore botanical investigations concerning plant pro-
 duction will be needed in order to find out whether reindeer
 have lived in the area since the place name Tugtulgissuaq
 means »the big reindeer area«.

The joint cooperative Greenland/Danish efforts mean
 that the expedition is carried out by participation of the
 Thule Municipality, the Landsmuseet (central museum) in
 Godthåb, the National Museum in Copenhagen, and with
 various Danish scientific institutions. The protector of the
 expedition is His Royal Highness Prins Henrik. The 3-year
 expedition (1978, 79, and 1980) and the establishment of the
 camp at Tugtulgissuaq has been possible only due to the
 great assistance received from the Admiralty and the finan-
 cial aid granted by various funds. The 1979 expedition was
 paid by the Carlsberg Foundation.

The Preliminary Expedition 1978

It was necessary to establish working spaces in a small hut
 which was later on supplemented with tent camps. For the
 climatic studies regular measurements the whole year
 around had to be carried out on temperatures, air pressure,
 wind velocities and wind directions, and soil temperatures at
 3 depths (5, 22, and 62 cm). The meteorological station, the

UGO, was established about 30 m a.s.l. on the southern side of Tugtulgssuaq at 250 m from the shore. Freely exposed to winds coming from directions within the 80° - 245° range, whereas the mountains ridge having a gradient of 1-7° to a great extent shelters against winds from other directions, especially from the NW. On August 10th 1978 7 persons boarded the Admiralty's »Beskytteren« accompanied by 10 tons of gear and supplies. They were landed on August 13th. The camp was established and remnants of 15 old settlements were registered as well as of dwellings dating from the turn of this century and from the period 1920-27 were registered.

The Expedition 1979

By sledge

In April 1979 first part of the Memorial Expedition went by sledge from Thule to Kap Seddon via the old sledge route. On 7 sledges were two scientists, some Polar Eskimos with their family, and film director Jørgen Roos who participated in order to make a film.

The trip took place from 29/4 to 14/5. One sledge stayed at the destination, the others continued to Kuvdlorssuaq, and thus the connection to the Upernavik district was established. The last two sledges returned to Savigsivik on June 12th.

By Ship

While most of the Greenland expedition members returned from Kap Seddon, Bjarne Grønnow and Niels Thingvad proceeded their studies on the spot, and by the middle of July ten other scientists from Denmark and Greenland arrived. They were transported by sea on the Admiralty's Ingolf and now they should commence the main tasks. During the voyage the first occurrence of pack ice was reached at 73° N - the actual ice border appeared on July 14th at 74° N, where the coverage was 8-10/10 with sporadic icebergs and ice packs up to 1.5 metre. The slow voyage made it possible to accomplish some minor tasks at the cap of Red Head, The islands Depotøerne and N.E. Balles Ø, all S of Kap Seddon, and the islands Sabineøerne W of Kap Seddon.

On July 15th at 6.27 a.m. the expedition reached a position of 3 nautical miles from Kap Seddon. The vessel got stuck in the ice, and landing had to be carried out by helicopter. It took 28 crossings and more than 24 hours to land about 5½ tons of goods at Kap Seddon.

Upernavik - N. district

6/8 - 30/8 four expedition members made an archaeological reconnaissance of the Upernavik N. district. In two 15 feet open boats the scientists made the trip Kuvdlorssuaq-Kap Seddon in search for ruins and former settlements on scattered islands along the margin of the inland ice.

Expedition 1980

In the summer of 1980 the self-recording climatic station will be retrieved and thus the final data-collection goal of the expedition will have been fulfilled. Further investigations on geomorphology, botany as well as archaeology will be carried out.

- Report of Activities at Tugtulgssuaq, Melville Bay, 1979 -

CHR. BAY, B. FREDSKILD, B. GRØNNOW, B. HOLM
JAKOBSEN, M. MELDGAARD,
N. GYLLING MORTENSEN & N. THINGVAD

The ice-filled waters of the Melville Bay stretch from Kap York in the NW to Devil's Thumb in the S. The bay, in Greenlandic known as Qimugseriarssuaq, The Great Sledge Route, is to the N and E rimmed by the Lauge Koch Kyst. The entire length of this coast is dominated by the Inland Ice, with only the islands off the coast and a few steep rocky headlands remaining ice-free. One of the most conspicuous of these ice-free 'lands' is the peninsula of Tugtulgssuaq, situated at 75° (20' - 27') N and 58° (14' - 42') W, between the calving fields of the Dietrichson Gletscher to the N and the Steenstrup Gletscher to the S (Fig. 4). The peninsula has an area of 68 sq.km and consists of three pronounced mountain massifs. The investigations of the expedition were concentrated in the westernmost massif. This part of the peninsula covers 39 sq.km and reaches a height of 619 m a.s.l. The NW coast is everywhere steep, permitting only a few landing possibilities from the sea. The mountainside is rocky and barren, giving room along its upper rim to a row of firn niches. The mountain-slopes to the E and S are more gentle, and the S coast is in part rimmed by low-lying land. This, in addition to the two small river valleys opening to the S coast, makes an easy access from the sea. The waters around Tugtulgssuaq are ice-bound from September/October until mid-July; the tidal range is about 1.5 m. Tugtulgssuaq experiences midnight sun from April 27 until August 15; from November 11 until February 7 the sun remains below the horizon.

GEOGRAPHICAL INVESTIGATIONS

B. Holm Jakobsen, N. Gylling Mortensen & N. Thingvad

The geographical field-investigations at Tugtulgssuaq, during July and August 1979, have been planned and carried out with two specific aims. Firstly, in order to support the ethno-archaeological investigations, emphasis has been laid upon aspects of geomorphology and pedology that gives clues to an understanding and reconstruction of the Holocene climatic history of Tugtulgssuaq; climate and physical



Fig. 4. Aerial photograph of Tugtuligssuaq. Geodetic Institute.

Fig. 4. Skråbilledoptagelse af Tugtuligssuaq. copyright (A173/80).

environment being of crucial importance to the life of the Eskimos, and thus to the interpretation of the historical development and spreading of the Eskimo cultures.

Secondly, because this part of Greenland (i.e. the Lauge Koch Kyst) is rather poorly known as regards the present-day physical environment, it has been a wish to gather as much information as possible concerning this, e.g. meteorological observations, observations on sea-ice conditions in Melville Bay, on snow conditions and glaciers, water-balance studies etc.

Meteorological and hydrological investigations

Since the nearest weather stations are app. 350 km to the NW and S (Dundas and Upernavik) it was found essential to establish a recording series of at least two years to ensure comparability of the observed parameters with the two weather stations mentioned. An automatic recording station (UGO) was established, consisting of an Anderaa taperecording datalogger, equipped with heating batteries to ensure proper working temperatures inside the recorder. Every three hours recordings were made of air temperature at a height of 2 meters, windspeed and winddirection at a height of 10 meters, barometric pressure, and soil temperatures in three levels, 0.05, 0.22, and 0.62 meters below the surface. The recorder was started August 1978, it was reequipped

with fresh batteries and tape summer 1979, and will subsequently be dismantled in the summer 1980.

The station was manned in the period from May 13 1979 until August 22 1979. During this period daily observations were made of air temperature and humidity, cloudiness, visibility, precipitation, evaporation, windspeed and wind-direction. The air temperature and humidity was also recorded by a thermohygrograph, and the shortwave radiation was recorded every three hours by a Kipp & Zonen radiometer.

A well defined catchment area of app. 3 sq.km was selected for water balance studies. The snow depth in the area was measured at 200 points, and the snow density was measured at regular intervals. The catchment area was drained by one single stream, and immediately after this stream broke up on June 29, a streamgauging station was established. A waterstage recorder was erected, streamgauging with an Ott-Labor current meter was carried out at intervals throughout the period, and also samples of suspended load were collected. In the melt period daily readings of snow melt was made, and pit studies of the snow pack together with temperature recordings were carried out.

On the ridge NW of the hut at a height of 375 m a.s.l. an automatic photostation was established, in order to record weather situations and the break up and drift of the sea ice.

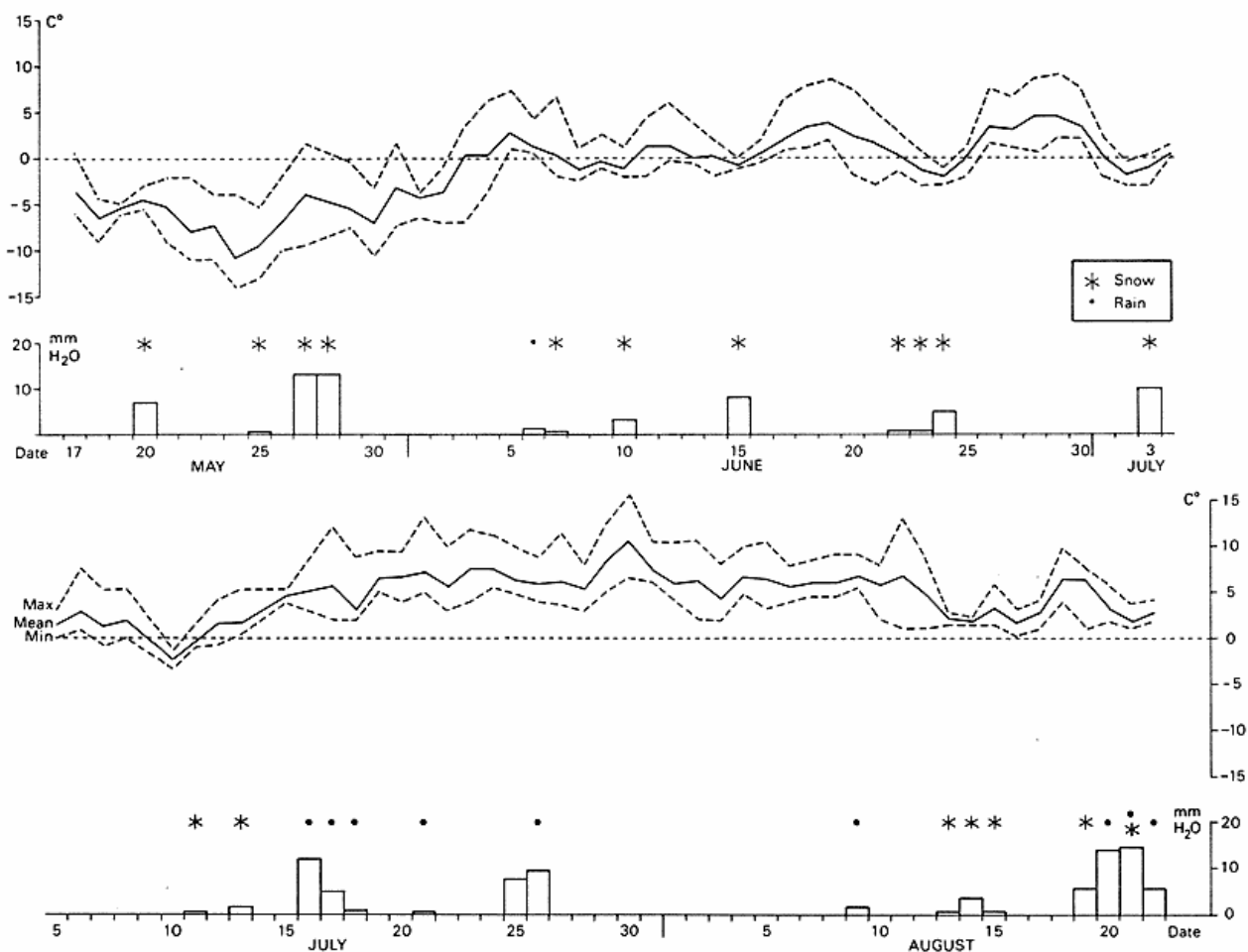


Fig. 5. Temperatur og nedbør i perioden fra 13. Maj 1979 til 22. august 1979.

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The photostation consisted of two 35-mm cameras equipped with 250-frame backs, motor drive and a timer. The two cameras, overlooking the sea to the N and S of Kap Seddon, made exposures every 30 minutes on Ektachrome 200-film. The photostation, operating from June 18 till July 20, experienced several breakdowns because of failing batteries and the breaking of films due to the cold weather.

The weather at Tugtulgssuaq. (Fig. 5)

In late May and the beginning of June the rather stable winter-weather was over, milder and more humid airmasses came in, and the sea ice gradually opened up. This period from the beginning of June till the beginning of July was characterized by temperatures oscillating around 0° C and frequent precipitation in the form of snow. In the first half of July snow melt set in for real, the rivers and streams broke up, and around July 15 the sea ice was in drift. Precipitation in the form of rain, and temperatures above 0° C even in night-time prevailed for nearly a month. In mid-August,

autum was announced by falling temperatures and the downfall of snow and slush.

Throughout the observation period winds were mostly very light, and winddirections from the NE through E to the SE dominated.

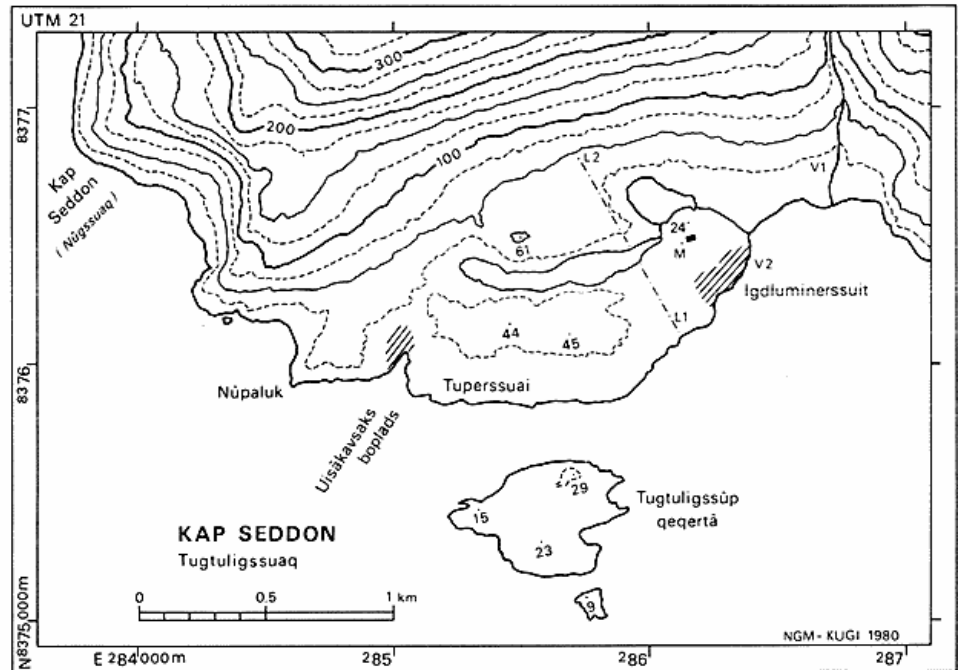
In the observed period the precipitation amounted to 147 mm, of which 81 mm fell as snow and slush, and 66 mm as rain.

Topographical survey

To almost any of the different kinds of investigations that were carried out at Tugtulgssuaq, the question of location is of great importance. For instance, the archaeologist wishes to account for the topographical setting of the Eskimo settlements and related meat-caches, graves, traps etc., their distance from the sea, altitude and relative position in the terrain. To the botanist, the altitude and exposure of a locality is of importance, as this will determine the local microclimate, and thus to a great extent the conditions under

Fig. 6. Main activity area of the expedition. M: UGO with 10 m mast. V1: Hydrological station, waterstage-recorder. V2: Sea-level stage board. L1-L2: The profile L1-L2 in fig. 11. Igdluminerssui, Tuperssui and Uisákavak's Boplads are the main Eskimo settlements. The hatched areas refer to the maps fig. 7 & 8. The expedition hut 'Kunupaluk' is also marked out.

Fig. 6. Ekspeditionens hovedaktivitetsområde. M: UGO med 10 m mast. V1: Hydrologisk station, vandstandsmåler. V2: Vandstandsbræt. L1-L2: Profilen L1-L2 i fig. 11. Igdluminerssui, Tuperssui og Uisákavak's boplads er de vigtigste eskimoboplads. De skraverede områder refererer til kortene i fig. 7 & 8. Ekspeditionshytten 'Kunupaluk' er også markeret.



which the plants are growing. Finally, the significance of a detailed topographical knowledge as to the studies of geomorphology, pedology and of drainage basin, is evident.

The need for an adequate topographical map was hence obvious, from the very outset of the expedition. As the existing maps of the area were far too small in scale to cover the needs outlined above, one of the main tasks before the field season, was to prepare a suitable map material.

In spite of the lack of sufficient geodetic field control, a preliminary map was compiled photogrammetrically on the basis of vertical aerial photographs taken from a height of app. 6000 m (US Air Force 1953). The scale and contour interval were chosen to 1:20,000 and 25 m respectively. Furthermore, areas of specific interest were supplied with 12.5 m contours, and the main activity area (fig. 6) was covered with a map in scale 1:10,000 and a contour interval of 10 m.

During the field season, a number of control-points were coordinated in relation to the Greenlandic Geodetic Net and a detailed topographical reconnaissance were carried out, in order to rectify and complete the preliminary maps.

In addition to the overall photogrammetric survey, the two main settlement areas have been surveyed in detail by means of a Wild tachymeter (figs. 7 & 8). A reference level for altitude measurements was established by registration of the sea-level variations in July and August, 1979.

Geomorphology

In order to obtain a general impression of the geomorphology of Tugtulgissuaq, and especially, as a framework to pedological and geomorphological investigations of particular areas or topics, a systematic mapping of the geomorphology was

carried out. The mapping covers the two westernmost massifs of the peninsula, a total area of 61.5 sq.km. The basic material used for the mapping was oblique and vertical ac-

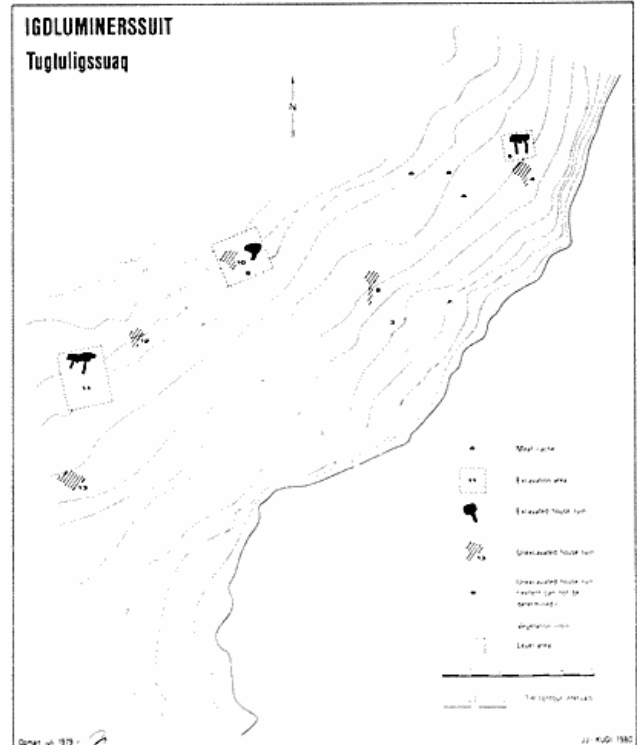


Fig. 7. Survey map of Igdluminerssui. Fig. 7. Oversigtskort over Igdluminerssui.



Fig. 8. Survey map of Uisakavsqaq Boplads.

Fig. 8. Oversigtskort over Uisakavsqaq Boplads.

rial photographs (f.h. app. 6000 m), enlargements of the vertical photographs (scale: 1:20,000 at s.l.), and a topographical map on the scale of 1:20,000 with a contour interval of 25 m. For the greater part of the area the mapping has been based on foot traverses, with a 'reconnaissance intensity' of more than 2 km/sq.km; and several localities have been investigated in some detail. Due to the steepness and inaccessibility of the coastal area, especially the northern coast, this has been supplementarily surveyed from an inflatable boat.

All observations and measurements have been plotted in the field, on a transparent covering on the photo-enlargements. As the geomorphological map is still in preparation, including the conversion of the field map into a parallel projection, and as the results of most investigations are not yet available, only a brief account of some characteristics of the landscape can be given at the present time.

The overall appearance of Tugtulisssuaq is greatly determined by the structural setting of the bedrock, which has a foliated structure trending NE-SW and dipping to the SE. This causes the NW- and N-directed slopes to be precipitous cliffs, with scattered occurrences of scree. In some places pronounced rock-fall chutes have developed, and in the westernmost massif, nivation hollows occur; the perennial snow and firn reaching almost down to sea-level.

SW-, through S-, to NE-directed slopes are generally much less steep, and have only in few cases developed a small free-face. The cover of debris is in most places rather thin, with protruding bedrock, and consists mainly of angular cobble- and boulder-size rock-fragments, detached from the bedrock by frost-bursting. Obviously rock- and talus-creep play a role in the downward movement of this rock-waste. Debris islands, solifluction lobes and earth-slips occur occasionally on these block-slopes.

Where the slopes are gentler, solifluction lobes, sorted stripes and sorted circles and nets become more frequent. Solifluction is the dominating process on certain slopes and occurs widespread at the foot of the block-slopes, where the terrain flattens out and the proportion of finer material increases. Sorted stripes, circles and nets occur on gently sloping to horizontal ground, one often as an extension of the other. These gently sloping areas are mainly found in the two or three small valleys, in the depressions between elevated areas, and in a few places along the coast. It is characteristic that the stony part of these landforms consists of very coarse, angular material, i.e. cobbles and especially boulders. Due to this, and the presence of a frost-table, it was not possible to excavate any of these forms of patterned ground, so as to determine whether or not ice-wedging occurs. The frost-table was found at depths from a few dm to one meter.

In continuation of these investigations, two small experimental sites were established. One concerning sorted circles, the other, mass-movement in solifluction lobes of different size. In both cases, targets were placed on the surface and in depth, in order to obtain a rough estimate of the mass-movements in the horizontal and vertical plane.

Traces of former glacial activity are abundant at Tugtugligssuaq, most widespread as roches moutonnées, glacial striae, marks and other erosional forms. The main activity area of the expedition (fig. 6) is thus predominantly made up of a series of stoss-and-lee-side hills, with the Eskimo settlements situated in the interjacent areas of debris accumulation. Landforms of glacial deposition, on the other hand, are far less conspicuous, and generally not easy to identify and correlate with certainty, as they have been influenced greatly by periglacial processes.

The most distinct expression of glacial activity is the historical moraines and related trim-line zones observed on both sides of Tugtugligssuaq. To the S, the position of the glacier front is now app. 3 km behind the outermost margin of the trim-line zone, which reaches an elevation of 40-50 m above the glacier surface, in the vicinity of the present frontal position. This glacier seems rather unproductive, as there were observed no ice-bergs at all in front of it, the fiord containing only unbroken sea-ice.

Along the northern coast, the historical moraines extend app. 9 km from the front of the Dietrichson Gletscher. Compared with the aerial photographs of 1953, a total of 10.5 sq.km of the glacier snout have been detached and drifted away. This corresponds to a retreat of the front of 4.5 km at the southern margin, and of app. 1.5 km at the northern. The southern glacier has only been subjected to minor adjustments in frontal position since 1953.

During the geomorphological mapping, considerable attention has been paid to the recognition of former marine shore-lines, and to the marine limit. Steep rock cliffs and slopes dominated by mass-wasting constitute roughly 9/10 of the more than 45 km long coastline, and this stretch is therefore not susceptible to lasting signs of marine and/or fluvial erosion or deposition. A thorough examination of the remaining coastal area has not revealed unambiguous evidence concerning the marine limit. The distribution of 'perched boulders' indicates a marine limit not very much above the present sea-level, i.e. below 15-17 m, but further analyses, e.g. of sediments in two small lakes near the coast, will be required to elucidate this matter.

Pedological investigations

The investigations of the soil development were made for several reasons. First of all it was important to recognize the various pedological soil types, which are represented in an arctic environment as that found in the small landareas between the Inland Ice and the sea in the Melville Bay. Such studies of soils in polar landscapes can, if properly used, give

important information for the understanding of fossil soil characteristics. These are found in areas, where early soil development took place in a periglacial environment during the Pleistocene and early Holocene.

The soil profile will reflect the integral of the present soil forming factors and to a certain extent profile characteristics developed under different climatic conditions. It is evident, that a comparative study of soils covering the entire peninsula, can give important clues about the change in natural environment and especially about the relative age of the soils. Such information about the deglaciation and trends in climatic history can be useful for the interpretation of the area in relation to archaeological studies.

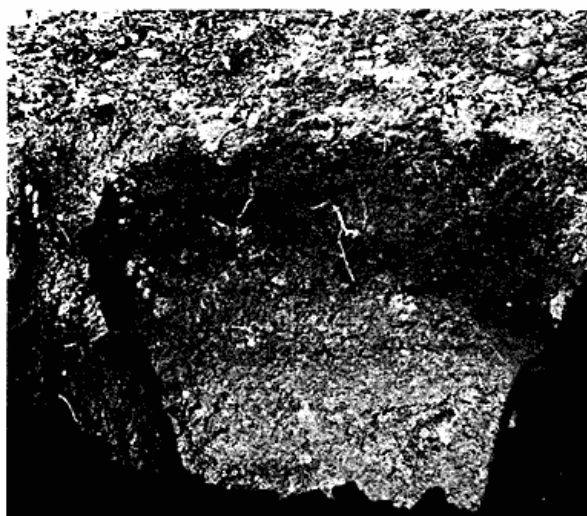
This preliminary report present a short description of the typical soils and their position in the landscape. Furthermore some clearly occurring differences in profile development due to different age of the soils will be mentioned.

As the relief energy is high and the peninsula dominantly consists of gnejsic bedrock, large areas, as the high lying mountain area (> 150-200 m) and steep sloping areas in other regions, showed no sign of soil development. Exposed bedrock and Lithosols dominate, where the only process is the physical weathering of the rock. In these areas various types of weakly developed patterned grounds were found, e.g. debris islands, sorted circles and sorted stripes. The weak development is probably due to the shallowness of the soils and to the very coarse materials consisting of boulders and cobbles with only traces of fines.

In the lower lying region in horizontal or only gently sloping areas one finds more well developed soils on materials as tills, glaciofluvial deposits, delta deposits and materials brought to the area by mass - wasting. In these areas well developed patterned grounds were found (sorted nets,-circles and -stripes), especially in the lower parts of the slopes and in the areas immediately in front of the slopes. This is probably due to the wide range in textural composition (boulders to clay) likely to be found here. In these lower lying areas the soil is moved downslope by creep- and gelifluction-processes due to low waterstress in greater parts of the year. Furthermore processes of cryoturbation are active in these materials. The influence of these horizontmixing processes on the profile-picture will be mentioned in the description of the typical soils.

The genetic soils in the area can be arranged in forms of sequences starting with the zonal soil the arctic brown. Progressing through more poorly drained conditions we reach, through various tundra soils, soils with major organic accumulations. As a result of the weakening of soil-forming potential, either by lack in time for profile development or by entering areas with more arctic desert-like environment, one meets miniature profiles and profiles where no observable soil formation has taken place.

Arctic brown: Fig. 9a and Fig. 9b. In well drained positions with a permafrost table at a depth of > 50 cm and a sparse vegetation one finds arctic browns. Some of these



cm	A _h	10	YR 3/4	pH 5,18
10	B _v	10	YR 4/4	pH 5,55
	B _v C	10	YR 5/4	pH 6,20
	C	10	YR 6/3	pH 6,30

Fig. 9. Arctic brown developed on gravally sand with about 5% clay. Permafrost in 90 cm. The soil is well drained and located in a gently sloping area to the south. Soil creep takes place in the topsoil.

Fig. 9. Arktisk brunjord udviklet i gruset sand med ca. 5% ler. Permafrost i 90 cm. Jorden er veldrænet og beliggende i et svagt mod syd hældende område. Jordkrybning finder sted i overjorden.

profiles, especially those developed on wellsorted delta sands show signs of clay migration (weakly developed B₁-bands) and weak podzolization seen as a somewhat paler A₂ and a narrow zone (B) coloured by small accumulations of humus and sesquioxides. These profiles also show a somewhat lower Ph in the A-horizon (Ph(H₂O) at 5) compared to the typical arctic brown. These profiles often showed soil creep at the surface and some profiles were totally dislocated due to cryoturbation and interfering gelifluction lobes. At some places one finds a »double« arctic brown, where the youngest soils is developed in material brought into the area by mass -wasting.

Tundra soils: More poorly drained soils are represented by both upland- and meadow tundra soils. An example of a meadow tundra soil is seen in Fig. 10a and Fig. 10b. These tundra soils are often connected with permafrost tables near the ground surface and the Ph profile reveals only weak leaching in these soils. Often and especially in areas with hummocks concentrations of »bases« in the uppermost horizons, due to the special water regime existing in the soils, are found.

The soil forming factors which are mainly responsible for the small scale pedovariance in the area are relief, depth of permafrost table and soil drainage. Especially in this area



cm	H	5	YR 2/2	
0	A _h	5	YR 2/2	pH 6,31
10	C _g	10	YR 3/3	pH 6,10

Fig. 10. Meadow tundra soil developed on loamy sand. Groundwater table in 25 cm. The soil is situated in a nearly horizontal area in the bottom of a valley.

Fig. 10. Eng tundra jord udviklet i leret sand. Grundvand i 25 cm's dybde. Profilen er beliggende i bunden af en dal i fladt terræn.

time is an important soil differentiating factor. About 30 profiles were examined, and more detailed information about the actual processes in the soils will be revealed when various laboratory tests have been concluded.

The comparison of profiles developed in positions with similar material and soil forming conditions showed marked differences. The following data on soil development may be useful as an indication of age: Horizon thickness, intensity of weathering and leaching, particle size distribution, organic matter content and Ph. At this preliminary stage it is obvious, that good results can be achieved when limiting the comparative study to the zonal arctic brown. Here it seems possible to establish a useful relation between depth and intensity of weathering and leaching and the age of the soil. According to the investigations made at Tugtulgissuaq it seems unlikely, that good results are possible when comparing either tundra soils or well drained shallow soils. This is mainly due to the difficulty in controlling the locally occurring dominant soil forming factors, which just determines the azonality of these soils.

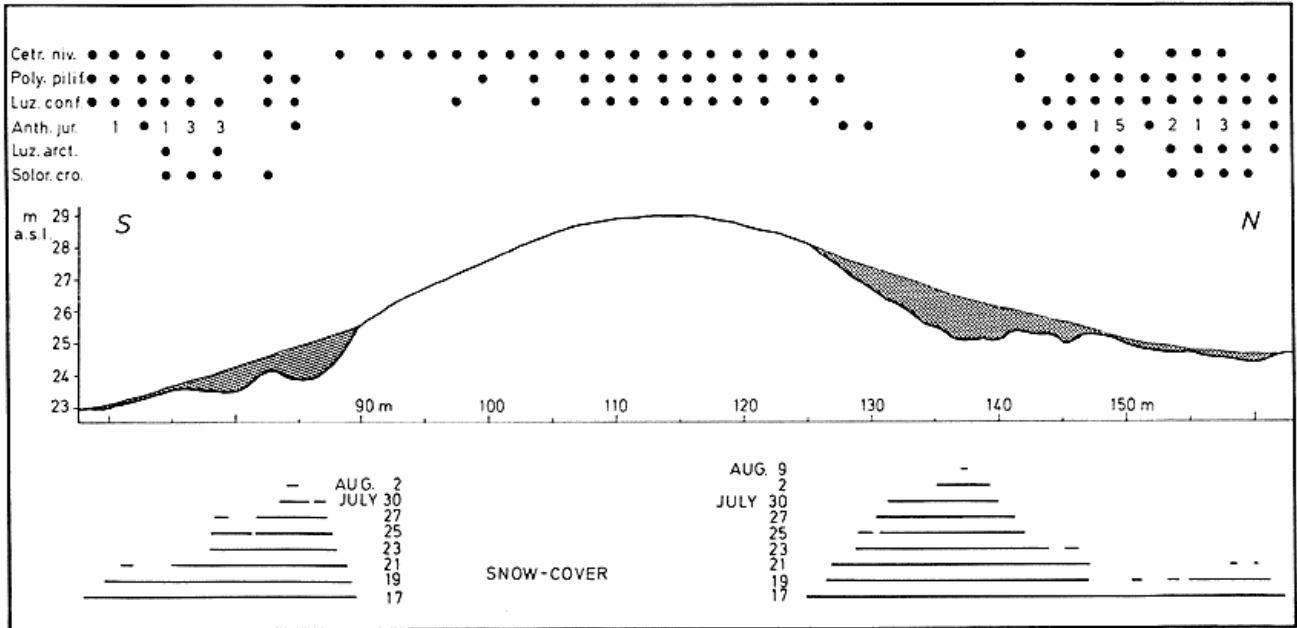


Fig. 11. Profile showing the extension of the snow-cover and the distribution and degree of cover of some selected plant species.

Fig. 11. Profil visende snedækkets udbredelse og nogle udvalgte plantearters fordeling og dækningsgrad.

BOTANICAL INVESTIGATIONS

Bent Fredskild & Christian Bay

Botanical investigations were carried out with the two-fold purpose of studying 1) the present flora and vegetation, 2) the vegetational development since the last glaciation and - if possible - by that means to trace former climatic changes.

The present vegetation

Vegetation analyses

Snow-cover is one of the most important factors as regards the distribution of plants in the Arctic. The duration of the snow-cover influences the length of the period of growth, while the thickness is decisive for the temperature in the vegetation. Snowbeds and snow-protected dwarf-shrub heaths are the most prominent vegetation types in the lowland of Tugtulisssuaq. Consequently the investigations of the present vegetation were concentrated on these types.

On July 17 a 680 m long N-S line was laid out perpendicular to the coast and to the low parallel ridges in the bedrock (Fig. 6). The line cut through 17 snow-covered areas with interjacent ridges being free of snow on that date. On July 23 only 12 areas were covered with snow. These are termed snowbeds. On August 24 one remained still. A 1 m square was placed every second metre along the line and the degree of cover was noted for all species (incl. higher plants, mosses and lichens) using a modified Hult-Sernander scale: In this 6 marks a degree of cover between 1/1 and 3/4, 5 = 3/4 - 1/2, 4 = 1/2 - 1/4, 3 = 1/4 - 1/8, 2 = 1/8 - 1/16, 1 = 1/16 - 1/32, + (in Fig. 11 marked with a dot) = <

1/32. In each square the thickness and the texture of the soil were described. Deeper soil profiles were dug in the different vegetation types along the line, and soil samples were taken for later analyses. A total of 21 higher plants, 28 mosses and 23 lichens was met with in the squares.

Fig. 11 shows the distribution of some selected plant species, the depth of the snow on July 17 and the duration of the snow-cover along part of the line, including a south- and a north-exposed snowbed and a ridge. The distribution of *Luzula confusa*, which is the most abundant species on Tugtulisssuaq, does not seem to be related to snow-cover. It occurs as frequently in snowbeds as on the ridges. This is valid also for e.g. the moss *Polytrichum piliferum*. Judging from Fig. 11 the distribution of the ubiquitous liverwort *Anthelia juratzkana* seems to be highly related to snow-cover but in other parts along the line this is not the case. However, *Luzula arctica* and *Solorina crocea* grow almost consistently in snowbeds only. In the latest part of the snowbed shown to the right in Fig. 11 only two mosses grew: *Andraea rupestris* and *Cynodontium tenellum*.

Cetraria nivalis is a distinct chionophobe species. It occurs in the vast majority of the squares on the ridges, but in only a few of the snowbed-squares. Some species of *Alectoria*: *A. ochroleuca*, *A. nigricans* and *A. nitidula* (not shown in the figure) have a very similar distribution.

A common trend along the line is the paucity of species as well as of individuals. Often just one single, tiny specimen of a species was recorded, and especially as regards phanerogams, the vegetation is very open.

Outline of the vegetation types on Tugtulgissuaq Dwarf-shrub heaths. - Generally the vegetation on top of the above mentioned ridges and on fine-textured, early snowless, south-exposed slopes elsewhere in the lowland can be termed poor dwarf-shrub heaths dominated by *Vaccinium uliginosum* (mostly sterile), rich in *Salix arctica* and *Empetrum hermaphroditum*, and less often with some *Dryas integrifolia*. With a little longer lasting snow-cover *Cassiope tetragona* enters the vegetation and *Dryas* disappears. With a still later melting *Cassiope* becomes the dominating species, *Salix herbacea* appears, while *Empetrum* and later also *Vaccinium* disappear. Having the widest ecological range within the dwarf-shrubs *Salix arctica* is subdominant in these snow-protected heaths. *Luzula confusa*, *Pedicularis hirsuta* and *Carex bigelowii* are most common among the few herbs. The vigorous growth and numerous young individuals of *Cassiope* indicate optimal conditions to this species in the high-arctic maritime climate of Tugtulgissuaq. This is concordant with the vegetation of N. Greenland which can be divided into two main regions: an outer coast and high altitude *Cassiope*-region and a *Dryas*-region in the continental, interior lowland.

On horizontally, patterned ground the *Cassiope*-*Salix arctica* heaths gradually change into snowbeds and the degree of cover of the higher plants diminishes, whereas the soil is covered by a carpet of cryptogams. While lichens (apart from *Solorina crocea*) are dominating on the ridges, mosses and liverworts take over in the snowbeds, e.g. *Racomitrium lanuginosum* and *Anthelia juratzkana*. *Silene acaulis*, always sterile here, and *Huperzia selago* are the most conspicuous herbs in the middle-late snowbeds in which also tiny specimens of *Cassiope*, *Salix arctica* and *Luzula arctica* are growing. In extremely late snowbeds only cryptogams occur.

Fell-fields, rocks and screes. - Almost every slope and plateau at elevations above the upper marine limit (c. 15 m a.s.l.) are covered with blocks. Apart from lichens and mosses only few *Luzula confusa* and rarely a single *Cardamine bellidifolia* are found. Sandy-gravelly south-exposed screes are found in places. Here a number of species characteristic of dry soil can be found: *Carex nardina*, *Poa glauca*, *Antennaria ekmaniana*, *Campanula uniflora*, *Draba nivalis* and *Saxifraga tricuspidata*. In spite of the small extent of the peninsula a marked difference in the dry plant communities was observed. Thus *Potentilla chamissonis*, *Kobresia myosuroides* and in small rock-crevices also *Woodsia alpina*, *W. glabella* and *Cystopteris fragilis* were found only in the eastern part.

Herb-slopes. - A herb-slope bordered the waterfall on the south side of Itivdlip aluk. *Oxyria digyna*, *Ranunculus pygmaeus*, *Antennaria canescens*, *Carex bigelowii*, *Salix herbacea* and a few *Pedicularis flammaea* were growing in the moist carpet of moss.

Fens. - *Carex stans* fens intersected by melt water brooks covered a great part of a plateau 200 m a.s.l. east of Itivdlip aluk. *Eriophorum scheuchzeri* and *E. angustifolium* (not *E.*

triste) are common, and *Juncus biglumis*, *J. castaneus*, *Koenigia islandica* and *Deschampsia pumila* were also growing here. Clayey polygons in the fen harboured *Sagina caespitosa*, *S. intermedia*, *Draba lactea* and *Phippsia algida*. Small or fragmentary fens were met with in the valley 2 km SE of »Kunupaluk« and at the W end of Langesø.

Lakes and ponds. - Stagnant water is uncommon on Tugtulgissuaq. No higher plants were found in the lakes, whereas mosses and liverworts, especially *Drepanocladus exannulatus* and *Marsupella arctica* cover the lake bottom even at depths exceeding 5 m.

Ranunculus hyperboreus was found in a temporary pond at Kap Seddon. Rivers and brooks in valley bottoms often are bordered with carpets of mosses and liverworts: *Calliergon sarmentosum*, *Marsupella arctica* and *Anthelia*. Sphagnum is not frequent.

Seashore vegetation. - Seashore vegetation proper was not found, but a few specimens of *Puccinellia phryganodes*, *Stellaria humifusa* and *Carex glareosa* were growing in protected places. *Saxifraga rivularis*, *Sagina intermedia* and *Phippsia algida* were often met with in rock-crevices just above the high water mark.

Summing up, the vegetation on Tugtulgissuaq is extremely poor, not only in individuals but also in number of species (83 higher plants). This can be ascribed to 1) the easily disintegrating bedrock which excludes species demanding stable soil or rock walls, 2) the acid bedrock excluding calciphile plants, and 3) the long snow-cover excluding species demanding warmth and a long growing season.

The former vegetation

The hope of being able to support the archaeologists with palaeobotanical and thereby palaeoclimatical information by stratigraphical investigations in kitchen-middens and in moist, peaty places close to the former Eskimo sites failed as a result of periglacial phenomena which spoiled any stratigraphy everywhere. Thus only remained coring in the two lakes at »Kunupaluk«, unofficially named Rundesø and Langesø.

The ice floe in Rundesø (c. 15 m a.s.l.) and in Langesø (c. 16 m a.s.l.) disappeared very late (August 8 resp. 19). The sequence of sediment in both lakes was similar: 30 cm of coarse sand was covered by 5-10 cm sticky clay, in the upper part with some mosses and a touch of gyttja. Resting on this was c. one metre of gyttja with mosses. Usually the deepest 10-15 cm was more clayey.

Some preliminary analyses of the sediment have been carried out. According to the content of diatoms (N. Foged anal.) the whole sequence in Langesø is limnic. The transition from a lake rich in suspended clay to a clear water lake took place 8,540 ± 120 C¹⁴yr ago (K-3276, the dating of the deepest 1.5 cm gyttja, H. Tauber anal.). The lake was fairly rich in the beginning of its existence as illustrated by the production of half a million *Pediastrum*/ml and the finding of *Hippuris vulgaris* pollen, but shortly after it became

oligotrophic. In the present gyttja the number of *Pediastrum* is less than 50/ml. In the beginning the terrestrial vegetation consisted of pioneer plants like *Oxyria digyna*, *Papaver radicum*, Gramineae, *Tofieldia* and *Armeria scabra*, the latter two like *Hippuris* now extinct on the peninsula. After some time (one millenium?) *Salix arctica*, *S. herbacea* and *Cassiope* immigrated, the pioneer plants were reduced in number or disappeared, and after a period, in which the pollen of Cyperaceae dominated, *Cassiope* gradually became dominating (B. Fredskild anal.).

ARCHAEOLOGICAL INVESTIGATIONS

Bjarne Grønnow & Morten Meldgaard

The archaeological investigations at the peninsula Tugtulisuaq form a considerable part of the Memorial Expedition.

Below a survey of the archaeological subjects, the methods applied and the different sites investigated will be presented.

Tugtulisuaq is the most conspicuous peninsula in the southern part of the Melville Bay. Travelling »The Eskimo Way« (dog sledge on the sea ice) across the several hundred kilometer wide bay, one will find that Tugtulisuaq is one of the few natural dwelling-places on the route. For that reason - and also Knud Rasmussen's information on the rich hunting grounds taken into consideration - this area was expected to offer particularly good possibilities for tracing the prehistoric Eskimos. Datings of the settlements at Tugtulisuaq throw new light on the problems about the migrations of the Eskimos from North Greenland to West Greenland.

Another aim was to elucidate the life of the prehistoric Eskimos in this particular area. Human survival in a harsh nature, as that of the Melville Bay, demands a specific cultural adaptation to the natural environment: a highly developed and specialized hunting community. The closer investigation of this was made possible by concentrating the archaeological work on the following main subjects:

1. Location of the sites and settlement structure.
2. The structure and internal arrangement of the houses.
3. The exploitation of the game (the subsistence).
4. The burial customs.

The Fieldwork

The team working in the field represented: archaeology, eskimology (ethnography) and quaternary zoology. The fieldwork was furthermore closely coordinated with the geographers and botanists of the expedition.

The fieldwork at Tugtulisuaq comprised the following activities:

reconnaissance - registration and mapping of the house ruins, tent rings and other structures (graves, meat-caches, traps etc.).

surveying - topographic measurings of the settlement-areas.

excavation - systematical excavations of selected house - and tent-ruins and graves.

ethnographical investigation - collecting ethnographical information from the present hunters - the Greenlanders.

Accomplishing such a comprehensive fieldwork in the High Arctic naturally causes many special problems. First of all the summer season - and thereby the duration of the excavation work - is limited to 1½ month, and secondly the permafrosen soil inevitably slows down the excavation activities - difficulties with which the eskimo-archaeologist must learn to live.

The reconnaissance

Primarily through written accounts by Knud Rasmussen and Lauge Koch from the beginning of this century we knew that at least two former settlements existed at Tugtulisuaq: Igdluminerssuit and Uisakavsuaq Boplads (see the maps Fig. 6, 7 & 8.) The examination of these will be described below.

However - the tracing of further human activity was an important task. Through comprehensive reconnaissances a large number of »structures« made by the prehistoric Eskimos as well as the present Greenlanders were localised and registered.

Besides the house- and tent-ruins of the settlement areas one finds a large number of single ruins - preferentially remains of summer tents, i.e. tent rings and sleeping-platforms made of stoneflags. Most of these appear to be from this century and are situated along the S-coast between the two older settlements.

The remaining structures comprise meat-caches, foxtraps, cairns and graves. The meat-caches are situated either near the settlements or in groups near the landingplaces for caught narwhales. The fox-traps are concentrated in the proximity of the meat-caches, but they are also found in virtually all accessible places at the peninsula.

At the SW-point of Tugtulisuaq we found a veritable cemetery consisting of about 30 graves (stonebuilt chamber-graves). They are several hundred years old (see below).

The current analyses of these structures yield valuable information on the human activities in the vicinity of the settlements.

The excavations at Igdluminerssuit

The oldest and largest settlement is Igdluminerssuit (i.e. »The Place with Many Old Houses«). A detailed topographical survey was carried out (see map Fig. 7).

Today the ruins of ten houses or house-groups are visible on the surface. They are located on a gently sloping terrain close to the coastline.

A ruin appears as a grass-grown depression shaped like a cloverleaf. »The stalk« is the entrance-passage (length 4-6 m, width ½-1 m) and »the leaf« is the room itself. The passages are distinct - the big vertical stoneslaps forming the walls are mostly in original position in spite of soil-movements during centuries. Unfortunately the direction of solifluction is at right angles to the back walls of the rooms and consequently these are often damaged.



Fig. 12. A well preserved puppy (age approximately 4 months) found under a seal skin in the frozen deposits of an entrance passage, Igduminerssuit. The deposits are dated to 1000-1200 A.D. (Phot.M.M.).

Fig. 12. En velbevaret hundehvalp (alder ca. 4 mdr.) fundet under et sælskind i de frosne gulvlag i en husgang, Igduminerssuit. Datering: 1000-1200 e. Kr. (fot. M.M.).

Excavations were carried out in three of the ruins (no. 5, 9, 11). Two of these ruins were well preserved and during the excavation the wall constructions, the flooring (stoneflags), kitchen-niches, pits, platforms, passages etc. were registered by means of technical drawings and photos (including vertical photos). Both these houses were double-houses with two connected rooms and two passages. The excavation method applied makes it possible to replace the findings in grid squares of $\frac{1}{4}$ m², and analysis on the distribution of artifacts and waste products will provide information on the everyday life in the houses.

In the frozen floor sediments in the passages the state of preservation was extremely good. All organic material - wood, bone, antler, feather, hair, baleen - was carefully excavated.

The bone material demonstrates the inhabitants' exploitation of the game, and in zoological context the bones yield information on the different species and their prehistoric distribution. The bone material is dominated by marine mammals e.g. seal, polar bear, narwhal and species of larger whales. The last indicating catching methods nowadays unknown in Greenland.

But also terrestrial mammals are represented. Thus marrowbroken caribou bones indicate the hunting of these animals in the Tugtulgssuaq area. The former presence of caribou is remarkable, considering the small area of land and the scarce vegetation.

In one of the passages the Eskimo's domesticated animal - the dog - was found. In the frozen floor deposit a puppy with the fur preserved was encapsulated (Fig. 12).

Among the artifacts found in the houses only a few types will be mentioned here: harpoon head, bodkin (large bone needle), wound plug, comb (made of narwhal tooth), wooden shaft, tooth pendants (made of polar-bear canine tooth). The harpoon head from ruin 11 was found in a pit under the platform and it dates the house to an early phase of the

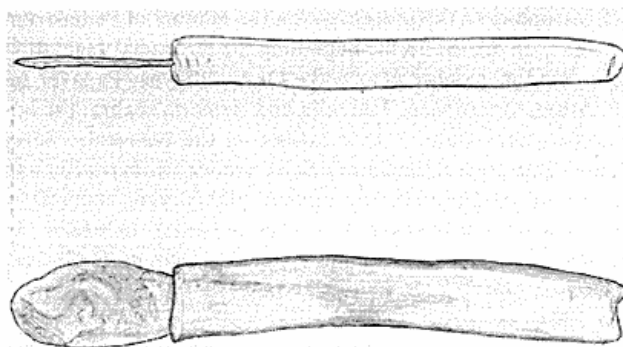


Fig. 13. Knife with iron blade found in the floor deposits House 11, Igduminerssuit. (BG del.).

Fig. 13. Kniv med jernblad fundet i gulvlagene, Hus 11, Igduminerssuit.

Thule Culture (1000 - 1200 A.D.). The findings from the other ruins are in accordance with this.

Specific attention should be paid to the metal objects from Igduminerssuit. The people of the Thule Culture knew the use of iron! - they hammered out small pieces of the meteors from the Thule District and used them for knives. Such a knifeblade of (meteoric) iron with bone shaft were found (Fig. 13), but two of the specimens - an iron nail and three iron rings chained together - are objects not made by the Eskimos. Probably these iron objects originate from the Norsemen in Greenland. Metal analyses are in preparation.

Further analyses and interpretations of the Igduminerssuit-material will provide us with a detailed insight into this early Melville Bay Community.

The excavations at Tupersuai

In a small valley opening to the coast approx. 1 km WSW of Igduminerssuit many tent-ruins are situated - all probably of later date. The site is called Tupersuai («The big Tents»).

One of these tent-ruins was examined (Fig. 14). The flagstone flooring, the stones supporting the tent poles and the sleeping-platform were remaining. According to the hunters from Upernavik District this summer camp has been inhabited during the 1920's by a family from Uisakavsqaq Boplads. The examination included sampling the artifacts and waste products (mostly marrow-broken bones) from the surface, which was divided into a grid of $\frac{1}{4}$ m². The purpose was to provide a bone material from the summer period and to collect a material for testing different archaeological interpretations.

Uisakavsqaq Boplads

Uisakavsqaq Boplads is situated at a natural harbour delimited on the E- and W-side by steep cliffs (See map Fig. 8).

A great deal of historical information on the period from

the turn of the century to this 1920's, when the settlement finally was abandoned, is available. Partly these informations derive from the works of Knud Rasmussen and Lauge Koch, and partly they exist as oral traditions among the hunters of the Upernavik and Thule District.

During the first stage of the Memorial Expedition - the sledge travel from Thule to Tugtulgissuaq - the author (BG) talked with the old Anguvdluk Umaq from Savigsivik. He was among the last inhabitants at Uisakavsqaq Boplads.

The settlement is named after «The Pioneer of Tugtulgissuaq» - the famous Uisakavsqaq. The remarkable lifestory of this outstanding personality and great hunter is told by Knud Rasmussen.

This summer the settlement was surveyed and a registration of the very well preserved ruins (winter-houses) was carried out (Fig. 15). Relating these data to the Greenlanders' accounts many ethno-historical perspectives open up.

The purpose of the excavations at this site was primarily to trace settlements older than the historically known (pre 1900 A.D.). Therefore a couple of cross-sections through the midden deposits in front of the houses were made, and beneath the midden layer from this century two older were found. Excavations in relation to the sections were made in order to date the old layers, but at present only the upper one can be dated preliminary to 17-18'th century A.D.

Beneath later midden deposits a 2-3 hundred years old ruin in a very bad state was found. Obviously the Eskimos, as they often do, had reused stones and turf from the walls of this house as building material in the younger houses. The stratigraphy of the cultural deposits at such an intensively inhabited site is disturbed by these reuses (e.g. artifacts from old turf-grown middenlayers are sometimes found in the walls of younger houses). Thus the only certain trace - an



Fig. 14. Excavating a tent ruin at Tupersuai. (Ethnographer Jørn Berglund Nielsen and teacher Arine Engelund Kristiansen). (Phot. M.M.).

Fig. 14. Udgravning af en telttomt på Tupersuai. (Etnograf Jørn Berglund Nielsen og lærer Arine Engelund Kristiansen). (Fot. M.M.).

artifact - of the Paleo Eskimos (i.e. in Greenland the Eskimo Cultures older than approx. 900 A.D.) at Tugtulgissuaq was found in much younger cultural layers. The specimen is a small asymmetrical knife blade made of jasper, the type belonging to the latest Dorset Culture in Greenland (6-800 A.D.).

The graves

The 30-40 graves registered at Tugtulgissuaq are primarily situated in the close vicinity to Uisakavsqaq Boplads.



Fig. 15. House from the turn of this Century, Uisakavsqaq Boplads. Probably this house was inhabited by the legendary Uisakavsqaq himself. (Phot. MM).

Fig. 15. Hus fra omkring Århundredeskiftet, Uisakavsqaq Boplads. Sandsynligvis beboede den legendariske Uisakavsqaq dette hus.



Fig. 16. Chamber grave containing woman with her sewing gear. (Phot. A.F.).
 Fig. 16. En kammergrav indeholdende en kvinde med sit sygrej.

The most common type of grave is the chamber-grave, which is a rectangular chamber (length 1½ - 2 m, width ½ - 1 m) built of big stones. The dead body is placed in the chamber lying on the back with bent knees. Up against the big chamber a smaller one is often built for the grave goods. The grave chamber is covered with flagstones and a big pile of stones.

Unfortunately nearly all the graves are disturbed in recent time by the Greenlanders of the district, yet three comparatively unspoiled graves, which could still yield good archaeological information, were found.

During the excavation the moss layer partly covering the skeletons were removed (Fig. 16). The bones protruding the moss layer in the graves were the best preserved - i.e. some limb bones and the cranium. In a couple of the graves pieces of the dead person's clothing were preserved.

Two graves contained the same characteristic grave goods showing that the buried persons were women. In each grave the woman was provided with a complete set of sewing gear consisting of a needle case with plug, 3-4 ornamental bodkins (large bone needles with carvings) and a so-called thimble-holder. (Fig. 17). One needle case still contained a tiny iron needle.

The characteristic, ornamented »winged« needle case dates the graves to the same period as the excavated houses at Igdluminerssuaq, and probably the majority of the graves situated at this outermost part of the peninsula are built by the inhabitants of this settlement.

Ethnographical information

It is necessary to have an intimate knowledge of the Melville Bay hunters of today to understand the cultural patterns of the prehistoric Eskimo as expressed in the archaeological findings.

Collecting ethnographical and ethnohistorical information on the hunting and the way of life at Tugtulisuaq formed a very inspiring part of the fieldwork. Nowadays the game of the Tugtulisuaq-area is exploited by West Greenland hunters from the Upernavik District. The peninsula serves as



Fig. 17. Grave goods. (Phot. L. Larsen).
 Fig. 17. Gravgaver.

a base primarily for the catching of narwhals migrating northward along the coast in the summer. The narwhal is caught with harpoon thrown from kayak - a traditional hunting method.

Through conversations we have collected important information on the whaling and sealing tackle, the hunting techniques and the behaviour of the marine game in this area.

In this report a short outline of the purpose of the archaeological investigations and their practical accomplishment have been presented, and a comprehensive and time-consuming phase of analysis is ahead.

The findings and the many technical drawings, photos and notes must be structuralized. The large quantum of bones must be treated by a quaternary zoologist and the knowledge deduced from this can be used both in archaeological and zoological context.

By our interdisciplinary approach we will be able to achieve a better understanding of the life of the prehistoric Eskimos - an understanding, which hopefully can be used by the Greenlanders of today.

After the analysis all the material will be transferred to Grønlands Landsmuseum, Godthåb. (The National Museum of Greenland).