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DANSK PEARYLAND EKSPEDITION 1947–50

LEADER: EIGIL KNUTH

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BIRDS AND MAMMALS OF PEARY LAND  
IN NORTH GREENLAND

INCLUDING NOTES FROM NORTHEAST GREENLAND

BY

PALLE JOHNSEN

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WITH 15 FIGURES IN THE TEXT  
AND 4 MAPS

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## PREFACE

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The present paper contains the ornithological and mammalogical results of the Danish Peary Land Expedition (in the text abbreviated to D.P.E.) 1947—50 to the northernmost Greenland. The literature contains only very few zoological observations from this region.

The author stayed in Peary Land as a member of the expedition for a couple of weeks in July—August 1947 and again from August 1948 to August 1949, and thus, as the first one had the opportunity of studying the bird life throughout the year.

The ornithological results obtained in the summer of 1947 have already been published by ULRIK MØHL-HANSEN (1949), who took part in the summer expedition as an ornithologist. His paper—"Fuglelivet på Peary Land, Nordgrønland (The Bird-life in Peary Land, North Greenland)"—is provided with a summary in English.

I wish here to express my deep gratitude to the fathers of the expedition, EIGIL KNUTH and EBBE MUNCK, as well as to all my comrades during the wintering. KJELD HOLMEN, BØRGE FRISTRUP, JOHANNES TROELSEN and EIGIL KNUTH were always anxious to help me with collecting and notes. This was especially valuable since they often visited places where I was not able to go. KNUTH and ELLITSGAARD RASMUSSEN made careful notes on the birds and mammals during the second wintering of the expedition in 1949—50, in which the author did not take part. A great many of the field notes in this paper were thus made by my comrades. My thanks are also due to TORBEN ANDERSEN, who for some weeks in the summer of 1949 assisted me in the zoological investigation. Great help with the determination of vegetable matter in the stomachs was most kindly yielded by KJELD HOLMEN.

During the preparation of the paper I have obtained favourable working facilities at the ZOOLOGICAL MUSEUM, Copenhagen, and economic support was granted by THE CARLSBERG FOUNDATION. Valuable help with the solution of certain scientific problems was given by FINN SALOMONSEN and ULRIK MØHL-HANSEN.

Since during the preparation of this paper FINN SALOMONSEN was writing a handbook on the birds of Greenland (1950—51) a great many

of my not yet published results from Peary Land were incorporated in this handbook.

Peary Land was never before visited by a zoologist and no collections had been brought home to museums from here, apart from some few insects collected by PETER FREUCHEN and a couple of skins of birds shot by T. WULFF.

Due to the remote and fairly inaccessible situation of Peary Land, the northernmost land-area in the world, I think that all observations may be of interest and the writing of this paper is therefore broader than is generally the rule, when more wellknown areas are treated.

Since all the zoological information from Peary Land prior to D.P.E. is not easily accessible because they are found buried in expedition-reports and popular travelling literature I present all these scattered records here, thus attempting to summarize what is known of the birds and mammals of Peary Land up till now.

All wing measurements in the text were made on dry skins, unless otherwise stated. All weights are in grammes and measurements in millimeters, when nothing else is indicated. All the collections are kept in the Zoological Museum, Copenhagen, Denmark.

The meaning of the Danish words, commonly used in the geographical names is as follows: bjerg = mountain, bredning = gulf, bugt = bay, dal = valley, elv = river, fjeld = mountain, fjord = fjord, gletcher = glacier, iskappe = icecap, kap = cape, kyst = coast, land = land, pas = pass, slette = plain, strand = beach, sø = lake and ø = island.

Mrs. AGNETE VOLSØE most kindly read through and corrected the English manuscript.

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## PREVIOUS INVESTIGATIONS IN PEARY LAND

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Below is given a brief account of all the expeditions which prior to D.P.E. have trotted Peary Land, but only the results of these expeditions obtained in Peary Land itself are discussed as the history of the exploration of North Greenland inclusive that of Peary Land has been dealt with in detail lately by LAUGE KOCH (1940).

THE LADY FRANKLIN BAY EXPEDITION 1881—1884. During this American expedition Peary Land was visited by white men for the first time. They were LOCKWOOD and BRAINARD, who with eskimo escort travelled along the north coast of Greenland up to  $83^{\circ}24'$  NL, i. e. a fairly long distance along the north coast of Peary Land. LOCKWOOD perished during the return of the expedition, but his and BRAIGNARD's diaries from the journey to Peary Land were brought home, and their observations are included in the report of the expedition by GREELY (1886). The zoological observations are given as an appendix.

DANMARK EXPEDITIONEN 1906—08. This Danish expedition sent a sledge party consisting of MYLIUS ERICHSEN, HOEG HAGEN and the Greenlander JØRGEN BRØNLUND from the wintering station at Danmarkshavn north and into Independence Fjord. They mostly travelled south of this fjord, but also paid a short visit to the north coast of this fjord, viz. to the mouth of Jørgen Brønlunds Fjord. All the partakers in this sledge journey perished on their way back to Danmarkshavn.

Some scattered notes on birds and mammals from this journey are known from reports in cairns found later and from the diary of BRØNLUND (TROLLE 1934), which was found on his body. No zoological information from Peary Land is contained in this diary, but some is given from the areas south of Independence Fjord. Another sledge party consisting of J. P. KOCH and AA. BERTELSEN and the Greenlander T. GABRIELSEN started together with the other party and travelled along the east coast of Peary Land up to Kap Bridgman. Some zoological notes from this journey have been published by MANNICHE (1910).

THE EXPEDITIONS OF R. E. PEARY 1892—1909. In 1892 and again in 1895 PEARY travelled across the Inland Ice and descended on Vildtland at the head of Independence Fjord. From here he saw the land later called

Peary Land (PEARY 1898). In 1900 he travelled along the north coast of Peary Land and a distance down along its east coast. Scattered notes on mammals are given in the report of this expedition (PEARY 1907). In 1906 PEARY again visited Peary Land, the north west coast, on his way back from an unsuccessful attempt to reach the north pole. Only some observations of hares are given from this stay in Peary Land (PEARY 1907). In 1909 PEARY sent BORUP and MACMILLAN to the north coast of Peary Land in order to lay out depots to be used if necessary during PEARY'S return from another attack on the north pole. There are very few observations on animals in Peary Land in the book on this journey published by BORUP (1911).

THE FIRST THULE EXPEDITION 1912. During this Danish expedition KNUD RASMUSSEN and PETER FREUCHEN visited Peary Land together with two Greenlanders coming from the land south of Independence Fjord, which they traversed, landing in Melville Land. From there they travelled along the south coast to the head of Independence Fjord and into Adam Bierings Land. The observations on birds and mammals were published separately by FREUCHEN (1915). Some scattered notes made by RASMUSSEN (1915 a & b) are also to be found in the report of the expedition.

THE SECOND THULE EXPEDITION 1916—18. RASMUSSEN, L. KOCH and T. WULFF with their Greenland companions visited the northwestern coast stretches of Peary Land during this Danish expedition. The easternmost point reached was De Long Fjord. Mammals and birds observed are mentioned scattered in the report of the expedition (RASMUSSEN 1919 & 1927).

THE DANISH BICENTARY JUBILEE EXPEDITION NORTH OF GREENLAND 1920—23. During this expedition L. KOCH (in 1921) with some Greenland companions went by sledge all the way round Peary Land along the coast. Zoological information is given here and there in the report of the expedition (KOCH 1926) and also in the more popular narrative of the travel (KOCH 1925, 1927, 1928 a).

Since this expedition Peary Land was not visited again until 1947, when eight men were landed by D. P. E., not considering the few times airplanes flew over the land.

## NATURAL CONDITIONS

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Peary Land is a peninsula (fig. 16 and 17) connected with the rest of Greenland by the land area named Wandels Dal. The other boundaries are formed by the sea. To the north is the Polar Sea, to the east Wandels Hav, and to the south the huge Independence Fjord cuts deep into the mainland. To the west the Inland Ice and J. P. Kochs Fjord form the boundary. The whole peninsula is of the size of Switzerland.

The geography and glaciology of Peary Land have been treated by L. KOCH (1928 & 1940). The results of D.P.E. in these disciplines will later on be treated in detail by B. FRISTRUP in this journal. A preliminary survey of these results have already appeared (FRISTRUP 1950).

As mentioned above Peary Land is surrounded by the sea, but in fact this means ice in the greater part of the year. Apart from stretches along the coast and the small fjords the sea is practically always covered with ice, even if systems of fissures and openings in the sea are to be found here and there. In the summers of 1947, 1948, 1949 and 1950 even Independence Fjord was covered by confluent masses of ice and only locally were there systems of fissures, and no large areas of open water were observed. Independence Fjord may nevertheless sometimes be more or less free of ice, which is proved by the rather numerous icebergs scattered in the fjord and frozen up in the ice.

Due to these ice conditions the expedition had to be totally airborne. Jørgen Brønlunds Fjord had to be chosen as base because it was the only place offering tolerable landing possibilities for the Catalina airplanes used for the transportation of men, dogs and material. The small fjords, according to our experience, no doubt become icefree every summer for a shorter or longer period. At any rate this was the case of Jørgen Brønlunds Fjord, G. B. Schley Fjord and also the interior parts of Fr. E. Hyde Fjord, as it was observed during flights in 1948 and 1949.

The Jørgen Brønlunds Fjord has depths of about 85 meters, and is provided with a threshold with only 10—12 meters of water. It has afflux of fresh water from the big river—in connection with Greenland—coming from Wandels Dal and from another rather big river named Børglum Elv. Furthermore several smaller rivers and brooks contribute to the melting of the ice during spring.



Fig. 1. Location of wintering station i Peary Land, at Jørgen Brønlunds Fjord. On the other side of the fjord the entrance to the valley of Børglum Elv is seen. In the foreground raised clay sea-bottom. P. JOHNSEN phot. 2/7-1949.

As early as the end of August (1948) the first new ice was formed. From  $\frac{3}{9}$  it covered the entire surface of Jørgen Brønlunds Fjord at intervals, but not until the middle of September was the ice fast and unbroken. In 1949 the ice very slowly began melting again in June, but the ice cover did not disappear until  $\frac{13}{7}$ — $\frac{14}{7}$ , on account of a violent storm. Thus there is only open water i Jørgen Brønlunds Fjord for one and a half months.

The tide in Jørgen Brønlunds Fjord is small, the difference between ebb and flow being only about 30 centimeters. The salinity is about 30 ‰ and the fjord is rich in bottom invertebrates and not poor in plankton. Charr and polar cod are rather frequent in the fjord. The littoral zone is extremely poor in animals and the bottom here consists of gravel and locally of clay.

Typical aspects of Peary Land appear from the photos fig. 1—3. The main part of the land consists of mountains often with steep sides, but mostly flat on the top. These mountains around Jørgen Brønlunds Fjord, Erlandsens Land, Heilprin Land and Melville Land are made up



Fig. 2. View of northern Heilprin Land at wintering station, seen towards southwest.  
P. JOHNSEN phot. 2/7-49.

of eocambrian sandstone and dolomite of the Thule-formation and belong to the North Greenland plateau area (TROELSEN 1949). Mountains of a somewhat different aspect are found in the eastern part of Peary Land, where they are made up of deposits from ordovician and silurian. In the central part of Peary Land an area with alpine mountains with high peaks rises above the plateau, i. e. Nordkronen (2000 meters a. s. l.). The plateau reaches a height of 1200—1300 meters a. s. l. Among these box-formed mountains a system of valleys is running, often with rivers or brooks.

Along the coasts there are stretches of raised postglacial sea-bottom forming systems of terraces. They consist of hard clay and as a result of the erosion are now forming hills with steep sides. To the biologist this landscape is the most desolate. Herlufsholm Strand is a huge plain consisting of former sea bottom, now relatively rich in vegetation.

As seen from the map (fig. 17) Peary Land has a number of local icecaps: Hans Tavsens Iskappe, on Nordkronen, on Roosevelt Fjældene on Nansens Land and Erlandsens Land. On the southeastern part only



Fig. 3. Eastern end of Midsommørsøen. Along the north coast mountains, named Trappetrinene. Å. SAHLERTZ phot. <sup>23</sup>/<sub>7</sub>-1949.

very small and few icecaps are found, e. g. south of G. B. Schley Fjord. Nevertheless Peary Land is one of the largest cohesive icefree land stretches in the whole of Greenland.

Larger and smaller lakes are also found. The most remarkable one is Midsommørsøen, a narrow but very long lake. The length is about 70 kilometers. This lake is very deep. Only a few soundings were taken, but they showed depths exceeding 80 meters. In some summers the lake may become quite free of ice although the ice may attain a thickness of 2.5 meters. The lake was icefree in 1948 but as late as <sup>25</sup>/<sub>7</sub>-1949 great parts were still filled with ice. This lake is very poor in plankton, but on the bottom, even at depths of 50—60 meters, numerous larvae of *Chironomidae* occur. The larvae constitute food for the numerous charrs (*Salvelinus alpinus*) in the lake.

At the locality 82°10' NL, 31°30' WL, where the wintering station of the expedition was situated, the sun does not set between April 10. and September 3. (146 nights), and it does not rise from October 14. to February 28. (138 days). These statements refer to the centre of the sun not considering the refraction. If we consider the diameter of the sun and the refraction the number of nights with midnight sun is increased to 150 nights, namely from April 8. to September 5., and the number

of days without sun is limited to 134, namely from October 16. to February 26.

Generally spoken this remote place has midnight sun during 5 months and dark season during  $4\frac{1}{2}$  months. Only 40 days in the spring and 40 days in autumn have ordinary day and night. The sun is highest on June 22., namely  $31\frac{1}{4}^{\circ}$  above the horizon at midday and  $15\frac{1}{2}^{\circ}$  at midnight.

As the land is made up of mountains many places will be shaded and thus not hit by the sun in the first days after its arrival after the dark season. Our station house was first exposed to the sun rays on March 14. and here it disappeared at the end of September on account of the mountains to the south.

The heliograph 1948—49 according to FRISTRUP, registered 2232 hours of sunshine, which is somewhat more than the mean number in Denmark. May was the month with the greatest number of hours of sunshine, namely 634.

What these extreme conditions of insolation mean to the life here is evident, and without these favourable conditions during the summer the plants and animals could not subsist under the climate prevailing here. In addition fog is rather seldom and mostly restricted to the fjords, at any rate in the country near the station. No doubt the north and east coast are a good deal more foggy.

The climatic conditions of course are extremely high arctic and desert-like. At the station during the first wintering violent and frequent gales were blowing at a velocity of up to 30—40 meters per second. Here we often had warm and dry foehns, which brought a remarkable rise of temperature. The different valleys have their own direction of the wind. At the station the wind was either blowing west or east. The violent gales locally rise sand-drift. This was the case around Jørgen Brønlunds Fjord, where the stones on the coast were neatly worn by sand- and perhaps snow-drift. Furthermore sand-drift was observed at the western end of Midsommersøen.

During sledge journeys the temperature in some places on Independence Fjord, Hagens Fjord and Danmarks Fjord, in J. P. Kochs Fjord and at the east coast of Peary Land was found to be lower than at the station in Jørgen Brønlunds Fjord at the same time, no doubt because the foehns were blowing here. The monthly mean temperature in Jørgen Brønlunds Fjord is seen from table 1. The summer temperature is seen to be relatively high.

During the first wintering, in 1948—49, the first night frost was  $\frac{17}{8}$ , after  $\frac{30}{8}$  it was daily and from  $\frac{8}{9}$  the temperature was constantly below zero. The first positive temperature in spring was registered  $\frac{28}{5}$ . After  $\frac{15}{6}$  the day temperature was always above zero, and  $\frac{21}{6}$  the latest

Table 1. Temperatures of macroclimate ( $^{\circ}$  C) at the station in Jørgen Brønlunds Fjord (After FRISTRUP 1950 and KNUTH 1950).

| Month           | Monthly mean temp. |         | Absolute extremes in temp. |         |         |         |
|-----------------|--------------------|---------|----------------------------|---------|---------|---------|
|                 | 1948—49            | 1949—50 | max.                       |         | min.    |         |
|                 |                    |         | 1948—49                    | 1949—50 | 1948—49 | 1949—50 |
| August .....    | 3.7                | 3.7     | 18.0                       | 16.7    | 2.3     | — 4.5   |
| September ..... | — 5.1              | — 5.6   | 4.2                        | 5.0     | — 16.3  | — 15.0  |
| October .....   | — 19.4             | — 19.0  | — 9.0                      | — 12.0  | — 29.3  | — 26.2  |
| November .....  | — 24.5             | — 24.3  | — 8.7                      | — 14.4  | — 35.7  | — 34.7  |
| December .....  | — 31.3             | — 23.4  | — 22.2                     | — 12.4  | — 41.3  | — 33.7  |
| January .....   | — 31.3             | — 30.6  | — 17.3                     | — 15.2  | — 39.3  | — 39.2  |
| February .....  | — 26.6             | — 32.0  | — 17.3                     | — 14.4  | — 38.4  | — 44.1  |
| March .....     | — 24.2             | — 29.0  | — 11.5                     | — 19.3  | — 34.3  | — 43.4  |
| April .....     | — 21.3             | — 22.7  | — 9.0                      | — 9.3   | — 32.8  | — 37.6  |
| May .....       | — 8.6              | — 6.9   | 9.5                        | 4.2     | — 16.9  | — 19.7  |
| June .....      | 2.5                | 2.7     | 16.5                       | 9.5     | — 4.0   | — 5.5   |
| July .....      | 6.0                | 6.4     | 16.1                       | 15.0    | 0.8     | 0.2     |

night frost was registered. The first negative night temperature after the summer was observed  $^{20}/_8$ . This means that the summer had 66 days and nights without frost. The daily oscillations in temperature were very small (cited after FRISTRUP l. c.).

During the second wintering, 1949—50, the climate deviated somewhat from the previous year. According to KNUTH (1950) the wind only a few times was blowing at a velocity of 20 m/sec., never more. During the summer of 1950 a period of permanent wind from east ( $^{7}/_6$ — $^1/_8$ ) was observed, whereas in the summer of 1949 the wind very seldom blew from the east. Thus the effect of the frequent foehns was lowered somewhat during this last wintering. The winter of 1949—50 was accordingly somewhat colder than the winter of 1948—49.

All the temperatures mentioned above are temperatures of the macroclimate. Of course positive temperatures were measured in the microclimate long before they were registered in the macroclimate. I saw melting snow on  $^2/_5$ .

The climate is very dry. The precipitation is very low and relative humidities of the air below 30 % were often registered both in summer and winter. At the station the snowfall was low and the gales are rising snow-drift again and again with the result that the land is blown free of snow to such a degree, that sledging or skiing on the lowland is out of question. When using dog-sledge we therefore had to travel on the sea, fjords, lakes, rivers and on the Inland Ice. In the region around the station the snow accumulated in the valleys and other places sheltered

from the wind. On the east coast and along the north coast of Peary Land the snowfall is no doubt greater. At Herlufsholm Strand skiing and sledging is possible inland. In parts of Independence Fjord and in Astrups Fjord south of Peary Land very deep snow may cover the ground.

The first impression of Peary Land is that it is a land of stones, gravel and bare mountains, and the areas covered with vegetation should no doubt be reckoned in per mille rather than in per cent. Nevertheless an surprisingly large number of mosses (about 120 species) and even of phanerogams (about 90) occur here (HOLMEN: Arctic 1950).

Where the rivers run through lowland with a moderate current there are on wet ground *Eriophorum Scheuchzeri*-meadows and on moist sandy soil *Carex aquatilis*-meadows. Mixed with the *Eriophorum* are e.g. *Carex* spp., *Alopecurus*, *Equisetum*, white *Saxifraga*. Other places where the soil is covered with vegetation are snow-patches, where the slowly melting snow yields sufficient moisture throughout the summer. There are several types of vegetation here. According to HOLMEN (l. c.) the wet part of this biotope has an *Eriophorum polystachyum*-bog; on the dry slopes we find *Dryas punctata*-heath. Between these two types the solifluctional soil results in a rather dry *Salix arctica*-vegetation and in a somewhat moist soil is a *Carex misandra*-vegetation with *Oxyria digyna* and *Saxifraga oppositifolia*. In the highland from 500 to 1000 meters a. s. l. are patches with *Cassiope tetragona*. On dry stony ground there is fell-field vegetation with *Poa*, *Trisetum* and species of *Saxifraga*.

On the east coast of Peary Land the continental *Dryas*-heath is almost lacking and substituted by a vegetation dominated by mosses and lichens such as *Rhacomitrium* and *Cetraria*.

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## BIRDS

### 1. Birds of Peary Land.

List of Species (in Latin, English, and Danish).

1. *Fulmarus glacialis* L. Fulmar. Stormfugl.
2. *Colymbus stellatus* Pontoppid. Red-throated Diver. Rødstrubet lom.
3. *Branta bernicla hrota* (O. F. Müller). Palebreasted Brent Goose. Lysbuget knortegås.
4. *Anser caerulescens* (L.). Snow Goose. Snegås.
5. *Clangula hyemalis* (L.). Long-tailed Duck. Havlit.
6. *Somateria spectabilis* (L.). King Eider. Kongeederfugl.
7. *Falco rusticolus candicans* Gml. Gerfalcon. Jagtfalk.
8. *Lagopus mutus captus* Peters. Rock Ptarmigan. Fjeldrype.
9. *Charadrius h. hiaticula* L. Ringed Plover. Alm. præstekrave.
10. *Arenaria i. interpres* (L.). Turnstone. Stenvender.
11. *Crocethia alba* (Pallas). Sanderling. Selning.
12. *Calidris canutus* (L.). Knot. Islandsk ryle.
13. *Calidris alpina arctica* (Schiöl.). Dunlin. Ryle.
14. *Phalaropus fulicarius* (L.). Grey Phalarope. Thorshane.
15. *Stercorarius longicaudus pallescens* Løppenthin. Longtailed Skua. Lille kjove.
16. *Larus h. hyperboreus* Gunnerus. Glaucous Gull. Gråmåge.
17. *Sterna paradisaea* Pontoppid. Arctic Tern. Havterne.
18. *Nyctea scandiaca* (L.) Snowy Owl. Sneugle.
19. *Carduelis flammea hornemanni* (Holb.). Redpoll. Hvidsidsken.
20. *Calcarius lapponicus* (L.). Lapland Bunting. Laplandsverling.
21. *Plectrophenax n. nivalis* (L.). Snow-Bunting. Snespurv.

### Discussion of Species.

*Fulmar. Fulmarus glacialis glacialis* L.

*Fulmarus glacialis* L. WINGE 1898. MANNICHE 1910. FREUCHEN 1915.

There is only one record of the Fulmar from the area treated here viz. that of the find of a dried up head, made <sup>13</sup>/<sub>7</sub>-1912 on Nyeboes Bræ

(FREUCHEN 1915). It is certainly quite accidental that a Fulmar has come all the way to the head of Independence Fjord—such a long distance from the open sea. Independence Fjord is always filled with ice, even in summer, so that there is no possibility that this bird can subsist here. The nearest place with open water has been observed near Nordostrundingen both by KOCH (1940) and by D.P.E. Just south of Nordostrundingen the northernmost breeding place of this species has been found, namely at Kap Jungersen (PETERSEN 1942). The northernmost record west of Peary Land according to WINGE (1898) is at Thank God Harbour.

*Red-throated Diver. Colymbus stellatus* Pontoppidan.

*Colymbus septentrionalis* L. WINGE 1898. MANNICHE 1910. FREUCHEN 1915.

The only author, who previously recorded this bird from Peary Land is KOCH (1925). He saw two individuals at the mouth of Jørgen Brønlunds Fjord  $\frac{9}{6}$ -1921. FREUCHEN (1915) did not observe it farther north than  $81^{\circ}37'$  NL, i. e. south of Peary Land. These observations must have been overlooked by PEDERSEN (1930), who states  $80^{\circ}30'$  to be the northernmost occurrence in East Greenland. The northernmost breeding place on the east coast recorded in literature is Germania Land and on the west coast at Hvalsund (fide WINGE l. c.), but it has been observed as far north as Washington Land by VIBE (fide SALOMONSEN 1950).

Notes from the diaries. 1947:  $\frac{30}{7}$ , Jørgen Brønlunds Fjord, 1 seen.  $\frac{31}{7}$  ibid. 1 at the station.  $\frac{4}{8}$  ibid. 1 or a pair now and then passing at a great height. 1948:  $\frac{2}{8}$  two on Klaresø.  $\frac{6}{8}$  two at the beach below the station. Two flying into the fjord in the evening.  $\frac{11}{8}$  two were heard at the station. On account of a storm no birds were observed the preceding days.  $\frac{13}{8}$  ibid. one flying out of the fjord, cackling, later on two flying inwards.  $\frac{18}{8}$  ibid. one heard.  $\frac{25}{8}$  two on the fjord.  $\frac{26}{8}$ , 11 evidently in pairs gathered on Jørgen Brønlunds Fjord, mewing.  $\frac{30}{8}$  one heard at the station. During a motor-boat trip into the fjord divers were seen in numbers.  $\frac{31}{8}$  head of Jørgen Brønlunds Fjord, some heard throughout the night.  $\frac{1}{9}$  ibid. some seen.  $\frac{2}{9}$  three on the river from Midsommersøen.  $\frac{4}{9}$  ibid. three. One juv. shot. About  $\frac{5}{9}$  valley of Børglum Elv, some on lakes. 1949:  $\frac{11}{6}$  the first Red-throated Diver heard at the station, but not seen.  $\frac{12}{6}$  ibid. after midnight the characteristic voice of the species heard again from great height.  $\frac{13}{6}$  east of the station three in the land-water (icefree margin along the coast).  $\frac{15}{6}$  some cackling out on the fjord.  $\frac{16}{6}$  east of the station four in the landwater, three of which were shot.  $\frac{17}{6}$  several heard on the fjord.  $\frac{21}{6}$  a pair shot at the beach west of the station.  $\frac{25}{6}$  a pair on Klaresø took flight when I approached, but continued to circle over the lake for a while.  $\frac{28}{6}$  nest with two eggs on the

beach of Klaresø.  $^{29}/_6$  ibid. one on the nest and another one on the lake. A pair seen on the fjord.  $^8/_7$  at small islet in the fjord three seen.  $^{21}/_7$ — $^{25}/_7$  daily a few pairs over the western part of Midsommersøen. A pair on little lake south of Trappetrinene.  $^2/_8$  one pair on small lake in the valley of Børglum Elv near the mouth. Several heard on the fjord.  $^8/_8$  diver heard at the station. 4—5 at the mouth of Børglum Elv, screaming throughout the night. They were fishing in the river mouth.  $^{10-15}/_8$  Jørgen Brønlunds Fjord, the species was seen now and then.  $^4/_9$  eastern end of Midsommersøen, one.  $^5/_9$  ibid. two. 1950:  $^8/_7$  one in river mouth at the station, observed here several days.  $^{11}/_7$  four around islet in Jørgen Brønlunds Fjord.  $^8/_8$  lake on northern Heilprin Land west of Kajakelv, a nest with two warm eggs, one bird on the lake.  $^{28}/_7$ — $^{12}/_8$  a few heard on Jørgen Brønlunds Fjord.

General remarks. The species arrives at Peary Land in the beginning of June when the fjords are still covered with ice, and seeks out the smaller lakes, which have open water much earlier. The earliest observations are from  $^9/_6$  and  $^{11}/_6$ . The autumn migration takes place in the beginning of September. The latest observations were made on  $^{4-5}/_9$ , when the frost had started. Before leaving the birds gather in small flocks on Jørgen Brønlunds Fjord. The largest flock observed numbered 11 birds.

The Red-throated Diver was seen on northern Heilprin Land, Jørgen Brønlunds Fjord, Walcotts Land, Melville and Erlandsens Land. In the last place from the valley of Børglum Elv to the eastern part of Midsommersøen.

The species was found to breed in Peary Land, since juvenile birds as well as two nests with eggs were found. One nest was found  $^{28}/_6$ -1949 at Klaresø and one as surprisingly late as  $^8/_8$ -1950 at another lake on northern Heilprin Land. Both contained 2 eggs, and was placed characteristically just at the water's edge. The substratum consisted mainly of mosses. When a short while after the discovery the nest was visited again the eggs had disappeared, probably taken by a fox, the tracks of which could be seen along the beach. Furthermore, a female shot  $^{21}/_6$  contained a nearly ripe egg. The egg was already coloured, but not completely calcified. The first divers which arrive, must be content with plant material, which occur in the small lakes. As soon as a small stretch of open water appears along the coast of the fjords they will be seen here presumably in search of food. One diver shot  $^{16}/_6$  contained in the gizzard exclusively indeterminable remains of some plants and the content of the intestines was quite green. During the foraging trips the divers also visit the rivers, where they were seen fishing for Charr, e. g. in Børglum Elv and the river draining Midsommersøen. On Midsommer-

søen, where the species was also observed, there was plenty of food since Charrs were numerous along the coasts wherever I went. No doubt, the Red-throated Diver lives mainly on the Charr. The specimen examined also contained remnants of this fish.

The small young are also able to find food in the ponds without fish because *Daphnia pulex* and *Branchinecta* sp. may be abundant here.

A single specimen was infested with a species of *Nematoda*, and a pair shot  $21/6$  both contained a great amount of *Cestoda* in their abdominal cavity. In zoogeography we often speak of dispersal by birds, but we do not know much about this possibility of dispersal. I therefore wish to point out that a Red-throated Diver, shot  $16/6$  1949 in the landwater in Jørgen Brønlunds Fjord, among the feathers of the belly had a larva of a *Chironomid*. The bird had newly come from a visit in a freshwater lake, since no *Chironomids* live in the fjord, and the content of the gizzard was mainly freshwater plants. No doubt *Chironomids* may be dispersed fast in this way. It is to be added that the larva stuck so fast to the bird, that it did not drop off during the transportation of the shot bird to the station—half an hour's walk.

The following measurements were taken (wing measurement marked \* is from fresh bird):

Table 2. *Colymbus stellatus*.

| No. | Sex<br>Age | Locality                    | Date       | Weight | Total<br>length | Wing | Bill | Tarsus | Prepara-<br>tion |
|-----|------------|-----------------------------|------------|--------|-----------------|------|------|--------|------------------|
| 32  | juv.       | Wandels Dal                 | $4/9$ -48  |        |                 | 260* | 38.2 | 70     | Skull            |
| 734 | ♀ ad.      | Jørgen Brøn-<br>lunds Fjord | $16/6$ -49 | 1450   | 610             | 281  | 50.3 | 71.2   | Skin             |
| 767 | ♂ ad.      | — —                         | — —        | 1680   |                 |      | 52.0 | 73     | Skeleton.        |
| 780 | ♀ ad.      | — —                         | $21/6$ -49 |        |                 |      | 45.8 |        | Skull.           |
| 779 | ♂ ad.      | — —                         | — —        |        |                 |      | 52.5 |        | Skull.           |

No. 734 had the biggest egg in the ovary 7 millimeters long, and no. 780 had a fully developed egg in the oviduct.

*Pale-breasted Brent Goose. Branta bernicla hrota* (O. F. Müller).

*Anser leucopsis*. FREUCHEN 1915.

In the literature on Peary Land the Brent Goose is mentioned by L. KOCH (1925, 1926), who  $3/6$ -1921 in the outer part of the south coast of Peary Land saw "brintgeese coming in pairs from the south and migrating northward".

BERTELSEN (1932) gives some particulars handed over to him by L. KOCH, to the effect that he has found the Brent Goose breeding

in Peary Land, 83° NL, where it is said to be one of the most common birds, an expression which hardly justifies the assumption that a number of 100 pairs breed there scattered along the north coast (82°—83° NL). These observations were made during the same journey as those quoted below from RASMUSSEN (1915). In my opinion L. KOCH's determination of the species is the right one.

In papers by FREUCHEN and RASMUSSEN several observations of Bernacle Goose (*Branta leucopsis* (Bechstein)) are mentioned. I do not hesitate to forward the opinion that these geese observed by the mentioned authors most probably must have been Brent Geese. None of the authors were zoologists and a wrong determination is very likeable. A drawn illustration in RASMUSSEN's book (1919) shows a Greenlander carrying shot game among others a goose. It is true that the artist did not take part in the journey, but as the goose represents a Brent Goose the reader must believe that the determination is incorrect, since the figure shows a Brent Goose and not a Bernacle Goose, as it is called in the text.

Below the notes on "Bernacle Goose" in the literature are quoted. FREUCHEN (1915) tells that east of the mouth of Jørgen Brønlunds Fjord  $\frac{8}{6}$ -1912 he first saw 2, then 6 and again 6 birds migrating.  $\frac{9}{6}$  several migrating flocks were seen, the biggest numbering 9 individuals. A few flocks had alighted on the shore and at a lake. The migration took place along the coast into the fjord. His travelling mate, RASMUSSEN (1915) notes from the same place  $\frac{10-16}{6}$ , now and then a flock of Bernacle Geese. From the 2. Thule Expedition RASMUSSEN (1919) gives the following notes, some of which originate from the botanist T. WULFF: At "Strømstedet" at the mouth of J. P. Kochs Fjord we were awoken in the night  $\frac{14}{6}$  by Bernacle Geese, flying two and two over the tent. Kap Salor, 3 came flying towards land from far out in the Polar Sea. Between Kap Neumeyer and Kap Benet  $\frac{17}{6}$  a goose was seen. Low Point,  $\frac{20}{6}$ , 3 Bernacle Geese shot. Kap Ramsay,  $\frac{24}{6}$ , 1 shot. Mouth of J. P. Kochs Fjord,  $\frac{16}{6}$ , 2 geese shot.

During D. P. E. neither *Branta bernicla hrota* (O. F. Müller) nor *Branta leucopsis* (Bechstein) was observed, not even in the time when migration should take place, so I dare say that these species at any rate do not breed in the vicinity of Jørgen Brønlunds Fjord, where they else no doubt would have been observed during the four summers.

The Brent Goose is said to migrate northwards in spring, both along the northernmost east and west coast (SALOMONSEN 1950). The north coast of Greenland, may thus be invaded both from the east and the west, the population of Peary Land most likely from the east side.

During a trip by airplane over the interior of Peary Land in August 1949, it was discovered that great parts of the huge Fr. E. Hyde Fjord

is free of ice in summer. Breeding places of the Brent Goose may therefore be found here in the river deltas, e. g. at Drivhuset. Fragments of bones of *Branta bernicla* were found during excavation of an old eskimo-settlement in Jørgen Brønlunds Fjord (KNUTH 1951).

*Snow-Goose. Anser caerulescens L.*

The Snow-Goose has never before been observed in this area. The nearest record is from Inglefield Bredning (STONE 1895). Here as well as in Thule district the species is breeding (FREUCHEN 1921) and judging from the great number of birds passing Thule on migration there are presumably breeding places farther north.

According to SALOMONSEN (1933) I think that the observation below refers to the race *A. c. atlantica* (Kenn).

<sup>8</sup>/<sub>7</sub>-1949 I saw for the first time the species in Peary Land; it was on the northern Heilprin Land, southwest of the station. Scaring a couple of musk-oxen away from my route, the oxen raised two big white birds with black wing tips, Snow-Geese, whereby I became aware of them. I followed their low flight several hundred meters with the eyes till they disappeared behind some rocks. We now went—two men—slowly towards the place where we had seen them alight, but when we reached this place the birds had totally disappeared in spite of our eager search. Not even a pair of shots brought them on the wing.

Next time the species was seen was <sup>2</sup>/<sub>8</sub>-1949 in the vicinity of the mouth of Børglum Elv, on the eastern side of the river-valley. Here again two geese were seen together. They were sitting on stones at the beach of a lake. The surroundings were plain grass meadows. When they noticed the observer they swam out to the middle of the lake, where they stayed—beyond shooting range. On the beach many excrement and shed feathers were seen, so the birds must have stayed in this locality for a longer time, no doubt during the moulting period.

When this "Snow-Goose Lake" was visited again <sup>8</sup>/<sub>8</sub>, it was planned to shoot one specimen as a proof, but this was frustrated by an old muskox bull, which attacked. It was necessary to shoot it and the shot brought both the geese on the wing. A couple of shots only brought them out of course towards Jørgen Brønlunds Fjord. Since then no Snow-Goose was observed.

*Long-tailed Duck. Clangula hyemalis (L.).*

*Pagonetta glacialis* L. MANNICHE 1910. WINGE 1898.

Previously (to D. P. E.) this species was unknown from Peary Land, but 2 specimens were shot in the southern part of Vildtland <sup>29</sup>/<sub>6</sub>-1921 (KOCH 1921), an observation overlooked by PETERSEN (1930). West of Peary Land the northernmost record is Thank God Harbour (fide WINGE

1898) and it has been found breeding as far north as Washington Land by VIBE (SALOMONSEN 1950). The northernmost breeding place on the east coast according to the literature was Germania Land (MANNICHE 1910).

Notes from the diaries. 1947:  $3/8$ , Klaresø 1 ♀ with 6 newly hatched ducklings.  $14/8$ , *ibid.*, 1 different ♀ with 5 ducklings, hardly more than eight days old. 1948:  $2/8$  *ibid.*, 2 ad ♀♀ with 4 and 2 ducklings respectively.  $19/8$ , at the coast near the station, 2 juv. shot.  $30/8$ , head of Jørgen Brønlunds Fjord, a big flock. 1 juv shot.  $2/9$ , Jørgen Brønlunds Fjord, 4 seen on the Fjord, now with more new ice than water.  $15/9$ , mouth of the fjord, 1 juv. found dead on the ice. 1949:  $5/6$ , 15—20 in a flock in the narrow landwater of Jørgen Brønlunds Fjord.  $25/6$ , Lersø, 2 pairs.  $1/7$ , Klaresø, 1 pair.  $8/7$ , on islet in the fjord, 1 flock.  $19/7$ , 1 at the beach near the station. 1950:  $8/7$  one nest on an islet in Jørgen Brønlunds Fjord, containing 5 eggs. One faded egg outside the nest.

General remarks. The Long-Tailed Duck is far from numerous in Peary Land and has only been observed in the region around Jørgen Brønlunds Fjord. Bigger flocks were however seen on the fjord in spring and especially in the autumn. The species arrives in the beginning of June (earliest observation  $5/6$ ), somewhat earlier than observed in 1907 and 1908 at Germania Land ( $15/6$  and  $11/6$ ) by MANNICHE (1910). In 1939 the first observation from Dove Bugt is from  $22/6$  (PETERSEN 1942). The species leaves again in the end of August. Latest observation  $2/9$ .

In the days after arrival the birds are seen roaming in small flocks along the fjord coasts, but very soon they form pairs and go to the breeding places near smaller lakes. That the species actually breeds in this region was seen already in 1947, when we observed 2 broods of ducklings on Klaresø near the station. An old unhatched egg was also found on the bank of the river near the station. In the summer of 1948 2 pairs were again breeding at Klaresø, as 2 broods of ducklings were seen here. In the summer of 1949, it is true, we saw again Long-tailed Ducks here and on Lersø, but this year no breeding took place here, perhaps on account of the disturbance by man. 1950 also no breeding took place at these lakes, but  $8/7$  one nest with 5 eggs was found on an islet in Jørgen Brønlunds Fjord.

Klaresø, where the species was breeding, is a small transparent lake up to 3 metres deep, rich in freshwater *Crustacea*: *Daphnia pulex* and *Branchinecta* sp. and *Cyclops strenuus* and *Ostracoda*. The number of young in the broods were 6, 5, 4 and 2. The young probably hatched in the end of July and the beginning of August.

The stomachs of 2 ad. ♀♀ and 1 pull. shot ( $7/7$ ,  $14/8$ ,  $7/8$ ) 1947 at Klaresø contained exclusively *Branchinecta*.

Measurements of 3 birds from Peary Land are given by MØHL-HANSEN (1947). Own measurements:

Table 3. *Clangula hyemalis*.

| No. | Sex age | Locality                     | Date                             | Weight | Total length | Wing | Bill | Tarsus | Preparation  |
|-----|---------|------------------------------|----------------------------------|--------|--------------|------|------|--------|--------------|
| 6   | ♀ ad.   | Jørgen Brønlunds Fjord . . . | <sup>21</sup> / <sub>8</sub> -48 | 650    | 403          | 183  | 24   | 35     | skin, belly. |
| 7   | ♀ ad.   | — —                          | <sup>21</sup> / <sub>8</sub> -48 | 670    | 408          | 180  | 23.6 | 34     | skin, belly. |

*King Eider. Somateria spectabilis* (L.).

Literature. BERTELSEN (1932) quotes a statement by L. KOCH to the effect that he met with a few breeding pairs at 83° NL, which is the only record from Peary Land, apart from information in a paper by FREUCHEN (1915 a). FREUCHEN here, in the list of birds observed during 1. Thule Expedition, mentions *Somateria mollissima* from the north coast of Independence Fjord, but not *S. spectabilis*. In another paper by the same author (1915 b) some birds seen <sup>8</sup>/<sub>6</sub>—<sup>12</sup>/<sub>6</sub> (82°11' NL, 29°10' WL) are mentioned and among these "eider duck (*Somateria spectabilis* (?))", but *S. mollissima*, which in the above mentioned paper was seen <sup>12</sup>/<sub>6</sub> and <sup>13</sup>/<sub>6</sub> is not mentioned here. Evidently the very same birds in the two papers have been recorded as *S. spectabilis* ? and *S. mollissima* respectively. *S. mollissima* was never observed in Peary Land in the years 1947—50 and it has never been observed north of Mallemukfjeldet (MANNICHE 1910). I therefore think that the ducks seen by FREUCHEN must have been King Eiders, and that the Eider Duck should be deleted from the list of birds known from Peary Land.

West of Peary Land the northernmost record from Greenland is Kap Lupton (fide WINGE 1898), but on Grant Land it has been found breeding at 82°27' NL (FEILDEN 1877).

Notes from the diaries. 1947; <sup>3</sup>/<sub>8</sub> one ♀ with rather big downy young on Klaresø. <sup>1</sup>/<sub>8</sub>, one ♀ with ducklings in a lagune at Jørgen Brønlunds Fjord. <sup>8-9</sup>/<sub>8</sub> several times a flock of about 25 observed on Jørgen Brønlunds Fjord, both ♂♂ and ♀♀. 1948: <sup>31</sup>/<sub>7</sub> two ♀♀ with ducklings, 5 each, on Klaresø. <sup>2</sup>/<sub>8</sub> one ad. ♀ near the station at the beach. <sup>8</sup>/<sub>8</sub> a flock in the middle of the fjord. <sup>9</sup>/<sub>8</sub> the same. <sup>12</sup>/<sub>8</sub> flock of 7—8 ad. and juv. on the fjord. <sup>24</sup>/<sub>8</sub> a flock of 3 ♀♀ and one ♂ on the fjord at the station. <sup>25</sup>/<sub>8</sub> ibid a flock of 9, all brown. Four shot at the mouth of the fjord. <sup>27</sup>/<sub>8</sub> many small flocks especially in the outer part of the fjord. On a little islet in the fjord an abandoned nest with a fully developed embryo

beside it. Several other older nests *ibid.*, but without down. A gergalcon seen swooping down after a King Eider on the water.  $^{30}/_8$  two small flocks on the fjord at the station and two birds seen on an ice-floe. Traveling by motor-boat from the station to the head of the fjord half a hundred birds in small flocks were observed close to each other. Two very pale individuals, almost yellowish, seen in a flock of the normally coloured birds.  $^1/_9$  one off river mouth near the head of the fjord. A few on flat clay-banks in the big delta at head of fjord.  $^{10}/_9$  a big flock *ibid.*  $^{11}/_9$  a flock of 15 in an opening in the ice at mouth of the fjord. 1949:  $^{24}/_5$  on an islet in the fjord a single old nest observed and on the smallest islet here 3—4 old nest-bowls, no doubt also originating from King Eider. On a higher, stony island off Kap Harald Moltke also an old nest-bowl.  $^8/_6$  two ♂♂ and two ♀♀ flying into the fjord along border of landwater.  $^{11}/_6$  about 15 in a flock flying out of the fjord along landwater.  $^{15}/_6$  a few times a flock of 5 at the station going west.  $^{21}/_6$  in the evening 3 ♂♂ and 2 ♀♀ in one flock passing the station towards west.  $^{16}/_6$  five in a flock, 3 ♂♂ and 2 ♀♀ at Blomsterstranden.  $^{22}/_6$  two ♀♀ and 1 ♂ on Klaresø.  $^{23}/_6$  a ♀ incubating 6 eggs at the coast near the station. 2 pairs flying along the coastline at the station.  $^{25}/_6$  a ♀ sitting on 5 eggs at Lersø, a ♂ seen on the lake. One pair on Klaresø.  $^{29}/_6$  six ♂♂ in a flock on the fjord. The nest discovered  $^{23}/_6$  still without down and one egg disappeared. The nest no doubt abandoned.  $^1/_7$  three ♂♂ going out the fjord together. Furthermore a flock of 2 ♂♂ and 2 ♀♀ passing the station.  $^2/_7$  five pairs going out the fjord passing the station. Later that day a flock of 5 and others—totally 18 birds observed in the outer part of the fjord.  $^4/_5$  a great number on the fjord east of the station—counted 34 (31 ♂♂ and only 3 ♀♀ or juveniles). A rather emaciated ♂ shot.  $^8/_7$  three nests observed on the bigger of the 2 islets in the outer part of the fjord. In one nest 5, and in another 6 eggs. On the third nest the ♀ was sitting and it was not disturbed. Several ♂♂ and ♀♀ swimming around the islets.  $^{12}/_7$  one ad. ♂ shot in a small bog west of the station.  $^{16}/_7$  a flock of 6—7, exclusively ad. ♀♀ and juveniles, on the fjord, which during the latest days have become quite icefree.  $^{19}/_7$  a flock—all of them brown—seen at the station.  $^8/_8$  some on ice-floes in the fjord—none of them ad. ♂♂.  $^{10-13}/_8$  some seen now and then on the fjord at the station.  $^{14}/_8$  at an islet in the fjord 50 in 2 flocks observed—all in dark plumage, apart from one ad. ♀, which was quite pale. 1950:  $^{23}/_6$  one in Morænesø.  $^8/_7$  islet in the fjord, 5 nests with eggs. Number of eggs were 3, 3, 4, 5 and 6 respectively. On the smallest islet *ibid.* one nest with 3 eggs.  $^{11}/_7$  big flocks around the islets in the fjord.

General remarks. The King Eider is by far the most frequent of the sea-birds. Throughout the summer many are seen on Jørgen



Fig. 4. Breeding biotope of *Somateria spectabilis*. Vegetationless, stony sea-slope in Jørgen Brønlunds Fjord. P. JOHNSEN phot.

Brønlunds Fjord. The first birds arrived  $8/6$ -49, the very same date as the first ones were seen by FREUCHEN (1915 a). Like the other sea-birds they were first observed in the narrow border of landwater in Jørgen Brønlunds Fjord. The departure takes place in the beginning of September—the latest observation being  $11/9$ .

Although the King Eider has been observed by L. KOCH in Peary Land as far north as  $83^{\circ}$  NL the species was observed during D. P. E. only in Independence Fjord, Jørgen Brønlunds Fjord and on northern and southern Heilprin Land. But this was mainly due to the difficult travelling conditions in summer.

Breeding biology. Judging from the number of juveniles seen in the flocks on Jørgen Brønlunds Fjord, when the birds gather before departure in the autumn, numerous pairs must breed at the inland lakes. Already one of the first days after our arrival in 1947 we also saw the first evidence of breeding in Peary Land, one ♀ with ducklings being

seen on Klaresø. Another ♀ with ducklings was seen in a lagune nearby. These observations were made in the first days of August. The following year the species again bred at Klaresø, where this year 2 females were seen with downy young ( $3^{1/7}$ ). In the early spring of 1949 I found old nests of King Eiders on some very small islets in the outer part of Jørgen Brønlunds Fjord. On the biggest one I found one nest and on the smallest one 3—4. On a third islet just off Kap Harald Moltke in the very mouth of the fjord also one old nest was found. That these were actually nests of King Eider was proved partly by the remains of brown down and partly by a dead nestling. In the summer of 1949 the species again bred in the vicinity of the station, where 2 nests with eggs were found. One of these was placed on a stony/gravelly clay-slope facing north and forming the south coast of the fjord. It was some 20 meters above sea level and about 50 meters from the sea. The surroundings were completely devoid of vegetation (fig. 4) and the nest was only a faint depression on a sandy spot. The nest was discovered as the female flew up. It moved quite low over the ground down to the landwater. This very low flight to the nearest water of scared breeding King Eiders I had occasion to observe several times—both at this and at another nest. The nest contained 6 eggs, but there was no down although laying was completed and brooding had started some time ago (fig. 5). At a distance from the nest a tuft of down was found, so the possibility exists that they have been blown out of the nest. When this nest was inspected 6 days later it was still without down and one of the eggs had disappeared. The bird was not on the nest or in the neighbourhood, and the eggs were cold and wet and spotted with earth after a slight rain, so the nest had no doubt been abandoned. As the conditions were the same the following day the eggs were blown out. They were slightly incubated.

Another nest was found on flat ground, likewise on stony clay, about 60 meters from the shallow lake Lersø. When the female flew down to the lake, where also a male was seen, I examined the nest. It contained 5 eggs and was devoid of down like the other one. It was lined with a few loose grass tufts. When the nest was inspected some days later the eggs and the bird had disappeared, but the nest was now lined with down in the normal way. Close to the nest an old nest-bowl was seen, which at any rate had not been used this year.

A further three nests were found in the summer of 1949, viz. on one of the small, stony islets in Jørgen Brønlunds Fjord east of the station. Here old nest-bowls had been found earlier. On July 8. two of the nests contained 5 and 6 eggs respectively. The bird was sitting on the third nest and it was not disturbed. In 1950 the same islet was  $8/7$  inhabited by 5 breeding King-Eiders, and a small islet nearby by one. The numbers of eggs in these nests were 3, 4, 5, 6, 3, and 3 respectively. This observa-



Fig. 5. Nest with eggs of *Somateria spectabilis*. This nest was placed in the middle of fig. 4. P. JOHNSEN phot.

tion of 5 nests on an islet rather close upon each other is interesting because the King Eider was supposed to breed singly and not in sociability like the Eider Duck, and here at any rate it looked as if a beginning sociability had started. Besides the King Eiders also a Longtailed Duck was breeding on the islet.

The find of about 10 nests of King Eiders on islets was also very interesting, because this bird is not found breeding on islets elsewhere in Greenland. Thus SCHIÖLER (1926) writes that the species everywhere prefers to breed at freshwater lakes, and MANNICHE (1910) states that he observed a few nests on slopes and low coastal hills, but as distinct from the Eider Duck it persistently kept to freshwater lakes and always to the mainland, where he supposed it was breeding exclusively—a view also emphasized by OLDENDOW (1933) and PHILLIPS (1925—26). PHILLIPS

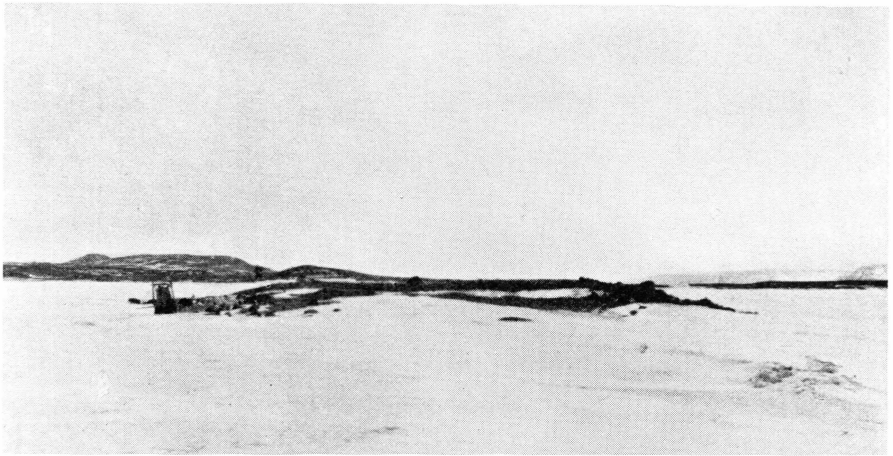


Fig. 6. Breeding biotope of *Somateria spectabilis*. Stony islet in Jørgen Brønlunds Fjord. P. JOHNSEN phot.

states that it is characteristic of the King Eider that the breeding sites are almost always found at freshwater ponds or tundra pools at a small distance from the sea and never on outlying islands or on the actual coastline. It was therefore unexpected that the species in Peary Land, besides the normal breeding biotopes, had extended the breeding places to the small islets (fig. 6). That this was not accidental is proved by the fact, that on all three islets visited in Jørgen Brønlunds Fjord one or several nests were observed. Good evidence was found that breeding on one of the islets at least had taken place for three consecutive years. Why the birds up here deviate from their mates is not easy to say. An attempt at an explanation is that the Eider Duck, which prefers such islets for breeding, is totally lacking here and can not compete for this breeding biotope as they may farther south, where the two species occur together. All previous records on the breeding biology of the King Eider in Greenland originate from areas inhabited by both species.

As distinct from the great majority of authors HØRRING (1919) states that the King Eider prefers breeding on islets, but without any statement of authority. SCHIØLER (1925) concludes, after having gone critically through the literature on King Eider's breeding on islets, that these can hardly be relied upon. But we have seen that this may very well happen in Peary Land.

In addition, my other biological observations are in full agreement with those of other authors. Also the number of eggs, 5—6, was normal.

Food. The analysis of the content of 10 stomachs is given as table 4, from which it is seen that food of the young while living in the lakes

mainly consists of *Branchinecta*. While breeding at lakes near the sea the females will now and then go to the sea in order to fourage.

In Jørgen Brønlunds Fjord the food is mainly made up of the two species of *Bivalva*: *Portlandia arctica* and *Saxicava arctica*. These are in bottom samples found by the hundred per square meter.

Table 4. Food of *Somateria spectabilis*.

| No.  | Sex age | Date    | Locality             | Bran-<br>chi-<br>necta | Port-<br>landia<br>arctica | Saxi-<br>cava<br>arctica | Ga-<br>stro-<br>poda | Ophiu-<br>ridae | Indet.<br>vege-<br>table |
|------|---------|---------|----------------------|------------------------|----------------------------|--------------------------|----------------------|-----------------|--------------------------|
| ..   | ? ad.   | 9/8-49  | Jørgen Brønlunds Fj. | ..                     | 148                        | ..                       | 3                    | ..              | ..                       |
| 1696 | ♀ ad.   | 29/7-49 | — —                  | ..                     | ..                         | ++                       | ..                   | ..              | ..                       |
| 230  | juv.    | Aug.-48 | — —                  | ..                     | 10                         | 10                       | ..                   | 1               | ..                       |
| 232  | juv.    | — —     | — —                  | ..                     | ..                         | ++                       | ..                   | ..              | ..                       |
| 231  | juv.    | — —     | — —                  | ..                     | +                          | +                        | 2                    | ..              | ..                       |
| 1692 | pull.   | 2/8-47  | Klaresø.....         | ++                     | ..                         | ..                       | ..                   | ..              | ..                       |
| 1693 | pull.   | 7/8-47  | — .....              | ++                     | ..                         | ..                       | ..                   | ..              | +                        |
| 1754 | pull.   | 2/8-48  | — .....              | ++                     | ..                         | ..                       | ..                   | ..              | +                        |

MANNICHE states that the food while the birds are staying in fresh-water mainly consists of vegetable matter. This was not the case in Peary Land. In Germania Land, where MANNICHE carried out his investigations the above mentioned crustaceans are lacking. COTTAM (1939), who examined the food of the species in North America very thoroughly, found only 7.5 per cent vegetable matter in 85 birds, and only in three of these did the vegetable matter make up half or more of the stomach content.

Downy dress. The downy young of the King Eider seem to be little known, and as the authors do not agree in their descriptions I will here discuss the appearance of the young. The downy young of *S. mollissima* and *S. spectabilis* is characteristic by the extension of feathers on the bill, but apart from this feature they are very similar. MIDDENDORF (1853) describes the downy young of *S. spectabilis* as being lighter, especially on the dorsal side than *S. mollissima*. HØRRING (1919) says, without statement of authority, that the upper side is somewhat more reddish brown, while the cheeks and all the underside are said to be more light and more yellowish—as compared with *S. mollissima*. When comparing four skins of about a fortnight old ducklings from Peary Land with ducklings of *S. mollissima islandica* Brehm from East Greenland it was impossible for me and others to distinguish the two species by the colour of the dorsal side, which in fact is similar in colour and tone in the material compared. The statement that the cheeks and underside should be lighter than in *S. mollissima* holds good although the difference is

very small. MIDDENDORF's fig. 1, tabula XXII is too white on the underside compared with my skins and the light streak over the eye, which is only slightly indicated in his fig., is far more distinct and light in my skins. Also the cheek is much lighter in my skins. The picture in SCHIÖLER's (1925—26) work is made after a preparation in alcohol, which no doubt must have been rather faded, as this author supposed, since all my skins are of a much darker brown colour.

Speaking of colours I observed that the colour of the bill in ad. males shot in the middle of June was much redder than in the colour plates in SCHIÖLER's mentioned work. In this the bill in the second nuptial dress is said to be violet reddish. The reason is no doubt that the author and the artist never had newly shot males from this season at their disposal. The colours of bill and knob of forehead will fade very quickly after death.

Measurements. See table 5.

Table 5. *Somateria spectabilis*.

| No.  | Sex. age | Date    | Locality                 | Weight | Total length | Wing | Bill | Tarsus | Preparation |
|------|----------|---------|--------------------------|--------|--------------|------|------|--------|-------------|
| 1138 | ♂ ad.    | 12/7-49 | Jørgen Brønlunds Fjord.. | ..     | ..           | 275  | ..   | ..     | skull       |
| 985  | ♂ ad.    | 4/7-49  | — —                      | ..     | ..           | 290  | ..   | ..     | skull       |
| 744  | ♂ ad.    | 16/6-49 | Blomsterstrand.          | 1615   | 548          | 284  | 33.2 | 46.2   | skin        |
| 1136 | ♀ ad.    | 8/7-49  | Jørgen Brønlunds Fjord.. | ..     | ..           | 267* | 31.9 | ..     | skull       |
| 1137 | ♀ ad.    | 8/7-49  | — —                      | ..     | ..           | 265* | 33.3 | ..     | skull       |
| 6    | ♀ ad.    | 2/8-48  | — —                      | 1600   | 562          | 266  | 37.9 | 46     | skin        |
| 1    | ♀ ad.    | 31/7-48 | Heilprin Land            | 1200   | 510          | 265  | 31.5 | 45     | skin        |
| 743  | ♀ ad.    | 16/6-49 | Blomsterstrand.          | 1580   | 549          | 269* | 36   | 45.8   | skeleton    |
| 1767 | ♀ ad.    | 9/8-48  | Jørgen Brønlunds Fjord.. | ..     | 575          | 263  | 31   | 45     | skin        |
| 7    | ♂ pull   | 31/7-48 | Heilprin Land            | 240    | 288          | 51   | 18.3 | 40.2   | skin        |
| 30   | ♀ pull   | 1/8-47  | — —                      | 260    | 285          | 53   | 18.5 | 31     | skin        |
| 1768 | pull     | 1/8-48  | — —                      | 218    | 270          | 48   | 17.3 | 27.4   | skin        |
| 1769 | pull     | 1/8-48  | — —                      | 240    | ..           | 50   | 18.1 | ..     | skin        |

The wing measurements marked with \* from fresh birds, the other from dry skins. No. 30 after MØHL-HANSEN (1949).

Five eggs, all from the same nest, had the following dimensions:

|        |          |         |          |
|--------|----------|---------|----------|
| Length | 86.4 mm. | Breadth | 43.7 mm. |
| —      | 68.0 —   | —       | 43.1 —   |
| —      | 67.8 —   | —       | 43.5 —   |
| —      | 64.3 —   | —       | 44.6 —   |
| —      | 62.1 —   | —       | 42.9 —   |

Average length 66.1 mm. Average breadth 43.6 mm.

These figures are within the limits stated in the literature.

Parasites. A few specimen of *Anatoecus icterodes* (Nitzsch) were secured from King Eider in Jørgen Brønlunds Fjord. This bird has not been recorded as host of this *Mallophaga*, but is known from Greenland on *Somateria mollissima*, *Anser albifrons* (HENRIKSEN 1939) and *Branta leucopsis* (MJÖBERG 1910).

*Gerfalcon. Falco rusticolus candicans* Gml.

*Falco gyrfalco* (L.) MANNICHE 1910. FREUCHEN 1915.

The Gerfalcon has been observed a few times in Peary Land by earlier expeditions. One was seen by BERTELSEN <sup>26</sup>/<sub>5</sub>-1907 over Independence Fjord, 82° NL (MANNICHE 1910). It was not seen during I. Thule Expedition, but a feather of Gerfalcon was found on Nyeboes Bræ (FREUCHEN 1915). Finally, one was shot at Kap Morris Jesup <sup>15</sup>/<sub>5</sub>-1921, and 2 were seen <sup>7</sup>/<sub>6</sub>-1921 nest-building on Falkefjeld, at the south coast (KOCH 1925). West of Peary Land it has not been found breeding farther north than Thule (FREUCHEN 1921).

Notes from the diaries. 1947: near the mouth of Børglum Elv, 1 seen a few times in August. Ibid. guano on rock wall indicating nest (MØHL-HANSEN 1949). <sup>13</sup>/<sub>8</sub>, north coast of Jørgen Brønlunds Fjord, the voice of a Gerfalcon heard. 1948: <sup>24-25-26</sup>/<sub>8</sub>, 1 over the station (2 were seen, but perhaps it was the same bird). <sup>27</sup>/<sub>8</sub>, mouth of Jørgen Brønlunds Fjord, 1 attacking a swimming *Somateria spectabilis*. <sup>30</sup>/<sub>8</sub>, 1 over the station. <sup>31</sup>/<sub>8</sub>, 1 over the station. 1 inland south of the head of Jørgen Brønlunds Fjord. Later in the day 1 at rivermouth ibid. <sup>1</sup>/<sub>9</sub>, 1 ibid. <sup>2</sup>/<sub>9</sub>, 1 shot at the station. <sup>4</sup>/<sub>9</sub>, 1 over the station. 1 shot about 12 kilometers into the valley of Børglum Elv. <sup>15</sup>/<sub>9</sub>, 1 over the station. <sup>25</sup>/<sub>9</sub>, 1 over Kap Harald Moltke. Later in the day 1 ibid., perhaps the same one. 1949: <sup>20</sup>/<sub>4</sub>, Walcotts Land, old nesting place on basalt wall on south coast of Midsommersøen. <sup>27</sup>/<sub>5</sub>, ibid. 1 on the nest. <sup>29</sup>/<sub>5</sub>, ibid. 2 at the nest. <sup>1</sup>/<sub>6</sub>, big valley north of Herlufsholm Strand, 1 heard. <sup>9</sup>/<sub>6</sub>, Astrups Fjord, 3 circling very high, screaming and playing catch. <sup>24</sup>/<sub>7</sub>, 1 seen in Itukussuks Dal. 1950: <sup>12</sup>/<sub>5</sub> one at Kap John Flagler. <sup>18</sup>/<sub>5</sub> one south of Clarence Wyckoff Bjerg.

General remarks. That the species breeds in Peary Land was observed already by L. KOCH, and I had the opportunity of confirming this. No doubt, the Gerfalcon is very sparse as a breeding bird. It has only been observed at the breeding place two, perhaps three times. As mentioned above breeding was observed in 1921 during L. KOCH's travels. It was on a rock wall named Falkefjeld on the south coast. A pair was building their nest here. In 1947 a Gerfalcon was now and then seen on a rock wall at the mouth of Børglum Elv. Here a guano-blotch

no doubt betrayed a breeding place (MØHL-HANSEN 1947). During a sledge-journey along the southern coast of Midsommersøen I noticed a nearly perpendicular basalt wall rising from the water. At a great distance you was able to see a dozen white spots, guano blotches from old nests placed on the shelves of the rock wall. The only one of the nesting places accessible was four-five meters above the ice of the lake. Some of the nest material could be fished down with an ice-chisel. It consisted of twigs of *Salix arctica* and remains of meals. These consisted of feathers of *Plectrophenax nivalis* and *Lagopus mutus*, remains of *Dicrostonyx groenlandicus* and paws of *Lepus arcticus*. I think this nest must have belonged to a Gerfalcon though I thought that the majority of the nests were Glaucous Gulls' nests, which species also use twigs as nest-material (HØRRING 1934) and lemmings for food, but the remains of ptarmigan and hares can only originate from falcon. That my supposition that this was a colony of Glaucous Gulls with breeding falcon was right, was confirmed when this locality was again inspected on 27/5. A falcon was then sitting on a nest but higher up on the wall, about 50 meters. When the place was passed again 29/5 two falcons (♂ and ♀) were sitting on the wall. Furthermore seven Glaucous Gulls were seen this time, sitting on the shelves.

The falcon is known from scattered localities throughout Peary Land, but only in small numbers. It has been observed in the following places: Kap Morris Jesup, Kap John Flagler, south of Clarence Wyckoff Bjerg, north of Herlufsholm Strand, outer part of Independence Fjord, Kap Harald Moltke, and Falkefjeld on Melville Land, northern Heilprin Land, in the valley of Børglum Elv, on the southern side of Buen, Itukussuks Dal and Walcotts Land at Midsommersø. South of Peary Land I saw the species in Astrups Fjord.

Migration. Next to the ptarmigan and the Snow-Bunting the falcon is the bird which appears earliest in spring. The earliest observation in Peary Land was made 12/5 (1950) at Kap John Flagler (At Danmarkshavn, Germania Land, the earliest record 1949 was 24/4—according to verbal information). Just like MANNICHE (1910) on Germania Land I in Peary Land was not able to note any regular migration in spring. On the other hand, there was an evident autumn migration. After a period from 30/7 to 23/8 (1948) without a single observation of falcon at the station, falcons were suddenly seen daily, cf. table 6. All birds were, when the age could be stated, juvenile. The autumn-migration thus must be said to take place in the end of August and the beginning of September, as the 2 latest observations must refer to stragglers.

Food. Three falcons the intestines of which were examined all contained only the remains of lemmings. That the falcon does not shrink

Table 6.

| Date                | Falcons observed |
|---------------------|------------------|
| 30/7-23/8 . . . . . | 0                |
| 24/8 . . . . .      | 1                |
| 25/8 . . . . .      | 1                |
| 26/8 . . . . .      | 1                |
| 27/8 . . . . .      | 1                |
| 30/8 . . . . .      | 1                |
| 31/8 . . . . .      | 2                |
| 1/9 . . . . .       | 1                |
| 2/9 . . . . .       | 1                |
| 4/9 . . . . .       | 2                |
| 15/9 . . . . .      | 1                |
| 25/9 . . . . .      | 1 possibly 2     |

from attacking bigger animals was seen in Jørgen Brønlunds Fjord where a falcon was swooping down at King Eider, but without success. In Lindemansdalen at the south-base a falcon tried several times to seize a Bernacle Goose, but with just as little success—it was shaken off in the flight. But generally speaking the lemming must be said to be the main food of the falcon in Peary Land, although Snow Bunting, ptarmigan and young hares may also be taken.

Parasites. Only a single species of *Mallophaga*, probably belonging to *Degeriella rufa* (Nitzsch) was secured.

Measurements: The following measurements were taken:

Table 7. *Falco rusticolus*.

| No. | Locality       | Date    | Sex.   | Weight | Total length | Wing | Bill. | Tarsus | Preparation |
|-----|----------------|---------|--------|--------|--------------|------|-------|--------|-------------|
| 6   | Erlandsens Ld. | 4/9-48  | ..     | ..     | ..           | 390  | ..    | ..     | skull       |
| 19  | Heilprin Land  | 26/8-48 | ♀ juv. | 1500   | ..           | 402  | 25.5  | 63.5   | skin        |
| 24  | — —            | 2/9-48  | ♂ juv. | 1250   | 524          | 365  | 21.4  | 70     | skin        |

*Rock Ptarmigan. Lagopus mutus captus* Peters.

*Lagopus mutus rupestris* (Gmelin). FREUCHEN 1915.

*Lagopus mutus captus* Peters. MÖHL-HANSEN 1949.

Literature: There are numerous records from the previous travelers in Peary Land. Already LOCKWOOD found the species 5/5-1882 at Kap Frederik 83°03' NL and footprints were seen on Lockwoods Ø (GREELY 1886). MANNICHE (1910) writes that 18/5 1907 fresh foot prints

were seen in snow on extensive table land on the east coast of Peary Land, 83°12' NL. BORUP (1911) states that in May 1909 near Kap Neumayer he shot 2 ptarmigans. FREUCHEN (1915) and RASMUSSEN (1915) give the following observations originating from 1912: On the south coast of Peary Land  $\frac{5}{6}$  a number of ptarmigans, partly in pairs, also some solitary males. Ibid.  $\frac{7}{6}$ , 1 ♀ shot, with fully developed egg in the oviduct and  $\frac{8}{6}$  another ♀ shot, with not yet fully developed eggs and  $\frac{11-16}{6}$  some were shot.  $\frac{28}{6}$  a great number on Adam Bierings Land.  $\frac{4}{7}$  in Valmuedalen, "a flock of young birds, not yet fully fledged, about a fortnight old."  $\frac{6}{7}$ , Adam Bierings Land, a flock of young birds, hardly more than a couple of days old. Ibid.  $\frac{10}{7}$ , a ptarmigan and her young seen. From 1917 some notes by RASMUSSEN (1919) are available: At the mouth of J. P. Kochs Fjord, a number  $\frac{4}{7}$ . Ibid.  $\frac{8}{6}$  "ptarmigans in pairs celebrating the breeding season with lively cackling" (Translated). Ibid.  $\frac{8}{6}$  a pair of "quite brown ptarmigans". Ibid.  $\frac{20}{6}$ , some seen. Cackling ptarmigans  $\frac{14}{6}$  on Elison Ø. Kap Benét, Sverdrups Ø,  $\frac{6}{6}$ , 16 observed. Ibid.  $\frac{8}{6}$ , one shot. Low Point  $\frac{9}{6}$ , "ptarmigans more numerous". (i. e. than more to the west in Peary Land). Between Kap Neumayer and Kap Benét on Sverdrups Ø  $\frac{14}{6}$ , 8 shot. Nansens Land at the mouth of De Long Fjord  $\frac{20}{6}$ , 6 shot. "The smooth sloping coast land here seems to be a popular place of residence to hares and ptarmigans". Blue Point  $\frac{27}{6}$ , some shot. L. KOCH (1925) gives only a single observation of one ptarmigan  $\frac{3}{6}$ -1921 on the easternmost part of the south coast of Peary Land.

Notes from the diaries. 1947:  $\frac{1}{8}$  south of the station hen with chicks.  $\frac{12}{8}$  ibid. hen with chicks. 1948:  $\frac{28}{8}$  southern side of Buen, numerous excrement.  $\frac{30}{8}$  near the station, 9, no doubt a brood. 2 shot (1 ad and 1 juv.). Ad, nearly quite white.  $\frac{31}{8}$ , northern Heilprin Land about 850 meters above sea level, 4.  $\frac{18}{9}$  fresh tracks on the snow in riverbed at the station.  $\frac{20}{9}$  ibid., 8—9, 4 of which shot.  $\frac{27}{9}$  at Klaresø, fresh foot prints in snow.  $\frac{29}{9}$ , 2 flying from Falkefjeld southwards over Independence Fjord.  $\frac{30}{9}$  footprints in snow east of Falkefjeld. Near the station 1 ad. and 2 juv. shot.  $\frac{1}{10}$  fresh footprints on Kjøvesletten.  $\frac{2}{10}$  near the station, fresh foot prints in the snow.  $\frac{3}{10}$  footprints on Kap Peter Henrik. 2 shot in depressions in the snow in riverbed near the station.  $\frac{4}{10}$ , 5 shot ibid., 2 of which with pink tinge.  $\frac{5}{10}$ , 1 shot ibid. North of Kap Harald Moltke, tracks in snow.  $\frac{7}{10}$  tracks of 4 ptarmigans on eastern side of Hagens Fjord.  $\frac{9}{10}$ , 1 shot in riverbed at the station.  $\frac{20}{10}$  tracks in new snow at Klaresø. 1949:  $\frac{22}{2}$  many tracks on Buen at Børglum Elv. 2 shot.  $\frac{26}{2}$  1 ♂ at the station.  $\frac{27}{2}$  ibid., 2.  $\frac{28}{2}$  a flock of 10 in riverbed at the station, 7 shot.  $\frac{6}{3}$ , 3 on Buen 200 meters above sea level, 2 shot.  $\frac{7}{3}$ , 2 ♂♂ shot near the station.  $\frac{17}{3}$ , 1 ♀ shot in Jørgen Brønlunds

Fjord.  $^{19}/_3$ , Buen near Børglum Elv, 2 flocks of 10, 9 of which shot. In addition a single shot. 1 single bird in riverbed at station. Tracks at eastern end of Midsommerersøen.  $^{20}/_3$  Kap Knud Rasmussen, many tracks.  $^{21}/_3$  a dead ptarmigan near the station, no doubt wounded the other day.  $^{22}/_3$  a ♂ shot on Buen. Northern shore of Aftenstjernesø, tracks and 1 seen.  $^{23}/_3$  on Buen a flock of 5 and one of 4, all of them shot. 1 seen at the station. Northern shore of Aftenstjernesø 5—6 seen.  $^{29}/_3$  along the Inland Ice west of Aftenstjernesø 4 and 1 and 3 flying north-west. Kap Caroline Marie, 2 seen, 1 shot.  $^{30}/_3$  at the front of Adams Gletcher, 4—5 ptarmigans flying across the head of J. P. Kochs Fjord towards Freuchens Land—at a great height, about 200 meters up.  $^{1}/_4$  one single bird shot in riverbed at the station.  $^{2}/_4$  *ibid.*, a single shot. 2 seen on Buen, 1 shot. Head of J. P. Kochs Fjord on the eastern side, 1 shot.  $^{4}/_4$  one ♂ seen in riverbed at the station. 1 shot near the station.  $^{6}/_4$  a single bird near the station. North of western end of Midsommer-søen, tracks.  $^{9}/_4$  *ibid.*, 600 meters above sea level, tracks. South coast of western end of Midsommersøen, tracks.  $^{14}/_4$  Kap Peter Henrik, 1 ♂ and 2 ♀♀ shot, 4 others observed.  $^{17}/_4$  a pair shot at stream-narrowing in Midsommersøen. Near the station, 2 flying. Buen, a pair shot.  $^{18}/_4$  interior of Hagens Fjord, 1 ♂ and 2 ♀♀ shot. 2 seen among ice-bergs in Hagens Fjord.  $^{19}/_4$ , southern part of Vald. Glückstadts Land, 70—100 in 4—5 flocks. West coast of Hagens Fjord, 1 ♂ and 10 ♀♀ shot.  $^{23}/_4$ , 10 at the station—6 shot (3 ♂♂ and 2 ♀♀).  $^{25}/_4$  tracks on Koralkysten. 1 seen in outer part of Jørgen Brønlunds Fjord.  $^{26}/_4$  one seen on Kap Rigsdagen.  $^{31}/_4$  many tracks on mountain slope on Merqujôqøen, J. P. Kochs Fjord.  $^{1}/_5$  tracks on Kjovesletten.  $^{5}/_5$  a pair at Kap København.  $^{7}/_5$ , Kap Eiler Rasmussen, 1 ♂ and 2 ♀♀ shot. One of the hens with a few brown feathers on head and neck.  $^{9}/_5$  a single ♀ shot at the station. Many ptarmigan-feathers scattered over the ground in the landscape in these days. North coast of Mudderbugten, 1 ♂ and 1 ♀ at ice-berg.  $^{11}/_5$  one ♀ about 10 kilometers inland on Herlufsholm Strand, in pure winter-dress. North of Kap Eiler Rasmussen one ♀ shot—with brown feathers hidden under the white dress.  $^{13}/_5$  *ibid.*, about 30 kilometers inland, 3 ♂♂ and 2 ♀♀ shot.  $^{14}/_5$  some in winter-dress on Herlufsholm Strand.  $^{15}/_5$  northern part of Herlufsholm strand, among many white ptarmigans one ♀, which was vigorously brown spotted on neck and back. Near Mudderbugten one white.  $^{16}/_5$  northern part of Herlufsholm Strand, besides white ♂♂ a single brown spotted ♀ was observed.  $^{17}/_5$  one ♂ on Kap Eiler Rasmussen. A pair south of the station—♀ moulting to summer-dress.  $^{19}/_5$  Asmild Elv 1 ♂ and 1 ♀ shot—♀ with a few brown feathers. Tracks at Neergaards Elv.  $^{20}/_5$  tracks east of Kap Grundloven.  $^{22}/_5$  some white at Peary's cairn on Wyckoff Land.  $^{23}/_5$  one white at north coast of G. B. Schley Fjord.  $^{25}/_5$  white ptarmigans on south coast of G. B. Schley Fjord.

$^{26}/_5$  tracks at head of little fjord south of G. B. Schley Fjord.  $^{27}/_5$  a pair ibid., ♀ vigorously brown spotted.  $^{29}/_5$  a pair on northern shore of Midsommersøen. ♀ nearly in full summer-dress. ♂ with a few coloured feathers on head, dancing before the ♀. Mouth of little fjord south of G. B. Schley Fjord, tracks.  $^{31}/_5$  some heard and 1 ♀ nearly in full summer-dress seen in valley north of Herlufsholm Strand.  $^1/_6$  one at Nergaards Elv. In big valley north of Herlufsholm Strand, many.  $^3/_6$  one east of Kjølén, Melville Land.  $^4/_6$  excrement on Kap København.  $^5/_6$  a pair shot about 5 kilometers southwest of Kap Knud Rasmussen—♀ in summer-dress and containing an uncoloured egg with thin shell.  $^6/_6$  one ♂ on the coast north of Diabasholmene.  $^7/_6$  lots of ptarmigans on Kap Glacier at cairn point. 2 pairs shot. Saxifragadal, 4 shot (2 ♀♀ and 2 ♂♂) and 1 seen. South coast of Peary Land about  $21^\circ$  W, a pair—♀ in summer-dress and with eggs of a pea's size.  $^9/_6$  a pair and a lonely ♂ seen on west coast of Astrups Fjord. Cackling often heard. A pair on Blomsterstranden shot. The hen contained a fully developed, but still uncoloured egg.  $^{16}/_6$  ibid. 2 ♂♂ with a few brown feathers on head shot. An old nest with eggshells about 200 meters above sea level.  $^{24}/_7$ , 7 ad. and some chicks, ready to fly, in Itukussuks Dal.  $^{25}/_7$  one ♀ with 10 fledged chicks east of Midsommersøen. 1 ♀ with about 8 fledged chicks below Frysefjeld.  $^{31}/_7$  one ad. ♀ shot south off the station on mountain slope. It had 2 fledged chicks.  $^2/_8$ , valley of Børglum Elv about 20 kilometers from the coast, 2 hens, one with 7 and one with 5 chicks, in a meadow. The brood of 5 just ready to fly.  $^{15}/_9$  about 20 in one flock going southwest at head of Astrups Fjord.  $^{25}/_9$  fresh footprints at Kølneæs, Herlufsholm Strand.  $^{30}/_9$ , Kap Eiler Rasmussen, 9 and 4 ptarmigans seen west of this place.  $^7/_10$  ten at the station.  $^{10}/_10$  one shot at the waterfall in Sydpasset.  $^2/_10$  two at Børglum Elv.  $^{25}/_10$  fresh footprints on islet at head of Independence Fjord. 1950:  $^{11}/_3$  one in Sydpasset.  $^2/_4$  one shot at "Strømstedet" in J. P. Kochs Fjord.  $^5/_4$ , west coast of Mascart Inlet 2 ♂♂ and 2 ♀♀ shot.  $^8-9/_4$  fresh tracks at Kap John Flagler.  $^9/_4$  Kap Payer, 4 ♂♂ and 2 ♀♀ shot.  $^{11}/_4$ , mouth of Jewels Fjord, three shot.  $^{17}/_4$  one shot on Sverdrups Ø.  $^{19}/_4$  footprints at Nordkronelien. One shot in Lemming Fjord.  $^6/_5$ , three in Citronens Fjord on south coast of Fr. E. Hyde Fjord.  $^{15}/_5$  two shot at Ormen in G. B. Schley Fjord.

Distribution. As seen from the diaries the ptarmigan is met with practically everywhere in Peary Land. From the north coast it is recorded from John Murray Ø, Elison Ø, mouth of J. P. Kochs Fjord, Sverdrups Ø, Hazen Land and Lockwood Ø. On the east coast it is known from  $83^\circ 12'$  NL and south: North and south coast of G. B. Schley Fjord, Wyckoff Land, Herlufsholm Strand, Kap Eiler Rasmussen, Mudderbugten, Kap København. Along the south coast it has been observed at

the following localities: Kjovesletten, Falkefjeld, Koralkysten, Kap Harald Moltke, Heilprin Land, Valmuedalen, Adam Bierings Land. Furthermore it was seen on Erlandsens Land, Walcott Land, in Sydpasset and on the Inland Ice at the offspring of Adams Gletcher as well as at the head of J. P. Kochs Fjord.

Outside Peary Land ptarmigans were observed by the expedition along the south coast of Independence Fjord here and there, on Academy Land, Ubberup Land, I. C. Christensens Land and Valdemar Glückstadts Land.

From Lockwood Ø to the mouth of Fr. E. Hyde Fjord along the north coast of Peary Land no records of ptarmigans are found in the literature, but this is also the less visited part of the explored parts of this area. There is no doubt that the ptarmigan may also be met with here, and according to the explorers of this region the food plants of this bird occur here.

**Biology.** No doubt the ptarmigan migrates from Peary Land to the south of Greenland during winter. MANNICHE also claims that the population of Germania Land migrates south in the severest winter months. Although ptarmigans have been observed throughout the year so far north in West Greenland as 79° NL (BERTELSEN 1932) and in November north of 76° NL in East Greenland (JENNOV 1945) I agree with MANNICHE that the ptarmigans of the northernmost part of Greenland's eastern half go south in winter.

In Peary Land the autumn migration takes place mainly in September and the beginning of October. In 1948 the latest ptarmigan was observed  $9/_{10}$ , but even as late as  $20/_{10}$  fresh tracks in new snow were seen near the station. In 1949 the latest bird was seen  $22/_{10}$  and the latest fresh footprints on  $25/_{10}$ . Later no sign of ptarmigans were seen although I looked several times for footprints by help of an electric torch.

Before the ptarmigans leave, small flocks, both ad. and juv. birds, gather in the lowland near the coasts, especially in riverbeds, where they are seldom seen during the summer, at any rate in the Jørgen Brønlunds Fjord region.

In Peary Land the first ptarmigans were seen  $22/_{2}$ -49, still before the dark season had ceased. On Germania Land the first two were observed  $31/_{1}$  the same year, according to verbal information. This is a little earlier than MANNICHE's record from the same locality. His earliest observations for two succeeding years were  $4/_{2}$  and  $8/_{2}$ .

The route of the migrating ptarmigans of Peary Land no doubt goes south-north, at any rate for the majority of the birds. No banding indicates this, but a few observations support this theory. During the autumn migration two were seen going south together over Independence

Fjord coming from Falkefjeld. During spring migration 4 and 1 and 3 were seen going northwest along the Inland Ice near Aftenstjernesø, and the next day ( $\frac{30}{3}$ ) 4-5 ptarmigans were crossing the head os J. P. Kochs Fjord some 200 meters up in the air in the same direction. No doubt these observations refer to migrating birds.

A great number of ptarmigans were shot for food, but before they were eaten many of them were determined as to sex. From  $\frac{28}{8}$  to  $\frac{9}{10}$ -48

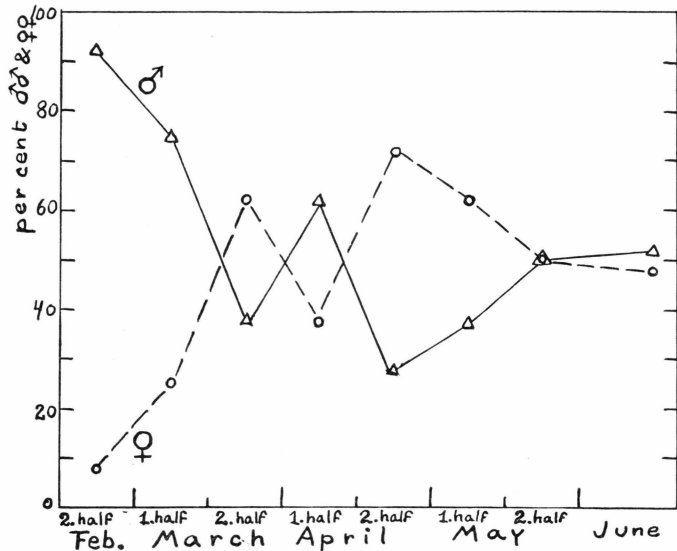


Fig. 7. Percentage of males ——— and females - - - - of ptarmigans from coastland during first half of the year in Peary Land and along south coast of Independence Fjord.

about 20 ptarmigans were shot and the next year from  $\frac{22}{2}$  to  $\frac{14}{6}$  we secured about 120 ptarmigans. Most of these were shot during migration, when the birds moved around in flocks in the coast land. These sex-determinations show that practically all the individuals shot in the end of February were males. The beginning of March also yielded a surplus of males. During the second half of March and first half of April no distinct difference in number of males and females was found, but in the end of April most of the ptarmigans shot were females, namely 15 as against 6 males. In fig. 7 the graphs show the ratio of the two sexes during the first half of the year based on 107 ptarmigans. The absolute figures are as follows: 2. half of February 11 ♂♂/1 ♀. 1. half of March 3/1. 2. half of March 8/13. 1. half of April 5/3. 2. half of April 6/15. 1. half of May 6/10. 2. half of May 4/4. June taken as a unit 11/10. Although the material is rather scarce it is clearly seen, that the males on an average arrive earlier than the females. The rather evident difference in number of ♂♂

and ♀♀ in the second half of April probably indicates the arrival of a greater number of females compensating for the surplus of males arrived earlier, the more so as they were shot out of flocks in the coast land, where the newly arrived ptarmigans evidently prefer to settle for a time before going inland to the breeding places.

In the end of May and in June the flocks of ptarmigans have disappeared and the species is now seen in pairs inland and consequently the sex-determinations give equal numbers of ♂♂ and ♀♀.

The size of the flocks when arriving is rather small compared with the flocks more to the south, where they may number more than 100 (PETERSEN 1930). The biggest flocks recorded from Germania Land numbered, according to MANNICHE (1910), 20 birds, but according to verbal information flocks of about 50 were seen in 1949. In Peary Land I have never met with flocks numbering more than 10 and this happened only 4—5 times. Due south of Peary Land on the east coast of Hagens Fjord Eigil Knuth saw "70—100 ptarmigans in 4—5 flocks", so it is very likely that flocks exceeding 10 may also be seen in Peary Land. From the time of arrival in the end of February to the second half of April ptarmigans are seen in flocks generally numbering 3—6. During May and June only pairs or single individuals were observed. In the first half of July only single females with their chicks were seen. From the second half of August to the second half of October ptarmigans were again seen in flocks of 4—9.

It seems very likely that some of the flocks, when arriving consist either of males or of females, with none or a few birds of the other sex. The flocks with a majority of males arrive first and the flocks with a majority of females come later, as said above. This explains why 7 ptarmigans shot  $\frac{28}{2}$  out of a flock of 10 included 1 hen only, the rest being males, and furthermore that 11 ptarmigans shot  $\frac{19}{4}$  on the east coast of Hagens Fjord included only one cock, the rest being females. The great variation in percentage of males and females plotted in fig. 7 in the second half of March and April is also explained by this phenomenon. As the material is rather poor the great variations may be due to the fact that a considerable part of the birds were shot out of a flock by accident mainly consisting only of males or females. MANNICHE mentions a flock of 5 consisting exclusively of females observed on Germania Land, where the species also is migratory. It is also noteworthy that his three earliest skinned birds from February are all males.

It is a wellknown fact that the ptarmigan in Greenland is subject to great fluctuations in number in the same place through the years (BRÆSTRUP 1941). Judging from FREUCHEN (1915) and RASMUSSEN (1915) the species was rather frequent in Peary Land in 1912, and the same seems to have been the case in 1917 according to RASMUSSEN (1919).

Table 8. Food of

| No.  | Sex. | Date | Locality                 | <i>Salix arctica</i> | <i>Saxifraga oppositifolia</i> | <i>Dryas octopetala</i> | <i>Stellaria longipes</i> | <i>Cerastium</i> | <i>Draba</i> | <i>Polygonum viviparum</i> | <i>Papaver radiculatum</i> |
|------|------|------|--------------------------|----------------------|--------------------------------|-------------------------|---------------------------|------------------|--------------|----------------------------|----------------------------|
| 307  | ..   | 22/2 | Erlandsens Land .....    | 90                   | 5                              | 5                       | ..                        | ..               | ..           | ..                         | ..                         |
| 312  | ..   | 22/2 | — — .....                | 85                   | +                              | 14                      | ..                        | ..               | ..           | ..                         | ..                         |
| 309  | ..   | 26/2 | Heilprin Land .....      | 10                   | 80                             | +                       | +                         | +                | +            | ..                         | +                          |
| 313  | ♂    | 27/2 | Erlandsens Land .....    | 20                   | +                              | 80                      | ..                        | ..               | ..           | ..                         | ..                         |
| 314  | ♂    | 27/2 | — — .....                | 90                   | 2                              | 8                       | ..                        | ..               | ..           | ..                         | ..                         |
| 306  | ♂    | 28/2 | Heilprin Land .....      | 80                   | 19                             | +                       | +                         | +                | ..           | ..                         | ..                         |
| 300  | ..   | 28/2 | — — .....                | ++                   | ++                             | +                       | ..                        | +                | ..           | ..                         | ..                         |
| 304  | ..   | 28/2 | — — .....                | ++                   | ++                             | +                       | ..                        | +                | ..           | ..                         | ..                         |
| 297  | ..   | 28/2 | — — .....                | 50                   | 15                             | 20                      | +                         | +                | ..           | ..                         | ..                         |
| 326  | ..   | 6/3  | Erlandsens Land .....    | 10                   | 3                              | 85                      | ..                        | ..               | ..           | ..                         | ..                         |
| 224  | ..   | 6/3  | — — .....                | 75                   | +                              | 20                      | ..                        | ..               | +            | ..                         | ..                         |
| 333  | ♂    | 7/3  | Heilprin Land .....      | 50                   | 20                             | ..                      | 2                         | 20               | ..           | +                          | ..                         |
| 330  | ♂    | 7/3  | — — .....                | 80                   | +                              | +                       | +                         | +                | ..           | ..                         | ..                         |
| 421  | ♂    | 17/3 | — — .....                | 80                   | 15                             | ..                      | ..                        | ..               | ..           | ..                         | ..                         |
| ÷    | ..   | 17/3 | — — .....                | 9                    | 1                              | 90                      | ..                        | ..               | ..           | ..                         | ..                         |
| 415  | ♀    | 19/3 | Erlandsens Land .....    | +                    | +                              | ++                      | ..                        | ..               | ..           | ..                         | ..                         |
| 425  | ♂    | 19/3 | — — .....                | ++                   | +                              | ++                      | ..                        | ..               | ..           | ..                         | ..                         |
| 417  | ♀    | 19/3 | — — .....                | +                    | +                              | +                       | ..                        | ..               | ..           | ..                         | ..                         |
| 420  | ♂    | 19/3 | — — .....                | 1                    | ..                             | 99                      | ..                        | ..               | ..           | ..                         | ..                         |
| 413  | ♂    | 16/3 | — — .....                | +                    | +                              | ++                      | ++                        | ++               | ..           | ..                         | ..                         |
| 418  | ♀    | 22/3 | — — .....                | 5                    | ..                             | 95                      | ..                        | ..               | ..           | ..                         | ..                         |
| 414  | ♀    | 23/3 | — — .....                | 5                    | ..                             | 95                      | ..                        | ..               | ..           | ..                         | ..                         |
| 416  | ♀    | 23/3 | — — .....                | +                    | ..                             | ++                      | ..                        | ..               | ..           | ..                         | ..                         |
| ÷    | ♀    | 23/3 | — — .....                | +                    | ..                             | ++                      | ..                        | ..               | ..           | ..                         | ..                         |
| ÷    | ♀    | 23/3 | — — .....                | 20                   | ..                             | 80                      | ..                        | ..               | ..           | ..                         | ..                         |
| 423  | ♀    | 29/3 | Kap Caroline Marie.....  | 99                   | +                              | ..                      | +                         | +                | ..           | ..                         | ..                         |
| 419  | ♂    | 1/4  | Heilprin Land .....      | e                    | m                              | p                       | t                         | y                | ..           | ..                         | ..                         |
| 410  | ♂    | 2/4  | — — .....                | ..                   | ++                             | +                       | +                         | ..               | ..           | ..                         | ..                         |
| 411  | ♂    | 4/4  | — — .....                | 99                   | +                              | ..                      | ..                        | ..               | +            | ..                         | ..                         |
| 422  | ♂    | 6/4  | — — .....                | 20                   | 70                             | ..                      | ..                        | ..               | +            | ..                         | +                          |
| 505  | ♂    | 7/5  | Kap Eiler Rasmussen..... | ..                   | +                              | ..                      | +                         | ..               | ..           | ..                         | ..                         |
| 506  | ♀    | 7/5  | — — .....                | ..                   | +                              | ..                      | +                         | ..               | ..           | ..                         | ..                         |
| 516  | ..   | 13/5 | Herlufsholm Strand.....  | ..                   | 10                             | ..                      | 15                        | 4                | ..           | ..                         | 5                          |
| 688  | ♀    | 9/6  | Blomsterstranden .....   | 90                   | 5                              | 5                       | +                         | ..               | ..           | +                          | ..                         |
| 1316 | ..   | 25/7 | Itukussuks Dal.....      | 1                    | ..                             | ..                      | ..                        | ..               | ..           | 99                         | ..                         |
| 1335 | ♀    | 31/7 | Heilprin Land .....      | 80                   | ..                             | 15                      | ..                        | ..               | ..           | ..                         | ..                         |
| 28   | ♀    | 1/8  | — — .....                | ..                   | ..                             | ..                      | ..                        | ..               | ..           | ..                         | 99                         |
| 1663 | ..   | 2/8  | — — .....                | ..                   | ..                             | ..                      | ..                        | ..               | 20           | ..                         | 50                         |
| 59   | ..   | 12/8 | — — .....                | +                    | +                              | ..                      | +                         | ..               | ..           | ..                         | +                          |
| 1662 | ..   | 30/8 | — — .....                | 99                   | ..                             | ..                      | ..                        | ..               | ..           | +                          | ..                         |
| 23   | ..   | 30/8 | — — .....                | 90                   | ..                             | ..                      | ..                        | ..               | ..           | ..                         | ..                         |
| 47   | ..   | 20/9 | — — .....                | 30                   | 20                             | ..                      | 5                         | 10               | 5            | 10                         | 1                          |
| 46   | ♂    | 20/9 | — — .....                | 40                   | 40                             | +                       | ..                        | ..               | +            | +                          | ..                         |



Table 8

| No. | Sex. | Date | Locality            | <i>Salix arctica</i> | <i>Saxifraga oppositifolia</i> | <i>Dryas octopetala</i> | <i>Stellaria longipes</i> | <i>Cerastium</i> | <i>Draba</i> | <i>Polygonum viviparum</i> | <i>Papaver radicatum</i> |
|-----|------|------|---------------------|----------------------|--------------------------------|-------------------------|---------------------------|------------------|--------------|----------------------------|--------------------------|
| 38  | ♂    | 20/9 | Heilprin Land ..... | 10                   | 80                             | ..                      | +                         | ..               | +            | ..                         | ..                       |
| 35  | ..   | 20/9 | — — .....           | 95                   | +                              | ..                      | +                         | ..               | ..           | ..                         | ..                       |
| 96  | ♂    | 30/9 | — — .....           | 40                   | ..                             | ..                      | +                         | +                | +            | +                          | ..                       |
| 95  | ..   | 30/9 | — — .....           | 20                   | ..                             | ..                      | +                         | 20               | 5            | 1                          | +                        |
| 94  | ♀    | 30/9 | — — .....           | 30                   | +                              | ..                      | ..                        | 20               | 20           | 2                          | ..                       |
| 78  | ..   | 3/10 | — — .....           | 99                   | +                              | +                       | +                         | ..               | ..           | +                          | ..                       |
| 76  | ..   | 3/10 | — — .....           | 90                   | 5                              | +                       | +                         | +                | +            | +                          | ..                       |
| 80  | ..   | 4/10 | — — .....           | 15                   | 10                             | ..                      | +                         | 70               | +            | ..                         | ..                       |
| 97  | ♀    | 5/10 | — — .....           | 20                   | 25                             | ..                      | 10                        | 10               | 15           | +                          | ..                       |
| 98  | ..   | 9/10 | — — .....           | 50                   | 20                             | +                       | +                         | +                | +            | ..                         | +                        |
| 172 | ♂    | 9/10 | — — .....           | 45                   | 36                             | ..                      | 17                        | +                | +            | +                          | +                        |

In 1921 it seems to have been very scarce since it is only mentioned once by KOCH (1925). This author (1940) therefore holds that the ptarmigan is very scarce in Peary Land. In 1947 we stayed only for too short a period in Peary Land to judge of the frequency of the species, however, some were observed even if this visit took place when less is seen of ptarmigans. Both in 1948 and especially in 1949 the species was very common—considering the northern latitude and the natural conditions. According to the narrative of other members of the expedition it seems to have been especially numerous on Herlufsholm Strand. In 1950 the number of ptarmigans was very small according to KNUTH (verbal information).

In the nearest inhabited place on the east coast of Greenland, the meteorological station at Danmarkshavn, on Germania Land, there was also an abundance of ptarmigans in 1948—1949, according to verbal information. During 1906—1908 it must have been present here in fairly great numbers according to MANNICHE (1910) who writes “ptarmigans were observed almost everywhere in the tracts explored by the expedition but nowhere in great numbers”. When PEDERSEN (1942) stayed in the same region in 1938—1939 the population presumably was very poor in number. He says it was “auffallend selten, seltener als ich es jemals vorher in Nordostgrönland beobachtet habe”, but north of Germania Land KNUTH found it to be more numerous in 1939.

The size of the biggest testes of 4 ad. males was measured:  $\frac{9}{10}$ : 3 mm.  $\frac{28}{2}$ : 4 mm.  $\frac{16}{3}$ : 4.2 mm.  $\frac{17}{3}$ : 3 mm. Measurements of biggest egg visible in ovary of some hens gave the following result:  $\frac{17}{3}$ : 0.6 mm.

(continued).

| <i>Saxifraga cernua</i> | Mosses | <i>Cochlearia officinalis</i> | <i>Braya</i> | <i>Minuartia rubella</i> | <i>Pedicularis hirsuta</i> | Glumales | <i>Potentilla pulchella</i> | <i>Oxyria digyna</i> | <i>Melandrium apetalum</i> | <i>Saxifraga nivalis</i> | <i>Saxifraga groenlandica</i> | <i>Ranunculus sulphureus</i> | <i>Equisetum arvense</i> | <i>Saxifraga tenuis</i> | Indetermined | <i>Cardamine bellidifolia</i> |
|-------------------------|--------|-------------------------------|--------------|--------------------------|----------------------------|----------|-----------------------------|----------------------|----------------------------|--------------------------|-------------------------------|------------------------------|--------------------------|-------------------------|--------------|-------------------------------|
| +                       | ..     | +                             | ..           | ..                       | ..                         | ..       | ..                          | ..                   | ..                         | ..                       | ..                            | ..                           | ..                       | ..                      | +            | ..                            |
| ..                      | ..     | ..                            | ..           | ..                       | ..                         | ..       | +                           | ..                   | ..                         | ..                       | ..                            | ..                           | ..                       | ..                      | ..           | ..                            |
| +                       | ..     | +                             | 5            | +                        | 10                         | ..       | ..                          | ..                   | ..                         | ..                       | ..                            | ..                           | +                        | +                       | ..           | ..                            |
| ..                      | +      | +                             | ..           | 10                       | ..                         | ..       | ..                          | ..                   | ..                         | ..                       | ..                            | ..                           | ..                       | ..                      | ..           | ..                            |
| ..                      | ..     | +                             | ..           | ..                       | ..                         | ..       | ..                          | ..                   | ..                         | ..                       | ..                            | ..                           | ..                       | ..                      | ..           | ..                            |
| +                       | ..     | ..                            | +            | +                        | ..                         | +        | ..                          | ..                   | +                          | ..                       | ..                            | ..                           | ..                       | ..                      | ..           | ..                            |
| +                       | ..     | +                             | ..           | ..                       | ..                         | ..       | ..                          | ..                   | ..                         | ..                       | ..                            | ..                           | ..                       | ..                      | ..           | ..                            |
| +                       | ..     | ..                            | ..           | +                        | ..                         | +        | ..                          | +                    | ..                         | ..                       | ..                            | ..                           | ..                       | +                       | ..           | ..                            |
| +                       | +      | ..                            | +            | ..                       | ..                         | +        | ..                          | ..                   | ..                         | ..                       | ..                            | ..                           | ..                       | +                       | 8            | ..                            |

$9/5$ : 2.8 mm.  $13/5$ : 4.4 mm.  $5/6$ : nearly fully developed egg, not quite calcified.  $7/6$ : egg of a pea's size.  $9/6$ : 41.3 mm. The last was a fully developed egg but not yet coloured. The breadth was 30.9 mm. FREUCHEN (1915)  $7/6$  shot one with fully developed egg and  $8/6$  one with "eggs not yet fully developed". Only 2 old nests with egg shells were seen, both placed on mountain slopes ca. 200 meters above sea level. FREUCHEN (l. c.)  $4/7$  observed a flock of young birds not yet fully fledged,  $6/7$  another flock, hardly more than a few days old, and  $10/7$  a hen with young. During 1947—1949 we observed half a score of hens with chicks:  $1/8$  hen with chicks.  $2/8$  hen with seven chicks and one with five fledged chicks.  $12/8$  hen with five chicks.  $24/7$  some fledged chicks seen.  $25/7$  one hen with 10 and one with eight chicks.  $31/7$  hen with 2 chicks.

Laying takes place in the first half of June, and since quite small chicks were observed in the first half of August 1947 by MØHL-HANSEN (1949) laying may also take place at any rate in the second half of June. Thus there is no deviation in the breeding time of the population in Peary Land as compared with the populations elsewhere in Greenland. More to the south in East Greenland MANNICHE (1910) on Germania Land  $11/6$  found a fully developed egg in a hen and he says: "laying began in the first half of June".

Food. Half a hundred preparations of the food contents of ptarmigans were brought home from Peary Land and the analyses hereof are given in table 8. The figures give the apparent volume of the different plants in per cent of the total crop content. A + indicates that the numer-

ical value has not been calculated, but only smaller amounts were found, two ++ indicates the same, but means that greater amounts of the said plant was found.

The food of the East Greenland ptarmigan has been studied in detail by GELTING (1937) in the region from Kejser Franz Josephs Fjord to Sabine Ø (between 73° and 75° NL) and his results are on the whole in accordance with mine from Peary Land. In some respects there are however deviations, no doubt due to the different climate and its influence on snow-cover and vegetation.

Insects were not at all found, which is explained by the fact that the greater part of the ptarmigans examined were shot during frost, viz. in February—April and September—October.

I have studied totally 54 crops from Peary Land—only one of these was of a chick. In these crops 28 different plants could be determined (table 9).

GELTING (l. c.) found 55 different plants represented in ptarmigans. That only half the number was found in ptarmigans in Peary Land is due to the flora being poorer here, as compared with the localities in East Greenland examined by GELTING.

*Salix arctica*, *Saxifraga oppositifolia* and *Dryas octopetala* in Peary Land as further south constitute the main source of food for the ptarmigans. *Polygonum viviparum* which GELTING found to be of the highest importance, especially during summer, since this plant is practically the only one represented in the crops, seems to be of minor importance in Peary Land. This plant—nearly always its bulbils—was found in very small amounts only in 11 out of 54 crops, and only 1 bird, a chick, contained almost exclusively bulbils of this species. Although the number of birds shot during the summer is fairly small, it is evident that *Polygonum* is not of the same importance to the ptarmigans in North Greenland as in East Greenland. No doubt this is due to the fact that this species is far more easily accessible further south in East Greenland than in Peary Land, where the species is far from common, though it is widely distributed.

Plumage. It has been shown by SALOMONSEN (1939) that the moults of the Rock Ptarmigan are submitted to a distinct geographical variation. I therefore give some observations on the moults in Peary Land.

Males: From the end of February, when the first ptarmigans arrived, to the end of May all males were in pure winter plumage.  $\frac{29}{5}$  the first one with a few brown feathers on the head was seen.  $\frac{16}{6}$  two males still had only a few brown feathers on the back of the neck.  $\frac{30}{8}$  a nearly quite white specimen was observed.  $\frac{20}{9}$  I noted about 4 cocks: "with some

Table 9. Occurrence of plants in 54 crops.

|   |                    |                                  |
|---|--------------------|----------------------------------|
| <i>Salix arctica</i> Pallas .....   | Found in 46 crops. | Highest amount 99 vol. per cent. |
| <i>Saxifraga oppositifolia</i> L. ....  | — - 39 —           | — — 80 — - -                     |
| <i>Dryas octopetala</i> L. ....   | — - 30 —           | — — 99 - - -                     |
| <i>Stellaria longipes</i> Goldie .....  | — - 24 —           | — — 17 - - -                     |
| <i>Cerastium (alpinum</i> L. and<br><i>Regelii</i> Ostenf.) .....                                     | — - 19 —           | — — 70 - - -                     |
| <i>Draba</i> spp. (among <i>Bellii</i><br>Holm) .....   | — - 16 —           | — — 20 - - -                     |
| <i>Polygonum viviparum</i> L. ....  | — - 12 —           | — — 99 - - -                     |
| <i>Papaver radiculatum</i> Rottb. ...   | — - 10 —           | — — 99 - - -                     |
| <i>Glumales</i> (among <i>Juncus bi-</i><br><i>glumis</i> L., <i>Poa abbreviata</i><br>R. Br.) .....  | — - 10 —           | — — 2 - - -                      |
| <i>Saxifraga cernua</i> L. ....   | — - 8 —            | — — traces                       |
| <i>Cochlearia officinalis</i> L. ....   | — - 8 —            | — — 8 vol. per cent.             |
| <i>Braya</i> spp. ( <i>purpurascens</i> (R.<br>Br.) Bge. and <i>Thorild Wulffii</i><br>Ostenf.) ..... | — - 7 —            | — — 5 - - -                      |
| <i>Mosses</i> (among <i>Polytrichum</i> ) .   | — - 7 —            | — — traces                       |
| <i>Minuartia rubella</i> (Wahlbg.)<br>Hiern. ....   | — - 6 —            | — — 10 vol. per cent.            |
| <i>Saxifraga tenuis</i> (Wg.) H. Sm.  | — - 5 —            | — — 10 - - -                     |
| <i>Pedicularis hirsuta</i> L. ....  | — - 3 —            | — — 10 - - -                     |
| <i>Oxyria digyna</i> (L.) Hill. ....  | — - 3 —            | — — traces                       |
| <i>Melandrium apetalum</i> (L.) Fenzl.  | — - 2 —            | — — —                            |
| <i>Equisetum arvense</i> L. ....  | — - 2 —            | — — 20 vol. per cent.            |
| <i>Saxifraga nivalis</i> L. ....  | — - 1 —            | — — 60 - - -                     |
| <i>Ranunculus sulphureus</i> Sol. ...   | — - 1 —            | — — 5 - - -                      |
| <i>Potentilla pulchella</i> R. Br. ....   | — - 1 —            | — — traces                       |
| <i>Cardamine bellidifolia</i> L. ....   | — - 1 —            | — — traces                       |
| <i>Saxifraga groenlandica</i> L. ....   | — - 1 —            | — — traces                       |

brown speckled feathers”, “Very few brown feathers”, “ a few brown feathers on back and wrist” and ‘ brown feathers on head, neck and base of wings’.  $\frac{30}{9}$ , 1 juv. in pure winter plumage.  $\frac{3}{10}$  one with 5—6 loose brown feathers.  $\frac{9}{10}$  one in pure winter plumage.

Females:  $\frac{7}{5}$  the first hen with a few coloured feathers on head and neck was seen. Same day a hen in pure winter plumage was shot.  $\frac{9}{5}$  many loose ptarmigan feathers found on the ground in these days indicate moulting.  $\frac{11}{5}$  white hens were seen, but brown feathers were in growth under the white plumage in one specimen. The same was seen on another the next day.  $\frac{15}{5}$  one vigorously brown spotted on neck and back.  $\frac{16}{5}$  a brown spotted.  $\frac{17}{5}$  one in moult into summer plumage.  $\frac{19}{5}$  a hen with some brown feathers.  $\frac{27}{5}$  a hen in summer moult, very much brown spotted.  $\frac{29}{5}$  one nearly in full summer plumage.  $\frac{31}{5}$  the same.  $\frac{5}{6}$  and  $\frac{7}{6}$  two in summer plumage.  $\frac{9}{6}$ ,  $\frac{1}{8}$  and  $\frac{12}{8}$  hens in summer plumage.

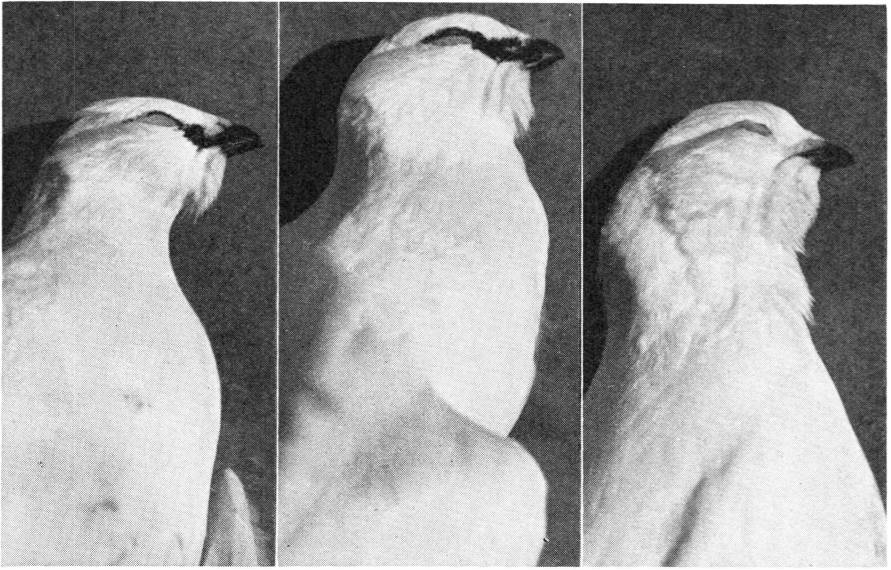


Fig. 8. Females of *Lagopus mutus* from Peary Land. To the left with normal extension of black at lore. In the middle a single female with lore like a male. To the right a single female without black feathers at lore. P. JOHNSEN phot.

$\frac{30}{100}$  ad. and juv. in pure winter plumage and one with 4 brown feathers. Later only winter dressed females were observed.

As proved by MANNICHE (1910) the lores of females of the Rock Ptarmigan in Northeast Greenland are provided with black feathers from a few to a continuous black streak. The same is the case in the population in Peary Land (Fig. 8). One of the female skins brought home by MANNICHE is in fact indistinguishable from that of a male. SALOMONSEN (1940) says about this skin: "It might be suggested that the N. E. Greenland ptarmigan (his fig. 2) in winter-dress labelled ♀ was wrongly sexed by the collector—however, I do not suppose so careful a student as MANNICHE to make mistakes on this point—". Surely MANNICHE was right, as I have also seen a female on Peary Land with complete black loreal streak as is normal in the males (fig. 8).

Among all the ptarmigan hens seen by me during the expedition only one adult female had pure white immaculate lore and eye-region (fig. 8), like the females of *L. mutus rupestris*. Only one skin of this aspect has til now been brought home from N. E. Greenland, namely by MANNICHE (SALOMONSEN l. c.).

A day in October some of my comrades came home from a hunting trip with a bunch of winter-dressed ptarmigans. Already at a distance I noticed that these ptarmigans had a very beautiful pink tinge over the white plumage—conspicuous, but so delicate that at first, I thought it

might be reflection from the snow, as I had never read or heard about pink ptarmigans. This was not the case! Even indoors in electric light I could see the pink in 2 of the birds, especially in one of them. The colour reminded somewhat of the pink colour in some species of *Cacatua*, but gave a luminous impression. The intensity was changing as the bird was turned. Most intense was the colour when seen among the slightly outspread primaries from the ventral side, but the pink tinge was also seen on head, neck, breast, belly, under and upper side of wings, back and rump. The feathers on the legs were pure white.

When I returned to Denmark I discussed these observations with HARRY MADSEN, who was wintering as an ornithologist at Disco in W. Greenland 1948—1949. He had made the same observation, but claimed that also white dogs and white paper had a pink tinge and suggested that it was the low sun in connection with the snow, which was the only explanation. As a matter of fact, I only observed the tinge in October ( $\frac{4}{10}$  two specimen.  $\frac{5}{10}$  one.  $\frac{9}{10}$  three) and in Februar ( $\frac{28}{2}$  only a single individual with very faint pink tinge), when the sun was very low or below the horizon respectively. Two skins with this pink colour were brought home and now—one year after the preparation—I again looked at them hoping that the tinge still was visible, and this was actually the case. The intensity had now faded, but nevertheless it was still so evident that 2 ornithologists present had to admit that they could see it.

Of course MADSEN is right, when holding that the sun and the snow may be the reason why white things get a pink tinge, but I still maintain my view, that the pink tinge observed by me and my comrades in some ptarmigans (both females and males) in Peary Land was a quality of the feathers. This is supported by my observation in electric light and the observation of pink tinge a year later in one of the skins brought home. Had it only been a reflection phenomenon, which would also be able to give a pink tinge to so different surfaces as paper, dogskin and ptarmigan feathers it seems unlikely to me that only some of the ptarmigans had this tinge, even if the feathers may undergo some sort of change on the surface in the course of time. I think the phenomenon is comparable with the rosy tinge seen in spring on the breast of *Larus ridibundus* L.

Racial character. Greenland is inhabited by three distinct races of ptarmigans. *L. mutus saturatus* Salomonsen (1950) occurs in Northwest Greenland. *L. m. rupestris* (Gmelin) ranges over the southern part of the west coast and at the southerly part of the east coast up to Kangerdlugssuaq. From here and northwards up to Germania Land *L. m. captus* Peters occurs (Salomonsen 1936). The northern limit of this race was not determined till now.

Table 10 below give the measurements and weights based on the material of D. P. E. Measurements of three females are taken from MØHL-HANSEN (1949). Wing measurements in the table marked \* are from fresh birds, the others from dried skins.

Table 10. Weight and measurements of ptarmigans.

| No. | Sex and age | Date    | Locality           | Weight in g | Total length | Wing | Bill from nostril | Tar-sus | Preparation    |
|-----|-------------|---------|--------------------|-------------|--------------|------|-------------------|---------|----------------|
| 23  | ♂ juv.      | 30/8-48 | Heilprin Ld.       | 650         | 390          | 210  | 10.3              | 38      | skin, food     |
| 172 | ♂ ad?       | 9/10-48 | —                  | ..          | 379          | 203* | 9.6               | 30.8    | skull, food    |
| 297 | ♂ ad.       | 28/2-49 | —                  | 575         | 390          | 206  | 9.1               | ..      | skin, food     |
| 299 | ♂ ad.       | —       | —                  | 525         | 365          | 205* | 10                | ..      | skull          |
|     | ♂ ad.       | —       | —                  | 530         | 385          | 204* | ..                | ..      |                |
|     | ♂ ad.       | —       | —                  | 565         | 392          | 206* | ..                | ..      |                |
| 304 | ♂ ad.       | —       | —                  | 625         | 395          | 209* | 10.3              | ..      | skull, food    |
| 301 | ♂ ad.       | —       | —                  | 565         | 392          | 206* | ..                | ..      |                |
| 305 | ♂ ad.       | —       | —                  | 565         | 391          | 211* | 9.5               | 39.9    | skull          |
| 306 | ♂ ad.       | —       | —                  | 650         | 403          | 211* | 10.9              | 42.5    | food           |
| 307 | ♂ ad.       | 22/2-49 | Erlandsens L.      | 648         | 384          | 209* | 10.3              | ..      | skeleton, food |
| 312 | ♂ ad.       | —       | —                  | 620         | 386          | 207* | 9.8               | ..      | skull, food    |
| 313 | ♂ ad.       | —       | —                  | 550         | 389          | 210* | 10                | ..      | skull, food    |
| 314 | ♂ ad.       | —       | —                  | 635         | 390          | 212* | 10.9              | ..      | skull, food    |
| 326 | ♂ ad.       | 6/3-49  | —                  | 450         | ..           | ..   | 9.0               | ..      | skull, food    |
| 330 | ♂ ad.       | 7/3-49  | Heilprin Ld.       | 600         | 367          | 213  | 10.4              | ..      | skin, food     |
| 333 | ♂ ad.       | —       | —                  | 630         | 398          | 206* | 10.5              | ..      | food           |
| 410 | ♂ ad.       | 2/4-49  | —                  | 500         | ..           | ..   | 9.9               | ..      | skull, food    |
| 422 | ♂ ad.       | 6/4-49  | —                  | 575         | ..           | ..   | 9.0               | ..      | skull          |
| 425 | ♂ ad.       | 19/3-49 | Erlandsens L.      | ..          | 395          | 211* | 9.7               | ..      | skull          |
| 426 | ♂ ad.       | 17/3-49 | Heilprin Ld.       | ..          | 395          | 211* | 10.3              | ..      | skull          |
| 427 | ♂ ad.       | 16/3-49 | —                  | ..          | ..           | 208* | 9.8               | ..      | skull          |
| 35  | ♂           | 20/9-48 | Heilprin Ld.       | 570         | 370          | 194  | 10.1              | 39.3    | skin           |
| 38  | ♂           | 20/9-48 | —                  | 555         | 375          | 202  | 10.0              | 40      | skin           |
| 76  | ♂ ad.       | 3/10-48 | —                  | ..          | 400          | 213  | 9.5               | 37.2    | skin           |
| 96  | ♂ juv.      | 30/9-48 | —                  | 530         | 367          | 199* | ..                | ..      | food           |
| 46  | ♂ ?         | 20/9-48 | —                  | 550         | ..           | ..   | ..                | ..      | food           |
| 47  | ♂ ?         | —       | —                  | 435         | ..           | ..   | ..                | ..      | food           |
| 78  | ♂ ?         | 3/10-48 | —                  | 535         | 360          | 214* | ..                | 39      | food           |
| 94  | ♀ ad.       | 30/9-48 | —                  | 500         | 364          | 191* | ..                | ..      | food           |
| 28  | ♀ ad.       | 1/8-47  | —                  | 430         | 365          | 200  | 9.7               | 30      | skin           |
| 59  | ♀ ad.       | 12/8-47 | —                  | 450         | 358          | 201  | 9.7               | 30      | skin           |
| 309 | ♀ ad.       | 26/2-49 | —                  | 545         | 378          | 199  | 10.6              | 41      | skin, food     |
| 324 | ♀ ad.       | 6/3-49  | Erlandsens L.      | 550         | ..           | ..   | 9.5               | ..      | skull, food    |
|     | ♀ ad.       | 17/3-49 | Heilprin Ld.       | ..          | ..           | 197* | ..                | ..      |                |
| 423 | ♀ ad.       | 29/3-49 | Kap Caroline Marie | 600         | ..           | ..   | ..                | ..      | food           |
|     | ♀ ad.       | 2/4-49  | Erlandsens L.      | ..          | ..           | 193* | ..                | ..      |                |

(continued)

Table 10 (continued).

| No.  | Sex and age | Date    | Locality           | Weight in g | Total length | Wing | Bill from nostril | Tar-sus | Preparation |
|------|-------------|---------|--------------------|-------------|--------------|------|-------------------|---------|-------------|
| 516  | ♀ ad.       | 13/5-49 | Herlufsholm Strand | ..          | ..           | 196  | 9.6               | ..      | skin        |
| 688  | ♀ ad.       | 9/6-49  | Heilprin Ld.       | 580         | 382          | 199  | 9.4               | ..      | skin, food  |
| 1335 | ♀ ad.       | 31/7-49 | — —                | ..          | 370          | 193  | 9.8               | 37      | skin        |
| 95   | ♀ juv.      | 30/9-48 | — —                | 560         | 360          | 203* | ..                | ..      | food        |
| 97   | ♀ juv.      | 5/10-48 | — —                | 560         | 368          | 194* | ..                | ..      | food        |
| 29   | ♀ juv.      | 1/8-47  | — —                | 210         | 255          | 146  | 9.5               | 28      | skin        |
| 80   | ♀ ?         | 4/10-48 | — —                | 500         | 382          | 202  | 9.1               | 34      | skin, food  |
| 98   | ♀           | 9/10-48 | — —                | 600         | 377          | 201  | 9.8               | ..      | skin, food  |
| 300  | ? ad.       | 28/2-49 | — —                | 530         | 385          | 204  | ..                | ..      |             |
|      | ? juv.      | 30/8-48 | — —                | 530         | ..           | ..   | ..                | ..      | food        |

In addition to the bill measurements given in table 10, the following ones were taken on skulls brought home:

Table 11. *Lagopus mutus*.

| No. | Sex   | Bill from nostril | No. | Sex       | Bill from nostril |
|-----|-------|-------------------|-----|-----------|-------------------|
| 451 | ♀ ad. | 9.6               | 419 | ♂ ad.     | 9.4               |
| 506 | ♀ ad. | 9.2               | 413 | ♂ ad.     | 9.3               |
| 424 | ♀ ad. | 9.8               | 505 | ♂ ad.     | 9.6               |
| 414 | ♀ ad. | 9.4               | 420 | ♂ ad.     | 10.2              |
| 416 | ♀ ad. | 9.9               | 313 | ♂ ad.     | 9.5               |
| 415 | ♀ ad. | 9.5               | 411 | ♂ ad.     | 9.6               |
| 417 | ♀ ad. | 9.0               | 418 | ♂ ad.     | 9.6               |
|     |       |                   | 450 | ♀ vix ad. | 9.4               |

The weights of 18 ad. ♂♂ ruled between 450—650 g., and the average was 581 g. The weights of 7 ad. ♀♀ were between 430—600 g. with an average of 522 g., which evidently marks the difference in size of the two sexes. In the literature no weights are normally given (see GELTING 1937 pag. 49). Some weights have been stated by HARRY MADSEN from Disko, West Greenland, where the birds belong to the race *L. m. rupestris*. 5 ♂♂ from here gave an average weight of 527 g. and 4 ♀♀ gave the average 478 g. (SALOMONSEN 1951). Only a few weights were secured at the south base of D. P. E., the region around Clavering Ø, where the ptarmigans had to be classed among *L. m. captus*: No. 45 ♂ 500 g. No. 84 ♂ ad. 520 g. No. 103 ♂ juv. 455 g. No. 85 ♀ ad. 460 g. The weight of 4 ♂♂ given by SCHAANING (1933) had an average of 518 g. These figures

show that the ptarmigans in Peary Land is a good deal heavier than ptarmigans belonging to *L. m. rupestris* from West Greenland, and it is to be expected that the population in Peary Land in this respect is closest to the Northeast Greenland ptarmigan, *L. m. captus*, which in fact is somewhat bigger., but only the few figures above—which cannot be used for comparison—are available.

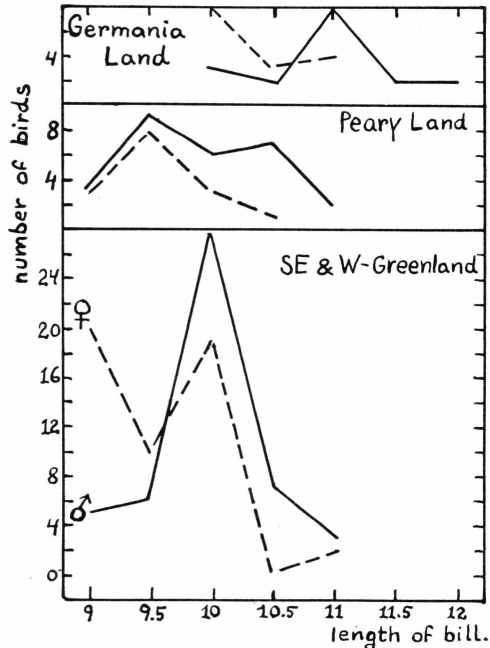


Fig. 9. Graphs illustrating the length of bills of ptarmigans, measured from nostril to point of bill, in different populations in Greenland. The two uppermost sets of graphs represent *L. mutus captus* and the lowermost set *L. mutus rupestris* (inclusive *saturatus*). Plotted partly according to SALOMONSEN (1939).

The colour of the autumn-plumage of the birds of Peary Land is indistinguishable from that of ptarmigans belonging to *L. m. saturatus* in West Greenland.

Discussing the races of *L. mutus* SALOMONSEN (1936) gives the following measurements of length of bill from nostrils in ad. of the three Greenland races. *L. m. rupestris* and *L. m. saturatus*: ♂♂ 9—11,5 mm and ♀♀ 9—11 mm. *L. m. captus*: ♂♂ 10—12 mm and ♀♀ 10—11 mm. In fig. 9 the length of the bill in the two sexes in different regions are plotted. (Figures from Germania Land and SE. & W. Greenland after SALOMONSEN (l. c.)). 14 females from Peary Land had a length of 9—10,6, average length 9,6 mm. 26 ad. males measured 9—10,9 mm, average 9,8 mm. Females and males from Germania Land, terra typica of the

race *L. m. captus*, according to SALOMONSEN had an average length of bill of 10,4 and 10,9 respectively. These figures and the graphs in fig. 9 show that in respect of length from nostril to point of bill the ptarmigans of Peary Land are more in conformity with *L. m. rupestris* than with the population of Germania Land i. e. *L. m. captus*.

Another character used to distinguish the races is the length of the wing from wrist to point of wing. According to SALOMONSEN (1951)

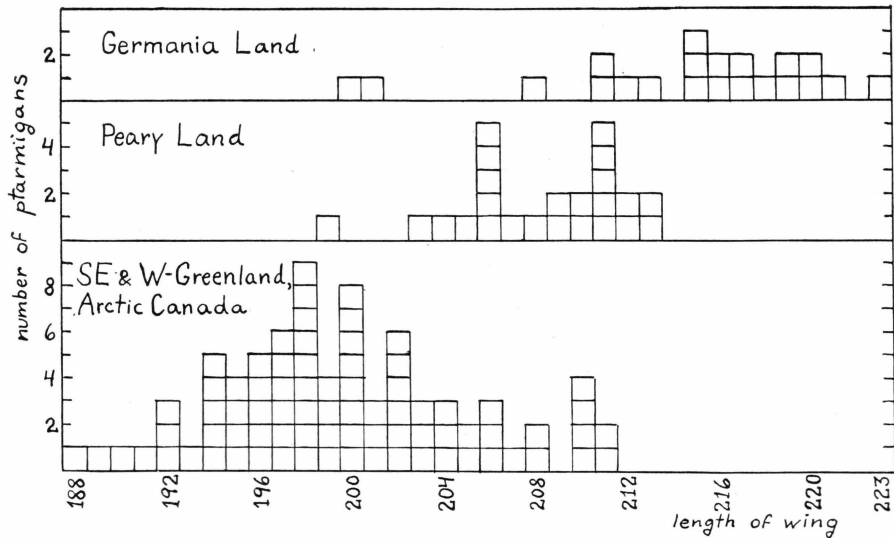


Fig. 10. Wing length of ad. males of ptarmigans from Peary Land compared with other populations. Partly plotted after SALOMONSEN (1936).

*L. m. rupestris* has the following wing length: ♂♂ 190—211 (average 200.6), ♀♀ 183—199 (average 189.5) and *L. m. saturatus*: ♂♂ 188—208 (average 197.5), ♀♀ 181—198 (average 190.1) and *L. m. captus*: ♂♂ 211—223 (average 217.4), ♀♀ 193—207 (average 200.0). In Peary Land 22 ad. ♂♂ had a wing length of 199—213 mm and 9 ad. ♀♀ a wing length of 191—201 mm, the average being: ♂♂ 208, ♀♀ 197. The above figures given for the three races show that the ptarmigans of Peary Land, as regards wing length, cannot be classed among *L. m. captus*, as they do not attain the great wing lengths characteristic of this race, whereas they have somewhat too great wing lengths to be classed among *L. m. saturatus* or *rupestris*. As a matter of fact, the population of Peary Land, in respect of wing length, is intermediate between the populations of West Greenland and the nearby population of Germania Land, as shown in fig. 10.

Summarizing the racial characters of the ptarmigan population of Peary Land we find that some characters point towards *L. m. saturatus*—colour of autumn-plumage, length of bill—and other characters are in accordance with *L. m. captus*—black loreal streak in female and weight—

finally, the wing length is intermediate between the two races. The birds of Germania Land are as mentioned typically *L. m. captus* and the nearest ptarmigans examined west of Peary Land were nearest to this form and for practical reasons should be referred to as *L. m. captus* (SALOMONSEN 1951). Thus it could be expected that the race of East Greenland somewhere in North Greenland would be transitional into the races of West Greenland, this is—what I hope to have shown—actually the case already in Peary Land so close to the terra typica of *L. m. captus*. I therefore think it best to determine the ptarmigans of Peary Land as *L. m. captus*  $\gtrsim$  *L. m. saturatus*, although the fairly big size and heavy weight and black loreal streak in females are characters which place these birds nearest to *L. m. captus*.

This statement of characters in the ptarmigan of Peary Land pointing towards West Greenland is zoogeographically, in accordance with the record here of Snow Goose and an *Euphyllpod* (*Branchinecta* sp.), previously known only from the western side of Greenland.

Bony remains of ptarmigans were excavated at old eskimo settlements in Jørgen Brønlunds Fjord (KNUTH 1951).

Parasites. Only *Mallophaga* found. *Gonocephalus* ? *mammilatus* Rudow was the most numerous species—and occurred on most of the birds shot. *Menopon* ? *lagopi* Grube I could not determine with certainty, as it is not a well described species. The type host was *Lagopus* from Siberia. Finally, *Lagopoecus affinis* (Children), new to Greenland, was found.

*Ringed Plover. Charadrius hiaticula hiaticula* (L.).

*Ægialitis hiaticula* (L.). WINGE 1898. MANNICHE 1910. FREUCHEN 1915.

*Charadrius hiaticula psammodroma* SALOMONSEN. LØPPENTHIN 1932. HØRRING 1935.

Literature. Prior to D. P. E. the following observations were made on the Ringed Plover in Peary Land.  $5/6$ -1912 a single crossing Independence Fjord in a northern direction. The following days one seen now and then on the south coast, but not until  $15/6$  could it be said to be frequent.  $10/7$  one making diverting manoeuvres in Valmuedalen (FREUCHEN 1915). RASMUSSEN (1915 b) saw the species  $28$ - $29/6$ -1912 south east of Valmuedalen.  $3/6$  1921 L. KOCH (1925) saw Ringed Plovers on the eastern part of the south coast and also  $9/6$  at the head of Jørgen Brønlunds Fjord.

West of Peary Land the northernmost observation is from McCormick Bugt (fide WINGE), but it is not as breeding record. Northernmost breeding record from the eastern side of Greenland is Germania Land (MANNICHE 1910).

Notes from the diaries. 1947: All observations are from the south coast of Jørgen Brønlunds Fjord.  $30/7$ , some seen occasionally along the river at the station.  $31/7$  one ♀, 3 ♂♂ and 1 pull. shot, several

seen.  $3/8$  one ad. shot some 700 metres above sea level at a small lake.  $7/8$  one ad. ♀ with two fully fledged young seen.  $9/8$  one ad. ♂ shot.  $10/8$  same.  $12/8$  two juv. shot at the station. 1948:  $31/7$ — $5/8$  Ringed Plovers seen several times at the station.  $7/8$  a number along the river at the station, but farther inland. Both ad. and juv.  $19/8$  two ad. in company with Sanderlings on the beach at the station.  $30/8$  one in the river delta and one on the beach near the station.  $1/9$  a single on the beach on the south side of Jørgen Brønlunds Fjord near the head. 1949:  $2/6$  the first Ringed Plovers observed this year. One was staying on Oksesletten and two were flying away together at great speed towards the west.  $4/6$  two at the station. 1 of them shot.  $11/6$  a single shot on a snow-patch near the station.  $15/6$  many everywhere in the country south of the station, especially on Oksesletten.  $16/6$  one seen on Blomsterstranden.  $21/6$ , a pair has stayed for some days in the riverbed south of the station. One of them feigned injury. Many, often in pairs, on Oksesletten. Two ♂♂ shot here.  $26/6$  one ad. ♂ shot south east of the station.  $28/6$  one ad. ♂ shot at the station.  $8/7$  a few at the station. A number on Oksesletten.  $17/7$  one in company with a Sanderling and a Turnstone on the beach at the station—first sign of the waders gathering before the autumn migration.  $19/7$  one shot *ibid.*  $20/7$  several on meadows in bottom of the valley between head of Jørgen Brønlunds Fjord and Midsommersøen.  $21/7$  some here and there *ibid.*, but closer to the lake.  $22/7$  some at the north coast of Midsommersøen.  $24$ – $25/7$  many in Itukussuks Dal, among others two nearly fully fledged young.  $30/7$  downy young near the station, one of which was ringed. Many ad. on Oksesletten.  $31/7$  one ad. shot *ibid.*  $2/8$  six seen at mouth of Børglum Elv's valley.  $4/8$  in a small valley about 12 kilometres from the coast four pairs were observed. One of the pairs feigned injury.  $10$ – $13/8$  some on the beach at the station.  $14/8$  three juv. were shot. They were seeking their food together in the riverbed at the station. On several occasions such small flocks were observed here during the day. 1950:  $29/7$  a number seen on Oksesletten.  $5/8$ , mountain slope south of the station, some seen.

**Distribution.** The Ringed Plover has been observed all along the south coast of Peary Land, in Jørgen Brønlunds Fjord and far inland in the valley of Børglum Elv, Itukussuks Dal and Wandels Dal. The species has not been mentioned from other localities because they have not been visited during summer time.

**Biology.** The Ringed Plover was one of the most common birds of Peary Land. The earliest observation is from  $2/6$ , when several were met with near the station. Earliest observations by FREUCHEN and L. KOCH were  $5/6$  and  $3/6$  respectively, so the arrival of the species seems to be rather fixed, in the first days of June. In the end of August the species



Food. In table 12 the result of an examination of 13 stomachs, 8 from Peary Land and 5 from the south base in East Greenland, is given. From a quantitative point of view *Chironomidae* imagines, fly larvae and small *Aranea* are the most important part of the food. Only traces of the vegetable constituents were found.

Measurements are given in table 13. Wing measurements marked \* are from fresh birds, the others from dried skins.

Table 13. *Charadrius hiaticula*.

| No.  | Sex age | Date     | Locality               | Weight | Total length | Wing | Bill | Tar-sus | Prepara-tion |
|------|---------|----------|------------------------|--------|--------------|------|------|---------|--------------|
| 22   | ♂ ad.   | 31/7-47  | Jørgen Brønlunds Fjord | 46     | 185          | 131  | 14   | 26.5    | skin         |
| 23   | ♂ ad.   | 31/7-47  | — —                    | 45     | 184          | 126  | 14   | 25      | skin         |
| 24   | ♂ ad.   | 31/7-47  | — —                    | 53     | 184          | 125  | 14.5 | 26      | skin         |
| 42   | ♂ ad.   | 9/8-47   | — —                    | 62     | 185          | 132  | 14.5 | 25      | skin         |
| 48   | ♂ ad.   | 10/8-47  | — —                    | 50     | 185          | 124  | 14   | 26      | skin         |
| 633  | ♂ ad.   | 4/6-49   | Heilprin Land          | 55.2   | 188          | 126  | 13.3 | 25.5    | skin,food    |
| 764  | ♂ ad.   | 21/6-49  | — —                    | ..     | ..           | 127* | ..   | ..      | skull        |
| 768  | ♂ ad.   | 21/6-49  | — —                    | 52     | 184          | 126  | 13.4 | 21.3    | skin,food    |
| 826  | ♂ ad.   | 26/6-49  | — —                    | 49     | 191          | 129  | 13.3 | 24      | skin         |
| 834  | ♂ ad.   | 28/6-49  | — —                    | 62     | 185          | 126  | 13.3 | 24      | skin         |
| 21   | ♀ ad.   | 31/7-47  | Jørgen Brønlunds Fjord | 53     | 188          | 130  | 15.5 | 25      | skin         |
| 691  | ad.     | 11/6-49  | Heilprin Land.         | 48.5   | 185          | 126  | 14.2 | 24.6    | skin,food    |
| 1741 | ad.     | 1-8/8-49 | — —                    | 52.5   | 203          | 134  | 12.5 | 25      | skin         |
| 1770 | ♀ juv.  | 11/8-49  | — —                    | ..     | 182          | 116  | 12   | 23      | skin         |

In the table all measurements from 1947 were taken from MØHL-HANSEN (1949).

The material from Peary Land gives an average weight of 53 g for 9 ad. ♂♂, with a variation of 45—62 g. Average length of wings of 10 ad. ♂♂ is 127 millimeters (variation 124—132) and of their bills 13.8 millimeters (variation 13.3—14). Average length of tarsus of 9 ad. ♂♂ is 24.9 millimeters (variation 21.3—26.5).

The average length of wing of 19 ad. ♂♂ from Northeast Greenland (north of 73°45' NL) given by LØPPENTHIN (1932) is 128.1 millimeters and the average length of 10 ad. ♂♂ from Southeast Greenland (south of Scoresby Sund) calculated from papers by HØRRING (1939) and DEGERBØL & MØHL-HANSEN (1935) is 129.6 millimeters. Thus the wing length in the population of Peary Land does not seem to deviate remarkably in this respect from populations elsewhere in East Greenland.

Parasites. From Heilprin Land *Colpocephalum* sp., *Degeriella hiaticulae* (Müller) and one more species of *Mallophaga* were taken.

*Turnstone. Arenaria interpres interpres* (L.).*Strepsilas interpres* L. MANNICHE 1910. FREUCHEN 1915.

Literature. The following notes are found in the literature on Peary Land. FREUCHEN (1915) writes that the species was seen and heard regularly as long as he stayed in Independence Fjord, i. e. along the inner north coast of the fjord in June and July 1912. Observed in numbers  $^{10}/_6$ -1917 at Low Point by WULFF, where courtship-display was observed (fide SALOMONSEN 1951).  $^4/_6$ -1921 one Turnstone was observed by L. KOCH (1926) on the easternmost part of the south coast.

Notes from the diaries. 1947:  $^{31}/_7$  at the station one juv. ♂ and one juv. ♀ shot.  $^1/_8$  a small flock ibid.  $^2/_8$  at river outlet near head of Jørgen Brønlunds Fjord, a flock of juv.  $^7/_8$  near the station, 2 juv. ♂♂ shot. 1948:  $^2/_8$  ibid. 2 shot.  $^6/_8$  south coast of Jørgen Brønlunds Fjord, many Sanderlings and a few Turnstones. At midnight a flock of 5—6 over the station.  $^8/_8$  ibid., several times Turnstones were seen and heard.  $^{13}/_8$  ibid., a flock of 15—16 migrating at a great altitude towards head of the fjord. Some are going in the river at the station.  $^{19}/_8$  ibid., one at the beach.  $^{27}/_8$ , islet in the fjord, 1 juv. ♀ shot—the last bird of this species observed this year. 1949.  $^3/_6$  at the station, the first Turnstones heard, but not seen.  $^7/_8$ , Oksesletten, 4—5 seen at the newly formed melt water pools.  $^{25}/_6$  three at Klaresø.  $^{28}/_6$  three at the station.  $^8/_7$ , Oksesletten, several ad. and one downy young seen.  $^{17}/_7$  a single on the beach at the station in company with one Sanderling and one Ringed Plover.  $^{30}/_7$  one ad. on Oksesletten.  $^{31}/_7$ , riverbed at the station, 6—7 in a flock.  $^1/_8$  ibid. a few.  $^{10-13}/_8$ , the beach ibid., juv. Turnstones seen.  $^{14}/_8$  ibid. small flocks of Turnstones and Sanderlings flying towards Independence Fjord. 1950:  $^{29}/_7$  some on Oksesletten.  $^5/_8$  some on mountain slope south of the station.

General remarks. The species has been observed at the north coast of Nansen Land and all along the south coast of Peary Land and in the region around Jørgen Brønlunds Fjord, but it is not very frequent. At any rate it is much rarer than Sanderling and Ringed Plover.

In spring the species arrives in the first days of June—according to the earliest observations  $^{3-4}/_6$ . In Germania Land the Turnstone in 1907 and 08 arrived on  $^2/_6$  and  $^{28}/_5$  respectively. A single bird was seen here as early as  $^{22}/_5$ , but this must be considered accidental (MANNICHE 1910). According to verbal information from the meteorological station in Germania Land the first Turnstone in 1949 was seen as early as  $^{17}/_5$ , but this was no doubt also an accidental forerunner.

In Peary Land the ad. birds again disappear in the end of July. In 1947 only juv. birds were seen from  $^{30}/_7$  to  $^{15}/_8$ , i. e. all the time of

our stay this summer (MØHL-HANSEN 1949). Before leaving in the autumn the young Turnstones gather along the beaches of Jørgen Brønlunds Fjord and especially in the outlets of small rivers. Here they normally forage in and at the river mouths, now and then in company with other waders. The last juveniles depart in the end of August—the latest observation being from  $19/8$  and  $27/8$ —but most of them have already disappeared about the middle of August.

It was striking to see how the species before and during the breeding period avoids the coast, where it could always be seen late in the summer.

That the species breeds in the vicinity of the station I evidenced one day while I was walking on Oksesletten, a vast green meadow-like area with pools and rivulets, 80 meters a. s. l. It was  $8/7$ . As usually some Turnstones were seen here, but especially one pair attracted my attention, as they continued to fly around me. I also succeeded in observing one young, about eight days old, which hurried away when I tried to catch it for ringing.

I noticed that the Turnstones contrary to the other waders preferred to rest on the highest stones in their neighbourhood. The other waders always rested on the ground.

**Food.** The result of the investigations on the food of Turnstones is given in table 14. Besides 7 birds from Peary Land 13 from the south base of D. P. E. have been examined. Unfortunately, the stomach content of 2 was quite indeterminable. MANNICHE stated that old Turnstones in Germania Land feed on vegetable as well as animal food. That also juveniles do so in Peary Land is seen from the table. That insects is the most important food during summer in Peary Land as elsewhere (PEDERSEN 1942) is beyond doubt. Regarding the food of those living along the sea-shores farther south in East Greenland, there is a remarkable difference. At Danmarkshavn (MANNICHE), Christian IX's Land (DEGERBØL & MØHL-HANSEN 1935) and at Zackenberg Bugt (according to my own investigations) the diet of the juv. along the sea-shores is mainly made up of *Crustacea*, namely *Amphipoda*. Since these as well as other marine invertebrates are nearly completely lacking along the shores of Jørgen Brønlunds Fjord, the food here is mainly made up of seeds and chaffs of the grass *Puccinellia Andersonii*, one of the very few plants growing on these desert-like shores.

The Turnstone is apparently incapable of separating the seeds from the chaffs, since birds, which had been eating this food contained plenty of chaffs, while the Snow-Buntings nearly always contained seeds only mixed with a few chaffs. The *Brachycera* found in the stomachs could in some cases be identified as meat-flies. It is on record that Turnstones will eat washed-up fishes (fide SALOMONSEN 1951), and that they will

Table 14. Food of

| No. ....  | 1                      | 1683 | 1681 | 1679 | 1760 | 1682 | 1758 |
|---|------------------------|------|------|------|------|------|------|
| Sex .....                                       | ♂                      | ♂    | ♂    | ♂    | ♀    | ♀    | ..   |
| Date .....                                      | 3/8                    | 31/7 | 7/8  | 7/8  | 27/8 | 2/8  | 3/8  |
| Year .....                                      | 48                     | 47   | 47   | 48   | 48   | 47   | 48   |
| Locality .....                                  | Northern Heilprin Land |      |      |      |      |      |      |
| <i>Chironomidae</i> , larva .....               | ++                     | ..   | ..   | ..   | ..   | ..   | ..   |
| <i>Chironomidae</i> , imago .....               | +                      | ..   | +    | ..   | ..   | ..   | ..   |
| <i>Brachycera</i> s. l. ....                    | ..                     | ..   | ..   | ..   | ..   | ..   | ..   |
| Insect-remains indet. ....                      | ..                     | +    | ..   | +    | ..   | +    | ..   |
| <i>Aranea</i> .....                             | ..                     | ..   | ..   | ..   | ..   | ..   | ..   |
| <i>Amphipoda</i> .....                          | ..                     | ..   | ..   | ..   | ..   | ..   | ..   |
| Hairs from carcass .....                        | ..                     | ..   | ..   | ..   | ..   | ..   | ..   |
| <i>Alopecurus alpinus</i> , seeds, chaffs ..... | ..                     | ..   | ..   | ..   | ..   | ..   | +    |
| <i>Puccinellia Andersonii</i> seeds .....       | ..                     | ++   | ..   | +    | ++   | ..   | ..   |
| <i>Polygonum viviparum</i> , seeds .....        | ..                     | ..   | ..   | ..   | ..   | ..   | +    |
| <i>Carex</i> sp. seeds .....                    | ..                     | ..   | ..   | ..   | ..   | ..   | ..   |
| Mosses .....                                    | ..                     | ..   | ..   | ..   | ..   | ..   | ..   |
| Algae .....                                     | ..                     | ..   | ..   | ..   | ..   | ..   | ..   |

also eat mammalian carcasses is indicated by the hairs, presumably from a sledge-dog, found in one of the birds. At a place in Zackenberg Bugt where some Norsemen were salting Charrs on a large scale a number of juveniles was always assembled. But normally I think that the birds are attracted by the carcasses mostly on account of the numerous flies. A few birds shot on carcasses only contained the different stages of meat-flies.

Parasites. One species of *Mallophaga* secured.

*Sanderling. Crocethia alba* (Pallas).

*Calidris arenaria* L. FREUCHEN (1915 a).

*Crocethia alba* (Pallas). SALOMONSEN (1951).

Literature. Prior to D. P. E. the Sanderling was recorded by FREUCHEN, who in 1912 in Valmuedalen saw an ad. with 4 still downy young. North of this valley he noted  $\frac{9}{6}$  5—6 broods of young Sanderlings.  $\frac{11}{6}$ -1917 WULFF shot and skinned 1 ad. ♀ at Low Point (fide SALOMONSEN 1951).

*Arenaria interpes* juv.

|                |                |                |                |                |                |                |                       |      |      |      |      |                |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-----------------------|------|------|------|------|----------------|
| 1724           | 1723           | 1722           | 1721           | 1720           | 1718           | 1680           | 1677                  | 1676 | 1674 | 1675 | 1678 | 1719           |
| ..             | ..             | ..             | ..             | ..             | ..             | ..             | ..                    | ..   | ..   | ..   | ..   | ..             |
| $\frac{25}{8}$ | $\frac{25}{8}$ | $\frac{23}{8}$ | $\frac{21}{8}$ | $\frac{21}{8}$ | $\frac{21}{8}$ | $\frac{18}{3}$ | Second half of August |      |      |      |      | $\frac{25}{8}$ |
| 47             | 47             | 47             | 47             | 47             | 47             | 47             | 47                    | 47   | 47   | 47   | 47   | 47             |

## Zackenbergt Bugt

|    |    |    |    |    |    |    |    |    |    |    |   |   |
|----|----|----|----|----|----|----|----|----|----|----|---|---|
| .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | i | i |
| .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | n | n |
| +  | +  | .. | .. | .. | ++ | +  | .. | .. | .. | .. | d | d |
| +  | +  | .. | .. | .. | .. | +  | +  | .. | +  | .. | e | e |
| .. | .. | .. | .. | .. | +  | .. | .. | .. | +  | .. | t | t |
| .. | .. | .. | ++ | +  | .. | +  | .. | +  | +  | +  | r | r |
| .. | .. | +  | .. | .. | .. | .. | .. | .. | .. | .. | m | m |
| .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | i | i |
| .. | .. | .. | .. | .. | .. | +  | .. | .. | .. | .. | n | n |
| .. | .. | .. | .. | .. | .. | +  | .. | .. | .. | .. | a | a |
| .. | .. | .. | .. | .. | .. | +  | .. | .. | .. | .. | b | b |
| .. | .. | .. | .. | .. | .. | +  | .. | .. | .. | .. | l | l |
| .. | .. | .. | .. | .. | .. | +  | +  | +  | +  | +  | e | e |
| +  | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |   |   |
| .. | .. | +  | .. | .. | .. | .. | .. | .. | .. | .. |   |   |

Table 15. *Arenaria interpes*.

| No.  | Sex age | Date     | Locality               | Weight | Total length | Wing | Bill | Tarsus | Preparation |
|------|---------|----------|------------------------|--------|--------------|------|------|--------|-------------|
| 690  | ♀ ad.   | 7/6-49   | Heilprin Land          | 126    | 225          | 143  | 22.6 | 27.8   | skin        |
|      | ♀ juv.  | 27/8-48  | Jørgen Brønlunds Fjord | ..     | ..           | 155* | 20   | 26.3   |             |
| U 2  | juv.    | 3/8-48   | — —                    | 84     | 229          | 148  | 19.7 | 26.4   | skin,food   |
| U 1  | juv.    | 3/8-48   | — —                    | 96     | 242          | 152  | 21.6 | 26.9   | skin,food   |
| 1772 | ♀ juv.  | 1.8/8-48 | — —                    | ..     | 233          | 149  | 20.2 | 25.9   | skin        |

The wing length marked \* is from a fresh bird, the others from dry skins. Weights and measurements of 4 juv. more are given by MØHL-HANSEN (1949).

Notes from the diaries. 1947: Last days of July some seen at the station. 3/8 a flock in rivermouth near head of Jørgen Brønlunds

Fjord on the southern side. Newly hatched young in riverbed at the station, 1 ad. ♂, 1 juv. ♂ and 1 pull. shot (MØHL-HANSEN 1949).  $\frac{6}{8}$  one at Klaresø. 1948:  $\frac{31}{7}$  three shot on the beach at the station.  $\frac{2}{8}$  many waders, especially Sanderlings on south coast of Jørgen Brønlunds Fjord.  $\frac{6}{8}$  many on the beach near the station, especially at rivermouths.  $\frac{15}{8}$  a little flock *ibid.*  $\frac{17}{8}$  a flock of 16 at rivermouth at the station.  $\frac{18}{8}$  a single *ibid.*  $\frac{19}{8}$  a few *ibid.*  $\frac{30}{8}$  southern shore of Jørgen Brønlunds Fjord at the head, some times small flocks observed.  $\frac{31}{8}$  *ibid.*, a number.  $\frac{7}{9}$  a single at the station. 1949:  $\frac{2}{6}$  two at the station, the first ones seen this year, flying to the east. 2 seen at Klaresø and 2 on Okseletten. The two at the lake performing courtship display.  $\frac{3}{6}$  two shot in riverbed at station and 1 at the shore. Several flocks numbering about 14—15 seen.  $\frac{4}{6}$  several times small flocks at the shore as well as in the riverbed at station.  $\frac{5}{6}$  a few kilometers SW of Kap Knud Rasmussen, Sanderling observed.  $\frac{6}{6}$  one ad. ♀ shot in riverbed at station.  $\frac{7}{6}$  many on Okseletten.  $\frac{8}{6}$  Blomsterstranden, about 20 kilometers from Kap Knud Rasmussen, Sanderling observed.  $\frac{15}{6}$  some on Okseletten.  $\frac{21}{6}$  a number in pairs *ibid.*, 1 shot.  $\frac{30}{6}$  three on the shore at station.  $\frac{17}{7}$  *ibid.*, 1 in company with a Ringed Plover and a Turnstone.  $\frac{22}{7}$  some at eastern end of Midsommersøen.  $\frac{23}{7}$  *ibid.*, 1 feigning injury. No doubt young near-by.  $\frac{24}{7}$  a few in Itukussuks Dal.  $\frac{30}{7}$  one ♀ shot near the station. A few juv. on Okseletten.  $\frac{2}{8}$  entrance to the valley of Børglum Elv, some seen, 2 shot.  $\frac{8}{8}$  a few at the station.  $\frac{9}{8}$  some *ibid.*,  $\frac{10-13}{8}$  some seen at the shore near the station.  $\frac{14}{8}$  *ibid.*, small flocks of Sanderlings and Turnstones flying towards Independence Fjord, all juv. 1950:  $\frac{28}{7}$ — $\frac{12}{8}$  Sanderlings observed around the station.  $\frac{10}{8}$  many in the rivermouth at the station.

Distribution. The species has been observed along the entire south coast of Peary Land, from the easternmost part to Blomsterstranden, and it was met with around Jørgen Brønlunds Fjord, in the valley of Børglum Elv, in Itukussuks Dal, Valmuedalen and far inland at the western end of Midsommersøen. Breeding no doubt occurs in all these places. From the north coast a single record exists.

General remarks. In Peary Land the Sanderling is no doubt the most common of the waders apart from the Ringed Plover.

The arrival in spring takes place in the first days of June; the first ones were observed  $\frac{2}{6}$  (1949), and in the following days flocks of up to 20 individuals were seen. My earliest date of observation agrees very well with that of L. KOCH (1925), who  $\frac{3}{6}$  (1921) observed the earliest "ryler" in Peary Land. I think these "ryler" have been Sanderlings. The last departures of the ad. birds are about the first half of August and the greater part of the juv. depart in the second half of August.

Table 16. Food of *Crocethia alba*.

| No. ....  | 612                    | 614 | 1422 | 1690 | 1673 | 1715     | 608 | 770 | 694 | 1713       | 1716 |
|---|------------------------|-----|------|------|------|----------|-----|-----|-----|------------|------|
| Sex .....   | ..                     | ..  | ..   | ..   | ♀    | ..       | ♂   | ♂   | ♀   | ..         | ..   |
| Age .....   | ..                     | ..  | ..   | pull | ad.  | juv.     | ad. | ad. | ad. | juv.       | juv. |
| Date .....  | 3/6                    | 3/6 | 30/7 | 8/8  | 8/8  | 9/8      | 2/6 | 2/6 | 6/6 | 18/8       | 19/8 |
| Year .....  | 49                     | 49  | 49   | 47   | 47   | 47       | 49  | 49  | 49  | 47         | 47   |
| Locality .....  | Jørgen Brønlunds Fjord |     |      |      |      |          |     |     |     | Zackenbugt |      |
| <i>Chironomidae</i> imago .....                         | ..                     | ..  | ..   | +    | +    | ..       | 2   | ..  | ..  | ..         | ..   |
| <i>Chironomidae</i> larva .....                         | ..                     | +   | +    | ..   | ..   | i        | ++  | +   | ..  | ..         | ..   |
| <i>Brachycera</i> s.l. immature .....                   | ..                     | +   | ..   | ..   | ..   | {n<br>d} | +   | ++  | ..  | ++         | ..   |
| <i>Brachycera</i> s.l. imago .....                      | ..                     | ..  | ..   | +    | ..   | {e<br>t} | ..  | ..  | ++  | ..         | ..   |
| <i>Aranea</i> .....                                     | ..                     | 1   | ..   | ..   | ..   | {e<br>m} | 10  | +   | ..  | ..         | ..   |
| <i>Collembola</i> .....                                 | ..                     | ..  | ..   | ..   | 1    | {i<br>n} | ..  | ..  | ..  | ..         | ..   |
| Insect-remains indet. ....                              | ..                     | ..  | +    | ..   | +    | {a<br>b} | ..  | ..  | ..  | ..         | ..   |
| <i>Amphipoda</i> .....                                  | ..                     | ..  | ..   | ..   | ..   | {l<br>e} | ..  | ..  | ..  | ..         | ++   |
| <i>Puccinellia Andersonii</i> seeds<br>and chaffs ..... | ++                     | ?   | ..   | ..   | ..   | ..       | +   | ..  | ..  | ..         | ..   |
| <i>Polygonum viviparum</i> bul-<br>bils .....           | ..                     | ..  | ..   | 2    | ..   | ..       | ..  | ..  | ..  | ..         | ..   |
| Mosses .....  | ..                     | +   | ..   | +    | ..   | ..       | +   | ..  | ..  | ..         | ..   |
| <i>Glumales</i> (excl. seeds) ....                      | ..                     | +   | ..   | +    | ..   | ..       | ..  | ..  | ..  | ..         | ..   |
| Vegetable matter indet. ...                             | ..                     | +   | +    | ..   | ..   | ..       | ..  | ..  | ..  | ..         | ..   |

In that month small flocks can always be seen along the shores. The last flock was seen in Jørgen Brønlunds Fjord  $31/8$  (1948), when the permanent frost had just started. The latest observation, a single bird, was on  $7/9$ , when the fjord had already been covered with thin ice.

Evidence of the breeding of the species in the area under consideration is found in the observations of newly hatched and downy young at the station in Jørgen Brønlunds Fjord and in Valmuedalen. Sanderlings were seen in pairs throughout the summer on Oksesletten, and one shot had incubation patch. Also at the western end of Midsommersøen good evidence of breeding was delivered by a bird acting as if deadly hurt on a *Dryas*-grown slope facing the beach of the lake, but I did not succeed in finding the young.

The longest of the testes from the birds no. 608, no. 770 and no. 908 measured 11.6, 12.9 and 10.4 millimeters respectively. The length of the biggest egg in the ovary from birds no. 611, 612, 614, and 694 was 3.4, 2.6, 2.8, and 2.3 millimeters respectively.

Measurements. See table 17.

Table 17. *Crocethia alba*.

| No.  | Sex age | Date    | Locality               | Weight | Total length | Wing  | Bill | Tarsus | Preparation |
|------|---------|---------|------------------------|--------|--------------|-------|------|--------|-------------|
| 2    | ♂       | 31/7-48 | Jørgen Brønlunds Fjord | 52     | ..           | 119   | 20.5 | 24.5   | skin        |
| 5    |         | 31/7-48 | —                      | 42     | 200          | 122   | 23   | 25     | skin        |
| 35   | ♀ ad.   | 3/8-47  | — —                    | 47     | 195          | 124   | 23   | 25     | skin        |
| 36   | ♂ pull. | 3/8-47  | — —                    | 19     | 105          | ..    | 13   | 21     | skin        |
| 39   | ♂ juv.  | 5/8-47  | — —                    | 50     | 185          | 118   | 24   | 25     | skin        |
| 608  | ♂ ad.   | 2/6-49  | Heilprin Land          | 51     | 196          | 124   | 29.9 | 25     | skin        |
| 611  | ♀ ad.   | 3/6-49  | — —                    | 51.5   | 187          | 121.5 | 24.4 | 23     | skin        |
| 612  | ♀ ad.   | 3/6-49  | — —                    | 60     | 188          | 122   | 23.8 | 24.7   | skin,food   |
| 614  | ♀ ad.   | 3/6-49  | Jørgen Brønlunds Fjord | 53.5   | ..           | 120   | 26   | 24.9   | skin,food   |
| 694  | ♀ ad.   | 6/6-49  | Heilprin Land          | 51.9   | 187          | 124   | 26.2 | 25.9   | skin        |
| 908  | ♂ ad.   | 30/6-49 | — —                    | ..     | 177          | 117.8 | 23.2 | 22.7   | skin        |
| 1761 | ♀       | 31/7-48 | — —                    | 55     | 198          | 123.7 | 23.9 | 25.5   | skin        |
| 1762 | ♂       | 30/7-49 | — —                    | 45.8   | 188          | 113   | 22   | 25.3   | skin        |
| 770  | ♂ ad.   | 21/6-49 | — —                    | 49     | 184          | 119   | 22.6 | 23.3   | skin,food   |

Food. Analysis of the stomach content of 8 birds from Peary Land and 2 from the south base is given in table 16. As mentioned under Turnstone the *Crustacea*, which form the chief diet along the shores farther south in Greenland, is out of question in Jørgen Brønlunds Fjord, On account of this the Sanderling while staying along the beaches has to subsist on vegetable matter, and here the grass *Puccinellia Andersonii* again is the more important species. When the Sanderling is eating seeds of grasses it is swallowing a lot of chaffs, like the Turnstone, but contrary to the Snow-Bunting, which very carefully separates the seeds from the chaffs. In one Sanderling the seeds of this grass made up 100 per cent of the stomach content.

“*Glumales*” in table 16 was only represented by a single piece of a leaf and one anther of grass. Mosses were present in very small amounts only. The figures in the table indicate numbers of individuals or seeds.

Parasites. One species of *Trematoda* and one of *Mallophaga* collected.

*Knot. Calidris canutus* (L.).

*Tringa canutus* L. MANNICHE 1910.

The Knot was only observed once during the expedition. It was a juv. female which 28/7-49 came flying from west over the station. It stopped in the riverbed, but only to be shot as a proof of occurrence of the species in Peary Land. Northernmost record of the Knot in West Greenland is according to the literature Thank God Harbour on Hall Land

(fide WINGE 1898). From the east coast it had previously been observed as far north as Germania Land (MANNICHE 1910).

As the species is breeding in Ellesmere Land, Northwest Greenland and Spitsbergen it is not excluded that it may be breeding in the area treated here.

The food of the secured specimen consisted exclusively of seeds and chaffs of *Puccinellia*.

Material brought home:

Table 18. *Calidris canutus*.

| No.  | Sex age | Locality      | Date    | Weight | Wing | Bill | Tar-<br>sus | Prepara-<br>tion |
|------|---------|---------------|---------|--------|------|------|-------------|------------------|
| 1320 | ♀ juv.  | Heilprin Land | 28/7-49 | 115    | 116  | 30.7 | 35.6        | skin food        |

The specimen was infested with a number of a not yet determined Mallophaga.

*Dunlin. Calidris alpina arctica* (Schjølter).

*Tringa alpina* L. MANNICHE 1910.

This species is not previously recorded from Peary Land. It is true that RASMUSSEN (1915 b) and KOCH (1925) mention "Ryler" (i. e. Dunlins), but no doubt this means Sanderlings, which are very common in Peary Land.

Only a single specimen was secured 15/6-1949, an ad. ♂, infested with *Mallophaga* and *Cestoda*. Size of biggest testes 8.9 millimetres.

Besides this specimen secured, HOLMEN saw a few more individuals, all on Oksesletten in the vicinity of the station.

Material brought home.

Table 19. *Calidris alpina*.

| No. | Sex age | Locality      | Date    | Weight | Total<br>length | Wing | Bill | Tar-<br>sus | Prepara-<br>tion |
|-----|---------|---------------|---------|--------|-----------------|------|------|-------------|------------------|
| 707 | ♂ ad.   | Heilprin Land | 15/6-49 | 39     | 169             | 108  | 25.0 | 22.0        | skin food        |

*Grey Phalarope. Phalaropus fulicarius* (L.).

This species has never been recorded from Peary Land. The northernmost record from East Greenland is Germania Land (MANNICHE (1910), a place which PEDERSEN (1942) holds to be the northern limit of breeding in East Greenland. From Ellesmere Land and Fridtjof Nansen Land (Franz Josef Land) it has been recorded as breeding farther north than in Greenland (RENDAHL 1936).

The Grey Phalarope was only observed twice during the expedition. I never saw it myself, but our Greenlander, KARL FILEMONSEN, a good connoisseur of birds, maintained to have seen a single one  $^{25}/_6$ -1949. The following summer a single bird only was observed,  $^{24}/_6$  by KNUTH west of Glaciolog Elv.

*Long-tailed Skua. Stercorarius longicaudus pallescens* Løppenthin.  
*Lestris longicauda* (Viell.). MANNICHE 1910. FREUCHEN 1915.

Literature. 1912 FREUCHEN (1915 a) observed a flock of seven flying across Independence Fjord toward Peary Land.  $^5/_6$  many were seen along the south coast of Peary Land.  $^6/_7$  several pairs were found breeding or they had possibly already chicks. RASMUSSEN (1915 b) records a few  $^6/_6$ -1912 from the south coast of Peary Land and mentions that some were shot *ibid.*  $^{11}/_6$ — $^{16}/_6$ . The records of skuas, given by RASMUSSEN (1919), at the mouth of J. P. Kochs Fjord no doubt refer to the Long-tailed Skua. Here on  $^8/_6$  he observed many skuas over the camp and others were sitting on a mountain slope.  $^3/_6$ -1921 KOCH (1925) observed the species on the eastern part of the south coast of Peary Land.

Notes from the diaries. 1947 and 1948: none observed. 1949:  $^4/_6$  three at Kap København.  $^5/_6$  a number on Kjovesletten, one of which was shot.  $^7/_6$  two were shot west of Kjovesletten, about  $21^\circ$  WL.  $^9/_6$  one shot near Diabasnæs, south coast of Heilprin Land.  $^{13}/_6$  one flying along south coast of Jørgen Brønlunds Fjord and one at Kap Knud Rasmussen.  $^{15}/_6$  two over the station.  $^{16}/_6$  one at Blomsterstranden.  $^{19}/_6$  one over the station.  $^{14}/_7$  one swooping down near the station. 1950:  $^1/_6$  one at east coast of Hagens Fjord.

General remarks. The Long-tailed Skua has been observed at the head of J. P. Kochs Fjord, along the south coast of Peary Land, in Jørgen Brønlunds Fjord and at Blomsterstranden and in Valmuedalen. I never found any evidence of breeding, but according to FREUCHEN it does breed in Peary Land. As the species was not observed in 1947, 1948 and 1950 the species will no doubt only stay here and breed when the lemmings are sufficiently abundant, as is the case is in Germania Land (MANNICHE 1910). 1950 a single bird was seen  $^1/_6$  on south coast of Independence Fjord.

The arrival at Peary Land takes place in the first days of June. The earliest observations for the different years are as follows: 1912:  $^4/_6$ . 1917:  $^8/_6$ . 1921:  $^3/_6$  and 1949:  $^4/_6$ . Thus the arrival here is just as early as in Germania Land, where the earliest observations are: 1907:  $^5/_6$ . 1908:  $^{28}/_5$  (MANNICHE 1910). 1939:  $^6/_6$  (PEDERSEN 1942). The dates for the autumn migration I have not been able to state.

As pointed out by LØPPENTHIN (1932) it is very likely that the

Long-tailed Skuas of Northeast Greenland during their migration are able to cross the inland ice.

From <sup>28</sup>/<sub>8</sub>-1912 FREUCHEN's (1915) observation of a flock numbering 5 flying over the inland ice in a westerly direction (78°35' NL, about 58° WL) shows that this is not only likely but a fact. He writes, "they were flying very fast, giving the impression that they were bound on some definite errand across the inland ice." I therefore venture the supposition that the skuas of Peary Land most likely, as the populations of entire East Greenland, migrate west-east or southwest-northeast. A fact speaking in favour hereof is that the times of arrival at Peary Land and the more southern Germania Land in spring practically coincide, as already mentioned. If the population of Peary Land in spring was migrating north along the east coast the species would have been observed earlier at Germania Land. That the migration in the autumn from the east coast of Greenland takes place in a westerly direction over the inland ice is also indicated by the fact that the species is rare and only met with accidentally in Southeast Greenland. Along Kong Christian IX Land only a few were observed in 1932 (DEGERBØL and MØHL-HANSEN 1935) and during VI and VII. Thule Expeditions to the south east coast 1931—33 the species was not seen at all (HØRRING 1939). At Angmagssalik it is stated to be merely an accidental guest (HELMs 1926).

An analysis of the stomach content of two individuals from Peary Land (no. 703 and 687) revealed young lemmings as the only food item.

Of ectoparasites were found a species of *Mallophaga* and a species of mite. Biggest testes of no. 703 measured 12.7 millimetres.

Material brought home: See table 20.

Table 20. *Stercorarius longicaudus*.

| No. | Sex age | Locality          | Date                            | Weight | Total length | Wing | Bill | Tarsus | Preparation |
|-----|---------|-------------------|---------------------------------|--------|--------------|------|------|--------|-------------|
| 703 | ♂ ad.   | Near Kjovesletten | <sup>7</sup> / <sub>6</sub> -49 | 350    | 541          | 310  | 25.8 | 39.8   | skin        |
| 704 | ♀ ad.   | Heilprin Land     | <sup>9</sup> / <sub>6</sub> -49 | ..     | 585          | 310  | 26.3 | 40.9   | skeleton    |
| 687 | ♀ ad.   | Kjovesletten      | <sup>5</sup> / <sub>6</sub> -49 | 380    | 555          | 293  | 26.1 | 39.6   | skin        |

According to the colouration of the bellies the birds secured from Peary Land must be referred to *S. l. pallescens* Løppenthin since the bellies of two specimen were very light and of one specimen somewhat less light than types A and B in fig. 23 in the paper by LØPPENTHIN (1932).

*Glaucous Gull. Larus hyperboreus* Gunnerus.

*Larus glaucus* Brünn. WINGE 1898. MANNICHE 1910. FREUCHEN 1915.

Literature: FREUCHEN (1915) is the first to mention the species from Peary Land. <sup>8</sup>/<sub>6</sub> he saw one flying west along the south coast. <sup>9</sup>/<sub>6</sub> ibid.

one seen and  $14/6$  five were seen flying west. These observations were all made in 1912. RASMUSSEN (1919) writes:  $8/6$ -1917 at the mouth of J. P. Kochs Fjord "three gulls", but without statement as to species, which no doubt was the species discussed here. A gull seen the same day at Kap Benét is called *Larus glaucus* (= *hyperboreus*). Finally, KOCH (1925) 1921 saw gulls in the easternmost part of the south coast, where one was killed  $4/6$ , and he also observed one gull at the mouth of Jørgen Brønlunds Fjord.

The northernmost point west of Peary Land where the species is known to breed is Littleton Ø according to KANE and STONE (fide WINGE 1898). On the east coast the northernmost breeding place according to the literature, was Jøkelbugten (PÆDERSEN 1942), but Manniche (1910) supposes that it breeds at Mallemukfjeldet.

Notes from the diaries. 1947:  $31/7$  Glaucous Gulls seen now and then at the station.  $4/8$ , 1 ibid.  $13/8$ , 1 at the north coast of Jørgen Brønlunds Fjord. 1948:  $8/8$ , 1 over the station.  $26/8$ , 1 flying out Jørgen Brønlunds Fjord.  $27/8$ , 1 going towards the head of the fjord. 2 seen in the mouth of the fjord.  $28/8$ , 1 passing the station going west—later again 1 at the station.  $31/8$ , 1 going west at the station. At the head of the fjord a few times 1 over my tent.  $1/9$ , ibid. some gulls over the tent. During a trip by motor-boat into the big delta at the head of the fjord gulls were seen in the air and sitting on the flat clay banks which are numerous here. 2 ad. were attacking and scolding.  $2/9$ , twelve in a flock going west very high up passing the station, where they circled for a moment before they took up their course. In the delta at the head of the fjord 10 were seen in a flock.  $3/9$  one juv. shot and one ad. seen ca. 12 kilometers from the coast in the valley of Børglum Elv. In the evening 7, 4 ad. and 3 juv., at a height of about 200 meters along the northern side of Jørgen Brønlunds Fjord flying to the west. Later one going out the fjord along the south coast.  $5/9$  one juv. on ice-floe at the station. Three seen at the eastern end of Midsommersøen.  $6/9$  one passing the station towards west, flying low. Later first 3 juv. and then 1 juv. going out the fjord. A short time after 1 juv. going in the fjord. 1 juv. sitting on the beach at a skin of a seal.  $8/9$ , 1 ad. and 1 juv. at the station.  $9/9$  one ibid.  $10/9$  one ibid. 1949:  $27/5$ , 1 flying in a straight course over the stream narrowing in Midsommersøen.  $28/5$  a pair at Kap Vaarbrud of which the male was shot.  $29/5$ , basalt wall on south coast of Midsommersøen with a dozen of guano blotches under shelves. Two Glaucous Gulls sitting on the breeding places performed a scolding attack. The place was again visited in the night and now there were 7 gulls on the wall.  $31/5$  two over the station coming from the west.  $1/6$  two on islet in Jørgen Brønlunds Fjord, one in the mouth

of the fjord and foot prints at the breathing hole of a seal *ibid.*  $\frac{5}{6}$  five about 5 kilometers southwest of Kap Knud Rasmussen.  $\frac{7}{6}$  a couple shot at hatching place on steep basalt wall at mouth of Saxifragadal.  $\frac{8}{6}$  three seen at shot seals off Kap Ejnar Mikkelsen.  $\frac{10}{6}$  one flying north in the middle of Independence Fjord south of Jørgen Brønlunds Fjord.  $\frac{13}{6}$  one at a dog's carcass on the fjord ice off the station.  $\frac{15}{6}$  one flying over Oksesletten.  $\frac{21}{6}$  one was seen at the station twice in one day.  $\frac{12}{7}$  two on the fjord at the station.  $\frac{20-26}{7}$  in the eastern part of Midsommersøen some seen now and then.  $\frac{22}{7}$  *ibid.* several on ice floes in shallow bay on north coast.  $\frac{24}{7}$  one seen in Itukussuks Dal.  $\frac{28}{7}$  one over the fjord at the station.  $\frac{1}{8}$  one *ibid.*  $\frac{3}{8}$  in the valley of Børglum Elv about 6 kilometers from the coast one gull scolding and swooping down on the observer, later on one more seen at the river.  $\frac{8}{8}$  same two birds seen again *ibid.*  $\frac{10-13}{8}$  a few seen along the beach near the station.  $\frac{14}{8}$  one over the beach *ibid.* 1950:  $\frac{5}{5}$  one at north coast of Fr. E. Hyde Fjord, east of Friggs Fjord.  $\frac{8}{5}$  one at Kap Ole Chiewitz.  $\frac{28}{7}$ — $\frac{12}{8}$  a single gull often seen going in or out Jørgen Brønlunds Fjord.

General remarks. The Glaucous Gull is far from numerous, but along the coasts and inland at big lakes and along rivers it may be met with now and then.

The species has been observed the following places: mouth of J. P. Kochs Fjord, Sverdrups Ø, Itukussuks Dal, valley of Børglum Elv, Midsommersøen, Blomsterstranden. Kap Ejnar Mikkelsen, northern Heilprin Land, south coast of Peary Land, Kap Vaarbrud and in the middle of Independence Fjord. South of Peary Land it was observed in Saxifragadal.

The arrival of the species is surprisingly early, i. e. in the end of May, when it was observed in the western as well as the easternmost Peary Land. The earliest observations were  $\frac{25}{5}$  and  $\frac{28}{5}$ ; from then on the species was observed regularly. The arrival coincided with the first positive temperatures measured, but rivers, lakes and fjords were still covered with thick ice.

The autumn migration takes place in the very beginning of September. The latest observation was  $\frac{10}{9}$ . A single observation in the spring indicates that some of the Glaucous Gulls of Peary Land reach this land coming from the west. When a breeding colony in Midsommersøen was passed in the end of May 1949 the breeding-place had not yet been populated, but when we travelled westward a gull was seen flying in a straight course towards east. On the way back a couple of days later the breeding place was visited again and was now found to be inhabited by 2 gulls and later in the day by seven. The first gulls observed at the station in Jørgen Brønlunds Fjord also came from the west. The observations of gulls in

this fjord during the autumn migration also left the impression, that the route went towards west.

The gulls observed at the breeding-place at Midsommersøen was the earliest record in the spring, which shows that the gulls go to the breeding-places immediately after their arrival—which is not the case more to the south. For instance at Scoresby Sund they arrive one month before they go to the breeding-places (PEDERSEN 1930).

Another breeding-place was found  $\frac{7}{6}$  south of Peary Land in the mouth of Saxifragadal, where a pair had already taken possession of their shelf. Only one pair bred there and the presence of only one guano blotch indicated that the place during the preceding years also had been occupied by a single pair only. This and the afore mentioned breeding-place found by D. P. E. was typically placed on steep rock-walls made up of basalt. The one on the southern side of Midsommersøen, some 30 kilometers from the head of Jørgen Brønlunds Fjord, was a small colony consisting in 1949 of at least 4 pairs, but the number of guano-blotches on the wall was about 12. One of these at least originated from a pair of falcons breeding in the colony of gulls. Judging from the number of juvenile birds seen late in the summer in Jørgen Brønlunds Fjord it should be possible to find more colonies or singly breeding pairs in Peary Land.

Studying records on the diet of the Glaucous Gulls in Greenland, which mainly consisted of marine animals, I wondered how they were able to subsist during the first period after their arrival. Contents of a few stomachs showed the following food items:

No. 27. White hairs of lemming.

No. 741. White hairs of lemming.

No. 986. Two intact lemmings.

At this time the birds no doubt live on lemmings. This is of interest since no previous author has found lemmings in Glaucous Gull in Greenland. From arctic Canada lemmings have been recorded as prey of this gull. Else the species in Peary Land as elsewhere in Greenland is able to subsist on the dung of seals left on the ice at the breathing-holes and of Charrs (*Salvelinus alpinus*), furthermore on shoals of *Mycidaceae*—seen along the coasts of Jørgen Brønlunds Fjord—and polar cod. In Midsommersøen I had the opportunity of observing the gulls fishing in a shallow bay, where they were taking the small Charrs which were abundant here.

Only one parasite, a species of *Degeriella* (*Mallophaga*), was observed on the specimen secured.

Material brought home:

Table 21. *Larus hyperboreus*.

| No. | Sex age | Locality      | Date    | Weight | Total length | Wing | Bill | Tar-sus | Preparation |
|-----|---------|---------------|---------|--------|--------------|------|------|---------|-------------|
| 27  | ♂ juv.  | Melville Land | 3/9-48  | 1550   | 675          | 443  | 57.6 | 75.6    | skin        |
| 741 | ♂ ad.   | Saxifragadal  | 7/6-49  | 1750   | 712          | 475  | 63.3 | 74.3    | skin food   |
| 986 | ♀ ad.   | Saxifragadal  | 7/6-49  | ..     | ..           | ..   | 52.0 | ..      | skeleton    |
| 631 | ♀ ad.   | Kap Vaarbrud  | 28/5-49 | ..     | ..           | ..   | 52.0 | ..      | skull       |

*Arctic Tern. Sterna paradisaea* Pontoppidan.

*Sterna macrura* Naumann. WINGE 1898. MANNICHE 1910. FREUCHEN 1915.

Literature. Prior to D. P. E. only FREUCHEN (1915) recorded Arctic Tern from this area. 12/6-1912 he saw two in Independence Fjord and 13/6 five.

West of Peary Land the northernmost breeding record of this species is from Thank God Harbour (fide WINGE 1898). The northernmost breeding place in East Greenland according to literature was Germania Land (MANNICHE 1910). Farthest north the species was seen by PEARY (1907) at Cape Fanshaw Martin, ca. 83° NL on the north coast of Grant Land.

Notes from the diaries. 1947: Seen daily along the coast at the station during the first half of August (MØHL-HANSEN 1949). 1948: 2/8 five terns in Jørgen Brønlunds Fjord. 17/8, one seen at the station. 20/8 one fishing at the river ibid. 24/8 one fishing ibid. 27/8 four-five terns over islet in Jørgen Brønlunds Fjord. On the islet small depressions in the sand—no doubt old nest-cups of terns. 1949: 13/6 two in coast water east of the station—the first terns this year. 18/6 one at the station. 28/6 same. 29/6 east of the station four terns. 8/7 at islet in Jørgen Brønlunds Fjord 14 terns seen. 1 ad ♂ shot. 16/7 four fishing in the river-mouth at the station. 21/7 one fishing in eastern end of Midsommersøen. 22/7 ibid. one and later on 8 in a flock. 22-26/7 ibid. terns seen daily. 24/7 nest with one egg on islet in Jørgen Brønlunds Fjord. 25/7 one in Itukussuks Dal. 2/8 two pairs at lake in the valley of Børglum Elv near the coast of the fjord. 3/8 one fishing in the same valley 8 kilometers from the fjord. 10-13/8 some along the coast at the station. 14/8 two swooping down on the watcher. 1950: 6/6 two terns attacking Snowy Owl at Koralkysten. 28/7—12/8, Arctic Terns observed in Jørgen Brønlunds Fjord.

Biology. The Arctic Tern arrives in the area before the middle of June, the earliest observations being 12/6-1912, 13/6-1949 and 6/6-1950. It comes in small flocks or in pairs. During the summer they are seen practically daily along the coasts of Jørgen Brønlunds Fjord, especially in the outer part, but they are also met with far inland. Terns may thus be seen 8—9 kilometers inland in the valley of Børglum Elv and in

Itukussuks Dal, both localities rich in lakes and fairly big rivers. Also the huge lake Midsommersøen 40—50 kilometers from the nearest sea-water was frequented by a great number of terns and they were no doubt breeding here. An old egg was found in the estuary of the river of Sydpasset at the western end of the lake.

The species was breeding in Jørgen Brønlunds Fjord at any rate on one of the small stony islands in the outer part of the fjord. On one of these a tern was found breeding  $^{24}/_7$ . The nest contained one egg and was placed quite near to the water on the sand beach. The highest point of this islet was about 2 meters. Apart from a few straws of grass it was quite devoid of vegetation. Here also *Somateria spectabilis* was found breeding.

The terns were very often seen fouraging at the mouth of the small river at the station, where small young of *Salvelinus alpinus* and of a sea scorpion, most likely *Cottus quadricornis* were abundant, and no doubt the aim of the terns' fishing. Inland terns could sometimes be seen flying in the air, capturing insects. A hot summer's day with smooth water on Midsommersøen I saw several terns very eagerly taking *Chironomidae*, which were just hatching from the surface in huge numbers. Several were swarming just over the surface while others were sitting on the surface film. The terns were hunting the insects just over the surface and sometimes they would even touch the water, just as in Europe the House-Martin will do. I think that also the Caddis flies (*Apatelia zonella*), which are fairly common here, were also taken by the terns.

Of three stomachs examined two were empty (no. 20 and 1139) and one (no. 1661) contained the remains of small marine *Crustacea*.

Material brought home: One egg collected had the following dimensions length 38 millimeters, breadth 28.2 millimeters. Wing measurements in table 22 marked with \* are from fresh birds.

Table 22. *Sterna paradisaea*.

| No.  | Sex age | Locality               | Date           | Weight | Total length | Wing | Bill | Tar-sus | Prepara-tion |
|------|---------|------------------------|----------------|--------|--------------|------|------|---------|--------------|
| 20   | ♂ ad.   | Jørgen Brønlunds Fjord | $^{27}/_8$ -48 | ..     | ..           | 284  | 28.5 | 16.3    | skin food    |
| 30   | ♂ ad.   | — —                    | $^{27}/_8$ -48 | ..     | ..           | 282  | 29.9 | 15.7    | skin         |
| 1661 | ♂ ad.   | — —                    | $^{27}/_8$ -48 | 122    | ..           | 275* | ..   | 16.3    | food         |
| 45   | ♀ ad.   | — —                    | $^{27}/_8$ -48 | ..     | 366          | 275* | 27.8 | 15.6    | skeleton     |
| 33   | ..      | — —                    | $^{27}/_8$ -48 | ..     | ..           | ..   | 26.7 | 16.1    | skeleton     |
| 1139 | ♂ ad.   | — —                    | $^8/_7$ -49    | ..     | ..           | ..   | 29.0 | ..      | skull food   |

Parasites. The only one observed was *Philopterus melanocephalus* Nitzsch (*Mallophaga*).

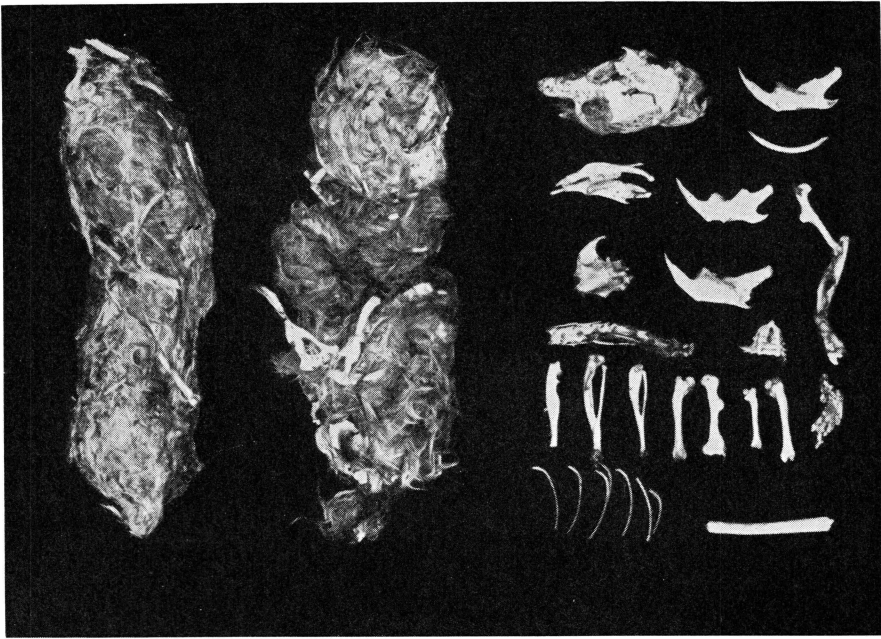


Fig. 11. Pellets from *Nyctea nivea*. Zackenberg Bugt, Northeast Greenland. U. MØHL-HANSEN phot.

*Snowy Owl Nyctea scandiaca* (L.).

*Nyctea nivea* (Thunb.). WINGE 1898. MANNICHE 1910. FREUCHEN 1915.

Literature. The Snowy Owl was first seen in Peary Land  $13/5$ -1907 by J. P. KOCH and BERTELSEN on the east coast,  $82^{\circ}50'$  NL (MANNICHE 1910). FREUCHEN (1915) did not observe the species in 1912, but writes "we found ejected pellets of owls in several places in Adam Bierings Land". In the northwestern part of the land RASMUSSEN (1919)  $4/8$  saw a pair of owls at their nest, in which 9 eggs. The incubation had started and  $8/6$  another breeding owl was observed. Both observations are from the mouth of J. P. Kochs Fjord. Finally an owl was seen by L. KOCH (1926)  $3/6$ -1921 on the eastern part of Peary Land's south coast.

Notes from the diaries. 1947: Only old pellets found. 1948:  $28/9$  one owl some 400 meters above the sea-level, between Chr. Eriksens Bræ and south coast of Jørgen Brønlunds Fjord. Plumage with much grey. 1949:  $18/4$  east coast of Hagens Fjord, south of Peary Land, one seen.  $4/5$  HOLMEN found at Kap Vaarbrud on an "owl-hill" fresh excrement, pellets and one feather of owl. Between 7 and  $21/5$  pellets had been ejected at a stone on northern Heilprin Land, 1073 meters above sea-level according to FRISTRUP. 1950:  $6/6$ , Koralkysten, one owl attacked by arctic terns.

General remarks. The number of owls in Peary Land is of course dependent on the fluctuation in number of lemmings in the different years, but it certainly is one of the rare birds. Altogether only eight owls have been seen during all expeditions, and only three individuals were seen during D. P. E.

More or less old ejected pellets were found every year on Heilprin Land and at Børglum Elv 17 kilometers from the fjord. The pellets all consisted of remains of lemmings. The aspect of pellets of Snowy Owl is seen on fig. 11.

*Redpoll. Carduelis flammea hornemanni* (Holb.).

*Cannabina linaria* L. MANNICHE 1910.

*Cannabina linaria* var. *canescens*. FREUCHEN 1915.

Literature. No observations of Redpoll in Peary Land are found in the literature. A few records are available from the land stretches south of Peary Land. Thus FREUCHEN (1915) <sup>18</sup>/<sub>5</sub>-1912 saw one near Zigzagdalen, the west coast of Danmarks Fjord, and L. KOCH (1925) saw and heard one singing near Mylius-Erichsen's cairn on Academy Land. Northernmost record west of Peary Land is Thule (FREUCHEN 1921).

Notes from the diaries. 1947: Not seen. 1948: <sup>6</sup>/<sub>9</sub> a flock of 6—8 in riverbed on northern Heilprin Land some 300 meters above sea-level, near the head of Jørgen Brønlunds Fjord. 2 of these were shot. <sup>18</sup>/<sub>9</sub> three in a flock on the northcoast of the fjord. <sup>20</sup>/<sub>9</sub> three in a flock, later in the day a flock of 5—6 at the station resting on some boxes. One of them shot. 1949: <sup>25</sup>/<sub>7</sub> two seen in Itukussuks Dal. 1950: None observed.

General remarks. The Redpoll is apparently a very rare migratory bird in Peary Land since it has been observed only once (2 individuals) in the summer. During the autumn it was seen in small flocks three times only. No evidence of breeding was found, though it is probably breeding in northernmost Greenland. At Kap York in West Greenland, where it does not breed, it is seen in numbers on its way northward in the spring, and again on its return in autumn, no doubt after having bred in northernmost Greenland (FREUCHEN 1921).

On the east coast at Germania Land it was only observed a few of times in 1906—08 on migration (MANNICHE 1910)—no doubt on their way to the breeding places far north. This race is not very migratory (SALOMONSEN 1928) and during winter it has been observed several times far to the north (Thule) in West Greenland. According to verbal information from trapper PETER KLOKKER one was seen in the winter of 1948 at Zackenberg far in the dark season.

An analysis of the intestinal canal of the birds secured gave the following result:

No. 4. exclusively imagines of *Chironomidae*.

No. 26. imagines of *Chironomidae* and a few seeds of *Draba* sp.

No. 43. exclusively seeds of *Puccinellia angustata* and *Polygonum viviparum*.

Material brought home:

Table 23. *Carduelis flammea*.

| No. | Sex age | Locality      | Date    | Weight | Total length | Wing | Bill | Tar-sus | Prepara-tion |
|-----|---------|---------------|---------|--------|--------------|------|------|---------|--------------|
| 4   | ♂ juv.  | Heilprin Land | 6/9-48  | ..     | ..           | 80   | 8.4  | 17.6    | skull, food  |
| 26  | ♂ ad.   | — —           | 6/6-48  | 20.1   | ..           | 83.7 | 8.8  | 18.5    | skin, food   |
| 43  | ♂ ad.   | — —           | 20/9-48 | 18.6   | 139          | 80.8 | 8.3  | 18.5    | skin, food   |

*Lapland Bunting. Calcarius lapponicus lapponicus* (L.).

*Emberiza lapponica* (L.). MANNICHE 1910. FREUCHEN 1915.

*Calcarius lapponicus groenlandicus* (Brehm). SCHIÖLER 1926.

*Calcarius lapponicus subcalcaratus* (Brehm). SALOMONSEN 1931.

There is only one record of Lapland Bunting from Peary Land, viz. that by RASMUSSEN (1915 b), who in his diary for <sup>28-29</sup>/<sub>6</sub>-1912 writes "On the small tufts Lapland Buntings sit, singing at the top of their voices to give a little variation in the monotonous sound, which the Turnstones amuse themselves by uttering" (translated). Strange enough this highly interesting observation has not been incorporated in the zoological paper from this expedition (I. Thule Exp.) by FREUCHEN (1915), who only mentions one from Vildtland. RASMUSSEN's record originates from south of Valmuedalen at the northern limit of Nyeboes Bræ, ca. 81°51' NL 35°40' WL. RASMUSSEN was not a zoologist so the determination may be wrong, but as the species was observed on Vildtland and is recorded as breeding so far north as Qanaq, 77°30' NL in West Greenland, and has been observed outside Greenland so far north as Kap Flora on Franz Josef Land, 80° NL, the said record from Peary Land may be right.

The northernmost record of Lapland Bunting from the eastern side of Greenland is thus extended to the head of Independence Fjord according to RASMUSSEN (1915 b), a fact overlooked by PEDERSEN (1930) and LÖPPENTHIN (1932), who give the northernmost record of the species in East Greenland as 77° and 76°40' NL respectively.

*Snow-Bunting. Plectrophenax nivalis nivalis* (L.).

*Emberiza nivalis* (L.). MANNICHE 1910. FREUCHEN 1915.

*Plectrophenax nivalis subnivalis* (Brehm). SCHIÖLER 1926. PEDERSEN 1942.

Literature. On Lockwood Ø, 83°24' NL, the species was observed by LOCKWOOD and he saw numerous birds along the coast more to the south. (GREELY 1886). Also BORUP (1911) <sup>25</sup>/<sub>5</sub> 1909 saw and heard a singing Snow-Bunting on Lockwood Ø. FREUCHEN (1915 a) gives the following observations from 1912 of the Snow-Bunting in this area: <sup>4</sup>/<sub>6</sub>, 5 flying across the interior of Independence Fjord. <sup>15</sup>/<sub>6</sub>, interior part of Peary Land's south coast—"more numerous here than anywhere hitherto seen" (i. e. south of Independence Fjord). <sup>3</sup>/<sub>7</sub>, Adam Bierings Land, "We saw for the first time birds of the young brood, still downy", but <sup>6</sup>/<sub>7</sub> "we saw one close by which was already able to fly". Another note from the same expedition is given by RASMUSSEN (1915 b) who states: <sup>28-29</sup>/<sub>6</sub>, southeast of Valmuedalen, Snow-Buntings. MANNICHE (1910) gives a few observations from 1907: <sup>7</sup>/<sub>5</sub> on the east coast of Peary Land (82°83' N), 6 Snow-Buntings seen in a flock, <sup>13</sup>/<sub>5</sub>, *ibid.*, (83°30' NL) 4 in a flock and some solitary individuals. From his journey north of Greenland L. KOCH (1925) gives these observations: <sup>3</sup>/<sub>5</sub>, Low Point, for the first time twittering Snow-Bunting and <sup>3</sup>/<sub>6</sub> on the easternmost part of the south coast of Peary Land, Snow-Buntings were seen. RASMUSSEN (1919) states the presence of a pair of Snow-Buntings at the mouth of J. P. Kochs Fjord <sup>8</sup>/<sub>6</sub> 1917.

Notes from the diaries. 1947: <sup>30</sup>/<sub>7</sub>, a few near the station. <sup>31</sup>/<sub>7</sub> a number in the vicinity of the station. <sup>3</sup>/<sub>8</sub> some seen on northern Heilprin Land, about 400 meters above sea-level. <sup>4</sup>/<sub>8</sub> several at the station. <sup>9</sup>/<sub>8</sub> five juv. shot *ibid.* <sup>10</sup>/<sub>8</sub> several *ibid.* One juv., still yellow at the corner of bill, shot. <sup>11</sup>/<sub>8</sub> six juv. shot *ibid.* <sup>12</sup>/<sub>8</sub> three juv. shot *ibid.* 1948: <sup>12</sup>/<sub>8</sub> two near the station. <sup>16</sup>/<sub>8</sub> half a score *ibid.* <sup>19</sup>/<sub>8</sub> a flock seen twice. One juv. shot. <sup>20</sup>/<sub>8</sub> several flocks of 15—16 birds *ibid.* Four ad. and two juv. shot. Later in the day several flocks of about 30. <sup>21</sup>/<sub>8</sub> many *ibid.* <sup>22</sup>/<sub>8</sub> some *ibid.* <sup>23</sup>/<sub>8</sub> two juv. in lemming-traps near the station. <sup>26</sup>/<sub>8</sub> about 10 seen *ibid.*, but not in flocks, mostly very young birds. 1 shot. 7—8 birds flying towards west. <sup>31</sup>/<sub>8</sub> two at the station. A few seen in the mountains south of the head of Jørgen Brønlunds Fjord. <sup>1</sup>/<sub>9</sub> one at the south coast of the fjord near the head. At the station 6—7 flying towards west. <sup>3</sup>/<sub>9</sub> at the station 4—5 seen. <sup>5</sup>/<sub>9</sub> one *ibid.* <sup>6</sup>/<sub>9</sub> *ibid.*, twice a solitary bird. <sup>8</sup>/<sub>9</sub>, Snow-Buntings observed over Chr. Eriksens Bræ and to the north below the ice-cap. Beginning of September, some along Midsommerelven. <sup>9</sup>/<sub>9</sub> a single at the station. <sup>14</sup>/<sub>9</sub> two *ibid.* <sup>29</sup>/<sub>9</sub> a flock going north at Kap Harald Moltke. <sup>11</sup>/<sub>10</sub> one solitary bird shot at the station: 1949: <sup>26</sup>/<sub>4</sub> twittering at the station, but no birds observed. <sup>27</sup>/<sub>4</sub>, one at Falke-

fjeld.  $28/4$ , two at the station.  $2/5$  two flying north near the station. Later on a flock of 14. Prinsesse Thyras Ø, one seen.  $4/5$  first some, later a small flock foraging at the station. 2 ♂♂ shot.  $5/5$ , *ibid.*, some heard. Kap København, one.  $7/5$ , Herlufsholm Strand north of Mudderbugten, five at the shore. Kap København, many going north.  $9/5$  a score at the station, one ♂ shot. Kap Eiler Rasmussen, two and nine observed.  $10/5$  several singing in the landscape around the station, one ♂ shot.  $11/5$  flock of 5—6 at the station. South of the station several males singing sitting on rocks. About 10 kilometers west of Kap Eiler Rasmussen many twittering.  $13/5$  *ibid.*, 1. Some heard at the station.  $14/5$  *ibid.*, several times small flocks. Herlufsholm Strand, Snow-Buntings.  $15/5$  northernmost part of Herlufsholm Strand, some singing. At the station half a score. 1 ♂ shot.  $16/5$  *ibid.*, some heard.  $17/5$  south of the station, on mountain-slope some seen and heard, but only one or two at a time. Later a flock of half a score at the station. At Kap Eiler Rasmussen, 1.  $18/5$  a number at the station throughout the day.  $19/5$  many both in pairs and small flocks everywhere in the vicinity of the station singing lively. Neergaards Elv, singing Snow-Buntings.  $20/5$  extremely many in riverbed at the station, 50—60 at a time. 2 males shot. East of Kap Grundloven, in little creek east of this cape, twittering Snow-Buntings.  $21/5$ , the number of birds in the flocks now seen at the station has to be counted with three ciphers. Now also females in the flocks.  $22/5$  some on islets in Schley Fjord.  $23/5$ , 1 ♂ shot at the station.  $25/5$  *ibid.*, both ♂♂ and ♀♀ in flocks of up to 50. 4 ♂♂ and 1 ♀ shot. South coast of Schley Fjord, some.  $27/5$  Wallcotts Land, at the middle of Midsommersøen, some now and then, but not in flocks. South of the station 1 ♀.  $28/5$  Kap Vaarbrud, some seen. South coast of Midsommersøen, at basalt point, 1 ♀ shot.  $30/5$ , 1 at the station. The flocks which for a long time appeared daily at the station have now disappeared.  $31/5$  *ibid.*, a few now and then. Some north of Herlufsholm Strand.  $5/6$  some seen 5 kilometers SW of Kap Knud Rasmussen.  $7/6$  some pairs in the neighbourhood of the station. 1 ♂ shot. Many at Kap Glacier and Saxifragadal. South coast of Peary Land, about  $21^\circ$  WL, some seen.  $8/6$  Kap Ejnar Mikkelsen, a stoat hunting Snow-Buntings. Blomsterstranden, some.  $9/6$  west coast of Astrups Fjord, some seen and heard. 2 ♂♂ performing tremendous fight.  $15/6$  copulation observed at the station.  $16/6$  some seen at Blomsterstranden.  $21/6$  pairs only, in the area around the station.  $28/6$  *ibid.*, some.  $7/7$ , northern Heilprin Land, 2 nests found, both with 5 nestlings. *Ibid.* 2 fledglings.  $15/7$  one fledgling at the station.  $21/7$  near eastern end of Midsommersøen, small flocks.  $22/7$  *ibid.*, several.  $26/7$  to the west of the head of Jørgen Brønlunds Fjord, small flocks.  $30/7$  many, especially young ones, on Oksesletten.  $31/7$  *ibid.* juv. Snow-Buntings.  $2/8$  the valley of Børglum Elv, some seen.  $8/8$  *ibid.* 2 flocks of juv. birds, each numbering 3—4. A single juv. still with some of the

downy dress left.  $^{10-13}/_8$  at the station, small flocks of 3—4.  $^{15}/_8$  ibid. 2 flocks of 10—15 flying northeast high up in a straight course.  $^{16}/_{10}$  one seen ibid. 1950:  $^{15}/_4$ , mouth of Friggs Fjord, one twittering.  $^{24}/_4$ , Nordpasset, 3 seen.  $^6/_5$  one twittering in Sydpasset.  $^{11}/_5$  footprints at Frihedsrådet's Elv, northeast corner of Fr. E. Hyde Fjord.  $^{15}/_5$  one seen, several heard in Ormen, G. B. Schley Fjord.  $^6/_6$  some at Koralkysten.  $^{29}/_7$  one on Oksesletten.  $^5/_8$  many in the mountains south of the station.

**Distribution.** The Snow-Bunting has been observed all over Peary Land: along the north coast at mouth of J. P. Kochs Fjord, Low Point, Lockwood Ø and on the east coast at G. B. Schley Fjord, Herlufsholm Strand, Kap Eiler Rasmussen, Mudderbugten, Kap København as well as along the south coast—Kap Vaarbrud, Melville Land, Falkefjeld, Kap Harald Moltke, Blomsterstranden, head of Independence Fjord and Kap Ejnar Mikkelsen. Inland it was met with on Heilprin Land, even over Chr. Eriksens Bræ, on Adam Bierings Land, in the valley of Børglum Elv, on Erlandsens Land, Walcotts Land, in Wandels Dal, Friggs Fjord and at Frihedsrådet's Elv. Also along the south coast of Independence Fjord we saw Snow-Buntings: Prinsesse Thyras Ø, Neergaards Elv, Kap Grundloven, Astrups Fjord, Saxifragadal and Kap Glacier. The species is no doubt the most common of the birds in Peary Land.

**Biology.** The Snow-Bunting is not met with in northernmost Greenland during the severe winter, and thus a true migration takes place here. The males arrive at Peary Land in the end of April and the first half of May. The earliest observations were made  $^{26}/_4$  (1949) and  $^{15}/_4$  (1950). Thus the Snow-Bunting here arrives much later than normally in Germania Land, where the first observations are from  $^5/_4$  (1907—08) (MANNICHE 1910).

Judging from observations in the spring of 1949 the migration goes in a northerly direction, since several flocks were going north coming from the south coast of Independence Fjord, but in the autumn of 1949 the main migration seemed to be to the west in the region around the station. Maybe the population of Peary Land partly comes from the south, from East Greenland, and partly from the west, from West Greenland or arctic North America. These observations should not be taken for more than they are—merely a vague impression.

The females arrive somewhat later than the males, in the second half of May. At first only small flocks of Snow-Buntings are seen—exclusively males, but later bigger flocks of more than 100 are seen. In 1949 the migration culminated around  $^{20-25}/_5$ , when hundreds of Snow-Buntings could be seen at a time from the house. Here they were foraging in the riverbed. In the middle of May also the females were seen in the flocks.

The flocks gradually dissolve, and by the end of May the great flocks which we had seen daily in the vicinity of the wintering station had disappeared. As early as the middle of May we saw and heard singing solitary males, which had left the flocks and chosen their territory. During the first half of June most of the birds had formed pairs.  $^{15}/_6$  copulation was observed near the station. On Germania Land the first pairs were formed nearly a month earlier (MANNICHE 1910) than was the case in Peary Land.

The growth of the testes during spring is illustrated by the following measurements of the biggest testes in 11 ad. ♂♂:  $^4/_5$ : 3.2.  $^9/_5$ : 4.3.  $^{10}/_5$ : 7.9.  $^{11}/_5$ : 7.4.  $^{15}/_5$ : 5.2.  $^{18}/_5$ : 5.2.  $^{20}/_5$ : 6.1 and 6.6.  $^{23}/_5$ : 6.9.  $^{25}/_5$ : 7.3 and 9.5 millimeters.

In the beginning of July two nests were found on northern Heilprin Land ( $^7/_7$ ), each containing 5 young and the same day two fledged young were seen. Newly fledged young were also observed  $^{15}/_7$  near the station. This indicates that the breeding conditions in 1949 must have been like those in 1912, since FREUCHEN observed downy young  $^3/_7$  and fledged young  $^6/_7$ . The find of a young still yellow in the corner of its mouth  $^{10}/_8$  and one  $^8/_8$  (1949) still with rests of the downy dress indicates that some of the young Snow-Buntings may leave their nests much later.

The departure in the autumn takes place throughout September. The last flock was seen  $^{25}/_9$ -49 and a single laggard was observed as late as  $^{16}/_{10}$ -49, which is one month earlier than the latest observations on Germania Land made by MANNICHE.

Thus the time during which the Snow-Buntings can remain in Peary Land is about  $1\frac{1}{2}$  months shorter than is the case in Germania Land.

Other biological observations on this species in Peary Land are in full accordance with the observations by MANNICHE (1910) and therefore need not be repeated here.

Food. Table 24 gives the result of food-analyses of 28 birds from Peary Land and 4 from the south base of D. P. E. (Zackenbugt). Besides the food-items listed in the table one bird was seen hunting *Cidaria* sp. and another was seen with a small, green larva (? *Cidaria*) in its bill. As the birds examined were shot mostly outside the breeding period, namely during May and August, the food mainly consisted of seeds, although a number of arthropods were also found in 5 birds. Besides the *Chironomidae* imagines found in two of the birds, *Chironomidae* occurred in large quantities in the bill of a single bird. The vegetable matter in the Snow-Buntings practically exclusively consisted of seeds of flowering plants (totally 12 species) and among these none seems to be especially preferred; the fairly high percentage of seeds of *Puccinellia* is no doubt due to the fact that this grass was the most dominant species

Table 24. Food of

| No. ....                                       | 406                     | 402 | 429 | 431  | 452  | 466  | 491  | 492  | 520  | 539  | 518  | 697 |
|--|-------------------------|-----|-----|------|------|------|------|------|------|------|------|-----|
| Sex .....                                      | ♀                       | ♂   | ♂   | ♂    | ♂    | ♂    | ♂    | ♂    | ♂    | ♂    | ♂    | ♀   |
| Age .....                                      | ad.                     | ad. | ad. | ad.  | ad.  | ad.  | ad.  | ad.  | ad.  | ad.  | ad.  | ad. |
| Date .....                                     | 4/5                     | 4/5 | 9/5 | 11/5 | 15/5 | 18/5 | 20/5 | 20/5 | 25/5 | 25/5 | 25/5 | 7/6 |
| Year .....                                     | 49                      | 49  | 49  | 49   | 49   | 49   | 49   | 49   | 49   | 49   | 49   | 49  |
| Locality .....                                 | Northern Heilprin Land, |     |     |      |      |      |      |      |      |      |      |     |
| <i>Chironomidae</i> , .....                    | ..                      | 1   | ..  | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..  |
| — , larvae .....                               | ..                      | 45  | ..  | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..  |
| <i>Ichneumonidae</i> s. l. ....                | ..                      | ..  | ..  | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..  |
| <i>Brachycera</i> , larvae .....               | ..                      | ..  | ..  | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..  |
| Small Aranea .....                             | ..                      | ..  | ..  | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   | 1   |
| Vegetable matter indet. ....                   | ..                      | ..  | ..  | ..   | ..   | ..   | ..   | ..   | ..   | +    | ..   | ..  |
| <i>Ranunculus sulphureus</i> , seeds .....     | ..                      | ..  | ..  | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..  |
| <i>Papaver radicatum</i> , seeds .....         | ..                      | ..  | ..  | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..  |
| <i>Cochlearia officinalis</i> , seeds .....    | ..                      | ..  | ..  | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..  |
| <i>Alopecurus alpinus</i> , seeds & chaffs ... | ..                      | ..  | ..  | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..  |
| <i>Potentilla pulchella</i> , seeds .....      | ..                      | +   | +   | ..   | ..   | ..   | ..   | +    | ..   | ..   | ..   | ..  |
| <i>Cerastium alpinum</i> , seeds .....         | ..                      | ..  | ..  | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..  |
| <i>Puccinellia</i> sp., seeds & chaffs .....   | ?                       | ..  | +   | ..   | +    | +    | ..   | ..   | ..   | ..   | ++   | ++  |
| <i>Polygonum viviparum</i> , bulbils .....     | ..                      | ..  | +   | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..  |
| — — , stem-tubers .....                        | ++                      | ..  | ..  | ..   | ..   | +    | +    | ..   | +    | ..   | ..   | ..  |
| — — , seeds .....                              | ..                      | ..  | ..  | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..  |
| <i>Draba</i> spp., seeds .....                 | ..                      | ..  | ..  | ..   | +    | ..   | ..   | ..   | ..   | ..   | ++   | +   |
| <i>Carex (stans)</i> , seeds & utriculæ .....  | ..                      | ..  | ..  | ..   | +    | ..   | ..   | ..   | ..   | ..   | ++   | +   |
| <i>Melandrium apetalum</i> , seeds .....       | ..                      | ..  | ..  | ..   | ..   | +    | ..   | ..   | ..   | ..   | ..   | ..  |
| <i>Equisetum arvense</i> .....                 | +                       | ..  | ..  | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..  |
| <i>Eriophorum</i> sp., seeds .....             | ..                      | +   | ..  | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..  |
| <i>Saxifraga cernua</i> , subsoil-buds .....   | ..                      | +   | ..  | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..  |
| Moss, spore cases .....                        | ..                      | ..  | ..  | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..  |
| — , leaves & shoots ( <i>Bryum</i> sp.) ...    | +                       | ..  | ..  | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   | 1   |

in the area in which the birds were shot. Opposite to the Turnstone and the Sanderling, which also may feed on the seeds of this plant, the Snow-Bunting is very well able to avoid the chaffs. In Peary Land as well as in Zackenberg Bugt (south base) birds were shot, in which the food was mainly made up of spore cases of mosses (among *Bryum* sp.). In some cases leaves and shoots of mosses were also found but only traces—leaving the impression that they had been eaten by accident together with fly larvae and *Chironomidae* larvae in the moist moss tufts. Very rare large parts of capsules e. g. of *Papaver* were found in the stomachs. Bird no. 402 was interesting because as early as 4/5 it contained 45 larvae and one imago of *Chironomidae*. As the first positive macroclimatic temperature was not measured until 28/5 the analysis of the stomach



Material brought home: See table 25.

Table 25. *Plectrophenax nivalis*.

| No.              | Sex age | Date     | Locality                  | Weight | Total length | Wing   | Bill | Tar-sus | Prepara-tion |
|------------------|---------|----------|---------------------------|--------|--------------|--------|------|---------|--------------|
| 9                | ♂ ad.   | 20/8-48  | Heilprin Land             | 42     | ..           | 111    | 10   | 25.0    | skin, food   |
| 11               | ♂ ad.   | 20/8-48  | — —                       | 40.7   | ..           | 109    | 9.2  | 21.7    | — —          |
| 406              | ♂ ad.   | 4/5-49   | — —                       | 42     | 163.5        | 110    | 9.5  | 21.7    | — —          |
| 428              | ♂ ad.   | 10/5-49  | — —                       | 37.5   | ..           | 108.8  | 10.5 | 21.3    | — —          |
| 429              | ♂ ad.   | 9/5-49   | — —                       | 40.5   | 170.5        | 108.5  | 9.2  | 21      | — —          |
| 431              | ♂ ad.   | 11/5-49  | — —                       | 40     | 174          | 108.5  | 10.4 | 21.4    | — —          |
| 452              | ♂ ad.   | 15/5-49  | — —                       | 40     | 177          | 116    | 9.9  | 22.5    | — —          |
| 491              | ♂ ad.   | 20/5-49  | — —                       | 43.2   | 168          | 109    | 10   | 21.8    | — —          |
| 492              | ♂ ad.   | 20/5-49  | — —                       | 39.5   | 169.5        | 110    | 11   | 22.3    | —            |
| 518              | ♂ ad.   | 25/5-49  | — —                       | 41     | 159          | 109.2* | 9.8  | 21.7    | skull —      |
| 520              | ♂ ad.   | 25/5-49  | — —                       | 39.5   | ..           | 106.3* | 10.4 | 22.9    | — —          |
| 699              | ♂ ad.   | 25/5-49  | — —                       | 38.5   | ..           | ..     | 10.3 | ..      | skeleton     |
| 537              | ♂ ad.   | 23/5-49  | — —                       | 46.6   | 171          | 110    | 9.6  | 21.5    | skin         |
| 539              | ♂ ad.   | 25/5-49  | — —                       | 45     | 162          | 107    | 10   | 21.7    | — —          |
| 402              | ♂ ad.   | 4/5-49   | — —                       | 38     | 173          | 114    | 10.5 | 25      | —            |
| 10               | ? ad.   | 20/8-48  | — —                       | 41.8   | ..           | 109    | 10   | 21      | — food       |
| 466              | ♂ ad.   | 18/5-49  | — —                       | ..     | 167.5        | 105.2* | 10.3 | 21.8    | skull        |
| 43 <sup>1)</sup> | ♀ ad.   | 9/8-47   | Jørgen Brønlunds<br>Fjord | 30.5   | 150          | 98.    | 11   | 20      | skin         |
| 44 <sup>1)</sup> | ♀ ad.   | 9/8-47   | — —                       | 31     | ..           | 102    | 11   | 20      | —            |
| 607              | ♀ ad.   | 27/5-49  | Heilprin Land             | ..     | 167          | 103.8  | 9.7  | 21.2    | —            |
| 696              | ♀ ad.   | 7/6-49   | — —                       | 37     | 159          | 102    | 9.7  | 21.9    | —            |
| 698              | ♀ ad.   | 29/5-49  | Walcotts Land             | ..     | 167          | 103    | 10.8 | 21.5    | —            |
| 700              | ♀ ad.   | 25/5-49  | Heilprin Land             | 32.1   | ..           | ..     | 10   | ..      | skeleton     |
| 12               | ♀ ad.   | 20/8-48  | — —                       | 43.8   | ..           | 111    | 9.9  | 20.4    | skin, food   |
| 13               | ♀ juv.  | 20/8-48  | — —                       | 38.3   | ..           | 106.5  | 9.6  | 21.7    | — —          |
| 14               | ♀ juv.  | 20/8-48  | — —                       | 38.2   | ..           | 100    | 8.6  | 24      | — —          |
| 17               | ♀ juv.  | 23/8-48  | — —                       | 38     | ..           | 107    | 9.8  | 20.9    | — —          |
| 18               | ♀ juv.  | 23/8-48  | — —                       | 38.8   | ..           | 107    | 9.8  | 21.9    | — —          |
| 109              | ? juv.  | 11/10-48 | — —                       | 31     | 155          | 103    | 9.5  | 20.7    | food         |
| 1658             | ? juv.  | 30/7-49  | — —                       | 31.5   | 159          | 104    | 8.7  | 21      | skin         |
|                  | ? juv.  | 19/8-48  | — —                       | ..     | ..           | 102.9* | 10.3 | 21.4    | food         |
| 1659             | ♀ juv.  | 30/8-48  | — —                       | ..     | ..           | 104.8* | 10   | 21.3    | food         |

Average and variation of measurements from ad. ♂♂ and ♀♀ is given as table 26. The measurements are in accordance with those from Scandinavian Snow-Buntings and the name thus is *P. nivalis nivalis* (L.) and not *P. n. subnivalis* Brehm, as this race cannot be upheld, the difference between the population of Northeast Greenland and West Greenland being too slight (HØRRING 1937, SALOMONSEN 1951).

<sup>1)</sup> After MØHL-HANSEN 1949. \* at wing measurements means that they were taken on fresh, not dried skins.

Table 26. *Plectrophenax nivalis*.

|                     | ad. ♂♂          |         |           | ad. ♀♀          |         |           |
|---------------------|-----------------|---------|-----------|-----------------|---------|-----------|
|                     | Number of birds | Average | Variation | Number of birds | Average | Variation |
| Length of wing....  | 15              | 109.5   | 105.2-114 | 6               | 103.3   | 98-111    |
| Length of bill..... | 16              | 10.4    | 9.2-11    | 7               | 10.3    | 9.6-11    |
| Length of tarsus... | 15              | 22.2    | 21-25     | 6               | 20.8    | 20-21.9   |
| Weight .....        | 15              | 40.9    | 37.5-46.6 | 5               | 34.9    | 30.5-43.8 |

Two skins of ad. males from the spring were very pale on the rump, like on the Siberian race, *P. n. pallidor* Salomonsen (1947). The same was the case with some of the skins collected in Germania Land by MANNICHE, but in this respect they do not deviate much from the typical race.

## 2. Birds observed in Northeast Greenland.

During D. P. E. a south base was erected from where the expedition could be borne to Peary Land by air-planes. Due to the unfortunate ice-conditions we were obliged to chose so southern a locality as Zackenberg Bugten, 73°28' NL to the north of Clavering Ø.

This region is wellknown in an ornithological respect and has been treated in detail by LØPPENTHIN (1932). A few notes on the birds in this region made in 1947 during D. P. E. have already been published in Danish by MØHL-HANSEN (1949). Below is given a short account of the observations made here by the same expedition during the summers of 1947, 1948, and 1949. These notes were made mostly by MØHL-HANSEN, URSIN and the present author and originate mainly from the south-base of the expedition, Zackenberg Bugt, but also a few notes from journeys to and from Greenland by ship or during excursions to the vicinity of the south-base have been included. Likewise some observations on animals in Northeast Greenland most kindly delivered by IB POULSEN are included.

The time of observation in the different years at Zackenberg Bugt was: 1947: 23/7—30/7 and again 16/8—2/9 (MØHL-HANSEN and the author). 1948: 16/7—26/8 (URSIN and the author). 1949: 13/8—27/8 (the author).

Investigations on the food of the birds from this region must in most cases be looked for in the part dealing with the birds of Peary Land. Most localities mentioned in the text will be found on the maps fig. 16 and 19.

**List of Species.**

- |  |                                     |
|--|-------------------------------------|
| 1. <i>Fulmarus glacialis</i> L.                                      | Fulmar. Stormfugl.                  |
| 2. <i>Colymbus stellatus</i> Pontoppid.                              | Red-throated Diver. Rødstrubet lom. |
| 3. <i>Cygnus cygnus islandicus</i><br>Brehm.                         | Whooper Swan. Sangsvane.            |
| 4. <i>Anser brachyrhyncus</i> Baill.                                 | Pink-footed Goose. Kortnæbbet gås.  |
| 5. <i>Branta leucopsis</i> (Bechstein).                              | Bernacle Goose. Bramgås.            |
| 6. <i>Clangula hyemalis</i> (L.).                                    | Long-tailed Duck. Havlit.           |
| 7. <i>Somateria mollissima islandica</i><br>Brehm.                   | Eider-Duck. Ederfugl.               |
| 8. <i>Falco rusticolus candicans</i> Gml.                            | Gerfalcon. Jagtfalk.                |
| 9. <i>Haliaeetus albicilla groenlandicus</i><br>Brehm.               | White-tailed Eagle. Havørn.         |
| 10. <i>Lagopus mutus captus</i> Peters.                              | Rock Ptarmigan. Fjeldrype.          |
| 11. <i>Charadrius h. hiaticula</i> L.                                | Ringed Plover. Alm. præstekrave.    |
| 12. <i>Arenaria i. interpres</i> (L.).                               | Turnstone. Stenvender.              |
| 13. <i>Crocethia alba</i> (Pallas).                                  | Sanderling. Selning.                |
| 14. <i>Calidris alpina arctica</i> (Schiöler).                       | Dunlin. Ryle.                       |
| 15. <i>Phalaropus fulicarius</i> (L.).                               | Grey Phalarope. Thorshane.          |
| 16. <i>Tringa totanus</i> (L.).                                      | Redshank. Rødben.                   |
| 17. <i>Stercorarius parasiticus</i> (L.).                            | Arctic Skua. Kjove.                 |
| 18. <i>Stercorarius longicaudus</i><br><i>pallescens</i> Løppenthin. | Longtailed Skua. Lille kjove.       |
| 19. <i>Larus h. hyperboreus</i> Gunnerus.                            | Glaucous Gull. Gråmåge.             |
| 20. <i>Rissa tridactyla tridactyla</i> (L.).                         | Kittiwake. Ride.                    |
| 21. <i>Rodostethia rosea</i> (MacGillivray)                          | Ross's Gull. Rosenmåge.             |
| 22. <i>Xema sabini</i> (Sabine).                                     | Sabine's Gull. Sabinemåge.          |
| 23. <i>Sterna paradisaea</i> Pontoppidan.                            | Arctic Tern. Havterne.              |
| 24. <i>Plotus a. alle</i> (L.).                                      | Little Auk. Søkonge.                |
| 25. <i>Cephus grylle mandtii</i> Mandt.                              | Black Guillemot. Tejst.             |
| 26. <i>Corvus corax principalis</i> Ridgw.                           | Raven. Ravn.                        |
| 27. <i>Nyctea scandiaca</i> (L.)                                     | Snowy Owl. Sneugle.                 |
| 28. <i>Oenanthe oenanthe schiöleri</i><br>Salomonsen.                | Wheatear. Stenpikker.               |
| 29. <i>Carduelis flammea hornemanni</i><br>(Holb.).                  | Redpoll. Hvidsidsken.               |
| 30. <i>Plectrophenax n. nivalis</i> (L.).                            | Snow-Bunting. Snespurv.             |

**Discussion of Species.***Fulmarus glacialis* L.

In 1948 between  $16/7$  and  $21/7$  some observations were made from the ship going from Iceland to Zackenberg Bugt.  $65^{\circ}$ NL,  $20^{\circ}$ WL, ice

edge now and then visible, many seen, most of them of the light type, only a few were gray. Close to the ice edge still many, most of them white. Outer part of the pack-ice grey and white Fulmars in a broader border of open water. In denser ice only a few observed. Off Scoresby Sund, 70 kilometers from the coast one white and one without statement of colour in icefree area. Between 71° and 72° NL, two white ones and one without statement of colour in nearly ice-free area. Off Hold With Hope, close to the coast, some white ones in an open area. At most two seen at a time. At the entrance to Young Sund, one grey over dense ice. In 1947 some observed along and in the pack-ice from  $18-22/7$  and off Kap Borlase Warren  $1/9$ , some seen at the margin of the pack-ice.

Analysis of the food of five birds caught  $6/7-48$  at 60° NL, 8° WL:

No. 24. ♀. Empty.

No. 25. ♀. Red remains of *Caridea*

No. 26. ♂. Red remains of *Caridea*, stones.

No. 27. ♂. Empty.

No. 28. ♂. Red remains of *Caridea*, remains of small fishes.

All the examined stomachs had a great number of *Nematoda* attached to the inner wall.

*Colymbus stellatus* Pontoppidan.

During the summers of 1947, 48 and 49 seen in number at Zackenberg Bugt, along the coast off rivermouths as well as far inland in Lindemansdalen.

The stomach content of three birds from the end of August consisted of vertebrae and small bones of fishes. Besides one of them contained traces of vegetable matter.

One nest was found at a small lake rather near the coast.

*Cygnus cygnus islandicus* Brehm.

This species was not observed during the expedition, but according to verbal information from three different trappers it had been observed on several occasions in the spring of 1948 in an opening in the ice off Wollaston Forland. This is the northernmost record from East Greenland.

*Anser brachyrhyncus* Baill.

A few observed in Zackenberg Bugt in the end of July 1947. Some breeding in river estuary in Stormbugt (IB POULSEN). During 2. world war rather many breeding in Hellefjord (POULSEN).

*Branta leucopsis* (Bechstein).

1947: End of July, numerous birds observed daily at Zackenberg Bugt. Some seen in Dødemandsbugten, Clavering Ø. At this time the

birds were unable to fly because they were shedding their primaries. End of August, numerous flocks migrating to the outer coast over Zackenberg. Breeding locality had this year been found on the mountain Zackenberg. 1948: From end of July to the end of August flocks were often met with in Lindemansdalen, Zackenberg Bugt, Tyrolerfjord and Dolomitdal on Clavering Ø. The number of birds in the flocks was between 4 and 100. Flocks of 30—50 were seen occasionally, but only once,  $^{26}/_8$ , a bigger flock was seen—numbering about 100 birds. 1949: Some flocks seen in Zackenberg Bugt.

According to verbal information the earliest observation of the species at Danmarkshavn, Germania Land, in 1949 was  $^{30}/_5$ .

Stomachs of two birds shot in the estuary of Zackenberg Elven contained: No. 1687, leaves of *Poa* sp. No. 1754, ears of *Poa* sp. and *Puccinellia*, fruits of *Carex misandra*, shoots of *Stellaria ciliatocephala*, leaves and petals of *Vaccinium*.

All individuals secured were infested with *Ornithobius klinckowstroemi* Mjøberg. Besides *Anaticola anseris* (L.) was found. Bones of *B. leucopsis* were excavated in eskimo house-ruins.

#### *Clangula hyemalis* (L.).

Only a few observations from 1947 and 1948. A single in Zackenberg Bugt and some—among which two ad. ♀♀ with ducklings ( $^{30}/_7$ )—at small lakes in Lindemansdalen.

#### *Somateria mollissima islandica* Br.

Observed breeding every year in the region around the south base. In 1947 hundreds were breeding on Sandøen. Many with downy young observed in the end of July. In 1948 the species was observed south of Hold With Hope, Kap Mary (Clavering Ø), Young Sund, Zackenberg Bugt, off the mouth of Dolomitdal (Clavering Ø). According to POULSEN a flock was seen  $^{11}/_9$  in Eleonores Bugt and a flock  $^{19}/_9$  in Tømmerbugt, Ella Ø.

#### *Falco rusticolus candicans* Gml.

In 1947 only one ad. falcon was observed at Zackenberg ( $^{17}/_8$ ). The following summers only juvenile birds were seen here, but not very many. Most observations were made in 1948 ( $^{15}/_8$ — $^{25}/_8$ ), namely 7. The stomach of one bird contained remains of ptarmigan only. According to POULSEN the species was observed in 1948—49 both in spring and autumn at Danmarkshavn, and  $^{29}/_5$  one was seen on Ella Ø.

#### *Haliaëtus albicilla groenlandicus* Brehm.

IB POULSEN maintains years ago to have found an old skull of an eagle on the south coast of Clavering Ø. Most likely it belonged to this

species, hitherto unknown from the high-arctic region in Greenland. Unfortunately the skull was not secured.

*Lagopus mutus captus* Peters.

Every summer a few ptarmigans were observed now and then, especially on the mountain Zackenberg. One egg collected here 1000 meters a. s. l. measured: length 43.0, breadth 29.5 millimeters. A food-analysis of one bird shot  $^{20}/_8$  gave the following result: No. 1703. Leaves and fruits of *Vaccinium uliginosum* 50%, *Salix arctica* 40%, capsules and seeds of *Cassiope tetragona* 9%, *Draba* sp. 1% (vol. %).

According to verbal information the earliest observations of ptarmigans in 1950 at Mørkefjord, Danmarkshavn and Daneborg were  $^{21}/_2$ ,  $^4/_3$ , and  $^3/_3$  respectively. March—April 1949 POUlsen at Danmarkshavn noted remarkably large numbers of ptarmigans migrating. 500 were shot and more could easily have been secured.

*Charadrius hiaticula hiaticula* L.

Very frequent in Zackenberg Bugt and Lindemandsdalen every Summer and breeding regularly here. Furthermore many observed at Daneborg, Dødemandsbugten and Dolomitdal. At the last mentioned place breeding was ascertained. In 1947; a great many in the end of July and the beginning of August, but from  $^{18}/_8$  only few were seen. In 1948: end of July big numbers of ad. along the beaches, but from August the birds met with here were mainly juveniles. In 1949:  $^{13}/_8$  still many present at the south base. From  $^{21}/_8$  only few observed.

Downy young were seen latest  $^{28}/_7$ . About  $^{12}/_8$  the young of the year go on the wing.

Measurements of a clutch of 4 eggs:

|        |          |         |          |
|--------|----------|---------|----------|
| Length | 35.0 mm. | Breadth | 25.9 mm. |
| —      | 37.6 —   | —       | 26.7 —   |
| —      | 35.9 —   | —       | 25.4 —   |
| —      | broken   | —       | 25.6 —   |

*Arenaria interpres interpres* (L.).

Nearly only juv. observed. In 1947 and 1948 only a few ad. birds were seen at Sandodden and in Zackenberg Bugt, whereas juveniles were always met with along the shores in these localities, mostly in small flocks. From the end of August they became scarcer.

*Crocethia alba* (Pallas).

From the end of July to about  $^{19}/_8$  numerous Sanderlings in Zackenberg Bugt in small flocks, sometimes in company with *Calidris alpina*.

The species especially gather at rivermouths. From  $^{24}/_8$  only a few observed now and then. The species was also observed at Dolomittedal (Clavering Ø).

*Calidris alpina arctica* (Schjølter).

This species was observed regularly every year at Zackenberg Bugt. Small flocks were seen from  $^{22}/_7$ — $^{24}/_8$ .  $^5/_8$  not fully fledged young and  $^{18}/_8$  two young able to fly, but still with rests of the downy dress, were observed.

Parasites: *Degeriella zonaria* (Nitzsch) and *Colpocephalum* ? *umbrinum* Nitzsch. Analysis of some stomachs gave the following result (table 27).

Table 27. Food of *Calidris alpina*.

| No.....                                 | 1672            | 1685       | 1686       | 1729       | 1730       | 1731       | 1732       |
|---|-----------------|------------|------------|------------|------------|------------|------------|
| Date— all from 1947.....                | $^{22}/_7$      | $^{27}/_7$ | $^{27}/_7$ | $^{28}/_8$ | $^{20}/_8$ | $^{28}/_8$ | $^{28}/_8$ |
| Locality.....                           | Zackenberg Bugt |            |            |            |            |            |            |
| <i>Chironomidae</i> , larvae.....       | ..              | ..         | ..         | ..         | ..         | ..         | +          |
| <i>Chironomidae</i> , imagines.....     | +               | ..         | ..         | ..         | ..         | ..         | ..         |
| <i>Brachycera</i> s. l. larvae.....     | +               | +          | ..         | ..         | ..         | ..         | ..         |
| <i>Brachycera</i> s. l. pupae.....      | ..              | +          | ..         | ..         | ..         | ..         | ..         |
| <i>Insecta</i> indet. ....              | +               | +          | +          | +          | ..         | ..         | ..         |
| <i>Acari</i> .....                      | ..              | ..         | ..         | ..         | 1          | ..         | ..         |
| <i>Amphipoda</i> .....                  | ..              | ..         | ..         | ..         | 1          | ..         | ..         |
| Hairs from carcass.....                 | +               | +          | ..         | ..         | ..         | ..         | ..         |
| <i>Polygonum viviparum</i> , seeds..... | ..              | +          | ..         | ..         | ..         | ..         | ..         |
| Vegetable matter, indet. ....           | ..              | ..         | ..         | ..         | ..         | +          | ..         |

*Phalaropus fulicarius* (L.).

Only a single, ad. male, observed in Lindemansdalen ( $^{27}/_7$ -1947).

*Tringa totanus* (L.).

$^{25}/_8$ -1947 a single specimen observed at Zackenberg Bugt several times. It was shot but lost in the sea. The species is not recorded from East Greenland (MØHL-HANSEN 1949).

*Stercorarius parasiticus* (L.).

In 1949 only observed at the south base, where an ad. with a big young was staying near the coast in Zackenberg Bugt ( $^{15}/_8$ ). Breeding must have taken place in this locality.

*Stercorarius longicaudus pallescens* Løppenthin.

1948:  $^{18}/_7$  two over the ice off the coast between  $71^\circ$  and  $72^\circ$  NL.  $^{19}/_7$  two at the coast off Hold With Hope.  $^7/_8$  one in the estuary at the mouth of Dolomittedal (Clavering Ø). 1949:  $^{13}/_8$  some seen in Zackenberg Bugt.

*Larus hyperboreus hyperboreus* Gunnerus.

In Zackenberg Bugt a single or a few were observed almost daily. In 1948 all birds observed had ad. plumage, with the exception of one. Some seen off Hold With Hope, Kap Mary, Dolomitdal and in Young Sund.

*Rissa tridactyla tridactyla* (L.).

In 1948 some were observed along and over the pack-ice at 68° NL, 20° WL. Off Scoresby Sund about 70 kilometers from the coast a single was seen and again between 71° and 72° NL two were seen.

*Rodostethia rosea* (MacGillivray).

This species was observed for the first time in East Greenland in the early summer of 1947 on Sandøen by a trapper, who shot the bird. The skin was secured by the expedition (MØHL-HANSEN 1949). This is the same bird mentioned by SALOMONSEN (1951) without reference.

*Xema sabini* (Sabine).

Sandøen, the wellknown breeding locality, was visited by MØHL-HANSEN <sup>23/7</sup>—<sup>24/7</sup>-1947 and he writes in Danish "there were three pairs-nests or young we did not notice in spite of eager search and secret watching, but as the island is a preferred place for egg-collecting, where the trappers from the stations near-by have pic-nics, this may be the explanation". When LØPPENTHIN (1932) visited the island <sup>22/7</sup>-1932 he observed 18 birds after 8 had been skinned. No doubt these observations indicate a decrease of the species in this breeding locality.

In 1949 a Greenlander unfortunately (<sup>15/8</sup>) shot a specimen at Sandøen. It was brought to me and skinned. The stomach contents consisted of otholiths and vertebrae of small fishes.

*Sterna paradisaea* Pontoppidan.

In 1947 the species was breeding by the hundred on Sandøen. <sup>23/7</sup> most eggs had been hatched. Every summer observed now and then at Zackenberg bugt. Occasionally observed at Kap Mary, Dolomitdal and in Young Sund. <sup>25/8</sup> a big flock seen in Zackenberg Bugt.

*Plotus alle alle* (L.).

In 1947 only a single one observed in the pack-ice. In 1948 a few were seen near the edge of the pack-ice about, 68° NL, 20° WL. In the eastern part of the pack-ice many were seen on the water. Off Scoresby Sund about 70 kilometers from the coast a great number was seen in an ice-free area. Between 71° and 72° NL many among ice-floes; more

Table 28. Measurements of birds from Zackenberg region.

| No.  | Sex age | Date    | Locality        | Weight | Total length | Wing | Bill | Tar-sus | Prepara-tion |
|--|---------|---------|-----------------|--------|--------------|------|------|---------|--------------|
| <i>Colymbus stellatus</i>  |         |         |                 |        |              |      |      |         |              |
| 6  | ♂       | 24/7-48 | Zackenberg Bugt | 1200   | 655          | 291  | 50.5 | 73.3    | skin         |
| 83   | ♂ ad.   | 20/8-47 | — —             | 1950   | 680          | 295  | 55.4 | 77      | skin         |
| 28   | ♀ ad.   | 20/8-47 | — —             | ..     | ..           | 281  | 53.8 | 68.7    | skin         |
| <i>Branta leucopsis</i>  |         |         |                 |        |              |      |      |         |              |
| 12   | ♀ ad.   | 27/7-47 | Zackenberg Bugt | 1700   | 650          | 280  | 32.8 | 72      | skin         |
| 97   | ad.     | 25/8-47 | — —             | 2300   | 690          | 344  | 33   | 77      | skin         |
| 11   | ♂ ad.   | 27/7-47 | — —             | 2000   | 700          | ..   | 31   | 74.5    | skin         |
| <i>Clangula hyemalis</i>   |         |         |                 |        |              |      |      |         |              |
| 11   | ♀       | 30/7-48 | Zackenberg Bugt | ..     | 370          | 206  | 25.5 | 35.2    | skin         |
| <i>Falco rusticolus candicans</i>                                  |         |         |                 |        |              |      |      |         |              |
| 73   | ♀ ad.   | 17/8-47 | Zackenberg Bugt | 1720   | 585          | 415  | 28   | 66      | skin         |
| 48   |         | 20/8-48 | — —             | 1200   | 508          | 357  | 22   | 60      | skin         |
| 1634   |         | 15/8-49 | — —             | ..     | ..           | ..   | 21.9 | 69      | skeleton     |
| <i>Lagopus mutus captus</i> (bill measured from nostril to point). |         |         |                 |        |              |      |      |         |              |
| 45   | ♂       | 17/8-48 | Zackenberg      | 500    | 385          | 202  | 11   | ..      | skin         |
| 84   | ♂ ad.   | 21/8-47 | Clavering Ø     | 520    | 378          | 201  | 11   | ..      | skin         |
| 103  | ♂ juv.  | 28/8-47 | Zackenberg      | 455    | 360          | 188  | 10.2 | ..      | skin         |
| 85   | ♀ ad.   | 21/8-47 | Clavering Ø     | 460    | ..           | 186  | 9    | ..      | skin         |
| <i>Charadrius h. hiaticula</i>                                     |         |         |                 |        |              |      |      |         |              |
| 2  | ♀       | 22/7-48 | Zackenberg Bugt | 57     | 190          | 129  | 14.4 | 26.7    | skin         |
| 5  | ♀       | 25/7-48 | — —             | 59     | 193          | 131  | 14.2 | 26.8    | skin         |
|  | juv.    | 10/8-48 | Clavering Ø     | 51     | 180          | 129* | ..   | ..      |              |
| <i>Phalaropus fulicarius</i>                                       |         |         |                 |        |              |      |      |         |              |
| 10   | ♂ ad.   | 27/7-47 | Lindemandsdalen | 35     | 180          | ..   | 20   | 20.7    | skin         |
| <i>Arenaria i. interpres</i>                                       |         |         |                 |        |              |      |      |         |              |
| 32   | ♀ juv.  | 5/8-48  | Zackenberg Bugt | 95     | 229          | 148  | 20.9 | 25.0    | skin, belly  |
| 71   | ♂ ad.   | 17/8-47 | — —             | 122    | 225          | 146  | 21   | 24.3    | skin         |
| <i>Crocethia alba</i>  |         |         |                 |        |              |      |      |         |              |
| 29   | ♂       | 5/8-48  | Zackenberg Bugt | 43     | 172          | 117  | 23.2 | 24.3    | skin, belly  |
| 15   | ♂       | 30/7-48 | — —             | 51     | 190          | 117  | 22.6 | 24.7    | skin         |
| 12   |         | 30/7-48 | — —             | 47     | 183          | 114  | 21.3 | 24.6    | skin         |
| 79   | ♂       | 19/8-47 | — —             | 60     | 190          | 117  | 22.6 | 23.7    | skin         |
| 40   | ♀       | 9/8-48  | Clavering Ø     | 48     | 171          | 120  | 20.5 | 24.3    | skin, belly  |
| 41   |         | 9/8-48  | Clavering Ø     | 46     | 184          | 119  | 22   | 22.2    | skin, belly  |

(continued)

Table 28 (continued).

| No.                                  | Sex age | Date    | Locality        | Weight | Total length | Wing | Bill | Tar-sus | Prepara-tion |
|--------------------------------------|---------|---------|-----------------|--------|--------------|------|------|---------|--------------|
| <i>Calidris alpina arctica</i>       |         |         |                 |        |              |      |      |         |              |
| 3                                    | ♂       | 23/7-48 | Zackenberg Bugt | 32     | 167          | 110  | 24.1 | 21.5    | skin         |
| 13                                   |         | 30/7-48 | — —             | 52     | 187          | 111  | 25.5 | 21.4    | skin         |
| 16                                   | ♂       | 30/7-48 | — —             | 37     | 170          | 105  | 23.2 | 21.4    | skin         |
| 14                                   | ♀       | 30/7-48 | — —             | 49     | 189          | 108  | 29.9 | 22.5    | skin         |
| <i>Larus h. hyperboreus</i>          |         |         |                 |        |              |      |      |         |              |
| 9                                    | ♀ ad.   | 28/7-48 | Zackenberg Bugt | 1330   | 660          | 450  | 57.7 | 69.4    | skin         |
| <i>Xema sabini</i>                   |         |         |                 |        |              |      |      |         |              |
| 1417                                 | ♂ ad.   | 15/8-49 | Sandøen         | 140    | 331          | 275  | 25.5 | 34      | skin         |
| <i>Sterna paradisaea</i>             |         |         |                 |        |              |      |      |         |              |
| 42                                   | ♂       | 10/8-48 | Claverling Ø    | 91     | 364          | 266  | 29.6 | ..      | skin, belly  |
| 43                                   | ♂       | 10/8-48 | — —             | 97     | 373          | 275  | 32   | ..      | skin, belly  |
|                                      |         | 10/8-48 | — —             | 93     | 274          | 285* | ..   | ..      |              |
| 81                                   | ♀ ad.   | 20/8-47 | Zackenberg Bugt | 110    | 395          | 282  | 30   | ..      | skin         |
| 78                                   | ♀ ad.   | 19/8-47 | — —             | 100    | 358          | 271  | 30.1 | ..      | skin         |
| <i>Corvus corax principalis</i>      |         |         |                 |        |              |      |      |         |              |
| 30                                   | ♀ ad.   | 6/8-48  | Zackenberg Bugt | 1720   | 678          | 458  | 66.5 | 71.8    | skin         |
| <i>Carduelis flammea hornemanni</i>  |         |         |                 |        |              |      |      |         |              |
| 80                                   | ♂       | 20/8-47 | Zackenberg      | 19     | 146          | 84   | 7.3  | 15      | skin         |
| <i>Plectrophenax nivalis nivalis</i> |         |         |                 |        |              |      |      |         |              |
| 4                                    | ♂ ad.   | 23/7-48 | Zackenberg Bugt | 33     | 165          | 108  | 12   | 21.9    | skin         |
| 88                                   | ♂ juv.  | 23/8-47 | Claverling Ø    | 43     | ..           | 115  | 10.5 | 22      | skin         |
| 100                                  | ♂ juv.  | 27/8-47 | Zackenberg Bugt | 41     | 177          | 111  | ..   | 22.2    | skin         |
| 39                                   | ♀       | 8/8-48  | Claverling Ø    | 37     | 174          | 106  | 12   | 22      | skin, belly  |

scarse where there was much open water. Near the coast off Hold With Hope a flock in opening between waste fields of ice-floes.

*Cephus grylle mandtii* Mandt.

Observed only in 1948, when it was noted as common between 71° and 72° NL in the pack-ice. Near the coast of Hold With Hope 4 and a flock of 10 observed and at Kap Mary a single seen.

*Nyctea scandiaca* (L.).

A single owl was observed at the south base in the end of August 1947. Several owl pellets were collected (fig. 11). Most of the pellets

contained bones of lemming, a single contained the skull of a stoat. According to POULSEN the species was not observed 1948—49 at Danmarkshavn.

*Corvus corax principalis* Ridgw.

The raven must be rather scarce at the south base since only a single specimen was observed during the expedition. This one was shot  $6/8$ -48 in the estuary of Zackenberg Elven. It was seen at a carcass of a musk-ox, and it had remains of meat and fly larvae from it in the stomach. It was a rather old female. It had an incubation patch and was very fat.

According to verbal information from a trapper, PETER KLOKKER, many ravens were seen during the autumn of 1949 in the region round the south base. According to POULSEN it was not seen 1948—49 at Danmarkshavn.

*Oenanthe oenanthe schiøleri* Salomonsen.

Observed only in 1949 ( $25/8$ ), when two birds stayed for a few days in the vicinity of the south base of the expedition in Zackenberg Bugt.

*Carduelis flammea hornemanni* (Holb.).

A pair seen  $20/8$ -47 on the side of Zackenberg. One shot (no. 80) contained only seeds of *Draba* sp.

*Plectrophenax nivalis nivalis* (L.).

Common everywhere around Zackenberg, Daneborg and Clavering Ø. Sign of breeding in the region. According to POULSEN the first observation in 1951 was  $13/4$  at Påskenæsset.

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## MAMMALS

### 1. Mammals of Peary Land.

**List of Species.** (in Latin, English and Danish. † means extinct).

- |  |   |
|--|---|
| 1. <i>Lepus arcticus groenlandicus</i>             | Alpine Hare. Polarhare.                 |
| 2. <i>Dicrostonyx groenlandicus</i><br>Traill.     | Collared Lemming. Halsbåndlem-<br>ming. |
| 3. <i>Alopex lagopus</i> (L.).                     | Arctic Fox. Polarræv.                   |
| 4. <i>Canis lupus tundrarum</i> Miller. †          | Polar Wolf. Polarulv.                   |
| 5. <i>Ursus maritimus</i> L.                       | Polar Bear. Isbjørn.                    |
| 6. <i>Putorius ermineus arcticus</i><br>Merriam.   | Stoat. Hermelin.                        |
| 7. <i>Phoca hispida</i> Schreiber.                 | Ringed Seal. Ringsæl el. Fjordsæl.      |
| 8. <i>Erignathus barbatus</i><br>(O. Fabricius). † | Bearded Seal. Remmesæl.                 |
| 9. <i>Balaena mysticetus</i> L. †                  | Greenland Whale. Grønlandshval.         |
| 10. <i>Monodon monoceros</i> L. †                  | Narwhal. Narhval.                       |
| 11. <i>Ovibos moschatus wardi</i><br>Lydekker.     | Musk-ox. Moskusokse.                    |
| 12. <i>Rangifer tarandus</i> (L.).                 | Caribou. Rensdyr.                       |

### Discussion of Species.

The cranial measurements given here were taken in the following way. Condylbasal length: from hindmost part of condyle to foremost point of praemaxillare. Zygomatic breadth: greatest breadth of zygomatic arch. Maxillary and mandibular tooth-row: length from foremost margin of  $p_1$ -alveolus to hindmost margin of alveolus of the last m. Interorbital constriction: smallest breadth between orbita. Nasal: measured along inner margin, only hares measured as diagonal. Mandible: from tip to angle. Mastoid breadth: greatest breadth between bony ear-openings. Occipito nasal length: from hindmost part of occiput to tip of nasal. Postorbital constriction: smallest breadth of skull behind the eyes.

*Alpine Hare. Lepus arcticus groenlandicus* Rhoads.*Lepus variabilis glacilis sive timidus.* FREUCHEN 1915a.*Lepus variabilis* Pall. *var. glacilis* Leach. MANNICHE 1910.

Literature. As the hare is a fine thing in the pot a good deal of information of hares is found in the travelling records from Peary Land. From Lockwood's journey the following particulars are available: at Kap Benét, about 83°3' NL, 1 shot May 1882. Tracks were seen at Mary Murray Ø and at Lockwood Ø (GREELY 1886). PEARY (1907) saw about 1<sup>3</sup>/<sub>5</sub>-1900 at Kap Morris Jesup 1 hare. At Kap Neumayer first 7, later several and later again 6 during his journey. BORUP (1911) writes: about 1<sup>1</sup>/<sub>5</sub>, 1 hare near Kap Mohn. Lockwood Ø about 1<sup>1</sup>/<sub>5</sub>, 3 hares. At Kap Morris Jesup in May, 1 hare. These observations are from 1909. FREUCHEN (1915 a) and RASMUSSEN (1915) give following data from 1912: 5<sup>5</sup>/<sub>6</sub>, south coast of Melville Land, several. 6<sup>6</sup>/<sub>6</sub> *ibid.*, a single hare seen during a long excursion into Peary Land. 7<sup>7</sup>/<sub>6</sub> *ibid.*, but closer to Jørgen Brønlunds Fjord, several seen every day, 2 shot today. 14<sup>14</sup>/<sub>6</sub>, 1 shot at Kap Knud Rasmussen. A number at Kap Schmelck. 20<sup>20</sup>/<sub>6</sub>, 3 on Adam Bierings Land. Everywhere abundant. 22-27<sup>22-27</sup>/<sub>6</sub>, a couple on nunataks in Nyeboes Bræ. 27<sup>27</sup>/<sub>6</sub>, Vardebakken on Adam Bierings Land, 2. 29<sup>29</sup>/<sub>6</sub>, Valmuedalen, everywhere in the valley. A flock of 10. 28-29<sup>28-29</sup>/<sub>6</sub>, 1 leveret south-east of Valmuedalen in ravine. 30<sup>30</sup>/<sub>6</sub>-1<sup>1</sup>/<sub>7</sub> *ibid.*, flocks along the mountains on both sides of the valley. 10<sup>10</sup>/<sub>7</sub>, Adam Bierings Land, 24 in 2 flocks. From his journey 1917 RASMUSSEN (1919) records following data: 4<sup>4</sup>/<sub>6</sub>, 2 at mouth of J. P. Kochs Fjord. 8<sup>8</sup>/<sub>6</sub>, *ibid.* 3 shot. 16<sup>16</sup>/<sub>6</sub>, Kap Emroy, Sverdrups Ø, 1 ad. and a brood of leverets. 20<sup>20</sup>/<sub>6</sub> *ibid.*, a number shot. 6<sup>6</sup>/<sub>6</sub>, 5 shot at Kap Benét, Sverdrups Ø. 1 with foetuses of a fist's size. 9<sup>9</sup>/<sub>6</sub>, Low Point, Nansens Land, hares more abundant than more to the west. 17<sup>17</sup>/<sub>6</sub>, 3 shot between Kap Neumayer and Kap Benét. 20<sup>20</sup>/<sub>6</sub>, entrance to De Long Fjord, the sloping coastland seemed to be a preferred locality to the hares. 4 shot. 22<sup>22</sup>/<sub>6</sub>, 7 shot *ibid.* 27<sup>27</sup>/<sub>6</sub>, 3 shot at Blue Point. Finally, some observations from 1921 are given by L. KOCH (1925): 2<sup>2</sup>/<sub>5</sub>, 1 at Linn Bugt. 5 shot at Kap Benét. Uphill at Distant Cape 6 shot. 3<sup>3</sup>/<sub>5</sub>, 4 shot at Kap Mohn. 6<sup>6</sup>/<sub>5</sub>, 3 shot at Kap Hommock. 15<sup>15</sup>/<sub>5</sub>, 32 shot at Kap Morris Jesup. 21<sup>21</sup>/<sub>5</sub>, 1 juv. shot at the mouth of Fr. E. Hyde Fjord. 25<sup>25</sup>/<sub>5</sub>, 1 shot in the mountains at Herlufsholm Strand. 5<sup>5</sup>/<sub>6</sub>, 1 shot on south coast of Peary Land. Not many hares here and they were very wary. 8<sup>8</sup>/<sub>6</sub>, 5 shot north of Kap Harald Moltke. The following days good hare hunting here as well as in the land around Jørgen Brønlunds Fjord. 18<sup>18</sup>/<sub>6</sub>, on the side of Frysefjeld it swarmed with hares. 14<sup>14</sup>/<sub>7</sub>, 1 shot on Adam Bierings Land. 16<sup>16</sup>/<sub>7</sub>, 6 shot *ibid.*

Notes from the diaries. 1947: about 6<sup>6</sup>/<sub>8</sub>, Melville Land near the mouth of Børglum Elv, 2 shot. 10<sup>10</sup>/<sub>8</sub>, south of the station, 1. Wool of

1 lying as after a meal of some animal of prey.  $12/8$  ibid., 3 ad. shot, 1 juv. seen. Southern side of Buen, 2 shot, 1 big young seen. 1948:  $7/8$  south of the station on faintly sloping dolomite rocks, 2 seen, one of which shot.  $11/8$ , 4 seen southeast of the station, 2 of which shot.  $13/8$  riverbed at the station, 2 ad.  $16/8$  ibid., 2.  $28/8$  north coast of Jørgen Brønlunds Fjord, 2 ad. ♀♀ shot.  $30/8$ , 6 kilometers from south coast of Jørgen Brønlunds Fjord 100 meters above sea level, 1 seen.  $31/8$  ibid. at the head, 500 meters above sea level,  $2-4/9$ , slope south of the station, 5 seen, 4 shot.  $5/9$ , eastern end of Midsommersøen,  $2-7/9$  snow patch east of the station, flock of 5. At Lersø, 1.  $20/9$ , riverbed at the station, 2. Numerous tracks.  $22/9$ , ibid., 2 foraging animals shot. Numerous tracks.  $27/9$  east of Falkefjeld, 2 shot. Just east of Kap Caroline Marie, tracks on flat ravel plains.  $28/9$  south of the head of Jørgen Brønlunds Fjord, below Chr. Eriksens Bræ about 700 meters above sea level, tracks of 3 hares.  $29/9$  Independence Fjord off Falkefjeld, tracks on the ice.  $1/10$ , 1 shot on Kjovesletten. Near Koralkalk Elv track on the ice.  $2/10$  south of the station, 1 shot in ravine.  $3/10$  west of Kap Peter Henrik, tracks. On the cape itself also track.  $6/10$  east coast of Hagens Fjord, tracks of 2 hares.  $8/10$  ibid., a fresh track with many loops and angles, evidently pursued by fox, the track of which was seen.  $10/10$ , 1 kilometer off Kap Grundloven, track.  $11/10$  track at eastern end of Midsommersøen.  $13/10$  westernmost north coast of Midsommersøen, track.  $15/10$  Sydpasset, about 12 kilometers from Midsommersøen, track.  $20/10$  at Klaresø, 1 ♂ shot. 1949:  $21/2$  north coast of eastern end of Midsommersøen, track.  $22/2$  Klaresø, track.  $25/2$ , Buen at mouth of Børglum Elv, 1 shot. Klaresø, track,  $27/2$ , Buen at mouth of Børglum Elv, 2 shot.  $19/3$  southern side of Buen, 1 seen.  $24/3$  ibid., 2 in company, both shot.  $2/4$  excrement at eastern side of J. P. Kochs Fjord at the head.  $23/4$  Buen at the mouth of Børglum Elv, 1 ad. ♂ shot.  $25/4$ , Koralkysten, tracks. South coast of Jørgen Brønlunds Fjord at the bend about 200 meters uphill, 1.  $26/4$ , 2 shot at Falkefjeld.  $4/5$ , 3 shot at Kap Rigsdagen.  $5/5$  Kap København, tracks.  $9/5$  northern Heilprin Land, the hares are evidently changing their coats, since much loose wool is scattered on the ground.  $12/5$ , 3 hares on Herlufsholm Strand about 10 kilometers west of Kap Eiler Rasmussen.  $12-14/5$  Herlufsholm Strand, the plain near the mountains about 150 meters above sea level, 7 shot — 1 ♂ and 5 ♀♀, 1 not determined. All ♀♀ with fairly big foetuses — 6, 7, 5, 5 and 7 respectively.  $14/5$  ibid., totally 25 hares in flocks of up to 6 individuals observed.  $16/5$  northern part of Herlufsholm Strand, a flock of 4.  $17/5$  ibid., flock of 5.  $19/5$  ibid., 1 in mountain ravine. Asmild Elv, track. Neergaards Elv, track. Riverbed at the station one foraging.  $22/5$  Wyckoffs Land at Peary's cairn, excrement.  $27/5$ , head of Hellefisk Fjord, excrement. On bigger point from south coast of Midsommersøen, 1.  $31/5$  Herlufsholm Strand, 5 seen, 1 of which shot. about 100 meters above

Table 29. Cranial measurements

| No. ....                                    | 132           | 130                           | 207  | 1631  | 177  | 67                           | 30 A                        | 391                          | 397  | 648                          | 653                          | 649                          | 651                          | 652                          | 650                          |
|---|---------------|-------------------------------|------|-------|------|------------------------------|-----------------------------|------------------------------|------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|
| Sex .....                                   | ♂ad.          | ♂ad.                          | ♂ad. | ♂ad.  | ♂ad. | ♂ad.                         | ♂ad.                        | ♂ad.                         | ♂ad. | ♂ad.                         | ♀ad.                         | ♀ad.                         | ♀ad.                         | ♀ad.                         | ♀ad.                         |
| Date .....                                  | Oct.          | <sup>20</sup> / <sub>10</sub> | Spt. |       | Spt. | <sup>14</sup> / <sub>8</sub> | <sup>3</sup> / <sub>8</sub> | <sup>23</sup> / <sub>4</sub> | Apr. | <sup>13</sup> / <sub>5</sub> | <sup>13</sup> / <sub>5</sub> | <sup>13</sup> / <sub>5</sub> | <sup>13</sup> / <sub>5</sub> | <sup>13</sup> / <sub>5</sub> | <sup>13</sup> / <sub>5</sub> |
| Year .....                                  | 48            | 48                            | 48   |       | 48   | 47                           | 47                          | 49                           | 49   | 49                           | 49                           | 49                           | 49                           | 49                           | 49                           |
| Locality .....                              | Heilprin Land |                               |      |       |      | Melville Land                |                             | Erland-sens Land             |      | Herlufsholm Strand           |                              |                              |                              |                              |                              |
| Occipito nasal length .....                 | 90.8          | 90.6                          | 89.8 | 101.6 | 96.0 | 98.0                         | 97.0                        | 95.9                         | 99.6 | 92.4                         | 95.2                         | 94.6                         | 92.7                         | 93.5                         | 94.6                         |
| Condylbasal length .....                    | 84.4          | 85.9                          | 83.2 | 92.5  | 90.7 | 89.0                         | 91.6                        | 91.0                         | 94.3 | 91.0                         | 91.6                         | 89.8                         | 90.9                         | 90.0                         | 88.4                         |
| Zygomatic breadth .....                     | 37.5          | 48.9                          | 48.5 | 53.5  | 51.0 | 50.3                         | 54.0                        | 51.7                         | 51.6 | 50.9                         | 51.5                         | 51.7                         | 37.9                         | ..                           | 51.7                         |
| Interorbital constriction .                 | 21.1          | 19.7                          | 21.2 | 20.6  | 23.5 | 21.2                         | 22.4                        | 21.0                         | 22.0 | 24.7                         | 24.1                         | 22.1                         | 24.9                         | 23.1                         | 22.2                         |
| Postorbital constriction ....               | 18.1          | 16.7                          | 17.8 | 17.3  | 17.7 | 17.5                         | 18.0                        | 17.0                         | 17.6 | 17.7                         | 17.0                         | 17.8                         | 17.4                         | 19.1                         | 18.3                         |
| Nasal (diagonal)                            | 37.8          | 48.2                          | 38.8 | 45.7  | 41.0 | 43.1                         | 41.0                        | 41.0                         | 43.2 | 42.7                         | 42.4                         | 40.7                         | 40.2                         | 43.2                         | 40.8                         |
| Mastoid breadth                             | ..            | 36.9                          | 37.5 | 38.5  | 38.3 | 38.0                         | 39.6                        | 38.7                         | 40.2 | ..                           | 39.3                         | 38.6                         | 37.8                         | ..                           | 40.0                         |
| Palatal breadth between first jaw-tooth ... | 14.0          | 13.8                          | 14.4 | 14.7  | 14.0 | 13.3                         | 14.4                        | 14.7                         | 14.6 | 14.6                         | 15.0                         | 14.8                         | 15.5                         | 14.9                         | 14.9                         |
| Diastema .....                              | 27.0          | 28.8                          | 27.7 | 32.0  | 29.6 | 30.0                         | 29.5                        | 30.3                         | 31.7 | 30.0                         | 30.0                         | 30.2                         | 30.8                         | 29.8                         | 30.8                         |

sea level; it contained 8 big foetuses. <sup>7</sup>/<sub>6</sub> south coast of Peary Land, about 20° W, track. <sup>9</sup>/<sub>6</sub> west coast of Astrups Fjord, excrement. <sup>16</sup>/<sub>6</sub>, Blomsterstranden, excrement. <sup>9</sup>/<sub>7</sub>, 1 ♀ shot on Oxesletten, milk in the udder. <sup>2</sup>/<sub>8</sub>, lower part of the valley of Børglum Elv, tracks. <sup>3</sup>/<sub>8</sub>, 1 seen ibid. <sup>4</sup>/<sub>9</sub> seven seen at eastern end of Midsommersøen. <sup>7</sup>/<sub>9</sub>, 1 at the river below the lake. <sup>30</sup>/<sub>9</sub>, 2 at Glaciologelv. <sup>10</sup>/<sub>10</sub>, 6 at the waterfall in Sydpasset. <sup>12</sup>/<sub>10</sub>, 4 ibid. <sup>16</sup>/<sub>10</sub>, 1 on plateau north of this waterfall. <sup>25</sup>/<sub>10</sub> fresh track on island at head of Independence Fjord. 1950: <sup>9</sup>/<sub>2</sub>, 2 shot at the station. <sup>11</sup>/<sub>2</sub>, 1 shot ibid. <sup>25</sup>/<sub>2</sub>, 2 shot ibid. <sup>11</sup>/<sub>3</sub>, 2 ♂♂ and 2 ♀♀ shot in Sydpasset. <sup>31</sup>/<sub>3</sub>, 4 shot at Strømstedet in J. P. Kochs Fjord. <sup>5</sup>/<sub>4</sub>, 2 at G. B. Schley Fjord. <sup>6</sup>/<sub>4</sub>, 1 shot at west coast of Mascart Inlet. <sup>8</sup>/<sub>4</sub>, 1 shot at Kap John Flagler. <sup>13</sup>/<sub>4</sub>, track on eastern north coast of Fr. E. Hyde Fjord. <sup>17</sup>/<sub>4</sub>, 1 at Sverdrup Ø. <sup>18</sup>/<sub>4</sub>, 1 shot ibid. <sup>19</sup>/<sub>4</sub> track on Nordkronelien. <sup>24</sup>/<sub>4</sub>, Harebugten near Nordpasset, 32 hares observed. <sup>29</sup>/<sub>4</sub>, 1 on Nansens Land at J. P. Kochs Fjord. <sup>30</sup>/<sub>4</sub> Harebugten near Nordpasset, 20 hares observed. <sup>1</sup>/<sub>5</sub> ibid., 24 hares observed. <sup>2</sup>/<sub>5</sub>, 3 on north coast of Fr. E. Hyde Fjord opposite Thors Fjord. <sup>7</sup>/<sub>5</sub>, 1 ♂ shot at the waterfall in Sydpasset. <sup>11</sup>/<sub>5</sub>, 1 ♀ with embryos shot ibid. <sup>3</sup>/<sub>6</sub>, 1 shot at Kap Peter Henrik. <sup>30</sup>/<sub>6</sub>, 1 at the station. <sup>5</sup>/<sub>8</sub>, 2 south of the station. <sup>11</sup>/<sub>8</sub>, 2 ibid.

from *Lepus arcticus groenlandicus*.

| G5A            | 1149          | 31 A             | 395   | 68             | 87A            | 66A            | 2              | 64             | 503                 | 502            | 69             |            | 370           | 5                | 162           |            |      |
|----------------|---------------|------------------|-------|----------------|----------------|----------------|----------------|----------------|---------------------|----------------|----------------|------------|---------------|------------------|---------------|------------|------|
| ♀ ad.          | ♀ ad.         | ♀ ad.            | ♀ ad. | ♀ ad.          | ♀ ad.          | ♀ juv.         | ♀ juv.         | ad.            | ad.                 | ad.            | ad.            | ad.        | ad.           | ♀ juv.           | juv.          |            |      |
| $\frac{12}{8}$ | $\frac{9}{7}$ | $\frac{3}{8}$    | Apr.  | $\frac{14}{8}$ | $\frac{23}{8}$ | $\frac{12}{8}$ | $\frac{31}{8}$ | $\frac{12}{8}$ | $\frac{13}{5}$      | $\frac{13}{5}$ | $\frac{14}{8}$ |            | Spt.          | $\frac{28}{8}$   | Spt.          |            |      |
| 47             | 49            | 47               | 49    | 47             | 47             | 47             | 48             | 47             | 49                  | 49             | 47             | 47-49      | 48            | 48               | 48            |            |      |
| Heilprin Land  |               | Erland-sens Land |       | Melville Land  | Zacken-berg    | Heilprin Land  |                |                | Herlufsholms Strand |                |                | Peary Land | Heilprin Land | Erland-sens Land | Heilprin Land | Peary Land |      |
| 96.6           | 90.5          | 100.0            | 95.8  | 105.0          | 97.7           | 78.3           | 83.2           | 98.7           | 102.0               | 97.5           | 100.9          | 98.0       | ..            | 90.6             | 91.2          | 94.3       | 95.9 |
| 88.2           | 87.5          | 91.1             | 88.4  | 98.6           | 91.4           | 69.0           | 76.6           | 90.1           | 95.7                | 88.3           | 94.1           | 91.3       | 81.9          | 81.5             | 82.5          | 89.3       | 90.5 |
| 48.8           | 51.5          | ..               | 50.6  | 54.8           | 51.0           | ..             | 48.0           | 52.4           | 53.5                | 51.4           | 51.0           | 52.0       | 48.7          | 49.9             | 48.2          | 49.8       | 49.8 |
| 19.3           | 23.2          | 22.2             | 21.5  | 30.0           | 23.1           | 20.0           | 20.0           | 21.7           | 24.0                | 22.4           | 22.5           | 22.5       | 20.6          | 21.3             | 19.7          | 21.7       | 23.3 |
| 17.9           | 16.9          | 16.6             | 17.1  | 18.3           | 17.1           | 16.8           | 17.5           | 15.7           | 17.8                | 18.0           | 17.6           | 18.0       | 17.4          | 18.0             | 16.9          | 17.5       | 16.8 |
| 42.0           | 40.3          | 43.5             | 40.8  | 44.0           | 43.0           | 30.5           | 35.0           | 43.5           | 44.9                | 40.6           | 43.9           | 42.2       | ..            | 38.4             | 38.5          | 42.3       | 41.8 |
| 37.1           | 38.0          | 39.8             | 38.2  | 41.2           | 32.0           | 33.8           | 37.2           | 37.0           | 41.0                | 39.2           | 39.6           | ..         | 37.8          | ..               | ..            | 38.5       | 38.9 |
| 14.5           | 14.9          | ..               | 14.3  | 15.8           | 14.8           | 12.5           | 12.0           | 14.9           | 14.9                | 14.9           | 14.0           | 14.8       | 14.9          | 14.5             | 13.5          | 14.3       | 15.0 |
| 29.9           | 28.9          | 31.4             | 30.2  | 32.9           | 30.5           | 22.9           | 24.0           | 30.0           | 31.7                | 30.4           | 30.9           | 28.1       | 30.4          | 26.3             | 25.0          | 29.7       | 30.5 |

Distribution. As seen from the diaries the hare is widely distributed throughout Peary Land. The hares were most numerous in Valmuedalen and Adam Bierings Land, where FREUCHEN saw several flocks one of which numbered 16 hares, furthermore in Harebugten at Nordpasset and on Herlufsholm Strand, where KNUTH one day counted 32 hares.

In order to give at least some idea of the number of hares in Peary Land the roughly calculated number of hares observed in the different years by expeditions to Peary Land is given. 1882: 1 (GREELY). 1900: about 20 (PEARY). 1909: 5 (BORUP). 1912: more than 100 (FREUCHEN). 1917: about 90 (RASMUSSEN). 1921: about 100 (L. KOCH). 1947: 9. 1948: 31. 1949: about 90. 1950: about 90 (D. P. E.).

Also south of Peary Land we observed hares or sign of their presence, namely at the following places along the southern border of Independence Fjord: Vildtland, Ubberup Land (west coast of Astrups Fjord), I. C. Christensens Land (Kap Grundloven, Asmild Elv, Neergaards Elv) and Valdemar Glückstads Land (east coast of Hagens Fjord).

General remarks. The hare occurs in the lowland as well as in the mountains, mostly singly or in small flocks of 3—6 individuals. The

Table 30. Weight & total length of *Lepus a. gr.*

| No. | Sex    | Date | Year | Locality        | Weight | Total length |
|-----|--------|------|------|-----------------|--------|--------------|
| 67  | ♂ ad.  | 14/8 | 47   | Melville Land   | 3500   | 650          |
| 32  | ♂ ad.  | 3/8  | 47   | Melville Land   | 3850   | 660          |
| 5a  | ♂ ad.  | 11/8 | 48   | Heilprin Land   | 2570   | ..           |
| 68  | ♀ ad.  | 14/8 | 47   | Melville Land   | 4300   | 610          |
| 31  | ♀ ad.  | 3/8  | 47   | Melville Land   | 4400   | 670          |
| 65  | ♀ ad.  | 12/8 | 47   | Heilprin Land   | 3850   | 670          |
| 3   | ad.    | 7/8  | 47   | Heilprin Land   | 4200   | ..           |
| 69  | ad.    | 14/8 | 47   | Melville Land   | 3980   | 650          |
| 64  | ad.    | 12/8 | 47   | Heilprin Land   | 4300   | 660          |
| 391 | ad.    | 23/4 | 49   | Erlandsens Land | 3600   | 660          |
|     | ♀      | 28/8 | 48   | Heilprin Land   | 3450   | ..           |
| 5   | ♀ juv. | 28/8 | 48   | Erlandsens Land | 3450   | ..           |
| 66  | ♀ juv. | 12/8 | 47   | Heilprin Land   | 1750   | 550          |
| 87  | ad.    | 23/8 | 47   | Zackenberg      | 3600   | 660          |
| 22  | juv.   | 2/8  | 48   | Zackenberg      | 1500   | 444          |
| 21  | juv.   | 2/8  | 48   | Zackenberg      | 1500   | 480          |
| 23  | ♂ juv. | 2/8  | 48   | Zackenberg      | 1600   | 495          |

biggest flock observed in Peary Land numbered 16 hares, which in fact is a very low number compared with the large flocks of up to about 100 animals observed on several occasions more to the south in East Greenland (PEDERSEN 1934). As in the case of the musk-ox, this is no doubt due to the extremely poor vegetation in Peary Land.

Only the following data contributing to the breeding biology were obtained. Pregnant females were shot between 11/5—6/6. The number of foetuses ruled between 5—8 (5, 5, 6, 6, 7, and 8 respectively). A single rather big young was seen 12/3. Females with milk in the mammae were shot 9/7-49 and 3/8-47.

Changing of the winter pelage in spring presumably takes place during May, judging from the amount of loose wool tufts scattered on the ground at this season. A female shot 9/7 was in summer dress, but its back was still without the grey band.

As the intestinal contents of the hares are completely masticated it may be of interest to note that shot hares had *Salix arctica* and *Oxyria digyna* in the mouth. A hare observed while it was eating took only these plants. The last mentioned species is not recorded in the literature as food for hares in Greenland.

Bony remains of hares were excavated in former eskimo sites at Jørgen Brønlunds Fjord (KNUTH 1951).

A number of skulls secured all had a high incisive index placing the

population of Peary Land among *L. a. groenlandicus* Rhoads, as the race was described by DEGERBØL & BRÆSTRUP (1934).

Cranial measurements from hares collected during the expedition are given in table 29. They all originate from Peary Land, with the exception of one, no. 87 A, which is from the south base area.

Weight and total length of fresh hares are given in table 30. The four last mentioned hares in this table originate from the south base of D. P. E.

Parasites. A few of the hares shot on Heilprin Land and Erlandsen Land were infested with the flea *Hoplopyllus glacialis* Tasch. Besides, only one species of small *Nematoda* was found in great numbers in the intestine of a single hare. Nothing was seen of the *Cestoda* so commonly found in hares on Germania Land by PEDERSEN (1942). A small collection of meat samples of hares was examined for *Trichinella spiralis* Ow. by the late Dr. H. ROTH without positive result. Only few records of flesh eating hares exist, and I therefore want to call attention to such a record from Vildtland by RASMUSSEN (1915), who tells (translated): "curiously enough, they (the hares) are like mad after our meat depots, and we are again and again surprising them while stealing meat". Even if hares thus normally do not eat meat, they are able to do so, and may be infested with *Trichinella*.

*Greenland Collared Lemming. Dicrostonyx groenlandicus* Traill.

*Myodes torquatus* (Pall.). MANNICHE 1910. FREUCHEN 1915.

Literature. The literature contains the following data on the lemming. GREELY (1886) writes that LOCKWOOD in May 1882 saw this species at Mary Murray Ø (83°19' NL) as well as at his northernmost point 83°24' NL. MANNICHE (1910) gives the following records from 1907:  $18/5$ , 83°10' NL, track on the snow—same a little more to the south, i. e. off Hans Egedes Land.  $25/5$ , Herlufsholm Strand (82°30' NL), track on the snow. FREUCHEN (1915) says that everywhere in the parts of Peary Land which he visited in July 1912, viz. the southwestern corner, tracks were seen, also in Valmuedalen and on Adam Bierings Land. RASMUSSEN (1919)  $5/6$ -1917 at the entrance of J. P. Kochs Fjord saw many nests and  $8/6$  the animals themselves. L. KOCH (1925) records from 1921:  $21/5$ , lemming on the ice between Cape Bridgman and the entrance of Fr. E. Hyde Fjord.  $1/6$ , track on Herlufsholm Strand.

Notes from the diaries. 1947:  $30/7$ — $14/8$ , southcoast of Jørgen Brønlunds Fjord, a single specimen secured, the only one seen this year. 1948:  $7/8$ , riverbed at the station, apparently fresh holes.  $26/8$ , some in Gerfalcon shot at the station.  $28/8$ , south of Buen, rather fresh holes.

$29/8$ , beach at station, 1 ♂ caught.  $30/8$  one ♂ caught near the station.  $2/9$  some in Gerfalcon shot at the station.  $3/9$  one observed in riverbed ibid.  $4/9$  a Gerfalcon shot 12 kilometers up in the valley of Børglum Elv had the stomach filled with remains of lemmings.  $5/9$  one ♂ caught in riverbed at the station.  $14/9$ , ibid. one ♀ caught.  $16/9$ , ibid., one ♀ caught.  $18/9$  one on the snow south of the station.  $25/9$  track on snow ibid.  $27/9$ , close to the station, many holes in the snow.  $28/9$ , north of Chr. Eriksens Bræ, 1000 meters above sea level, tracks. One captured at Koralkysten.  $29/9$ , off Falkefjeld, everywhere tracks on the sea ice.  $30/9$  more to the east the same was the case.  $1/10$  tracks everywhere along the coast at Kjøvesletten. A fox shot here contained remains of lemmings.  $10/10$  tracks near the eastern end of Midsommersøen.  $13/10$  tracks on westernmost part of the northcoast of Midsommersøen.  $15/10$ , Sydpasset, about 12 kilometers from Midsommersøen, tracks. 1949:  $18/1$  remains of lemmings in fox shot at the station.  $21/2$ , easternmost part of Midsommersøen, track on the ice.  $22/3$  remains of lemmings in fox shot at the station.  $29/3$ , off Melville Land, about  $23^\circ$  WL, one dead ♂ on the ice near the coast.  $18/4$ , northern Heilprin Land, one white.  $25/4$ , Koralkysten, tracks.  $26/4$  one dead on the snow at Falkefjeld.  $28/4$  Kap Caroline Marie, tracks.  $2/5$ , between Kap Vaarbrud and Kjøvesletten, track on the ice 4 kilometers from land.  $7/5$  track at Kap Eiler Rasmussen.  $15/5$  one seen near galleries in the snow on east coast of Mudderbugten. Near the station rather fresh tracks.  $19/5$  tracks at Asmild Elv.  $28/5$ , Wallcotts Land at the central part of Midsommersøen, one dead ♀.  $29/5$ , Hellefiskefjord, one ♂ in summerdress.  $30/5$ , Graptolit Elv, a white lemming had made its nest in a musk-ox hide. One dark seen in Hellefisk Fjord.  $31/5$ , Independence Fjord south of Koralkalk Elv, one captured (changing coat).  $1/6$ , big valley north of Herlufsholm Strand, one white captured.  $2/6$ , Herlufsholm Strand, one dark.  $4/6$ , Mudderbugten, two dark ones on the ice. Kap København, one white dead, many fresh holes. At Kap Vårbrud, a dark one sitting at at musk-ox skin.  $5/6$ , Kjøvesletten, one dark seen. Juv. lemming in Long-tailed Skua shot at Kjøvesletten.  $6/6$  two dark ones at south coast of Peary Land,  $21^\circ$  WL.  $7/6$  one in Glaucous Gull shot in Saxifragadalen. Young in Long-tailed Skua shot at Kjøvesletten.  $10/6$ , riverbed at the station, one young still with indication of black dorsal line.  $23/6$ , near the station, one ad. ♀ caught, with uterine tubes dilated, so that parturition had taken place.  $9/7$ , riverbed ibid., one dead.  $15/7$ , snow-patch ibid., one young with black dorsal line.  $20/7$ , some kilometers to the west of the head of Jørgen Brønlunds Fjord, one seen.  $2/8$ , entrance to the valley of Børglum Elv, freshly dug holes.  $4/9$  one at the eastern end of Midsommersøen. 1950:  $6/4$  tracks on west coast of Mascart Inlet.  $19/4$  tracks on Nordkronelien.  $25/4$  one white in middle of Nordpasset.  $11/5$  tracks at Frihedsrådets Elv, northeast corner of Fr. E. Hyde Fjord.

$6/6$  one in summer dress at Koralkysten.  $28/7-12/8$  no lemmings observed, or freshly dug holes at the station.

Distribution. The lemming or tracks of lemmings have been observed in all visited parts of Peary Land, naturally most frequently along the coasts along which most of the journeys took place, but also inland, in Sydpasset, Nordpasset, on Heilprin Land and Erlandsens Land and other places. It was observed up to a height of 1000 meters a. sea level. Thus it cannot be accepted when GELTING (1934 pag. 271) maintains—no doubt on account of insufficient use of the existing literature—that the lemming in Greenland is “clearly bicentric, occurring on the northcoast as far as Low Point, and again from Danmarkshavn to Cape Dalton”. There are in fact records of lemmings from the region between Peary Land and Danmarkshavn, viz. from Vildtland, Nyeboes Bræ, Zigzagdalen, Danmarks Fjord, Independence Fjord and Lambert Land (FREUCHEN 1915, MANNICHE 1910). From the southcoast of Independence Fjord I can add Academy Land, Uubberup Land and I. C. Christensens Land.

Fluctuations in number. The reports of previous expeditions to Peary Land say very little of the relative frequency of the lemmings. During the first half of August 1947 not a single specimen was seen on the open ground, and only one was secured by digging. This year most of the lemming-holes on Heilprin Land seemed to be old and not used. The next summer, 1948, the number of lemmings seemed to have increased as compared with the preceding year. Everywhere in the neighbourhood of the station newly dug holes were found. The loose earth and the vegetation around the holes bitten at the top betrayed the freshness of the holes. During September new holes especially along the riverbed at the station, were observed every day. From August till the dark season altogether 8 lemmings were observed. In this number the lemmings found in stomachs of Gerfalcons, Longtailed-Skuas, Glaucous Gulls, Arctic Foxes and Stoats are not included. During 1950 only 2 observations of lemmings were recorded to me by the wintering party, and HOLMEN who stayed in the vicinity of the station  $28/7-12/8$  writes, that no lemmings or fresh holes were noticed this year. From this it seems justified to conclude, that the number of lemmings was very low in 1947 and 1950. In 1948 the number was fairly high and in 1949 perhaps still higher (24 observed). This is also in accordance with the observations on the number of animals living mainly on lemmings. Thus not a single Longtailed-Skuua was seen in Peary Land in 1947, 1948 and 1950, but several were seen in 1949, the year with apparently greatest number of lemmings (see general remarks on this bird in the text). If the breeding of Longtailed-Skuua in Northeast Greenland can be taken as a sign of

Table 31. Cranial measurements of *Dicrostonyx*.

| No. ....                  | 111                    | 388              | 29               |                  | 875              | 575              | 702                   | 1134             | 507              | 654                               |
|---------------------------|------------------------|------------------|------------------|------------------|------------------|------------------|-----------------------|------------------|------------------|-----------------------------------|
| Sex .....                 | ♂ ad.                  | ♂ ad.            | ♂ ad.            | ♂ juv.           | ♀ ad.            | ♀ juv.           | ad.                   | ad.              | ♀ ad.            | ♂ ad.                             |
| Date .....                | 28/9                   | 29/3*            | 16/9             | 31/7             | 23/6             | 29/9*            | 1/6                   | 9/7*             | 26/4*            | 29/5                              |
| Year .....                | 48                     | 49               | 48               | 47               | 49               | 49               | 49                    | 49               | 49               | 49                                |
| Locality .....            | East of<br>Koralkysten | Melville<br>Land | Heilprin<br>Land | Heilprin<br>Land | Heilprin<br>Land | Heilprin<br>Land | Herlufsholm<br>Strand | Heilprin<br>Land | Melville<br>Land | South of<br>G. B. Schley<br>Fjord |
| Condylbasal length ...    | 28.0                   | 22.4             | 26.9             | 21.8             | 30.4             | 24.2             | 28.2                  | 30.0             | 27.2             | 30.1                              |
| Zygomatic breadth ...     | 17.4                   | 17.7             | 16.7             | 16.8             | 19.4             | 15.4             | ..                    | 19.3             | 17.3             | 19.7                              |
| Interorbital constriction | 4.1                    | 3.8              | 4.1              | 3.8              | 3.5              | 3.4              | 3.7                   | 4.0              | 3.8              | 4.0                               |
| Mastoid breadth .....     | 14.1                   | 13.8             | 14.0             | 13.2             | 15.4             | 12.5             | ..                    | 15.5             | 14.0             | ..                                |
| Nasal (inner margin) ..   | 7.9                    | 8.0              | 7.4              | 8.0              | 8.8              | 7.0              | 8.5                   | 8.8              | ..               | 9.0                               |
| Diastema .....            | 9.1                    | 8.7              | 8.9              | 8.8              | 10.0             | 7.9              | 10.2                  | 9.9              | 8.8              | 9.8                               |
| Mandible (from angle) .   | 19.0                   | 18.7             | 18.0             | 17.9             | 21.7             | ..               | 20.8                  | 20.1             | 18.5             | 19.9                              |
| Maxillary tooth-row ...   | 7.4                    | 7.4              | 7.7              | 6.7              | 8.0              | 6.7              | 7.4                   | 8.0              | 7.8              | 7.8                               |
| Mandibular tooth-row..    | 7.0                    | 7.2              | 6.9              | 6.3              | 8.9              | ..               | 7.0                   | 7.2              | 7.3              | 7.2                               |

\* At date means found dead.

abundance of lemmings, which is to be supposed, the year 1912 must have been a lemming-year in Peary Land as FREUCHEN (1915) observed breeding Longtailed-Skuas here. He also tells about musk-ox carcasses untouched by foxes, which no doubt means that there must have been an abundance of lemmings here this year. In 1947—50 all musk-ox remains very soon attracted a number of foxes. Furthermore the winter of 1949/50 appeared to be very rich in Arctic Foxes in Peary Land, a phenomenon which is usually the case in East Greenland after a summer with a maximum of lemmings (cfr. BRÆSTRUP 1941).

General remarks. The burrows of lemmings were found especially along the banks of riverbeds a little above the highest water level and on snow patches, i. e. places with sufficient food. In the summer winter-nests were found on the ground on snow-patches as well as heaps of excrement, both originating from the lemmings living below the snow-cover during winter.

As a curiosity I can mention that a piece of tin foil was found in a lemming's cave, which was dug out. Why it had taken this down into the cave is difficult to say, as it is not soft as the things normally used in lemming-nests—fine grass or wool of musk-oxen.

A lemming kept for a time in a tin-box was seen to eat its own excrement like rabbits, and it was not for lack of food as there were leaves in the box.

During the dark season nothing was seen of the species, only a few

Table 32. Weight and total length of *Dicrostonyx*.

| No.  | Sex    | Date | Year | Locality                   | Weight | Total length | Preparation  | Pelage       |
|------|--------|------|------|----------------------------|--------|--------------|--------------|--------------|
| 28   | ♀ ad.  | 14/9 | 48   | Heilprin Land              | 53.2   | 128          | skin         | summer       |
| 25   | ♂ ad.  | 5/9  | 48   | Heilprin Land              | 47.5   | 104          | skin         | summer       |
| 111  | ♀ ad.  | 28/9 | 48   | Koralkysten                | 44.5   | 127          | skin         | transitional |
| 29   | ♂      | 16/8 | 48   | Heilprin Land              | 38.0   | 105          | skin         | summer       |
| 21   | ♂ ad.  | 29/8 | 48   | Heilprin Land              | 42.1   | 119          | skin         | summer       |
| 22   | ♂      | 30/8 | 48   | Heilprin Land              | 43.0   | ..           | skin         | summer       |
| 575  | ♀ juv. | 29/5 | 49   | Walcotts Land              | ..     | 109          | skin         |              |
|      |        |      |      |                            |        |              | (found dead) | summer       |
| UM-H | ♂ juv. | 31/7 | 47   | Heilprin Land              | 40     | 118          | skin         | summer       |
| 384  | ♂ ad.  | 18/4 | 49   | Heilprin Land              | ..     | 131          | skin         | winter       |
| 507  | ♀ ad.  | 26/4 | 49   | Melville Land              | ..     | 117          | skin         |              |
|      |        |      |      |                            |        |              | (found dead) | winter       |
| 388  | ♂ ad.  | 29/3 | 49   | Melville Land              | ..     | ..           | skin         |              |
|      |        |      |      |                            |        |              | (found dead) | winter       |
| 99   | ♂ ad.  | 26/8 | 47   | Zackenbergt                | 47     | 145          | skin         | summer       |
| 44   | ♂      | 12/8 | 48   | Zackenbergt Bugt           | 26     | 91           | skin         | juvenile     |
| 637  | ad.    | 30/5 | 49   | S coast Peary Ld.<br>21° W | ..     | ..           | alcohol      | winter       |
| 661  | juv.   | 10/6 | 49   | Heilprin Land              | ..     | ..           | alcohol      | juvenile     |
| 1349 | juv.   | 15/7 | 49   | Heilprin Land              | ..     | ..           | alcohol      | juvenile     |

tracks were observed in the end of February 1949 at the east end of Midsommersøen. Altogether very little was seen of the species, even in the year relatively rich in lemmings.

Lemmings from 25/9 to 25/4 was all in pure winter pelage. The moulting from winter- to summer-pelage seems to take place during May. From 28-30/5 quite white as well as individuals in summer-pelage and in not fully changed winter-pelage were captured. So late as 1/6 a quite white lemming was seen, but all later observations were of lemmings in summer-dress.

While lemmings captured between 29/8 and 16/9 were all in summer-pelage a single one kept indoor in a cage 30/8 had already moulted to nearly complete winter-pelage (induced by the smaller light intensity in the house?).

Only the following data on the breeding time were obtained. Size of testes: No. 384, 18/4: 6.5 mm. No. 654, 29/5: 8.4 mm. No. 21, 29/8: 9.9 mm. No. 22, 30/8: 5.1 mm. No. 25, 5/9: 5.7 mm. No. 29, 16/9: 4.3 mm. A female captured 23/6 had distended uterine tubes, but without embryos. No doubt parturition had newly taken place. 2 juv. still with the dark dorsal line was taken 10/6 and 9/7 respectively. Thus it seems as if breeding in Peary Land takes place during May—August.

Parasites. A number of dead lemmings examined for *Trichinella* by the late H. ROTH all gave negative results. A single specimen from the south coast of Peary Land was highly infested with a species of lice new to Greenland, viz. *Hoplopleura acanthopus* (Burmeister) (preparation No. 618).

Measurements. Finally, some cranial measurements (table 31) and some weights and measurements of the total length of fresh animals (table 32) can be given.

*Arctic Fox. Alopex lagopus* (L.).

*Canis lagopus* L. MANNICHE 1910. FREUCHEN 1915 a.

Literature. Numerous tracks were observed in May 1882 by LOCKWOOD on the north coast, 83°24' NL (GREELY 1886). MANNICHE (1910) records from the east coast 1907: 19/5, 83°50' NL, 2 days old tracks on the sea-ice. 83°10' NL, many tracks on the ice. 24/5, 82°30' NL, a fox near shot musk-ox. Many foxes had visited the killed animals shortly before. From 1912 FREUCHEN (1915 a) states: wherever we went (i. e. the southeastern part of Peary Land), we found numerous tracks of foxes, the animals themselves being sighted several times. Finally, a white fox 8/6-1917 was seen hunting lemmings at the mouth of J. P. Kochs Fjord (RASMUSSEN 1919).

Notes from the diaries. 1947: August, some seen several days at musk-ox carcass on Oxesletten. One at south coast of Brønlund Fjord. Melville Land near Børglum Elv, 2 shot. 1948: 7/8 old tracks and excrement near the station. 28/8, southern side of Buen, 1 juv. ♂ shot. 11/9 grey fox at musk-ox skull near the station. 20-25/9 numerous tracks in riverbed near the station. 27/9, lemming holes in snow drifts around the station dug out by foxes in several cases. 28/9 tracks of Arctic Fox observed from sea level up to 1000 meters above sea level, on northern Heilprin Land. 25-31/9, south coast of Peary Land from Jørgen Brønlunds Fjord to Kjøvesletten, many tracks seen. 1/10, *ibid.*, about 24° NL, 1 in summerdress shot. 27/9, Koralkysten, tracks in clay. 29/9 tracks on the ice off Falkefjeld. 2/10, south of the station, tracks in a valley. In the middle of Independence Fjord south of Koralkalk River, track. 3/10, at the station a young, grey fox sleeping on a musk-ox fur. West of Kap Peter Henrik, tracks. 4/10 a dark fox crossing Jørgen Brønlunds Fjord. 5/10, east of Kap Harald Moltke, numerous tracks at dead musk-ox. Uphill at Kap Peter Henrik, fresh tracks. 8/10, east coast of Hagens Fjord, fresh track of a hare apparently pursued by a fox's track, many loops and angles formed by both tracks. 13/10, easternmost part of Midsommer-søen, a few tracks crossing the lake. 15/10, about 20 kilometers from the lake at meat depot, numerous tracks. 14/11, Jørgen Brønlunds Fjord, a

very short time after a bear-skin mitten had fallen from a sledge, it was partly devoured by a fox.  $18/11$ , near the station 1 white, juv. ♀ in trap.  $20/11$ , near the station 1 white, juv. ♀ in trap.  $20/11$ , *ibid.*, again 1 white, juv. ♀ in trap. 1949:  $21/2$ , north coast of eastern part of Midsommersøen, tracks in snow and on the ice. Southern side of Buen at the mouth of Børglum Elv, 1 white, ad. ♂ shot.  $22/2$  *ibid.*, many tracks where a musk-ox had been killed yesterday. Tracks on Oksesletten.  $25/2$ , meat depot east of Midsommersøen, now tracks. This was not the case a few days ago. In the meantime we had moved the snow covering and stones so the meat had sent out new scent.  $18/3$ , musk-ox carcass from last autumn, east of Midsommersøen, quite cleaned from meat rests by foxes.  $19/3$  east coast of this lake, many tracks.  $20/3$ , Kap Knud Rasmussen, tracks.  $21/3$  eastern part of Sydpasset, tracks seen now and then. South of the station, 1 white ♀ in trap. Tail and hind leg devoured by other foxes.  $22/3$ , Aftenstjernesø, tracks. At the station 1 white ♂ in trap.  $24/3$ , southern side of Buen at Børglum Elv 1 small, white ♀ in trap.  $28/3$ , Aftenstjernesø, 1 white fox at the glacier front.  $29/3$ , uppermost part of Adams Gletcher, tracks.  $30/3$ , head of J. P. Kochs Fjord at the front of Adams Gletcher, track.  $6/4$ , north coast of westernmost part of Midsommersøen, tracks.  $7/4$  south coast *ibid.*, tracks.  $8/4$ , north coast *ibid.* 680 over the lake, tracks.  $25/4$ , Koralkysten, tracks.  $1/5$ , western end of Kjovesletten, about  $24^\circ$  WL, tracks in number.  $2/5$ , Independence Fjord 4—5 kilometers from land between Kap Vaarbrud and Kjovesletten's western end, tracks.  $3/5$ , Kap Vaarbrud, 1 white fox. Off Kjovesletten, tracks on the ice.  $4/5$ , Kap Vaarbrud, tracks.  $5/5$ , Kap København, tracks.  $11/5$  north of Kap Eiler Rasmussen, 1 white. Middle of Herlufsholm Strand about 10 kilometers from the coast, 1 white seen.  $16/5$ , Kap Vaarbrud, 1 white, head black-grey.  $17/5$ , northern part of Herlufsholm Strand, 1 heard.  $19/5$ , Asmild Elv, tracks. Neergaards Elv, tracks.  $20/5$ , near Kap Grundloven, tracks.  $24/5$ , mouth of Jørgen Brønlunds Fjord, a fox had been digging through snow-drift covering a seal's breathing hole.  $26/5$ , head of Hellefisk Fjord, tracks.  $7/6$ , south coast of Perry Land, about  $21^\circ$  WL, tracks.  $9/6$ , Koralkysten, 1 in grey summerdress.  $16/6$ , Blomsterstranden, excrement.  $2/8$ , valley of Børglum Elv, tracks everywhere.  $5/8$ , 12 kilometers from mouth of Børglum Elv, 1 ad seen.  $4/9$  one dark at eastern end of Midsommersøen.  $10/9$ , one at the station.  $1/10$  tracks along south coast of Peary Land.  $16/10$  one white ♂ in trap at the station.  $17/10$  two white ♂♂ in traps at the station.  $18/10$  ♂ and ♀, both white, in traps *ibid.*  $19/10$ , 2 white ♂♂ in traps *ibid.*  $20/10$  ♂ and ♀, both white, in traps *ibid.*  $24/10$ , 1 white ♂ in trap *ibid.*  $26/10$ , 3 white ♂♂ in traps *ibid.*  $28/10$ , 2 ♂♂ in traps *ibid.*, one white and one perhaps blue.  $30/10$ , 1 white ♀ in trap *ibid.*  $4/11$ , 1 white ♂ in trap *ibid.*  $5/11$ , white ♂ in trap *ibid.*  $7/11$ , 1 white ♀ in trap *ibid.*  $12/11$ , 1 white ♂ in trap at the station.  $13/11$ , 1 white

♀ in trap ibid.  $^{15}/_{11}$ , 1 white ♂ in trap ibid.  $^{17}/_{11}$ , 1 blue ♂ in trap ibid.  $^{18}/_{11}$ , 1 white ♀ in trap ibid.  $^{24}/_{11}$ , 1 white ♂ in trap ibid.,  $^{25}/_{11}$ , 2 white ♂♂ in traps ibid.  $^{29}/_{11}$ , 3 white ♂♂ in traps ibid.  $^1/_{12}$ , 1 white ♂ in trap ibid.  $^2/_{12}$ , 1 white ♂ in trap ibid.  $^7/_{12}$ , 1 white ♂ in trap at the station.  $^8/_{12}$ , 2 white ♂♂ in traps ibid.  $^{12}/_{12}$ , 1 white ♂ in trap ibid.  $^{22}/_{12}$ , 1 white ♂ in trap ibid.  $^{24}/_{12}$ , 1 white ♂ in trap ibid.  $^{29}/_{12}$ , 2 white ♂♂ in trap ibid. 1950:  $^4/_1$ ,  $^{13}/_1$ ,  $^{14}/_1$ ,  $^{16}/_1$ ,  $^{23}/_1$ ,  $^{30}/_1$  and  $^4/_2$  one white ♂ in trap at the station.  $^8/_2$ , 1 white ♀ in trap ibid.  $^{19}/_2$ , 1 white in trap ibid.  $^{11}/_3$ , 1 white ♂ in trap ibid.  $^{28}/_3$  a single track in head of J. P. Kochs Fjord.  $^6/_4$  track on west coast of Mascart Inlet.  $^9/_4$  foot-prints at Kap John Flagler.  $^{19}/_4$  tracks on Nordkronelien. At the foot of an ice-berg in Fr. E. Hyde Fjord a fox had dug three holes in the snow, no doubt attracted by the scent from a seal, the expiration of which was seen in the cold air.

Distribution. The Arctic Fox is fairly common everywhere in Peary Land. The foxes or their tracks have been observed in all parts of Peary Land visited by the different expeditions, only along the eastern part of the north coast—as in the case of musk-ox—no observations have been made.

General remarks. As elsewhere in NE Greenland (compare JENNOV 1945) the percentage of blue foxes in the fox population of Peary Land is very low. Out of 62 foxes observed or captured only 3, perhaps 2, were blue, i. e. 5.1 per cent. Concerning fluctuations in numbers see the text on Greenland Collared Lemming.

Foxes from  $^9/_6$ — $^4/_10$  were in summer dress and from  $^{16}/_{10}$ — $^{11}/_5$  all foxes observed wore pure winterdress.  $^{16}/_5$  one in a transitional stage, white but with dark head, was observed. This is in accordance with the observations on moulting in foxes farther south in East Greenland (MANNICHE 1910. PEDERSEN 1930).

It is evident that there is a great difference in numbers of males and females among the foxes caught in traps. Out of 54 foxes caught in traps in Peary Land 42 were males and only 12 females, i. e. 79 per cent of males. From the Scoresby Sund region PEDERSEN (1926) records a material of 95 foxes “erlegt und gefangen”. No doubt these foxes have mainly been taken in traps as the number of males was 58 (67 %) and the number of females was 35 (two not sexed). Out of 69 foxes “shot or caught” on Germania Land 45 were males (65 %) and only 24 females according to MANNICHE (1910). In these cases an unstated number of shot foxes no doubt has lowered the difference in number of the sexes, but still an evident surplus of males is found. This may be due to the males’ greater interest in the traps, or perhaps the explanation is that the males stroll much more about than do the females. The females, which have their territory where the traps are placed, will soon be caught, but strolling

males constantly invade this territory and thus replace males already caught. Mostly the traps in East Greenland have fixed places all the winter or remain at least in the same place for a longer period of time. All the foxes taken in traps by D. P. E. were taken in the vicinity of the station.

The foxes of Peary Land are typical "lemming foxes", mainly living on lemmings. A few stomachs examined contained:

|          |        |                      |                             |
|----------|--------|----------------------|-----------------------------|
| No. 5.   | ♂ juv. | $\frac{28}{8}$ -48.  | Vertebrae of fish.          |
| No. 86.  | ♀ ad.  | $\frac{1}{10}$ -48.  | Lemmings.                   |
| No. 158. | ♀ juv. | $\frac{18}{11}$ -48. | Lemmings. Hairs of musk-ox. |
| No. 367. | ♂      | $\frac{22}{3}$ -49.  | Lemmings.                   |
| No. 371. | ♀      | $\frac{21}{3}$ -49.  | Empty.                      |
| No. 382. | ♀      | $\frac{24}{3}$ -49.  | Hairs of musk-ox.           |

Furthermore the lemming-hunt of the fox has been observed directly and on several occasions we have seen how foxes have dug out the holes of lemmings. Twice it was seen that foxes had been digging in snow covering the breathing holes of Ringed Seals, and here according to PEDERSEN (1934) the newborn seals may be caught. In two cases when eggs in nests of King Eider and Red-throated Diver under observation disappeared the fox was no doubt guilty, the more so as the footprints were clearly seen near one of these nests.

MANNICHE (1910) in contrast to FABRICIUS (1788) and MÜLLER (1906) holds that the Arctic Fox does not pursue the hares, since in Germania Land he observed these animals living friendly together throughout the year and never found traces of hares in the foxes, their excrement or outside their dens. PEDERSEN (1926) found remains of hares in 8 out of 60 foxes, but these may originate from carcasses. The same author (1934) tells that foxes in summer will take leverets. It is interesting to note therefore that an ad. hare on the east coast of Hagens Fjord had been vigorously pursued by a fox judging from the tracks in snow—at least the tracks of both animals formed many angles and loops. On Heilprin Land I also once found the rather fresh remains of an ad. hare which had been attacked by some animal of prey, most likely a fox, since no Snowy Owls were observed that year-1947. We may conclude from the diverging opinions as to the hare-hunting of the fox that in years with an abundance of lemmings the foxes will not attack adult hares but stick to the more easily obtained lemmings. In case of shortage of lemmings hares will no doubt be pursued. The year when PEDERSEN found rests of hares in foxes the lemming was far from numerous. At least one of the years when MANNICHE made his above mentioned observations must have been a true lemming-year.

It seems as if lemmings are highly desirable by the foxes. FREUCHEN (1915 a) in Peary Land found dead musk-oxen untouched by foxes. This

Table 33. Measurements and

| No. ....                        | 371                          | 158                           | 86                           | 382                          | 1766          |
|---------------------------------|------------------------------|-------------------------------|------------------------------|------------------------------|---------------|
| Sex .....                       | ♀                            | ♀                             | ♀                            | ♀                            |               |
| Date .....                      | <sup>21</sup> / <sub>3</sub> | <sup>18</sup> / <sub>11</sub> | <sup>1</sup> / <sub>10</sub> | <sup>24</sup> / <sub>3</sub> |               |
| Year .....                      | 49                           | 48                            | 48                           | 49                           | 49            |
| Locality .....                  | Heilprin Land                |                               | Kjove-<br>sletten            | Erland-<br>sens Ld.          | Peary<br>Land |
| Condylbasal length .....        | 113.7                        | 110.0                         | 114.2                        | 114.9                        | 111.5         |
| Zygomatic breadth .....         | 63.9                         | 61.5                          | 63.5                         | 64.2                         | 64.8          |
| Maxillary tooth-row .....       | 42.8                         | 41.0                          | 44.4                         | 41.9                         | 42.8          |
| Interorbital constriction ..... | 24.9                         | 22.8                          | 24.6                         | 25.9                         | 25.1          |
| Nasal, inner margin .....       | 38.1                         | 37.5                          | 41.3                         | 38.5                         | 35.9          |
| Mandible from angle .....       | 86.5                         | 80.2                          | 85.9                         | 84.2                         | 22.7          |
| Mandibular tooth-row .....      | 47.1*                        | 46.6                          | 49.3                         | 48.0                         | 45.5*         |
| Tooth .....                     | worn                         | some-<br>what<br>worn         | much<br>worn                 | not<br>worn                  | worn          |
| Mastoid breadth .....           | 39.9                         | 32.0                          | ..                           | 39.2                         | 37.9          |
| Weight of fresh fox .....       | ..                           | 2450                          | 2700                         | ..                           | ..            |
| Snout-tip of tail .....         | ..                           | ..                            | 890                          | 870                          | ..            |

\* No. 371: lacking both m<sub>3</sub>, No. 33 A: same, No. 1766 lacking m<sub>3</sub> in one side.

was no doubt due to an abundance of lemmings, because in 1947—50 the remains of our musk-ox hunting always attracted foxes, and meat depots had to be protected most carefully. None of these years were real lemming-years in Peary Land.

A highly astonishing behaviour was seen on a few occasions at musk-ox carcasses where some foxes were assembled. One of the foxes for at least one quarter of an hour ran to and fro the carcass, resting only for a few seconds now and then. This behaviour strikingly reminded of the movements of carnivores so common in zoological gardens.

Measurements and weights secured are given in table 33.

Parasites. One of the foxes was infested with *Hoplopyllus glacialis* Tasch. Another had a number of *Cestoda* and *Nematoda* in the intestine. A number of foxes was examined by the late H. ROTH for *Trichinella*, but without result.

*Polar Wolf. Canis lupus tundrarum* Miller.

*Canis lupus* L. MANNICHE 1910. FREUCHEN 1915 a.

Literature. There are the following records of the species in Peary Land. PEARY (1907) in the middle of May 1900 observed wolf tracks at Kap Morris Jesup. FREUCHEN <sup>5</sup>/<sub>7</sub> and <sup>6</sup>/<sub>7</sub>-1912 saw the same wolf in Valmuedalen. In 1921 LAUGE KOCH (1925) met with wolves several times along the coasts of Peary Land, viz. <sup>2</sup>/<sub>5</sub> one in Linn Bugt, <sup>7</sup>/<sub>5</sub> a female at

weights from *Alopex lagopus*.

| 1475          | 364                          | 5                            | 367                          | 160                           | 33 A                        | 34 A                        | I                           | II                          | III                          | 104                          |
|---------------|------------------------------|------------------------------|------------------------------|-------------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|------------------------------|------------------------------|
| sub-fossil    | ♂                            | ♂                            | ♂                            | ♂                             | ♂ ad.                       | ♂ ad.                       | ♂                           | ♀                           | ♂                            | ♀                            |
|               | <sup>21</sup> / <sub>2</sub> | <sup>28</sup> / <sub>8</sub> | <sup>22</sup> / <sub>3</sub> | <sup>20</sup> / <sub>11</sub> | <sup>3</sup> / <sub>8</sub> | <sup>6</sup> / <sub>8</sub> | <sup>4</sup> / <sub>2</sub> | <sup>8</sup> / <sub>2</sub> | <sup>11</sup> / <sub>3</sub> | <sup>31</sup> / <sub>8</sub> |
|               | 49                           | 48                           | 49                           | 48                            | 47                          | 47                          | 50                          | 50                          | 50                           | 47                           |
| Heilprin Land | Erlandsens Ld.               | Erlandsens Ld.               | Heilprin Land                |                               | Melville Land               |                             | Heilprin Land               |                             |                              | Zacken-berg                  |
| ..            | 120.0                        | 110.0                        | 117.9                        | 113.9                         | 124.5                       | 123.6                       | ..                          | ..                          | ..                           | ..                           |
| ..            | 67.0                         | 61.4                         | 62.9                         | 63.9                          | 71.5                        | 71.3                        | ..                          | ..                          | ..                           | ..                           |
| 45.4          | 46.0                         | ..                           | 45.6                         | 42.7                          | 47.0                        | 46.7                        | ..                          | ..                          | ..                           | ..                           |
| 29.0          | 24.6                         | 24.8                         | 25.1                         | 25.1                          | 30.0                        | 29.0                        | ..                          | ..                          | ..                           | ..                           |
| ..            | 45.6                         | 36.9                         | 41.7                         | 34.5                          | 41.1                        | 45.3                        | ..                          | ..                          | ..                           | ..                           |
| ..            | 91.7                         | 82.0                         | 88.0                         | 83.6                          | 96.6                        | 94.5                        | ..                          | ..                          | ..                           | ..                           |
| ..            | 52.7                         | ..                           | 51.5                         | 49.0                          | 53.1*                       | 53.1                        | ..                          | ..                          | ..                           | ..                           |
| much worn     | worn                         | lactal                       | some-what worn               | not worn                      | much worn                   | much worn                   |                             |                             |                              |                              |
| ..            | 39.6                         | 38.0                         | 38.7                         | 38.5                          | 41.6                        | 41.8                        | ..                          | ..                          | ..                           | ..                           |
| ..            | ..                           | 2650                         | ..                           | 2150                          | 3200                        | 3500                        | ..                          | ..                          | ..                           | 2900                         |
| ..            | ..                           | ..                           | ..                           | 840                           | 900                         | 930                         | 890                         | 900                         | 880                          | 800                          |

Lockwood Ø, <sup>13</sup>/<sub>5</sub> one at Kap Morris Jesup. <sup>15</sup>/<sub>5</sub> three seen, one of which was shot, near Kap Morris Jesup. <sup>1</sup>/<sub>6</sub> a track at the entrance of Independence Fjord. Another track near Kap København. South of here one was heard. <sup>4</sup>/<sub>6</sub>, south coast of Peary Land, several wolves seen or heard inland and a hard trampled path ran along the coast. <sup>4</sup>/<sub>5</sub> *ibid.*, but more to the west, as usual wolves inland. <sup>15</sup>/<sub>6</sub> one shot at Kap Harald Moltke.

Notes from the diaries. 1949: One old mandible of wolf found on northern Heilprin Land. Some excrement in the valley of Børglum Elv, around an old musk-ox skeleton, no doubt several years old.

General remarks. Considering the observations of wolves in Peary Land and records from the neighbouring land stretches, Vildtland (ASTRUP 1895. PEARY 1898. FREUCHEN 1915 a.), from the north coast west of Peary Land (RASMUSSEN 1919) and just south of Independence Fjord (FREUCHEN 1915 a), it was rather astonishing that not a single trace of wolves was seen 1947—50. The only evidence of their former existence was old excrement in a single place in Erlandsens Land and a subfossil mandible in Heilprin Land.

In Germania Land where a number was seen in 1906—1908 (MANNICHE 1910) and in 1932—1933 many tracks were observed (JENNOV 1945) not a single observation has been made since then. During the Danish Northeast Greenland Expedition 1938—1939 (PEDERSEN 1942) and according to verbal information also 1948—50 passed without a

single observation of wolves or their tracks. When asking RODAHL about his expression "howling wolves" (1945) at Clavering Ø he admitted that it may refer to foxes.

Although the wolf has always been rare in Greenland it may be concluded from the total lack of records of wolves in Greenland during the last 10 years that it has become extinct, at least in northernmost East Greenland including Peary Land. The latest observation was made in 1939 at Scoresbysund (PEDERSEN (1942)). Now and then a few stragglers may invade North Greenland from Ellesmere Land, but at present it is very questionable whether the Polar Wolf can be listed among the mammals of Greenland.

*Polar Bear. Ursus maritimus L.*

Literature. The occurrence of the Polar Bear in Peary Land has been stated by the following travellers. LOCKWOOD in May 1882 at Kap Benét saw a track leading northeast (GREELY 1886). During Peary's journey in May 1900 a bear was brought down in a little inlet west of Kap Morris Jesup (PEARY 1907). L. KOCH (1925)  $\frac{2}{6}$ -1921 observed a fresh track at Kap København leading from the sea-ice inland. In the middle of Independence Fjord south of Blomsterstranden he  $\frac{10}{6}$  1921 saw another track. Also FREUCHEN (1915 a) in this fjord saw a track of bear leading due north from Kap Rigsdagen. RASMUSSEN (1919)  $\frac{14}{6}$  1917 observed a track at Kap Salor, Elison Ø.

Notes from the diaries. 1947: No trace of bear. 1948:  $\frac{5}{8}$  one bear at the station. Beginning of September, a track at the eastern end of Midsommersøen, about 30 kilometers from the nearest seawater. Footprints on a musk-ox path between this lake and Jørgen Brønlunds Fjord, most likely originating from the same animal. The very same footprints were seen a year later—a good example of the longevity of footprints in North Greenland.  $\frac{27}{9}$ , old track in clay at Koralkysten.  $\frac{3}{10}$  many tracks in snow in Independence Fjord off Kap Peter Henrik. The tracks rather fresh. 1949:  $\frac{11}{10}$ , track of little bear at the station. 1950: no observations.

General remarks. Although nearly all travellers in Peary Land have observed tracks of bears, the bear must be said to be extremely rare here. This is no doubt due to the fact that the sea and the fjords are frozen for a long period of time. The seals are also represented more sparsely here than farther south.

At the station, a locality rather long away from the outer coastline, we did not expect to see much of bears, and in fact only a single bear was seen here. I had just been landed and sat eating with some other members of the expedition, when I heard scrambling of a pot outside

the tent. I looked out and a few meters away saw a bear moving towards me. I let the cloth drop down over the entrance in a hurry. Joining in a terrible scream at the top of our voices—the ammunition was placed in a box outside the tent—we succeeded in frightening away the animal. When we rushed out to load our guns, the bear, as we expected, suddenly arrived again from the top of a sand-hill. I just noticed that it rushed towards me before I jumped into the tent, which partly collapsed when the bear touched it. When a moment later I looked out of the tent the bear rushed towards the other men, but one of them just in time hit it with his rifle, which he most fortunately had got loaded. It appeared to be a grown-up young female. Farther south in the inhabited parts of Greenland the females and young of both sexes will normally fly before man (PEDERSEN 1934).

An analysis of the stomach revealed a piece of milk-chocolate with tin-foil, which must have been taken in the camp. Nothing else was found in the stomach.

The following measurements were taken. Snout-tip of tail: 188 centimeters. Width of breast behind forelimbs: 100 centimeters. Condylbasal length: 325. Interorbital breadth: 73.8. Zygomatic breadth: 185. Mastoid breadth: 118.4. Postorbital constriction: 62.3. Rostral breadth over canines: 77.8. Mandible (from angle): 205.

*Stoat. Putorius ermineus arcticus* Merriam.

*Mustela erminea* L. MANNICHE 1910. FREUCHEN 1915 a.

Literature. The Stoat is recorded only once from Peary Land, namely by FREUCHEN who <sup>10</sup>/<sub>7</sub>-1912 observed one hunting a ptarmigan near Valmuedalen. RASMUSSEN (1915) mentions tracks of Stoat <sup>6</sup>/<sub>6</sub>-1912 on the south coast of Peary Land opposite Hagens Fjord.

Notes from the diaries. 1947: No stoat was seen, but tracks betrayed its presence on the south coast of Jørgen Brønlunds Fjord 1948: <sup>6</sup>/<sub>8</sub>, at the station, 1 captured. <sup>5</sup>/<sub>9</sub>, Melville Land, at Børglum Elv, 12 km. from the mouth, 300 meters above sea level, 1 very confident. <sup>22</sup>/<sub>9</sub>, near the station tracks in fresh snow. <sup>29</sup>/<sub>9</sub>, Kap Caroline Marie, track leading to hole in snow drift in mountain ravine. <sup>30</sup>/<sub>9</sub>, east of Falkefjeld, tracks. <sup>2</sup>/<sub>10</sub>, in the middle of Independence Fjord, track. <sup>3</sup>/<sub>10</sub> Kap Peter Henrik, track. <sup>13</sup>/<sub>10</sub>, Sydpasset about 12 kilometers from Midsommersøen, tracks in rocky area at waterfall. 1949: <sup>28</sup>/<sub>2</sub>, north coast of easternmost part of Midsommersøen, track. <sup>5</sup>/<sub>4</sub>, Buen, footprints. <sup>19</sup>/<sub>5</sub>, Neergaards Elv, many tracks. <sup>7</sup>/<sub>6</sub>, south coast of Peary Land, ca. 21° WL, track. <sup>8</sup>/<sub>6</sub>, Diabasholmene, 1 hunting Snow Buntings. <sup>23</sup>/<sub>6</sub> northern Heilprin Land, 1 ♂ shot. <sup>17</sup>/<sub>7</sub>, near the station, 1 ♂ shot at the beach. <sup>20</sup>/<sub>7</sub>, in the house, 1 ♀ caught. <sup>24</sup>/<sub>7</sub>, outlet of Midsommersøen, 1 ♂ crossing the river, from

Walcotts Land to Erlandsens Land. Ibid., another scrambling with an empty tin box outside the tent.  $^{24-25}/_7$  Itukussuks Dal, 2 seen.  $^{26}/_7$ , north coast of Jørgen Brønlunds Fjord at the head, track.  $^2/_8$ , entrance to the valley of Børglum Elv, tracks.  $^5/_8$ , 20 kilometers from the coast in same valley, 1 ad. shot. 1950:  $^9/_4$  track at Kap John Flagler.  $^{12}/_4$ , track on north coast of Fr. E. Hyde Fjord's eastern part.

General remarks. The stoat must be rather common in Peary Land judging from the tracks seen practically everywhere, but the stoat itself was in fact fairly seldom seen. It has been seen on Heilprin Land, Erlandsens Land, Valmuedalen, Melville Land, Walcotts Land, Itukussuks Dal and Diabasholmene. Furthermore tracks in snow were seen in Sydpasset, at north coast of Fr. E. Hyde Fjord, at Falkefjeld, Cap Caroline Marie, Kjovesletten—along the south coast of Peary Land and also along the south coast of Independence Fjord at Kap Peter Henrik and Neergaards Elv. A track was also found on the ice in the middle of Independence Fjord.

The only food found in the Stoat was remnants of lemmings.

Parasites. A single of the stoats secured was infested with *Trichodectes mustelae* (Schrank), not previously recorded from Greenland. The same stoat was also infested with hundreds of a species of mite.

The following measurements have been taken (table 34):

Table 34. Weight, total length and cranial Measurements of *Putorius e. a.*

| No.....                        | 72                   | 77                   | 9                     | 8                     | 1303             | 862              | 1158             | 1317                 | I                |
|--------------------------------|----------------------|----------------------|-----------------------|-----------------------|------------------|------------------|------------------|----------------------|------------------|
| Sex.....                       | ♂                    | ♀                    | ♂                     | ♀                     | ♀juv.            | ♂ ad.            | ♂ juv.           | ♂ juv.               | ♂                |
| Date.....                      | $^{17}/_8$           | $^{19}/_8$           | $^{27}/_7$            | $^{27}/_7$            | $^{20}/_7$       | $^{23}/_8$       | $^{17}/_7$       | $^{24}/_7$           | $^5/_8$          |
| Year.....                      | 47                   | 47                   | 47                    | 47                    | 49               | 49               | 49               | 49                   | 49               |
| Locality.....                  | Zacken-<br>berg Bugt | Zacken-<br>berg Bugt | Zacken-<br>berg Bugt  | Zacken-<br>berg Bugt  | Heilprin<br>Land | Heilprin<br>Land | Heilprin<br>Land | Erland-<br>sens Land | Melville<br>Land |
| Condylbasal length.....        | 45.4                 | 40.8                 | 43.0                  | 41.4                  | 38.9             | 42.5             | ..               | 44.9                 | ..               |
| Zygomatic breadth.....         | 27.3                 | 23.4                 | 25.3                  | 23.4                  | 22.8             | 24.4             | ..               | 25.6                 | ..               |
| Mastoid breadth.....           | 22.6                 | 20.8                 | 21.5                  | 20.6                  | 19.7             | 21.4             | ..               | 22.8                 | ..               |
| Maxillary tooth-row.....       | 10.1                 | 9.4                  | 10.2                  | 9.7                   | 8.8              | 12.0             | ..               | 9.7                  | ..               |
| Interorbital constriction..... | 11.8                 | 10.0                 | 10.8                  | 10.0                  | 10.4             | 11.1             | ..               | ..                   | ..               |
| Nasal (inner margin).....      | 7.8                  | 8.2                  | 6.9                   | 6.6                   | 7.0              | ..               | ..               | ..                   | ..               |
| Mandible (from angle).....     | 22.0                 | 19.9                 | 21.8                  | 20.5                  | 19.4             | 23.0             | ..               | 21.5                 | ..               |
| Mandibular tooth-row.....      | 12.0                 | 11.2                 | 11.8                  | 11.2                  | 10.5             | 12.3             | ..               | 11.9                 | ..               |
| Tooth.....                     | worn                 | worn                 | some-<br>what<br>worn | some-<br>what<br>worn | not<br>worn      | not<br>worn      | ..               | not<br>worn          | ..               |
| Weight, fresh.....             | 205                  | 125                  | 130                   | 130                   | ..               | ..               | 168              | 133                  | 115              |
| Total length.....              | 335                  | 325                  | 292                   | 318                   | ..               | 375              | 297              | 302                  | 375              |

*Ringed Seal. Phoca hispida* Schreiber.

*Phoca foetida* O. Fabricius. FREUCHEN 1915 a.

Literature: A number of observations, all from the interior part of Independence Fjord 1912, are given by FREUCHEN (1915a): Seals were seen in great numbers for the most part at the foot of icebergs.  $\frac{5}{6}$ , 1 at same breathing hole.  $\frac{8}{6}$ , again 2 seals at a single hole and later 3 at one hole. Bones of seals at eskimo tent-rings.  $\frac{9}{6}$ , a number of seals on the ice near Jørgen Brønlunds Fjord.  $\frac{12}{6}$  one shot.  $\frac{13}{6}$  we passed several hundred seals on the ice. At one fissure there were 29. 4 shot.  $\frac{14}{6}$ , one in narrow landwater.  $\frac{15}{6}$ , 3 shot. During the same expedition RASMUSSEN (1915a) noted:  $\frac{6}{6}$ , south coast of Peary Land, seal observed.  $\frac{10}{6}$  *ibid.*, 1. From 1917 RASMUSSEN (1919) gives these particulars: Strømstedet in outer part of J. P. Kochs Fjord,  $\frac{8}{6}$  2 shot and  $\frac{10}{6}$  again a couple seen on the ice here. *Ibid.*  $\frac{20}{6}$ , 1 seen.  $\frac{9}{6}$  Low Point, Nansens Land, 1.  $\frac{17}{6}$ , 1 very big shot between Kap Neumayer and Kap Benét, Sverdrups Ø.  $\frac{18}{6}$ , 1 on ice at Low Point. The seals are very shy, the author says.  $\frac{20}{6}$  mouth of De Long Fjord, 1.  $\frac{23}{6}$  south point of Elison Ø, a number, 4 shot.  $\frac{27}{6}$  Blue Point, a number. Finally L. KOCH (1925) records:  $\frac{2}{6}$ , 1 off Kap København.  $\frac{3}{6}$  eastern part of south coast of Peary Land, 1.  $\frac{5}{6}$  *ibid.*, 1.  $\frac{6}{6}$  *ibid.*, opposite Kap Grundloven, 1 shot.  $\frac{7}{7}$  more towards west, 2 shot.  $\frac{8}{6}$ , 2 shot in mouth of Jørgen Brønlunds Fjord—in the following days several.  $\frac{16}{6}$ , 1 in Jørgen Brønlunds Fjord.  $\frac{13}{6}$  Independence Fjord west of Jørgen Brønlunds Fjord, numerous seals. 10 seen at a single hole in the ice.

Notes from the diaries. 1947: a few seen in Jørgen Brønlunds Fjord. 1948:  $\frac{6}{8}$  Jørgen Brønlunds Fjord, 1.  $\frac{30}{8}$  *ibid.*, at the head off rivermouth, 1, in the middle of the fjord another one.  $\frac{31}{8}$  *ibid.*, at the station, 1. At the head of the Fjord, 1.  $\frac{1}{9}$  still 1 seal at head of the fjord. In the mouth of the fjord 1 ad. and 1 juv. shot and a third seen.  $\frac{11}{9}$  *ibid.*, 3 seen in current hole in the ice.  $\frac{15}{9}$  *ibid.*, 3 on the ice.  $\frac{15}{10}$  front of Academy Gletcher, 1 breathing hole. 1949:  $\frac{21}{5}$  mouth of Jørgen Brønlunds Fjord, first seal seen on the ice.  $\frac{24}{5}$  *ibid.*, 2 breathing holes at iceberg, the one covered with thick snow drift, in which a fox had been digging. The other in newly formed ice (the iceberg had moved some time ago). About 3 kilometers east of Kap Harald Moltke, 1 big seal at hole. Deep impression of the body at the hole.  $\frac{1}{6}$  mouth of Jørgen Brønlunds Fjord, 3 on the ice (2 together and one alone). 1 ad. ♂ shot. Total length 149 centimeters. Flesh with a rank smell.  $\frac{4}{6}$  *ibid.*, 1 shot. Kap København, 1 on the ice.  $\frac{5}{6}$  outer part of Jørgen Brønlunds Fjord, 4 on the ice. Independence Fjord outside Jørgen Brønlunds Fjord, 2 on the

ice, one of which—a ♀—shot. 5 kilometers west of Kap Knud Rasmussen, 1 ♂ and 1 ♀ shot. Furthermore 7 seals observed on ice here.  $\frac{6}{6}$ , Diabas-holmene, 1 ♀ shot. Kap Ejnar Mikkelsen, 11 seals together at one fissure. Of these 1 ♀ shot. This day 16 seals were seen at the head of Independence Fjord.  $\frac{8}{6}$  Kap Caroline Marie, 1 on the ice.  $\frac{9}{6}$  near Diabasnæs, head of Independence Fjord, several observed.  $\frac{10}{6}$  about 7 kilometers north of Astrups Fjord, 1 on the ice about 200 meters from tent and dogs. Near the mouth of Jørgen Brønlunds Fjord in Independence Fjord, 1 breathing hole.  $\frac{15}{6}$  off Blomsterstranden, 2 on the ice.  $\frac{17}{6}$  Jørgen Brønlunds Fjord, 2 on the ice.  $\frac{20}{7}$  *ibid.*, 1.  $\frac{8}{8}$  *ibid.*, 1 seen.  $\frac{18}{9}$ , 1 in middle of Independence Fjord west of Josephine Bræ.  $\frac{3}{10}$ , 1 at the mouth of Graptolit Elv. 1950:  $\frac{19}{4}$ , breathing hole in Fr. E. Hyde Fjord,  $\frac{4}{6}$ , 1 ♂ at head of Independence Fjord.  $\frac{6}{6}$ , 5 at Kap Harald Moltke.  $\frac{7}{6}$ , a number at head of Independence Fjord.

General remarks. The Ringed Seal has been observed throughout Independence Fjord, most numerous at the head, at the outer part of J. P. Kochs Fjord, at several places from the mouth of J. P. Kochs Fjord along the north coast to the head of De Long Fjord. In Fr. E. Hyde Fjord only a single observation of a breathing hole was made.

In Jørgen Brønlunds Fjord some seals could always be seen, but as this fjord is quite free of ice in the summer for periods, the seals are growing more numerous towards the mouth of the fjord. Here the sea-ice was permanent in 1947—1950, although there were many fissures. But only when travelling out of Jørgen Brønlunds Fjord to the ice of Independence Fjord, where icebergs are found were the seals frequent. It is my impression that the number of seals in the interior Independence Fjord must have been much smaller than it was in 1912, when FREUCHEN saw hundreds of seals in one day.

Not until the seals are climbing up on the ice to bask in the sun is there a good opportunity to study them. This did not happen until the end of May (earliest observation of seal on the ice  $\frac{21}{5}$ ). During that part of the year, when the seals are in the water, breathing holes on the huge icefields are found only accidentally, whereas seals on the ice are commonly seen as dark spots at great distances. FREUCHEN's and our observations were made at the same season so the difference in number of seals observed in 1912 and in 1948—50 is surprising. I want here to call attention to a few lines by JOHANSEN (1910), who writes about the seals at Germania Land: "We now see (as the summer gradually advances) them in larger and smaller herds lying sunning themselves on the ice out in the fjord, and the shimmering, uncertain light doubles their numbers." This might have been the reason why FREUCHEN, who had suffered from snow-blindness, states such a high number of seals in interior Independ-

ence Fjord. But his travelling-mate, KNUD RASMUSSEN in his printed diary (1915b) says: <sup>15-16</sup>/<sub>6</sub>, "saw a lot of seals, some only with the head above water. Often in such a number that it was difficult to count them." Furthermore he mentions several times seals and speaks of flocks of up to 30. I think we should rely on these statements and conclude that the number of seals here has decreased since then.

Stomachs of 3 seals were examined. 2 of them were completely empty, and the third contained rests of fish (*Cottidae*), a number of *Calanus*, a few *Sabinea septemcarinata* (a shrimp) and an arm of a species of *Cephalopoda*. One of the empty stomachs, of an ad. ♂ (leg. <sup>1</sup>/<sub>5</sub>), contained many parasitic *Nematoda*. *Trichinella spiralis* was looked for in a small number of seals, but in vain.

A number of skulls brought home had the following measurements:

Table 35. Cranial measurements of *Phoca hispida*.

| No. ....                 | 50         | 49         | 1                           | 772                | 771                    | 987                | 701                         | I                | II                          | 1 U  |
|--------------------------|------------|------------|-----------------------------|--------------------|------------------------|--------------------|-----------------------------|------------------|-----------------------------|--|
| Sex. ....                | ad.        | ad.        | ♀ ad.                       | ♀ ad.              | ♀ juv.                 | ♂ ad.              | ♀ ad.                       | ad.              | ad.                         | ♂ juv.   |
| Date. ....               |            |            | <sup>1</sup> / <sub>9</sub> | medio June         |                        |                    | <sup>5</sup> / <sub>6</sub> | summer           | <sup>1</sup> / <sub>5</sub> | <sup>19</sup> / <sub>7</sub>                           |
| Year. ....               | 48         | 48         | 48                          | 49                 | 49                     | 49                 | 49                          | 47               | 49                          | 48   |
| Locality. ....           | Young Sund | Young Sund | Jørgen Brønlunds Fjord      | Independence Fjord | Jørgen Brønlunds Fjord | Independence Fjord | Independence Fjord          | Zackenbergs Bugt | Jørgen Brønlunds Fjord      | 60 nautic miles S. of Clavering Ø, 20 n. m. from coast |
| Condylbasal length ...   | 180        | ..         | 187                         | 180                | 157                    | 190                | 184                         | 190              | 201                         | 157  |
| Zygomatic breadth ...    | 111.1      | 105.8      | 113.1                       | 105.2              | 92.7                   | 116.1              | 109.0                       | 109.2            | 113.8                       | ..   |
| Mastoid breadth ...      | 107.9      | ..         | 109.1                       | 99.4               | 95.4                   | 110.5              | 104.8                       | 111.0            | 109.0                       | ..   |
| Mandible (from angle) .  | 99.4       | 102.5      | 103.6                       | 98.7               | 83.9                   | 106.0              | 104.5                       | 103.1            | 111.6                       | 82.9   |
| Maxillary tooth-row ...  | 38.0       | 36.8       | 37.8                        | 39.0               | 33.8                   | 39.7               | *                           | 41.3             | 40.8                        | 34.6   |
| Mandibular tooth-row ..  | 35.6       | 35.0       | 38.2                        | 35.9               | 33.1                   | 38.9               | 33.1                        | 38.8             | 42.3                        | 32.4   |
| Nasal (inner margin) ..  | 43.0       | ..         | 42.6                        | 36.4               | 34.6                   | 47.4               | 42.8                        | 45.7             | 39.3                        | 34.2   |
| Interorbital breadth ... | 5.9        | 6.0        | 5.6                         | 4.7                | 6.6                    | 5.8                | 6.1                         | 6.5              | 5.5                         | 6.3  |
| Teeth .....              | worn       | worn       | much worn                   | not worn           | not worn               | worn               | much worn                   | worn             | worn                        | not worn   |

\* last molar lacking, alveoles disappearing.

*Bearded Seal. Erignathus barbatus* (O. Fabricius).

The bearded Seal has never been observed by any expedition in Peary Land, but some bones of this species were found by KNUTH at former eskimo settlements at Herlufsholm Strand. The bones were found both at Sommernæsset between Kap Ejler Rasmussen and Mudderbugten and at Kølønæsset. The find of bones of Bearded Seal in Peary Land is of special interest because the recent northern limit of the species in East

Greenland was shown to be 77° NL by MANNICHE (1910), and later on it has never been observed farther north (PEDERSEN 1942). Neither have bones been found by archæologists in eskimo-settlements excavated north of this limit—apart from these finds from Peary Land.

It seems justified to conclude from this find that the climate—at any rate the ice-conditions must have been more favourable in Peary Land when eskimos lived here. This is supported by the fact that the culture represented by the former settlement on Herlufsholm Strand as shown by KNUTH (1951) was mainly based on baleen-hunting. Now a days this mode of living is out of question, because baleenes now are never met with along the coasts of East Greenland inside the pack-ice.

*Greenland Whale. Balaena mysticetus L.*

Under the head *Balaena mysticetus*? FREUCHEN (1915 a) records a find of whale bones partly buried in the gravel near Kap Harald Moltke, Melville Land about 10 meters above sea level.

During D. P. E. the archaeologist of the expedition, KNUTH, at Herlufsholm Strand found eskimo sites, rich in remains of whales, e. g. a shovel made of a scapula, ropes, bow, and a box made of whalebone. These things originated from eskimos belonging to the Thule culture. They have been published by KNUTH (1952) as originating from *Balaena mysticetus*.

*Narwhal. Monodon monoceros L.*

Only one record, subfossil, exists from Peary-Land namely that by KNUTH (1952), who mentions excavated implements made of bones of this species. The place of this find was Herlufsholm Strand.

*Greenland Musk-Ox. Ovibos moschatus wardi Lydekker.*

*Ovibus moschatus* (Zimm.). MANNICHE 1910. FREUCHEN 1915 a.

Literature. As the musk-ox has been a very important animal to all explorers in Peary Land the travel literature from here is fairly rich in observations on the musk-ox. The following observations are all cited from the literature.

GREELY (1886): May 1882, Kap Britannia and Kap Benét, tracks. PEARY (1907),  $13/5$ -1900, Kap Morris Jesup, tracks, ca.  $18/5$ -1900, *ibid.*, 10 shot, May 1900, west of Kap Washington, 1 herd consisting of 15 animals, 1 of 18 and furthermore 2—3 stragglers. 4 shot. MANNICHE (1910): Herlufsholm Strand, 82°50' NL,  $7/5$ -1907, 2 herds of 6 (4 cows, 2 old bulls, 1 young bull, 2 heifers, 3 calves) respectively. Some days later, south coast of Fr. E. Hyde Fjord, 1 old bull. Many tracks. BORUP (1911):  $27/4$  1909, John Murray Ø, 5 musk-oxen. In May 1909 at Kap Morris Jesup at least 54 individuals were seen, among a herd numbering

16. BORUP writes: "while we shot many, their number were too great for that to make any impression". From the I. Thule Expedition RASMUSSEN (1915) and FREUCHEN make the following remarks in 1912:  $\frac{5}{6}$ , Melville Land opposite Hagens Fjord, 2 bulls, 1 solitary bull and 4 bulls.  $\frac{8}{6}$  near Jørgen Brønlunds Fjord, a herd numbering 12 (4 cows, 4 calves, 2 heifers, 2 young bulls) and 3 bulls. Ibid.  $\frac{11}{6}$ , a herd numbering 6.  $\frac{13}{6}$  Blomsterstranden, a carcass in the landwater.  $\frac{14}{6}$ , ibid. herd of 8 (among cows and young calves).  $\frac{16}{6}$ , ibid., many oxen. Head of Independence Fjord at the north-coast, only few tracks seen.  $\frac{17-21}{6}$ , Kap Schmelck, at the top of the mountain, 800 meters above sea level, trampled down ox-paths.  $\frac{25}{6}$  Valmuedalen, 3 old bulls shot.  $\frac{29}{6}$ , ibid., a solitary bull shot.  $\frac{30}{6}$ — $\frac{1}{7}$  ibid., an incredible amount of dung everywhere. 1 bull seen.  $\frac{2}{7}$  Valmuedalen 3 oxen in one herd shot. They were at the height of moulting, with big loose tufts of wool. RASMUSSEN (1919) gives some observations from 1917:  $\frac{4}{6}$  mouth of J. P. Kochs Fjord, very old excrement.  $\frac{8}{6}$  ibid., during a long excursion into the land only old excrement were seen and the author says:— and everything indicates that the musk-ox has left this district many years ago.  $\frac{14}{6}$ , Elison Ø, excrement, but he thinks that oxen have stayed here only temporarily, judging from the natural condition of the island.  $\frac{6}{6}$ , Kap Benét, very old excrement. Hannes Ø, at the foot of Thulefjældet, very old bone remains crumbling away. L. KOCH (1925): All observations are from 1921.  $\frac{2}{5}$ , Linn Bugt and Distant Cape, Fresh tracks.  $\frac{15}{5}$  Kap Morris Jesup, the author writes—PEARY and MACMILLAN and BORUP had good musk-ox hunting here, but now there was none. It looked as if the musk-oxen had gone southwards. Only in one place a track most likely several months old was seen.  $\frac{25-26}{5}$ , Herlufsholm Strand, 2 herds with calves were seen. 9 were shot. After an excursion into the land one of the eskimos said that most likely many musk-oxen were living here.  $\frac{1}{6}$ , ibid., numerous tracks, also of calves.  $\frac{17}{6}$ , south coast of Jørgen Brønlunds Fjord, 5 (1 bull, 3 cows, 1 calf).  $\frac{18}{6}$ , Frysefjeld, 2 musk-oxen. Everything indicated that musk-oxen were numerous here.  $\frac{17}{7}$ , Adam Bierings Land, 1 shot.

Notes from the diaries. 1947.  $\frac{30}{7}$ , North of Buen, 1 herd seen from airplanc. South-coast of Jørgen Brønlunds Fjord, 1 herd, 1 solitary bull.  $\frac{31}{7}$ , ibid., 2 herds, each numbering 6. One of the bulls shot.  $\frac{6}{8}$ , south of the station, herd numbering 5. Riverbed at the station, herd of 6 (2 cows, 2 calves, 1 bull, 1 undertermined).  $\frac{8}{8}$ , at the station, 1 very old bull.  $\frac{9}{8}$ , near the station, herd of 2 and 2 solitary.  $\frac{10}{8}$ , ibid., 2 or 3 solitary bulls.  $\frac{13}{8}$ , south side of Buen, a herd numbering 9, including 2 small calves. Furthermore 2 musk-oxen. 1948:  $\frac{7}{8}$ , south of the station, 2 solitary bulls.  $\frac{11}{8}$ , at the station, 1 solitary bull shot.  $\frac{13}{8}$ , southwest of the station, 7 in one herd seen from airplane. At the station, a herd

numbering 6 (2 bulls, 2 cows, 2 calves from this year).  $17/8$ , south of the station, a herd of 8 (2 rather small calves, 3 cows, 1 old bull and 2 younger bulls) and another numbering 6 (most probably the same herd observed  $13/8$ ).  $20/8$ , southern side of Buen, 5 in one herd (4 ad. and 1 calf).  $23/8$ , south coast of Jørgen Brønlunds Fjord, at the entrance, 2 musk-oxen.  $26/8$ , south of the station, 2 solitary, 2 herds numbering 5 and 3 (2 ad. and 1 little calf).  $27/8$ , south coast of Jørgen Brønlunds Fjord, at the entrance, herd numbering 7. Buen at the mouth of Børglum Elv, 4.  $28/8$ , southern side of Buen, many tracks.  $30/8$ , south coast of Jørgen Brønlunds Fjord, 1 solitary bull.  $31/8$ , *ibid.*, but farther from the coast, 1 solitary bull.  $1-3/9$ , Børglum Elv's valley, 1 solitary bull and 2 herds numbering 4 (1 bull, 2 cows, 1 little calf) and 3 (1 bull, 2 cows). Skeleton of old bull and skulls of 1 bull and 2 cows.  $1-5/9$ , from head of Jørgen Brønlunds Fjord to Midsommersøen, about 10 skulls.  $3/9$ , at the station, herd numbering 8 (composition as the herd observed  $17/8$ , probably the very same herd). 1 bull from this herd shot. Below Chr. Eriksens Bræ, about 850 meters above sea level, 1 bull and 1 cow together.  $4/9$ , Okseletten, 1 solitary bull.  $6/9$ , south of the station, 2 solitary bulls, a herd numbering 3 (1 big calf in this herd).  $7/9$ , southeast of the station, 2 solitary bulls.  $9/9$ , south of the station, herd numbering 3 (1 bull, 1 cow, 1 calf. Perhaps the same herd observed  $6/9$ ).  $13/9$ , riverbed near the station, 1 solitary bull shot.  $20/9$ , at the station, 1 solitary bull shot.  $26/9$  *ibid.*, 1 solitary seen.  $29/9$ , Okseletten, 4 in one herd.  $1/10$ , riverbed at the station, herd numbering 5 (3 bulls, 2 cows). Okseletten, 1 lonely bull and a herd numbering 3 (1 bull, 1 cow, 1 big calf). Southeast of the station 2 bulls together.  $3/10$ , northeast of Kap Harald Moltke, herd numbering 6 (4 ad., 2 calves), of which 1 cow shot as the hunter mistook it for a bull in the dark. Several places between Kap Caroline Marie and Falkefjeld, old tracks. Western part of Kjovesletten, 2 musk-oxen about 10 kilometers from the coast. Fresh tracks.  $6/10$ , eastern side of Hagens Fjord, 11 musk-oxen (among others 2 calves).  $10/10$ , riverbed near the eastern end of Midsommersøen, 1 lonely bull shot. *Ibid.*, near Jørgen Brønlunds Fjord, 2 bulls seen.  $11/10$  east of Midsommersøen, fresh tracks.  $14/10$ , western end of Midsommersøen, 1 solitary bull.  $15/10$  Sydpasset near Midsommersøen, 2 musk-oxen. Sydpasset west of the waterfall, 3 solitary bulls and a herd numbering 6. *Ibid.*, but more to the west, 21 musk-oxen when frightened ran together in two herds numbering 16 and 5 respectively (in the bigger herd some calves), furthermore 2 bulls together, one of which was shot.  $16/10$  western end of Midsommersøen, 1 solitary bull, maybe the same one observed  $14/10$ .  $20/10$ , near Blåsø, one herd numbering 5—6. Southern side of Buen, one herd numbering 10 (with 2 calves).  $21/10$ , *ibid.*, herd consisting of 4 animals (2 young bulls, 1 old bull, 1 heifer?).  $25/9$ , 1 bull, crossing Independence Fjord towards Kap Harald Moltke, shot.  $27/9$ .

Koralkysten, 1 bull.  $29/9$ , 3 musk-oxen.  $30/10$ , north of Chr. Eriksens Bræ, 400 meter above sea level, 1 solitary bull. 1949:  $20/2$ , southern side of Frysefjeld, herd numbering 6. Near eastern end of Midsommersøen, 1 lonely bull.  $21/2$  outlet of Midsommersøen, track on the ice. North coast of the easternmost part of Midsommersøen, herd numbering 2 (1 bull, 1 cow) shot. Cow with rather developed foetus. Aspect and size of the bull very cowlike. Both rather fat, regarding the season. Buen near the mouth of Børglum Elv's valley, 1 solitary bull shot.  $22/2$ , Walcotts Land, south of easternmost part of Midsommersøen, tracks. Buen near the mouth of Børglum Elv's valley, 1 solitary bull shot.  $24/2$ , Midsommerelven, near Midsommersøen, 1 very big bull shot.  $19/3$ , east of Midsommersøen, many tracks.  $20/3$ , north coast of Midsommersøen, near the middle, 1 seen.  $21/3$ , the mouth of Sydpasselven, 1 solitary bull. Sydpasset, tracks and excrement on the snow everywhere. During the sledge journey that day we counted about 40 musk-oxen in Sydpasset, 1 solitary bull and herds numbering 6 (2 young animals in the herd), 4 (in which 2 bulls were fighting vigorously), 4 and 15. In addition several smaller herds now and then along the river.  $22/3$ , Aftenstjernesø, during a sledge trip of about 20 kilometers on the lake 56—60 individuals were observed, among 2 solitary bulls and herds of 2, 2, 5, 5, 6, 6, 9, 11 and 14. The herd of 11 contained at any rate 1 calf from last year. In one of the herds 2 bulls were seen fighting for a short while.  $23/3$ , *ibid.*, herd of 5 at the tent. Many also observed this day, but most of them must no doubt have been the same animals observed the day before.  $27/3$  *ibid.*, western end, up to the Inland Ice, herd of 6.  $28/7$ , *ibid.*, 1 solitary bull shot.  $30/3$ , interior part of J. P. Kochs Fjord, excrement on the ice.  $2/4$ , head of J. P. Kochs Fjord, eastern side, 1 lonely bull. Buen, at the mouth of Børglum Elv, 1 lonely bull.  $4/4$ , Aftenstjernesø, 2 together, on the northern shore. Sydpasselven near Aftenstjernesø, a herd of more than 20 animals uphill. *Ibid.*, herd of 6 at the river.  $5/4$ , Sydpasset at the waterfall, herd of 2.  $7/4$ , south coast of western end of Midsommersøen, tracks.  $8/4$ , north coast of western end of Midsommersøen, about 500 meters above sea level, 1 solitary bull.  $14/4$ , southern side of Frysefjeld, herd of 16 (including 1 calf from the foregoing year).  $19/4$ , in the middle of the western side of Hagens Fjord herd of 6.  $20/4$ , north coast of Midsommersøen, herd of 3 uphill. *Ibid.*, south coast near outlet, herd of 4.  $21/4$ , Buen, apparently 2 herds of 5 joined when frightened. Oksesletten, 2 bulls shot from herd, to prevent dogs from being hurt.  $23/4$ , *ibid.*, herd of 7.  $24/4$ , Kap Rigsdagen, 1 old bull killed.  $25/4$ , Koralkysten, tracks.  $3/5$ , Kap Knud Rasmussen, 2 musk-oxen. Kjovesletten, 1 solitary and herds of 2, 3 and 5. 7 kilometers west of Kap Vaarbrud, 10 musk-oxen. One cow, with milk in the udder, shot, and 1 newborn calf killed by the sledge-dogs.  $4/5$ , Kap Vaarbrud, tracks.  $5/5$ , Kap København, tracks.  $6/5$ , east coast of

Mudderbugten, herd of 5 without calves. East coast of Hagens Fjord, 1 solitary and herd of 3. Kjovesletten, 9 (including 2 calves).  $7/5$ , Kap København, herds of 2 and 5.  $8/5$ , *ibid.*, 2.  $9/5$ , west coast of Mudderbugten, 1 solitary. North coast of Mudderbugten, 1 solitary and herd of 10 (including 2 calves). Herlufsholm Strand near Mudderbugten, herd of 7 (including 1 calf). Snow-patch near the station, 1 solitary bull. Kap Eiler Rasmussen, herd of 7 (including 1 calf from last year).  $10/5$  north of Mudderbugten, 1 lonely. South of the station, 1 lonely.  $11/5$ , about 10 kilometers west of Kap Eiler Rasmussen, herd of 14 (with 2 newly born, 1 old bull and 1 bull-calf from last year). Many musk-oxen in the landscape. Besides the herd of 14, 31 animals were counted, among 1 solitary bull.  $14/5$  Herlufsholm Strand, about 30 kilometers from the coast, 12 in one herd (including 4 newborn, falling again and again, when running). Herd of 3, of which 1 bull shot, other oxen on the plain. Near the foot of the mountains herd of 8 with 1 newly born calf.  $15/5$  about 10 kilometers west of Kap Eiler Rasmussen, about 50 oxen seen, among herds of 3, 3 (all bulls) 4, 7 and one of about 10 plus 1 solitary bull. Herlufsholm Strand some 30 kilometers from the coast, many. Northeast of Mudderbugten, several musk-oxen in riverbed.  $17/5$  Kjovesletten, herds of 4 and 7 (1 young cow shot). Kap Eiler Rasmussen, herd of 8 (1 shot) and 1 lonely.  $19/5$ , Asmild Elv, tracks. Between Asmild Elv and Neergaards Elv 7 in one herd (without calves). Neergaards Elv, tracks. Northern part of Herlufsholm Strand, 1 solitary bull shot. Oksesletten, herd of 4 and 1 solitary.  $20/5$ , a little east of Kap Grundloven, tracks.  $22/5$ , north coast of G. B. Schley Fjord, excrement on snow.  $23/5$ , Kap Isak Glückstadt, old tracks.  $25/5$ , south coast of Schley Fjord, 1 solitary.  $26/5$ , Mudderbugten, herd of 4.  $27/5$ , Kap København, 1 solitary. Hellefisk Fjord, tracks in the snow.  $28/5$ , outlet of Sydpaselven, 1 solitary.  $29/5$ , *ibid.*, 1 solitary (probably the same seen  $28/5$ ).  $31/5$ , east of Neergaards Elv, 1 solitary.  $1/6$ , Kap Grundloven, 1 lonely.  $2/6$ , north of Mudderbugten, 1 solitary.  $4/6$ , Kap København, 1 solitary.  $6/6$ , Blomsterstranden between Kap Knud Rasmussen and Diabasholmene, inland herd of 6 (without calves).  $7/6$ , south coast of Peary Land,  $21^\circ$  WL, herd of 4 (including 1 calf from last year) and 1 solitary.  $8/6$ , 20 kilometers south west of Kap Knud Rasmussen, herd of 3 (2 ad. and 1 calf from this year).  $9/6$ , south coast of Jørgen Brønlunds Fjord near Kap Knud Rasmussen, 1 solitary bull. Koralkysten, 1 solitary. West coast of Astrups Fjord, old tracks.  $21/7$ , near eastern end of Midsommersøen, path with numerous tracks, excrement and several skeleton-remains, 1 herd and 1 solitary bull seen.  $22/7$ , southern side of outlet from Midsommersøen, 1 solitary. Herd of 4 *ibid.*, on northern side.  $23/7$  *ibid.*, southern side, several, some of them bathing.  $24/7$ , *ibid.*, many, several roaring.  $24-25/7$ , Itukussuks Dal, many probably 40—50 animals. Musk-

oxen seen crossing a river.  $^{25}/_7$ , southern side of Frysefjeld, herd of 3.  $^{2}/_8$ , valley of Børglum Elv near the mouth, 4 musk-oxen, including 1 little calf from this year. Tracks everywhere.  $^{3}/_8$  ibid., 6 kilometers from the coast 1 ♂ and 1 ♀ swimming across a 50 meter broad river with a rapid stream.  $^{5}/_8$ , ibid., 20 kilometers from the fjord, 1 solitary and a herd of 3 seen. Wool on rock-walls, where the animals had been rubbing it off.  $^{8}/_8$ , ibid., lower part, 1 solitary bull shot as it was attacking 2 men. 2 shot at the station.  $^{15}/_8$ , south of the station, 2 seen.  $^{27}/_8$  one bull shot at the station.  $^{29}/_8$  three seen east of the station.  $^{3}/_9$  one at Midsommerelv near the lake. 7—8 seen in mouth of Itukussuks Dal.  $^{4}/_9$  five north of eastern end of Midsommersøen.  $^{7}/_9$  seven at the station.  $^{23}/_9$ , Mudderbugten, about 23 seen, among a herd of 10 from which a bull and a cow were shot.  $^{24}/_9$ , ibid., 15 seen.  $^{7}/_{10}$ , at the station 15, of which a bull and a cow were shot.  $^{8}/_{10}$ , 3 north of eastern end of Midsommersøen.  $^{9}/_{10}$  two old bulls at south coast of middle part of Midsommersøen.  $^{10}/_{10}$  at the waterfall in Sydpasset, herds of 6, 5 and 2.  $^{11}/_{10}$  five, 3 bulls, 1 cow, 1 heifer, shot above the waterfall in Sydpasset.  $^{12}/_{10}$  one ibid.  $^{16}/_{10}$ , Sydpasset between the waterfall and Aftenstjernesø, 80 observed.  $^{17}/_{10}$ , lower part of Sydpaselv, 2 seen.  $^{18}/_{10}$  one on north coast of Midsommersøen.  $^{24}/_{10}$  two at south coast of Heilprin Land near Kap Knud Rasmussen.  $^{25}/_{10}$  one cow shot at the station.  $^{26}/_{10}$  fresh tracks at "Kranievarden" at head of Independence Fjord.  $^{29}/_{10}$  one cow shot at mouth of Glaciologelv.  $^{2}/_{11}$  one bull shot at the station.  $^{9}/_{11}$  a herd south of the station.  $^{8}/_{12}$  two bulls shot at Lersø.  $^{30}/_{12}$  one bull shot at the station. 1950:  $^{23}/_2$ , at Midsommerelv near the lake, two herds, both numbering 7. One of the herds consisted of 2 bulls, 3 cows and 2 calves. 2 of the cows shot had rather well developed embryos.  $^{8}/_3$  a herd of at least 8 at Midsommerelv near the lake.  $^{9}/_3$  two herds, both of 2, at Midsommersøen.  $^{10}/_3$  eight at Sydpaselven.  $^{12}/_3$  relatively few musk-oxen in Sydpasset near Aftenstjernesø.  $^{14}/_3$  numerous herds at Aftenstjernesø. A few of the herds numbering more than 20 animals.  $^{25}/_3$  Kjovesletten, 17 observed.  $^{28}/_3$  three at west coast of Mudderbugten.  $^{29}/_3$ , south eastern part of Nansens Land, several herds of 2—3 and one of 9. 1 very meagre cow shot.  $^{30}/_3$  eight at Herlufsholm Strand, 2 bulls shot.  $^{31}/_3$  small herds at south coast of Nansens Land.  $^{5}/_4$  seven in Skærbugten (G. B. Schley Fjord).  $^{6}/_4$  six at east coast of Hans Egedes Land.  $^{7}/_4$  one very meagre bull shot at east coast of Mascart Inlet.  $^{13}/_4$  two herds of 4 and 6 at head of Jewell Fjord.  $^{16}/_4$  twelve seen at Kap Payer.  $^{19}/_4$  two fat bulls shot in Lemmingfjord.  $^{20}/_4$  two at south coast of Fr. E. Hyde Fjord between Nordkronelien and Thors Fjord.  $^{24}/_4$  one in entrance to Nordpasset from Fr. E. Hyde Fjord.  $^{26}/_4$ , east of Borups Ø in De Long Fjord, 16.  $^{29}/_4$  several small herds, at last 63 animals at south east corner of Nansens Land. Herds of 1, 1, 2, 2, 2, 3, 4, 4, 5, 6, 6, 8, 8, and 11 were counted.  $^{6}/_5$  four in Sydpasset.

Four in Citronens Fjord, south coast of Fr. E. Hyde Fjord, one bull killed here.  $11/5$  two at Frihedsrådets Elv, north east corner of Fr. E. Hyde Fjord.  $12/5$  two at east coast of Hans Egedes Land.  $15/5$  tracks at Ormen in G. B. Schley Fjord.  $16/5$  two herds of 3 and 2 at Skærbugten, mouth of G. B. Schley Fjord.  $18/5$  three at northern part of Herlufsholm Strand.  $23/5$ , some at the mountains behind Herlufsholm Strand.  $27/5$  two herds both of 2, at west coast of Mudderbugten.  $31/5$  one at northeast coast of Hagens Fjord. 2 bulls shot below Buen opposite the station.  $6/6$  a herd of six and a solitary at Koralkysten.  $17/6$  one on plain at Glaciologelv.  $22/6$ , 2 at Frysefjeld.  $23/6$  one south of Midsommerelv at the mouth, one at Morænesø.  $2/7$  one shot south of the station.  $22/7$  three south of the station, one bull shot.  $23/7$  one at the station.  $22/7$  one bull at Klaresø.  $30/7$  two herds, each of two old bulls, near the station.  $5/8$  one old bull on Oksesletten.  $7/8$  three old bulls south of the station.  $8/8$  two herds of 7 and 5 on Oksesletten.  $10/8$  one old bull near the station.  $11/8$  one old bull at the station and one south of the station.

Distribution and number. The musk-ox ranges over practically all localities visited by man. The only part where no oxen have been observed is the coast from Kap Morris Jesup to the mouth of Fr. E. Hyde Fjord. The abundance of musk-oxen at the different localities of course varies very much according to the natural conditions. Naturally steep mountains with vegetationless plateaus are not inhabited by oxen, and only a few accidental stragglers may be met with in such localities. During D. P. E. at least a few herds could be seen daily in the lowland or in the valleys. The population was found to be most numerous on the huge plain on Herlufsholm Strand, in the valley of Børghlum Elv, on northern Heilprin Land, Itukussuks Dal, Sydpasset and the southeastern part of Nansens Land, as seen from fig. 12. South of Peary Land oxen were observed on I. C. Christensens Land and Vald. Glückstadts Land. Fig. 12 gives the number of musk-oxen observed during a rather straight journey along the dotted lines, i. e. the figures give the fairly exact number of oxen counted during a single sledge journey (in order to avoid counting the same animals over and again). If a landscape was traversed on several occasions only the number of oxen observed on one occasion is given. Thus musk oxen may have been observed where no signature is given on the map.

Certainly the number of oxen is much higher. On account of the hilly landscape in most localities, many flocks no doubt have escaped observation. When after a long straight course we camped and made excursions inland we nearly always sighted oxen, which no doubt would have escaped observation if the straight course had been continued. Only the oxen on the side of the hills facing the travellers were counted.

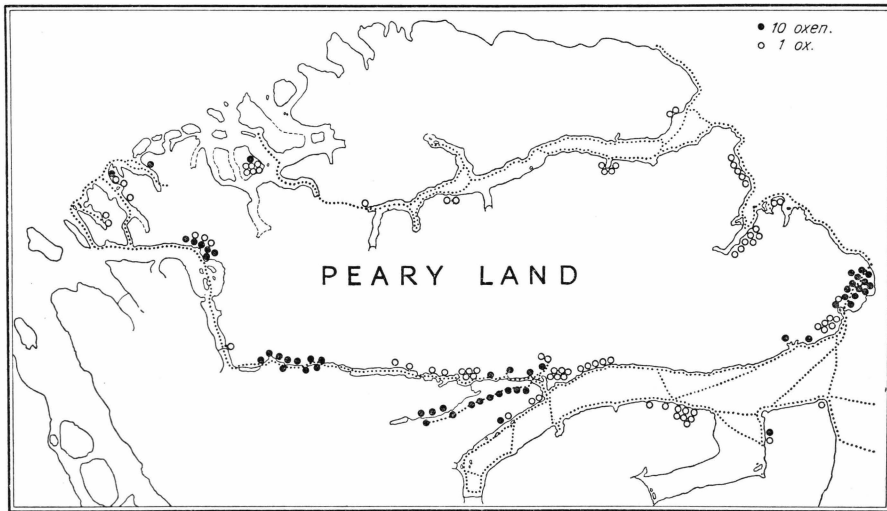


Fig. 12. Map showing number of musk-oxen observed in Peary Land during a single journey along the dotted line. For further explanation see the text.

I am therefore of the opinion that the number living in the areas along the dotted lines on the map should be nearly doubled, if the real number (not only these observed) should be stated.

Of course still only a relatively small part of the huge area of Peary Land has been trotted by man, but judging from the number of oxen observed in the areas explored during 1947—50, I think that the total musk-ox population of Peary Land at least should be estimated at 2—3000 animals.

All previous expeditions observed and shot a great number of musk-oxen in Peary Land apart from the last one. KOCH (1925) during his journey around Peary Land in 1921 only succeeded in shooting about a dozen oxen although he visited the same places where The I. Thule Expedition observed and shot a great number. Whether this is ascribable to a decrease in the number of oxen cannot be stated now. Perhaps the oxen in 1921 for a time had wandered away from the localities where they were abundant in 1912. At any rate the number of oxen during 1947—50 must have been somewhat like that observed in 1912 by FREUCHEN and RASMUSSEN.

General remarks. L. KOCH (1930) stated that both when he (1921) and the northgoing party of the Danmark Expedition (1907) visited Peary Land the men had suffered from cases of sickness after eating musk-ox meat. During D. P. E. nothing of this kind happened to any members of the expedition, the sledge dogs included, and we tasted a good deal of ox meat. I therefore think that these cases of sick-

ness should not be ascribed to the musk-oxen of Peary Land, the more so as similar cases, as far as I know, are not recorded from other areas inhabited by musk-oxen. In some way or other the cases of sickness may be ascribed to the constitution of the men. Perhaps after a successful hunting they have eaten too much after a fairly long period with very small rations of less concentration.

The voice of the adult ox is very seldom heard. PEDERSEN (1936), in his recent monograph on the Greenland Musk-Ox, says: "In den fünf Jahren, die ich in Nordøstgrönland zugebracht habe, habe ich bewusst nur ein einziges Mal einen Moschusoschen brüllen gehört." I was more lucky since I heard the bellowing or rather roaring of musk-oxen several times. First I heard roaring at a distance near the station ( $\frac{8}{8}$ ) and next while camping at Midsommersøen ( $\frac{23-24}{7}$ ). Here several herds and solitary bulls passed the tent, and several times I heard the adult bulls roaring. Probably the roaring of the bulls are correlated with the rut, which occurs in the end of July and in August—September.

Fighting bulls were observed a few times.  $\frac{24}{7}$  the bulls of a flock were seen attacking a solitary bull, which they met on their way. In this case there was no real fight, as the old bull was in the defensive and fled as fast as possible, but several times I saw how the bulls of the flock hit it in the haunches while pursuing it. Real fighting was seen  $\frac{21}{3}$  and  $\frac{22}{3}$ , in one of these cases very vigorously and for a long time.

Usually musk-oxen, and always when in flocks, are not dangerous to man, but that the solitary rutting bulls may be of danger also we had the "opportunity" of observing. In two cases a man was pursued by oxen and had to run and hide among rocks to avoid attack, and on one occasion two persons were suddenly attacked by a bull. They stood on a small tongue of land at a lake and had to shoot the bull to save their lives.

Some oxen, the stomachs of which were examined (all bulls), had eaten:  $\frac{31}{7}$  nearly exclusively *Salix arctica*, a few *Eriphorum polystachyum*.  $\frac{8}{8}$  excl. *Puccinellia angustata*.  $\frac{11}{8}$  excl. *Puccinellia ang.*  $\frac{17}{8}$  mainly *Salix arctica*, large quantities of grass and *Saxifraga oppositifolia*.

Everywhere we found dung of musk-oxen, from the first day we landed, along the beach on quite vegetationless clay and on ravel hills as well as high up in the naked mountains tracks and dried up excrement were seen. It is not easy from the number of footprints to draw conclusions as to the frequency of the animals. Especially not in this dry and frosty climate. Apparently, rather fresh footprints may be fairly old—at any rate several years old. I have seen my own foot prints stand very clear in clay a little more than a year after they were placed, and RASMUSSEN found the footprints of Peary 17 years after they had been placed. Also the excrement will keep their shape for years when dropped on dry soil.



Fig. 13. Musk-ox path along river, Midsommerelven, coming from Midsommersøen.  
 Å. SAHLERTZ phot. 21/7-1949.

That the musk-ox does not avoid water was seen a few times. <sup>25</sup>/<sub>7</sub> some oxen were seen crossing a fairly big river in Itukussuks Dal and <sup>3</sup>/<sub>8</sub> a cow and a bull were observed swimming across a 50 meter broad river with a rapid stream. This happened in both cases without the animals having been scared by the observer, no doubt they had not observed him. That the musk-ox will also bathe was seen at the outlet of Midsommer-søen. Here some oxen of a herd grazing on the coast went out into the water till the water reached the sides of the belly and here they stayed for a long time. It was a very hot and calm day and we were here much annoyed by the mosquitoes (*Aedes nigripes*) and perhaps these also bit the oxen.

Real musk-oxen paths were seen by FREUCHEN on Vildtland and by me along Midsommerelven. Here the path could be traced over some kilometers and was as comfortable as a path in a Danish wood. Numerous footprints and excrement and some skeleton parts were seen along the path. Also in other localities paths could be seen. No doubt the paths are formed on account of the morphology of the landscape and not because the oxen are apt to follow special routes (fig. 13). Where the terrain is hilly and with big boulders they will however take the easiest way and thus the paths are formed where predestinated by nature. When

climbing in the mountains you could meet small pieces of paths just where you had to go. When the terrain again became easier the paths disappeared. It looked as if the paths in some places were indicated by a border of richer vegetation, presumably on account of the manure.

When a herd of oxen is scared to flight they will always run uphill or towards the mountains and if they are at the coast, they will run away from the water. This no doubt instinctive reaction is adequate because, it is best not to be hindered in the flight by water and because they can more easily escape their enemies by running uphill. They are in fact very fast and agile even on mountain sides. These observations were endorsed by RODAHL, who have wintered in the oxen-rich land at Clavering Ø in Northeast Greenland. MANNICHE (1910 pag. 86 and 87) says about flying oxen: "fled to the mountains" and "hurried away to the mountains".

During summer the excrement of musk-oxen are like droppings of cows, but in winter the excrement are small bean-like pellets of a rather hard consistence. The difference is seen from fig. 14. FREUCHEN (1915a) explained that the difference was due to the difference in water content in the food during summer and winter. This no doubt is the truth. In the end of August when the night frost had begun I observed the first fresh excrement in the form of pellets. That it is really the excrement of adult oxen and not of calves was proved partly by the find ( $\frac{13}{9}$ ) of these pellets in the rectum of an adult bull and partly by the observation ( $\frac{1}{10}$ ) of still hot pellets in the snow, originating from a herd numbering only adult oxen.

The moulting from winter to summer coat goes very slowly. In Peary Land moulting takes place, no doubt, as stated by PEDERSEN (1936) in more southern localities, from the end of April to the end of June. The loose wool tufts may however still adhere to the animals far into October. Thus the musk-oxen seen during D. P. E. nearly always had loose wool tufts in the furs (from  $\frac{21}{4}$  to  $\frac{13}{9}$ ). It was so common that I especially noted that 11 oxen quite without the usually loose tufts were observed between  $\frac{1}{9}$  and  $\frac{9}{9}$ .

I want to draw attention to the fact that the musk-ox may contribute to the dispersal of the soil-fauna. During winter the musk-oxen will scratch the snow away from the snow-patches in order to get at the vegetation below, and very often lumps of frozen soil with the adhering vegetation and soil-fauna may be transported over long distances by the violent gales, and such lumps were observed on several occasions on the sea ice a rather long way from the coast.

As far as it was possible the oxen in the flocks were counted, but when the number was more than 20 it was difficult to do this exactly when the animals were observed at a distance, especially when the animals

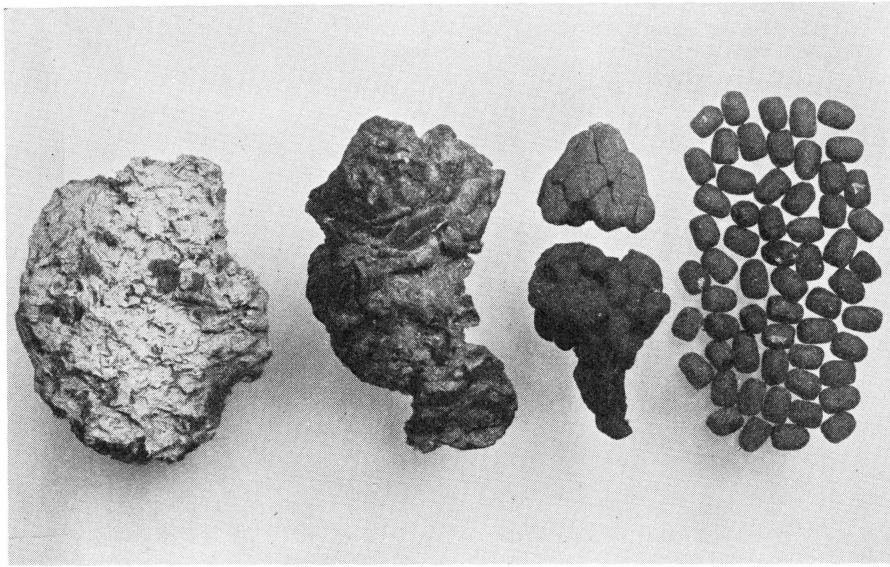


Fig. 14. Excrement of *Ovibos moschatus* ad. To the left two droppings from summer. To the right pellets as found during winter. Between transitional stage. U. MØHL-HANSEN phot.

ran together. This counting showed (fig. 15) that the biggest flocks observed numbered about 20 animals, and at any rate did not exceed 25, and flocks of this size were observed only on three occasions. There seemed to be no relation between the size of the flocks and the time of the year. Commonly the flocks are made up of 4—7 animals. Herds numbering 11—16 animals were always something of an event. Flocks of only two and sometimes of three very often consisted exclusively of bulls, and often bulls in their best age.

The relatively high number of old, solitary bulls was remarkable. Sometimes the diaries only contained information of an observed flock without statement of number. Therefore the number of solitary oxen in relation to the number of flocks no doubt is somewhat lower in nature than seen from fig. 15. A lonely oxen will always be recognized as a single individual even at a great distance. Thus all “flocks” of 1 have been incorporated in fig. 15, but some herds observed have been left out because the number could not be or was not stated in the diaries. The solitary animals were in all cases bulls.

The formation of bigger flocks would be especially inconvenient in this northernmost part of the range of the species, since the few spots with edible vegetation here are very scattered and of small extension.

The flocks must wander from place to place in northernmost Greenland more than elsewhere to get sufficient food. It was observed that

walking musk-oxen may cover 4—5 times the distance which a walking man may cover in the same time.

During winter the musk-oxen farther south in East Greenland gather at special winter-quarters, relatively rich in vegetation and with a not too thick snow-cover. In such places great numbers will gather and

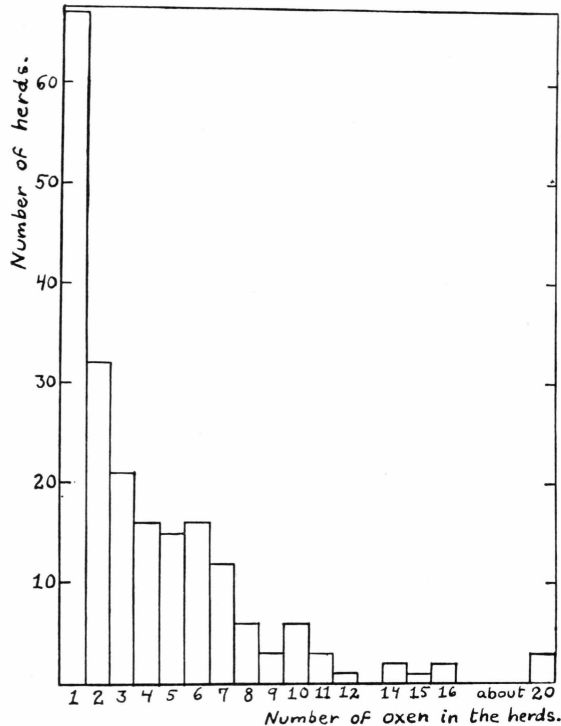


Fig. 15. Number of individuals in the musk-ox herds observed in Peary Land 1948-50.

the flocks form herds of 25—50 individuals (PEDERSEN 1936). This was not the case in Peary Land as far as I was able to see, at least not to such an extent. This is easily explained by the natural conditions. The vegetation is far from rich enough to allow a bigger number of oxen to thrive in a narrower locality and here it is of no use to look for wind-swept localities without snow-cover. The precipitation is very small, so small that vegetation of any importance must be looked for at the snow-patches or along rivers. Although wind-swept areas along rivers may attract the oxen during the severest winter months as for instance in Wandels Dal, they have to spread along the narrow stripe of vegetation along the river system.

That at least some oxen stayed in the area south of the station during the dark-season was proved by the fresh foot-prints and earth dug up in snow-patches.

Table 36. Number of calves in the flocks.

| Number in flock | Bulls | Cows | Calves         |                |       | Date     |
|-----------------|-------|------|----------------|----------------|-------|----------|
|                 |       |      | from same year | from last year | total |          |
| 6.....          | 2     | 2    | ..             | ..             | 2     | 6/8-47   |
| 9.....          | ..    | ..   | 2              | ..             | 2     | 13/8-47  |
| 6.....          | 2     | 2    | 2              | ..             | 2     | 13/8-48  |
| 8.....          | 3     | 3    | 2              | ..             | 2     | 17/8-48  |
| 5.....          | ..    | ..   | ..             | ..             | 0     | 20/8-48  |
| 3.....          | 1     | 1    | ..             | ..             | 1     | 23/8-48  |
| 3.....          | 1     | 1    | ..             | ..             | 1     | 26/8-48  |
| 2.....          | 1     | ? 1  | ..             | ..             | 0     | 3/9-48   |
| 3.....          | 1     | 1    | ..             | 1              | 1     | 6/9-48   |
| 4.....          | 1     | 2    | 1              | ..             | 1     | 1-3/9-48 |
| 3.....          | 1     | 2    | ..             | ..             | 0     | 1-3/9-48 |
| 5.....          | 3     | 2    | ..             | ..             | 0     | 1/10-48  |
| 3.....          | 1     | 1    | ..             | ..             | 1     | 1/10-48  |
| 2.....          | 2     | ..   | ..             | ..             | 0     | 1/10-48  |
| 6.....          | 1     | 2    | ..             | ..             | 2     | 3/10-48  |
| 2.....          | ? 2   | ..   | ..             | ..             | 0     | 15/10-48 |
| 16.....         | ..    | ..   | ..             | ..             | 3-4   | 15/10-48 |
| 2.....          | 2     | ..   | ..             | ..             | 0     | 15/10-48 |
| 2.....          | 2     | ..   | ..             | ..             | 0     | 10/10-48 |
| 10.....         | ..    | ..   | ..             | ..             | 2     | 20/10-48 |
| 2.....          | 1     | 1    | ..             | ..             | 0     | 21/2-49  |
| 11.....         | ..    | ..   | ..             | at least       | 1     | 22/3-49  |
| 16.....         | ..    | ..   | ..             | ..             | 1     | 14/4-49  |
| 5.....          | ..    | ..   | ..             | ..             | 0     | 6/5-49   |
| 9.....          | ..    | ..   | ..             | ..             | 2     | 6/5-49   |
| 10.....         | ..    | ..   | ..             | ..             | 2     | 9/5-49   |
| 7.....          | ..    | ..   | ..             | ..             | 1     | 9/5-49   |
| 7.....          | ..    | ..   | ..             | 1              | 1     | 9/5-49   |
| 14.....         | ..    | ..   | 2              | 1              | 3     | 11/5-49  |
| 3.....          | 3     | ..   | ..             | ..             | 0     | 15/5-49  |
| 3.....          | 3     | ..   | ..             | ..             | 0     | 15/5-49  |
| 12.....         | ..    | ..   | 4              | ..             | 4     | 14/5-49  |
| 3.....          | ..    | ..   | ..             | ..             | 0     | 14/5-49  |
| 8.....          | ..    | ..   | ..             | ..             | 1     | 14/5-49  |
| 7.....          | ..    | ..   | ..             | ..             | 0     | 19/5-49  |
| 6.....          | ..    | ..   | ..             | ..             | 0     | 6/6-49   |
| 4.....          | ..    | ..   | ..             | 1              | 1     | 7/6-49   |
| 3.....          | 1     | 1    | 1              | ..             | 1     | 8/6-49   |
| 4.....          | ..    | ..   | 1              | ..             | 1     | 2/8-49   |
| 2.....          | 1     | 1    | ..             | ..             | 0     | 3/8-49   |
| 5.....          | 3     | 2    | ..             | ..             | 0     | 11/10-49 |
| 7.....          | 2     | 3    | ..             | 2              | 2     | 23/2-50  |
| 2.....          | 2     | ..   | ..             | ..             | 0     | 30/7-50  |
| 2.....          | 2     | ..   | ..             | ..             | 0     | 30/7-50  |

252 musk-oxen hereof 42 calves

The fertility of the musk-ox has recently been discussed by JENNOV (1945). He states the percentage of calves in the population of East Greenland to have been 13—19 in the years 1889—1940. In table 36 particulars are given of 44 flocks in Peary Land, in which the number of calves has been especially noted. With calves is meant young up to about one year. It is seen that out of 252 musk-oxen 40 (or 16 per cent) were calves. This means that the fertility of the species in Peary Land 1947—50 must have been just as high as normally in the more southern and more luxuriant parts of its range.

The D. P. E. had good supplies of food for men as well as for dogs, but in order to give the dogs fresh meat after the long dark-seasons, when they were only fed dried pemmikan and fish-powder, a number of oxen was killed. In all 63 animals were shot, 1 calf (for anatomical studies), 8 cows, and 54 adult, mostly old and very old solitary bulls. One of the cows shot was mistaken for a bull in the dark. One bull was shot in self-defence. Furthermore a newly born calf, which ran away from a flock, was killed by our dogs. In order to spare the population we nearly always hunted the lonely, old bulls, no longer of any importance to the fertility, and I think the number of oxen killed by the expedition in 1947—50 can have influenced the population only slightly.

The following measurements were taken: no. 514. Newly born calf. Herlufsholm Strand. Weight 6900 g. Snout-tip of tail 67 centimeters. From back to tip of front leg 45.5 centimeters.

Bony remains of musk-oxen were found at former eskimo sites in the region around Jørgen Brønlunds Fjord. These settlements had belonged to the palaeo-eskimos of Peary Land, the material culture of which was Dorset culture. They have no doubt lived mainly as musk-ox hunters (KNUTH 1948).

*Barrenground Caribou. Ragnifer tarandus (L.).*

Literature: The only one who has recorded finds proving an early occurrence of caribous in this area is FREUCHEN (1915). At Kap Schmelck and on Adam Bierings Land he found "numerous antlers all more or less disintegrated and overgrown with algae".

Notes from the diaries. 1947: no sign of Caribou observed around Jørgen Brønlunds Fjord. 1948: Only one fragment found, although 8 men trotted large parts of Heilprin Land, stretches of Erlandsens Land and Melville Land. This single fragment of antler was very disintegrated. It was found a few kilometers from the eastern end of Midsommersøen on a trampled-down path, no doubt formed by musk-oxen. The path followed the foot of a mountain-side along Midsommereelv. 1949: During the journeys in the spring and summer of 1949 some other

finds were made. Uphill south of the station on the northern Heilprin Land another fragment of an antler was found. From an eskimo tenting east of the station in Jørgen Brønlunds Fjord a few bits of antlers were secured. Also at the east coast of Peary Land a few fragments of antlers were dug out by KNUTH during the archaeological excavations. South of Peary Land a few finds were likewise made. A fragment of an antler lying on fell-field in Saxifragadal was quite covered by lichens and mosses and very fragile. At Neergaards Elv antler fragments were found during excavation of a former eskimo-settlement.

General remarks. Excluding the finds made in connection with former eskimo-sites (antlers may have been brought by the eskimos) only three finds of fragments of caribou-antlers were made during D. P. E. Neither footprints nor excrement and bones were seen. If we compare this poverty in cast antlers in the area visited in North Greenland with the richness in antlers found on Germania Land (MANNICHE 1910) and observed personally in Zackenberg Bugt and Lindemansdalen at the south base of the expedition, it must be admitted that the caribou must have been very scarce in Peary Land and just south of Peary Land. Most numerous it seems to have been on Adam Bierings Land. This is in fact not surprising since the vegetation in Peary Land is scarcer and the climate more severe so far north.

As all the finds including those of FREUCHEN are very disintegrated and, mine at least, only consisted of fragments, it is to be supposed that the caribou in Peary Land became extinct before this happened farther to the south on Germania Land and A. P. Olsens Land. The last living specimens at the east coast of Greenland were seen 1899 (NATHORST 1900). If the species had become extinct at the same time in Peary Land and in Northeast Greenland the drier and frostier climate of Peary Land should have preserved the antlers better here than farther south. This is as explained above not the case, just the opposite.

## 2. Mammals observed in Northeast Greenland.

The general remarks on the observations of birds from the region around the south-base of D. P. E. given on pag. 81 are also true of the following scattered observations on mammals from this region.

### *Lepus arcticus groenlandicus* Rhoads.

Some hares met with here and there and a few shot on Zackenberg up to 1300 meters a. s. l. On a few occasions hares were observed in the night at the foot of the mountain, near the sea level, but normally hares should be looked for higher up in the mountains (Author). 1948—49

the stock at Danmarkshavn had increased as compared with 1940—41 (POULSEN). Cranial measurements see table 29, weight and total length table 30.

*Dicrostonyx groenlandicus* Traill.

During visits to Zackenberg Bugt in 1947 and 1948 the lemming was very scarce. In the summer of 1949 it was far more abundant. In 1950 HOLMEN informed me, that  $\frac{26}{7}$  and  $\frac{27}{7}$  he noted that the species here was fairly numerous and he found freshly dug holes everywhere.

A juv. male (no. 44) captured  $\frac{12}{8}$ -48 was moulting all over the body, apart from chin and extremities. Weight 26 grammes. Total length 91 millimeter (URSIN). According to POULSEN it was increasing in number in 1948—49 at Danmarkshavn and in 1950—51 it was seen in large numbers in all regions visited between Ella Ø and Daneborg. Material see table 32 no. 99 and 44.

*Alopex lagopus* (L.)

Only a few observed around Zackenberg, some of which attracted by musk-ox carcass (author). During 1948—49 the fox was very rare at Danmarkshavn, only two captured. Trappers in Northeast Greenland said that 1950—51 was a good fox-year. The number of foxes secured by the different hunting stations were thus (according to POULSEN):

|                                 |     |
|---------------------------------|-----|
| Antarctics Havn .....           | 70  |
| Myggbukta .....                 | 130 |
| Loch Fyne .....                 | 140 |
| Revet .....                     | 240 |
| Zackenberg and Hochstetter..... | 100 |
| Herschell .....                 | 160 |
| Jonsbu .....                    | 25  |
| Otto Strand .....               | 70  |
| Aalborghus .....                | 30  |
| Hvalrodsodden .....             | 30  |

Weight and total length see no. 104 table 33.

*Ursus maritimus* L.

While sailing through the pack-ice off Northeast Greenland 5—6 bears were seen. While staying at the south-base only a single was seen, coming into Young Sund with drifting ice. During the winter 1948—49 several were shot here by KLOKKER, a trapper living here. According to verbal information from POULSEN 17 bears were shot this winter at

Danmarkshavn, Germania Land. In the spring of 1951 three bears were shot at Kap Herschell and the same number at Myggbukta.

*Putorius ermineus arcticus* Merriam.

A number observed and skinned in 1947 in Zackenberg Bugt (author). During 1948—49 not a single one observed at Danmarkshavn, not even tracks (POULSEN). Measurements see table 34.

*Phoca hispida* Schreiber.

Rather frequent in Young Sund as well as in the pack-ice near the coast. No trichinosis found (author). In 1948—49 common at Danmarkshavn, but not as in Dove Bugt. A great number in May 1949 south of Isle de France (POULSEN). Measurements see table 35.

*Erignathus barbatus* (O. Fabricius).

In 1947 a few observed in the pack-ice and one shot in Zackenberg Bugt; infested with *Nematoda* and *Cestoda*. In 1949 a number shot *ibid*. No trichinosis found (author). In 1948—49 common at Danmarkshavn but not as frequent as in Dove Bugt. May 1949 a number at Isle de France (POULSEN).

*Trichechus rosmarus* L.

In 1948—49 19 observed at Danmarkshavn (POULSEN).

*Monodon monoceros* L.

In 1947 a flock of Narwhals in Zackenberg Bugt. In 1948 one killed in charr-net *ibid*. Total length 550 centimeters. Length of very much worn tooth (outer part) 132 centimeters. September 1950 according to POULSEN a dead specimen found in Nordfjord.

*Ovibos moschatus wardi* Lydekker.

Considering the presence of trappers and their dogs the number of musk-oxen is fairly high. You never had to walk long from the south base before at least some oxen could be seen. Climbing the foot of Zackenberg on one occasion I was able to count nearly 100 musk-oxen scattered in Lindemandsdalen. Also during visits to Clavering Ø several flocks were seen.

During his wintering in 1948—49 at Danmarkshavn POULSEN made the following notes. During this period the climate must be said to have yielded favourable conditions to the terrestrial mammals. The musk-ox stock was, as far as it could be estimated, somewhat bigger than in

1940—41, but not at all something like the double. Generally only small flocks were observed. Calves born in 1948 and 1949 were seen in nearly all flocks containing cows. In all 22 specimen were shot. Of these 21 were bulls. In Skærfjorden a flock consisting of one bull, five cows and a calf, all very emaciated, were seen fouraging on sea-weeds on the shore.

*Ragniſer tarandus* (L.).

See the text pag. 128.

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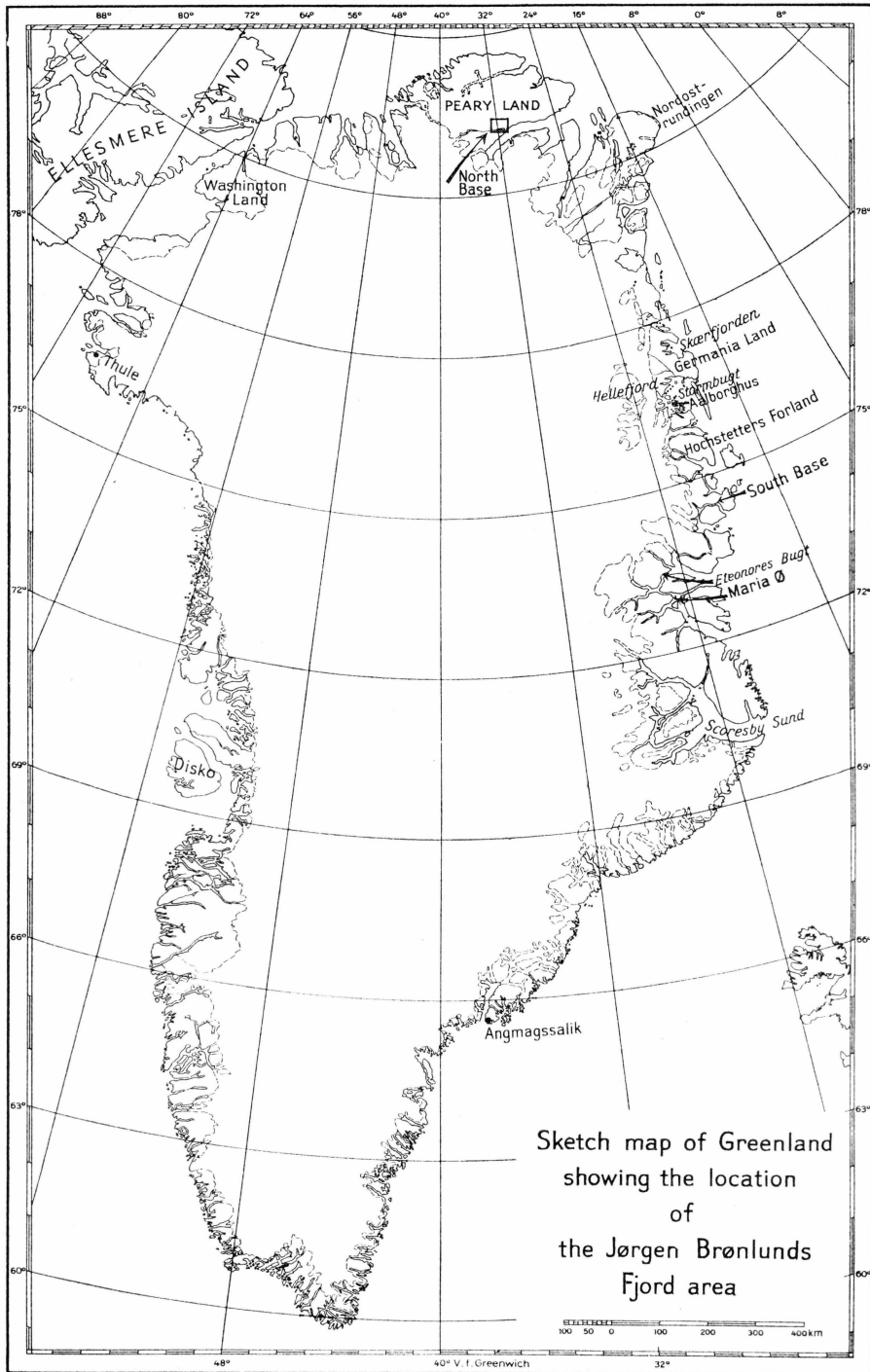


Fig. 16.

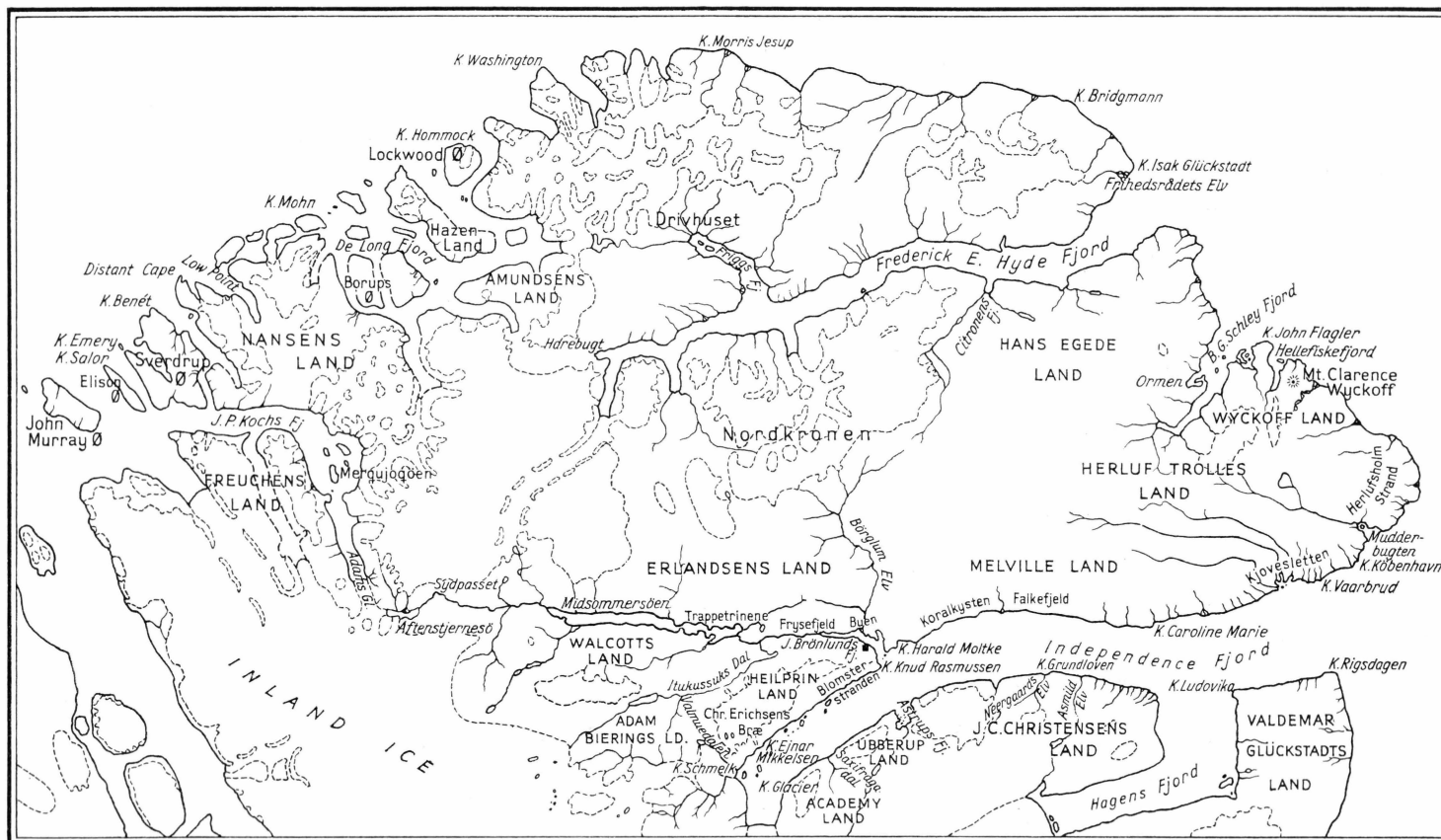


Fig. 17. Map of Peary Land (according to E. KNUTH 1950).

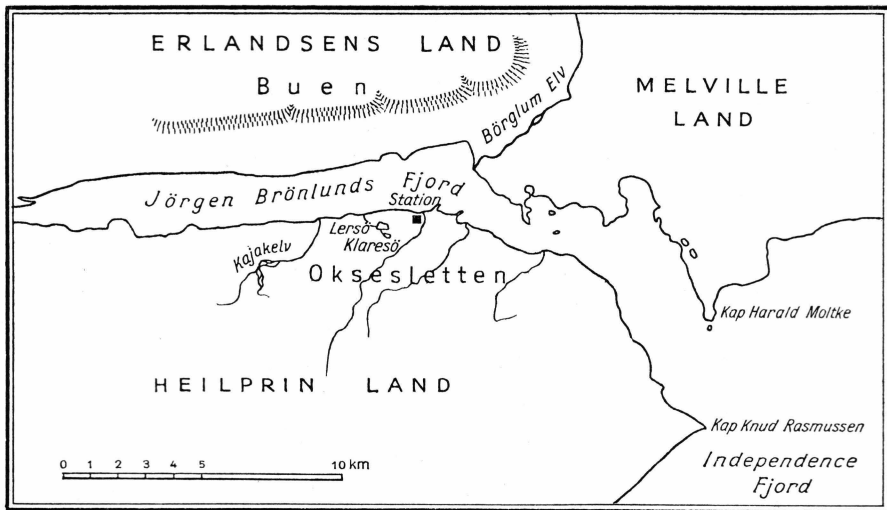


Fig. 18. The region around the wintering station in Jørgen Brønlunds Fjord.  
The map made by T. NIELSEN.

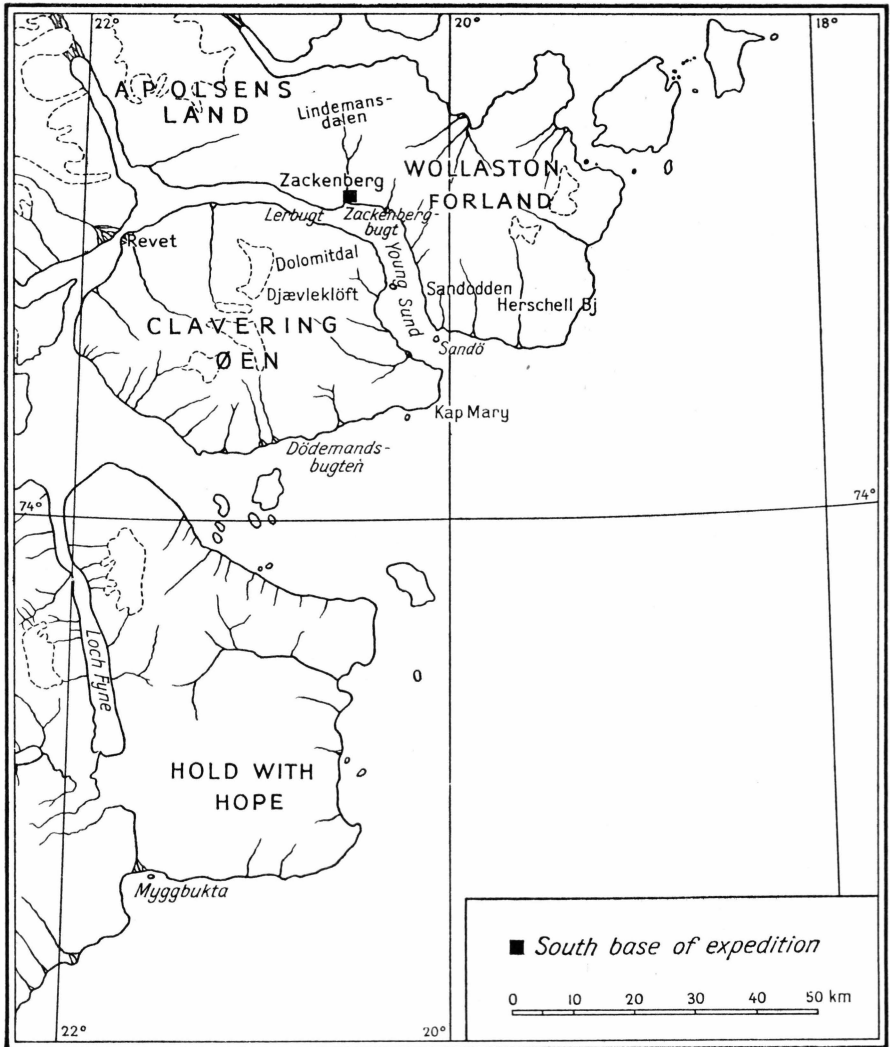


Fig. 19. The region around the south base of the expedition.